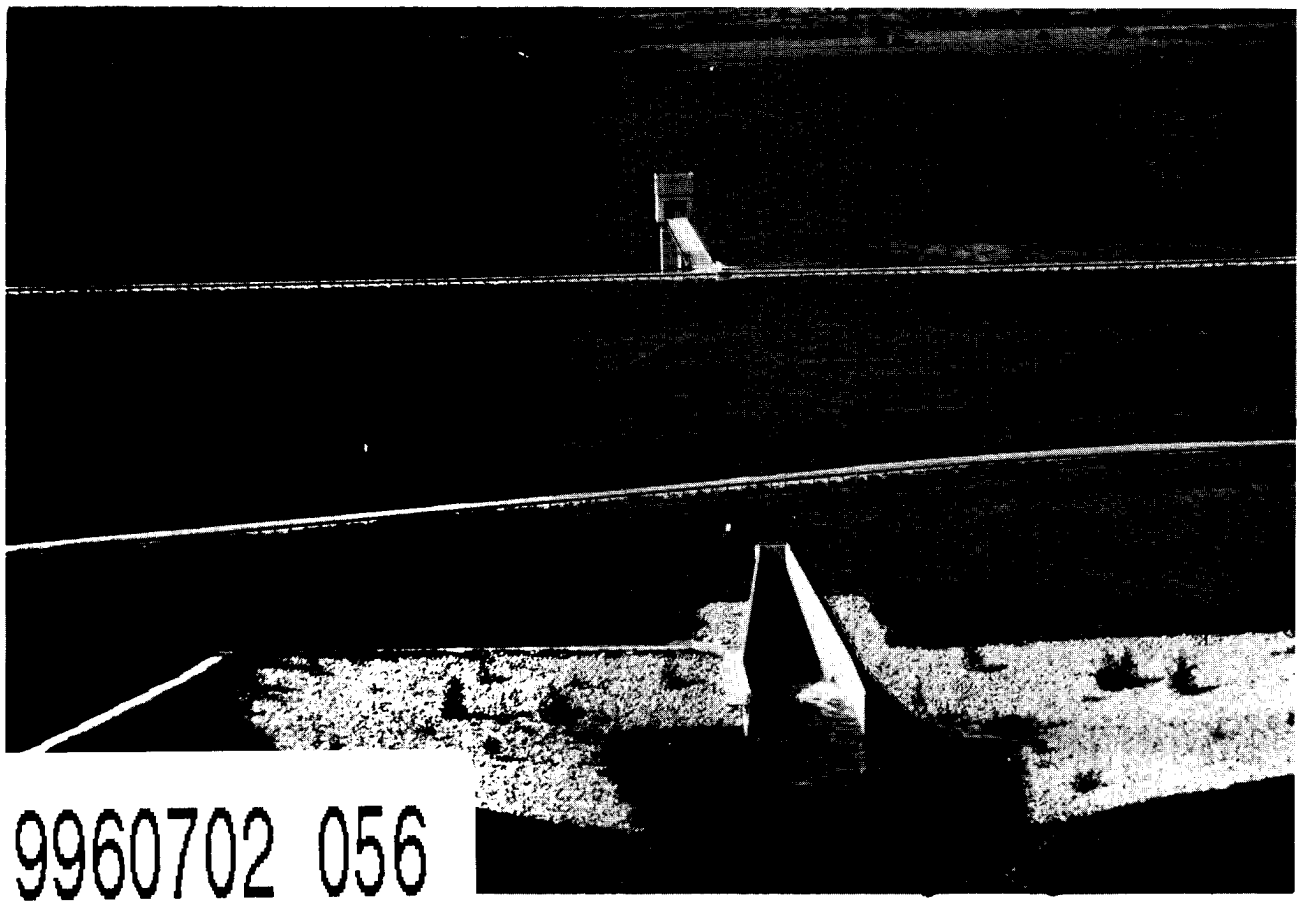
US Army Corps
of Engineers
Fort Worth District

Aquilla Lake
Final Foundation Report
Embankment, Spillway and Outlet Works

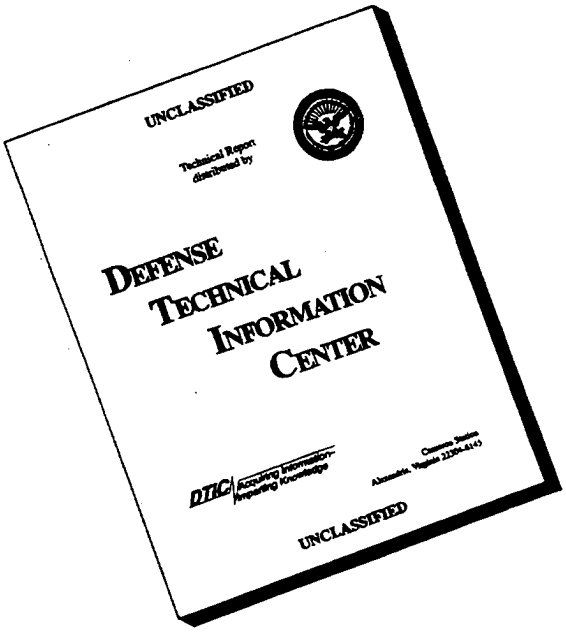


Volume II

REVISED
March 1996

November 1987

DISCLAIMER NOTICE



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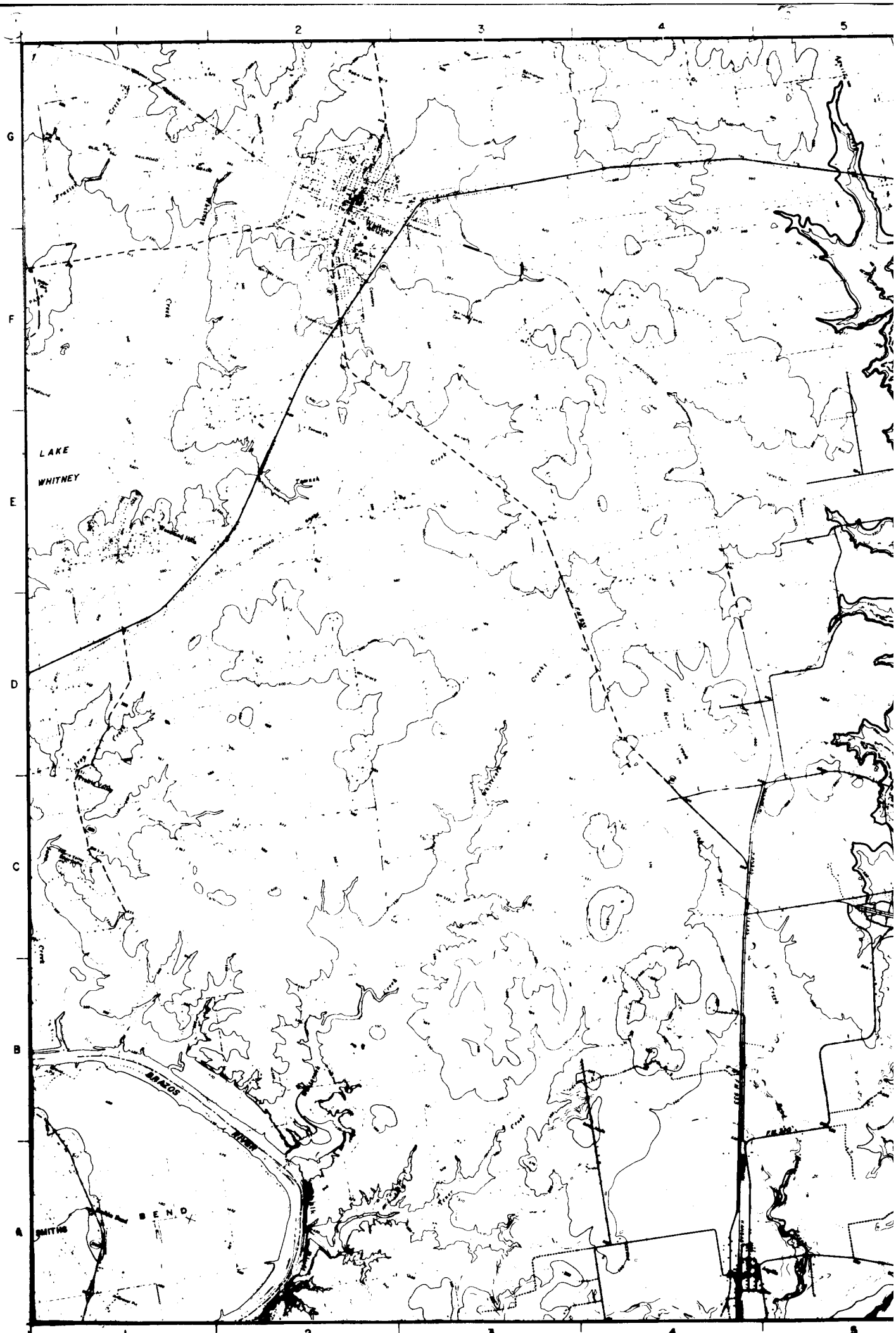
1
2
3
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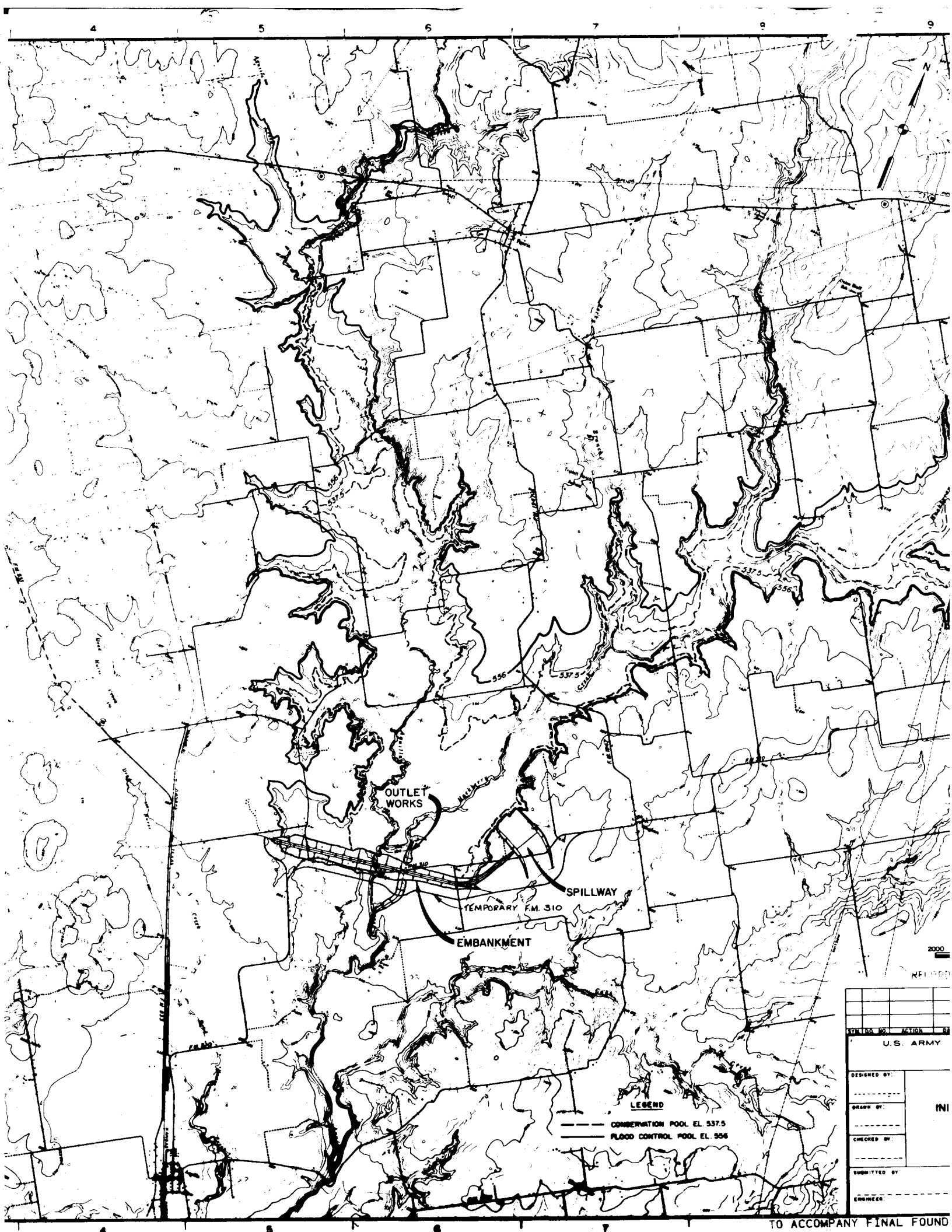
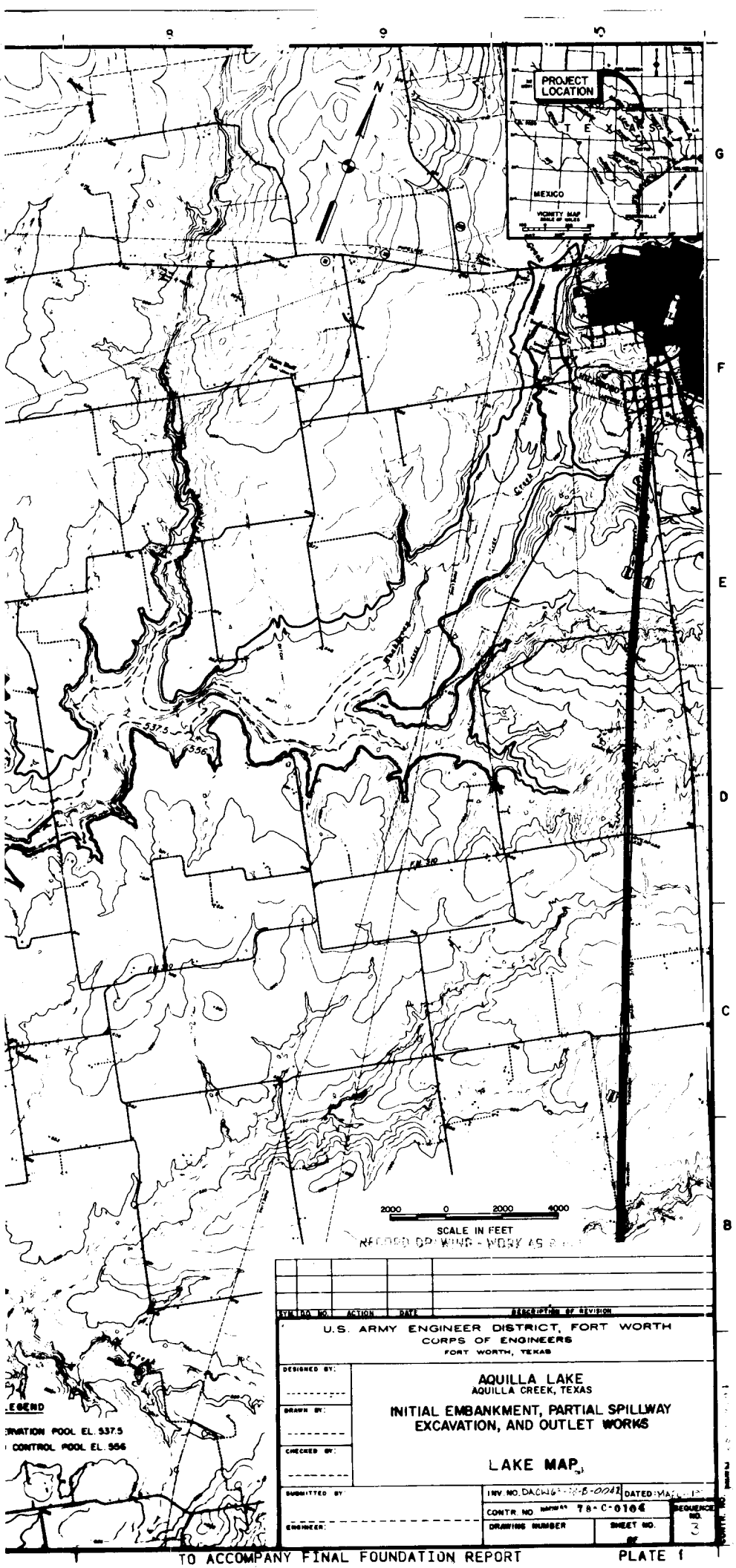
D
C
B
A
LAKE
WHITNEY
Whitney
BRAZOS
RIVER
SMITHS
BEND



TO ACCOMPANY FINAL FOUND



SYMBOL NO. | ACTION | DATE | DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

INITIAL EMBANKMENT, PARTIAL SPILLWAY EXCAVATION, AND OUTLET WORKS

LAKE MAP

INV. NO. DACW63-78-B-0042 DATED: MAY 1978
CONTR. NO. 78-C-0164
DRAWING NUMBER
SHEET NO.
SEQUENCE NO. 3

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 1

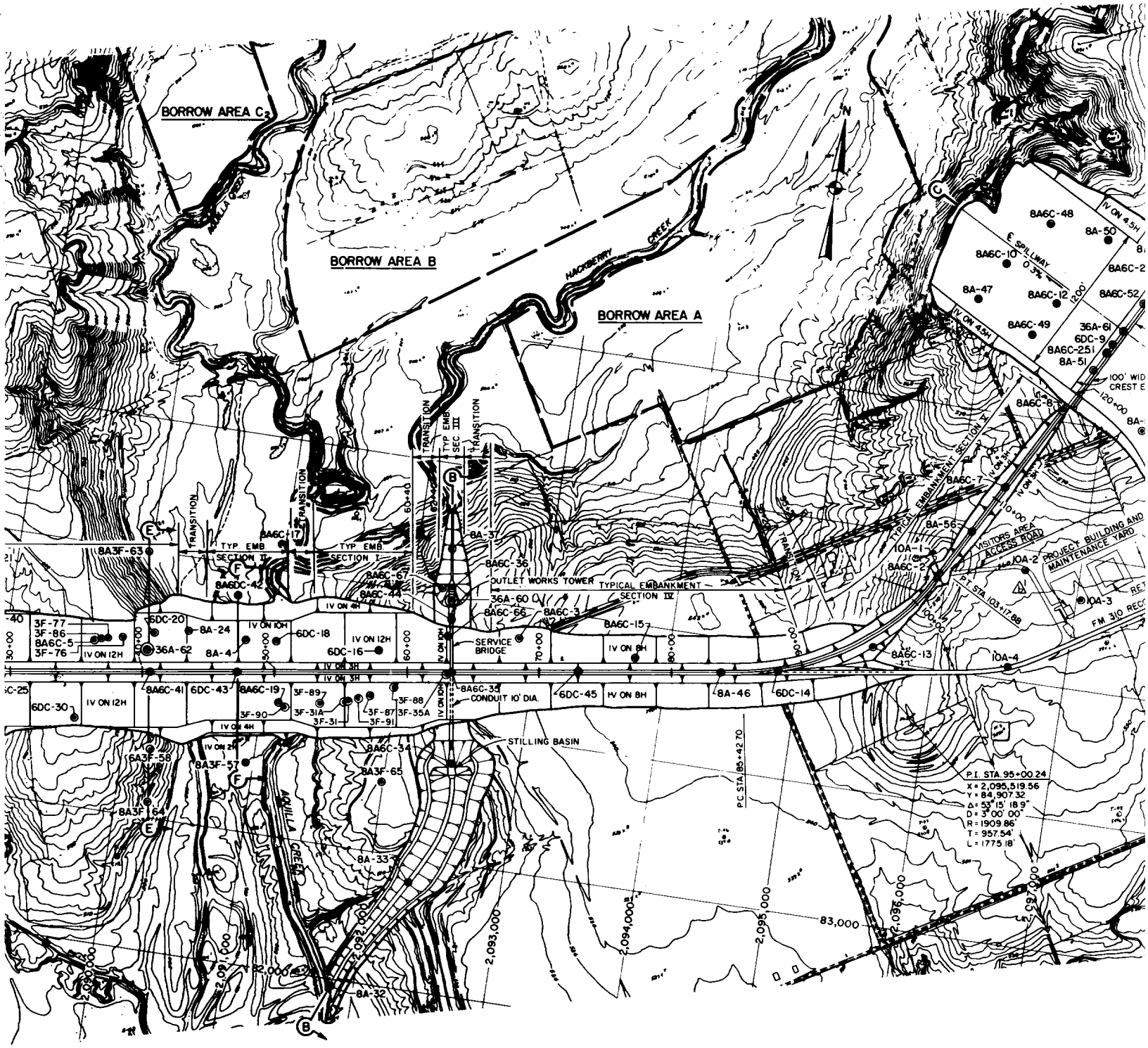
LEGEND

SYMBOLS

- ● CORE, AUGER AND FISHTAIL BORINGS
- ◉ LARGE DIAMETER AUGER BORINGS (INSPECTION)

BORING DESIGNATIONS:

8A6C-00	8 INCH AUGER AND 6 INCH CORE
6DC-00	6 INCH DENISON AND 6 INCH CORE
8A-00, 36A-00	8 INCH AUGER, 36 INCH AUGER
3F-00	3 1/8 INCH FISHTAIL OR ROCKBIT



BORING LAYOUT

400 0 400 800

SCALE OF FEET

LEGEND

SYMBOLS:

- CORE, AUGER AND FISHTAIL BORINGS
- LARGE DIAMETER AUGER BORINGS (INSPECTION)

BORING DESIGNATIONS:

A6C-00	8 INCH AUGER AND 6 INCH CORE
DC-00	6 INCH DENISON AND 6 INCH CORE
A-00, 36A-00	8 INCH AUGER, 36 INCH AUGER
F-00	3 1/8 INCH FISHTAIL OR ROCKBIT

NOTES:

1. FOR EMBANKMENT SECTION A-A, SEE SEQ. 76 AND 81
2. FOR OUTLET WORKS SECTION B-B, SEE SEQ. 82
3. FOR SPILLWAY SECTION C-C, SEE SEQ. 83
4. FOR SECTION ON STATION 19+10 D-D, SEE SEQ. 84 & 85
5. FOR SECTION ON STATION 40+60 E-E, SEE SEQ. 86
6. FOR SECTION ON STATION 47+20 F-F, SEE SEQ. 87

RECORD DRAWIN

	AM 0002	
NO.	REVISION NO.	ACTION

U.S. ARM

DESIGNED BY:

DRAWN BY: B.M.B.

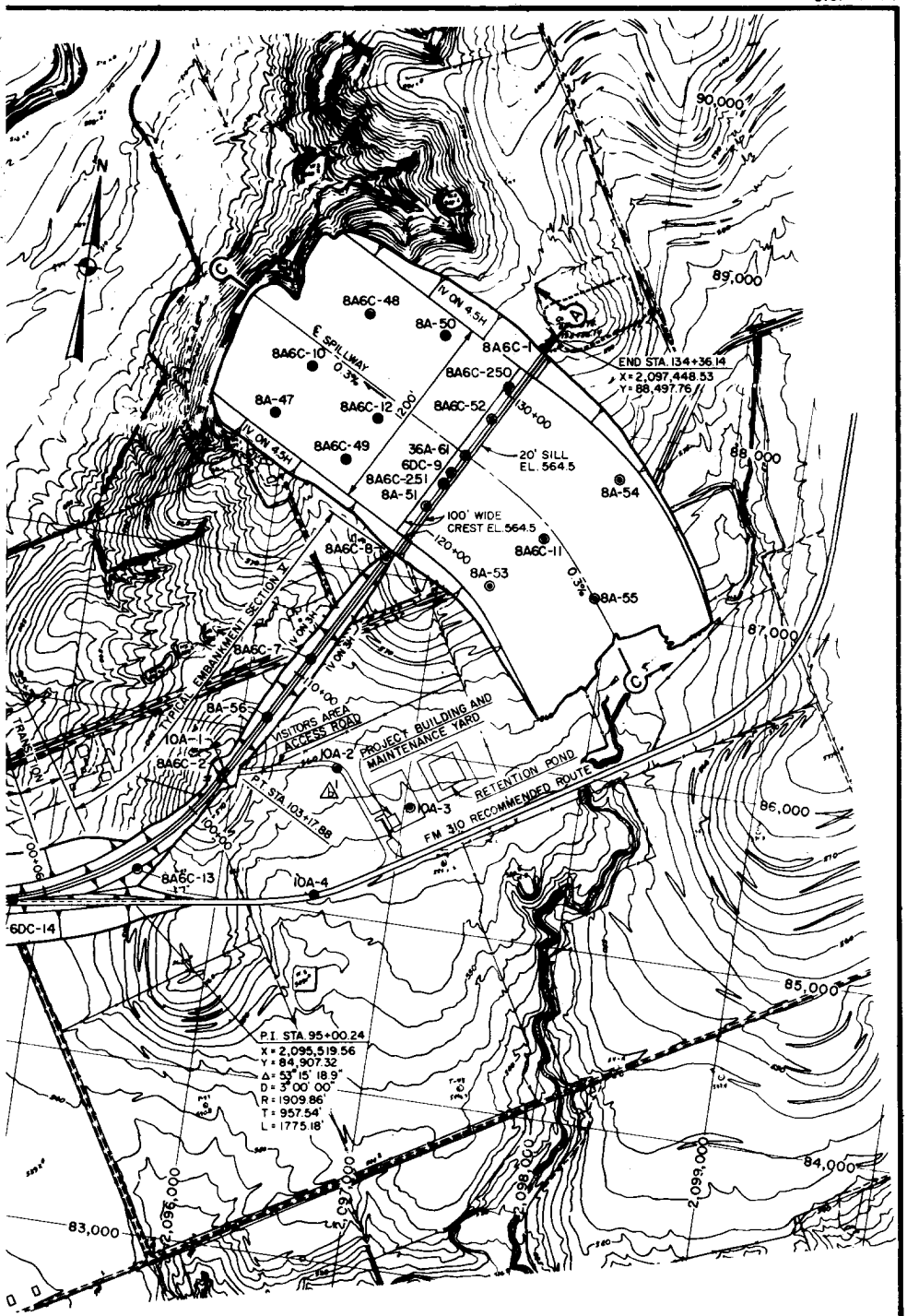
CHECKED BY:

SUBMITTED BY:

ENGINEER:

TO ACCOMPANY FINAL FO

U.S. ARMY



NKMENT SECTION A-A, SEE SEQ. 76 AND 81
ET WORKS SECTION B-B, SEE SEQ. 82
WAY SECTION C-C, SEE SEQ. 83
ION ON STATION 19+10 D-D, SEE SEQ. 84 & 85
ION ON STATION 40+60 E-E, SEE SEQ. 86
ION ON STATION 47+20 F-F, SEE SEQ. 87

RECORD DRAWING-WORK AS BUILT

1	AM	0002	28 NOV. 80	GENERAL REVISIONS
REVISION NO.		ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:

DRAWN BY: B. M. B.

CHECKED BY:

SUBMITTED BY:

ENGINEER:

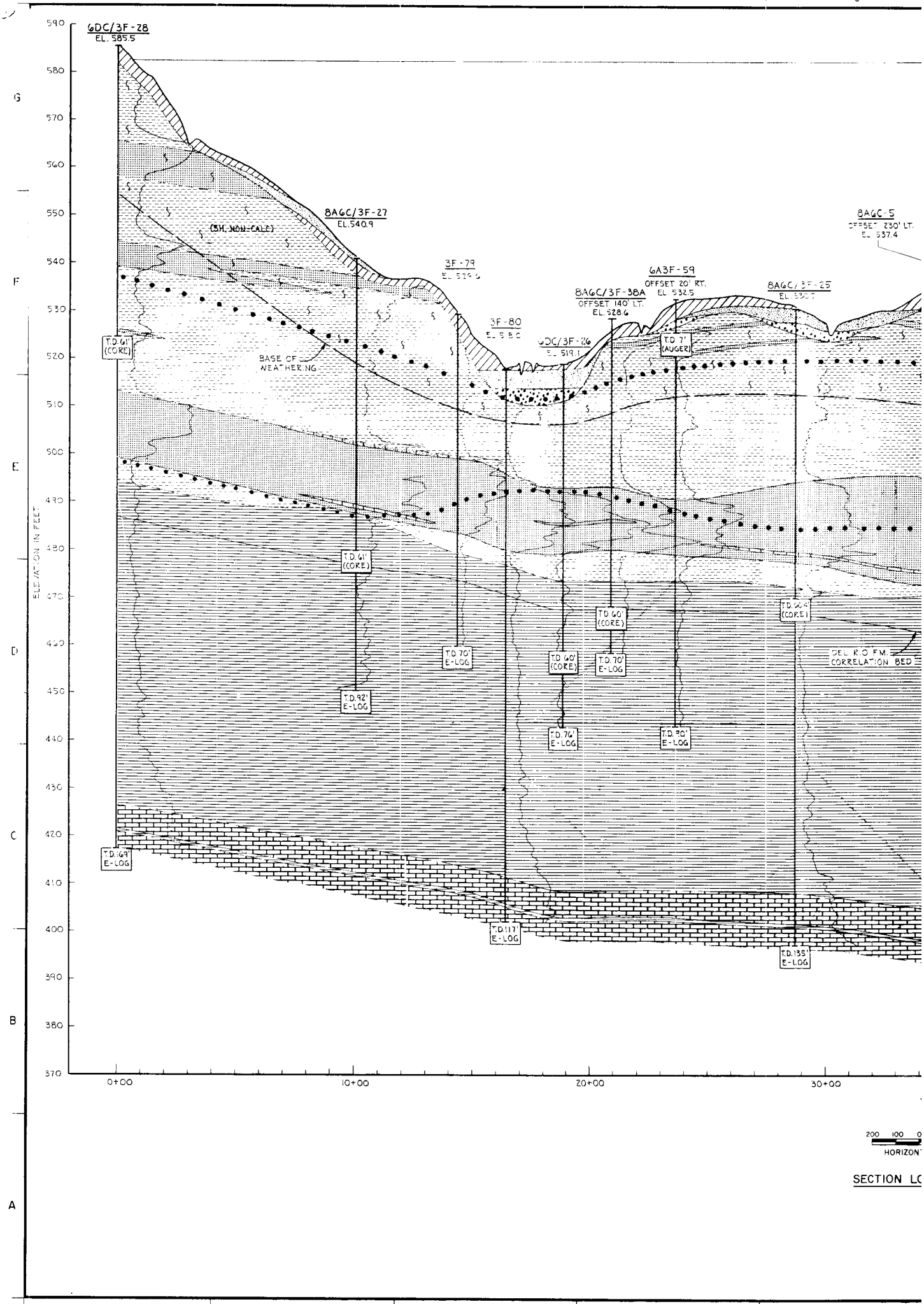
AQUILLA LAKE
AQUILLA CREEK, TEXAS

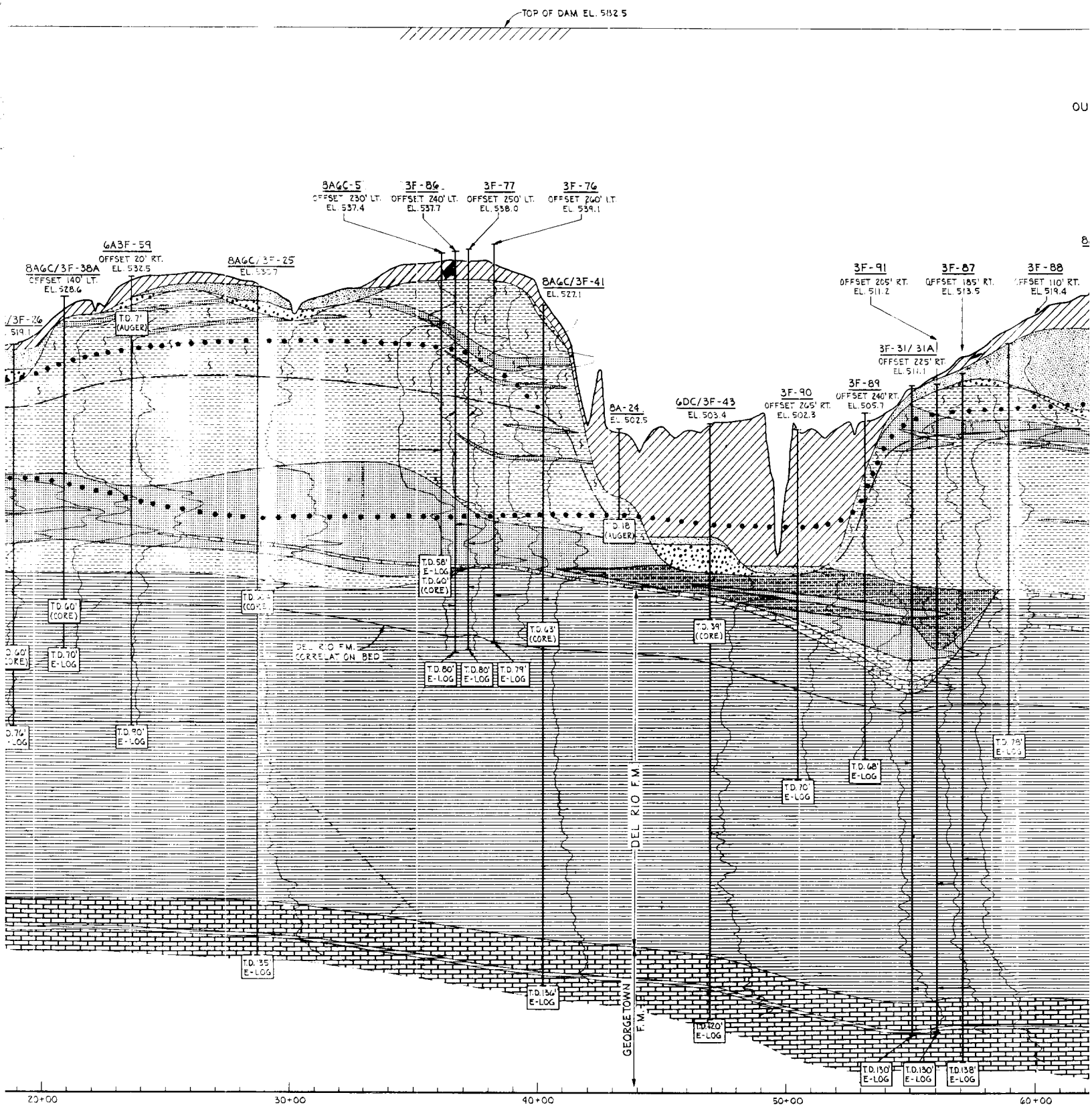
COMPLETION OF
EMBANKMENT AND SPILLWAY
AND CONSTRUCTION OF
SERVICE BRIDGE, ACCESS ROADS, PROJECT BUILDING, VISITORS OVERLOOK, F.M. 310 AND OTHER APPURTEANCES

BORING LAYOUT

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 102
CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 2


6DC/3F-28
EL. 585.5
8AGC/3F-27
EL. 540.9
(SH, NON-CALC)
3F-79
EL. 529.6
3F-80
EL. 518.0
6DC/3F-26
EL. 519.1
8AGC/3F-38A
OFFSET 140' LT.
EL. 528.6
6A3F-59
OFFSET 20' RT.
EL. 532.5
8AGC/3F-25
EL. 530.1
8AGC-5
OFFSET 230' LT.
EL. 537.4
BASE OF WEATHERING
T.D. 61' (CORE)
T.D. 92' E-LOG
T.D. 70' E-LOG
T.D. 60' (CORE)
T.D. 76' E-LOG
T.D. 7' (AUGER)
T.D. 70' E-LOG
T.D. 90' E-LOG
T.D. 60' (CORE)
T.D. 69' E-LOG
T.D. 117' E-LOG
T.D. 135' E-LOG
DEL. R.O. F.M. CORRELATION BED
ELEVATION IN FEET
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
0+00
10+00
20+00
30+00
G
F
E
D
C
B
A
1
2
3
4
5
200 100 0
HORIZON
SECTION LO



SECTION LOOKING UPSTREAM

U.S. ARMY

DESIGNED BY:

DRAWN BY: M.B.P.

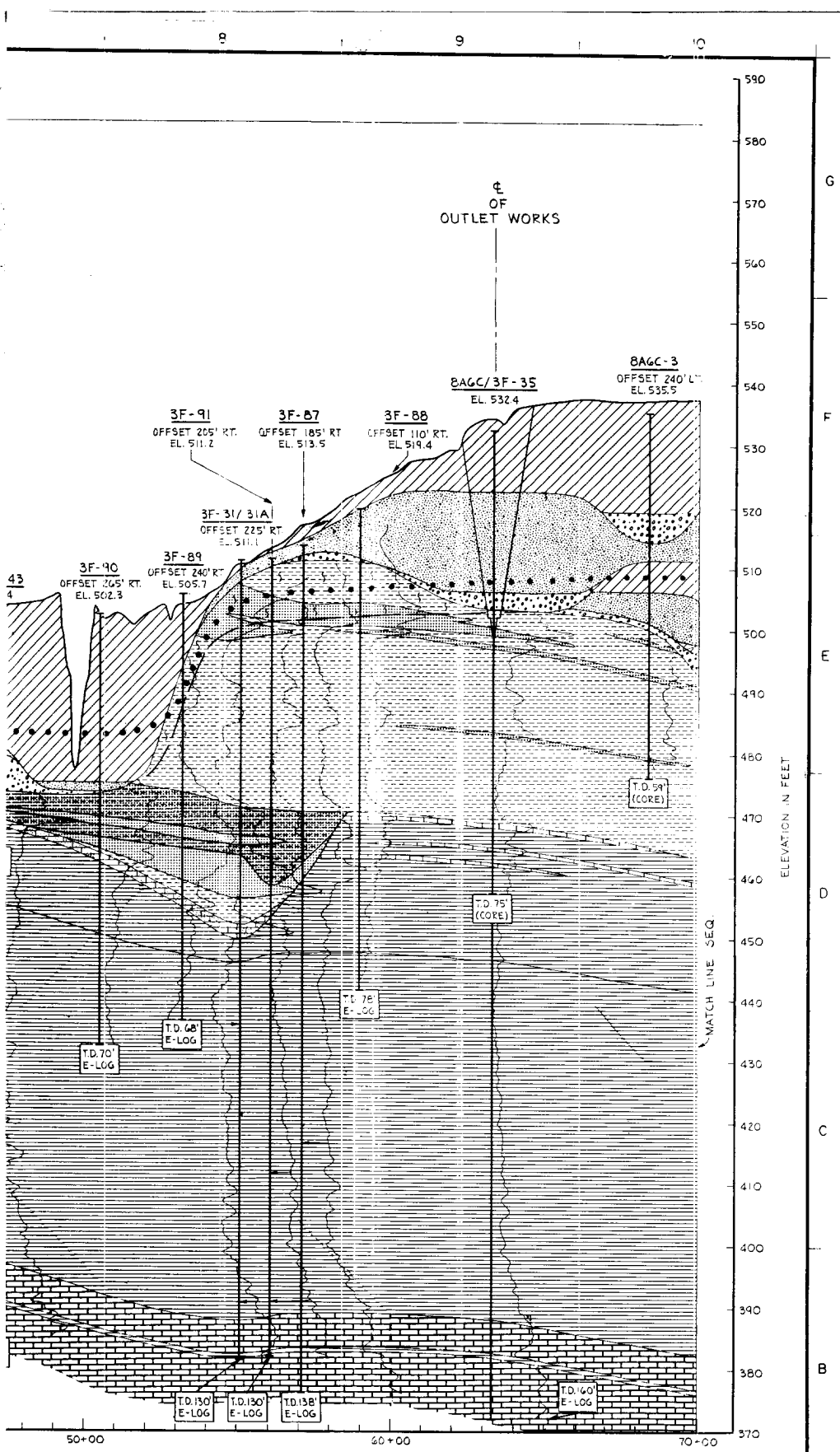
CHECKED BY:

SUBMITTED BY:

ENGINEER:

NO.	DRG. NO.	ACTION	DATE	DESCRIPTION OF REVISION

TO ACCOMPANY FINAL FO



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:

DRAWN BY: M.B.P.

CHECKED BY:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT

GEOLOGIC PROFILE
(EMBANKMENT - SECTION A-A)

SUBMITTED BY:

ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980

CONTR. NO. DACW63-81-C-0035

DRAWING NUMBER

SHEET NO. OF

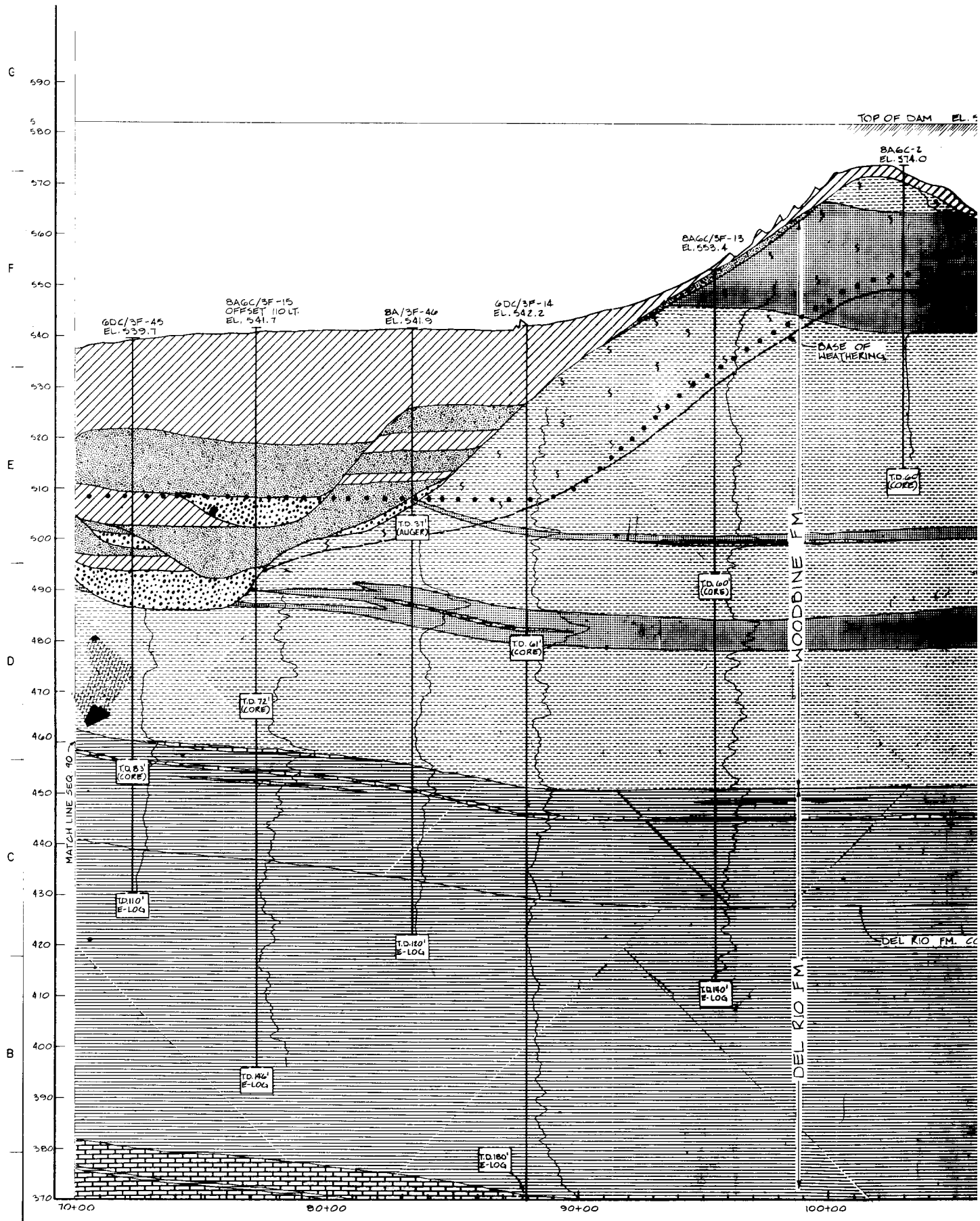
SEQUENCE NO. 103

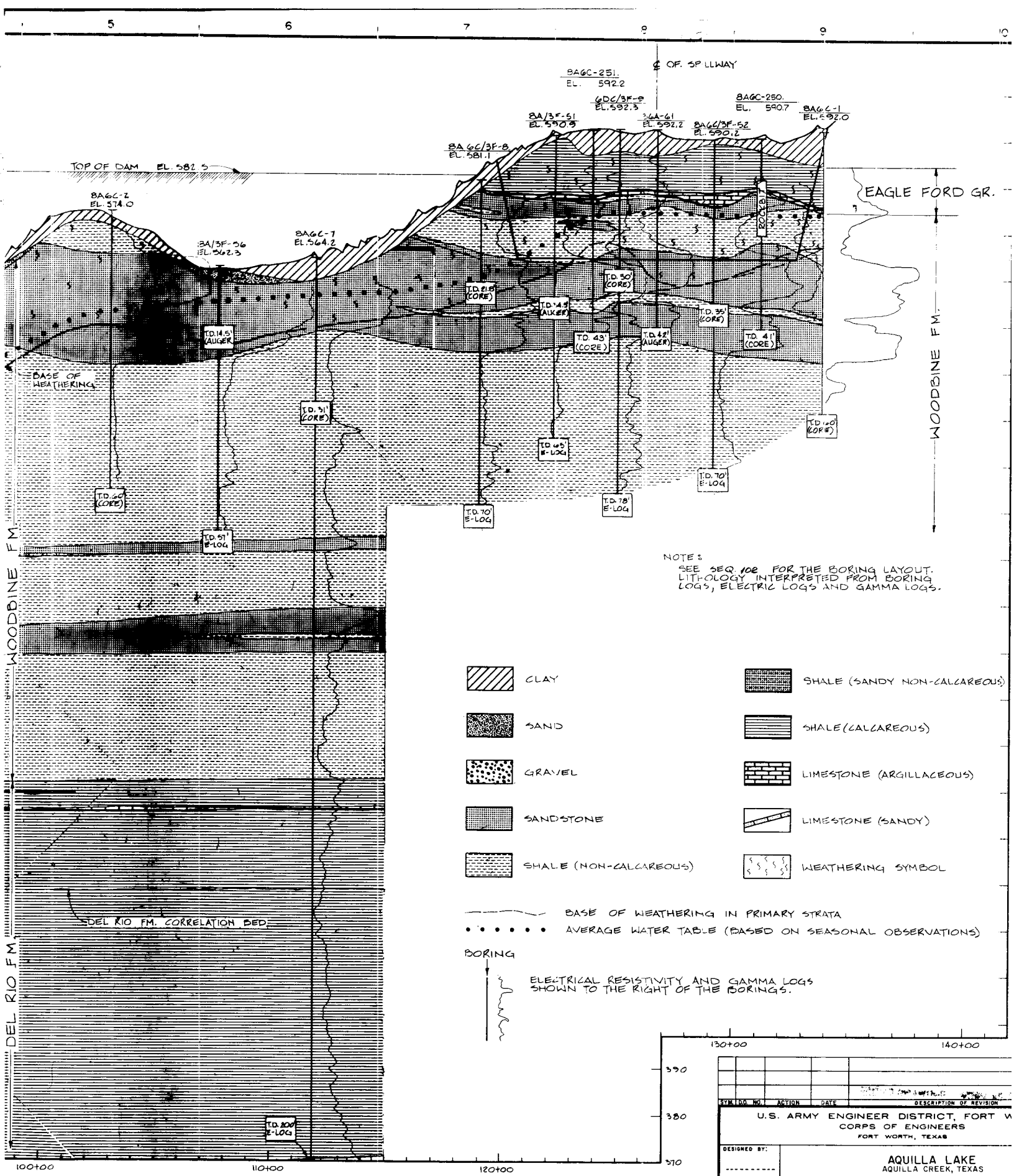
CONTR. NO. DACW63-81-C-0035

DESCRIPTION OF REVISION

TO ACCOMPANY FINAL FOUNDATION REPORT

PLATE 3


TOP OF DAM
BAGC-2
EL. 574.0
BAGC/3F-13
EL. 553.4
BAGC/3F-15
OFFSET 110 LT.
EL. 541.7
GDC/3F-45
EL. 539.7
BA/3F-46
EL. 541.9
GDC/3F-14
EL. 542.2
BASE OF WEATHERING
T.D. 60'
(CORE)
T.D. 31'
(AUGER)
T.D. 60'
(CORE)
T.D. 61'
(CORE)
T.D. 72'
(CORE)
T.D. 83'
(CORE)
T.D. 110'
E-LOG
T.D. 180'
E-LOG
T.D. 146'
E-LOG
T.D. 180'
E-LOG
T.D. 180'
E-LOG
WOODBINE FM
DEL RIO FM
DEL RIO FM.
MATCH LINE SEQ. 90
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
70+00
80+00
90+00
100+00
STATIONS
200
0
200
HORIZONTAL SCALE IN
SECTION LOOKING UP



NOTE:
SEE SEQ. 102 FOR THE BORING LAYOUT. LITHOLOGY INTERPRETED FROM BORING LOGS, ELECTRIC LOGS AND GAMMA LOGS.

- CLAY
- SAND
- GRAVEL
- SANDSTONE
- SHALE (NON-CALCAREOUS)
- SHALE (SANDY NON-CALCAREOUS)
- SHALE (CALCAREOUS)
- LIMESTONE (ARGILLACEOUS)
- LIMESTONE (SANDY)
- WEATHERING SYMBOL
- BASE OF WEATHERING IN PRIMARY STRATA
- AVERAGE WATER TABLE (BASED ON SEASONAL OBSERVATIONS)

BORING

ELECTRICAL RESISTIVITY AND GAMMA LOGS SHOWN TO THE RIGHT OF THE BORINGS.

SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT W
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: J.E.D.
CHECKED BY: ----------
SUBMITTED BY:
ENGINEER:

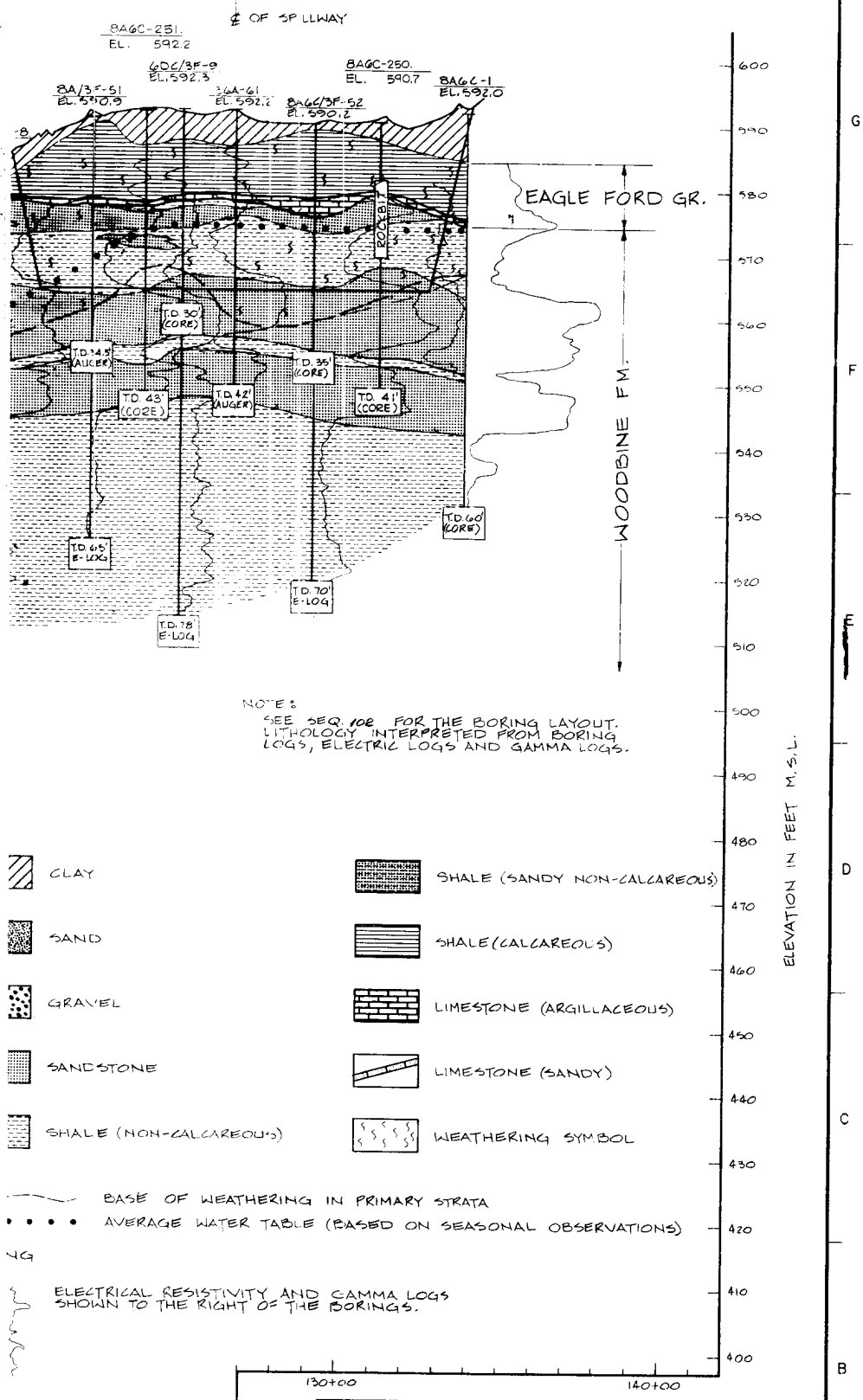
AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT

GEOLOGIC PROFILE
(EMBANKMENT - SECTION A-A)

INV. NO. DACW63-80-B-0085
CONTR. NO. DACW63-81-C
DRAWING NUMBER
SHEE

TO ACCOMPANY FINAL FOUNDATION REPORT



NOTE:
SEE SEQ. 102 FOR THE BORING LAYOUT.
LITHOLOGY INTERPRETED FROM BORING LOGS, ELECTRIC LOGS AND GAMMA LOGS.

CLAY

SAND

GRAVEL

SANDSTONE

SHALE (NON-CALCAREOUS)

SHALE (SANDY NON-CALCAREOUS)

SHALE (CALCAREOUS)

LIMESTONE (ARGILLACEOUS)

LIMESTONE (SANDY)

WEATHERING SYMBOL

BASE OF WEATHERING IN PRIMARY STRATA

AVERAGE WATER TABLE (BASED ON SEASONAL OBSERVATIONS)

NG

ELECTRICAL RESISTIVITY AND GAMMA LOGS SHOWN TO THE RIGHT OF THE BORINGS.

SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: J.E.D.
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

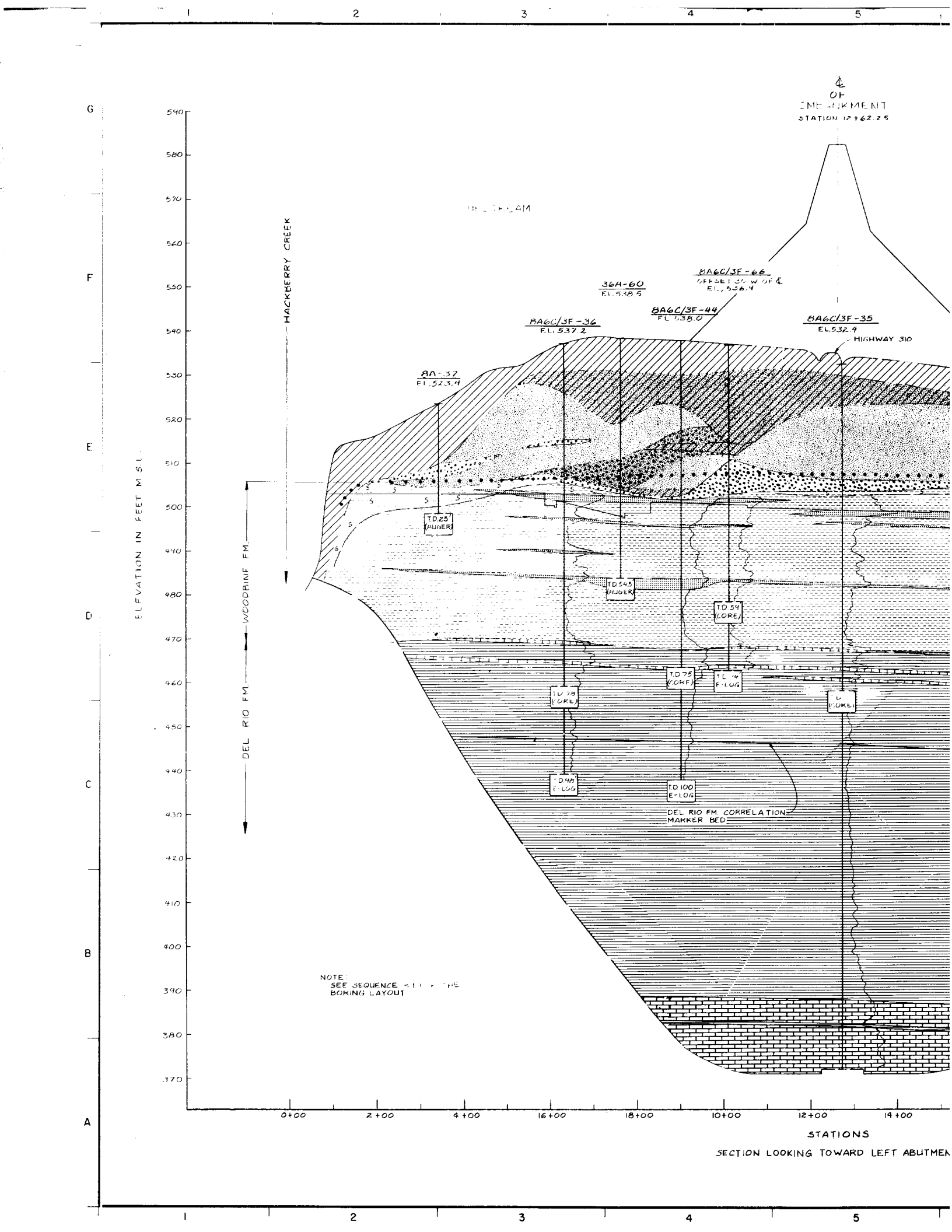
AQUILLA LAKE
AQUILLA CREEK, TEXAS

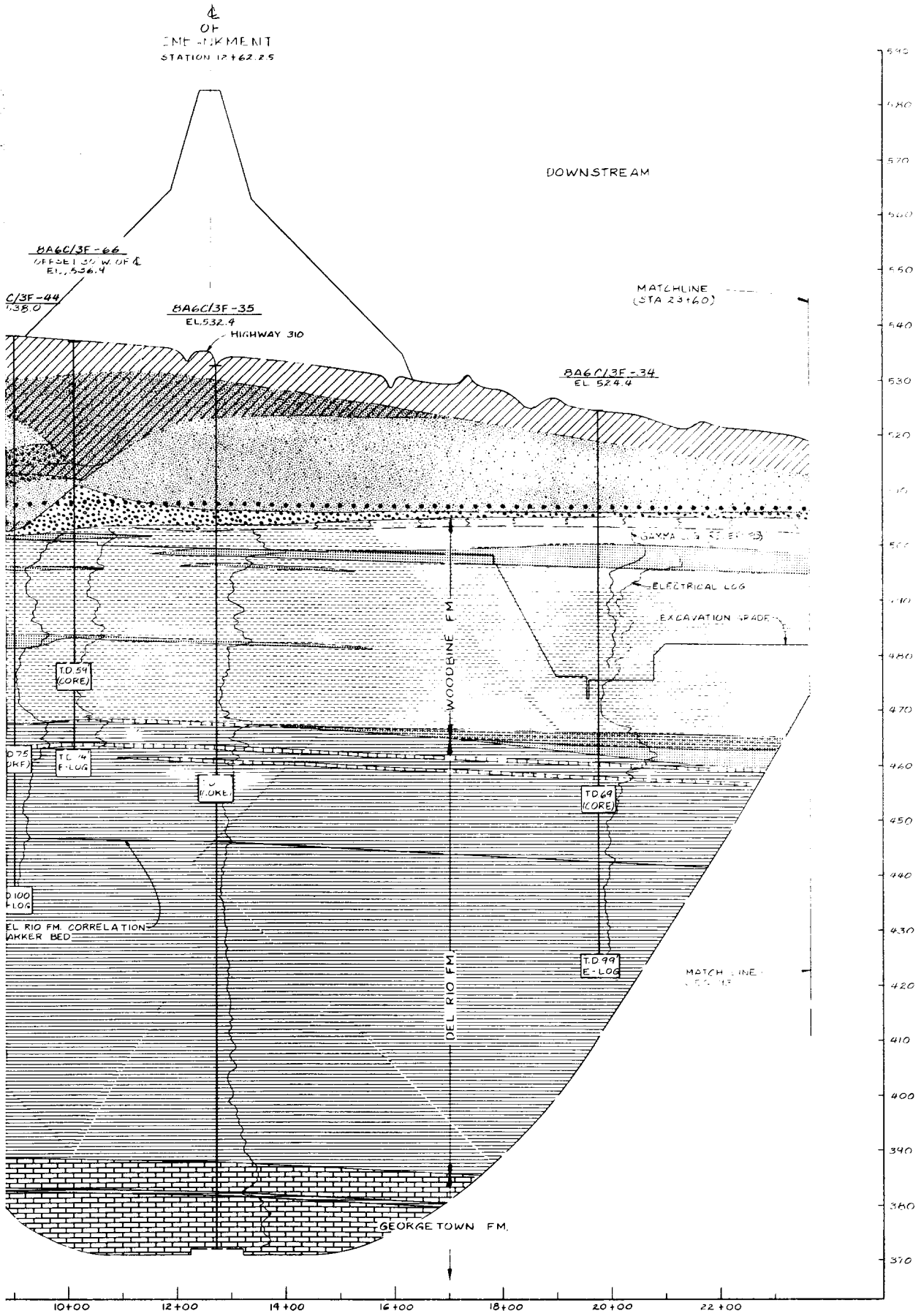
EMBANKMENT

GEOLOGIC PROFILE
(EMBANKMENT - SECTION A-A)

INV. NO. DACW63-80-B-0085 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 104
CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 4


℄ OF EMBANKMENT
STATION 12+62.25
HACKBERRY CREEK
BA6C/3F-66
OFFSET 30' W OF ℄
EL. 536.4
36A-60
EL. 538.5
BA6C/3F-44
EL. 538.0
BA6C/3F-36
EL. 537.2
BA6C/3F-35
EL. 532.4
HIGHWAY 310
BA-37
EL. 523.4
T.D. 25 (AUGER)
T.D. 54.5 (AUGER)
T.D. 59 (CORE)
T.D. 75 (CORE)
T.D. 74 E-LOG
T.D. 78 (CORE)
T.D. 98 E-LOG
T.D. 100 E-LOG
DEL RIO FM. CORRELATION MARKER BED
WOODBINE FM.
DEL RIO FM.
ELEVATION IN FEET M.S.L.
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
0+00
2+00
4+00
16+00
18+00
10+00
12+00
14+00
STATIONS
SECTION LOOKING TOWARD LEFT ABUTMEN
NOTE:
SEE SEQUENCE OF THE BORING LAYOUT



SECTION LOOKING TOWARD LEFT ABUTMENT

LITHOLOGIC SYMBOL

ADDITIONAL LITHOLOGIC SY
TO THIS SHEET.
SEE SEQUENCE 'I' FOR OTH

CLAY (NON-SANDY

CLAY (SANDY

SAND

SYMBOL NO.	ACTION	DATE

U.S. ARMY ENGINEER DIS
CORPS OF EN
FORT WORTH,

DESIGNED BY:	AQUI
AQUILLA
DRAWN BY: N.L.N.	GEOLOG
CHECKED BY:	OUTLET WO
SUBMITTED BY:	INV. NO
ENGINEER:	CONTR
	DRAWI

TO ACCOMPANY FINAL FOUNDATION REPOR

TREAM

MATCHLINE - (STA 23+60)

V3F-34
524.4

GAMMA LOG RE...

ELECTRICAL LOG

EXCAVATION GRADE

MATCH LINE

ELEVATION IN FEET M.S.L.

590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370

0+00
22+00

LITHOLOGIC SYMBOLS:

ADDITIONAL LITHOLOGIC SYMBOLS APPLICABLE TO THIS SHEET.
SEE SEQUENCE 11 FOR OTHER SYMBOLS USED

CLAY (NON-SANDY TO SLIGHTLY SANDY)

CLAY (SANDY TO VERY SANDY OR INTERBEDDED CLAY AND SAND)

SAND (GRAVELLY OR INTERBEDDED SAND AND GRAVEL)

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: N.L.N.
CHECKED BY: ---------

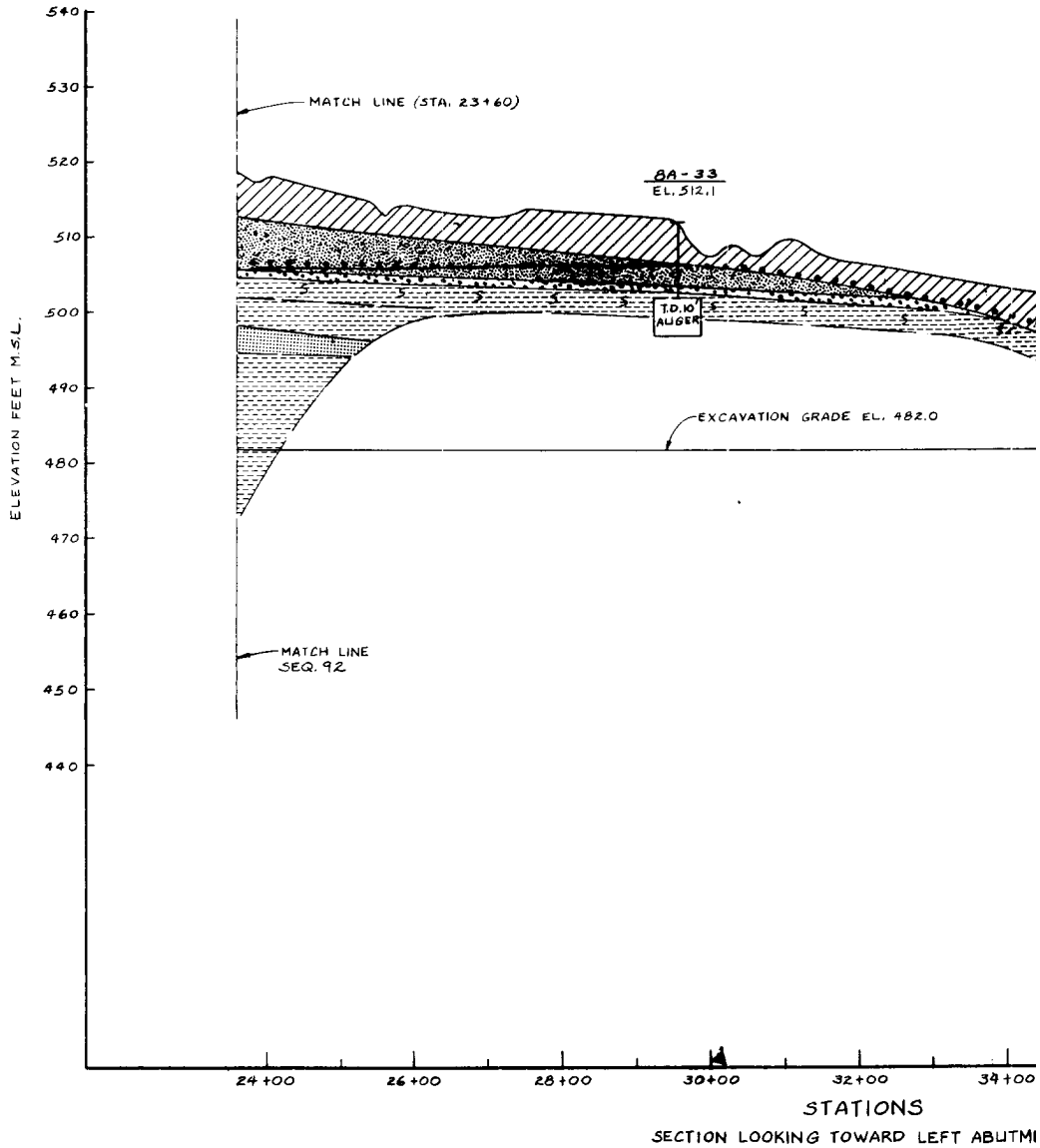
AQUILLA LAKE
AQUILLA CREEK, TEXAS

GEOLOGIC PROFILE

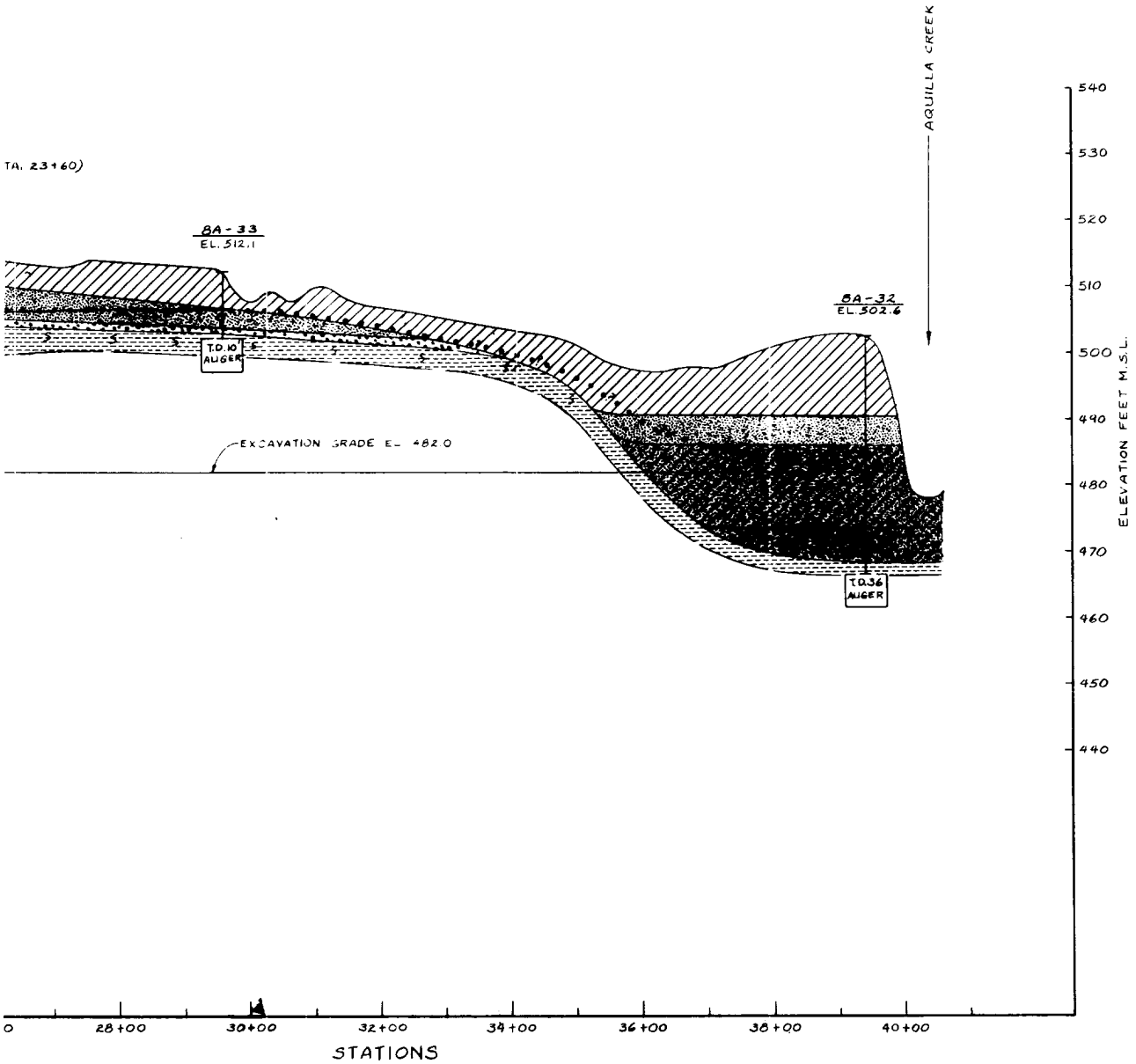
OUTLET WORKS SECTION B-B

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-78-B-0242 DATED: MARCH 1978
CONTR. NO. [illegible]
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 92
CONTR. NO.



SECTION LOOKING TOWARD LEFT ABUTME



SECTION LOOKING TOWARD LEFT ABUTMENT

NOTE:
SEE SEQUENCE 89 FOR THE BORING LAYOUT

LITH

ADDITIONAL LITHOLO
SEE SEQUENCE 91 FO

CLAY (NON

CLAY (SA
CL

SAND (GRA

RE

SYM	DO. NO.	ACTION	D

U.S. ARMY

DESIGNED BY:

DRAWN BY: N.L.N.

CHECKED BY:

SUBMITTED BY:

ENGINEER:

TO ACCOMPANY FINAL FOU

AQUILLA CREEK

ELEVATION FEET M.S.L.

540
530
520
510
500
490
480
470
460
450
440

400

LITHOLOGIC SYMBOLS

ADDITIONAL LITHOLOGIC SYMBOLS APPLICABLE TO THIS SHEET SEE SEQUENCE 91 FOR OTHER SYMBOLS USED.

CLAY (NON-SANDY TO SLIGHTLY SANDY).

CLAY (SANDY TO VERY SANDY, OR INTERBEDDED CLAY AND SAND).

SAND (GRAVELLY OR INTERBEDDED SAND AND GRAVEL).

RE... ...S BUILT

FOR THE BORING LAYOUT

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: N.L.N.
CHECKED BY: ----------

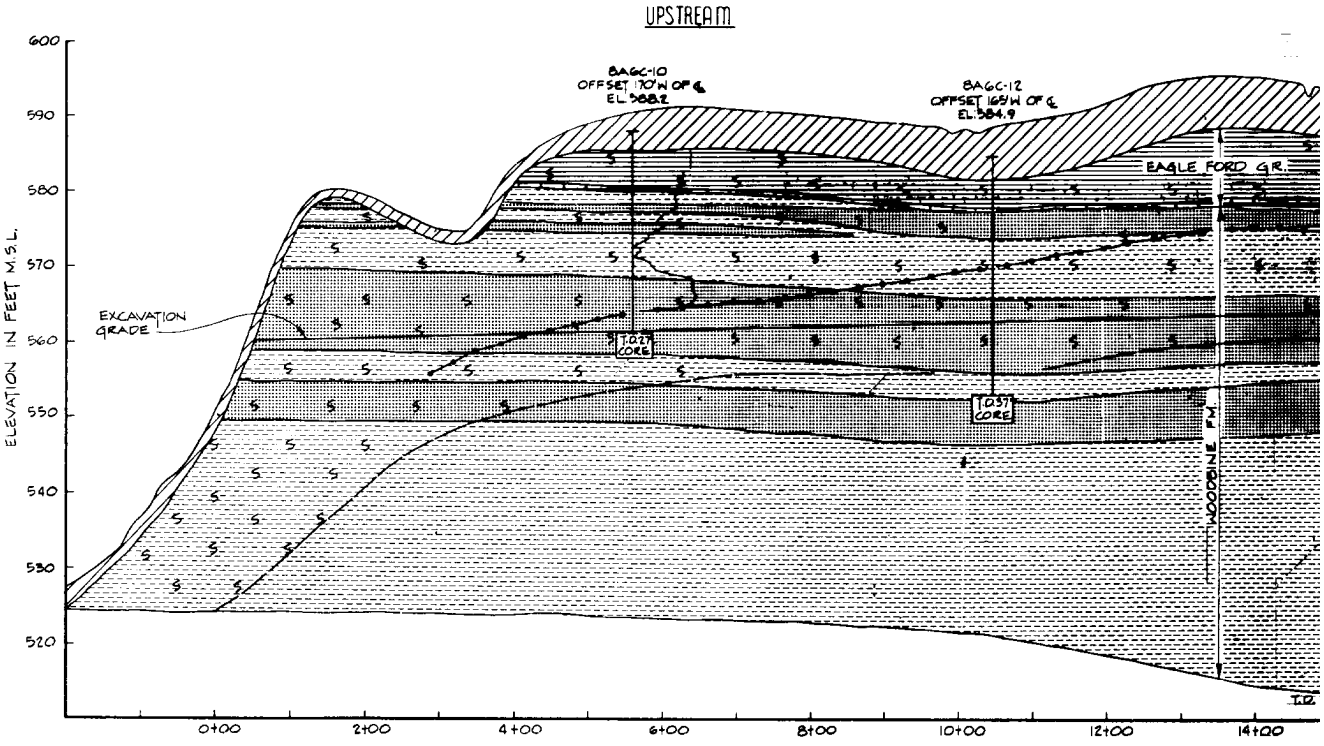
AQUILLA LAKE
AQUILLA CREEK, TEXAS

GEOLOGIC PROFILE

OUTLET WORKS SECTION B-B

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-78-B-0042 DATED: MARCH 1978
CONTR. NO. DACW63-78-C-0043
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 93
CONTR. NO.

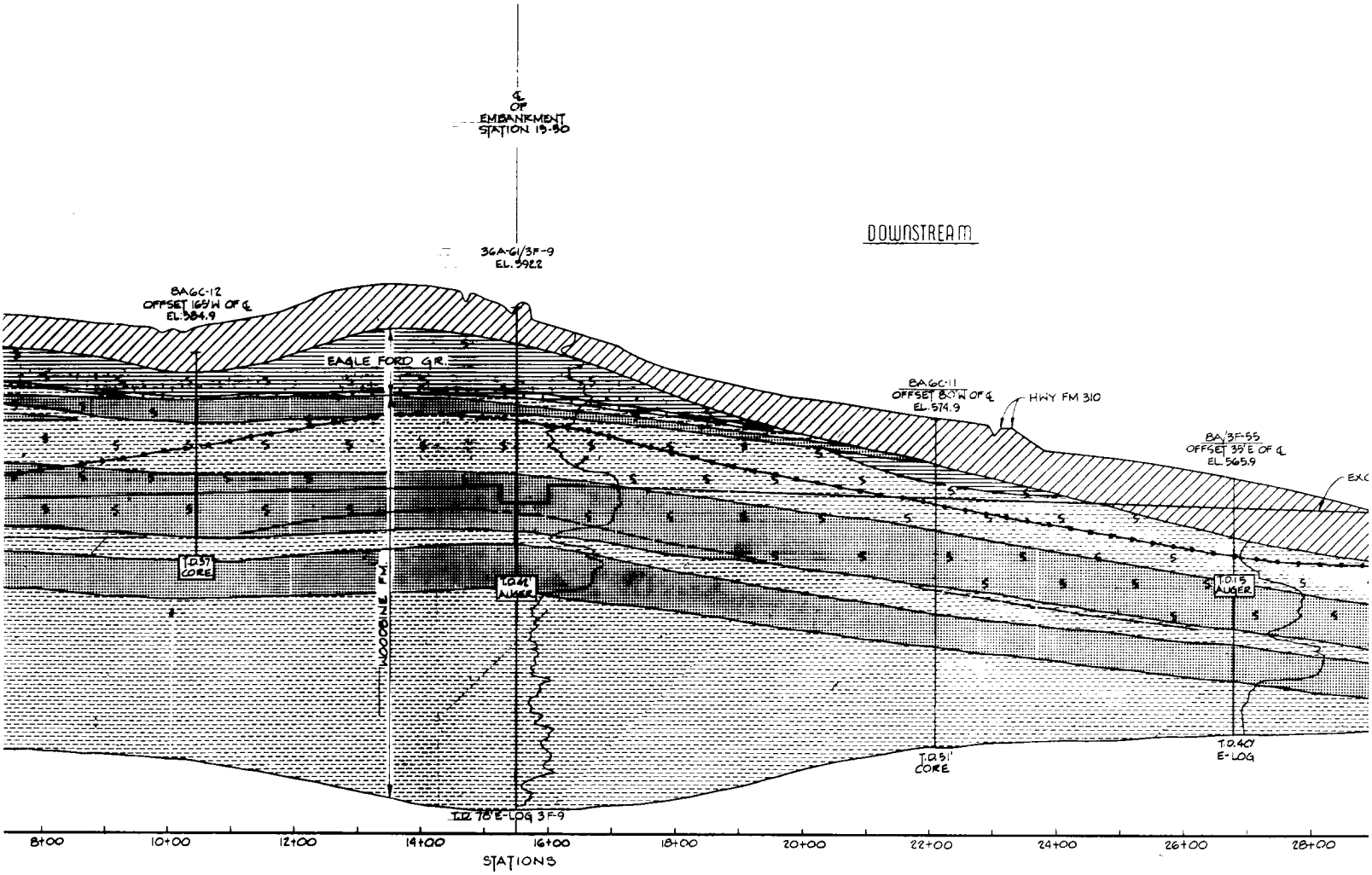


SECTION LOOKING

200 0

HORIZ

NOTES;
1. THICKNESS OF OVERBURDEN PENETRATED BY OFFSET BORINGS BAGC-10 AND BAGC-12 IS ADJUSTED TO THE GROUND SURFACE IN THE LINE OF SECTION.
2. SEE SEQ. 102 FOR THE BORING LAYOUT AND SEQ. 104 FOR LITHOLOGIC SYMBOLS.



SECTION LOOKING TOWARD LEFT WALL OF SPILLWAY

200 0 200 400

HORIZONTAL SCALE IN FEET

SYM	NO.	ACTION	DAT

U.S. ARMY E

DESIGNED BY:

DRAWN BY: C.M.B.

CHECKED BY:

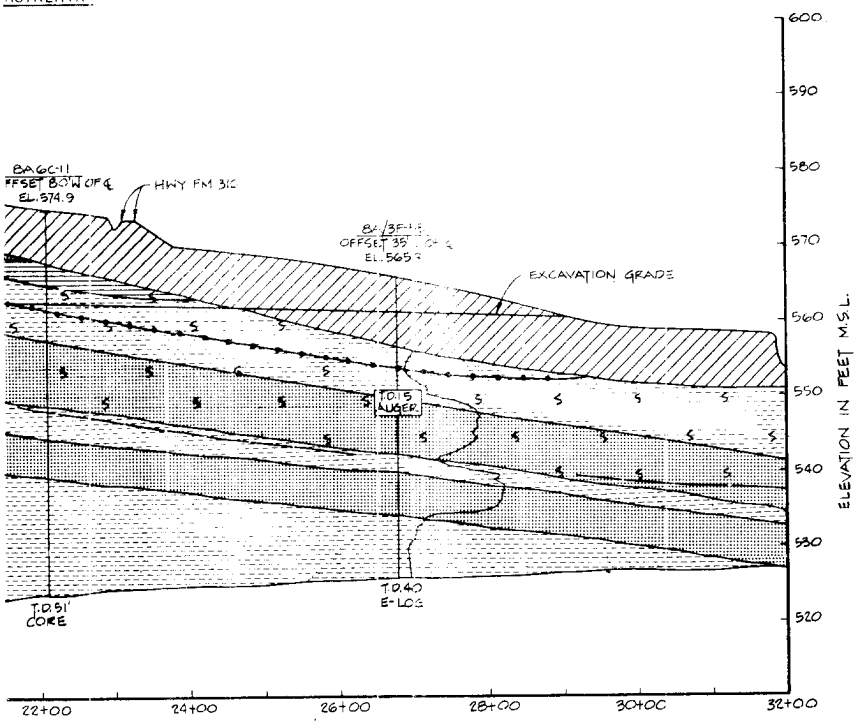
SUBMITTED BY:

ENGINEER:

G

G F E D C B

NSTREAM



SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:

DRAWN BY: C.M.B.

CHECKED BY:

SUBMITTED BY:

ENGINEER:

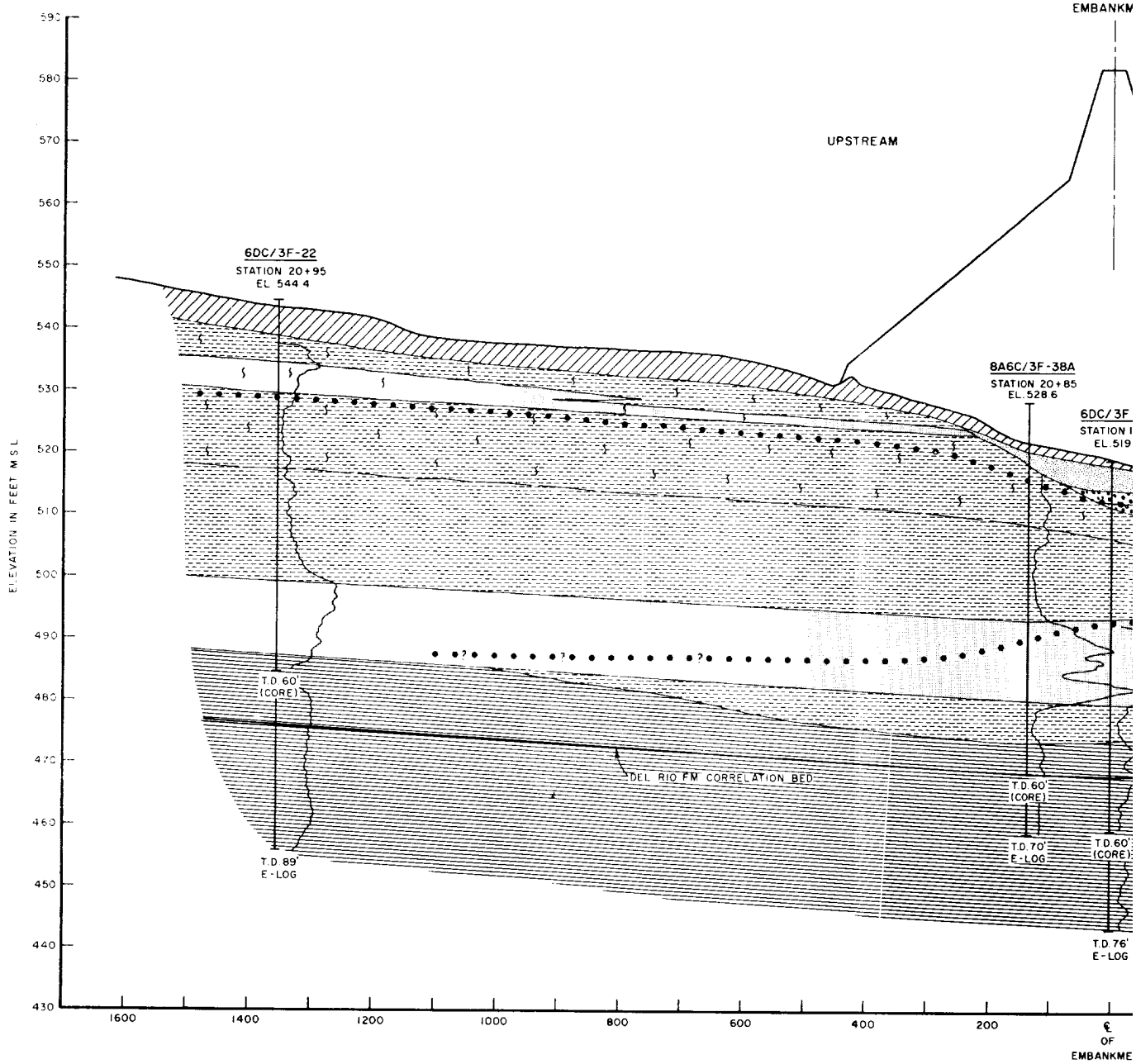
AQUILLA LAKE
AQUILLA CREEK, TEXAS

SPILLWAY

GEOLOGIC PROFILE SECTION C-C

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 105

CONTR. NO. DACW63-81-C-0035



DISTANCE FROM EMBANK
IN FEE

200 100 0

HORIZONTAL SCAL

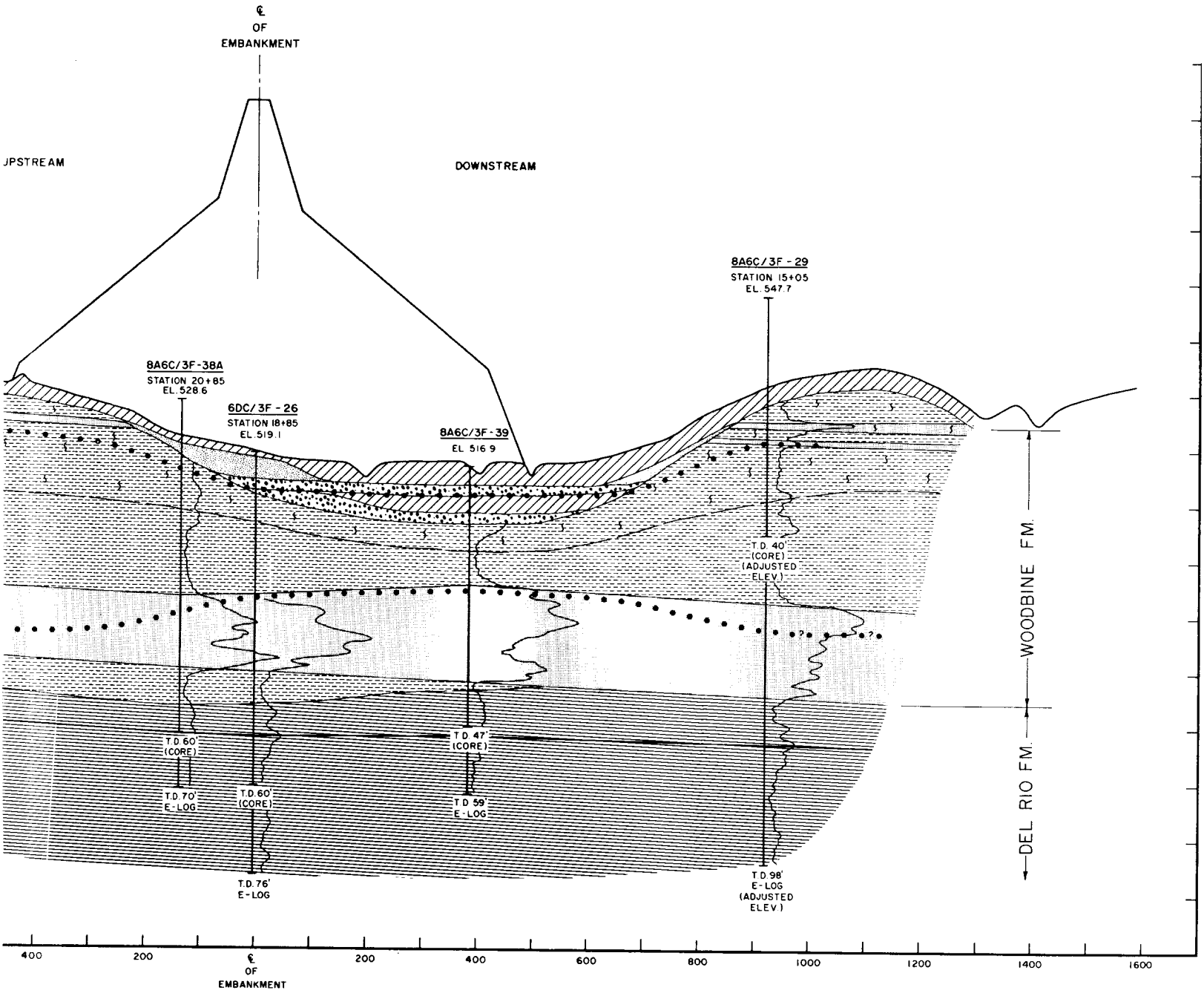
SECTION LOOKING TOWAR

NOTES:

(1.) PRIMARY STRATA SHOWN AT BORING 8A6C/3F-29 ARE DISPLACED DOWNWARD 3 FEET FROM THEIR ELEVATION IN THE BORING AS COMPENSATION FOR FORMATIONAL DIP. OVERBURDEN THICKNESS, AS SHOWN AT THIS BORING, IS ESTIMATED.

(2.) PRIMARY STRATA IN BORING 6DC 3F-22 AND 8A6C 3F-38A ARE AT APPROXIMATELY THE SAME ELEVATION IN THE LINE OF SECTION.

(3.) SEE SEQ. 89 FOR THE BORING LAYOUT AND SEQ. 91 FOR LITHOLOGIC SYMBOLS.



DISTANCE FROM EMBANKMENT CENTERLINE
IN FEET

200 100 0 200 400

HORIZONTAL SCALE IN FEET

SECTION LOOKING TOWARD LEFT ABUTMENT

RECORD DRAWING - WORK AS BUILT

SYM	DO NO.	ACTION	DATE	DESCRIPTION OF REVISIO

U.S. ARMY ENGINEER DISTRICT, FORT
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:

DRAWN BY:

CHECKED BY:

SUBMITTED BY:

ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILL

GEOLOGIC PROFILE
SECTION ON STA. 19+10 D-D

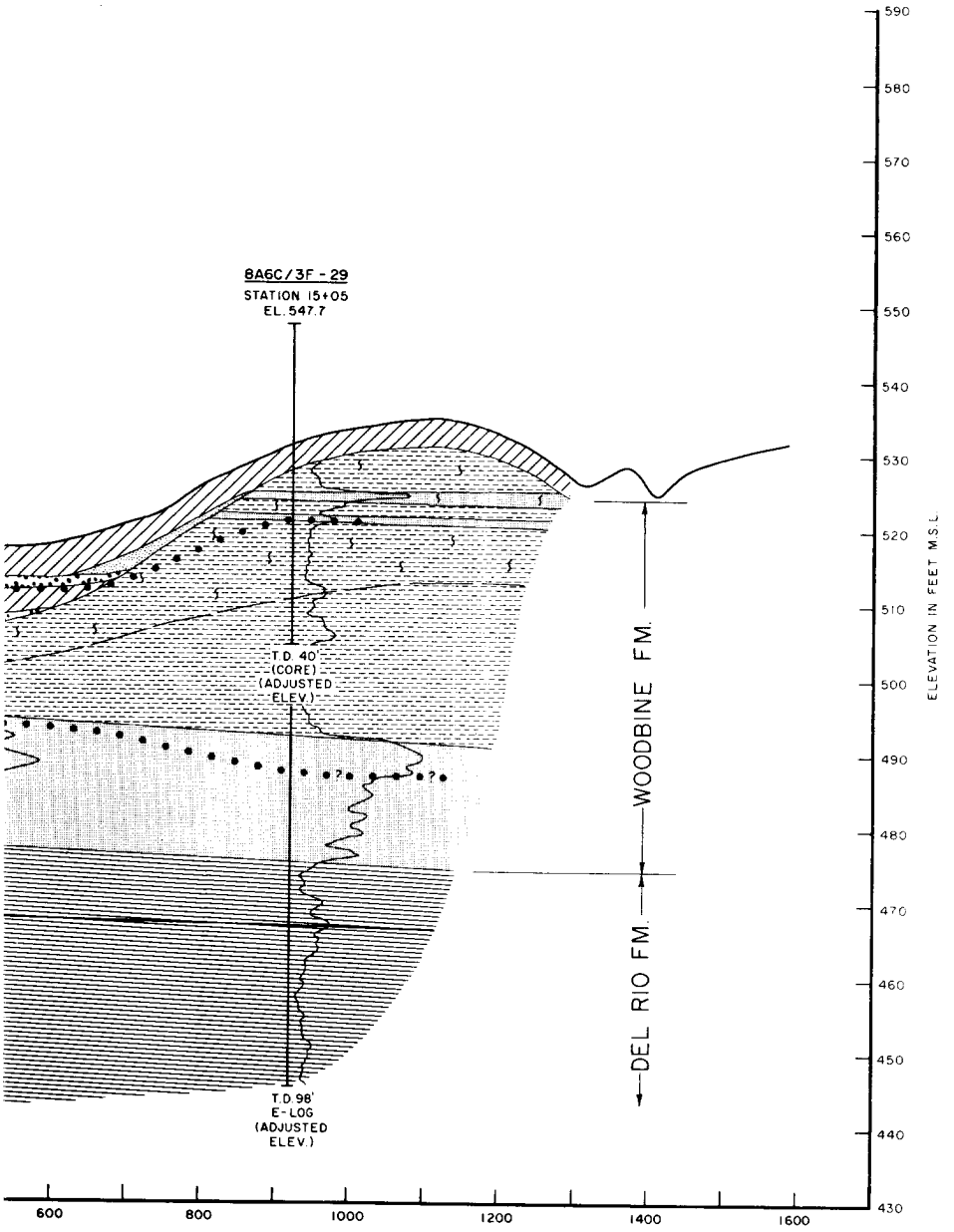
INV. NO. DACW63-78-B-0004

CONTR. NO. DACW63 78-C

DRAWING NUMBER

TO ACCOMPANY FINAL FOUNDATION REPORT

U.S. ARMY



SYM	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

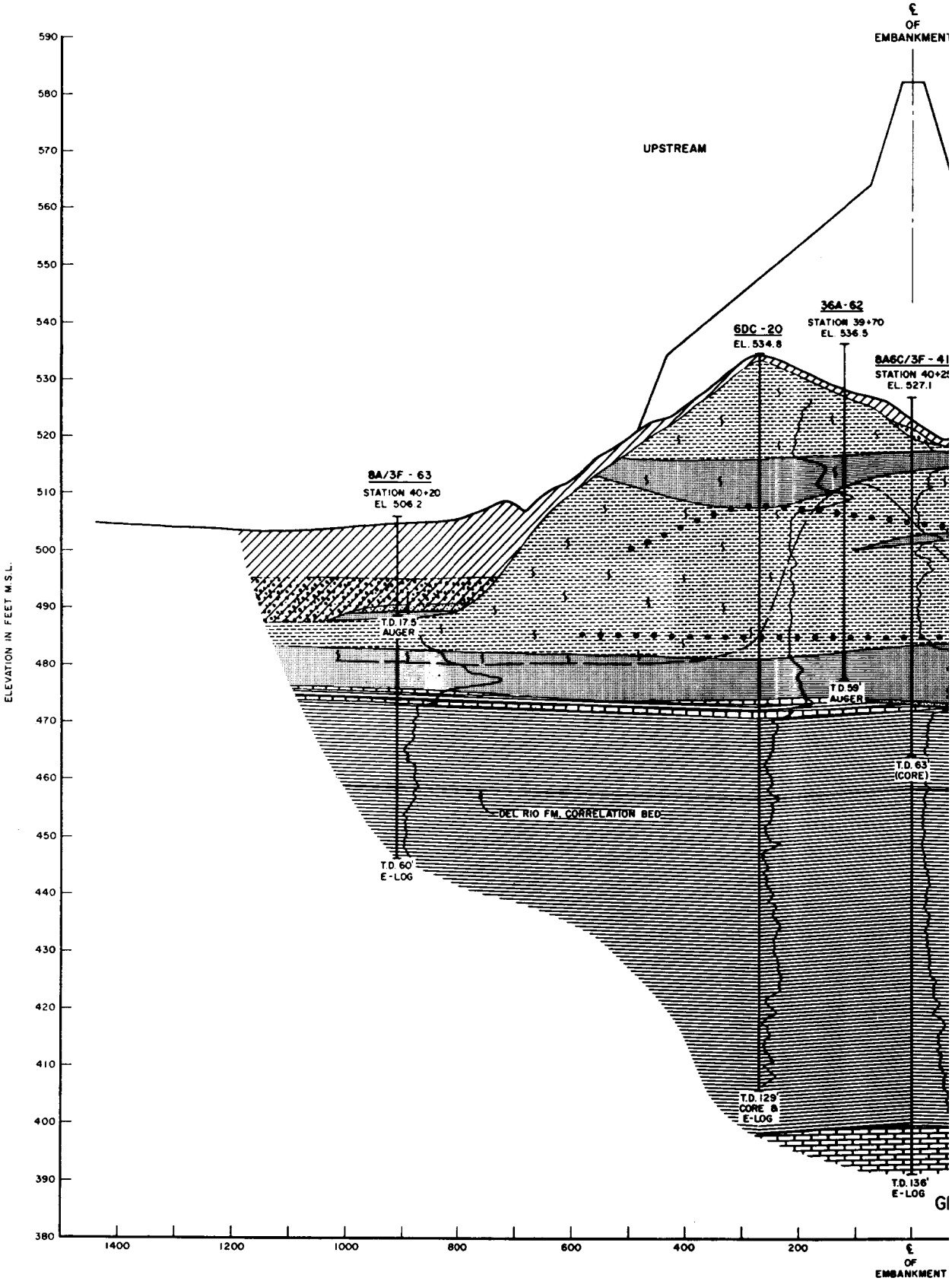
GEOLOGIC PROFILE
SECTION ON STA. 19+10 D-D

INV. NO. DACW63-78-B-0042 DATED: MARCH, 1976
CONTR. NO. DACW63 78-C-0104 SEQUENCE NO. 95
DRAWING NUMBER SHEET NO. OF

CONTR. NO. DACW63-78-C-0104

RECORD DRAWING - WORK AS BUILT

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 8



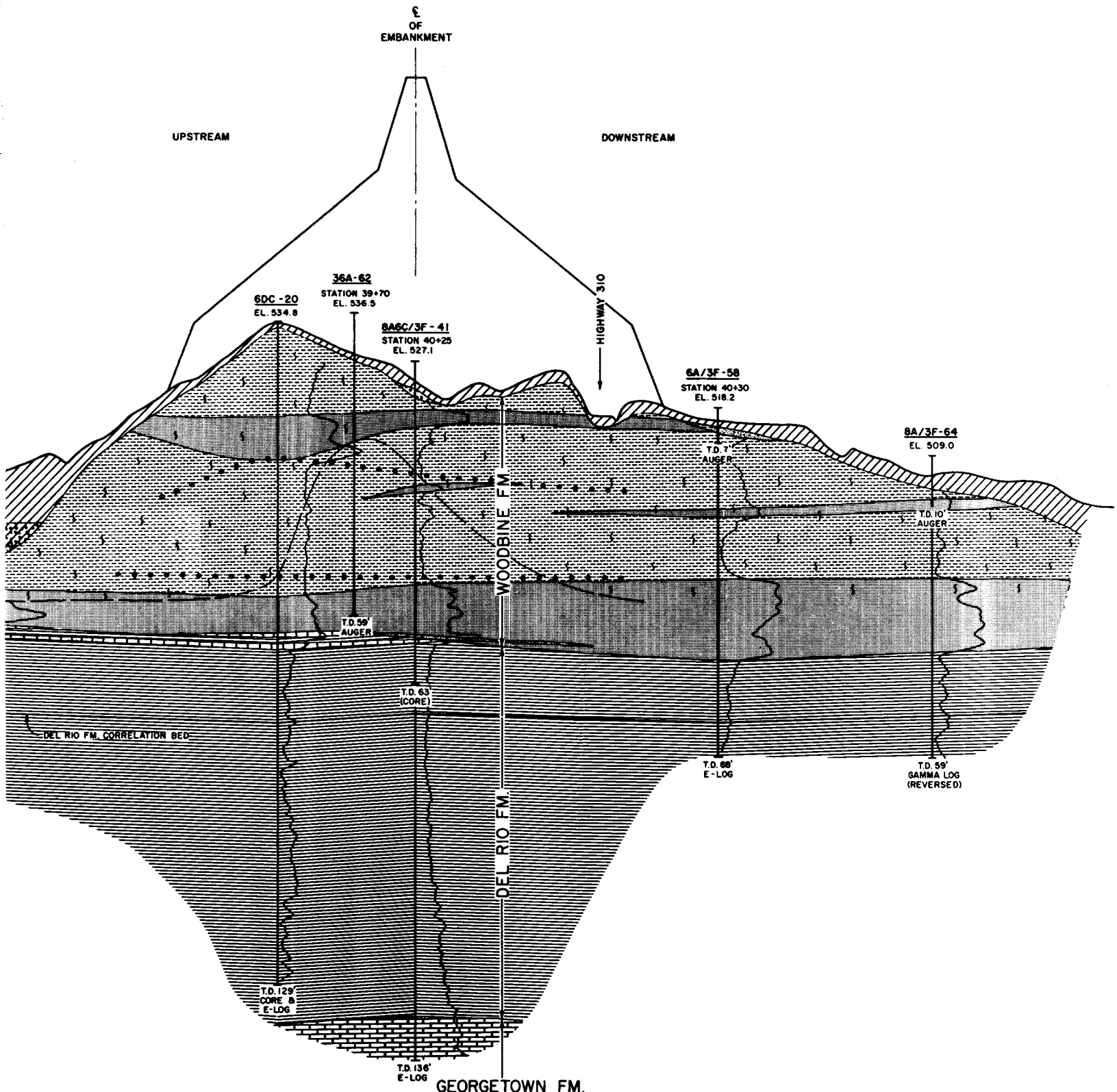
DISTANCE FROM EMBANKME
IN FEET

200 100 0

HORIZONTAL SCALE I

NOTES:
1. OVERBURDEN THICKNESS IS ESTIMATED FOR BORINGS AT ELEVATIONS ABOVE THE PROFILE.
2. DEPTH OF WEATHERING IN THE WOODBINE FORMATION IS ESTIMATED DOWNSTREAM FROM BORING 8A6C/3F-41.
3. SEE SEQ. 89 FOR THE BORING LAYOUT AND SEQ. 91 FOR LITHOLOGIC SYMBOLS.

SECTION LOOKING TOWARD



DISTANCE FROM EMBANKMENT CENTERLINE
IN FEET

200 100 0 200 400

HORIZONTAL SCALE IN FEET

SECTION LOOKING TOWARD LEFT ABUTMENT

RECORD DRAWING - WORK AS BUILT

SYM | DA | NO. | ACTION

U.S. ARMY

DESIGNED BY:

DRAWN BY:

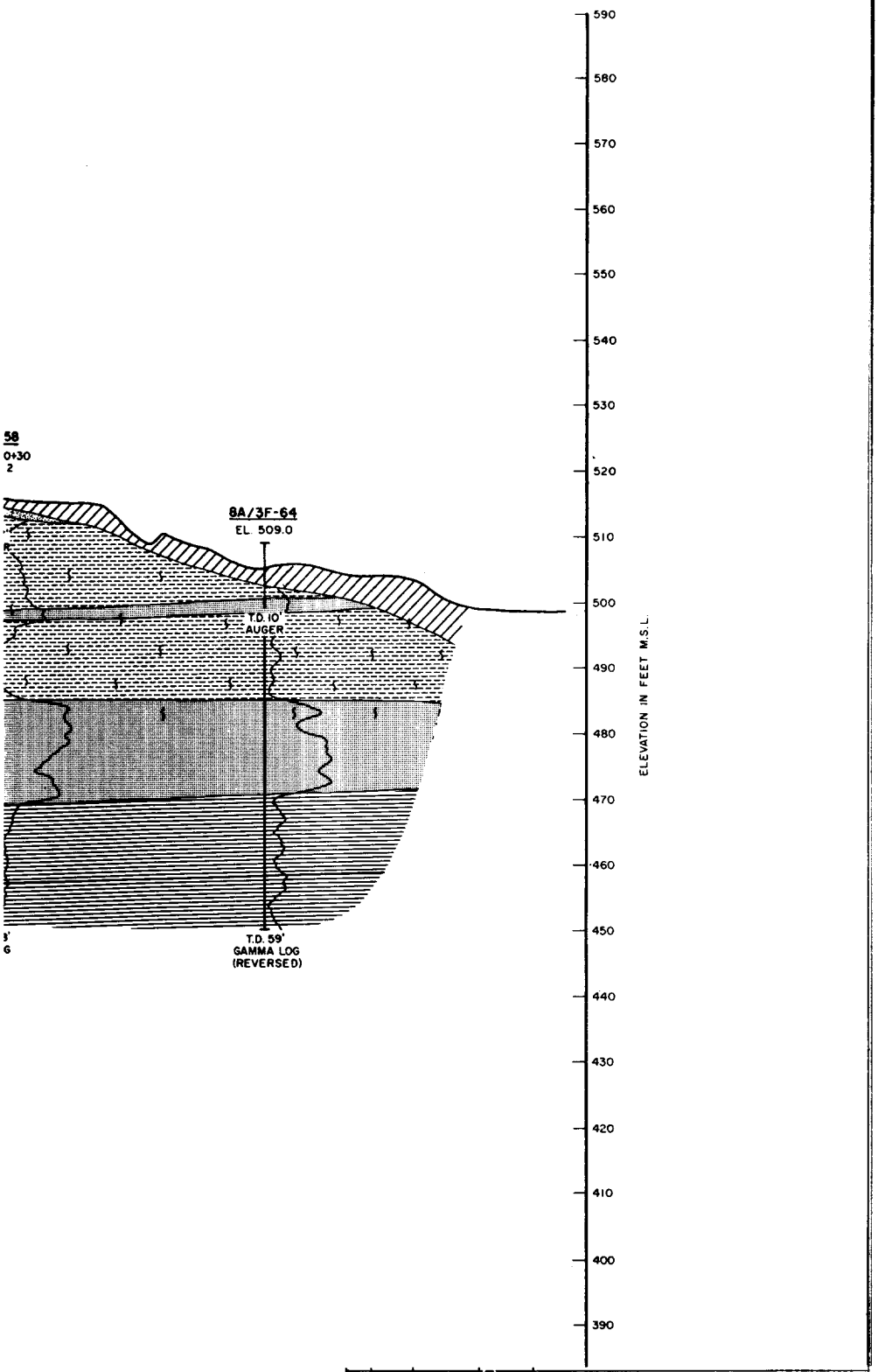
CHECKED BY:

SUBMITTED BY:

ENGINEER:

TO ACCOMPANY FINAL FOU

U.S. ARMY



SYM	DG NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

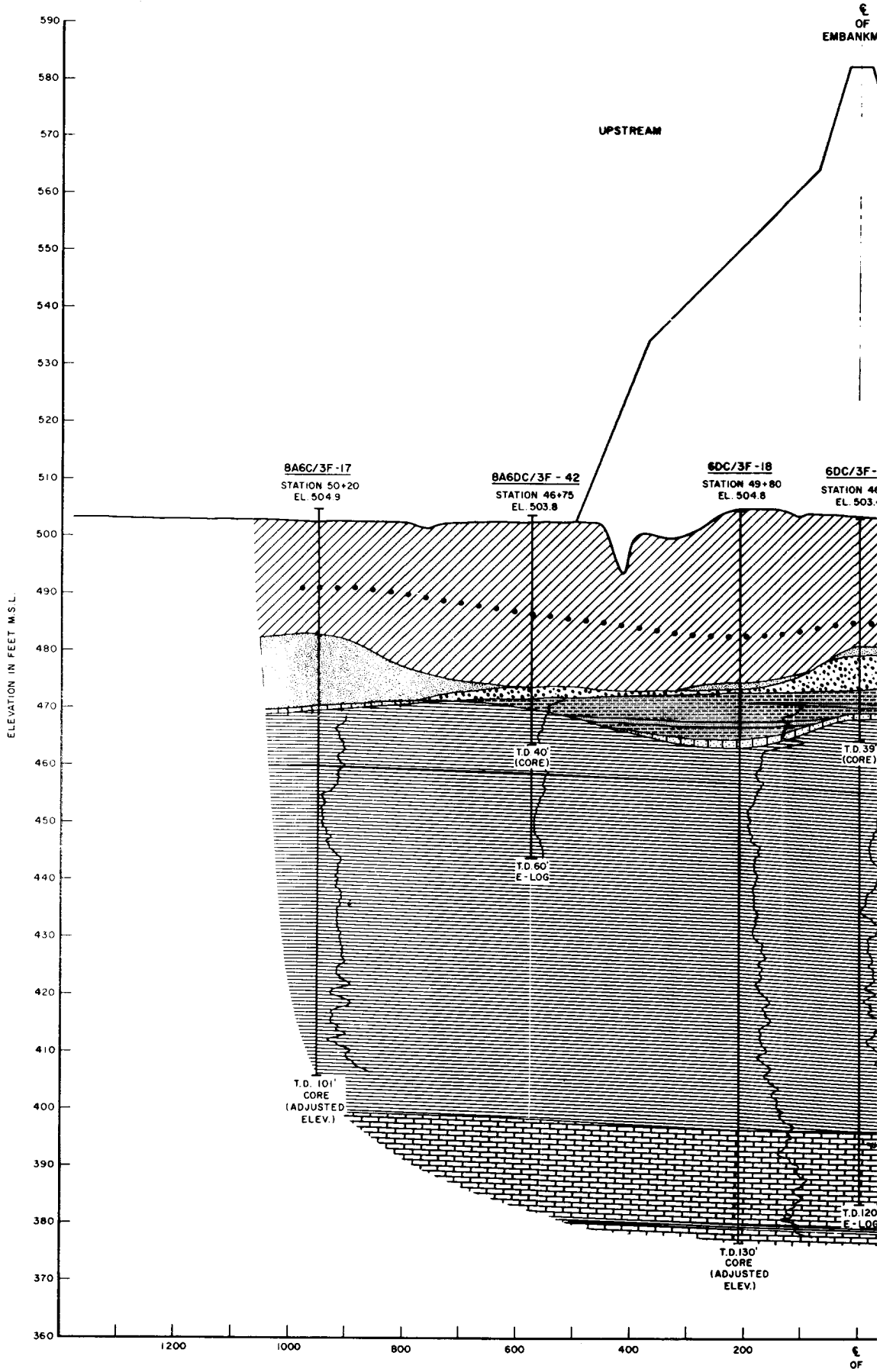
EMBANKMENT AND SPILLWAY

GEOLOGIC PROFILE
SECTION ON STA. 40+60 E-E

INV. NO. DACW63-78-B-0042 DATED: MARCH, 1978
CONTR. NO. DACW63 78-C-0104
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 96
CONTR. NO. DACW63 78-C-0104

RECORD DRAWING - WORK AS BUILT

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 9

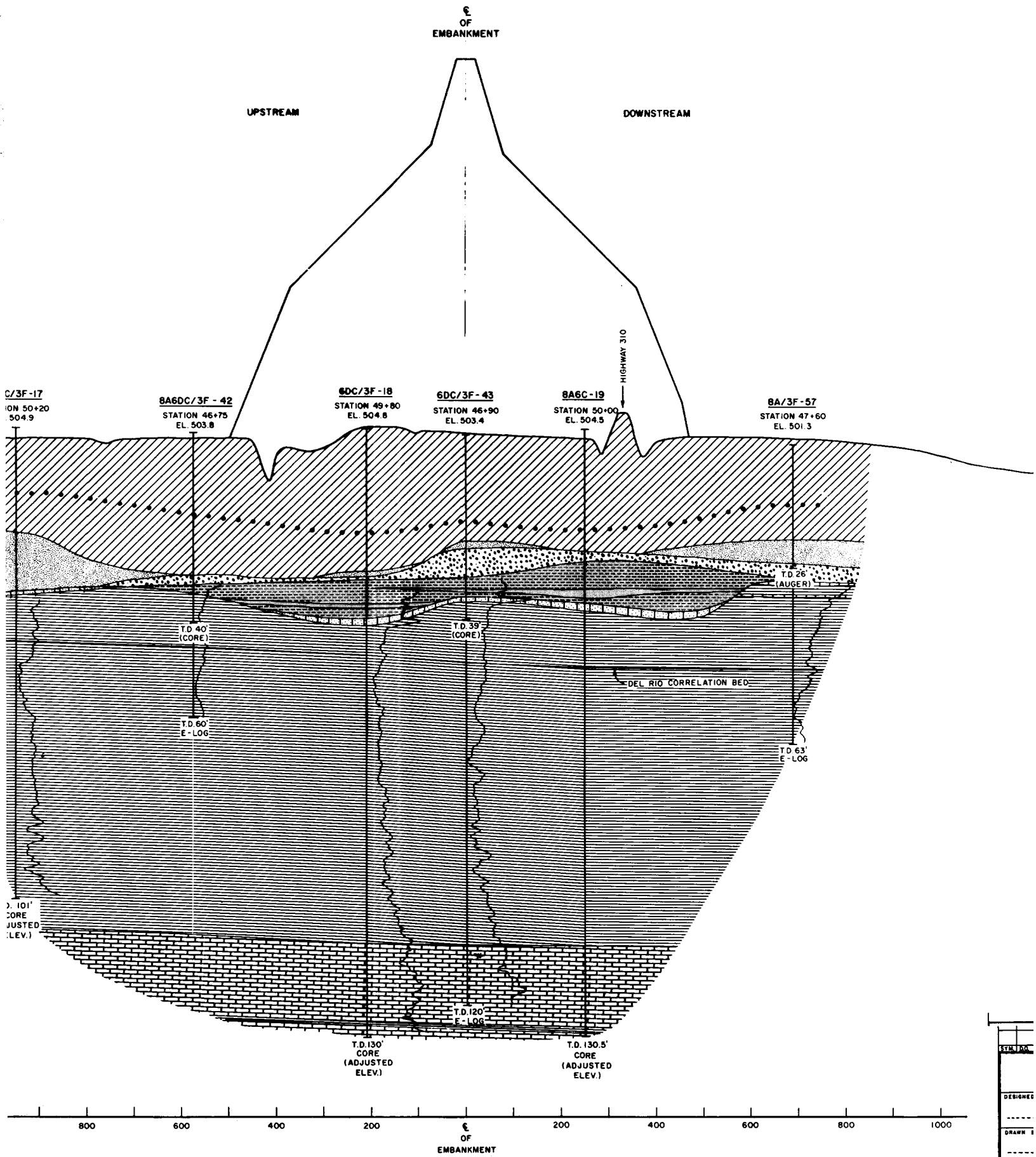


NOTES

1. PRIMARY STRATA SHOWN AT BORINGS 8A6C/3F-17 AND 6DC/3F-18 ARE DISPLACED UPWARD 2 FEET AND THOSE SHOWN AT BORING 8A6C-19 ARE DISPLACED UPWARD 3 FEET AS COMPENSATION FOR FORMATIONAL DIP.
2. SEE SEQ. 89 FOR THE BORING LAYOUT AND SEQ. 91 FOR LITHOLOGIC SYMBOLS.

DISTANCE FROM EMBANK
IN FEE

SECTION LOOKING TOWAR



/3F-17 AND 6DC/3F-18
SE SHOWN AT BORING
AS COMPENSATION FOR

. 91

DISTANCE FROM EMBANKMENT CENTERLINE IN FEET

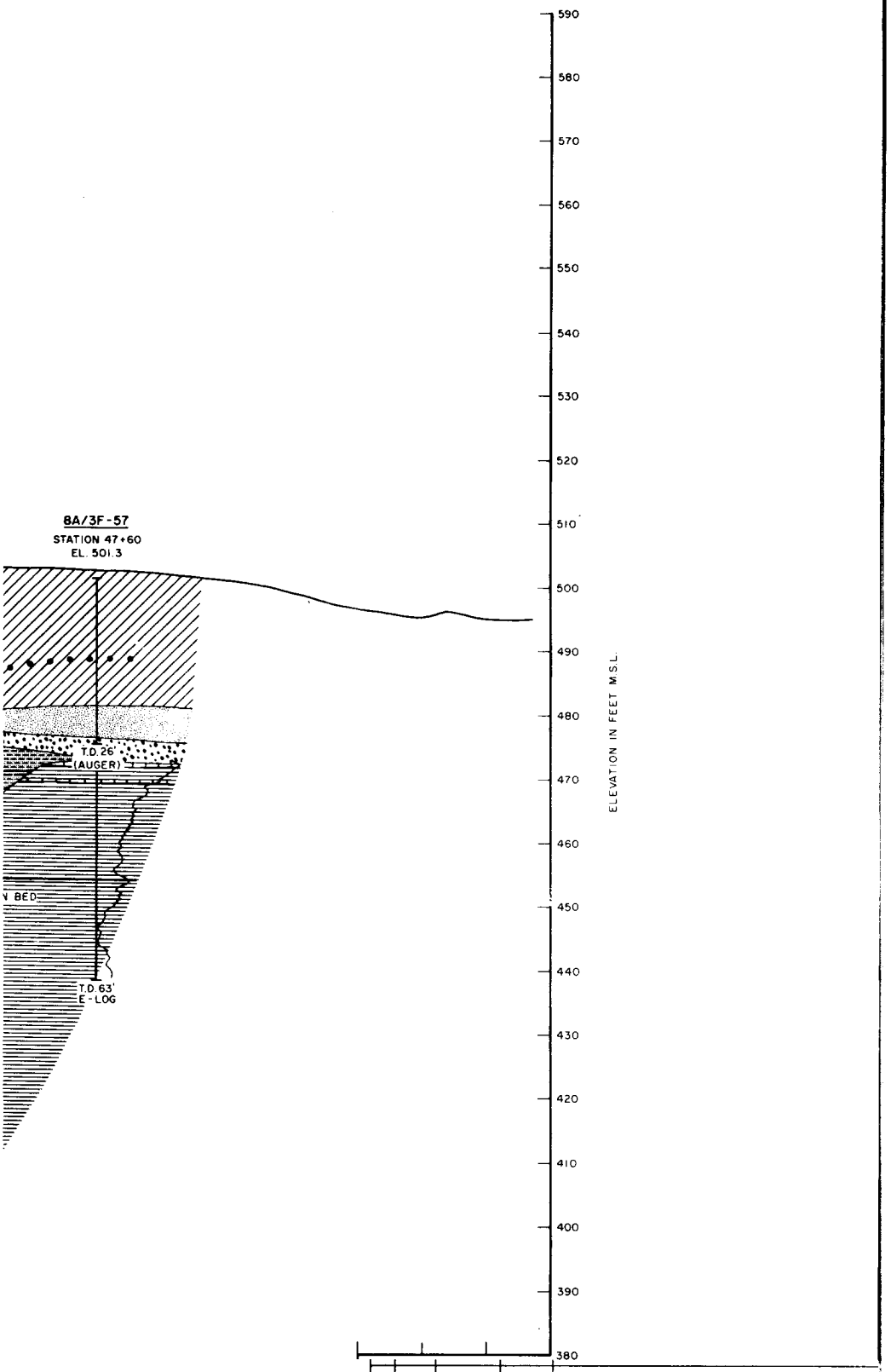
SECTION LOOKING TOWARD LEFT ABUTMENT

RECORD DRAWING - WORK AS BUILT

SYM. NO.
DESIGNED
DRAWN
CHECKED
SUBMITT
ENGINEE

TO ACCOMPANY

U.S. ARMY



SYM	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

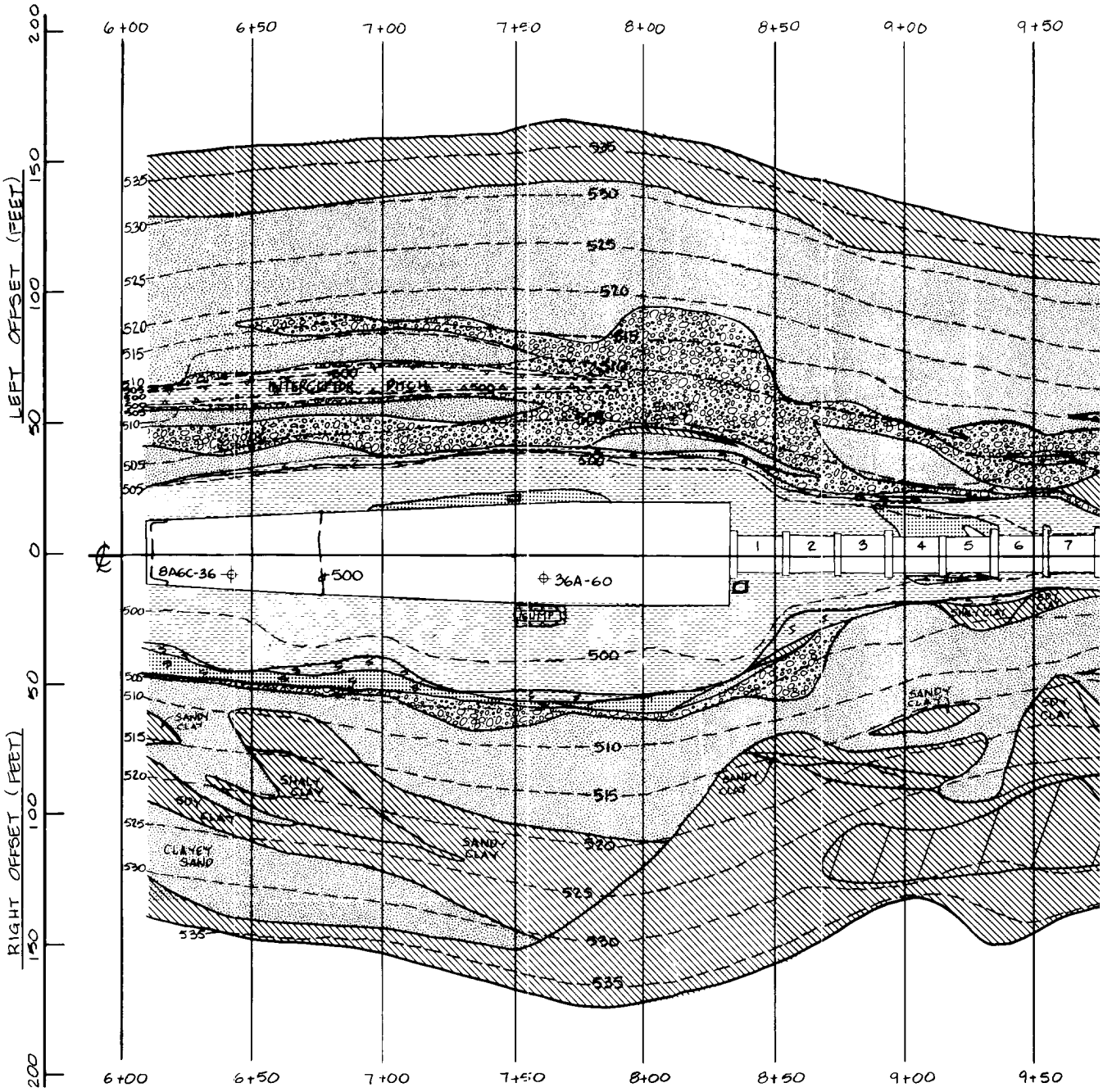
GEOLOGIC PROFILE
SECTION ON STA. 47+20 F-F

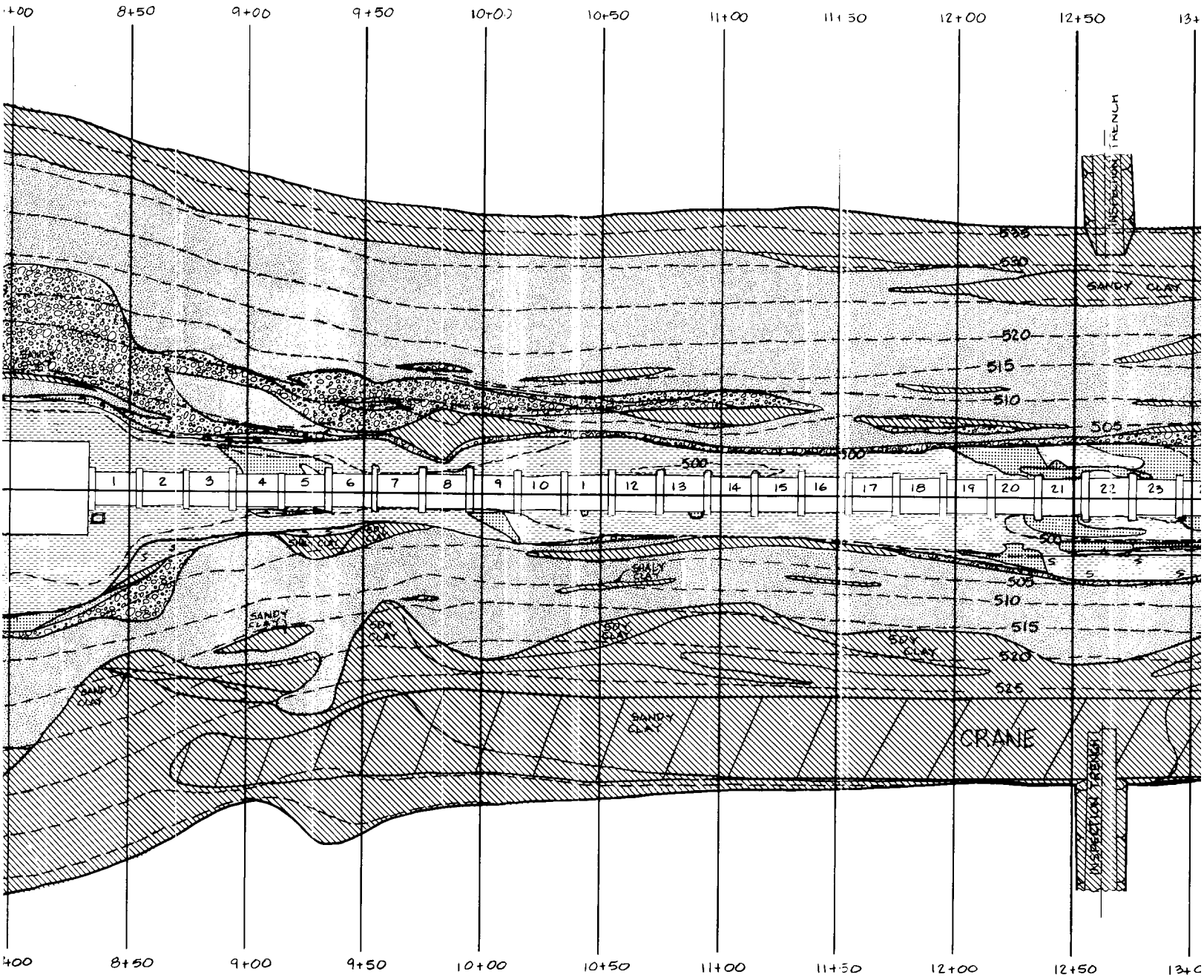
INV. NO. DACW63-78-B-0042 DATED: MARCH 1978
CONTR. NO. DACW63 78-C-0104
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 97

DACW63-78-C-0104

RECORD DRAWING - WORK AS BUILT

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 10


6+00
6+50
7+00
7+50
8+00
8+50
9+00
9+50
LEFT OFFSET (FEET)
RIGHT OFFSET (FEET)
200
150
100
50
0
BAGC-36
500
36A-60
1
2
3
4
5
6
7
SANDY CLAY
SHALY CLAY
SOFT CLAY
CLAYEY SAND
535
530
525
520
515
510
505
500



MAP SYMBOLS:

FR STEEPLY DIPP

CLAY, SAND

SAND, incl.

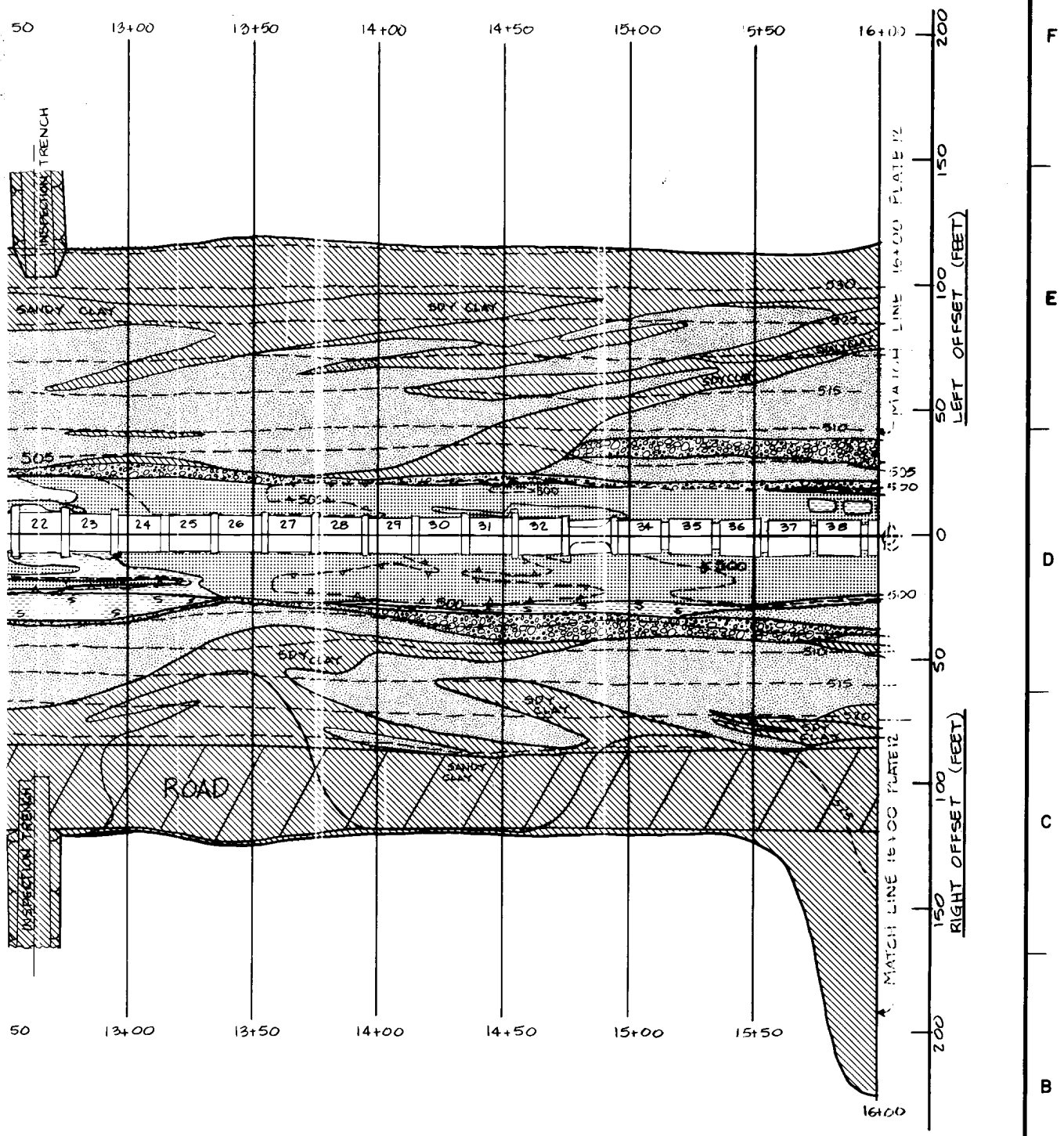
GRAVEL

SANDSTONE

SHALE, WEA

SHALE, UNW

NOTE: THIN, RARE, I
CLAY-IRONST



SYMBOLS:

- STEEPLY DIPPING FRACTURE WITH SANDSTONE FILLING.
- CLAY, SANDY CLAY & SHALY CLAY
- SAND, incl. CLAYEY SAND
- GRAVEL
- SANDSTONE
- SHALE, WEATHERED
- SHALE, UNWEATHERED
- THIN, RARE, LOCAL LAYERS OF CONCRETIONARY CLAY-IRONSTONE ARE NOT SHOWN HERE.

SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

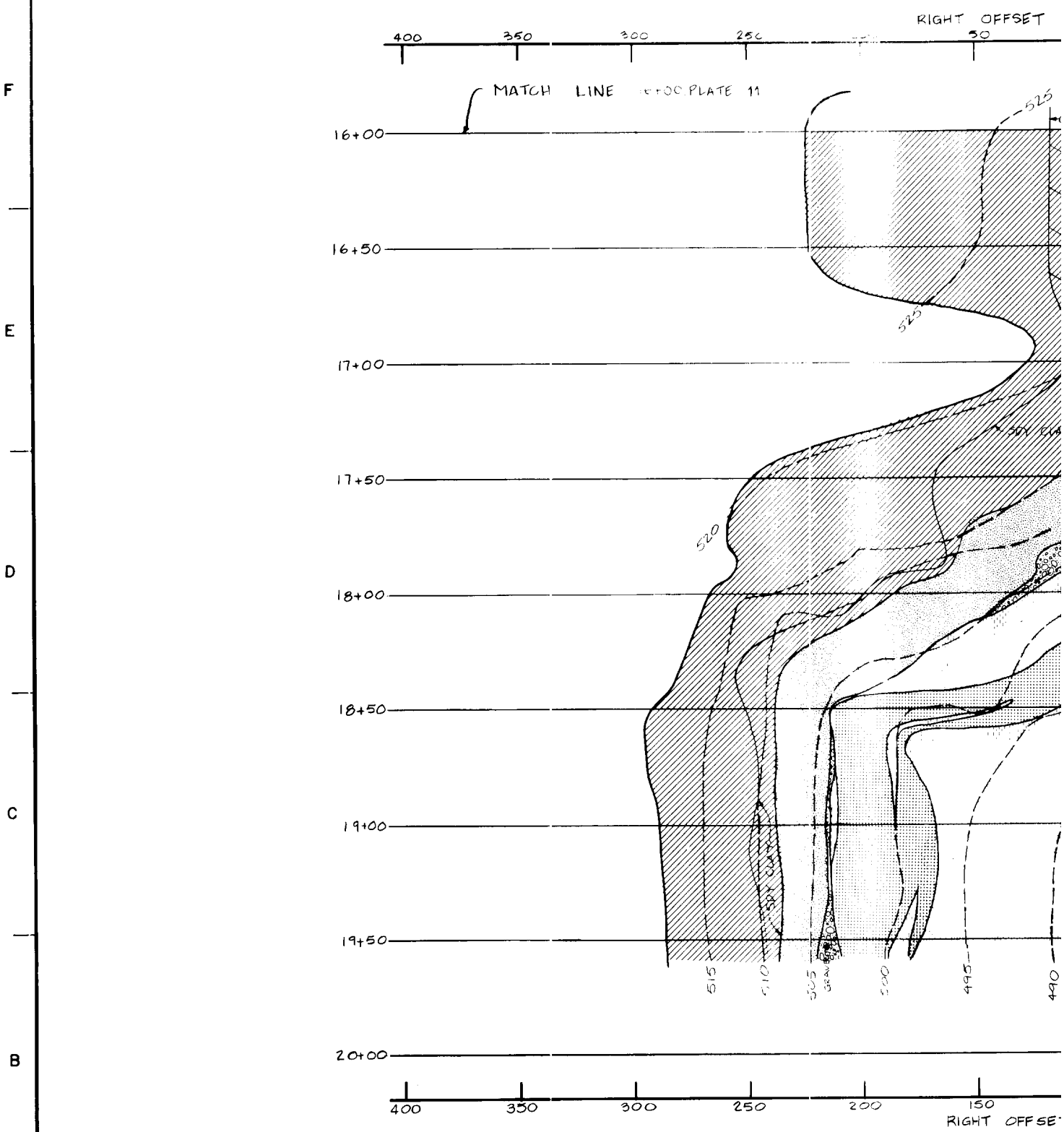
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

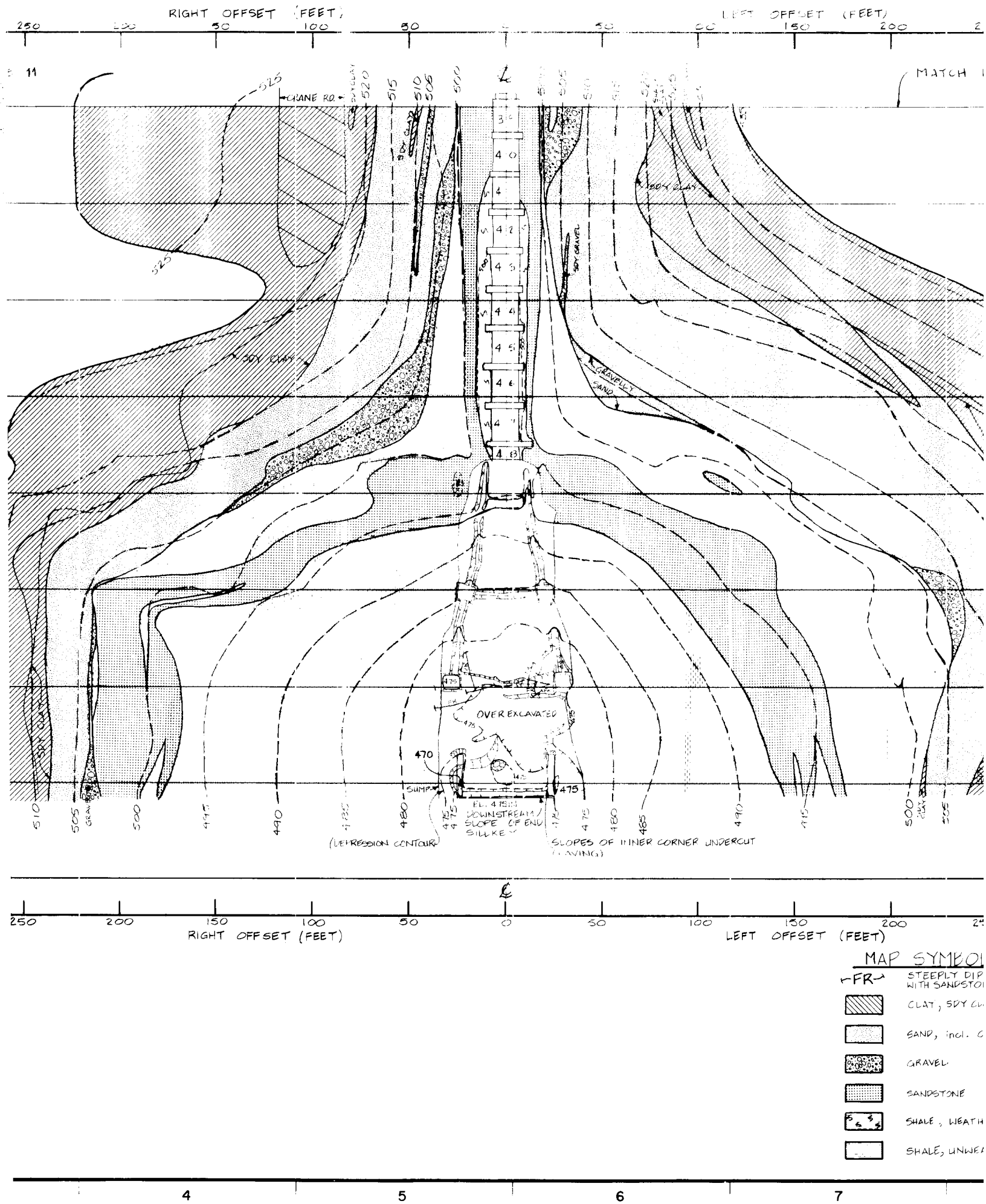
DESIGNED BY: G. RUEPE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

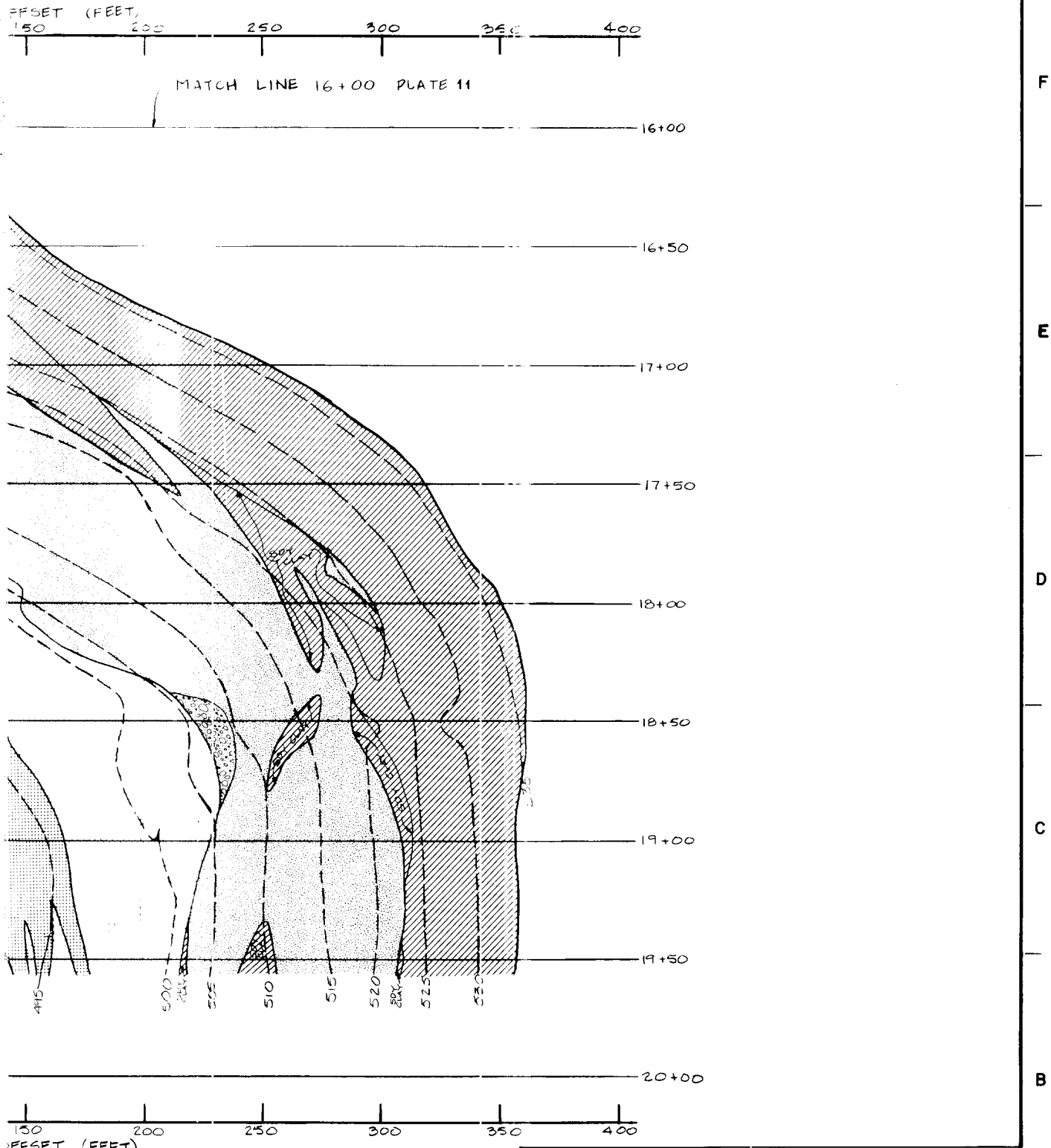
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
OUTLET WORKS
GEOLOGY AND EXCAVATION
STA. 6+10.25 TO STA. 16+00.00

SUBMITTED BY: ROBERT BEHM
ENGINEER:

INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.


RIGHT OFFSET
400
350
300
250
50
MATCH LINE
PLATE 11
16+00
16+50
17+00
17+50
18+00
18+50
19+00
19+50
20+00
525
520
515
510
505
500
495
490
SOFT CLAY
400
350
300
250
200
150
RIGHT OFFSET


RIGHT OFFSET (FEET)
250 200 150 100 50
LEFT OFFSET (FEET)
50 100 150 200
11
MATCH
CRANE RD.
SOY CLAY
SOY GRAVEL
GRAVELLY SAND
OVER EXCAVATED
SUMP
EL. 475±
DOWNSTREAM SLOPE OF END SILL
(DEPRESSION CONTOUR)
SLOPES OF INNER CORNER UNDERCUT (CAVING)
525
520
515
510
505
500
495
490
485
480
475
470
465
RIGHT OFFSET (FEET)
LEFT OFFSET (FEET)
MAP SYMBOL
STEEPLY DIP
WITH SANDSTO
CLAY, SDY CL
SAND, incl.
GRAVEL
SANDSTONE
SHALE, WEATH
SHALE, UNWEA



OFFSET (FEET)

MAP SYMBOLS

- ←FR→ STEEPLY DIPPING FRACTURE WITH SANDSTONE FILLING.
- CLAY, SDY CLAY & SHALY CLAY
- SAND, incl. CLAYEY SAND
- GRAVEL
- SANDSTONE
- SHALE, WEATHERED
- SHALE, UNWEATHERED

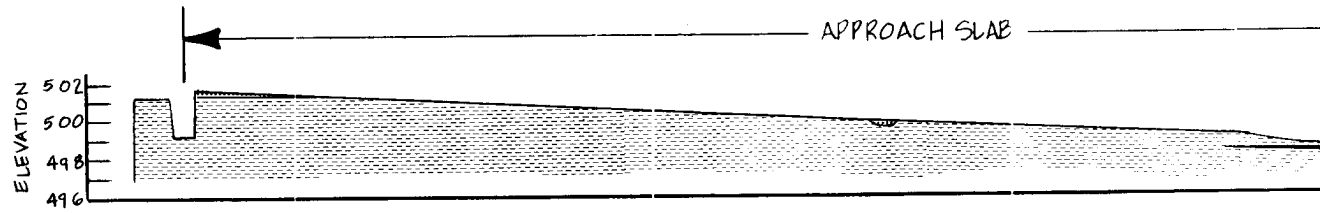
SYM.	DG. NO.	ACTION	DATE	DESCRIPTION OF REVISION

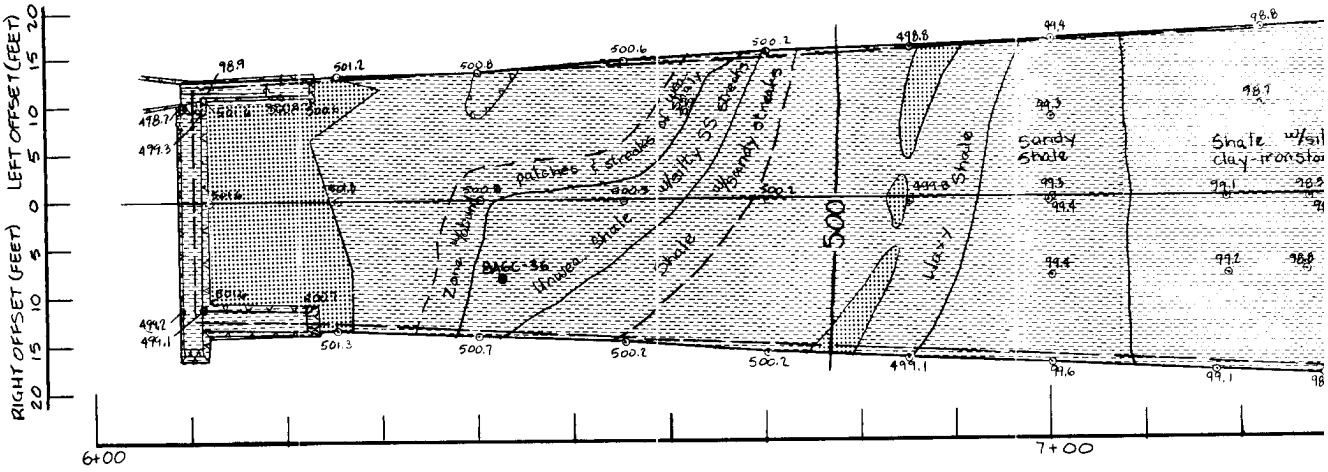
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

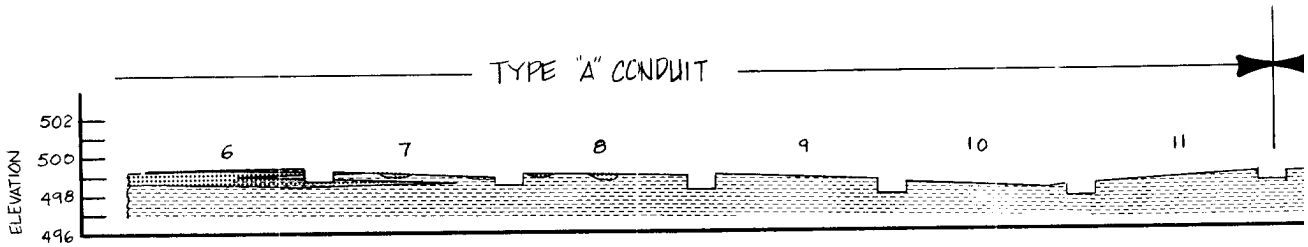
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM

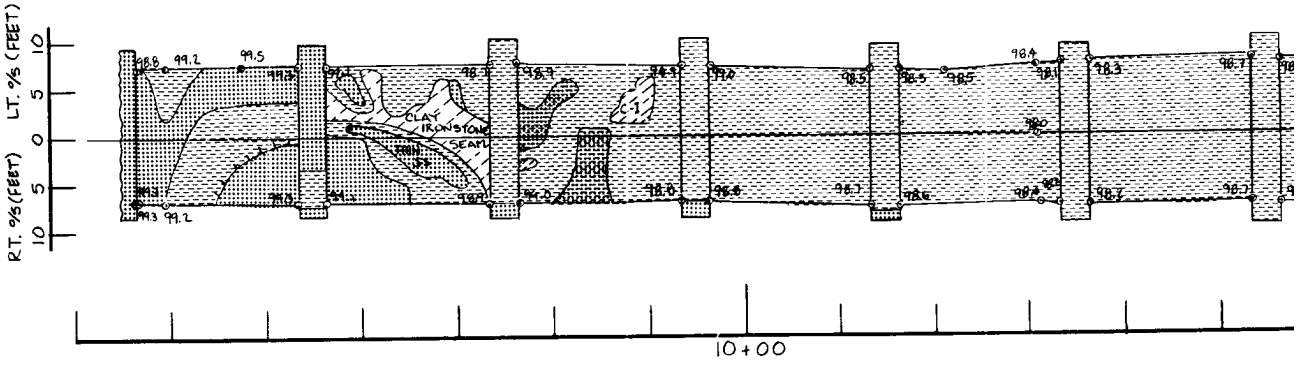
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
OUTLET WORKS
GEOLOGY AND EXCAVATION
STA. 16+00.00 TO STA. 19+56.95

INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.



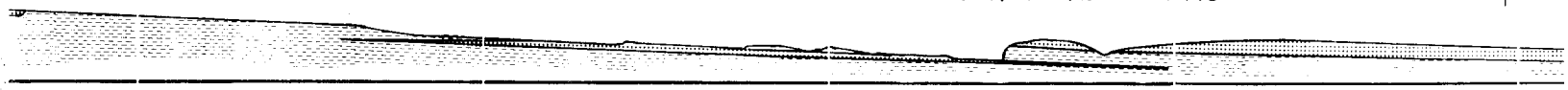


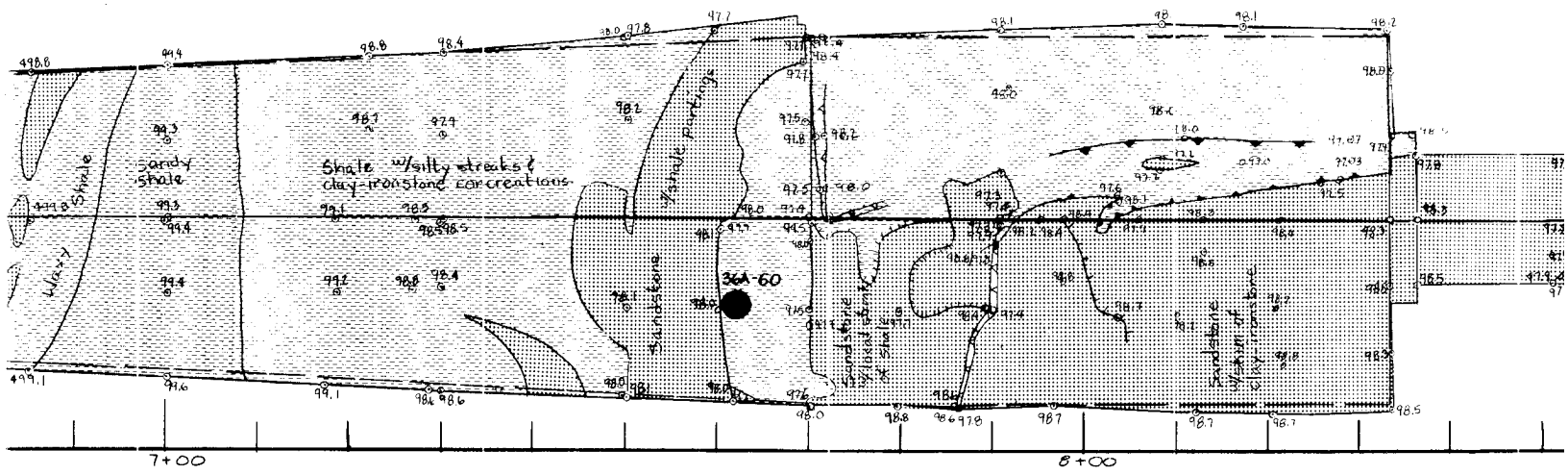




OACH SLAB — GATE TOWER

CENTERLINE SECTION



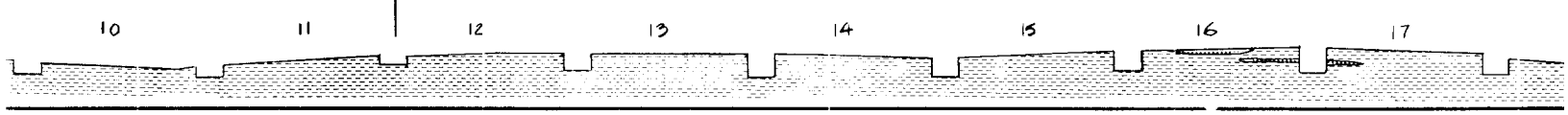


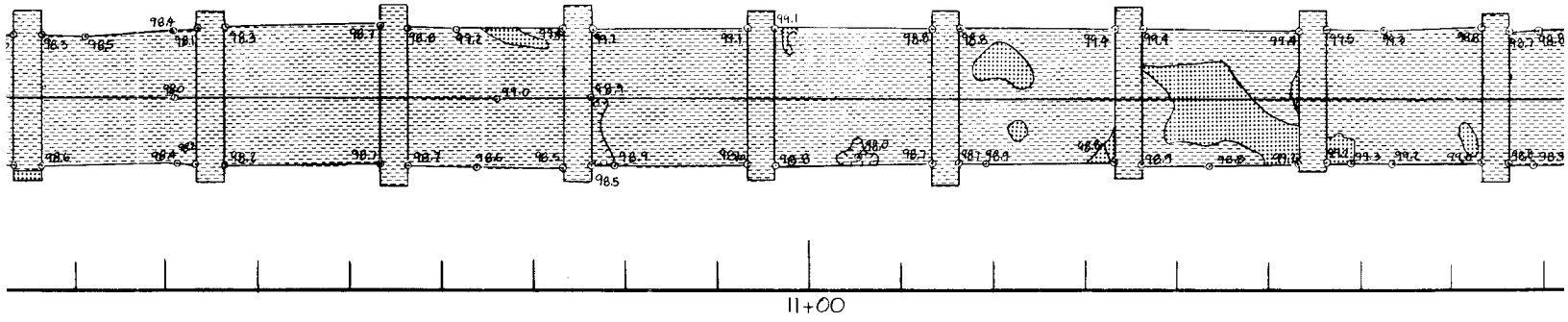
STATIONS

PLAN VIEW, APPROACH, TOWER AND CONDUIT

TY

CENTERLINE SECTION





STATIONS

PLAN VIEW OF CONDUIT FOUNDATION

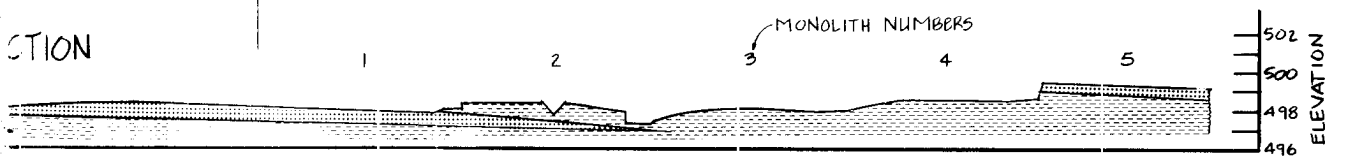
NOTE:

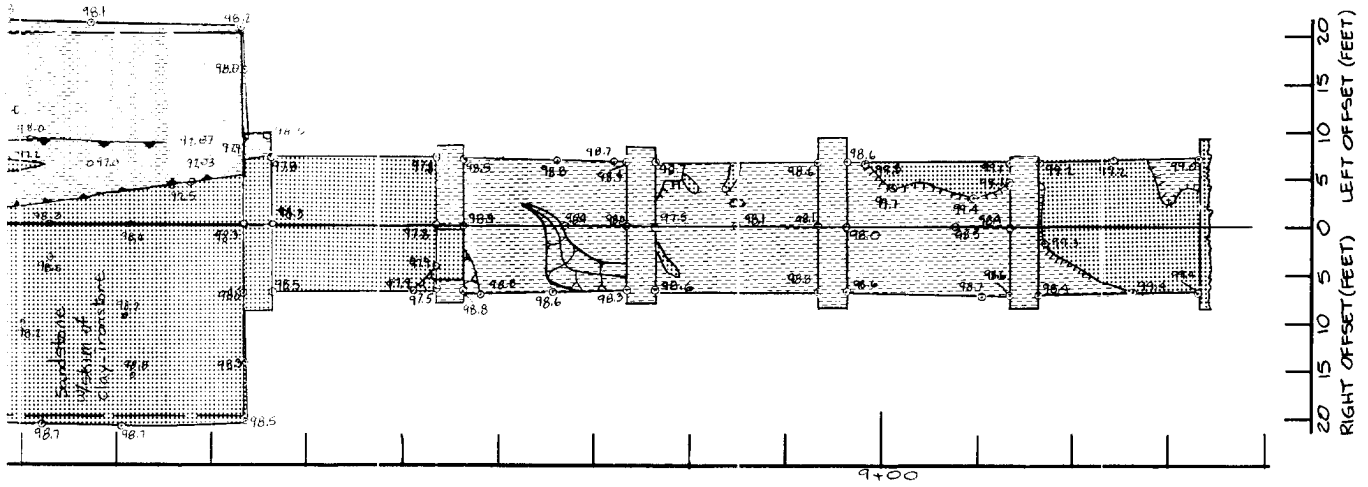
1. FOR PLAN VIEW MAP SYMBOLS, REFE

ER

CTION

TYPE "A" CONDUIT

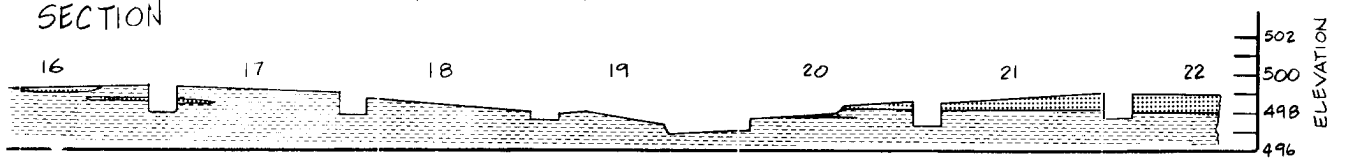


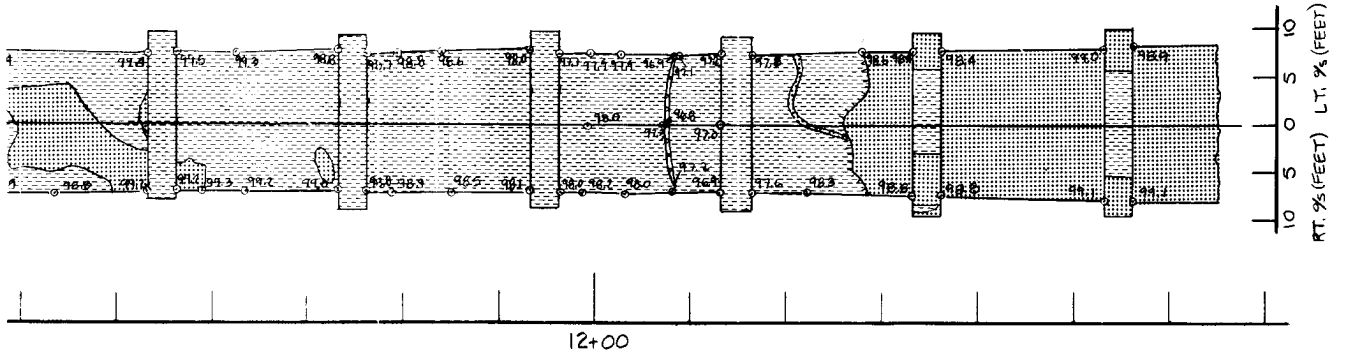


OWER AND CONDUIT

TYPE "B" CONDUIT

SECTION





DUIT FOUNDATION

E:
FOR PLAN VIEW MAP SYMBOLS, REFER TO PLATE 15.

SYM.	DD. NO.	ACTION	DATE	DESCRIPTION OF REVISION

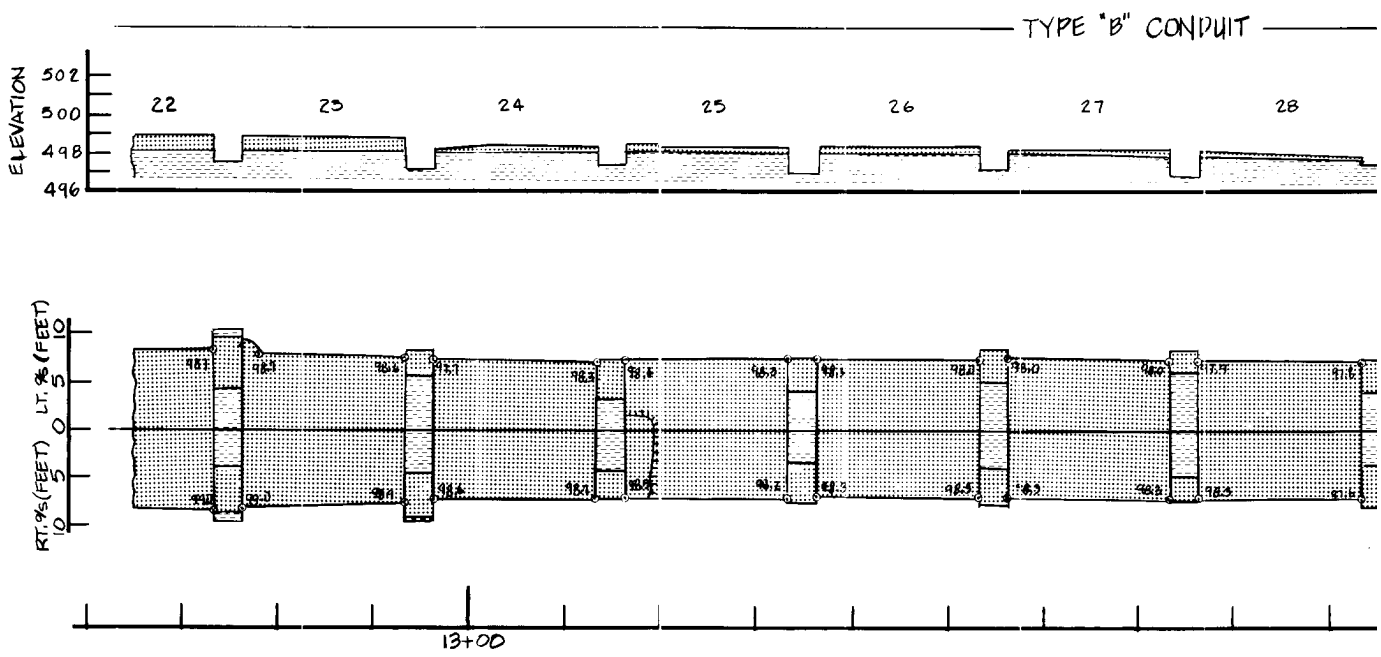
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

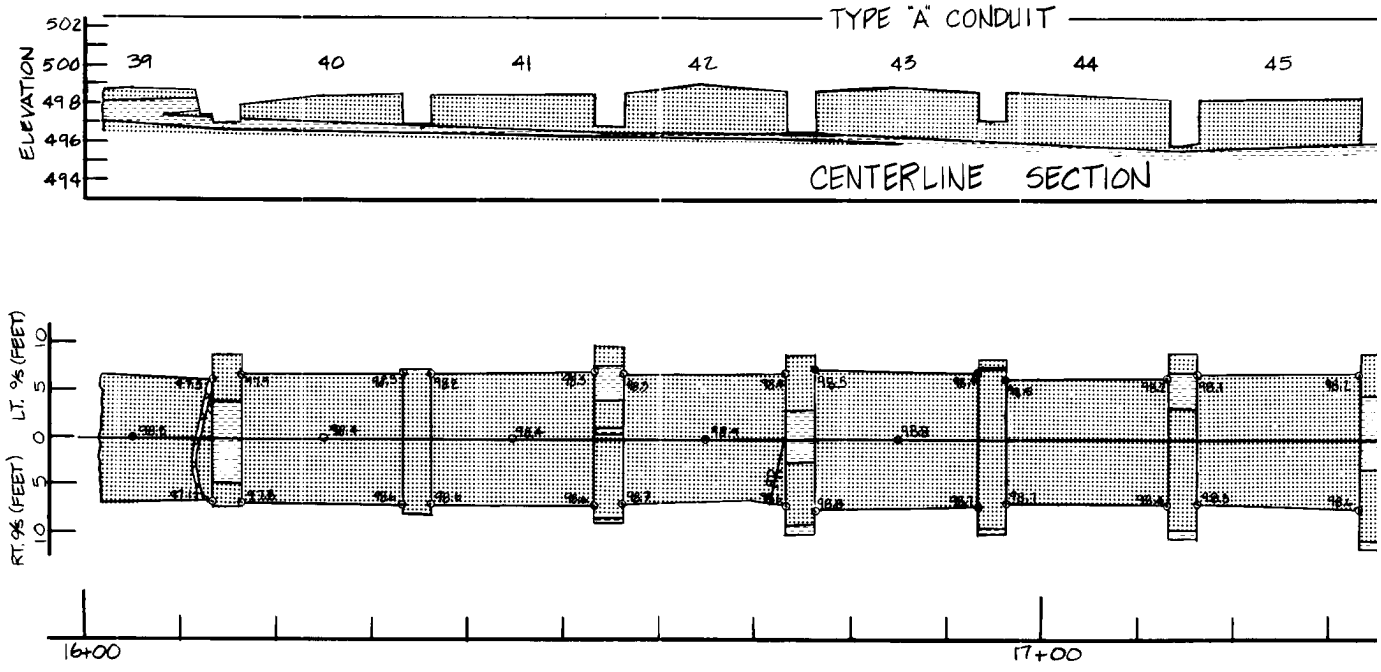
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
OUTLET WORKS STRUCTURES
GEOLOGY AND EXCAVATION
STA. 6+09.05 TO STA. 12+65.00

SUBMITTED BY: ROBERT BEHM
ENGINEER:

INVITATION NO. | DATE:
CONTRACT NO. | SEQUENCE NO.
DRAWING NUMBER | SHEET NO. OF
CONTRACT NO.





PLAN OF CONDUIT FOUNDATION

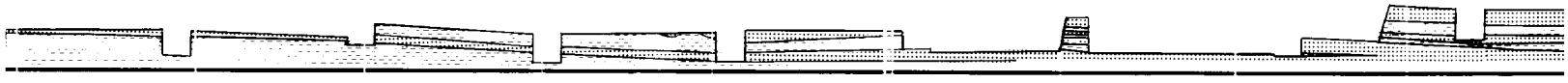
4 5 6 7

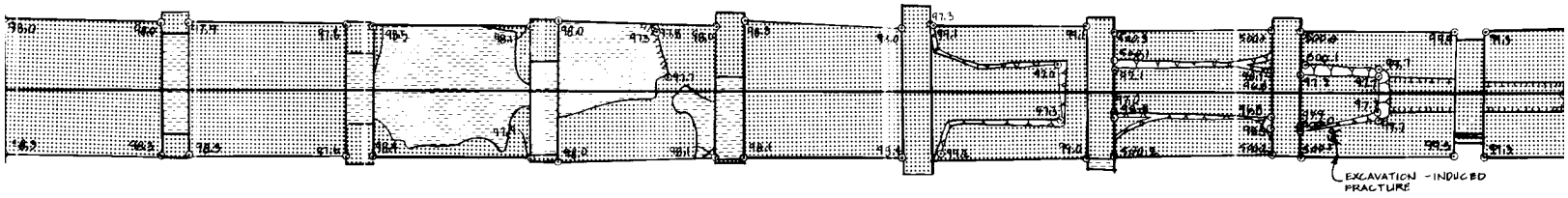
- TYPE "B" CONDUIT

CENTERLINE SECTION

MONOLITH NUMBERS

27 28 29 30 31 32 33 34





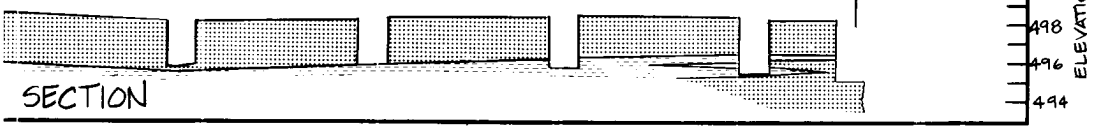
14+00 15+00

STATIONS

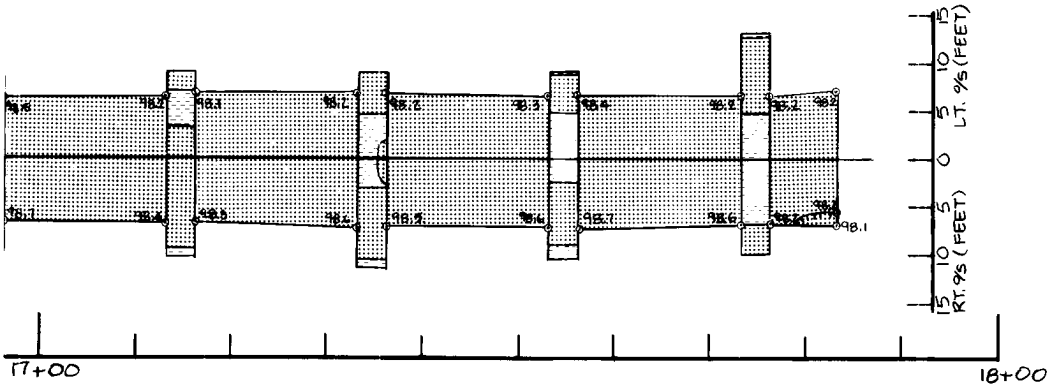
PLAN OF CONDUIT FOUNDATION

UIT

44 45 46 47 48



SECTION



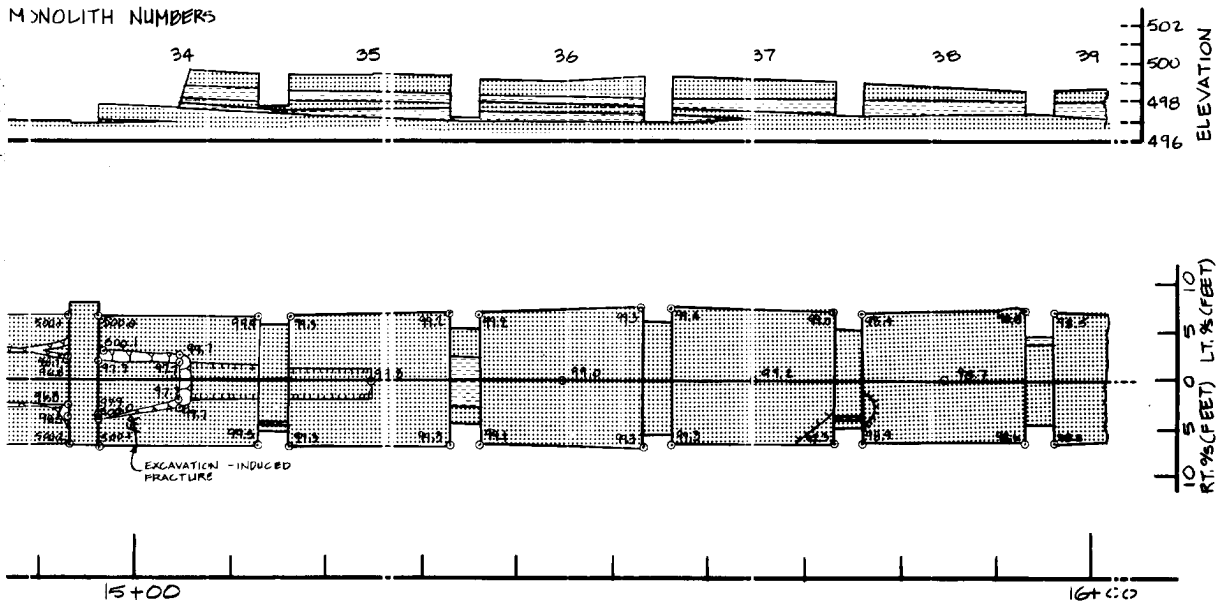
17+00 18+00

TATIONS

ONDUIT FOUNDATION

NOTE:
1. FOR PLAN VIEW MAP SYMBOLS, REFER TO PLATE 15.

TYPE "A" CONDUIT



REFER TO PLATE 15.

SYM.	DD. NO.	ACTION	DATE	DESCRIPTION OF REVISION

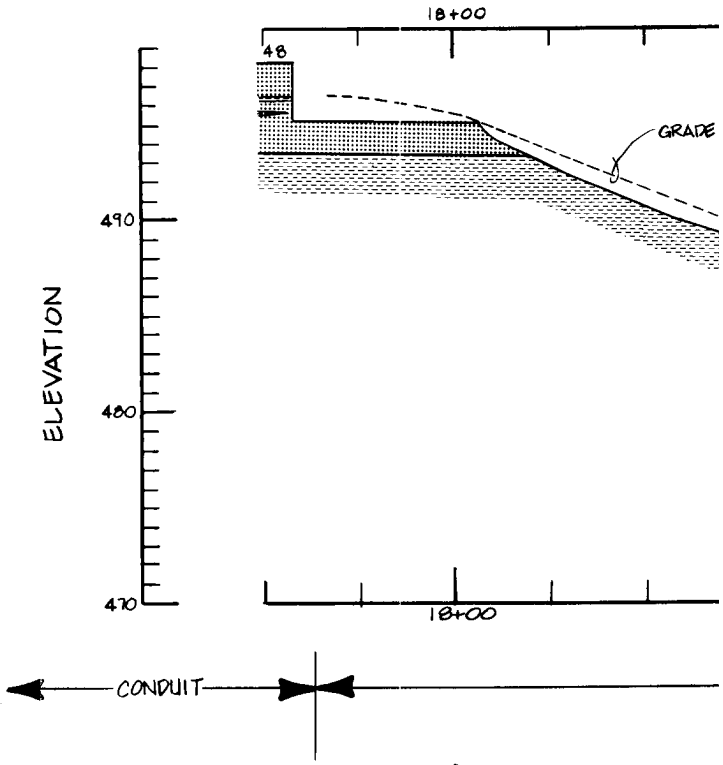
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

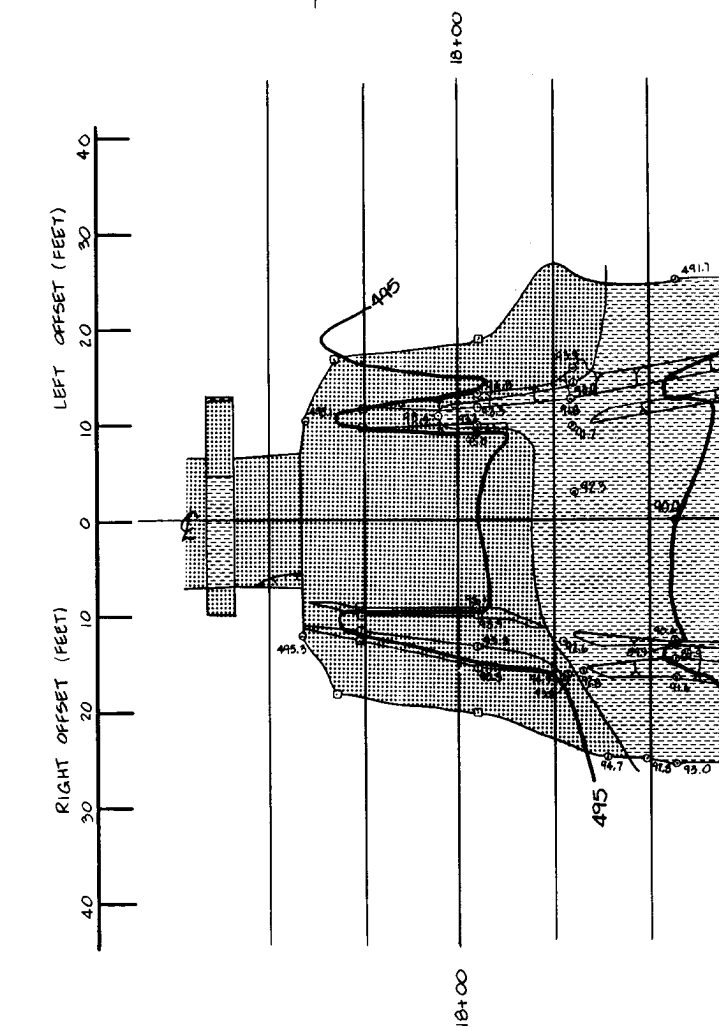
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
OUTLET WORKS STRUCTURES
GEOLOGY AND EXCAVATION
STA. 12 + 65.00 TO STA. 17+83.25

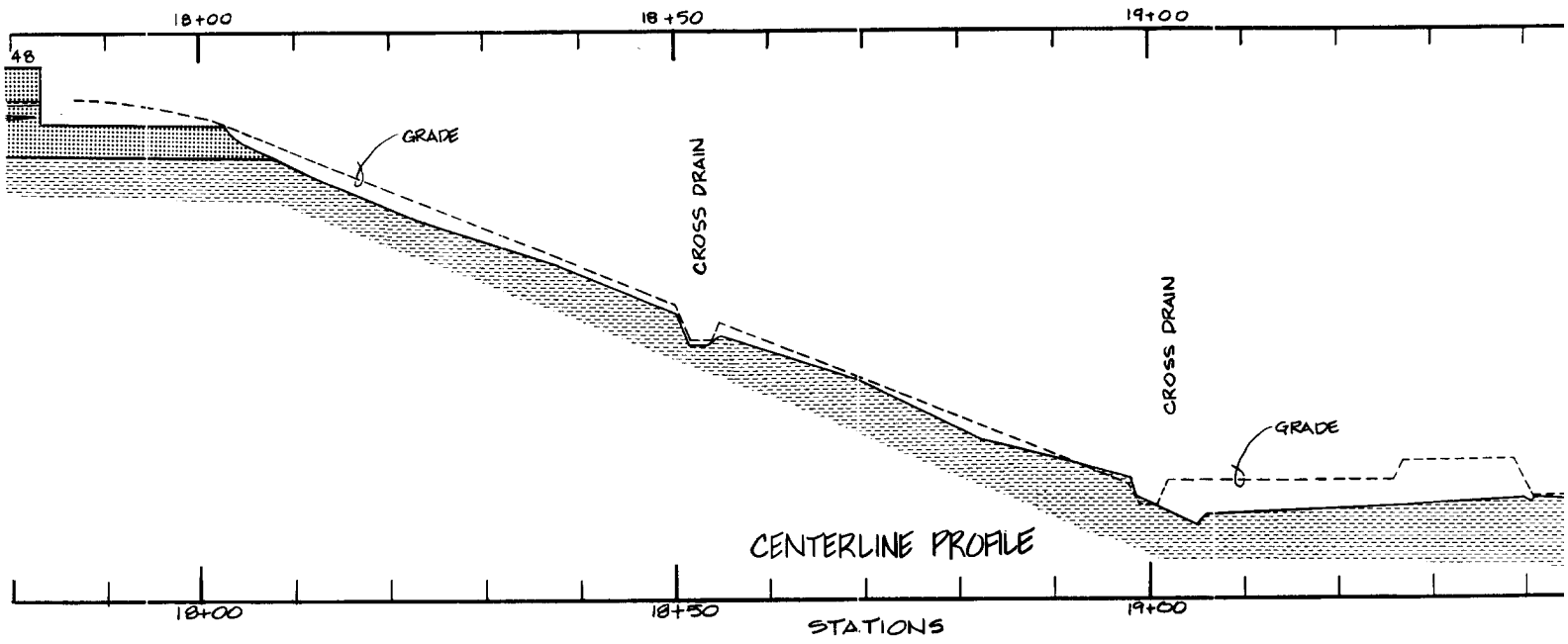
SUBMITTED BY: ROBERT BEHM
ENGINEER:

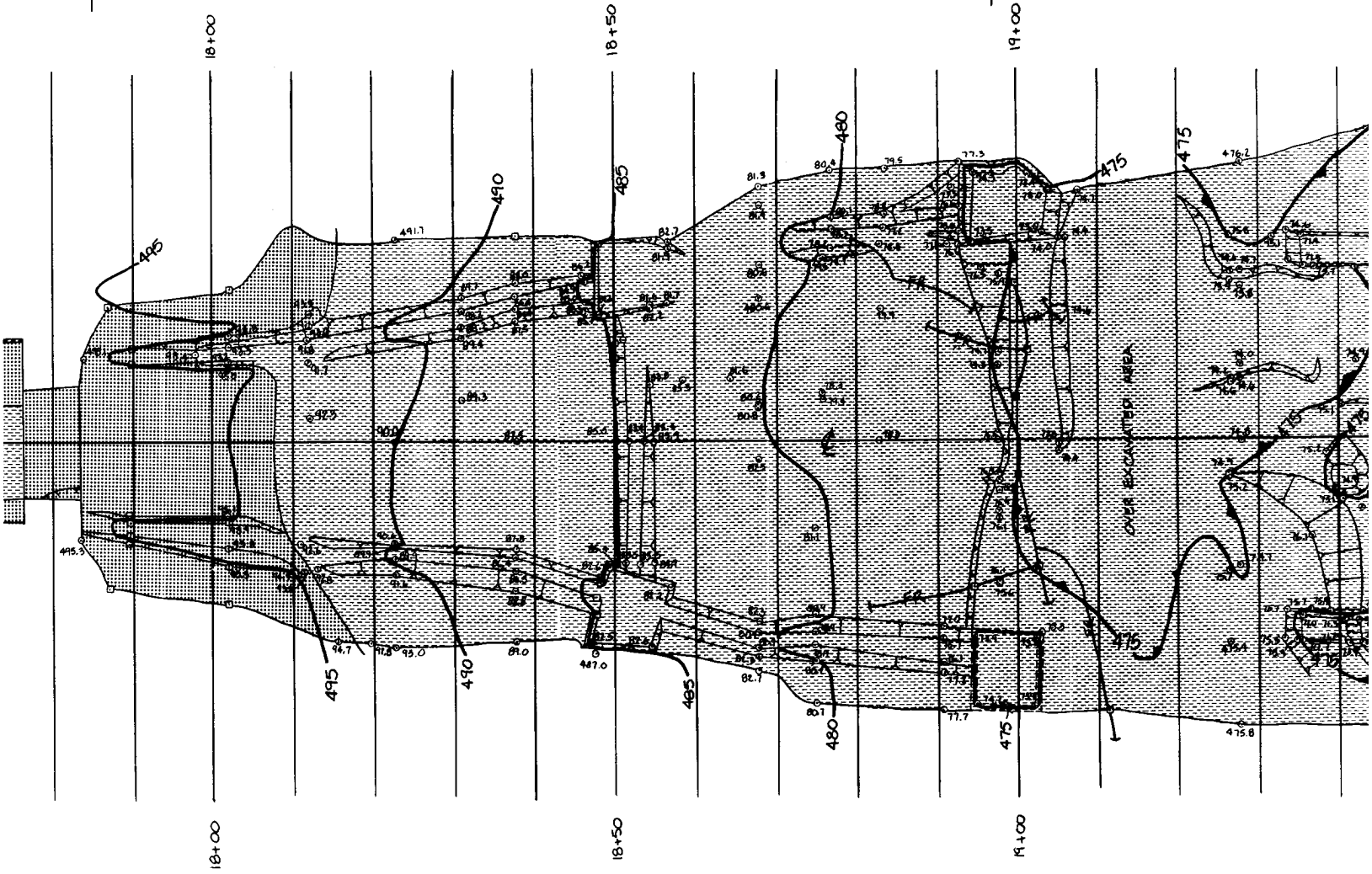
INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.

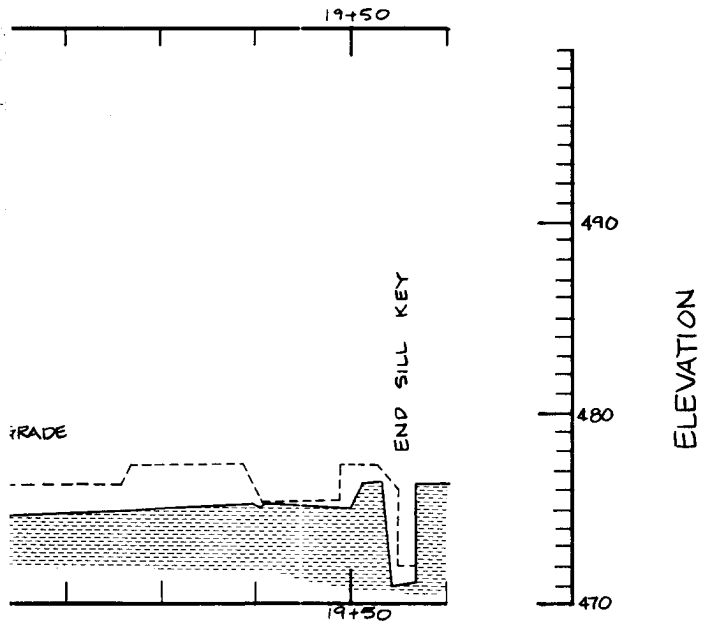

18+00
48
GRADE
490
480
470
ELEVATION
18+00

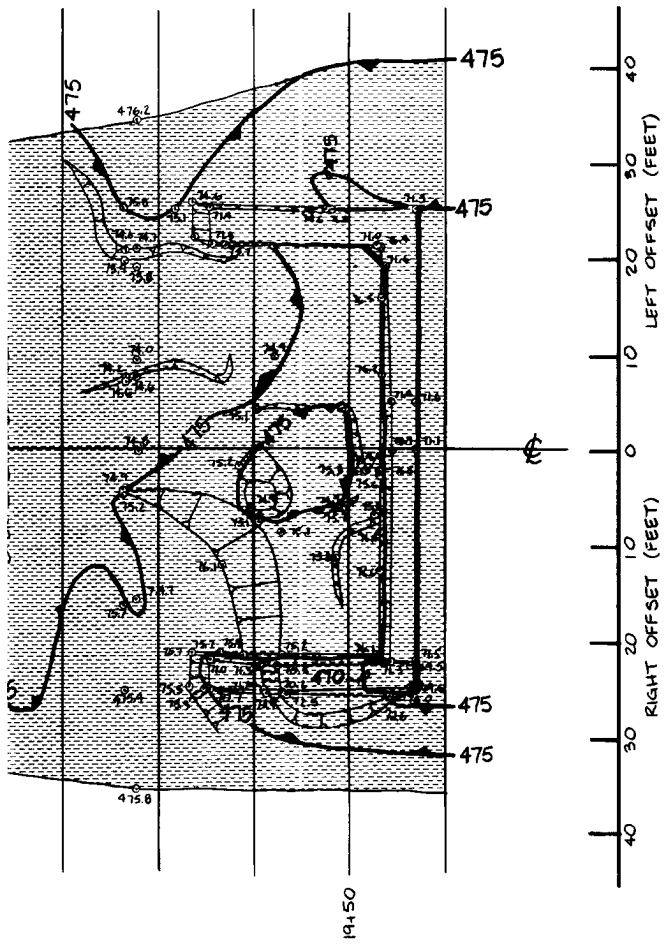
CONDUIT


18+00
LEFT OFFSET (FEET)
RIGHT OFFSET (FEET)
40
30
20
10
0
10
20
30
40
496
495
18+00


18+00
18+50
19+00
48
GRADE
CROSS DRAIN
CROSS DRAIN
GRADE
CENTERLINE PROFILE
18+00
18+50
19+00
STATIONS
CHUTE
STILLING BASIN


18+00
18+50
19+00
OVER EXCAVATED AREA
18+00
18+50
19+00
PLAN VIEW





MAP SYMBOLS FOR PLAN VIEW

- ⊙ DATA POINTS : ELEVATIONS, LOCATION
- ⊡ LOCATION DATA ONLY
- FR STEEP-DIPPING FRACTURES FILLED WITH SANDSTONE, TERMINATION OF FRACTURES SHOWN.

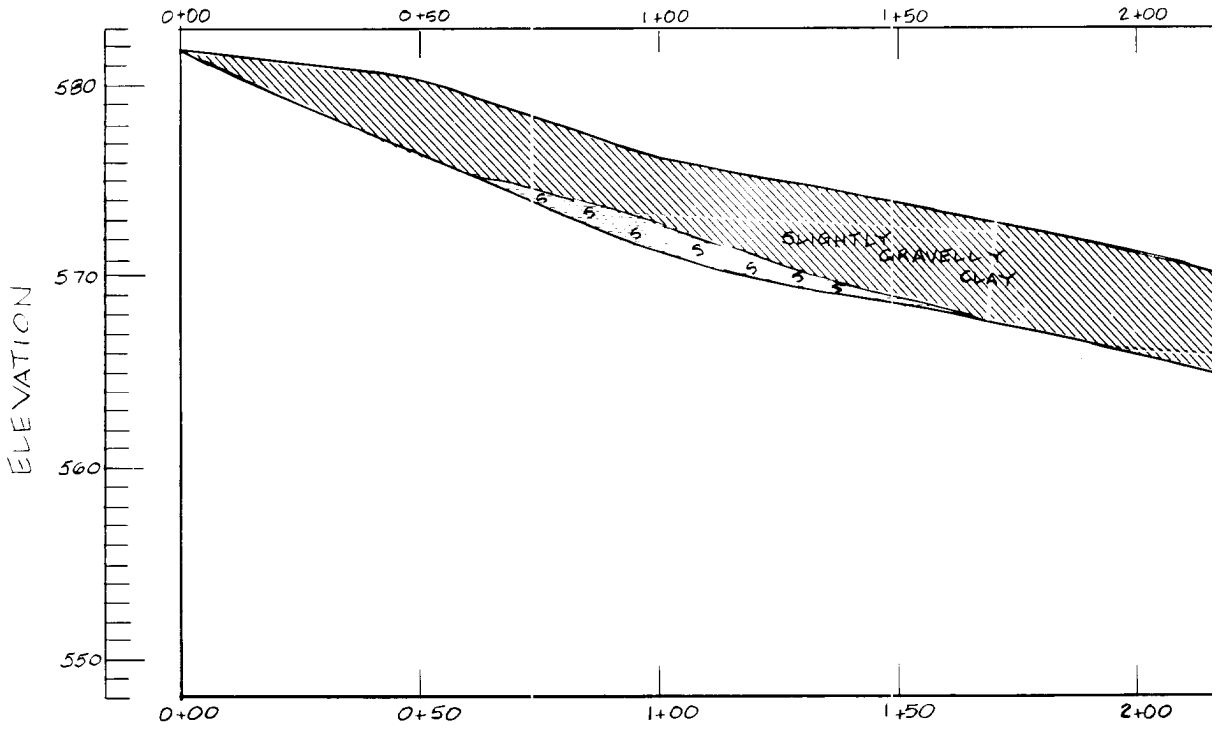
SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

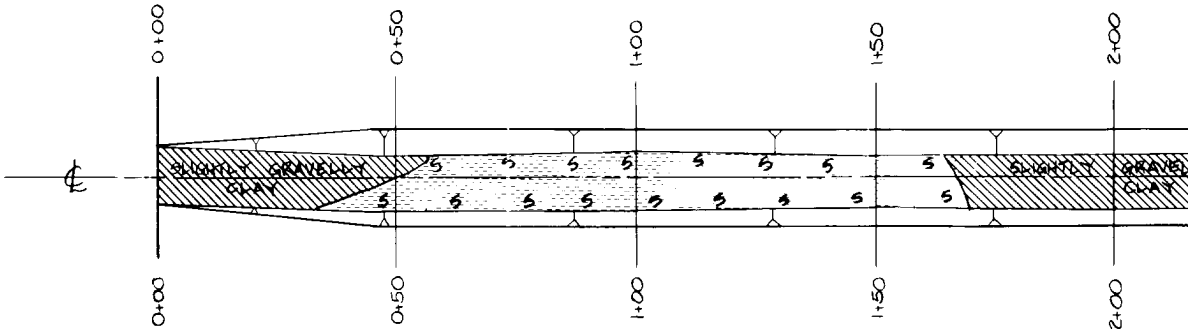
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

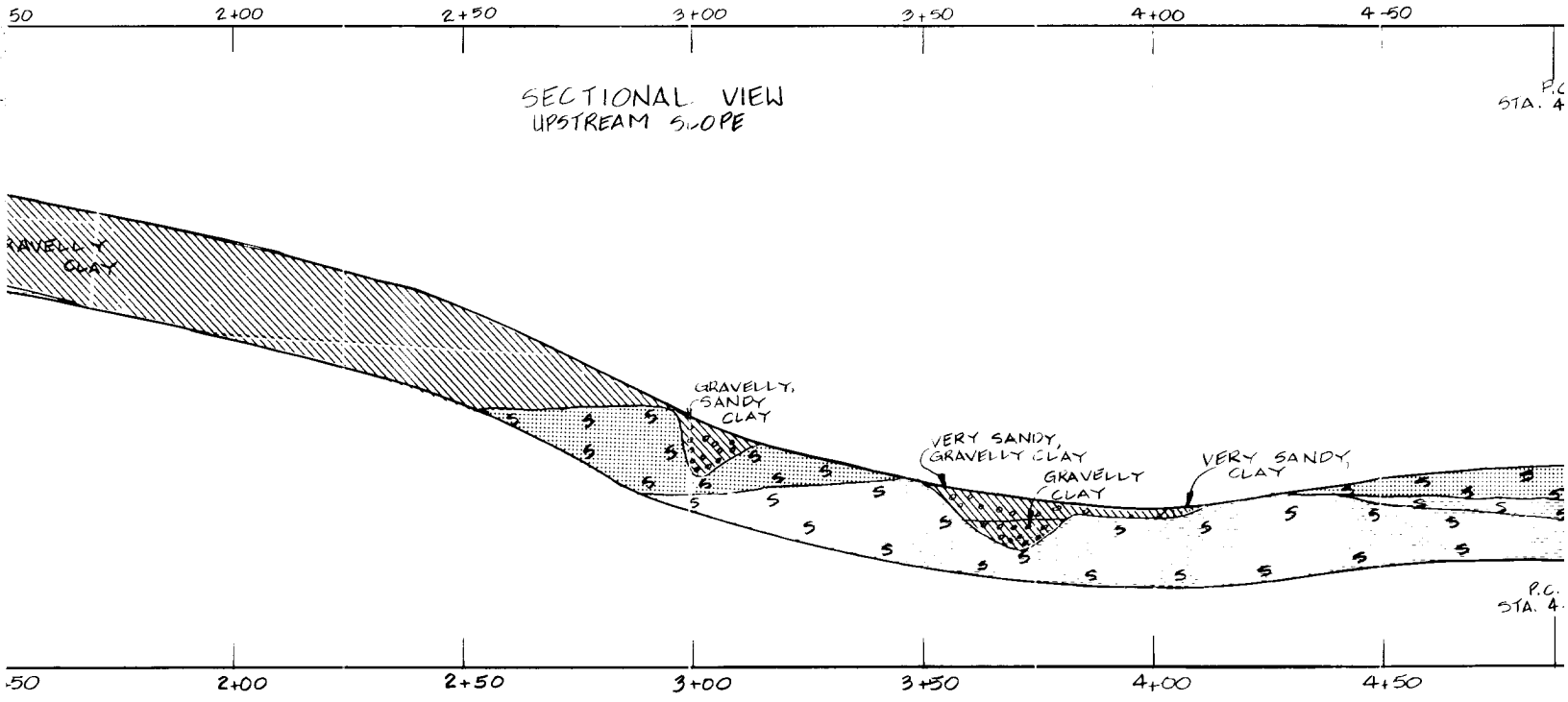
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

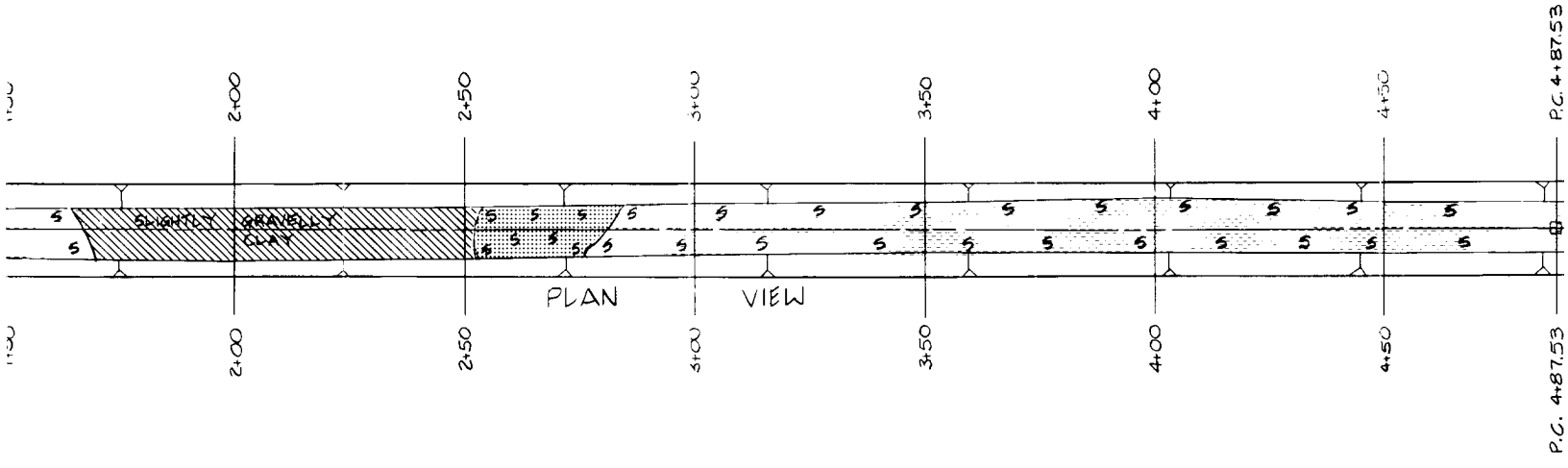
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
OUTLET WORKS STRUCTURES
GEOLOGY AND EXCAVATION
STA. 17+83.25 TO STA. 19+56.95

SUBMITTED BY: ROBERT BEHM
ENGINEER:
INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF
SEQUENCE NO. 1
CONTRACT NO.


0+00
0+50
1+00
1+50
2+00
580
570
560
550
ELEVATION
SLIGHTLY GRAVELLY CLAY
S

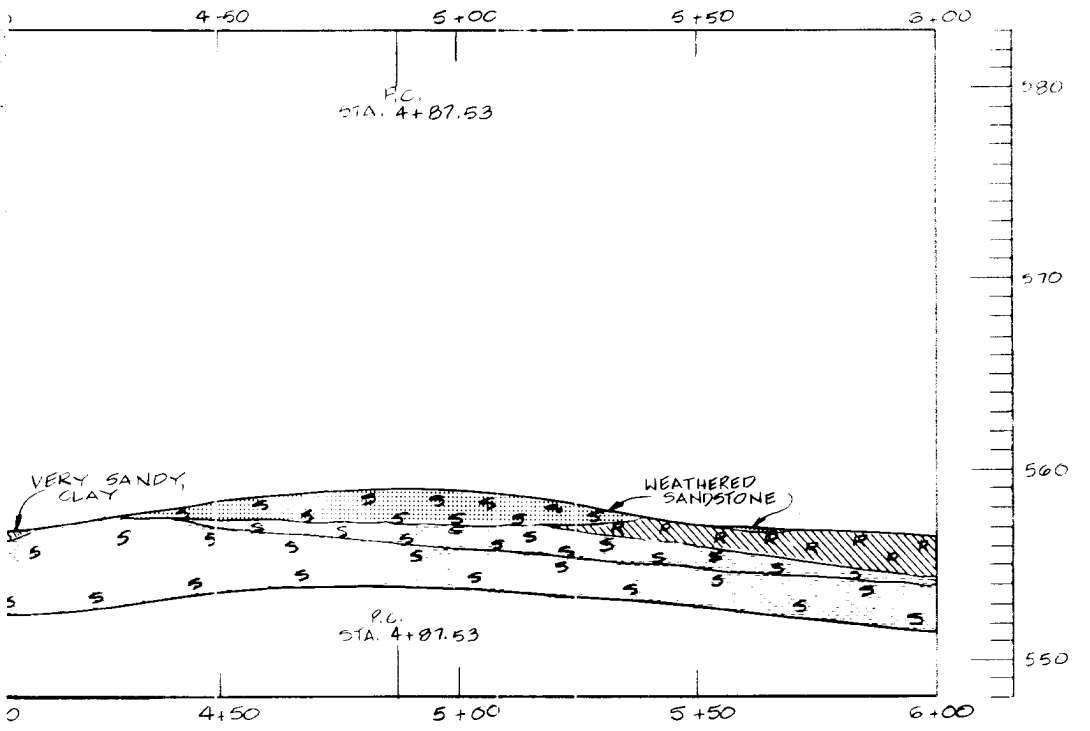

0+00
0+50
1+00
1+50
2+00
SLIGHTLY GRAVELLY CLAY
S

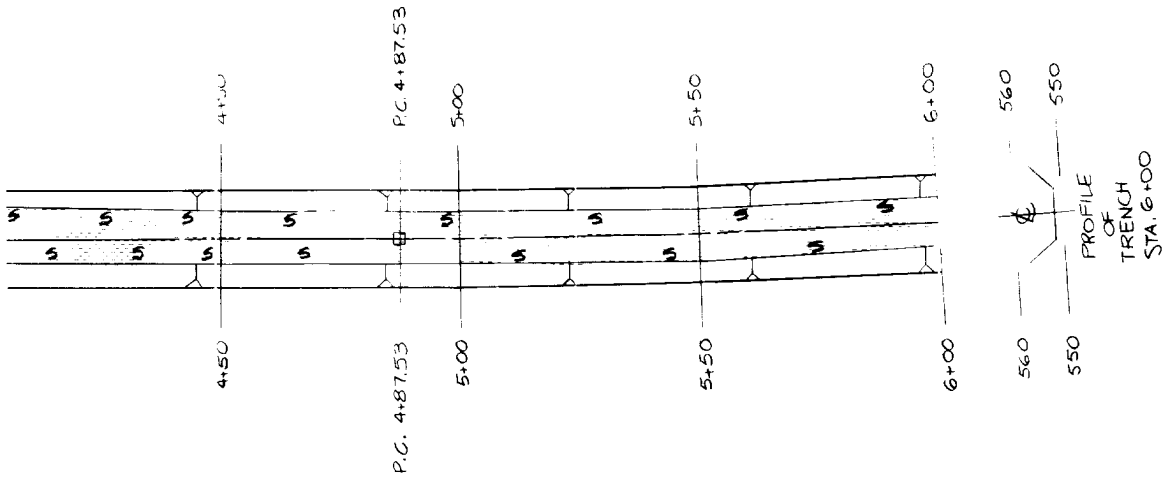




SYMBOLS:

- CLAY, SANDY CLAY, GRAVELLY CLAY, SHALY CLAY (AL
- RESIDUAL CLAY (VERY HIGHLY WEATHERED SHALE)
- SAND, CLAYEY SAND, GRAVELLY SAND
- GRAVEL, SANDY GRAVEL, CLAYEY GRAVEL
- SANDSTONE, UNWEATHERED
- SANDSTONE, WEATHERED
- SHALE, UNWEATHERED
- SHALE, WEATHERED
- SHALE, HIGHLY WEATHERED, OF CLAY CONSISTENCY IN PART OR WHOLLY





-AY, GRAVELLY CLAY, SHALY CLAY (ALLUVIUM)

Y (VERY HIGHLY WEATHERED SHALE)

SAND, GRAVELLY SAND

GRAVEL, CLAYEY GRAVEL

WEATHERED

EATHERED

HERED

RED

WEATHERED, OF CLAY CONSISTENCY OR WHOLLY

SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

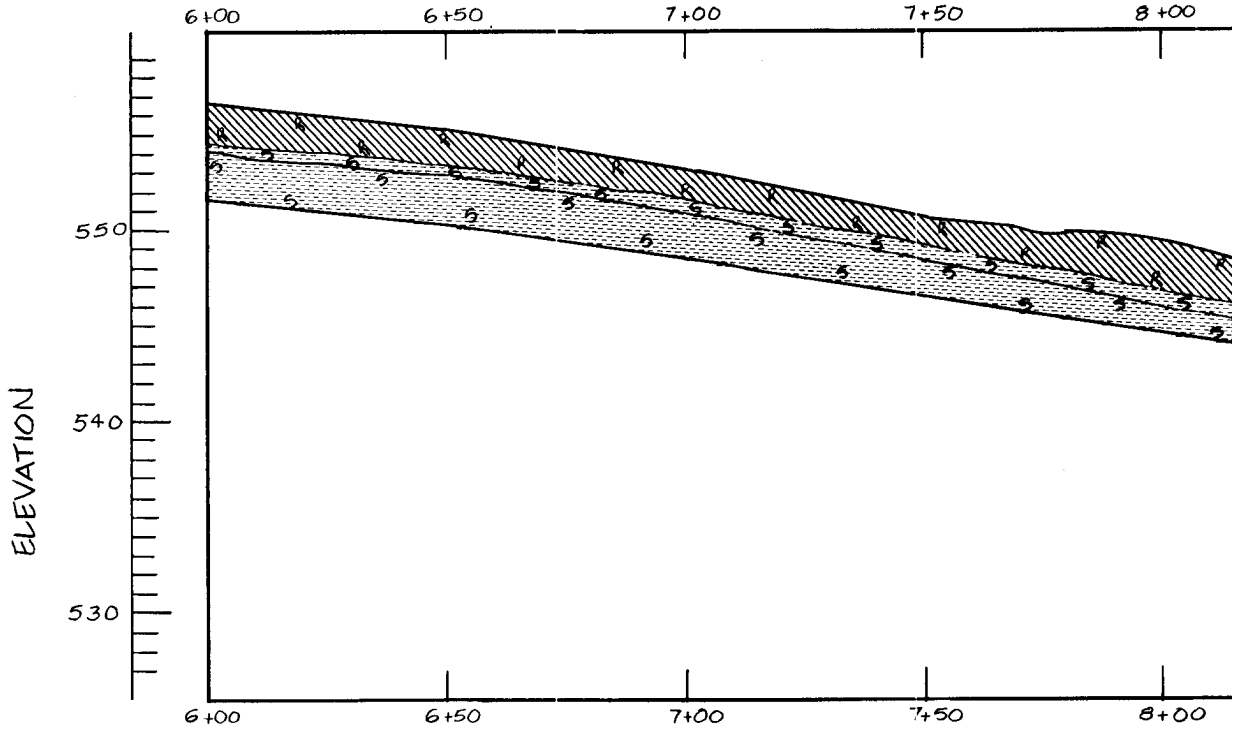
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

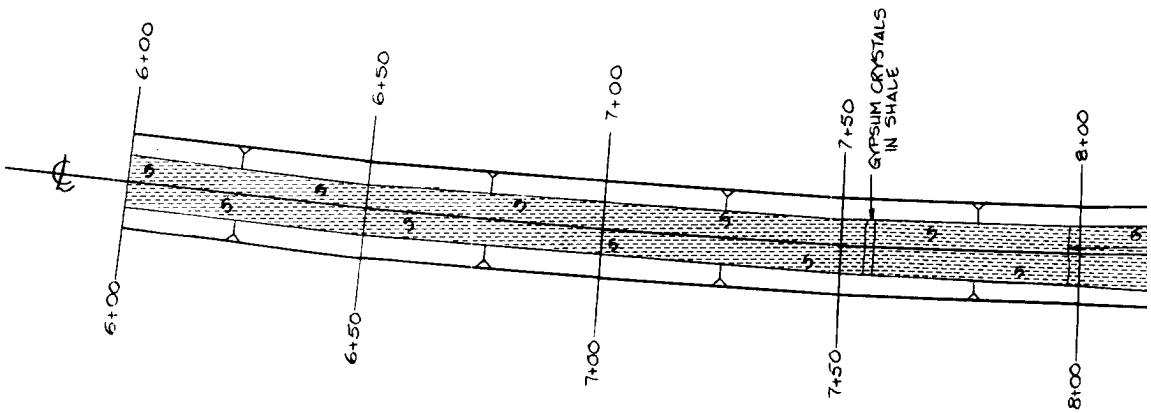
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 0+00.00 TO STA. 6+00.00

SUBMITTED BY: ROBERT BEHM
ENGINEER:

INVITATION NO. | DATE:
CONTRACT NO. | SEQUENCE NO.
DRAWING NUMBER | SHEET NO. OF | CONTRACT NO.

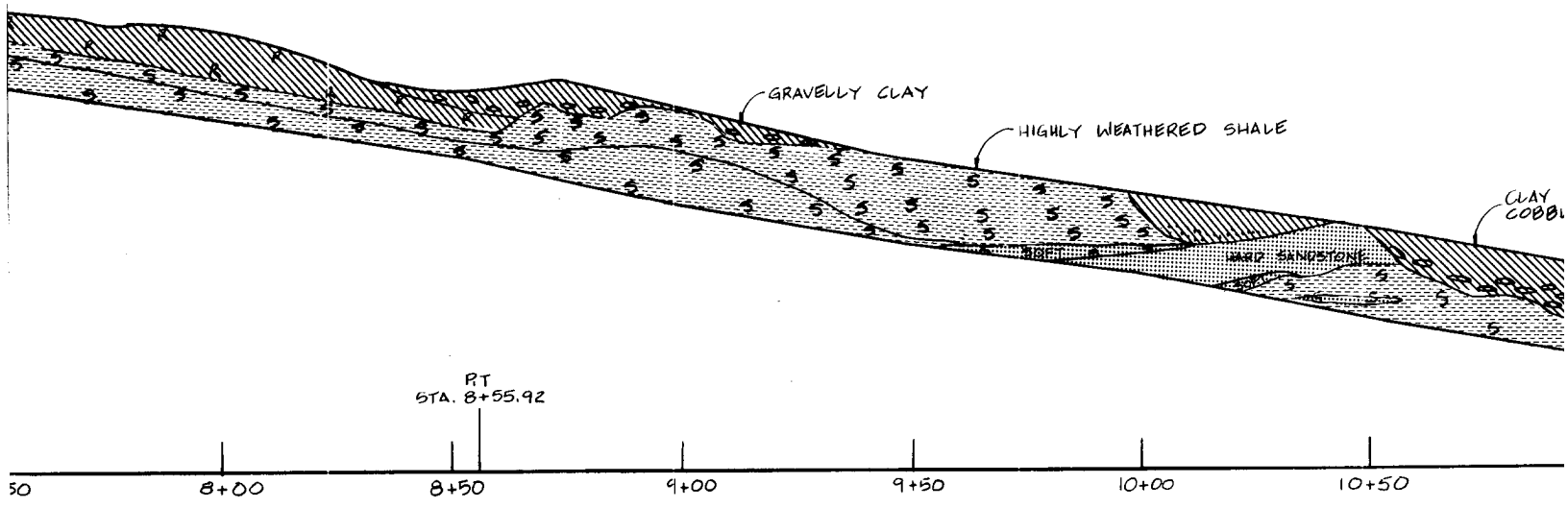

6+00
6+50
7+00
7+50
8+00
ELEVATION
550
540
530


6+00
6+50
7+00
7+50
GYPSUM CRYSTALS IN SHALE
8+00

50 8+00 8+50 9+00 9+50 10+00 10+50

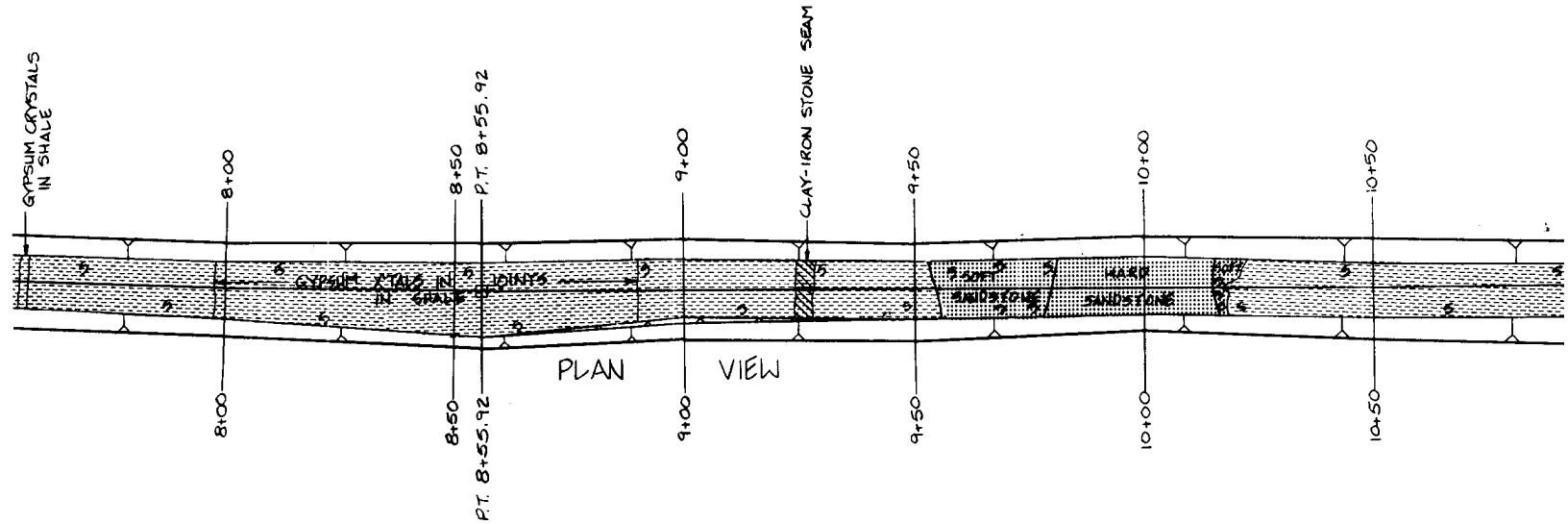
P.T.
STA 8+55.92

SECTIONAL VIEW
UPSTREAM SLOPE



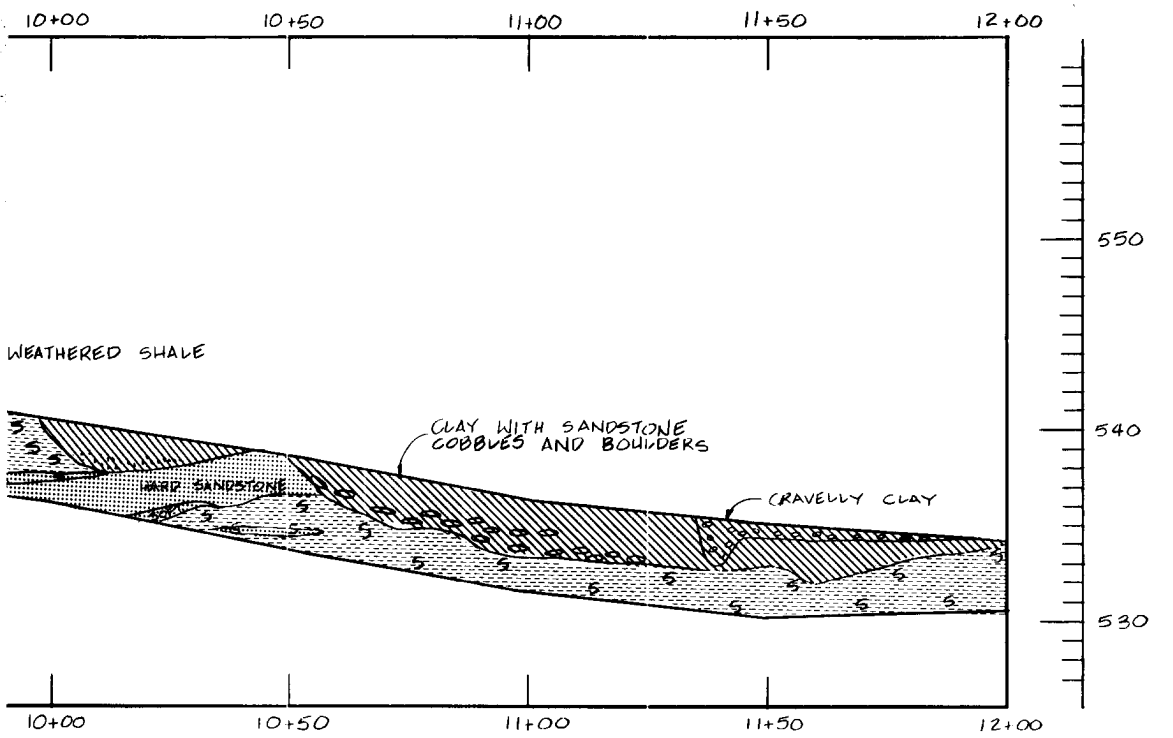
PT
STA. 8+55.92

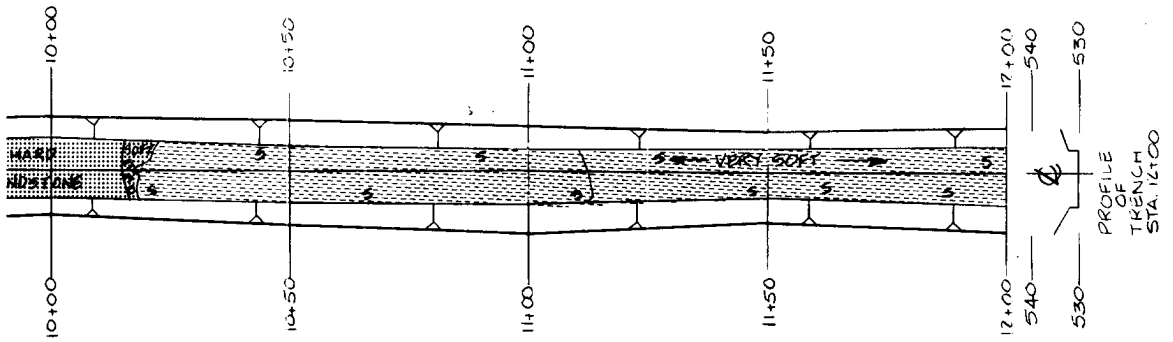
50 8+00 8+50 9+00 9+50 10+00 10+50



PLAN VIEW

NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE





NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.

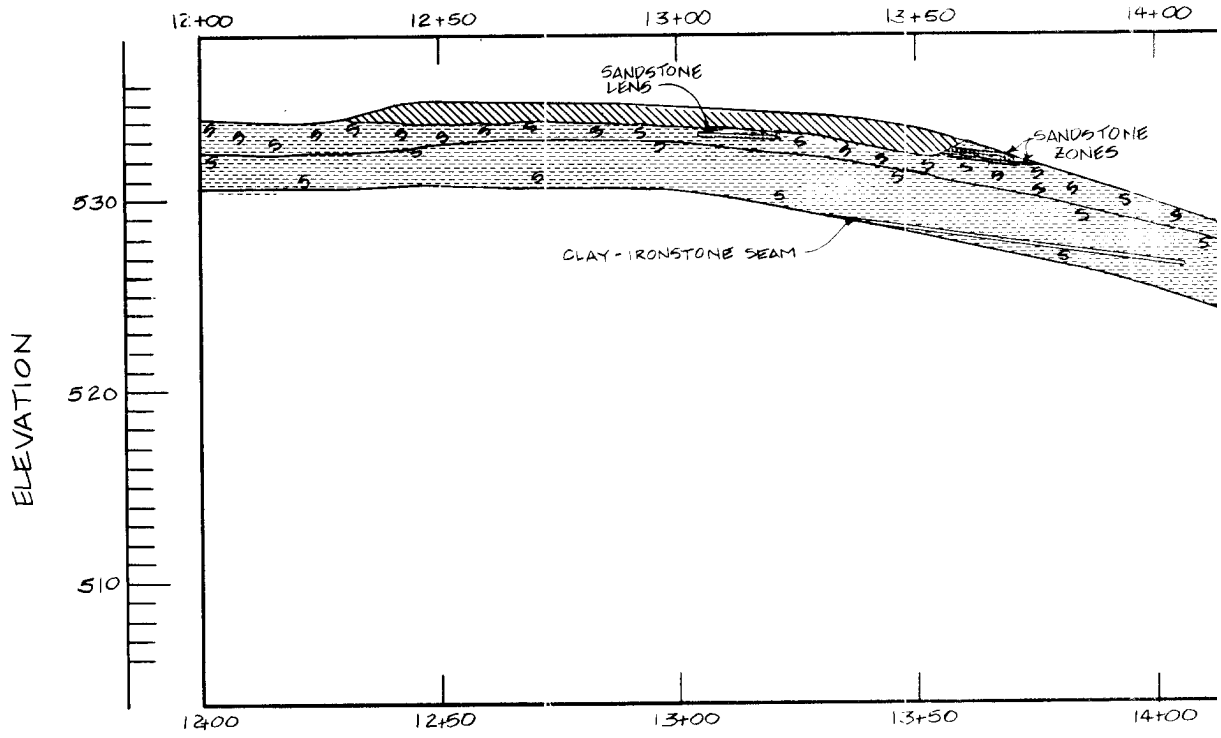
SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

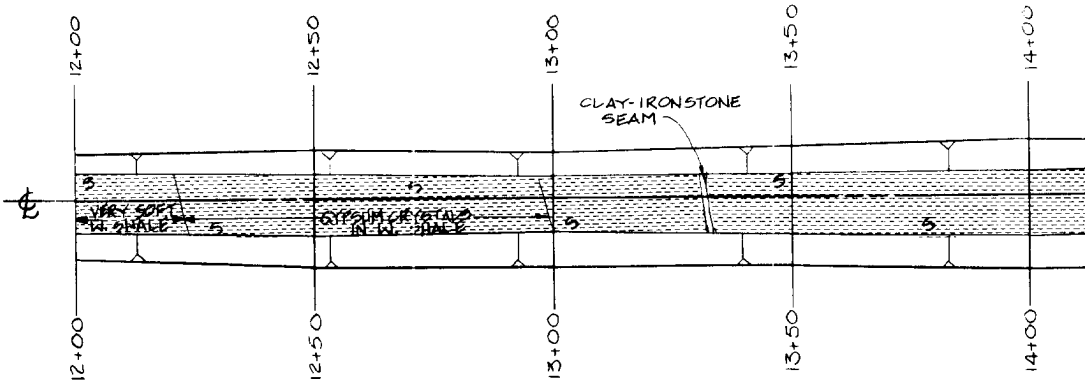
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM
ENGINEER:

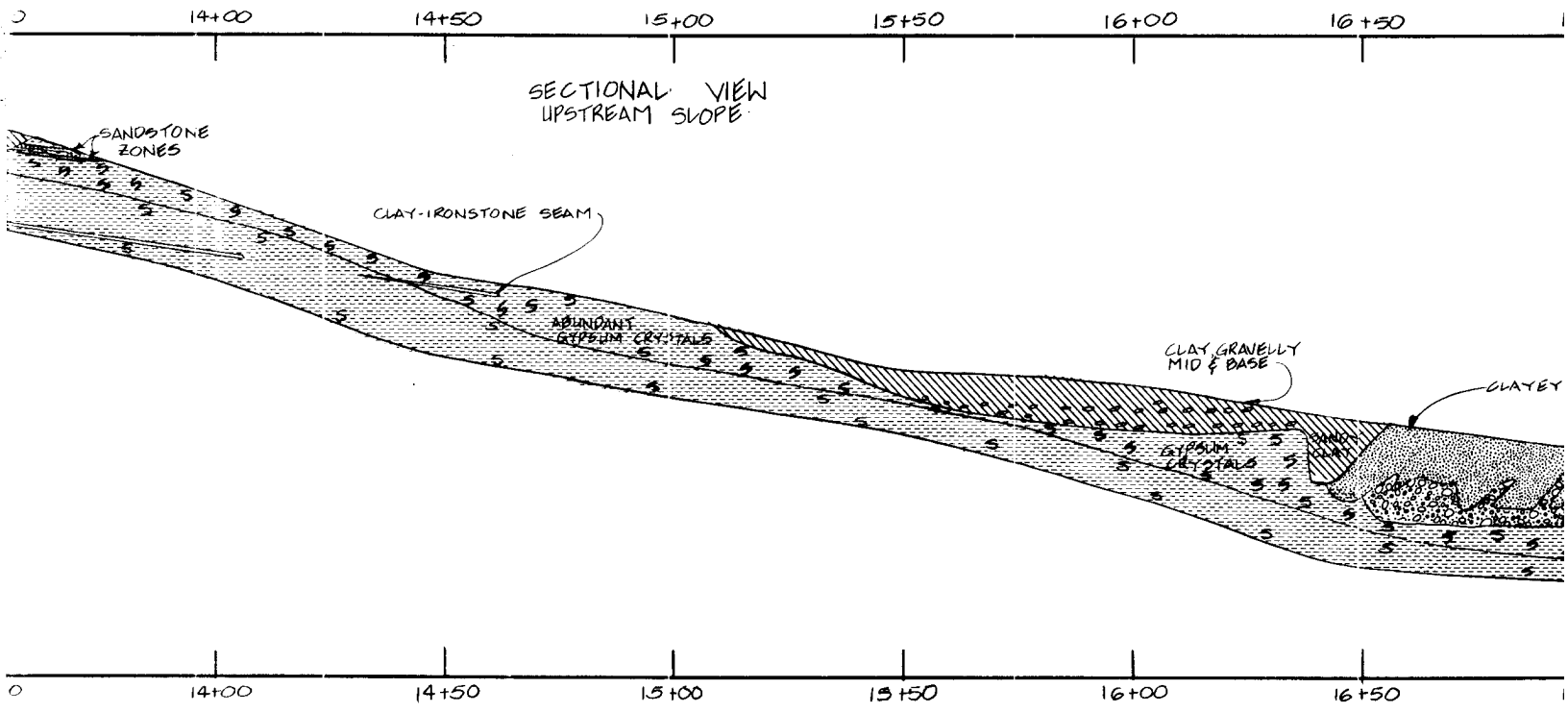
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 6+00.00 TO STA. 12+00.00

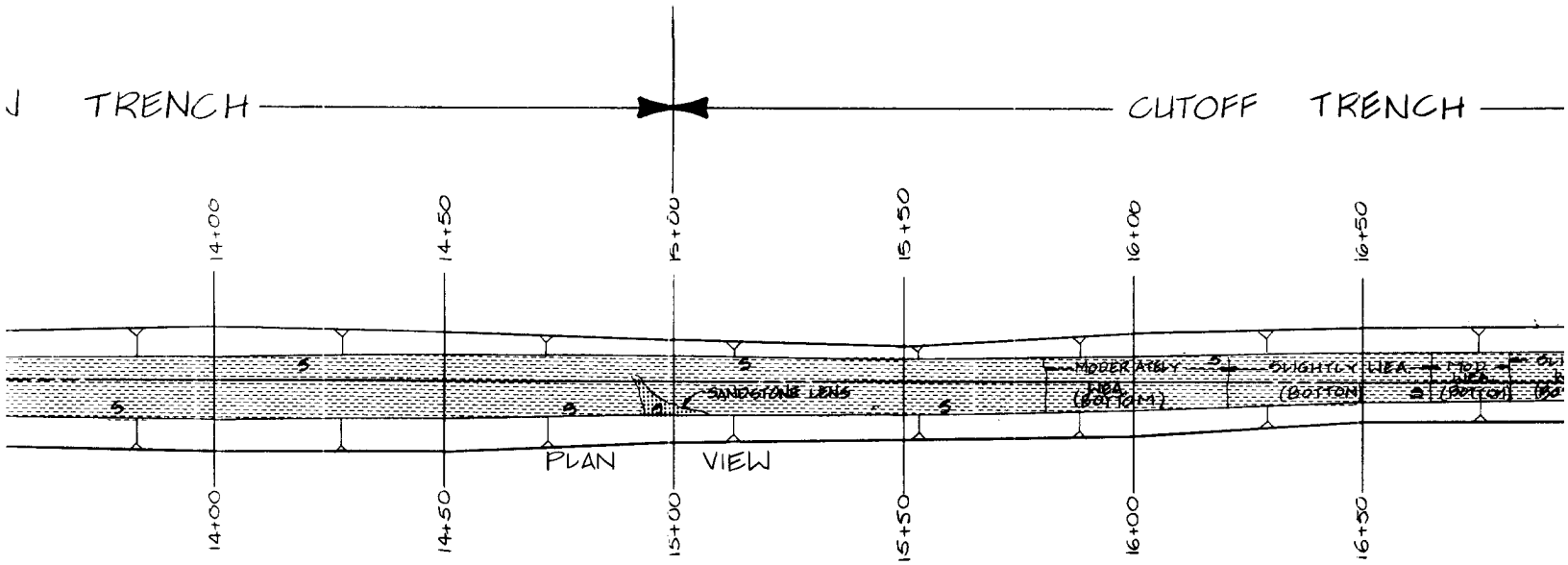
INVITATION NO. | DATE:
CONTRACT NO. | SEQUENCE NO.
DRAWING NUMBER | SHEET NO. OF | CONTRACT NO.



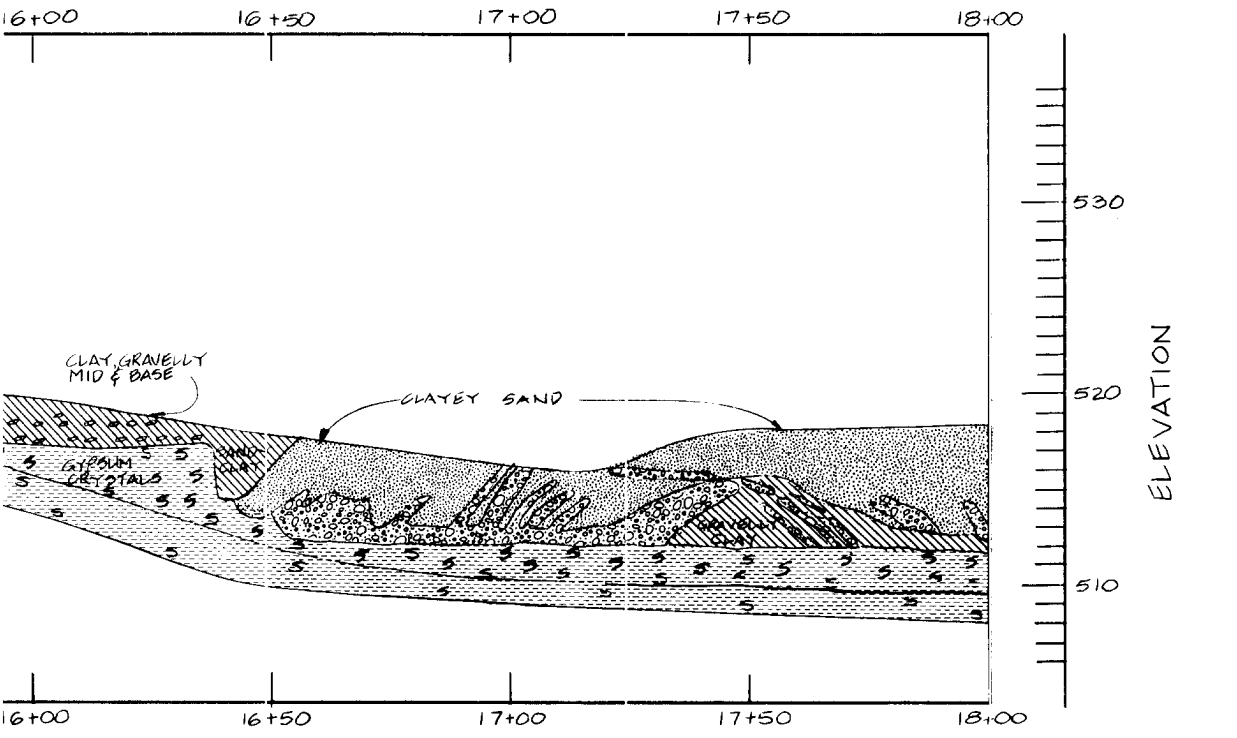
INSPECTION TRENCH



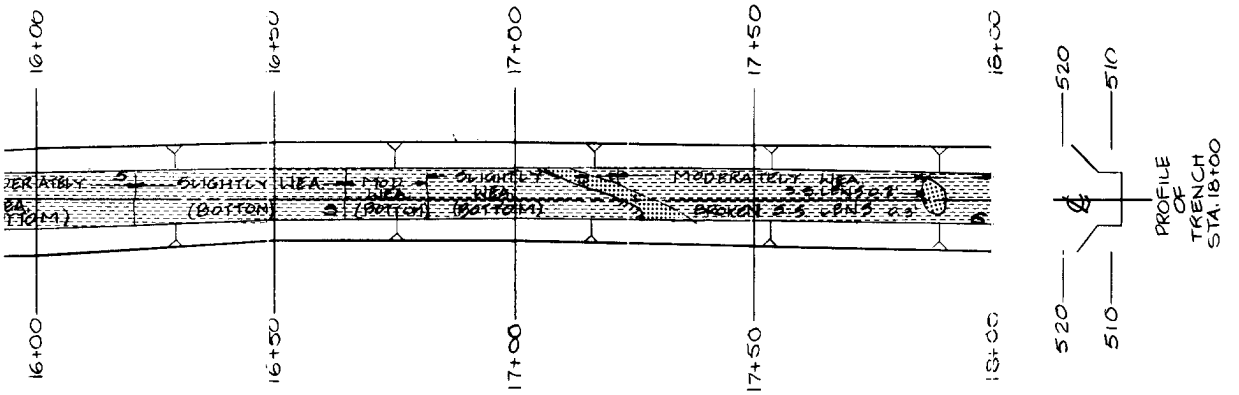




NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.



- CUTOFF TRENCH →



OR MAP SYMBOLS, REFER TO PLATE 15.

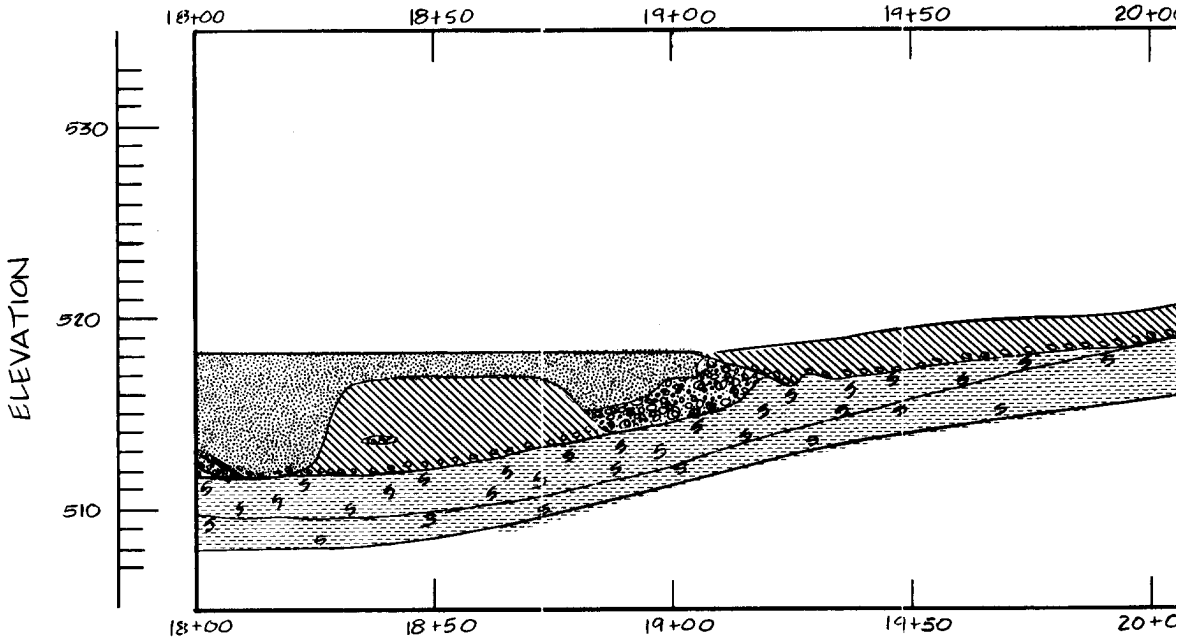
SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

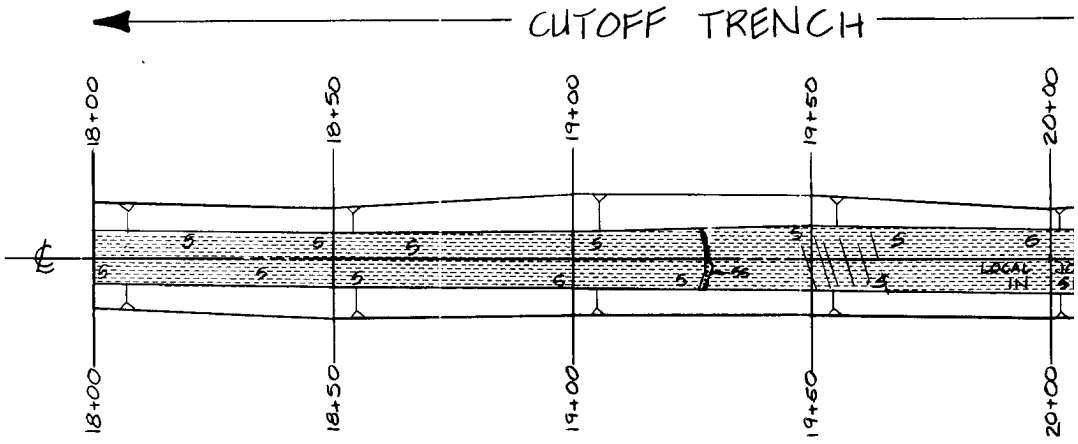
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

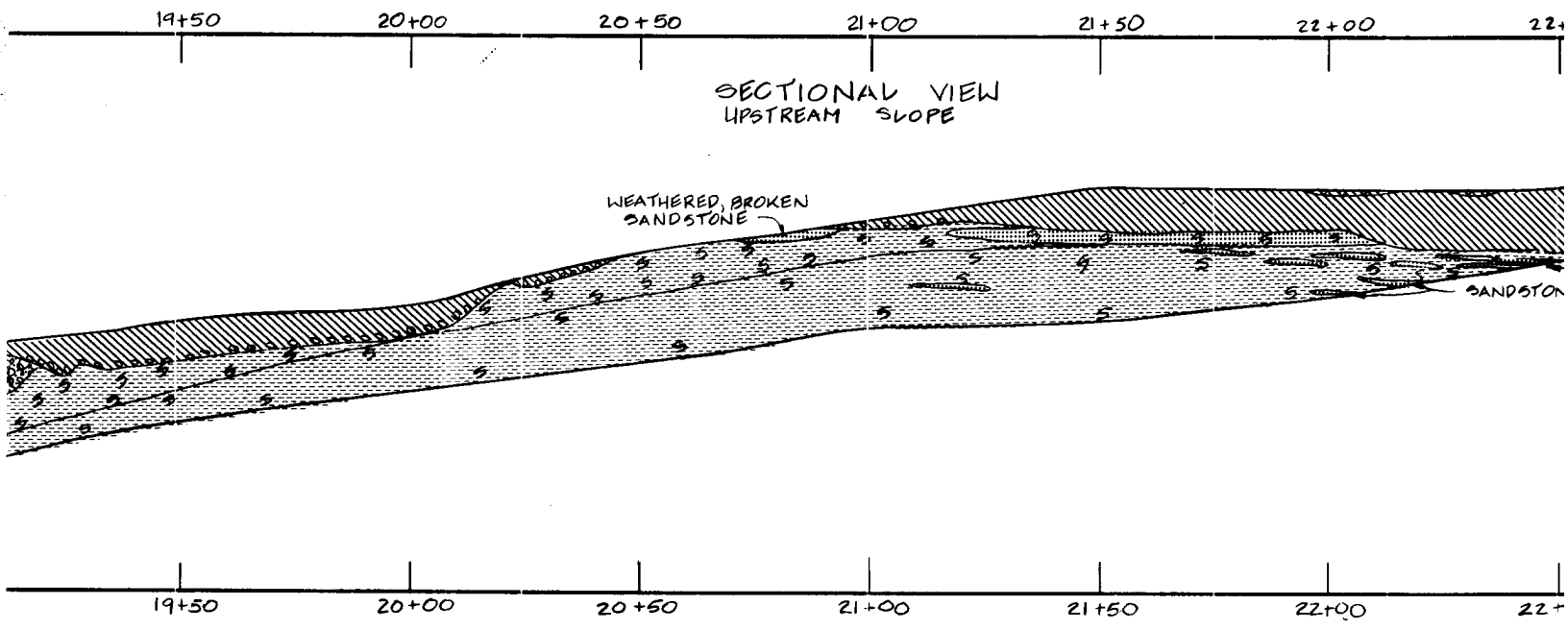
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

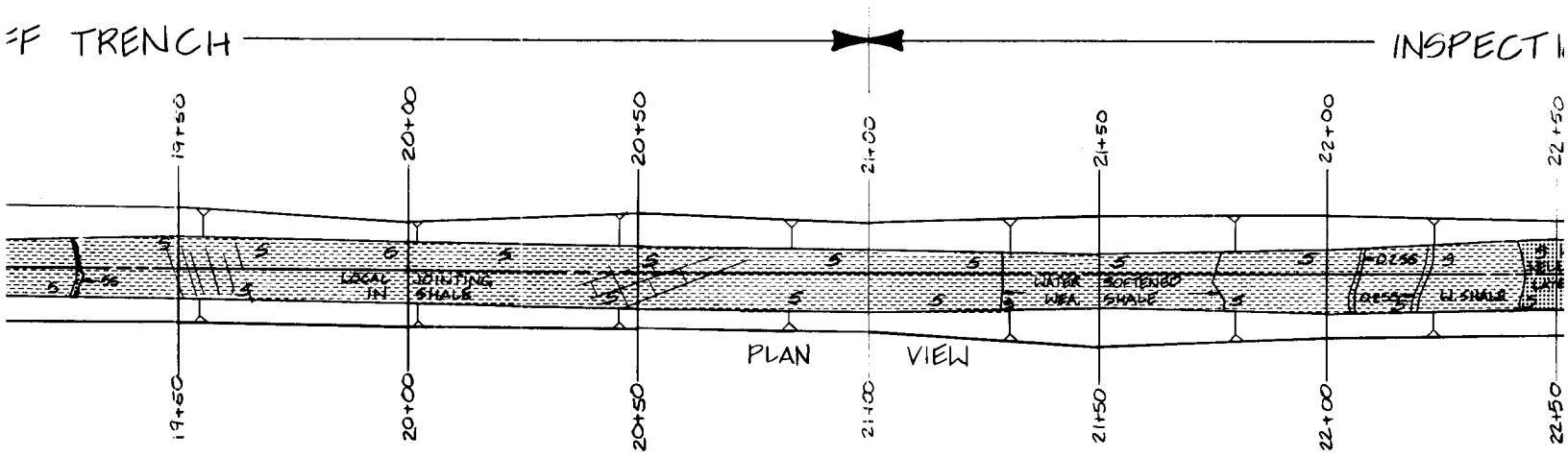
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
CUTOFF AND INSPECTION TRENCHES
GEOLOGY AND EXCAVATION
STA. 12 + 00.00 TO STA. 18 + 00.00

SUBMITTED BY: ROBERT BEHM
ENGINEER:
INVITATION NO.
DATE:
CONTRACT NO.
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO.
CONTRACT NO.

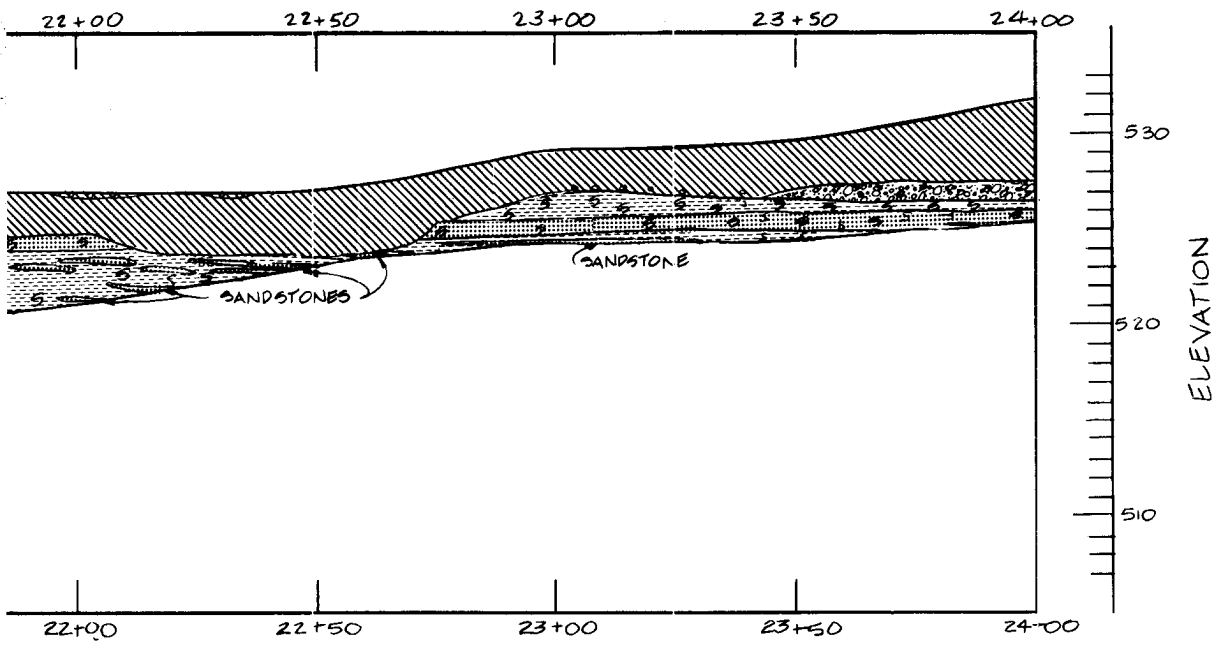

18+00
18+50
19+00
19+50
530
520
510
ELEVATION


CUTOFF TRENCH
18+00
18+50
19+00
19+50
20+00

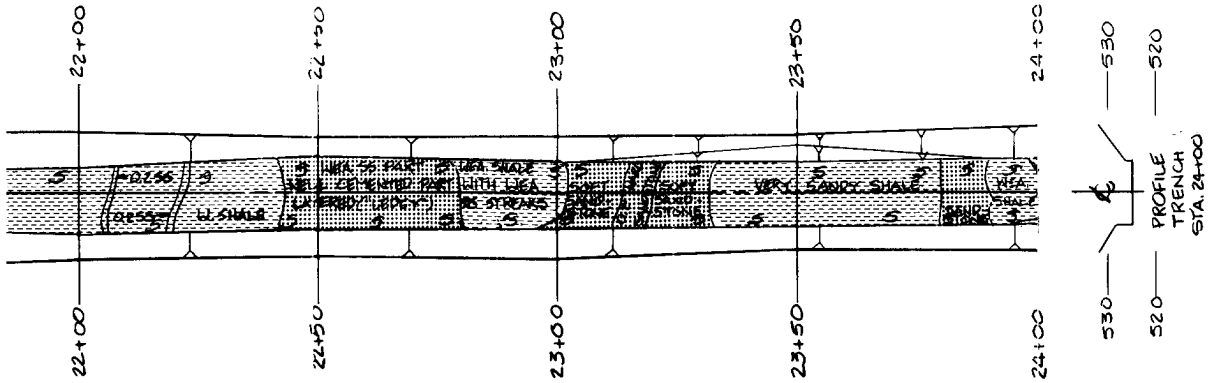




NOTE:
1. FOR MAP SYMBOLS, REFER



INSPECTION TRENCH



OTE:
. FOR MAP SYMBOLS, REFER TO PLATE 16.

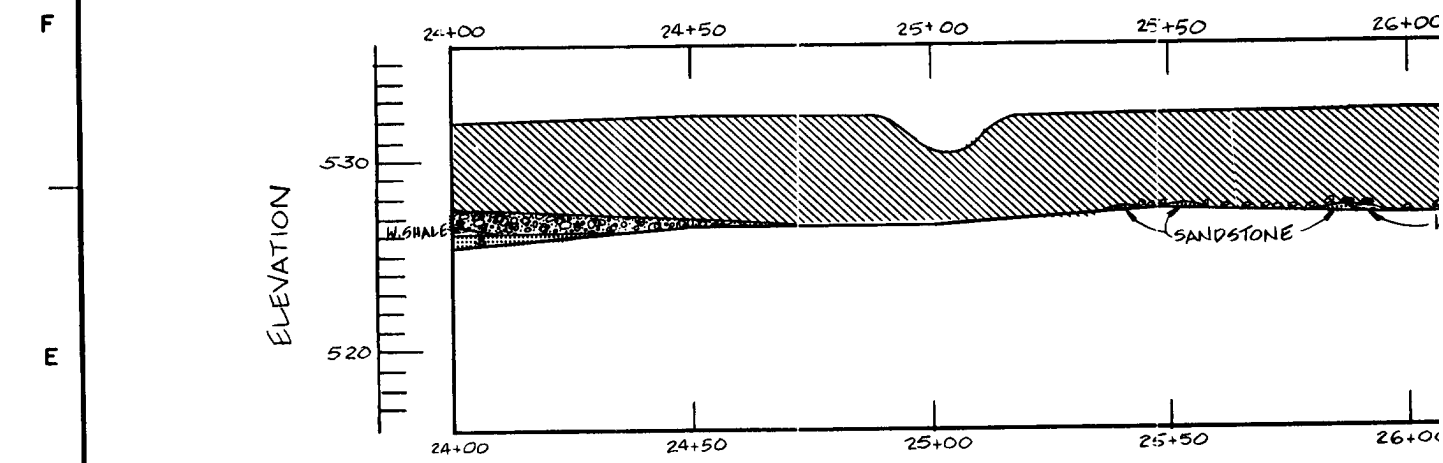
SYM.	DG. NO.	ACTION	DATE	DESCRIPTION OF REVISION

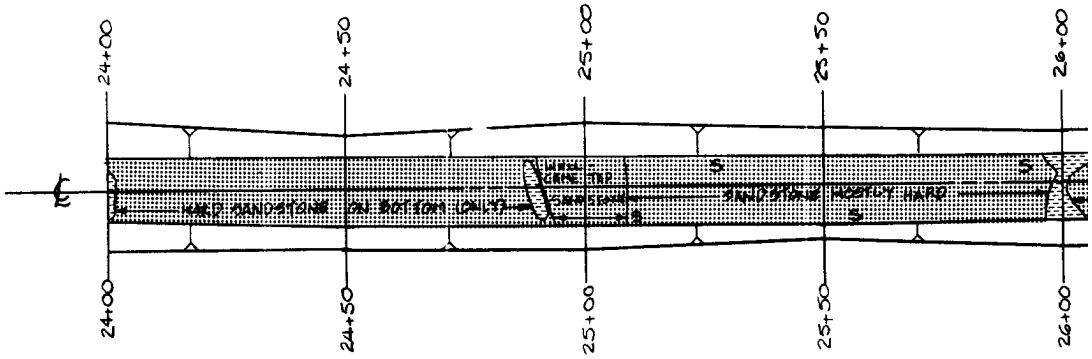
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

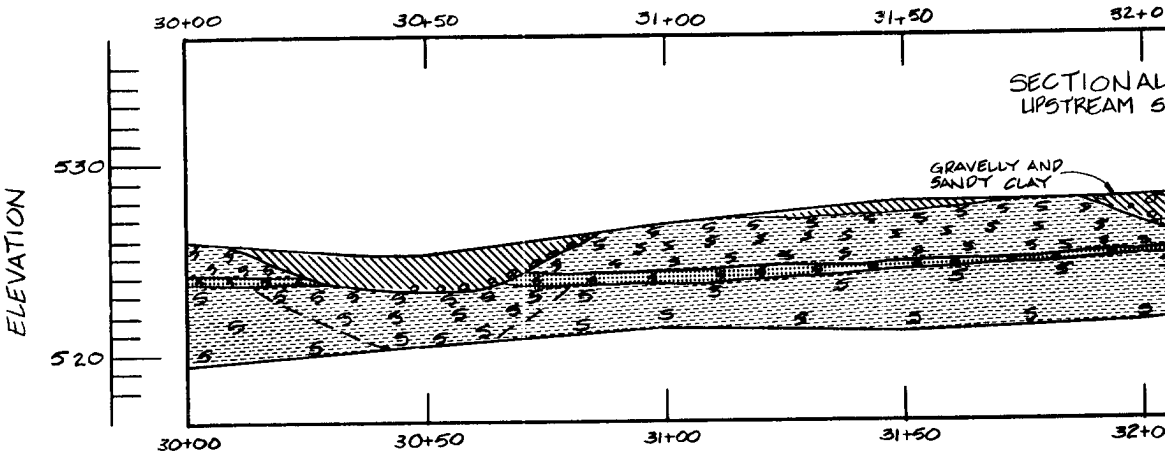
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

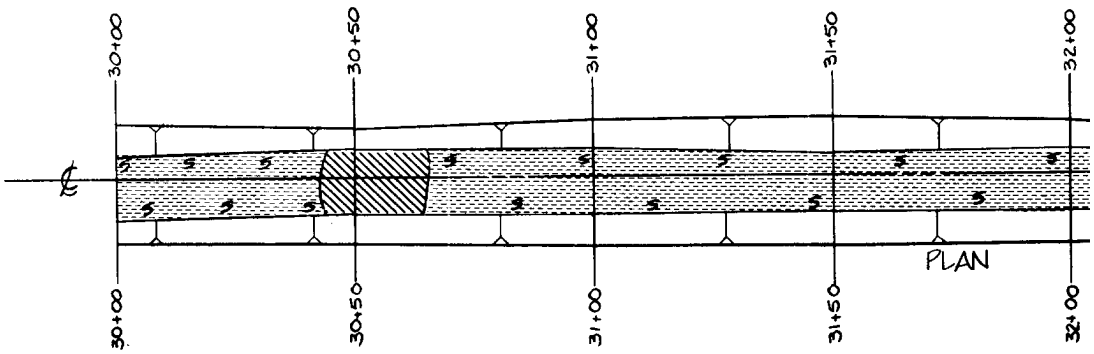
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
CUTOFF AND INSPECTION TRENCHES
GEOLOGY AND EXCAVATION
STA. 18+00.00 TO STA. 24+00.00

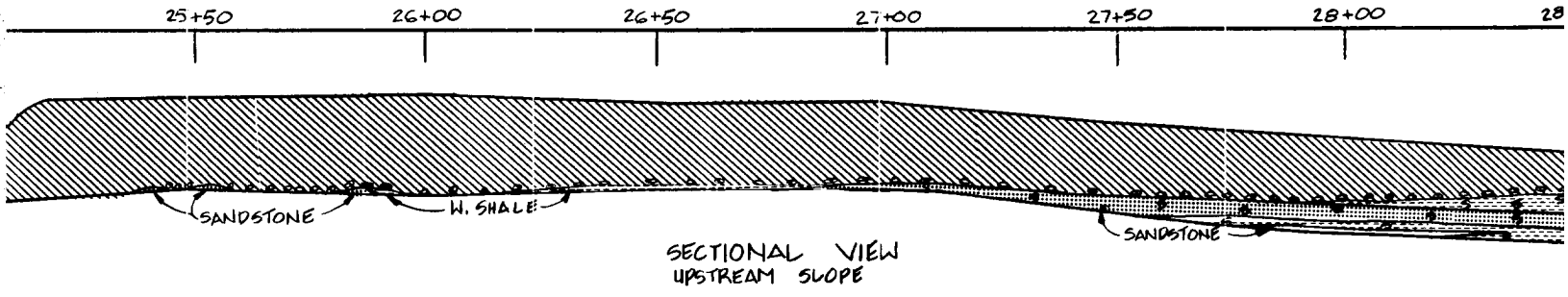
SUBMITTED BY: ROBERT BEHM
ENGINEER:
INVITATION NO.
DATE:
CONTRACT NO.
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO.
CONTRACT NO.


24+00
24+50
25+00
25+50
26+00
530
520
ELEVATION
W.SHALE
SANDSTONE

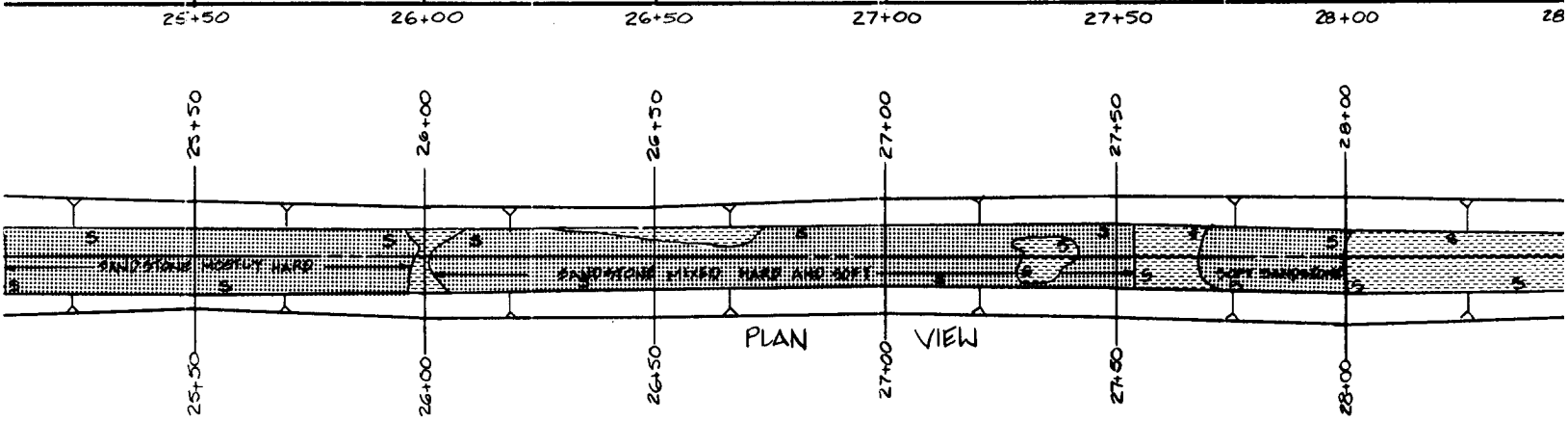

24+00
24+50
25+00
25+50
26+00
HARD SANDSTONE ON BOTTOM ONLY
SANDSTONE MOSTLY HARD


30+00
30+50
31+00
31+50
530
520
ELEVATION
GRAVELLY AND SANDY CLAY

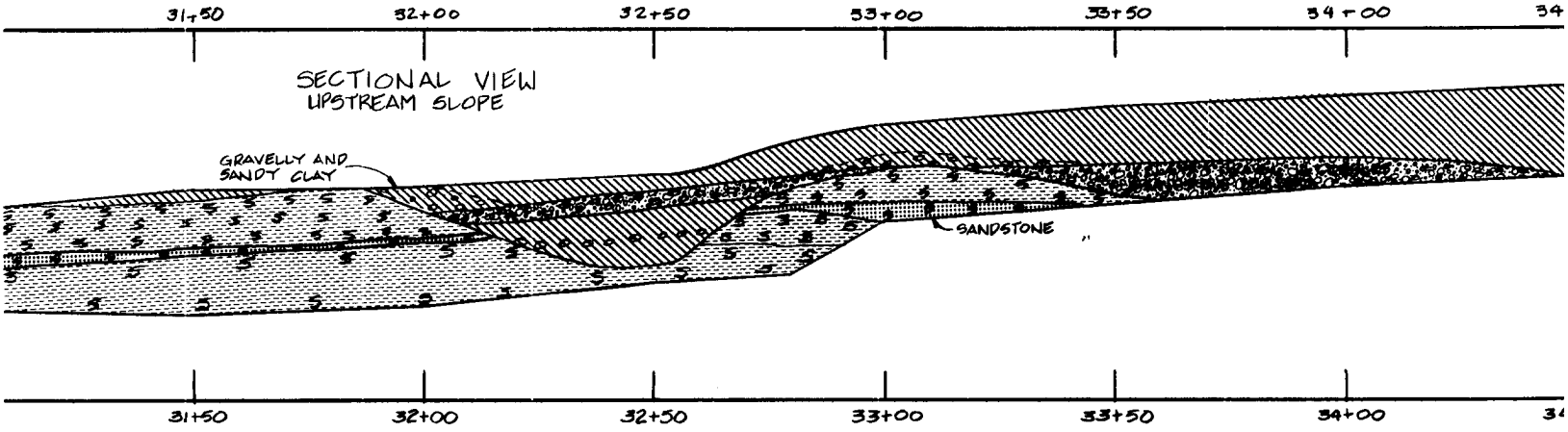

30+00
30+50
31+00
31+50
32+00
PLAN



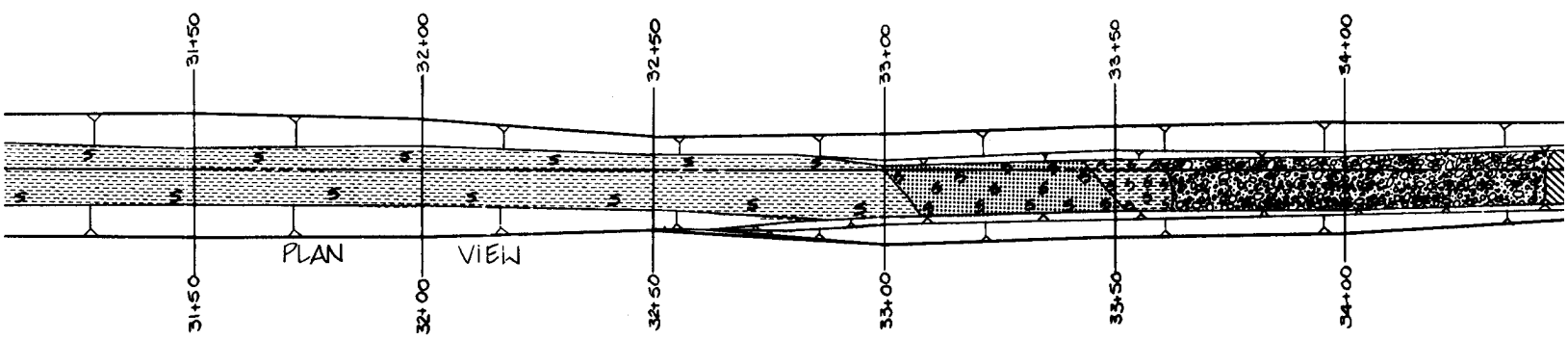
SECTIONAL VIEW
UPSTREAM SLOPE



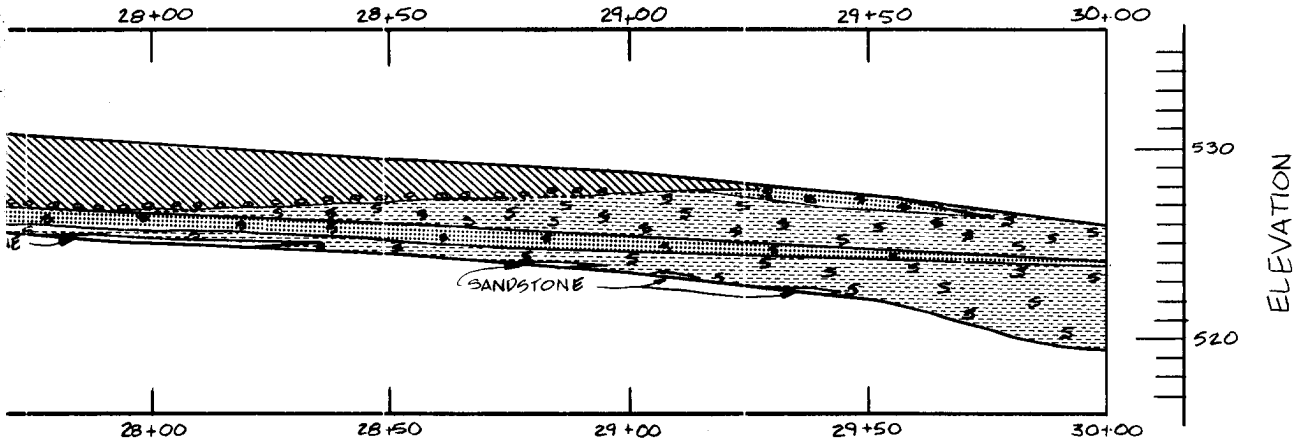
PLAN VIEW

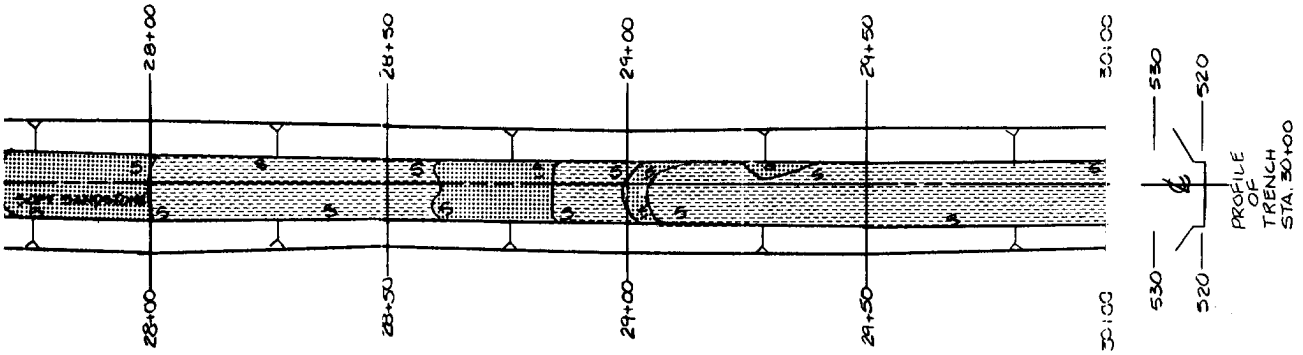


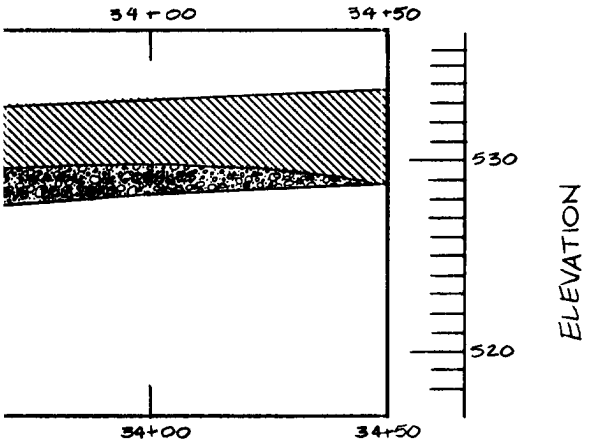
SECTIONAL VIEW
UPSTREAM SLOPE



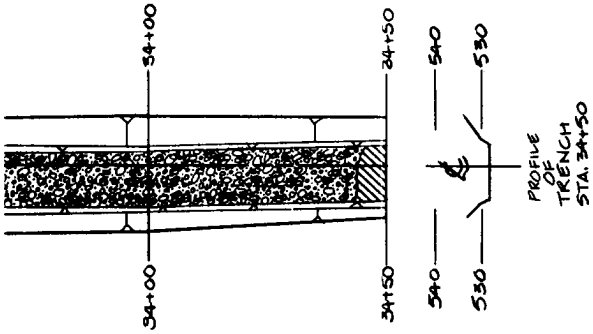
PLAN VIEW







NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.



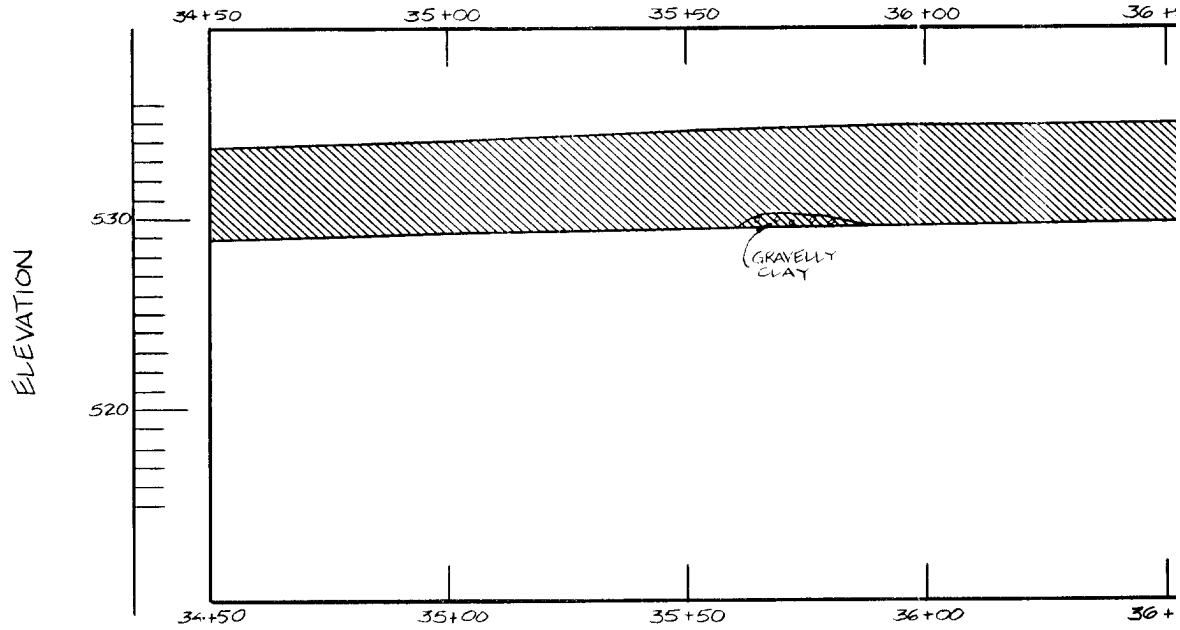
SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

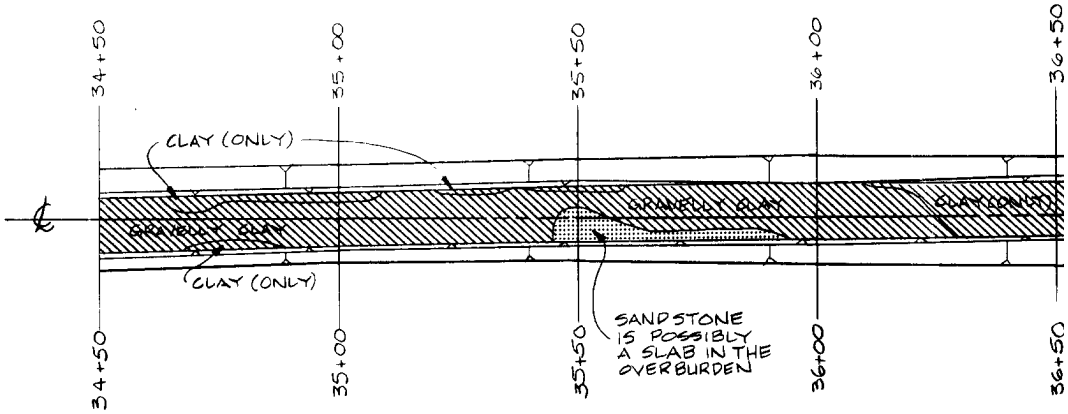
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

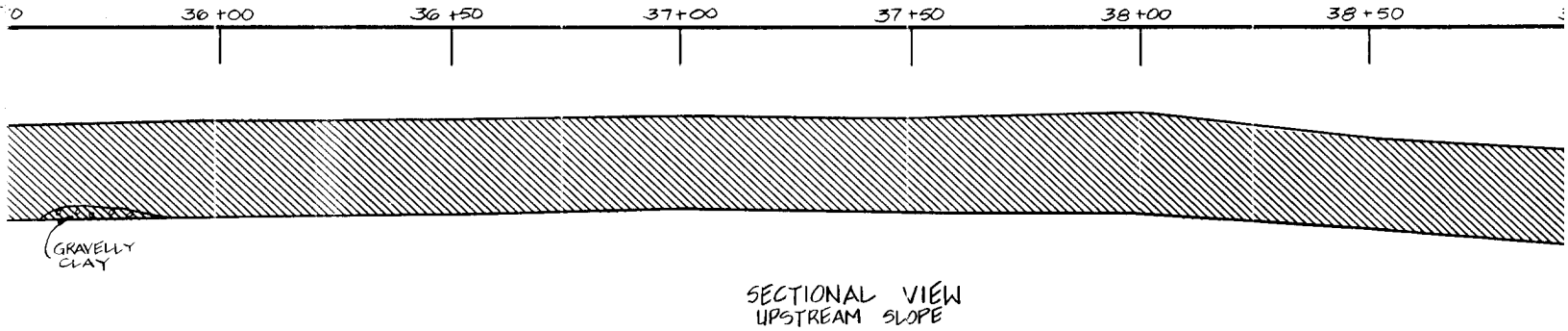
DESIGNED BY: G. RIEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 24+00.00 TO STA. 34+50.00

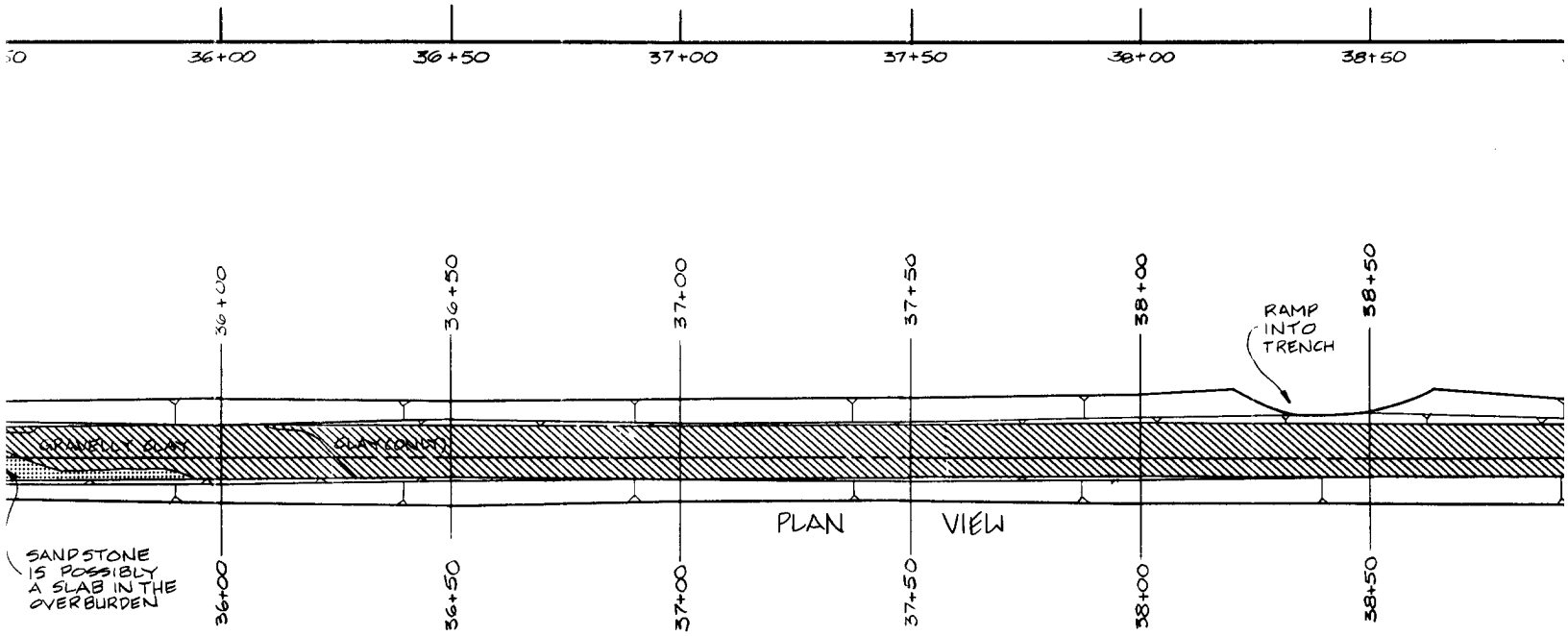
SUBMITTED BY: ROBERT BEHM
ENGINEER:
INVITATION NO.
DATE:
CONTRACT NO.
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO.
CONTRACT NO.


34+50
35+00
35+50
36+00
530
520
ELEVATION
GRAVELLY CLAY


34+50
35+00
35+50
36+00
CLAY (ONLY)
GRAVELLY CLAY
CLAY (ONLY)
SANDSTONE IS POSSIBLY A SLAB IN THE OVERBURDEN

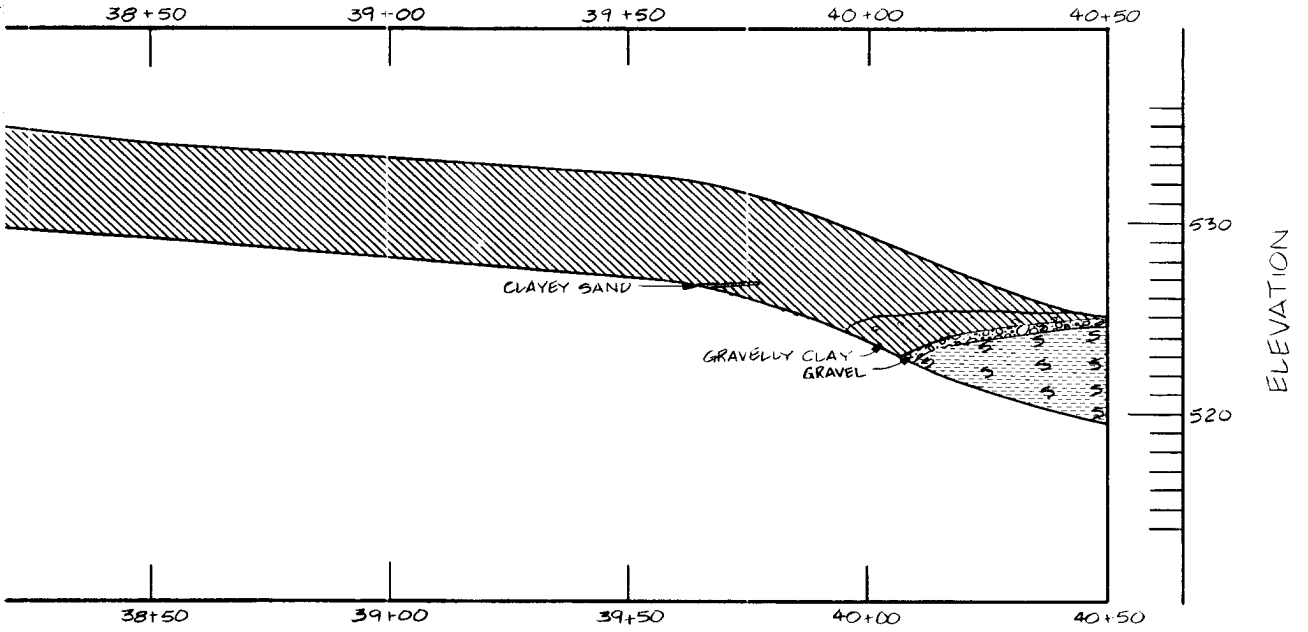


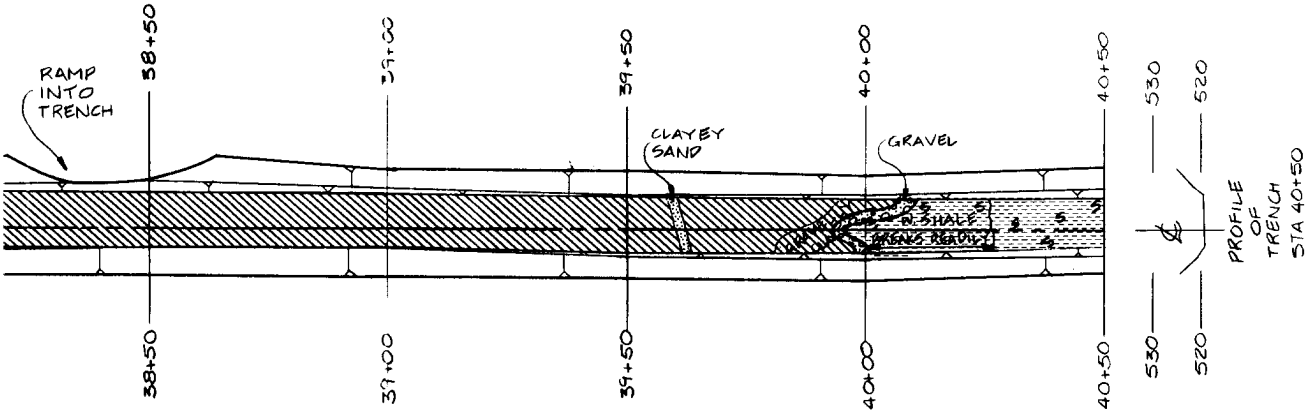
SECTIONAL VIEW
UPSTREAM SLOPE



PLAN VIEW

NOTE:
1. FOR MAP SY





NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.

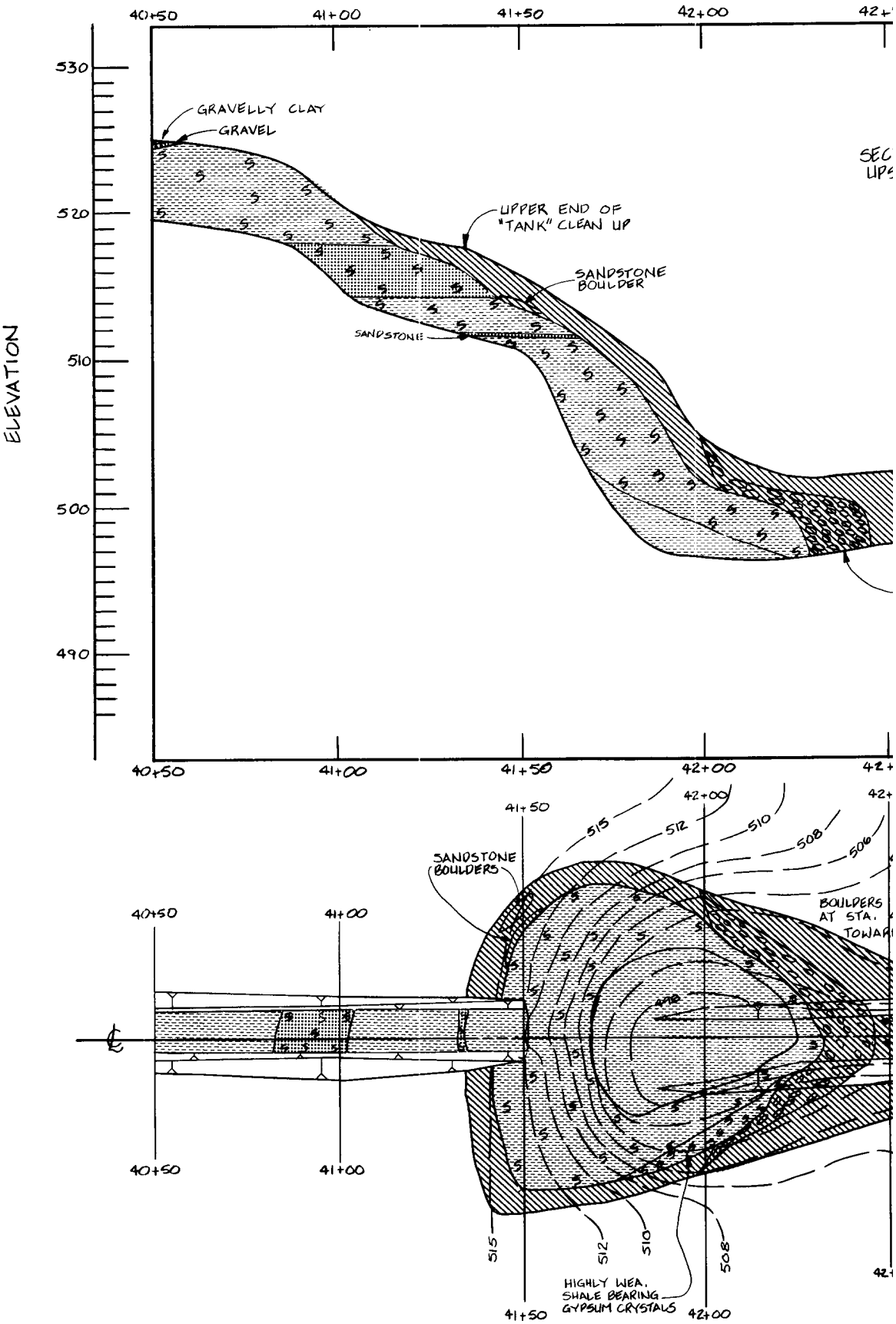
SYM.	DQ. NO.	ACTION	DATE	DESCRIPTION OF REVISION

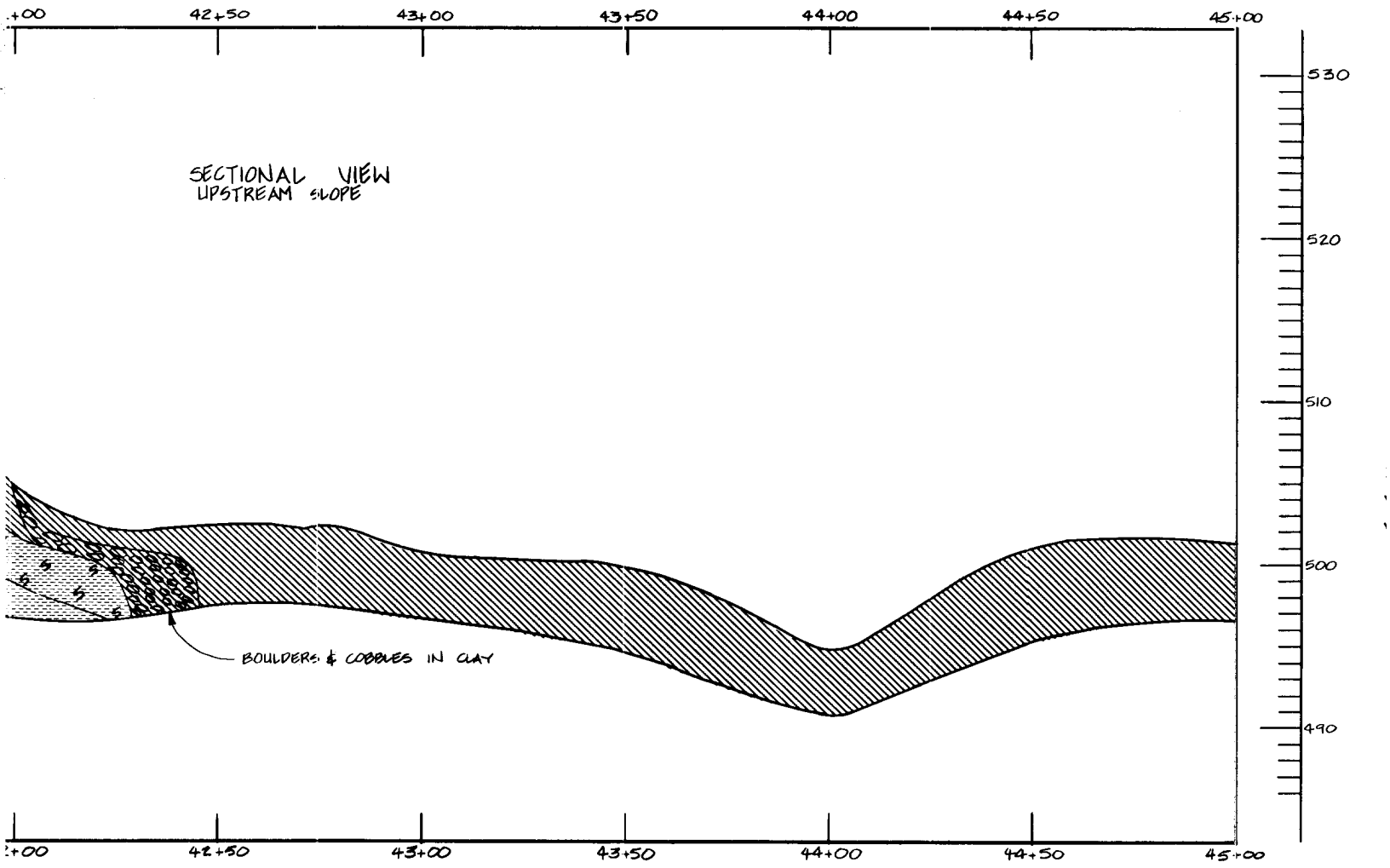
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

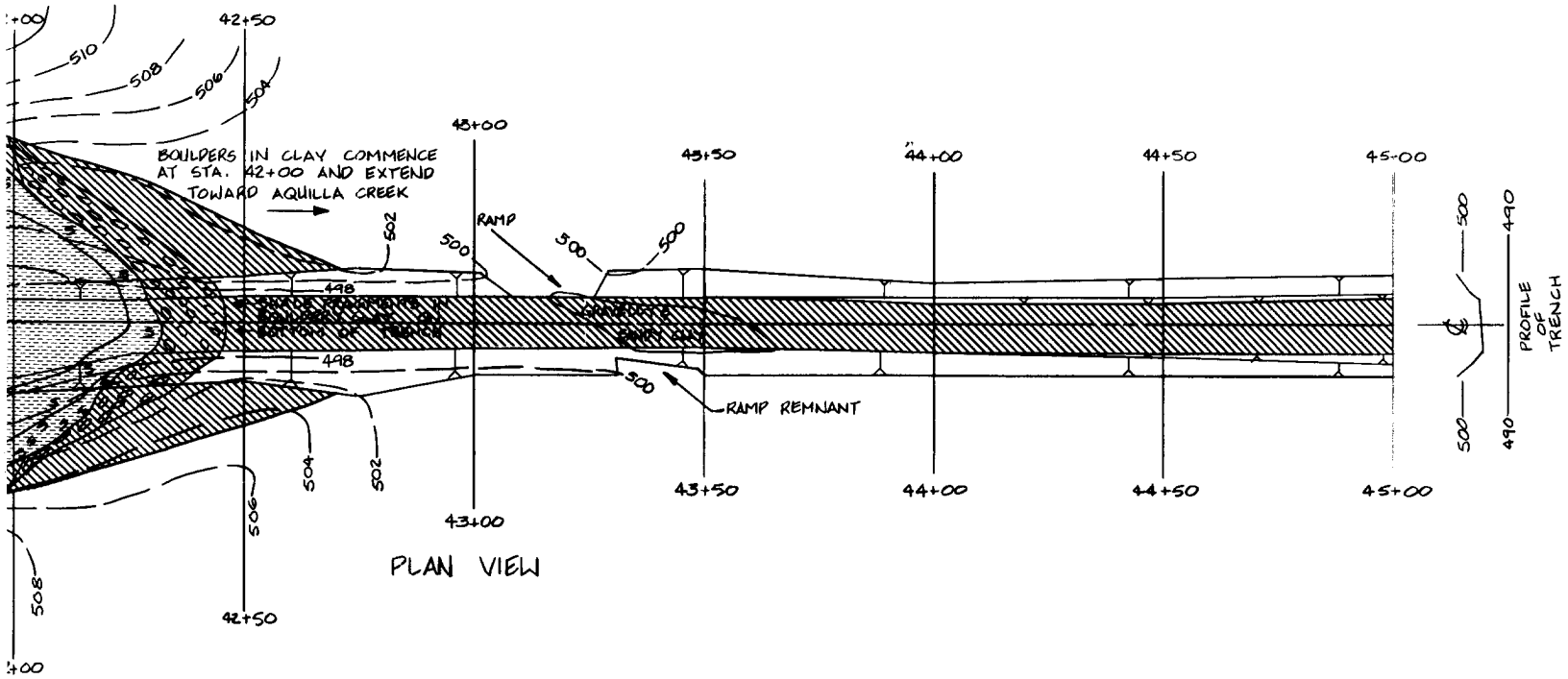
DESIGNED BY: G.RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM
ENGINEER:

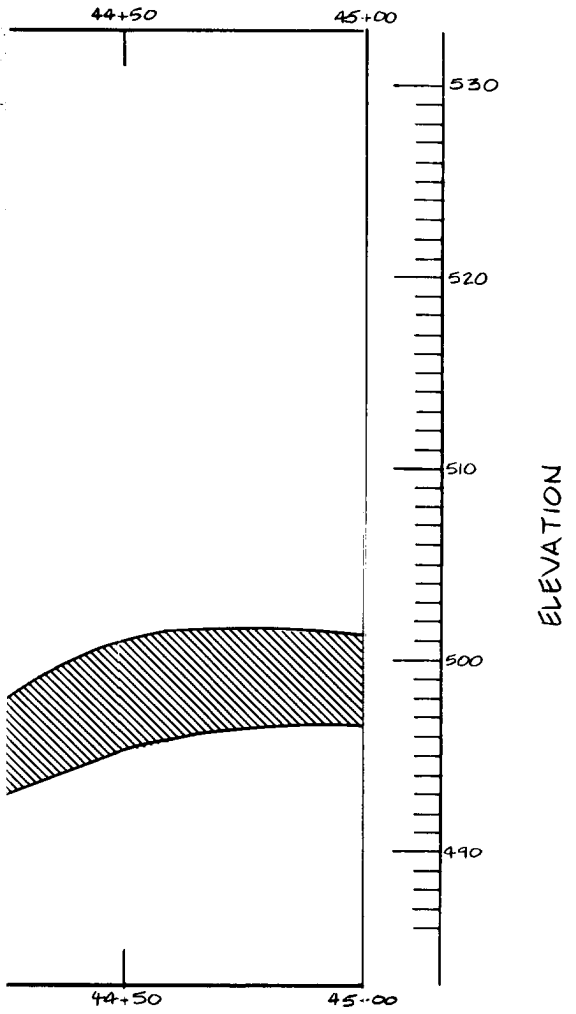
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 34+50.00 TO STA. 40+50.00

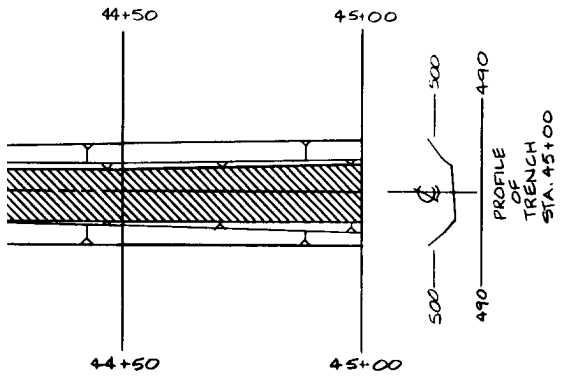
INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.


40+50
41+00
41+50
42+00
530
520
510
500
490
ELEVATION
GRAVELLY CLAY
GRAVEL
UPPER END OF "TANK" CLEAN UP
SANDSTONE BOULDER
SANDSTONE
SANDSTONE BOULDERS
515
512
510
508
506
HIGHLY WEA. SHALE BEARING GYPSUM CRYSTALS


42+00
42+50
43+00
43+50
44+00
44+50
45+00
530
520
510
500
490
SECTIONAL VIEW
UPSTREAM SLOPE
BOULDERS & COBBLES IN CLAY


42+00
42+50
43+00
43+50
44+00
44+50
45+00
510
508
506
504
BOULDERS IN CLAY COMMENCE AT STA. 42+00 AND EXTEND TOWARD AQUILLA CREEK
502
500
RAMP
498
RAMP REMNANT
PROFILE OF TRENCH
PLAN VIEW





NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.

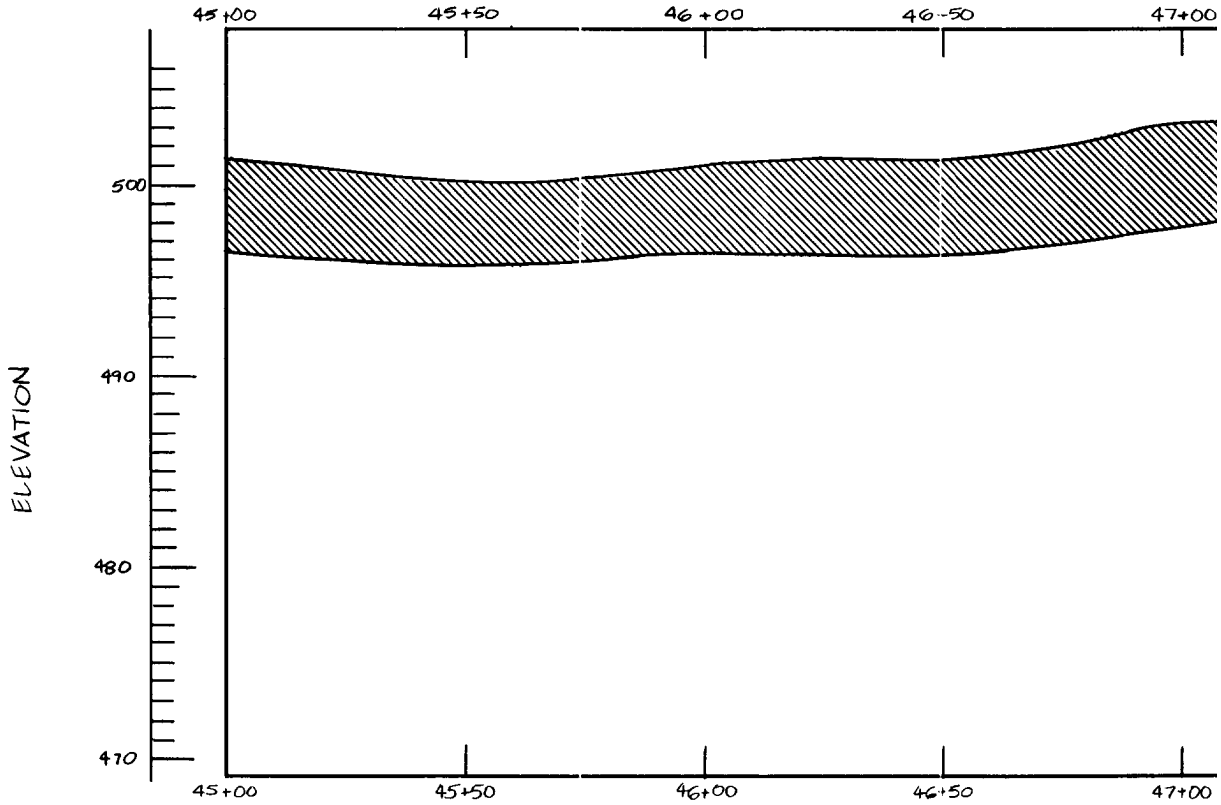
SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

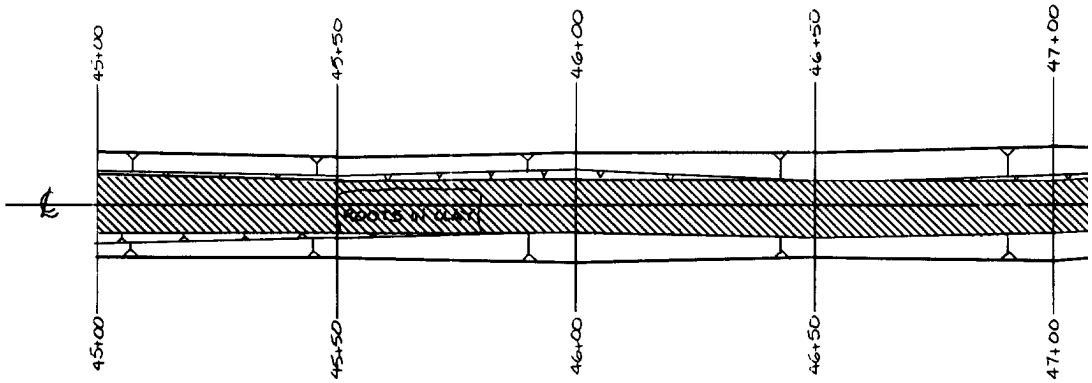
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

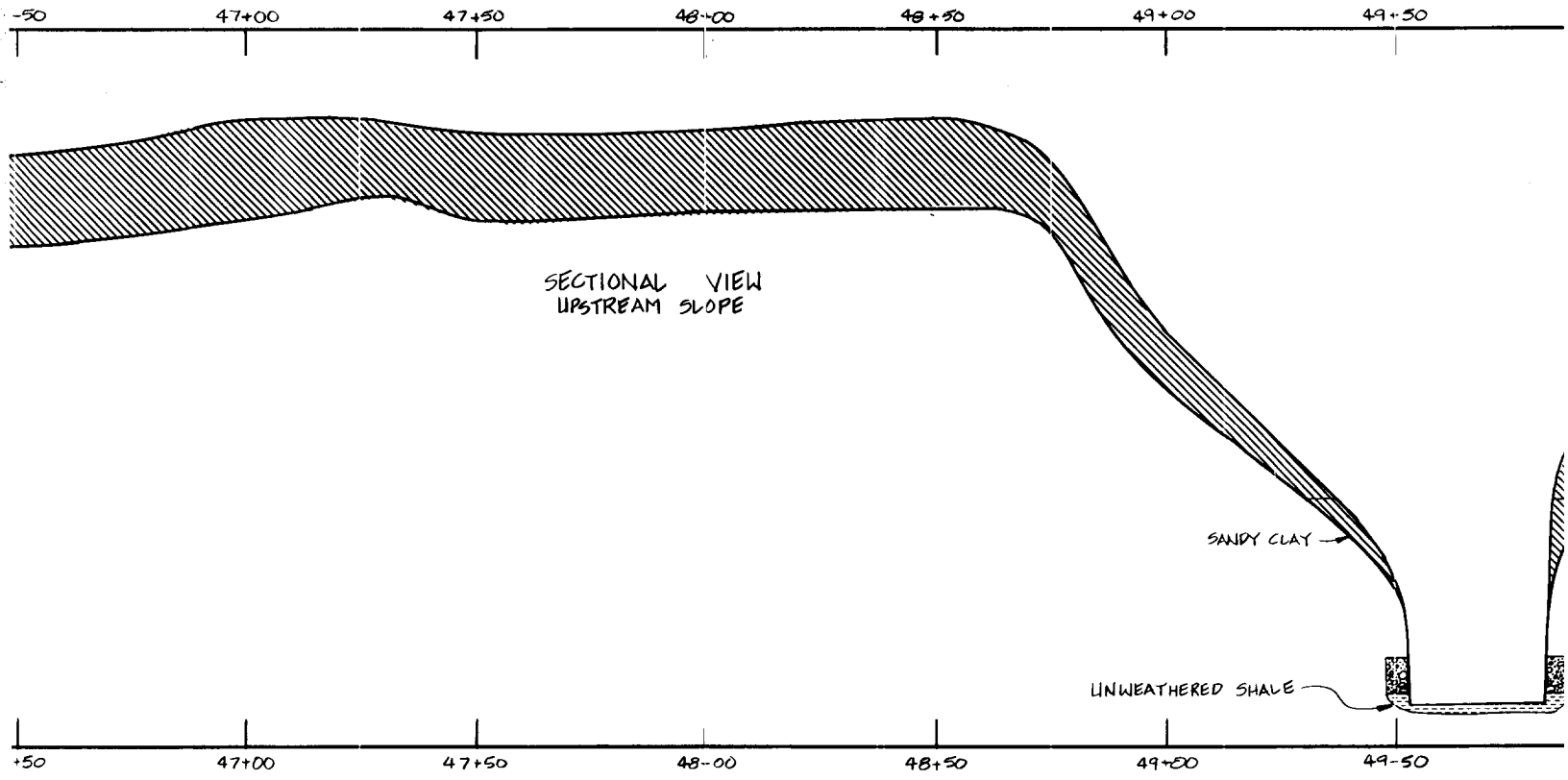
DESIGNED BY: G.RUEDE
DRAWN BY: C.KIRBY
REVIEWED BY:

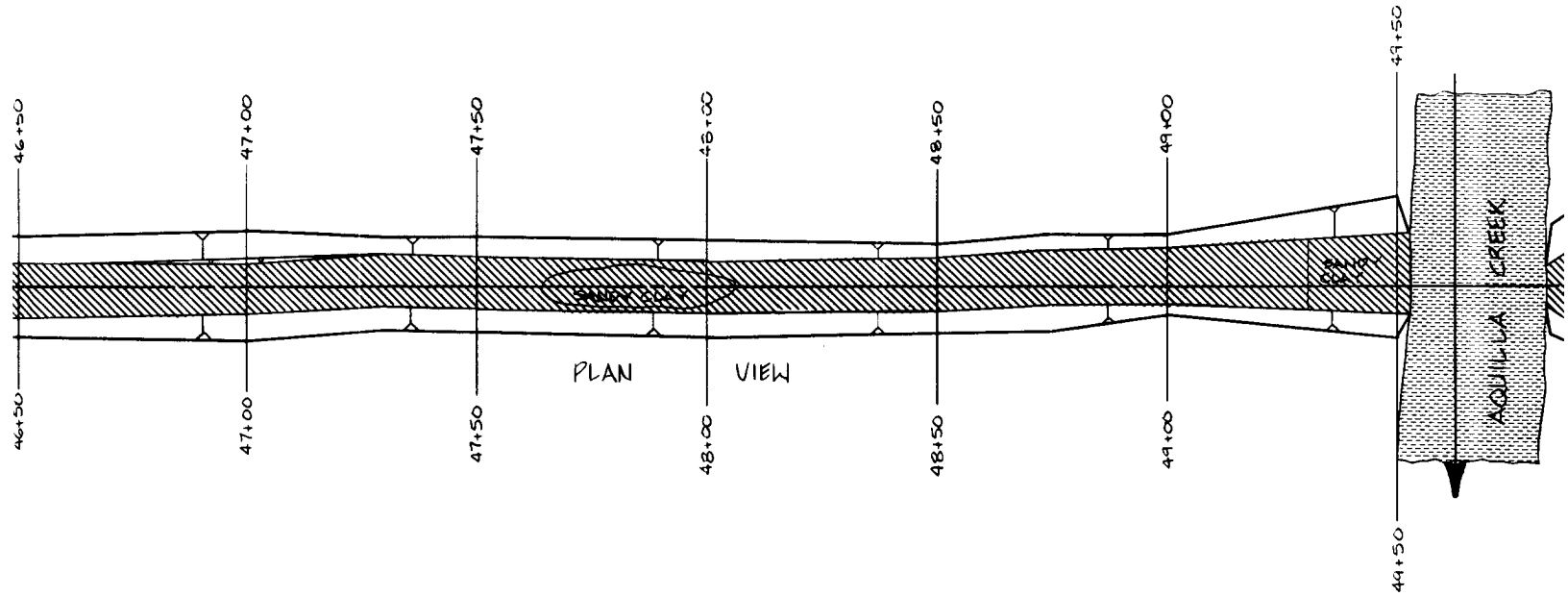
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 40+50.00 TO STA. 45+00.00

SUBMITTED BY:
ENGINEER:
INVITATION NO.
DATE:
CONTRACT NO.
DRAWING NUMBER
SHEET NO.
OF
SEQUENCE NO.
CONTRACT NO.

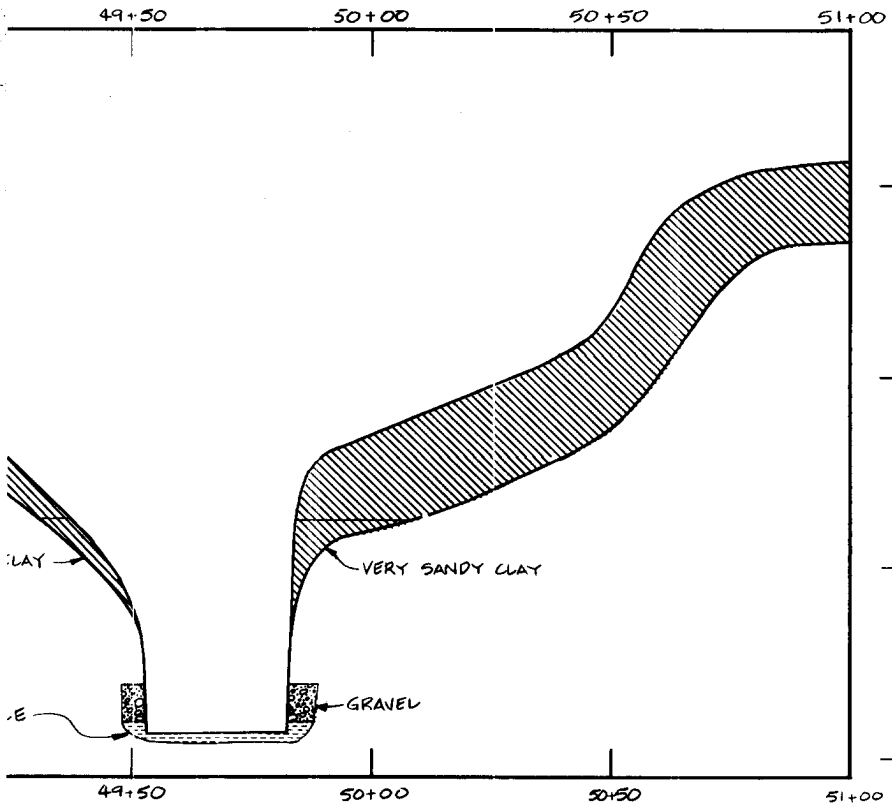

45+00
45+50
46+00
46+50
47+00
500
490
480
470
ELEVATION

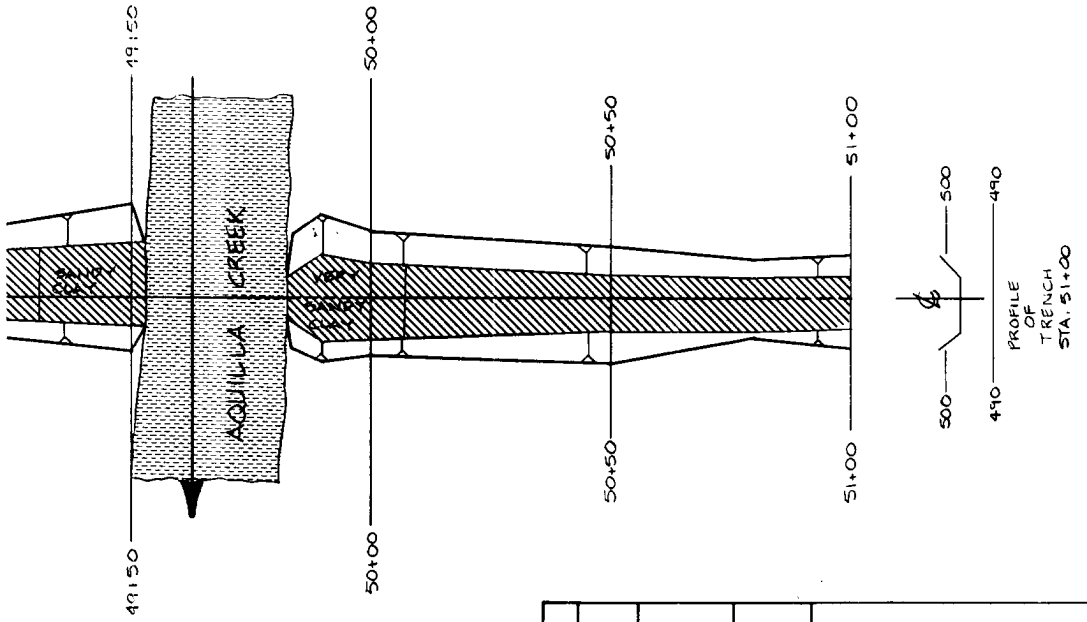

45+00
45+50
46+00
46+50
47+00
ROOTS IN CLAY





NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.





REFER TO PLATE 16.

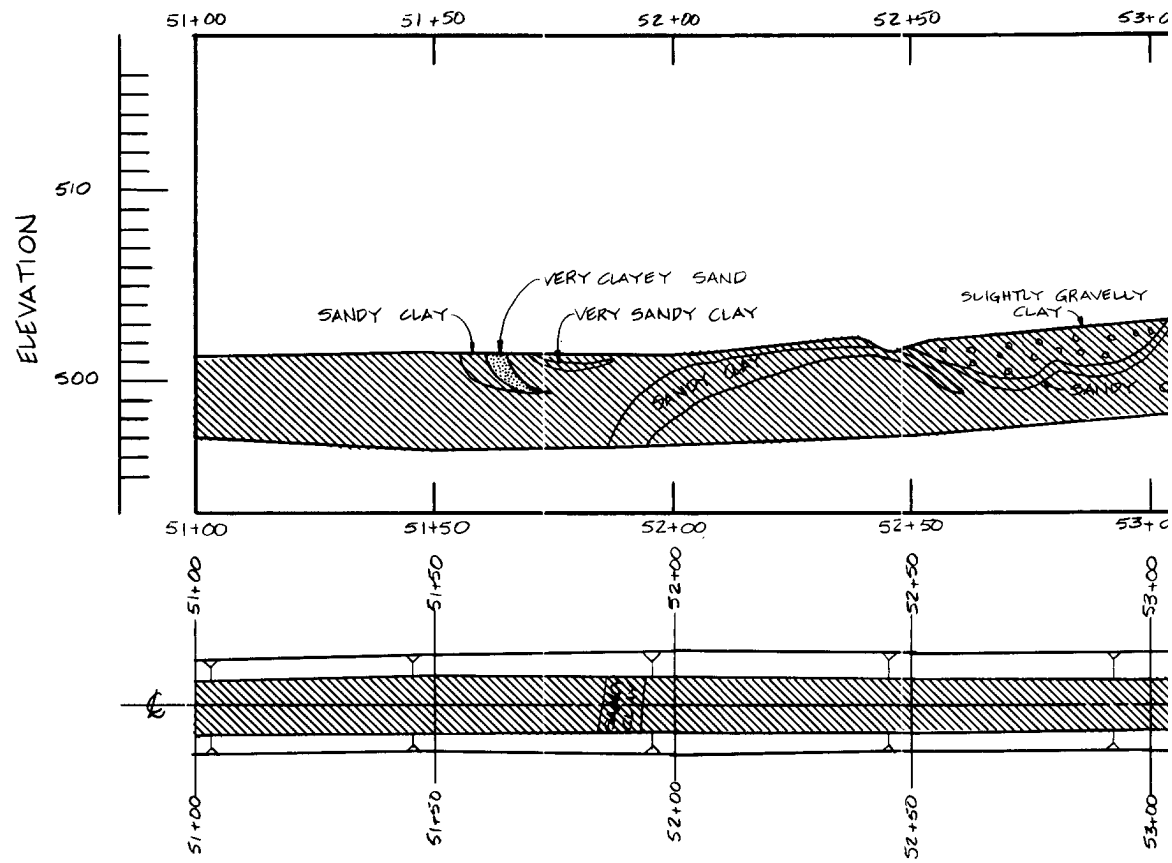
SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

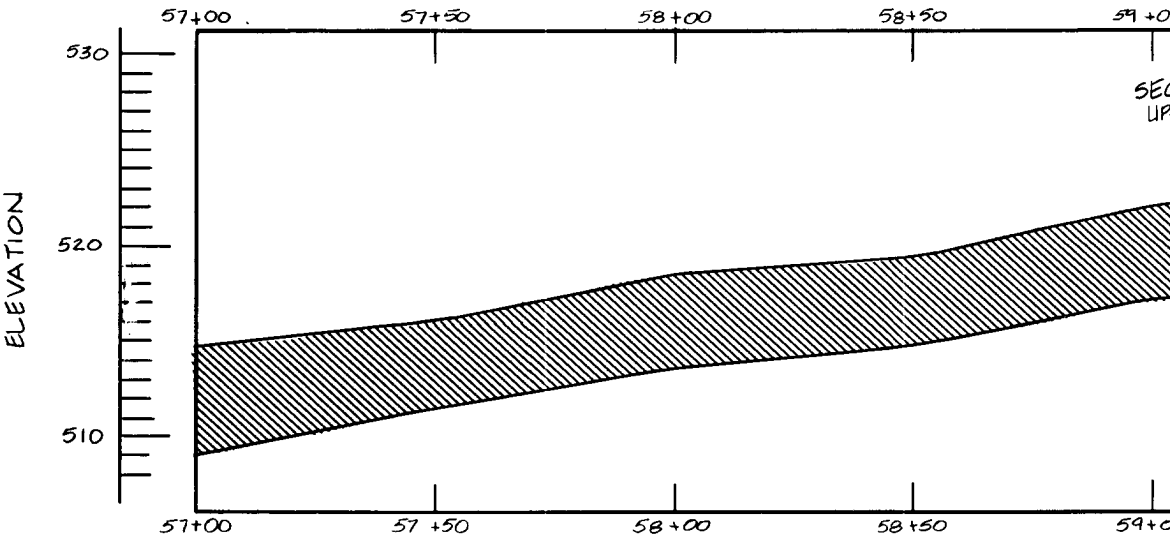
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM
ENGINEER:

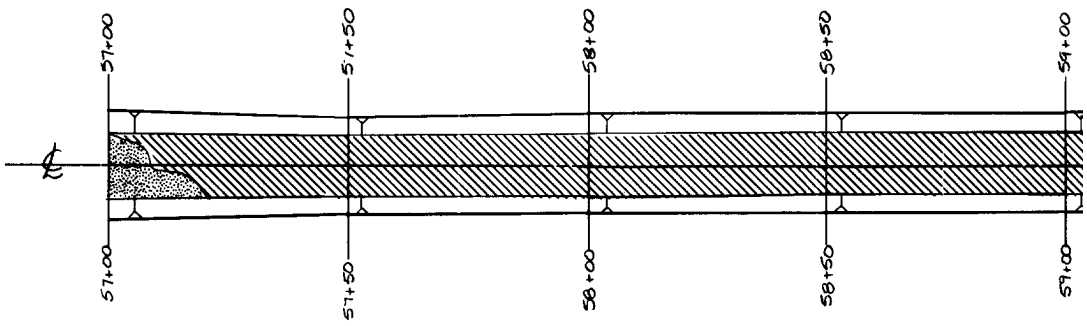
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 45 + 00.00 TO STA. 51 + 00.00

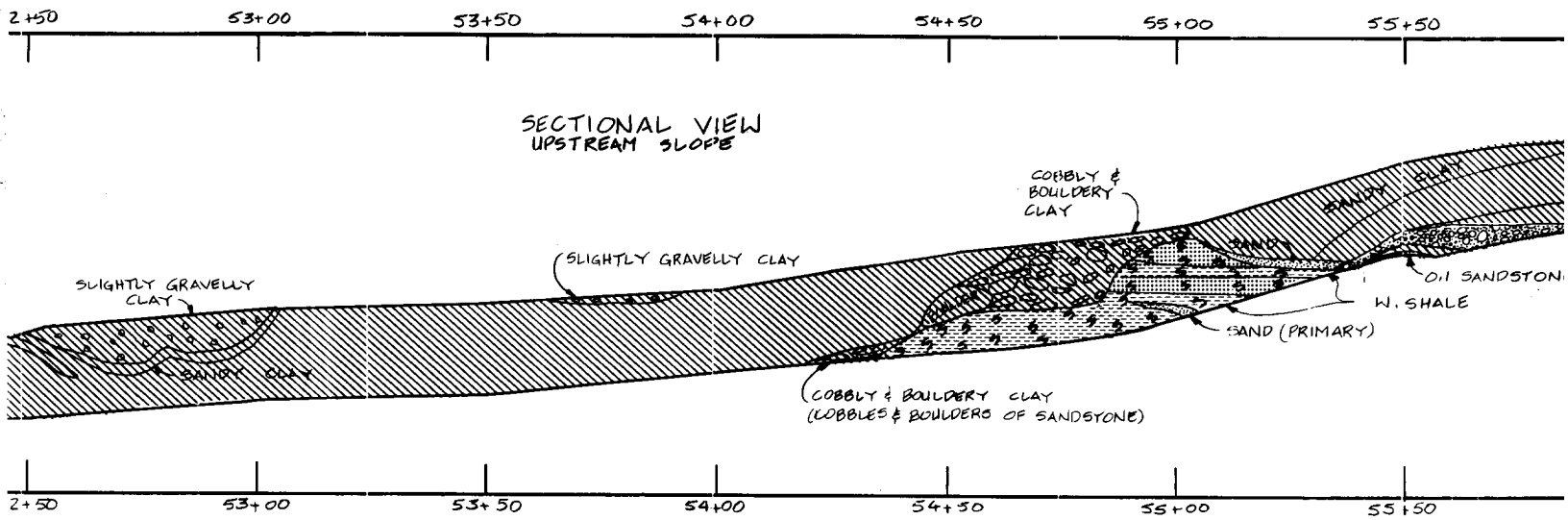
INVITATION NO. | DATE:
CONTRACT NO. | SEQUENCE NO.
DRAWING NUMBER | SHEET NO. OF
CONTRACT NO.

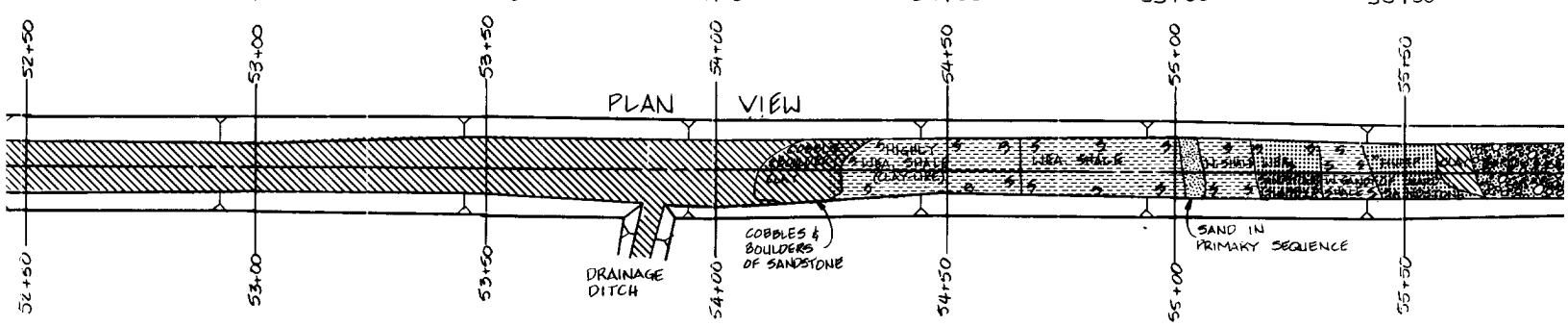

51+00
51+50
52+00
52+50
53+00
ELEVATION
510
500
SANDY CLAY
VERY CLAYEY SAND
VERY SANDY CLAY
SLIGHTLY GRAVELLY CLAY
SANDY

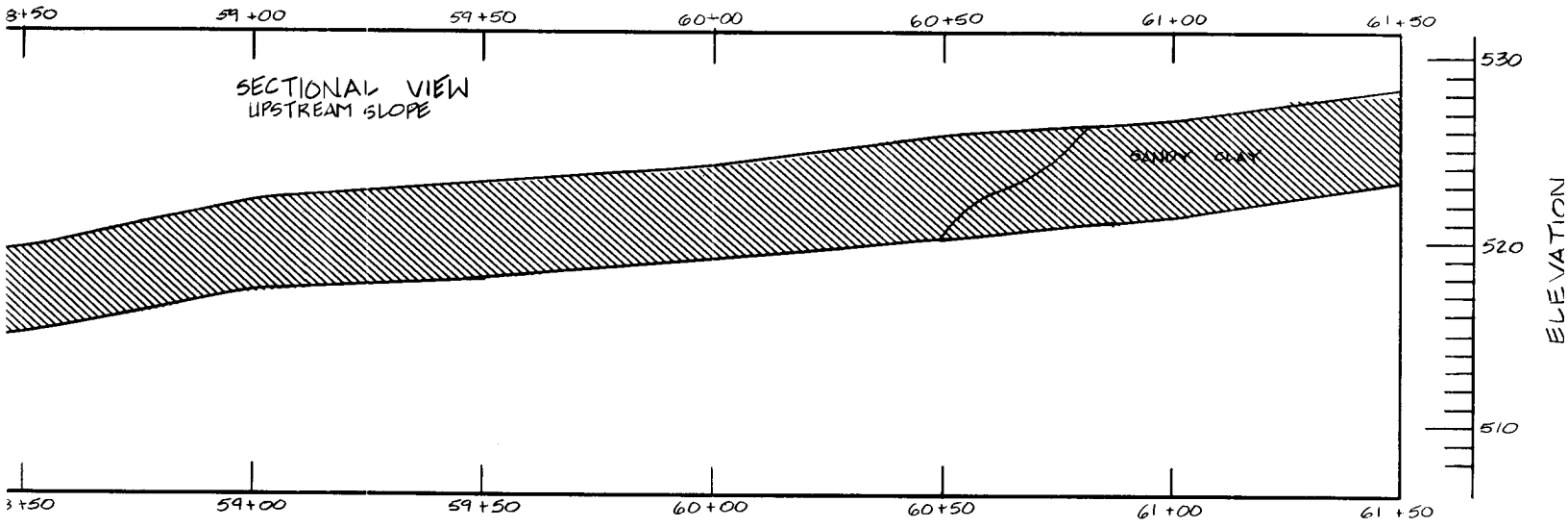
51+00
51+50
52+00
52+50
53+00

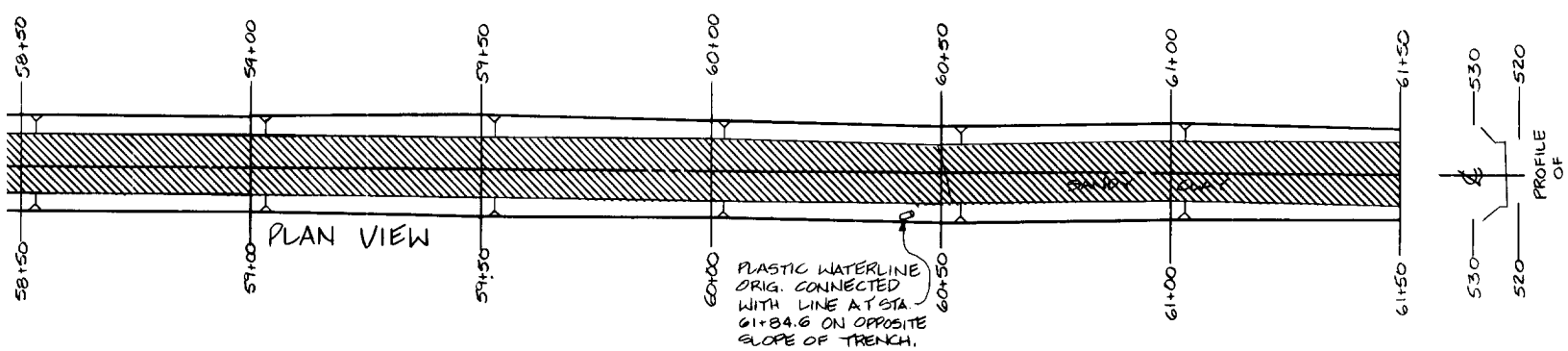

57+00
57+50
58+00
58+50
59+00
ELEVATION
530
520
510

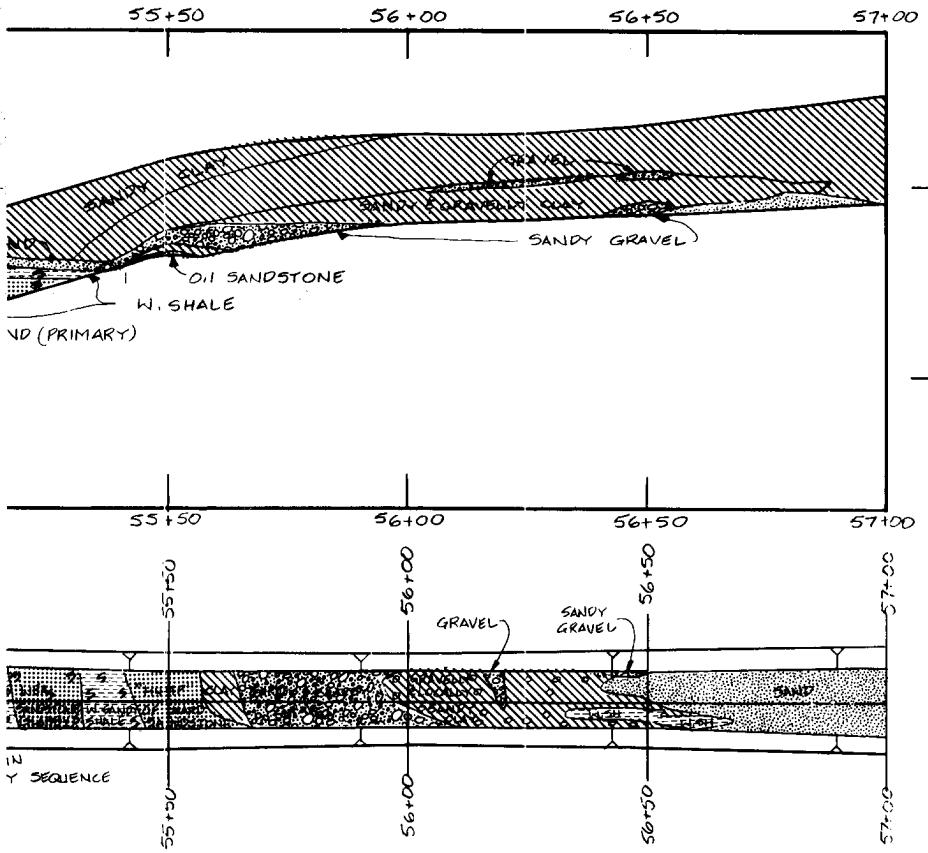

57+00
57+50
58+00
58+50
59+00

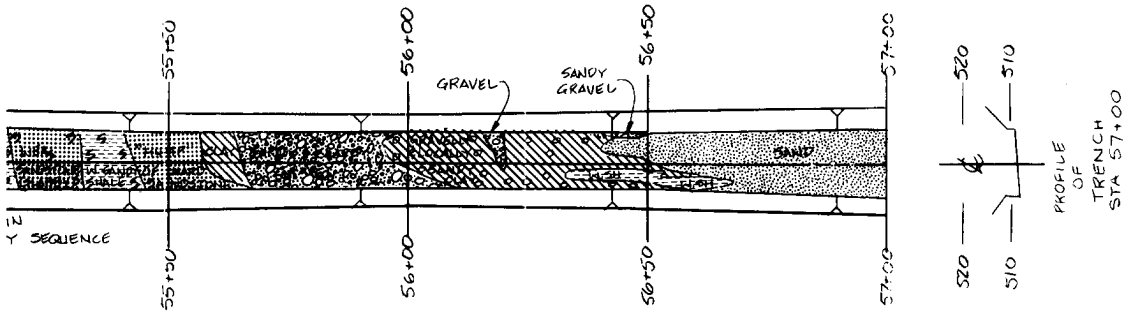

2+50
53+00
53+50
54+00
54+50
55+00
55+50
SECTIONAL VIEW
UPSTREAM SLOPE
COBBLY & BOULDERY CLAY
SANDY CLAY
SLIGHTLY GRAVELLY CLAY
SLIGHTLY GRAVELLY CLAY
SANDY CLAY
SAND
0.1 SANDSTONE
W. SHALE
SAND (PRIMARY)
COBBLY & BOULDERY CLAY
(COBBLES & BOULDERS OF SANDSTONE)

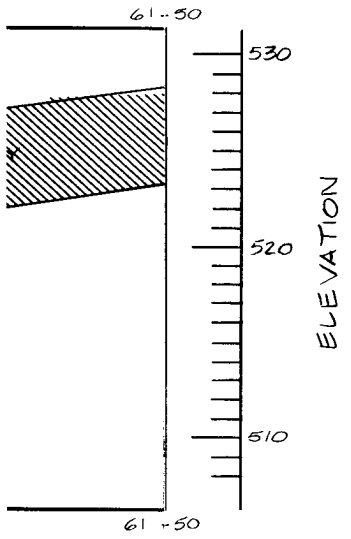

2+50
53+00
53+50
54+00
54+50
55+00
55+50
52+50
53+00
53+50
54+00
54+50
55+00
55+50
PLAN VIEW
HIGHLY WEA. SHALE (CLAYSTONE)
WEA. SHALE
COBBLES & BOULDERS OF SANDSTONE
DRAINAGE DITCH
SAND IN PRIMARY SEQUENCE


58+50
59+00
59+50
60+00
60+50
61+00
61+50
SECTIONAL VIEW
UPSTREAM SLOPE
SANDY CLAY
530
520
510
ELEVATION

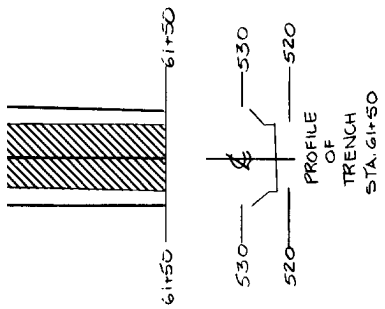

58+50
59+00
59+50
60+00
60+50
61+00
61+50
PLAN VIEW
SANDY CLAY
PLASTIC WATERLINE ORIG. CONNECTED WITH LINE AT STA. 61+84.6 ON OPPOSITE SLOPE OF TRENCH.
530
520
PROFILE OF







NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.



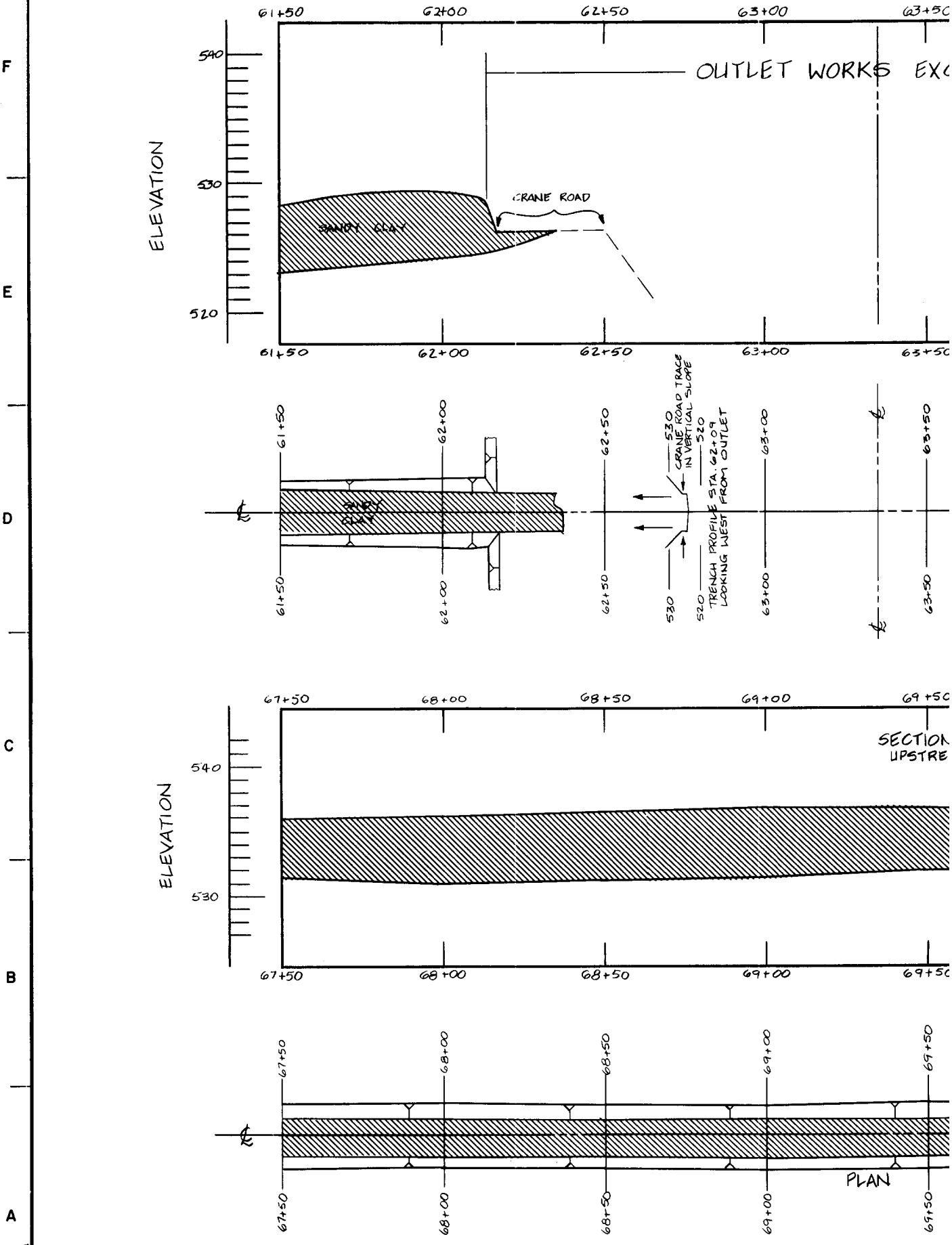
SYM.	DD. NO.	ACTION	DATE	DESCRIPTION OF REVISION

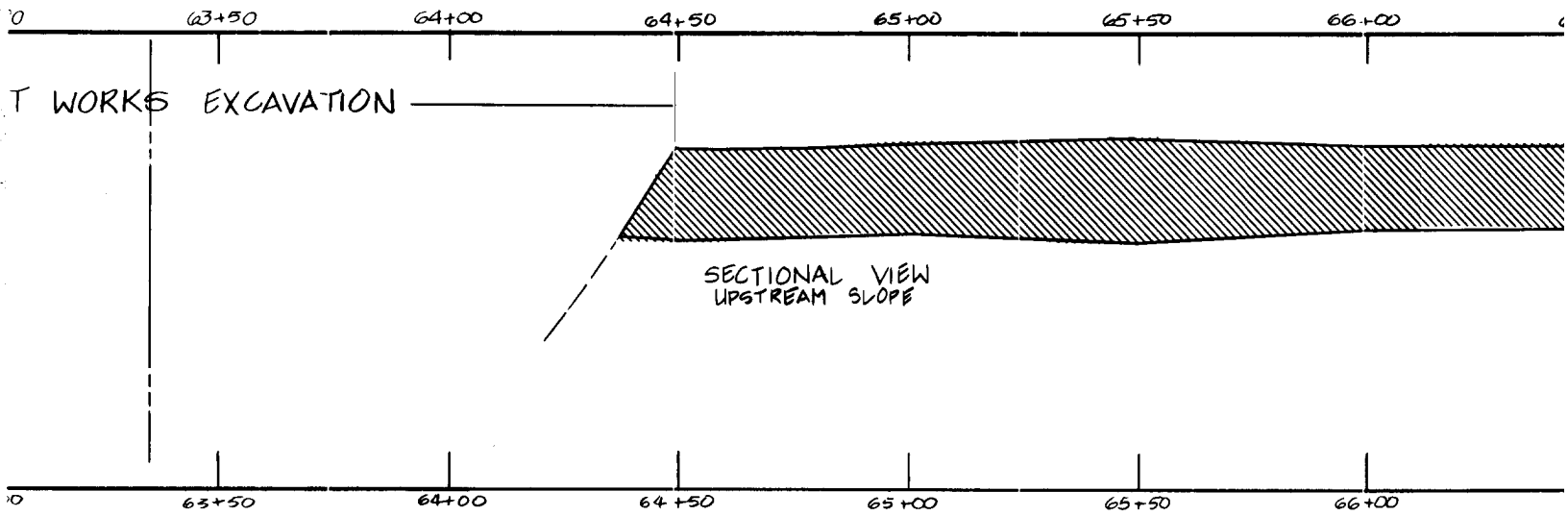
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

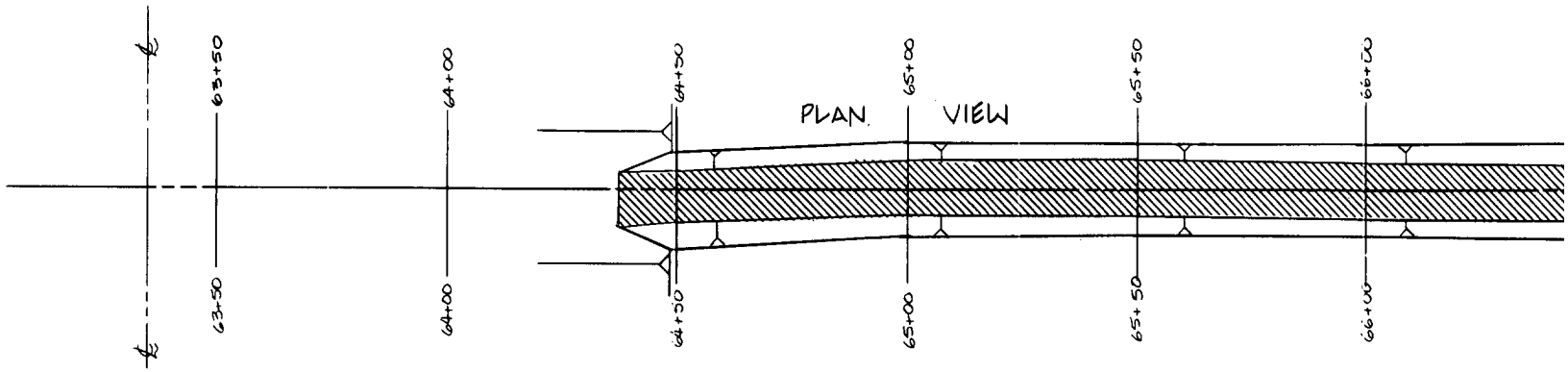
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

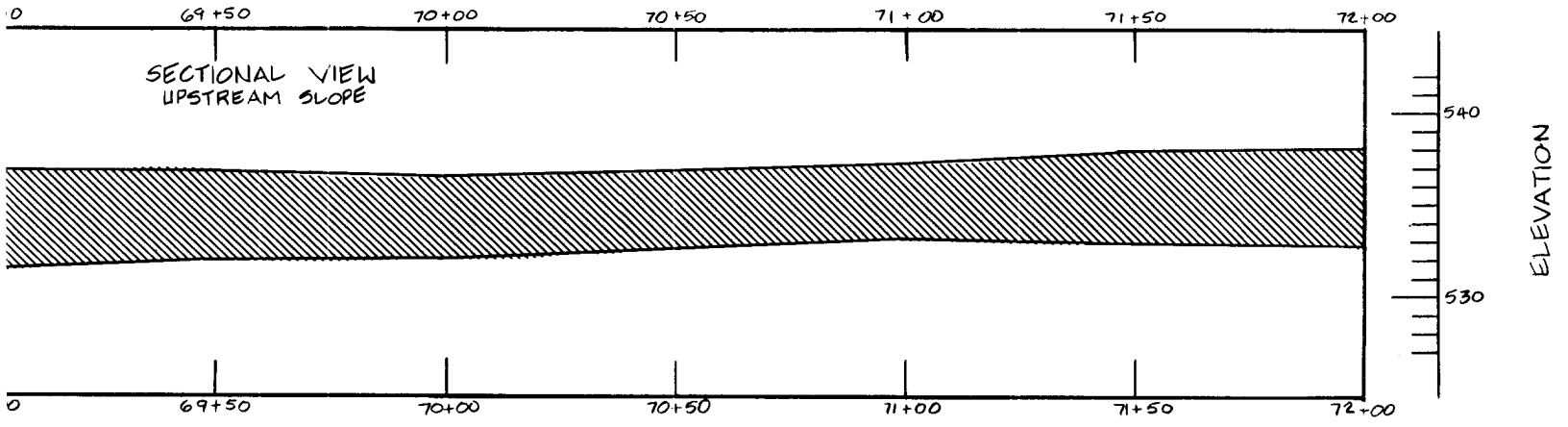
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 51 + 00.00 TO STA. 61 + 50.00

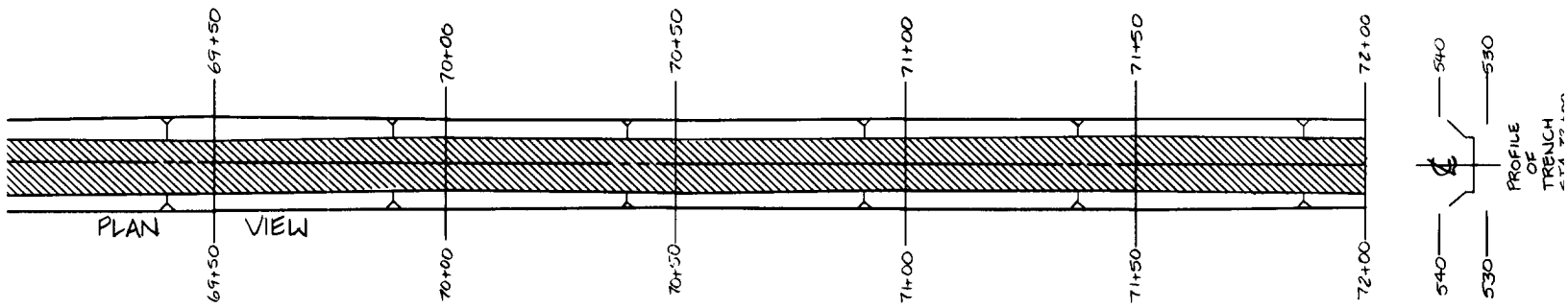
SUBMITTED BY: ROBERT BEHM
ENGINEER:
INVITATION NO.
DATE:
CONTRACT NO.
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO.
CONTRACT NO.

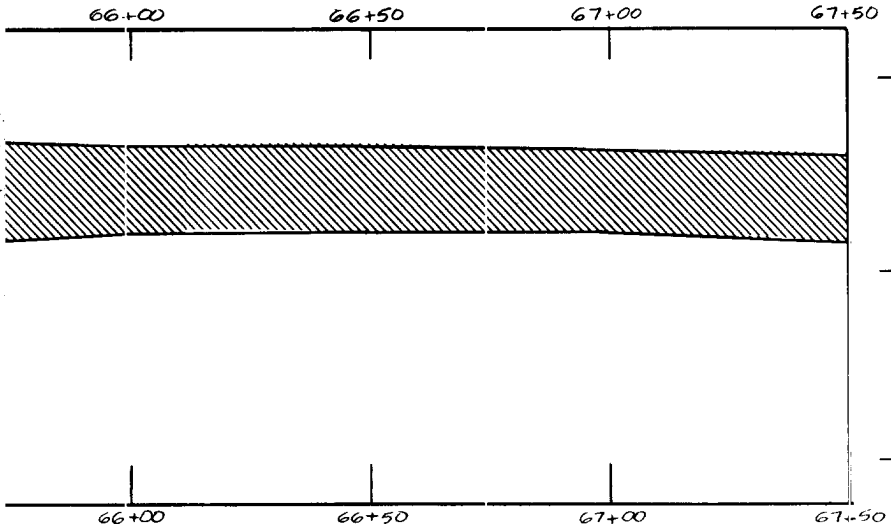

61+50
62+00
62+50
63+00
OUTLET WORKS EXC
ELEVATION
540
530
520
SANDY CLAY
CRANE ROAD
530
CRANE ROAD TRACE IN VERTICAL SLOPE
520
TRENCH PROFILE STA. 62+09 LOOKING WEST FROM OUTLET
67+50
68+00
68+50
69+00
SECTION
UPSTRE
PLAN

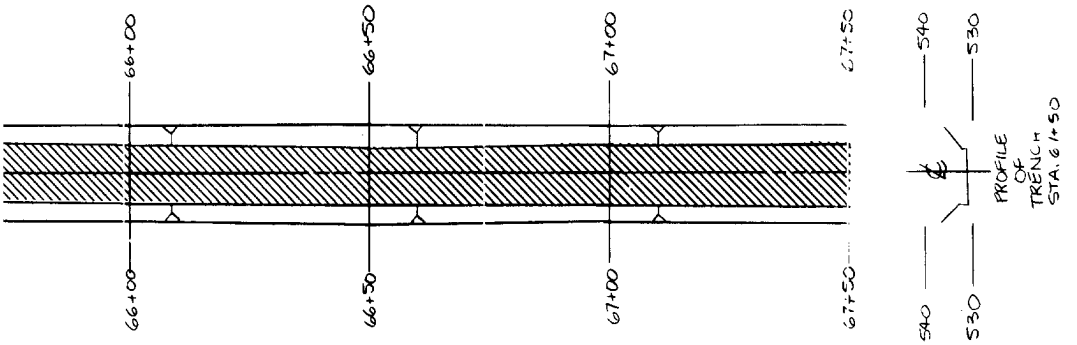

63+50
64+00
64+50
65+00
65+50
66+00
T WORKS EXCAVATION
SECTIONAL VIEW
UPSTREAM SLOPE

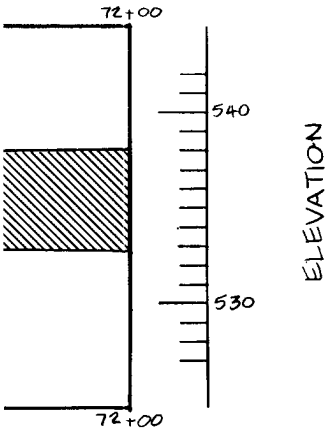

63+50
64+00
64+50
65+00
65+50
66+00
PLAN VIEW


69+50
70+00
70+50
71+00
71+50
72+00
SECTIONAL VIEW
UPSTREAM SLOPE
540
530
ELEVATION

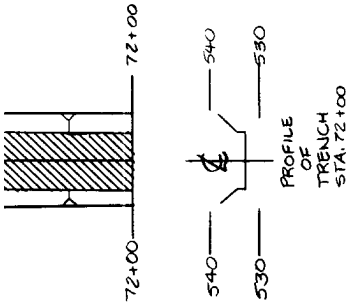

69+50
70+00
70+50
71+00
71+50
72+00
PLAN VIEW
540
530
PROFILE OF TRENCH







NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.



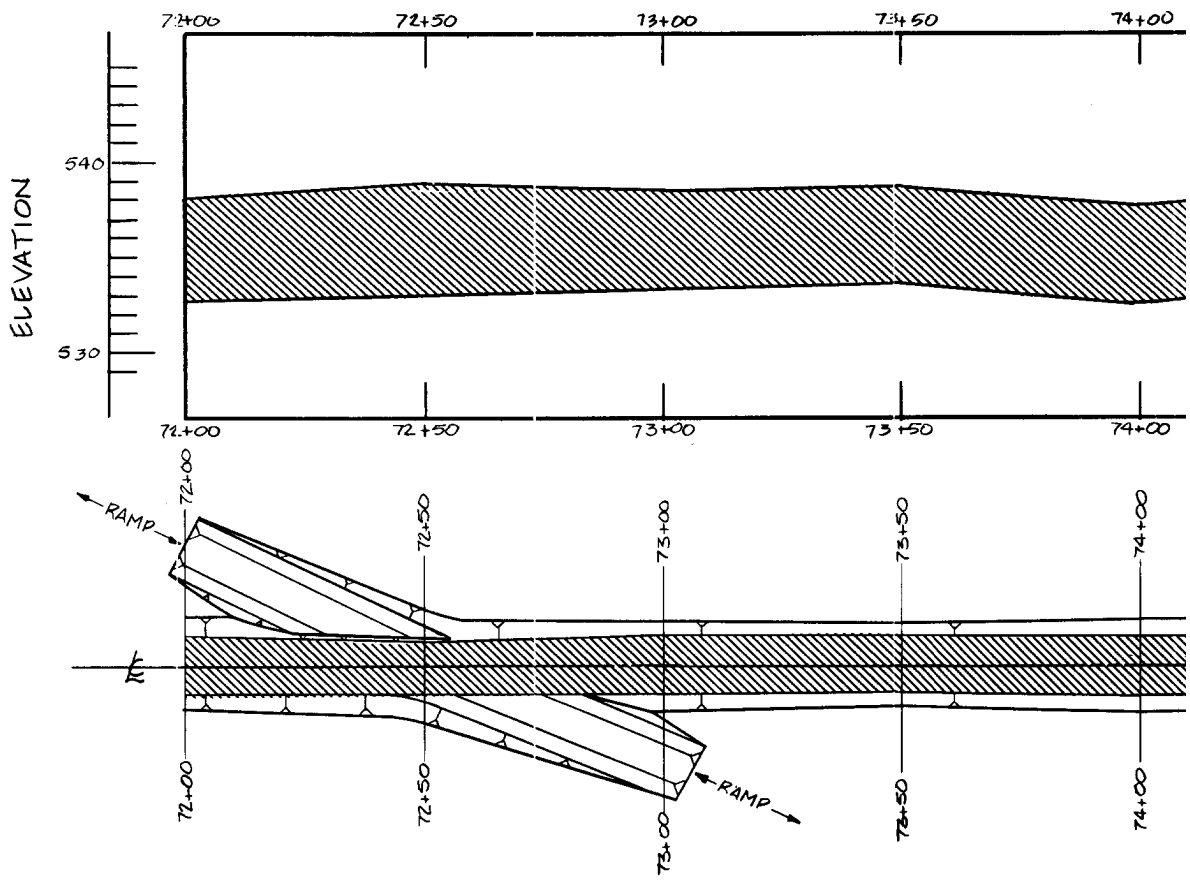
SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION

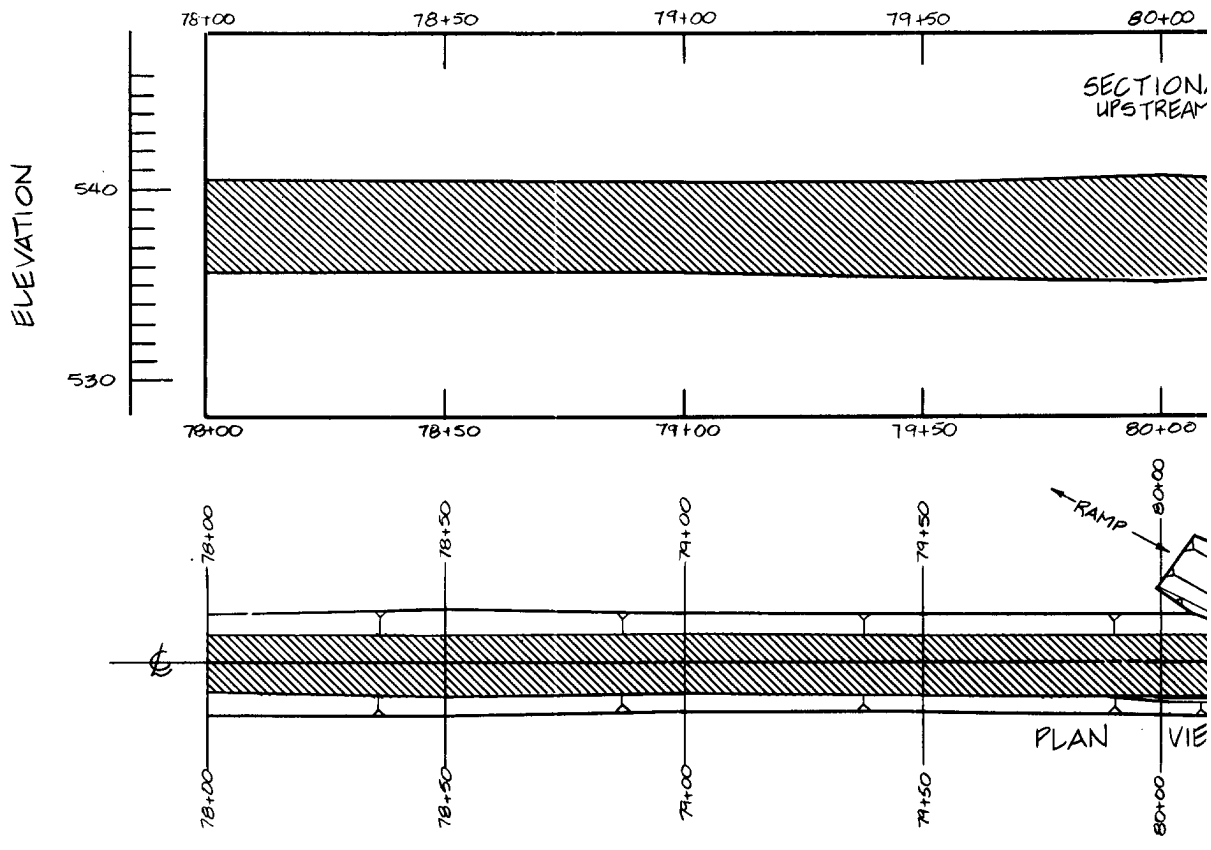
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

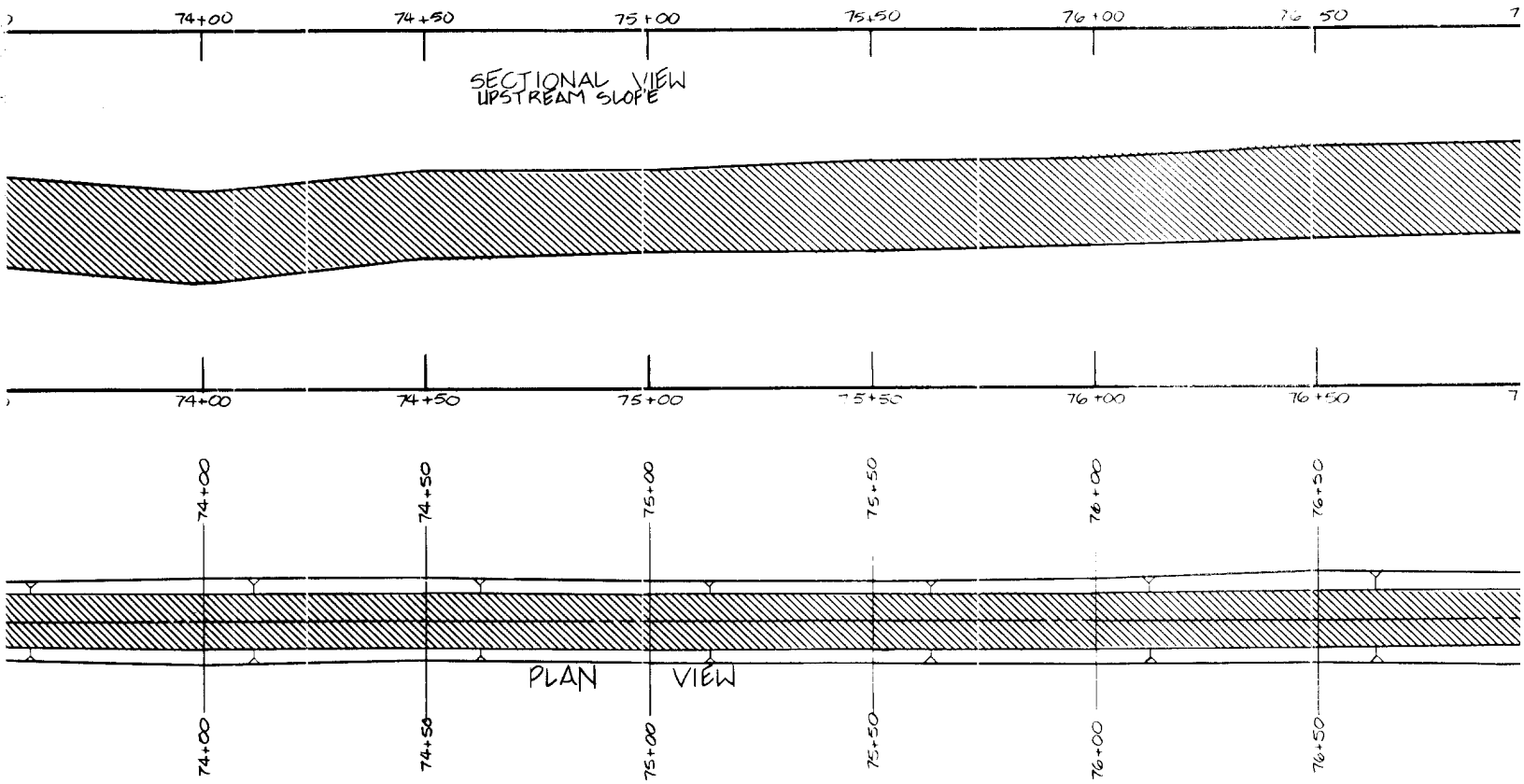
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM
ENGINEER:

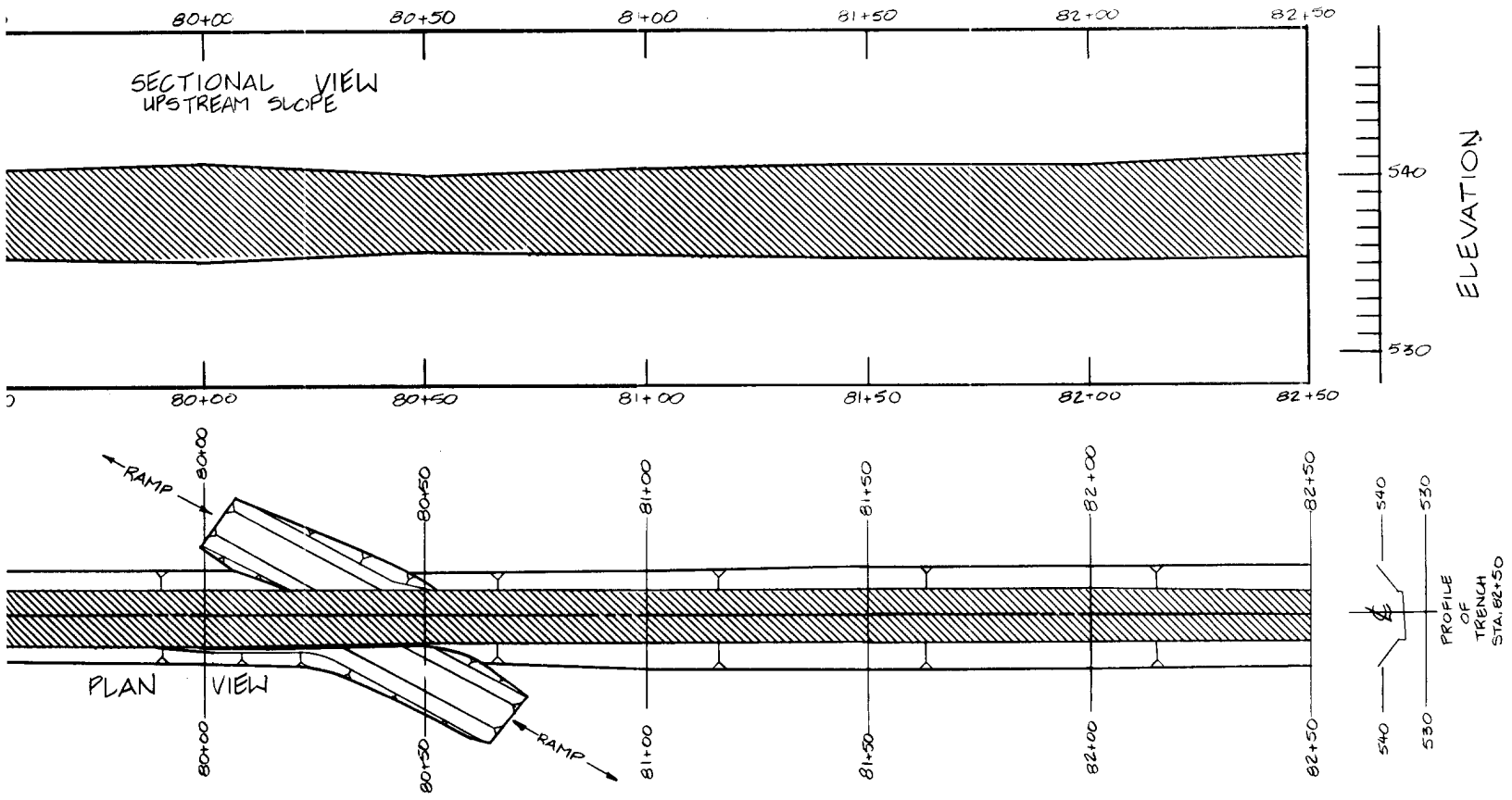
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 61+50.00 TO STA. 72+00.00

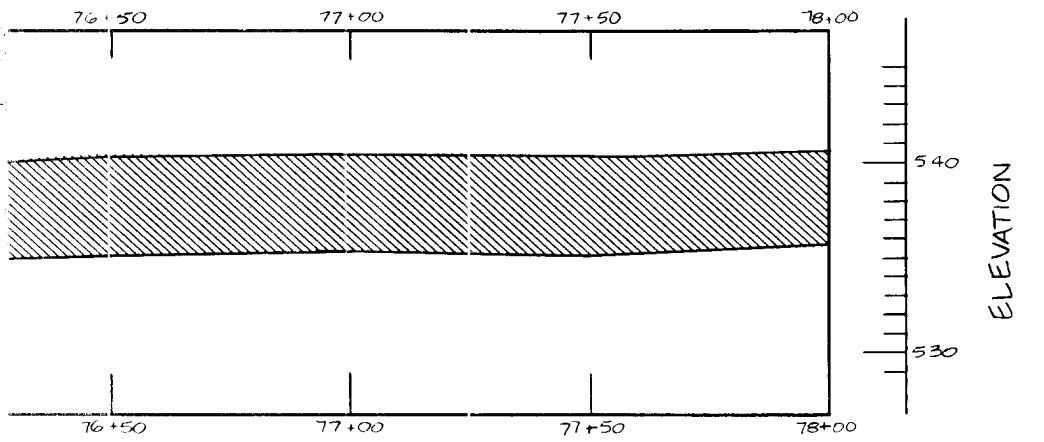
INVITATION NO. | DATE:
CONTRACT NO. | SEQUENCE NO.
DRAWING NUMBER | SHEET NO. OF
CONTRACT NO.

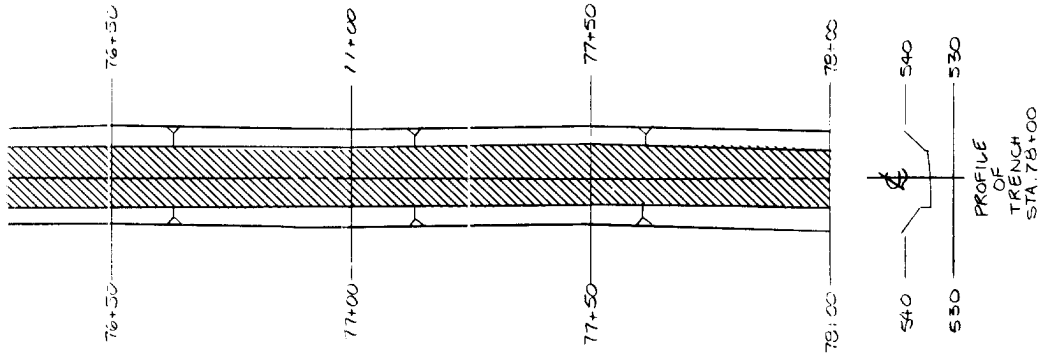

72+00
72+50
73+00
73+50
74+00
ELEVATION
540
530
RAMP
RAMP

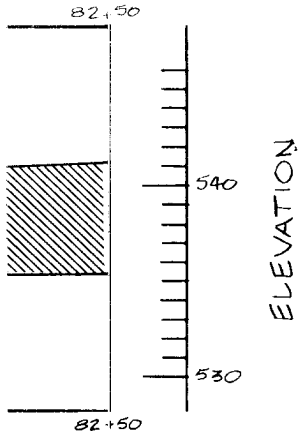

78+00
78+50
79+00
79+50
80+00
ELEVATION
540
530
RAMP
SECTIONA
UPSTREAM
PLAN
VIE


74+00
74+50
75+00
75+50
76+00
76+50
SECTIONAL VIEW
UPSTREAM SLOPE
PLAN VIEW

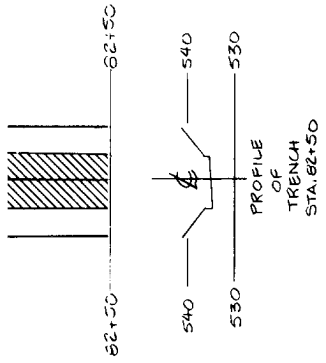

80+00
80+50
81+00
81+50
82+00
82+50
SECTIONAL VIEW
UPSTREAM SLOPE
540
530
ELEVATION
RAMP
RAMP
PLAN VIEW
PROFILE OF TRENCH STA. 82+50







NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.



SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

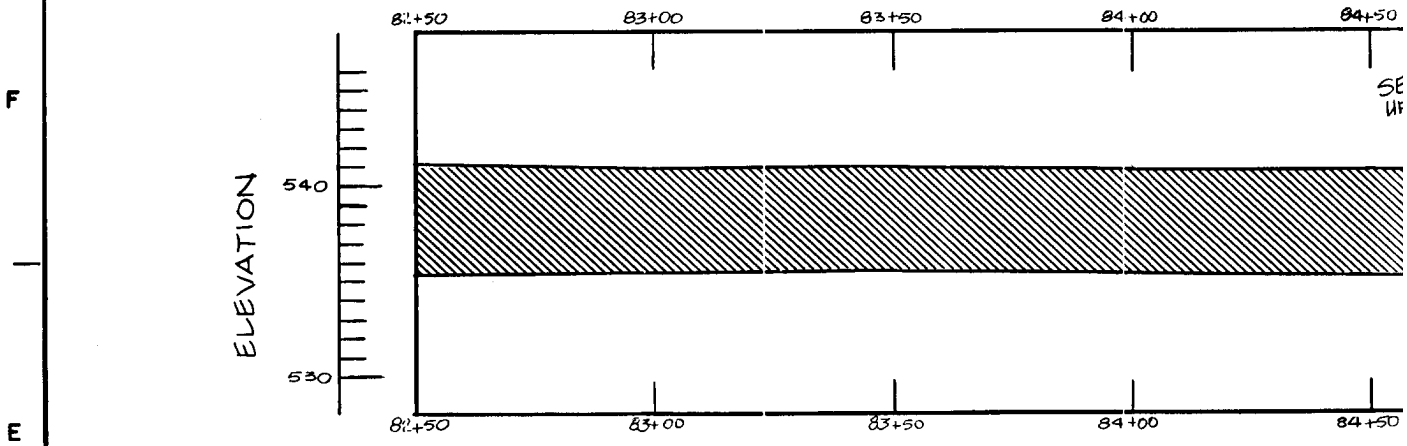
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

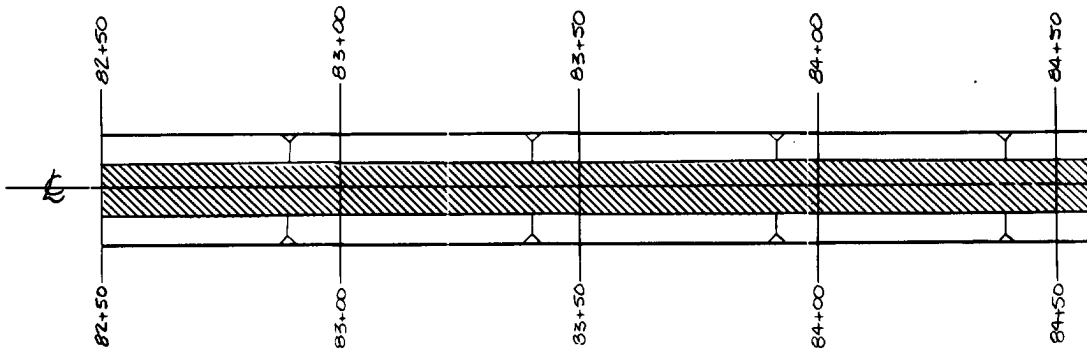
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

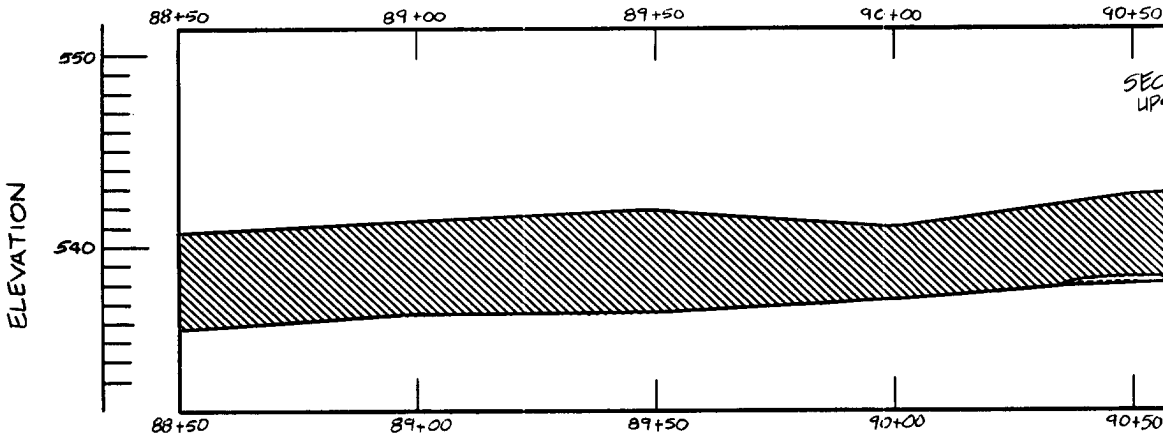
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 72+00.00 TO STA. 82+50.00

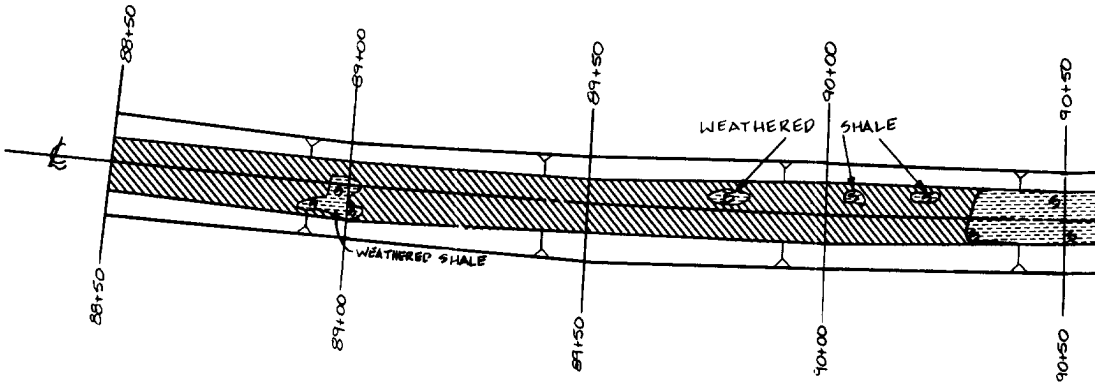
SUBMITTED BY: ROBERT BEHM
ENGINEER:

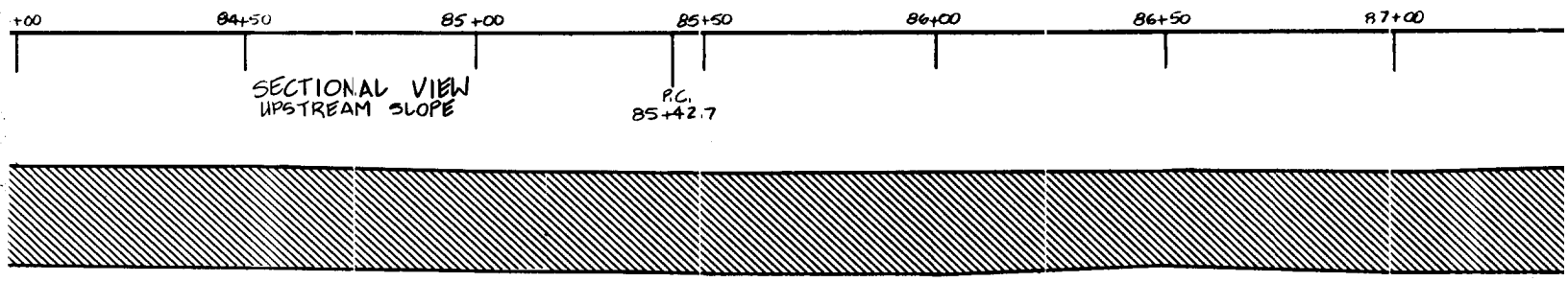
INVITATION NO. | DATE:
CONTRACT NO. | SEQUENCE NO.
DRAWING NUMBER | SHEET NO. OF | CONTRACT NO.

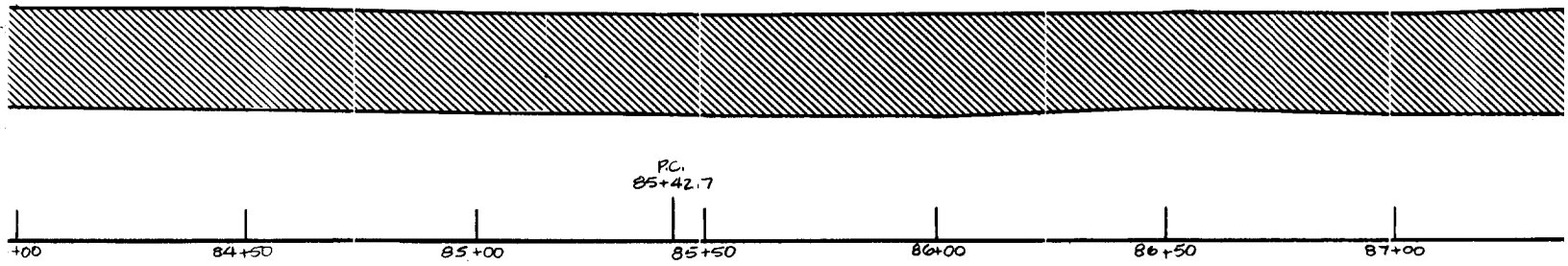

ELEVATION
540
530
82+50
83+00
83+50
84+00
84+50


82+50
83+00
83+50
84+00
84+50

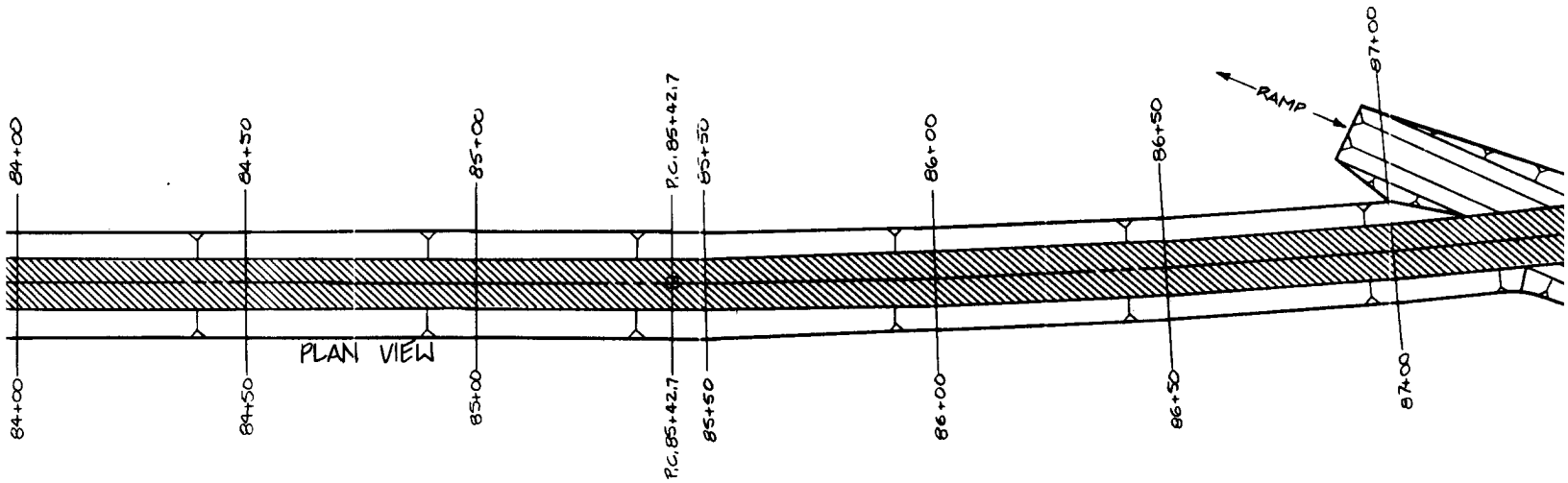

ELEVATION
550
540
88+50
89+00
89+50
90+00
90+50

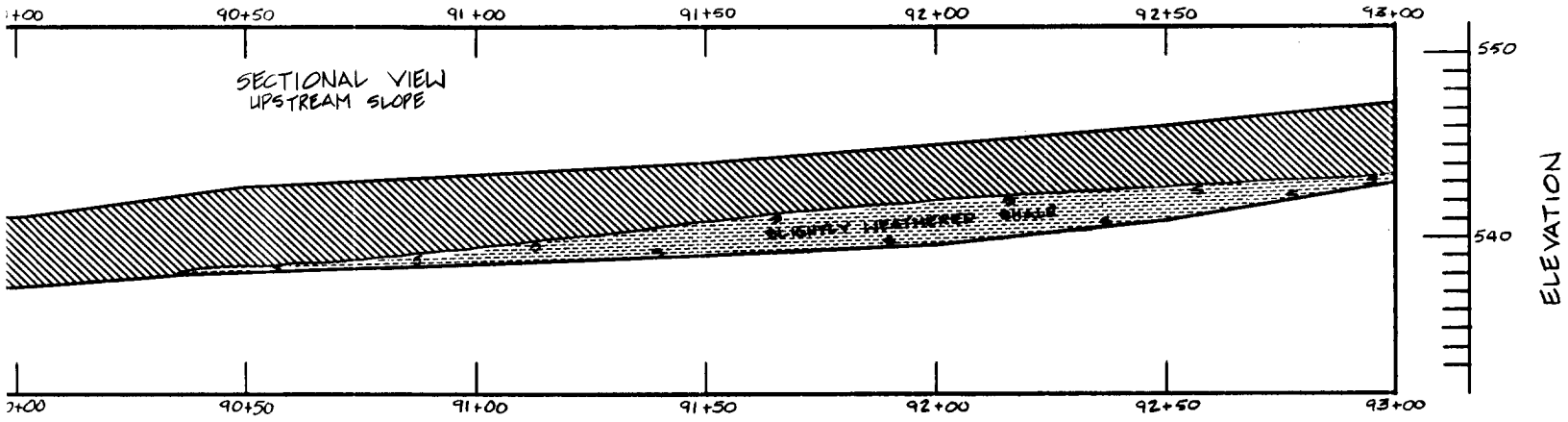

WEATHERED
SHALE
WEATHERED SHALE
88+50
89+00
89+50
90+00
90+50

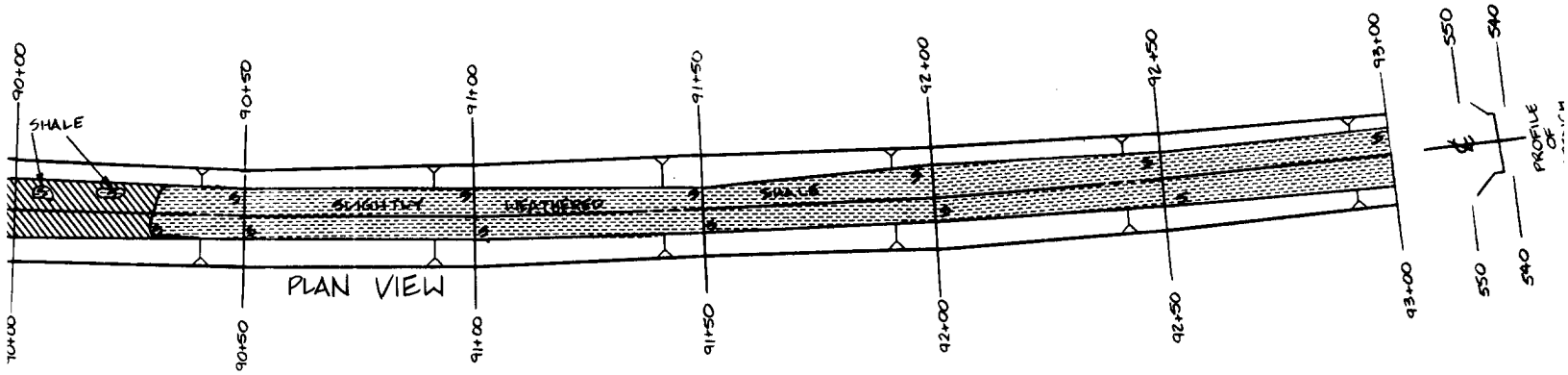

+00
84+50
85+00
85+50
86+00
86+50
87+00
SECTIONAL VIEW
UPSTREAM SLOPE
P.C.
85+42.7

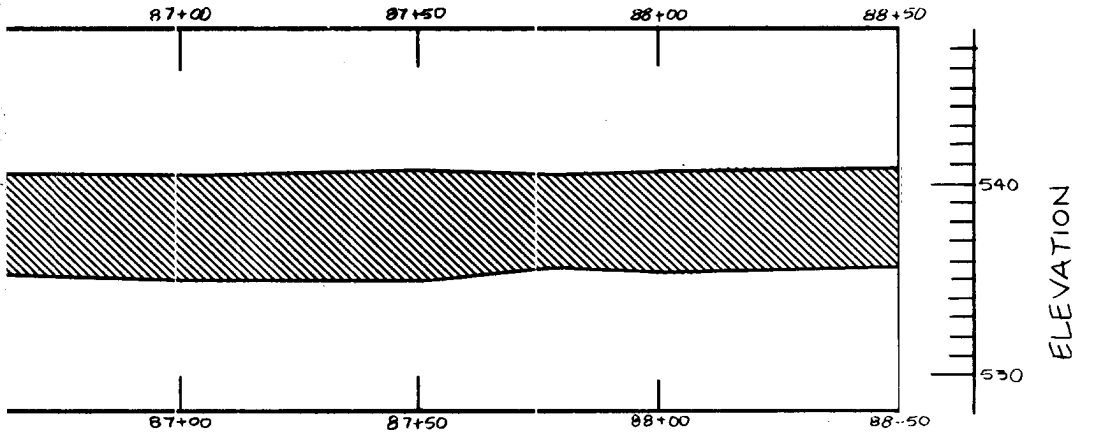


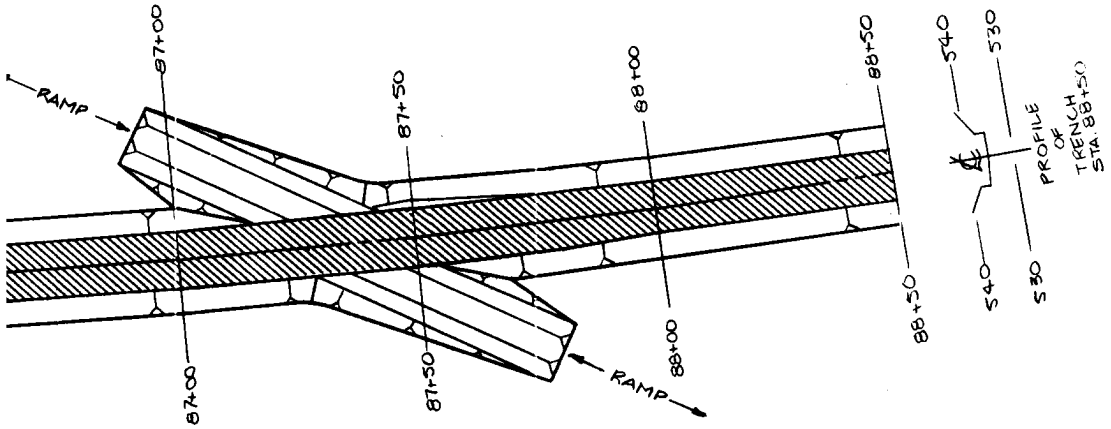
P.C.
85+42.7
+00
84+50
85+00
85+50
86+00
86+50
87+00

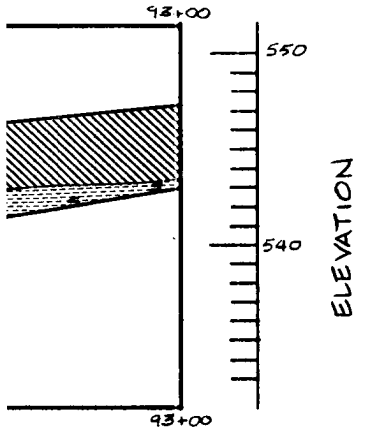

84+00
84+50
85+00
P.C. 85+42.7
85+50
86+00
86+50
87+00
RAMP
PLAN VIEW

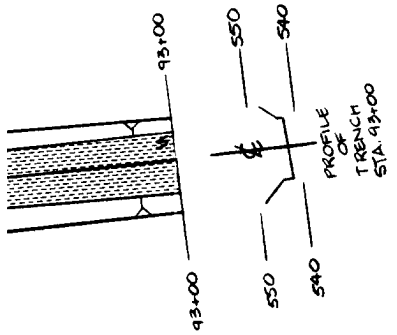

+00
90+50
91+00
91+50
92+00
92+50
93+00
SECTIONAL VIEW
UPSTREAM SLOPE
550
540
ELEVATION


90+00
90+50
91+00
91+50
92+00
92+50
93+00
SHALE
SLIGHTLY
WEATHERED
SHALE
PLAN VIEW
550
540
PROFILE
OF









NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

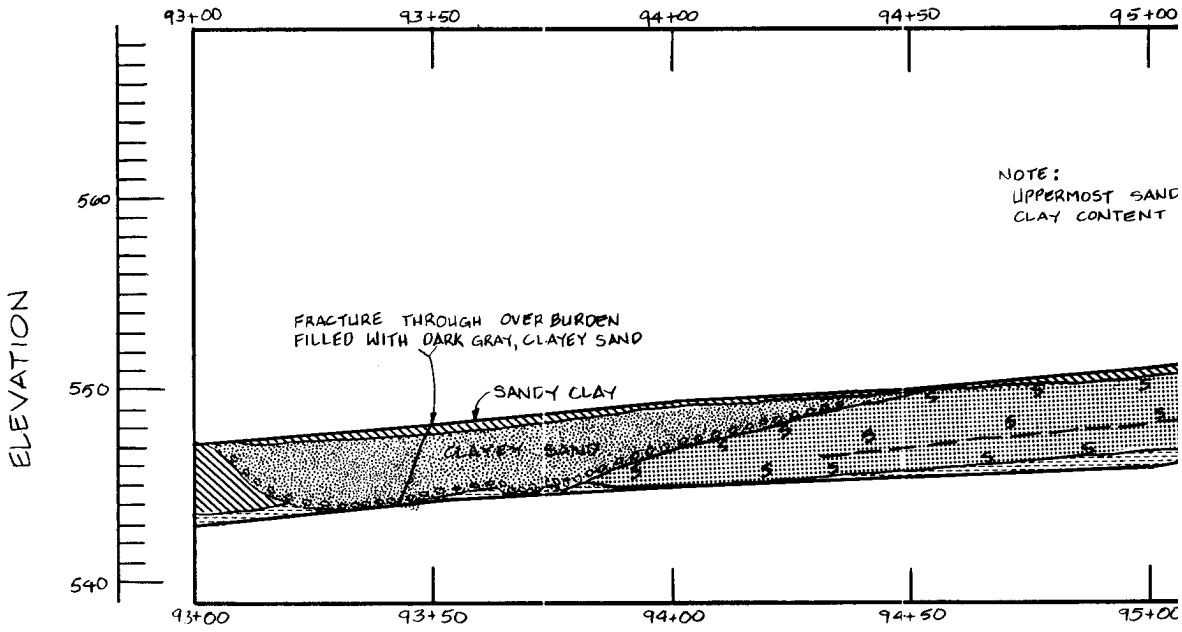
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

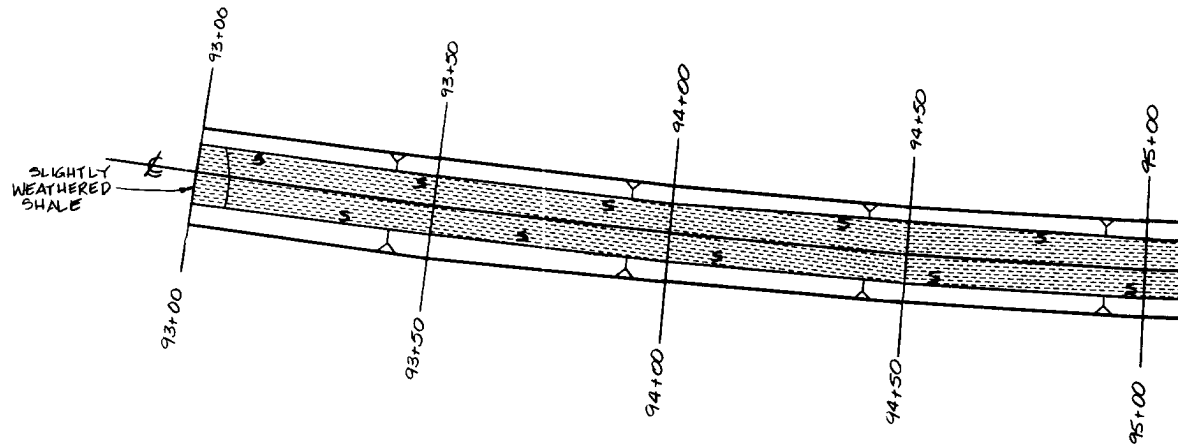
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

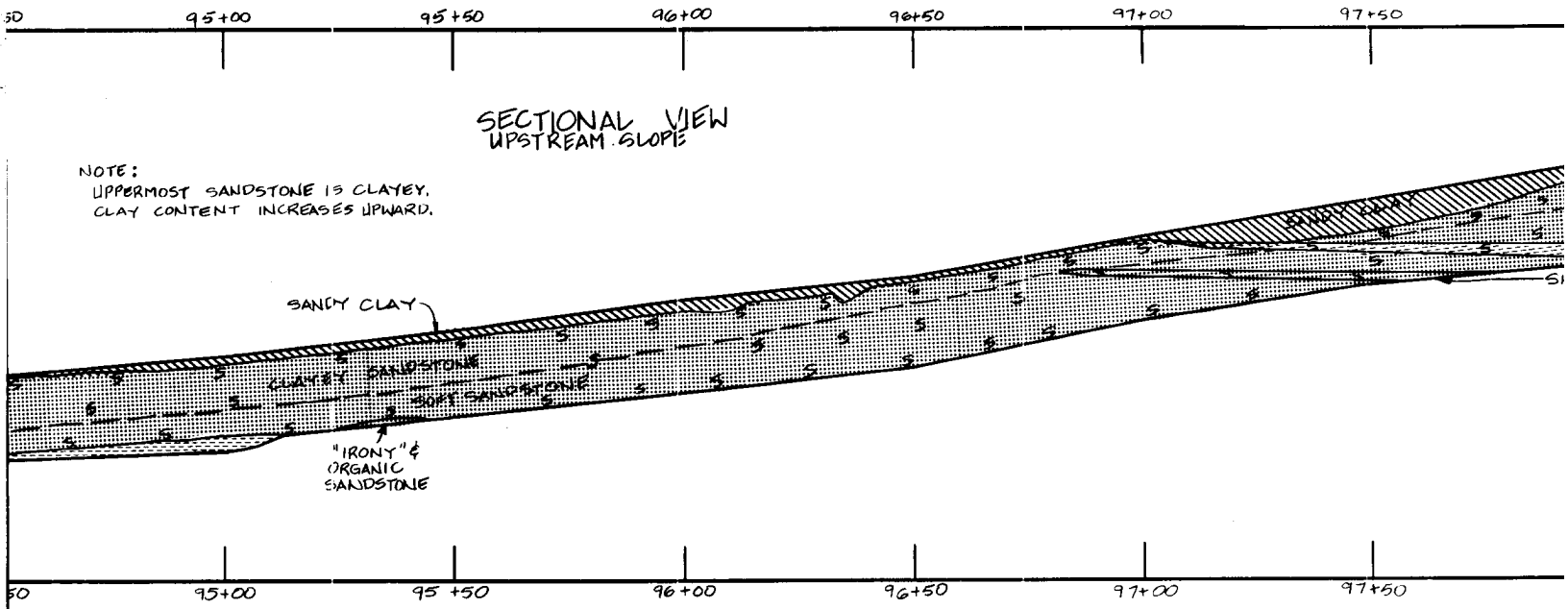
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 82+50.00 TO STA. 93+00.00

SUBMITTED BY: ROBERT BEHM
ENGINEER:

INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.

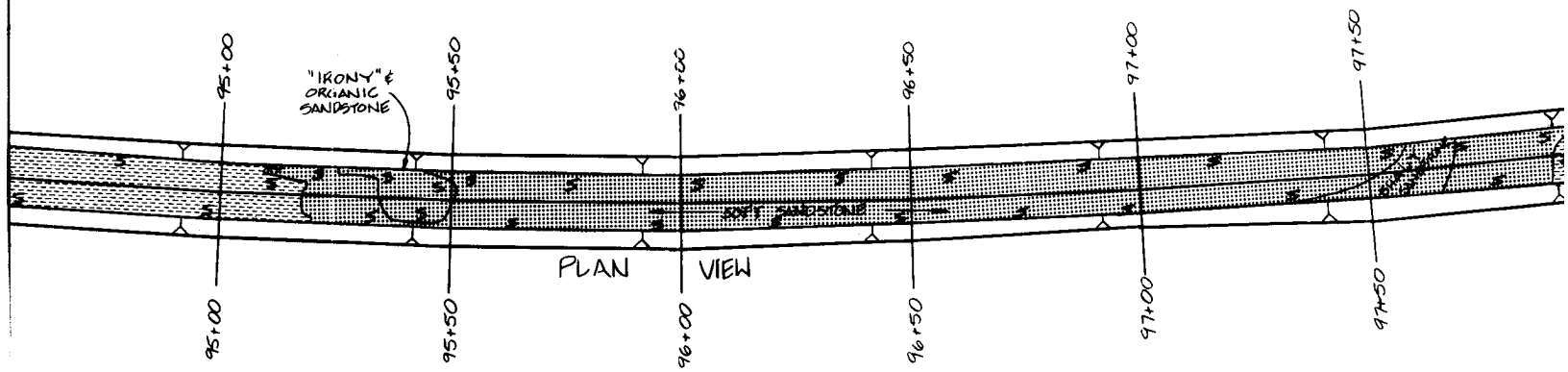

93+00
93+50
94+00
94+50
95+00
560
550
540
ELEVATION
NOTE:
UPPERMOST SAND
CLAY CONTENT
FRACTURE THROUGH OVER BURDEN
FILLED WITH DARK GRAY, CLAYEY SAND
SANDY CLAY
CLAYEY SAND


93+00
93+50
94+00
94+50
95+00
SLIGHTLY
WEATHERED
SHALE



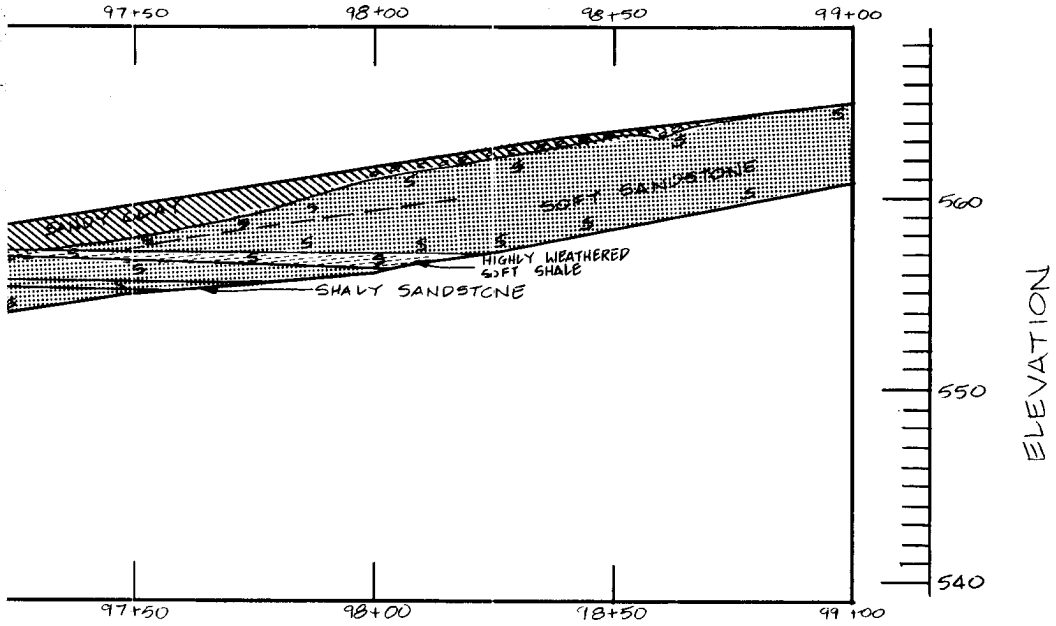
SECTIONAL VIEW
UPSTREAM SLOPE

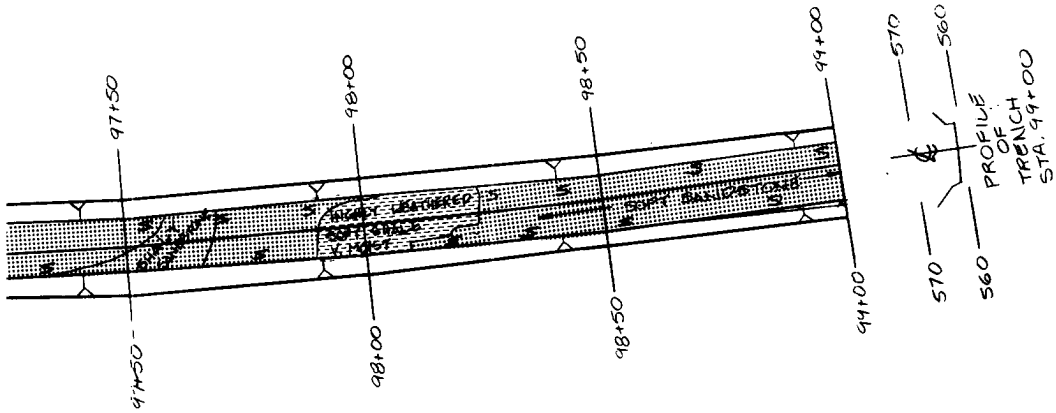
NOTE:
UPPERMOST SANDSTONE IS CLAYEY.
CLAY CONTENT INCREASES UPWARD.



PLAN VIEW

NOTE:
1. FOR MAP SYMBOLS, REFER TO PI





MAP SYMBOLS, REFER TO PLATE 16.

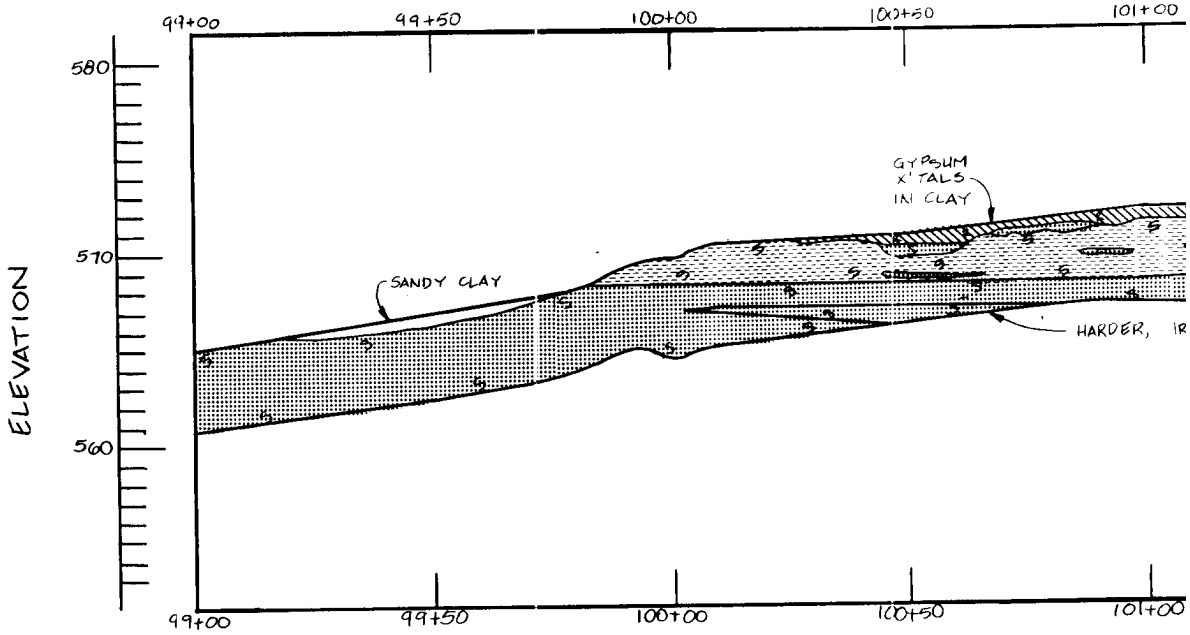
SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

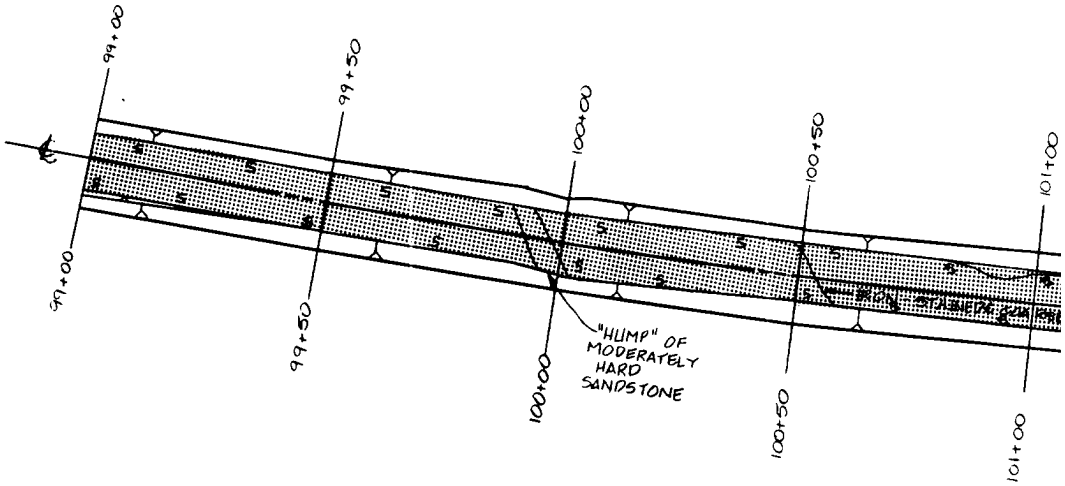
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

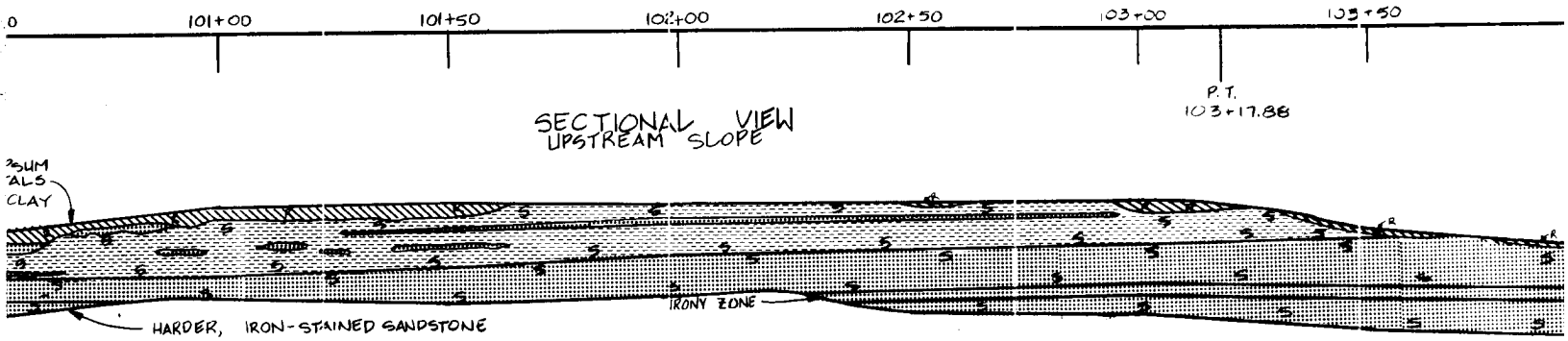
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM
ENGINEER:

AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 93+00.00 TO STA. 99+00.00

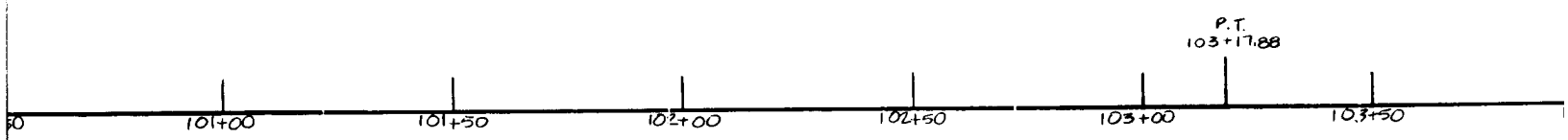
INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF
SEQUENCE NO.
CONTRACT NO.

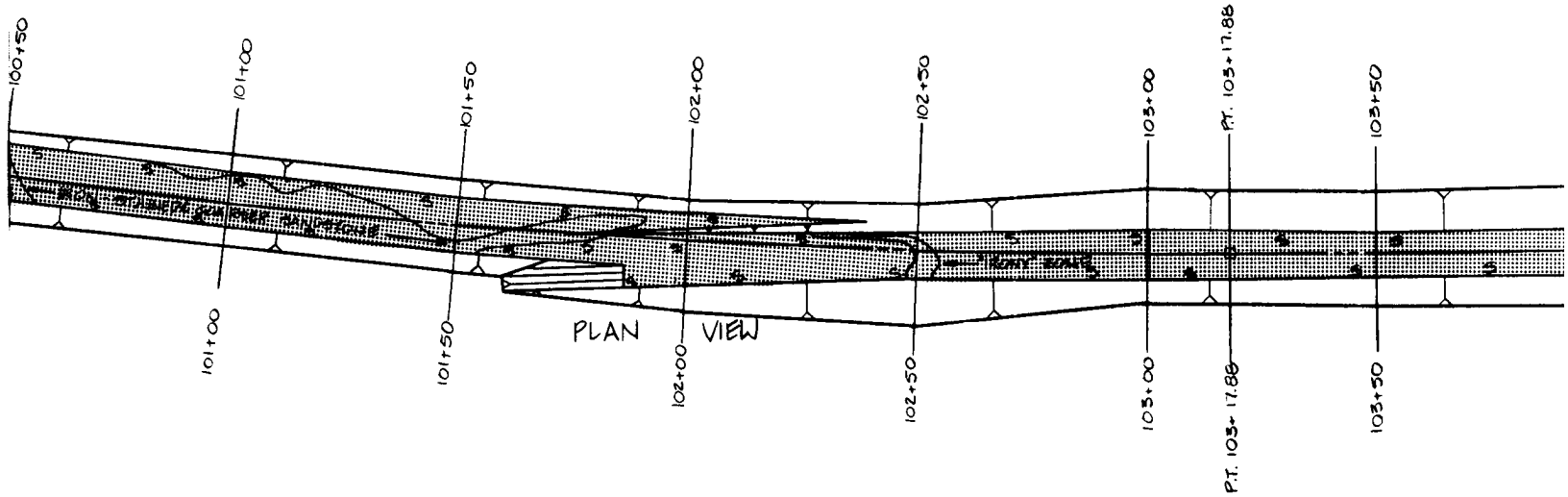

99+00
99+50
100+00
100+50
101+00
580
570
560
ELEVATION
GYPSUM X'TALS IN CLAY
SANDY CLAY
HARDER, IR


99+00
99+50
100+00
100+50
101+00
"HUMP" OF MODERATELY HARD SANDSTONE

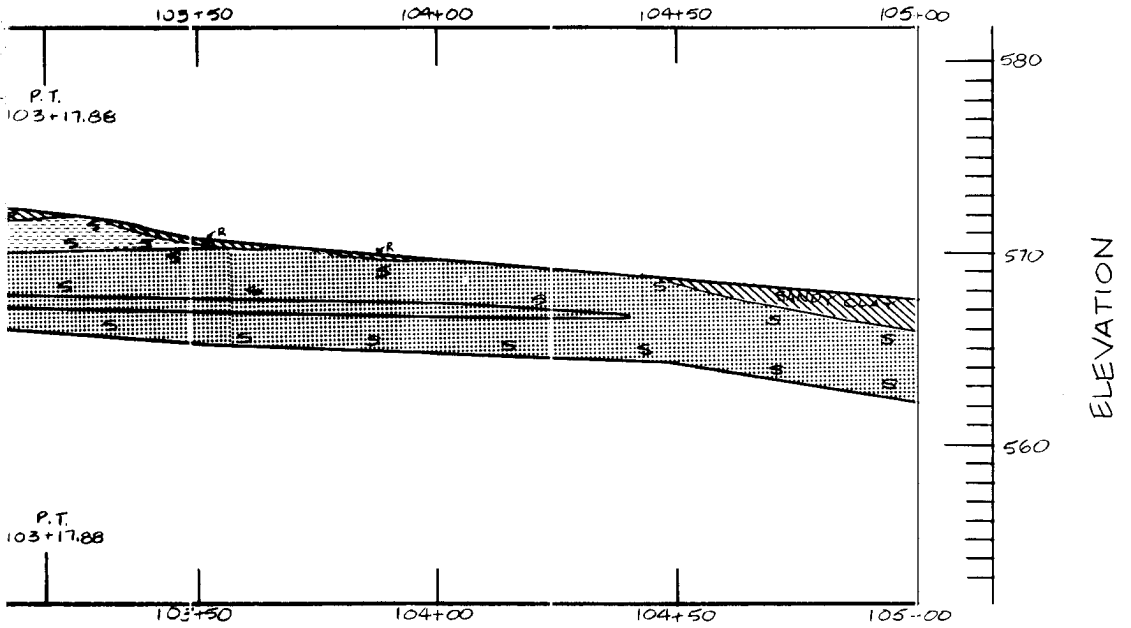


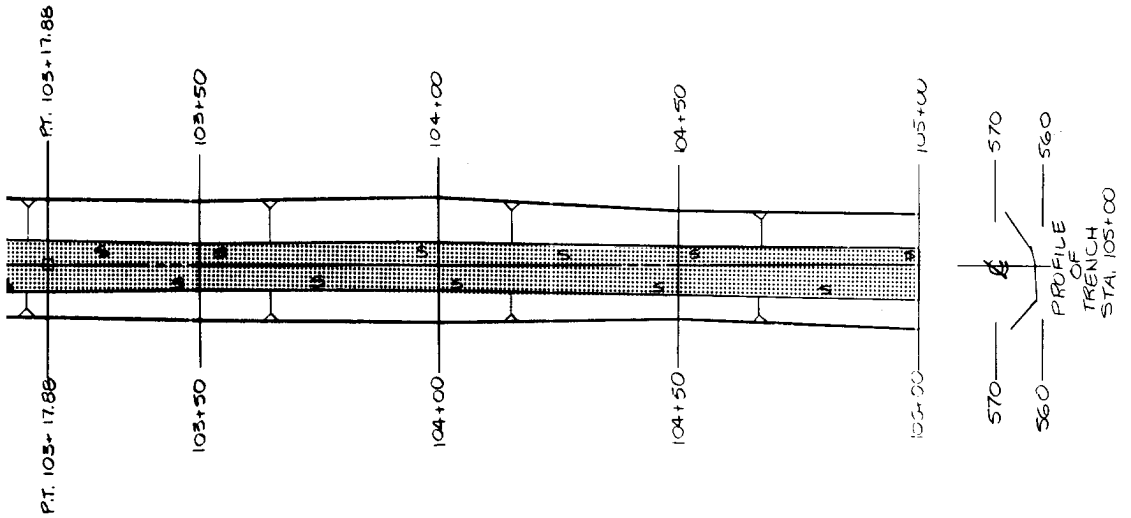
SECTIONAL VIEW
UPSTREAM SLOPE





NOTE:
1. FOR MAP SYMBOLS, REFER TO F





NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.

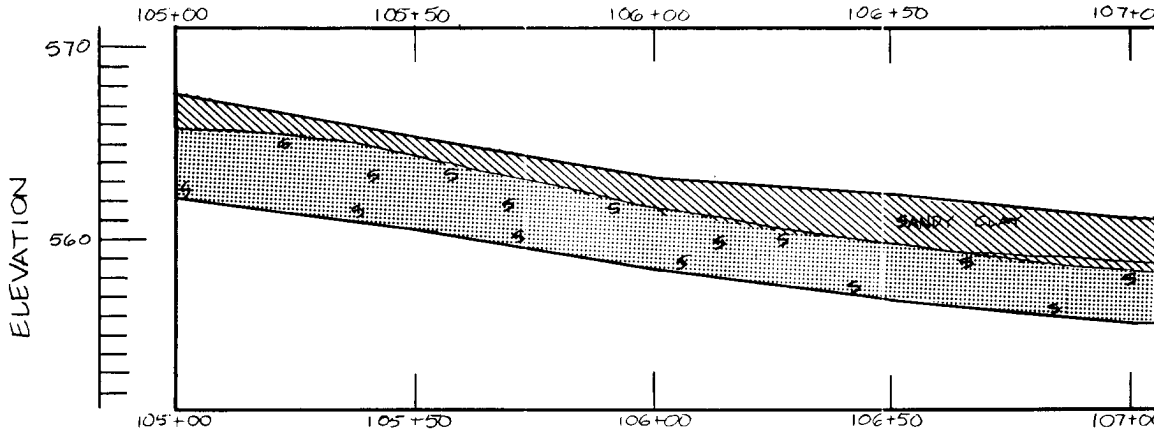
SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

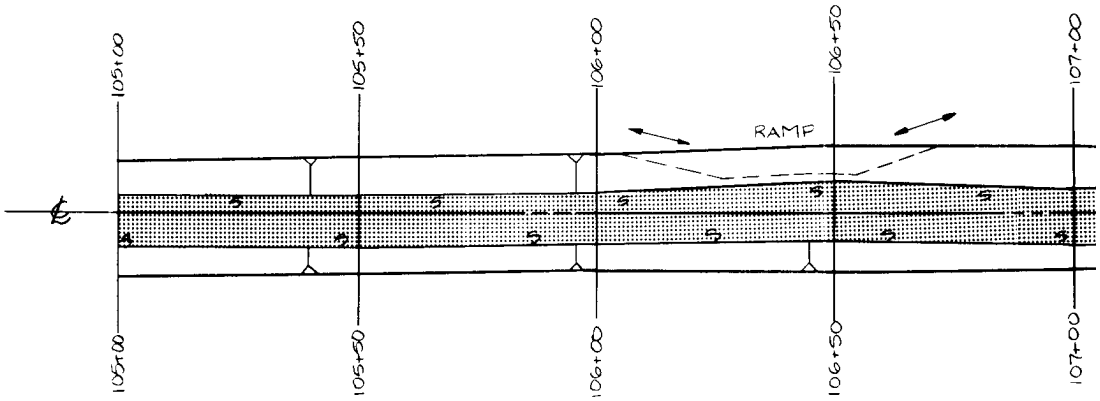
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

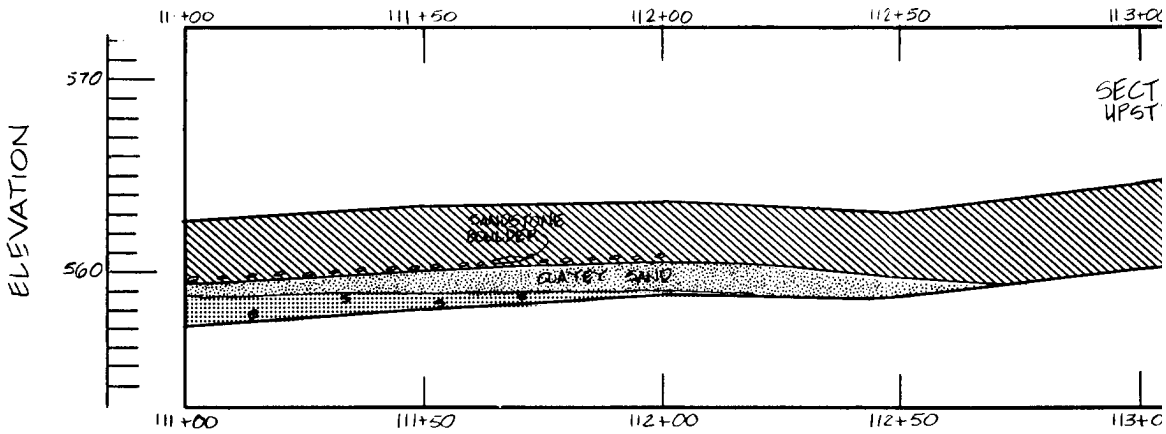
DESIGNED BY: G.RUEDE
DRAWN BY: C.KIRBY
REVIEWED BY: R.BEHM

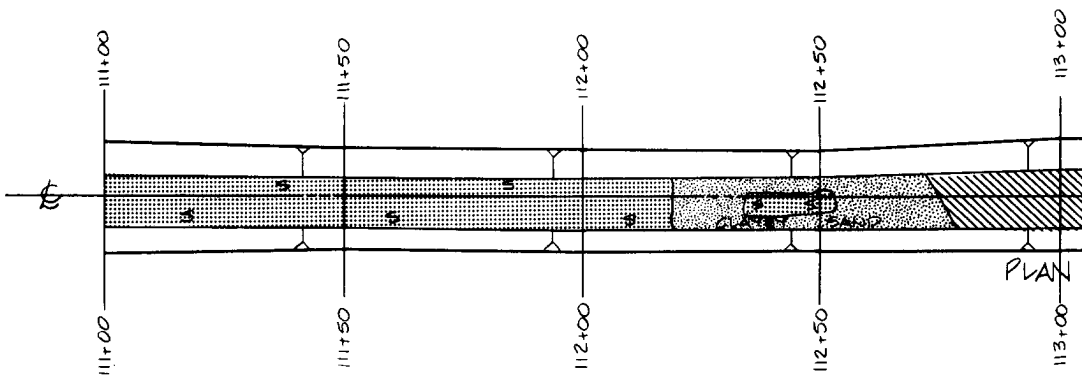
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 99+00.00 TO STA. 105+00.00

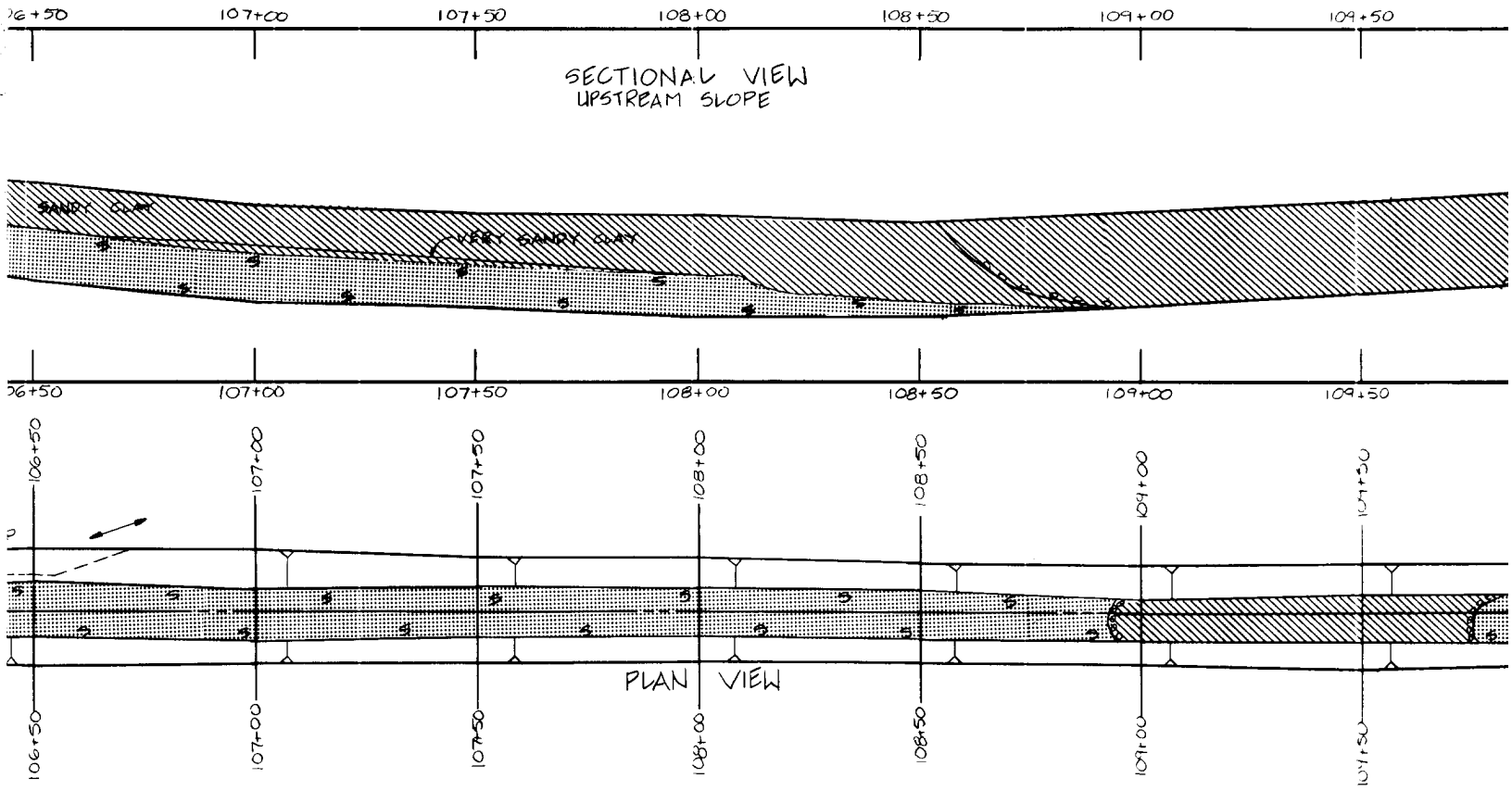
SUBMITTED BY: ROBERT BEHM
ENGINEER:
INVITATION NO.
DATE:
CONTRACT NO.
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO.
CONTRACT NO.

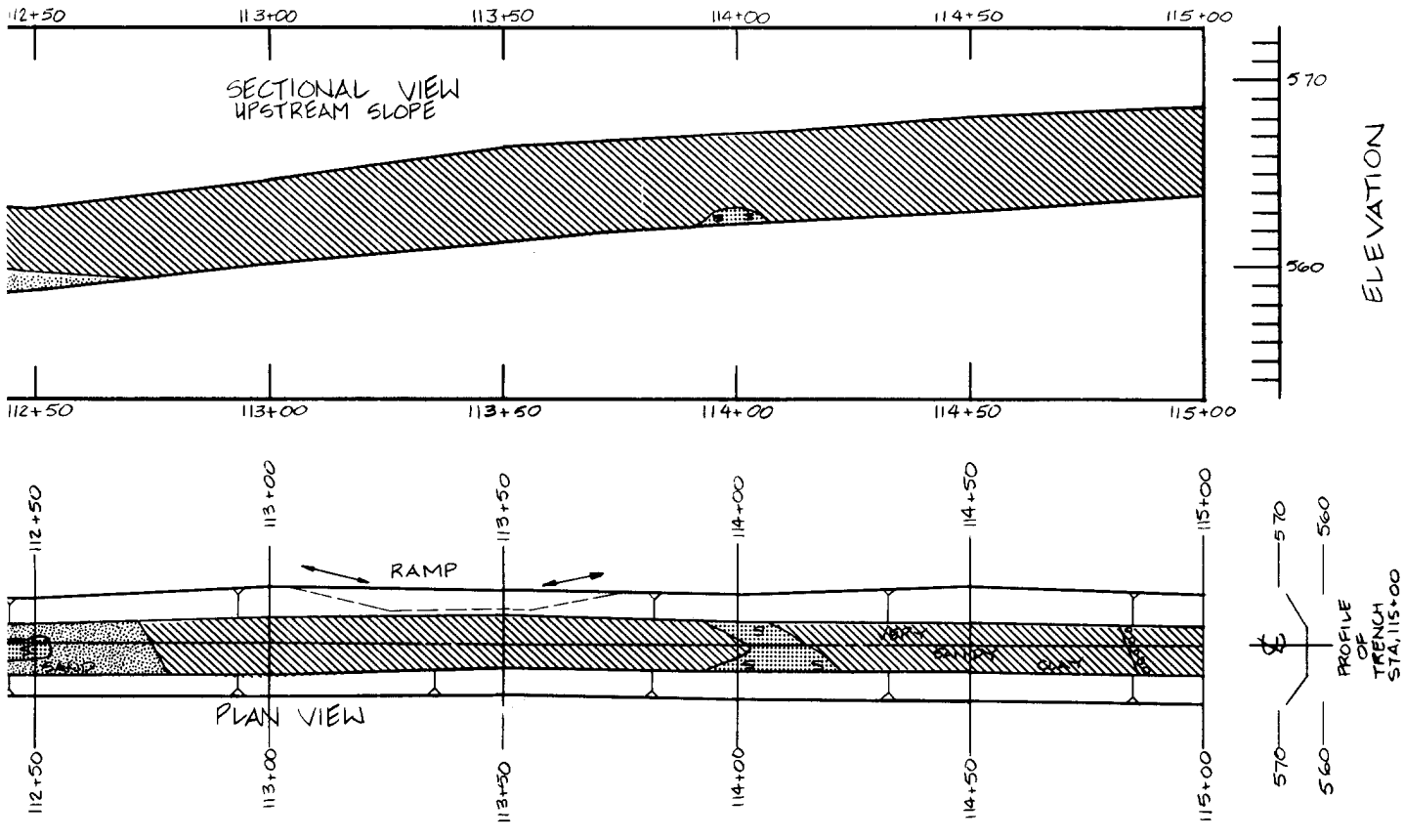

105+00
105+50
106+00
106+50
570
560
ELEVATION
SANDY CLAY

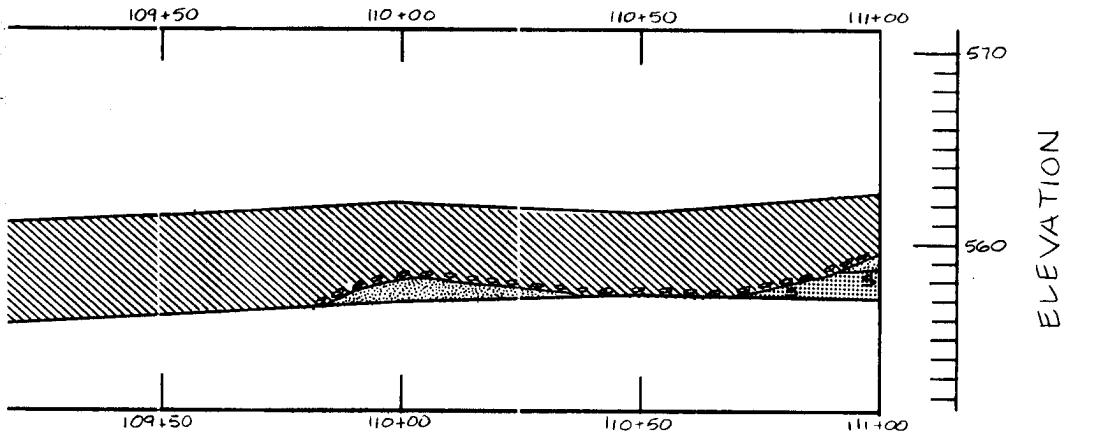

105+00
105+50
106+00
106+50
107+00
RAMP

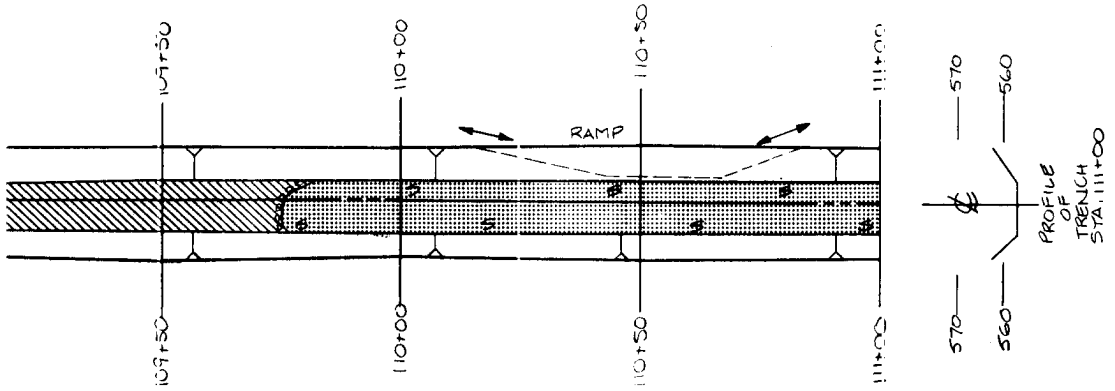

111+00
111+50
112+00
112+50
570
560
ELEVATION
SANDSTONE BOULDER
CLAYEY SAND


111+00
111+50
112+00
112+50
113+00
PLAN


106+50
107+00
107+50
108+00
108+50
109+00
109+50
SECTIONAL VIEW
UPSTREAM SLOPE
SANDY CLAY
VERY SANDY CLAY
PLAN VIEW


112+50
113+00
113+50
114+00
114+50
115+00
SECTIONAL VIEW
UPSTREAM SLOPE
570
560
ELEVATION
RAMP
VERY SANDY CLAY
SANDY CLAY
PLAN VIEW
PROFILE OF TRENCH STA. 115+00



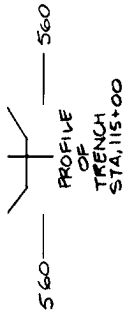


570

560

ELEVATION

NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.



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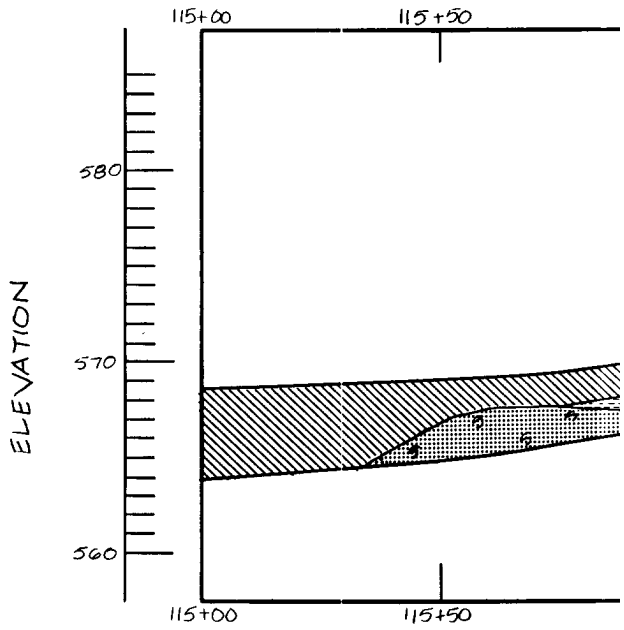
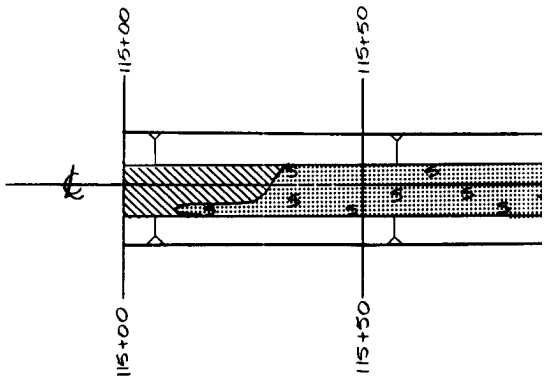
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

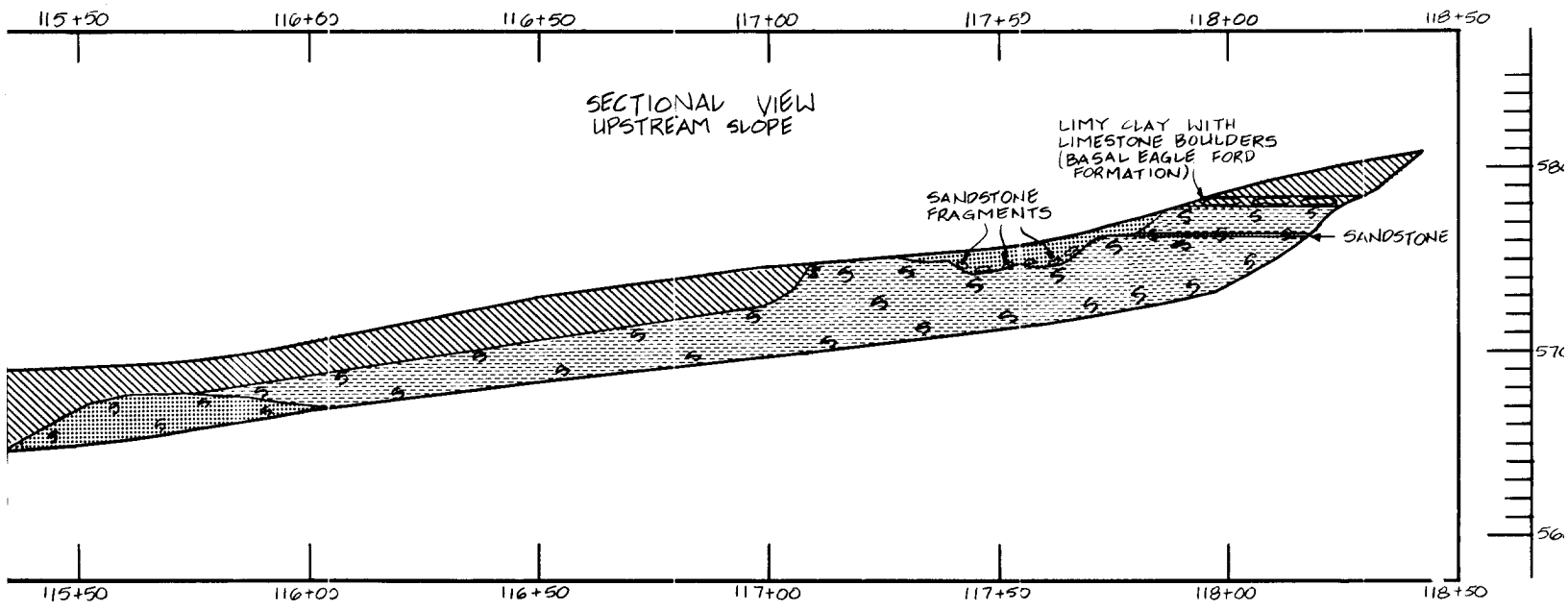
DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM
SUBMITTED BY: ROBERT BEHM
ENGINEER:

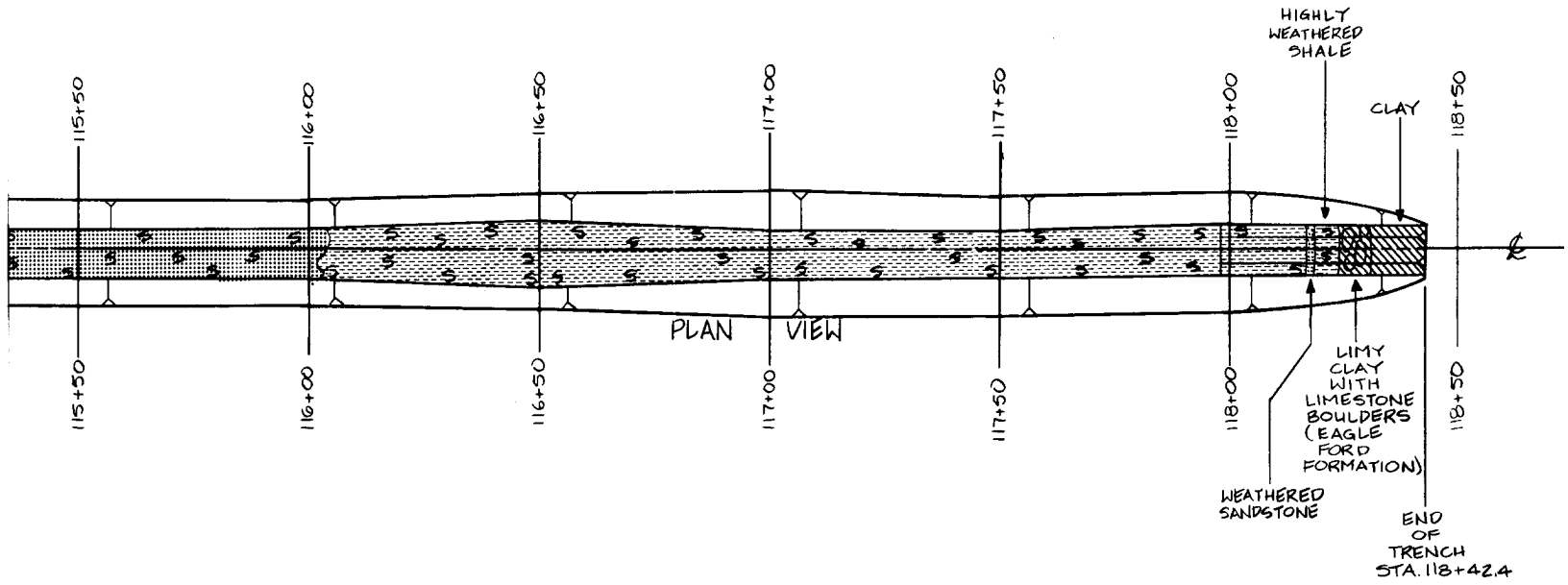
AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 105 + 00.00 TO STA. 115 + 00.00

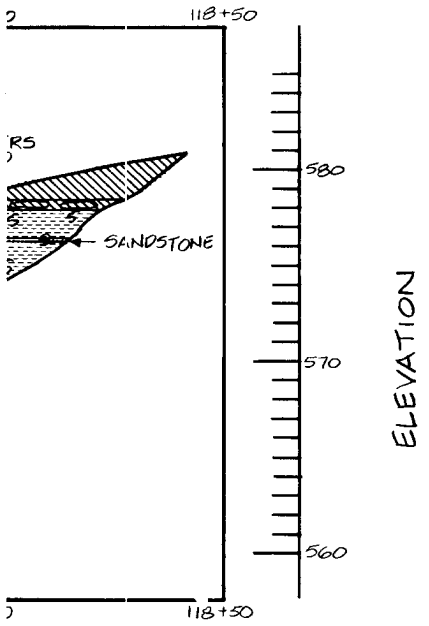
INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.

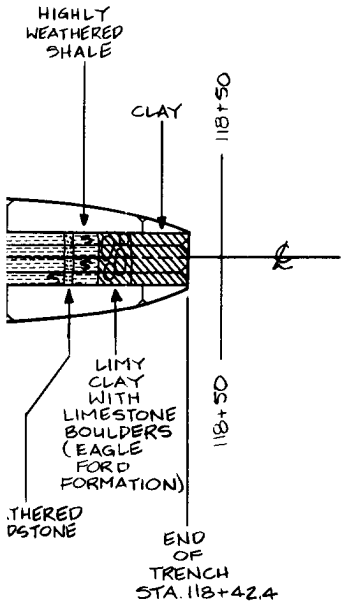

115+00
115+50
580
570
560
ELEVATION
115+00
115+50


115+00
115+50
115+00
115+50


115+50
116+00
116+50
117+00
117+50
118+00
118+50
SECTIONAL VIEW
UPSTREAM SLOPE
LIMY CLAY WITH
LIMESTONE BOULDERS
(BASAL EAGLE FORD
FORMATION)
SANDSTONE
FRAGMENTS
SANDSTONE
580
570
560


HIGHLY
WEATHERED
SHALE
CLAY
115+50
116+00
116+50
117+00
117+50
118+00
118+50
PLAN VIEW
LIMY
CLAY
WITH
LIMESTONE
BOULDERS
(EAGLE
FORD
FORMATION)
WEATHERED
SANDSTONE
END
OF
TRENCH
STA. 118+42.4





NOTE:
1. FOR MAP SYMBOLS, REFER TO PLATE 16.

SYM.	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: G. RUEDE
DRAWN BY: C. KIRBY
REVIEWED BY: R. BEHM

AQUILLA LAKE
AQUILLA AND HACKBERRY CREEKS, TEXAS
FINAL FOUNDATION REPORT
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STA. 115 + 00.00 TO STA. 118+42.40

SUBMITTED BY: ROBERT BEHM
ENGINEER:

INVITATION NO. | DATE:
CONTRACT NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO.
CONTRACT NO.

CORPS OF ENGINEERS

Hole No. 8A6C-1

DRILLING LOG — Division: Southwestern — Installation: Fort Worth — Sheet 1 of 2 Sheets

1. Project: Aquilla
2. Location: Site-D
3. Drilling Agency: Corps of Engineers
4. Hole No.: 8A6C-1
5. Name of Driller: Brown
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 16.5'
8. Depth Drilled into Rock: 43.5'
9. Total Depth of Hole: 60.0'
10. Size and Type of Bit: 6" auger, 6" core
11. Datum for Elevation Shown: (TSM or MSL)
12. Manufacturer's Designation of Drill: Failing 310
13. Total No. of Overburden Samples Taken: Disturbed 7, Undisturbed 0
14. Total Number Core Boxes: 8
15. Elevation Ground Water: ---
16. Date Hole: Started 19 Dec. 72, Completed 22 Dec. 72
17. Elevation Top of Hole: 592.0
18. Total Core Recovery for Boring: 99
19. Signature of Inspector: W. H. Duce

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0 to 3.0' CLAY: slightly silty, lean, moist, medium, dark grayish brown. Trace of small gravel & fine roots.		A	
			3.0 to 5.0 CLAY: slightly sandy as fine to coarse sand-sized lime particles, lean, very stiff to hard, 3.0-3.8' Trace gravel to 4", grayish brown. 3.8-5.0' Somewhat crumbly, tan.		B C D E	
10.0			5.0 to 6.3 CLAY: very limy, lean, slightly moist to dry, v. stiff, light tan. Ambident white lime wea. to clay consistency.		F	
			6.3 to 7.5		G	
			CLAY: slightly sandy to sandy (qtz. sand) (lime) slightly moist, moderately stiff, crumbly, light tan.	16.5 17.0		
	1			L.0 19.9	1	
20.0	2		Trace to Small % small gravel to coarse sand-sized sandstone fragments.	L.0 20.5		
			7.5 to 14.0	L.0		
			CLAY (Slightly wea. shale): v. thin lime streaks wea. to clay consistency, moist, stiff to v. stiff, shaly structure, yellowish tan with white & few greyish streaks.	25.0	2	
	3		14.0 to 16.5'	L.0 29.0	3	
30.0			CLAY: no visible lime, but limy reaction to acid, moist, stiff to v. stiff, no shaly structure, yellowish tan with numerous lt gray streaks.	L.0 33.0		
			16.5-17.4			
	4		SANDSTONE: HARD, calc, fine grn, SOLID - DRK RED.	L.0.5 37.0	4	
			17.4-25.0			
			CLAY: INTERBEDDED w/ SAND, SANDY CLAY & CLAY LENSES, STIFF-MED COMPACT, MOIST, INDICATED RED YELLOW & DRK GRAY.	L0.5 41.0		
			25.0' to 28.8' CLAY-SHALE	L. 0.0	5	
	5		25.0' to 28.0' Stiff, moist, drk. gray	45.0		
			28.0' to 28.8' Sandy, med.-stiff, thin lenses of gray sand, drk. gray.	L. 0.0	6	
	6		SANDSTONE 28.4' to 28.6' HARD, calc., fine-grained, drk. gray	49.0		
50.0			28.8' to 40.1' SAND --	L. 0.0 53.0	7	
	7		Clayey, med. compact, moist, some clay lenses, drk. gray.	L. 0.0		
	8		40.1' to 43.8' SHALE --	57.0	8	
			Stiff-v. stiff, laminated, sli. fissile, blue-blk	L. 0.0 60.0		
60.0	9		43.8' to 49.1' SAND -- Clayey, med. compact, moist, drk. gray.			
			49.1' to 60.0' SHALE -- v. stiff, fissile, thinly laminated, moist, drk. blue-blk. Some siltstone lenses or nodules.			
			--- T.D. 60.0' ---			

Remarks:
1. Set plastic pipe 4", to
2. JARS:
A. 0.0' to 3.0'
B. 3.0' to 3.8'
C. 3.8' to 5.0'
D. 5.0' to 6.3'
E. 6.3' to 7.5'
F. 7.5' to 14.0'
G. 14.0' to 16.5
h. @ 33.0'
3. CARTONS:
1. 17.4' to 18.2
2. 19.4' to 20.4
3. 27.1' to 27.9
4. 33.6' to 34.6
5. 42.9' to 43.8
6. 46.9' to 47.9
7. 51.8' to 52.8
8. 55.0' to 56.0
9. 59.0' to 60.0
4. Water loss at 22.5'.
5. Material expanded 1.0' the first 19.0' of core recovered.
6. Started 6" core @ 16.5'.

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE — (TRANSLUCENT) — Project: Aquilla -D — 8A6C-1

Hole No. 8A6C-2

DRILLING LOG — Division: Southwestern — Installation: Fort Worth — Sheet 1 of 2 Sheets

1. Project: Aquilla Dam
2. Location: Site -D
3. Drilling Agency: Corps of Engineers
4. Hole No.: 8A6C-2
5. Name of Driller: Brown
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 3.5'
8. Depth Drilled into Rock: 56.5'
9. Total Depth of Hole: 60.0'
10. Size and Type of Bit: 8" auger, 6" core
11. Datum for Elevation Shown: (TSM or MSL)
12. Manufacturer's Designation of Drill: Failing 310
13. Total No. of Overburden Samples Taken: Disturbed 2, Undisturbed 0
14. Total Number Core Boxes: 8
15. Elevation Ground Water: ---
16. Date Hole: Started 15 Dec. 72, Completed 19 Dec. 72
17. Elevation Top of Hole: 574.0
18. Total Core Recovery for Boring: 86
19. Signature of Inspector: W. H. Duce

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0 to 3.0 CLAY: slightly sandy as med.-coarse sand-sized lime particles, moist, v. stiff, tan to near olive drab.		A B C D	
			3.0 to 3.6' CLAY: limy as white lime streaks wea. to clay consistency, moist, stiff, suggestion of shaly structure, light gray to tan.	9.0	E F	
10.0			3.6 to 4.0 CLAY: moist, stiff, shaly structure, iron-stained olive drab. Spl. contains few soft grey-sized lt yellow sandstone fragments. Augers to lt ylw. powder-w/abundant clay frags + few ss frags.	9.5 11.0 L0.5 12.5 L 1.5	1	
	1		Appears to be highly wea. shale w/ ss. seams.	17.0		
20.0	2		4.0 to 6.0 SHALE: weathered, soft, lt. gray w/ iron-staining. Lither. stiff to hard clay).	L1.3 21.0		
			6.0 to 7.8 SAND: clayey and CLAY: somewhat sandy, moist, sand is soft, clay is medium to med. stiff. Sand lt. dull yellow, clay lt. brown w/ iron-staining - a mixed sample.	L0.5 13.5 L0.5 14.7	2	
	3		7.8 - 9.0' SAND and SANDSTONE: Sand often times only, fine grained, slightly moist, rusty dark brown. Contains trace of red clay - ironstone. Sandstone varies Sandstone on degree of iron cementation.	L0.0 17.5 L0.0	3	
30.0			9.0-11.0 SANDSTONE 9.0-9.5 HARD, CALC, FINE GRN, POORLY BEDDED, IRON STAINED, DRK RED & YELLOW 9.5-11.0 CALC, FINE GRN DENSE, V. DENSE, DRK. YELLOW.	33.3	4	
				L0.0 37.9 L1.7		
	4		11.0' to 32.5' SAND --	42.4	5	
			11.0' to 24.5' Fine-grained, med. compact, sli. moist, sli. Fe stain, lt. tan to tan.	0.7 46.0	6	
	5		Note: More Fe stain from 22.0' to 24.5'.	1.0		
50.0			24.5' to 28.5' Clayey, fine-grained, some thin clay lenses,	50.3 L.	7	
	6		moist, drk. gray.	0.4		
			28.5' to 32.5' V. clayey, thinly bedded, moist, med. compact to dense, drk. gray.	54.8	8	
	7		32.5' to 60.0 SHALE --	L. 1.4		
60.0			Laminated to poorly fissile, v. stiff, moist, blue-blk.	60.0		
			Note: Carton #3 contains sand & clay-shale contact.			
			44.0' to 44.2' SILTSTONE - Hard, conchoidal fracture, lt. tan.			
			52.4' to 52.6' SANDSTONE - HARD, calc, fine-grained, drk. gray.			
			---- T.D. 60.0' ---			

Remarks:
1. 4" plastic pipe set to depth of 40.0' for water level observation.
2. JARS:
A. 0.0' to 3.0'
B. 3.0' to 3.5'
C. 3.5' to 4.0'
D. 4.0' to 6.0'
E. 6.0' to 7.8'
F. 7.8' to 9.0'
G. @ 23.0'
3. CARTONS:
1. 15.6' to 16.4'
2. 24.7' to 25.7'
3. 31.9' to 32.9'
4. 40.0' to 42.0'
5. 45.3' to 46.3'
6. 51.7' to 52.5'
7. 57.6' to 58.6'
4. Started 6" core @ 9.0'.

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE — (TRANSLUCENT) — Project: Aquilla Dam — 8A6C-2

CORPS OF ENGINEERS

Hole No. 8A6C-1

DRILLING LOG — Division: Southwestern — Installation: Fort Worth — Sheet 1 of 2 sheets

1. Project: Aquilla
2. Location: Site-D
3. Drilling Agency: Corps of Engineers
4. Hole No.: 8A6C-1
5. Name of Driller: Brown
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 16.5'
8. Depth Drilled into Rock: 43.5'
9. Total Depth of Hole: 60.0'
10. Size and Type of Bit: 6" auger, 6" core
11. Datum for Elevation: MSL
12. Manufacturer's Designation of Drill: Failing 310
13. Total No. of Overburden Samples Taken: Disturbed 7, Undisturbed 0
14. Total Number Core Boxes: 8
15. Elevation Ground Water: ---
16. Date Hole: Started 19 Dec. 72, Completed 22 Dec. 72
17. Elevation Top of Hole: 592.0
18. Total Core Recovery for Boring: 99
19. Signature of Inspector: W. H. Duncan

Elevation	Depth	Legend	Classification of Materials (Description)	Core Run No.	Box No.	Remarks
			0.0 to 3.0' CLAY: slightly silty, lean, moist, medium, dark grayish brown. Trace of small gravel & fine roots.		A	
			3.0 to 5.0 CLAY: slightly sandy as fine to coarse sand-sized lime particles, lean, very stiff to hard, 3.0-3.8' Trace gravel to 4", grayish brown. 3.8-5.0' Somewhat crumbly, tan.		B C D E	
10.0			5.0 to 6.3 CLAY: Very limy, lean, slightly moist to dry, v. stiff, light tan. Ambient white lime wea. to clay consistency.		F	
			6.3 to 7.5 CLAY: slightly sandy to sandy (qtz. sand) (lime) slightly moist, moderately stiff, crumbly, light tan.	16.5 17.0 19.9	G	
20.0	2		Trace to Small % small gravel to coarse sand-sized sandstone fragments.	20.5	1	
			7.5 to 14.0 CLAY (highly wea. shale): v. thin lime streaks wea. to clay consistency, moist, stiff - v. stiff, shaly structure, yellowish tan with white & few grayish streaks.	L.O 25.0	2	
	3		14.0 to 16.5'	L.O 29.0	3	
30.0			CLAY: no visible lime but limy reaction to acid, moist, stiff to v. stiff, no shaly structure, yellowish tan with numerous light gray streaks.	L.O 33.0		
			16.5-17.4			
	4		SANDSTONE: HARD, calc, fine grn, SOLID - DRK RED.	L.O.5	4	
			17.4-25.0			
			CLAY: INTERBEDDED w/ SAND, SANDY CLAY & CLAY LENSES, STIFF-MED COMPACT, MOIST: INDICATED RED & YELLOW & DRK. GRAY.	37.0 L.O.5		
			25.0' to 28.8' CLAY-SHALE	41.0	5	
	5		25.0' to 28.0' Stiff, moist, drk. gray	L. 0.0 45.0		
			28.0' to 28.8' Sandy, med.-stiff, thin lenses of gray sand, drk. gray.	L. 0.0	6	
	6		SANDSTONE 28.4' to 28.6' HARD, calc., fine-grained, drk. gray	49.0 L. 0.0		
50.0			28.8' to 40.1' SAND --	53.0	7	
	7		Clayey, med. compact, moist, some clay lenses, drk. gray.	L. 0.0		
	8		40.1' to 43.8' SHALE --	57.0	8	
			Stiff-v. stiff, laminated, sli. fissile, blue-blk	L. 0.0 60.0		
60.0	9		43.8' to 49.1' SAND --			
			Clayey, med. compact, moist, drk. gray.			
			49.1' to 60.0' SHALE --			
			v. stiff, fissile, thinly laminated, moist, drk. blue-blk.			
			Some siltstone lenses or nodules.			
			--- T.D. 60.0' ---			

Remarks:
1. Set plastic pipe 4", to
2. JARS:
A. 0.0' to 3.0'
B. 3.0' to 3.8'
C. 3.8' to 5.0'
D. 5.0' to 6.3'
E. 6.3' to 7.5'
F. 7.5' to 14.0'
G. 14.0' to 16.5'
h. @ 33.0'
3. CARTONS:
1. 17.4' to 18.2
2. 19.4' to 20.4
3. 27.1' to 27.9
4. 33.6' to 34.6
5. 42.9' to 43.8
6. 46.9' to 47.9
7. 51.8' to 52.8
8. 55.0' to 56.0
9. 59.0' to 60.0
4. Water loss at 22.5'.
5. Material expanded 1.0' the first 19.0' of core recovered.
6. Started 6" core @ 16.5'.

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE — (TRANSMITTAL) — Project: Aquilla -D — 8A6C-1

Hole No. 8A6C-2

DRILLING LOG — Division: Southwestern — Installation: Fort Worth — Sheet 1 of 2 sheets

1. Project: Aquilla Dam
2. Location: Site -D
3. Drilling Agency: Corps of Engineers
4. Hole No.: 8A6C-2
5. Name of Driller: Brown
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 3.5'
8. Depth Drilled into Rock: 56.5'
9. Total Depth of Hole: 60.0'
10. Size and Type of Bit: 8" auger, 6" core
11. Datum for Elevation: MSL
12. Manufacturer's Designation of Drill: Failing 310
13. Total No. of Overburden Samples Taken: Disturbed 2, Undisturbed 0
14. Total Number Core Boxes: 8
15. Elevation Ground Water: ---
16. Date Hole: Started 15 Dec. 72, Completed 19 Dec. 72
17. Elevation Top of Hole: 574.0
18. Total Core Recovery for Boring: 86
19. Signature of Inspector: W. H. Duncan

Elevation	Depth	Legend	Classification of Materials (Description)	Core Run No.	Box No.	Remarks
			0.0 to 3.0 CLAY: slightly sandy as med.-coarse sand-sized lime particles, moist, v. stiff, tan to near olive drab.		A B C D	
			3.0 to 3.5 CLAY: limy as white lime streaks wea. to clay consistency, moist, stiff, suggestion of shaly structure, light gray to tan.	9.0 9.5	E F	
10.0			3.5 to 4.0 CLAY: moist, stiff, shaly structure, iron-stained olive drab. Spl. contains few soft grain-sized lt. yellow sandstone fragments. Augers to lt. yellow powder w/ abundant clay frags + few ss frags.	11.0 L0.5 12.5 L 1.5	1	
			Appears to be highly wea. shale w/ ss. seam.	17.0		
			4.0 to 6.0 SHALE: weathered, soft, lt. gray w/ iron-staining. Lithov. stiff to hard clay).	L1.3 20.0		
20.0			6.0 to 7.8 SAND: clayey and CLAY: somewhat sandy, moist, sand is soft, clay is medium to med. stiff. Sand lt. dull yellow, clay lt. brown w/ iron-staining - a mixed complex.	21.0 L0.5 23.5 L0.5 25.7 L0.0	2	
	2		7.5-9.0' SAND and SANDSTONE: Trace of fines only, fine grained, slightly moist, rusty dark brown. Contains trace of red clay - ironstone. Sand versus Sandstone on degree of iron cementation.	27.5 L.0	3	
30.0	3		9.0-11.0 SANDSTONE 9.0-9.5 HARD, CALC, FINE GRN, POORLY BEDDED, IRON STAINED, DRK RED & YELLOW 9.5-11.0 CALC, FINE GRN DENSE, V. DENSE, DRK. YELLOW.	33.3 L0.0 37.9 L1.7	4	
	4		11.0' to 32.5' SAND --	42.4	5	
			11.0' to 24.5' Fine-grained, med. compact, sli. moist, sli. Fe stain, lt. tan to tan.	0. 0.7 46.0	6	
	5		Note: More Fe stain from 22.0' to 24.5'.	0. 1.0		
50.0			24.5' to 28.5' Clayey, fine-grained, some thin clay lenses, moist, drk. gray.	50.3 L. 0.4	7	
	6		28.5' to 32.5' V. clayey, thinly bedded, moist, med. compact to dense, drk. gray.	54.8 L. 1.4	8	
	7		32.5' to 60.0 SHALE --			
60.0			Laminated to poorly fissile, v. stiff, moist, blue-blk.	60.0		
			Note: Carton #3 contains sand & clay-shale contact.			
			44.0' to 44.2' SILTSTONE - Hard, conchoidal fracture, lt. tan.			
			52.4' to 52.6' SANDSTONE - HARD, calc, fine-grained, drk. gray.			
			---- T.D. 60.0' ---			

Remarks:
1. 4" plastic pipe set to depth of 40.0' for water level observation.
2. JARS:
A. 0.0' to 3.0'
B. 3.0' to 3.5'
C. 3.5' to 4.0'
D. 4.0' to 6.0'
E. 6.0' to 7.8'
F. 7.8' to 9.0'
G. @ 23.0'
3. CARTONS:
1. 15.6' to 16.4'
2. 24.7' to 25.7'
3. 31.9' to 32.9'
4. 40.0' to 42.0'
5. 45.3' to 46.3'
6. 51.7' to 52.5'
7. 57.6' to 58.6'
4. Started 6" core @ 9.0'.

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE — (TRANSMITTAL) — Project: Aquilla Dam — 8A6C-2

Hole No. 8A6C-2

DRILLING LOG — Division: Southwestern — Installation: Fort Worth — Sheet 1 of 2 sheets

1. Project: Aquilla Dam
2. Location: Site -D
3. Drilling Agency: Corps of Engineers
4. Hole No.: 8A6C-2
5. Name of Driller: Brown
6. Direction of Hole: Vertical
7. Thickness of Overburden: 3.5'
8. Depth Drilled into Rock: 56.5'
9. Total Depth of Hole: 60.0'
10. Size and Type of Bit: 3" auger, 6" core
11. Datum for Elevation Shown: (Top of Hole)
12. Manufacturer's Designation of Drill: Failing 310
13. Total No. of Overburden Samples Taken: Disturbed 2, Undisturbed 0
14. Total Number Core Boxes: 8
15. Elevation Ground Water: —
16. Date Hole: Started 15 Dec. 72, Completed 19 Dec. 72
17. Elevation Top of Hole: 574.0
18. Total Core Recovery for Boring: 86 %
19. Signature of Inspector: Ruth H Durad

Elevation	Depth	Legend	Classification of Materials	% Core Recovery	Box or Sample No.	Remarks
	0.0 to 3.0		CLAY: slightly sandy as med.-coarse sand-sized lime particles, moist, v. stiff, tan to near olive drab.		A	1. 4" plastic pipe set to depth of 40.0' for water level observation.
	3.0 to 3.5		CLAY: limy as white lime streaks w.c.a. to clay consistency, moist, stiff, suggestion of shey structure, light gray/light tan.		D	2. JARS: A. 0.0' to 3.0' B. 3.0' to 3.5' C. 3.5' to 4.0' D. 4.0' to 6.0' E. 6.0' to 7.8' F. 7.8' to 9.0' G. @ 23.0'
10.0	3.5 to 4.0		CLAY: moist, stiff, shaly structure, iron-stained olive drab. Spl contains few soft greish-gray shale fragments. Augers to it, yields powder w/abundant clay frags + few SS frags.	9.0 / 4.5 / 11.0 / 10.5 / 13.5	E / F / I	3. CARTONS: 1. 15.6' to 16.4' 2. 24.7' to 25.7' 3. 31.9' to 32.9' 4. 40.0' to 42.0' 5. 45.3' to 46.3' 6. 51.7' to 52.5' 7. 57.6' to 58.6'
	4.0 to 5.0	1	Appears to be highly wea shale w/ SS seam.	1.5 / 17.0		
	5.0 to 6.0		SHALE: weathered, soft, lt. gray w/iron-staining, v. stiff to hard clay.	11.3		4. Started 6" core @ 9.0'.
20.0	6.0 to 7.8		SAND: clayey and CLAY: somewhat sandy, moist, sandy is soft, clay is medium to med. stiff. Sand lt. dull yellow, clay lt. brown w/ iron-staining - a micro conglo	31.6 / 10.5 / 13.5 / 10.5 / 15.7	2	
	7.8 to 9.0	2		10.0	3	
	9.0 to 11.0		SAND and SANDSTONE: Trace of fine-sandy, fine grained, slightly moist, rusty dark brown. Contains trace of red clay - ironstone. Sand varies	19.5 / 14.0		
30.0	11.0 to 11.8	3	Sandstone on degree of iron cementation	33.3	4	
	11.8 to 12.0		SANDSTONE	10.0		
	12.0 to 13.0		9.0-9.5 Hard, calc, fine grn, poorly bedded, iron stained, dk red & yellow	37.9		
	13.0 to 14.0		9.5-11.8 calc, fine grn, dense, v. dense, dark yellow.	41.7		
	14.0 to 15.0	4			5	
	15.0 to 16.0		11.0' to 32.5' SAND --	42.4		
	16.0 to 17.0		11.0' to 24.5' Fine-grained, med. compact, sli. moist, sli. Fe stain, lt. tan to tan.	0.7 / 46.0	6	
	17.0 to 18.0	5	Note: More Fe stain from 22.0' to 24.5'.	1.0	7	
50.0	18.0 to 19.0		24.5' to 28.5' Clayey, fine-grained, some thin clay lenses, moist, drk. gray.	50.3 / 0.4		
	19.0 to 20.0	6	28.5' to 32.5' V. clayey, thinly bedded, moist, med. compact to dense, drk. gray.	54.8	8	
	20.0 to 21.0		32.5' to 60.0 SHALE --	1.4		
	21.0 to 22.0		Laminated to poorly fissile, v. stiff, moist, blue-blk.	60.0		
60.0	22.0 to 23.0	7	Note: Carton #3 contains sand & clay-shale contact. 44.0' to 44.2' SILTSTONE - Hard, conchoidal fracture, lt. tan. 52.4' to 52.6' SANDSTONE - HARD, calc, fine-grained, drk. gray. ---- T.D. 60.0' ---			

NC FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) — Project: Aquilla Dam — Hole No. 8A6C-2

Hole No. 8A6C-3

DRILLING LOG — Division: SOUTHWESTERN — Installation: FORT WORTH DIST — Sheet 1 of 2 sheets

1. Project: Aquilla Dam
2. Location: SITE D
3. Drilling Agency: USACE - MOBILE DIST
4. Hole No.: 8A6C-3
5. Name of Driller: BROWN
6. Direction of Hole: Vertical
7. Thickness of Overburden: 36.0
8. Depth Drilled into Rock: 23.1
9. Total Depth of Hole: 59.1
10. Size and Type of Bit: 8" RHEBER 6" CORE
11. Datum for Elevation Shown: MSL
12. Manufacturer's Designation of Drill: FAILING 310
13. Total No. of Overburden Samples Taken: Disturbed 9, Undisturbed 0
14. Total Number Core Boxes: 5
15. Elevation Ground Water: #
16. Date Hole: Started 8 Dec '71, Completed 15 Dec '71
17. Elevation Top of Hole: 535.5
18. Total Core Recovery for Boring: 88 %
19. Signature of Inspector: RUEDE & DREES

Elevation	Depth	Legend	Classification of Materials	% Core Recovery	Box or Sample No.	Remarks
	0.0 to 5.5		CLAY: LEAN, MOIST, STIFF, DRK GRAY.			* WATER LEVEL HOLE BECAME WET @ 29.0'. SET 4" PLASTIC PIPE TO 40.0'.
	5.5 to 16.0		CLAY: SL. SANDY TO SANDY AS FINE TO CRS SAND-SIZED LIME PARTICLES, LEAN. 5.5-8.0 MOIST, U. STIFF, GRAY & YELLOW - BRN. 8.0-11.0 SOME OF LIME PARTICLES WITH TO CLAY CONSISTENCY, SL. MOIST, U. STIFF - HARD, YELLOWISH - TAN. 11.0-16.0 FINE-MED SIZED LIME PARTICLES, HARD, YELLOWISH - TAN.			JAR SAMPLES: A. 0.0-5.5 B. 5.5-8.0 C. 8.0-11.0 D. 11.0-16.0 E. 16.0-21.0 F. 21.0-24.0 G. 24.0-29.0 H. 29.0-35.0 I. 35.0-36.0
	16.0 to 24.0		GRAVEL: SANDY, (FINE-CRS SAND), CLAYEY, MOIST, BROWN. GRAVEL 1/4" - 5#			CARTON SAMPLES: 1. 38.9 - 39.9 2. 46.7 - 47.7 3. 56.5 - 57.5
	24.0 to 29.0		CLAYEY SAND/SANDY CLAY MOIST, MED., RUSTY TAN.			WEATHERING: MATY SL. WEATH TO 41.0'.
	29.0 to 35.0		CLAY: SANDY, MOIST, MED. STIFF-STIFF, RUSTY TAN W/ SOME LT. GRAY INCLUSIONS.			NOTE: SHALE IS HIGHLY EXPANDABLE FROM 36.0' - 40.0'
	35.0 to 36.0		CLAYEY SAND/SANDY CLAY MOIST, SOFT, RUSTY TAN W/TRACE OF LT. GRAY.			
	36.0 to 59.1		GRAVEL V. CLAYEY, SANDY, V. MOIST, CLAY FRACTION SOFT, YELLOW-BROWN GRAVEL TO +1½".	35.0 / 0.0 / 37.0		
			SHALE: FISSILE, TAN/LY LAMINATED, STIFF-U. STIFF, MOIST, BLUE-BLACK. 37.0-39.5 THIN LENSES OF SAND.	0.2 / 40.7		— STARTED 6" CORE AT 35.0'
40		1	37.6' to 37.9' - LIMESTONE, sandy, HARD, crystalline, gray.	L. 0.0 / 43.9		
		2	Thin beds of SANDSTONE located @: 40.3' to 40.8' - HARD, fine-grained, calc., drk.-gray, pyritic. 42.3' to 42.8' 50.0' to 50.2' 55.0' to 55.2' 56.0' to 56.2'	L. 0.0 / 46.2 / L. 1.5 / 50.2	3	
50.0		3	Thin beds or nodules of SILTSTONE located @: 38.0' to 38.1' HARD, conchoidal fracture, lt. tan. 46.0' to 46.2' 47.8' to 47.9' 50.7' to 50.8' 51.3' to 51.8'	L. 0.0 / 52.9 / L. 1.5 / 56.3	4	
		4		L. 0.0 / 59.1	5	
60.0		5	-- T.D. 59.1' --			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) — Project: Aquilla Dam - D — Hole No. 8A6C-3

DRILLING LOG — Division: Southweste — Sheet 1 of 2 sheets

1. Project: Aquilla
2. Location: Site -D
3. Drilling Agency: Corps of Engineers
4. Hole No.: 8A6C-4
5. Name of Driller: Jones
6. Direction of Hole: Vertical
7. Thickness of Overburden: 32.5'
8. Depth Drilled into Rock: 1.0'
9. Total Depth of Hole: 33.5'

Elevation	Depth	Legend	Classification of Materials
	0.0 to 28		CLAY--
	0.0 to 4.5		Calc., some med. to stiff tree roots,
	4.5 to 6.0		Sli. sandy, stiff, sli. moist, calc. brwn. to drk
	6.0 to 16.0		Sli. sandy, hard, calc., stiff @ 7.5 moist, becom moist @ 12.5
	16.0 to 25.0		Sandy, calc. med. to stiff
10.0			Becoming @ 25.0'.
	25.0 to 28.0		Sandy, calc. med to stiff limy nodules carbonaceous yel.brwn.
	28.0 to 32		SAND --
			Gravelly (fi clayey, satu loose to med yel.brwn, cal
477.0	32.5 to 33		CLAY --
			(Clay-shale), moist, sli. gray
			--- T. D. 33.5
39.0			
472.5			

SYM	DOC. NO.	ACTION	DATE

U.S. ARMY ENG CO

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

RECORD DRAWING-WORK AS BUILT

TO ACCOMPANY FINAL FOUNDATI

Hole No. 8A6C-3

DRILLING LOG	Division: SOUTHWESTERN
Installation: FORT WORTH DIST.	Sheet 1 of 2 sheets
1. Project: Aquilla Dam	10. Size and type of bit: 6" Auger
2. Location: SITE D	11. Datum for elevation shown: MSL
3. Drilling agency: USAGE-Mobile Dist	12. Manufacturer's designation of drill: Failing 310
4. Hole No.: 8A6C-3	13. Total No. of overburden samples taken: Disturbed 9, Undisturbed 0
5. Name of driller: Brown	14. Total number core boxes: 5
6. Direction of hole: ☒ Vertical ☐ Inclined	15. Elevation ground water: #
7. Thickness of overburden: 36.0	16. Date hole: Started 9 Dec '72, Completed 15 Dec '72
8. Depth drilled into rock: 23.1	17. Elevation top of hole: 535.5
9. Total depth of hole: 59.1	18. Total core recovery for boring: 88
	19. Signature of inspector: Ruede & Drees

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0-5.5 CLAY: LEAN, MOIST, STIFF, DRK GRAY.			* WATER LEVEL HOLE BECAME WET @ 19.0'. SET 4" PLASTIC PIPE TO 40.0'.
			5.5-16.0 CLAY: SL. SANDY TO SANDY AS FINE TO CRS SAND-SIZED LIME PARTICLES, LEAN. 5.5-8.0 MOIST, U. STIFF GRAY & YELLOW - BRN. 8.0-11.0 SOME OF LIME PARTICLES WEATH TO CLAY CONSISTENCY, SL. MOIST, U. STIFF-HARD, YELLOWISH-TAN. 11.0-16.0 FINE-MED SIZED LIME PARTICLES, HARD, YELLOWISH-TAN.			JAR SAMPLES: A. 0.0-5.5 B. 5.5-8.0 C. 8.0-11.0 D. 11.0-16.0 E. 16.0-21.0 F. 21.0-24.0 G. 24.0-29.0 H. 29.0-35.0 I. 35.0-36.0
10			16.0-21.0 GRAVEL: SANDY, (FINE-CRS SAND), CLAYEY, MOIST, BROWN. GRAVEL 1/4" - 5/8"			CARTON SAMPLES: 1. 38.9 - 39.9 2. 46.7 - 47.7 3. 56.5 - 57.5
20			21.0-24.0 CLAYEY SAND/SANDY CLAY MOIST, MED, DUSTY TAN.			WEATHERING: MOD'L SL. WEATH TO 41.0'.
			24.0-29.0 CLAY: SANDY, MOIST, MED. STIFF-STIFF, DUSTY TAN W/ SOME LT. GRAY INCLUSIONS			NOTE: SHALE IS HIGHLY EXPANDABLE FROM 36.0' - 40.0'
			29.0-35.0 CLAYEY SAND/SANDY CLAY MOIST, SOFT, DUSTY TAN W/TRACE OF LT. GRAY.			
30			35.0-36.0 GRAVEL V. CLAYEY, SANDY, V. MOIST, CLAY FRACTION SOFT, YELLOW-BROWN GRAVEL TO +1¼".	35.0		— STARTED 6" CORE AT 35.0'
			36.0-59.1 SHALE: FISSILE, THINLY LAMINATED, STIFF-U. STIFF, MOIST, BLUE-BLACK. 36.0-39.5 THIN LENSES OF SAND.	36.0 37.0 40.2 40.7		
40	1		37.6' to 37.9' - LIMESTONE, sandy, HARD, crystalline, gray.	L. 0.0 43.9	3	
	2		Thin beds of SANDSTONE located @: 40.3' to 40.8' - HARD, fine-grained, calc., drk.-gray, pyritic. 42.5' to 42.8' 50.0' to 50.2' 55.0' to 55.2' 56.0' to 56.2'	L. 0.0 46.2 L. 1.5 50.2	4	
50			Thin beds or nodules of SILTSTONE located @: 38.0' to 38.1' HARD, conchoidal fracture, lt. tan. 46.0' to 46.2' 47.8' to 47.9' 50.7' to 50.8' 51.3' to 51.8'	L. 0.0 52.9 L. 1.5 56.3	5	
	3			L. 0.0 59.1		
60			-- T.D. 59.1' --			

Hole No. 8A6C-4

DRILLING LOG	Division: Southwestern
Installation: Fort Worth	Sheet 1 of 2 sheets
1. Project: Aquilla	10. Size and type of bit: 9" Auger
2. Location: Site -D	11. Datum for elevation shown:
3. Drilling agency: Corps of Engineers	12. Manufacturer's designation of drill: Failing
4. Hole No.: 8A6C-4	13. Total No. of overburden samples taken: Disturbed 9, Undisturbed
5. Name of driller: Jones	14. Total number core boxes: 0
6. Direction of hole: ☒ Vertical ☐ Inclined	15. Elevation ground water: **
7. Thickness of overburden: 32.5'	16. Date hole: Started 9 Jan. 73, Completed 12 Jan. 73
8. Depth drilled into rock: 1.0'	17. Elevation top of hole: 535.3
9. Total depth of hole: 33.5'	18. Total core recovery for boring:
	19. Signature of inspector: Robt A Drees

Elevation	Depth	Legend	Classification of Materials (Description)	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 28.0' CLAY-- 0.0' to 4.5' Calc., some sand grains, med. to stiff, moist, tree roots, drk.-brwn.	A	** 1. Water level was 20.0' 10 Jan. 73.
			4.5' to 6.0' Sli. sandy, stiff-v. stiff, sli. moist to moist, calc., tree roots, brwn. to drk.brwn.	B	2. JARS: A. 0.0' to 4.5' B. 4.5' to 5.0' C. 5.0' to 6.0' D. 6.0' to 11.0' E. 11.0' to 16.0' F. 16.0' to 20.0' G. 20.0' to 25.0' H. 25.0' to 28.0' I. 28.0' to 32.5' J. 32.5' to 33.5'
			6.0' to 16.0' Sli. sandy, v. stiff to hard, calc., becoming stiff @ 7.5', sli. moist, becoming more moist @ 12.5'.	C	
			16.0' to 25.0' Sandy, calc., moist, med. to stiff, yel.brwn.	D	
			Becoming v. moist @ 25.0'.		
10.0			25.0' to 28.0' Sandy, calc., v. moist, med to stiff, scattered limy nodules, thin blk. carbonaceous films, yel.brwn.		
			28.0' to 32.5' SAND -- Gravelly (fine to med.), clayey, saturated, loose to med. compact, yel.brwn, calc.	E	3. Primery augered into @ 32.5', highly weathered to consistancy of clay.
489.0	46.2		32.5' to 33.5' CLAY -- (Clay-shale), sandy, moist, sli. calc, drk. gray	F G H I J	
			--- T. D. 33.5' ---		
477.0	58.0				
	30.0				
472.5					

SYM	NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ---------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-1, 2, 3 AND 8A-4

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-B-C-0033
DRAWING NUMBER
SHEET NO. B-1 OF
SEQUENCE NO. 106

CONTR. NO. DACW63-B1-C-0033

RECORD DRAWING-WORK AS BUILT

CORPS OF ENGINEERS

Hole No. SA6C-5

DRILLING LOG — Division: Southwestern — Royal Layton: Fort Worth — Sheet 1 of 2 Sheets

1. Project: Aquilla
2. Location: Site-D
3. Drilling Agency: Corps of Engineers
4. Hole No.: SA6C-5
5. Name of Driller: Jones
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 5.4'
8. Depth Drilled into Rock: 44.6'
9. Total Depth of Hole: 60.0'
10. Size and Type of Bit: 4" Auger, 6" Core
11. Datum for Elevation shown: msl
12. Manufacturer's Designation of Drill: Failing
13. Total No. of Overburden Samples Taken: Disturbed 0, Undisturbed 4
14. Total Number Core Boxes: 8
15. Elevation Ground Water: oo
16. Date Hole: Started 8 Jan. 73, Completed 9 Jan. 73
17. Elevation Top of Hole: 537.4
18. Total Core Recovery for Boring: 88.2 %
19. Signature of Inspector: Ralph A. Dill

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 5.4' CLAY -- 0.0' to 3.5' Some sand grains, med.-stiff, moist, drk. brwn to blk. 3.5' to 4.9' Sli. sandy, v. stiff to hard, sli. moist, brwn. 4.9' to 5.4' Sli. sandy, stiff-v. stiff, sli. moist, some calc. nodules.		A	oo 1. 30.0' of plastic pipe put in hole water level 19.03 12 Jan. 73
			-- Augered into primary @ 5.4' ---		B	
					C	2. JARS: A. 0.0' to 3.5' B. 3.5' to 4.9' C. 4.9' 5.4' D. 5.4' to 10.0'
532					D	
	10.0			10.0'		3. CARTONS: 1. 11.3' to 12.3' 2. 17.0' to 18.0' 3. 23.7' to 24.7' 4. 29.4' to 30.4' 5. 36.5' to 37.5' 6. 43.2' to 44.2' 7. 51.7' to 52.7' 8. 57.5' to 58.5'
		1	5.43. to 14.0' SHALE -- (Clay-Shale) 5.4' to 10.0' Sandy, dry-sli. moist, v. stiff, yel. brwn.	L. 0.6 13.0' L. 2.5' 17.0'	1	
		2	10.0' to 14.0' Sandy, sli. fissile, moist, v. stiff, calc. yel.brwn.	L. 0.5 20.0 L. 0.5	2	
	20.0	3	14.0' to 14.3' SANDSTONE HARD, calc., thinly bedded, fine-grained. gray	24.0' B. 0.7	3	4. Shales weathered to the consistance of a clay-shale to 39.0'.
			14.3' to 14.7' SHALE V. stiff, calc, moist, yel.-brwn.	28.0' L. 0.5		
	30.0	4	14.7' to 15.0' SANDSTONE HARD, thinly bedded, fine-grained, gray	32.0' L. 1.0	4	
		5	15.0' to 47.5' SHALE (Clay-Shale)	36.5' B. 0.7 39.0'	5	
			15.0' to 28.0' Some sandy lenses, thin seams of Fe stained sh. V. stiff, moist, calc., some selenite, sli, fissile, interbeded yel. & gray shale.	L. 1.1 43.0' G. 0.7 45.3'		
		6	28.0' to 39.0' Interbeded gray sandy lenses & blk. shale, thinly bedded, v. stiff to hard or dense, moist.	B. 0.5 49.0'		
	50.0		Note: Sandstone beds or lenses located @ 27.0' to 27.2' 33.0' to 33.3' 33.5' to 33.7' HARD, fine grained, thinly bedded, gray	L. 0.8 53.0' L. 0.5 57.0'		
		7	Siltstone beds or lenses located @ 28.6' to 28.7' 29.1' to 29.2' HARD, conchoidal fracture, tan.	G. 0.7 60.0'		
		8	39.0' to 47.5' Some w. thin sand lenses interbedded, hard, fissile, moist, drk.gray to blk.			
			47.5' to 60.0' SANDSTONE -- (consistancy of v. dense sand) Clayey, moist, fine-grained, some v. thin sh. seams. Thin carbonaceous seams to 60.0', many seams from 51.7' to 54.0'. drk. gray Limy beds or lenses located @ 54.5' to 55.7' 56.8' to 57.6' 58.0' to 60.0' Mod hard, wht. sandy.			
			-- T. D. 60.0' --			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) — Project: Aquilla -D — Hole No. SA6C-5

Hole No. SA6C-7

DRILLING LOG — Division: SWD — Sheet 1 of ___ Sheets

1. Project: Aquilla Lake Spillway & Embankment
2. Location: X: 2,096,710 Y: 84,480
3. Drilling Agency: USCE
4. Hole No.: SA6C-7
5. Name of Driller: G. Schexnayder
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 4.5'
8. Depth Drilled into Rock: 26.5'
9. Total Depth of Hole: 31.0'
10. Size and Type of Bit: 6" Calyx
11. Datum for Elevation shown: MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 3, Undisturbed 0
14. Total Number Core Boxes: 3
15. Elevation Ground Water: 559.6'
16. Date Hole: Started 28 June 73, Completed 28 June 73
17. Elevation Top of Hole: 564.2'
18. Total Core Recovery for Boring: 76 %
19. Signature of Inspector: Yanke P. Patel

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
564.2	0.0		0.0 to 3.5' CLAY: SANDY; STIFF; MOIST; RUST RED. brn.		0.0 A	I Drilling: 8" FLIGHT AUGER: 0.0' - 6.8' 6" CORE BARREL: 6.8' - 31.0' NOTE: SET 8" CASING TO 5.0'
	3.6		3.5 to 4.0' CLAY: V. SANDY; V. STIFF; MOIST; NO CARBON STAINS; NO CALC NODULES; RUST TRI		3.5 B 4.0	II SAMPLES: DISTURBED (JARS) A: 0.0' - 3.5' B: 3.5' - 4.0' C: 4.0' - 4.5' D: 4.5' - 6.8' UNDISTURBED (CARTON) C-1: 16.0' - 17.0' 2: 18.5' - 19.5' 3: 24.3' - 25.3' 4: 29.3' - 30.3'
559.7	4.5		4.0 to 4.5 GRAV: SANDY, GRAVELLY (MAX 3"), MOIST; STIFF; RUST BRN		4.5 C	
			4.5 to 9.8 SAND: FINE TO MED. GRAINED W. MOIST TO SAT'D.; HARD @ 6.0'; W/ 3.5 FRAGMENTS & SEAMS; NON TO WEAKLY CEMENTED; IRON STAINED; RUST TRI. NOTE: LOST 7.2'-9.8'		4.5 D 6.9 6.8	D: 6.6 R: 0.3 L: 2.7
554.4	9.8		9.8 to 10.3' LIMESTONE: SANDY, MOD. HARD LT. GRAY WHITE		9.8	
553.9	10.3		10.3 to 15.6 SANDSTONE & SANDY SHALE: SOFT, MOIST, VERY TO 15.0'; RUST BRN'T TO 15.0'; BC GRAY FROM 15.0'E TO 15.6' NOTE: LOST 11.8'-15.6'		D: 4.0 R: 2.0 L: 2.0 Box 1	
					13.8	
548.6	15.6		15.6 to 31.0' T.D. SHALE FISSILE, MOIST; SOFT, NON-CALC.; UNWEA.; W/ SCAT. CLAYSTONE STRKS; W/ SCAT. FRAC.; BC GRAY BLK. 17.2' FRAC.	Rec To 17.2'	D: 4.0 R: 2.2 1	
					17.8	
541.2	23		20.5': CLAYSTONE LENS 22.5'-22.2': VERT. FRAC.	Rec To 21.5'	D: 4.0 R: 4.3 18.5 2 Box 2	
			25.5': CLAYSTONE LENS 25.3': FRAC.	Rec To 26.0'	D: 4.8 R: 5.1 24.2 3	
			27.4'-27.6': CLAYSTONE SEAM		26.1 Box 3	
	30		28.5'-29.1': SCAT. 45° FRAC. W/ CLAYSTONE SEAM.	Rec To 30.9'	D: 4.9 R: 4.3 4	
533.2	31.0		30.9': SILTY T.D. 31.0'		31.0 30.9	

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) — Project: Aquilla Lake — Hole No. SA6C-7

Hole No. BAGC-7

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 1 of 2 Sheets

1. Project: AQUILLA LAKE - SPILLWAY & EMBANKMENT — Location: K: 2,696,710 Y: 86,480
2. Drilling Agency: USCE-C — Hole No.: BAGC-7
3. Name of Driller: G. Schoonover
4. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
5. Thickness of Overburden: 4.5'
6. Depth Drilled into Rock: 26.5'
7. Total Depth of Hole: 31.0'
8. Size and Type of Bit: 6" Carboloy
9. Datum for Elevation Shown: MSL
10. Manufacturer's Designation of Drill: Failing 1500
11. Total No. of Overburden Samples Taken: Undisturbed 3 / Disturbed 0
12. Total Number Core Boxes: 9
13. Elevation Ground Water: 559.0'
14. Date Hole: Started 28 June 73 / Completed 28 June 73
15. Elevation Top of Hole: 564.2'
16. Total Core Recovery for Boring: 76 %
17. Signature of Inspector: Jack R. Stiles

Elevation	Depth	Legend	Classification of Materials (Description)	Core Box No.	Boring Sample No.	Remarks
564.2	0.0		0.0 to 3.5': CLAY: SANDY; STIFF; MOIST; REDDISH-BRN.	0.0	A	I. Drilling: 8" Flight Auger: 0.0' - 6.8'; 6" Core Barrel: 6.8' - 31.0'. Note: Set 8" Casing to 5.0'.
	3.6		3.5' to 4.0': CLAY: V. SANDY; V. STIFF; MOIST; w/ CARBON STAINS; w/ CALC. NODULES; RUST TAN	3.5	B	II. Samples: Disturbed (Jars): A: 0.0' - 2.5'; B: 2.5' - 4.0'; C: 4.0' - 4.5'; D: 4.5' - 6.8'. Undisturbed (Carton): C-1: 16.0' - 17.0'; 2: 18.5' - 19.5'; 3: 29.3' - 29.9'; 4: 29.3' - 30.9'
559.7	4.5		4.0 to 4.5': CLAY: SANDY; GRAVELLY (MAX 3/4"); MOIST; STIFF; RUST BRN.	4.0	C	
			4.5 to 9.8': SAND: FINE TO MED. GRAINED; V. MOIST TO SATD.; HARD @ 6.0'; w/ SS FRAGMENTS & SEAMS; NON TO WEAKLY CEMENTED; IRON STAINED; RUST TAN. Note: Lost 9.2'-9.8'	4.5	D	
				6.8		III. Water Level: "Boring Bailed to 27.5' on 28 June 73. 4" Perf. Plastic Pipe was placed to 30.9'. Water Level was 5.2' after 24 hrs.
554.4	9.8		9.8 to 10.3': LIMESTONE: SANDY, MOD. HARD; LT. GRAY w/ WHITE	9.8		D: 6.6 R: 0.8 L: 2.7
553.9	10.3		10.3' to 15.6': SANDSTONE & SANDY SHALE: SOFT; MOIST; WEA. TO 15.0'; RUST BRN TO 15.0'S; BC GRAY FROM 15.0'S to 15.6. Note: Lost 11.8'-15.0'	10.3	Box 1	D: 4.0 R: 2.0 L: 2.0
548.6	15.6		15.6' to 31.0' T.D.: SHALE: FISSILE; MOIST; SOFT; NON-CALC.; UNWEA.; w/ SCAT. CLAYSTONE SEAMS; w/ SCAT. FERR.; BC GRAY BLK. 17.2' Frac.	13.8		D: 4.0 R: 2.3 Rec. to 17.2'
				17.8		D: 4.0 R: 4.3
541.2	23		20.5': CLAYSTONE LENS	21.5	Box 2	Rec. to 21.5'
			21.5'-22.2': VERT. FRAC.	22.8		D: 4.8 R: 5.1
			25.5': CLAYSTONE LENS	24.2	3	Rec. to 26.6'
			25.8': FRAC.	26.6	Box 3	D: 4.9 R: 4.3
			27.4'-27.6': CLAYSTONE SEAM			
			28.5'-29.1': SCAT. 45° FRAC. w/ CLAYSTONE SEAM	29.9	4	Rec. to 30.9'
533.2	31.0		30.9': SILTY T.D. 31.0'	31.0		

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — Project: AQUILLA LAKE — Hole No.: BAGC-7

Hole No. BAGC-8

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 1 of 2 Sheets

1. Project: AQUILLA LAKE - SPILLWAY & EMBANKMENT
2. Drilling Agency: USCE-C — Hole No.: BAGC-8
3. Name of Driller: G. Schoonover
4. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
5. Thickness of Overburden: 2.0'
6. Depth Drilled into Rock: 19.8'
7. Total Depth of Hole: 21.8'
8. Size and Type of Bit: 6" Carboloy
9. Datum for Elevation Shown: MSL
10. Manufacturer's Designation of Drill: Failing 1500
11. Total No. of Overburden Samples Taken: Undisturbed 3 / Disturbed 0
12. Total Number Core Boxes: 3
13. Elevation Ground Water: See Remarks Column
14. Date Hole: Started 1 May 73 / Completed 1 May 73
15. Elevation Top of Hole: 581.1
16. Total Core Recovery for Boring: 74 %
17. Signature of Inspector: Jack R. Stiles

Elevation	Depth	Legend	Classification of Materials (Description)	Core Box No.	Boring Sample No.	Remarks
	0.0		0.0 to 0.9': CLAY: SLI. CALC.; MOIST; STIFF to V. STIFF; w/ SCAT. GRAVEL; DARK BRN. to BRN.	0.4	B	I. Drilling: 10" Flight Auger: 0.0' - 2.0'. Note: Had Auger Refusal at 2.0'. 7 7/8" Rockbit: 2.0' - 6.8'. 6" Core Barrel: 6.8' - 21.8'. Note: Could Not Begin Coring Before 6.8' Because of Long Core Barrel
	0.9		0.9' to 2.0': CLAY: w/ TRACE of SAND; SLI. MOIST; CALC.; V. STIFF; w/ HARD QUARTZITIC S.S. FRAGMENTS; TAN-BRN.	0.9	C	
	2.0		2.0' to 5.8': SANDSTONE: MOD. WEA.; MOD. HARD DOWN TO SOFT; (AUGER REFUSAL); TAN to LT. GRAY BRN. (CLASSIFIED By DRILL REACTION)	2.0	Rock-Bitter No Sample	II. Samples: Disturbed (Jars): A: 0.0' - 0.4'; B: 0.4' - 0.9'; C: 0.9' - 2.0'. Undisturbed (Carton): C-1: 10.7' - 11.7'. Note: Unable to obtain additional carton samples because of breaks in the soft material
	5.8		5.8' to 6.8': SHALE: HIGHLY WEA.; CLAYEY; MOIST; SOFT; TAN & LT. GRAY (CLASSIFIED FROM ROCKBIT CUTTINGS)	6.8	6.8	
	6.8		6.8' to 7.8': SANDSTONE: HIGHLY WEA. WEAKLY CEMENTED; SOFT; MOIST; w/ IRON STAINING; w/ SCAT. THIN SHALE PARTINGS; LT. GRAY & RUST	D: 3.0 R: 2.6 Rec. to 9.4'	Box 1	III. Water Level: "Boring was Bailed to 21.2' on 1 May. 2" Perf. Plastic Pipe was Placed to Depth of 21.8'. Water Level after 24 hrs. was 14.7'.
	7.8		7.8' to 10.3': SHALE: NON-CALC.; SLI. TO MOD. WEA.; CLAYEY; SOFT; SLI. FISSILE; w/ IRON STAIN WEA. ALONG BEDDING PLANES, w/ SCAT. SAND & WEAKLY CEMENTED SANDSTONE PARTINGS & ; LT. BLUE GRAY w/ RUST YELLOW & PURPLE	9.8		
	10		10.3' to 14.8': SANDSTONE: WEATH.; WEAKLY to MODERATELY CEMENTED; MOIST; SOFT; w/ ABUNDANT IRON STAINING; w/ OCCAS. THIN SHALE PARTINGS; RUST. Note: Lost Core from 17.6'-21.8'. Could Not Recover. Was Possibly V. Weakly Cemented S.S. or Sand & was Washed Away. Note: Material Wea. to T.D. 21.8'.	D: 4.0 R: 4.2 Rec. to 13.6'	1	
			14.8'-15.0': SOFT SS. 15.0'-16.5': SANDY STRINGS.	12.7		
	13.8			13.8	Box 2	
	15		Note: Had Partial Loss of Drilling Fluid in Core Run from 13.8'-17.8'.	D: 4.0 R: 4.0 Rec. to 17.6'		
	16.5		16.5 to 21.8' T.D.: SANDSTONE: WEATH.; WEAKLY to MODERATELY CEMENTED; MOIST; SOFT; w/ ABUNDANT IRON STAINING; w/ OCCAS. THIN SHALE PARTINGS; RUST. Note: Lost Core from 17.6'-21.8'. Could Not Recover. Was Possibly V. Weakly Cemented S.S. or Sand & was Washed Away. Note: Material Wea. to T.D. 21.8'.	17.3	Box 3	
	17.8			17.8		
	20			D: 4.0 R: 0.0 Rec. to 17.6'		
	21.8		T.D. 21.8'	21.8		

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — Project: AQUILLA LAKE — Hole No.: BAGC-8

DRILLING LOG — Division: SWD

1. Project: AQUILLA LAKE - SPILLWAY & EMBA
2. Location (Coordinates or Station)
3. Drilling Agency: USCE-C — Hole No.: GDC-
4. Name of Driller: G. SCHOONOVER
5. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg.
6. Thickness of Overburden: 4.6'
7. Depth Drilled into Rock: 25.4'
8. Total Depth of Hole: 30.0'

Elevation	Depth	Legend	Classification of Materials (Description)
	0.0		0.0' to 0.7': CLAY: w/ SCAT.
	0.7		MOIST; V. STI
			DARK BRN. - BL
			0.7' to 3.0': CLAY: CALC. w
			SLI. MOIST; V.
	3.0		3.0' to 4.6': CLAY: w/ CALI
			CALC.; MOIST;
			& WHITE
	4.6		4.6' to 13.1': SHALE: MOD.
			STAINING IN S
			PARTINGS; MO
			MOIST; SLI. FI
			SS. SEAMS, LEN
			BRN. - RUST & L
			4.6'-4.7': Sc
			6.4'-6.7': Sc
			7.7'-7.8': IR
			Sc
			9.0': SOFT S
			9.3'-9.4': Sc
	10		9.8'-10.0': Ca
			HA
			GRA
			LT.
			10.6'-10.8': M
			LT.
			11.6': SOFT S
			12.0'-13.1': S
			12.5'-12.6': M
	13.1		12.8'-12.9': P
			13.1' to 14.0': LIMESTONE:
	14.0		FOSS.; MOD. HAR
			WHITE
			14.0' to 15.1': SHALE: WEA.;
	15.1		MOIST; SOFT; W
			PARTINGS, RUS
			15.5'-14.7':
			15.1' to 18.2': SANDSTONE:
			WEAKLY CEMEN
			CEMENTED; MOI
			LT. GRAY
	18.2		15.1'-15.5': M
			15.9'-16.2': W
			S.S
			16.2'-18.2': SH
			18.2' to 28.2': SHALE: MOI
			TO UNWEA.; W/ SC
			LAMINATIONS &
			MOIST; NON-CA
			SOFT; RUST TAN,
			& PURPLE DOWN T
			BLK. W/ LT. GRA
			18.2'-21.2':
			SAND/S.S
			20.0'-20.2':
			21.3'-21.4':
			21.9': SOFT
			22.7': "
			22.9'-23.1':
			23.1'-24.2':
			24.2'-25.6':
			25.1': PYRIT
			25.2'-25.6'
			25.6'-28.2':
			SHALE:
			W/ABUN
			SANDY S
			& LENSE
	28.2		28.2' to 30.0': SANDSTONE:
			CEMENTED; MOIST
			PARTINGS; LT. GRA
			28.2'-29.5': SH
	30.0		T.D. 30.0'

SYM	DO NO	ACTION	DA

U.S. ARMY

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

RECORD DRAWING-WORK AS BUILT

TO ACCOMPANY FINAL FOUND

Hole No. GDC-9

DRILLING LOG	Division: SWD
Installation: FWD	Sheet 1 of 2 Sheets
1. Project: AQUILLA LAKE - SPILLWAY & EMBANKMENT	10. Size and Type of Bit: 6" CARBOLOY
2. Location (Coordinates or Station):	11. Datum for Elevation Shown (Feet or Mtl): MSL
3. Drilling Agency: USCE-C	12. Manufacturer's Designation of Drill: FAILING 1500
4. Hole No. (As shown on drawing title and file number): GDC-9	13. Total No. of Overburden Samples Taken: Disturbed 3, Undisturbed 1
5. Name of Driller: G. SCHOONOVER	14. Total Number Core Boxes: 5
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ Deg. From Vert.	15. Elevation Ground Water: SEE REMARKS COLUMN
7. Thickness of Overburden: 4.6'±	16. Date Hole: Started 2 MAY 73, Completed 3 MAY
8. Depth Drilled Into Rock: 25.4'±	17. Elevation Top of Hole: 592.3
9. Total Depth of Hole: 30.0'	18. Total Core Recovery for Boring: 85 %
	19. Signature of Inspector: Jackie R. Stiles

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Dry	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0		0.0' TO 0.7'		0.0 A 0.7	I DRILLING:
	0.7		CLAY: W/SCAT. GRAVEL; MOIST; V. STIFF; NON-CALC. DARK BRN. - BLK.		B	10" FLIGHT AUGER: 0.0' - 2.6'
			0.7' TO 3.0'±		2.6	6" DENISON BBL: 2.6' - 5.3'
	3.0		CLAY: CALC. W/ CALC. NODULES; SLI. MOIST; V. STIFF; BRN. - TAN			NOTE: HAD DENISON REFUSAL AT 5.3'
			3.0' TO 4.6'±		DB 1 (3.5)	9 7/8" ROCKBIT: 2.6' - 6.8'
	4.6		CLAY: W/ CALICHE POCKETS; V. STIFF CALC.; MOIST; MOD. FAT; TAN & WHITE		4.6 C 5.3	6" CORE BARREL: 6.8' - 30.0'
			4.6' TO 13.1'		Rock Bitted No Sample	II SAMPLES:
			SHALE: MOD. WEA.; W/ IRON STAINING IN SS SEAMS & PARTINGS; MOD. CALC.; SOFT; MOIST; SLI. FISSILE; W/SCAT. SS. SEAMS, LENSES & PARTINGS; BRN. - RUST & LT. GRAY		6.8	DISTURBED (JARS): A: 0.0' - 0.7' B: 0.7' - 2.6' C: 4.6
			4.6 - 4.7': SOFT SS.	D:3.0 R:2.6 Rec. To 9.4'	Box 1	UNDISTURBED (DENISON): DB 1: 2.6' - 4.6'
			5.1 - 5.3': SOFT SS.			UNDISTURBED (CORE): C-1: 8.4' - 9.4' 2: 20.2' - 21.2' 3: 25.6' - 26.6'
			7.7 - 7.8': IRON STAINED SOFT SS.		1	
			9.0': SOFT SS.			
			9.3 - 9.4': SOFT S.S.			
	10		9.8 - 10.0': CEMENTED L.S.; HARD, DENSE, FINE GRAINED, W/ JOINT, LT. GRAY WHITE	9.8 MOD. D:4.0 R:4.9 Rec. To 13.8		III WATER LEVEL: "B" BORING BAILED TO 23.4' ON 3 MAY 73. 2" PERF. PLASTIC PIPE PLACED TO 29.7'. WATER LEVEL AFTER 24 HRS. WAS 8.2'.
			10.6 - 10.8': MOD. HARD S.S. LT. GRAY WHITE		11.6	
			11.6': SOFT S.S. LENS			
			12.0 - 13.1': SCAT. SAND PARTINGS			
			12.5 - 12.6': MOD. HARD S.S.			
	13.1		12.8 - 12.9': MOD. SOFT S.S.		Box 2	
			13.1' TO 14.0'			
	14.0		LIMESTONE: MOD. WEA.; FOSS.; MOD. HARD; LT GRAY WHITE	13.8		
			14.0' TO 15.1'	D:4.0 R:3.0 Rec. To 16.8		
	15.1		SHALE: WEA.; MOD. FISSILE; MOIST; SOFT; W/ CALC. S.S. PARTINGS, RUST TAN		16.3	
			14.6 - 14.7': SOFT S.S.			
			15.1' TO 18.2'	LOST 16.8' -17.8'		
			SANDSTONE: WEA.; SOFT; WEAKLY CEMENTED TO MOD. CEMENTED; MOIST; TAN W/ LT GRAY	17.8	Box 3	
	18.2		15.1 - 15.3': MOD. CEMENTED S.S.	D:4.0 R:2.0 LOST 17.8' - 19.8'		
			15.4 - 16.4': WEAKLY CEMENTED S.S., RUST & RED.			
			16.2 - 18.2': SMALL SOFT S.S.			
			18.2' TO 28.2'	Rec. FROM 19.8' -21.8'	2	
			SHALE: MOD. WEA.; BROWN TO UNWEA.; W/SCAT. S.S. SEAMS, LAMINATIONS & PARTINGS; MOIST; NON-CALC.; FISSILE; SOFT; RUST TAN, LT. BLUE GRAY & PURPLE BROWN TO DARK GRAY BLK. W/ LT. GRAY PARTINGS.	21.8	Box 3	
			18.2 - 21.2': W/ ABUNDANT SAND/S.S. PARTINGS	D: 1.5 R: 1.2 Rec. To 23.0	23.0	
			20.0 - 20.2': MOD. SOFT S.S. LT GRAY	23.3		
			21.3 - 21.4': SOFT S.S.	D: 2.5 R: 2.6 Rec. To 25.6'	Box 4	
			21.7': SOFT S.S			NOTE: BASE OF WEA. AT 24.8'
			22.7': " "			
			22.9 - 23.1': SOFT S.S			
			23.1 - 24.2': STAINED TIGHT JOINT			
			24.2 - 25.6': PYRITE FLAKES	25.8	3	
			25.1': PYRITE LENS			
			25.2 - 25.6': MOD. SOFT SS	D:4.2 R:4.1 Rec. To 29.7		
			25.6 - 28.2': DARK GRAY SHALE INTERBEDDED W/ABUNDANT LT. GRAY SAND/ S.S. PARTINGS & LENSES			
	28.2		28.2' TO 30.0' T.D.		28.7 Box 5 29.7	
			SANDSTONE: UNWEA.; SOFT CEMENTED; MOIST; W/ SHALE PARTINGS; LT GRAY W/ DARK GRAY.			
			28.2 - 29.3': SHALE PARTINGS			
	30.0		T.D. 30.0'	30.0		

SYM	DO NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------	AQUILLA LAKE AQUILLA CREEK, TEXAS
DRAWN BY: ----------	EMBANKMENT AND SPILLWAY
CHECKED BY: ----------	LOGS OF BORINGS 8A6C-5, 7, 8 AND 6DC-9
SUBMITTED BY: ENGINEER:	INV. NO. DACW63-80-B-0085 DATED: AUG. 1980 CONTR. NO. DACW63-81-C-0035 SEQUENCE NO. 107 DRAWING NUMBER SHEET NO. 8-2 OF

CONTR. NO. DACW63-81-C-0035

S BUILT

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 33

Hole No. BAGC-10

DRILLING LOG — DIVISION: SWD — INSTALLATION: FWD — SHEET 1 OF 2 SHEETS

1. PROJECT: AQUILLA LAKE - SPILLWAY & EMBANKMENT
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and/or number): BAGC-10
5. NAME OF DRILLER: T. SUITS
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 4.9'
8. DEPTH DRILLED INTO ROCK: 21.9'
9. TOTAL DEPTH OF HOLE: 26.8'
10. SIZE AND TYPE OF BIT: 6" - CARBOLOY
11. DATUM FOR ELEVATION SHOWN: MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 4
15. ELEVATION GROUND WATER: See Remarks Column
16. DATE HOLE: STARTED 4 MAY 73; COMPLETED 4 MAY 73
17. ELEVATION TOP OF HOLE: 588.2
18. TOTAL CORE RECOVERY FOR BORING: 86 %
19. SIGNATURE OF INSPECTOR: Jackie K Stokes

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 2.9' CLAY: MOIST; NON-CALC.; W/ SCAT. GRAVEL; V. STIFF; BLK. DOWN TO DARK BRN.		0.0 A 0.8 B	I. DRILLING: 10" FLIGHT AUGER: 0.0' - 4.9' NOTE: HAD AUGER REFUSAL AT 4.9' 9 7/8" ROCKBIT: 4.9' - 6.8' 6" CORE BARREL: 6.8' - 26.8' NOTE: COULD NOT CORE BEFORE 6.8' BECAUSE OF LONG CORE BARREL.
	2.9		2.9' to 4.9' CLAY: CALC. W/ CALICHE POCKETS; SLI. MOIST, V. STIFF; TAN-BRN.		2.9 C	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 0.8' B: 0.8' - 2.9' C: 2.9' - 4.9' UNDISTURBED (CORE): C-1: 12.1' - 13.1' 2: 16.6' - 17.6' NOTE: COULD NOT OBTAIN ADDITIONAL CARTON SAMPLES DUE TO BREAKS IN CORE.
	4.9		4.9' to 6.2' SANDSTONE: WEA. SOFT TO MOD. HARD; MOIST; TAN (NOTE: LOGGED FROM ROCK-BIT REACTION).		4.9 ROCK-BIT REACTION	
	6.2	S	6.2' to 7.3' SHALE: HIGHLY WEA.; CLAYEY, MOIST; SOFT; CALC.; RUST TAN 6.9'-7.0': SOFT SS.	6.8		
	7.3	S	7.3' to 7.8' SANDSTONE: SLI. WEA., CALC. QUARTZITIC; JOINTED; MOD. HARD; LT. GRAY	D:4.0 R: Rec. To 10.5' Lost 7.8'-9.4'		III. WATER LEVEL: ▼ BORING BAILED TO 21.0' on 4 MAY 73. 2" PERF PLASTIC PIPE WAS PLACED TO 23.5'. BORING HAD CAVED IN AT 23.5' W/ NO FREE WATER ABOVE CAVE-IN.
10	7.8	S	7.8' to 19.3' SHALE: HIGHLY WEA. DOWN TO SLI. WEA.; W/ IRON STAINS, W/ SANDY SEAMS & S.S. SEAMS; SOFT; MOIST; ESS. NON-CALC.; LT. GRAY W/ RUST DOWN TO LT. BLUE GRAY 7.8'-13.6': SANDY 11.9'-13.6': SOFT S.S. 13.6'-14.3': LT. BLUE GRAY 14.8'-15.2': FRAC. SOFT S.S. 18.2'-18.4': LT. GRAY SOFT S.S. 19.1'-19.3': PURPLE & RED	9.4	Box 1	
	10.8	S		D:4.0 R:4.3 Rec. To 14.8'	1	
	13.9	S				
	14.8			D:4.0 R:3.7 Rec. To 18.5'	Box 2 2	
19.3	18.8				18.8	
20			19.3' to 26.8' T.D. SANDSTONE: MOD. WEA.; MODIFIED TO MOD. CEMENTED; MOIST; W/ SCAT. SHALY ZONES; SOFT TO MOD. SOFT; TAN TO LT. GRAY W/ RUST RED 19.6'-20.1': CEMENTED MOD. SOFT S.S. W/ SMALL SOLUTION CAVITIES. 21.5'-22.3': CEMENTED MOD. SOFT RED IRON STAINED S.S. 22.3'-25.4': WEAKLY CEMENTED SOFT SHALY S.S. RUST TAN & LT. GRAY 25.4'-25.6': CEMENTED MOD. SOFT SHALY S.S. TAN & LT. GRAY NOTE: WEA. TO T.D. 26.8'	D:4.0 R:3.1 Rec. To 21.6'	Box 3 3	
	22.8			D:4.0 R:4.0 Rec. To 25.6'	22.8 23.5 Box 4 4	
	25.6				25.6	
26.8	26.8		T.D. 26.8'		26.8	
30	30.0					

EMC FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) — PROJECT: AQUILLA LAKE — HOLE NO.: BAGC-10

Hole No. BAGC-11

DRILLING LOG — DIVISION: SWD — INSTALLATION: FWD — SHEET 1 OF 3 SHEETS

1. PROJECT: AQUILLA LAKE - SPILLWAY & EMBANKMENT
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and/or number): BAGC-11
5. NAME OF DRILLER: G. SCHOONOVER
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 6.9'
8. DEPTH DRILLED INTO ROCK: 44.1'
9. TOTAL DEPTH OF HOLE: 51.0'
10. SIZE AND TYPE OF BIT: 6" - CARBOLOY
11. DATUM FOR ELEVATION SHOWN: MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 5
15. ELEVATION GROUND WATER: See Remarks Column
16. DATE HOLE: STARTED 7 MAY 73; COMPLETED 8 MAY 73
17. ELEVATION TOP OF HOLE: 574.9
18. TOTAL CORE RECOVERY FOR BORING: 9
19. SIGNATURE OF INSPECTOR: Jackie K Stokes

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 5.3' CLAY: NON-CALC.; MOIST; STIFF TO V. STIFF; DARK BRN-BLK. DOWN TO BRN. 0.0'-2.4': DK. BRN.-BLK. 2.4'-5.3': BRN.		0.0 A 2.4 B	I. DRILLING: 10" FLIGHT AUGER: 0.0' - 9.0' 6" CORE BARREL: 9.0' - 51.0' NOTE: BORING WAS OFFSET 178.58 FT. FROM SPILLWAY CENTER LINE.
	5.3		5.3' to 6.9' CLAY: W/ TRACE OF SAND; V. MOIST; SLI. CALC.; STIFF; TAN-BRN		5.3 C	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 2.4' B: 2.4' - 5.3' C: 5.3' - 6.9' D: 6.9' - 9.0' C-1: 10.2' - 11.8' 2: 12.9' - 13.9' 3: 27.3' - 28.2' 4: 31.4' - 32.3' 5: 38.8' - 39.2' 6: 46.0' - 47.0'
	6.9		6.9' to 17.1' SHALE: HIGHLY WEA.; CALC.; CLAYEY; W/ SMALL CALC. NODULES & POCKETS; MOIST; SOFT; SLI. FISSILE; W/ SANDY STRINGS W/ IRON STAINS; TAN & LT. GRAY TO LT. BLUE GRAY 6.9'-10.0': CALC. W/ NODULES 12.5'-17.1': W/ SCAT. SILTSTONE POCKETS 14.2': STAINED TIGHT JOINT 14.2'-17.1': W/ RED & PURPLE STREAKS	7.0 D:2.8 R:2.5 Rec. To 11.3'	6.9 D 7.0 9.0	III. WATER LEVEL: ▼ BORING BAILED TO 38.5' on 8 MAY 73; WATER LEVEL WAS 5.5' AFTER 24 HRS. BORING WAS LEFT OPEN FOR E-LOGGING BUT HAD CAVED IN AT 12.2' on 11 MAY. 4" PERF PLASTIC PIPE WAS PLACED TO 12.0'.
10	11.8	S		D:4.0 R:4.3 Rec. To 15.6'	11.8 Box 1 1	
	15.6	S		D:3.4 R:3.0 Rec. To 18.6'	15.6 Box 2 2	
17.1	19.2	S	17.1' to 25.6' SANDSTONE: WEA.; MOIST; SOFT TO MOD. HARD, NON-CALC.; TAN & LT. GRAY 17.1'-17.9': CEMENTED MOD HARD LT. GRAY S.S. 17.9'-18.3': SANDY CLAY W/ RED IRON STAINS 18.3'-21.6': SOFT S.S. 20.6'-23.5': SOFT SS INTERBEDDED W/ SOFT SHALE, W/ RARE PURPLE STRINGS	D:4.6 R:3.9 Rec. To 23.5' Lost 20.6'-21.6'	20.6 Box 3 3	
	23.8			D:3.0 R:3.3 Rec. To 26.8'	23.8	
25.6	26.4		25.6' to 30.3' SHALE: MOD. WEA. DOWN TO UNWEA.; NON-CALC.; FISSILE; SOFT; MOIST; W/ SCAT. SANDY S.S. LENSES & PARTINGS; DARK GRAY BLK. 25.6'-25.8': W/ RUST STAINS 28.5'-28.7': SOFT S.S. 29.7'-29.8': SOFT S.S.	26.8 D:2.4 R:2.4 Rec. To 29.2'	26.8 Box 4 4	NOTE: BASE OF WEA AT 26.6'
30	30.3		30.3' to 35.1' SANDSTONE: UNWEA.; NON-CALC.; SOFT; MOIST; SHALY; WEAKLY CEMENTED; DARK GRAY	D:4.6 R:4.6 Rec To 33.8'	32.3	
	33.8		34.6': LIGNITE PARTING	D:2.6 R:2.5 Rec To 36.3'	33.8 Box 5 5	
35	35.1		35.1' to 51.0' T.D. SHALE: UNWEA.; NON-CALC.; FISSILE; SOFT; MOIST; DARK GRAY 35.2'-35.3': SILTSTONE CONC. 36.1'-36.3': CEMENTED SOFT S.S. 36.7': SANDY PARTINGS 37.3'-37.4': SILTSTONE CONC. 37.4'-38.2': TWO VERTICAL TIGHT JOINTS 38.2': SILTSTONE LAMINATIONS 38.8': TIGHT JOINT	36.4 D:2.8 R:2.9 Rec. To 39.2'	36.3 Box 6 6	
	39.2				39.2	
	40.0					

DRILLING LOG — DIVISION: SWD — Hole No. BAGC-11 — Sheet 1 of 3 Sheets

PROJECT: AQUILLA LAKE - SPILLWAY & EMBANKMENT — LOCATION (Coordinates or Station)

DRILLING AGENCY: SCE-C — HOLE NO. (As shown on drawing title) and Bu. number: BAGC-11 — NAME OF DRILLER: L. SCHOONOVER — DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.

THICKNESS OF OVERBURDEN: 6.9' — DEPTH DRILLED INTO ROCK: 44.1' — TOTAL DEPTH OF HOLE: 51.0'

SURFACE ELEVATION: FWD — MSL — DATUM FOR ELEVATION SHOWN (USGS or USC&GS)

10. DESIG. AND TYPE OF RIG: 6" CASEHOLE

11. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500

12. TOTAL NO. OF CORES: DISTURBED 3 — UNDISTURBED 0

13. TOTAL NUMBER CORE BOXES: 8

14. ELEVATION GROUND WATER: See Remarks, Column 5

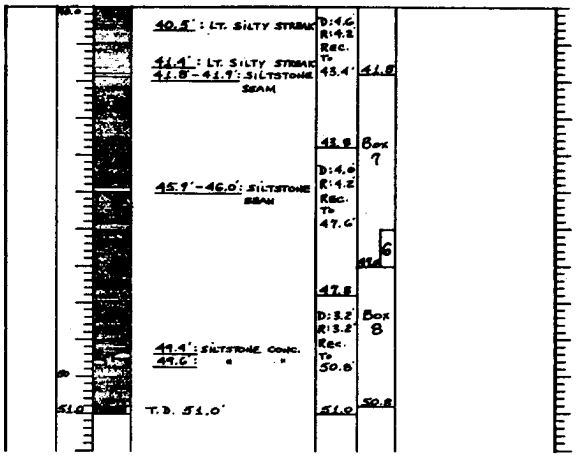
15. DATE HOLE: STARTED 7 MAY 75 — COMPLETED 8 MAY 75

17. ELEVATION TOP OF HOLE: 574.9

18. TOTAL CORE RECOVERY FOR BORING: 97 %

19. SIGNATURE OF INSPECTOR: Jack R. Stotts

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
574.9	0.0		0.0' TO 5.3' CLAY: NON-CALC.; MOIST; STIFF TO V. STIFF; DARK BRN-BLK. DOWN TO BRN. 0.0'-2.4': DK. BRN.-BLK. 2.4'-5.3': BRN.		0.0 A 2.4 B 5.3	I. DRILLING: 10" FLIGHT AUGER: 0.0' - 9.0'; 6" CORE BARREL: 9.0' - 51.0'. NOTE: BORING WAS OFFSET 178.38 ALONG SPILLWAY CENTER LINE FROM ORIGINAL LOCATION.
568.0	6.9		5.3' TO 6.9' CLAY: W/ TRACE OF SAND; V. MOIST; SL. CALC.; STIFF; TAN-BRN.		C 6.9	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 2.4' B: 2.4' - 5.3' C: 5.3' - 6.9' D: 6.9' - 9.0' C-1: 10.3' - 11.8' 2: 12.9' - 15.9' 3: 27.3' - 28.2' 4: 31.4' - 32.3' 5: 36.2' - 37.2' 6: 46.0' - 47.0'
			6.9' TO 17.1' SHALE: HIGHLY WEA.; CALC, CLAYEY; W/ SMALL CALC. NODULES & POCKETS; MOD. HARD; SOFT; SLI. FISSILE; W/ SANDY STRINGS W/ IRON STAINS. TAN & LT. GRAY TO LT. BLUE GRAY. 6.9'-10.0': CALC. W/ NODULES & POCKETS 12.5'-17.1': W/ SCAT. SILTSTONE POCKETS 14.2': STAINED TIGHT JOINT 14.2'-17.1': W/ RED & PURPLE STREAKS	D:2.8 R:2.5 Rec. To 11.3'	7.0 1 11.8 Box 1	III. WATER LEVEL: BORING BAILED TO 38.5' ON 8 MAY 75; WATER LEVEL WAS 5.5' AFTER 24 HRS. BORING WAS LEFT OPEN FOR E-LOGGING BUT HAD CAVED IN AT 12.0' ON 11 MAY. 4" PERF. PLASTIC PIPE WAS PLACED TO 12.0'.
			17.1' TO 25.6' SANDSTONE: WEA.; MOIST; SOFT TO MOD. HARD, NON-CALC.; TAN & LT. GRAY 17.1'-17.9': CEMENTED MOD. HARD LT. GRAY SS 17.9'-18.3': SANDY CLAY W/ RED IRON STAINS 18.3'-20.6': SOFT SS 20.6'-23.5': SOFT SS INTERBEDDED W/ SOFT SHALE, W/ RED PURPLE STREAKS	D:4.0 R:4.3 Rec. To 15.6' D:3.4 R:3.0 Rec. To 18.6' D:4.6 R:3.9 Rec. To 23.5 Lost 20.6'-21.6' D:3.0 R:3.3 Rec. To 26.8'	15.6 Box 2 19.2 20.6 Box 3 23.8 26.4	
			25.6' TO 30.3' SHALE: MOD. WEA. DOWN TO UNWEA.; NON-CALC.; FISSILE; SOFT; MOIST; W/ SCAT. SANDY SS. LENSES & PARTINGS; DARK GRAY BLK. 25.6'-25.8': W/ RUST STAINS 28.5'-28.7': SOFT S.S. 29.7'-29.8': SOFT S.S.	D:2.4 R:2.4 Rec. To 29.2' D:4.6 R:4.6 Rec. To 33.8'	26.8 3 29.2 Box 4 32.1	NOTE: BASE OF WEA. AT 26.8'
			30.3' TO 35.1' SANDSTONE: UNWEA.; NON-CALC.; SOFT; MOIST; SHALY; WEAKLY CEMENTED; DARK GRAY 31.6': LIGNITE PARTING	D:2.6 R:2.8 Rec. To 36.3'	33.8 Box 5 36.3	
			35.1' TO 51.0' T.D. SHALE: UNWEA.; NON-CALC.; FISSILE; SOFT, MOIST; DARK GRAY 35.2'-35.3': SILTSTONE CONC. 36.1'-36.3': CEMENTED SOFT SS 36.7': SANDY PARTINGS 37.3'-37.4': SILTSTONE CONC. 37.4'-38.2': TWO VERTICAL TIGHT JOINTS 38.2': SILTSTONE LAMINATIONS 38.6': TIGHT JOINT	D:2.8 R:2.9 Rec. To 39.2'	36.4 Box 6 39.2 5	
525.0	49.9					



DRILLING LOG — DIVISION: SWD

PROJECT: AQUILLA LAKE - SPILLWAY & EMBANKMENT — LOCATION (Coordinates or Station)

DRILLING AGENCY: USCE-C — HOLE NO. (As shown on drawing title) and Bu. number: BAGC-12 — NAME OF DRILLER: T. STOTTS — DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.

THICKNESS OF OVERBURDEN: 6.8' — DEPTH DRILLED INTO ROCK: 25.0' — TOTAL DEPTH OF HOLE: 31.8'

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)
	0.0		0.0' TO 1.5' CLAY: NON-CALC.; W/ GRAVEL; MOIST; STIFF V. STIFF; DARK BRN.-
	1.5		1.5' TO 3.2' CLAY: MOD. CALC. W/ NODULES; MOIST; V. S DARK BRN.
	3.2		3.2' TO 6.8' CLAY: CALC. W/ CALC. W/ CALICHE POCKET MOIST; V. STIFF; TA
	6.8		6.8' TO 11.0' SANDSTONE: MOD. W/ W/ INTERBEDDED SHA SEAMS; MOIST; SOFT (EXCEPT AS INDICATE BELOW); LT. GRAY, R & YELLOW. 6.8'-7.0': HARD QUA ITIC SS. W/ CALC. CEME WELL CEMENTED, LT. GR 7.0'-8.0': SOFT SS. V SHALE LAMINATIONS, R 8.0'-8.1': RED IRON S SS. 8.1'-9.1': SOFT SS & S W/ SCAT. CALC. STREAKS, GRAY & YELLOW 9.1'-11.0': SOFT SS. SHALE SEAMS, MOD. CEME LT. GRAY, TAN & YELLOW
	11.0		11.0' TO 18.8' SHALE: WEA. W/ABU IRON STAINING ALONG BEDDING PLANES; MOD. MOIST; CLAYEY; SOFT. SCAT. SAND LENSES & PA LT. BLUE GRAY W/ RUST & PURPLE. 11.3'-11.6': SOFT S IRON STAINING. 11.6'-13.7': W/ SCAT. LENSES & PARTINGS. 13.7'-13.8': SOFT S 13.9'-14.0': SOFT S 14.9'-18.8': V. CLAY SOFT, W/ SCAT. SAND LEN W/ABUNDANT IRON STAINI BLUE GRAY & PURPLE. 14.3'-15.9': MOD. GRAY M 16.9'-17.4': PURPLE W
	18.8		18.8' TO 28.5' SANDSTONE: WEA. THIN BEDDED; W/ WEAKL CEMENTED (EXCEPT INDICATED BELOW); M RUST W/ LT. GRAY 18.8'-22.6': MOD. C SS. ALTERNATING W/ WI CEMENTED SS. 19.2'-19.7': CLAYE GRAY 22.8'-23.2': CLAYEY GRAY 23.2'-28.5': W/ THI SHALE PA 26.2'-26.7': CEMEN MOD. SO
	28.5		28.5' TO 31.8' T.D. SHALE: ESS. UNWEA. W/ WEA. IRON STAINED BEDDING PLANES IN UPP PART; NON-CALC.; MO SOFT; FISSILE; DARK W/ SCAT. LT. GRAY SAND PARTINGS & LENSES.
	31.8		T.D. 31.8'

SYM	DG. NO.	ACTION	DATE

U.S. ARMY ENGINEE
CORPS
FORT

DESIGNED BY: ----------

DRAWN BY: ----------

CHECKED BY: ----------

SUBMITTED BY: ----------

ENGINEER: ----------

EMBAN

L

RECORD DRAWING-WORK AS BUILT

TO ACCOMPANY FINAL FOUNDATION REP

U.S. ARMY

Hole No. 8AGC-12

DRILLING LOG	DIVISION SWD	INSTALLATION FWD	SHEET 1 OF 2 SHEETS
1. PROJECT: Aquilla Lake - Spillway & Embankment		12. SIZE AND TYPE OF BIT: 6" CARBOLOY	
2. LOCATION (Coordinates or Station)		13. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
3. DRILLING AGENCY: USCE-F		14. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500	
4. HOLE NO. (As shown on drawing title) and Sht number: 8AGC-12		15. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED 0	
5. NAME OF DRILLER: T. Shits		16. TOTAL NUMBER CORE BOXES: 5	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		17. ELEVATION GROUND WATER: SEE REMARKS COLUMN	
7. THICKNESS OF OVERBURDEN: 6.8'		18. DATE HOLE: STARTED 1 MAY 73; COMPLETED 2 MAY 73	
8. DEPTH DRILLED INTO ROCK: 25.0'		19. ELEVATION TOP OF HOLE: 534.9	
9. TOTAL DEPTH OF HOLE: 31.8'		20. TOTAL CORE RECOVERY FOR BORING: 83 %	
		21. SIGNATURE OF INSPECTOR: Jack R. Letts	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RUN	CORE RECOVERY	REMARKS (Drilling time, water loss, depth of weathering, etc.; if significant)
	0.0		0.0' TO 1.5' CLAY: NON-CALC.; W/SCAT. GRAVEL; MOIST; STIFF TO V. STIFF; DARK BRN.-BLK.		0.0	I. DRILLING: 10" FLIGHT AUGER: 0.0' - 6.8' NOTE: HAD AUGER REFUSAL AT 6.8 6.8' CORE BARREL: 6.8' - 31.8' NOTE: COULD NOT BEGIN CORING BEFORE 6.8' BECAUSE OF LONG CORE BARREL
	1.5		1.5' TO 3.2' CLAY: MOD. CALC. W/ CALC. NODULES; MOIST; V. STIFF; DARK BRN.	A	1.5	
	3.2		3.2' TO 6.8' CLAY: CALC. W/CALC. NODULES; W/CALICHE POCKETS; MOIST; V. STIFF; TAN-BRN.	B	3.2	
				C		II. SAMPLES: DISTURBED (JARS): A: 0.0' - 1.5' B: 1.5' - 3.2' C: 3.2' - 6.8' UNDISTURBED (CARTON): C-1: 12.9' - 13.7' C-2: 16.4' - 17.2' C-3: 29.8' - 30.7' NOTE: UNABLE TO OBTAIN ADDITIONAL CARTON SAMPLES BECAUSE OF BREAKS IN THE CORE.
	6.8		6.8' TO 11.0' SANDSTONE: MOD. WEA.; W/ INTERBEDDED SHALE SEAMS; MOIST; SOFT (EXCEPT AS INDICATED BELOW); LT. GRAY, RUST & YELLOW. 6.8'-7.0': HARD QUARTZITIC SS. W/ CALC. CEMENTATION, WELL CEMENTED, LT. GRAY 7.0'-8.0': SOFT SS. W/ SHALE LAMINATIONS, RUST-YELL. 8.0'-8.1': RED IRON STAINED SS. 8.1'-9.1': SOFT SS & SHALE W/ SCAT. CALC. STREAKS, LT. GRAY & YELLOW 9.1'-11.0': SOFT SS. W/ SHALE SEAMS, MOD. CEMENTED, LT. GRAY, TAN & YELLOW	6.8	6.8	
					D: 4.0' R: 3.4' Rec. To 10.2'	Box 1
	11.0		11.0' TO 18.8' SHALE: WEA. W/ABUNDANT IRON STAINING ALONG BEDDING PLANES; MOD. FISSILE; MOIST; CLAYEY; SOFT; W/ SCAT. SAND LENSES & PARTINGS; LT. BLUE GRAY W/ RUST, YELLOW & PURPLE. 11.3'-11.6': SOFT SS. W IRON STAINING. 11.6'-13.7': W/ SCAT. SAND LENSES & PARTINGS. 13.7'-13.8': SOFT SS. 13.8'-14.0': SOFT SS. 13.9'-18.8': V. CLAYEY. SOFT, W/ SCAT. SAND LENSES. W/ABUNDANT IRON STAINING. BLUE GRAY & PURPLE. 14.3'-15.9': MOD. GRAY W/ENS 16.9'-17.4': PURPLE W/ RUST	10.8	11.8	
					D: 4.0' R: 4.0' Rec. To 14.2'	1
						Box 2
					D: 4.0' R: 4.6 Rec. To 18.8'	2
	18.8		18.8' TO 28.5' SANDSTONE: WEA.; SOFT; THIN BEDDED; WEAKLY CEMENTED (EXCEPT AS INDICATED BELOW); MOIST; RUST W/ LT. GRAY 18.8'-22.6': MOD. CEMENTED SS. ALTERNATING W/WEAKLY CEMENTED SS. 19.2'-19.7': CLAYEY, LT. GRAY 22.8'-23.2': CLAYEY, LT. GRAY 23.2'-28.5': W/ THIN SHALE PARTINGS 26.2'-26.7': CEMENTED, MOD. SOFT	18.8	19.3	
					D: 4.0' R: 1.6 Lost 20.4'-22.8'	Box 3
						3
						Box 3
					D: 5.0' R: 3.9 Lost 26.7'-27.8'	Box 4
	28.5		28.5' TO 31.8' T.D. SHALE: ESS. UNWEA.; W/ WEA. IRON STAINED BEDDING PLANES IN UPPER PART; NON-CALC.; MOIST; SOFT, FISSILE; DARK GRAY W/ SCAT. LT. GRAY SAND PARTINGS & LENSES.	27.8	23.8	NOTE: BASE OF WEA. AT 28.5'
					D: 4.0' R: 3.4' Lost 31.2'-31.8'	3
	31.8		T.D. 31.8'	31.8	30.7	Box 5 31.2

SYM.	DA. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-10, 11 AND 12

SUBMITTED BY: ----------
ENGINEER:

INV. NO. DACW63-80-B-0088 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-3 OF
SEQUENCE NO. 108

CONTR. NO. DACW63-81-C-0035

RECORD DRAWING-WORK AS BUILT

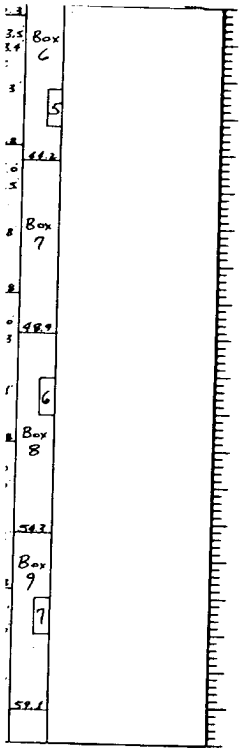
Hole No. 8AGC-13

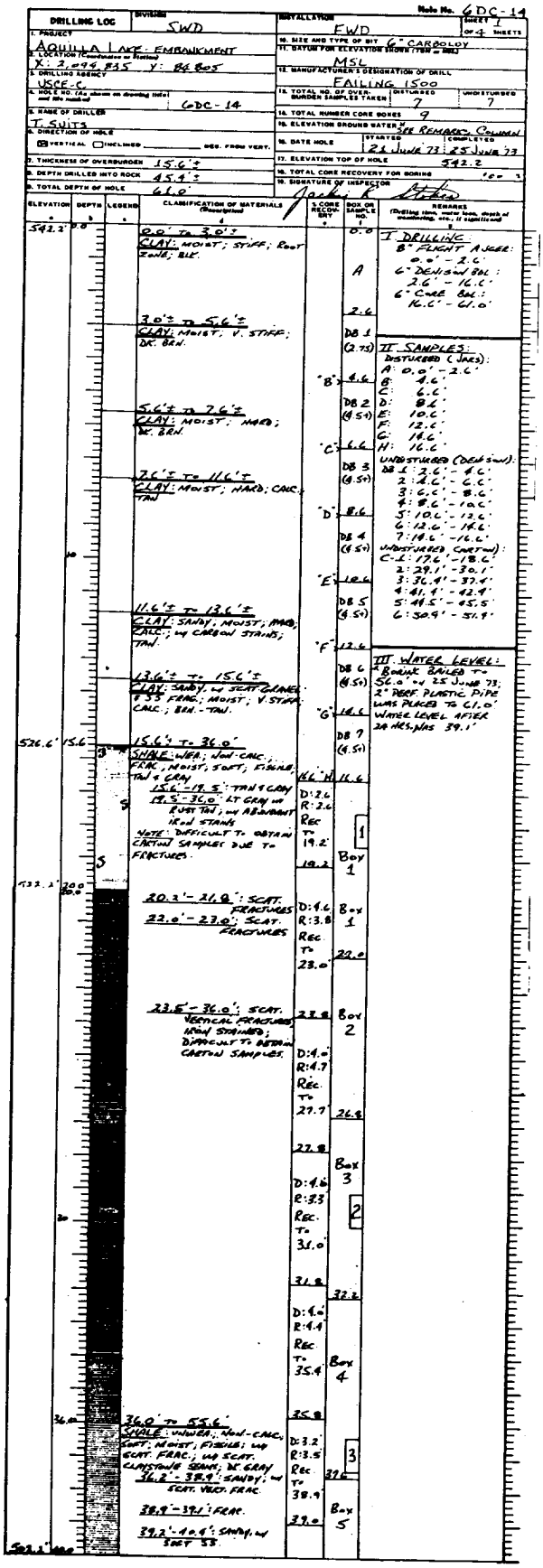
DRILLING LOG — DIVISION SWD — INSTALLATION FWD — SHEET 1 OF 3 SHEETS

1. PROJECT: AQUILLA LAKE EMBANKMENT
2. LOCATION (Coordinates or Stations)
3. DRILLING AGENCY: USAE FWD
4. HOLE NO. (As shown on drawing title) and File Number: 8AGC-13
5. NAME OF DRILLER: G. SCHOONOVER
6. DIRECTION OF HOLE: 90 VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 1.8
8. DEPTH DRILLED INTO ROCK: 58.2
9. TOTAL DEPTH OF HOLE: 60.0
10. SIZE AND TYPE OF BIT: 6" CARBOLOY
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 9
15. ELEVATION GROUND WATER: SEE REMARKS COLUMN
16. DATE HOLE: STARTED 15 JUNE 73; COMPLETED 19 JUNE 73
17. ELEVATION TOP OF HOLE: 5834
18. TOTAL CORE RECOVERY FOR BORING: 92 %
19. SIGNATURE OF INSPECTOR: Jack R. Peters

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
5834	0.0		0.0 to 1.8 SAND: w/ TRACE OF FINES; FIRM; FINE TO MED GRAINED, V. MOIST; BRN.		A	I. DRILLING: 8" FLIGHT AUGER: 0.0' - 9.0'; 6" CORE BARREL: 9.0' - 60.0'. NOTE: PULLED UP 5.0' & FISHTAILED TO 140.0' & E-LOGGED
5832.2	1.8		1.8 to 4.0 CLAY: SANDY, W/ 35 FRAGMENTS, STIFF; MOIST; RUST RED w/ BRN.		1.8 B	
5830	4.0		4.0 to 6.9 SAND: FINE TO MED GRAINED, MOIST, FIRM; LT RUST		4.0 C	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 1.8'; B: 1.8' - 4.0'; C: 4.0' - 6.9'; D: 6.9' - 9.0'. UNDISTURBED (CORE): C-1: 12.6' - 13.5'; 2: 21.0' - 21.8'; 3: 25.1' - 26.1'; 4: 36.9' - 37.7'; 5: 42.3' - 43.3'; 6: 50.1' - 51.1'; 7: 56.0' - 57.0'
5827.1	6.9	S	6.9 to 53.1 SHALE: HIGHLY WEA. DOWN TO UNWEA., NON-CALC.; SANDY IN UPPER PART; W/ SCAT. FRAC.; MOIST; SOFT; LT. GRAY & RUST DOWN TO DK. GRAY		6.9 D	
	9.0		6.9 - 23.1 HIGHLY WEA.; W/ ABUNDANT IRON STAINED FRACTURES; SLI FISSILE; LT GRAY W/ RUST	D:2.6 R:1.9 Rec. To 10.9'	9.0 9.0	III. WATER LEVEL: BORING BAILED TO 56.8' ON 19 JUNE & 4" PERF PLASTIC PIPE PLACED TO 60.0'. WATER LEVEL WAS 20.9' AFTER 24 HRS
	11.8				Box 1	
				D:4.0 R:4.0 Rec To 14.9	1	
	14.9				14.9	
	15.8					
				D:4.0 R:1.6 Rec To 16.5' Lost: 16.5' to 18.7'	Box 2	
	19.8					
				D:2.0 R:1.9 Rec. To 20.1	2	
	21.8			D:2.5 R:1.7 Rec. To 21.8'	21.8	
			23.1 - 53.1 ESS. UNWEA FISSILE; DK. GRAY		Box 3	
	23.9			D:2.4 R:1.3' Rec. To 26.1'	3	
			26.1 - 28.5 PULLED OFF OF CORE & HAD TO GO BACK OVER IT IN ORDER TO RECOVER; CORE WAS BROKEN IN PROCESS			
	26.3			D:4.3 R:3.5 Rec To		
			28.5 - 36.0 SCAT. SILT & FINE SAND LAMINATIONS.		28.5	
	29.9					
			30.4 SOFT SS POCKET			
			30.6 SOF SS SEAM		Box 4	
	30.6			D:4.2 R:4.0 Rec To 33.9'		
			33.1 - 33.5 SOFT SS SEAM		33.1	
	33.9					
			34.3 CLAYSTONE POCKET			
	34.8		35.1 CLAYSTONE POCKET			
				D:4.0 R:4.3 Rec. To	Box 5	
			36.0 CLAYSTONE POCKET			
			36.7 CLAYSTONE POCKET			
	38.2		37.5 - 38.2 V. SANDY		4	
			38.4 - 38.5 CLAYSTONE SEAM			
	38.4				38.7	
				D:1.5 R:1.7 Rec To 39.9		
5794			39.9 CLAYSTONE SEAM			

5794	40.0		40.0 - 40.1 CLAYSTONE SEAM	40.3
			40.2 - 41.3 SCAT. TIGHT FRAC.	D:3.5 R:3.4 Rec To 43.3 Box 6
			41.3 CLAYSTONE CONC.	5
				43.8
			44.8 CLAYSTONE CONC.	44.2 D:4.0 R:3.5 Rec To
			45.8 CLAYSTONE CONC.	
			46.0 - 46.1 CLAYSTONE SEAM	46.8 Box 7
				47.8
			48.2 - 48.4 SANDSTONE SEAM	D:4.0 R:4.3 48.9
			48.9 CLAYSTONE CONC.	
			48.7 SANDY SEAM	
			48.9 - 49.1 SANDY SHALE W/ SOFT SS WISPS	Rec To 51.1'
			50.0 - 50.1 CLAYSTONE CONC.	6
			51.1 - 52.1 SANDY SHALE W/ SOFT SS WISPS & SEAMS	51.8 Box 8
	52.1		52.1 to 53.1 SANDSTONE: SHALY, MOIST; SOFT; DK. GRAY	D:4.0 R:4.0 Rec To 55.1
	53.1		53.1 to 54.2 LIMESTONE: SANDY, FOSS.; W/ PYRITE, W/ SHALE WISPS; MOD. SOFT TO MOD. HARD; LT GRAY	54.3
	54.2		54.2 to 60.0 TD SHALE: UNWEA; NON-CALC. FISSILE; SOFT; MOIST; DK. GRAY	55.8 Box 9
			- 54.3 SANDY	D:4.2 R:4.0 Rec To 59.1' 7
			54.4 CLAYSTONE	
			57.1 - 57.4 FRACTURE	
			58.1 - 58.4 CLAYSTONE SEAM	59.1
5774	60.0		TD 60.0'	60.0

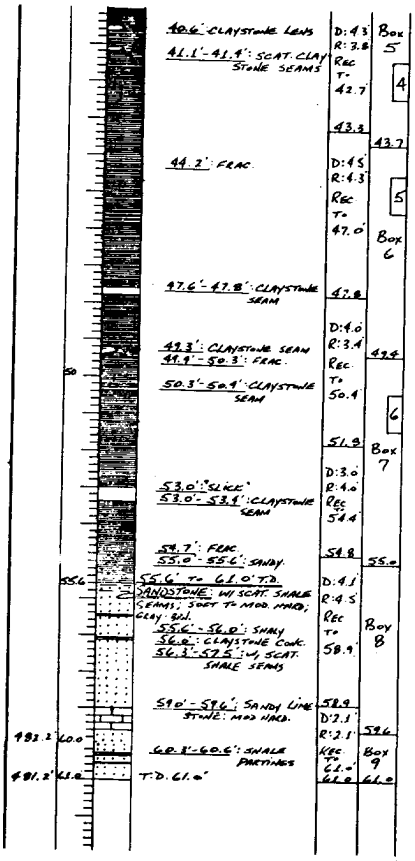




DRILLING LOG — Hole No. 6DC-14

1. PROJECT	AQUILLA LAKE EMBANKMENT
2. LOCATION	X: 2,494,835 Y: 82,805
3. DRILLING AGENCY	USCE-C
4. HOLE NO.	6DC-14
5. NAME OF DRILLER	T. SUITS
6. DIRECTION OF HOLE	VERTICAL
7. THICKNESS OF OVERBURDEN	15.6' ±
8. DEPTH DRILLED INTO ROCK	45.4' ±
9. TOTAL DEPTH OF HOLE	61.0'
DIVISION	SWD
INSTALLATION	FWD
10. SIZE AND TYPE OF BIT	6" CARBOLOY
11. DATUM FOR ELEVATION SHOWN	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	FAILING 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 7 / UNDISTURBED 7
14. TOTAL NUMBER CORE BOXES	9
15. ELEVATION GROUND WATER	SEE REMARKS, COLUMN 7
16. DATE HOLE	STARTED 21 JUNE 73 / COMPLETED 25 JUNE 73
17. ELEVATION TOP OF HOLE	542.2
18. TOTAL CORE RECOVERY FOR BORING	100%
19. SIGNATURE OF INSPECTOR	Jack K. Stokes

ELEVATION	DEPTH	CLASSIFICATION OF MATERIALS	% CORE BOX	BOX OR SAMPLE NO.	REMARKS
542.2	0.0	0.0' to 3.0'± CLAY: MOIST; STIFF; ROOT ZONE; BLK.		0.0 A 2.6	I. DRILLING: 8" FLIGHT AUGER: 0.0' - 2.6'; 6" DENISON BBL: 2.6' - 16.6'; 6" CORE BBL: 16.6' - 61.0'
		3.0'± to 5.6'± CLAY: MOIST, V. STIFF; DK. BRN.		DB 1 (2.7S)	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 2.6'; B: 4.6'; C: 6.6'; D: 8.6'; E: 10.6'; F: 12.6'; G: 14.6'; H: 16.6'
		5.6'± to 7.6'± CLAY: MOIST; HARD; DK. BRN.		"B" 4.6 DB 2 (4.5+) "C" 6.6 DB 3 (4.5+)	UNDISTURBED (DENISON): DB 1: 2.6' - 4.6'; 2: 4.6' - 6.6'; 3: 6.6' - 8.6'; 4: 8.6' - 10.6'; 5: 10.6' - 12.6'; 6: 12.6' - 14.6'; 7: 14.6' - 16.6'
		7.6'± to 11.6'± CLAY: MOIST; HARD; CALC; TAN		"D" 8.6 DB 4 (4.5+) "E" 10.6 DB 5 (4.5+)	UNDISTURBED (CORETAINER): C-1: 17.6' - 18.6'; 2: 29.1' - 30.1'; 3: 36.9' - 37.9'; 4: 41.9' - 42.9'; 5: 49.5' - 50.5'; 6: 50.9' - 51.9'
		11.6'± to 13.6'± CLAY: SANDY, MOIST; MED. GRAIN; w/ CARBON STAINS; TAN		"F" 12.6 DB 6 (4.5+) "G" 14.6 DB 7 (4.5+)	III. WATER LEVEL: BORING BAILED TO 56.0' w/ 25 JUNE 73; 2" PERF. PLASTIC PIPE WAS PLACED TO 61.0'. WATER LEVEL AFTER 24 HRS. WAS 39.1'
		13.6'± to 15.6'± CLAY: SANDY, w/ SCAT. GRAVEL & SS FRAG.; MOIST; V. STIFF; CALC.; BRN.-TAN.			
526.6'	15.6	15.6' to 36.0' SHALE: WEA.; Jnd-CALC. FRAC.; MOIST; SOFT; FISSILE; TAN & GRAY		"H" 16.6	
		15.6' - 19.5': TAN & GRAY	D:2.6 R:2.6 Rec. To 19.2'	1 Box 1	
		19.5' - 36.0': LT GRAY w/ RUST TAN; w/ ABUNDANT HOR. STAINS		19.2	
		NOTE: DIFFICULT TO OBTAIN CARETAINER SAMPLES DUE TO FRACTURES.			
512.2'	30.0	20.3' - 21.9': SCAT. FRACTURES	D:4.6 R:3.8 Rec. To 23.0'	Box 1	
		22.0' - 23.0': SCAT. FRACTURES		22.0	
		23.6' - 36.0': SCAT. VERTICAL FRACTURES NOW STAINED; DIFFICULT TO OBTAIN CARETAINER SAMPLES.		23.6 Box 2	
			D:4.0 R:4.7 Rec. To 27.7'	26.9	
				27.8 Box 3	
			D:4.6 R:3.3 Rec. To 31.0'	2	
				31.8 32.2	
			D:4.0 R:4.4 Rec. To 35.4'	Box 4	
				35.8	
506.2'	36.0	36.0' to 55.6' SHALE: w/INTER. Jnd-CALC, SOFT; MOIST; FISSILE; w/ SCAT. FRAC.; w/ SCAT. CLAYSTONE SEAMS; DK. GRAY	D:3.2 R:3.5 Rec. To 38.9'	3 37.6	
		36.2' - 38.9': SANDY; w/ SCAT. VERT. FRAC.		Box 5	
		38.9 - 39.1': FRAC.		39.0	
503.2'	40.0	39.2' - 40.4': SANDY, w/ SHEET SS.			



ELEVATION	DEPTH			
		40.6' CLAYSTONE LENS	D:4.3 R:3.8 Rec. To 42.7'	Box 5
		41.1' - 41.4': SCAT. CLAY STONE SEAMS		4
				43.2
		44.2' FRAC.	D:4.5 R:4.3 Rec. To 47.0'	43.7 5 Box 6
		47.6' - 47.8': CLAYSTONE SEAM		47.8
		49.3': CLAYSTONE SEAM 49.9' - 50.3': FRAC.	D:4.0 R:3.4 Rec. To 50.4'	49.4
		50.3' - 50.4': CLAYSTONE SEAM		6 Box 7
		53.0': SLICK 53.0' - 53.4': CLAYSTONE SEAM	D:3.0 R:4.0 Rec. To 54.4'	51.9
		54.7': FRAC 55.0 - 55.6': SANDY.		54.8 55.0
486.6	55.6	55.6 to 61.0' T.D. SANDSTONE: w/ SCAT. SHALE SEAMS; SOFT to MOD. HARD; GRAY; SLI.	D:4.1 R:4.5 Rec. To 58.9'	Box 8
		55.6' - 56.0': SHALY 56.0': CLAYSTONE Conc. 56.3' - 57.5': w/ SCAT. SHALE SEAMS		
		59.0' - 59.6': SANDY LIME STONE: MOD HARD.	D:2.1 R:2.1 Rec. To 61.0'	58.9 59.6 Box 9
481.2'	60.0	60.2' - 60.6': SHALE PARTINGS		61.0
481.2'	61.0	T.D. 61.0'		

RECORD DRAWING-WORK AS BUILT

STA.	DA.	NO.	ACTION	DATE	DESCRIPTION OF

U.S. ARMY ENGINEER DISTRICT, F
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAK
AQUILLA CREEK, TE

EMBANKMENT AND S

LOGS OF BORI
8A6C-13 AND 6DC

INV. NO. DACW63-80-
CONTR. NO. DACW63
DRAWING NUMBER

TO ACCOMPANY FINAL FOUNDATION REPORT

Hole No. 6DC-14

ELEVATION: FWD — SHEET 1 OF 4 SHEETS

TYPE AND TYPE OF BIT: 6" CARBOLOY

DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL

MANUFACTURER'S DESIGNATION OF DRILL: FALLING 1500

TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 7 — UNDISTURBED 7

TOTAL NUMBER CORE BOXES: 9

ELEVATION GROUND WATER: SEE REMARKS, COLUMN

DATE HOLE: STARTED 21 JUNE 79 — COMPLETED 25 JUNE 79

ELEVATION TOP OF HOLE: 542.2

TOTAL CORE RECOVERY FOR BORING: 100 %

SIGNATURE OF INSPECTOR: Parker K Stokes

% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0	I. DRILLING: 8" FLIGHT AUGER: 0.0' - 2.6'; 6" DENISON BBL: 2.6' - 16.6'; 6" CORE BBL: 16.6' - 61.0'
	A 2.6	
	DB 1 (2.75)	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 2.6'; B: 4.6'; C: 6.6'; D: 8.6'; E: 10.6'; F: 12.6'; G: 14.6'; H: 16.6'
"B"	4.6	
	DB 2 (4.5+)	
	DB 3 (4.5+)	UNDISTURBED (DENISON): DB 1: 2.6' - 4.6'; 2: 4.6' - 6.6'; 3: 6.6' - 8.6'; 4: 8.6' - 10.6'; 5: 10.6' - 12.6'; 6: 12.6' - 14.6'; 7: 14.6' - 16.6'
"C"	6.6	
"D"	8.6	
	DB 4 (4.5+)	UNDISTURBED (SHELBY): C-1: 17.6' - 18.6'; 2: 29.1' - 30.1'; 3: 36.4' - 37.4'; 4: 41.1' - 42.9'; 5: 44.5' - 45.5'; 6: 50.9' - 51.9'
"E"	10.6	
	DB 5 (4.5+)	
"F"	12.6	
	DB 6 (4.5+)	III. WATER LEVEL: 4" BORE BAILED TO 52.0' ON 22 JUNE 79; 2" REINF. PLASTIC PIPE WAS PLACED TO 61.0' WATER LEVEL AFTER 24 HRS. WAS 39.1'
"G"	14.6	
	DB 7 (4.5+)	
"H"	16.6	
D:2.6 R:2.6 Rec T 19.2'	1	
19.2	Box 1	
D:4.6 R:3.8 Rec T 23.0'	Box 1	
22.0		
23.0	Box 2	
D:4.0 R:4.7 Rec T 27.7'	26.4	
27.8	Box 3	
2		
32.2		
D:4.4 Rec T 37.6'	Box 4	
37.6	3	
39.9	Box 5	

40.6' CLAYSTONE LENS

41.1'-41.9': SCAT. CLAY STONE SEAMS

44.2': FRAC.

47.6'-47.8': CLAYSTONE SEAM

49.3': CLAYSTONE SEAM

49.9'-50.3': FRAC.

50.3'-50.4': CLAYSTONE SEAM

53.0': SLICK

53.0'-53.4': CLAYSTONE SEAM

54.7': FRAC.

55.0'-55.6': SHALY

55.6' TO 61.0' T.D.

SANDSTONE: W/ SCAT. SHALE SEAMS; SOFT TO MOD. HARD; CLAY: SH.

55.6'-56.0': SHALY

56.0': CLAYSTONE CONC.

56.3'-57.5': W/ SCAT. SHALE SEAMS

59.0'-59.6': SANDY LIME STONE: MOD HARD.

60.3'-60.6': SHALE PARTINGS

T.D. 61.0'

D:4.3 R:3.8 Rec T 42.7'	43.3	Box 5 — 4
	43.7	
D:4.5 R:4.3 Rec T 47.0'	47.8	5 — Box 6
D:4.0 R:3.4 Rec T 50.4'	51.8	6 — Box 7
D:3.0 R:4.0 Rec T 54.4'	54.8	55.0
D:4.1 R:4.5 Rec T 58.9'	58.9	Box 8
D:2.1 R:2.1 Rec T 61.0'	59.6	Box 9
	61.0	61.0

RECORD DRAWING-WORK AS BUILT

SYM	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-13 AND 6DC-14

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0039
DRAWING NUMBER — SHEET NO. B-4 OF
SEQUENCE NO. 109

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT — PLATE 35

CORPS OF ENGINEERS

Hole No. 8A6C-15

DRILLING LOG	Division: SWD	Installation: FWD	Sheet 1 of 4 sheets
1. PROJECT: Aguilla Lake - Embankment		10. SIZE AND TYPE OF BIT: 6" Carb-loy	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
3. DRILLING AGENCY: USCE-C		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing and/or AF/ Number): 8A6C-15		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 18; UNDISTURBED 0	
5. NAME OF DRILLER: T. Quits		14. TOTAL NUMBER CORE BOXES: 5	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN: 49.5'		16. DATE HOLE: STARTED 6 Nov. '73; COMPLETED 9 Nov. '73	
8. DEPTH DRILLED INTO ROCK: 22.5'		17. ELEVATION TOP OF HOLE: 541.7	
9. TOTAL DEPTH OF HOLE: 72.0'		18. TOTAL CORE RECOVERY FOR BORING: 90 %	
		19. SIGNATURE OF INSPECTOR: Harold D. Wallace	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
a	b	c	d	e	f	g
	0.0'		0.0' to 22.5'		0.0'	1. 8" Flight Auger 0.0' - 49.7'
			CLAY -			7 7/8" Rockbit 49.7' - 50.7'
			0.0' - 5.0' Olive gray brown, sli. stiff, moist, med. plasticity, silty, sli. sandy, sli. calc., scat. 1mm size caliche.		A	6" Core Barrel 50.7' - 72.0'
			5.0' - 6.0' Olive gray brown, high plasticity, stiff, moist, calc., hard caliche modules to 1cm., pockets of tan color.		5.0' B 6.0'	Casing set to 49.7'
			6.0' - 11.0' Tan, very stiff, sandy, silty, moist, med. plasticity, calc., scat. hard caliche modules to 1cm., also powdery caliche.		C	2. Jars: A: 0.0' - 5.0' B: 5.0' - 6.0' C: 6.0' - 11.0' D: 11.0' - 16.0' E: 16.0' - 19.0' F: 19.0' - 22.5' G: 22.5' - 27.5' H: 27.5' - 33.0' I: 33.0' - 37.0' J: 37.0' - 42.0' K: 42.0' - 47.0' L: 47.0' - 49.5' M: 49.5' - 50.7'
	10.0'		11.0' - 16.0' Olive tan, sandy, moist, silty, med. plasticity, calc., scat. black coarse sand size chert, some minor caliche.		11.0' D	3. Cartons: C-1: 50.7' - 51.8'
			16.0' - 19.0' Orange-tan, gray streaks, stiff, sandy, silty, moist, low to medium plasticity, sli. calc.		16.0' E	4. Drill rig moved off hole 4', and flushtailed to ____. Hole E-logged on 12 November 1973
			19.0' - 22.5' Tan and gray, hard, moist, silty, calc., becoming sli. sandy at 22.0'.		19.0' F	5. Water bailed to 32.1' with casing still in hole. Could bail on further due to rate of incoming water.
			22.5' to 49.5'		22.5' G	Water level after 72 hours was
	20.0'		SAND -			Perforated plastic pipe set to 72.0'.
			22.5' - 27.5' Tan, wet, low plasticity, silty, loose, calc.		27.5' H	
			27.5' - 33.0' Tan, moist, silty, calc., low plasticity, loose, scat pebbles.		33.0' I	
			33.0' - 37.0' Tan, loose, moist, clayey, low plasticity, calc., gravels and large cobbles present.		37.0' J	
			SAND - (contd.)			
			37.0' - 42.0' Tan, wet, loose, sli. calc., low plasticity, silty, heavy gravels to 39.0'.			
			42.0' - 47.0' Tan w/ pockets of gray, loose, sli. stiff, very moist, low plasticity, calc.			
	30.0'		47.0' - 49.5' Tan, wet, low plasticity, loose, calc., heavy gravel and coarse sand size ironstone pebbles present.			
	40.0'					

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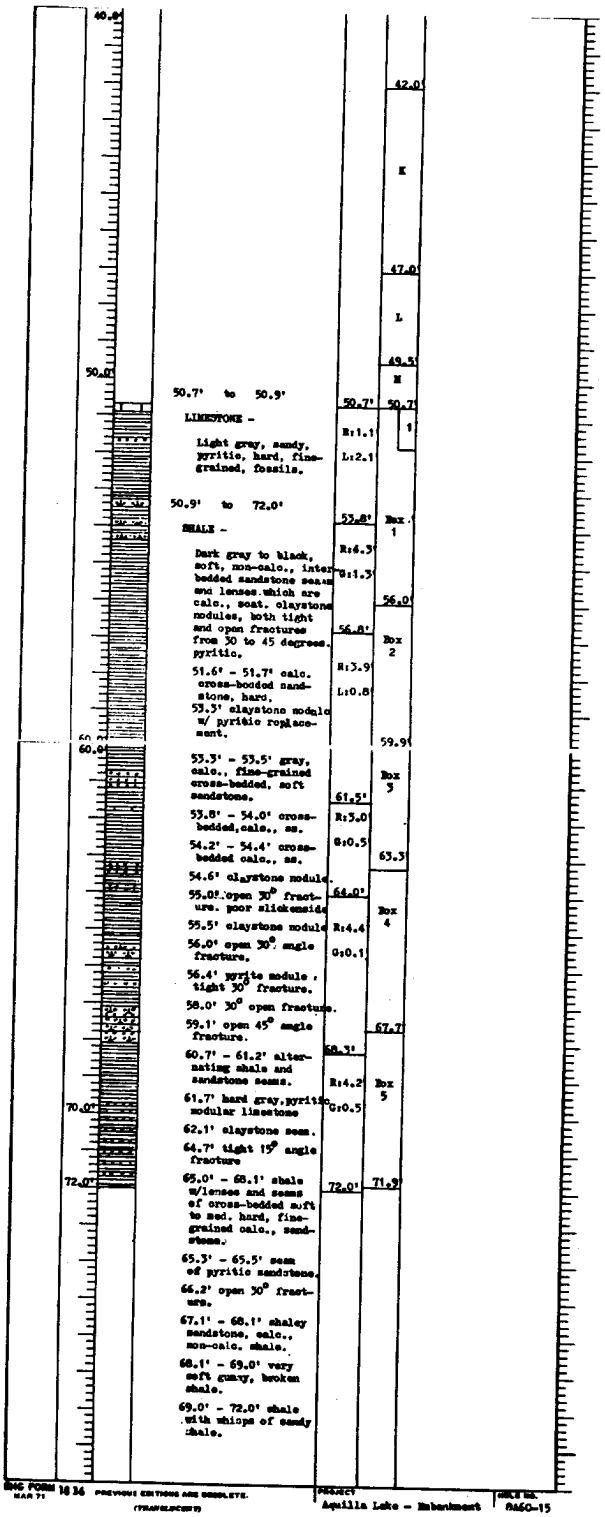


RECORD DRAWING-WORK AS BUILT

SYM.	DIG. NO.	ACTION	DATE	DESCRIPTION OF REV

U.S. ARMY ENGINEER DISTRICT, FO
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPI

LOGS OF BORING
8A6C-15

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-80-B
CONTR. NO. DACW63-8
DRAWING NUMBER

TO ACCOMPANY FINAL FOUNDATION REPORT

U.S. ARMY

RECORD DRAWING-WORK AS BUILT

SYM.	DR. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: --------
CHECKED BY: --------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-15

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0039
DRAWING NUMBER
SHEET NO. 8-5 OF
SEQUENCE NO. 110

CONTR. NO. DACW63-81-C-0039

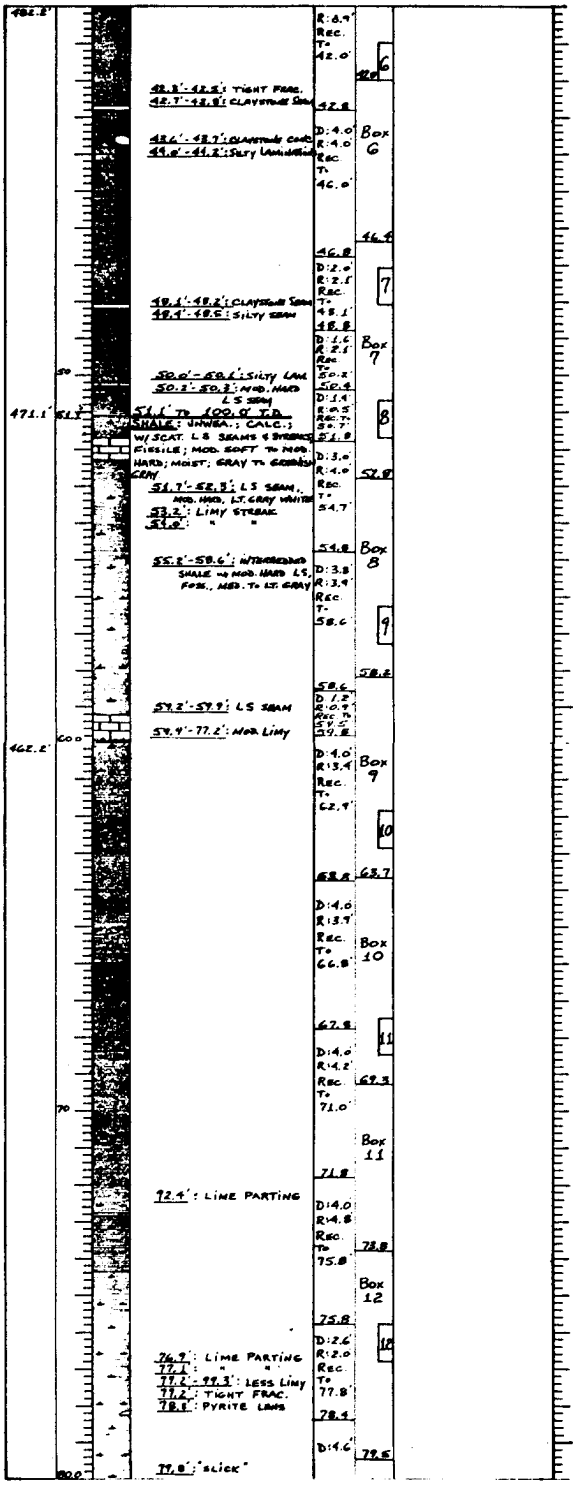
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 36

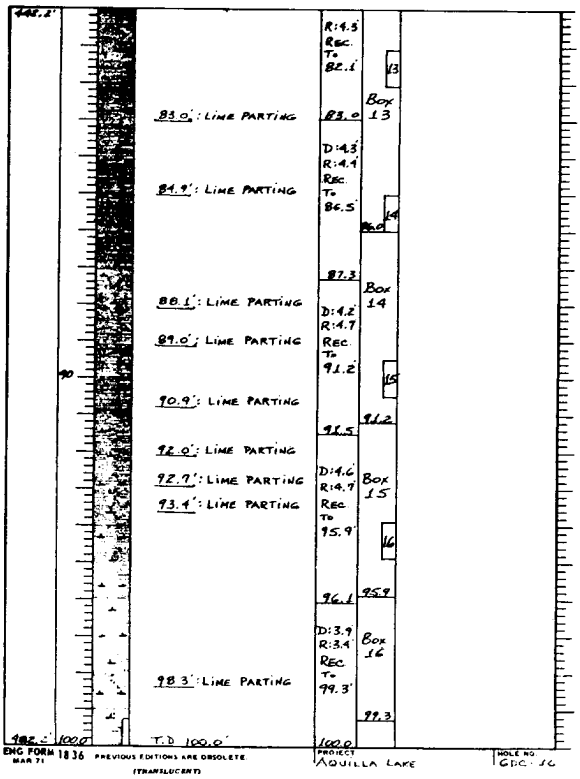
Hole No. GDC-16

DRILLING LOG	Division SWD	Installation FWD	Sheet 1 of 5 sheets
1. Project AQUILLA LAKE - EMBANKMENT		10. Size and Type of Bit 6" CARBOLOY DIAMOND	
2. Location (Coordinates or Station) X: 2 071 625 Y: 84 515		11. Datum for Elevation Shown (TBM or MSL) MSL	
3. Drilling Agency USCE-G		12. Manufacturer's Designation of Drill FAILING 1500	
4. Hole No. (As shown on drawing title and title number) GDC-16		13. Total No. of Overburden Samples Taken: Disturbed 5 / Undisturbed 4	
5. Name of Driller G. SCHOONOVER		14. Total Number Core Boxes 16	
6. Direction of Hole ☒ Vertical ☐ Inclined ____ Deg. From Vert.		15. Elevation Ground Water SEE REMARKS COLUMN	
7. Thickness of Overburden 10.6'±		16. Date Hole: Started 17 MAY 73 / Completed 22 MAY 73	
8. Depth Drilled Into Rock 89.4'±		17. Elevation Top of Hole 522.2'	
9. Total Depth of Hole 100.0'		18. Total Core Recovery for Boring 98 %	
		19. Signature of Inspector Jack L. Hatton	

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Remarks
522.2	0.0		0.0' TO 3.6'± CLAY: MOIST; W/ TRACE OF SAND; V. STIFF TO HARD, DK. BRN.		6.0 'A' 2.6 DB#1 (4.5+)	I. DRILLING: 8" FLIGHT AUGER: 0.0' - 2.6' 6" DENISON BARREL: 2.6' - 12.6' 6" CORE BARREL: 12.6' - 100.0'
			3.6'± TO 5.6'± CLAY: SANDY; MOIST; HARD; RUST BRN. & LT. GRAY		'B' 5.6 DB#2 (4.5+)	II. SAMPLES: DISTURBED (JAR): A: 0.0' - 2.6' B: 4.6' C: 6.6' D: 8.6' E: 10.6' F: 12.6' UNDISTURBED (DENISON): DB 1: 2.6' - 4.6' 2: 4.6' - 6.6' 3: 6.6' - 8.6' 4: 8.6' - 10.6' 5: 10.6' - 12.6' UNDISTURBED (CORE): C-1: 13.8' - 14.8' 2: 19.4' - 20.4' 3: 23.9' - 24.9' 4: 31.5' - 32.5' 5: 33.8' - 34.8' 6: 41.0' - 42.0' 7: 47.1' - 48.1' 8: 50.7' - 51.7' 9: 56.3' - 57.3' 10: 64.9' - 65.9' 11: 67.5' - 68.5' 12: 75.9' - 76.9' 13: 81.1' - 82.1' 14: 85.0' - 86.0' 15: 89.5' - 90.5' 16: 93.9' - 94.9'
			5.6'± TO 9.6'± SAND: SLI. CLAYEY, FINE TO MED. GRAINED; MOIST; FIRM; RUST TAN & LT. GRAY		'C' 6.6 DB#3 (4.5+)	
					'D' 8.6 DB#4	
			9.6'± TO 10.6'± CLAY: MOIST; W/ WEA. SHALE & SCAT GRAVEL;			
511.6	10.6	S	10.6'± TO 17.8' SHALE: HIGHLY WEA.; SOFT; CLAYEY; MOIST; W/SCAT TIGHT FRAC; NON-CALC.; W/ GYP VEINING; W/ SCAT SANDY POCKETS & LAMINATION; OLIVE GRAY & RUST W/ LT BLUE GRAY		'E' 10.6 DB#5	
		S	15.9' - 16.7': SANDY SEAM	12.6	12.6 F	
				D: 3.2 R: 3.0 Rec. To 15.6'	1	III. WATER LEVEL W/ BORING LEFT OPEN FOR E-LOGGING & PLASTIC PIPE AT A LATER DATE
		S		15.8	Box 1	
		S		D: 2.7 R: 2.3 Last 17.7' - 18.5		
504.4	17.8		17.8' TO 21.3' CLAYSTONE: SOFT TO HARD W/ INTERBEDDED SHALE, MOIST; TAN TO GRAY	18.5 D: 1.3 R: 0.8 Last 18.5 - 19.4	18.9	
			17.8' - 17.9': MOD. HARD, IRON STAINED, RUST RED	17.9	2	
502.2	20.0		17.9' - 18.6': SOFT SS.	D: 2.0 R: 1.9 Rec. To 21.3'		
			18.6' - 18.9': MOD. SOFT TAN SS.			BASE OF WEA. AT 20.4'
500.9	21.3		18.9' - 20.4': HARD CALC. S.S., TAN - BRN.	21.8		
			20.4' - 20.6': SOFT UNWEA. SHALE	D: 1.9 R: 1.7 Rec. To 23.0'	Box 2	
			20.6' - 21.0': HARD CALC. S.S., LT. TO MED. GRY.	23.6		
			20.8' - 21.3': INTERBEDDED MOD. SOFT S.S. & SOFT UNWEA. SHALE.			
			21.3' TO 51.1' SHALE: UNWEA.; NON-CALC.; SOFT; MOIST; FISSILE; W/ SCAT. CLAYSTONE SEAMS & CONC.; W/ OCCAS. MOD. HARD LS SEAM; W/ SCAT. TIGHT JOINTS; DK. GRAY BLK.	D: 4.2 R: 4.3 Rec. To 27.3'	3	
			22.6' - 22.7': MOD. HARD CLAYSTONE	25.4		
			22.7' - 23.6': TIGHT JOINT			
			23.1': CLAYSTONE			
			23.3' - 23.6': CLAYSTONE SEAM		Box 3	
			24.9' - 26.0': " "	27.8		
			27.8' - 28.2': TIGHT JOINT	D: 3.0 R: 3.4 Rec. To 30.7'		
			28.6' - 29.2': " "			
			29.8' - 30.7': SILTY POCKETS			
	30		30.7' - 30.8': HARD LS SEAM	30.2		
			30.9' - 31.0': PYRITE CONC.	30.8		
			31.1': CLAYSTONE	D: 2.4 R: 1.8 Rec. To 32.5'	4	
			31.5' - 32.1': IRREG. SILT PARTINGS			
			33.0' - 33.2': HARD CLAYSTONE	33.2	Box 4	
			33.5' - 33.6': 2 TIGHT JOINTS	D: 3.6 R: 4.0 Rec. To 36.5'	5	
			34.2': CLAYSTONE			
			34.7' - 34.9': CLAYSTONE			
			34.9' - 36.2': SILT PARTINGS			
			36.2' - 38.2': INTERBEDDED W/ SILTSTONE	36.8	36.5	
			37.6' - 37.7': CLAYSTONE	D: 2.0 R: 1.6 Rec. To 38.1'	Box 5	
			38.0' - 38.1': "	38.8		
			38.1': TIGHT FRAC.	D: 4.0		
			38.9' - 39.5': TIGHT FRAC.			
			39.4' - 40.0': " "			
	40.0					

482.2		
		42.5' - 42.6': TIGHT FRAC. 42.7' - 42.8': CLAYSTONE SEAM
		43.6' - 43.7': CLAYSTONE CONC. 44.0' - 44.2': SILTY LAMINATION
		48.1' - 48.2': CLAYSTONE SEAM 48.4' - 48.5': SILTY SEAM
	50	50.6' - 50.8': SILTY LAM 50.2' - 50.3': MOD. HARD LS SEAM
471.1	51.1	51.1' TO 100.0' T.D. SHALE: UNWEA.; CALC.; W/ SCAT. L.S. SEAMS & STRINGERS; FISSILE; MOD. SOFT TO MOD. HARD; MOIST; GRAY TO GREENISH GRAY
		51.7' - 52.3': LS SEAM, MOD. HARD, LT. GRAY WHITE 53.2': LIMY STREAK 53.6': " "
		55.8' - 58.6': INTERBEDDED SHALE W/ MOD. HARD LS, FOSS., MED. TO LT. GRAY
		57.2' - 57.9': LS SEAM 57.9' - 77.2': MOD. LIMY
462.2	100	
	70	72.4': LIME PARTING
		76.7': LIME PARTING 77.1': " " 77.2' - 99.3': LESS LIMY 77.2': TIGHT FRAC. 78.3': PYRITE LENS
	100	77.6': "SLICK"





RECORD DRAWING-WORK AS BUILT

SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER: ----------

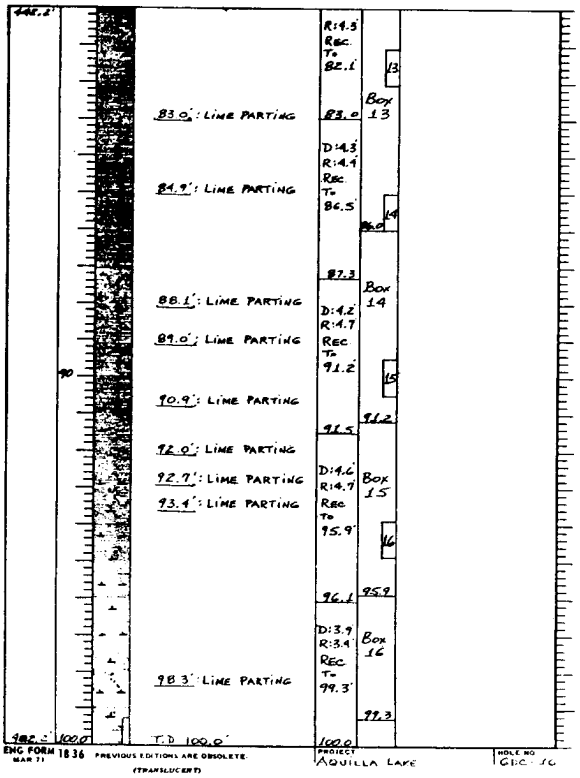
AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPI

LOGS OF BORING
6DC-16

INV. NO. DACW63-80-B-
CONTR. NO. DACW63-
DRAWING NUMBER

TO ACCOMPANY FINAL FOUNDATION REPORT



RECORD DRAWING-WORK AS BUILT

SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
6DC-16

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-6 OF
SEQUENCE NO. 111

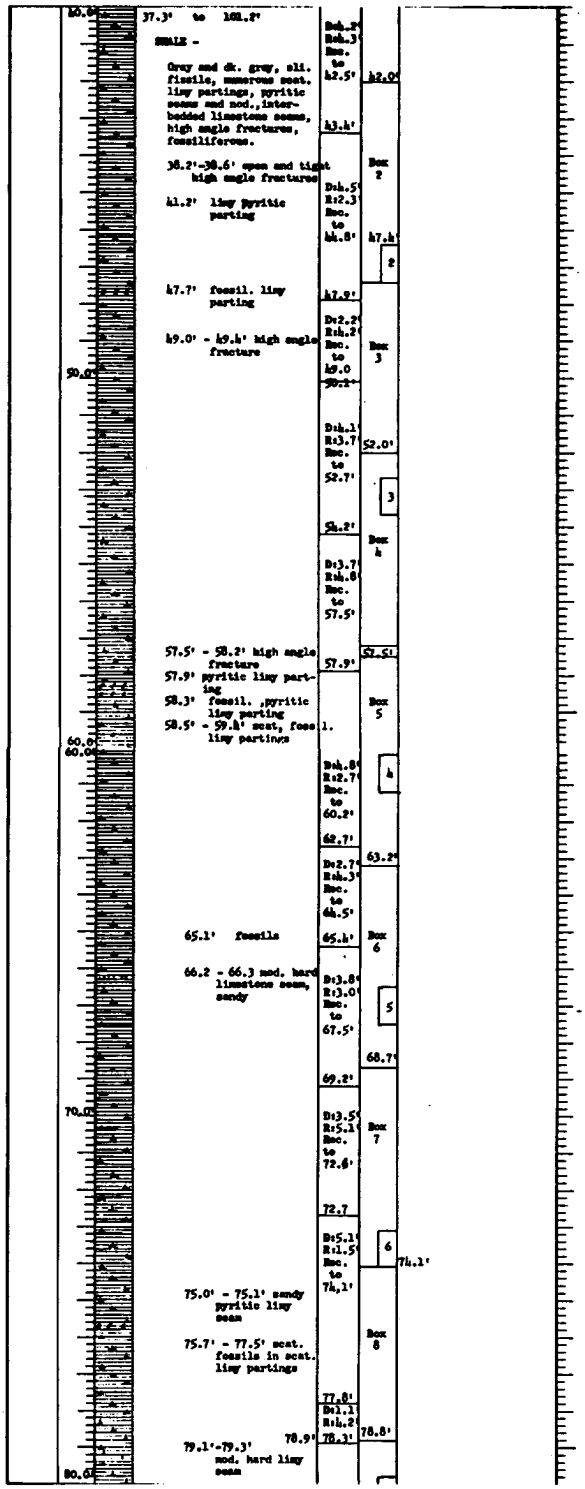
CONTR. NO. DACW63-81-C-0035

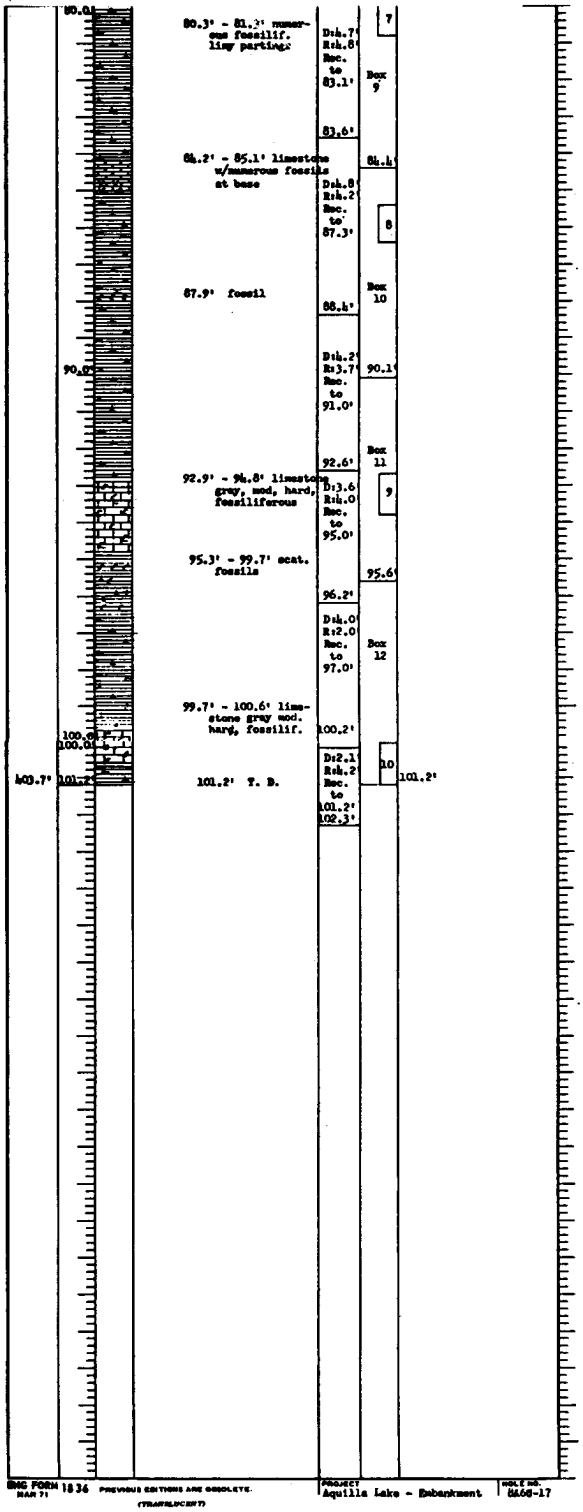
Hole No. AA6C-17

1. PROJECT: Aquilla Lake - Embankment	2. DIVISION: SWD	3. INSTALLATION: FWD	4. SHEET: 1 of 6 SHEETS
5. LOCATION (Coordinates or Station): N: 7,090,965 E: 85,190		10. SIZE AND TYPE OF BIT: 6" Carboloy	
6. DRILLING AGENCY: USCE-C		11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
7. HOLE NO. (As shown on drawing title and/or tab number): AA6C-17		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
8. NAME OF DRILLER: G. Schoonover		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 8; UNDISTURBED 0	
9. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		14. TOTAL NUMBER CORE BOXES: 12	
7. THICKNESS OF OVERBURDEN: 36.5'		15. ELEVATION GROUND WATER: 444.0'	
8. DEPTH DRILLED INTO ROCK: 64.7'		16. DATE HOLE: STARTED 26 July '73; COMPLETED 31 July '73	
9. TOTAL DEPTH OF HOLE: 101.2'		17. ELEVATION TOP OF HOLE: 504.9'	
		18. TOTAL CORE RECOVERY FOR BORING: %	
		19. SIGNATURE OF INSPECTOR: Kenneth P. Mathews	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	SAMPLE OR CORE BOX NO. e	DEPTH SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0.0'		0.0' to 3.0'		0.0'	1. 8" Flight Auger 0.0' - 36.5'
			CLAY - Dark brown, silty, sli. moist, high plasticity, calc.		A	6" Core Barrel 36.5' - 101.2'
501.9'					3.0'	8" Casing set to 36.5'
			3.0' to 8.0' CLAY - Chocolate brown, very silty, sli. moist, sli. calc., high plasticity.		B	2. Jars : A: 0.0' - 3.0' B: 3.0' - 8.0' C: 8.0' - 13.0' D: 13.0' - 17.0' E: 17.0' - 22.0' F: 22.0' - 26.5' G: 26.5' - 31.5' H: 31.5' - 36.5'
496.9'	10.0'		8.0' to 13.0' CLAY - Brown, sli. sandy, sli. moist, med. plasticity, calc.		8.0' C	3. Cartons : C-1: 38.8' - 39.8' C-2: 46.4' - 47.4' C-3: 52.7' - 53.7' C-4: 60.2' - 61.2' C-5: 66.5' - 67.5' C-6: 73.1' - 74.1' C-7: 79.8' - 80.8' C-8: 85.4' - 86.4' C-9: 92.7' - 93.8' C-10: 100.1' - 101.2'
491.9'			13.0' to 17.0' CLAY - Light brown, sli. sandy, sli. moist, med. plasticity, calc.		13.0' D	4. E-logged 31 July '73 Perforated plastic pipe set to 50.0'
487.9'	20.0' 20.0		17.0' to 22.0' CLAY - Tan, sandy, moist, med. plasticity, calc.		17.0' E	
482.9'			22.0' to 26.5' SAND - Light tan, clayey, very moist, med. to low plasticity, calc.		22.0' F	
478.4'			26.5' to 31.5' SAND - Light tan w/white streaks, clayey, very moist, med. to low plasticity, calc.		26.5' G	
473.4'			31.5' to 36.5' SAND - Dark gray, clayey, very moist, low plasticity, calc., w/tabular rounded sandstone and dark limestone pebbles at lower portions.		31.5' H	
468.4'			36.5' to 37.3'	36.5'	36.5'	
467.6'			LIMESTONE - Light olive brown and white, sandy, fine-grained crystalline, angular limy siltstone at base, pyrite replacement and streaks of a dk. mineral along bedding.	D:2.7' R:1.7' Rec. to 38.2'	Box 1	
				39.2'	1	

50.0'	37.3' to 108.2' SHALE - Gray and dk. gray, sli. fissile, numerous scat. limy partings, pyritic seams and nod., interbedded limestone seams, high angle fractures, fossiliferous.	D:4.5' R:2.3' Rec. to 44.8'	42.0' Box 2
	38.2'-38.6' open and tight high angle fracture		
	41.2' limy pyritic parting		47.4' 2
	47.7' fossil. limy parting	47.9'	
	49.0' - 49.4' high angle fracture	D:2.2' R:1.8' Rec. to 49.0'	Box 3
50.0'		50.2'	
		D:4.1' R:3.7' Rec. to 52.7'	52.0'
		54.2'	3
		D:3.7' R:4.6' Rec. to 57.5'	Box 4
	57.5' - 58.2' high angle fracture	57.9'	57.5'
	57.9' pyritic limy parting		Box 5
	58.3' fossil. ,pyritic limy parting		
	58.5' - 59.4' scat, foss limy partings	1.	
60.0' 60.0		D:4.8' R:2.7' Rec. to 60.2'	4
		62.7'	63.2'
		D:2.7' R:4.3' Rec. to 64.5'	
	65.1' fossils	65.4'	Box 6
	66.2 - 66.3 mod. hard limestone seam, sandy	D:3.8' R:3.0' Rec. to 67.5'	5
			68.7'
		69.2'	
70.0'		D:3.5' R:3.1' Rec. to 72.6'	Box 7
		72.7	
		D:5.1' R:1.5' Rec. to 74.1'	6 74.1'
	75.0' - 75.1' sandy pyritic limy seam		
	75.7' - 77.5' scat. fossils in scat. limy partings		Box 8
		77.8'	
		D:1.1' R:1.2'	78.8'
	79.1'-79.3' mod. hard limy seam	78.9' 78.3'	
80.0'			





ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT Aquilla Lake - Embankment HOLE NO. B468-17

RECORD

DESIGNED

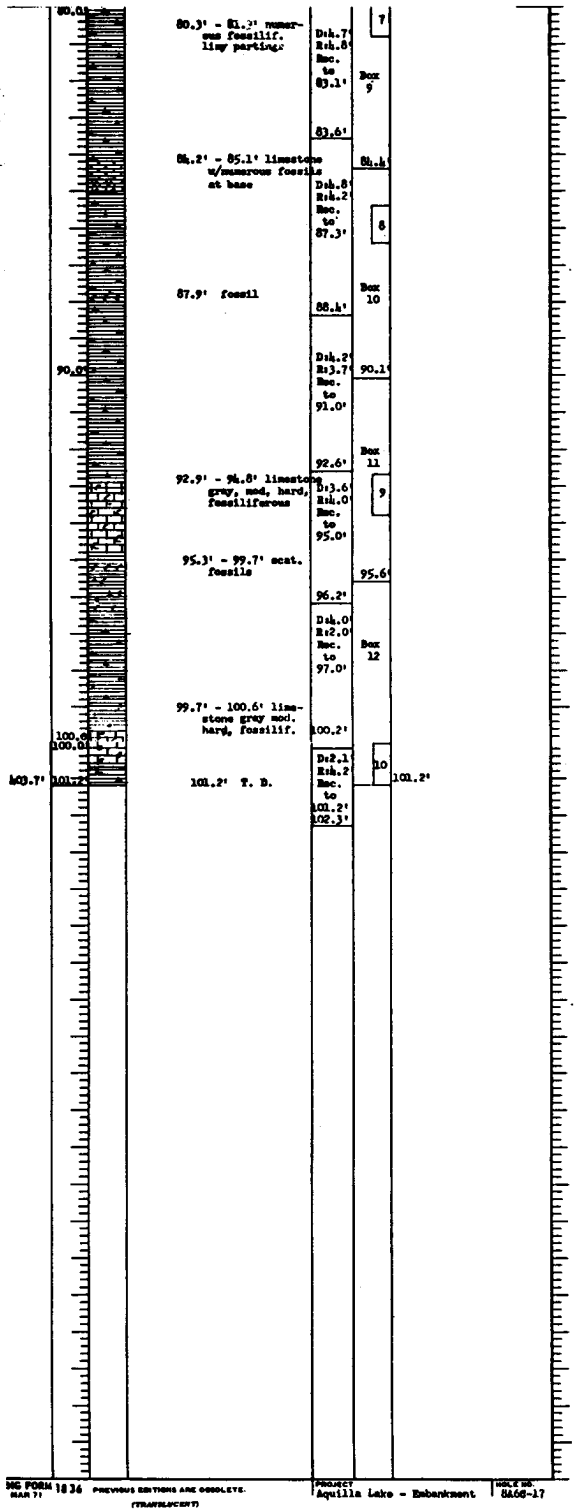
DRAWN BY

CHECKED

SUBMITTED

ENGINEER

TO ACCOMPANY FINAL



RECORD DRAWING-WORK AS BUILT

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-17

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-7 OF
SEQUENCE NO. 112

CONTR. NO. DACW63-81-C-0035

CORPS OF ENGINEERS

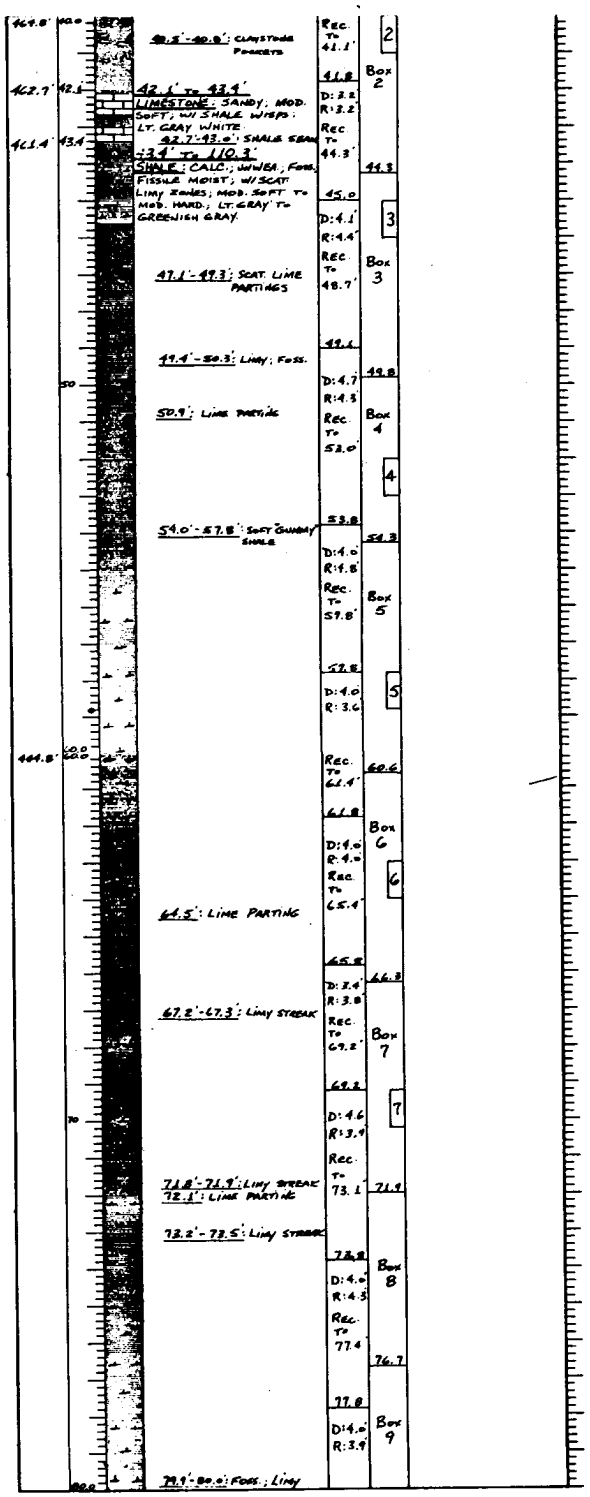
(1)

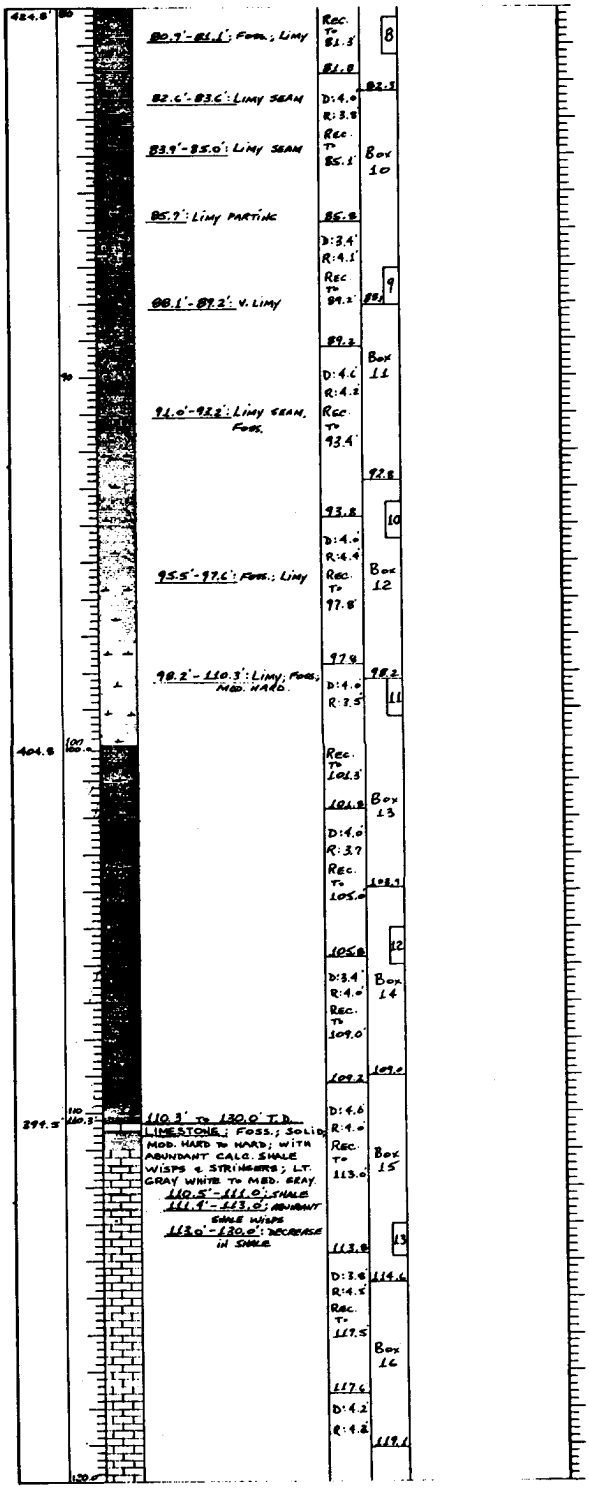
Hole No. GDC-18

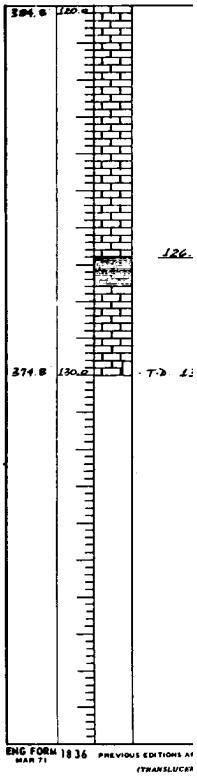
1. PROJECT: AQUIL A LAKE - EMBANKMENT	2. LOCATION: X: 2010.0E Y: 84.445	3. DRILLING AGENCY: LRCE	4. HOLE NO.: GDC-18
5. NAME OF DRILLER: G. SCHMIDLOCK	6. DIRECTION OF HOLE: (V) VERTICAL (I) INCLINED ____ DEG. FROM VERT.	7. THICKNESS OF OVERBURDEN: 31.8'	8. DEPTH DRILLED INTO ROCK: 98.2'
9. TOTAL DEPTH OF HOLE: 130.0'	10. DIVISION: SWD	11. INSTALLATION: FWD	12. SHEET 1 OF 7 SHEETS
13. DATUM FOR ELEVATION SHOWN: MSL	14. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500	15. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 14, UNDISTURBED 13	16. TOTAL NUMBER CORE BOXES: 18
17. ELEVATION GROUND WATER: SEE REMARKS COLUMN	18. DATE HOLE: STARTED 23 MAY 73, COMPLETED 1 JUNE 73	19. ELEVATION TOP OF HOLE: 504.8	20. TOTAL CORE RECOVERY FOR BORING: 99 %
21. SIGNATURE OF INSPECTOR: Jacob K. Hahn			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RUN	SAMPLE OR CORE BOX NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
504.8	0		0.0' TO 3.0'± CLAY: MOIST; STIFF; SLI. CALC.; DK. BRN.		0.0 A 2.6 DB 1 (3.5)	I. DRILLING: 10" FLIGHT AUGER: 0.0' - 2.6' 6" DENISON BBL: 2.6' - 29.6' 9 7/8" ROCKBIT: 0.0' - 32.0' SET 8" CASING TO 32.0' CLEANED OUT TO 34.0' 6" CORE BARREL: 34.0' - 130.0'
			3.0'± TO 9.6'± CLAY: SLI. SILTY; MOIST; V. STIFF; CALC.; BRN. TO DK. BRN.		'B' 4.6 DB 2 (3.5)	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 2.6' B: 4.6' C: 6.6' D: 8.6' E: 10.6' F: 12.6' G: 14.6' H: 16.6' I: 18.6' J: 20.6' K: 22.6' L: 24.6' M: 26.6' N: 28.6' - 29.6'
					'C' 6.6 DB 3 (4.5)	
					'D' 8.6 DB 4 (3.25)	
	10		9.6'± TO 21.6'± CLAY: SLI. SILTY; W/ TRACE OF FINE SAND; MOIST; STIFF TO V. STIFF; CALC.; BRN. DOWN TO DK. BRN. 9.6'± - 19.6'±: BRN 19.6'± - 21.6'±: DK. BRN.		'E' 10.6 DB 5 1.75	UNDISTURBED (DENISON): DB 1: 2.6' - 4.6' 2: 4.6' - 6.6' 3: 6.6' - 8.6' 4: 8.6' - 10.6' 5: 10.6' - 12.6' 6: 12.6' - 14.6' 7: 14.6' - 16.6' 8: 16.6' - 18.6' 9: 18.6' - 20.6' 10: 20.6' - 22.6' 11: 22.6' - 24.6' 12: 24.6' - 26.6' 13: 26.6' - 28.6'
					'F' 12.6 DB 6 (2.25)	
					'G' 14.6 DB 7 (1.75)	UNDISTURBED (CORE): C-1: 35.8' - 36.8' 2: 40.1' - 41.1' 3: 45.1' - 46.1' 4: 52.0' - 53.0' 5: 57.8' - 58.8' 6: 63.0' - 64.0' 7: 69.2' - 70.2' 8: 80.3' - 81.3' 9: 87.1' - 88.1' 10: 93.4' - 94.4' 11: 98.2' - 99.2' 12: 105.0' - 106.0' 13: 113.0' - 113.9' 14: 121.7' - 122.6' 15: 126.6' - 127.6'
					'H' 16.6 DB 8 (1.75)	
					'I' 18.6 DB 9 (1.75)	
481.8	23.0				'J' 20.6 DB 10 (1.75)	III. WATER LEVEL: * PLASTIC PIPE IS TO BE PLACED IN BORING AFTER BORING HAS BEEN BACKFILLED AT A LATER DATE.
					'K' 22.6 DB 11 (1.75)	
					'L' 24.6 DB 12 (1.75)	
					'M' 26.6 DB 13 (1.75)	
			27.6'± TO 30.0'± CLAY: SLI. SANDY; V. MOIST; STIFF; W/ ORGANIC STAINS; DK. GRAY BLE.		28.6 'N' 29.6	
	30		30.0'± TO 31.8' SAND; SLI. CLAYEY; GRAVELLY W/ SCAT. COBBLES; SAT'D.; GRAY BRN.			
473.0	31.8		31.8' TO 42.1' SHALE: PREDOM. SANDY SHALE W/ ABUNDANT INTERBEDDED SOFT SS SEAMS; ESS. UNWEA, SOFT, FISSILE, MOIST; DK GRAY 31.8'-34.4': SANDY SHALE 34.4'-34.6': SOFT SS 34.6-35.0': SANDY SHALE 35.0'-35.2': SOFT SS 35.3'-37.4': INTERBEDDED SS & SHALE 37.4'-37.5': CLAYSTONE 37.5'-38.9': SANDY SHALE	REMARKS FOR CORE BOX	34.0 D: 2.8 R: 5.4 Rec To 37.4' Box 1 [1] 37.8 D: 4.0 R: 3.7 39.4	
			38.9'-39.9': SOFT S.S.			

464.8	40.0		40.0'-40.6': CLAYSTONE PARTINGS	Rec. To 41.1'	[2]
462.7	42.1		42.1' TO 43.4' LIMESTONE: SANDY; MOD. SOFT; W/ SHALE WISPS; LT. GRAY WHITE	41.8 D: 3.2 R: 3.2 Rec To 44.3'	Box 2
461.4	43.4		42.2'-43.4': SHALE SEAM 43.4' TO 110.3' SHALE: CALC.; UNWEA.; FOSS. FISSILE MOIST; W/ SCAT. LIMY ZONES; MOD. SOFT TO MOD. HARD.; LT. GRAY TO GREENISH GRAY.	44.3	[3]
			47.1'-49.3': SCAT. LIME PARTINGS	45.0 D: 4.1 R: 4.4 Rec To 48.7'	Box 3
			49.4'-50.3': LIMY; FOSS.	49.1	[4]
	50		50.9': LIME PARTING	D: 4.7 R: 4.3 Rec To 53.0'	Box 4
			54.0'-57.8': SOFT SHALE	53.8 D: 4.0 R: 1.8 Rec To 57.8'	Box 5
				57.8 D: 4.0 R: 3.6	[5]
444.8	60.0			Rec To 61.4'	[6]
			64.5': LIME PARTING	61.8 D: 4.0 R: 4.0 Rec To 65.4'	Box 6
			67.2'-67.3': LIMY STREAK	65.8 D: 3.4 R: 3.8 Rec To 69.2'	Box 7
	70			69.2 D: 4.6 R: 3.9 Rec To 73.1'	[7]
			71.8'-71.9': LIMY STREAK 72.1': LIME PARTING 73.2'-73.5': LIMY STREAK	73.8 D: 4.0 R: 4.5 Rec To 77.4'	Box 8
				77.8 D: 4.0 R: 3.9	Box 9
	80.0		79.9'-80.0': FOSS.; LIMY		







RECORD DRAWING-

SYM	DR. NO.	ACTION

U.S. ARM

DESIGNED BY:

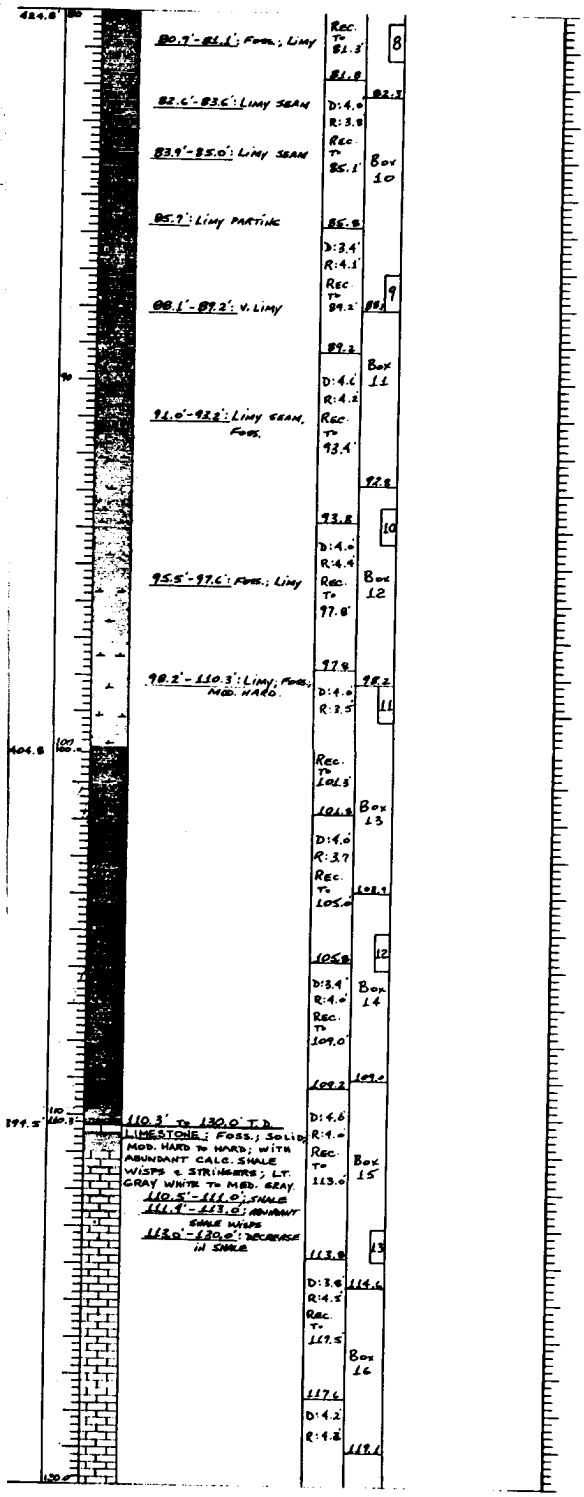
DRAWN BY:

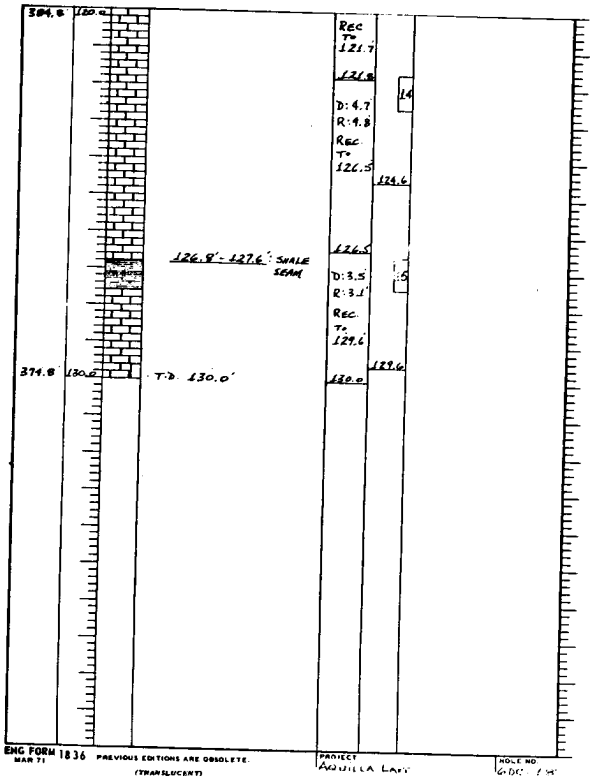
CHECKED BY:

SUBMITTED BY:

ENGINEER:

TO ACCOMPANY FINAL FOU





RECORD DRAWING-WORK AS BUILT

SYM.	DQ. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
6DC-18

INV. NO. DACW63-80-B-0085 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. 8-8 OF
SEQUENCE NO. 113
CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT

PLATE 39

CORPS OF ENGINEERS

Hole No. BAGC-21

SWD

AQUILLA LAKE - EMBANKMENT

USCE-CC

BAGC-21

C. SMITH

6.8'

55.0'

61.8'

FWD

SHEET 1 OF 4 SHEETS

11. DIZE AND TYPE OF BIT: 6" CARBOLOY & DIAMOND

12. DATUM FOR ELEVATION SHOWN (TBM or Mean): MSL

13. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500

14. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 2, UNDISTURBED 0

15. TOTAL NUMBER CORE BOXES: 10

16. ELEVATION GROUND WATER: SEE REMARKS COLUMN

17. DATE HOLE: STARTED 14 MAY 73, COMPLETED 16 MAY 73

18. ELEVATION TOP OF HOLE: 536.3

19. TOTAL CORE RECOVERY FOR BORING: 98 %

20. SIGNATURE OF INSPECTOR:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0		0.0' TO 1.4' CLAY: MOIST; STIFF TO V. STIFF; NON-CALC.; DARK BRN.		0.0 A 1.4	I. DRILLING: 10" FLIGHT AUGER: 0.0' - 4.0' NOTE: HAD AUGER REFUSAL IN GRAVEL & COBBLES. 9 7/8" ROCKBIT: 4.0' - 6.8' 6" CORE BARREL: 6.8' - 61.8'
	1.4		1.4' TO 4.0' CLAY: SLI. MOIST; V. STIFF; NON-CALC.; BRN.		B 4.0	
532.3	4.0		4.0' TO 6.8'+ CLAY; GRAVELLY; w/ SCAT. COBBLES; w/ TRACE of SAND; SLI. MOIST; V. STIFF; CALC.; BRN. - TAN (NOTE: HAD AUGER REFUSAL AT 4.0'. LOGGED MATERIAL BY DRILL REACTION & SIGHTING DOWN BORING.)		ROCK-BITTED w/ SAMPLE	II. SAMPLES: DISTURBED (JARS): A: 0.0' - 1.4' B: 1.4' - 4.0' UNDISTURBED (CORES): C-1: 7.0' - 8.0' 2: 10.6' - 11.6' 3: 16.6' - 17.6' 4: 24.9' - 25.9' 5: 29.1' - 30.0' 6: 37.8' - 38.8' 7: 41.9' - 42.9' 8: 49.4' - 50.4' 9: 55.6' - 56.6' 10: 60.8' - 61.8'
527.5	6.8		6.8' TO 9.4' SHALE: HIGHLY WEA.; CLAYEY; MOIST; SLI. FISSILE; LT. GRAY & TAN 7.0'-9.5' Shelby	D:3.8 R:2.5 Lost 8.0'-9.0' Rec. To 10.3'	6.8 1 Box 1	
526.8	9.5		9.5' TO 10.6' SANDSTONE: CEMENTED; MOD. WEA.; NON-CALC.; MOD. HARD; BRN. - TAN		10.6 2	
525.7	10.6		10.6' TO 43.8' SHALE: MOD. WEA. TO UNWEA.; NON-CALC.; MOIST; SOFT; FISSILE.; w/ SCAT. TIGHT STAINED JOINTS; w/ SCAT. SS SEAMS & LENSES; MED. GRAY w/ RUST DOWN TO DK. GRAY BLK.	D:4.2 R:3.8 Rec. To 14.1'	14.1 Box 2	III. WATER LEVEL: * BORING WAS BAILED TO 59.0' ON 16 MAY. BORING HAD CAVED IN AT 46.8'. 2" Perf. PLASTIC PIPE WAS PLACED TO 46.8'. No FREE WATER ABOVE "CAVE-in" AFTER 24 HRS.
			10.6'-18.1': MED. GRAY w/ RUST			
			12.1'-12.7': TIGHT STAINED JOINT			
			13.2'-13.4': STAINED BEDDING PLANE			
			13.8'-13.6': SS SEAM, LT. GRAY			
			13.9': SS SEAM, LT. GRAY			
			14.1'-18.1': MED. GRAY w/ RUST STAINED BEDDING PLANE, w/ SELENITE VEINING & POCKETS		14.8	
			16.4'-16.6': RUST RED SILTSTONE SEAM	D:4.0 R:4.0 Rec. To 18.1'	Box 2	
			16.6'-17.6': TIGHT JOINTS w/ SELENITE VEINING		3	
			18.1'-25.4': DARK GRAY w/ RUST		18.8	
	20.0		20.0': TIGHT JOINT 20.2': RED STAINS 20.2'-22.6': SCAT. TIGHT STAINED JOINTS	D:4.0 R:4.1 Rec. To 22.5'	19.9 Box 3	
					22.8	
			25.4': BASE OF WEA. 25.4'-34.6': UNWEA.; FISSILE, w/ SCAT. SOFT SS SEAMS & LENSES, DK. GRAY BLK.	D:4.0 R:3.9 Rec. To 26.4'	24.1 4 Box 4	
			27.9': SOFT SS LENS 28.1'-28.5': SOFT SS SEAM 28.7': SCAT. SOFT SS LENSES	D:4.0 R:4.4 Rec. To 30.8'	26.8 5	
			24.0'-24.2': SOFT SS SEAM 24.9'-30.2': SOFT SS SEAM		30.8 Box 5	
			30.6': SOFT SS LENS 30.8'-34.6': SCAT. LT. GRAY SS PARTINGS	D:4.0 R:4.0 Rec. To 34.8'		
			34.6'-34.8': LT. GRAY SILTSTONE CALC.		34.8 Box 6	
				D:4.0 R:4.0 Rec. To 38.8'	6	
					38.8	

			44.4'-46.8': SANDY SHALE w/ SAND STRINGS	D:5.6 R:5.0 Rec. To 43.8'	40.8 7 Box 7
492.5	43.8		43.8' TO 53.1' SANDSTONE: SOFT; THINLY BEDDED; WEAKLY TO MOD. CEMENTED; MOIST; GRAY TO DARK GRAY Note: BEACH ALONG BEDDING PLANES & WAS UNABLE TO SAMPLE FROM 43.8'-44.4' & 50.4'-53.1'	43.8 D:4.0 R:3.8 Rec. To 47.6'	45.8
			47.9'-49.4': INTERBEDDED w/ SHALE	47.8 D:4.0 R:4.2 Rec. To 51.8'	Box 8 8
			50.4'-51.4': INTERBEDDED w/ SHALE		51.4
483.3	53.1		53.1' TO 54.0' SANDSTONE: WELL CEMENTED HARD; CALC.; LT. GRAY	51.8 D:1.6 R:1.6 Rec. To 52.8'	
482.3	54.0		53.9'-54.0': INDICATES A CHANGE in DEPOSITIONAL CONDITIONS. CONTAINS ANGULAR TO ROUNDED LT. & DK. ROCK FRAGMENTS. SILTSTONE FRAG & PYRITE.	D:2.0 R:1.9 Rec. To 54.7'	Box 9
			54.0' TO 61.8' TD. SHALE: UNWEA.; CALC., w/ LIN. STREAKS; FOSS.; FISSILE w/ PYRITE; MOD. SOFT; GRAY	SEC. B	9
			54.6'-54.5': PYRITE SEAM	D:3.3 R:4.1 Rec. To 58.8'	57.0
				59.1	Box 10
	60.0		59.1' "SLICK"	D:2.7 R:3.0 Rec. To 61.6'	10
474.5	61.8		T.D. 61.8'	61.8	61.8

Mode No. 6DC-22

DRILLING LOG — DIVISION SWD — INSTALLATION FWD — SHEET 1 OF 4 SHEETS

1. PROJECT: Aquilla Lake - Embankment
2. LOCATION (Coordinates or Stationing): N/A
3. DRILLING AGENCY: USACE -F
4. HOLE NO. (As shown on drawing title): 6DC-22
5. NAME OF DRILLER: S. Dobrovolny
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 5.6'
8. DEPTH DRILLED INTO ROCK: 54.4'
9. TOTAL DEPTH OF HOLE: 60.0'
10. SIZE AND TYPE OF BIT: 6" Carboloy, 6" Diamond
11. DATUM FOR ELEVATION SHOWN (MSL or Assumed): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF CORES: 2; OVERBURDEN: 2; ROCK: 2
14. TOTAL NUMBER CORE BOXES: 9
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 5 Aug. '73; COMPLETED 7 Aug. '73
17. ELEVATION TOP OF HOLE: 544.4
18. TOTAL CORE RECOVERY FOR COMBINED: %
19. SIGNATURE OF INSPECTOR: Samuel R. Mathes

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RUN NO.	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc.; if applicable)
	0.0'		0.0' to 0.6' CLAY - Dark brown, hard, sli. sandy, high plasticity, sli. moist, non-calc., mottled.		0.0' A 0.6' B 2.6'	1. 8" Flight Auger 0.0' - 2.6' 6" Denison Barrel 2.6' - 7.1' 6" Core Barrel 7.1' - 60.0' Diamond bit 56.1' - 60.0' Casing set to 7.0'
			0.6' to 5.6' CLAY - Orange brown, hard, high plasticity, moist, quartzite gravel, non-calc., mottled.		C=4.6' DB-1 DB-2 D=6.6'	2. Jars: A=0.0' - 0.6' B=0.6' - 2.6' C=2.6' - 4.6' D=4.6' - 7.1'
5.6'			5.6' to 27.3' SHALE - Gray, weath., orange stained fractures and joints, soft, non-calc. gypsiferous partings, ironstone nodules, interbedded non-calc. sandstone and siltstone, fossils.	7.1'	7.1'	3. Cartons: C-1: 7.1' - 8.1' C-2:19.1' - 20.0' C-3:23.6' - 24.6' C-4:27.5' - 28.5' C-5:32.5' - 33.5' C-6:38.5' - 39.5' C-7:44.0' - 45.0' C-8:51.4' - 52.2' C-9:59.0' - 60.0'
			10.1' - 10.4' gray-white calc. fine-grained sandstone. 10.5' appearance of sd unconformity. 10.5' - 11.5' brown sandstone, non-calc., poorly sorted, orange stains in bedding, red ironstone lens. 11.5' - 14.9' interbedded non-calc. brown sandstone and gray shale, weathered, orange stained, worm trail casts along ss. and shale contacts, sect. ironstone nodules.	10.1'	Box 1	4. Weathering to 27.3'
			17.1' - 17.5' gray homogeneous, sandy, clayey shale, peppered with specks of black fossil remains.	14.1'	15.7'	5. B-logged Aug. '73 Perforated plastic pipe set to 60.0'
20.0'			20.7' - 27.3' numerous gypsum partings	18.0'	Box 2 19.0'	6. Water level was 18.5' after 24 hours.
			24.7' ironstone nodule	23.9'	20.7' Box 3	
27.3'			27.3' to 45.4' SHALE - Dark gray, unweathered, silty, waxy, interbedded consolidated sandstone lenses and seams, fossils, non-calc., sect. non-calc. siltstone lenses, both tight and open low and high angle fractures.	28.1'	25.8' 4	
30.0'			28.2' siltstone nodule 29.9' - 32.5' sect. cross-bedded sandstone lenses.	32.5'	Box 4 31.6'	
			32.5' fossils	32.5'	5	
			33.7' low angle fract. 34.3' - 36.3' tight high angle fractures intersecting, orient. converging at near 60° angles.	36.8'	Box 5	
			36.8' - 40.0' sect. non-calc. siltstone lenses and seams.	37.5'	37.5'	
40.0'					6	

56.0' to 57.3'
LIMESTONE - Gray to white, fine to med. grained, very sandy in upper part, pyritic, whisps of black shale, and knotty flow stuctures at base. 56.0' - 56.9' gray-brown with jongnes of white 45° to bore pyritic. 57.0' pyrite seam

57.3' to 60.0'
SHALE - Dark gray, silty, soft, calc., sli. fissile, sect. fossils.

40.0' - 40.1' low angle fracture — Box 6

42.1' sandstone lens — 41.9'

45.0' sandstone lens and fossils. D:4.0' R:4.5' Rec. to 45.2' — 42.9'

45.4' to 53.2'
SANDSTONE - Gray-brown, soft, fine to med. grained, non-calc., open fractures along bedding planes, fossils, sli. shaley, from 45.4' - 48.9' 48.4' - 48.9' numerous sect. 8" calc., white nodules in sandstone. D:4.2' R:4.2' Rec. to 49.4' — 45.9' Box 7 — 48.4'

48.9' - 49.4' gray, non-calc. shale.

49.4' - 51.2' shale w/ whisps of white calc. sandstone. sect. creme colored claystone lenses. D:4.2' R:2.8' Rec. to 52.2' L:1.0' — 50.1' Box 8

51.2' - 53.2' gray sandy shale.

53.2' to 53.5'
LIMESTONE - Gray white, sandy, numerous black fossil frags. sli. friable, mod. hard, pyritic, siltstone nodules, apparent unconformity at base. D:1.8' R:1.2' Rec. to 54.4' — 54.3' — 56.0'

55.5' to 54.4'
SHALE - Gray to black, calc., apparent dip of 10° to 15° — 56.1' D: R: Rec. to 57.4' 58.2' D:1.8' R:2.6' Rec. to 60.0' — Box 9 — 60.0'

SYMBOL NO.	ACTION	DATE	DESCRIPTION OF C

U.S. ARMY ENGINEER DISTRICT, FO
CORPS OF ENGINEERS
FORT WORTH, TEXAS

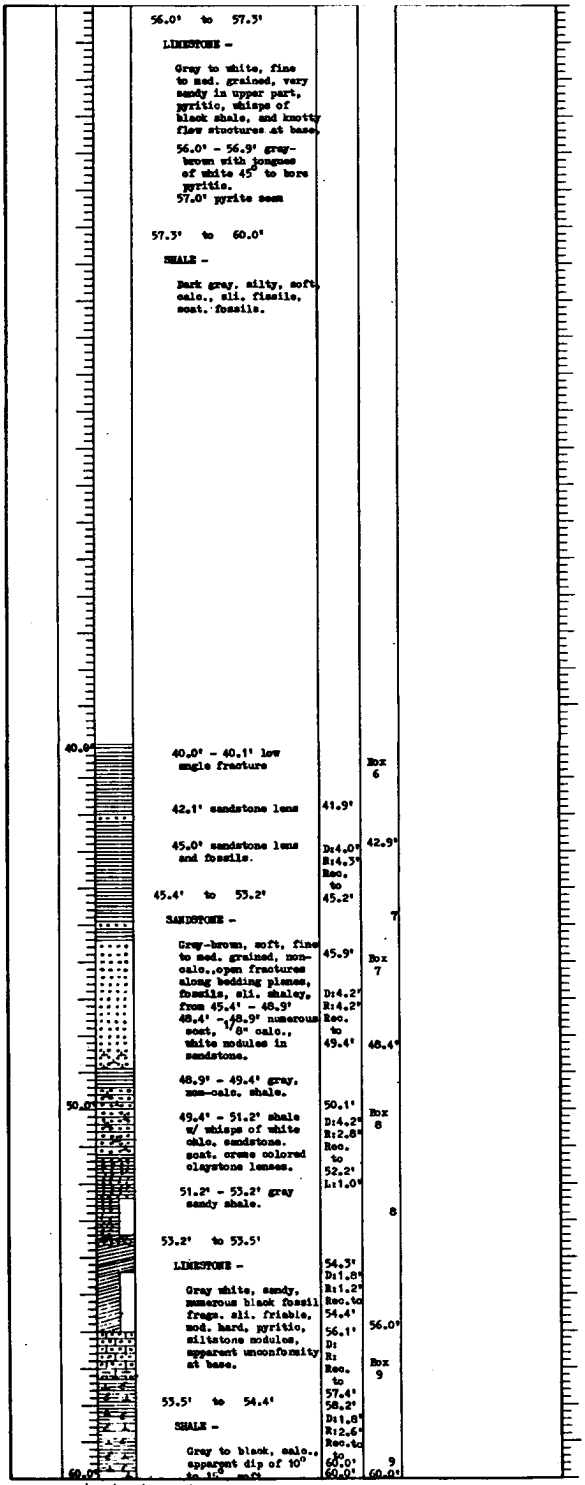
DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXA
EMBANKMENT AND SP
LOGS OF BORIN
8A6C-19

INV. NO. DACW63-80-
CONTR. NO. DACW63-
DRAWING NUMBER

RECORD DRAWING-WORK AS BUILT

TO ACCOMPANY FINAL FOUNDATION REPORT



56.0' to 57.5'

LIMESTONE -

Gray to white, fine to med. grained, very sandy in upper part, pyritic, whisps of black shale, and knotty flow structures at base.

56.0' - 56.9' gray-brown with jongnes of white 45° to bore pyritic.

57.0' pyrite seam

57.5' to 60.0'

SHALE -

Dark gray, silty, soft, calc., sli. fissile, scat. fossils.

40.0' - 40.1' low angle fracture

42.1' sandstone lens — 41.9'

45.0' sandstone lens and fossils. — D:4.0' R:4.3' Rec. to 45.2'

45.4' to 53.2'

SANDSTONE -

Grey-brown, soft, fine to med. grained, non-calc., open fractures along bedding planes, fossils, sli. shaley, from 45.4' - 48.9' — 45.9'

48.4' - 48.9' numerous scat, 1/8" calc., white nodules in sandstone. — D:4.2' R:4.2' Rec. to 49.4'

48.9' - 49.4' gray, non-calc. shale.

49.4' - 51.2' shale w/ whisps of white calc. sandstone. scat. orange colored claystone lenses. — 50.1' D:4.2' R:2.8' Rec. to 52.2'

51.2' - 53.2' gray sandy shale. — L:1.0'

53.2' to 53.5'

LIMESTONE -

Gray white, sandy, numerous black fossil frags. sli. friable, mod. hard, pyritic, siltstone nodules, apparent unconformity at base. — 54.3' D:1.8' R:1.2' Rec. to 54.4' — 56.1' D: R: Rec. to 57.4'

53.5' to 54.4'

SHALE -

Gray to black, calc., apparent dip of 10° — 58.2' D:1.8' R:2.6' Rec. to 60.0' — 60.0'

REVISIONS			
SYM	DRG. NO.	ACTION	DATE

DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-19

INV. NO. DACW63-80-B-0086 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0035 SEQUENCE NO. 114
DRAWING NUMBER SHEET NO. 8-9 of

CONTR. NO. DACW63-81-C-0035

ILT

ACCOMPANY FINAL FOUNDATION REPORT PLATE 40

CORPS OF ENGINEERS

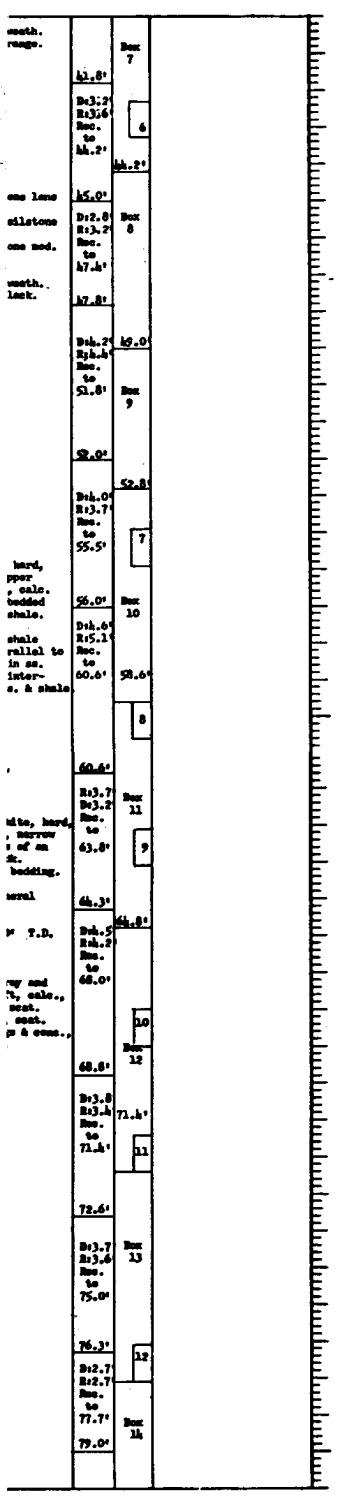
(1)

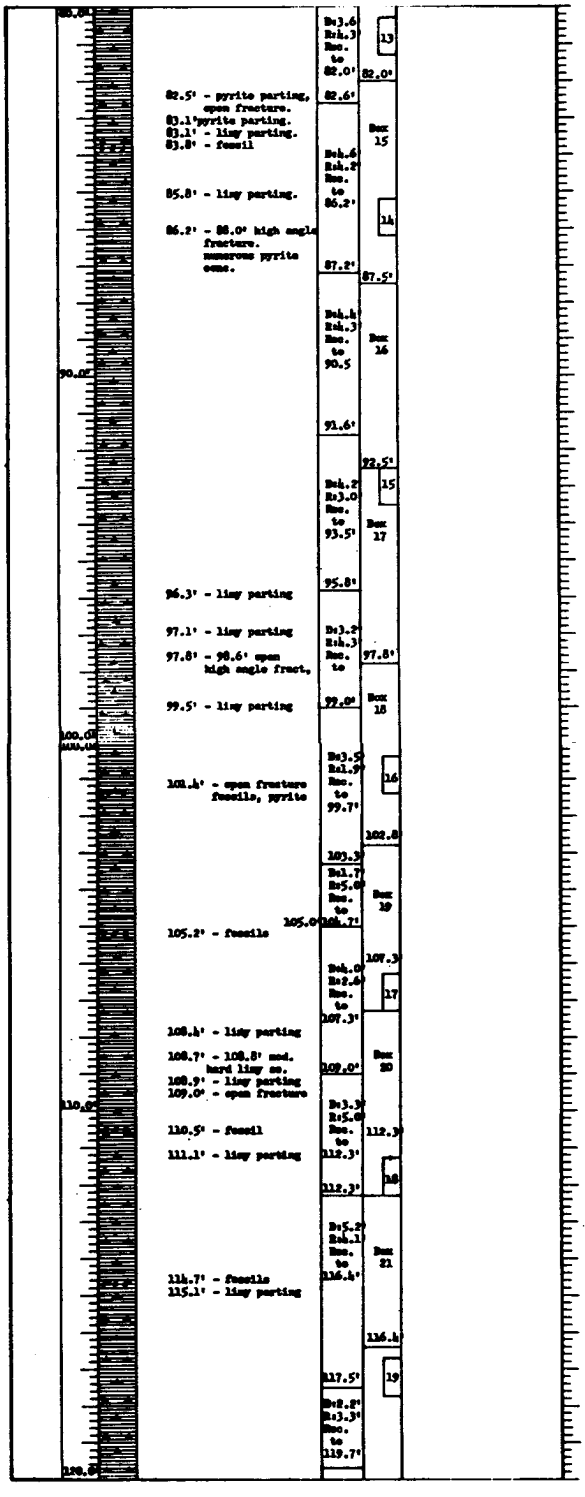
Hole No. 6DC-20

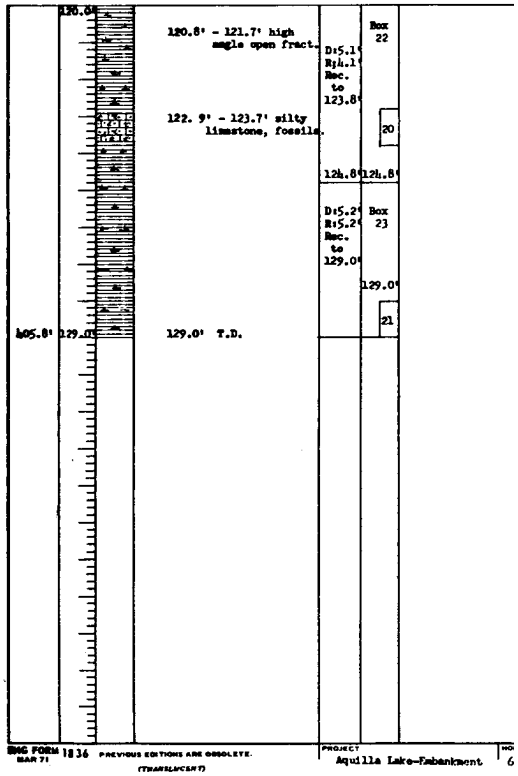
DRILLING LOG	Division SWD
1. PROJECT	Aquilla Lake - Embankment
2. LOCATION (Coordinates or Station)	X: 2,090,110 Y: 84,370
3. DRILLING AGENCY	USCE-C
4. HOLE NO. (As shown on drawing title and this number)	6DC-20
5. NAME OF DRILLER	T. Suits
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	1.0'
8. DEPTH DRILLED INTO ROCK	128.0'
9. TOTAL DEPTH OF HOLE	129.0'
10. ELEVATION	SWD
11. DATE HOLE	STARTED 18 July '73 COMPLETED 26 July '73
12. SIZE AND TYPE OF BIT	6" Carboloy
13. DATUM FOR ELEVATION SHOWN (MSL or MLL)	MSL
14. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
15. TOTAL NO. OF CORE BORINGS	DISTURBED 1 UNDISTURBED 0
16. TOTAL NUMBER CORE BOXES	23
17. ELEVATION TOP OF HOLE	534.8'
18. TOTAL CORE RECOVERY FOR BORING	99 %
19. SIGNATURE OF INSPECTOR	Kenneth O. Mathews
20. ELEVATION GROUND WATER	
REMARKS	1. 8" Flight Auger 0.0' - 2.6' 6" Denison barrel 2.6' - 6.6' 6" Core barrel 6.6' - 129.0' 8" Casing set to 23.0' 2. Jars: A: 0.0' - 1.0' B: 1.0' - 2.0' C: 2.0' - 2.6' D: 2.6' - 4.6' E: 4.6' - 6.6' 3. Denison cams: DB-1 : 2.6' - 4.6' DB-2 : 4.6' - 6.6' 4. Cartons: C-1 : 8.6' - 9.6' C-2 : 12.2' - 13.2' C-3 : 17.4' - 18.4' C-4 : 31.3 - 32.3' C-5 : 35.9' - 36.9' C-6 : 42.3' - 43.3' C-7 : 53.9' - 54.9' C-8 : 58.6' - 59.6' C-9 : 62.1' - 63.1' C-10: 67.0' - 68.0' C-11: 70.4'- 71.4' C-12: 76.1' - 77.1' C-13: 80.3' - 81.3' C-14: 85.2' - 86.2' C-15: 92.5' - 93.5' C-16: 100.4' - 101.4' C-17: 106.3'- 107.3' C-18: 111.3'- 112.3' C-19: 116.7'- 117.7' C-20: 122.8'- 123.8' C-21: 128.0'- 129.0' 5. Weathering to 50.0'

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. RQD	RUN NO. SAMPLE NO.
534.8'	0.0'		0.0' to 1.0'		0.0'
533.8'	1.0'		CLAY - Gray-brown, sli. mo..t, med. to high plasticity, calc., silty, w/rounded pebbles.		A 1.0' B
532.8'	2.0'		1.0' to 2.0' SHALE - Gray & tan, soft, sli. calc., silty.		2.0' C 2.6' DB-1 (4.5 4.6' DB-2 (4.5
531.2'	3.6'		2.0' to 3.6' SANDSTONE - Tan, v. poorly cem., fine-grained, sli. calc.	6.6' Dsk.2' Rsk.1' Rec. to 10.7'	6.6' 1
	10.0'		3.6' to 18.4' SHALE - Olive-gray, w/streaks of rust color, soft, sli. fissile, non-calc., scat. tight fratures, highly weath., selenite seams. 8.1' - Rust-red iron-stone 11.1'- Selenite seam 13.6'- Selenite seam	10.8' Dsk.0' Rsk.3' Rec. to 14.3'	Box 1 2
515.4'	18.4'		18.4' to 27.0' SANDSTONE - Olive-gray, gray & red, soft to hard, partial weath., non-calc. to c calc., scat, open fractures w/iron stain, shale seam. 19.2'-21.5' - poorly cem., broken	14.8' Dsk.4' Rsk.9' Rec. to 19.2' 19.2'	Box 2 3 18.4'
	20.0' 20.0'		SANDSTONE (contd.) 23.1'- 23.2' - shale seam 23.6'- 27.0' - hard calc. sandstone w/scat. high angle iron stained fractures	Dsk.0' Rsk.0' Rec. to 23.2' 23.2' Dsk.6' Rsk.6' Rec. to 27.8'	Box 3 23.1' Box 4
507.8'	27.0'		27.0' to 53.6' SHALE - Alternating lt. & dk. gray color, soft, non-calc., both horisontal & high angle fractures, seams of weath. gumy shale of orange & green-brown color, inter-bedded sandstone, silt-stone and claystone nodules and.lenses. 27.3' - 27.4' so. seam 27.7' - 27.8' so. seam 28.7' - siltstone 29.4' - 29.8' slickenside 29.8' - 31.1' weath., gumy, grn-brn to orange 32.7' - 33.1' tight fract., 45° to bore. 33.1' - 33.5' gumy red-brn. 34.6' - 34.7' siltstone 35.1' - 35.4' so. seam, hard, non-calc. 36.9' - 38.5' high-angle open fractures 38.5' - 40.6' scat. lenses & nodules of claystone	27.8' D:3.8 R:2.0 Rec. to 29.8' 31.6' D:3.2 R:3.3 Rec. to 33.1' 34.8' D:3.1 R:3.8 Rec. to 36.9' 37.9' D:3.9 R:3.7 Rec. to 40.6'	27.8' Box 5 4 33.1' Box 6 5 39.1'
	40.0'				

ELEVATION	DEPTH	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. RQD	RUN NO. SAMPLE NO.
		40.6' - 42.3' weath. gumy, orange.		Box 7
	41.8'		D:3.2' R:3.6' Rec. to 44.2'	6
	44.2'			
		45.0' - siltstone lens		Box 8
		45.7' - 45.9' siltstone	D:2.8 R:3.2 Rec. to 47.4'	
		46.7' - claystone nod.		
	47.8'	47.4' - 49.6' weath., gumy, black.		
	49.0'		D:4.2' R:4.4' Rec. to 51.8'	Box 9
	52.0'			
481.2'	53.6'	53.6' to 60.6' SANDSTONE - Gray-brn, med. hard, non-calc. in upper section to sli. calc. at base, interbedded dk. grey soft shale. 53.9' - 54.9' shale frag. parallel to bedding in sa. 55.2' - 60.6' inter-bedded sa. & shale	D:4.0' R:3.7' Rec. to 55.5'	52.8' 7
	56.0'		D:4.6' R:5.1' Rec. to 60.6'	Box 10
	58.6'			8
	60.0' 60.6'			
478.2'	60.6'	60.6' to 63.8' LIMESTONE - Gray-brn to white, hard, fossiliferous, narrow concentrations of an undetermined dk. mineral along bedding. 61.0' - dk mineral		60.6'
			R:3.7 R:3.2 Rec. to 63.8'	Box 11 9
471.0'	63.8'			64.3'
		63.8' to 129.0' T.D. SHALE - Alternating gray and dker.gray, soft, calc., sli. fissile, scat. lisy partings, scat. pyrite partings & conc., scat. fossils.	D:4.5' R:4.7' Rec. to 68.0'	64.8' 10 Box 12
	68.8'		D:3.8 R:3.4 Rec. to 71.4'	71.4' 11
	72.6'		D:3.7 R:3.6 Rec. to 75.0'	Box 13
	76.3'		D:2.7 R:2.7 Rec. to 77.7'	12
	79.0'			Box 14
	80.6'			







RECORD DRAWING-WORK AS BUILT

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REV

U.S. ARMY ENGINEER DISTRICT, FO
CORPS OF ENGINEERS
FORT WORTH, TEXAS

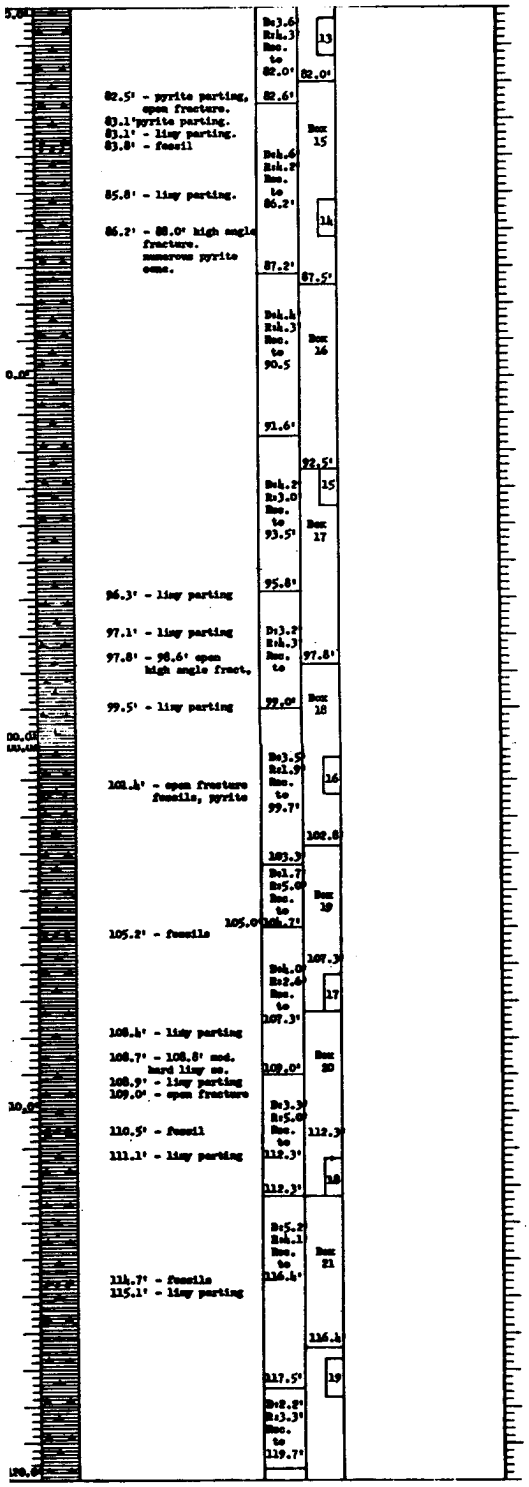
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

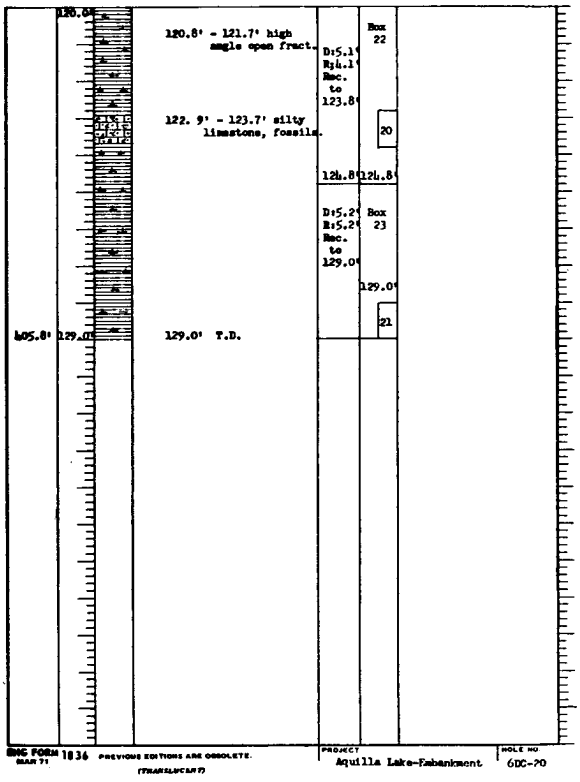
AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPI

LOGS OF BORING
6DC-20

INV. NO. DACW63-80-E
CONTR. NO. DACW63-
DRAWING NUMBER





RECORD DRAWING-WORK AS BUILT

SYM	DRG. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

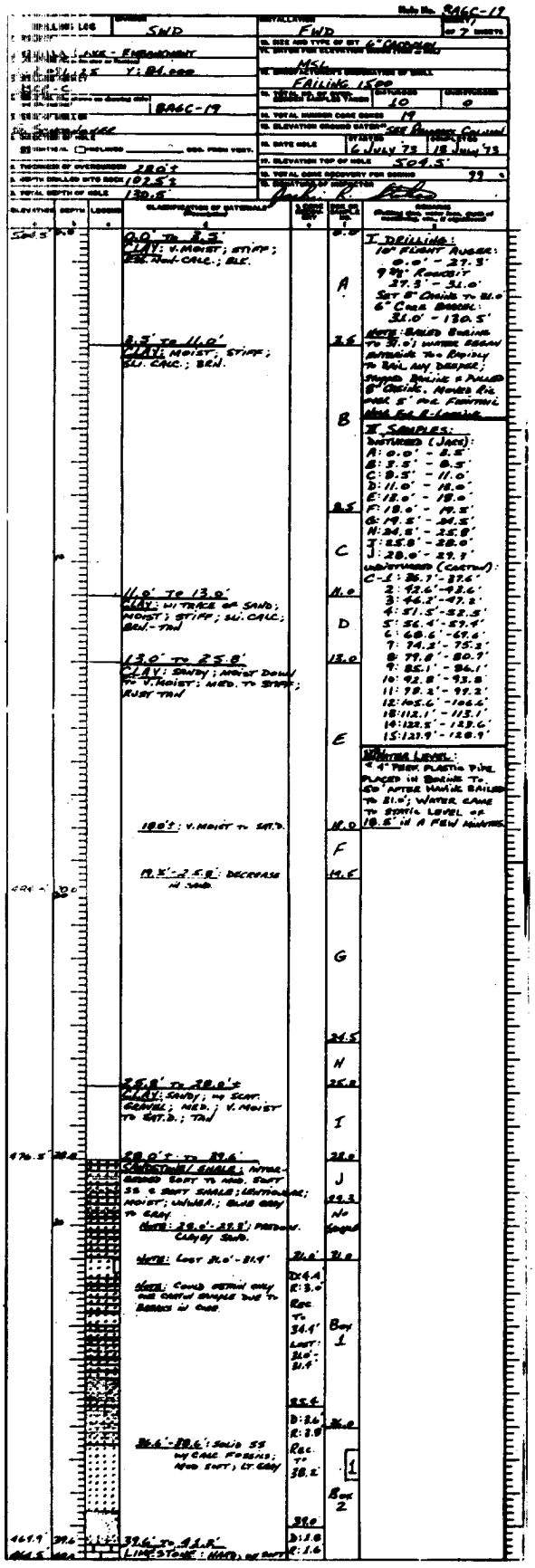
DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER:

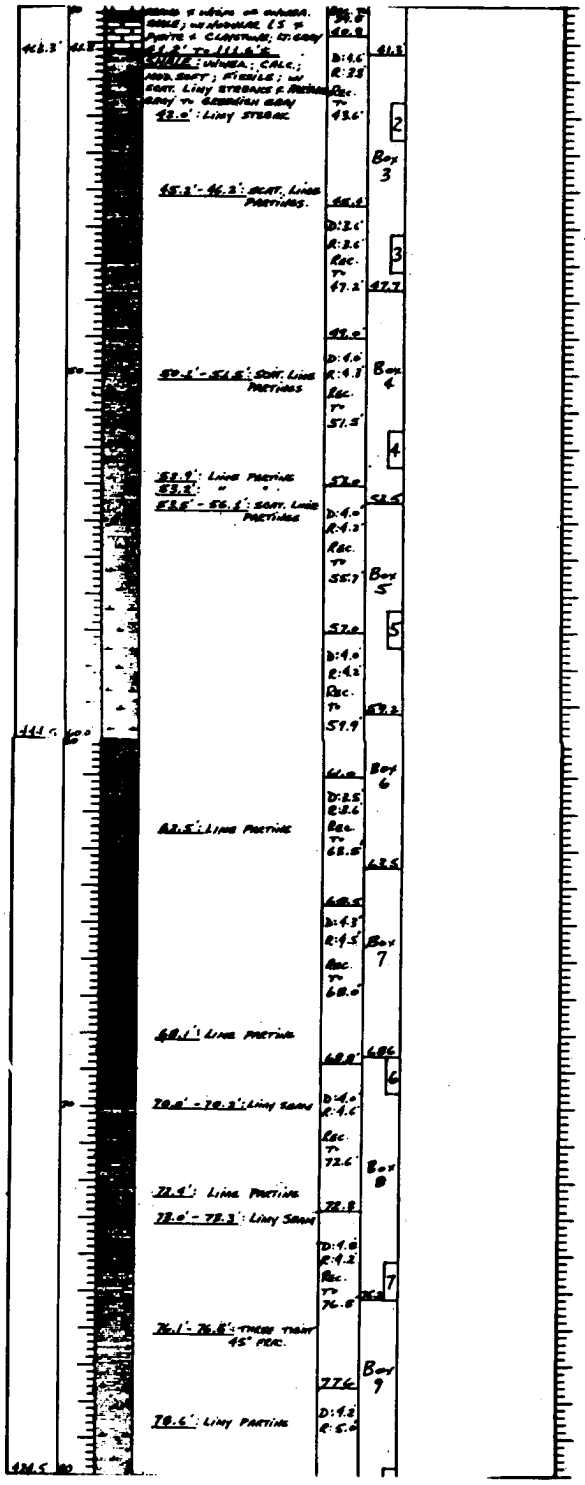
AQUILLA LAKE
AQUILLA CREEK, TEXAS

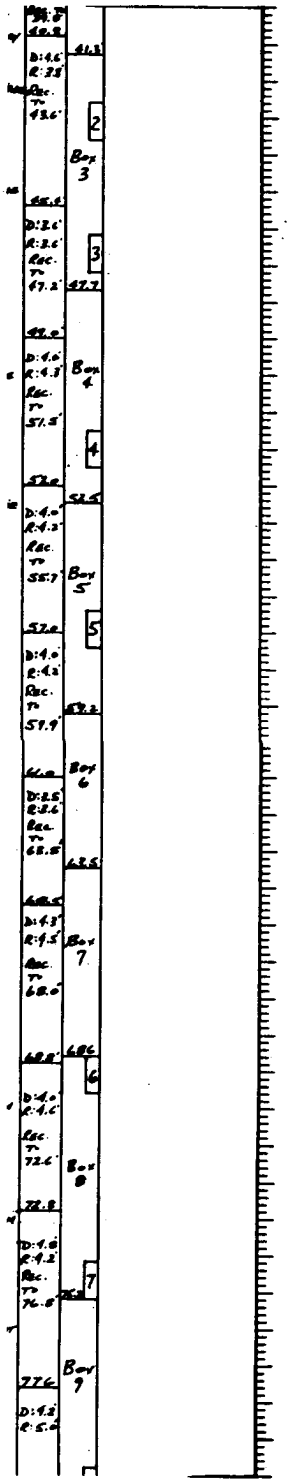
EMBANKMENT AND SPILLWAY

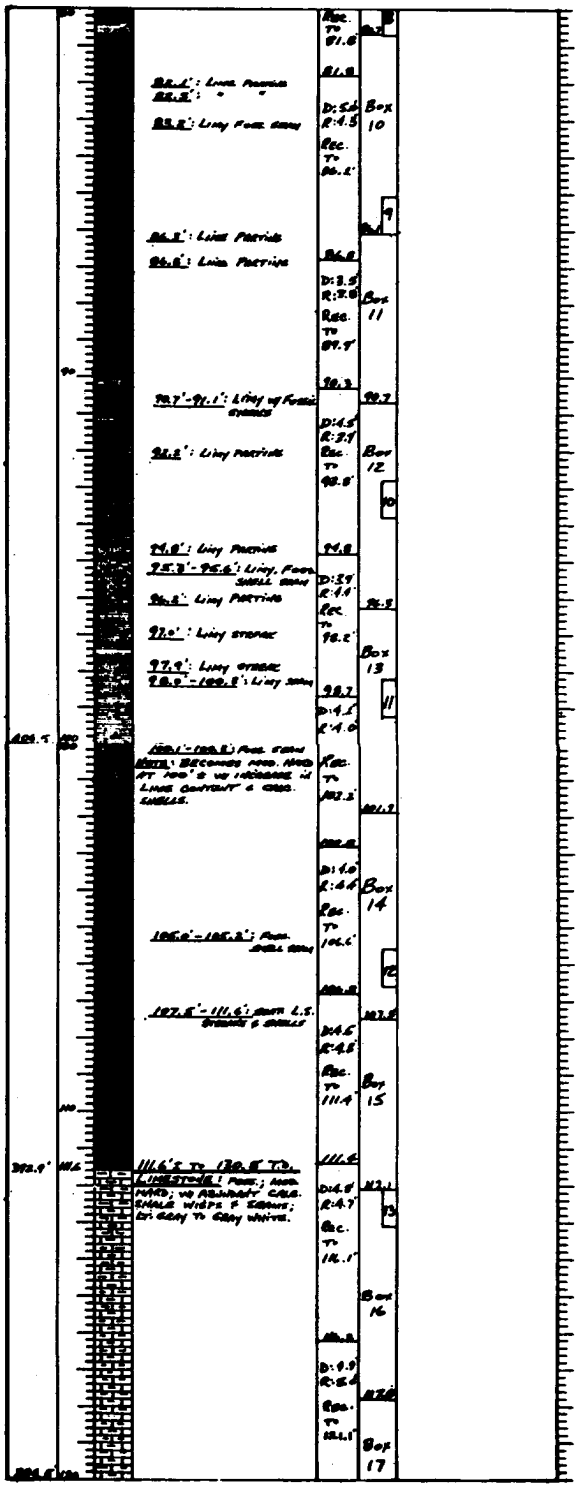
LOGS OF BORINGS
6DC-20

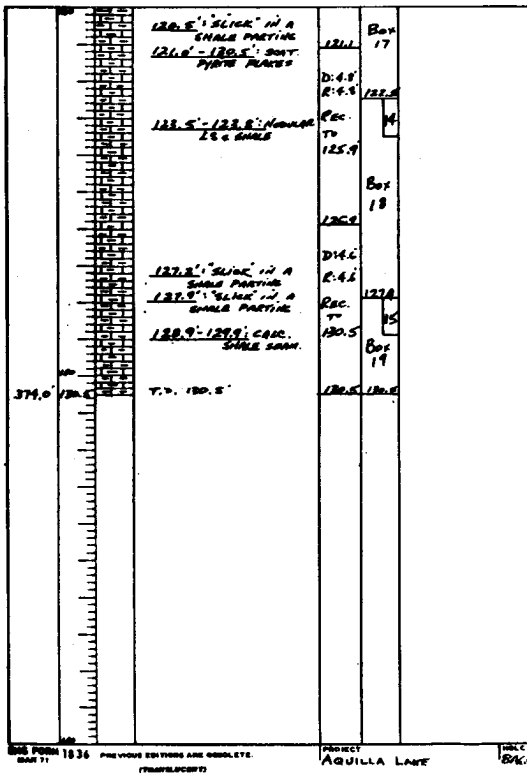
INV. NO. DACW63-80-B-0088 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0095
DRAWING NUMBER
SHEET NO. 8-10 OF
SEQUENCE NO. 115
CONTR. NO. DACW-63-81-C-0095


BAGC-17
SWD
FWD
6" DIAMOND
FAILING 1500
10
0
19
6 JULY 75
18 JULY 75
504.5'
99
J. R. Lee
220'
102.5'
130.5'
0.0' To 2.5'
CLAY: V. MOIST; STIFF; SLI. CALC.; BLK.
2.5' To 11.0'
CLAY: MOIST; STIFF; SLI. CALC.; BRN.
11.0' To 13.0'
CLAY: W/ TRACE OF SAND; MOIST; STIFF; SLI. CALC.; BRN. - TAN
13.0' To 25.8'
CLAY: SANDY; MOIST DOWN TO V. MOIST; MED. TO STIFF; RUSTY TAN
18.0': V. MOIST TO SAT'D.
19.5'-21.5': DECREASE IN SAND
25.8' To 28.0'
CLAY: SANDY; W/ SCATT. GRAVEL; MED.; V. MOIST TO SAT'D.; TAN
28.0' To 39.6'
CARBONATE / SHALE: INTERBEDDED SOFT TO MOD. SOFT SS & SOFT SHALE; CALCAREOUS; MOIST; LAMINA.; BLUE GRAY TO GRAY
NOTE: 28.0'-29.5' PREDOM. CLAYEY SHALE.
NOTE: LOST 31.0'-31.9'
NOTE: COULD OBTAIN ONLY ONE CORE SAMPLE DUE TO BARRICS IN CORE
36.6'-38.6': SOLID SS W/ CALC. FOSSILS; MOD. SOFT; LT. GRAY
39.6' To 41.5'
LIMESTONE: HARD, MOD SOFT
I DRILLED:
10" PLANT AUGER: 0.0' - 27.5'
9 7/8" RANGER: 27.5' - 31.0'
SET 8" CASING TO 31.0
6" CORE BARREL: 31.0' - 130.5'
NOTE: BASED ON LOSS OF WATER BEING ATTRIBUTABLE TO A RAPIDLY DRILL ANY DEPTH; PLUGGED BORING & PULLED 8" CASING. MOVED RIG MORE 5' AND CONTINUED DRILLING FOR E-LOGGING
II SAMPLES:
UNDISTURBED (JAR):
A: 0.0' - 2.5'
B: 2.5' - 8.5'
C: 8.5' - 11.0'
D: 11.0' - 18.0'
E: 18.0' - 19.0'
F: 19.0' - 19.5'
G: 19.5' - 24.5'
H: 24.5' - 25.8'
I: 25.8' - 28.0'
J: 28.0' - 29.1'
UNDISTURBED (CASING):
C-1: 36.7' - 37.6'
2: 42.6' - 43.6'
3: 46.2' - 47.2'
4: 51.5' - 52.5'
5: 56.4' - 57.4'
6: 60.6' - 61.6'
7: 74.2' - 75.2'
8: 79.8' - 80.7'
9: 85.1' - 86.1'
10: 92.8' - 93.8'
11: 98.2' - 99.2'
12: 105.6' - 106.6'
13: 112.1' - 113.1'
14: 122.5' - 123.6'
15: 127.9' - 128.9'
WATER LEVEL:
4" PERF. PLASTIC PIPE PLACED IN BORING TO 50' AFTER HAVING BAILED TO 31.0'; WATER CAME TO STATIC LEVEL OF 10.5' IN A FEW MINUTES
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Box 1
Box 2
Box 3
Box 4
Box 5
Box 6
Box 7
Box 8
Box 9
Box 10


111.0'
111.6' To 113.6'
CLAY: LAMINA.; CALC.; MOD. SOFT; FISSILE; W/ SCATT. LIMY STREAKS & PATCHES; GRAY TO GREENISH GRAY
42.0': LIMY STREAK
45.2'-46.2': SCATT. LIME PARTINGS.
50.4'-51.6': SCATT. LIME PARTINGS
52.9': LIME PARTING
53.2': " "
53.6'-56.4': SCATT. LIME PARTINGS
63.5': LIME PARTING
68.8': LIME PARTING
70.8'-70.9': LIMY SEAM
72.4': LIME PARTING
72.8'-73.3': LIMY SEAM
76.1'-76.8': THIN THIN 45° FRC.
78.6': LIMY PARTING







RECORD DRAWING-WORK AS BUILT

NO.	BY	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
QUANTITIES BY: ----------
SUBMITTED BY: ----------
ENGINEER:

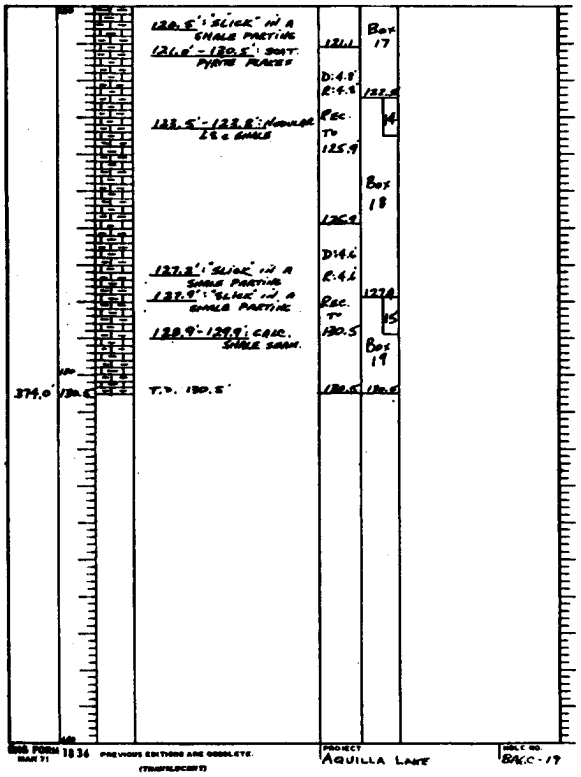
AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILL

LOGS OF BORINGS
8A6C-21 AND 6DC-22

INV. NO. DACW63-80-B-00
CONTR. NO. DACW63-81-
DRAWING NUMBER

TO ACCOMPANY FINAL FOUNDATION REPORT



RECORD DRAWING-WORK AS BUILT

SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-21 AND 6DC-22

SUBMITTED BY: ----------
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0053
DRAWING NUMBER
SHEET NO. 8-11 OF
SEQUENCE NO. 116

CONTR. NO. DACW63-81-C-0053

Hole No. BA6C-23

DRILLING LOG	DIVISION SWD	INSTALLATION FWD	SHEET 1 of 4 SHEETS
1. PROJECT: Aquilla Lake - Embankment		10. SIZE AND TYPE OF BIT: 6" Carboloy	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
3. DRILLING AGENCY: USCE-C		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing title and file number): BA6C-23		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED 0	
5. NAME OF DRILLER: T. Suits		14. TOTAL NUMBER CORE BOXES: 10	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN: 6.5'		16. DATE HOLE: STARTED 1 Aug. '73; COMPLETED 3 Aug. '73	
8. DEPTH DRILLED INTO ROCK: 52.9'		17. ELEVATION TOP OF HOLE: 544.4	
9. TOTAL DEPTH OF HOLE: 59.4'		18. TOTAL CORE RECOVERY FOR BORING: %	
		19. SIGNATURE OF INSPECTOR: William K. Williams	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0'		0.0' to 1.5'		A 0.0'	1. 8" Flight Auger 0.0' - 6.5'
			CLAY -		1.5'	
			Dark brown, silty, non-calc., moist, high plasticity, w/rounded surface pebbles.		B	6" Core Barrel 6.5' - Diamond Bit 50.0' - 59.4'
			1.5' to 4.0'			2. Jars: A: 0.0' - 1.5' B: 1.5' - 4.0' C: 4.0' - 5.0' D: 5.0' - 6.5'
			CLAY -		4.0' C	
			Black, silty, non-calc., moist, high plasticity		5.0' D	
			4.0' to 5.0'	6.5'	6.5'	3. Cartons: C-1: 13.3' - 14.3' C-2: 19.9' - 20.9' C-3: 27.6' - 28.5' C-4: 30.2' - 31.2' C-5: 34.2' - 35.2' C-6: 38.1' - 39.1' C-7: 45.5' - 46.5' C-8: 48.2' - 49.2' C-9: 52.0' - 53.0' C-10: 55.7' - 56.8' C-11: 58.4' - 59.4'
			CLAY -	D:4.7' R:3.9' Rec. to 10.7'	Box 1	
			Orange-brn. & gray w/ white gyp. streaks, high plasticity, moist, sli. calc.			
	10.0'		5.0' to 6.5'			
			CLAY -			
			Tan, sandy, moist, non-calc., low plasticity.	11.5'	11.4'	4. 4 1/4" Rockbit 59.4' - 90.0'
			6.5' to 8.6'	D:4.1' R:4.0' Rec. to 14.7'	1	E-logged 3 Aug. '73
			SHALE -			
			Gray & tan, badly weath., non-calc., interbedded sandstone, sandy lenses.	15.6'	Box 2	
			6.8'-7.0' hard ss., tan & orange, mica. fine-grained			
			7.0'-8.6' sandy	D:3.4' R:3.3' Rec. to 19.0'	17.0'	
			8.6' to 8.9'			
			SANDSTONE -			
			Light gray, hard, fine-grained, calc., brown at the base.	19.0'	Box 3	
	20.0'					
	20.0'		8.9' to 42.3'		2	
			SHALE -	D:4.8' R:4.4' Rec. to 23.4'		
			Gray to dk. gray, weath., non-calc., scat. tight orange stained joints, soft, scat. ss. seams & cross-bedded ss. lens, scat. siltstone seams		22.7'	
			14.6'-14.7' mod. hard siltstone, non-calc. weath. outer orange	23.8'		
			14.7'-19.0' v. soft, weath., gummy, orange stained joints.	D:4.0' R:4.2' Rec. to 27.6'	Box 4	
			19.3'-23.0' scat. siltstone lenses, nod. seams.			
			24.0'-28.2' scat. soft sand lenses, cross-bedded.	27.8'	27.6'	
			30.2'-35.8' sandy shale, scat. siltstone	D:4.0' R:3.6' Rec. to 31.2'	Box 5	
	30.0'				4	
				31.8'		
				D:4.0' R:4.6' Rec. to 35.8'	33.5'	
					5	
				35.8'		
				D:3.3' R:3.3' Rec. to 39.1'	Box 6	
			39.6'-40.0' badly weath., gummy, tight high angle fractures, fossils.	39.1'	6	
	40.0'				39.9'	

40.0'				D:4.7' R:4.6' Rec. to 43.7'	Box 7
42.3'			42.3' to 49.7'		
			SANDSTONE -		
			Gray, med. to fine-grained, crossbedded, interbedded mod. hard to soft sandstone, calc., non-calc. shaley portions, pyritic, w/orems colored, non-calc. claystone seams and lenses.	43.8'	44.6'
			42.3' - 43.2' soft shaley sandstone	D:4.2' R:4.2' Rec. to 47.9'	7
			43.2' - 43.7' hard, calc. sandstone, w/low angle fracture.		Box 8
			44.0' -44.3', 47.5' - 47.7', zones of hard sandstone.	48.0'	
			47.8' - 49.2' Dark mineral or dark fossil frags, along bedding of ss.	D:2.0' R:1.0' Rec. to 49.7'	8
50.0'			48.3' - 48.4', 48.7' - 48.8', seams of orems colored non-calc. claystone.	50.0'	
			49.2' 49.3' pyritic sandstone	D:3.8' R:3.3' Rec. to 53.0'	51.2'
			49.3' - 49.7' black non-calc. shale, w/scat. white ss whisps, dark fossil frags.		9
				53.8'	Box 9
			49.7' to 50.0'	D:4.3' R:3.8' Rec. to 56.8'	
			LIMESTONE -		10
			White, crystalline, fine-grained, pyritic, mod. hard, appearance of an unconformity at base.		
				58.1'	
				D:2.4' R:2.6' Rec. to 59.4'	11
59.4'			50.0' to 59.4'		
			SHALE -		
			Dark gray to black, sli. calc., fossiliferous, w/scat. orems colored claystone seams, limestone seams and open fractures.		
			50.7' orems colored claystone seam		
			51.2' open fracture along bedding		
			51.9' claystone seam		
			52.0' - 53.0' scat. claystone seams		
			53.3' - 53.5' low angle open fracture.		
			53.7' - 53.9' low angle tight fracture		
			53.9' - 55.7' Limestone soft to mod. hard, silty, fossiliferous, gray.		
			55.2' open low angle fracture.		
			55.7' - 59.4' dark gray to black shale, calc.		

Hole No. BA-24

DRILLING LOG	DIVISION SWD	INSTALLATION FWD	SHEET 1 OF 1 SHEETS
1. PROJECT: Aquilla Lake - Embankment		10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Stations): X: 2,090,370 Y: 84,425		11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
3. DRILLING AGENCY: USCE-C		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing title and file number): BA-24		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED 0	
5. NAME OF DRILLER: T. Suits		14. TOTAL NUMBER CORE BOXES: 0	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN: 16.0'		16. DATE HOLE: STARTED 1 Aug. '73; COMPLETED 1 Aug. '73	
8. DEPTH DRILLED INTO ROCK: 2.0'		17. ELEVATION TOP OF HOLE: 502.5'	
9. TOTAL DEPTH OF HOLE: 18.0'		18. TOTAL CORE RECOVERY FOR BORING:	
		19. SIGNATURE OF INSPECTOR: Vincent O. Mathews	

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
502.5'	0.0'		0.0' to 5.0' CLAY - Brown, silty, moist, plastic, med. plasticity, calc., smooth.		0.0' A	1. 8" Auger 0.0' - 18.0' 2. Jars: A: 0.0' - 5.0' B: 5.0' - 8.5' C: 8.5' - 14.0' D: 14.0' - 16.0' E: 16.0' - 18.0'
			5.0' to 8.5' CLAY - Lt. brown, moist, silty, med. plasticity, calc., soft, smooth.		5.0' B	3. 24 hour check - water level was 3.0'.
	10.0'		8.5' to 14.0' CLAY - Dark brown, hard, sli. moist, scat. caliche, silty, high plasticity, calc.		8.5' C	
			14.0' to 16.0' CLAY - Olive-brown, w/gray & orange streaks, sticky, smooth, silty, high plasticity, gypsum crystals, non-calc.		14.0' D	NOTE: The clay shown between 14.0' and 16.0' is interprpted as being highly weathered, non-calcareous shale. Geary M. Rinde
486.5'	16.0'				16.0' E	
			16.0' to 18.0' SHALE - Gray, badly weath., orange & brown stains, clayey, soft, non-calc. 18.0' T. D.		18.0'	

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) PROJECT HOLE NO.

RECORD DRAWING-WORK AS BUILT

SYM	CH. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT W
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY:
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

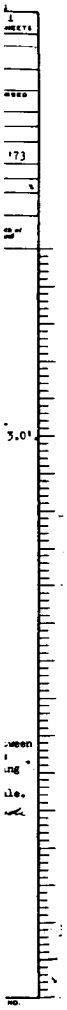
EMBANKMENT AND SPILLWA

LOGS OF BORINGS
8A6C-23 AND 8A-24

INV. NO. DACW63-80-B-0085
CONTR. NO. DACW63-81-C-0
DRAWING NUMBER 8-12
SHE

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE

U.S. ARMY



RECORD DRAWING-WORK AS BUILT

SYM	QA NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-23 AND 8A-24

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-12 OF
SEQUENCE NO. 117

CONTR. NO. DACW63-81-C-0035

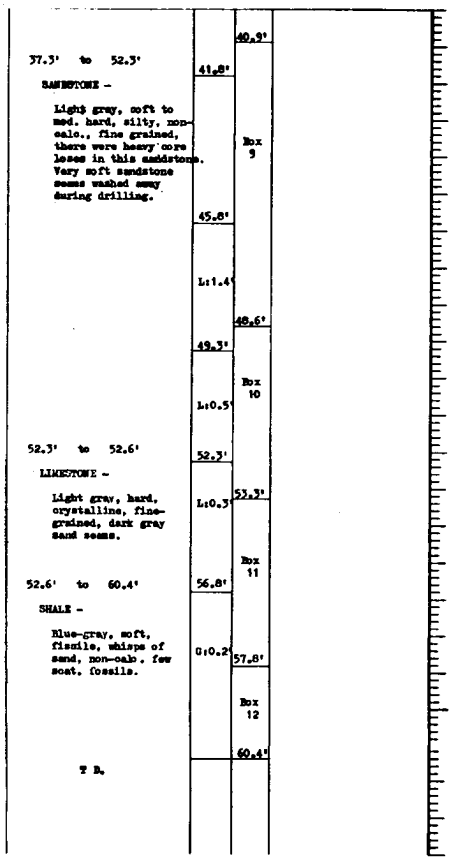
Hole No. 8A6C-25

DRILLING LOG | Division: SWD | Installation: FWD | Sheet 1 of 4 sheets

1. Project: Aquilla Lake - Embankment
2. Location (Coordinates or Station)
3. Drilling Agency: HSCE-C
4. Hole No. (As shown on drawing title and file number): 8A6C-25
5. Name of Driller: G. Schoonover
6. Direction of Hole: [X] Vertical [ ] Inclined ____ Deg. From Vert.
7. Thickness of Overburden: 5.5'
8. Depth Drilled Into Rock: 54.9'
9. Total Depth of Hole: 60.4'
10. Size and Type of Bit: 6" Carboloy
11. Datum for Elevation Shown (MSL or Mean): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 4; Undisturbed 0
14. Total Number Core Boxes: 12
15. Elevation Ground Water:
16. Date Hole: Started 18 Dec. '73; Completed 19 Dec. '73
17. Elevation Top of Hole: 530.7
18. Total Core Recovery for Boring: %
19. Signature of Inspector: Lloyd P. Mathis

Elevation (a)	Depth (b)	Legend (c)	Classification of Materials (Description) (d)	% Core Recov. Dry (e)	Box or Sample No. (f)	Remarks (Drilling time, water loss, depth of weathering, etc., if significant) (g)
	0.0'		0.0' to 3.2' SAND - 0.0' - 2.0' Tannish brown, silty, sli. clayey, med. dense, sli. moist, friable, low plasticity, non-calc. 2.0' - 3.2' Orange tan, very dense, steel blue sandy nodules, very clayey, med. to high plasticity, moist, non-calc., scat. quartzite coarse sand grains.		0.0'	1. 10" Flight Auger 0.0' - 7.0' 6" Core Barrel 7.0' - 60.8' 7.0' of 8" Casing was set.
	2.0'				2.0'	
	3.2'				3.2'	3. Jars: A: 0.0' - 2.0' B: 2.0' - 3.2' C: 3.2' - 5.5' D: 5.5' - 6.5'
	5.5'				5.5'	
	6.5'				6.5'	4. After drilling the hole was bailed to 55.4'.
	6.8'			7.0'	7.0'	
			3.2' to 5.5' CLAY - Gray brown, sandy, hard, sli. moist, low plasticity, calc., rounded limestone, quartzite, chert, pebbles, angular hard crystalline tabular cobbles.	L:1.0'	Box 1	Set 60.0' of plastic slotted pipe.
	9.8'					
	10.0'				11.1'	
				L:0.5'		
			5.5' to 6.5' SHALE - Gray, tan, weath., stained, gray powder, laminae, sandy, sli. fissile, soft, non-calc.		Box 2	5. Hole was E-logged 21 Dec. '73.
	13.8'					
					15.0'	
			6.5' to 6.8' SANDSTONE - Light tan to white, soft, sli. laminated, fine to mod. grained, ground up by augor no sample.	L:0.2'	Box 3	
	17.8'					
					18.7'	
	20.0'					
	20.4'		6.8' to 57.3' SHALE - Blue-gray, weathered, gummy, fissile, non-calc. sandy lenses, high and low angle fractures, open and tight fractures, ironstone concretions. 6.8' - 17.8' heavily stained fractures. 17.8' - 21.8' very sandy seams and lenses.		Box 4	
				21.8'		
					22.9	
				L:0.2'	Box 5	
	25.8'					
					27.0	
				G:0.3'		
	29.3'				Box 6	
	30.0'					
				G:0.4'		
					32.2	
	33.8'				Box 7	
				L:0.7'		
					36.8	
	37.3'			37.8'		
					Box 8	
				L:0.9'		
	40.0'					

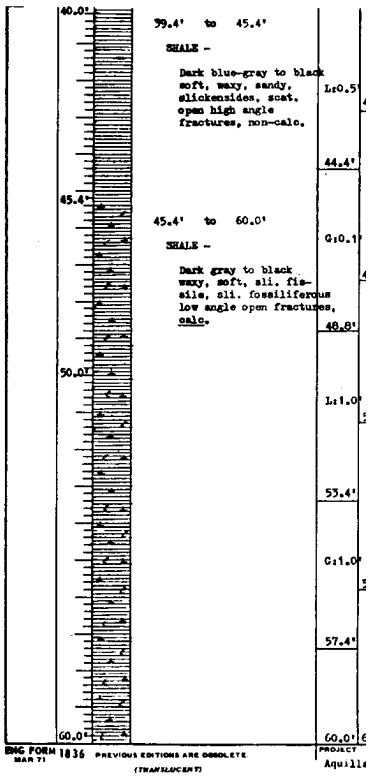
Elevation (a)	Depth (b)	Legend (c)	Classification of Materials (Description) (d)	% Core Recov. Dry (e)	Box or Sample No. (f)	Remarks (Drilling time, water loss, depth of weathering, etc., if significant) (g)
	40.0'		37.3' to 52.3' SANDSTONE - Light gray, soft to med. hard, silty, non-calc., fine grained, there were heavy core losses in this sandstone. Very soft sandstone seams washed away during drilling.		40.9'	
				41.8'		
					Box 9	
				45.8'		
				L:1.4'		
					48.6'	
				49.3'		
	50.0'				Box 10	
				L:0.5'		
			52.3' to 52.6' LIMESTONE - Light gray, hard, crystalline, fine-grained, dark gray sand seams.	52.3'	52.3'	
				L:0.3'		
					Box 11	
			52.6' to 60.4' SHALE - Blue-gray, soft, fissile, whisps of sand, non-calc. few scat. fossils.	56.8'		
				G:0.2'	57.8'	
					Box 12	
	60.0'					
	60.4'		T.D.		60.4'	
	60.8'					



Hole No. 6DC-26

DRILLING LOG	DIVISION: SWD
1. PROJECT	Aquilla Lake - Embankment
2. LOCATION (Coordinates or Station)	
3. DRILLING AGENCY	HSCE-C
4. HOLE NO. (As shown on drawing title and file number)	6DC-26
5. NAME OF DRILLER	T. Suite
6. DIRECTION OF HOLE	☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	
8. DEPTH DRILLED INTO ROCK	
9. TOTAL DEPTH OF HOLE	60.0'
INSTALLATION	FED
SHEET 1 OF 5 SHEETS	
10. SIZE AND TYPE OF BIT	6" Carboloy 6" Diamond
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
13. TOTAL NO. OF OVERBURDEN & ROCK SAMPLES TAKEN	DISTURBED 4 / UNDISTURBED 2
14. TOTAL NUMBER CORE BOXES	12
15. ELEVATION GROUND WATER	
16. DATE HOLE	STARTED 11 Dec. '73 / COMPLETED 14 Dec. '73
17. ELEVATION TOP OF HOLE	519.1
18. TOTAL CORE RECOVERY FOR BORING	%
19. SIGNATURE OF INSPECTOR	P. Mathews

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. BOX	SIZE OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 0.8'		0.0' A 0.8'	1. 8" Flight Auger 0.0' - 2.6' 8.6' - 10.0'
			CLAY – Dark brown, silty, sli. sandy, stiff, moist, med. to high plasticity, non-calc.		B 2.6'	6" Denison Barrel 2.6' - 8.6'
					DB-1	6" Core Barrel 10.0' - 60.0'
			0.8' to 7.6'	C:	4.6'	Set 10.0' of 8" casing.
			SAND – 0.8' - 2.6' Brown, med. dense, fine to med. grained, saturated, sli. clayey, low plasticity, non-calc.		No Sample 6.6'	2. Jars: A: 0.0' - 0.8' B: 0.8' - 2.6' C: 4.6' D: 8.6' No sample recovery between 4.6' and 6.6' Probably a very loose sandy, pea size gravel
			2.6' - 4.9' Brown, dense, med. grained, low plasticity, water bearing, non-calc., few scat. quartzite and sandstone gravels.		DB-2	35.4' of Woodbine Fm. (sandstone and Pepper Shale) was wrapped in wall canvas and wax.
	7.6		4.9' - 7.6' No sample recovered. Probably a very loose sandy pea size gravel having a few 4 cm. gravels.	D:	8.6' Hole Cleaned	14.5' of Del Rio Fm. (shale) was also wrapped in this way.
	10.0			10.0'	10.0'	
				L:1.0'	Box 1	3. The hole was bailed to 56.4'. 60.0' of slotted plastic pipe was set. After 24 hours the water level was 2.3'.
	12.5		7.6' to 12.5' SHALE – Blue-gray and brown, weathered, stained, soft, sandy, sli. fissile, non-calc., some black deteriorating rootlets.	13.0'	14.5'	
				L:0.1'		4. A 76.0' fishtail was E-logged 15 December '73.
			12.5' to 25.8' SHALE – Dark blue-gray, sandy, fissile, waxy, sli. fossiliferous, non-calc., tight and open low angle fractures, tight and open high angle fractures, slickensides.		Box 2	
	20.0			17.8'	18.5'	
	20.8			G:0.2'		
					Box 3	
				21.8'	22.5'	
				L:0.1'	Box 4	
			25.8' to 26.2' SANDSTONE – Black, very soft, med. grained, non-calc., clayey, non-calc.	25.8'	26.2'	
	25.8					
	26.2		26.2' to 29.2' SANDSTONE – Gray, calc., med. hard, very limy, very fossiliferous, med. grained.	27.9'	Box 5	
	29.2			L:0.3'	30.2'	
	30.0					
			29.2' to 39.4' SANDSTONE – Gray brown, non-calc., med. grained, inter-bedded seams of med. hard and soft sandstone, very soft seams may be washed away leaving open fractures, scat. lignite or black woody, fibrous fossils along some bedding planes.	32.6'	Box 6	
					33.8'	
				G:0.2	Box 7	
			30.2' - 30.9' Limestone hard, light gray, crystalline, fine-grained sandy dark gray seams.	37.5'	37.3'	
				L:0.6	Box 8	
	39.4			39.8'		
	40.0					



ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

PROJECT Aquilla

RECORD DRAWING-

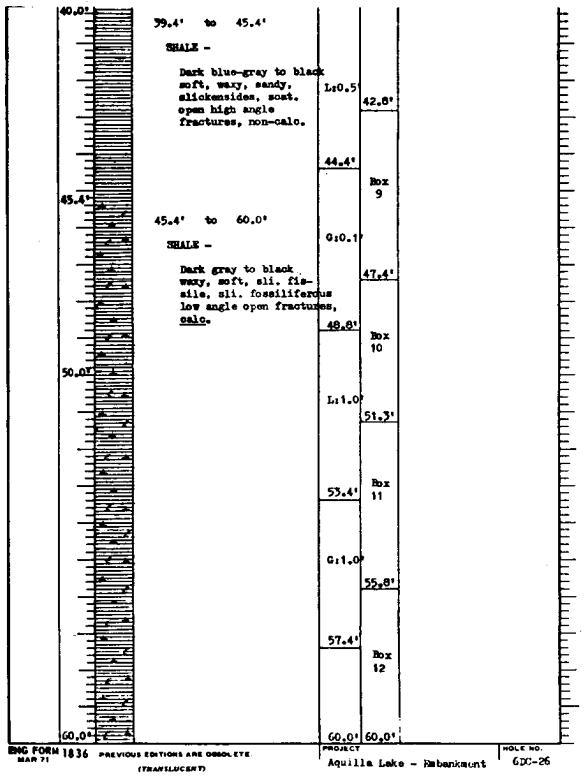
SYM	DO NO.	ACTION	D

U.S. ARMY

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

TO ACCOMPANY FINAL FOUNDA

U.S. ARMY



ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

PROJECT: Aquilla Lake - Embankment

HOLE NO.: 6DC-26

RECORD DRAWING-WORK AS BUILT

SYM	DO NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-25 AND 6DC-26

SUBMITTED BY: ----------
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. 8-13 OF
SEQUENCE NO. 118

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 44

Hole No. BA6C-27

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 1 of 4 sheets

1. Project: Aquilla Lake - Embankment
2. Location (Coordinates or Station): MSL
3. Drilling Agency: USCE-C
4. Hole No. (As shown on drawing title and file number): BA6C-27
5. Name of Driller: G. Schoonover
6. Direction of Hole: (X) Vertical ( ) Inclined ____ deg. from vert.
7. Thickness of Overburden: 3.5'
8. Depth Drilled Into Rock: 57.5'
9. Total Depth of Hole: 61.0'
10. Size and Type of Bit
11. Datum for Elevation Shown (TBM or MSL): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 3; Undisturbed 0
14. Total Number Core Boxes: 13
15. Elevation Ground Water
16. Date Hole: Started 16 Jan. '74; Completed 18 Jan. '74
17. Elevation Top of Hole: 540.9'
18. Total Core Recovery for Boring: %
19. Signature of Inspector: Kenneth E. Mathews

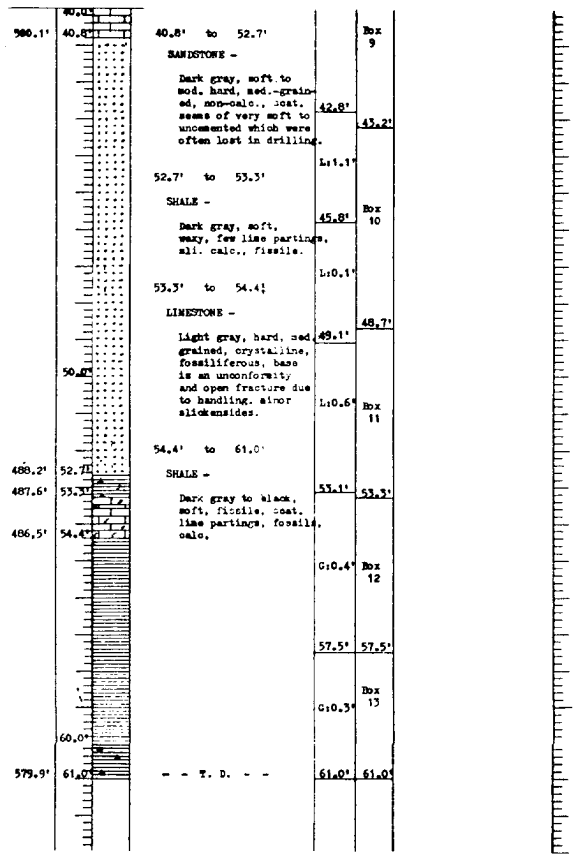
Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ert.	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
540.9'	0.0				A 0.0'	1. 8" Flight Auger 0.0' - 3.5' 6" Core Barrel 3.5' - 61.0'
			0.0' to 0.7' SAND - Dark brown, loose, moist, med.-grained, low plasticity, sli. clayey, non-calc.		0.7' B 1.9' C	
537.4'	3.5				3.5'	2. Jars: A: 0.0' - 0.7' B: 0.7' - 1.9' C: 1.9' - 3.5'
537.2'	3.7		0.7' to 3.5' CLAY - 0.7' - 1.9' Orange-tan, med. stiff, med. to high plasticity, moist, sandy, silty, non-calc. 1.9' - 3.5' Tannish brown, stiff, moist, sandy, med. to high plasticity, non-calc., scat. coarse sand size chert and sandstone.	L:10.5' 4.7' L:1.9' G:0.2'	Box 1 6.6' 9.4'	3. After drilling the hole was bailed to 59.3' and 61.0' of slotted plastic pipe was set. After 24 hours the water level was 54.2'.
534.9'	6.0				9.8'	4. A 90.0' fishtail hole was drilled 18 Jan. - 21 Jan. '74, and was E-logged on 21 Jan. '74.
	10.0		3.5' to 3.7' LIMESTONE - Light gray, hard, fine-grained, crystalline.	L:0.2'	Box 2 13.2'	
			3.7' to 6.0' SANDSTONE - Tan and brown, light gray, mod. hard to soft interbedded seams, weathered, stained, fine to mod. grained, scat. seams of soft gray shale.	13.8' L:0.3'	Box 3 16.9'	
			6.0' to 21.8' SHALE - Light gray, weathered, stained tight joints and fractures, soft, fissile, scat. sandstone seam, limestone concretions.	17.8' G:0.5'	Box 4	
	20.0				20.0'	
			21.8' to 37.8' SHALE - Dark blue gray, soft, fissile, non-calc., sli. sandy, few scat. nodules of claystone, gypsiferous, few tight fractures.	21.8' G:0.4'	21.4' Box 5 25.8'	
519.1'	21.8			L:0.2'	Box 6 29.1'	
	30.0			L:0.1'	30.5' Box 7 33.8'	
			38.8' to 40.8' LIMESTONE - Gray, hard, fine-grained, crystalline, fossiliferous.	G:0.5'	35.1' Box 8 37.8'	
502.1'	38.8			L:0.2	38.8'	
	40.8					

500.1'	40.8		40.8' to 52.7' SANDSTONE - Dark gray, soft to mod. hard, med.-grained, non-calc., scat. seams of very soft to uncemented which were often lost in drilling.	42.8' L:1.1'	Box 9 43.2'
			52.7' to 53.3' SHALE - Dark gray, soft, waxy, few lime partings, sli. calc., fissile.	45.8' L:0.1'	Box 10 48.7'
	50.0		53.3' to 54.4' LIMESTONE - Light gray, hard, med. grained, crystalline, fossiliferous, base is an unconformity and open fracture due to handling, minor slickensides.	49.1' L:0.6'	Box 11 53.3'
488.2'	52.7		54.4' to 61.0' SHALE - Dark gray to black, soft, fissile, scat. lime partings, fossils, calc.	53.1' G:0.4'	Box 12 57.5'
487.6'	53.3				
486.5'	54.4				
	60.0			G:0.3'	Box 13
479.9'	61.0		- - T. D. - -	61.0'	61.0'

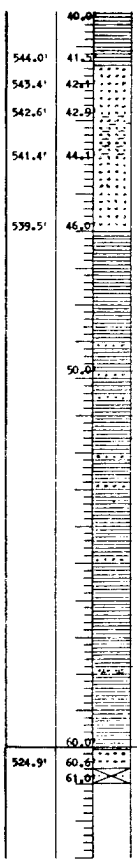
Hole No. 6DC-28

DRILLING LOG	Division: SWD	Installation: FWD	Sheet 1 of 4 sheets
1. Project: Aquilla Lake - Embankment		10. Size and type of bit: 6" Carboloy	
2. Location (Coordinates or Station):		11. Datum for elevation shown (GS or MSL): MSL	
3. Drilling agency: USCE-C		12. Manufacturer's designation of drill: Failing 1500	
4. Hole No. (As shown on drawing title and file number): 6DC-28		13. Total no. of overburden samples taken: Disturbed 4, Undisturbed 3	
5. Name of driller: T. Suits		14. Total number core boxes: 12	
6. Direction of hole: ☒ Vertical ☐ Inclined ____ deg. from vert.		15. Elevation ground water:	
7. Thickness of overburden: 5.6'		16. Date hole: Started 22 Jan. '74, Completed 24 Jan. '74	
8. Depth drilled into rock: 55.4'		17. Elevation top of hole: 585.5'	
9. Total depth of hole: 61.0'		18. Total core recovery for boring: %	
		19. Signature of inspector: Raymond P. Mathews	

Elevation	Depth	Legend	Classification of Materials (Description)	Core Run	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
585.5'	0.0'		0.0' to 5.6'± CLAY – 0.0' – 2.6'± Dark brown, hard, moist, silty, sli. sandy, high plasticity, non-calc., few scat. quartzite pebbles. 2.6'± – 5.6'± Clay or clayshale, grayish brown, w/dark brown and tannish veinlets and pockets, moist, high plasticity, very stiff, non-calc.		0.0' A 2.6' DB-1 B 4.6' DB-2 C 6.6' DB-3 7.6' D 7.6'	1. 8" Flight Auger 0.0' – 2.6' 6" Denison Barrel 2.6' – 7.6' 6" Core Barrel 7.6' – 61.0' 2. Jars: A:0.0' – 2.6' B:4.6' C:6.6' (shale) D:7.6' (shale) 3. After drilling the hole was bailed to a depth of 58.9'. 50' of slotted plastic pipe was set. After 24 hours the water level was 44.7'. 4. A 125.0' fishtail hole was then drilled and E-logged on 25 Jan. '74.
	10.0'		5.6'± to 19.1' SHALE – Light gray, weathered, stained orange and dark brown along bedding planes and tight fractures and joints, soft, fissile, seams and lenses of soft to mod. hard sandstone, few scat. ironstone concretions. 11.6' – 16.1' beds have an 8° to 10° dip to bore.	L:10.3'	Box 1 11.8' 11.6'	
566.4'	19.1'		19.1' to 27.2' SANDSTONE – Gray to light gray, med. to fine grained, soft and mod. hard, non-calc.	G:10.1'	Box 2 15.8' 16.1'	
	20.0'			L:10.1'	Box 3 19.6'	
				G:10.3'	Box 4 20.8' 24.5' 24.9'	
558.3'	27.2'		27.2' to 41.5' SHALE – Dark gray, soft, non-calc., sli. fissile, whips of white non-calc. sand, scat. seams and nodules of hard claystone, scat. tight low angle fractures. Above 31.2 the shale is sli. weathered with stained fractures.	L:2.2'	Box 5 28.8'	
	30.0'			G:10.5'	30.2'	
				L:10.3'	Box 6 31.8' 34.6'	
				G:10.4'	Box 7 35.0' 38.8' 39.1'	
	40.0'					



Elevation	Depth	Legend	Classification of Materials (Description)	Core Run	Box or Sample No.	Remarks
580.1'	40.8'		40.8' to 52.7' SANDSTONE – Dark gray, soft to mod. hard, med.-grained, non-calc., scat. seams of very soft to uncemented which were often lost in drilling.		42.8'	Box 9 43.2'
				L:1.1'		
			52.7' to 53.3' SHALE – Dark gray, soft, waxy, few lime partings, sli. calc., fissile.		45.8'	Box 10
				L:0.1'		
			53.3' to 54.4' LIMESTONE – Light gray, hard, med. grained, crystalline, fossiliferous, base is an unconformity and open fracture due to handling, minor slickensides.		48.7' 49.1'	
	50.0'			L:0.6'		Box 11
488.2'	52.7'		54.4' to 61.0' SHALE – Dark gray to black, soft, fissile, scat. lime partings, fossils, calc.		53.1'	53.3'
487.6'	53.3'					
486.5'	54.4'			G:0.4'		Box 12
					57.5'	57.5'
				G:0.3'		Box 13
	60.0'					
579.9'	61.0'		– – T. D. – –		61.0'	61.0'



Elevation	Depth	Legend	Classification of Materials (Description)	Core Run	Box or Sample No.	Remarks
544.0'	41.5'		41.5' to 42 SANDSTONE – Light gray, fine-grained, massive.			
543.4'	42.1'					
542.6'	42.9'		42.1' to 42 SANDSTONE – Brownish, g bedded, sli med. grained calc.			
541.4'	44.1'					
539.5'	46.0'		42.9' to 44 SANDSTONE – Dark bluish very shaley soft, fine grained, no some clayst			
	50.0'		44.1' to 46 SANDSTONE – Dark blue-g calc., mod. fine to med. somewhat ca			
			46.0' to 60. SHALE – Dark blue-g black, soft fissile, sc pyritic, no sandstone s tight low a fractures a high angle scat. white whips of s			
	60.0'					
524.9'	61.0'		– – T. D.			

RECORD

SYM	SO NO.
	U.

DESIGNED BY:

DRAWN BY:

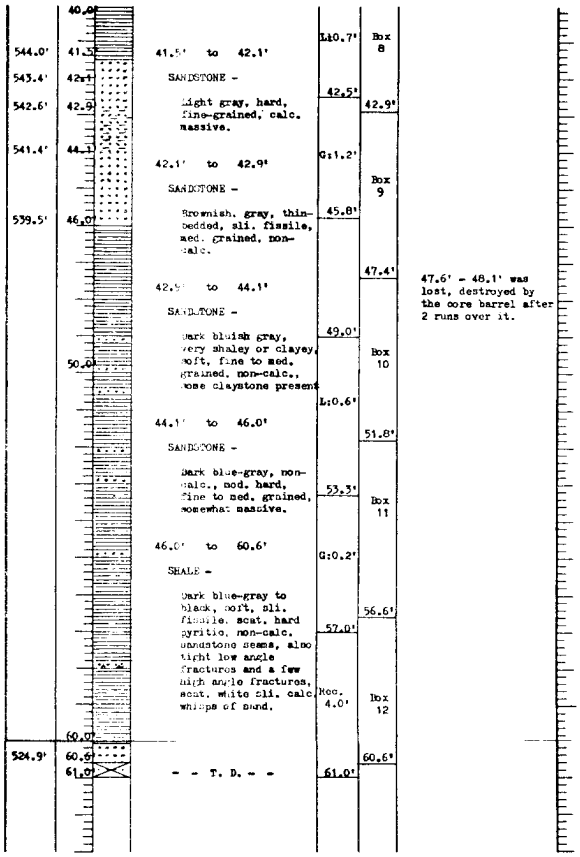
CHECKED BY:

SUBMITTED

ENGINEER:

TO ACCOMPANY FINAL

U.S. ARMY



RECORD DRAWING-WORK AS BUILT

SYM.	DO NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-27 AND 6DC-28

SUBMITTED BY: ----------
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0033
DRAWING NUMBER
SHEET NO. 8-14 OF
SEQUENCE NO. 119

CONTR. NO. DACW63-81-C-0033

TO ACCOMPANY FINAL FOUNDATION REPORT

PLATE 45

CORPS OF ENGINEERS

Hole No. SA60-29

DRILLING LOG — DIVISION SWD — INSTALLATION FWD — SHEET 1 OF 2 SHEETS

1. PROJECT: Aquilla Lake – Embankment
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: US Ck-C
4. HOLE NO. (As shown on drawing title and file number): SA60-29
5. NAME OF DRILLER: G. Schoonover
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 4.8'
8. DEPTH DRILLED INTO ROCK: 35.2'
9. TOTAL DEPTH OF HOLE: 40.0'
10. SIZE AND TYPE OF BIT: 6" Carboloy
11. DATUM FOR ELEVATION SHOWN (GS or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 8
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 7 Jan. '74; COMPLETED 8 Jan. '74
17. ELEVATION TOP OF HOLE: 547.7'
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Samuel P. Mathews

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	RUN NO. SAMPLE NO.	REMARKS
	0.0		0.0' to 4.8' CLAY – 0.0' – 2.0' Tannish brown, sandy, moist, stiff, med. to high plasticity, calc., rootlets. 2.0' – 4.0' Brown, moist, sandy, silty, stiff, high plasticity, coarse sand size ironstone, sandstone, chert, non-calc. 4.0' – 4.8' Gray-brown, sandy, silty, moist, stiff, high plasticity, calc., caliche nodules to 3cm.		0.0' A 2.0' B 4.0' C 4.8' B 7.0'	1. 10 Flight Auger 0.0' – 7.0' 6" Core Barrel 7.0' – 40.0' 2. Jars: A: 0.0' – 2.0' B: 2.0' – 4.0' C: 4.0' – 4.8' D: 4.8' – 7.0' (shale) 3. Hole was bailed to 34.6'. 40' of slotted plastic pipe was set. 4. A 70.0' fishtail hole was E-logged 10 January '74.
	4.8		4.8' to 39.6' SHALE – Light gray, weathered, soft, fissile, sandy, stained orange and yellow, gummy, non-calc., gypsiferous, interbedded sandstone seams and lenses.	L:0.4'	9.8' Box 1	
	10.0			C:0.1'	11.5'	
					13.8' Box 2	
			19.6' – 23.2' numerous interbedded lenses and seams of light gray, fine to med. grained, non-calc., sandstone. Beds are thin-bedded and flaggy, soft to med. hard, crossbedded, stained.	L:0.3'	15.3' Box 3	
				C:0.4'	17.8' 19.6'	
	20.0			L:0.4'	Box 4	
	23.8		23.2' – 26.3' many tight, stained, sandy joints with gypsum fill.		23.2' 25.8' Box 5	The material in the run from 23.8' – 27.8' was gone over twice and the sample is probably disturbed.
			26.3' No longer weathered.	L:0.5'	26.7' 27.8'	
	30.0		28.8' – 39.6' scat. hard sandstone seams selenite fills both high and low angle fractures.		Box 6 31.0'	The top of the material in the run from 27.8' 31.8' was broken by the core barrel.
					31.8' Box 7	
				C:0.1'	35.1'	
					35.8' Box 8	
				C:0.2'		
	39.6				39.6'	
	40.0				40.0'	

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: Aquilla Lake – Embankment — HOLE NO. SA60-29

Hole No. SA60-30

DRILLING LOG — DIVISION SWD — INSTALLATION FWD — SHEET 1 OF 3 SHEETS

1. PROJECT: Aquilla Lake – Embankment
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title and file number): SA60-30
5. NAME OF DRILLER: E. Suits
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 10.8'
8. DEPTH DRILLED INTO ROCK: 31.0'
9. TOTAL DEPTH OF HOLE: 41.8'
10. SIZE AND TYPE OF BIT: 6" Carboloy
11. DATUM FOR ELEVATION SHOWN (GS or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED 4
14. TOTAL NUMBER CORE BOXES: 8
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 11 Jan. '74; COMPLETED 14 Jan. '74
17. ELEVATION TOP OF HOLE: 535.7'
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Samuel P. Mathews

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	RUN NO. SAMPLE NO.	REMARKS
535.7'	0.0		0.0' to 9.6'± CLAY – 0.0' – 2.6' Dark brown, med. stiff to stiff, moist, sli. sandy, high plasticity, calc. 2.6' – 5.6'± Brown, stiff, moist, sli. silty, sli. sandy, high plasticity, pockets of dark gray-brown, scat. nodules of caliche. 5.6'± – 7.6'± Tan, w/pockets of gray-brown, hard, moist, sli. brittle, high plasticity, calc., scat. nodules of caliche. 7.6'± – 9.6'± Tan, very stiff to hard, sli. sandy, silty, moist, high plasticity, calc., few coarse sand size chert, scat. nodules of caliche to 1.5cm.		0.0' A 2.6' B 4.6' C 6.6' B 8.6' C 10.6'	1. 10" Flight Auger 0.0' – 2.6' 10.6' – 12.5' 6" Denison Barrel 2.6' – 10.6' 6" Core Barrel 12.5' – 41.8' 8" Casing set to 12.8' 2. Jars: A: 0.0' – 2.6' B: 4.6' C: 6.6' D: 8.6' E: 10.6' 3. After drilling the hole was bailed to 38.4'. 40.0' of slotted plastic pipe were set after bailing. After 24 hours the water level was 16.9' 4. A fishtail hole was drilled 15-16 Jan. '1974. The fishtail hole was E-logged on 16 Jan. '74.
525.1'	10.6				NB-1 10.6'	
525.2'	12.5		9.6'± to 10.6' SAND – Loose, coarse to med. grained, gravelly, sli. clayey, dark tan, low plasticity, non-calc., water bearing	L:0.3'	12.5' Box 1	
521.0'	14.7		10.6' to 12.5' SHALE – Light gray, soft, weathered, gummy, non-calc., scat. seams of sandstone.	L:0.9'	14.8' 16.6' Box 2	
	20.0				19.2' 20.0'	
	20.8		12.5' to 12.9' LIMESTONE – Gray, hard, fine grained, crystalline.		21.1' Box 3	
512.2'	25.5		12.9' to 14.7' SANDSTONE – Tan, stained, cross-bedded, med. hard to hard, bedding is about 10° to the bore.	L:0.1'	25.8' 25.2'	
508.6'	27.1		14.7' to 25.5' SHALE – Light gray, weathered stained yellow along tight fractures and joints, gypsiferous, ironstone concretions few 30° open fractures. 23.2' – 23.5 was broken so badly it was left out of core box.		27.8' Box 4	
	30.0				29.6' Box 5	
			25.5' to 27.1' SANDSTONE – Tan, thin-bedded, sli. fissile, cross-bedded, much inter-bedded shale that is gypsiferous and has ironstone concretions, non-calc.	C:0.1'	31.8' 33.7'	
					Box 6	
			27.1' to 41.0' SHALE – Dark gray, soft, non-calc., sli. fissile, many seams of very soft gray, non-calc sandstone.	L:1.4'	35.8' 38.0'	
					Box 7	
	40.0				40.0'	
494.7'	41.0			C:1.2'	41.0'	
493.9'	41.8		– – T. D. – –		41.8'	

Hole No. 6DC-30

INSTALLATION: FWD | SHEET 1 OF 5 SHEETS

10. SIZE AND TYPE OF BIT: 6" Calyx
11. DATUM FOR ELEVATION SHOWN: MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 5 | UNDISTURBED 4
14. TOTAL NUMBER CORE BOXES: 8
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 11 Jan. '74 | COMPLETED 14 Jan. '74
17. ELEVATION TOP OF HOLE: 538.7
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Kenneth Mathews

MATERIALS	ELEV.	DEPTH	LEGEND	SAMPLE NO.	REMARKS
9.6'±					1. 10" Flight Auger 0.0' - 2.6' 10.6' - 12.5' 6" Rambow Barrel 2.6' - 10.6' 6" Core Barrel 12.5' - 41.8' 8" Casing set to 12.0'
.6' Bank run... ff.to stiff, ...ll. sandy, ...sticity, calc.		2.6'		A	
.6'± Brown, ...ist, sli. ...ll. sandy, ...sticity, ...of dark gray- ...ect. nodules ...he.		4.6'		B-1 B-2	2. Jars: A: 0.0' - 2.6' B: 4.6' C: 6.6' D: 8.6' E: 10.6'
7.6'± Tan, ...s of gray- ...ard, moist, ...ttle, high ...y, calc., ...dules of		6.6'		C- B-3	
9.6'± Tan, ...ff to hard, ...dy, silty, ...igh plasticity, ...or coarse ...e chert, scat. ...of caliche to		8.6'		D- B-4	3. After drilling the hole was bailed to 38.4'. 40.0' of slotted plastic pipe were set after bailing. After 24 hours the water level was 16.9'
10.6'		10.6'		D-	
...coarse to med. ...gravelly, ...gray, dark tan, ...ticity, non- ...ater bearing		12.5'	L:0.3'	12.5' Box 1	4. A fishtail hole was drilled 15-16 Jan. '1974. The fishtail hole was E-logged on 16 Jan. '74.
12.5'		14.8'		16.6'	
...y, soft, ...d, gummy, ...; moist, scat. ...tone.			L:0.5'	Box 2	
		19.2'			
12.9'		20.0'		21.1'	
...rd, fine ...crystalline.				Box 3	
14.7'		25.8'		25.2'	
...ined, crenu- ...ed. hard to ...ding in ...' to the bore.			L:0.1'	Box 4	
25.5'		27.8'		29.6'	
...y, weathered ...ellow along ...ctures and ...ypsiferous, ...concretions ...pen fractures.				Box 5	
...5.5 was broken ...it was left ...se box.		31.8'		33.7'	
27.1'			G:0.1'	Box 6	
...-bedded, ...dle, crenu- ...ch inter- ...ale that is ...m and has ...concretions		35.8'		38.0'	
41.0'				Box 7	
..., soft, non- ...i. fissile, ...s of very ..., non-calc ...			L:1.4'		
		40.0'			
		40.8'			
			G:1.2'	41.0'	
		41.8'			

Hole No. 8A-32

DRILLING LOG | DIVISION SWD | SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla Dam
2. LOCATION: Outlet Works
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and file number: 8A-32
5. NAME OF DRILLER: Schoonover
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 34.2'
8. DEPTH DRILLED INTO ROCK: 1.8'
9. TOTAL DEPTH OF HOLE: 36.0'

INSTALLATION: FWD | SHEET 1 OF 1 SHEETS

10. SIZE AND TYPE OF BIT: 6" BH/TCP
11. DATUM FOR ELEVATION SHOWN: MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 10 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: ---
16. DATE HOLE: STARTED 12 Sept. 74 | COMPLETED 13 Sept. 74
17. ELEVATION TOP OF HOLE: 502.6
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Robert H. Divis

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
	10.0		0.0' to 12.3' CLAY - 0.0' to 3.5' Medium plasticity, soft, brown, slightly silty, moist. Becomes medium to hi plasticity, stiff, black from 1.8' to 3.5'. 3.5' to 12.3' Medium to hi plasticity, very stiff, dry to slightly moist, dark brown, small white calcareous laminations. Becomes lo to medium plasticity, silty, with small off white calcareous pockets from 7.0' to 10.0'. Becomes slightly sandy, slightly moist, yellow brown from 10.0' to 12.3'.		A B C D E	1. Water level 20.1' 13 Sept. 74 taken before augering resumed. 2. Boring stakes obliterated by farmer for second site. Hole drilled 52.0' from stake located on edge of creek on line with 8A-33. 3. JARS: A. 0.0' to 1.8' B. 1.8' to 3.5' C. 3.5' to 7.0' D. 7.0' to 10.0' E. 10.0' to 12.3' F. 12.3' to 16.7' G. 16.7' to 21.7' H. 21.7' to 26.2' I. 26.2' to 29.2' J. 29.2' to 31.2'
	20.0		12.3' to 16.7' [illegible] - Medium compact, yellow brown, slightly clayey, medium grained, damp. 16.7' to 29.2' CLAY - Lo to medium plasticity, stiff, moist, brown, sandy. Becomes lo plasticity, yellow brown, slightly sandy, w/scattered small calcareous nodules from 21.7' to 29.2'		F G H	4. All overburden calcareous. 5. Boring caving slightly from approx. 20.0'. 6. 34.0' 4" plastic pipe set 13 Sept. 74.
	30.0		29.2' to 33.9' SAND, CLAY,GRAVEL - Probably interbedded &/or lenticular beds of moist to saturated sand, clay, and gravel, reddish brown. Note: No samples obtained in auger from 31.2' to 36.0'. 33.9' to 34.2' CONGLOMERATE - Hard, partially cemented. (By drill action). Primary - - - - - - - - - - - 34.2' to 36.0' CHALK -		I J	(by drill action) Soft,(rock tore) to 36.0' *-*Auger refusal@36.0' *-* - - - - -T.D. 36.0' - - -

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) | PROJECT: Aquilla Dam | HOLE NO. 8A-32

Hole No. 8A-33

DRILLING LOG | DIVISION SWD

1. PROJECT: Aquilla Dam
2. LOCATION: Outlet Works
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and file number: 8A-33
5. NAME OF DRILLER: Schoonover
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 9.5'
8. DEPTH DRILLED INTO ROCK: .5'
9. TOTAL DEPTH OF HOLE: 10.0'

INSTALLATION: FWD

10. SIZE AND TYPE OF BIT: 6" BH/TCP
11. DATUM FOR ELEVATION SHOWN: MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 6
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 12 Sept. 74
17. ELEVATION TOP OF HOLE: 5
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR: Robert H. Divis

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
502.6			0.0' to 8.5' CLAY - 0.0' to 2.3' Medium plasticity, soft, moist, dark brown, slightly silty. 2.3' to 5.4' Low to medium plasticity, stiff, moist, yellow brown, slightly sandy, scattered small white calcareous nodules. Becomes more sandy (gray, fine grained), from 4.0'. 5.4' to 8.5' (Borderline sand), probably interbedded clay & sand,		A B C D E	1. Making w... Water le... check. Sept. 74 2. JARS: A. 0.0' B. 2.3' C. 5.4' D. 8.2' E. 8.5' F. 9.5' 3. All over... 4. Boring c... 5. Set 9.5' pipe 12
492.6	10.0		Low plasticity, stiff, moist, brown to tan, scattered gravel, sandy. Becomes lo to medium plasticity, brown & gray gravelly (lenticular?) very stiff from 8.2' to 8.5'. 8.5' to 9.5' GRAVEL - (Borderline sand), medium compact, yellow brown, clayey, wet to saturated, scattered cobbles. Primary - - - - - - - - - - - - 9.5' to 10.0' SHALE - Soft, medium gray, laminated, non-calcareous, weathered partially yellow brown, slight Fe stain, - - - - -T.D. 10.0' - - - - -		F	

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) | PROJECT: Aquilla Dam

NOTE:

FOR LOG OF BORING NO. 3F-31 SEE PLATE IX-34

RECORD DRAWING-WORK AS BUILT

SYM	NO.	ACTION	DATE	DESCRIPTION OF ...

U.S. ARMY ENGINEER DISTRICT, FO...
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---
DRAWN BY: ---
CHECKED BY: ---
SUBMITTED BY: ---
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEX...

EMBANKMENT AND SP...

LOGS OF BORIN...
8A6C-29, 6DC-30, 8A-32

INV. NO. DACW65-80-...
CONTR. NO. DACW63-...
DRAWING NUMBER

Hole No. 8A-33

DRILLING LOG	Division: SWD	Installation: FWD	Sheet 1 of 1 sheets
1. Project: Aquilla Dam		10. Size and type of bit: 6" au/cor	
2. Location: Outlet Works		11. Datum for elevation shown: (USC or USGS)	
3. Drilling Agency: Corps of Engineers		12. Manufacturer's designation of drill: Failing 1500	
4. Hole No.: 8A-33		13. Total No. of Overburden Samples Taken: Disturbed 6; Undisturbed 0	
5. Name of Driller: Schoonover		14. Total Number Core Boxes: 0	
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.		15. Elevation Ground Water: ---	
7. Thickness of Overburden: 9.5'		16. Date Hole: Started 12 Sept. 74; Completed 12 Sept. 74	
8. Depth Drilled into Rock: .5'		17. Elevation Top of Hole: 512.1'	
9. Total Depth of Hole: 10.0'		18. Total Core Recovery for Borings:	
		19. Signature of Inspector: Robert H. Deen	

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery	Sample or Core Box No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 8.5' CLAY - 0.0' to 2.3' Medium plasticity, soft, moist, dark brown, slightly silty. 2.3' to 5.4' Low to medium plasticity, stiff, moist, yellow brown, slightly sandy, scattered small white calcareous nodules. Becomes more sandy (gray, fine grained), from 4.0'. 5.4' to 8.5' (Borderline sand), probably interbedded clay & sand, Low plasticity, stiff, moist, brown to tan, scattered gravel, sandy. Becomes lo to medium plasticity, brown & gray gravelly (lenticular) very stiff from 8.2' to 8.5'.		A B C D E F	1. Making water from 7.0'. Water level 5.2' 20min check. Level 5.0' 13 Sept. 74. 2. JARS: A. 0.0' to 2.3' B. 2.3' to 5.4' C. 5.4' to 8.2' D. 8.2' to 8.5' E. 8.5' to 9.5' F. 9.5' to 10.0' 3. All overburden calcareous 4. Boring caving from 5.5' 5. Set 9.5' 4" plastic pipe 12 Sept. 74.
502.6'						
Syenite	10.0'		8.5' to 9.5' GRAVEL - (Borderline sand), medium compact, yellow brown, clayey, wet to saturated, scattered cobbles. Primary - - - - - - - - - - - - 9.5' to 10.0' SHALE - Soft, medium gray, laminated, non-calcareous, weathered partially yellow brown, slight Fe stain, - - - - -T.D. 10.0' - - - - -			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

Project: Aquilla Dam — Hole No. 8A-33

RECORD DRAWING-WORK AS BUILT

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---	AQUILLA LAKE AQUILLA CREEK, TEXAS
DRAWN BY: ---	EMBANKMENT AND SPILLWAY
CHECKED BY: ---	LOGS OF BORINGS 8A6C-29, 6DC-30, 8A-32 AND 33
SUBMITTED BY:	INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
ENGINEER:	CONTR. NO. DACW63-81-C-0055 SEQUENCE NO. 120
	DRAWING NUMBER SHEET NO. 8-15 OF

CONTR. NO. DACW63-81-C-0055

CORPS OF ENGINEERS

Hole No. 8A60-34

DRILL LOG — Division: Southwestern — Installation: Fort Worth — Sheet 1 of 3 sheets

Project: Aquilla Dam Site

Location: Outlet Works

Drilling Agency: Corps of Engineers

Hole No. assigned by contractor: 8A60-34

Name of Driller: Schoonover

Direction of Hole: (X) Vertical ( ) Inclined ____ deg. from vert.

Thickness of Overburden: 19.5'

Depth Drilled into Rock: 49.5'

Total Depth of Hole: 69.0'

11. Size and Type of Bit: 7⅞" Hycore 6" Core

12. Datum for Elevation Shown: Above msl

12. Manufacturer's Designation of Drill: Failing 1500

13a. Total No. of Cores: Disturbed 8; Undisturbed 0

14. Total Number Core Boxes: 11

15. Elevation Ground Water: no

16. Date Hole: Started 5 Sept 74; Completed 12 Sept 74

17. Elevation Top of Hole: 524.4

18. Total Core Recovery for Boring: 82.1 %

19. Signature of Inspector: Thomas M. Cook & Samuel B. Logan

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recov. Ftg.	Box or Sample No.	Remarks
	0.0		0.0' to 5.5' CLAY: 0.0' to 2.0' – medium to low plasticity, medium dark brown, very finely sandy to silty, moist, calcareous. 2.0' to 5.5' – low plasticity, medium to soft, brown, very finely sandy to silty, moist calcareous.		A	1. Hole making water from 18.0' to 19.5'. Water level 16 Sept. 74, after heavy rains at 17.2'
					B	
					C	2. Drilling: No problems. Post core loss due to mechanical grinding after encountering small lenticular very fine grained hard sandstones.
					D	
	10.0		5.5' to 18.7' SAND: 5.5' to 7.5' – fine to medium to coarse grained, tan to light brown, silty and clayey with calcareous nodules up to 3/8", non cohesive, calcareous.		E	3. Jars: A. 0.0' to 2.0'; B. 2.0' to 5.5'; C. 5.5' to 7.5'; D. 7.5' to 10.0'; E. 10.0' to 14.6'; F. 14.6' to 16.5'; G. 16.5' to 18.7'; H. 18.7' to 19.5'; I. 19.5' to 21.0'
					F	
			7.5' to 10.0' – very fine grained to silty, very clayey in places, tan to red brown, cohesive, damp.		G	
					H	
	20.0				I	4. Core Boxes: 1. 21.0' to 24.7'; 2. 24.7' to 29.8'; 3. 29.8' to 34.0'; 4. 34.0' to 38.8'; 5. 38.8' to 43.0'; 6. 43.0' to 46.5'; 7. 46.5' to 50.7'; 8. 50.7' to 54.9'; 9. 54.9' to 59.6'; 10. 59.6' to 64.4'; 11. 64.4' to 67.8'
			10.0' to 14.6' – very fine grained, silty and slightly clayey, light rust colored, poorly cohesive, damp, calcareous.	L 1.1'	Box 1	
			14.6' to 16.5' – medium grained, some clayey binder, dark brown, non cohesive, wet, calcareous.	L 1.6'	Box 2	
	30.0		16.5' to 18.7' – very fine grained, clayey, tan to light brown, moderately cohesive, wet, calcareous.	L 0.5'	Box 3	5. Sample Treatment: Core was hastily logged and immediately wrapped in foil, sealed with wax, then wrapped in polyethylene and covered with wax to preserve samples for testing.
				L 0.6'		
			18.7' to 19.5' GRAVEL – poorly graded, maximum 1½", tan to light brown clayey binder, wet.	L 1.3'	Box 4	6. Location of Hole: Texas State Plane Coordinates: Scaled X – 2,092,505; Y – 83,730
			19.5' to 21.0' SHALE – dark gray, weathered, soft, non-calcareous.			
	40.0		21.0' to 59.0' SHALE – gray to dark gray, soft to medium hard, frequent laminar definition and occasional natural partings; occasional gradations into fine grained, gray, soft sandstones, with no observed thickness in excess of 0.5'; frequent lenses of grayish-tan very fine grained, well cemented sandstones. When encountered, these lenses often broke and caused core loss due to grinding.	L 0.0'	Box 5	7. Top of shale at 19.5' augered to 21.0'. Began coring at 21.0'. Core was not logged in detail (see remarks No. 5); Description is general.
				L 0.9'	Box 6	
				L 0.2'	Box 7	NOTE: A 4" WIDE STRIP OF PARAFFIN-SEALED CORE BETWEEN 50.7 AND 64.4' WAS LOGGED IN THE MOISTURE ROOM OF THE SWD LAB ON 7 FEB. 1975.
	50.0			L 0.6'	Box 8	
			50.7 to 56.9' SHALE: unwea., non-calc., soft, dark gray. 50.8' 2 0.02' to 0.04' silty sand seam. 51.0' 0.03' silty sand seam. 51.2' 30° fract (non-slickl.) 51.6' 10° fract. 51.9' Tan claystone nodule. 52.1' ± 30(?) fract.	L 0.6'	Box 9	
	60.0		56.3(?) 0.05' sandy silt seam. 56.4'-56.5' normal fm. hardness but very plastic. 56.6' to 56.7' SHALE: Soft, non-calc. silty matrix & silt laminations. 56.9' 0.15 sandy silt-stone. Zone of 0.6' drill loss probably below this seam. 57.4'-58.1' sandy silt/clay laminations & seams. 58.1'-58.5' very little silt in matrix, normal fm hardness but quite plastic. 58.5'-58.7' fine silt laminations. 58.7' to 59.5' SHALE: sandy (fine), silty, gray. Sand content increases downward. Slightly calc. at top to calc. at 59.5'.	L 0.4'	Box 10	— WOODBINE/DEL RIO FORMATIONAL CONTACT IS AT 62.5'
				L 0.8'	Box 11	

595' to 61.2' SHALE & SANDSTONE: Rudy interbedded. Shale is very sandy & silty & slightly calc. Sandstone is shaly & silty & calc. Silty partings in both materials. Interval is soft, gray. 595-59.6' Sandstone, v. calc / Limestone, v. sandy. 61.2' to 62.4' SANDSTONE: silty, very calc., slightly, friable, med hard, gray. Consists of abundant 3/4 streaks with shaly partings. Partings are somewhat calc. 62.4' to 62.6' LIMESTONE: sandy, shaly. Contains fossils. A mixture. 62.5' to 62.6' LIMESTONE: argillaceous, med hard to near hard. Top 0.05' is rust-stained. 62.6' to 64.4' SHALE: unwea., calc. med hard to soft, gray to dark gray. 62.6'-62.9' Contains thin limestone lenses. 62.9'-63.4' Apparently drilled up. 63.4'-63.7' soft, contains 1/4" clay partings. 63.7'-64.4'(±) Very calc. weathered, laminations of very argillaceous limestone.

T.D. @ 69.0'

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — Project: Aquilla Dam — Hole No. 8A6C-34

61.2' to 61.2'
SHALE & SANDSTONE: finely interbedded; shale is very sandy & silty & slightly calc. Sandstone is shaly & silty & calc. Silty partings in both materials. Interval is soft, gray.
61.2' to 62.4'
SANDSTONE: silty, very calc., slightly friable, mod. hard, gray. Consists of abundant 1/2" streaks with shaly partings. Partings are somewhat calc.
62.4' to 62.6'
LIMESTONE: sandy, shaly. Contains shale. A mixture.
62.5' to 62.6'
LIMESTONE: argillaceous, mod hard to very hard. Top 0.05' is rust-stained.
62.6' to 64.4'
SHALE: unmeas., calc, mod hard to soft, gray to dark gray.
62.6' - 62.9' Contains thin limestone beds.
62.9' - 63.4' Apparently drilled up.
63.4' - 63.7' soft. contains 1" ray partings.
63.7' - 64.4' (±) very calc, mod hard, banding of very argillaceous limestone.

T.D. @ 64.0'

EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT Aquilla Dam

HOLE NO. 8A6C-34

Mode No. 8A6C-35

DRILLING LOG

DIVISION Southwestern

INSTALLATION Fort Worth

SHEET 1 OF 2 SHEETS

1. PROJECT: Aquilla Dam
2. LOCATION: Outlet Works
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO.: 8A6C-35
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: VERTICAL
7. THICKNESS OF OVERBURDEN: 29.0'
8. DEPTH DRILLED INTO ROCK: 36.0'
9. TOTAL DEPTH OF HOLE: 75.0'
10. SIZE AND TYPE OF BIT: 6" Arrow, 6" Core
11. DATUM FOR ELEVATION SHOWN: 532.4' Above MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF CORES: 9; DISTURBED: 9; UNDISTURBED: 0
14. TOTAL NUMBER CORE BOXES: 90
15. ELEVATION GROUND WATER: ∞
16. DATE HOLE: STARTED 17 July 1974; COMPLETED 22 July 1974
17. ELEVATION TOP OF HOLE: 532.4'
18. TOTAL CORE RECOVERY FOR BORING: 90
19. SIGNATURE OF INSPECTOR: Samuel H. Logan

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	CORE RECOVERY	BOX NO.
	0.0'		0.0' to 9.5' CLAY		A
			0.0' to 3.5' - high plasticity, black, stiff, slightly moist, slightly sandy.		B
			3.5' to 9.5' - borderline clayey sand.		C
	10.0'		9.5' to 26.0' SAND - medium dense, medium to fine grained, moist, tan, trace tan clay.		D
			26.0' to 29.0' GRAVEL - 1" max, saturated, dense, clayey, sandy.		E
	20.0'		29.0' to 30.0' SHALE - non-calcareous, weathered, dark gray.		F
			30.0' to 64.8' SHALE - gray to dark gray, soft to medium hard, frequent laminar definition and occasional natural partings; occasional gradations into fine grained, gray, soft sandstone with no observed thickness in excess of 0.5'; frequent lenses of grayish-tan very fine grained, well cemented sandstone. When encountered, these lenses often broke and caused core loss due to grinding. Shale became very calcareous at 64.8'.		G
					H
	30.0'				I
					J
				No Recovery	
				L 0.7'	Box 1
				L 0.2'	
				G 0.1'	
	40.0'			L 0.5'	Box 2
				10.0'	Box 3
			(Actual) →	L 0.8'	
				L 0.4'	Box 4
	50.0'			L 0.1'	Box 5
				G 0.3'	Box 6
	60.0'			L 0.3'	Box 7
			64.8' to 73.9' LIMY SHALE / SHALY LIMESTONE: Core intermittently grades from shaly limestone to limy shale, medium hard to hard, gray to grayish-tan, slightly to very calcareous. Top of Del Rio formation at 64.8' (picked from measured core recovery and electric logs).	G 0.5'	Box 8
	70.0'			L 0.8'	Box 9
				L 0.3'	Box 10
			---- T. D. 75.0' ----		

REMARKS

1. Water level at 24.7' after augering to 28.0'. Water level was measured at 24.7' 48 hours after hole completion.

2. Drilling: Augered to 30.0'. Cleaned out to 31.0'. Attempted 2 foot core run from 31.0' to 33.0'. Difficulty with gravel in hole. No returns. Core badly broken and ground. First recoverable core run from 33.0' to 34.0'.

3. Jars:
   A. 0.0' to 3.0'
   B. 3.0' to 3.5'
   C. 3.5' to 7.5'
   D. 7.5' to 9.5'
   E. 9.5' to 14.5'
   F. 14.5' to 19.5'
   G. 19.5' to 23.0'
   H. 23.0' to 26.0'
   I. 26.0' to 29.0'
   J. 29.0' to 30.0'

4. Core Boxes:
   1. 33.0' to 37.2'
   2. 37.2' to 43.0'
   3. 43.0' to 47.4'
   4. 47.4' to 52.0'
   5. 52.0' to 56.4'
   6. 56.4' to 60.5'
   7. 60.5' to 64.5'
   8. 64.5' to 68.7'
   9. 68.7' to 72.9'
   10. 72.9' to 73.9'

5. Sample Treatment: Core was carefully examined and immediately wrapped in foil, sealed with wax, then wrapped in polyethylene and covered with wax to preserve samples for testing.

6. Location of Hole: Texas State Plane Coordinates: Scaled
   X - 2,099,295
   Y - 85,950

7. Top of shale at 29.0' augered to 30.0'. Began coring at 31.0' (See Remarks No. 2). Core was not logged in detail (See Remarks No. 5); Description is general.

8. Core was examined at SWD Laboratory in preparation for selective testing. Interval 56.4' to 56.6' was found to exhibit slickensides approximately 45° to recovery. Shale dark grey, soft, even textured, with natural parting intersecting one slickenside (core did not part entirely along projected slickenside).

DD FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT Aquilla Dam

HOLE NO. 8A6C-35

RECORD DRAWING-WO

REVISION NO.	ACTION	DATE

U.S. ARMY E

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

TO ACCOMPANY FINAL FOUNDAT

Mode No. 8A6C-35

DRILLING LOG	DIVISION: Southwestern
1. PROJECT: Aquilla Dam	INSTALLATION: Fort Worth
2. LOCATION: Outlet Works	11. DATUM FOR ELEVATION SHOWN: 532.4' Above MSL
3. DRILLING AGENCY: Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
4. HOLE NO.: 8A60-35	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 9, UNDISTURBED 0
5. NAME OF DRILLER: Brewer	14. TOTAL NUMBER CORE BOXES: 10
6. DIRECTION OF HOLE: VERTICAL	15. ELEVATION GROUND WATER: **
7. THICKNESS OF OVERBURDEN: 29.0'	16. DATE HOLE: STARTED 17 July 1974, COMPLETED 22 July 1974
8. DEPTH DRILLED INTO ROCK: 46.0'	17. ELEVATION TOP OF HOLE: 532.4'
9. TOTAL DEPTH OF HOLE: 75.0'	18. TOTAL CORE RECOVERY FOR BORING: 90 %
	19. SIGNATURE OF INSPECTOR: Elmer B. Rogers

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			0.0' to 9.5'		A	**
			CLAY		B	1. Water level at 24.7' after augering to 28.0'. Water level was measured at 24.7' 48 hours after hole completion.
			0.0' to 3.5' - high plasticity, black, stiff, slightly moist, slightly sandy.		C	
			3.5' to 9.5' - borderline clayey sand.		D	2. Drilling: Augered to 30.0'. Cleaned out to 31.0'. Attempted 2 foot core run from 31.0' to 33.0'. Difficulty with gravel in hole. No returns. Core badly broken and ground. First recoverable core run from 33.0' to 34.0'.
			9.5' to 26.0'		E	
	10.0'		SAND - medium dense, medium to fine grained, moist, tan, trace tan clay.			3. Jars: A. 0.0' to 3.0' B. 3.0' to 3.5' C. 3.5' to 7.5' D. 7.5' to 9.5' E. 9.5' to 14.5' F. 14.5' to 19.5' G. 19.5' to 23.0' H. 23.0' to 26.0' I. 26.0' to 29.0' J. 29.0' to 30.0'
			26.0' to 29.0'		F	
			GRAVEL - 1" max, saturated, dense, clayey, sandy.		G	
			29.0' to 30.0'		H	4. Core Boxes: 1. 33.0' to 37.2' 2. 37.2' to 43.0' 3. 43.0' to 47.4' 4. 47.4' to 52.0' 5. 52.0' to 56.4' 6. 56.4' to 60.5' 7. 60.5' to 64.5' 8. 64.5' to 68.7' 9. 68.7' to 72.9' 10. 72.9' to 73.9'
			SHALE - non-calcareous, weathered, dark gray.		I	
			30.0' to 64.8' ***		J	
	20.0'		SHALE - gray to dark gray, soft to medium hard, frequent laminar definition and occasional natural partings; occasional gradations into fine grained, gray, soft sandstones with no observed thickness in excess of 0.5'; frequent lenses of grayish-tan very fine grained, well cemented sandstones. When encountered, these lenses often broke and caused core loss due to grinding. Shale became very calcareous at 64.8'.			5. Sample Treatment: Core was carefully examined and immediately wrapped in foil, sealed with wax, then wrapped in polyethylene and covered with wax to preserve samples for testing.
	30.0'			No Returns		6. Location of Hole: Texas State Plane Coordinates: Zone 4 X - 2,099,895 Y - 85,950
				L 0.7'	Box 1	
				L 0.2'		***
				C 0.1'		7. Top of shale at 29.0' augered to 30.0'. Began coring at 31.0' (See Remarks No. 2). Core was not logged in detail (See Remarks No. 5); Description is general.
				L 0.5'	Box 2	
				L0.0'		
	40.0'			L 0.2' (Actual)	Box 3	8. Core was examined at SWD Laboratory in preparation for selective testing. Interval 56.4' to 56.6' was found to exhibit slickensides approximately 45° to recovery. Shale dark gray, soft, even textured, with natural parting intersecting one slickenside (core did not part entirely along projected slickenside).
				L 0.4'	Box 4	
				L 0.1'	Box 5	
				C 0.3'	Box 6	
	50.0'			L 0.3'	Box 7	
				C 0.5'	Box 8	
	60.0'			L 0.8'	Box 9	
				L 0.5'	Box 10	
			64.8' to 73.9'			
	70.0'		LIMY SHALE / SHALY LIMESTONE: Core intermittently grades from shaly limestone to limy shale, medium hard to hard, gray to grayish-tan, slightly to very calcareous.			
			Top of Del Rio formation at 64.8' (picked from measured core recovery and electric logs).			
			----- T. D. 75.0' -----			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT: Aquilla Dam — HOLE NO. 8A60-35

RECORD DRAWING-WORK AS BUILT

SYM	DRG. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-34 AND 35

SUBMITTED BY: ----------
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-16 OF
SEQUENCE NO. 121

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 47

CORPS OF ENGINEERS

Mode No. 8A60-36

DRILLING LOG	Division: Southwestern	Installation: Fort Worth	Sheet 1 of 2 sheets
1. Project: Aquilla Dam		10. Size and type of bit: 6" Auger, 6" Core	
2. Location (Coordinates or Stations): Outlet Works		11. Datum for elevation shown (MSL or MLW): MSL	
3. Drilling agency: Corps of Engineers		12. Manufacturer's designation of drill: Failing 1500	
4. Hole No. (As shown on drawing title and file number): 8A60-36		13. Total no. of overburden samples taken: Disturbed 12; Undisturbed 0	
5. Name of driller: Schoonover		14. Total number core boxes: 11	
6. Direction of hole: ☒ Vertical ☐ Inclined ____ deg. from vert.		15. Elevation ground water: **	
7. Thickness of overburden: 31.5'		16. Date hole: Started 26 July 1974; Completed 30 July 1974	
8. Depth drilled into rock: 46.5'		17. Elevation top of hole: 537.2'	
9. Total depth of hole: 78.0'		18. Total core recovery for boring: 95 %	
		19. Signature of inspector: Thomas A. Logan	

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)
			0.0' to 11.0'		A	**
			CLAY		B	1. Water level at 23.5' after completion.
			0.0' to 1.8' - medium to high plasticity, moist, black, slightly sandy, calcareous.		C	2. Drilling: Augered to 33.0' (Rock contact at 32.0'). Began coring at 33.0'.
			1.8' to 4.0' - medium plasticity, moist, scattered calcareous nodules, tan, slightly sandy.		D	3. Jars: A. 0.0' to 1.8' B. 1.8' to 4.0' C. 4.0' to 6.3' D. 6.3' to 11.0' E. 11.0' to 16.0'<|
	10.0'		4.0' to 6.3' - as above interval; no nodules.			F. 16.0' to 20.0' G. 20.0' to 22.0' H. 22.0' to 23.0' I. 23.0' to 28.0' J. 28.0' to 29.5' K. 29.5' to 30.5' L. 30.5' to 31.5' M. 31.5' to 32.0'
			6.3' to 11.0' - borderline clayey sand, moist, tan calcareous.		E	
			11.0' to 22.0'			4. Core Boxes: 1. 33.0' to 37.0' 2. 37.0' to 41.0' 3. 41.0' to 45.3' 4. 45.3' to 50.0' 5. 50.0' to 53.9' 6. 53.9' to 58.2' 7. 58.2' to 62.5' 8. 62.5' to 66.8' 9. 66.8' to 70.1' 10. 70.1' to 75.0' 11. 75.0' to 77.0'
			SAND - medium to fine grained, medium dense, slightly moist, tan, clayey, calcareous.		F	
			22.0' to 23.0'			
	20.0'		GRAVEL - 3/4" maximum, subrounded, poorly graded, medium dense, clayey, sandy, tan to red, some siltstone fragments, moist, calcareous.		G	
					H	
			23.0' to 30.5'		I	5. Sample Treatment: Core was cursorily examined and immediately wrapped in foil, sealed with wax, then wrapped in polyethylene and covered with wax to preserve samples for testing.
			SAND - medium dense, medium to fine grained, tan, moist, clayey, gravelly from 28.0' to 30.5', calcareous.		J	
	30.0'		30.5' to 31.5'		K	
			GRAVEL - 3/4" maximum, subrounded, poorly graded, tan, medium dense, sandy clayey, very moist, calcareous.		L	
					M	
			31.5' to 32.0'	No Returns		*
			SHALE - non-calcareous, weathered, soft, dark gray.	L 0.0'	Box 1	6. Location of Hole: Texas Cent. Zone Plane Coordinates: Scaled X - 2,092,300 Y - 85,070
				L 0.7'	Box 2	
	40.0'		32.0' to 67.8' ***			***
			SHALE - gray to dark gray, soft to medium hard, frequent laminar definition and occasional natural partings; occasional gradations into fine grained, gray, soft sandstones with no observed thickness in excess of 0.8'; frequent lenses of grayish-tan very fine grained, well cemented sandstones. When encountered, these lenses often broke and caused core loss due to grinding. Shale became very calcareous at 67.8'.	L 0.0'	Box 3	7. Top of shale at 32.0' Augered to 33.0'. Began coring at 33.0'. Core was not logged in detail (See remarks No. 5). Description is general.
				L 0.6' (Actual)	Box 4	
				L 0.5'		
	50.0'				Box 5	
				L 0.0'	Box 6	
				C 0.5'	Box 7	8. Core was examined at SWD Laboratory in preparation for selective testing. Interval 59.9' to 60.5' was found to be badly broken with slickensides noted on some of the pieces. Prominent slickensides noted also at 60.5' approximately 45° to core. It is possible that the badly broken condition of the core in this short interval was due in part to mechanical damage. Shale dark gray to black, soft.
	60.0'			L 0.8'	Box 8	
				C 0.3'	Box 9	
	70.0'			L 0.1'	Box 10	
			67.8' to 78.0'			
			LIMY SHALE / SHALY LIMESTONE Core intermittently grades from shaly limestone to limy shale, medium hard to hard, gray to grayish-tan, slightly to very calcareous.	L 0.2'	Box 11	
			Top of Del Rio formation at 67.8' (picked from measured core recovery and electric logs).			
			---- T. D. 78.0' ----			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT)

Project: Aquilla Dam — Hole No. 8A60-36

Hole No. 8A6C-36

rt Worth | SHEET 1 OF 2 SHEETS

6" Auger; 6" Core

GNATION OF DRILL

DISTURBED	UNDISTURBED
12	0

BOXES 11

ATER

ARTED 26 July 1974 | COMPLETED 30 July 1974

CE 537.2'

TY FOR BORING 95 %

TION

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

1. Water level at 23.5' after completion.

2. Drilling: Augered to 33.0' (Rock contact at 32.0'). Began coring at 33.0'.

3. Jars:
   A. 0.0' to 1.8'
   B. 1.8' to 4.0'
   C. 4.0' to 6.3'
   D. 6.3' to 11.0'
   E. 11.0' to 16.0'
   F. 16.0' to 20.0'
   G. 20.0' to 22.0'
   H. 22.0' to 23.0'
   I. 23.0' to 28.0'
   J. 28.0' to 29.5'
   K. 29.5' to 30.5'
   L. 30.5' to 31.5'
   M. 31.5' to 32.0'

4. Core Boxes:
   1. 33.0' to 37.0'
   2. 37.0' to 41.0'
   3. 41.0' to 45.3'
   4. 45.3' to 50.0'
   5. 50.0' to 53.9'
   6. 53.9' to 58.2'
   7. 58.2' to 62.5'
   8. 62.5' to 66.8'
   9. 66.8' to 70.1'
   10. 70.1' to 75.0'
   11. 75.0' to 77.0'

5. Sample Treatment: Core was cursorily examined and immediately wrapped in foil, sealed with wax, then wrapped in polyethylene and covered with wax to preserve samples for testing.

6. Location of Hole: Texas State Plane Coordinates: Scaled
   X = 2,092,300
   Y = 85,070

7. Top of shale at 32.0'. Augered to 33.0'. Began coring at 33.0'. Core was not logged in detail (See remarks No. 5). Description is general.

8. Core was examined at SWD Laboratory in preparation for selective testing. Interval 59.9' to 60.5' was found to be badly broken with slickensides noted on some of the pieces. Prominent slickenside noted also at 60.5' approximately 45° to core. It is possible that the badly broken condition of the core in this short interval was due in part to mechanical damage. Shale dark gray to black, soft.

n Dam | HOLE NO 8A6C-36

Hole No. 8A-37

DRILLING LOG | DIVISION Southwestern | INSTALLATION Fort Worth | SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla Dam Site
2. LOCATION (Coordinates or Station): Outlet Works Investigation
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and DRILL number: 8A-37
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 23.5'
8. DEPTH DRILLED INTO ROCK: 1.5'
9. TOTAL DEPTH OF HOLE: 25.0'
10. SIZE AND TYPE OF BIT: 6" Auger
11. DATUM FOR ELEVATION SHOWN (GS or MSL): Above MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 9 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER: ∞
16. DATE HOLE: STARTED 23 July 1974 | COMPLETED 23 July 74
17. ELEVATION TOP OF HOLE: 523.4'
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Lewis H. Sapp

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f
			0.0' to 13.5' – CLAY – calcareous, medium plasticity, medium, tan moist, sandy		A, B, C, D
	10.0'		13.5' to 16.8' – GRAVEL – calcareous, 2" maximum, moist, sandy, slightly clayey, tan.		E
			16.8' to 19.0' – SAND – fine grained, tan, calcareous, medium dense, damp.		F, G
			19.0' to 23.5' – CLAY – medium to low plasticity, medium, tan, slightly calcareous, possible highly weathered shale.		H, I
	20.0'		23.5' to 25.0' – SHALE – gray, some laminar definition, unweathered.		J
			T. D. 25.0'		

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

1. Probably making water below 17.0'. Hole caved to 17.5' upon completion. Water level at 17.5' 25 July 1974.

2. Drilling: No problems.

3. Jars:
   A. 0.0' to 0.6'
   B. 0.6' to 5.5'
   C. 5.5' to 6.8'
   D. 6.8' to 7.1'
   E. 7.1' to 13.5'
   F. 13.5' to 16.0'
   G. 16.0' to 16.8'
   H. 16.8' to 19.0'
   I. 19.0' to 23.5'
   J. 23.5' to 25.0'

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) | PROJECT Aquilla Dam Site | HOLE NO 8A-37

RECORD DRAWING-WORK AS BUILT

SYM	DG. NO.	ACTION	DATE	DESCRIP

U.S. ARMY ENGINEER DISTRIC
CORPS OF ENGINE
FORT WORTH, TEXA

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA
AQUILLA CRE

EMBANKMENT A

LOGS OF
8A6C-36 AN

INV. NO. DACW
CONTR. NO. D
DRAWING NU

TO ACCOMPANY FINAL FOUNDATION REPORT

DRILLING LOG — Division: Southwestern — Hole No. 8A-37 — Sheet 1 of 1 sheets

1. PROJECT	Aquilla Dam Site
2. LOCATION (Coordinates or Station)	Outlet Works Investigation
3. DRILLING AGENCY	Corps of Engineers
4. HOLE NO. (As shown on drawing title and file number)	8A-37
5. NAME OF DRILLER	Brewer
6. DIRECTION OF HOLE	[X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	23.5'
8. DEPTH DRILLED INTO ROCK	1.5'
9. TOTAL DEPTH OF HOLE	25.0'
INSTALLATION	Fort Worth
10. SIZE AND TYPE OF BIT	8" Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	Above MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED: 9 — UNDISTURBED: 0
14. TOTAL NUMBER CORE BOXES	
15. ELEVATION GROUND WATER	∞
16. DATE HOLE	STARTED: 23 July 1974 — COMPLETED: 23 July 74
17. ELEVATION TOP OF HOLE	523.4'
18. TOTAL CORE RECOVERY FOR BORING	
19. SIGNATURE OF INSPECTOR	Lewis H. Taylor

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)
			0.0' to 13.5' – CLAY – calcareous, medium plasticity, medium, tan moist, sandy		A, B	∞ 1. Probably making water below 17.0'. Hole caved to 17.5' upon completion. Water level at 17.5' 25 July 1974.
			13.5' to 16.8' GRAVEL – calcareous, 2" maximum, moist, sandy, slightly clayey, tan.		C, D	2. Drilling: No problems.
			16.8' to 19.0' SAND – fine grained, tan, calcareous, medium dense, damp.		E	3. Jars: A. 0.0' to 0.6' B. 0.6' to 5.5' C. 5.5' to 6.8' D. 6.8' to 7.1' E. 7.1' to 13.5' F. 13.5' to 16.0' G. 16.0' to 16.8' H. 16.8' to 19.0' I. 19.0' to 23.5' J. 23.5' to 25.0'
10.0'			19.0' to 23.5' CLAY – medium to low plasticity, medium, tan, slightly calcareous, possible highly weathered shale.		F, G	
			23.5' to 25.0' SHALE – gray, some laminar definition, unweathered.		H, I	
20.0'			T. D. 25.0'		J	

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE (TRANSLUCENT) — PROJECT: Aquilla Dam Site — HOLE NO. 8A-37

RECORD DRAWING-WORK AS BUILT

SYM	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-36 AND 8A-37

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER: B-17 OF
SHEET NO.
SEQUENCE NO. 122

CONTR. NO. DACW63-81-C-0035

CORPS OF ENGINEERS

Hole No. 8A6C-38A

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet: of 3 sheets

1. Project: Amarillo
2. Location: Randall Co
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and Air Force No.: 8A6C-38A
5. Name of Driller: Hooper
6. Direction of Hole: (X) Vertical ( ) Inclined ____ deg. from vert.
7. Thickness of Overburden: 2.0'
8. Depth Drilled into Rock: 60.0'
9. Total Depth of Hole: 71.0'
10. Size and Type of Bit: 6" Rotor; 3" fishtail
11. Datum for Elevation Shown (MSL or Mean): ____
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 1; Undisturbed 0
14. Total Number Core Boxes: 12
15. Elevation Ground Water: *
16. Date Hole: Started 22 Apr 75; Completed 24 Apr 75
17. Elevation Top of Hole: 3729.6
18. Total Core Recovery for Borehole: 98%
19. Signature of Inspector: Gerald A. Shultz

Elevation	Depth	Legend	Classification of Material (Description)	Core Recovery	Box or Sample No.	Remarks
			0.0' to 2.0' GRAVEL - - loose to medium dense, dark brown, moist, very clayey and sandy	60	Jar A; B; C	**Drilling** 0.0' to 6.0' 8" auger; 6.0' to 60.1' 6" core; 0.0' to 71.0' 3" fishtail. **Jar samples** A. 0.0' to 2.0' B. 2.0' to 5.0' C. 5.0' to 6.0' **Carton samples** 1. 43.8' to 44.8' 2. 51.6' to 52.5' 3. 58.7' to 59.6' **Boxed samples** Core from 6.2' to 35.4' (boxes 1 to 7) was continuously wrapped. *Water level: Hole was left open after completion of drilling; check, 29 Apr. **Offset: 8A6C-38 was offset accidently 320' SE of proper location. 38-38 was drilled 8.0' W of 8A6C-38 at same elevation. **Note** 38-38 was drilled for purposes of geophysical logging. Log was based on drill action and cuttings below 60.0'. Sandstone is exposed in creek bed 2.4' below elevation of core hole.
			2.0' to 35.5' SHALE - -	62	Box 1	
			2.0' to 12.7' light gray, weathered, with occasional iron-stained, tight fractures	L 0.4 / 60	10.4	
			5.0' to 6.0' SANDSTONE, tan, poorly cemented	L 0.0	2	
			8.4' clay-ironstone, re	14.5	14.1	
			10.3' to 10.4' clay-ironstone, yellow	L 0.0	3	
			10.4' to 11.1' tight, high angle fracture	19.0	18.6	
			11.7' to 11.8' clay-ironstone concretion	L 0.1	4	
			12.3' to 19.8' predominantly gray, slightly weathered	22.9	23.3	
			13.7' to 14.1' several red, clay-ironstone lenses, with scattered grains of gypsum	L 0.1	5	
			16.3' to 16.4'; 16.8' to 16.9'; 17.2' to 17.4' SANDSTONE, moderately cemented, silty	27.5	27.9	
			19.8' to 35.5' dark gray, unweathered, with some light gray sandstone lenses, unfractured	G 0.1	6	
			20.8' to 21.0'; 28.6' to 28.7'; 34.5' to 35.0' SANDSTONE, light gray, poorly cemented	34.5	31.1	
			22.5' to 23.0'; 25.9' to 26.7'; with seams and lenses of poorly cemented SANDSTONE	G 0.2	7	
			23.0' to 23.4' LIMESTONE, gray, very hard, sandy	35.6	35.4	
			26.9' to 27.1' SANDSTONE,	L 0.3	8	
			moderately cemented	39.3	40.6	
			35.5' to 38.9' SHALE-SANDSTONE - -	G 0.4	9	**Note** 2.0' to 19.8' weathered 19.8' to T. D. unweathered 0.0' to 59.1' non calcareous, except for well cemented sandstone and limestone lenses, and 48.4' to 55.1' which is slightly calcareous along bedding 55.1' to 71.0' calcareous
			shale, dark gray and sandy, with numerous soft sandstone lenses, grading downward to sandstone, light gray and slightly lignitic, with numerous shale partings	43.8	45.0	
			38.9' to 48.4' SANDSTONE - -	L 1.1	10	
			38.9' to 39.3' poorly cemented, argillaceous and limy	45.3	50.5	
			39.3' to 39.5' light gray well cemented, calcareous, with several shale partings; could not cut with a carbaloy	L 0.8	11	
			39.5' to 39.6' SHALE	52.3	55.8	
			39.6' to 41.1' moderately cemented, brownish-gray, with some shale partings at top	G 0.1	12	
			41.1' to 41.8' SHALE, gray, sandy, with elongate lenses of sandstone and a limestone lens	56.3	59.6	
			41.8' to 42.5' LIMESTONE, light gray, sandy, well cemented; could not cut with carbaloy; with some shale partings and lignite	L 0.2		
			42.5' to 42.7' SHALE, sandy			
			42.7' to 43.8' moderately cemented, grayish-brown			
			43.8' to 44.8' SHALE, dark gray, waxy			
			44.8' to 48.2' poorly cemented, with thin beds of lignite			
			45.4' to 45.7' non-cemented, with thin beds of shale			
			46.6' to 46.7' well cemented, calcareous			
			48.2' to 48.4' moderately cemented			
			48.4' to 71.0' SHALE - -			
			48.4' to 55.1' dark gray, waxy, non-calcareous, grading downward to calcareous along bedding planes			
			50.1' to 50.5' SANDSTONE, moderately cemented, light gray			
			55.1' to 71.0' greenish-gray, calcareous, fissile, with limy streaks			
			T. D. @ 71.0' in shale			

Hole No. 8A6C-39

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 3 sheets

1. Project: Agnilla
2. Location (Coordinates or Station): CO
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 8A6C-39
5. Name of Driller: Reyna
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ Deg. From Vert.
7. Thickness of Overburden: 10.5'
8. Depth Drilled Into Rock: 50.5'
9. Total Depth of Hole: 61.0'
10. Size and Type of Bit: 6" core; 3" fishtail
11. Datum for Elevation Shown (MSL or Mean): ____
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 4; Undisturbed 0
14. Total Number Core Boxes: 7
15. Elevation Ground Water: ____
16. Date Hole: Started 25 Apr 75; Completed 29 Apr 75
17. Elevation Top of Hole: 516.9
18. Total Core Recovery for Borehole: 91%
19. Signature of Inspector: Jerrell O'Neal

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery & RQD	Run or Sample No.	Remarks
			0.0' to 3.5'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 10.5' 6" auger
			low plasticity, dark brown, soft to medium stiff., very moist, very sandy			10.5' to 47.0' 6" core
			3.5' to 5.5'		C	0.0' to 61.0' 3" fishtail
			GRAVEL - -		D	**Jar samples**
			tan, medium dense, very moist, sandy and clayey, to 1"	10.5		A. 0.0' to 3.5'
	10		5.5' to 10.5'	L 19		B. 3.5' to 5.5'
		1	CLAY - -	12.5	Box 1	C. 5.5' to 8.5'
			5.5' to 8.5' low plasticity, tan, stiff, moist, sandy	13.0 10.7 6.0 14.7		D. 8.5' to 10.5'
		2	8.5' to 10.5' tan, soft, saturated, sandy and very gravelly, with cobbles to 4"	6 0.2	16.7 2	**Carbon samples**
			10.5' to 22.0'	18.7		1. 11.8' to 12.7'
			SHALE - -	6 0.4	20.9	2. 15.3' to 16.2'
	20		10.5' to 14.5' weathered, light gray and yellowish-brown, with occasional, thin, elongate sandy lenses. Several low and high angle tight fractures; core was very badly broken in this zone due to poor seating of casing through gravel. Accurate depths are uncertain	23.0 L 2.3 25.5 L 0.8 26.6	3 31.5	3. 45.5' to 46.4'
			14.5' to 15.3' slightly weathered, dark gray, with some rust colored staining, especially on bedding planes; slightly gypsiferous	6 0.3 32.8	4 39.3	**Boxed samples**
	30		15.3' to 22.0' unweathered, dark gray	L 0.4	.5 370	7. 38.9' to 42.4'
			15.3' to 16.8' 4.25 on hand penetrometer, non-fissile	37.6		Individual pieces wrapped:
			16.8' to 20.5' >4.5, fissile, waxy	6 0.5 380	6 .189	38.9' to 39.7'
			20.5' to 21.5' 4.0' to 4.25 on penetrometer, non-fissile, does not tend to break on bedding planes upon drying	L 0.3 43.0	7 42.4	39.7' to 41.0'
			21.5' to 21.7' SANDSTONE, poorly cemented, light gray	L 0.0 47.0	6 46.4	41.0' to 42.4'
		3	21.7' to 22.0' very sandy			**Location**
			22.0' to 38.9'			8A6C-39 was drilled on opposite side of street, as shown on mosaic. 3A-39 was drilled 9.7' S of 8A6C-39, and 0.35' lower than 8A6C-39, for purposes of geophysical logging.
	50		SANDSTONE - -			**Water Level**
			22.0' to 25.2' light brown, poorly cemented, with some shale partings and thin beds of lignite; some core loss here			A hole was drilled 16.0' deep, 8' N of 8A6C-39, and 4" slotted plastic pipe was set to 14.0'. Due to cave-in, pea gravel was not placed about pipe. Hole made water at 8.5'.
			25.2' to 26.1' LIMESTONE, light gray, well cemented, sandy, with numerous shale partings and a lens of moderately cemented sandstone; could not cut with a carbaloy			**Note**
	60		26.1' to 27.5' light brown, moderately cemented, with occasional shale partings and thin beds of lignite			0.0' to 9.6' 8" casing
			27.5' to 27.8' no redovery			10.5' to 15.3' weathered
			27.8' to 29.1' light gray, well cemented, calcareous, interbedded with thin beds of lignite; could not cut with carbaloy			15.3' to 61.0' unweathered
			29.1' to 31.2' light brown, moderately cemented, with several beds (0.05') of lignite and lignitic sandstone			0.0' to 40.4' noncalcareous, except several well cemented beds in sand stratum
			31.2' to 31.5' LIMESTONE, light gray, well cemented, sandy with numerous shale partings			40.4' to 61.0' calcareous
			31.5' to 38.9' light brown, moderately cemented, with some thin beds of lignite and shale partings			46.4' to 61.0' log is based on cuttings and drill action only
			33.1' to 33.6'; 34.1' to 34.8' with 0.1' beds of interbedded			T. D. @ 61.0' in shale

48.4' to 71.0'

SHALE - -

48.4' to 55.1' dark gray, waxy, non-calcareous, grading downward to calcareous along bedding planes

50.1' to 50.5' SANDSTONE, moderately cemented, light gray

55.1' to 71.0' greenish-gray, calcareous, fissile, with limy streaks

T. D. @ 71.0' in shale

shale and sandstone 37.7' to 38.1'; 38.4' to 38.7'
SHALE

38.9' to 61.0'

SHALE - -

38.9' to 40.4' dark gray, soft, waxy, non-calcareous, with occasional whisps of lime

40.4' to 61.0' greenish-gray, calcareous, with limy pockets, moderately hard

45.9' to 46.4' slightly less calcareous

RECORD DRAWING-WOR

REVISION NO.	ACTION	DATE

U.S. ARMY EN

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

TO ACCOMPANY FINAL FOUNDATI

Hole No. 8A6C-39

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 3 sheets

Project: Aquilla — Location: — Drilling Agency: Corps of Engineers — Name of Driller: Bynum — Direction of Hole: ☑ Vertical ☐ Inclined ____ deg. from vert.

Hole No. (As shown on drawing title and file number)	8A6C-39
10. Size and Type of Bit	6" auger; 3" fishtail
11. Datum for Elevation Shown (TBM or MSL)	
12. Manufacturer's Designation of Drill	Failing 1500
13. Total No. of Overburden Samples Taken	Disturbed: 4 — Undisturbed: 0
14. Total Number Core Boxes	7
15. Elevation Ground Water	0
16. Date Hole	Started: 25 Apr 75 — Completed: 29 Apr 75
17. Elevation Top of Hole	516.9
18. Total Core Recovery for Borings	91%
19. Signature of Inspector	Jarrett A. Blyth
Thickness of Overburden	10.5'
Depth Drilled into Rock	50.5'
Total Depth of Hole	61.0'

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 3.5'		Jar A	**Drilling**
			CLAY - -			0.0' to 10.5' 8" auger
			low plasticity, dark brown, soft to medium stif., very moist, very sandy		B	10.5' to 47.0' 6" core
			3.5' to 5.5'		C	0.0' to 61.0' 3" fishtail
			GRAVEL - -		D	**Jar samples**
	10		tan, medium dense, very moist, sandy and clayey, to 1"	10.6		A. 0.0' to 3.5'
			5.5' to 10.5'	L 19 12.5	Box 1	B. 3.5' to 5.5'
1			CLAY - -	8.0		C. 5.5' to 8.5'
			5.5' to 8.5' low plasticity, tan, stiff, moist, sandy	13.0 0.7 20.7 18.7	#3	D. 8.5' to 10.5'
			8.5' to 10.5' tan, soft, saturated, sandy and very gravelly, with cobbles to 4"	6 0.2	16.7	**Carbon samples**
2				18.7	2	1. 11.8' to 12.7'
			10.5' to 22.0'	6 0.4	20.9	2. 15.3' to 16.2'
	20		SHALE - -	23.0		3. 45.5' to 46.4'
			10.5' to 14.5' weathered, light gray and yellowish-brown, with occasional, thin, elongate sandy lenses. Several low and high angle tight fractures; core was very badly broken in this zone due to poor seating of casing through gravel. Accurate depths are uncertain	L 2.3 25.5 L 0.8 28.6	3	**Bored samples**
					27.5	7. 38.9' to 42.4'
			14.5' to 15.3' slightly weathered, dark gray, with some rust colored staining, especially on bedding planes; slightly gypsiferous	G 0.3 32.8	4	Individual pieces wrapped:
	30				32.5	38.9' to 39.7'
			15.3' to 22.0' unweathered, dark gray	L 0.4	5	39.7' to 41.0'
			15.3' to 16.8' 4.25 on hand penetrometer, non-fissile	37.6	370	41.0' to 42.4'
			16.8' to 20.5' >4.5, fissile, wavy	G 0.5 38.0	6 389	**Location**
						8A6C-39 was drilled on opposite side of street, as shown on mosaic. 38-39 was drilled 9.7' S of 8A6C-39, and 0.35' lower than 8A6C-38 for purposes of geophysical logging.
	40		20.5' to 21.5' 4.0' to 4.25 on penetrometer, non-fissile, does not tend to break on bedding planes upon drying	L 0.3 43.0	7 43.4	**Water level**
				L 0.0	6	A hole was drilled 16.0' deep, 8' N of 8A6C-39, and 4" slotted plastic pipe was set to 14.0'. Due to cave-in, pea gravel was not placed about pipe. Hole made water at 8.5'.
			21.5' to 21.7' SANDSTONE, poorly cemented, light gray	47.0	46.4	
			21.7' to 22.0' very sandy			
			22.0' to 38.9'			
	50		SANDSTONE - -			**Note**
			22.0' to 25.2' light brown, poorly cemented, with some shale partings and thin beds of lignite; some core loss here			0.0' to 9.6' 8" casing 10.5' to 15.3' weathered 15.3' to 61.0' unweathered 0.0' to 40.4' noncalcareous, except several well cemented beds in sand stratum 40.4' to 61.0' calcareous 46.4' to 61.0' log is based on cuttings and drill action only
			25.2' to 26.1' LIMESTONE, light gray, well cemented, sandy, with numerous shale partings and a lens of moderately cemented sandstone; could not cut with a carbaloy			
	60		26.1' to 27.5' light brown, moderately cemented, with occasional shale partings and thin beds of lignite			T. D. @ 61.0' in shale
			27.5' to 27.8' no recovery			
			27.8' to 29.1' light gray, well cemented, calcareous, interbedded with thin beds of lignite; could not cut with carbaloy			
			29.1' to 31.2' light brown, moderately cemented, with several beds (0.05') of lignite and lignitic sandstone			
			31.2' to 31.5' LIMESTONE, light gray, well cemented, sandy with numerous shale partings			
			31.5' to 38.9' light brown, moderately cemented, with some thin beds of lignite and shale partings			
			33.1' to 33.6'; 34.1' to 34.8' with 0.1' beds of interbedded shale and sandstone			
			37.7' to 38.1'; 38.4' to 38.7' SHALE			
			38.9' to 61.0'			
			SHALE - -			
			38.9' to 40.4' dark gray, soft, waxy, non-calcareous, with occasional whisps of lime			
			40.4' to 61.0' greenish-gray, calcareous, with limy pockets, moderately hard			
			45.9' to 46.4' slightly less calcareous			

RECORD DRAWING-WORK AS BUILT

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ---------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-38A AND 39

INV. NO. DACW63-80-B-0085 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-18 OF
SEQUENCE NO. 123

CONTR. NO. DACW63-81-C-0035

Hole No. SA6C-40

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 3 sheets

Project: Joe Pool Lake, Grand Prairie, Texas

Drilling Agency: Consulting Engineers

Hole No. (As shown on drawing title): SA6C-40

Name of Driller: Brown

Direction of Hole: Vertical

Total Depth of Overburden: 3.0'

Total Depth Drilled into Rock: 68.0'

Total Depth of Hole: 71.0'

10. Size and Type of Bit: 6" core; 3" fishtail

11. Datum for Elevation Shown (MSL or Assumed): MSL

12. Manufacturer's Designation of Drill: Failing 1500

13. Total No. of Overburden Samples Taken: Disturbed 2; Undisturbed 0

14. Total Number Core Boxes: 13

15. Elevation Ground Water: 0

16. Date Hole: Started 16 Apr 75; Completed 17 Apr 75

17. Elevation Top of Hole: 529.1

18. Total Core Recovery for Boring: 98.5%

19. Signature of Inspector: Joseph N. Booth

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 2.0'		Jar A	**Drilling**
			SAND - -		B	0.0' to 6.0' 8" auger
			dark brown, loose, moist, slightly clayey, fine		C	6.0' to 70.0' 6" core
				60	D	0.0' to 71.0' 3" fishtail
			2.0' to 3.0'			**Jar samples**
			GRAVEL - -	L 09	Box 1	A. 0.0' to 2.0'
			medium dense, yellow-brown, moist, very clayey, with small, well rounded pebbles of quartz and ironstone	10.0		B. 2.0' to 3.0'
	10					C. 3.0' to 5.0'
			3.0' to 10.0'	L 02	11.7	D. 5.0' to 6.0'
			SANDSTONE - -	14.0	2	**Carbon samples**
			red, yellow, tan, and gray, weathered, fine-grained, poorly cemented	6 03	16.9	1. 12.2' to 13.1'
			5.0' to 6.0' SHALE, gray and tan, thin-bedded	18.0	3	2. 19.0' to 19.9'
	20		9.3' to 10.0' very poorly cemented, with some thin lenses of shale	L 0.1		3. 24.9' to 25.8'
				22.0	22.3	4. 33.0' to 33.9'
			10.0' to 40.5'			5. 68.4' to 69.3'
			SHALE - -	6 0.1	4	**Water level**
			10.0' to 13.5' light gray, weathered, with several low angle, rust-stained fractures. massive; core remains intact upon drying	26.0		Hole was drilled 12' E of SA6C-40 for observation well, but had auger refusal in sandstone at 3.0'. Could not penetrate with either a fishtail or rockbit. Thus, 4" slotted, plastic pipe was set in SA6C-40 to 16.3', where it had caved. 24 hour check - 10.5'.
				0.0	27.9	
	30		10.0' to 10.2' with clay-ironstone, red	30.0	5	**Note**
			13.5' to 21.7' gray, weathered, with very numerous low and high angle fractures which tend to open upon drying and are stained rust	L 0.0	32.0	0.0' to 23.9' weathered
				34.0	6	23.9' to 70.0' unweathered
			20.3' to 21.6' several high angle fractures, as above, which intersect at 21.0'	L 0.0	37.4	0.0' to 64.5' non-calcareous
				38.0	7	64.5' to 71.0' calcareous
	40		21.7' to 23.9' dark gray, slightly weathered, with occasional stained, low angle fractures, and thin lenses of gray, soft sandstone	L 0.0	42.0	SP-40 was offset 21.5' S if SA6C-40 for purpose of geophysical logging; log is based on cuttings and drill action below 70.0'. SP-40 is 0.2' higher than SA6C-40.
				L 0.0	8	
			23.9' to 38.0' dark gray, unweathered, with numerous lenses of sandstone		46.0	
			26.7' to 27.8' high angle fracture, healed with soft sandstone	0.0	9	
	50		27.8' to 27.9'; 29.9' to 30.1' SANDSTONE, poorly cemented	50.0	50.5	
			36.8' to 37.4' with very numerous lenses of sandstone	L 0.0	10	
			38.0' to 40.5' sandy, with numerous, small, elongate lenses of sandstone	54.0	54.6	
				L 0.2	11	
			40.5' to 63.2'			
			SANDSTONE - -	58.0	58.9	
	60		40.5' to 42.0' gray, poorly cemented, with thin wisps of shale and scattered lignite grains	0.5	12	
				62.0		
			41.7' unconsented			
			42.0' to 46.1' with numerous partings of shale, slightly lignitic	6 0.4	63.9	
				66.0	13	
			43.5' to 43.6'; 43.8' to 43.9'; 44.0' to 44.1' unconsented	L 0.4	69.3	
	70		46.1' to 47.5' moderately to well cemented, grading downward to moderately cemented	70.0		
			47.5' to 50.7' poorly cemented with very thin beds of lignite			
			47.3' to 47.7'; 48.6' to 48.8'; 49.1' to 49.2'; 49.6' to 49.8'; 50.0' to 50.7' lenses of thinly bedded shale and sandstone			
			50.7' to 53.3' moderately cemented, with numerous, thin beds of lignite on bedding planes, but sandstone appears massive			
			53.3' to 54.6' moderately to well cemented, lignitic at top to non-lignitic at base			
			54.6' to 59.4' with very numerous lenses of thinly bedded shale and sandstone			
			55.4' to 56.5' predominantly sandstone			
			59.4' to 61.8' moderately cemented, with interbedded lignite seams at 59.2' to 59.3'; 59.8' to 59.9'; 60.3' to 60.4'; lignite tends to be concentrated along bedding			
			61.8' to 63.2' moderately to well cemented			
			63.2' to 63.9'			
			SHALE - -			
			dark gray, with occasional beds of sandstone			
			63.9' to 64.5'			
			SANDSTONE - -			
			63.9' to 64.2' poorly cemented with shale partings			
			64.2' to 64.5' well cemented, brownish-gray			
			64.5' to 65.3'			
			LIMESTONE - -			
			light gray, well cemented, crystalline, sandy			
			65.3' to 69.3'			
			SHALE - -			
			greenish-gray, fissile, calcareous, with limy streaks			
			T. D. @ 69.3' in shale			

Hole No. SA6C-41

DRILLING LOG	DIVISION: Southwestern	SURVEY ELEVATION: Fort Worth District	SHEET 1 OF 4 SHEETS
1. PROJECT: Amarillo		10. SIZE AND TYPE OF BIT: 6" CHUCK; 6" AUGER	
2. LOCATION (Coordinates or Station)		11. DATUM FOR ELEVATION SHOWN (GS or MSL)	
3. DRILLING AGENCY: Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing title and file number): SA6C-41		13. TOTAL NO. OF OVERBURDEN SAMPLES: DISTURBED 3; UNDISTURBED 0	
5. NAME OF DRILLER: Brewer		14. TOTAL NUMBER CORE BOXES: 11	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER: 0	
7. THICKNESS OF OVERBURDEN: 3.0'		16. DATE HOLE: STARTED 27 May 75; COMPLETED 30 May 75	
8. DEPTH DRILLED INTO ROCK: 60.0'		17. ELEVATION TOP OF HOLE: 527.14'	
9. TOTAL DEPTH OF HOLE: 63.0'		18. TOTAL CORE RECOVERY FOR BORING: 97%	
		19. SIGNATURE OF INSPECTOR: Joseph A. O'Brien	

ELEVATION	DEPTH	LOGGING	CLASSIFICATION OF MATERIALS (Description)	% CORE REC.	RQD	SAMPLE NO.	REMARKS
a	b	c	d	e	f	g	h

0.0' to 2.0'

CLAY - -

0.0' to 1.0' low plasticity, brown, very stiff, moist, sandy, with small lime nodules

1.0' to 2.0' becomes slightly gravelly, with pockets of soft, caliche-like material

2.0' to 3.0'

GRAVEL - -

poorly graded, tan, medium dense, moist, well rounded, very clayey, to 1"

3.0' to 44.0'

SHALE - -

3.0' to 5.0' gray and tan, reworked with sand and gravel, very calcareous to slightly calcareous, with zones of soft, caliche-like material

5.0' to 8.0' tan and gray, weathered, non-calcareous with occasional low angle tight fractures, with small, elongate pockets of sand, which increase downward; lower 0.1' very sandy

8.0' to 9.6' lost

9.6' to 10.2' SANDSTONE, well cemented, calcareous, gray, could not cut with carbaloy bit

10.2' to 13.2' weathered, predominately light gray, with numerous elongate, tan, sandy zones

10.5' to 10.8' with beds of poorly cemented sandstone and clay-ironstone

12.1' to 12.4' with several low and high angle, tight, yellow-stained fractures

13.2' to 14.0' very sandy at top, grading downward to clayey SANDSTONE, gray, with 30° open fracture, 13.7' to 14.0'

14.0' to 15.5' light gray, with numerous tight, irregular, short, ironstained fractures, sandy in upper 0.2'

14.7' to 14.9' SANDSTONE, moderately cemented, brown, thin-bedded, non-calcareous

15.5' to 17.2' slightly weathered, predominately gray with less numerous fractures, as above

16.1' to 16.3' clay-ironstone, red

16.6' to 17.2' high angle, tight, iron-stained fracture

17.2' to 22.3' non-weathered, except stained fractures, dark gray

19.2' to 19.3' stained, tight, low angle fracture

20.0' to 20.3' high angle fracture, as above

21.5' to 21.6' clay-ironstone, stained

21.6' to 22.3' a little softer, very smooth texture

22.3' to 24.0' unweathered, with numerous zones of

24.0' to 24.3' SANDSTONE, hard, slightly calcareous

24.3' to 24.5' a little softer

24.5' to 24.6' SANDSTONE, as above

24.6' to 26.8' waxy

25.0' to 25.1' SANDSTONE, moderately hard, slightly calcareous

25.3' to 25.4' SANDSTONE, moderately hard, slightly calcareous

25.4' to 30.1' with numerous pockets, lenses, and thin beds of sandstone

27.4' to 27.8'; 28.4' to 28.6'; 29.0' to 29.5' sandstone lenses, light gray

30.1' to 43.4' waxy

33.2' to 33.3' SANDSTONE, light gray, poorly cemented, thinly interbedded with shale

34.0' to 34.2' SANDSTONE, light gray, well cemented, calcareous

41.8' to 42.1' SANDSTONE, poorly cemented

42.2' to 42.4' sandstone lenses

43.4' to 44.0' sandy

44.0' to 53.4'

SANDSTONE - -

44.0' to 45.7' brown and light brown, moderately cemented, calcareous to non-calcareous, very fossiliferous, with numerous oyster shells

45.7' to 47.8' moderately cemented, decreasing downward to poorly cemented at 47.3', fossiliferous, mostly non-calcareous, with occasional shale partings

47.8' to 48.5' [illegible] gray, interbedded with poorly cemented sandstone

48.5' to 49.3' same as 44.0' to 45.7' with some lignite

49.3' to 50.2' gray, poorly to moderately cemented, locally non-calcareous, slightly fossiliferous, slightly lignitic

50.2' to 51.8' light gray, well cemented, calcareous, with very numerous partings of shale which increase downward, slightly fossiliferous, approaches sandy limestone

51.8' to 53.4' grayish-brown, moderately to well cemented, with numerous partings of shale, mostly non-calcareous, pyritiferous at base

53.4' to 53.7'

LIMESTONE - -

gray, well cemented, sandy, with several solution cavities and partings of shale

53.7' to 62.6'

SHALE - -

greenish-gray, calcareous, with whisps of lime, moderately hard

54.1' to 54.3' lenses of limy sandstone

Drillers

0.0' to 6.0' 6" auger
6.0' to 63.0' 6" core

Jar samples

A. 0.0' to 1.0'
B. 1.0' to 2.0'
C. 2.0' to 3.0'
D. 3.0' to 5.0'
E. 5.0' to 6.0'

Carton samples

1. 6.0' to 7.0'
2. 18.8' to 19.7'
3. 20.6' to 21.5'
4. 21.6' to 22.3'
5. 25.4' to 26.3'
6. 34.7' to 35.4'
7. 36.0' to 36.6'
8. 36.6' to 37.5'
9. 38.1' to 39.0'
10. 39.5' to 40.4'
11. 54.5' to 55.4'
12. 60.2' to 61.1'

Water level

6" auger hole was drilled from 0.0' to 9.5', offset 12.5' N from SA6C-41. Slotted, plastic pipe was installed, and hole was backfilled with pea gravel to 2.5'. 24 hour check - dry.

Note

0.0' to 5.0' calcareous
5.0' to 53.4' non-calcareous, except well cemented zones
53.4' to 62.6' calcareous
5.0' to 22.3' weathered
22.3' to 62.6' unweathered

SA-41 was drilled 6.0' N of SA6C-41 for purposes of geophysical logging and in order to penetrate the Georgetown Formation.

Drillers notes on SA-41:
126.0' to 126.0' hard
129.5' to 136.5' mostly very hard
136.5' T. D.

T. D. @ 62.6' in shale

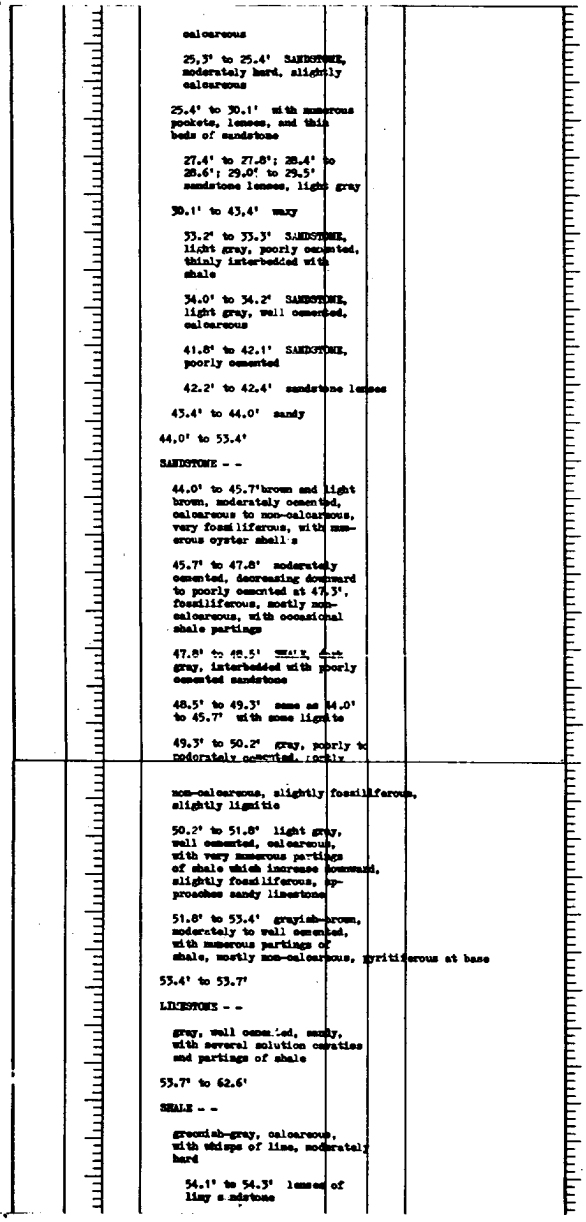
RECORD DRAWING-WORK

SYM	DR. NO.	ACTION	DATE

U.S. ARMY ENG
C

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

TO ACCOMPANY FINAL FOUNDATION R



calcareous

25.3' to 25.4' SANDSTONE, moderately hard, slightly calcareous

25.4' to 30.1' with numerous pockets, lenses, and thin beds of sandstone

27.4' to 27.8'; 28.4' to 28.6'; 29.0' to 29.5' sandstone lenses, light gray

30.1' to 43.4' wavy

33.2' to 33.3' SANDSTONE, light gray, poorly cemented, thinly interbedded with shale

34.0' to 34.2' SANDSTONE, light gray, well cemented, calcareous

41.8' to 42.1' SANDSTONE, poorly cemented

42.2' to 42.4' sandstone lenses

43.4' to 44.0' sandy

44.0' to 53.4'

SANDSTONE - -

44.0' to 45.7' brown and light brown, moderately cemented, calcareous to non-calcareous, very fossiliferous, with numerous oyster shells

45.7' to 47.8' moderately cemented, decreasing downward to poorly cemented at 47.3', fossiliferous, mostly non-calcareous, with occasional shale partings

47.8' to 48.5' [illegible] gray, interbedded with poorly cemented sandstone

48.5' to 49.3' same as 44.0' to 45.7' with some lignite

49.3' to 50.2' gray, poorly to moderately cemented, mostly non-calcareous, slightly fossiliferous, slightly lignitic

50.2' to 51.8' light gray, well cemented, calcareous, with very numerous partings of shale which increase downward, slightly fossiliferous, approaches sandy limestone

51.8' to 53.4' grayish-brown, moderately to well cemented, with numerous partings of shale, mostly non-calcareous, pyritiferous at base

53.4' to 53.7'

LIMESTONE - -

gray, well cemented, sandy, with several solution cavities and partings of shale

53.7' to 62.6'

SHALE - -

greenish-gray, calcareous, with wisps of lime, moderately hard

54.1' to 54.3' lenses of limy sandstone

RECORD DRAWING-WORK AS BUILT

SYM.	DG. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-40 AND 41

SUBMITTED BY: ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. 8-19 OF
SEQUENCE NO. 124

CONTR. NO. DACW63-81-C-0035

Hole No. BA6DC-42

DRILLING LOG | DIVISION: Southwestern | INSTALLATION: Fort Worth District | SHEET 1 OF 2 SHEETS

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and (Hole number): BA6DC-42
5. NAME OF DRILLER: Record
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN
8. DEPTH DRILLED INTO ROCK
9. TOTAL DEPTH OF HOLE

10. SIZE AND TYPE OF BIT: 6" D Rbl & core
11. DATUM FOR ELEVATION SHOWN (USGS or NGS)
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED 5
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 4 June 75 COMPLETED 4 June 75
17. ELEVATION TOP OF HOLE 503.81'
18. TOTAL CORE RECOVERY FOR BORING
19. SIGNATURE OF INSPECTOR: Joseph A. Shrallow

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 30.0'			**Drilling**
			CLAY - -		Jar A	0.0' to 20.0' 8" auger 20.0' to 32.0' 6" D Rbl 32.0' to 40.0' 6" core
			0.0' to 10.0' low plasticity, brown to dark brown, very stiff, moist, sandy, except slightly sandy, 2.0' to 5.0'		B	**Denison samples** 1. 20.0' to 22.0' 2. 22.0' to 24.0' 3. 24.0' to 26.0' 4. 26.0' to 28.0' 5. 28.0' to 30.0'
	10		10.0' to 12.0' becomes light brown, slightly sandy, with limy streaks		C	Note: no sample from 30.0' to 32.0'.
			12.0' to 16.0' low plasticity, light brown, stiff, very moist, very sandy		D	**Jar samples** A. 2.0' to 5.0' B. 5.0' to 10.0' C. 10.0' to 12.0' D. 12.0' to 16.0' E. 16.0' to 20.0' F. 22.0' G. 24.0' H. 26.0' I. 28.0' J. 30.0'
			16.0' to 21.0' becomes very moist to saturated		E	
			21.0' to 29.0' low plasticity, tan with some gray, sandy to very sandy, with zones of sand at 26.0'		Can 1	**Carton samples** 1. 35.7' to 36.6' 2. 38.0' to 38.9'
			29.0' to 30.0' becomes predominantly gray, very moist		2	**Water level**
			30.0' to 32.0'		3	Hole making water at 17.0'; backfilled after completion
			GRAVEL - -		4	
			no sample		6	**Note**
	30		32.0' to 32.2'			0.0' to 32.0' calcareous 32.2' to 34.0' non-calcareous, except sandstone 34.0' to 39.5' calcareous Primary is unweathered. BF-42 was drilled to 61.0' for purposes of geophysical logging. BF-42 was drilled 6.0' east of BA6DC-42 at the same elevation
			LIMESTONE - -			
			light gray, well cemented, slightly stained, sandy			
			32.2' to 34.0'			
			SHALE - -			
			32.2' to 34.0' dark gray, unweathered, nonfractured, non-calcareous, with numerous lenses and thin beds of calcareous and non-calcareous sandstone. Some core loss in this zone, due to grinding by gravel	32.0 L 0.8 34.0 L 0.3 36.0 L 0.5 40.0	2 on 1	
	40		34.0' to 39.5' greenish-gray, moderately hard, calcareous, with limy whisps			
			T. D. @ 39.5'			

Hole No. 6DC-43

DRILLING LOG | DIVISION: Southwestern | INSTALLATION: Fort Worth District | SHEET 1 OF 2 SHEETS

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and (Hole number): 6DC-43
5. NAME OF DRILLER: Record
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 29.9'
8. DEPTH DRILLED INTO ROCK: 9.1'
9. TOTAL DEPTH OF HOLE: 39.0'

10. SIZE AND TYPE OF BIT: 6" D Rbl and core
11. DATUM FOR ELEVATION SHOWN (USGS or NGS)
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 15 UNDISTURBED 12
14. TOTAL NUMBER CORE BOXES 3
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 2 June 75 COMPLETED 3 June 75
17. ELEVATION TOP OF HOLE 503.4
18. TOTAL CORE RECOVERY FOR BORING 99%
19. SIGNATURE OF INSPECTOR: Joseph A. Shrallow

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
					Jar A	
			0.0' to 22.5'		8	**Drilling**
			CLAY - -		Can 1	0.0' to 2.0' 8" auger 2.0' to 26.0' 6" D Rbl 26.0' to 39.0' 6" core
			0.0' to 0.8' low plasticity, brown, stiff, moist, sandy		2	**Jar samples** A. 0.0' to 0.8' B. 0.8' to 2.0' C. 4.0' D. 6.0' E. 8.0' F. 10.0' G. 12.0' H. 14.0' I. 16.0' J. 18.0' K. 20.0' L. 22.0' M. 24.0' N. 26.0' O. 26.0' to 28.0'
			0.8' to 3.0' becomes light brown, very sandy		3	
			3.0' to 5.0' low plasticity, brown, very stiff, moist, sandy		4	
	10		5.0' to 22.0' low plasticity, light brown, very stiff, moist, very sandy		5	
			13.0' to 15.0' with small, irregular, lime nodules		6	
					7	
			17.0' becomes very moist		8	
			19.0' becomes slightly gravelly		9	**Denison samples** 1. 2.0' to 4.0' 2. 4.0' to 6.0' 3. 6.0' to 8.0' 4. 8.0' to 10.0' 5. 10.0' to 12.0' 6. 12.0' to 14.0' 7. 14.0' to 16.0' 8. 16.0' to 18.0' 9. 18.0' to 20.0' 10. 20.0' to 22.0' 11. 22.0' to 24.0' 12. 24.0' to 26.0'
			21.0' approaches clayey sand		10	
			22.5' to 24.0'		11	
			SAND - -		12	
			light brown, medium dense, very moist, very clayey	26.0		
			24.0' to 29.9'	L 0.0 28.0	Sr O	**Carton sample** 1. 36.8' to 37.7'
			GRAVEL - -	L 2.0	Box 1	**Water level**
	30		24.0' to 26.0' light brown, medium dense, poorly graded, saturated, clayey, well rounded, averages ¼", with cobbles to 2"	30.0 L 0.9 31.0		Hole making water from 24.0' to 29.9'. Four inch plastic pipe, slotted from 9.0' to 29.0' was set to 29.0', where hole had caved in. Hole was backfilled with pea gravel to 10.0'.
			26.0' to 28.0' becomes very clayey	32.0 L 0.7	2	
			28.0' to 29.9' with numerous rounded to elongate cobbles, maximum diameter 6"; everything was washed away but the cobbles	36.0	3	
				G 0.5	38.0	
	40		29.9' to 30.0'			**Note**
			LIMESTONE - -			0.0' to 30.0' calcareous 30.0' to 34.2' non-calcareous shale with calcareous sandstone 34.2' to 38.8' calcareous Primary is unweathered. BF-43 was drilled to 121.0' in order to penetrate the Georgetown Formation and for purposes of geophysical logging. It was drilled 6.0' E of 6DC-43 at the same elevation.
			light gray well cemented, sandy, slightly stained			**Driller's notes** BF-43: 65.0' to 66.0' hard 85.0' to 87.0' softer, sandy 106.0' to 121.0' hard, cemented 106.0' to 106.5' very hard 111.0' to 111.5' very hard 121.0' T. D.
			30.0' to 34.2'			
			SHALE - -			
			dark gray, unweathered, nonfractured, non-calcareous, with numerous lenses, pockets, and thin beds of calcareous and non calcareous sandstone			
			32.7' to 33.0' SANDSTONE, brownish-gray, moderately cemented, slightly calcareous			
			34.2' to 35.1'			
			LIMESTONE - -			
			light gray well cemented, sandy, with irregular, elongate lenses of light brown, non-calcareous clay-ironstone, and occasional shale partings			
			35.1' to 38.8'			
			SHALE - -			
			greenish-gray, moderately hard, calcareous, with whisps of lime			
			38.4' to 38.8' moderately cemented, very light gray, with 0.05' at 30° of softer, greenish-gray shale			
			T. D. @ 38.8' in shale			

Hole No. 8A6DC-43

Division: Southwestern	Installation: Fort Worth District		Sheet 1 of 2 sheets
	10. Size and type of bit: 6" D Rbl and core		
	11. Datum for elevation shown (feet or MSL):		
	12. Manufacturer's designation of drill: Failing 1500		
	13. Total no. of overburden samples taken:	Disturbed: 15	Undisturbed: 12
	14. Total number core boxes: 3		
	15. Elevation ground water:		
	16. Date hole:	Started: 2 June 75	Completed: 3 June 75
	17. Elevation top of hole: 503.4		
	18. Total core recovery for bonus: 99%		
	19. Signature of inspector: Joseph A. Bracht		

Classification of materials (Description)	Depth	Legend	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
0.0' to 22.5'				Jar A	**Drilling**
CLAY - -				B	0.0' to 2.0' 8" auger
0.0' to 0.8' low plasticity, brown, stiff, moist, sandy				Cas 1	2.0' to 26.0' 6" D Rbl
0.8' to 3.0' becomes light brown, very sandy				2	26.0' to 39.0' 6" core
3.0' to 5.0' low plasticity, brown, very stiff, moist, sandy				3	**Jar samples**
5.0' to 22.0' low plasticity, light brown, very stiff, moist, very sandy				4	A. 0.0' to 0.8'
13.0' to 15.0' with small, irregular, lime nodules				5	B. 0.8' to 2.0'
17.0' becomes very moist				6	C. 4.0'
19.0' becomes slightly gravelly				7	D. 6.0'
21.0' approaches clayey sand				8	E. 8.0'
22.5' to 24.0'				9	F. 10.0'
SAND - -				10	G. 12.0'
light brown, medium dense, very moist, very clayey				11	H. 14.0'
24.0' to 29.9'	26.0		L 0.0	12	I. 16.0'
GRAVEL - -	28.0		Sr 0		J. 18.0'
24.0' to 26.0' light brown, medium dense, poorly graded, saturated, clayey, well rounded, averages ¾", with cobbles to 2"	30.0		L 0.0 Cay	Box 1	K. 20.0'
26.0' to 28.0' becomes very clayey	32.0		L 0.7	2	L. 22.0'
28.0' to 29.9' with numerous rounded to elongate cobbles, maximum diameter 6"; everything was washed away but the cobbles	36.0		G 0.5	3	M. 24.0'
	38.0				N. 26.0'
					O. 26.0' to 28.0'
					Denison samples
					1. 2.0' to 4.0'
					2. 4.0' to 6.0'
					3. 6.0' to 8.0'
					4. 8.0' to 10.0'
					5. 10.0' to 12.0'
					6. 12.0' to 14.0'
					7. 14.0' to 16.0'
					8. 16.0' to 18.0'
					9. 18.0' to 20.0'
					10. 20.0' to 22.0'
					11. 22.0' to 24.0'
					12. 24.0' to 26.0'
					Carton sample
					1. 36.8' to 37.7'
					***Water level**
					Hole making water from 24.0' to 29.9', four inch plastic pipe, slotted from 9.0' to 29.0' was set to 29.0', where hole had caved in. Hole was backfilled with pea gravel to 10.0'.
29.9' to 30.0'					**Note**
LIMESTONE - -					0.0' to 30.0' calcareous
light gray, well cemented, sandy, slightly stained					30.0' to 34.2' non-calcareous sandstone with calcareous sandstone
30.0' to 34.2'					34.2' to 38.8' calcareous
SHALE - -					Primary is unweathered. 3F-43 was drilled to 121.0' in order to penetrate the Georgetown Formation and for purposes of geophysical logging. It was drilled 6.0' W of 8DC-43 at the same elevation.
dark gray, unweathered, non-fractured, non-calcareous, with numerous lenses, pockets, and thin beds of calcareous and non calcareous sandstone					**Driller's notes**
32.7' to 33.0' SANDSTONE, brownish-gray, moderately cemented, slightly calcareous					3F-43:
34.2' to 35.1'					65.0' to 66.0' hard
LIMESTONE - -					85.0' to 87.0' softer, sandy
light gray well cemented, sandy, with irregular, elongate lenses of light brown, non-calcareous clay-ironstone, and occasional shale partings					106.0' to 121.0' hard, cemented
35.1' to 38.8'					106.0' to 106.5' very hard
SHALE - -					111.0' to 111.5' very hard
greenish-gray, moderately hard, calcareous, with whisps of lime					121.0' T. D.
38.4' to 38.8' moderately cemented, very light gray, with 0.05' at 30° of softer, greenish-gray shale					
T. D. @ 38.8' in shale					

Hole No. 8A6C-44

Drilling Log	Division: Southwestern	Installation: Fort Worth District	Sheet 1 of 4 sheets
1. Project: Aquilla		10. Size and type of bit: 6" core; 3" fishtail	
2. Location (Coordinates or Station):		11. Datum for elevation shown (feet or MSL):	
3. Drilling agency: Corps of Engineers		12. Manufacturer's designation of drill: Failing 1500	
4. Hole no. (As shown on drawing title and file number): 8A6C-44		13. Total no. of overburden samples taken:	Disturbed: 14 Undisturbed: 0
5. Name of driller: Brewer		14. Total number core boxes: 8	
6. Direction of hole: (X) Vertical ( ) Inclined ____ deg. from vert.		15. Elevation ground water:	
7. Thickness of overburden: 36.3'		16. Date hole:	Started: 30 Apr 75 Completed: 2 May 75
8. Depth drilled into rock: 73.7'		17. Elevation top of hole: 537.96	
9. Total depth of hole: 101.0'		18. Total core recovery for bonus: 95%	
		19. Signature of inspector: Joseph A. Bracht	

Elevation	Depth	Legend	Classification of materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 15.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 35.8' 8" auger
			0.0' to 3.5' low plasticity, brownish-gray, stiff, moist, sandy		C	35.8' to 75.0' 6" core
			3.5' to 5.5' becomes hard		D	0.0' to 101.0' 3" fish tail
	10		5.5' to 8.0' low plasticity, brown, very stiff, moist, sandy, with small lime nodules		E	**Jar samples**
			8.0' to 15.0' becomes tan, very sandy		F	A. 0.0' to 3.5'
			15.0' to 23.5'		G	B. 3.5' to 5.5'
			SAND - -		H	C. 5.5' to 8.0'
			15.0' to 19.0' tan, medium dense, moist, slightly clayey		I	D. 8.0' to 13.0'
	20		19.0' to 20.5' loose to medium dense, tan, very fine, silty		J	E. 13.0' to 15.0'
			20.5' to 23.5' brown, well graded, slightly clayey, gravelly to ¾"		k	F. 15.0' to 19.0'
			23.5' to 25.0'		L	G. 19.0' to 20.5'
			CLAY - -		M	H. 20.5' to 23.5'
			low plasticity, tan, stiff, moist, very sandy		Box 1	I. 23.5' to 25.0'
			25.0' to 34.0'			J. 25.0' to 27.0'
			SAND - -			K. 27.0' to 32.0'
	30		25.0' to 27.0' brown, well graded, slightly clayey, gravelly to ¾"			L. 32.0' to 34.0'
			27.0' to 34.0' tan, medium dense, clayey, with zones of gray, sandy clay; very moist to 32.0', saturated 32.0' to 34.0'			M. 34.0' to 36.0'
			34.0' to 36.0'	35.9		N. 36.0' to 36.3'
			CLAY - -	L 2.0 38.4		**Carton samples**
			low plasticity, light gray,	G 0.1		1. 43.0' to 43.9'
	40		soft, very moist, very sandy	42.0		2. 51.5' to 52.4'
			36.0' to 36.3'	L 0.5	2	3. 59.8' to 60.7'
			GRAVEL - -	45.0		4. 73.1' to 74.0'
			tan, medium dense, sandy and clayey, with cobbles to 2"	0.1		***Water level**
			36.3' to 101.0'	47.5		Hole is making water from 32.0' to 36.3'. Four inch plastic pipe, slotted from 11.5' to 41.5', was set from 1.5' to 41.5' and backfilled with pea gravel to 4.5'
			SHALE - -	48.0		**Note**
	50		36.3' to 45.0' with numerous lenses and beds of as follow	0.6	3	0.0' to 36.3' calcareous
			36.3' to 36.4' slightly weathered, gray with some red and tan	53.0		36.3' to 70.7' non-calcareous, except well cemented zones
			36.4' to 37.5' no recovery	0.6	4	70.7' to 101.0' calcareous
			37.5' to 37.6' SANDSTONE, light gray, well cemented, calcareous, could not cut with a carbaloy	57.0 59.0	5	Due to core loss, depth of weathering is uncertain. 3F-44 was drilled 5.0' W of 8A6C-44 at same elevation for purposes of geophysical logging. Log is based on drill action and cuttings
	60		37.6' to 38.4' no recovery	G 0.1		
			38.4' to 38.6' SANDSTONE, as 37.5' to 37.6'	62.0	62.6	
			38.6' to 38.8' with numerous, elongate lenses of calcareous sandstone and several small pyrite nodules	L 0.0 67.0	6	
			38.8' to 39.1' waxy, dark gray	L 0.1	7	
	70		39.1' to 39.4' with several lenses of moderately cemented, non-calcareous sandstone, light gray	70.0	70.5	
			39.4' to 41.6' gray, sandy	L 0.2	8	
			41.6' to 42.0' waxy, dark gray	74.0	74.3	T. D. 6" core @ 74.3'
			42.0' to 42.6' SANDSTONE, light gray, well cemented, calcareous, with thin (0.01') beds of shale and pyrite from 42.4' to 42.5'			
	80					
						below 74.3'
	90					42.6' to 44.8' waxy, with 44.7' to 44.8' a little softer
						44.8' to 45.0' SILTSTONE, well cemented, light gray
						45.0' to 48.3' waxy
						45.3' to 45.5' tight low angle joint
						45.7' a little softer
						46.1' to 46.2' small lens of light brown chert
						47.7' to 48.1' tight, low angle joint, with 1° displacement
						48.1' to 48.2' a little softer
	100					48.3' to 57.8' with very numerous elongate lenses and beds of light gray moderately to well cemented sandstone and chert
						50.3' to 50.4' SANDSTONE, light gray, well cemented
						54.5' to 54.8'; 55.1' to 55.4'; 55.8' to 55.9'; 56.0' to 56.3'; SANDSTONE, light gray, moderately cemented
						56.3' to 56.4' chert, light brown, hard
						56.4' to 57.8' SANDSTONE, gray, moderately well cemented, thin-bedded, calcareous to 57.7'; 57.7' to 57.8' non calcareous, with an open low angle joint
	110					57.8' to 70.7' waxy
						60.7' to 60.9' SANDSTONE, moderately cemented, cross-bedded
						60.9' to 61.5' with numerous elongate lenses of sandstone
						62.2' to 62.5' tight 45° joint
						62.4' to 62.6' chert, light brown, hard, also 61.1' to 61.2'; 65.7' to 65.8'; 68.1' to 68.3'
						69.2' to 69.5' SANDSTONE, light gray, poorly cemented
						69.7' to 69.9' SANDSTONE, poorly cemented, calcareous
						70.7' to 74.3' gray, slightly cemented, calcareous, with very numerous lisy streaks, moderately hard
						74.3' to 101.0' gray, calcareous, as above

RECORD DRAWING-WORK AS BU

SYM	DO NO.	ACTION	DATE

U.S. ARMY ENGINEER
CORPS O
FORT W

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

EMBANK

LO
8A6DC-4

TO ACCOMPANY FINAL FOUNDATION REP

Hole No. 8A6C-44

rth District | SHEET 1 of 4 SHEETS

E OF BIT 6" core; 3" fishtail

LEVATION SHOWN (TBM or MSL)

P'S DESIGNATION OF DRILL 1500

OVER-LES TAKEN | DISTURBED 14 | UNDISTURBED 0

N CORE BOXES 8

ROUND WATER -

STARTED 30 Apr 75 | COMPLETED 2 May 75

OP OF HOLE 537.96

RECOVERY FOR BORING 95%

F INSPECTOR W. Grant

BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
Jar A	**Drilling**
B	0.0' to 35.8' 8" auger 35.8' to 75.0' 6" core 0.0' to 101.0' 3" fish-tail
C	**Jar samples**
D	A. 0.0' to 3.5' B. 3.5' to 5.5' C. 5.5' to 8.0' D. 8.0' to 13.0' E. 13.0' to 15.0' F. 15.0' to 19.0' G. 19.0' to 20.5' H. 20.5' to 23.5' I. 23.5' to 25.0' J. 25.0' to 27.0' K. 27.0' to 32.0' L. 32.0' to 34.0' M. 34.0' to 36.0' N. 36.0' to 36.3'
E	**Carton samples**
F	1. 43.0' to 43.9' 2. 51.5' to 52.4' 3. 59.8' to 60.7' 4. 73.1' to 74.0'
G	**Water level**
H	Hole is making water from 32.0' to 36.3'. Four inch plastic pipe, slotted from 11.5' to 41.5', was set from 1.5' to 41.5' and backfilled with pea gravel to 4.5'.
I	**Note**
J	0.0' to 36.3' calcareous 36.3' to 70.7' non-calcareous, except well cemented zones 70.7' to 101.0' calcareous
K	Due to core loss, depth of weathering is uncertain. 3A-44 was drilled 5.0' N of 8A6C-44 at same elevation for purposes of geophysical logging. Log is based on drill action and cuttings
L	
M	
Box 1	
42.0	below 74.3'
2	
47.5	
3	
4	
5	
62.6	
6	
66.7	
7	
70.5	
8	
74.3	T. D. 6" core @ 74.3'

90 — 100 — 110

42.6' to 44.8' waxy, with 44.7' to 44.8' a little softer

44.8' to 45.0' SILTSTONE, well cemented, light gray

45.0' to 48.3' waxy

45.3' to 45.5' tight low angle joint

45.7' a little softer

46.1' to 46.2' small lens of light brown chert

47.7' to 48.1' tight, low angle joint, with 1' displacement

48.1' to 48.2' a little softer

48.3' to 57.8' with very numerous elongate lenses and beds of light gray moderately to well cemented sandstone and chert

50.3' to 50.4' SANDSTONE, light gray, well cemented

54.5' to 54.8'; 55.1' to 55.4'; 55.8' to 55.9'; 56.0' to 56.3': SANDSTONE, light gray, moderately cemented

56.3' to 56.4' chert, light brown, hard

56.4' to 57.8' SANDSTONE, gray, moderately well cemented, thin-bedded, calcareous to 57.7'; 57.7' to 57.8' non calcareous, with an open low angle joint

57.8' to 70.7' waxy

60.7' to 60.9' SANDSTONE, moderately cemented, cross-bedded

60.9' to 61.5' with numerous elongate lenses of sandstone

62.2' to 62.5' tight 45° joint

62.4' to 62.6' chert, light brown, hard, also 61.1' to 61.2'; 65.7' to 65.8'; 68.1' to 68.3'

69.2' to 69.5' SANDSTONE, light gray, poorly cemented

69.7' to 69.9' SANDSTONE, poorly cemented, calcareous

70.7' to 74.3' gray, slightly cemented, calcareous, with very numerous limy streaks, moderately hard

74.3' to 101.0' gray, calcareous, as above

T. D. @ 101.0' in shale

RECORD DRAWING-WORK AS BUILT

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------
ENGINEER: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6DC-42, 6DC-43 AND 8A6C-44

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-20 of
SEQUENCE NO. 125

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT

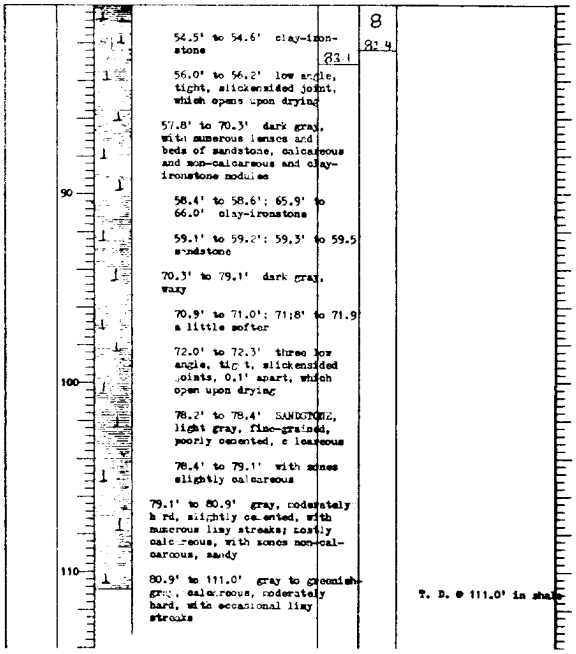
PLATE 51

Hole No. 6DC-15

DRILLING LOG	DIVISION: Southwestern	INSTALLATION: Ft North D istrict	SHEET 1 OF 3 SHEETS
1. PROJECT: Aquilla		10. SIZE AND TYPE OF BIT: A	
2. LOCATION (Coordinates or Stations)		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY: Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing title) and File number: 6DC-45		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 20; UNDISTURBED 19	
5. NAME OF DRILLER: Specht		14. TOTAL NUMBER CORE BOXES: 8	
6. DIRECTION OF HOLE: (X) VERTICAL ( ) INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER: oo	
7. THICKNESS OF OVERBURDEN: 52.7'		16. DATE HOLE: STARTED 5 May 75; COMPLETED 9 May 75	
8. DEPTH DRILLED INTO ROCK: 58.3'		17. ELEVATION TOP OF HOLE: 539.69'	
9. TOTAL DEPTH OF HOLE: 111.0'		18. TOTAL CORE RECOVERY FOR BORING: 100% (in primary)	
		19. SIGNATURE OF INSPECTOR: Jack D Hewitt	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 17.6'		Jar A	*Drilling
			CLAY - -		Can 1	0.0' to 2.0' 8" auger
			0.0' to 3.0' low plasticity, grayish-brown, stiff, moist, slightly sandy		2	2.0' to 38.5' 6" D Ex 38.5' to 83.1' 6" core 0.0' to 111.0' 3" fish-tail
			3.0' to 5.0' becomes stiff to very stiff		3	Jar samples
			5.0' to 11.0' low plasticity, tan, stiff to very stiff, moist, with small line nodules to 9.0'		4	A. 0.0' to 2.0' B. 4.0' 1.5 C. 6.0' 2.0 D. 8.0' 2.0 E. 10.0' 3.5 F. 12.0' 3.5 G. 14.0' 3.5 H. 16.0' 2.0 I. 18.0' J. 19.0' K. 21.0' L. 23.0' M. 25.0' N. 27.0' O. 29.0' P. 31.0' Q. 33.0' 2.0 R. 34.5' 2.25 S. 36.5' 2.25 T. 38.5'
10			11.0' to 15.0' becomes slightly sandy		5	
			15.0' to 17.6' becomes sandy		6	
			17.6' to 30.0'		7	
			SAND - -		8	
			17.6' to 18.5' tan, medium dense, moist, very clayey		9	
20			18.5' to 22.0' becomes slightly clayey		10	
			22.0' to 24.0' brown, loose, moist, medium-grained, with some dark minerals		11	Note: Column 2 is a tabulation of hand penetrometer readings
			24.0' to 28.0' tan, loose, moist, very fine		12	Denison samples
			28.0' to 30.0' brown, loose, moist, medium-grained, with some dark minerals		13	1. 2.0' to 4.0' 2. 4.0' to 6.0' 3. 6.0' to 8.0' 4. 8.0' to 10.0' 5. 10.0' to 12.0' 6. 12.0' to 14.0' 7. 14.0' to 16.0' 8. 16.0' to 18.0' 9. 18.0' to 19.0' 10. 19.' to 21.0' 11. 21.0' to 23.0' 12. 23.0' to 25.0' 13. 25.0' to 27.0' 14. 27.0' to 29.0' 15. 29.0' to 31.0' 16. 31.0' to 33.0' 17. 33.0' to 34.5' 18. 34.5' to 36.5' 19. 36.5' to 38.5'
			30.0' to 36.5'		14	
30			CLAY - -		15	
			low plasticity, tan, stiff, very moist, very sandy, with some pockets of fine to medium grained sand; becomes tan and gray at 35.0'		16	
			36.5' to 38.2'		17	
			SAND - -	78.6	18	
40			light brown, loose, saturated, fine to medium grained		19	
		CL	38.2' to 41.0'		Box 1	Carton samples
			GRAVEL - -			1. 41.5' to 42.2'
			loose, tan, saturated, poorly graded, to 1"			2. 55.0' to 55.9'
			41.0' to 42.5'	47.0		3. 67.5' to 68.4'
			SAND - -		2	4. 76.5' to 77.4'
50			tan and gray, medium dense, very moist, clayey, becoming very clayey at base			5. 81.5' to 82.4'
			42.5' to 45.6'			**Water level
			CLAY - -			Four inch plastic pipe slotted from 23.0' to 53.0', was set from 3.0' to 53.0', and backfilled with pea gravel to 15.0'. Pipe was buried with scrap metal for future use. Hole was taking water from 36.5' to 52.7'.
			low plasticity, gray, very moist, sandy, 2.0 on pocketometer	57.0		
			45.6' to 52.7'		3	Note
60			SAND and GRAVEL			0.0' to 52.9' calcareous 52.9' to 79.1 non-calcareous, except well cemented sandstone lenses 79.1' to 80.9' mostly calcareous 80.9' to 82.4' calcareous
			45.6' to 46.6' mostly gravel, no recovery	61.7		
			46.6' to 47.0' SAND, gray, medium dense, very moist, clayey		4	Primary is unweathered 6DC-45 was drilled 9.0' N of 6DC-45 for purposes of geophysical logging; log is based on cutting and drill action below 82.4'
			47.0' to 52.7' mostly gravel and cobbles to 4"; very little recovery	66.2		
			52.7' to 53.1'		5	
70			SANDSTONE - -	71.0		
			52.7' to 52.9' light gray, well cemented, calcareous		6	
			52.9' to 53.1' CLAY-IRONSTONE, light brown, hard	75.7		
			53.1' to 82.4'		7	
			SHALE - -			
			53.1' to 57.8' dark gray, non-calcareous, unweathered, waxy	80.1		

			54.5' to 54.6' clay-ironstone	83.1	8	82.4
			56.0' to 56.2' low angle, tight, slickensided joint, which opens upon drying			
			57.8' to 70.3' dark gray, with numerous lenses and beds of sandstone, calcareous and non-calcareous and clay-ironstone nodules			
90			58.4' to 58.6'; 65.9' to 66.0' clay-ironstone			
			59.1' to 59.2'; 59.3' to 59.5' sandstone			
			70.3' to 79.1' dark gray, waxy			
			70.9' to 71.0'; 71.8' to 71.9' a little softer			
			72.0' to 72.3' three low angle, tight, slickensided joints, 0.1' apart, which open upon drying			
100			78.2' to 78.4' SANDSTONE, light gray, fine-grained, poorly cemented, calcareous			
			78.4' to 79.1' with zones slightly calcareous			
			79.1' to 80.9' gray, moderately hard, slightly cemented, with numerous limy streaks; mostly calcareous, with zones non-calcareous, sandy			
110			80.9' to 111.0' gray to greenish-gray, calcareous, moderately hard, with occasional limy streaks			T. D. @ 111.0' in shale



54.5' to 54.6' clay-ironstone

56.0' to 56.2' low angle, tight, slickensided joint, which opens upon drying

57.8' to 70.3' dark gray, with numerous lenses and beds of sandstone, calcareous and non-calcareous and clay-ironstone nodules

58.4' to 58.6'; 65.9' to 66.0' clay-ironstone

59.1' to 59.2'; 59.3' to 59.5 sandstone

70.3' to 79.1' dark gray, waxy

70.9' to 71.0'; 71.8' to 71.9 a little softer

72.0' to 72.3' three low angle, tight, slickensided joints, 0.1' apart, which open upon drying

78.2' to 78.4' SANDSTONE, light gray, fine-grained, poorly cemented, calcareous

78.4' to 79.1' with zones slightly calcareous

79.1' to 80.9' gray, moderately hard, slightly cemented, with numerous limy streaks; mostly calcareous, with zones non-calcareous, sandy

80.9' to 111.0' gray to greenish-gray, calcareous, moderately hard, with occasional limy streaks

T. D. @ 111.0' in shale

Hole No. 84-46

DRILLING LOG — DIVISION: Southwestern — INSTALLATION: Fort North District — SHEET 1 OF 2 SHEETS

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Stations)
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title and file number): 84-46
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 34.5'
8. DEPTH DRILLED INTO ROCK: 2.5'
9. TOTAL DEPTH OF HOLE: 37.0'
10. SIZE AND TYPE OF BIT: 8" auger; 3" fishtail
11. DATUM FOR ELEVATION SHOWN (USE or MSL)
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 12; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: +
16. DATE HOLE: STARTED 19 May 75; COMPLETED 19 May 75
17. ELEVATION TOP OF HOLE: 541.87'
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Jerrell D. Heath

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIAL (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g

0.0' to 15.5'

CLAY - -

0.0' to 3.0' low to medium plasticity, gray, very moist, stiff, silty

3.0' to 6.5' medium plasticity, gray, very stiff, very moist

6.5' to 10.8' low plasticity, brown, very stiff, moist, with several small lime nodules

10.8' to13.0' low plasticity, tan, very stiff, moist, with occasional pockets of carbonaceous material

13.0' to 15.5' becomes very sandy

15.5' to 20.3'

SAND - -

15.5' to 17.0' brown, loose, moist, fine to medium, slightly clayey

17.0' to 20.3' becomes clayey, down to very clayey at 19.0'; brown with some gray

20.3' to 24.0'

CLAY - -

low plasticity, tan with some gray, stiff, very moist, very sandy

24.0' to 28.2'

SAND - -

tan with some gray, medium dense, very moist, very clayey

28.2' to 30.0'

CLAY - -

low plasticity, brown, very moist, stiff to very stiff, sandy and gravelly, to 1"

30.0' to 33.0'

SAND - -

tan, loose, saturated

33.0' to 34.5'

GRAVEL - -

well graded, tan, saturated, clayey, to 4"

34.5' to 37.0'

SHALE - -

slightly weathered, gray and tan, non-calcareous

T. D. @ 37.0' in shale

Jar: A, B, C, D, E, F, G, H, I, J, K, L

Drilling

0.0' to 37.0' 8" auger
0.0' to 121.0' 3" fishtail

Jar samples

A. 0.0' to 3.0'
B. 3.0' to 6.5'
C. 6.5' to 10.8'
D. 10.8' to 13.0'
E. 13.0' to 15.5'
F. 15.5' to 17.0'
G. 17.0' to 20.3'
H. 20.3' to 24.0'
I. 24.0' to 28.2'
J. 28.2' to 30.0'
K. 30.0' to 33.0'
L. 33.0' to 34.5'

***Water level**

Hole making water, 30.0 to 34.5'. Four inch plastic pipe, slotted from 17.0' to 37.0', was set from 2.5' to 37.0'. Hole was backfilled with pea gravel to 10.0'.

Note

BF-46 was drilled to 121.0' and was offset 6.0' W of 84-46 at the same elevation, for purposes of geophysical logging.

0.0' to 34.5' calcareous
34.5' to 37.0' non-calcareous
34.5' to 37.0' weathered

DRILLING LOG — DIVISION: Southwestern

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Stations)
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title and file number): 84-47
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FRO
7. THICKNESS OF OVERBURDEN: 5.0'
8. DEPTH DRILLED INTO ROCK: 36.0'
9. TOTAL DEPTH OF HOLE: 41.0'

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF (Description)
a	b	c	d

0.0' to 5.0'

CLAY - -

0.0' to 3.0' dark brown, ve

3.0' to 4.0' brown, hard, s sandy and grav

4.0' to 5.0' brown, very st be bedded, wit pockets of sof like material

5.0' to 5.4'

LIMESTONE - -

well cemented, penetrate with

5.4' to 18.0'

SHALE - -

gray

18.0' to 41.0'

SANDSTONE - -

30.0' to 32.0'

32.0' to 32.5'

32.5' to 33.0'

T. D. @ 41.0' in

RE

SYM	IN

DESIGN ---
DRAWN ---
CHECK ---
SUBMI ---
ENGIN

TO ACCOMPANY FIN

Hole No. 8A-46

INSTALLATION: ort Worth District — SHEET 1 OF 2 SHEETS

SIZE AND TYPE OF BIT: 8" auger; 3" fishtail

DATUM FOR ELEVATION SHOWN (TBM or MSL):

MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
	12	0

TOTAL NUMBER CORE BOXES: 0

ELEVATION GROUND WATER: +

DATE HOLE	STARTED	COMPLETED
	19 May 75	19 May 75

ELEVATION TOP OF HOLE: 541.87'

TOTAL CORE RECOVERY FOR BORING: %

SIGNATURE OF INSPECTOR:

ELEVATION	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		Jar A	**Drilling**
			0.0' to 37.0' 8" auger 0.0' to 121.0' 3" fishtail
			Jar samples
		B	A. 0.0' to 3.0' B. 3.0' to 6.5'
		C	C. 6.5' to 10.8' D. 10.8' to 13.0' E. 13.0' to 15.5' F. 15.5' to 17.0' G. 17.0' to 20.3' H. 20.3' to 24.0' I. 24.0' to 28.2' J. 28.2' to 30.0' K. 30.0' to 33.0' L. 33.0' to 34.5'
		D	
		E	
		F	***Water level**
		G	Hole making water, 30.0 to 34.5'. Four inch plastic pipe, slotted from 17.0' to 37.0', was set from 2.5' to 37.0'. Hole was backfilled with pea gravel to 10.0'.
		H	**Note**
		I	3P-46 was drilled to 121.0' and was offset 6.0' W of 8A-46 at the same elevation, for purposes of geophysical logging.
		J	0.0' to 34.5' calcareous 34.5' to 37.0' non-calcareous 34.5' to 37.0' weathered
		K	
		L	

Hole No. 8A-47

DRILLING LOG — DIVISION: Southwestern — INSTALLATION: Fort Worth District — SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and file number: 8A-47
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 5.0'
8. DEPTH DRILLED INTO ROCK: 36.0'
9. TOTAL DEPTH OF HOLE: 41.0'
10. SIZE AND TYPE OF BIT: 8" auger; 3" fishtail
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
	3	0

14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: +

16. DATE HOLE	STARTED	COMPLETED
	15 Apr 75	15 Apr 75

17. ELEVATION TOP OF HOLE: 586.92'
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Descriptions)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 5.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 5.0' 8" auger refusal at 5.0'
			0.0' to 3.0' low plasticity, dark brown, very stiff, moist		C	0.0' to 41.0' 3" fishtail
			3.0' to 4.0' low plasticity, brown, hard, moist, slightly sandy and gravelly			**Jar samples**
			4.0' to 5.0' becomes grayish-brown, very stiff, appears to be bedded, with very numerous pockets of soft, caliche-like material			A. 0.0' to 3.0' B. 3.0' to 4.0' C. 4.0' to 5.0'
			5.0' to 5.4'			***Water level**
			LIMESTONE - -			Hole dry at completion of augering. 24 hour check - dry.
			well cemented, could not penetrate with auger			**Note**
			5.4' to 18.0'			0.0' to 3.0' non calcareous 3.0' to 5.4' calcareous 5.4' to 41.0' non calcareous
			SHALE - -			3P-47 was drilled 8.0' W of 8A6C-47 for purposes of geophysical logging. Log is based on cutting and drill action below 5.0'.
			gray			
			18.0' to 41.0'			
			SANDSTONE - -			
			30.0' to 32.0' SHALE			
			32.0' to 32.5' well cemented			
			32.5' to 33.0' SHALE			
			T. D. @ 41.0' in sandstone			

RECORD DRAWING-WORK AS BUILT

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
6DC-45, 8A-46 AND 47

INV. NO. DACW63-80-B-0085 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0235
DRAWING NUMBER
SHEET NO. B-21 OF
SEQUENCE NO. 126

CONTR. NO. DACW63-81-C-0235

Hole No. 8A6C-48

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 2 Sheets

1. Project: Aquilla
2. Location (Coordinates or Station): 8A6C-48
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title or letter of transmittal)
5. Name of Driller: Brewer
6. Direction of Hole: (X) Vertical ( ) Inclined ____ deg. from vert.
7. Thickness of Overburden: 5.7'
8. Depth Drilled into Rock: 55.3'
9. Total Depth of Hole: 61.0'
10. Size and Type of Bit: 6" Core; 3" Fishtail
11. Datum for Elevation Shown (MSL or USC&GS): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 3; Undisturbed 0
14. Total Number Core Boxes: 7
15. Elevation Ground Water: ---
16. Date Hole: Started 11 Apr 75; Completed 11 Apr 75
17. Elevation Top of Hole: 595.84'
18. Total Core Recovery for Boring: 97%
19. Signature of Inspector: Gerald W. Hewitt
20. Total Depth of Hole: 61.0'

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 5.7'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 6.0' 8" auger 6.0' to 41.0' 6" core 0.0' to 61.0' 3" fish-tail
			0.0' to 1.5' low plasticity, brown, stiff, moist, silty and slightly sandy		C	**Jar samples** A. 0.0' to 1.5' B. 1.5' to 3.0' C. 3.0' to 5.7' D. 5.7' to 6.0'
			1.5' to 3.0' becomes hard, slightly moist, gravelly	6.0 L 04 1.00	Box 1	**Carton samples** 1. 7.3' to 8.2' 2. 24.7' to 25.6' 3. 37.8' to 38.7'
10			3.0' to 5.7' low plasticity, light brown, hard, moist, sandy, with numerous small line nodules and small pockets of soft, caliche-like material	11.6 G 00		***Water level** At completion of coring core hole was bailed to 38.0'. On 15 April, water level was 15.0'.
			5.7' to 13.6'		2	**Note** 0.0' to 14.7' calcareous 14.7' to 61.0' non calcareous 5.7' to 25.7' weathered 3P-48 was drilled 8.0' E of 8A6C-48 for the purpose of geophysical logging. Geologic log is based on information gathered from both holes, and based on cuttings and drill action only from 40.8' to 61.0'
			SHALE - -	14.0 L 03	4.2	
			tan, with some light gray, weathered, thin-bedded, tends to break along bedding planes, non-fractured or jointed, with occasional very thin beds of siltstone and fine sandstone	18.0 G 03	3	
			9.6' to 9.8'; 10.8' to 10.9'; 11.1' to 11.3'; LIMESTONE, light brownish-gray, moderately cemented	22.0	21.7	
			11.6' to 13.6' becomes predominately tan	L 01	4	
			13.6' to 14.7'	26.0 G 04	27.4	
			LIMESTONE - -	29.0		
30			light gray and light brown, weathered, moderately to well cemented	L 04	5	
			14.1' to 14.2' SHALE			
			14.7' to 28.9'	33.0	32.7	
			SHALE - -	L 11	6	
			14.7' to 20.9' weathered, light gray to gray, thin-bedded, with very numerous elongate lenses and beds of gray, yellow, and reddish-brown sandstone	37.0 L 02	36.7	
40				40.0	40.8	
			16.2' to 17.0' SANDSTONE, light brown, moderately cemented, with occasional shale partings, slightly calcareous			
			20.5' to 20.8' SANDSTONE, light brown, poorly cemented			
			20.9' to 23.7' slightly weathered, dark gray, with less numerous, very thin rust colored beds of sandstone			
50			23.7' to 28.9' unweathered, dark gray, thin-bedded, with occasional thin beds of light gray, poorly cemented sandstone			
			27.4' to 27.7' SANDSTONE, light gray, poorly cemented			
			28.2' to 28.9' very sandy, with numerous pockets of sandstone			
			28.9' to 36.0'			
60			SANDSTONE - -			
			light gray, poorly cemented, with numerous thin lenses and partings of shale			
			33.7' to 36.0' very poorly cemented to non cemented, with some core loss			
			36.0' to 39.9'			
			SHALE - -			
			dark gray, thin-bedded, non-fractured or jointed			
			39.9' to 40.8'			
			SANDSTONE - -			
			gray, poorly cemented, with numerous partings of shale			
			40.8' to 42.0'			
			SHALE - -			
			dark gray			
			42.0' to 47.5'			
			SANDSTONE - -			
			47.5' to 61.0'			
			SHALE - -			
			dark gray			

Hole No. 8A6C-49

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 1 Sheets

1. Project: Aquilla
2. Location (Coordinates or Station): 8A6C-49
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title or letter of transmittal)
5. Name of Driller: Brewer
6. Direction of Hole: (X) Vertical ( ) Inclined ____ deg. from vert.
7. Thickness of Overburden: 5.5'
8. Depth Drilled into Rock: 24.5'
9. Total Depth of Hole: 30.0'
10. Size and Type of Bit: 6" Core; 3" Fishtail
11. Datum for Elevation Shown (MSL or USC&GS): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 2; Undisturbed 0
14. Total Number Core Boxes: 3
15. Elevation Ground Water: ---
16. Date Hole: Started 9 Apr 75; Completed 9 Apr 75
17. Elevation Top of Hole: 579.12'
18. Total Core Recovery for Boring: 89%
19. Signature of Inspector: Gerald W. Hewitt
20. Total Depth of Hole: 30.0'

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 5.5'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 6.0' 8" au 6.0' to 20.5' 6" c 0.0' to 30.0' 3" f tail
			0.0' to 2.0' low plasticity, dark brown, very stiff, slightly moist, slightly sandy, with scattered gravels	6.0	C	**Jar samples** A. 0.0' to 2.0' B. 2.0' to 5.5' C. 5.5' to 6.0'
			2.0' to 5.5' becomes brownish gray, dry to slightly moist, hard	L 08	Box 1	**Carton samples** 1. 8.8' to 9.7' 2. 13.5' to 14.3' 3. 19.6' to 20.4'
10			5.5' to 6.6'	10.0		***Water level** Boring bailed to 15 24 hour check - 8.0
			SANDSTONE - -	G 03	18.1	
			tan, weathered, fine-grained, clayey, poorly cemented, with thin zones of shale	14.5	2	**Note** All samples are non calcareous, and cor hole was weathered T. D. 3P-49 was of 8.0' E of 8A6C-49 f purposes of geophys logging. Hole was from cuttings and d action from 20.5' t 30.0'.
			6.6' to 12.8'	L 04	17.8	
			SHALE - -	18.5		
20			6.6' to 10.2' gray, with rust along bedding planes, sandy, with thin beds and lenses of gray and rust sandstone	L 06 20.5	3	
			7.0' to 7.2'; 10.0' to 10.2'; SANDSTONE, gray, poorly cemented			
			10.2' to 12.4' becomes non-sandy			
			12.4' to 12.8' becomes sandy			
			12.8' to 30.0'			
30			SANDSTONE - -			
			brown to light brown, poorly cemented, with occasional thin beds of shale. Badly broken in drilling with some core loss from 18.1' to 19.1'.			
			12.8' to 13.3' moderately cemented, yellowish-brown and red			
			25.0' to 28.0' SHALE, dark gray			
			28.5' to 29.0' SHALE, dark gray			
40						

Hole No. 8A6C-49

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 2 sheets

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 8A6C-49
5. Name of Driller: Brewer
6. Direction of Hole: [X] Vertical [ ] Inclined ____ deg. from vert.
7. Thickness of Overburden: 5.5'
8. Depth Drilled into Rock: 24.5'
9. Total Depth of Hole: 30.0'
10. Size and Type of Bit: 6" core; 3" fishtail
11. Datum for Elevation Shown (MSL or USC&GS): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 2; Undisturbed 0
14. Total Number Core Boxes: 3
15. Elevation Ground Water: —
16. Date Hole: Started 9 Apr 75; Completed 9 Apr 75
17. Elevation Top of Hole: 579.12'
18. Total Core Recovery for Boring: 89%
19. Signature of Inspector: Joseph P. Dilworth

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 5.5'		Jar A	**Drilling** 0.0' to 6.0' 8" auger 6.0' to 20.5' 6" core 0.0' to 30.0' 3" fishtail
			CLAY - -		B	
			0.0' to 2.0' low plasticity, dark brown, very stiff, slightly moist, slightly sandy, with scattered gravels	6.0	C	**Jar samples** A. 0.0' to 2.0' B. 2.0' to 5.5' C. 5.5' to 6.0'
			2.0' to 5.5' becomes brownish gray, dry to slightly moist, hard	L 08	Box 1	**Carton samples** 1. 8.8' to 9.7' 2. 13.5' to 14.3' 3. 19.6' to 20.4'
10			5.5' to 6.6'	10 0		***Water level** Boring bailed to 19.0' 24 hour check - 8.0'.
			SANDSTONE - -	G 03	18 1	
			tan, weathered, fine-grained, clayey, poorly cemented, with thin zones of shale	14 5	2	
			6.6' to 12.8'	L 04	17 0	
			SHALE - -	18 5	3	**Note** All samples are non-calcareous, and core hole was weathered through T. D. 3F-49 was offset 8.0' E of 8A6C-49 for purposes of geophysical logging. Hole was logged from cuttings and drill action from 20.5' to 30.0'.
20			6.6' to 10.2' gray, with rust along bedding planes, sandy, with thin beds and lenses of gray and rust sandstone	10 6		
			7.0' to 7.2'; 10.0' to 10.2'; SANDSTONE, gray, poorly cemented	20 5		
			10.2' to 12.4' becomes non-sandy			
			12.4' to 12.8' becomes sandy			
			12.8' to 30.0'			
30			SANDSTONE - -			
			brown to light brown, poorly cemented, with occasional thin beds of shale. Badly broken in drilling with some core loss from 18.1' to 19.1'.			
			12.8' to 13.3' moderately cemented, yellowish-brown and red			
			25.0' to 28.0' SHALE, dark gray			
			28.5' to 29.0' SHALE, dark gray			
40						

Hole No. 8A-50

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 2 sheets

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 8A-50
5. Name of Driller: Brewer
6. Direction of Hole: [X] Vertical [ ] Inclined ____ deg. from vert.
7. Thickness of Overburden: 6.0'
8. Depth Drilled into Rock: 55.0'
9. Total Depth of Hole: 61.0'
10. Size and Type of Bit: 8" auger; 3" fishtail
11. Datum for Elevation Shown (MSL or USC&GS): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 4; Undisturbed 0
14. Total Number Core Boxes: 0
15. Elevation Ground Water: —
16. Date Hole: Started 15 Apr 75; Completed 15 Apr 75
17. Elevation Top of Hole: 595.8
18. Total Core Recovery for Boring: —
19. Signature of Inspector: Joseph P. Dilworth

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 6.0'		Jar A	**Drilling** 0.0' to 15.5' 8" auger refusal at 15.5' 0.0' to 61.0' 3" fishtail
			CLAY - -		B	
			0.0' to 2.0' low plasticity, gray, stiff, moist, slightly sandy, slightly calcareous		C	**Jar samples** A. 0.0' to 2.0' B. 2.0' to 3.5' C. 3.5' to 4.5' D. 4.5' to 6.0' E. 6.0' to 10.5' F. 10.5' to 13.5'
			2.0' to 3.5' becomes brown, hard, with occasional small lime nodules		D	
			3.5' to 4.5' with numerous small pockets of soft, caliche-like material		E	
10			4.5' to 6.0' low plasticity, reddish-brown, very stiff, very sandy, moist, with traces of bedding			
			6.0' to 13.5'		F	***Water level** At completion of augering hole was dry, but began to communicate water from fishtail hole.
			SHALE - -			
			6.0' to 10.5' gray and tan, weathered, thin-bedded			**Note** 0.0' to 15.5' calcareous 15.5' to 61.0' non calcareous 3F-50 was drilled 6.0' E of 8A-50 for purposes of geophysical logging. From 15.5' to 61.0' log is based on cuttings and drill action. 15.5' to 16.5' taking water badly 27.5' to 29.0' lost circulation 34.5' to 39.0' taking water gradually
			10.5' to 13.5' becomes predominately tan, sandy			
20			13.5' to 15.5'			
			LIMESTONE - -			
			gray, well cemented, could not penetrate with auger; shaley from 14.5' to 15.0'			
			15.5' to 26.5'			
			SHALE - -			
			gray to dark gray			
30			18.5' to 18.8' SANDSTONE			
			26.5' to 36.0'			
			SANDSTONE - -			
			poorly cemented			
			29.0' to 29.5' well cemented			
			36.0' to 39.0'			
			SHALE - -			
			dark gray			
			39.0' to 46.0'			
			SANDSTONE - -			
50			39.0' to 40.0' well cemented			
			40.0' to 41.5' SHALE			
			45.0' to 46.0', hard, well cemented, slightly calcareous			
			46.0' to 61.0'			
			SHALE - -			
			dark gray			
60			T. D. @ 61.0' in shale			

RECORD DRAW

SYM | NO. | ACTION

U.S. AR

DESIGNED BY: ----------

DRAWN BY: ----------

CHECKED BY: ----------

SUBMITTED BY: ----------

ENGINEER:

TO ACCOMPANY FINAL FO

U.S. ARMY

Hole No. 8A6C-48

Division: Southwestern	Installation: Fort Worth District
10. Size and Type of Bit: 8" auger; 3" fishtail	
12. Manufacturer's Designation of Drill: Failing 1500	
13. Total No. of Overburden Samples Taken: Undisturbed 4; Undisturbed 0	
14. Total Number Core Boxes: 0	
15. Elevation Ground Water: 0	
16. Date Hole: Started 15 Apr 75; Completed 15 Apr 75	
17. Elevation Top of Hole: 595.8	
18. Total Core Recovery for Boring:	
19. Signature of Inspector: Gerald R. Olcott	

8A-50

6.0'

55.0'

61.0'

Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
0.0' to 6.0'		Jar A	**Drilling**
CLAY - -		B	0.0' to 13.5' 8" auger refusal at 13.5'
0.0' to 2.0' low plasticity, gray, stiff, moist, slightly sandy, slightly calcareous		C	0.0' to 61.0' 3" fishtail
2.0' to 3.5' becomes brown, hard, with occasional small lime nodules		D	**Jar samples**
3.5' to 4.5' with numerous small pockets of soft, caliche-like material		E	A. 0.0' to 2.0' B. 2.0' to 3.5' C. 3.5' to 4.5' D. 4.5' to 6.0' E. 6.0' to 10.5' F. 10.5' to 13.5'
4.5' to 6.0' low plasticity, reddish-brown, very stiff, very sandy, moist, with traces of bedding		F	**Water level**
6.0' to 13.5'			At completion of auger hole was dry, but began to communicate water from fishtail hole.
SHALE - -			**Note**
6.0' to 10.5' gray and tan, weathered, thin-bedded			0.0' to 15.5' calcareous 15.5' to 61.0' non calcareous
10.5' to 13.5' becomes predominately tan, sandy			8P-50 was drilled 6.0' E of 8A-50 for purpose of geophysical logging. From 13.5' to 61.0' log is based on cuttings and drill action.
13.5' to 15.5'			15.5' to 16.5' taking water badly 27.5' to 29.0' lost circulation 34.5' to 39.0' taking water gradually
LIME ZONE - -			
gray, well cemented, could not penetrate with auger; shaley from 14.5' to 15.0'			
15.5' to 26.5'			
SHALE - -			
gray to dark gray			
18.5' to 18.8' SANDSTONE			
26.5' to 36.0'			
SANDSTONE - -			
poorly cemented			
29.0' to 29.5' well cemented			
36.0' to 39.0'			
SHALE - -			
dark gray			
39.0' to 46.0'			
SANDSTONE - -			
39.0' to 40.0' well cemented			
40.0' to 41.5' SHALE			
45.0' to 46.0', hard, well cemented, slightly calcareous			
46.0' to 61.0'			
SHALE - -			
dark gray			
T. D. @ 61.0' in shale			

RECORD DRAWING-WORK AS BUILT

SYM	DO NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-48, 49 AND 8A-50

INV. NO. DACW63-80-B-0086 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-22 OF
SEQUENCE NO. 127

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 53

Hole No. 84-51

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 2 Sheets

1. Project	Amarillo
2. Location	
3. Drilling Agency	Corps of Engineers
4. Name of Driller	
5. Hole Designation	84-51
6. Vertical / Inclined	Vertical
7. Thickness of Overburden	5.5'
8. Depth Drilled into Rock	74.5'
9. Total Depth of Hole	80.0'
10. Size and Type of Bit	8" Rotary, 3" Fishtail
11. Datum for Elevation Shown	
12. Manufacturer's Designation of Drill	Failing 1500
13. Total No. of Overburden Samples Taken	Undisturbed: 0
14. Total Number Core Boxes	0
15. Elevation Ground Water	
16. Date Hole	Started: 3 Apr 75; Completed: 3 Apr 75
17. Elevation Top of Hole	590.9
18. Total Core Recovery for Boring	
19. Signature of Inspector	Lloyd L. Shuck

Elevation	Depth	Legend	Classification of Materials (Descriptions)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 5.5'		B	**Drilling**
			CLAY - -		C	0.0' to 34.5' 8" auger
			0.0' to 0.8' low plasticity, dark brown, stiff, moist, slightly sandy with numerous large cobbles of quartz and chert		D	0.0' to 80.0' 3" fish tail
			0.8' to 3.8' low plasticity, light brown, very stiff, slightly sandy and silty, with numerous small pockets of soft, caliche-like material		E	**Jar samples**
			3.8' to 5.5' becomes hard, with cloggie pockets of soft, caliche-like material, a trace of bedding		F	A. 0.0' to 0.8' B. 0.8' to 3.8' C. 3.8' to 5.5' D. 5.5' to 8.5' E. 8.5' to 12.5' F. 13.3' to 16.5' G. 16.5' to 19.0' H. 19.0' to 24.0' I. 24.0' to 27.0' J. 27.0' to 32.0' K. 32.0' to 34.5'
			5.5' to 12.5'		G	*Water level
			SHALE - -		H	Hole making water below 14.0'. 24 hour check 12.2'.
			5.5' to 8.5' weathered, tan, slightly sandy, thin-bedded, becomes sandy at 6.5'		I	**Offset
			8.5' to 12.5' becomes a little harder to auger		J	Boring offset from crest of terrace as shown on mosaic.
			12.5' to 13.3'		K	**Note**
			LIMESTONE - -			XF-51 was drilled 8.0' north of 84-51 to a depth of 80.0' for the purpose of geophysical logging. Geological log below 34.5' is based on cuttings and penetration rate. All samples are calcareous to 16.5'. Base of weathering at 24.0'.
			moderately cemented, light gray, no sample taken			0.8'to3.8' probably highly weathered calc. Eagle Ford shale. 3.8'to 5.5' interpreted as being weathered Eagle Ford shale.
			13.3' to 27.0'			O. W. Peede
			SHALE - -			
			13.3' to 16.5' weathered gray and tan, thin-bedded very sandy, making water			
			16.5' to 19.5' slightly weathered, predominantly gray, non-calcareous, with finer grained sand in numerous pockets and lenses, becoming less sandy at base			
			19.5' to 24.0' dark gray unweathered shale with less numerous pockets of weathered, tan yellow brown sand			
			21.5' to 21.7' SANDSTONE, tan, poorly cemented			
			24.0' to 27.0' unweathered, dark gray, with numerous lenses of poorly cemented gray sandstone			
			27.0' to 45.0'			
			SANDSTONE - -			
			27.0' to 29.0' tan, soft, poorly cemented, saturated			
			29.0' to 32.0' becomes moderately cemented, very difficult to auger			
			32.0' to 34.5' becomes clayey			
			34.5' to 36.5' SHALE			
			36.5' to 38.0' poorly cemented			
			38.0' to 40.0' SHALE			
			40.0' to 45.0' poorly cemented			
			45.0' to 80.0'			
			SHALE - -			
			dark gray			
			T. D. @ 80.0' in shale			

Hole No. 84-52

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District

1. Project	Amarillo
2. Location	
3. Drilling Agency	Corps of Engineers
4. Name of Driller	
5. Hole Designation	BA60-52
6. Vertical / Inclined	Vertical
7. Thickness of Overburden	±6.5'
8. Depth Drilled into Rock	±63.5'
9. Total Depth of Hole	70.0'
10. Size and Type of Bit	6" Rotary, 3" Fishtail
11. Datum for Elevation Shown	
12. Manufacturer's Designation of Drill	Failing 1500
13. Total No. of Overburden Samples Taken	Undisturbed: 3
14. Total Number Core Boxes	6
15. Elevation Ground Water	
16. Date Hole	Started: 8 Apr 75; Completed: 8 Apr 75
17. Elevation Top of Hole	590.22'
18. Total Core Recovery for Boring	97%
19. Signature of Inspector	Lloyd L. Shuck

Elevation	Depth	Legend	Classification of Materials (Descriptions)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to ±6.5'		B	**Drilling**
			CLAY - -		C	0.0' to 6.0'
			0.0' to 1.0' low plasticity, dark brown, stiff, moist to very moist, silty, with scattered gravels	L 0.8	6.0	6.0' to 35.0'
			1.0' to 4.0' low plasticity, light brown to tan, very stiff, moist, sandy, with numerous small lime nodules	10.0 L 0.0	Box 1	0.0' to 70.0' tail
			4.0' to ±6.5' low plasticity, tan and gray, very stiff, moist, thin-bedded, with numerous lenses of soft, caliche-like material	12.2		**Jar samples**
			Water lost 6.0' to 6.5' 6.0' was clay and 6.8' was limestone	19.0 L 0.3	2	A. 0.0' to 1.0 B. 1.0' to 4.0 C. 4.0' to 6.0
			±6.5' to 11.3'	19.0	17.7	**Core samples**
			SHALE - -	60.3		1. 9.2' to 10. 2. 14.6' to 15 3. 20.3' to 21 4. 28.1' to 28 5. 32.9' to 33
			weathered, tan, thin-bedded interbedded with thin (0.01') beds very sandy		3	*Water lev
			6.8' to 6.9' LIMESTONE, moderately cemented, sandy, light brown	29.0 L 0.1	22.1	Hole dry at co of augering, a to 34.0' at co of coring. Fo plastic pipe, from 15.0' to in core hole t and backfilled gravel to 5.0' check -8.0'.
			7.3' to 7.5' SANDSTONE, brown, moderately cemented, very calcareous	36.0	4	**Note**
			8.6' to 8.8'; 9.0' to 9.1' L 0.1 SANDSTONE, poorly cemented, tan		27.5	0.0' to 14.3' 14.3' to 34.6' calcareous 6.5' to 22.3' 22.3' to 25.3' 25.3' to 30.5' weathered 30.5' to 34.6'
			11.3' to 14.0'	30.5	5	1.0' to 4.0' p highly weath calcareous E shale. 4.0'to 6.5'±
			LIMESTONE - -	L 0.2		
			11.3' to 11.7' light grayish-brown, moderately to well cemented, thin-bedded, slightly fossiliferous	33.7	6	
			11.7' to 11.9' becomes massive, sandy, pitted	34.6		
			11.9' to 12.3' SHALE, as above, with thin, lisy stringers	36.0		
			12.3' to 13.2' light gray, stained light brown, moderately to well cemented, very slightly fossiliferous, with shale at 11.9'			
			13.2' to 13.6' SHALE, tan, with numerous thin limestone stringers			**Note**
			13.6' to 14.0' light gray, moderately cemented, sandy, thinly interbedded with shale			XB-52 was dril of BA60-52 at elevation for of geophysical Descriptive lo on cuttings a section below
			14.0' to 16.6'			
			SANDSTONE - -			
			poorly cemented, with very numerous, thin beds and lenses of shale			
			14.0' to 14.3' tan, slightly calcareous			
			14.3' to 15.4' light gray			
			15.4' to 15.9' SHALE, light gray, with yellow-brown sandstone			
			15.9' to 16.4' light gray			
			16.4' to 25.3'			
			SHALE - -			
			16.4' to 18.0' gray, thin-bedded, interbedded with numerous thin (0.01' to 0.1') beds and elongate lenses of rust, red, and light gray sandstone			
			16.9' to 17.0'; 17.9' to 18.0' SANDSTONE, light gray, poorly cemented			
			18.0' to 22.3' gray, becoming dark gray at base, interbedded with less numerous thin, rust-colored sandstone beds and lenses			
			22.3' to 25.3' unweathered, dark gray, with small, irregular lenses of sand which increase in number downward			
			23.3' to 23.4'; 24.0' to 24.1' SANDSTONE, gray			
			24.8' to 25.3' sandy			

Hole No. BAGO-52

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 3 sheets

1. Project: Aquilla
2. Location (Coordinates or Station): [illegible]
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: BAGO-52
5. Name of Driller: Revrez
6. Manufacturer's Designation of Drill: Failing 1500
7. Total No. of Overburden Samples Taken: Undisturbed 3; Undisturbed 0
8. Total No. of Core Boxes: 6
9. Elevation Ground Water: ∅
10. Date Hole: Started 8 Apr 75; Completed 8 Apr 75
11. Size and Type of Bit: 6" spray, 3" fishtail
12. Datum for Elevation Shown (USGS or Mean Sea Level): [illegible]
13. Elevation Top of Hole: 590.22'
14. Total Core Recovery for Boring: 97%
15. Signature of Inspector: [signature]

Dip of Direction of Hole: ☐ Vertical ☐ Inclined ____ deg. from vert.
Thickness of Overburden: ±6.5'
Depth Drilled into Rock: ±63.5'
Total Depth of Hole: 70.0'

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	RQD or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to ±6.5'		3in-A	**Drilling**
			CLAY - -		B	0.0' to 6.0' 8" auger 6.0' to 25.0' 6" core 0.0' to 70.0' 3" fishtail
			0.0' to 1.0' low plasticity, dark brown, stiff, moist to very moist, silty, with scattered gravels		C	**Jar samples** A. 0.0' to 1.0' B. 1.0' to 4.0' C. 4.0' to 6.0'
			1.0' to 4.0' low plasticity, light brown to tan, very stiff, moist, sandy, with numerous small lime nodules	6.0 L 0.8 10.0 L 0.0	Box 1	**Carton samples** 1. 9.2' to 10.0' 2. 14.6' to 15.3' 3. 20.3' to 21.2' 4. 20.1' to 28.9' 5. 32.9' to 33.9'
10			4.0' to ±6.5' low plasticity, tan and gray, very stiff, moist, thin-bedded, with numerous lenses of soft, caliche-like material Water lost 6.0' to 6.8'; 6.0' was clay and 6.8' was limestone	13.8 19.0 L 0.3	2	**Water Level** Hole dry at completion of augering, and bailed to 34.0' at completion of coring. Four inch plastic pipe, slotted from 15.0' to 35.0' set in core hole to 35.0', and backfilled with pea gravel to 5.0'. 24 hour check -8.0'.
			± 6.5' to 11.3'	17.7 60.3	3	
			SHALE - -			
20			weathered, tan, thin-bedded, interbedded with thin (0.01') beds very sandy			
			6.8' to 6.9' LIMESTONE, moderately cemented, sandy, light brown	22.0 23.1 L 0.1	4	**Note** 0.0' to 14.3' calcareous 14.3' to 34.6' non-calcareous 6.5' to 22.3' weathered 22.3' to 25.3' unweathered 25.3' to 30.5' slightly weathered 30.5' to 34.6' unweathered
			7.3' to 7.5' SANDSTONE, brown, moderately cemented, very calcareous	26.0 27.5 L 0.1		
			8.6' to 8.8'; 9.0' to 9.1'; SANDSTONE, poorly cemented, tan			
			11.3' to 14.0'	30.5 L 0.2	5	
30			LIMESTONE - -			*1.0' to 4.0' probably highly weathered, calcareous Eagle Ford shale.*
			11.3' to 11.7' light grayish-brown, moderately to well cemented, thin-bedded, slightly fossiliferous	33.2 L 0.6	6	*4.0' to 6.5' interpreted as having weathered Eagle Ford shale.*
			11.7' to 11.9' becomes massive, sandy, pitted	36.0		J. M. Rucker
			11.9' to 12.3' SHALE, as above, with thin, lime stringers			
			12.3' to 13.2' light gray, stained light brown, moderately			
40			to well cemented, very slightly fossiliferous, with shale at 11.9'			**Note**
			13.2' to 13.6' SHALE, tan, with numerous thin limestone stringers			SB-52 was drilled 6' W of BAGO-52 at the same elevation for purposes of geophysical logging. Descriptive log is based on cuttings and drilling action below 34.6'.
			13.6' to 14.0' light gray, moderately cemented, sandy, thinly interbedded with shale			
			14.0' to 16.4'			
50			SANDSTONE - -			
			poorly cemented, with very numerous, thin beds and lenses of shale			
			14.0' to 14.3' tan, slightly calcareous			
			14.3' to 15.4' light gray			
			15.4' to 15.9' SHALE, light gray, with yellow-brown sandstone			
			15.9' to 16.4' light gray			
60			16.4' to 25.3'			
			SHALE - -			
			16.4' to 16.9' gray, thin-bedded, interbedded with numerous thin (0.01' to 0.1') beds and elongate lenses of rust, red, and light gray sandstone			
			16.9' to 17.0'; 17.9' to 18.0' SANDSTONE, light gray, poorly cemented			
70			18.0' to 22.3' gray, becoming dark gray at base, interbedded with less numerous thin, rust-colored sandstone beds and lenses			
			22.3' to 25.3' unweathered, dark gray, with small, irregular lenses of sand which increase in number downward			
			25.3' to 25.4'; 26.0' to 26.1' SANDSTONE, gray			
			24.8' to 25.3' sandy			
			25.3' to 43.5'			
			SANDSTONE - -			
			moderately cemented, massive, interbedded with numerous thin beds, elongate lenses, and partings of shale			
			25.3' to 30.5' slightly weathered, light brown, with some rust colored staining			
			30.5' to 34.6' unweathered, light gray			
			T. B. 6" core at 34.6'			
			34.8' to 36.2' SHALE			
			43.5' to 44.4'			
			LIMESTONE - -			
			very hard to drill			
			44.4' to 70.0'			
			SHALE - -			
			dark gray			
			55.0' to 55.8'; 61.0' to 61.2';			
			63.0' to 63.2' SILTSTONE, tan, calcareous			
			T. D. @ 70.0' in shale			

DRILLING LOG | Division: Southwestern | Installation: [illegible]

1. Project: Aquilla
2. Location (Coordinates or Station): [illegible]
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: BA-53
5. Name of Driller: Revrez
6. Direction of Hole: ☑ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 6.0'
8. Depth Drilled into Rock: 14.0'
9. Total Depth of Hole: 20.0'

Elevation	Depth	Legend	Classification of Materials (Description)
			0.0' to 6.0'
			CLAY - -
			0.0' to 2.0' low plasticity, brownish-gray, stiff, moist, sandy, with scattered gravels
			2.0' to 4.0' low plasticity, brown, very stiff, moist, san slightly calcareous
10			4.0' to 6.0' becomes gray an tan, with a suggestion of bedding, occasional small lim nodules, non-calcareous
			6.0' to 15.5'
			SHALE - -
			6.0' to 13.0' badly weathere gray and tan, traces of bedde structure, moist, sandy, with pockets very silty; sand cont increases toward base
20			13.0' to 15.5' very sandy wi pockets of clayey sand, very moist
			15.5' to 20.0'
			SAND - -
			15.5' to 16.5' loose, satura no sample
			16.5' to 20.0' becomes poorl cemented, a little harder to auger, no sample
			T. D. @ 20.0' in sand

RECORD DRAWING-WO

SYM	DR. NO.	ACTION	DAT

U.S. ARMY E

DESIGNED BY: ----------
DRAWN BY: - -------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

TO ACCOMPANY FINAL FOUNDA

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' to 61.2';
ROTORE.

Hole No. -53

DRILLING LOG	DIVISION: Southwestern	INSTALLATION: Fort Worth District	SHEET 1 OF 1 SHEETS
1. AGENCY: Aquilla		10. SIZE AND TYPE OF BIT: 8" auger	
2. LOCATION (Coordinates or Station): 00		11. DATUM FOR ELEVATION SHOWN (TBM or MSL):	
3. DRILLING AGENCY: Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing title and title number): BA-53		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED 0	
5. NAME OF DRILLER: Dreyer		14. TOTAL NUMBER CORE BOXES: 0	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.		15. ELEVATION GROUND WATER: o	
7. THICKNESS OF OVERBURDEN: 6.0'		16. DATE HOLE: STARTED 2 Apr 75; COMPLETED 2 Apr 75	
8. DEPTH DRILLED INTO ROCK: 14.0'		17. ELEVATION TOP OF HOLE: 576.0	
9. TOTAL DEPTH OF HOLE: 20.0'		18. TOTAL CORE RECOVERY FOR BORING: %	
		19. SIGNATURE OF INSPECTOR: Elmer A. Dunn 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
			0.0' to 6.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 20.0' 8" auger
			0.0' to 2.0' low plasticity, brownish-gray, stiff, moist, sandy, with scattered gravels		C	**Jar samples**
			2.0' to 4.0' low plasticity, brown, very stiff, moist, sandy, slightly calcareous		D	A. 0.0' to 2.0' B. 2.0' to 4.0' C. 4.0' to 6.0' D. 6.0' to 13.0' E. 13.0' to 15.5'
	10		4.0' to 6.0' becomes gray and tan, with a suggestion of bedding, occasional small lime nodules, non-calcareous			Note: nearly all material from 15.5' to 20.0' was washed off of auger. No sample was obtained.
			6.0' to 15.5'			**Note**
			SHALE - -		E	Samples are calcareous from 0.0' to 4.0'.
			6.0' to 13.0' badly weathered, gray and tan, traces of bedded structure, moist, sandy, with pockets very silty; sand content increases toward base			*Water level Hole making water from 15.5' to 20.0'. At completion of augering, water level was at 11.8'. 24 hour check - 11.5'
	20		13.0' to 15.5' very sandy with pockets of clayey sand, very moist			**Offset Boring was offset to right of way as shown on mosaic. BA-53 was drilled to 40.0' for purposes of geophysical logging. It was drilled 10' W of BA-53. BA-53 lost water slowly below 12.0', and badly from 15.0' to 17.0'.
			15.5' to 20.0'			
			SAND - -			
			15.5' to 16.5' loose, saturated, no sample			
			16.5' to 20.0' becomes poorly cemented, a little harder to auger, no sample			
			T. D. @ 20.0' in sand			

RECORD DRAWING-WORK AS BUILT

SYM	DAC. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A-51, 52 AND 53

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. 8-23 OF
SEQUENCE NO. 128
CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 54

Hole No. 8A-54

DRILL OR LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 1 Sheets

Abilene

Corps of Engineers | 8A-54

Driller

10. Size and type of bit: 8" Auger

11. Datum for elevation shown (MSL or USL)

12. Manufacturer's designation of drill: Failing 1500

13. Total no. of overburden samples taken: Disturbed 3 | Undisturbed 0

14. Total number core boxes: 0

15. Elevation ground water: —

16. Date hole: Started 1 Apr 75 | Completed 1 Apr 75

17. Elevation top of hole: 572.3

18. Total core recovery for borings:

19. Signature of inspector:

Direction of hole: ☒ Vertical ☐ Inclined ____ deg. from vert.

5. Thickness of overburden: 5.7'

6. Depth drilled into rock: 18.8'

7. Total depth of hole: 24.5'

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Remarks
			0.0' to 5.7'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 24.5' 8" auger
			0.0' to 2.0' low to medium plasticity, brownish-gray, stiff, moist, slightly gravelly		C	**Jar samples**
			2.0' to 5.0' low plasticity, brown, very stiff, moist, gravelly, slightly sandy, with occasional small lime nodules and small shells; small pockets of soft caliche-like material at 2.5' to 5.0'		D	A. 0.0' to 2.0' B. 2.0' to 5.0' C. 5.0' to 5.7' D. 5.7' to 8.0' E. 8.0' to 13.0' F. 13.0' to 18.5'
	10		5.0' to 5.7' becomes very sandy and crumbly		E	Note: No sample from 18.5' to 24.5' as most of material was washed off of auger.
			5.7' to 6.0'			*Water level
			LIMESTONE - -		F	Hole was making water rapidly from 6.0'. At completion of augering, water level was at 4.5'. 24 hour check - 0.8'.
			gray, moderately hard, well cemented			**Note**
			6.0' to 24.5'			All samples are calcareous from 0.0' to 6.0'.
	20		SHALE - -			**Offset
			6.0' to 8.0' weathered, dark gray to black, thin-bedded, iron-stained, non-calcareous, with pockets and thin beds of saturated, clayey sand			Boring offset to right of way as indicated on mosaic. XP-54 was drilled approximately 8.0' W of 8A-54.
			8.0' to 18.5' becomes light gray and yellow-brown, with 17.0' to 17.5' a little softer			
			18.5' to 24.5' becomes more sandy and slightly harder to auger. Most of material was washed off of auger			
			T. D. in weathered shale at 24.5'			

Hole No. 8

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District

Abilene

Corps of Engineers | 8A-55

Driller

10. Size and type of bit: 8" Auger; 5" Cla

11. Datum for elevation shown (MSL or USL)

12. Manufacturer's designation of drill: Failing 1500

13. Total no. of overburden samples taken: Disturbed 3

14. Total number core boxes: 0

15. Elevation ground water: —

16. Date hole: Started 16 Apr 75

17. Elevation top of hole: 569.94'

18. Total core recovery for borings:

19. Signature of inspector: Joseph A. Shukte

Direction of hole: ☒ Vertical ☐ Inclined ____ deg. from vert.

5. Thickness of overburden: 9.0'

6. Depth drilled into rock: 32.0'

7. Total depth of hole: 41.0'

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Remarks
			0.0' to 9.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 15.0' 0.0' to 41.0'
			0.0' to 4.0' low plasticity, dark gray, very stiff, moist, silty		C	**Jar samples**
			4.0' to 6.0' becomes gray, with numerous very small lime nodules		D	A. 0.0' to 4. B. 4.0' to 6. C. 6.0' to 9. D. 9.0' to 14 E. 14.8' to 1
	10		6.0' to 9.0' low plasticity, light brown, stiff to very stiff, moist, slightly sandy		E	*Water lev
			9.0' to 16.0'			At completion of aug. 12.0'. check -
			SHALE - -			**Note**
			9.0' to 14.8' gray and tan, weathered, with some zones of soft caliche-like material at top			0.0' to 4.0' calcareous 4.0' to 9.0' 9.0' to 41.0' calcareous
			14.8' to 15.0' with numerous lenses of tan sand			3P-55 was dri E of 8A-55 fo of geophysica 3P-55 is 0.4' staked locati is based on a drill action 8A-55 is west T. D. (15.0')
	20		16.0' to 31.5'			
			SANDSTONE - -			
			brownish-gray			
			25.5' to 26.0' SHALE			
			31.5' to 41.5'			
			SHALE - -			
	30		dark gray			
			T. D. @ 41.0' in shale			
	40					

Hole No. 84-55

DRILLING LOG — Division: Southwestern

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and file number: 84-55
5. NAME OF DRILLER: Browne
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 9.0'
8. DEPTH DRILLED INTO ROCK: 32.0'
9. TOTAL DEPTH OF HOLE: 41.0'

INSTALLATION: Fort Worth District — SHEET 1 OF 1 SHEETS
10. SIZE AND TYPE OF BIT: 8" auger; 3" fishtail
11. DATUM FOR ELEVATION SHOWN (MSL or Mean):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: ▽
16. DATE HOLE: STARTED 16 Apr 75; COMPLETED 16 Apr 75
17. ELEVATION TOP OF HOLE: 565.94'
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Joseph A. Brachta

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	NO. OF CORE BOX	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0		0.0' to 9.0' CLAY - - 0.0' to 4.0' low plasticity, dark gray, very stiff, moist, silty		Jar A	**Drilling** 0.0' to 15.0' 8" auger 0.0' to 41.0' 3" fishtail
			4.0' to 6.0' becomes gray, with numerous very small lime nodules		B	**Jar samples** A. 0.0' to 4.0' B. 4.0' to 6.0' C. 6.0' to 9.0' D. 9.0' to 14.8' E. 14.8' to 15.0'
	10		6.0' to 9.0' low plasticity, light brown, stiff to very stiff, moist, slightly sandy		C	***Water level** At completion of augering, 12.0'. 48 hour check -
			9.0' to 16.0' SHALE - - 9.0' to 14.8' gray and tan, weathered, with some zones of soft caliche-like material at top		D	**Note** 0.0' to 4.0' non-calcareous 4.0' to 9.0' calcareous 9.0' to 41.0' non-calcareous
			14.8' to 15.0' with numerous lenses of tan sand		E	84-55 was drilled 10.0' E of 84-55 for purposes of geophysical logging. 84-55 is 0.4' higher than staked location. Log is based on cuttings and drill action below 15.0'. 84-55 is weathered to T. D. (15.0').
	20		16.0' to 31.5' SANDSTONE - - brownish-gray			
			25.5' to 26.0' SHALE			
			31.5' to 41.5' SHALE - - dark gray			
	30					
	40		T. D. @ 41.0' in shale			

Hole No. 84-56

DRILLING LOG — Division: Southwestern

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and file number: 84-56
5. NAME OF DRILLER: Browne
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 6.0'
8. DEPTH DRILLED INTO ROCK: 53.0'
9. TOTAL DEPTH OF HOLE: 59.0'

INSTALLATION: Fort Worth District — SHEET 2 OF 2 SHEETS
10. SIZE AND TYPE OF BIT: 8" auger; 3" fishtail
11. DATUM FOR ELEVATION SHOWN (MSL or Mean):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 3; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: ▽
16. DATE HOLE: STARTED 2 Apr 75; COMPLETED 2 Apr 75
17. ELEVATION TOP OF HOLE: 561.3
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Joseph A. Brachta

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	NO. OF CORE BOX	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	0		0.0' to 6.0' CLAY - - 0.0' to 2.0' low plasticity, dark brown, stiff, moist, very sandy		Jar A	**Drilling** 0.0' to 14.5' 8" auger 0.0' to 59.0' 3" fishtail
			2.0' to 3.0' low plasticity, yellowish-brown, hard, sandy, moist		B	**Jar samples** A. 0.0' to 2.0' B. 2.0' to 3.0' C. 3.0' to 6.0' D. 6.0' to 8.5' E. 8.5' to 10.5' F. 10.5' to 14.5'
			3.0' to 6.0' low plasticity, yellowish-brown and red-brown, medium stiff, moist, very sandy and silty, with traces of bedding		C	***Water level** Hole was making water rapidly from 11.5' to 14.5'.
	10		6.0' to 16.0' SAND (primary) - - 6.0' to 8.5' tan, moist, non cemented, fine-grained with occasional ironstone concretions		D	**Note** 39-56 was drilled on ℄ for purposes of geophysical logging, and 84-56 was drilled 12' north. logging from 14.5' to 59.0' was done by drill response and cuttings. Weathered to 16.0'.
			8.5' to 10.5' becomes very moist		E	Jar samples A through C were relogged with the following reclassifications:
			10.5' to 16.0' becomes saturated		F	A 0.0' to 2.0' SAND: clayey to very clayey.
	20		16.0' to 59.0' SHALE - - unweathered, dark gray			B 2.0' to 3.0' SAND: very clayey.
						C 3.0' to 6.0' SAND: silty & clayey, highly weathered primary stratum.
	30					H. W. Russ
			39.0' to 39.2' claystone			
	40					
			45.5' to 45.7' claystone			
			47.0' to 47.3' claystone			
	50					
			T. D. @ 59.0' in shale			
	60					

DRILLING LOG — Division: Southwestern

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title) and file number: 84-57
5. NAME OF DRILLER: Browne
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FRO
7. THICKNESS OF OVERBURDEN: - -
8. DEPTH DRILLED INTO ROCK: - -
9. TOTAL DEPTH OF HOLE: 26.0'

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF
	0		0.0' to 20.0' CLAY - - 0.0' to 4.0' plasticity, da stiff, moist,
			4.0' to 9.0' brown, very st slightly sandy
	10		9.0' to 14.0' with occasiona nodules
			14.0' to 20.0' tan, stiff, va saturated, ver
			20.0' to 25.0' SAND - - tan, loose t silty, slightl urated
	20		25.0' to 26.0' GRAVEL - - tan, medium de saturated, wit refusal at 26.
			T. D. @ 26.0' in
	30		

RECORD DRAWING

SYMBOL NO.	ACTION

U.S. ARMY

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

TO ACCOMPANY FINAL FOUNDA

U.S. ARMY

Hole No. 8A-56

ELEVATION: Fort Worth District — SHEET 1 OF 2 SHEETS

TYPE AND TYPE OF BIT: 8" auger; 3" fishtail

DATUM FOR ELEVATION SHOWN (TBM or MSL):

MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
	3	0

TOTAL NUMBER CORE BOXES: 0

ELEVATION GROUND WATER: *

DATE HOLE	STARTED	COMPLETED
	2 Apr 75	2 Apr 75

ELEVATION TOP OF HOLE: 562.3

TOTAL CORE RECOVERY FOR BORING: %

SIGNATURE OF INSPECTOR: [illegible]

CORE RECOVERY %	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	Jar A	**Drilling**
	B	0.0' to 14.5' 8" auger 0.0' to 59.0' 3" fishtail
	C	**Jar samples**
	D	A. 0.0' to 2.0' B. 2.0' to 3.0' C. 3.0' to 6.0' D. 6.0' to 8.5' E. 8.5' to 10.5' F. 10.5' to 14.5'
	E	*Water level
	F	Hole was making water rapidly from 11.5' to 14.5'.
		Note
		3F-56 was drilled on ℄ for purposes of geophysical logging, and 8A-56 was drilled 12' north. Logging from 14.5' to 59.0' was done by drill response and cuttings. Weathered to 16.0'.
		Jar samples A through C were relogged with the following reclassifications: 0.0 to 2.0' SAND: clayey to very clayey. 2.0 to 3.0' SAND: very clayey. 3.0 to 6.0' SAND: silty & clayey, highly weathered primary stratum. H. W. Russa

Hole No. 8A3F-57

DRILLING LOG — DIVISION: Southwestern — INSTALLATION: rt Worth District — SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Station): ℄
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title and file number): 8A3F-57
5. NAME OF DRILLER: Bryner
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: - -
8. DEPTH DRILLED INTO ROCK: - -
9. TOTAL DEPTH OF HOLE: 26.0'
10. SIZE AND TYPE OF BIT: 8" auger; 3" fishtail
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 6; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: *
16. DATE HOLE: STARTED 9 June 75; COMPLETED 9 June 75
17. ELEVATION TOP OF HOLE: 501.3
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: [illegible]

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 20.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 26.0' 8" auger refusal at 26.0'
			0.0' to 4.0' low to medium plasticity, dark brown, very stiff, moist, silty		C	**Jar samples**
			4.0' to 9.0' low plasticity, brown, very stiff, moist, slightly sandy		D	A. 0.0' to 4.0' B. 4.0' to 9.0' C. 9.0' to 14.0' D. 14.0' to 20.0' E. 20.0' to 25.0' F. 25.0' to 26.0'
	10		9.0' to 14.0' becomes sandy, with occasional small lime nodules		E	*Water level
			14.0' to 20.0' low plasticity, tan, stiff, very moist to saturated, very sandy		F	Hole making water at 20.0'; at completion of augering, water level at 12.0'; 24 hour check 13.0'.
			20.0' to 25.0'			**Offset
	20		SAND - -			Boring was offset approximately 70.0', as shown on mosaic. New elevation will be determined.
			tan, loose to medium dense, silty, slightly clayey, saturated			**Note**
			25.0' to 26.0'			All samples are calcareous. 3F-57 was drilled adjacent to auger hole for purposes of geophysical logging.
			GRAVEL - -			*This is a relogging of 8A3F-57.
			tan, medium dense, well graded, saturated, with cobbles to 2"; refusal at 26.0'			The clay in jars A to C has dried out somewhat.
	30		T. D. @ 26.0' in gravel			

RECORD DRAWING-WORK AS BUILT

SYM	DG NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---------
DRAWN BY: ---------
CHECKED BY: ---------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A-54, 55, 56 AND 8A3F-57

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0015
DRAWING NUMBER
SHEET NO. B-24 OF
SEQUENCE NO. 129

CONTR. NO. DACW 63-81-C-0015

CORPS OF ENGINEERS

(1)

Hole No. 63F-58

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 1 sheets

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: 63F-58
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 4.5'
8. Depth Drilled into Rock: 2.5'
9. Total Depth of Hole: 7.0'
10. Size and Type of Bit: 8" auger; 3" fishtail
11. Datum for Elevation Shown (TBM or MSL):
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed 4; Disturbed 0
14. Total Number Core Boxes: 0
15. Elevation Ground Water: o
16. Date Hole: Started 19 May 75; Completed 19 May 75
17. Elevation Top of Hole: 518.2 ±
18. Total Core Recovery for Borings: %
19. Signature of Inspector: Harold C. Thurmond

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 2.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 7.0' 8" auger
			0.0' to 1.0' low plasticity, brown, stiff, moist, sandy, with small lime nodules		C	0.0' to 71.0' 3" fishtail
			1.0' to 2.0' with numerous small pockets of soft, caliche-like material		D	**Jar samples**
	10		2.0' to 4.5'		F	A. 0.0' to 1.0'
			SAND - -		F	B. 1.0' to 2.0'
			2.0' to 3.0' tan, medium dense, moist, clayey			C. 2.0' to 3.0'
			3.0' to 4.5' becomes gravelly, well graded, to 1"			D. 3.0' to 4.5'
			4.5' to 7.0'			E. 4.5' to 6.0'
			SHALE - -			F. 6.0' to 7.0'
			4.5' to 6.0' tan and gray, badly weathered, reworked with sand in upper portion, numerous ironstone nodules, calcareous			*Water level No water encountered in augering. 24 hour check - dry.
			6.0' to 7.0' gray, weathered, non-calcareous, with ironstone			**Elevation Elevation of staked location, 518.24'; but farmer had plowed up stake.
			T. D. @ 7.0' in shale			**Note** 0.0' to 6.0' calcareous 6.0' to 7.0' non-calcareous 4.5' to 7.0' weathered Hole was offset 7.0' S of fishtail hole, which was drilled 71.0' for purposes of geophysical logging.

Hole No. 63F-59

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 1 sheets

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: 63F-59
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 6.0'
8. Depth Drilled into Rock: 1.0'
9. Total Depth of Hole: 7.0'
10. Size and Type of Bit: 8" auger; 4" rockbit
11. Datum for Elevation Shown (TBM or MSL):
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed 4; Disturbed 0
14. Total Number Core Boxes: 0
15. Elevation Ground Water: o
16. Date Hole: Started 21 Apr 75; Completed 22 Apr 7
17. Elevation Top of Hole: 532.5
18. Total Core Recovery for Borings:
19. Signature of Inspector: Harold C. Thurmond

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0' to 6.0'		B	**Drilling**
			CLAY - -		C	0.0' to 7.0' 8" aug
			0.0' to 0.8' low plasticity, brown, moist, sandy, crumbly, non-calcareous, with very small lime nodules		D	**Jar samples**
	6		0.8' to 3.5' low plasticity, brown, hard, moist, slightly sandy, slightly calcareous		E	A. 0.0' to 0.8' B. 0.8' to 3.5' C. 3.5' to 4.5' D. 4.5' to 6.0' E. 6.0' to 7.0'
			3.5' to 4.5' becomes gravelly			*Water level
			4.5' to 6.0' low plasticity, reddish-brown, very stiff, moist, sandy and gravelly, calcareous			24 hour check - dry.
			6.0' to 7.0'			**Note**
			SHALE - -			Hole was offset E, 6 and drilled with a 4 rockbit to 91.0' for purposes of geophysi logging.
			weathered, gray and tan, non-calcareous			
			T. D. @ 7.0' in shale			

Hole No. 64SF-59

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 1 Sheets

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and Site number: 64SF-59
5. Name of Driller:
6. Direction of Hole: ☐ Vertical ☐ Inclined ____ Deg. From Vert.
7. Thickness of Overburden: 6.0'
8. Depth Drilled into Rock: 1.0'
9. Total Depth of Hole: 7.0'
10. Size and Type of Bit: 4" rockbit
11. Datum for Elevation Shown (TBM or MSL):
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 4; Undisturbed 0
14. Total Number Core Boxes: 0
15. Elevation Ground Water: ∅
16. Date Hole: Started 21 Apr 75; Completed 22 Apr 75
17. Elevation Top of Hole: 532.5
18. Total Core Recovery for Boring: %
19. Signature of Inspector: Joseph O Brackett

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 6.0' CLAY - - 0.0' to 0.8' low plasticity, brown, moist, sandy, crumbly, non-calcareous, with very small lime nodules 0.8' to 3.5' low plasticity, brown, hard, moist, slightly sandy, slightly calcareous 3.5' to 4.5' becomes gravelly 4.5' to 6.0' low plasticity, reddish-brown, very stiff, moist, sandy and gravelly, calcareous 6.0' to 7.0' SHALE - - weathered, gray and tan, non-calcareous T. D. @ 7.0' in shale		A B C D E	**Drilling** 0.0' to 7.0' 8" auger **Jar Samples** A. 0.0' to 0.8' B. 0.8' to 3.5' C. 3.5' to 4.5' D. 4.5' to 6.0' E. 6.0' to 7.0' **Water Level** 24 hour check - dry. **Note** Hole was offset E, 6.0' and drilled with a 4" rockbit to 91.0' for purposes of geophysical logging.

Hole No. 36A-60

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 2 Sheets

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and Site number: 36A-60
5. Name of Driller: Martin and Martin
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ Deg. From Vert.
7. Thickness of Overburden: 35.5'
8. Depth Drilled into Rock: 19.0'
9. Total Depth of Hole: 54.5'
10. Size and Type of Bit: 42" auger
11. Datum for Elevation Shown (TBM or MSL):
12. Manufacturer's Designation of Drill:
13. Total No. of Overburden Samples Taken: Disturbed 0; Undisturbed 0
14. Total Number Core Boxes: 0
15. Elevation Ground Water: ∅
16. Date Hole: Started 12 May 75; Completed 13 May 75
17. Elevation Top of Hole: 538.52'
18. Total Core Recovery for Boring: %
19. Signature of Inspector: Joseph O Brackett

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 19.0' CLAY - - low plasticity, brown, sandy 19.0' to 27.0' SAND - - tan, loose to medium dense, clayey at top, moist 27.0' to 35.5' GRAVEL and SAND - - difficult to pick out contacts on auger; gravel dark brown, well graded, very moist to saturated at 34.0'; sand - tan, gravelly 35.5' to 54.5' SHALE - - dark gray, unweathered, non-calcareous, with numerous thin lenses of sandstone, and nodules of clay-ironstone 39.9' clay-ironstone 44.7' to 44.8' clay-ironstone nodules 54.5' SANDSTONE - - well cemented, could not penetrate with auger or dry barrel T. D. @ 54.5' in sandstone			**Drilling** 0.0' to 54.5' 42" auger refusal at 54.5' 54.5' 42" dry barrel refusal at 54.5' 0.0' to 36.0' casing **Water Level** Hole was making water from 34.0' to 35.5'. 24 hour check (before casing pulled) - dry. **Note** Hole was logged by cuttings, drill action, and visual inspection. 0.0' to 35.5' calcareous 35.5' to 54.5' non-calcareous Primary is unweathered

DRILLING LOG — Division: Southwestern

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and Site number: 36A-60
5. Name of Driller: Martin and Martin
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ Deg.
7. Thickness of Overburden: 5.5'
8. Depth Drilled into Rock: 36.5'
9. Total Depth of Hole: 42.0'

Elevation	Depth	Legend	Classification of Materials (Description)
			0.0' to 5.5' CLAY - - low plastici stiff, moist nodules and caliche-like become more 5.5' to 13.1' SHALE - - tan, calcare interbedded of sand 13.1' to 14.0' LIMESTONE - - light gray, cemented, diff 14.0' to 15.2' SHALE - - tan and gray, with zones a 15.2' to 16.5' SANDSTONE - - brown, poorly with numerou shale 16.5' to 25.9' SHALE - - 16.5' to 24.5 weathered, w fractures fr 24.9' to 25.5 unweathered 25.9' to 35.0' SANDSTONE - - 25.9' to 32.1 poorly cemen with shale 32.1' to 35.0 thered 35.0' to 37.0' SHALE - - dark gray 37.0' to 42.0' SANDSTONE - - gray, poorly T. D. @ 42.0'

RECORD DRA

SYM	DO. NO.	ACTIO

U.S. A

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

TO ACCOMPANY FINAL F

U.S. ARMY

Hole No. 36A-60

North District — SHEET 1 OF 2 SHEETS

TYPE OF BIT 4.2" OD/ID

E ELEVATION SHOWN (FT/M or MSL)

NDER'S DESIGNATION OF DRILL

OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
	0	0

MBER CORE BOXES 0

N GROUND WATER —

DATE	STARTED	COMPLETED
	12 May 75	13 May 75

N TOP OF HOLE 538.52'

NE RECOVERY FOR BORING %

E OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			Drilling: 0.0' to 54.5' 42" auger refusal at 54.5' 54.5' 42" dry barrel refusal at 54.5' 0.0' to 36.0' casing ***Water level** Hole was making water from 34.0' to 35.5'. 24 hour check (before casing pulled) - dry. **Note** Hole was logged by cuttings, drill action, and visual inspection. 0.0' to 35.5' calcareous 35.5' to 54.5' non-calcareous Primary is unweathered			

Hole No. 36A-61

DRILLING LOG — DIVISION: Southwestern — INSTALLATION: Fort Worth District — SHEET 1 OF 2 SHEETS

1. PROJECT: Aquilla
2. LOCATION (Coordinates or Stations)
3. DRILLING AGENCY: Corps of Engineers
4. HOLE NO. (As shown on drawing title and file number): 36A-60
5. NAME OF DRILLER: Martin and Martin
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 5.5'
8. DEPTH DRILLED INTO ROCK: 36.5'
9. TOTAL DEPTH OF HOLE: 42.0'
10. SIZE AND TYPE OF BIT: 42" auger
11. DATUM FOR ELEVATION SHOWN (FT/M or MSL)
12. MANUFACTURER'S DESIGNATION OF DRILL
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: —
16. DATE HOLE: STARTED 12 May 75; COMPLETED 12 May 75
17. ELEVATION TOP OF HOLE: 592.19
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Joseph M. Driscoll Jr.

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 5.5' CLAY - - low plasticity, brown, very stiff, moist, with small lime nodules and pockets of soft caliche-like material which become more numerous downward			**Drilling:** 0.0' to 42.0' 42" auger 0.0' to 8.0' casing ***Water level** Hole is making water at 30.0'. 18 hour check - 23.3' **Note** Hole was logged by cuttings and visual inspection. 0.0' to 14.0' calcareous 14.0' to 42.0' non-calcareous 5.5' to 24.9' weathered 24.9' to 25.9' unweathered 25.9' to 32.1' weathered 32.1' to 42.0' unweathered
	10		5.5' to 13.1' SHALE - - tan, calcareous, weathered, interbedded with thin beds of sand			
			13.1' to 14.0' LIMESTONE - - light gray, sandy, well cemented, difficult to auger			
			14.0' to 15.2' SHALE - - tan and gray, weathered, with zones sandy, non-calcareous			
	20		15.2' to 16.5' SANDSTONE - - brown, poorly cemented, with numerous thin beds of shale			
			16.5' to 25.9' SHALE - - 16.5' to 24.9' tan and gray, weathered, with some tight fractures from 20.0' to 20.7'			
	30		24.9' to 25.9' dark gray, unweathered			
			25.9' to 32.1' SANDSTONE - - 25.9' to 32.1' tan, weathered, poorly cemented, interbedded with shale			
	40					
	42		32.1' to 35.0' gray, unweathered			
			35.0' to 37.0' SHALE - dark gray			
			37.0' to 42.0' SANDSTONE - - gray, poorly cemented			
			T. D. @ 42.0' in sandstone			

RECORD DRAWING-WORK AS BUILT

SYM	DO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------
ENGINEER:

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
6A3F-58, 59, 36A-60 AND 61

INV. NO. DACW63-80-B-0086 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035 SEQUENCE NO. 130
DRAWING NUMBER SHEET NO. 8-25 OF

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 58

CORPS OF ENGINEERS

Hole No. 35A-62

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District | Sheet 1 of 2 sheets

1. Project: Aquilla
2. Location (Coordinates or Station): Aquilla
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 35A-62
5. Name of Driller: Brewer
6. Direction of Hole: [X] Vertical [ ] Inclined ____ deg. from vert.
7. Thickness of Overburden: ±1.0'
8. Depth Drilled into Rock: ±58.0'
9. Total Depth of Hole: 59.0'
10. Size and Type of Bit: 42" Auger
11. Datum for Elevation Shown (USGS or USC&GS): [illegible]
12. Manufacturer's Designation of Drill:
13. Total No. of Overburden Samples Taken: Disturbed 0; Undisturbed 0
14. Total Number Core Boxes: 0
15. Elevation Ground Water: 0
16. Date Hole: Started 13 May 75; Completed 13 May 75
17. Elevation Top of Hole: 536.45'
18. Total Core Recovery for Boring: %
19. Signature of Inspector: Joseph A. Ohrtman

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0 to ±1.0'			**Drilling**
			CLAY - -			0.0' to 59.0' 42" auger refusal at 59.0'
			±1.0' to 19.3'			0.0' to 8.0' caving
			SHALE - -			**Water Level**
			weathered, light gray and tan, non-calcareous			Hole was dry to 59.0' during augering, except it was seeping slightly at 59.0'. Very little water was in the hole after 24 hours.
			19.3' to 25.3'			**Note**
	10		SANDSTONE - -			Hole was logged by drill action and visual inspection.
			gray to red, weathered			0.0' to 53.8' non-calcareous
			25.3' to 53.8'			53.8' to 55.0' mostly calcareous
			SHALE - -			1.0' to 25.3' weathered
			dark gray, unweathered, with some thin lenses of sandstone and siltstone, and nodules of clay-ironstone			25.3' to T. D. unweathered
			25.8' to 26.3' siltstone			
	20		40.0' to 40.6' with numerous siltstone lenses			
			53.8' to 55.0'			
			SANDSTONE - -			
			moderately cemented, calcareous, with limy zones			
			55.0' to 59.0'			
			could not examine, but appears to be sandstone and shale interbedded			
	30		59.0'			
			LIMESTONE (probable) - -			
			well cemented, could not penetrate with auger			
			T. D. @ 59.0' in limestone			
	50					
	60					

Hole No. [illegible]

DRILLING LOG | Division: Southwestern | Installation: Fort Worth District

1. Project: Aquilla
2. Location (Coordinates or Station):
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 35A-62
5. Name of Driller: Brewer
6. Direction of Hole: [X] Vertical [ ] Inclined ____ deg. from vert.
7. Thickness of Overburden: 16.5'
8. Depth Drilled into Rock: 1.0'
9. Total Depth of Hole: 17.5'
10. Size and Type of Bit: 2" CW GC
11. Datum for Elevation Shown (USGS or USC&GS): [illegible]
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 7
14. Total Number Core Boxes: 0
15. Elevation Ground Water:
16. Date Hole: Started 10 June 75; [illegible]
17. Elevation Top of Hole: 506.2
18. Total Core Recovery for Boring:
19. Signature of Inspector: Joseph A. Ohrtman

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 16.5'		Jar A	**Drill**
			CLAY - -			0.0' to 17.5' refusal a
			0.0' to 4.0' low plasticity, dark brown, stiff, moist, slightly sandy, slightly calcareous, with small lime nodules		B	**Jar sam**
			4.0' to 9.0' becomes brown, very stiff, non-calcareous			A. 0.0' to B. 4.0' to C. 9.0' to D. 11.0' to E. 13.5' to F. 14.0' to G. 15.5' to H. 16.5' to
	10		9.0' to 11.0' low plasticity, brown, hard, slightly moist to moist, slightly gravelly		C	
			11.0' to 15.5' low plasticity, light brown, very stiff, moist, slightly gravelly, with several small cobbles		D	
					E	**Not**
					F	0.0' to 4.0'
			13.5' to 14.0' SAND, tan, medium dense, slightly moist, silty and clayey, very fine		G	4.0' to 15.5' careous 15.5' to 16
					H	16.5' to 17 careous
			15.5' to 16.5' low plasticity, grayish-brown, very stiff, moist, very sandy, calcareous			Hole was lo examination ples. No w information
	20		16.5' to 17.5'			
			SANDSTONE - -			
			tan, very fine, silty, slightly clayey; refusal at 17.5'			
			T. D. @ 17.5' in sandstone			

Hole No. BA3-63

DRILLING LOG

Division	Southeastern
Installation	Fort Worth District
Project	Aquilla
Location (Coordinates or Station)	
Drilling Agency	Corps of Engineers
Hole No. (As shown on drawing title and file number)	BA3-63
Name of Driller	Brewer
Direction of Hole	☒ Vertical ☐ Inclined ____ deg. from vert.
Thickness of Overburden	16.5'
Depth Drilled into Rock	1.0'
Total Depth of Hole	17.5'
Size and Type of Bit	2¼" Core
Datum for Elevation Shown (MSL or Other)	Dallas 1500
Manufacturer's Designation of Drill	Dallas 1500
Total No. of Overburden Samples Taken	Undisturbed: 7; Disturbed: 0
Total Number Core Boxes	0
Elevation Ground Water	
Date Hole	Started: 10 June 75; Completed: 10 June 75
Elevation Top of Hole	506.2
Total Core Recovery for Boring	
Signature of Inspector	Joseph A. Shrall

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 16.5'		Jar A	**Drilling**
			CLAY - -			0.0' to 17.5' 8" auger refusal at 17.5'
			0.0' to 4.0' low plasticity, dark brown, stiff, moist, slightly sandy, slightly calcareous, with small lime nodules		B	**Jar samples**
			4.0' to 9.0' becomes brown, very stiff, non-calcareous			A. 0.0' to 4.0' B. 4.0' to 9.0' C. 9.0' to 11.0' D. 11.0' to 13.5' E. 13.5' to 14.0' F. 14.0' to 15.5' G. 15.5' to 16.5' H. 16.5' to 17.5'
10			9.0' to 11.0' low plasticity, brown, hard, slightly moist to moist, slightly gravelly		C	
			11.0' to 15.5' low plasticity, light brown, very stiff, moist, slightly gravelly, with several small cobbles		D	**Note**
					E	0.0' to 4.0' calcareous 4.0' to 15.5' non-calcareous 15.5' to 16.5' calcareous 16.5' to 17.5' non-calcareous
			13.5' to 14.0' SAND, tan, medium dense, slightly moist, silty and clayey, very fine		F	
					G	
			15.5' to 16.5' low plasticity, grayish-brown, very stiff, moist, very sandy, calcareous		H	Hole was logged from examination of jar samples. No water level information is available.
20			16.5' to 17.5'			
			SANDSTONE - -			
			tan, very fine, silty, slightly clayey; refusal at 17.5'			
			T. D. @ 17.5' in sandstone			

Hole No. BA3-64

DRILLING LOG

Division	Southeastern
Installation	Fort Worth District
Project	Aquilla
Location (Coordinates or Station)	
Drilling Agency	Corps of Engineers
Hole No. (As shown on drawing title and file number)	BA3-64
Name of Driller	Brewer
Direction of Hole	☒ Vertical ☐ Inclined ____ deg. from vert.
Thickness of Overburden	3.0'
Depth Drilled into Rock	7.0'
Total Depth of Hole	10.0'
Size and Type of Bit	2¼" Core
Datum for Elevation Shown (MSL or Other)	Dallas 1500
Manufacturer's Designation of Drill	Dallas 1500
Total No. of Overburden Samples Taken	Undisturbed: 5; Disturbed: 0
Total Number Core Boxes	0
Elevation Ground Water	
Date Hole	Started: 10 June 75; Completed: 10 June 75
Elevation Top of Hole	509.0
Total Core Recovery for Boring	
Signature of Inspector	Joseph A. Shrall

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 3.0'		Jar A	**Drilling**
			CLAY - -		B	0.0' to 10.0' 8" auger refusal at 10.0'
			0.0' to 0.5' low plasticity, brown, moist, crumbly, very sandy and silty		C	**Jar samples**
			0.5' to 3.0' medium plasticity, reddish-brown, stiff, moist		D	A. 0.0' to 0.5' B. 0.5' to 3.0' C. 3.0' to 4.0' D. 4.0' to 5.0' E. 5.0' to 8.5' F. 8.5' to 10.0'
			3.0' to 8.5'		E	
10			SHALE - -			**Note**
			3.0' to 4.0' red and gray mottled		F	All samples are non-calcareous. Hole was logged from examination of jar samples. No water level information is available. Weathered to T. D.
			4.0' to 5.0' light gray, with lenses of sandstone			
			5.0' to 8.5' light gray			
			8.5' to 10.0'			
			SANDSTONE - -			
			tan, with shale seams; refusal at 10.0'			
			T. D. @ 10.0' in sandstone			

DRILLING LOG

Division	Southwestern
Project	
Location (Coordinates or Station)	
Drilling Agency	Corps of Engineers
Hole No. (As shown on drawing title and file number)	BA3-65
Name of Driller	Brewer
Direction of Hole	☒ Vertical ☐ Inclined ____ deg. from vert.
Thickness of Overburden	12.0'
Depth Drilled into Rock	0.0'
Total Depth of Hole	12.0'

Elevation	Depth	Legend	Classification of Materials (Description)
			0.0' to 8.0'
			CLAY - -
			0.0' to 4.0' low plasticity, gray, very stiff, with small, lime
			4.0' to 5.5' low plasticity, gray, with nodul
			5.5' to 8.0' low plasticity, gray, with some moist, sandy
10			8.0' to 10.0'
			SAND - -
			gray with some t medium dense, ve clayey
			10.0' to 12.0'
			GRAVEL - -
			tan, loose, natu graded, clayey,
			12.0'
			SANDSTONE - -
			well cemented, c with auger
			T. D. @ 12.0' in s

RECORD DRAWING-WO

SYM	DO. NO.	ACTION	DATE

U.S. ARMY E

DESIGNED BY: ----------

DRAWN BY: ----------

CHECKED BY: ----------

SUBMITTED BY: ----------

ENGINEER:

TO ACCOMPANY FINAL FOUNDATIO

Hole No. 8 3F-4

Southwestern	INSTALLATION: Ft. Worth District	SHEET 1 OF 1 SHEETS
	10. SIZE AND TYPE OF BIT: NX Wire	
	11. DATUM FOR ELEVATION SHOWN (TBM or MSL):	
	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
8A3 -64	13. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED 2 / UNDISTURBED 0	
	14. TOTAL NUMBER CORE BOXES: 0	
	15. ELEVATION GROUND WATER:	
DEG. FROM VERT.	16. DATE HOLE: STARTED 10 June 75 / COMPLETED 10 June 75	
3.0'	17. ELEVATION TOP OF HOLE: 509.0	
7.0'	18. TOTAL CORE RECOVERY FOR BORING:	
10.0'	19. SIGNATURE OF INSPECTOR: Orval R. Shuttle	

CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		Jar A	
0.0' to 3.0'		B	Drilling
CLAY - -		C	0.0' to 10.0' 8" auger refusal at 10.0'
0.0' to 0.5' low plasticity, brown, moist, crumbly, very sandy and silty		D	Jar samples
0.5' to 3.0' medium plasticity, reddish-brown, stiff, moist		E	A. 0.0' to 0.5' B. 0.5' to 3.0' C. 3.0' to 4.0' D. 4.0' to 5.0' E. 5.0' to 8.5' F. 8.5' to 10.0'
3.0' to 8.5'		F	
SHALE - -			Note
3.0' to 4.0' red and gray mottled			All samples are non-calcareous. Hole was logged from examination of jar samples. No water level information is available. Weathered to T. D.
4.0' to 5.0' light gray, with lenses of sandstone			
5.0' to 8.5' light gray			
8.5' to 10.0'			
SANDSTONE - -			
tan, with shale seams; refusal at 10.0'			
T. D. @ 10.0' in sandstone			

Hole No. [illegible]

DRILLING LOG	DIVISION: Southwestern	INSTALLATION: [illegible]
1. PROJECT: Aquilla	10. SIZE AND TYPE OF BIT: [illegible]	
2. LOCATION (Coordinates or Stations)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL):	
3. DRILLING AGENCY: Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500	
4. HOLE NO. (As shown on drawing title and file number): 8A3 -65	13. TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED 5 / UNDISTURBED [illegible]	
5. NAME OF DRILLER: Brewer	14. TOTAL NUMBER CORE BOXES: 0	
6. DIRECTION OF HOLE: (X) VERTICAL ( ) INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER: *	
7. THICKNESS OF OVERBURDEN: 12.0'	16. DATE HOLE: STARTED 24 June 75 / COMPLETED 25 June 75	
8. DEPTH DRILLED INTO ROCK: 0.0'	17. ELEVATION TOP OF HOLE: 514.6'	
9. TOTAL DEPTH OF HOLE: 12.0'	18. TOTAL CORE RECOVERY FOR BORING:	
	19. SIGNATURE OF INSPECTOR: Orval R. Shuttle	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 8.0'		Jar A	Drilling
			CLAY - -		B	0.0' to 12.0' 8" auger refusal at 12.0'
			0.0' to 4.0' low plasticity, gray, very stiff, moist, silty, with small, lime nodules		C	Jar samples
			4.0' to 5.5' becomes brownish-gray, with nodules to ½"		D	A. 0.0' to 4.0' B. 4.0' to 5.5' C. 5.5' to 8.0' D. 8.0' to 10.0' E. 10.0' to 12.0'
	10		5.5' to 8.0' low plasticity, gray, with some tan, very stiff, moist, sandy		E	*Water Level
			8.0' to 10.0'			Water level at 9.0' at completion of augering.
			SAND - -			Note
			gray with some tan, loose to medium dense, very moist, clayey			B-65 was drilled 7.0' W of auger hole for purposes of geophysical logging. Elevations are the same. All samples are calcareous. See drillers notes on electric log.
			10.0' to 12.0'			
			GRAVEL - -			
			tan, loose, saturated, well graded, clayey, to 1½"			
			12.0'			
			SANDSTONE - -			
			well cemented, could not cut with auger			
			T. D. @ 12.0' in sandstone			

RECORD DRAWING-WORK AS BUILT

SYM	DO NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ---------
DRAWN BY: ---------
CHECKED BY: ---------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
36A-62, 8A3F-63, 64 & 65

SUBMITTED BY:
ENGINEER:

INV. NO. DACW63-80-B-0088 DATED: AUG 1980
CONTR. NO. DACW63-81-C-0095
DRAWING NUMBER
SHEET NO. B-26 OF
SEQUENCE NO. 131

CO. FILE NO. DACW63-81-C-0095

CORPS OF ENGINEERS

Hole No. BA6C-66

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 2 sheets

1. Project: Aquilla
2. Location (Coordinates or Station): —
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and file number: BA6C-66
5. Name of Driller: Proctor
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 34.0'
8. Depth Drilled into Rock: 25.0'
9. Total Depth of Hole: 59.0'
10. Size and Type of Bit: 6" auger; 6" core
11. Datum for Elevation Shown (TBM or MSL): —
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 11; Undisturbed 0
14. Total Number Core Boxes: 5
15. Elevation Ground Water: —
16. Date Hole: Started 16 June 75; Completed 18 June 75
17. Elevation Top of Hole: 536.9
18. Total Core Recovery for Boring: 83%
19. Signature of Inspector: Donald A. Shuttle

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc.; if applicable)
					36A	
			0.0' to 25.0'		B	**Drilling**
			CLAY - -			0.0' to 32.5' 8" auger
			0.0' to 0.5' low plasticity, dark brown, hard, slightly moist, slightly sandy and gravelly		C	32.5' to 59.0' 6" core
			0.5' to 4.0' becomes very stiff, moist, with small lime nodules and occasional pockets of soft, caliche-like material		D	**Jar samples**
			4.0' to 6.0' becomes brown, with numerous nodules		E	A. 0.0' to 0.5' B. 0.5' to 4.0' C. 4.0' to 6.0' D. 6.0' to 8.5' E. 8.5' to 13.5' F. 13.5' to 18.0' G. 18.0' to 22.0' H. 22.0' to 25.0' I. 25.0' to 26.0' J. 26.0' to 31.0' K. 31.0' to 34.0'
			6.0' to 8.5' low plasticity, brown with light brown streaks, very stiff, moist, sandy		F	**Corton samples** 1. 43.0' to 43.9' 2. 57.7' to 58.6'
			8.5' to 22.0' becomes very sandy, crumbly, with occasional lime nodules in lower 4'		G	**Water level** Hole was not bailed; 24 hour check - 28.9'
			22.0' to 25.0' low plasticity, tan with some gray, very stiff, moist, sandy		H	**Note** 0.0' to 34.0' calcareous 34.0' to 58.6' non-calcareous, except well cemented sandstone beds Primary is unweathered. Well cemented sandstone of 56.4' to 57.8', BA6C-44, was not encountered in this boring. 3F-66 was drilled 7.5' N of BA6C-66 for purpose of geophysical logging. It was drilled to 81.0'. 3F-66
			25.0' to 26.0'		I	
			SAND - -		J	
			tan with some gray, medium dense, moist, fine, silty, and slightly clayey			
			26.0' to 34.0'			
			GRAVEL - -			
			26.0' to 31.0' tan, medium dense, well graded, to 3/4", saturated			
			31.0' to 34.0' with numerous cobbles to 4"	32.5	K	
			34.0' to 58.6'	L 7.0	34.0	
			SHALE - -	34.0 L 11.2	Box 1	
			34.0' to 41.2' unweathered, gray, sandy, with occasional beds of sandstone; much core loss in this zone due to fall-in from gravel above	36.0 L 4.0		
				L 0.8		
				40.0	41.5	
			37.5' to 37.7' SANDSTONE, light gray and gray, partly calcareous, well cemented	6 0.8		
				42.0 L 0.7	2	
			37.7' to 37.9' clay-ironstone, light brown, hard			
			38.0' to 40.0' two intersecting, tight, low angle joints	46.0 L 0.0	3	
			41.0' to 41.2' SANDSTONE light gray, well cemented, calcareous	51.0	50.3	
			41.2' to 46.8' waxy, dark gray		4	
			42.6' to 42.8' clay-ironstone, brown	L 0.2	54.1	
			43.9' to 44.8' with tight, low angle, parralel joints, 0.1' apart, which tend to open upon drying. Surfaces have slickensides	56.0	5	
			45.6' to 45.9' 45° tight joint	59.0	58.6	T. D. @ 58.6' in shale
			46.8' to 54.6' with numerous pockets, lenses, and thin beds of poorly cemented light gray, non-calcareous sandstone, less than 0.2' thick			
			47.7' to 47.8'; 48.0' to 48.2' SANDSTONE, moderately cemented, light gray, calcareous			
			54.6' to 58.6' waxy			

Hole No. BA6C-67

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District

1. Project: Aquilla
2. Location (Coordinates or Station): —
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and file number: BA6C-67
5. Name of Driller: Proctor
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 34.0'
8. Depth Drilled into Rock: 22.5'
9. Total Depth of Hole: 56.5'
10. Size and Type of Bit: 8" auger; 6"
11. Datum for Elevation Shown (TBM or MSL): —
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed 0
14. Total Number Core Boxes: 5
15. Elevation Ground Water: —
16. Date Hole: Started 19 June 75
17. Elevation Top of Hole: 536.71'
18. Total Core Recovery for Boring: 92
19. Signature of Inspector: Donald A. Shuttle

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc.; if applicable)
						Drillin
						0.0' to 32.5'
						32.5' to 56.5
						Samples
						No samples we
						Note
						Primary was except severa lenses. Over calcareous. weathering at BA6C-67 was l locate well c sandstone bed 57.8' of BA6C was not press 67 was drille of BA6C-36 an of 3F-67. 3 drilled to 81 purposes of g logging.
			32.5' to 33.7'			
			Lost			
			33.7' to 34.0'			
			SANDSTONE - -			
			well cemented, conglomeritic, with several pebbles of iron-stone, and pyrite, calcareous			
			34.0' to 35.3'			
			Lost			
			35.3' to 53.3'			
			SHALE - -		37.5	
			35.3' to 37.1' tan and gray, weathered, mostly tan at top to mostly gray at base, sandy with numerous lenses of sandstone	L 1.2 34.0 L 1.7	Box 1	
			36.3' to 36.4' SANDSTONE, moderately cemented, calcareous	38.0 L 0.1	38.5	
			37.1' to 40.5' dark gray, unweathered, with thin seams of poorly cemented, silty sandstone, and occasional lenses of clay-ironstone	42.0 L 0.1	2	
			40.3' to 40.5' SANDSTONE, light brown, well cemented, calcareous	46.0 L 0.8	3	
			40.5' to 46.5' waxy, with several lenses of clay-ironstone			
			40.9' to 41.2' low angle, tight, poorly developped, fractures, which open upon drying	50.5 6 0.2	4	
			42.2' fracture, as above	53.5		
			44.6' to 45.9' with several low angle to 45° slickensided fractures, as above	L 0.5 53.5	5	
			46.5' to 55.2' with numerous seams and lenses of poorly cemented sandstone			
			47.6' to 47.7' SANDSTONE, moderately cemented, calcareous			
			50.4' low angle, tight fracture, with no slickensides			
			53.6' to 53.8'; 55.0' to 55.2' SANDSTONE, well cemented, tan, calcareous			
			54.4' to 54.9' very silty			
			55.2' to 55.8' waxy			
			T. D. @ 55.8' in shale			

Hole No. 8A6C-67

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 2 sheets

Project: Arkansas

Location (Coordinates or Station): Texarkana

Drilling Agency: Corps of Engineers

Hole No. (As assigned by drilling agency): 8A6C-67

Name of Driller:

Manufacturer's Designation of Drill: Failing 1500

Total No. of Overburden Samples Taken: Undisturbed 0; Disturbed 0

Total Number Core Boxes: 5

Elevation Ground Water:

Direction of Hole: Vertical ☐ Inclined ☐ Deg. from vert.

Date Hole: Started 19 June 75; Completed 20 June 75

Elevation Top of Hole: 536.71'

Total Core Recovery for Boring: 92%

Thickness of Overburden: 34.0'

Depth Drilled into Rock: 22.5'

Total Depth of Hole: 56.5'

Signature of Inspector: Joseph A. Schmitt

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Remarks
			Drilling 0.0' to 32.5' 8" auger 32.5' to 56.5' 6" core **Samples** No samples were taken. **Note** Primary was non-calcareous except several sandstone lenses. Overburden was calcareous. Depth of weathering at 37.1'. 8A6C-67 was drilled to locate well cemented sandstone bed (56.4' to 57.8' of 8A6C-44). It was not present. 8A6C-67 was drilled 20.0' W of 8A6C-36 and 6.0' E of 3?-67. 3?-67 was drilled to 81.0' for purposes of geophysical logging.			
	10					
	20		32.5' to 33.7' Lost 33.7' to 34.0' SANDSTONE - - well cemented, conglomeritic, with several pebbles of ironstone, and pyrite, calcareous 34.0' to 35.3' Lost 35.3' to 53.3' SHALE - -			
	30		35.3' to 37.1' tan and gray weathered, mostly tan at top to mostly gray at base, sandy with numerous lenses of sandstone 36.3' to 36.4' SANDSTONE, moderately cemented, calcareous	L 1.2 34.0 L 1.7 38.0 L 0.1	Box 1	32.5 38.4
	40		37.1' to 40.5' dark gray, unweathered, with thin seams of poorly cemented, silty sandstone, and occasional lenses of clay-ironstone 40.3' to 40.5' SANDSTONE, light brown, well cemented, calcareous 40.5' to 46.5' waxy, with several lenses of clay-ironstone 40.9' to 41.2' low angle, tight, poorly developped fractures, which open upon drying 42.2' fracture, as above 44.6' to 45.9' with several low angle to 45° slickensided fractures, as above 46.5' to 55.2' with numerous seams and lenses of poorly cemented sandstone	42.0 42.1 46.0 L 0.8 48.8 50.5 G 0.2 53.5 L 0.5 55.3	2 3 4 5	42.0 48.0 50.5 55.3
	50					
	60		47.6' to 47.7' SANDSTONE, moderately cemented, calcareous 50.4' low angle, tight fracture, with no slickensides 53.6' to 53.8'; 55.0' to 55.2' SANDSTONE, well cemented, tan, calcareous 54.4' to 54.9' very silty 55.2' to 55.8' waxy T. D. @ 55.8' in shale			
	70					

Hole No. 12-

DRILLING LOG — Division: Southwestern — Installation: Fort Worth District — Sheet 1 of 1 sheets

Project:

Location (Coordinates or Station): Ashdown, La. D. S.

Drilling Agency: Corps of Engineers

Hole No. (As assigned by drilling agency): 12-

Name of Driller: Brasher

Manufacturer's Designation of Drill: Failing 1500

Total No. of Overburden Samples Taken: Undisturbed 0; Disturbed 3

Total Number Core Boxes: 0

Elevation Ground Water:

Direction of Hole: Vertical ☐ Inclined ☐ Deg. from vert.

Date Hole: Started 25 Apr 74; Completed 26 Apr 74

Elevation Top of Hole: 510.8 ±

Total Core Recovery for Boring:

Thickness of Overburden: 3.7

Depth Drilled into Rock: 66.3

Total Depth of Hole: 70.0

Signature of Inspector: Joseph A. Schmitt

Elevation	Depth	Legend	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Remarks
			0.0 to 3.7 SAND - - very dense, reddish-brown, moist, with gravel-sized fragments of sandstone 1.5 to 3.7 with numerous cobbles of chert, sandstone, and limestone 3.7 to 13.5 SANDSTONE - - moderately cemented, except 9.5 to 10.3 well cemented 13.5 to 53.8 SHALE - - gray, non-calcareous			**Drilling** 0.0 to 3.7 8" auger 3.7 to 70.0 4" fishtail **Note** Cutting return from hard zones at 53.8 and 59.5 was very poor. Interpretation is based upon drilling action and not on cuttings. The zone at 59.5 was much harder than the zone at 53.8.
	10					
	20					
	30					
	40					
	50		53.8 to 55.0 SANDSTONE - - well cemented 55.0 to 59.5 SHALE - - gray, non-calcareous			
	60		59.5 to 60.9 SANDSTONE - - well cemented, hard, difficult to penetrate with fishtail 60.9 to 70.0 SHALE - - gray, calcareous			
	70					

RECORD DRAWING-W

SYM.	DO NO.	ACTION	DAT

U.S. ARMY E

DESIGNED BY:

DRAWN BY:

CHECKED BY:

SUBMITTED BY:

ENGINEER:

TO ACCOMPANY FINAL FOUNDATI

U.S. ARMY

Hole No. B-27

LOCATION: Fort Worth District — SHEET 1 OF 2 SHEETS

SIZE AND TYPE OF BIT: 4" fishtail — DATUM FOR ELEVATION SHOWN: MSL

MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500

TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
	0	0

TOTAL NUMBER CORE BOXES: 0

ELEVATION GROUND WATER:

HOLE	STARTED	COMPLETED
	25 Apr 74	25 Apr 74

ELEVATION TOP OF HOLE: 510.8±

TOTAL CORE RECOVERY FOR BORING: %

SIGNATURE OF INSPECTOR: Donald L. Shanks

DEPTH IN FEET	CORE RECOVERY %	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			Drilling 0.0 to 3.7 8" auger 3.7 to 70.0 4" fish-tail Note Cutting return from hard zones at 53.8 and 59.5 was very poor. Interpretation is based upon drill action and not on cuttings. The zone at 59.5 was much harder than the zone at 53.8.

RECORD DRAWING-WORK AS BUILT

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

EMBANKMENT AND SPILLWAY

LOGS OF BORINGS
8A6C-66, 67 AND 3F-31

SUBMITTED BY: ----------
ENGINEER:

INV. NO. DACW63-80-B-0085 DATED: AUG. 1980
CONTR. NO. DACW63-81-C-0035
DRAWING NUMBER
SHEET NO. B-27 OF
SEQUENCE NO. 132

CONTR. NO. DACW63-81-C-0035

TO ACCOMPANY FINAL FOUNDATION REPORT — PLATE 68

3AGC-250

3AGC-251

DRILLING LOG — Division: SWD — Installation: Ft. Worth — Sheet 1 of 2 sheets

1. Project: Aquilla Lake
2. Location: Spillway - east core hole
3. Drilling Agency: USCE
4. Hole No. (As shown on drawing title and file number): 3AGC-250
5. Name of Driller: Schoonover
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 3.1 + 2.5 = 5.6
8. Depth Drilled into Rock: 39.3 + 2.1 = 41.4
9. Total Depth of Hole: 41.4 + 33.1 = 74.5
10. Size and Type of Bit: 7⅞"
11. Datum for Elevation Shown (MSL): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples: Disturbed ____ Undisturbed ____
14. Total Number Core Boxes: 4
15. Elevation Ground Water: —
16. Date Hole: Started 17 June 79 Completed 19 June 79
17. Elevation Top of Hole: 590.6'
18. Total Core Recovery for Borings: 49%
19. Signature of Inspector: Robert A. McCoy Jr.

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0 to 7.5 CLAY 0.0 to 3.1 - high plasticity, stiff, moist, black to brown, calc, sandy and gravelly. 3.1 to 7.5 - sel. plast, stiff, moist, yellowish brown with some red after 6', calc, sl. sandy, limey, [illegible]			* Drilling 0.0 to 9' - 10" auger. Set 10' of 8" casing 9' to 21.0' - 7⅞ mud 21.0 to 41.4 - 6" core Soil bagged up to 55 for Aquilla project lab. Base of weathering 29.4' Box 1: 1. 21.0 - 25.7 2. 25.7 - 34.2 Box 2: 3. 34.2 - 38.7 Box 3: 4. 38.7 - 40.7 Hole was E-logged.
579.3	10.9		7.5 to 10.9 SHALE - highly weathered to a stiff clay consistency, yell. br. and gray, calc, sandy and silty seams(very thin).			
			10.9 to 11.4 ARENACEOUS LIMESTONE - hard, white, calc. Eagle Ford Gr.			
529.7	20'		11.4 to 21.0 SHALE and SANDSTONE This section rockbited - cuttings made from rotary action. 11.4 - 12' - shale. 12 - 12.7 - [illegible] 12.7 - 21.0 - shale w/ hard s.s. @ 13.3'.		Box 1 Box 2	
569.6	21.0		21.0 to 22.3 SHALE - weathered, mod soft, dark gray and yell. br., some yellow, non calc, pale brown, mod hard s.s. seam(L.T. 0.1' thick) sc. thruout section.	Actual loss 28.4' to 33.3' + 34.7 to 36.4	Box 2	Sandstone washed out.
554.5	36		22.3 to 36.2 SANDSTONE - weathered till 28.4', fine grained, mod. hard, mod. friable, pale brown, non calc, shaley.		Box 3	
553.1						
550.1	40'		22.3 to 36.2 SANDSTONE(cont) Shale seam @3.5 to 24.0' and sandy within. Shale seam @4.3 to 24.4'. Shale seam @4.6 to 25.2'. Very shaley zone from 27.7 to 35.2'.		Box 3	
			36.2 to 37.6 SHALE - unweathered, mod. soft, dark gray, non calc, thin sandstone seams and lenses thruout.			
			37.6 to 40.6 SANDSTONE - fine grained, mod soft to mod hard, mod. cemented, pale broan and gray, non calc. Shaley from 37.6 to 30.0'. 38 to 38.6 - no shale. Both above mod. hard zones. 38.6 to 39.3 - v. shaley. 39.3 to 39.9 - Shale(sandy). 39.9 to 40.6 - sl. shaley. Above three zones are mod. soft and sand is friable.			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — Project — Hole No. 3AGC-250

DRILLING LOG — Division: SWD — Installation: Ft. Worth

1. Project: Aquilla Lake
2. Location: Spillway - west core hole
3. Drilling Agency: USCE
4. Hole No. (As shown on drawing title and file number): 3AGC-251
5. Name of Driller: Schoonover
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 5.3
8. Depth Drilled into Rock: 37.9
9. Total Depth of Hole: 43.2
10. Size and Type of Bit: 7⅞"
11. Datum for Elevation Shown (MSL): MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples: Disturbed ____ Undisturbed ____
14. Total Number Core Boxes: —
15. Elevation Ground Water: —
16. Date Hole: Started 16 June 79 Completed 17 June 79
17. Elevation Top of Hole: 592.1'
18. Total Core Recovery for Borings: —
19. Signature of Inspector: Robert A. M[illegible]

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
			0.0 to 8.9 CLAY 0.0 to 0.2 - high plasticity, med stiff, moist, black, calc, sandy and gravelly.			* Drilling 0.0 to 14.5 - Set 10' of 8" 14.5 to 43.2 Base of weathering @ 28.3' The only samples taken were of weathered rock at 14.5-15.7 and 28.3-28.9 by the Aquilla project lab. Box 1: 1. 14.5 - [illegible] Box 2: 2. 19.3 - [illegible] 3. 24.3 - [illegible] 4. 28.9 - [illegible] Box 3: 5. 33.9 - [illegible] 6. 38.7 - 43.2 Box 4: Hole was E-logged.
572.9	5.3		0.2 to 4.9 - high/red plasticity, stiff, moist, calc, yellowish brown, limey, sl. sandy, gravelly at 2.5'(0.2' thick).			
	10'		4.9 to 5.3 - [illegible]			
			SAND - fine to med. grained, moist, strong brown, calc, gravelly and clayey.		Lab	
567.9	15.3		5.3 to 14.3 - Eagle Ford Fm.		Box 1	
			SHALE - highly weathered to a stiff clay consistency, very little shale structure, except from 6.4 to 7.0 - where structure is apparent, yell. br., gray, and some red, calc, sandy and silty, exp. x[illegible]'s @ 11'.		Lab	
563.7	20' 21.5		14.3 to 14.8 ARENACEOUS LIMESTONE - hard, white, calc, massive, well cemented. Eagle Ford Group		Box 2	
564.1	28'		14.8 to 15.7 SHALE - weathered, mod. soft (rx classi), gray, and yell. br., calc, scattered thin sand seams.		Box 3	
	30'		15.7 to 18.3 SANDSTONE		Box 4	
555.9	36.5		15.7 to 15.6 - weathered, fine grained, mod soft, gray, sl. calc, poorly to mod. cemented, friable, limonitic @ top of section. (cont)		Box 5	
552.6	39.6				Box 6	
	40'		15.7 to 18.3 SANDSTONE (cont) 16.6 to 17.0 - weathered, fine, hard, well cemented, light pale brown, sl. calc.			
549.0	43.2		17.0 to 18.3 - fine, poorly cemented and v. friable (much washed out by drilling circulation), gray, sl. calc, sl. shaley.			
			18.3 to 19.3 SHALE 18.3 to 18.9 - weathered, soft(rx classi), yell. br. and gray and red, sl. calc, sandy.			
			18.9 to 19.3 -as above except v. sandy.			
			19.3 to 21.5 SANDSTONE - weathered, fine, mod hard and mod cemented, pale brown, non calc, jointed, local dip(L.T. 10°) @ 20.5 to 20.7'. Soft shale seams(pent. tests of 1.75 to 2.75) @ 20.3 & 21.1 - both 0.1' thick.			Base of sandst dip of 12°. Shale beneath shows no dip The above two came out in cessive core Shale exhibits up to 7° from 22.5'.
			21.5 to 28.1 SHALE 21.5 to 23.8 - weathered, mod soft, gray and strong brown, non calc, limonitic, s.s. seams(mod hard and pale brown) @ 21.5 & again from 23.5 to 23.8'. 23.8 to 28.1 - weather stained fractures till 24.3, then unweathered, dark gray, non calc, mod soft, sc. thin sand seams, v. pyritic from 25.0 to 25.1 and @ 26.2. Mod. hard s.s. from 26.1 to 26.2 and 27.1 to 27.3'.			

8AGC-251

Hole No. 8AGC-257

DRILLING LOG — Division: SWD — Installation: Ft. Worth — Sheet 1 of 3 sheets

1. PROJECT: Aquilla Lake
2. LOCATION (Coordinates or Station): Spillway - west cove lake
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title) and drawing number): 8AGC-257
5. NAME OF DRILLER: Schooner
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 5.3
8. DEPTH DRILLED INTO ROCK: 37.9
9. TOTAL DEPTH OF HOLE: 43.2
10. SIZE AND TYPE OF BIT: N
11. DATUM FOR ELEVATION SHOWN (MSL or USC&GS): Sailing 1500
12. MANUFACTURER'S DESIGNATION OF DRILL: N/A
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14. TOTAL NUMBER CORE BOXES: 6
15. ELEVATION GROUND WATER: ____
16. DATE HOLE: STARTED 6 June 79 COMPLETED 7 June 79
17. ELEVATION TOP OF HOLE: 592.1
18. TOTAL CORE RECOVERY FOR BORING: 97.6%
19. SIGNATURE OF INSPECTOR: Robert A. McKay Jr.

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			0.0 to 4.9 CLAY 0.0 to 0.2 - high plasticity, med stiff, moist, black, calc, sandy and gravelly. 0.2 to 4.9 - high/red plasticity, stiff, moist, calc, yellowish brown, limey, sl. sandy, gravelly at 2.5'(0.2' thick).			# Drilling 00 to 14.5 - 10" auger. Set 10' of 8" casing. 14.5 to 43.2 - 6" core.
587.9	5.3		4.9 to 5.3 - SAND - fine to med. grained, moist, strong brown, calc, gravelly and clayey.			Base of weathering @ 24.3'.
582.7	10.5		5.3 to 14.3 - Eagle Ford Fm. SHALE - highly weathered to a stiff clay consistency, very little shale structure, except from 6.4 to 7.0 - where structure is apparent, yell. br., gray, and some red, calc, sandy and silty, gyp. xl's @ 11'.		Lab Box 1 Lab Box 2	The only samples taken were those of weathered shale at 14.8-15.7 & 19.3-19.3 by the Aquilla project lab.
577.9	14.3		14.3 to 14.8 ARENACEOUS LIMESTONE - hard, white, calc, massive, well cemented. Eagle Ford Group		Box 3	Box's 1. 14.5 - 19.3 2. 19.3 - 24.3 3. 24.3 - 28.9 4. 28.9 - 33.9 5. 33.9 - 38.7 6. 38.7 - 43.2
564.1	28.1		14.8 to 15.7 SHALE - weathered, mod. soft (rx classi), gray, mod. yell. br., calc, scattered thin sand seams.		Box 4	Hole was Elogged.
555.9	36.3		15.7 to 16.3 SANDSTONE 15.7 to 16.6 - weathered, fine grained, mod soft, gray, sl. calc, poorly to mod. cemented, friable, limonitic w/ top of section. (cont)		Box 5 Box 6	
549.0	43.2		15.7 to 18.3 SANDSTONE (cont) 16.6 to 17.0 - weathered, fine, hard, well cemented, light pale brown, sl. calc. 17.0 to 18.3 - fine, poorly cemented and v. friable (much washed out by drilling circulation), gray, sl. calc, sl. shaley. 18.3 to 19.3 SHALE 18.3 to 18.9 - weathered, soft(rx classi), yell. br. and gray and red, sl. calc sandy. 18.9 to 19.3 -as above except v. sandy. 19.3 to 21.5 SANDSTONE - weathered, fine, mod hard and mod cemented, pale brown, non calc, jointed, local dip(L.T. 10°) @ 20.5 to 20.7'. Soft shale seams(pent. test of 1.75 to 2.75) @ 20.5 & 21.1 - both 0.1' thick. 21.5 to 28.1 SHALE 21.5 to 23.8 - weathered, mod soft, gray and strong brown, non calc, limonitic, s.s. seams(mod hard and pale brown) @ 21.5 & again from 23.5 to 23.8'. 23.8 to 28.1 - weather stained fractures till 24.3, then unweathered, dark gray, non calc, mod soft, sc. thin sand seams, v. pyritic from 25.0 to 25.1 and @ 26.2. Mod. hard s.s. from 26.1 to 26.2 and 27.1 to 27.3'.			Base of sandstone has dip of 12°. Shale beneath s.s. shows no dip. The above two sections came out in two successive core pulls. Shale exhibits dip of up to 7° from 21.9 to 22.5°.

Hole No. 8AGC-257

DRILLING LOG — Division: SWD — Installation: Ft. Worth — Sheet 3 of 3 sheets

1. PROJECT: Aquilla Lake
2. LOCATION (Coordinates or Station): Spillway - west cove lake
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title) and drawing number): 8AGC-257
5. NAME OF DRILLER: Schooner
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 5.3
8. DEPTH DRILLED INTO ROCK: 37.9
9. TOTAL DEPTH OF HOLE: 43.2
10. SIZE AND TYPE OF BIT: N
11. DATUM FOR ELEVATION SHOWN (MSL or USC&GS): Sailing 1500
12. MANUFACTURER'S DESIGNATION OF DRILL: N/A
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14. TOTAL NUMBER CORE BOXES: 6
15. ELEVATION GROUND WATER: ____
16. DATE HOLE: STARTED 6 June 79 COMPLETED 7 June 79
17. ELEVATION TOP OF HOLE: 592.1
18. TOTAL CORE RECOVERY FOR BORING: 97.6%
19. SIGNATURE OF INSPECTOR: Robert A. McKay Jr.

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Geologic class)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS
			28.1 to 36.3 SANDSTONE - unweathered, fine, gray, non calc, mod soft to mod hard, poorly to mod. cemented, shaley, pyritic @ 30.6'. Mostly poorly cemented and friable after 32.7'. 36.3 to 39.6 SHALE - mod soft, dark gray, non calc, sc. thin gray sandstone/siltstone seams and lenses. Mod. hard, pale brown silt (limonite ?) lense from 37.9 to 37.9'. 39.6 to 43.2 SANDSTONE - fine grained, mod hard, mod. cemented, gray, non calc. Very shaley from 40.2 to 40.6'. Shale seam from 41.1 to 41.4'. Shaley zone from 41.7 to 43.2'.			

ENG FORM 1836 MAR 71 — PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLOG 8H7) — PROJECT — HOLE NO. 8AGC-257

RECORD DRAWING

NO.	BY	DATE	ACTION

U.S. ARMY

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

TO ACCOMPANY FINAL FOUN

Hole No. SA6C-251

WORK Ft. Worth	SHEET 3 OF 3 SHEETS
AND TYPE OF BIT	
(FOR ELEVATION SHOWN (TBM or MSL))	
MANUFACTURER'S DESIGNATION OF DRILL	
NO. OF CORE BARREL SAMPLES TAKEN: DISTURBED / UNDISTURBED	
TOTAL NUMBER CORE BOXES	
ELEVATION GROUND WATER	
HOLE: STARTED / COMPLETED	
ELEVATION TOP OF HOLE	
TOTAL CORE RECOVERY FOR BORING %	
SIGNATURE OF INSPECTOR: Peter A. McVay Jr.	

% CORE RECOVERY	ROCK OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc.; if organics, soil %)

PROJECT

HOLE NO. SA6C-251

RECORD DRAWING-WORK AS BUILT

SYM.	DRA. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS

SPILLWAY

LOGS OF BORINGS
8A6C-250, 8A6C-251

INV. NO. DACW63-80-B-0085
DATED: AUG. 1980
DRAWING NUMBER
SHEET NO. 6-28 OF
SEQUENCE NO. 133

DACW63-81-C-0035

Hole No. 10A-1

DRILLING LOG | DIVISION SWD | INSTALLATION Ft Worth | SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla Dam
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): 10A-1
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: -- --
8. DEPTH DRILLED INTO ROCK: -- --
9. TOTAL DEPTH OF HOLE: 9.0

10. SIZE AND TYPE OF BIT: 4" auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: -- --
15. ELEVATION GROUND WATER: ***
16. DATE HOLE: STARTED 28 March 78 | COMPLETED 28 March 78
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: -- --
19. SIGNATURE OF INSPECTOR: Robert A. McVay Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0.0 - 6.5 CLAY 0.0 - 2.8 - - high plasticity, very stiff, slightly moist, light gray and brown, calc, 2.8 - 6.5 - - low plast, hard, dry, strong brown, calc, silty.		A B C	1. *** Dry hole. 2. Jars: A. 0.0 - 2.8 B. 2.8 - 6.5 C. 6.5 - 9.0
	9.0		6.5 - 9.0 SAND - mostly fine and round, dry, dark brown, slightly calc, silty, slightly gravelly.			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) | PROJECT | HOLE NO.

Hole No. 10A-2

DRILLING LOG | DIVISION SWD | INSTALLATION Ft Worth | SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla Dam
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): 10A-2
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: -- --
8. DEPTH DRILLED INTO ROCK: -- --
9. TOTAL DEPTH OF HOLE: 5.2

10. SIZE AND TYPE OF BIT: 4" auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: -- --
15. ELEVATION GROUND WATER: ***
16. DATE HOLE: STARTED 20 March 78 | COMPLETED 28 March
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR: Robert A. McVay Jr.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0.0 - 5.2 CLAY 0.0 - 2.8 - - high plasticity, very stiff, slightly moist, black, non calc. 2.8 - 4.3 - - low plast, very stiff, slightly moist, grayish brown, slightly calc, sandy and silty. 4.3 - 5.2 - - low plast, very stiff, slightly moist, non calc, sandy and silty.		A B C	1. *** Dry hole. 2. Jars: A. 0.0 - 2.8 B. 2.8 - 4.3 C. 4.3 - 5.2
	6.0					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) | PROJECT | HOLE NO.

Hole No. 10A-2

DRILLING LOG — DIVISION: SWD — INSTALLATION: Ft Worth — SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla Dam
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): 10A-2
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: -- --
8. DEPTH DRILLED INTO ROCK: -- --
9. TOTAL DEPTH OF HOLE: 5.2
10. DATE HOLE: STARTED 28 March 78 — COMPLETED 28 March 78
11. ELEVATION GROUND WATER: ---
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 3 — UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: -- --
15. ELEVATION GROUND WATER: ---
16. DATE HOLE: STARTED 28 March 78 — COMPLETED 28 March 78
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: -- --
19. SIGNATURE OF INSPECTOR: Robert A. McVey Jr.
10. SIZE AND TYPE OF BIT: 4" auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS
	6.0		0.0 - 5.2 CLAY 0.0 - 2.8 - - high plasticity, very stiff, slightly moist, black, non calc. 2.8 - 4.3 - - low plast, very stiff, slightly moist, grayish brown, slightly calc, sandy and silty. 4.3 - 5.2 - - low plast, very stiff, slightly moist, non calc, sandy and silty.		A B C	1. --- Dry hole. 2. Jars: A. 0.0 - 2.8 B. 2.8 - 4.3 C. 4.3 - 5.2

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — PROJECT — HOLE NO.

Hole No. 10A-3

DRILLING LOG — DIVISION: SWD — INSTALLATION: Ft Worth — SHEET 1 OF 1 SHEETS

1. PROJECT: Aquilla Dam
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): 10A-3
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: -- --
8. DEPTH DRILLED INTO ROCK: -- --
9. TOTAL DEPTH OF HOLE: 8.3
10. DATE HOLE: STARTED 28 March 78 — COMPLETED 28 March 78
11. ELEVATION GROUND WATER: ---
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 4 — UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: -- --
15. ELEVATION GROUND WATER: ---
16. DATE HOLE: STARTED 28 March 78 — COMPLETED 28 March 78
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: -- --
19. SIGNATURE OF INSPECTOR: Robert A. McVey Jr.
10. SIZE AND TYPE OF BIT: 4" auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS
	10.0		0.0 - 6.0 CLAY 0.0 - 1.5 - - mod plasticity, stiff, moist, black, non calc, very sandy and silty. 1.5 - 3.1 - - high plast, very stiff, moist, red, non calc. 3.1 - 6.0 - - high to mod plast, very stiff, slightly moist, strong brown w/ some brown mixed in, non calc, silty. 6.0 - 8.3 SAND - mostly fine and round, moist, yellow to some colorless lenses, non calc, silty, slightly gravelly.		A B C D	1. --- Dry hole. 2. Jars: A. 0.0 - 1.5 B. 1.5 - 3.1 C. 3.1 - 6.0 D. 6.0 - 8.3

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) — PROJECT — HOLE NO.

DRILLING LOG — DIVISION: SWD

1. PROJECT: Aquilla Dam
2. LOCATION (Coordinates or Station)
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): 10A-4
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM
7. THICKNESS OF OVERBURDEN: -- --
8. DEPTH DRILLED INTO ROCK: -- --
9. TOTAL DEPTH OF HOLE: 9.0

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)
	10.0		0.0 - 0.9 SAND - fine and r dry, brown, non 0.9 - 6.1 CLAY 0.9 - 5.3 - - hi city, very stif slightly moist, calc, very slig Strong brown co w/ above after 5.3 - 6.1 - - m plast, very sti gray and strong non calc, sandy 6.1 - 9.0 SAND - fine and r strong brown w/ gray, non calc,

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

RECORD DRAWING

NOTE: SEE

1	AM# 0002	28	
REVISION NO.	ACTION		

U.S. ARMY

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------
SUBMITTED BY: ----------

ACC

TO ACCOMPANY FINAL FOUNDAT

Hole No. 10A-3

ELEVATION: Ft Worth | SHEET 1 OF 1 SHEETS
SIZE AND TYPE OF BIT: 4" auger
DATUM FOR ELEVATION SHOWN (TBM or MSL):
MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4 | UNDISTURBED 0
TOTAL NUMBER CORE BOXES: -- --
ELEVATION GROUND WATER: ---
DATE HOLE: STARTED 28 March 78 | COMPLETED 28 March 78
ELEVATION TOP OF HOLE:
TOTAL CORE RECOVERY FOR BORING: -- --
SIGNATURE OF INSPECTOR: Robert A. McVey Jr.

3. CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	A	1. *** Dry hole.
	B	2. Jars: A. 0.0 - 1.5 B. 1.5 - 3.1 C. 3.1 - 6.0 D. 6.0 - 8.3
	C	
	D	

PROJECT | HOLE NO.

Hole No. 10A-4

DRILLING LOG | DIVISION: SWD | BRYAN, TEXAS
1. PROJECT: Aquilla Dam
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USACE
4. HOLE NO. (As shown on drawing title and file number): 10A-4
5. NAME OF DRILLER: Brewer
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: -- --
8. DEPTH DRILLED INTO ROCK: -- --
9. TOTAL DEPTH OF HOLE: 9.0

BRYAN, TEXAS | SHEET 1 OF 1 SHEETS
10. SIZE AND TYPE OF BIT: 4" Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: -- --
15. ELEVATION GROUND WATER: ***
16. DATE HOLE: STARTED 28 March 78 | COMPLETED 28 March 78
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: -- --
19. SIGNATURE OF INSPECTOR: Robert A McVey Jr.

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	3. CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0 - 0.9 SAND - fine and round, loose, dry, brown, non calc, silty.		A	1. *** Dry hole.
			0.9 - 6.1 CLAY		B	2. Jars: A. 0.0 - 0.9 B. 0.9 - 2.5 C. 2.5 - 5.3 D. 5.3 - 6.1 E. 6.1 - 9.0
	10.0		0.9 - 5.3 - - high plasticity, very stiff to hard, slightly moist, red, non calc, very slightly sandy. Strong brown color mixed w/ above after 2.5.		C D E	
			5.3 - 6.1 - - med to low plast, very stiff, moist, gray and strong brown, non calc, sandy.			
			6.1 - 9.0 SAND - fine and round, moist, strong brown w/ some light gray, non calc, silty.			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLOCENT)

PROJECT | HOLE NO.

RECORD DRAWING-WORK AS BUILT

NOTE: SEE PLATE 1-2 FOR BORING LOCATIONS.

SYMBOL	NO.	ACTION	DATE	DESCRIPTION OF REVISION
A1		AM*0002	28NOV80	NEW SHEET

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ---------
CHECKED BY: ---------
SUBMITTED BY: ----------

AQUILLA LAKE
AQUILLA CREEK, TEXAS
ACCESS ROAD AND MAINTENANCE YARD
LOGS OF BORINGS
10A-1, 10A-2, 10A-3, AND 10A-4

INV. NO.
DATED:
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO. 133A

CONTR. NO. DACW63-81-C-0055