

Mobile Drill
Log # 4



Ben Meadows

1-800-241-6401

LEVEL BOOK

#101596

5-30-95 / 3/96

LITTLE RIVER PROT

SRWNID - BRADFORD CO

AMBIENT 95 - NWFWMD

17262
Drift # 5

17263
Drift # 1

17264
Drift # 2

17265
Drift # 3

17266
Drift # 4

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1 1/2 to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake										Cut or Fill
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1995	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995
JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

(352) (904) 895-0014

347-6929

FLORIDA GEOLOGICAL SURVEY

(904) 488-9380

HARLEY MEANS 878-4993 - Survey 657-8482

Greg Hatcher 576-1176

DENNIS - 575-6584

TOM PRATT (UNFUND) 4668-2093

FGS Cell (Ken) 904-965-1892

FGS CELLULAR (John) 305-293 (305) 293-1657

Taney Drilling (305) 685-2453

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USGS - TAMPA (813) 243-5800

Bob Wylie (cellular) 813-744-3690

Alex Howell 893-2158 / 866-8896

JENNIFER BRANCH 574 4328

FRANK RUSH 422-1949

Jim Trindell 926-8735

USGS TALLAHASSEE 942-9500

Ed OAKSFORD X 3017

MARION BERNDT X 3015

CHRISTIE CRANDALL X 3030

~~USGS CELLULAR (904) 841-0257~~

~~Discount Building Mat. - Live Oak 1000~~

RON CERYAK (904) 362-6909

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing. 362-5578

Josh HIRTEN (904) 336-7053

John Morrill - home 668-0247

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17262

A-SW-4

DATE 5-30-95

Site: A-SW-4

LOC SEC 36dbT 55 R 13E

LAT 30°00.460 LON 82°57.687'

START time 7AM END time 600pm

PARTY: KC, FRR. AH.

- 0-2.5' - push spl - LT 94% sd
- 2.5-5.0' - " " - lt. gy sd then
yl. or clayey sand
- 5-6.5' w.l. spl bn + LT 97 mottled
sl. ch. sd.
- 6.5-9' - dk bn ch. sd then lighter
+ less clayey with depth
- 9-11.5' - white quartz sand
- 11.5-14' white 94% sd
- 14-16.5' bn + gy mottled clayey sd
- 16.5-19' bn + gy ch. sd - more clayey
with depth - then yl or clayey
ls
- top of rock at ~18.00'
- 19-21.5' white calcilitic ls,
- somewhat harder at 21.5'
- 21.5-24' - ls. white - soft zone
- in middle of run lost. - harder at
bottom ~ 60% recovery
- calcilitic - lps. etc.
- water table in this run

17262
Truitt #5

17263
BARTLEY #1

17264
BARTLEY #2

17265
BARTLEY #3

17266
BARTLEY #4

~~Core boxes - tops & bottoms~~
~~Many core trays~~
~~Box liners~~
~~Blocks~~
~~Well casing 4" & 2"~~
~~Well protector~~
~~Cement~~

65.
45.
27.5
24.5 - 27.5'
soft ls

A-SW-4
24-25' - 3 short runs - splr plugging
- ls - drill 2 1/2" hsa down
to set T on & chg over to
N Q WL
27' 3/4 hsa in hole less ~ .75'
stickup

5-31-95 - 6:45 pm -
retn call to John Morrill -
EGS cellular phone

6-2-95 KC, FRR, AH, 7AM start
drop off casing w jim. 5:30 retn
men to A-SW-4

2 drill 3' run - no recovery -
mudded hole - apparently too
much angle on short segments
for inner bbl to catch
-25 - drill down to 29.75' - soft
- attempt to plug bbl
- pull NQ
27.5' - soft sticky ls.
29.75' - 32.25' soft rubble? ls - splr
plugged after ~ 6"

17306
A-BF-1
17263
Beantley #1
17264
Beantley #2
17265
Beantley #3
17266
Beantley #4

A-SW-4
32.25 - 34.75' - SAME as above ³
- splr plugged after ~ 6"
drilled down to 36'

TO DO ON sides:

get static WL A-SW-2

LAB LOW "

static WL A-SW-3A

" 3B

~~check samples 30-38~~
~~285-40'~~

6-7-95 KC, FRR, AH - 7AM START
1 ft sed in hsa - puped out
to bit - collect cuttings spl
at 36'

pull 36-39' - soft ls - pup sample
to clean hsa.

mix mud - pup hsa full - pull
hsa

- install 40' csg ^{~ 1' stickup} (for 2 ft)
pump 3 1/2 bags portland (frammie)

- csg full of mud w tight head
CEMENT to surface

* Chk w/ John M
for xtra Paul
wire-line retriever

Get:
Paul
1" PVC pipes

A-SW-4

6-7

A-SW-2 - w/c 24.5' below top of csg
30° 00.181' 82° 58.091'

A-SW-3A 19.5' bl. top of csg
A-SW-3B 19.6 " " "

6-8-95 KCI, AH (FAR off - Family
emergency) 7AM START

change over to wireline rod to
drill open hole - csg clean to
38.5 ~~38.5~~' (39.8' csg)

drill small plug grout
~ 39-41' sticky carbonate -
little or no granular material
in red water - poor spec recovery
- grey limestone - calcituff matrix
ls frag. in mud

44-42' grey ls. - peckstone(?) in mud
matrix

42-43.5 - ls. as above

43.5 - 45.25

Water level - 23.5' below
temp. casing.

Water level - 24' 0" below
top of PERM. casing.

17306
A-BF-1

17263
BEAUTLEY #1

17264
BEAUTLEY #2

17265
BEAUTLEY #3

17266
BEAUTLEY #4

Bob Heeke

904 362-1001

904 362-8130 cell

American Pump

575-9618

~~1/4" wipm upfls~~
~~2" alignment~~
~~pin / detector / fix L.F.~~
~~backhead of 29~~

~~1 1/4" OD~~

~~3/4" clevis~~

call marion / christy

- tape

- slow producer

- pumping springs well me

1 1/4" coupling + cap -

~~for job~~
~~vehicle logs~~

3/4" shackle

reader

6-9-95 KC, BH, 8AM start

- Wase - ngl spring nbl drill
spec return. TO. Bred and

- call Josh re WMD sites

- to spring fill water tanks

call Bob Heeke (HRE) re
re WMD sites

- Meet w Eddie about re add'l
sites

- return A-JW-4 - pump + surge

- pump ~ 1 gpm

return T2H 6:00 pm

6-12-95 KC + John Merrill to
W.G.T. Farms site

6AM start - mix mud,
drill down to 48' - set CSG.

pump 10 bags portland -

run ~ 8-10. 6:00 pm return to H

- Marion and/or christy

- pumping springs well

- my tape measure

- ideas / slow producer well

17263

A-SW-5
6-14-95 KC, AH, 7AM START 6

- Meet V.M. at west farm side
- put csq collapsed - ground out will sit 3" in upper part to native seal.
- Meet Bob Hecke + John Tosh - ck out Bradley sites

A-SW-5 Bradley/SRWD #1
T 55 R 13E SEC 26 NW, SW
LAT 30° 01' 13"
CON 82° 59' 40"
Elev ~ 30' TQPD

- 0-2.5' - push spl
- 0-0.5 ft gy, sl org. gtz sd, below ft gy y. sl clay sd
- 2.5-5.0' - push spl - easy push - 1/4 y. bn gtz sd - sl. clay
- 5.6' push. - as above, goes to white clean sand.
- 6-7.3' wht. sd w y. or clay blebs
- 7.3-9.5' - wht + y. or gtz sand
- 9.5-12 wht + y. gtz sd. coarser than above - g. m. y. or in middle
- 12-13.5 - y. bn claygy gtz sd.

17306
A-BF-1

17263
BRADLEY #1

17264
BRADLEY #2

17265
BRADLEY #3

17266
BRADLEY #4

A-JC-5

13.5 - 16' stiffer drilling, penetr.
refused at bottom of run
loose greenish bn clayey sand
some ol. gn clay & silt
- below ~ 15' lt grayish bn
silt and/or v.d. sand (dolosilt?)
tight

- shorten sampler nose 2"

16- sampler plugged after 2"
shorten splr.

- Power steering hose fails - to transfer
pu clamps, hose + fixed

16'2" - ~ 17.5 - 18.5
at ~ 17.5 hit rock & hard - then 18.5
no recovery in splr

- collected small bailer splr -
dry and 1 wet (in cutting bag)
extend splr nose 2"

18.5 - 19.25' - bn dolosilt? + dolastone
fine white rubble ls w. calc
muddy matrix

19.25 - 20.25 - white rubble ls

20.25 - 21.75' - rubble, crumbly white
fossiliferous ls - water table
in this sample int ~ 21'

17306
A-BF-1

17307
A-BF-3

17264
BRANTLEY #2

17265
#3

17266
BRANTLEY #4

S.W. Co. Home for
216 Pine Ave
Live Oak
364-5857

21.75' - 23.5' - soft rubble ls -
✓ poor recovery
23.5 - 26' soft ls, poor ind
calculated, full recovery
- shut down for day 6:30 pm

6-15-95 KC, AH - to WET. FARM
load cement + csq. Meet John + Jim
+ F.R. 6:30 AM start.
- tire blowout - chg tires

static wc 23.9 below top HSA's
- 3.9 stickups
20' BLSD

26-27 1/4 - soft ls then harder
- penetr refusal at btm of run
soft wht ls - then soft br ls/dolo
(essentially unconsolidated - most prob
lost, then hard br ls

27.25' - 31' - predominantly hard ls.
drilled w/o sampler. cavity or
soft zone ~ 29.5 - 30.5
- plugged HSA - possible spl
retained in HSA - 27.75 - 31'

$$\begin{array}{r} 37.5 \\ 4.5 \\ \hline 33 \end{array}$$

$$\begin{array}{r} 30' \quad 14.5'' \\ \quad \quad 2.5'' \\ \quad \quad 6.5'' \\ \hline 29' \quad 8'' \end{array}$$

small blocks
core boxes tops
bbls
bricks

staples

$$\begin{array}{r} 37.5 \\ 3.6 \\ \hline 33.9 \end{array}$$

(44)

$$\begin{array}{r} 37.5 \\ 6.25 \\ \hline 2 \end{array}$$

A-SW-5 9
mix 1.5 tubs of mud - pump
down TSA's on pulling - mud
to surface.

install 30' CSG (30' 2.5")
sets up with a 6.5" stickup
ie btm of CSG at ~~29.7'~~ 29.7'

pumped 8 bags portland - mtn to
top

clean up site / water run
and day 6:30 pm

6-16

- nd to coll. MARION RE
well deep. - sprigs well
- looks
- tape measure

KC-AH - 7AM start
wash out mud fr casing
drill cement fr. csg to 30'

30 - 32.2' cement and then

flow, bottle in dolomite -

~ full recovery of the dolomite

32.2 - ~~30~~ 32.75 - drill to above
bit set 30' zone at 32.75'

17306
A-BF-1

17307
A-BF-3

17264
BRANTLEY #2

17265
BRANTLEY #3

17266
BRANTLEY #4

Spill A-SW-1
CSG depth
to

Need
well CSG
put CSG
core box btm

top. W-17264
river
staple

blocks

LAT 30° 01' 09"
LONG 82° 58' 33"

A-SW-5 / A-SW-6 10
32.75 - 33.9' soft zone
33.9 - harder rock than
soft sticky material
- no recovery to 36.0' TD

blew well out w pump +
pumped well ~ 5 gpm.
after pump - tried to blow well
out w clean water - would
not come to surface.
static w.c. 21.3' below top
of CSG. CSG 2.5' above CSD
600 pm net

6/19/95

KC, JB to Little river Spgs
Meet up with FRR, JM, JT + AH
Alex net to T.H.

BRANTLEY
A-SW-6 Brantley #2
TSS, RISE, see 26 db

0-30" - push spl - 0-2" Hg + b'n
2.5' - 3.9' Push spl - 2-4.5'
3.9-4.5' Push spl
w/gy + y.l. ch
5d - shift

4.5-5.25 w.c. spl - hard penetr
pull spl nose back 2"

17306
A-BF-1

17307
A-BF-3

17264
BRANTLEY #2

17265
BRANTLEY #3

17266
BRANTLEY #4

A-50-6 11

5.25 - 6.75' light clay sd
6.75 - 8.25' - light y.l. or clay sd
8.25 - 10.75' gy to orange sd clay sd.
10.75 - 13.25 ~ 6" above thin clayer
sl. clay, stg sand - ~ 1" ls at btm
13.25' - 15.75' LS - soft, white - # light
toward bottom
15.75 - 18.25 - ls., soft wht.
18.25' - 20.5' - white LS
20.5 - 23' white LS
23 - 23.75' ls. as above - penetration
refusal
23.75 - 25.5 - white calcilutitic
ls. water table in this spec
25.5 - 28.0 - poor recovery - spec played
no recovery bottom part.
28 - 30.75' y.l. + white ls., harder
at btm. sampler won't penetrate
~~30.75~~
static w/c 25.25' 6 LSD
7AM - start 6 pm end

A-SW-6 12

6-21-95 KC, JB, (Frr Sick)
pu water truck thru to A-SW-6
30-32.5' soft calcilitic ls
32.5-35 " - same
orange clay when washing sampler down
for next run

35-37.5' - soft ls. - sticky -
plugging circulation - poor
recovery - soft zone washed out
37.5 - 45' 2 1/2' runs - soft
whit. ls. variable amt calcilitic
poor ind.
45-47.5' ls. reddish bn, otherwise
same as above
47.5-50' lt. gy bn ls. ~ 50% mud
50-52.5' lt. gy bn ls - soft, calcilitic
all ls. the hole OAC
52-55' soft ls - NO recovery
7AM-6PM

6-22-95 KC, JB, FRR
drill down to SA (3 1/4") to
55', KC to Bell pu cement,
pump mud in hole to fill
hole - pumped ~ 8 bags ~~portland~~
portland (to surface) to set
5 1/4 feet csg

7AM start - 7PM return

17306
A-BF-1

17307
A-BF-3

17308
A-BF-4

17265
BAUTLEY #3

17266
BAUTLEY #4

W-17265
A-SW-6A

6-23-95

A-SW-6/A-SW-6A
KC, JB, FRR

13

RETN to A-SW-6

drill thru ~12' cement in csg
55-57.5' - first part cement cuttings
(prob settled into btm of hole -)
then reddish crumbly ls. ~6"
recovered - remainder of run lost
either v soft sediment or cavity.
prob. cavity since lost circulation.
57.5-60' cavity? (~1st foot)
then hard ss. lt. bn rexl
ls. - last foot soft white
caliche ls. v poor ind.
static wl ~25.5' bwd
- pumped for approx 2 hr ~10 gpm
from 55' level.

Move rig start A-SW-6A

0-0.5 sand

3.0-13 clay + clay sd

~13 dkgy clay then lying clay.

~14' top of ls white. soft

14.5-17 - lowermost 1' softer

white party ls. - local, soft

shut down for day 4 PM

JB + FRR return to T&H

KC to Orlando

17306
A-BF-1

17307
A-BF-3

17308
A-BF-4

17265
BRANTLEY #3

17266
BRANTLEY #4

$$\begin{array}{r}
 2' \\
 16.5' \\
 \hline
 32.5' \\
 19.5' \\
 \hline
 22.75'
 \end{array}$$

set casing
 50' 35'
 50' 35'
 50' 35'

K-SW-6A

14

6-28-95 KC, KPR, VB

7 AM start - load csg. pu

8" pvc + water bbls.

start pinging deep hole again

17-18.25 - soft white ls

then y.l. br clayey ls.

18.25-20' - soft ls then harder - penetration stopped at 20'

20-22.5' soft ls. - sweet red

22.5-25' - soft wht. ls. cumbly.

25-27' - somewhat tighter drilling

27-29' - white ls. somewhat better indurated

29-31.5' ls. soft - but hard enough w/out sample - spur plugger

31.5-34.5 - soft ls. drilled w center plug. - no sm.

34.5-35.5 - drilled w/o spur - pinged small spe.

6-29-95

KC, P.C. + VB 8 AM start

7 pm end

drill out cement from casing.

drill 35-37' no sm

37-40' soft wht ls 40'+D

17306
A-BF-1

17307
A-BF-3

17308
A-BF-4

17309
A-BF-5

17266
BAUMLEY #4

220

A-SW-6A, 6B 15
Cement level at -12' LSD

-pumped 8 bags portland to surface
set protective casing.

top of permanent casing 2.0'
above LSD

6-30-95

KC, PC, VB Tansard - 1pm end
static w/c A-SW-6A 27' below
top of casing

Site

N

6A/40'
6B/50'
6/60'

17266

A-SW-6A

collect spot sampler on
2.5' intervals 0-11.5'

core square 11.5-13.5' (top of rock)

15 spot sampler 27'

27' spec harder also some iron
discoloration (surface clay?)

27-29.5'

29.5-31' - cavity fill - soft
brownish mud. ls frag, fossils,
clay. + sd

17306
A-BF-1

17307
A-BF-3

17308
A-BF-4

17309
A-BF-5
BRANTLEY #4

17266

A-SW-6B 16
31-45' - mostly soft/rubbery
- 15 w some hard stringers -
5 of 57 samples collected 2.5'
intervals.

6A pumped ~ 3 hrs - ~ 4 gpm.
relatively clean

7-6-95 KC, FRR, JB - 7AM
start (FRR 730-600)
KC, JB end 620 pm

set casing in A-SW-6B - 43.7' (LSD)
pumped ~ 80 gal mud before + while
pulling HSA. pumped 8 bags
portland thru casing to grout
after circulating till. got cement
return to surface. displacer
- couldn't pump to displace cement
down csg. - displaced back to
surface w hose

7-7-95 KC, FRR ~~7-7-95~~ KC 7AM -
FRR 720-
approx 15' of cement in csg.
drill out - getting shavings of
csg material.

~~50-52~~, 45-47.5' - NO RECOVERY 17
 - sample washed up (cuttings) consists
 of loose reddish stained forams
 etc. + cement frg.

47.5-50.1' TD - reddish stained
 soft ls. then white/green soft
 calcilitic ls. then rich.

pumped ~ 75 gal down hole w
 jet attachment to blow out
 loose sed. then attempted
 pumping hole - v slow - prob
 less than 1 gpm

pumped + surged A-SW-6A
 all day - water rel. clear
 but still needs addl. work

17306
A-BF-117307
A-BF-317308
A-BF-417309
A-BF-517310
A-BF-6

Hydraulic conductivity samples 18

A-SW-1 31.25-31.5, 44.5', ~26'?

A-SW-2 31.0'

A-SW-3a grout sample, @ 41.5'

A-SW-3B - no core recovered

A-SW-4 43' grout spl, 20' - v soft

A-SW-5 31.1, 32.5'

A-SW-6 ~~31.5~~ 51.75-52' v soft.

no suitable spls in open hole

poss soft 20.75-21'

A-SW-6A - no suitable spls for pen
too soft

A-SW-6B 48.75-49', 56.6-56.8',

WET FARM #1 ~~31.5-38~~, 48.5-48.75,

#2 no suitable spls

56.6-56.8, 54.8-55, 51.25-51.5

42.1-42.4

Wet Farm #3 37.75-38.0

33.25-33.5

7-27-95 KC + AH to A-sw-6¹⁹
- retrieve tape measure dropped
in hole - pumped hole
w/ ~ 150 gallons water
pumped down hole -
~ 1.5' piece of tape still
in hole - couldn't lift -
will try magnet

then to A-sw-5 - hole down to
original td. could not feel
lost valve in hole - ∴ must
be in cavity. - pumped hole
~ 8-9 gpm / surging
- water volume decreased
gradually to only ~ 1 gpm

8-24-95 KC, Jim Ladner²⁰
+ Henry F

Old fire tower site w of
Och. Bay bridge

Sand 0-4' 1/4, 9' 1/4, 14' 1/4, 19' 1/4, 24' 1/4

29' 1/4 - soft to st - clay? approx

27.5', 34' 1/4 clay + sd? 39.25 clay w

39.25 - 44.25 - soft - white clay cake?

44.25 - ~46.25 - soft ^{thick} clay w

~46.25 - rubblely st - 49.25

49.25 - 54.25 - ledge of rock?

softer beneath?

54.25 - 59.25 } rock? - gn

59.25 - ~62.5 - } clay w clay ls
+ organic fragments + blebs

Site 2

~2' fill then grey clay ^{sd}

then blk clay sd - 9' 1/4

9' 1/4 - 14' 1/4 - soft

14' 1/4 - 19' 1/4 SAME - soft

19' 1/4 - 24' 1/4 soft

24' 1/4 - 29' 1/4 soft - sl. sticky

29' 1/4 - 33 Same - ~~then~~ stiff

33 - 34.5 - stiff - then back soft - mud
clay dk greenish clay

17306
A-BF-1

17307
A-BF-3

17308
A-BF-4

17309
A-BF-5

17310
A-BF-6

predominantly
 br or sand
 rich sd
 gr low clay
 at ~ 19-26
 grades to gr
 then cream gr
 clay w ls
 514 - 514

34.5-39.5' - ~ 36 top of rock? 21
 rubble rotation - weathered rock?
 below clay w former blebs etc
 39.5-44.5

44-49, 49-54, 54-59 1/4
 clay, white stiff, plastic - fs
 fragments common
 no ls present or a little

Site 3
 Boat Ramp marker island
 0-~23 soft - EASY rot and
 feed

~23 - yet some rubble or such

~23-28 - stiffer - dy?

28-29 - stiff - lighter rotation
 - 31.75 appears to be top of rock
 or shell bed - hard - bit
 started deflecting rock
 at marker

side 4

22

E of hwy ~ 1/4 mi N of bay bridge

0 - ~ 20' sand + clay sand
CLAY

drilled to 45' - CLAY - denser
with depth - 15 at 45'

- when pulling auger - w
15' left in hole got sinkhole
collapse around hole.

pulled rig forward pulled
auger w wireline

sink 5' x 6' x 2.5' to
W.C.

fremmed 4 bags portland -
hole bridged at - 25' -

portland returned into pool
in depression

set up flagging around hole

8-25 - CEMENT Plug in set
at - 2.5' sloped in sides of
pit

Franklin Co. auger site 23

#1 south edge of Och. bay bridge
bridge east of hwy ~ 100 yds

#2 Bald point - at end of
road

#3 Granite Point

#4 Och. River boat ramp s of
Och. R. St. pk

17306
A-BF-1

17307
A-BF-3

17308
A-BF-4

17309
A-BF-5

17310
A-BF-6

~~CALL~~ ~~ROCK~~
~~copyrak~~
~~362-100~~
~~SR 100 in~~
~~1st Exit Lake City~~
~~21st St. SD~~
~~near Richard~~
~~Park St.~~
~~5 mi~~
~~21st St. south~~
~~DEER TRACK~~
~~2 mi~~
~~4 mi~~
~~364-9190~~

To Do List

- Pack - Map folder
- GPS
- magnet
- clear plastic tubing
- caps
- core boxes
- split snow spout spacer
- cell phone
- boots
- sample bags
- hole plug
- pump + foter
- gloves
- live pen marker
- long hose
- CALL, greg hatcher
- slide hammer

3 1/4" FSA's
 AW slips
 SS Auger pin

W-17306
A-BF-1 →

2.25' dark humic sd.

8-28-95
KC + FRR to Bradford
Co - meet w Ben Ceryak
re Lake Sampson auger
project

LAKE SAMPSON #1 - A-BF-1
LAT 29° 56.118'
LONG 82° 12.657'

SEC 33 Q. A. T. 65 R 21E
ELEV 145'
LAND OWNER:

0-2.5' push spl - organic rich sand - 6" thin - 1894 sd to 2"
2.5-5.0' push - soft ~ 50% rec.
5.0-7' dk bn humic sd
7.0-8.25' dk bn humic sd sd to 94
sl. clay sd
1894 bn clean gtz sd, poor
recovery, (~ 8")

8.25-10.25 lt gy gtz sd, poor recovery
(~ 8")

10.25-12.25' lt gy gtz sd, v sl. clay,
~ 2' recovered

12.25' 15' sand sucked into HSA 25'
pumped out to ~ 13.25 then
6" sand + 6" clay sd recovered

Ivory Joe Hunter
496 1332

15-17 vsl clay sd ~ 8" record
remainder prob clean sand
17-19" clean gy. sd - prepared sample
19-21.5' - hit clay approx 20-20.5
sample stuck - cable pulled loose
- pull hss to retr sample etc.
use drill head to push splr
thru latching head - drove
sample too far - bowed
middle of sample.

END DAY 7:30 PM
FR, KC START 7:00 AM

8-29-95 7:30 AM START

drill hss back to 21.5'

~~21.5-22.5~~ 21.5-22' clay

22-23.5 clay

23.5-25.5 clay - bottom 3" clayey
sand

25.5-27' split spoon sample

27-27.5' - hard at 27.5 - penetration

27.5- hard? - clay ls - shorter
splr

27.5-27.75 - ls - mod ind, friable
row's target litho

27.75' TD

A-BF-2

bottom of this
interval is sand

27

back fill hole w cuttings to
25.5' then bentonite to 20.5'
fill remaining hole with cuttings

BF

A-BF-2

LAT 29°55. ~~832~~ 832' ELEV. ¹⁴⁵
CON 82°12. ~~842~~ 842' (TOPD)

S 33 GA, T 65, R 21E

0-~9.5' SAND

9.5-25' ~~clay~~ clayey sand - some
blebs of clay n stringers

25-~~31~~ 31' shaly clay - blue + gn. SAND bottom hole
~31' first rough rotation -

grading - harder ~~gravel~~ weathered
rock and clay

34.25' ON ROCK - TD - second

rock chips saved on spl

NO SAMPLES COLLECTED

6:20 END DAY

17307
A-BF-3

8-30-95
A-BF-3

28

LAT 29°56.643' ptop 84.3

CON 82°12.573'

SEC 28 a b c, T 6 S, R 21 E

ELEV - 145' (topo)

0-3' black org. rich sd, gnd's
to gy at base

3-4' clayey sand

4-9.0' clayey sand - gets stiffer
at 7' - grey, red & orange clay
on clay sd. soft at btm

9-10' clay, blue at top -
gnd to y.l. & br below 10'

10-11.5' br clay

11.5-14.5' y/or clay & white
mottling

14.5-17' color chg at 14.5 - white clay is
y.l. br & grey streaks/mottled

17-19.5' - white, y/or clay.

- on pulling this sampling string
had positive hole pressure -
(Air?) (swamp gas?) bubbling
some slight collapsing - don't
know from where.

All clays to this point are
caliche & plastic

at N 20.25 - start some auger
shudder

19.5 - some shudder to
N 22.5' + 1/2" soft.
poor recovery -

collect - pseudo split spoon spc
- pushed tube into clay, pulled
off of auger.

24.5 TD - clay sd + organic
last run

- running water noises +
sediment collapsing -
plug btm of tube w 3.5 bags
Bentonite. - 24 → -10'

running water noises stopped
when bentonite reached
- 17 is N-17 in where running
water level is

plug remainder with cuttings

29

17311
A-BF-7

17312
A-BF-8

17308
A-BF-4

17309
A-BF-5

17310
A-BF-6

A-BF-4 →
W 17308

A-BF-4

30

LAT 29° 56.649' pdop 4.2
lon 82° 11.669'

South side of Cypress Run Rd.
Sec 27 bc, T 65, R 21E
Elev ~ 137' Topo

- 0-0.5 black organic rich sd
- 0.5-1.0 white/vltgy gtz sd
- 1.0-~35 humic sand,
- ~35-7 ltgy bn clay sd
- 7-9.25 ltgy, bluish & grayish
stiff clayey sand
- 9.5-11.5 gray clay sd
- 11.5-14-
- 14-16.5 white/ltgy sand-uncons.
- 16.5-24.5 white/vltgy gtz sd
- 24.5-28.0 white/vltgy gtz sd
- 28-29 white, ltgy & bn sl ch gtz sd
- 29-31.5 blue gr plastic dsol
- 31.5-34.5 @.gr, buff & blue clay sd
w minor rock chunker sized
clay
- 34.5-39.5 - bluish gray clay sd
w phos grania & rock pebbles
- 39.5-42' As above. less rocks
phos

17311
A-BF-7
17312
A-BF-8
17308
A-BF-4
17309
A-BF-5
17310
A-BF-6

42-49' - bluish clayey sd 31

w phosphate
49-54.5 clay clay sd w phos

51.5-54

54-55.5

55.5-58

58-59.5' TD

hole collapsed/filled naturally
to -17' - backfilled with
cuttings to -10'

-10-7' bentonite -

backfilled remainder with
cuttings

W 17309
A-BF-5 →

8-31-95 - Kc, FRR 7:30 AM start 500 ft
A-BF-5 end

LAT 29° 56.870' (52") PDOP 4.9

LONG 82° 10.883' (53")

S 260C AT 05 R 21E

Elev ~141' (Topo)

0-2.5' push spl, dk bn organic
rich gy s. - lighter with depth

2.5-5' push spl 2.5-3 1/4 - lt gy
bn sl. clay sd

3.75-5- gy + or chy sd

32

5-7' gray + or chy? chy sd on above

7-9' gray clay + clayey sand

9-11.5' wht tillite gy & chy sd

11.5-14' wht sd to ~12.5 then y/or

14-16.5' - quartz sd. uncon. - poor recovery

16.5-19' - sand then back into chy

sd 18-19'

19-21.5' qtz sd - sucking into pipe

white lt. gy uncon.

21.5-25.5' - purged spl. clean qtz
sd w blebs + streaks of clay
minor

25.5-27' - sand as above

~50% recovery w flap valve

- ~6' sd in TSA - purged TSA
clean

27-29.5' sand as above - ~50%

recovery. 6-7' sand in TSA

(sampler also sand in

this run - static wt - 4.5' sd

29.5-30.5 qtz sand

30.5-30.5 or + green sandy clay

31-33.5 ~ 31.5-33.5 split spoon spec

31.5-32.5 sand 32.5-34 grey +
bn clay + chy sd

~~34-36.5'~~ 33.5-36'

33

33.5-34.5' grayish sand & clay sd

34.5-35.5' gray to orange clayey sand /
sandy clay

35.5-36 - greenish + orange clay / clay sd
with phos sand

36-38.5' clay, lt. gy, w phos green
mixed in ~ 30-40'

38.5-41' lt. bl. gy clay sd, v phos sd
less phos at base

41-43.5' poor recovery - upper part
prob worked out clearing pipe
(worked ~ 1' below bit) -

43.5' grey, gn, + lt. yellowish grey clay
w ls fragments, iron scale

phos + gtz + phos sd clay

43.5-46' lt. bl. phos sd clay to
~ 45 then reddish br phosphatic
clayey sd.

46-46.5' y. or clayey sand and
penetration in/on gtz + phos sd
ls. - prob none of sample back

46.5-48.5 - soft ls / hard clay w
ls frag

TD 48.5'

place has bentonite 42.75-46'

W-17310
A-BF-6

John's cluster site

34

LAT $29^{\circ}56.355'$

Lon $82^{\circ}12.996'$

pdop
3.6

9-5-95 KC, AH, D. Jensen

A-BF-6

LAT $29^{\circ}56.713'$

Lon $82^{\circ}10.30942'$

pdop
7.5 4.3

S 26 dda, T65, R 21E

Elev 140' TOPO

TD 59.5'

24-24.5-

but blue green clay at 24'

W 17311

A-BF-7

LAT $29^{\circ} 66.075'$

LONG $82^{\circ} 10.097'$

pdop 4.2

S. 35cbb T65

R 21E

E/W 125' TARD

0-3' SAND

3-9.5 clay sd - stiff

9.5-14.5 - stiff clay sd

35

17311
A-BF-7

17312
A-BF-8

17332
-BY-1

17335
A-RV-3

17336
A-RV-4

W 17312

9-6-95

A-BF-8

36

LAT 29° 55.391' (23")

LOD 82° 10.321' (19")

S 35 CCB T 65 R 216

Elev 134' TPO

0-2.5' - push spl - ~ 1.25' recovered

- splr plugged on pine root

2.5-5.0' push spl - dk gy

humic / organic rich gtz sd

5.0-7.5' - no recovery - soft -

extd splr nose

7.5-8 3/4 - poor recovery in top thr

dk gy stiff clayey sd

8.75-11.25' med to lt gy clayey sd

sdg/ch

11.25-12.25' - split sporn spl

gy clayey sd.

12.25-13.5' lt. gy gtz sd. - low m

part sl. ch.

13.5-16' Clean white sand

- organic-rich cavings toward top

- pumped hole before sampling

next interval - sand had clogged

hole

16-18.5' poor recovery of clean sand

~ 6" - sampler was jammed

(sand locked)

17334
A-BY-2
Elevating #2

17312
A-BF-8

17332
A-BY-1

#1

17335
A-RV-3

17336
A-RV-4

- lost most sample trying to
get sampler out of hole.
pumped a representative sample.

- 18.5 - cont'd
21.0 - clean SD. ~ 12" recovered
23.5 - SAND LOCKED AGAIN
- 50% recovery - cln SD
26.0 - cln SD - pumped SAMPLE.
- contains some clay fragments &
COARSER GRAINED SANDS.
28.5 - PUMPED SAMPLE
- hit clay - greasy, ¹/₄" olive brown
31.0 - cln SD & SANDY ¹/₄" OLIVE CLAY
33.5 - clayey SD - H. olive brown
36.0 - clayey SD - full rec.
38.5 - clayey SD - clay ↑ toward bottom
- 80% recovery.
41.0 - same - muck at base
43.5 - pumped sample - cl. SD.
- made a cavity - 46.4' hole w/ 44.5' pipe
- smpl sl. coarser w/ calcarenite
44.25 - PUMPED SAMPLE
- as above w/ blebs of sandy clay.
46.0 - ~~clayey~~ H. gray - brown sand
48.5 - gray sand - some clay matrix
50.5 - AS ABOVE
51.5 - PUMPED SAMPLE
- cln snd w/ some clay frags.

38
Sampler sand locked after
51- 53.5' run - cable broke
trying to pull it loose
- drilled down 53.5-58.5
to see if rock present -
no rock

W-17332

ABy-1

34"

9/25/95

39

ZAX start KC, AH, DJ
met K. Miller (WMD)
at WITSE - Loaded sand.

A-By-1 Econdine #1

30° 31.570' pdop 4.4

85° 29.145'

12:00 T2N, ~~R12W~~ R12W, S43E

! * @ < [. E . 8 X * @ !

pickup truck + trailer stuck

3:45

0-2.5 - sand - organics top 2"

2.5-5.0 - brownish yellow clayey sand

5.0-6.0 - as above.

9-26-95 KC, AH, JB - 7AM start

near drill site ~ 9:15

6.0-7.0' y.l. br sand

7-9.1' y.l. med. or sand - 50% rec

9.1-11.6' - almost no recovery

- ? don't know why - sand

11.6-13.1 - same sl. clayey sand

- hit iron-stained v. clayey sand

last 1" of run - @ 13'

4" short.
29.25
28.9'

13.1-14.25 v. clayey sand - orange
w. qtz pebbles.

14.25-16.75 - clayey sand - mod. orange
decreasing clay down int.

16.75-19.25 - same

19.25-21.75 - same

21.75-24.25 - same

sl. more clayey 21.75-24'

24.25-26.75 - same

26.75-28.9' ^{all as above vary sl. in clay & mottled iron staining}
~~iron staining~~

-4" short of a full run due to
accumulation of extra 1" here & there.

~~28.9-30.5~~

28.9-30.5 - cleaner sand - still some clay
& iron stain.

★ lower depth is absolute. Should have
been a full 2.5' run. however.

Will check to find area of mixup.

30.5-33.0 - sand - varying clay & stain

33.0-33.75 - same

33.75-36.25 - clean sand - some iron stain
clay mottling

36.25-38.75 - same.

38.75-40.25 - same to 39.5'

39.5-41.25 - clean white sand

~~41.25-43.75 - clean white sand~~
~~43.75-46.25 - clean white sand~~
~~46.25-48.75 - clean sand & mod orange sand~~
~~48.75-51.25 - orange sand - saturated~~
~~51.25-53.75 - clean sand - bailed sample~~
~~53.75-56.25 - same~~
~~56.25-58.75 - same~~
~~58.75-61.25 - m. orange clayey sand~~
~~61.25-63.75 - hit a thin lamina of hard clay (1 cm diam.)~~
~~63.75-66.25 - static water level - 50.4'~~

49.2

3.9

45.3

41

41.25-43.75 - clean white sand

43.75-46.25 - clean white sand.

- interval w/ iron stain 44.25-45.5

46.25-48.75 - clean sand & mod orange sand.

- hit water table. sat. sand.

- hit a med. gray thin clay laminae
~48.5'

48.75-51.25 - orange sand - saturated.

- can't put 4" well. - not enough big
augers. -- 2" well or nothing.

9/27/95 - KC, AH, HM.

STATIC W.L. 49.2' - 3.9 = 45.36'

51.25-53.75 - clean sand - bailed sample

53.75-56.25 - same

56.25-58.75 - same.

static W.L. = 51.1^{BLS} at end of drilling.

58.75-61.25 - m. orange clayey sand

- hit a thin lamina of hard
clay (1 cm diam.) -

- static water level - 50.4'

★ Need to
total cased
62.5'
(65' to top of csg)
Need to
measure
depth

2
2.4
2.7
1.60
4.8
7.48

42
Inserted casing - pulled flights.
Sand naturally filled in to 42'
Backfilled sand to 30.5'
Poured one bag Hole Plug to 27.5'
6 gal water to wet
mixed and pumped 8 bags portland
27.5' - LWD set protective casing
top of well csg 30" above LWD

10-3-95 - KC, AH return A-BY-1
to develop. water level
46.5' below csg 2 1/2 sticks up
- pumped ~ 30 gal city water
down hole - no return at top.
Rigged bailer / surge pump
- bailing at ~ 1/4 gal/minute
- still producing sand at end
of day

10-4/10-5 Hurricane Opal

10-6- KC, AH, DJ - return to
A-BY-1 - w/ 6" bailer -
bail + surge till noon -
still producing some sand
water getting much clearer.
hole prob. suitable for sub pump.

Bolt → cooler
Hand cleaner
large trays
sampler

W-17334

A-BY-2

dist. name George to surficial

10-6-95 district developed -
move to Elondine Cr #2

A-BY-1 completion date ~~10-6-95~~

A-BY-2

T 15, R 14 W, SEC 2 bdc b
elev 22 meters

Lat 30° 25' 56" 85° 36' 36"

0-2.5' pushed bn + gy bn slch sd

2.5-5.0' pushed lt. orange ch sd

5.0-6.5' pushed - as above

6.5-6.75' trash - last smplr

down hole a hand to pull
flights out to retrieve.

6.75-9.25 - med brow to ltg orange sand.

9.25-11.75 - lt orange sd

11.75-14.25 - same

14.25-16.75 - same

16.75-19.0 - pulled nose of smplr
back 2"

- same lt orange sand

- some mottling of color

- dk gray brown lense toward top of
run.

43

17334
A-BY-2
Elondine #2
650944 to SUR.

17338
A-GF-1

17339
A-GF-2

17335
A-RV-3

17336
A-RV-4

For Get:

- * complete sets of box materials
- * grip strips for trailer
- * ~~Screen~~ (4")
- * 4" PVC cap
- * 10' 4" casing

* Ready to sample

10-9-95 KC, AH, DJ

Return to A-BY-2

"A Beautiful Day in the Neighborhood"

Sample Box 3 contained 18.25-19.0
-smp jumbled in transit

19.0-21.5 - lt. orange sd ~60% recovery
- extended sampler nose 2".

21.5-24.0 - lighter orange sand.

- gray staining from sampler
- small pocket of mocha brown

fine sand at top of run - dk brown boundary

24.0-26.5 - sd. ~~more~~ darker than smp above

- mottled iron-staining more apparent
- also bad gray stain from sampler
- cavings at 27.0'

26.5-29.0 - As Above

29.0-31.5 - brige sand

- hit water table about 30.0'

31.5-34.0 - ~~not~~ bailed smp ^{lt. orange} sand

34.0-36.5 - same - also bailed

36.5-39.0 - same

@39.0 - same

- All bailed smps had
very clays, orange water

39.0-41.5 - same PUMPED SAMPLE
 41.5-^{44.0} pumped sample
 44.5-49.0 - same PUMPED SAMPLE
 49-54' pumped spc

pulled 3 1/4 hsa's, ran in 15'
 of 6 5/8 hsa

10-10-95 KC, AM, JB ^{TAM start 700pm petn}
 ran in 6 5/8 hsa's to 48'.

- sand in btm - ?' - pulled
 Auger back out - belt missing
 run back in - place csg.
 csg pulling up with hsa's -
 pull csg + hsa's
 shut down for day.

10-12 KC, JB + H.M. ^{TAM started}
 rebn - run 6 5/8 hsa's back in
 set csg. - starts to pull up.
 poured 50 lb sand in csg
 for wt. — MISTAKE

STATIC WATER level 29.5' bldd
 1' stickup on 48' csg, scd + t.p.

2" suction hose
1 1/2" press. hose
2" x 1 1/2" bush

46
formation sand washed in
around SCN & CSG as HSA's
were pulled to depth of
22.5' TD

1 bag 30-65 sand to 21.5'
PUMPED 9 bags Portland 21.5' → -6' BLSO
Screen 39-44'
tail pipe 44-46.5'

~~10/16/95~~ 6:30 quitting time

10/16/95 KC, AH

- Attempted to pump sand w/ 2" hose
no success
- Pumped ~250 gals City of Tally
water w/ no return
- Mixed 5 bags Portland to
set protective casing & set
0-6'
- Will need ~ 1-2 bags additional
to finish platform.

* Well HAS NOT been developed.

W 17338
A-GF-1

D-TP
UDSL

2
84
6
50

spcs from 18.5' →
predominantly
pumped

T 75, R 8W sec 17.66a

47

A-GF-1 Fish & Game Land
@ Howard Creek

LAT 29°52.84' Lon 85°03.97'

0-2.5 push core

2.5-5.0 push core

5.0-6.5

6.5-9.0

9.0-11.5

11.5-14.0

14.0-16.5

Shut down 5 PM 7:15 pm note

10-17-95

KC. JB, DJ 7 AM start

STATIC WL 6.5' BLS

16.5-18.5' fine gl. silty sd. poor
recovery, pumped to clear
HSA

18.5-22' primarily den or clay sd
- mixing into HSA's

27-29' cored - flap valve - spgr
sucked sand in

29-32' pumped spec red clay matrix
minor clay blebs + iron cemented
blebs

SEN above here

0-27 SEN

27-32 ^{SEN} ~~SEN~~

32-35 + P

35' purged spe
32-34' red clay on matrix sd 48
sd coarser than Above
35-37.5' red & dy sd
37.5-39' - bit clay red-dy sd w
39-41.5' blebs grey silty clay
39-41.5 - mostly coarse red sd
+ blebs grey clay.
41.5-45. = grey clayey sand
purged + sampler samples
45-46.5' grey silty sd w fluvial
shut down on day.
6:30 pm retn

★ SEND COPY of Litho
logs AND water data
to GFC

Phil MANOR

10-19-95 KC, JB + HM TAM street
fill water tank then retn
to A-GF-1
drill pull 3 1/4" fssas
drill in 40' 6 5/8".
set 30 csg, 5' sen + 3' tp
top of SEN ~ 29.5'

10-20
pump 5 bags
portland for
remainder of
grout +
platform

49
pulled 25' KSA's - SAND
filling in on auger as pulled
mix 5 bags portland
premixed 5 bags & portland
16.5' - 7'

7:15⁴ netN

10-20-95 KC, AH 7AM start
pump + surge well - pumps at
329pm (1 1/4" hose) w 3' drawdown

well total depth 37.5'
CSG 0 - 29.5
SCN 29.5 - 34.5
at tail pipe 34.5 - 37.5'

flush mount completion - grout
stopped at -1'. Filled in
w filter sand beneath
manhole then poured platform.
completion date 10-20-95

1 baler the
6' EVL

$$\begin{array}{r} \text{top + bottom} = 22.65 \times 2 \\ \text{sidew} \quad \quad \quad 16 \\ \hline 38.65 \times 2 \\ \hline 241 \text{ lb} \end{array}$$

$$\begin{array}{r} 32.27 \times 2 \\ \hline 24 \\ \hline 56.25 \\ \hline 351.5 \text{ lb} \\ \hline 592 \text{ lb} \end{array}$$

Dimensions

Ry top tool boxes

Top left $22 \times 74 \times 12 = 3256$
 $22 \times 122 \times 12$

Top right core box dimensions flat.

19 x 31" - top

top left box 241 lb
 at " $351 \text{ lb} > 592 \text{ lb}$

W 17339
A-GF-2

T45, R10W
Sec 13a

A-GF-2
10-24-95 KL, AH, DJ
Dead Lake Strat Rec
30° 08.34 85° 11.96
Elev. 40'

0-2.5' > push - SAND
2.5-5.0
5.0-5.5
5.5-7.0 ss. spl
7-9. pk + yl. ch. sd - fight
9-11.5' - ~~9-10.25 ss spl + 10.25~~
~~10.25 w.c. spl.~~
red ch. sd
11.5-12.75 ss. spl
12.75-14' w.c. spl
14-16.5'
16.5-19'
19-21.5' split spoon spl.
21.5-24' 17.1. sand
24-26.5' - hit water table
poor retn.
26.5-28' split spoon run - poor
recovery - 1.5' sand in TSA
pumped sample to clear TSA
coarse sand + silt pbls

51

17337
ST. Andrews
ARV-5

17340
Dead Dog
A-WC-1

17339
A-GF-2
Dead Lake

17335
A-BY-3

17336
A-BY-4

To do/get:

Cut floor plate for toolbox

AW slips

~~Measure~~ measure

Gak Combo
Dead Lakes
1972

BC - 45'
BS - 42'
TS - 37'

9 bags 20/30 > btm to 26.5'
1 bag 30/65
3/4 bag Hole plug 24.5-26.5

28-29.5' crs qtzsd + phl. ⁵² pyrox
29.5-32' }
32-35' } purple spec
35-38.5' }

38.5-43.5' purple spl

43.5-48.5' purple spec - lower part
chg to gy ch + chsd

48.5-53.5' dk gy clay, sandy
clay, 1st fly, and shell fly.
barnacles, olive shells etc

53.5-58.5' - as above - sandier

58.5-59.5' get sampler w flap valve

- no penetration - pull spec
shorten - won't go back in

- sample sandy, clayey

drill 59.5-63.5' - drill in
hwa w/o sampler - hard rotation
slow penetration but not
rocky - will spec off hwa +
bit.

7pm return

10-25-95 KC, AH
pull 3/4 hsa, drill in 48.5'
6 7/8 hsa, fill water column
place csq + sen + 3' tp.
nom 37-42' sen

To get:

- ~~Pick up man-hole cover~~

- ~~100' tape~~

- ~~Wasp spray~~

~~1 lb box of nails 8d~~

4) ~~1x4x8'~~

completion sept #1 + 3

- ~~Remove valve~~

- ~~put on string on~~

- ~~above assembly tape 10', 20', 24'~~

placed 9 bags 20-30 ⁵³
1 bag 30-65 along with
for sand and drill
34 bags barite 24.5-26.5'

Pumped 8 1/2 bags Portland
6 pm note

topped off grout w 3 bags
Portland - 1' → - 7'

surged + pumped to develop
pump ~ 1.5-2 gpm - still
cloudy

flush mount completion
top of csg. ~ 0.1' above
natural grad level.

10-27-95 AH 7:30 AM 54

Static water level 23.33' BTC

- TC approx. at land surface

- maybe 2-3" above.

Bottom of casing @ 44.1'

Screen - 36-41'

Pumped in, pumped out & surged
till 3:30. Clean up & 4:00 depart.
Water still very cloudy.

A-By-3
W 17335

Plotted Lat. Lon
30° 26' 04"
85° 25' 43"

11-3-95 KC, AH, DT to

Youngstown fire tower - 06"

A-By-3 Lat 30° 26' 04" 106

Lon 85° 25' 43" 698

Prop 4.4

T15, R12W sec 3a,b

push spurs - 0-5'

latching Assy wadvent. left
in TCH, leave rig setup
retn TCH.

7AM - start 200pm retn

~~To get:~~

~~Box stuff~~ tops (5 extra)
~~bottoms~~
~~liners~~

~~Blocks~~

~~Split spoon tubing.~~

~~4 screen~~

~~Cam WD40~~

~~paper towels~~

~~16 PS~~

~~Sample bags~~

~~Blue caps~~

~~Call Sam~~

11-6-95

KL. AH. DV. TAM SAND

MAN A-BY-3

0-2.5' SAND

2.5-7.5' SAND - NO RECOVERY 3.5-5.0

5-6.5' black organic - sandy?

NO significant recovery.

6.5-8.5' black organic rich sed

8.5-11'

~ 2' recovered

11-13.5' as above

13.5-16' as above

16-18.5' puped spl

18.5-19' split spoon sample
flowing sand

19-22' flowing sand, organic
+ humate? matrix - minor

quantity of humate cemented

blocks

- puped sample
22-24.5' puped sample - as above

24.5-

split spoon sample

- tremmie bore locked in
(SAND) - bore broke - not recoverable

pulled test - plug corehole

- 14-11 bentonite

- 1-5 putlac cement used

11-7

moved rig 4' for monitor⁵⁶
well hole

5-7' split spoon spl (n6 recovered
- sand) - plugged - pushed through
organic rich sed.

11-13.5' split spoon spl

- ~15' hammer hammer

prop spl ~~22-24~~ 25-28.5'
drill to 31' - prop spl at 31-31.5'

31.5-34' - prop spl

~~34-36~~ 34-36' sp. spoon spl

~~36-38.5~~

34-~36' split spoon spl ~1'
recovered. - sand getting lighter
sand in some shell

36-~~38.5~~ 39' - prop spl white

gty sd.

39-41' - drilled down

41-43' prop spl

43-~~45.5~~ 44' drilled down - prop spl

44

end day 500 pm, return
to tch 600 pm

~~Catt~~ Sanding ~~At~~
steel core ~~with~~

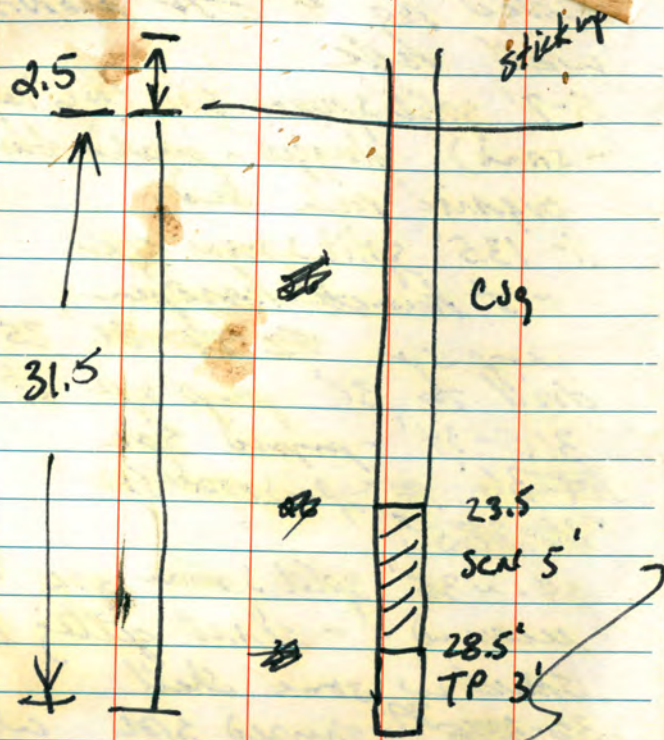
17337
ST. Andrews
A-20-5

17340
Dead Dog
A-20-1

17341
A-34-6

17352
BURSP
A-32-1

17336
A-34-4



DOT PC maint yard. loan
backhoe + op. to dig down
to top of CSG (hole approx
8'x10'x 9' deep. screw in
pvc back on top + pump
filled hole. - mixed sand
out of casing.

11-7-95 KC, AH, JD Tam start 57
disc w R. Capelan - set
SEN in 20-30' region
S.W.L. at ~ -5'

0-23.5' = "lost" casing
CSG 0-27' n - 7' - SAND washing
23.5-28.5' SEN 28-32' in over pipe
28.5-31.5' TP 32-35'

~~Callie Capelan - 11-8-95~~

11-8-95 KC, AH, DJ Tam start
hole filled in to ~ -4' - drill
down (19' to) to SA and Hennie
portland cement as pull agers
- CSG pulled up ~ 2'
Kept HSA fill as they were pulled
- 5 bags portland to -2'

retire thh 6:15 pm

17337
ST. Andrews
A-W-5

17340
HEAD DOG
A-W-1

17341
A-BY-6

17352
BURSP
A-BY-1

17336
A-BY-4

~~For Thurs.~~

~~Rake~~

~~2" PVC~~

~~Protective casing - above ground~~

~~Bolts for compressor~~

~~Right angle tubing adaptor~~

~~box top~~

~~Drop off Johns packet~~
~~knife~~

W 17336

A-By-4

11-9-95 KC NB, AM 7AM 58

net N A-By-3

pump well at ~4 gpm 2 hrs
mix cement)

Mix 3 bags portland to set prot.
csg. + platform

Run compressor to blow well

11-10-95 JB + DJ - net N A-By-3

- pump well STATIC W.L. 17.2' below
top of csg. ∴ 14'8" below USD

11-13-95 KC, AM, FRR - 7AM start
A-By-4

S 78°d T3S R12W

LAT 30°14'09" LONG 85°28'47"
Elev 18m (59')

0-2.5' SAND - push spc

2.5-5.0' "

5-6.25' mottled red, y. clay sd

6.25-7.75' as above

7.75-8.75'

8.75-11.25' as above

11.25-15.25' yellow & red or clay sd

15-17.25'

16.25-18.75' - yellow + white
csg clean sand

18.75-21.25 - white qtz sd. uncon

STATIC WL in this int.

21.25-22' split spoon spec

22-24.75 - purple sample -

yellow ss clay sd - thin white

ss clay sd below - pink

open below base of csg.

yellow material much coarser
than the white

- static wt 31.0' w hole
to 31.5'

32-33.75' cm yellow fine clay
sd

33.75-36.25 y. clay sd

36.25-38.75' CRS y. or clay sd

38.75-44.25' purple spec - CRS

clay sd w limonite cemented
grains + sh. granules

44.25-47' - Appx int. - purple

sample - dk gy fine clay sd

ONE TO 47'

SET SEN 36.25-44.25 int
or 20-26'

(static wt above clay at
~ 20')

Tues. AM

Call Katherine - screen depth?

pick up pump seal

10 bags portland

15 bags sand

NW district completion cards

permission for lock box completion

50' 1 1/4" PVC

T

bushing 1 1/4" → 1/2"

1/2" quick connects + air hoses

to get before next well

boxes - tops & bottoms

timers

trays

staples

sample bags

pens

auto accident report

45'

casing

2 1/2' tail pipe

5
3.8
1.7
66
38
64.6

Drilling

6:45 noon, K 7:30 pm

60

11-14-95 KC, FRR, DJ TAM stand

Load up, to Kelley farm A-B-3
static water level ~22'

pull 3 3/4 hsa, drill in 44.5'
6 3/4 hsa

set nominal ^{43'} 38' csg/scn
string.

pulled augers - hole not filled
to 27' - poured 5 bags

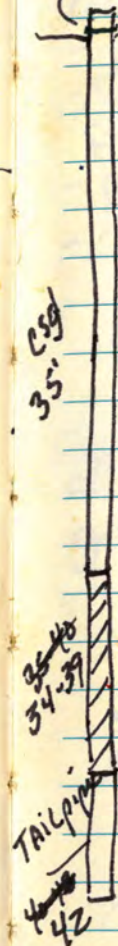
2030 sand + 2 bags 30-65

to 18.5' - poured 1 bag

bandwidth to ~17.5'

pumped 6.5 bags portland
(Hemimic)

flush mount completion



To get Ser Thurs

Contact @ St. Andrews

Tom Ratt

Antio. Ranger Richard Butgereit
904-233-5110

Ranger Cecil Dikes
at office
- located site w/ Catherine

11-15-95 AT, FRR 7AM start
- cement to 6' below LSP
- Mixed two bags portland to
fill well w/ 2' of land surface
- filled w/ 2 bags 20/30 sand
- Topped off & set casing (man hole)
w/ 1 1/4 bags ^{portland} more stabilized
w/ sand (20/30)

- pumped 3 hrs - removed
all but trace of ^{fine} sand-sized
grains - mainly mica left.

Static - 22' BLSO

KC - 11-15 800-AM $\Rightarrow$ 54.5pm
Tumblers, wood

A.B. 4
Final td of well 42.05'
static WL 11-16-95 21.8'
below top of Csg

Completed 11-15-95
completion rept. done

W 17337
ST ANDREWS
A-By-5

7:53
8:00
5:30
5:40
4:40

Appears that
road etc is
existing beach
on ridge - elev ~ 3' above
swell of fill at
~ 1.5' of fill at
drill site

11-16-95 KC, AH, DJ 7am start 62
to A-By 4 - pu rig, finish up surface
completion then to St. Andrews
Bark park

- move site from original one - across
road + down ~ 200'

S22 iert 45 R 15W

Lat Lon

Elev. ~ 10' TOPO

0 - ~~2.5~~ 4' is fill - 0 - 1.25' no ch

0 - 2.5' push spl

2.5 - 4.75' push spl

4.75 - 6.0' w.l. spl, wnt sed

6 - 8.5' " " " "

8.5 - 11' " " " "

11 - 13.5' w.l. spl NO recovery -

piped sample at 13.5 - 13.5'

13.5 - 16.5' AS ABOVE

16.5 - 19 - mid interval pu
dk br organic rich sand

19 - ~~20~~ 21' w.l. sample - 1' interval

- pip sample/sed from pipe

21 - ~~22~~ 24 w.l. spl - ~ 60% recovery

shut down for day 5:30pm

17337
ST ANDREWS
A-By-5

17340
ST ANDREWS
A-By-1

17341
ST ANDREWS
A-By-6

17352
ST ANDREWS
A-By-1

29.4
3.8
36.6

11-17-95 KC. AH, DJ 8AM SHORE 63

attempt split spn spl - 24.8-25

- splr locked in tube - ~3" v fine

sand recovered - drill dn to 20

+ pump spl ~~24.8-26.5~~ 24-26.5'

26.5-29.7' - pumped spl. light dk

cohesive humate/organic layer

in upper part of interval -

fine sand

29.7-32' pumped spl - humate

cemented sand - humate

prob. under represented in spl

32-~~33~~ 33.5' NDSM

33.5-35.2 pumped spl - humate

(cemented) sand as above

35.2-36.7 - humate cont sd

coherent layer (note

sp) at bottom of interval

36.7-38.5' - w/ spl - no rec.

pumped spl from test

38.5-41' pumped spl

41-43.5' - NDSM

43.5-45' pumped spl - fine sand - less

organics + humate

45-48' - clean sand

48-50' TD pumped spl - clean sand

- poss. minor humate blebs

17340
DEAD DOG
A-100-1

17341
A-100-6

17352
BURSP
A-100-1

11-17-95
5:30 PM Finish
11-18-95
8:00 AM
START
Globe ~~off~~
~~broken~~

64
plan to place SCN
17-22.

SCREEN actually set at
to ____ hole drilled in in auger
were pulled
pumped + surged up to 30 gpm
w last 10' auger in hole
pumped $5 \frac{3}{4}$ bags portland
-1 $\rightarrow$ -11 - settled to approx -3.5
STATIC ~~at~~ we 9.0 below top of casing
Top of well casing 0.2 above
parking lot surface
topped off grout w cement/sand
mix to -1' - filled remainder
of hole w 20-30 sand for
drain bed. constructed
covered platform

Final well TD 23.7'
pumping greenish brn clear water
(dilute tea) at ~30 gpm
- drawdown ~6'

retn test 4:30 pm

17340
Dead Dog
A-W-1

17341
A-B-6

17352
Burris
A-W-1

~~Need~~ 3-bkts to Katherine
well comp. for
3358 key for Katherine

W-17340

A-WL-1

14.5
1.25
13.25

25.75 - 28.25'
split spoon run - no recovery

11-20-95 KC, AH, FR 7AM start 65
to youngstown pa. rig, gas up
fill water tanks then to
new site

A-WL-1 ~~Howard~~ Sandy Creek Rd (Dead Dog)

T 3N, R 17W, Sec 27 b c.

LAT 40° 38.31' LON 85° 55.88'

Elev ~ 62'

0-2.5' push core

2.5-5.0 push core

5-6 1/4 ss spl. - grooved

6.25-7.75' ss. spl. ~ 50% rec.

8.25 -

8.25-10.25 mottled orange, yellow & wht sandy clay

10.25-13.25 same

13.25-15.25 - ss spl.

15.25-17.75 - same - some grey also

17.75-20.25 - same to ~ 19.50

19.5-20.25 - orange brown clayey sand

20.25-21.75 ss spl.

grade back in clay at 21.0

21.75-23.25 mottled orange, brownish orange.
& white sandy clay.

23.25-25.75 mottled bn, red
cm clay + clay sed

17340
Dead Dog
A-WL-1

17341
A-BY-6

17352
Bursip
A-WL-1

Staples

inside at - w lunch
50.75' after lunch
at 28' after lunch
break in - 16.4
rose to - 16.4
further wait

200pm

Right side guide key failed - 66
shut down, rebr tlb in rig for
repair

11-21 + 11-22 - repair

11-27-95 K.L. FRR, D.J. 7AM start

static water level 20.0'

28.25 - 30.75' silt spurium chyd

30.75 - 33.25' chyd gl. or

33.25 - 35.75' - chyd

35.75 - 38.25' - chyd - v tight - ss spl

38.25' - 40.75' brick red + gl. or

clay / chyd

40.75 - 43.25' red or chyd

43.25 - 44.5' ss - run - penetrator
refusal at 44.5'

44.5 - 46.5' gl or chyd - ~ 1 1/4' rec

46.5 - 48.25' red chyd

48.25 - 50.75' - ~ 1' recovered

gl. and orange sl. chyd sand - sign.
less clay than above

50.75 - 53.25' - gtz sand - ~

1' recovered - prob plugged spur
- 5' sd in HSA - pop out

17341
A-34-6
17352
BuckIP
1-512-1

penneble zone

25.5 - 28

35.5

~ 34 -

43.50

53.5 - 57'

static w
~ 16'

measured final well depth
38.2'

12/6-95 - static w 23' 7"
below top of clay (2.5' stickup)
21' 1" 650

53.25 - pumped spec down 67
~ 53' - 53.5'

53.25 - 56.25 pumped spec - sand

- variable clay matrix

56 - 57.25 sand? clay.

57.25 - 58.25 tight clay? - 3' sec in
HSA

pump spec - some sand + gtz
gravel. + clay blebs - 2 1/2' of
clay? in HSA - want pump out

return TCH 7pm - KC to spec 8pm

11-28-95 KL, FRR, TCB - 7AM start

- hole collapsed to 27' -

no water standing -

start to drill in GSB HSA

38' hole

39-36' bentonite - 1 bag

36-23' 20-30 sand 14.5 bags

23-22' 30-65 sand 2 bags

- natural collapse/sink to 20'

pump 7 bags prothane

well 30' csg 6' secw 30-35

3' tp. 35-38'

41
W-173
A-By-6

A-WZ-1

11-29-95 KC, AH, DJ + FRK

68

notw to A-WZ-1

static WL 20.1' bUSD

stickup set at 2.5'

12-6-95 SWZ. 21.1' bUSD

Move rig to A-By-6 - Pine log
stake forest in SE corner
of forest rd 19 (car body)
and B-2

S 96d T 15 R 16w

LAT 30°25.02' LON 85°50.77'

0-2.5' pink spl bn - sl. ch set

2.5-4.5' pink spl - (Hbn → white sd

4.5-5' - NO SM

5'-6.5' ss spl - SAND - ~50% vce

- sand sucked into PSA -

shut down for day since don't
have water

AH-DJ - set protective casing &
tapped off well ~~A-By~~ A-WZ-1
- 2.5 bgs Portland

Retn to H 700pm

17341
A-By-6
Pine log

17352
BursP
9-52-1

no spl
63-7.5'

11-30-95 KC, AH, VB 7 AM

69

pump out PSA

- sample 7.5-8.75' - poor rec - ext
spur

8.75-10.25 - v soft - almost no recovery
- no sign hole

10.25-^{13.75} - v soft - still upon recovery even
with flap valve

13.75-15.25 SS spl - v poor rec
ext spur note add'l. 2"

15.25-16.5' - pumped spl - unconsolidated
sand

16.5-19 - sand - v poor recovery

19-22' - pumped spl chn. say

22-24.5' - no sm

24.5'(AT) - pumped spl 24.5-25.0

sand - minor current flakes from
pump etc

24.5-26.5 pumped spl

26.5-29.5 - no sm

29.5(at) bailer

29.5-31.5' s. spl spl

31.5-34' bailer spl

shut down for day

RETURN TEL 7:15 PM

17352
BWRIP
A-5C-1

12-1-95 KC, AH, DJ - 7AM STARTED TO

static well (hole to 34') - 3'

drill 34-39' - bail spl of clayey
sd from HSA (~1' in pipe)

- pumped pipe clean + bailed
spl from 39-39.5'

39-44 drill down 2' sd in HSA

- pump out spl to 44'
sand on above

44-46.5' - drilled on above

46.5' rotation gets tight - pump spl

46.5-51' pumped spl - hit guy

~~51-55'~~ blk clayey sd.

51-55' - pump spl

at 55' - bailer spl - splr stick
like clayey sd. - ~6.25' recovered

55-56.25' - 99 blk sl. ch. sd.
sl. cohesion

56.25' TD

Drill in 24" 65/B/HSA - set

CSG + SCN - SCN 15-20

- tremmie cement as pull last

2 Augers -

- well failed - 8' sd in csg.

- jettied to pump out - jettied to
30' - pull csg + scn -
end cap failed

~~23.1"~~
 23' 1" 13"
 10
 22' 3"

abd. tide - 6 bags portland 71

total

atn TLT 7:00 pm

12-4-95 Kc. AH, FPR 630 AM
 Start.

return to A-B4-6 -

drill in 25' 6 5/8" hsa

set 15' csg, 5' sc + 3' t.p.

- pulled 15' hsa. sand

nat. fill to - 11'

pump + surge - pump at ~

5 gpm - clearing up eventually

but real silty on surging

csg set up - 10" above 1st

well depth 22' 3'

2.5' stickup

pump system began portland

- 10 → 1st + platform.

static wL 3' bLSD

12-6-95 static wL 4' 2" bTDC

1.8' bLSD (3)

17352
 A-502-1
 BURIP

W 17352 —
Permit #T9600805

KC, AH, HM

Get SSS sample at ~4.5-5.0'
in new hole.

LAT $30^{\circ}42'44''$
Lon $86^{\circ}52'41''$

14
3 | 44
3
14

LOC - LE

72

pitted cinder surface exposed
in drainage ditch W side
of I 75 S
~1.5 mi N of mile post 115
4.0 mi N of exit 18

A-SR-1 Blackwater River
State Park Ambient site
Permit # T9600805

T 2N R 26W S 6db

LAT $30^{\circ}42'43''$ Lon $86^{\circ}52'42''$
pdep 4.1

2-26 - to Quincy - then
with pod - repair truck
then to Blackwater
work 7AM - 600pm

2-27-96 730AM start

0-2.5 push

2.5-5.0 push

5.0-5.25 push

5.25-6.5' s. sp. spl

6.5-8.5 white sand

8.5-11' white sand

11-18.5' sp. spn spl poor ^{rec}

17352
A-SR-1
BWRSP

- 14.5
 13.5 - ~~14.5~~ - ~~82~~ NO recovery
 - adj. spec nose
 14.5 - ~~14.5~~ - 17.0 - hit soft zone
 in approx middle of run
 17.0 - poor recovery - lost in
 HSA - clean flowing sand
 - sp spec recovered part of
 lost sample.
 17-19.0 - pumped spec - cln sd w
 thin clay streaks
 19-21 pumped spec
 21- 22.75 pumped spec
 22.75 - 23.75 - 55 spec -
 - clean sand
 23.75 - ~~24.75~~ - 26.25
 26.25 - 28.75 - Pumped - clean med. sand
 28.75 - 31.5 As Above.
 31.5 - 34' As Above
 34 - 38' Sand as Above plus exam
 + 16.34 clay and quartz granules
 38 - 38.75 sd w clay + gtr phz
 38.75 - 41.75 - sd as above, nft
 as clayey as prev. 2 ft.
 41.75 - 43.75 - same
 43.75 - 47.5 - same - w/ gtr pebbles
 47.5 - 49.0 clean sand w/ ~3% heavies

49-51.0 - clean sand w/ blebs of
friable, plastic clay & yellow clay
-driller felt soft zone toward
bottom of run

51.0 - "soft" run -

55.2 - 56.4 - split spoon
dk gray sandy, micaceous clay
-TD-

-pulled & flight

NAT SAND fill to - 20'

bentonite to - 17'

NAT. fill to - 14'

pumped (tremmie 5 bags probland
END work day 800 pm

To Do B4 Motor pool-

- bolt down water tank
- replace 2 main hydraulic hoses
- drill tool boxes for eyebolts, grind down box lid corner

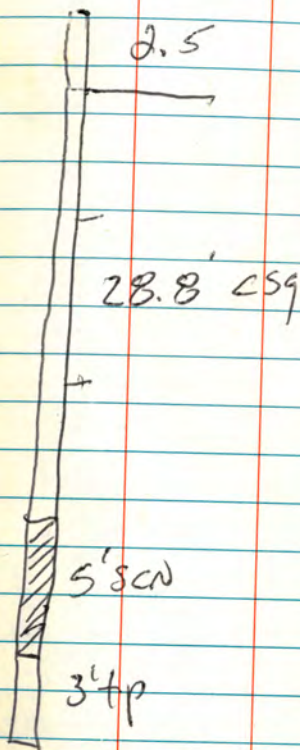
1' csq
25' csq
20' csq
5' csq
5' scn
3' tp

$$\begin{array}{r} 28.8 \\ 5 \\ \hline 33.8 \\ 3 \\ \hline 36.8' \end{array}$$

2-28-96 8 Am start

75

2.8' stickup
pump 3 adell. bags portland to bring
grout back to surface
static w2 15.2" below top of csq
construct surface pad.



SCREEN da. + qd. pump
same COARSER than slot size
- install entire 3" liner
AND SCREEN.

After liner installed

pumped & little sand - after
pumping & surging w/ 1 hr
pumped 15 gpm

Final well depth 36' 4"
to top of csg

3/5 A7, JBH to Blackwater
River State Park
- A-SR-I

static WL - 13' top of casing
2.5' stick up.
SWL 10.5' (BLSI)

Pumped/ ~~surged~~ surged for 6 hrs.
- pump/surge full can of water
7-10X then let well pump
for 4-5 mins straight.
- refill can w/ cleaner water &
start over again.

Centered 3" casing w/ tubing, banded
chips & neat grout.

- First attempt at sealing failed - surging action created air pressure between casings forcing air out thru top of tubing, bentonite, & grout → mess

Finished sealing after pumping.
Cleaned casing as best as possible.

Return 8:15

~~Bob~~
~~Freddie Jones~~
~~242-7800~~

~~ENP.~~

~~4001 SR 9336~~

~~12 miles SW of~~
~~Hoodland~~
~~on SR 3336~~

~~SSNRC~~

CAPACITY OF HOLE

Diameter of Hole (Inches)	Gallons per Lin.Ft.	Lin.Ft. per Gallon	Sacks Cement per Lin.Ft.	Lin.Ft. per Sack Cement
2	0.1632	6.1275	0.0199	
1/2	.2550	3.9216	.0311	50.2518
3	.3672	2.7233	.0444	32.1548
1/2	.4998	2.0008	.0607	22.5228
				16.4748
4	.6528	1.5319	.0791	12.6422
1/4	.7369	1.3570	.0893	11.1982
1/2	.8262	1.2104	.1006	9.9404
3/4	.9206	1.0862	.1118	8.9448
5	1.0200	.9804	.1240	8.0645
1/4	1.1246	.8892	.1367	7.3153
1/2	1.2342	.8102	.1500	6.6667
3/4	1.3489	.7413	.1639	6.1013
6	1.4688	.6808	.1785	5.6022
1/4	1.5938	.6276	.1937	5.1626
1/2	1.7238	.5801	.2095	4.7733
3/4	1.8590	.5379	.2259	4.4267
7	1.9992	.5002	.2430	4.1152
1/4	2.1445	.4663	.2606	3.8373
1/2	2.2950	.4357	.2789	3.5855
3/4	2.4506	.4081	.2978	3.3580
8	2.6112	.3830	.3173	3.1516
1/4	2.7769	.3601	.3375	2.9630
1/2	2.9478	.3392	.3583	2.7910
3/4	3.1237	.3201	.3796	2.6344
9	3.3048	.3026	.4016	2.4900
1/4	3.4910	.2865	.4243	2.3568
1/2	3.6822	.2716	.4475	2.2346
3/4	3.8785	.2578	.4714	2.1213

* Cement calculations based on the volume of an average cement mixture being 1.1 cubic feet per sack of cement.

Angle	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.
32	5299	6249	1.1792	1.887	1.600	.84805	58	39	.6293	.8098	1.2868	1.589	1.235
10	5324	6289	1.1813	1.878	1.590	.84650	50	10	.6316	.8146	1.2898	1.583	1.228
20	5348	6330	1.1835	1.870	1.580	.84495	40	20	.6338	.8195	1.2929	1.578	1.220
30	5373	6371	1.1857	1.861	1.570	.84339	30	30	.6361	.8243	1.2959	1.572	1.213
40	5398	6412	1.1879	1.853	1.560	.84182	20	40	.6383	.8292	1.2991	1.567	1.206
50	5422	6453	1.1901	1.844	1.550	.84025	10	50	.6406	.8342	1.3022	1.561	1.199
33	5446	6494	1.1924	1.836	1.540	.83867	57	40	.6428	.8391	1.3054	1.556	1.192
10	5471	6536	1.1946	1.828	1.530	.83708	50	10	.6450	.8441	1.3086	1.550	1.185
20	5495	6577	1.1969	1.820	1.520	.83549	40	20	.6472	.8491	1.3118	1.545	1.178
30	5519	6619	1.1992	1.812	1.511	.83389	30	30	.6494	.8541	1.3151	1.540	1.171
40	5544	6661	1.2015	1.804	1.501	.83228	20	40	.6517	.8591	1.3184	1.535	1.164
50	5568	6703	1.2039	1.796	1.492	.83066	10	50	.6539	.8642	1.3217	1.529	1.157
34	5592	6745	1.2062	1.788	1.483	.82904	56	41	.6561	.8693	1.3251	1.524	1.150
10	5616	6787	1.2086	1.781	1.473	.82741	50	10	.6583	.8744	1.3284	1.519	1.144
20	5640	6830	1.2110	1.773	1.464	.82577	40	20	.6604	.8796	1.3318	1.514	1.137
30	5664	6873	1.2134	1.766	1.455	.82413	30	30	.6626	.8847	1.3352	1.509	1.130
40	5688	6916	1.2158	1.758	1.446	.82248	20	40	.6648	.8899	1.3386	1.504	1.124
50	5712	6959	1.2183	1.751	1.437	.82082	10	50	.6670	.8952	1.3421	1.499	1.117
35	5736	7002	1.2208	1.743	1.428	.81915	55	42	.6691	.9004	1.3456	1.494	1.111
10	5760	7046	1.2233	1.736	1.419	.81748	50	10	.6713	.9057	1.3492	1.490	1.104
20	5783	7089	1.2258	1.729	1.411	.81580	40	20	.6734	.9110	1.3527	1.485	1.098
30	5807	7133	1.2283	1.722	1.402	.81412	30	30	.6756	.9163	1.3563	1.480	1.091
40	5831	7177	1.2309	1.715	1.393	.81242	20	40	.6777	.9217	1.3600	1.476	1.085
50	5854	7221	1.2335	1.708	1.385	.81072	10	50	.6799	.9271	1.3636	1.471	1.079
36	5878	7265	1.2361	1.701	1.376	.80902	54	43	.6820	.9325	1.3673	1.466	1.072
10	5901	7310	1.2387	1.695	1.368	.80730	50	10	.6841	.9380	1.3711	1.462	1.066
20	5925	7355	1.2413	1.688	1.360	.80558	40	20	.6862	.9435	1.3748	1.457	1.060
30	5948	7400	1.2440	1.681	1.351	.80386	30	30	.6884	.9490	1.3786	1.453	1.054
40	5972	7445	1.2466	1.675	1.343	.80212	20	40	.6905	.9545	1.3824	1.448	1.048
50	5995	7490	1.2494	1.668	1.335	.80038	10	50	.6926	.9601	1.3863	1.444	1.042
37	6018	7536	1.2521	1.662	1.327	.79864	53	44	.6947	.9657	1.3902	1.440	1.036
10	6041	7581	1.2549	1.655	1.319	.79688	50	10	.6967	.9713	1.3941	1.435	1.030
20	6065	7627	1.2577	1.649	1.311	.79512	40	20	.6988	.9770	1.3980	1.431	1.024
30	6088	7673	1.2605	1.643	1.303	.79335	30	30	.7009	.9827	1.4020	1.427	1.018
40	6111	7720	1.2633	1.636	1.295	.79158	20	40	.7030	.9884	1.4061	1.422	1.012
50	6134	7766	1.2661	1.630	1.288	.78980	10	50	.7050	.9942	1.4101	1.418	1.006
38	6157	7813	1.2690	1.624	1.280	.78801	52		.7071	1.	1.414	1.414	1.
10	6180	7860	1.2719	1.618	1.272	.78622	50						
20	6202	7907	1.2748	1.612	1.265	.78442	40						
30	6225	7954	1.2778	1.606	1.257	.78261	30						
40	6248	8002	1.2808	1.601	1.250	.78079	20						
50	6271	8050	1.2838	1.595	1.242	.77897	10						
Cosin. Cotg. Cosec. Sec. Tan. Sin. Angle							Cosin. Cotg. Cosec. Sec. Tan. Sin. Angle						

Steamboat Dive Inn
 Bradford - (904) - 935-2283

GORMAN 620098
 WALMART 620099
 TALLA. WdS 620101
 Lower 620103
 Holley 620110
 Atl. Drilling 620113
 Connie likes Auto 620107
 Mid Am. 620111

~~ENV M89~~ - STACY
 ENV M89 - 800-624-0005
 P.O. 130 Bonifay
 - 77 to 90 - go w - 7-8 miles
 on Rt. before Bonifay
 White & blue

Johnny
 WALTERS

HARVEY Branton
 DOT P.C.
 (904) 872-4490

Billy Cook

Alex → Colorado
 970-533-1247

Sandy Pt. Campgrounds + Motel
Hwy 1295 935-0615

6 mi S of Bearford - 1295

35/night motel
no phone
ferts 40,
no pets

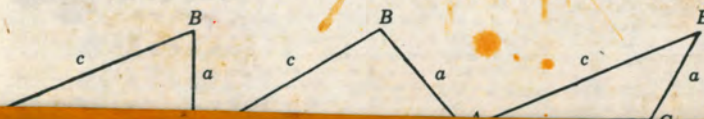
STEAMBOAT DRIVE INN
Bearford (904) 935-2263

Claxton - I 75 - FB
turnpike off I 75 - exit
Tampa exit - EXIT 27
turn off SANDY LAKE RD.
take 1st Rt. I 41. DR
go 1.5 mi - on Rt.

EXIT - SR 200 - college RD
- go back - away from BK
to pine ave (2744)
go Rt. 2.5 mi to
Big RASUAL BBR

347-6929

TRIGONOMETRIC FORMULAE



For Angle A.

Given

a, b

a, c

A, a

A, b

A, c

Given

A, B, a

A, a, b

a, b, C

a, b, c

a, b, c

A, b, c

A, B, C,

Slope

Horizontal

When the rise is known, the horizontal distance is approximately: - the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.

one of the
= 5° 10'.
distance =

distance
as in the
cosine 5°
319.4 -

Ken Campbell
FLORIDA GEOLOGICAL
SURVEY

963 W TENNESSEE ST
TALLAHASSEE FL

32304

(904) 488-9380