VV-9

Resource Recovery

Existing wells heights AMSL

	Top of Casing	Ground
control	414.7* ~~414.~~	410.1
1	417.1	413.9
2	408.1	406.2
3	422.4	419.1
4	393.7	392.75

* original height, 3.44 feet cut off by E&E (or 41¼ inches)

E&E wells heights

	Top of casing	water level static	AMSL water level
1	418.9	59.2	359.7
2	416.8	68.5	348.3
3	415.1	62.0	353.1
4	397.6	44.0	353.6
5B	405.5	51.0	354.5
6	424.9	72.5 (70.5?)	352.4 (354.4?)
7	423.8	77.9	345.9
8	426.5	76.6	349.9
9	426.2	73.5	352.7

locations

#1 SE¼ of SW¼ Sect 15 T9N R30E WM Franklin Co WA

#2, 3, 6, 7, 8, 9 SW¼ of the NW¼ Sect 22 T9N R30E

#4, 5 NW¼ of the NW¼ Sect 22 T9N ~~R20E~~ R30E

E&E wells # 1, 6, and 7 were relocated.

New locations

EE 1. 76 feet from control well along bearing S 49° 50' 50" E

EE 6 63.5 feet from SE corner area C along bearing S 88° 32' 00" W

EE 7 133 feet from SE corner area C along bearing N 72° 07' 25" W

USEPA SF
1452431

Jim Braddock

(A)

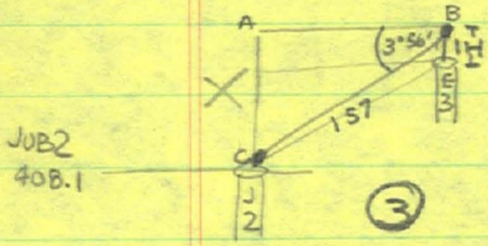
Surveying Notes

415.12
416.82

EE 3 = ~~415.12~~
EE 2 = ~~415.75~~
EE 7 = 423.75 OK
EE 6 = 424.85 OK
EE 9 = 426.15 OK
EE 8 = 426.5 OK
EE5 405.51
EE4 397.62

JOB #2 408.1

$157 \sin 3°56' = x = 10.77$



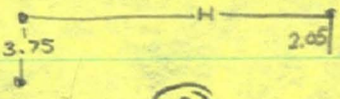
(3)

$BC = \frac{AC = \sin 3°56' \times 157}{157} = 9.694$

$9.694 - 3.75 = 5.944$

~~408.1 + 9.694 − 3.75 = 414.04~~

408.1
+ 10.77
− 3.75
415.12

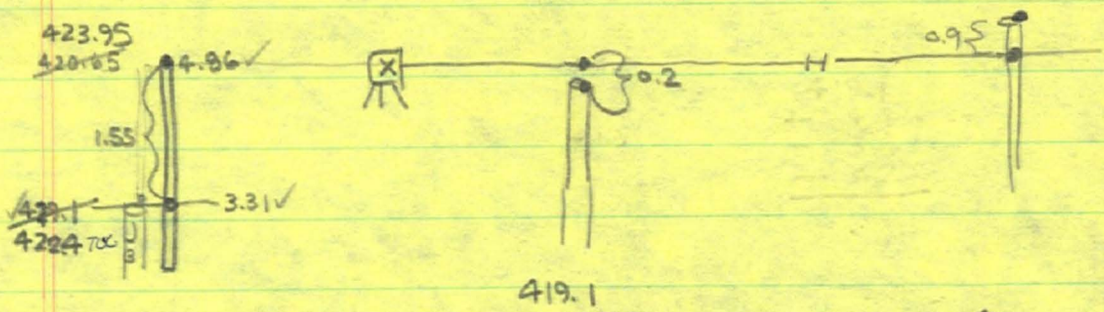


(2)

~~414.04 + 3.75 − 2.05 = 415.74~~ ≈ 415.7

415.12
+ 3.75
− 2.05
416.82

JOB 3
419.1
Ground



Add 3.3 ft to all

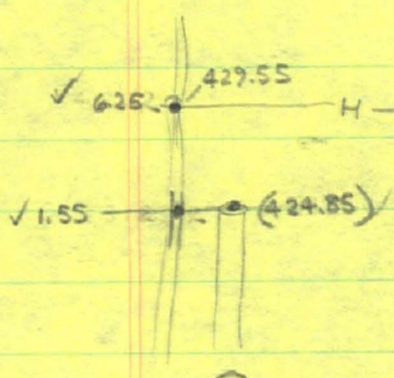
JOB #3
Casing to ground

419.1
+ 4.86
− 3.31
− 0.2
~~420.45~~ 423.75

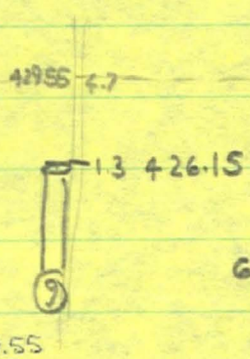
(7)

420.65
+ 0.9
~~421.55~~ 424.85

(8)

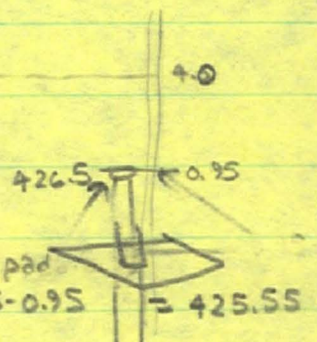


(6)



(9)

429.55
− 4.7
+ 1.3
426.15



Ground pad
426.5 − 0.95 = 425.55
=

429.55
− 4.0
+ 0.95
426.5

8

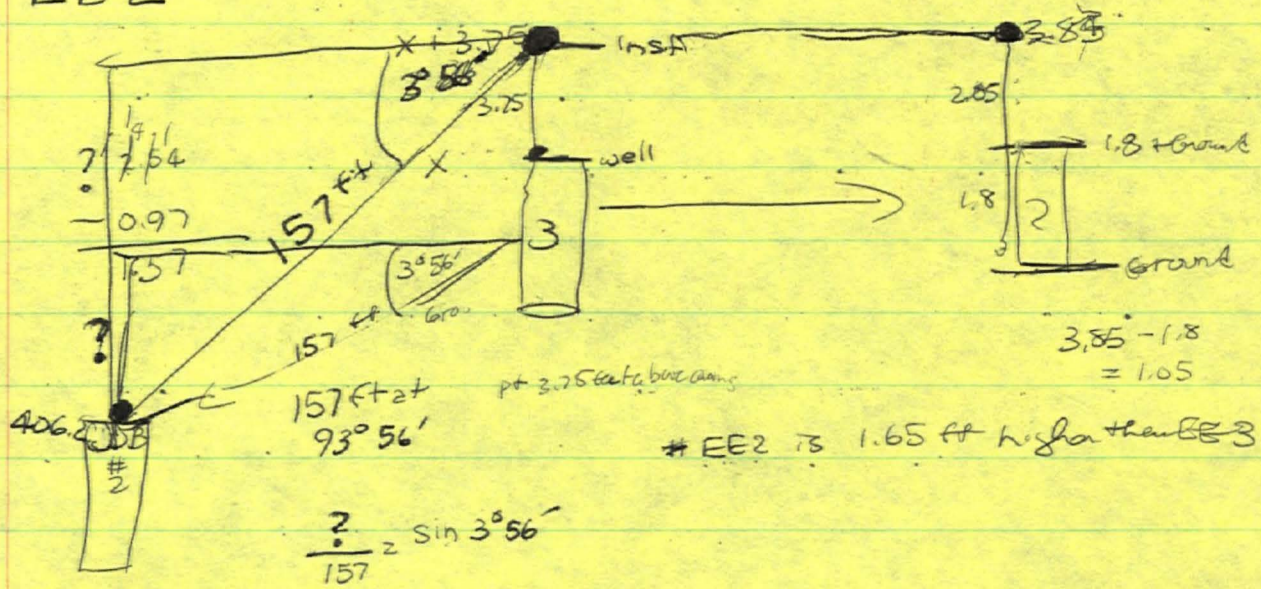
429.55 + 0.95 − 4.0

(1) JOB 2 to EE 2 & 3

5.4
1.7
3.75

0.97

EE 3 sight from road JOB well #2
EE 2



EE2 is 1.65 ft higher than EE3

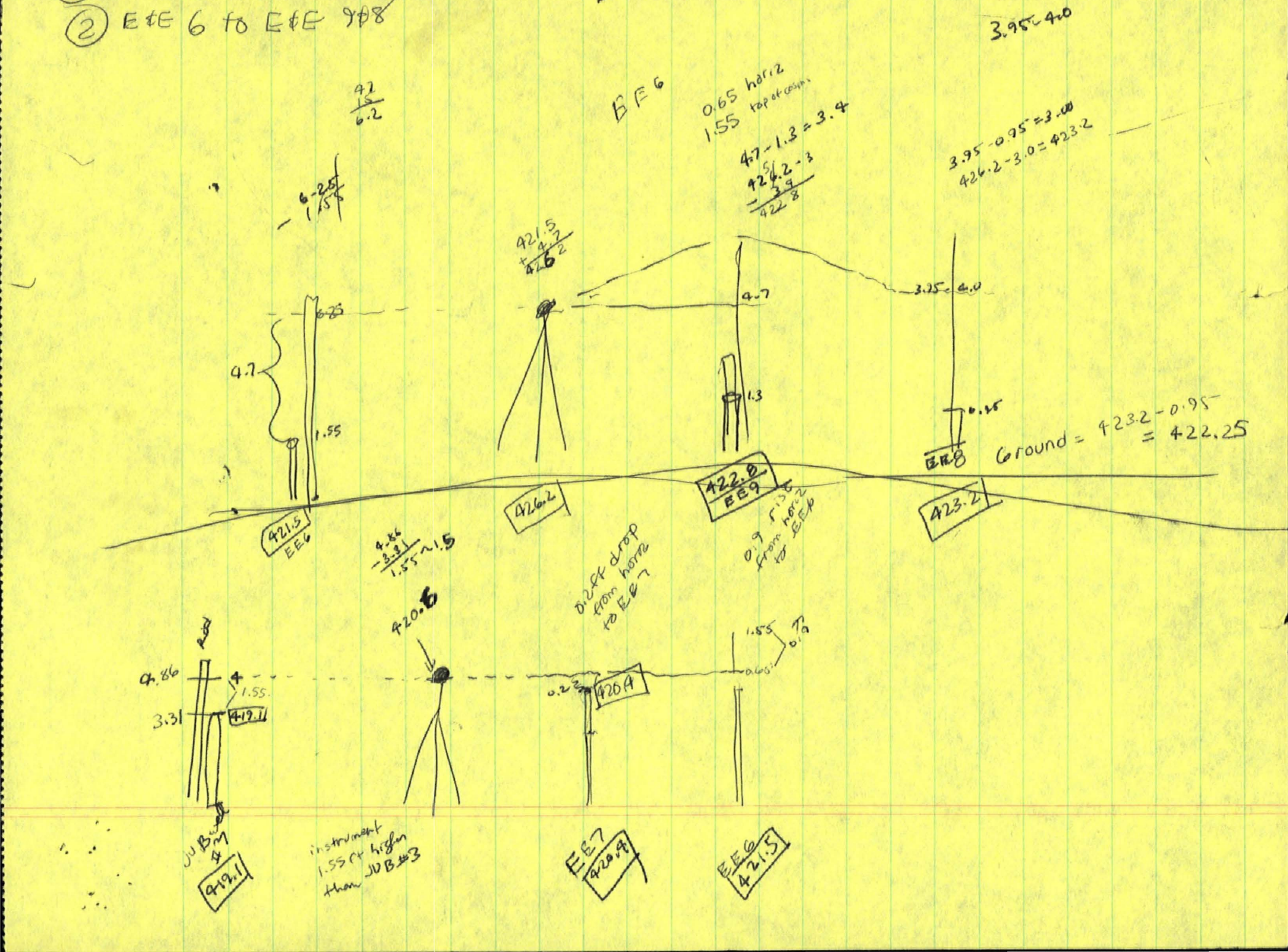
$\frac{?}{157} = \sin 3°56'$

EE2

(3) JUB #3 to E&E 7 & 6

(2) E&E 6 to E&E 9 & 8

EE 6-7-8-9



EE 5-6-8

(4)

E&E 8 to E&E 5&4

189
-110
79

1.9
1.5
1.1

80 ft. at

#5 horiz at 2.35
Casing at 2.95
Casing to p 0.6 ft above horiz

90
-85
0

360 midpt at 280 ft
200
160 ft

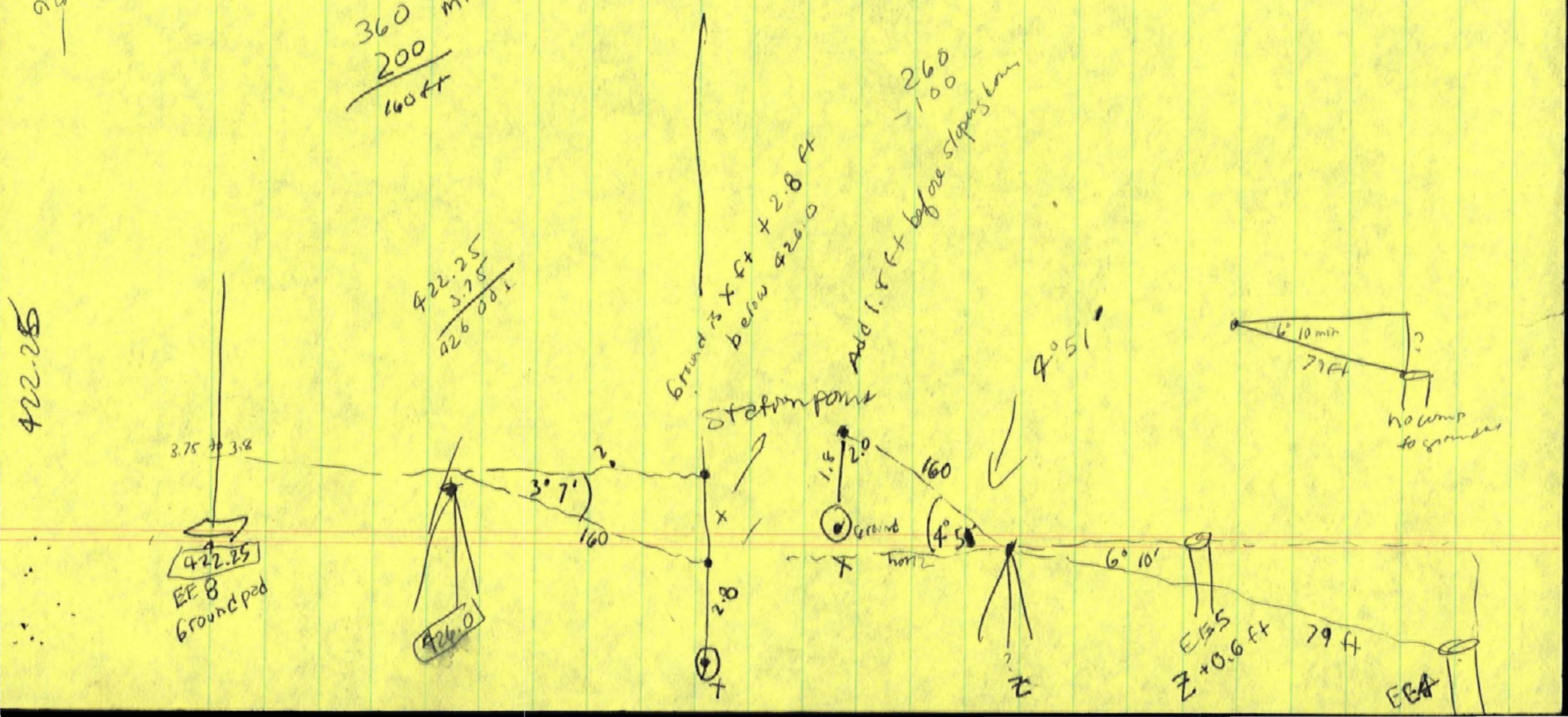
260
-100

Ground is x ft + 2.8 ft below 426.0

Add 1.8 ft before sloping horiz

422.25
3.75
426.00

422.25



(6) control well to JOB #3 dist & elev.
then turn to E&E #1

control well to well #1

~~360 azimuth =~~

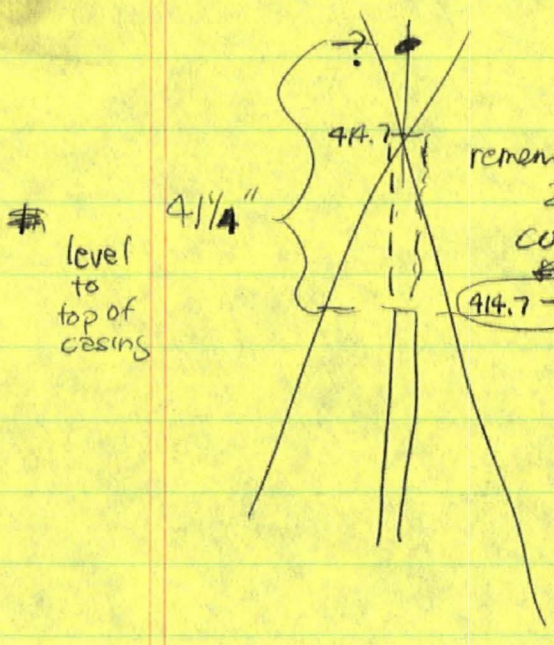
S 38° 57' 06" W or azimuth 218° 57' 06"

~~slighted & dialed in~~ bearing

then turn to well E&E 1

control well to EE 1 130° 09' 10"

88° 52' 30"
slightly up



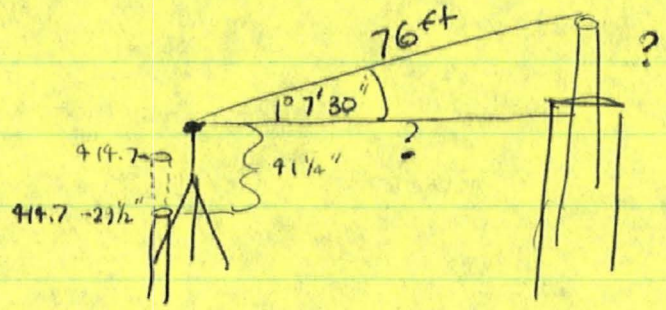
remember that 29½" were cut off ~~for blade waste~~

414.7 − 29½"

29½" includes

2°½
136.
76 ft

64
12
76



218 57 06
130 09 10
88 47 56

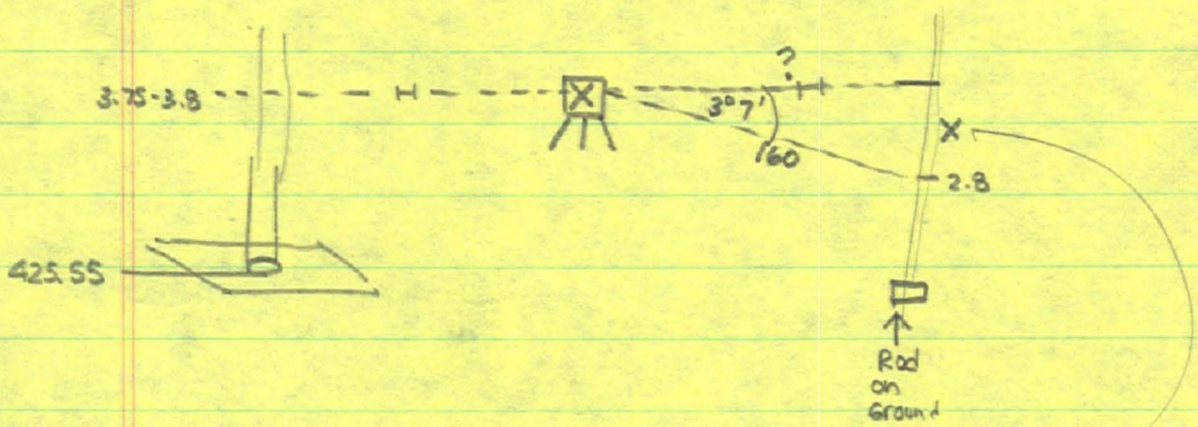
or S 49 50 50 E

49 50 50
130 09 10
179 59 60

hours
Wed EQP 1hr
tvl 5hrs
ONS 6hrs
12

Tho work 8^15 −
tvl

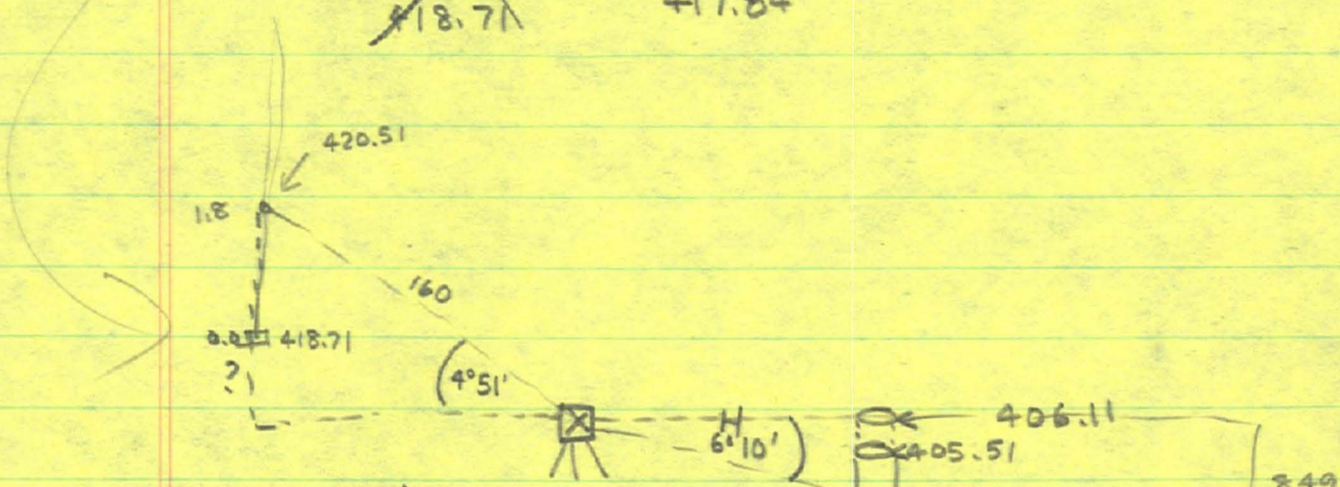
(B)



$\sin 3°7' = \frac{x}{160}$

$x = \cancel{\sin}\ 160 \sin 3°7' = \cancel{7.85\ ft.}$ 8.70 ft

$$\cancel{\begin{array}{r} 425.55 \\ +\ 3.79 \\ -\ 7.80 \\ \hline -\ 2.80 \\ \hline 418.71 \end{array}} \qquad \begin{array}{r} 425.55 \\ +\ 3.79 \\ -\ 8.70 \\ -\ 2.80 \\ \hline 417.84 \end{array}$$



$160 \sin 4°51' = \cancel{12.18} \Rightarrow 13.53$

$$\cancel{\begin{array}{r} 418.7 \\ +\ 1.8 \\ -\ 12.18 \\ \hline 408.33 \end{array}} \qquad \begin{array}{r} 417.84 \\ +1.8 \\ -13.53 \\ \hline 406.11 \end{array}$$

inst ht.

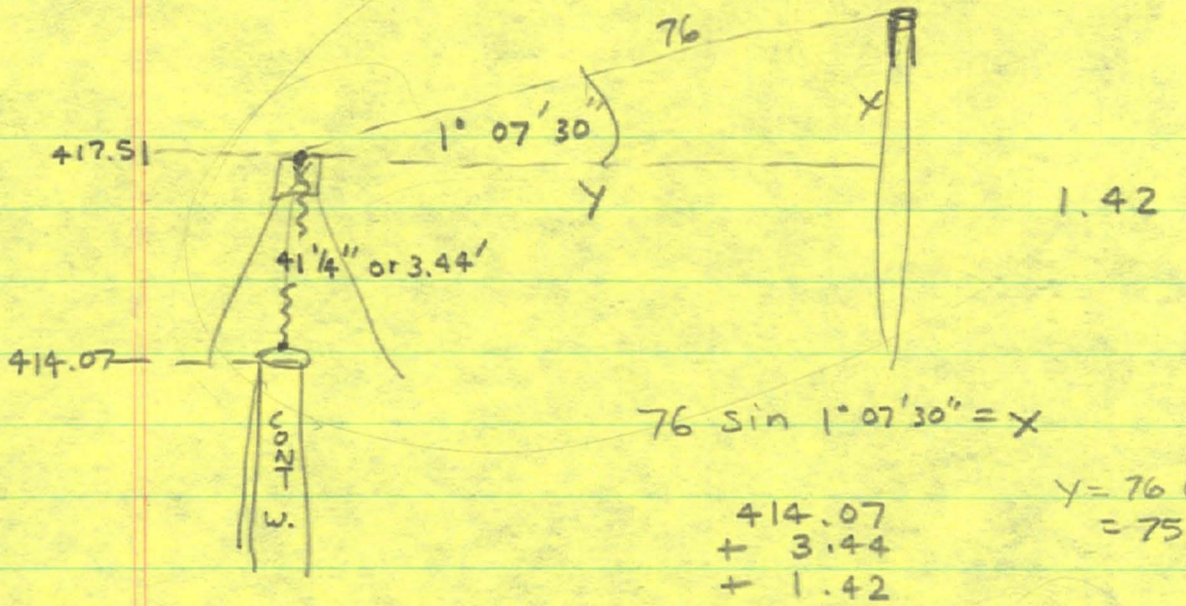
E5 is 0.6 ft below horiz

$$\cancel{\begin{array}{r} 408.33 \\ -\ 0.6 \\ \hline 407.73 \end{array}} \qquad \begin{array}{r} 406.11 \\ -\ 0.6 \\ \hline 405.51 \end{array}$$ (5)

$79 \sin 6°10' = x = 8.49$

$$\begin{array}{r} 406.11 \\ -\ 8.49 \\ \hline 397.62 \end{array}$$ (4)

(c) 1.07 → 1.16
1.073 1.125
1.079 1.1416
1.13



76 sin 1° 07' 30" = x

y = 76 cos 1° 07' 30"
= 75.99

414.07
+ 3.44
+ 1.42
418.93 EE 1

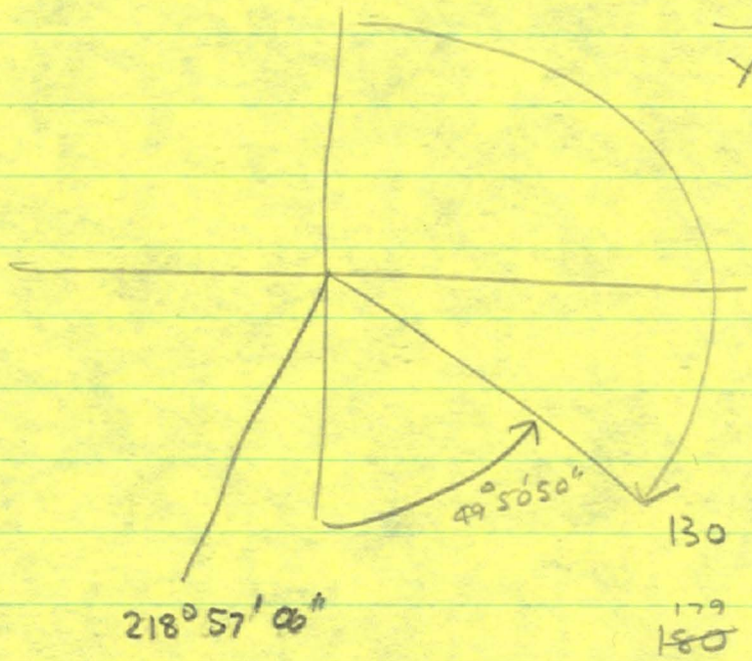
tan 1 = x/76

76

~~y = 76 tan 1° 07' 30"~~

cos 1° 07' 30" = 76/y

y = 1/(76 cos 1° 07' 30)



	179	59	60
	~~180~~	~~00~~	~~00~~
−	130	09	10
S	49	50	50

240-9300
20 ft

AP well elev approx 34 ft topo map ~~which~~
bottom of pond at elev of Columbia is approx sea level
~~which~~ (10 feet max) according to USGS Portland topo.

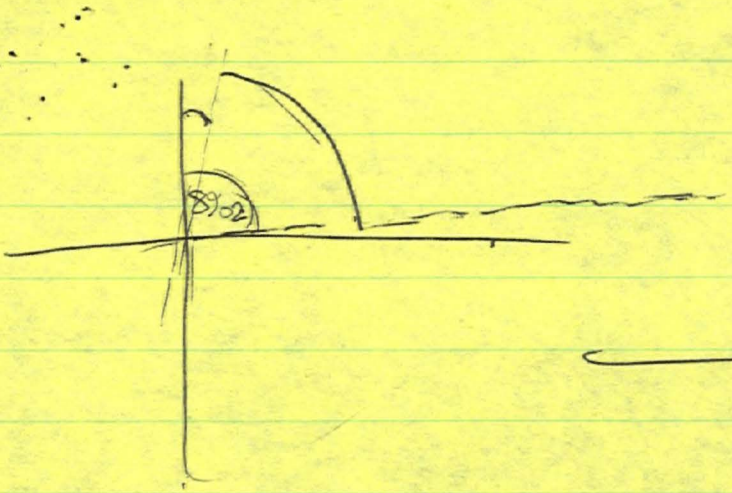
Static water level is 23'6"

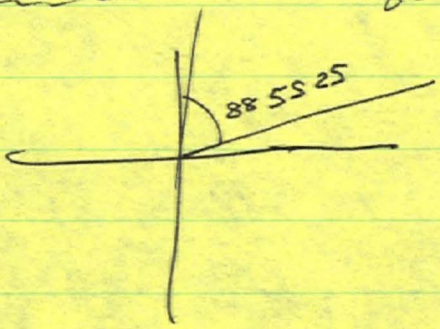
~~so clay~~ water table is ~~just below~~ above bottom of lake.

Net precip. 39.91" rain
evap

24.5"
15.41"

P





$$\begin{array}{r} 8\cancel{9}^{8}\ 62\ 48 \\ 00\ 08\ 42 \\ \hline 88\ 54\ 06 \end{array}$$

$$\begin{array}{r} 88\ 55\ 25 \\ -\ 0\ 32\ 06 \\ \hline 88\ 23\ 19 \end{array}$$

2810 W Clearwater.

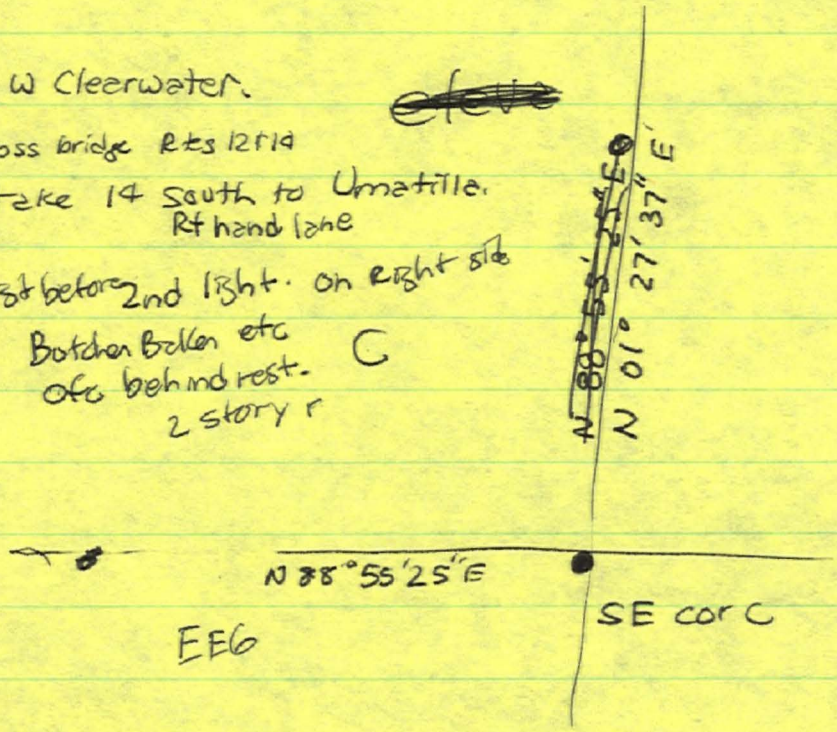
~~elev~~

Cross bridge Rts 12+14

take 14 south to Umatilla.
Rt hand lane

just before 2nd light. on right side

Butcher Baker etc
ofc behind rest. C
2 story r



29 1/2 = ft bladewidth.

29.5

30/12

2.5 ft

Add 2.5 ft to present control well height.
+14.7

(5) SE cor Lot C to locations - EE 5 & 6

EE6 is 63.5 ft from (SE) corner lot C
at bearing ~~1°28~~
S 88°32' 00" W

EE7 is 133 ft from SE corner lot C
at bearing N 72° 07' 25" W

5.445
4.805

$$\begin{array}{r} 4\ 1 \\ 5.44 \\ 4.81 \\ \hline 63\ ft \end{array}$$

91°28'

$$\begin{array}{r} 659.5 \\ 527 \\ \hline 132.5 \end{array}$$

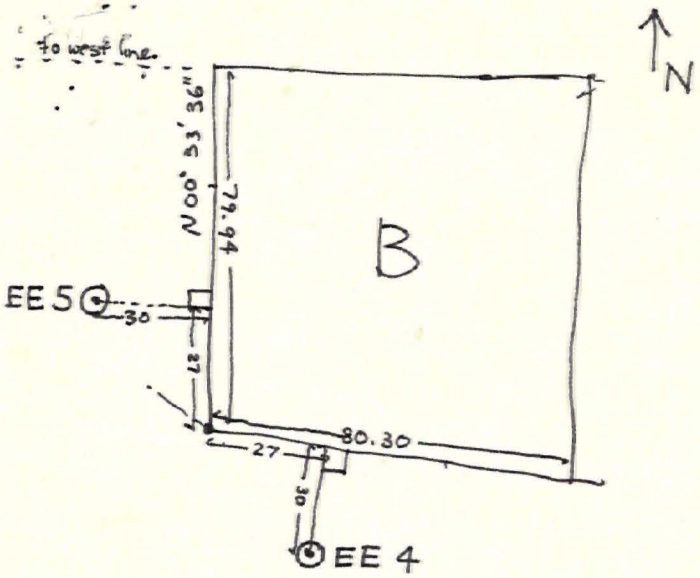
72°07°25

5.27

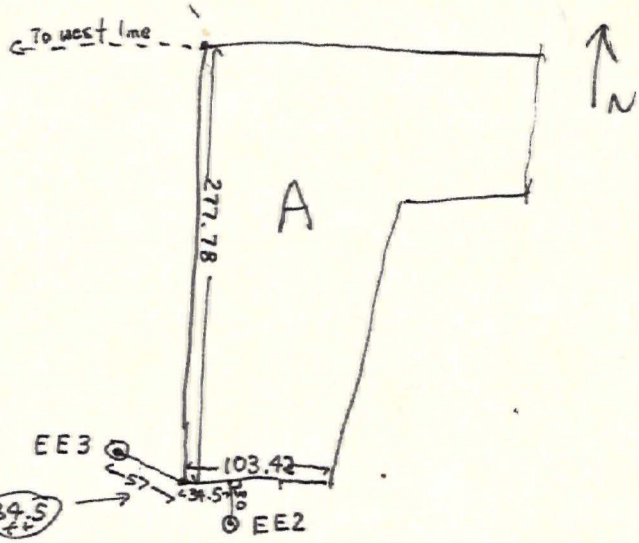
$$\begin{array}{r} 90\ 00\ 00 \\ 72\ 07\ 28 \\ \hline 17\ 52\ 35 \end{array}$$

29 1/2 cut off

Well Locations p 1 of 2



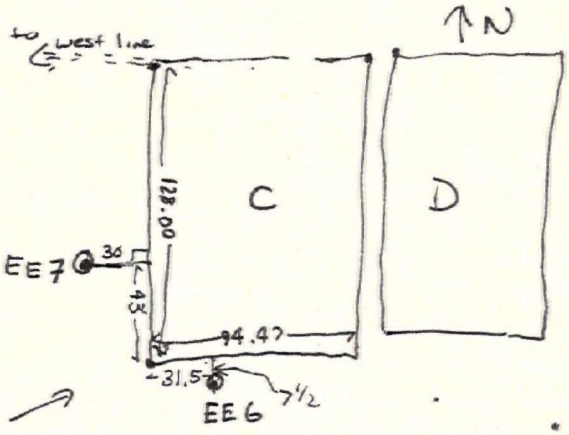
1/3 alons baselines from (27 ft) SW cor., then 30 feet out ⊥



To EE2: 34.5 ft "eastward" alons south base line the 30 feet "southward" ⊥

To EE3: 57 ft at bearing of N 68° 28' W from SW cor.

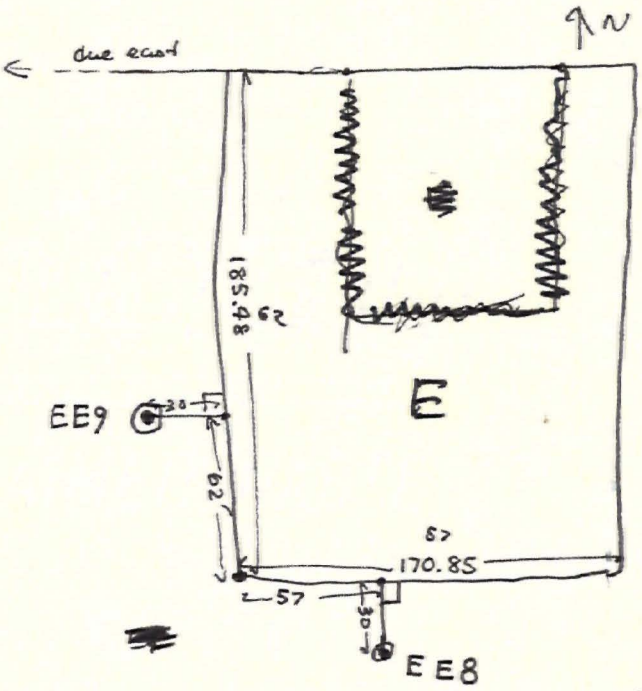
Sites C and D are approx 10 ft apart, and ~~2 wells~~ will be treated as one site



SW cor site C

EE6: 31.5 ft ~~westerly~~ easterly along south base line from SW cor. then 7.5 feet southerly ⊥ to south base line

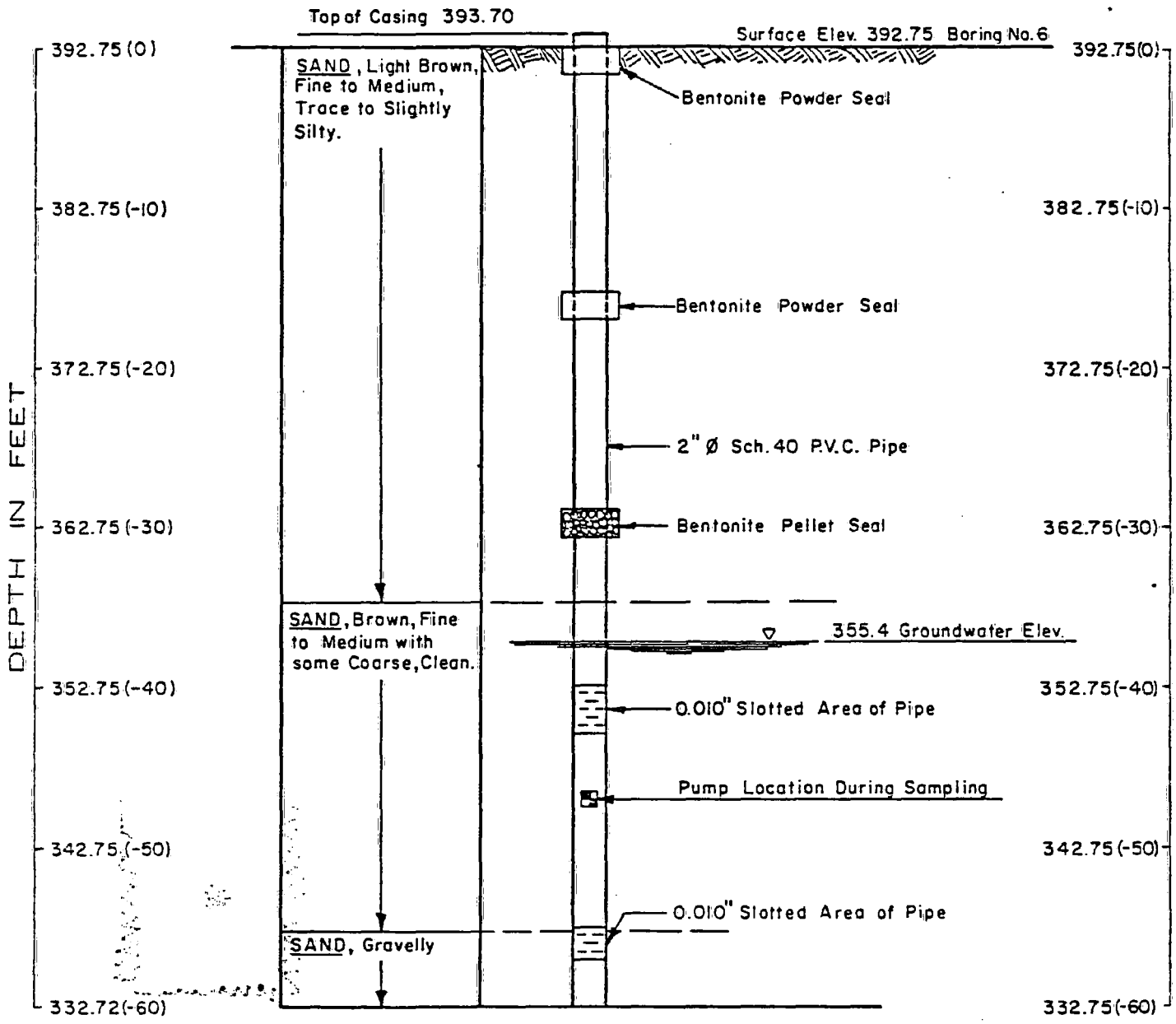
EE7 43 ft northerly along west base line from SW cor, then 30 feet westerly ⊥ to west base line



EE 9 62 ft northerly along west base line from SW cor. then 30 feet westerly ⊥ to west base line

EE 8 57 ft easterly ~~from~~ along south base line ~~from SW cor~~ then 30 feet southerly ⊥ to south base line

recycled paper
ecology and environment



NOTE:
Area around slotted pipe was backfilled with in-place soil, due to it's clean, granular consistency.

FIGURE 6

WELL NO.4

INSTALLED 11-29-82

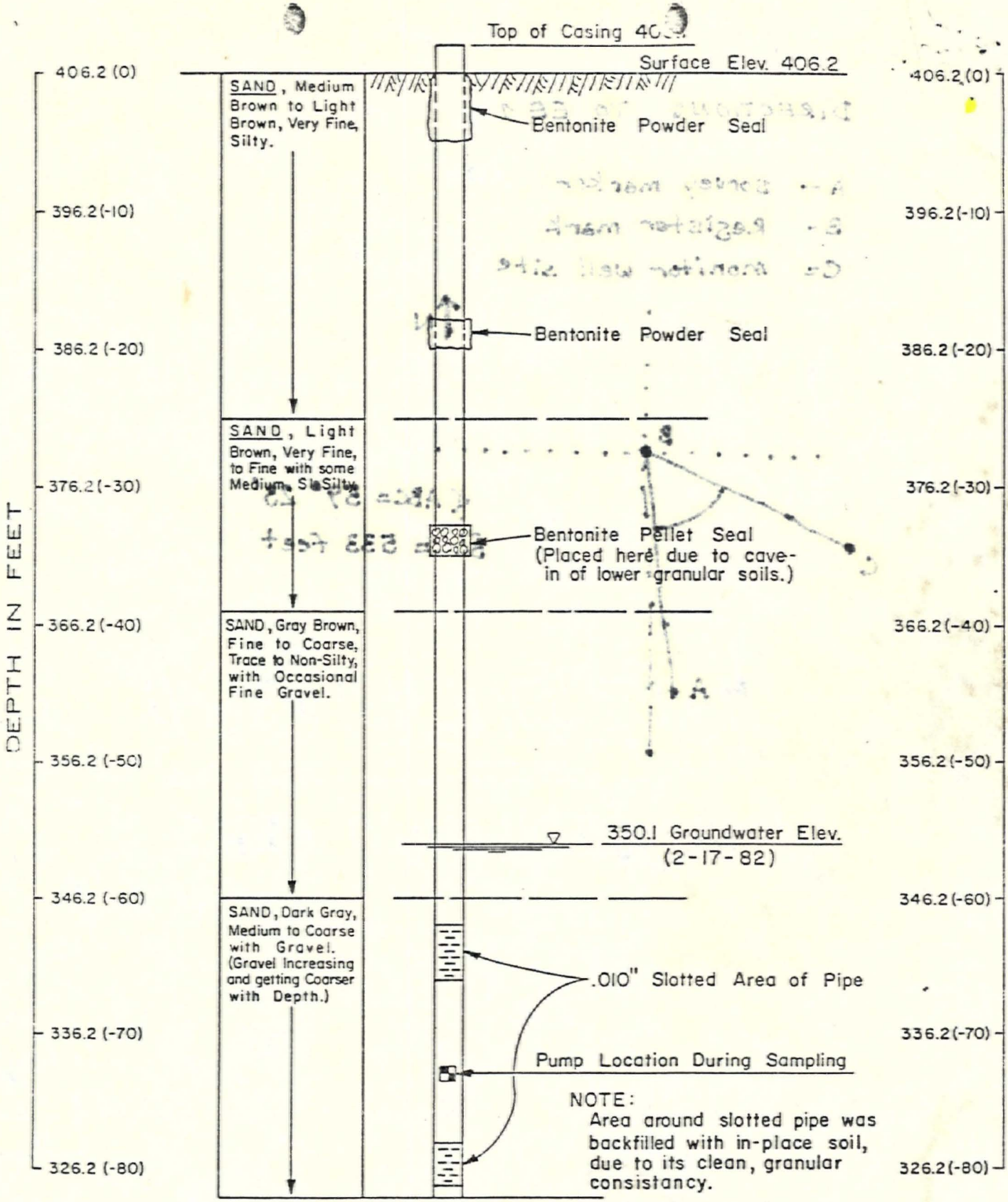


FIGURE 4

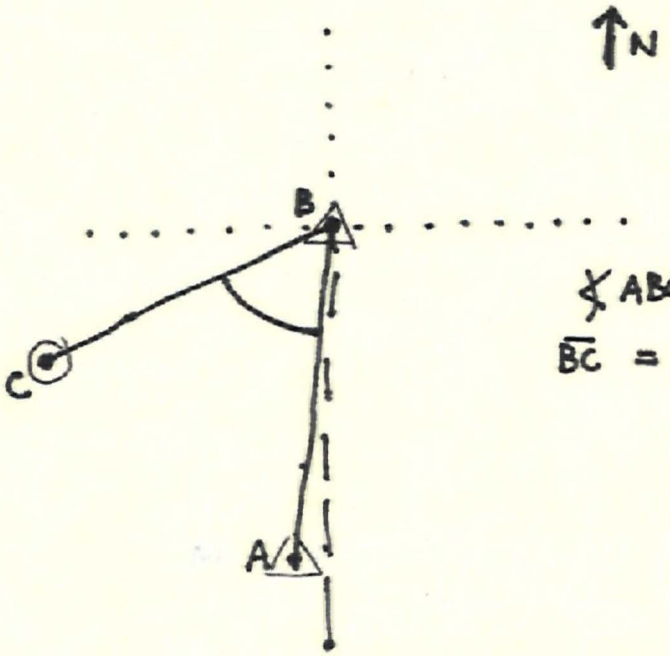
WELL NO. 2

INSTALLED 1-14-82

Well Locations p 2 of 2

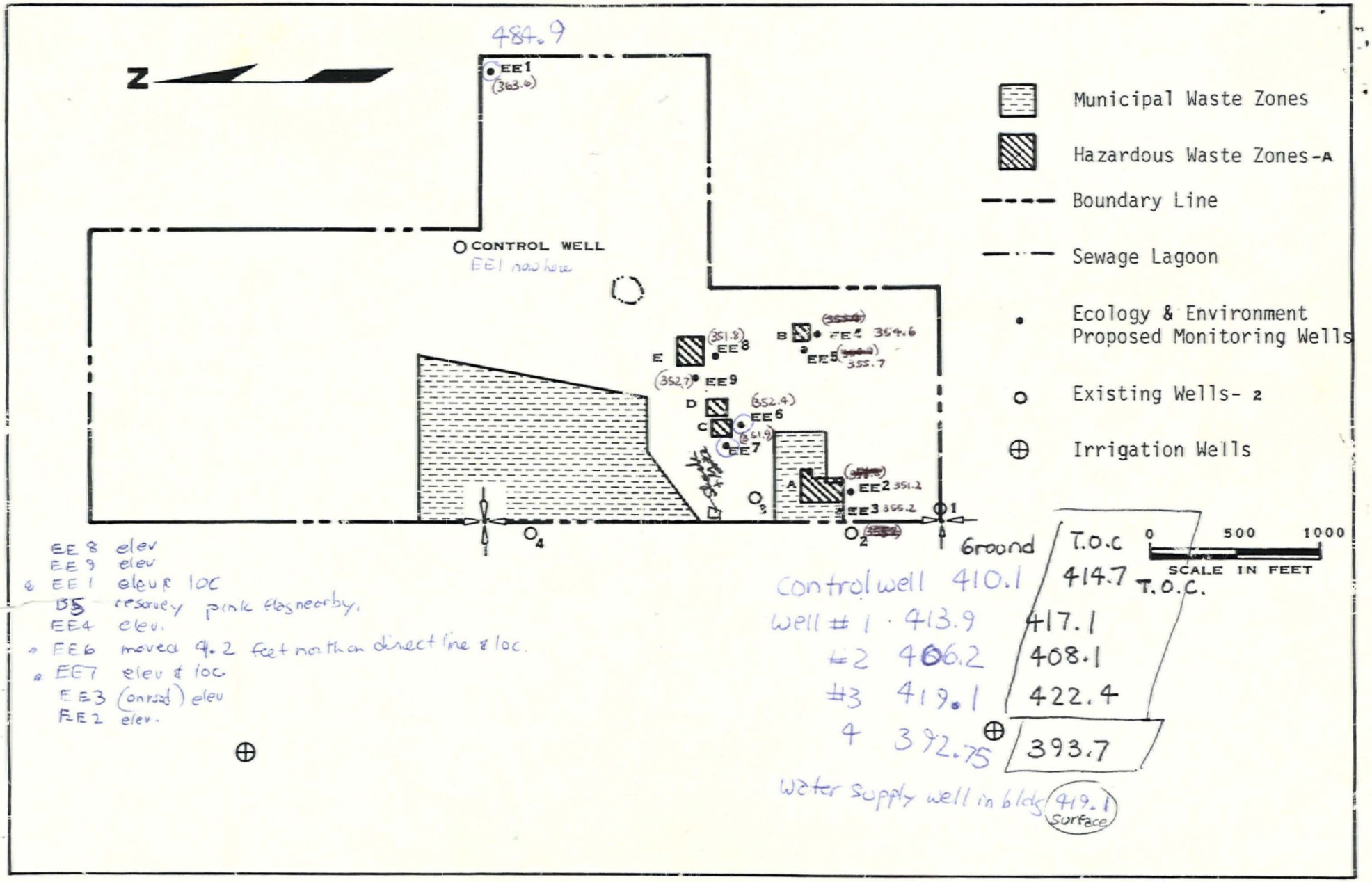
DIRECTIONS TO EE 1

A – survey marker 484.9 ft measured
B – Register mark (approx 436.2 ft)
C = monitor well site (approx 445.5 ft)



$\measuredangle ABC = 59° 23'$

$\overline{BC} = 533$ feet



Resurvey EE1 JOB control well white

FIGURE 2.3
PASCO SANITARY LANDFILL
HAZARDOUS WASTE BURIAL ZONES AND
EXISTING MONITORING WELL LOCATIONS,
NEW MONITORING WELL LOCATIONS

John Villich

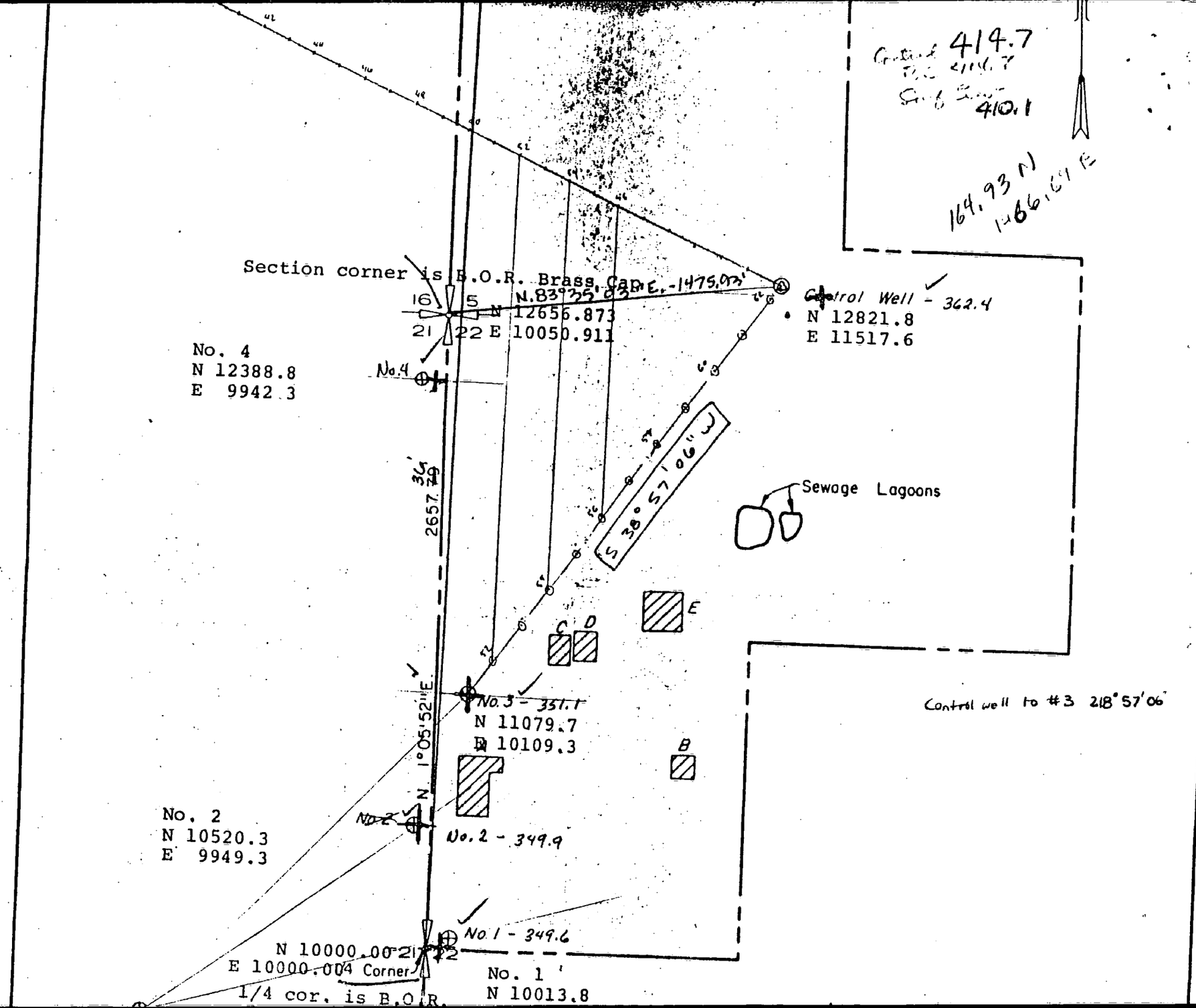

Control 414.7
410.1
169.93 N
1466.64 E
Section corner is B.O.R. Brass Cap
N.83°35'03" E. -1475.03'
16
5
21
22
N 12656.873
E 10050.911
Control Well - 362.4
N 12821.8
E 11517.6
No. 4
N 12388.8
E 9942.3
No.4
2657.34
S 38° 57' 06" W
Sewage Lagoons
E
C
D
B
No. 3 - 351.1
N 11079.7
E 10109.3
N. 1°05'52" E.
Control well to #3 218° 57' 06"
No. 2
N 10520.3
E 9949.3
No.2
No. 2 - 349.9
No. 1 - 349.6
N 10000.00
E 10000.00
4 Corner
1/4 cor. is B.O.R.
No. 1
N 10013.8

Fig. 4

Resource Recovery

Existing wells heights AMSL

	Top of Casing	Ground
control	414.7* ~~414.~~	410.1
1	417.1	413.9
2	408.1	406.2
3	422.4	419.1
4	393.7	392.75

* original height, 3.44 feet cut off by E&E (or 41¼ inches)

E&E wells heights AMSL

	Top of casing
1	418.9
2	416.8
3	415.1
4	397.6
5	405.5
6	424.9
7	423.8
8	426.5
9	426.2

E&E wells # 1, 6, and 7 were relocated.

New locations

EE 1. 76 feet from control well along bearing S 49° 50' 50" E

EE 6. 63.5 feet from SE corner area C along bearing S 88° 32' 00" W

EE 7 133 feet from SE corner area C along bearing N 72° 07' 25" W

Jim Broadbeck

Ken,
Here are the well elevations + locations for the resource recovery wells.
Thanks
BR