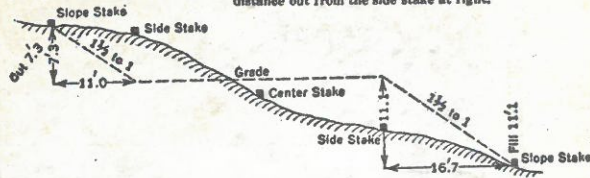


1966

1966
COUNTY
CHARLOTTE
MANATEE
SARASOTA

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
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

KEUFFEL & ESSER CO.

If found please return to:

Jon D. Tremper

Florida Geological Survey

P.O. Drawer 631

Tallahassee, Fla.

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

INDEX

WELL	PAGE	WELL	PAGE
6672	1	✓ USC&GS Test #14	17
6678	1	5962	19
6673	3	Englewood ✓ USC&GS "F"	21
6675	3	Englewood ✓ USC&GS "G"	21
6679	3	Englewood ✓ City Well #12	21
6680	5	Englewood ✓ City Well #13	21
6677	5	Englewood ✓ City Well #14	21
6320	7	✓ USGS #9	23
6318	7	✓ Florida land Test Well #1	25
6319	7	✓ Florida land Test Well #2	25
6322	9	✓ Florida land Test Well #3	25
6321	9	✓ Florida land - Pump house pool	27
6308	9	✓ Florida land - Lovers lane	29
6309	9	✓ Florida land Pump house	29
7552	11	7101	31
5418	13	7100	31
6333	15	7102	31

Well #	Page	Well	Page
6923	33		
6246	35		
7304	37		
7646	39		
USGS # 10 ✓	41		
USGS # 11 ✓	41		
USGS BIG SLOUGH ✓	43		
USGS # 13 ✓	43		
USGS # 12 ✓	43		
KAIMEE # 31	45		
# 32	47		
# 34	49		
# 36	51		
# 35	53		
# 29	55		

W-6672	B.S.	I.H.	F.S.	Elv	Sarasota Co	7/8/66
B.M.				7.76	City of Venice	clear & hot
TP ₁	4.6	6.87	14.63	4.40	10.23	Wells 33 through 41
TP ₂	4.36	14.59	5.79	8.80		Brooks rod
TP ₃	5.47	14.27	5.86	8.41		Jon-level
TP ₄	6.00	14.41	5.10	9.31		
TP ₅	5.78	15.09	4.99	10.10	TEMP 03.41	B.M. USCGS
TP ₆	4.05	14.15	5.14	9.01		# X 38 1933
TP ₇	4.34	13.35	5.44	7.91		Elv. 7.756
TP ₈	4.41	12.32	4.81	7.51		
TP ₉	5.48	12.99	4.30	8.69		57.14
TP ₁₀	5.29	13.98	4.15	9.83		- 54.82
TP ₁₁	5.09	14.92	4.84	10.08	CASING	# 33
	57.14		5.39	9.53	GRD.	2.32
						10.08
						7.76
						2.32
W-6673	4.84	14.92	1.57	13.35		#34
	3.39	16.74	3.30	13.44	CASING	
			3.96	12.78	GRD.	
①	8.23		4.87			13.44
	4.87					10.08
						3.36
						②

#35

13.44

7/12/66

TP, 4.08 17.52 3.11 14.41 CASING #35

3.73 13.79 GRD

w-6673

#37

14.41

4.20 18.61 3.77 14.84

5.80 20.64 5.15 15.49 CASING #37

10.00

5.95 14.69 GRD

8.92

w-6675

1.08

#38

15.49

5.35 20.84 4.84 16.00

4.75 20.75 4.67 16.08 CASING #38

10.10

5.35 15.40 GRD

9.51

w-6679

.59

9.51

(3)

(4)

42

16.08

3.54 19.62 4.87 14.75

78

5.41 20.16 5.11 15.05 T.B.M.

4.36 19.41 4.11 15.30 CASING # 42

15.09

13.31

4.80 14.61 GRD.

78

W-6680

41

15.05

4.55 19.60 5.09 14.51

65

5.11 19.62 5.59 14.03

4.89 18.92 4.52 14.40 CASING # 41

15.20

14.55

4.91 14.01 GRD.

65

W-6677

⑤

⑥

Wells
USGS
35-41

B.S. I.H. F.S. E/V

B.M.

TP₁ $\begin{smallmatrix} 2.3 \\ 5.23 \end{smallmatrix}$ 12.99 $\begin{smallmatrix} 3.2 \\ 2.70 \end{smallmatrix}$ 10.29 $\begin{smallmatrix} 7.76 \\ 7.92 \\ 15.68 \end{smallmatrix}$

TP₂ 4.16 14.45 3.48 10.97

TP₃ 4.55 15.52 3.71 11.81

TP₄ 5.06 16.87 4.02 12.85

TP₅ 2.55 15.40 1.76 13.64

TP₆ 4.12 17.76 3.70 14.06

TP₇ 4.24 18.30 5.03 13.27

4.52 17.79 2.11 15.68 CASING W-6320

34.43 4.87 12.92 GRD (35)

26.51

7.92

17.79 1.83 15.96 CASING W-6318

4.67 13.12 GRD (36)

17.79 1.97 15.82 CASING W-6319

4.82 12.97 GRD (37)

Sarasota Co.

Venice USGS

Wells 35-41

7/12/66

cloudy & hot

Brooks-rod

Jon-level

B.M. USC&GS

X 38 1933

E/V, 7.756

(7)

(8)

17.79	1.67	16.12	CASING	W-6322
	4.76	13.03	GRD	(38)

17.79	2.13	15.66	^{TOP OF CAP} CASING	W-6321
	4.80	12.99	GRD	(39)

17.79	3.32	14.47	^{TOP OF CAP} CASING	W-6308
	4.91	12.88	GRD	(40)

17.79	.29	17.50	^{TOP OF CAP} CASING	W-6309
	4.69	13.10	GRD	(41)

W-7552	B.S.	I.H.	F.S.	Elv
B.M				16.04
TP ₁	^{3 2} 4.54	20.58	^{3 2} 5.47	15.11
TP ₂	5.39	20.50	5.25	15.25
TP ₃	4.69	19.94	5.15	14.79
TP ₄	4.70	19.49	4.99	14.50
TP ₅	4.93	19.43	4.90	14.63
TP ₆	<u>4.73</u>	<u>19.36</u>	<u>1.91</u>	17.45 CASING
	28.98		4.06	15.30 GRD
	27.57			
	1.41		27.57	

Sarasota Co.

7/13/66

Courthouse Annex

Venice

cloudy & hot

Brooks - rod

Jon - level

B.M. Sarasota Co.

458-A

Elv. 16.04

17.45
Elv

15.30

GRD

W-5418 B.S. I.H. F.S. EIV.

B.M. 16.00

TP₁ 5.27 21.27 4.90 16.37

TP₂ 4.84 21.21 4.94 16.27

TP₃ 5.06 21.33 5.92 15.41

TP₄ 5.01 20.42 4.58 15.84

B.M. EIV

- .16

WELL
EIV

Cyros Venetian Bowl
Venice, Fla.

7/13/66

cloudy & hot

Jon-rod

Brooks level

B.M. USC EGS

#S255 1965

No EIV.

Pump

elv.



W-6333 B.S. I.H. F.S. Ely

Sarasota Co.

7/14/66

B.M.

16.48

Osprey School

	² ₁		¹ ₂	
TP ₁	3.52	20.00	5.23	14.77

Hwy 41

hot & cloudy

TP ₂	5.27	20.04	4.39	15.65
-----------------	------	-------	------	-------

Brooks - rod

TP ₃	5.57	21.22	5.06	16.16
-----------------	------	-------	------	-------

Jon - level

TP ₄	5.43	21.59	5.26	16.33
-----------------	------	-------	------	-------

TP ₅	4.80	21.13	5.12	16.01	CASINE
-----------------	------	-------	------	-------	--------

B.M. Sarasota Co.

24.59

5.75 15.38 GRD

143 Ely. 16.48

25.06

24.59

47

16.01

15.38
FIN

CONCRETE BASE

GRD

USGS
Test #14

B.S. I.H. F.S. E/v.

B.M.

16.36 16.36

-15.92

.44

TP₁ 4.98 21.34 4.38 16.96TP₂ 4.81 21.77 4.86 16.91TP₃ 4.72 21.63 4.60 17.03TP₄ 4.62 21.65 4.47 17.18TP₅ 4.72 21.90 4.76 17.14TP₆ 4.85 21.99 4.46 17.53TP₇ 4.90 22.43 4.33 18.10TP₈ 5.30 23.40 4.08 19.32TP₉ 5.28 24.60 8.69 15.92 grd

40.18

44.62

44.19
44.19

Sarasota Co.

USGS Test #14

7/14/66

cloudy + hot

Ion-rod

Brooks - level

B.M. Sarasota Co.

471

e/v. 16.36

25.95

15.92

10.03'

GRD

(17)

(18)

W-5962 B.S. I.H. F.S. Elev.

B.M.

TP₁ 4.69 17.44 5.62 11.82

TP₂ 5.16 16.98 5.43 11.55

TP₃ 4.88 16.43 6.17 10.26

TP₄ 5.43 15.69 5.75 9.94

TP₅ 4.39 14.33 5.34 8.99

TP₆ 4.25 13.24 4.88 8.36

TP₇ 4.54 12.90 4.51 8.39

TP₈ 5.07 13.46 5.01 8.45

TP₉ 4.67 13.12 4.66 8.46

TP₁₀ 4.59 13.05 4.62 8.43

TP₁₁ 4.53 12.96 4.58 8.38

TP₁₂ 3.39 11.77 6.11 5.66

TP₁₃ 3.71 9.37 3.67 5.70

TP₁₄ 4.67 10.37 4.51 5.86

TP₁₅ 5.28 11.14 5.16 5.98

69.25

76.02

69.25

12.75

5.98

6.77

Sarasota Co.

7/15/66

C.E. Pitts

Sorrento Shores

Nokomis

cloudy & hot

Brooks-rod

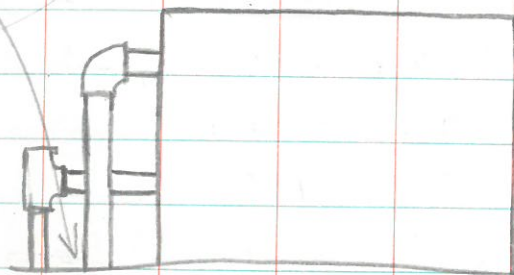
Jon-level

B.M. Sarasota Co.

163

Elev 12.75

598 GRD



GROUND

ENGEL-
WOOD
USGS

B.S. I.H. F.S. E/V

B.M.

14.00

TP₁ 4.36 18.36 5.14 13.22

TP₂ 4.60 17.82 4.81 13.01

TP₃ 4.59 17.60 4.43 13.17

TP₄ 4.96 18.13 5.18 12.95

TP₅ 4.53 17.48 4.96 12.52

TP₆ 4.68 17.20 4.68 12.52

TP₇ 4.69 17.21 5.31 11.90

TP₈ 4.28 16.18 5.00 11.18

TP₉ 4.11 15.29 5.21 10.08

TP₁₀ 4.46 14.54 4.32 10.22

TP₁₁ 5.16 15.38 6.76 8.62

7.69 7.69

TP₁₂ 6.79 15.41 6.44 8.97

TP₁₃ 6.23 15.20 5.58 9.62

8.00 7.20

TP₁₄ 2.00 11.62 4.60 7.02

6.77 4.85

CITY
WELL #12

CITY
WELL #14

CITY
WELL #13

CITY
WELL #13

pipe

TEST WELL

"E"

USGS

TEST WELL

"G"

Sarasota Co.

Englewood

USGS

B.M. USGS

66 ERS 1952

No E/V.

Englewood city wells

12, 13, & 14 e/v. were

taken on conc. base

casings projected

about 6" above conc.

7/15/66

cloudy hot

Jon-rod

Brooks - level

(21)

(22)

USGS
#9

B.S. I.H. F.S. EIV

B.M

TP₁ 5.6 4.58 22.32 6.5 4.87 17.45

TP₂ 6.24 16.08

TP₃ 3.54 20.99 4.82 16.17

TP₄ 5.48 21.65 5.23 16.42

TP₅ 4.99 21.41 5.07 16.34

TP₆ 5.08 21.42 4.81 16.61

TP₇ 5.05 21.66 4.80 16.86

TP₈ 5.39 22.25 4.79 17.46

TP₉ 4.81 22.27 5.26 17.01

TP₁₀ 4.89 21.90 4.99 16.91

TP₁₁ 4.92 21.83 5.78 16.05

48.73

50.42

48.73

1.69

17.74

16.05

1.69

T.B.M.

Sarasota Co.

7/18/66

USGS well #9

Osprey

cloudy & hot

Brooks-rod

Jon-level

B.M. Sarasota Co.

157

EIV. 17.74

16.05

ELV.

3.69

GRD

FLORIDA
LAND

B.S. I.H. F.S. Elv

Sarasota Co.

7/18/66

B.M.

16.08

Floridaland

cloudy & cool

TP₁ 6.35² 22.43² 4.82² 17.61^{1.80}
17.88

Venice

TP₂ 4.34 21.95 4.93 17.02 TBM

Brooks - rod

TP₃ 4.20 21.22 5.19 16.03

Jon - level

TP₄ 5.26 21.29 4.23 17.06TP₅ 5.07 22.13 4.25 17.88TEST WELL
#1

B.M from Sarasota Co

25.22
23.42

5.56 16.57 GRD,

157

1.80

4.93 17.20

TBM Elv 16.08

TP₆ 5.17 22.37 5.56 16.81TP₇ 4.79 21.60 8.38 13.22TEST WELL
#215.94
9.36

9.88 11.72 GRD

3.72

4.21 17.39

TP₈ 4.25 21.64 5.50 16.14TEST WELL
#3

4.81 14.83 GRD

17.20
13.22

3.98

(25)

26

FLORIDA
LAND

B.S. I.H. F.S. E/V

B.M.

16.14

	4 ⁴		2 ²	
TP ₁	2.34	18.48	5.44	13.04

TP ₂	3.49	16.53	6.62	9.91
-----------------	------	-------	------	------

TP ₃	4.25	14.16	4.98	9.18
-----------------	------	-------	------	------

TP ₄	4.88	14.06	5.32	8.74
-----------------	------	-------	------	------

TP ₅	6.79	15.53	6.87	8.66
-----------------	------	-------	------	------

TP ₆	5.69	14.35	9.45	4.90
-----------------	------	-------	------	------

TP ₇	3.95	8.85	2.71	6.14	PIPE
-----------------	------	------	------	------	------

31.39

4.21 4.64 GRD

41.39

31.39

10.00

Sarasota Co.

7/20/66

Floridaland

Porpoise pool

hot & cloudy

Brooks-rod

Jon-level

from
B.M. Sarasota Co.

157 TBM E/V. 16.14

FISH
HOUSEELV.
6.14ELV
4.64

FLORIDA
LAND

B.S.

I.H.

F.S.

EIV

B.M.

TP₁ 4.09^{1 2} 21.97 5.79^{4 2} 16.18TP₂ 5.03 21.21 5.51 15.70TP₃ 4.24 19.94 4.95 14.99TP₄ 4.66 19.65 5.91 13.74TP₅ 5.30 19.04 3.89 15.15 CASING

23.32

26.95

5.76 13.28 GRD

5.89 13.15

TP₆ 4.76 17.91 5.50 12.41TP₇ 4.31 16.72 5.75 10.97TP₈ 6.28 17.25 6.22 11.03 CASING

1535

17.47

15.35

2.12

CASING
GRD

Sarasota Co.

7/20/66

Floridaland

Lover's Lane &

cloudy & hot as hell

Pumphouse well

Brooks-rad

Jon-level

B.M. from Sarasota Co.

157 T.B.M. Elev. 17.88

LOVER'S
LANE

15.15

13.28

11.03

TO PUMP

(29)

(30)

W-7101 B.S. I.H.F.S. E10 ass
B.M. 10.00

Sarasota Co.

7/20/66

Venice Gardens

cloudy & hot

TP₁ 4.88 14.88 4.00 10.88

TP₂ 4.33 15.21 4.70 10.51

TP₃ 4.84 15.35 5.17 10.18

TP₄ 4.94 15.12 5.19 9.93

TP₅ 4.76 14.69 4.74 9.95

TP₆ 4.75 14.70 4.34 10.36

TP₇ 5.12 15.48 5.04 10.44

TP₈ 4.64 15.08 2.98 12.10 casing # 17

4.03 11.05 grd. W-7101

4.92 17.02 4.23 12.79 casing # 18

5.47 11.55 grd. W-7100

4.99 12.03 casing # 16

6.25 10.77 grd. W-7102

Don-rod

Brooks-level

B.M. USC & GS

C 252 1965

no elev. (assumed 10')

Wells # 16, 17, & 18



W-6923	B.S.	I.H.	F.S.	Elv.
B.M.				12.19
TP ₁	⁴ 4.62	16.81	³ 6.04	10.77
				<u>8.85</u>
				3.34
TP ₂	3.87	14.64	7.98	6.66
TP ₃	3.78	10.44	5.87	4.57
TP ₄	7.29	11.86	4.36	7.50
TP ₅	4.84	12.34	2.92	9.42
TP ₆	<u>4.68</u>	14.10	<u>5.25</u>	8.85 GRD
	29.08		32.42	
			<u>29.08</u>	
			3.34	

Sarasota Co.

7/21/66

Nokomis Elem.

cloudy & hot

School

Brooks-rod

Jabri-level

B.M. - USC&GS T.B.M.

disc on bridge over

Roberts Bay

elv. 12.19

S.E.
Wall

8.85

← 10' →

UNDERGROUND
PUMP & CASING

w-6246

B.S.

I.H.

F.S.

EIV

ASS.

Sarasota Co.

7/21/66

B.M.

10.00

S. Venice Baptist Church

	^{4.3}		^{4.3}	
TP ₁	5.76	15.76	5.37	10.39

TP ₂	4.93	15.32	5.32	10.00	2.58
-----------------	------	-------	------	-------	------

TP ₃	4.96	14.96	5.37	9.59
-----------------	------	-------	------	------

TP ₄	5.03	14.62	4.57	10.05
-----------------	------	-------	------	-------

TP ₅	4.20	14.25	4.72	9.53
-----------------	------	-------	------	------

TP ₆	4.44	13.97	4.81	9.16
-----------------	------	-------	------	------

TP ₇	4.47	13.63	6.74	6.89
-----------------	------	-------	------	------

TP ₈	5.43	12.32	4.90	7.42
-----------------	------	-------	------	------

39.22

41.80

39.22

2.58

cloudy & cool

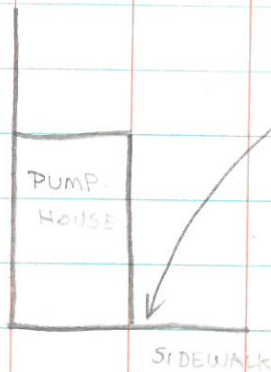
Brooks - rod

Jon - level

B.M. USC & GS

1965 C 252

No EIV.

N. Side
of
ChurchELV. = B.M. ELV. 2.58

W-7304 B.S. I.H. F.S. Elv.

B.M.

11.31
10.65

TP₁ 3.96 14.61 3.89 10.72

TP₂ 5.58 16.30 6.78 9.52

TP₃ 5.36 14.88 4.40 10.48

TP₄ 4.24 14.72 4.25 10.47

TP₅ 4.06 14.53 5.00 9.53

TP₆ 5.29 14.82 4.37 10.45

TP₇ 4.98 15.43 4.12 11.31

38.47

38.81
42

Sarasota Co

7/21/66

Harry Gray

cloudy warm

N. Port Charlotte

Brooks-level

Jon-rod

B. M. USC&GS

S38 Reset - 1938

elv. 10.645

SE corner of house

pump

elv. 11.31

TI

W-7646 B.S. I.H. F.S. CIV.

BM

37.88

35.39

T.P. 1 ^{2.3} 4.96 40.35 ^{2.2} 5.49 34.86

2.49

TP 2 5.15 40.01 5.11 34.90

T.P. 3 5.54 40.44 4.09 36.35

TP 4 6.08 42.43 5.60 36.83

TP 5 4.65 41.48 4.83 36.65

TP 6 5.04 41.69 3.81 37.88 CSG

31.42 5.65 36.04 GRD

2893

2.49

Sarasota Co.

7/22/66

Ollie Roberts

Sugar Bowl Rd.

B.M. - (T.B.M.) from USCE&GS

294 1942

Elev. 35.39

37.88
Elev.36.04
Elev.

USGS #10 & #11 B.S. I.H. F.S. Elv. Ass.
 11.00

B.M.

TP 2.60 13.60 10.20 3.40 #11
 10.10 3.50 #10

10.20 11.00
 2.60 3.40
 7.60 7.60

assumed elev. 11.00

R.M. elev. -21.680

well elev. +10.680

USGS #10 - 14.18

USGS #11 - 14.08

Sarasota Co.

USGS #10 & #11

7/22/66

cloudy / cool

Brooks - red

Jon - level

B.M. from USGS & SGS

Reference Mark

Bridge over Cowpen Slough

Ass.
 12.36

#11

#10

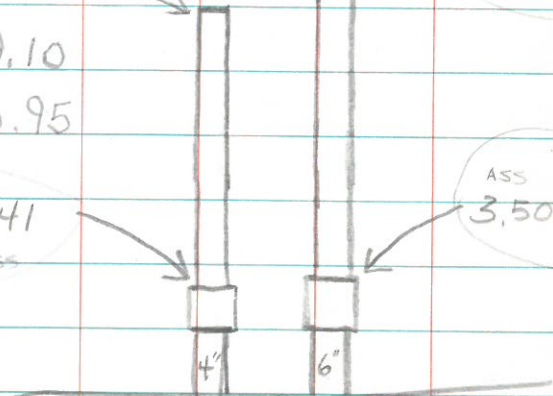
12.60
 Ass.

#10 9.10

#11 8.95

3.41
 Ass.

Ass
 3.50



BIG SLOUGH B.S. I.H. F.S. E.I.V. 35.34

B.M. 34.12

TP₁ 6.66 40.78 4.77 36.01 1.22TP₂ 4.92 40.93 5.11 35.82TP₃ 5.12 40.94 4.82 36.12TP₄ 4.87 40.99 4.97 36.02TP₅ 4.80 40.82 5.10 35.72TP₆ 4.76 40.48 4.95 35.53 T.B.M.TP₇ 4.78 40.31 4.59 35.72TP₈ 4.75 40.47 5.37 35.10TP₉ 4.31 39.41 4.60 34.91TP₁₀ 4.98 39.89 5.08 34.71TP₁₁ 5.52 40.23 4.89 35.34 CSg. #13

55.47 7.62 32.61 ground #13

54.25 7.66 32.57 ground #12

1.22 4.84 35.39 CSg. #12

Sarasota Co.

7/22/66

USGS Big Slough

Sugar Bowl Rd.

rainy

Brooks-rod

Jon-level

B.M. USCEGS

Z 94 1942

E.I.V. 34.121

T.B.M. 10 E. of wooden gate

.5 mi. E of Big Slough Br.

KAIMEE

#31	B.S.	I.H.	F.S.	Elv.
B.M				95.56
TP ₁	4.6 4.19	99.75	5.4 4.85	94.90
TP ₂	5.17	100.07	5.17	94.90
TP ₃	5.28	100.18	5.35	94.83
TP ₄	4.78	99.61	5.19	94.42
TP ₅	4.73	99.15	5.94	93.21
TP ₆	4.77	97.98	5.91	92.07
TP ₇	4.33	96.40	6.10	90.30
TP ₈	4.09	94.39	6.25	88.14
TP ₉	3.78	91.92	2.84	89.08 TBM
TP ₁₀	.24	89.32	6.40	82.92
TP ₁₁	<u>4.43</u>	<u>87.35</u>	<u>4.43</u>	82.92 csg #31
TP ₁₂	45.79		6.60	80.75 grd.

7.18
58.43
45.79
12.64

Sarasota Co

7/26/66

Verna Wellfield

cloudy & hot

Brooks - rod

Jon - level

USC&GS B.M

593 1942

95.558

4.52

3.42

1.10

82.92

12.64

95.56

#32 B.S. I.H. F.S. Elev.

Kaimere #32

7/26/66

B.M. 82.92

cloudy & hot

TP₁ 2.57 85.49 6.08 79.41

TP₂ 4.11 83.52 5.12 78.40 TBM

TP₃ 2.51 80.91 6.08 74.83

TP₄ 3.70 78.53 4.08 74.45 csg #32

12.89 6.41 72.12 ground

21.36

12.89

8.47

74.45

82.92

B.M. casing #31

Elev. 82.92

#	B.S.	I.H.	F.S.	Elv.
34				
B.M.				78.40
TP ₁	4.48	82.88	4.59	78.29
TP ₂	5.01	83.30	2.68	80.62 csg
TP ₃	9.49		4.81	78.49 ground
	7.27		7.27	
	2.22			78.20

Sarasota Co

7/26/66

Kaimsee # 34

hot & cloudy

Brooks - rod

Jon - level

B.M (T.B.M) from

USC # 65 S 93 Elv 78.40

#36 B.S. I.H. F.S. EIV

Sarasota Co.

36-35-33

B.M.

80.62

Kaimec #36

7/26/66

$$\begin{array}{r} 2.3 \\ TP_1 \quad 2.96 \quad 83.58 \quad 4.99 \quad 78.59 \\ \hline 7.68 \end{array}$$

hot & cloudy

TP₂ 5.18 83.77 5.49 78.28

Brooks-rad

TP₃ 3.66 81.94 5.01 76.93 T.B.M.

Jon-level

TP₄ 5.63 76.31TP₅ 4.25 80.56 5.99 74.57

B.M. casing #34

TP₆ 4.02 78.59 6.17 72.42TP₇ 4.67 77.09 4.15 72.94 CSG. #36
$$\begin{array}{r} 24.74 \\ \hline 6.30 \quad 70.79 \quad GRD \end{array}$$

$$\begin{array}{r} 32.42 \\ 24.74 \\ \hline 7.68 \end{array}$$

#35	B.S.	I.H.	F.S.	Elev	
B.M.					76.93
TP ₁	6.03	82.96	3.48	79.48	
TP ₂	6.23	85.71	2.72	82.99	csg
TP ₂			4.92	80.79	grd
TP ₄			4.33	81.39	
TP ₅	6.10	87.48	3.70	83.78	
TP ₆	5.52	89.30	4.27	85.03	
TP ₇	6.10	91.13	4.52	86.61	
	6.34	92.95	2.08	90.87	csg
	24.06		4.41	88.54	grd
	14.58				
	9.49				
			10.57		

Kaimere #35

7/26/66

Sarasota Co

cloudy & hot

Brooks-level

Jon-rod

#33

KAIMEE #29	B.S.	I.H.	F.S.	Elv.	
B.M.					95.56
TP ₁	^{3 2} 4.40	99.96	^{2 3} 4.80	95.16	^{4 1} 15
TP ₂	4.87	100.03	4.86	95.17	
TP ₃	4.51	99.68	5.19	94.49	
TP ₄	4.89	99.38	5.18	94.20	
TP ₅	5.14	99.34	5.24	94.10	
TP ₆	4.77	98.87	3.46	95.41	CSG.
	28.58		5.62	93.25	GRD.
			28.73		
			28.58		
			15		

Sarasota Co. 7/27/66

Kaimce Wellfield

cool, cloudy & rainy

Brooks - road

Jon - level

B.M. USC#65

S93 1942

E/v. 95.558

#28 B.S. I.H. F.S. E/V
B.M. 95.41

Sarasota Co.

7/27/66

Kaimec Wd Field

TP₁ 3.25 98.66 5.51 93.15

cloudy & warm

TP₂ 4.94 98.09 5.10 92.99

Jon - rod

5.76 98.75 2.68 96.07 T.B.M.

Brooks - level

2.19 98.26 3.03 95.23 csg

12.14 4.90 93.36 grd.

12.32

12.2
11.28

30 B.S. I.H. F.S. Elev.

B.M.

95.23

3.27 98.50 4.88 93.62

5.42 99.04 4.98 94.06

4.99 99.05 1.79 97.26 csg

1.08

4.00 95.05 grd

Sarasota Co.

Kaimsee Well Field

7/27/66

cloudy & warm

Iron-rod

Brooks-level

#27 B.S. I.H. F.S. Elev.

T.B.M. 96.07

TP₁ 2.02 98.09 5.64 92.45

TP₂ 4.74 97.19 5.59 91.60

TP₃ 4.32 95.92 4.18 91.74 csg.

5.61 90.31 grd.

Sarasota Co.

7/27/66

Kaimsee Well Field

cloudy warm

Jon-rod

Brooks-level

USGS
08

B.S. I.H. F.S. Elv.

B.M.

TP 3.15 100.41 4.07 96.34 csg
5.40 95.01 gnd.

4.07

3.15

92

97.26

92

96.34

1.35

95.01

Sarasota Co.

7/28/66

Kaimce USGS

cloudy & hot

Observation #08

Jon-rod

Brooks-level

B.M. Casing/Kaimce

Well #30, Elv. 97.26

USGS
VERNA#1 B.S. I.H. F.S. Elv.

B.M. 81.31

TP₁ 5.08 86.39 4.57 81.82

TP₂ 4.75 86.57 2.15 84.42 CSG

9.83 4.29 82.28 GRD

6.72

3.11

672

USGS Well

8/2/66

Hwys 70 & 675

N. of Kairnee cloudy, rainy &

Verna#1 hot

Brooks-rod

Jon-level

B.M. USCGS

K95 1942

Elv 81.306

KAIMEE

#22

B.S. I.H. F.S. EIV

B.M.

86.29

TP₁ 4.34 90.63 5.64 84.99

83.66

83.66

TP₂ 4.35 89.34 5.47 83.87TP₃ 4.55 88.42 5.34 83.08TP₄ 4.66 87.54 5.45 82.29TP₅ 4.14 86.43 2.77 83.66

CSG

22.04

4.92 81.31

grd.

22.67

22.00

22.00

Kaimee #22

8/2/66

Sarasota Co.

cloudy & hot

Brooks-level

Jon-rod

B.M. USCEGS

Y76 1934

EIV. 86.289

KAIMEE
21

B.S. I.H. F.S. Elv.

B.M.

83.66

TP₁ ^{2 2} 3.19 86.85 5.45 81.40

81.62

2.04

TP₂ 4.83 86.23 5.31 80.92

TP₃ 4.66 85.58 5.34 80.24

TP₄ 4.76 85.00 3.38 81.62

CSG.

TP₅ 17.44 5.32 79.68

GRD.

19.48

17.44

2.04

Sarasota

8/3/66

Kaimee City

hot windy & cloudy

Well #21

Brooks - road

Jon - level

B.M. casing #22

Elv. 83.66

KAIMEE # 19	B.S.	I. H.	F.S.	EIV		Sarasota Co.	8/3/66
B.M.					81.62	Kaimee City	hot & cloudy
TP ₁	3.99	85.61	5.06	80.55		well # 19	Brooks-level
TP ₂	5.37	85.92	4.74	81.19			Jon-rod
TP ₃	5.57	86.75	5.09	81.66			
TP ₄	4.90	86.56	2.84	83.72	css	B.M. Casing well	
TP ₅	19.93		4.70	81.86	spd	# 21 EIV	
	17.73		17.73				
	2.10						

KAIMEE

16

B.S. I.H. F.S. Elv.

B.M.

TP₁ 3.05 86.77 4.98 81.79TP₂ 4.63 86.42 5.16 81.26TP₃ 4.79 86.05 5.05 81.00TP₄ 4.86 85.86 5.04 80.82TP₅ 5.04 85.86 5.28 80.58TP₆ 4.54 85.12 3.44 81.68 csg

26.91

5.30 79.82 grd

28.95

26.91

28.95

Sarasota Co.

Kaimsee City

Well # 16

8/3/66

cloudy & hot

Jan-rod

Brooks-level

KAIMEE
#26

B.S. I. H. F.S. Elv.

B.M

TP₁ ^{2.2} 3.25+ 98.66 ^{2.3} 4.59 94.07

TP₂ 5.43 99.50 5.31 94.19

TP₃ 4.44 98.63 5.74 92.89

TP₄ 4.42 97.31 6.36 90.95

TP₅ 4.44 95.39 6.07 89.32

TP₆ 4.24 93.56 4.34 89.22 CSG

26.22 6.31 87.25 GRD

32.41

26.22

6.19

Sarasota Co.

Kaimec Cr.

Well # 26

8/3/66

cloudy & hot

Don-level

Brooks-rad

B.M. casing well

#29 Elv. 95.41

KAIMEE
#25

B.S. I.H. F.S. E/v.

B.M.

89.22

TP₁ 2.12 91.34 5.29 86.05

84.90
4.32

TP₂ 4.31 90.36 3.16 87.20 T.B.M.

TP₃ 1.80 89.00 7.02 81.98

TP₄ 4.29 86.27 2.88 83.39

TP₅ 4.97 88.36 3.46 84.90 csg

17.49

5.44 82.92 cgd

2.81

17.49

2.81

Sarasota Co.

8/3/66

Kaimsee City

cloudy & hot

Well #25

Brooks-level

Jon-rod

B.M. casing well

#26 E/v. 89.22

KAIMEE						Sarasota Co.	8/4/66
#24	B.S.	I.H.	F.S.	Elv		Kaimee #24	rainy, cloudy & cool
B.M.					87.20		
					4.77		
TP ₁	1.40	88.60	5.53	83.07	82.43		Brooks - rod
TP ₂	4.25	87.32	5.56	81.76			Jon - level
TP ₃	4.43	86.19	3.76	82.43	CSG		
	10.08		5.76	80.43	GRD		

14.85
10.08
4.77

B.M. T.B.M. from well
#25 Elv. 87.20

KAIMEE
23

B.S. I.H. F.S. Elv

B.M.

89.22

TP₁ 2.76 91.98 4.87 87.11

TP₂ 4.48 91.59 5.26 86.33

TP₃ 4.94 91.27 5.90 85.37

TP₄ 4.82 90.19 5.74 84.45

TP₅ 5.08 89.53 3.80 85.73 T.B.M.

TP₆ 3.21 88.94 5.84 83.10

TP₇ 5.05 88.15 4.23 83.92

35.30 6.28 81.87

35.64

81.80

35.30

Sarasota Co.

8/4/66

Kaimce #23

cloudy, rainy E. mkt

Brooks - level

Jan - rod

B.M. casing well

26 Elv. 89.22

Kaimere # 20 B.S. I.H. F.S. Elevation
 Sarasota Co. 8/4/66
 Kaimere City cloudy & hot

B.M. 85.73

TP 3.38 89.11 4.58 84.53 $\frac{3.49}{92.29}$

TP 4.40 88.93 5.01 83.92

TP 4.92 88.84 5.24 83.60

TP 5.25 88.85 5.61 83.24

TP 5.03 88.27 3.23 85.04 TBM

TP 1.67 86.71 4.47 82.24 csg

2.65 6.61 80.10 gnd

28.14

30.62

3.49

Well # 20

Jon-rod

Brooks-level

B.M. T.B.M. from

Well # 23 E/v. 85.73

KAIMEE
#17

B.S. I.H. F.S. EIV

B.M.

85.04

TP₁ ^{2 2} 3.05 88.09 ^{3 4} 4.79 83.30

^{1.34}
83.70

TP₂ 5.23 88.53 5.07 83.46

TP₃ 4.06 87.52 4.98 82.54

TP₄ 4.82 87.36 4.56 82.80 T.B.M

TP₅ 4.30 87.10 5.27 81.83

TP₆ 4.86 86.69 2.99 83.70 CSG

26.32 4.97 81.72 GRD

27.66

26.32

1.34

Sarasota Co.

8/4/66

Kaimsee City

cloudy & hot

Well #17

Brooks - red

Jon - level

B.M - T.B.M from

Well #20 EIV 85.04

KAIMEE		B.S.	I.H.	F.S.	Elv.
#14					
B.M.	3 3				82.80
TP ₁	4.57	87.37	5.02	82.35	<u>16</u>
TP ₂	4.70	87.05	4.27	82.78	82.96
TP ₃	3.92	86.70	5.25	81.45	
TP ₄	5.29	86.74	5.35	81.39	
TP ₅	5.01	86.40	5.32	81.08	
TP ₆	4.87	85.95	4.91	81.04	
TP ₇	5.08	86.12	3.16	82.96	CSG
	33.44		5.06	81.06	GRD
	<u>25</u>				
	.46				
		33.28			

Sarasota Co

8/4/66

Kaimee City

cloudy & hot

Well #14

Brooks road

Jon-leve

B.M. - T.B.M from

well #17

KAIMEE
11

B.S. I.H. F.S. E/v

B.M.	2.2		2		82.96
TP ₁	2.58	85.54	4.82	80.72	$\frac{64}{82.32}$
TP ₂	4.54	85.26	4.90	80.36	
TP ₃	4.94	85.30	5.02	80.28	
TP ₄	<u>4.87</u>	85.15	<u>2.83</u>	82.32	CSG
	16.93		4.82	80.33	GRD

17.57

16.93

$\frac{64}{16.93}$

Sarasota Co.

8/4/66

Kaimce City

cloudy & hot

Well # 11

Brooks rod

Jon level

B.M. casing well # 14
E/v. 82.96

KAIMEE
#8

B.S.

I.H.

F.S.

Elev.

B.M.

TP₁ 3.01 85.33 4.48 80.85TP₂ 4.68 85.53 4.98 80.55TP₃ 4.44 84.99 5.64 79.35TP₄ 3.38 82.73 6.34 76.39TP₅ 4.32 80.71 3.22 77.49 csg.

19.83

5.18 75.53 grd.

24.66

19.73

4.92

Sarasota Co.

Kaimec City

Well # 8

8/4/66

cloudy & hot

Jon-rod

Brooks-level

B.M. casing

well # 11 elev. 82.32

KAIMEE

#5

B.S. I.H. F.S. Elv.

B.M.

77.49

TP ₁	²³ 2.88	80.37	¹² 5.16	75.21	<u>93</u> 76.56
-----------------	-----------------------	-------	-----------------------	-------	--------------------

TP ₂	5.14	80.35	4.99	75.36	
-----------------	------	-------	------	-------	--

TP ₃	4.95	80.31	5.11	75.20	
-----------------	------	-------	------	-------	--

TP ₄	4.67	79.87	5.38	74.49	
-----------------	------	-------	------	-------	--

TP ₅	<u>5.09</u>	79.58	<u>3.02</u>	76.56	CSG
-----------------	-------------	-------	-------------	-------	-----

	22.73		4.99	74.59	GRD
--	-------	--	------	-------	-----

23.66

22.73

.93

Sarasota Co

8/5/66

Kaimee - City

cloudy, rainy

Well #5

Jon - level

Brooks - rod

B.M. Casing Well

#8 Elv. 77.49

KAIMEE
#3

B.S. I.H. F.S. E/v.

B.M

TP₁ 2.76 79.32 5.07 74.25

TP₂ 4.15 78.40 5.76 72.64

TP₃ 5.27 77.91 5.10 72.81

TP₄ 5.52 78.33 2.85 75.48 CSG

17.70 4.72 73.61 GRD.

18.78

17.70

1.08

Sarasota Co

8/5/66

Kaimce - City

Well #3

cloudy & warm

Brooks - rod

Jon - level

B.M. casing Well

#5 E/v. 76.56

KAIMEE
#1

B.S. I.H. F.S. ELV

Sarasota Co

8/8/66

B.M.

75.48

Kaimee - City

cloudy & hot

TP₁ ²² 2.51 77.99 ²² 5.43 72.56²⁵ 75.73

Well # 1

Brooks - rod

TP₂ 4.79 77.35 5.26 72.09

Jon - level

TP₃ 5.28 77.37 4.39 72.98TP₄ 5.74 78.72 2.99 75.73 CSG

18.32

4.91 73.81 GRD

B.M. casing

Well # 3

³²
18.07²⁵

KAIMEE
2

B.S. I.H. F.S. Elv.

B.M.

TP₁ 2.53 78.26 4.67 73.59

TP₂ 5.22 78.81 3.32 75.49 T.B.M.

TP₃ 4.93 73.88

TP₄ 4.89 78.77 5.17 73.60

TP₅ 4.83 78.43 4.77 73.66

TP₆ 4.16 77.82 2.94 74.88 GSG

21.63 4.99 72.83 GRD

24.90

3.32

21.58

22.48

21.63

85

Sarasota Co.

8/10/66

Kaimiee - City

Well # 2

hot & clear

Brooks - rod

Jon - level

B.M. Casing well

1 Elv. 75.73

USGS #2

KAIMEE

B.S. I.H. F.S. EIV

B.M

75.49

TP₁ 3.35 78.84 5.12 73.72TP₂ 4.70 78.42 5.29 73.13TP₃ 4.38 77.51 5.31 72.20 GSG

12.43 5.62 71.89 GRD

72.20
3.29

75.49

15.72

12.43

3.29

Sarasota Co.

8/10/66

USGS # 2

Kaimee

hot & clear

Brooks - rod

Jon - level

B.M. (T.B.M) from

well # 2

USGS #04

Kaimce B.S. I.H. F.S. Elv.

B.M.

72.20

Sarasota Co.

8/10/66

USGS #04

cloudy & hot

Kaimce

Jon-rod

Brooks-level

TP₁ 3.55 75.75 5.84 69.9162.25
9.95TP₂ 3.92 73.83 6.37 67.46TP₃ 4.08 71.54 5.80 65.74TP₄ 3.82 69.56 5.30 64.26TP₅ 4.43 68.69 5.48 63.21TP₆ 5.22 68.43 4.94 63.49TP₇ 4.90 68.39 5.28 63.11TP₈ 4.89 68.00 5.15 62.85TP₉ 5.22 68.07 5.22 62.85

4.78 67.63 5.33 62.30

4.45 66.75 4.50 62.25

Large
Well

csg.

49.26

5.02 61.63

grd.

4.04 62.61

small
well

csg.

4.98 61.67

grd.

49.21

2

9.95

103

104

USGS 4
Kaimce
B.M.

BS. I.H. F.S. E.Lv.

TP₁ 3.87 66.48 5.08 61.40

TP₂ 5.18 66.58 3.61 62.97

9.05 5.22 61.36

3.77 62.81

62.61

large well

small well

Sarasota Co
USGS Well #4

Kaimce

csg.

gnd.

csg.

gnd

8/10/66
cloudy & hot

don-rod

Brooks-level

B.M. from casing of
small well; elev. 62.61

KAIMEE
7-06 TEST

B.S. I.H. F.S. EIV.

B.M.

82.32

TP, 3.06 85.38 4.86 80.52 csg

5.46 79.92 grd

Sarasota Co

8/10/66

Kaimsee-City

test well 7-06 cloudy & hot

Brooks-level

Jon-rod

B.M. casing city

Well #11

EIV 82.32

BS. I.H. F.S. Elv.

B.M.

54

89.00

TP₁ 4.97 93.97 4.20 89.77

83.61

5.39

TP₂ 4.70 94.47 4.71 89.76TP₃ 4.42 94.18 4.81 89.37TP₄ 3.65 93.02 5.63 87.39TP₅ 3.32 90.71 6.15 84.56TP₆ 3.47 88.03 4.34 83.69TP₇ 2.52 86.21 4.21 82.00TP₈ 4.79 86.79 4.67 82.12TP₉ 4.59 86.71 3.10 83.61 GSG

36.43

5.72 80.99 GRD

41.82

36.43

5.39

Manatee Co.

8/16/66

USGS Myakka Head

cloudy & hot

Brooks-Rod

Jon-Level

B.M. USGS

68 RHP 1949

No Elv.

USGS
CATLEDOCK
POINT

B.S.

I.H

F.S.

Elv

Charlotte Co.

8/17/66

B.M.

6

USGS

TP₁ 3.2 4.81 10.81 4.17 6.64

El Jobean

cloudy & hot

TP₂ 5.56 12.20 5.44 6.76

TP₃ 1.97 8.73 7.43 1.30 TIDAL

TP₄ 5.68 6.98 3.72 3.26 CSG

18.02

20.76

ATOP

8" CSG

18.02

2.74

3.26

6.00

B.M. Spot Elv

Q of 771

Elv. 6

USGS

FLAMORE

B.S. I.H. F.S. EIV

Sarasota Co

8/17/66

B.M.

13

USGS-Engelwood

TP₁ 4.17² 17.17 4.50² 12.67TP₂ 4.63 17.30 4.81 12.49TP₃ 4.06 16.55 4.87 11.68TP₄ 4.74 16.42 1.62 14.80 GSG

17.60 5.23 11.19 GRD

15.80

180

1580

B.M. USGS

76 ERTS 1952

No EIV. (13')

USGS	B.S	I.H.	F.S.	Elv		Sarasota Co.	8/18/66
OLD MYAKKA						USGS - Old Myakka	
B.M.					²² 22.72 ³⁷		
TP ₁	4.26	26.98	5.38	21.60	1565		cloudy & hot
TP ₂	4.15	25.75	4.56	21.19			Brooks - rod
TP ₃	4.70	25.89	3.60	22.29			Jon - level
TP ₄	4.91	27.20	4.93	22.27			
TP ₅	5.39	27.66	4.92	22.74		B.M. Sarasota Co	
TP ₆	4.70	27.44	4.62	22.82		#578 Elv. 22.72	
TP ₇	5.66	28.48	4.67	23.81			
TP ₈	7.32	31.13	5.11	26.02			
TP ₉	4.25	30.27	5.79	24.48			
TP ₁₀	3.41	27.89	5.62	22.27			
TP ₁₁	4.33	26.60	5.41	21.19	86.63 70.78 15.65		
TP ₁₂	5.22	26.41	4.68	21.73			
TP ₁₃	5.74	27.47	4.05	23.42			
TP ₁₄	6.47	29.89	4.12	25.77			
TP ₁₅	8.94	34.71	2.42	32.29			
TP ₁₆	6.98	39.27	0.90	38.37	CSG		
(115)	86.43		3.73	35.54	grd.		(116)

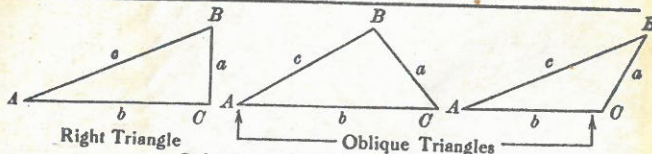
955-9588

W#7-06 - 300' due E of

Kaimie Well #11

10.03

TRIGONOMETRIC FORMULÆ



Right Triangle

Oblique Triangles

Solution of Right Triangles

For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\csc = \frac{c}{a}$

Given
a, b

Required
A, B, c

$$\tan A = \frac{a}{b} = \cot B, c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$$

a, c

A, B, b

$$\sin A = \frac{a}{c} = \cos B, b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$$

A, a

B, b, c

$$B = 90^\circ - A, b = a \cot A, c = \frac{a}{\sin A}$$

A, b

B, a, c

$$B = 90^\circ - A, a = b \tan A, c = \frac{b}{\cos A}$$

A, c

B, a, b

$$B = 90^\circ - A, a = c \sin A, b = c \cos A$$

Solution of Oblique Triangles

Given
A, B, a

Required
b, c, C

$$b = \frac{a \sin B}{\sin A}, C = 180^\circ - (A + B), c = \frac{a \sin C}{\sin A}$$

A, a, b

B, c, C

$$\sin B = \frac{b \sin A}{a}, C = 180^\circ - (A + B), c = \frac{a \sin C}{\sin A}$$

a, b, C

A, B, c

$$A + B = 180^\circ - C, \tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$$

a, b, c

A, B, C

$$c = \frac{a \sin C}{\sin A}$$

$$s = \frac{a + b + c}{2}, \sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$$

$$\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}, C = 180^\circ - (A + B)$$

a, b, c

Area

$$s = \frac{a + b + c}{2}, \text{area} = \sqrt{s(s - a)(s - b)(s - c)}$$

A, b, c

Area

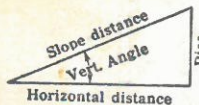
$$\text{area} = \frac{b c \sin A}{2}$$

A, B, C, a

Area

$$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$$

REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10'. From Table, Page IX. $\cos 5^\circ 10' = .9959$. Horizontal distance = 319.4 × .9959 = 318.09 ft. Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

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.