

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING  
SLOPE 1 TO 1. ROADWAY OF ANY WIDTH

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0
1	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	1
2	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	2
3	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	3
4	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80	4.90	4
5	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	5
6	6.00	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	6
7	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	7
8	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	8
9	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	9
10	10.00	10.10	10.20	10.30	10.40	10.50	10.60	10.70	10.80	10.90	10
11	11.00	11.10	11.20	11.30	11.40	11.50	11.60	11.70	11.80	11.90	11
12	12.00	12.10	12.20	12.30	12.40	12.50	12.60	12.70	12.80	12.90	12
13	13.00	13.10	13.20	13.30	13.40	13.50	13.60	13.70	13.80	13.90	13
14	14.00	14.10	14.20	14.30	14.40	14.50	14.60	14.70	14.80	14.90	14
15	15.00	15.10	15.20	15.30	15.40	15.50	15.60	15.70	15.80	15.90	15
16	16.00	16.10	16.20	16.30	16.40	16.50	16.60	16.70	16.80	16.90	16
17	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90	17
18	18.00	18.10	18.20	18.30	18.40	18.50	18.60	18.70	18.80	18.90	18
19	19.00	19.10	19.20	19.30	19.40	19.50	19.60	19.70	19.80	19.90	19
20	20.00	20.10	20.20	20.30	20.40	20.50	20.60	20.70	20.80	20.90	20
21	21.00	21.10	21.20	21.30	21.40	21.50	21.60	21.70	21.80	21.90	21
22	22.00	22.10	22.20	22.30	22.40	22.50	22.60	22.70	22.80	22.90	22
23	23.00	23.10	23.20	23.30	23.40	23.50	23.60	23.70	23.80	23.90	23
24	24.00	24.10	24.20	24.30	24.40	24.50	24.60	24.70	24.80	24.90	24
25	25.00	25.10	25.20	25.30	25.40	25.50	25.60	25.70	25.80	25.90	25
26	26.00	26.10	26.20	26.30	26.40	26.50	26.60	26.70	26.80	26.90	26
27	27.00	27.10	27.20	27.30	27.40	27.50	27.60	27.70	27.80	27.90	27
28	28.00	28.10	28.20	28.30	28.40	28.50	28.60	28.70	28.80	28.90	28
29	29.00	29.10	29.20	29.30	29.40	29.50	29.60	29.70	29.80	29.90	29
30	30.00	30.10	30.20	30.30	30.40	30.50	30.60	30.70	30.80	30.90	30
31	31.00	31.10	31.20	31.30	31.40	31.50	31.60	31.70	31.80	31.90	31
32	32.00	32.10	32.20	32.30	32.40	32.50	32.60	32.70	32.80	32.90	32
33	33.00	33.10	33.20	33.30	33.40	33.50	33.60	33.70	33.80	33.90	33
34	34.00	34.10	34.20	34.30	34.40	34.50	34.60	34.70	34.80	34.90	34
35	35.00	35.10	35.20	35.30	35.40	35.50	35.60	35.70	35.80	35.90	35
36	36.00	36.10	36.20	36.30	36.40	36.50	36.60	36.70	36.80	36.90	36
37	37.00	37.10	37.20	37.30	37.40	37.50	37.60	37.70	37.80	37.90	37
38	38.00	38.10	38.20	38.30	38.40	38.50	38.60	38.70	38.80	38.90	38
39	39.00	39.10	39.20	39.30	39.40	39.50	39.60	39.70	39.80	39.90	39
40	40.00	40.10	40.20	40.30	40.40	40.50	40.60	40.70	40.80	40.90	40
41	41.00	41.10	41.20	41.30	41.40	41.50	41.60	41.70	41.80	41.90	41
42	42.00	42.10	42.20	42.30	42.40	42.50	42.60	42.70	42.80	42.90	42
43	43.00	43.10	43.20	43.30	43.40	43.50	43.60	43.70	43.80	43.90	43
44	44.00	44.10	44.20	44.30	44.40	44.50	44.60	44.70	44.80	44.90	44
45	45.00	45.10	45.20	45.30	45.40	45.50	45.60	45.70	45.80	45.90	45
46	46.00	46.10	46.20	46.30	46.40	46.50	46.60	46.70	46.80	46.90	46
47	47.00	47.10	47.20	47.30	47.40	47.50	47.60	47.70	47.80	47.90	47
48	48.00	48.10	48.20	48.30	48.40	48.50	48.60	48.70	48.80	48.90	48
49	49.00	49.10	49.20	49.30	49.40	49.50	49.60	49.70	49.80	49.90	49
50	50.00	50.10	50.20	50.30	50.40	50.50	50.60	50.70	50.80	50.90	50

Distance of slope stake from side or shoulder stake for any width roadway, slope 1 to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

812

Please Return to  
City of San Diego Water Dept.  
Room 903 Civic Center

MICROFILMED

JAN 10 1965



TABLE XIII—CORRECTIONS FOR TANGENTS AND EXTERNALS

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table VIII) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

FOR TANGENTS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.79	.89	.99	1.04	1.29	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	.43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22

FOR EXTERNALS ADD

Central Angle	DEGREE OF CURVE													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.029	.032	.035	.039	.043	.047	.051
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.127	.135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.711	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.266	.353	.440	.528	.617	.707	.797	.887	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.76	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.885	1.06	1.25	1.43	1.62	1.80	1.99	2.18	2.38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2.06	2.28	2.50	2.73	2.96
110°	.268	.536	.806	1.08	1.35	1.63	1.91	2.20	2.48	2.76	3.05	3.35	3.66	3.96
120°	.360	.721	1.08	1.45	1.82	2.19	2.57	2.95	3.33	3.72	4.11	4.50	4.91	5.32

✓ Barrett Res silt survey *Tringulation* *also*  
 ✓ 9 Aug 54 Cottonwood creek 58-64 *also*



Quage ONTons 0.700-1446.12

U.S.G.S.

Quage El 62.83 = 1588.95

U.S.G.S. El. by Fairchild Feb. 1951

1615.12

Highest Water mark

14 46.12

85.

1531.12



Barrett Dam

King  
West T  
Williams

9-28-51

Eh  
1624.00

B.M.	2.33	1626.93		1624.60
T.P.	4.82	1625.18	6.57	1620.36
T.B.M.	9.55	1624.56	10.17	1615.01
F.P.	2.22	1624.01	0.77	1623.79
T.B.M.	4.82	1619.70	11.13	1614.88
T.B.M.	0.23	1614.20	5.73	1613.97
T.P.	0.27	1601.30	13.17	1601.03
J.P.	0.36	1588.68	12.98	1588.32
J.P.	0.11	1576.10	12.69	1575.99
	0.63	1563.64	13.09	1563.01
	0.25	1551.31	12.58	1551.06
	0.16	1538.64	12.83	1538.48
	0.63	1526.42	12.85	1525.79
	5.14	1519.42	12.14	1514.28
T.B.M.			2.60	<sup>1516</sup> 1517.82
	7.91	1515.79	11.54	1507.88

U.S.G.S. 111 - West end Dam

#1 Top pipe in rock below Weather Station

#2 on old stake left 15' Rd. SE. 50' of tower on Pig Point

#3 white stake white lathe

#4 Set B.M. West edge Flume Rd 3' white paint on rock



Barrett Lake  
X-sect #1  
0+00 - 1510 Contour - Westside

10-1-51  
King  
West  
Williams

El. Water	11.83	150.013		1458.30	4.59.5. Water
	12.49	1511.62	1.00	1499.13	
0+00			1.6	1510.0	
0+10			4.8		
0+14			4.9		
0+33			12.5		
0+47			17.3		
0+53			23.3		Edge water
0+65			29.3		
0+99			35.3		
1+32			36.3		
1+75			35.4		
2+10			33.3		
2+20			31.5		
2+46			28.2		
2+68			28.1		
2+95			23.3		Edge water
3+23			1.6	1510.0	







Barrett Lake  
X-sects. #2 (Pig point)  
0400-1510 Contour West side

10-1-51

4

1515.79

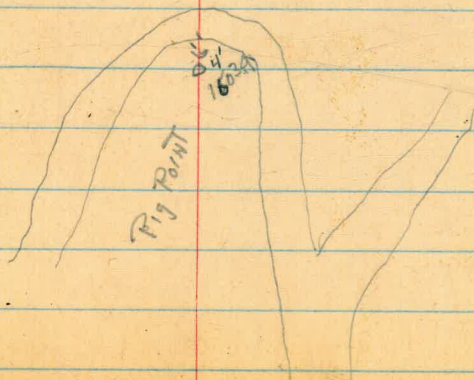
H.I. From Page 1

0400	5.79	1510	✓
0425	11.5		
0456	27.5	1488.	.2
0499	30.5		
1448	34.3		
2432	33.7		
2462	32.7		
2490	29.6		
3470	27.5		
4405	12.0		
5485	11.3		
6418	5.79	1510	

Edge Water

Iron P.P. E11612.

N 78 E





Pt # 2  
Pig Point  
check Fairchild - Transit on 1510 - West side

East side

(676) 678	+3°25'	1550.3
(720) 732'	+5°14'	1576.5
(820) 834'	+5°44'	1592.7

West side

(145) 148	+8°01'	1536.5
(255) 265	+11°16'	1560.7
(344) 390	+14°50'	1606.2

10-1-57

King  
West  
Williams

5

West Edge Rd



#3 - X-sections  
1510 Contour - 1510 Contour

10-2-51  
King  
West  
Williams

6

T.B.M	0.85	1517.67		1516.82	#4
0+00			7.67	1510.00	
T.P	0.78	1506.95	11.50	1506.17	
0+15			4.0	1502.95	
0+29			6.6		
0+46			8.5		
0+62			11.6		
1+00			12.0		
1+58			13.7		
1+85			12.8		
2+15			11.5		
2+55			10.7		
2+81			11.2		
3+22			8.0		
3+28			2.7		
T.P	11.52	1517.97	0.50	1506.45	
3+92			7.97	1510.	
			1.12	1512.85	1516.82

Bottom creek



Pt. #3 -  
 Cheekon Fairchild  
 Transition 1540 Contour - West side

	West side	El
(485)		(1615)
497'	+8°55'	1616.0
(398)		
406'	+8°17'	1597.7
(258)		
262'	+4°33'	1580.6
(93)		
100'	-15°23'	1514.4
	East side	
(767)		(1616)
775'	+5°40'	1616.2
(639)		
640'	+2°37'	1529.4
540'	+0°36'	1548.8

10-2-51

King  
 West  
 Williams

Hot

7

Set 2" Pipe El. 1616

17062.5  
 485

Set 2" Pipe El. 1615.00



Pt #4  
 X-sects - 1510 - 1510 Contour

10-1-51  
 King  
 West  
 Williams

Very Hot

8

T.B.M.	0.0	1523.00		1523.00
T.P.	2.4	1512.16	13.00	1510.00
	0400		2.6	1510.0
	0410		4.4	
	1400		7.4	
	1444		9.4	
	1790		9.1	
	2158		9.5	
	2792		11.8	
	3430		12.1	
	3483		11.6	
	3498		10.7	
	4712		4.4	
	4719		2.16	1510.
T.P.	13.20	1523.20	2.16	1510.00
T.B.M.			0.20	1523.00

GINNEY

toilet  
 8" IRON PIPE - 1615.0

creek bottom

IRON 2" 1614.17

GINNEY



Barrett Levels  
Up North Branch to line 7  
X-sec. Line 7

10.4-51

9

T.B.M.	+ 11.45	1521.45			1510.00
T.P.	12.74	1529.16	5.03	1516.42	
T.P.	6.02	1533.87	1.31	1527.85	
T.P.	1.26	1533.28	1.85	1532.02	
T.B.M.			3.28	1530.00	
0+00			3.3	1530.0	
0+08			8.6		
0+30			9.3		
0+66			10.0		
1+07			10.0		
1+13			11.8		
1+98			12.5		
2+30			12.3		
2+68			12.2		
2+81.70			3.28	1530.00	
	6.82	1538.06	7.04	1526.24	
	1.48	<sup>1521</sup> <del>1520</del> .96	12.76	1530.38	
			11.90	<sup>1510.02</sup> <del>1509</del>	

GINNEY No. side ON LINE #4

GINNEY ON N.E. bank ON LINE 7

creek

Set GINNEY - SW. bank



Levels - Up Barrett Lake  
East Branch

B.M.	6.18	1528.00		1576.82
T.P.	5.86	1528.86	0.00	1528.0
T.B.M.	3.37	1521.78	10.45	1518.41
T.P.	11.06	1529.47		1518.41
T.P.	7.60	1527.78	9.29	1520.18
T.P.	6.83	1531.25	3.36	1524.42
T.B.M.	4.40	1533.52	2.32	1529.93
T.P.	11.251	1543.96	2.07	1531.45
T.P.	12.92	1548.55	8.33	1535.63
T.P.	12.23	1558.70	7.08	1546.47
T.P.	5.68	1556.09	8.29	1550.41
T.B.M.	13.25	1566.04	3.30	1552.79
T.P.	12.79	1578.54	0.29	1568.75
T.P.	12.40	1590.13	0.81	1577.73
T.P.	13.03	1602.58	0.58	1589.55
T.P.	11.11	1612.15	1.54	1601.04
T.P.	8.91	1619.46	1.00	1605.5
T.B.M.			4.46	1615.0
			3.27	1612.19

10-3-4-5  
King  
West  
William P

Hot

10

#4

on tree trunk

GINNEY No. 5 side #5

50 side same elev.

on GINNEY No. 5 side 50 East of fence - bottom stop

Top 1" Pipe No. 5 side #6 - 0700



Pt. 5  
 V-sects.  
 0+00 = 1615 contour North side

King 10-3-51  
 West  
 Williams

11

0+00			1615.00
T.B.M.	2.51	1531.44	1528.93 ✓
1+64.09		2.5	
98			
1+53		6.9	
1+91		6.1	
2+06		4.6	
2+60		4.9	
3+48		6.0	
3+58		8.9	
3+69		5.7	
4+60		5.7	
5+69		5.6	
6+60		5.7	
7+00		5.0	
7+13E		2.54	
8+17 ←	Slope	93' (81.4)	1544.9
	+	114'	
9+62.80 ←	Slope	200' (190.20)	1590.73
	+	180.09	(1615.52)
9+59.54		61 (55.74)	1615.00
		+230.59	

ON GINNEY Toe of slope. - No.

9+59.39 • Set 2" Pipe El. 1615.00  
 Top Pipe

Creek



Mag. B. 53°W

0+00 → Set 2" Pipe - El. 1615.00

GINNEY

Iron pipe - 50.



Pt. # 6  
East Branch Lake  
Barrett

10-4-51  
KING

12

0+00			1615.00
T.B.M. 4141	1557.20		1552.79 ✓
1+44.72	2.0		1555.20 ✓
1+58	4.2		
2+00	4.7		
2+72	6.1		
2+98	5.1		
3+05	6.2		
4+14	6.3		
4+23	4.7		
5+00	4.3		
5+75	4.7		
6+13	5.1		
6+24.51	3.53	1553.67	
7+44.52			

1+00 - E! 1552.27 - + 23<sup>46</sup> (144.52) → 157.91

1515.91 - 1616.10

Top of  
E - 300' E  
Top of Slope

Set 1" P.P. - E! 1616.19

Water

W 1/2 E

Force - Red Steel Poles

Set 1" P.P. - E! 1615.0

0400

157.91

ginn



Barrett Dam

#1

see page 3.

10-15-51

King  
West  
Williams

13

T.R. 0+00

1622.40

Top pipe above parking area <sup>West</sup> East side - See Page 3

(37.95)

0+37.95 40' -18°26'

1619.45

East Edge Rd. Parking area

0+90.28 98' -22°54'

1593.97

1+64.91 169' -13°14'

1573.41

P.O.T. 2+25.5 230.58 -12°27'

1582.39

3+35.90 115' -15°39'

1551.37

4+18.21 198' -12°50'

1538.41

P.O.T. 5+02.67 282.69 -11°58'

1528.29

0+00.74 43' -15°56'

1516.49

See Page 2 - X-sects in Water

5+43.97 = 0+00

8+67.27 = 3+23.5

1510

8+97.11

1523.51

9+54.20

1537.36

11+01.35

1622.60



Pt #2 - Pig Point  
See Page 4

18-18.51  
King  
West  
Williams

14

0400

1609.15

Top 2" Pipe

X  
0429

29° 0'

1604.65 ✓

West Edge Road

(116.05)

128 -24° 57'

1550.65 ✓

(217.89)

232 -28° 05'

1525.00 ✓

H. Edge Rd

X  
(286.97)

3115.87

300 -17° 01'

1514.86 ✓

3170.99

537.1 0°

1510.00 ✓

See page 4

(59.15)

63.05 -20° 16'

1488.16 ✓

Edge Water

300.34 0°

1488.16 ✓

(254.85)

7 258.80 4° 55'

1510

GINNEY

(61.93)

X 77.19 +36° 37'

1556.03

X (11.83)

76.15 +19° 24'

1581.32

(59.16)

60 +9° 35'

1592.31

Side Shot

95.37

X 94.00 +6° 39'

1593.26

(20.50)

21 -11° 53'

1589.08

(133.12)

137 -13° 40'

1520.84

198.22

200 -7° 37'

1566.71

299.75

X 299.75 +0° 12'

1614.26

(79.93)

83.05 +15° 46'

1615.83

1616.35 Top Page



Profile Line  
3

B.M. = 0402	(94.50) 96.50	-11° 41'	1615.0	2" Pipe
	144	-15° 19'	1595.46	
	(29364) 298.12	-9° 57'	1543.95	
	(88.51) 88.65	-3.20'	1538.80	
	28	-13° 24'		
	(7	-15° 04'		
	100'	-15° 26'		
	(105.38) 109.53	-15° 49'		



Profile Line # 4

	H.D.	V.A	Red
B.M. 0400	(126.09) 130.89	-16°34'	5.6 1614.17
1+26.09 P.O.T	121	-19°31'	1576.85
	157'	-17°31'	
3+31.86	(205.77) 216.32	-17°58'	(150.00) 1570.70
7+50.86	(65)		1510
8+15.86	67.91 51.7	+16°50'	1529.67
8+47.56	52' 212.35	-6°03'	1524.1
10+28.21	214	+7°08'	1556.24
11+03.4 P.O.T	287.55 293.83	+11.52'	1590.09
11+64.00	(60.59) 64.97	+21.09'	1613.53

Top 1" Pipe - North Side

Set by Level  
ON GINNEY - set by level

(1613.89) - Set by Level



#7

17

T.R.M 12.73 1542.73 1530.00

T.P. 11.49 1558.75 0.47 1572.26

12.18 1565.73 0.20 1553.55

12.46 1577.90 0.29 1525.44

13.16 1590.97 0.09 1577.81

12.77 1603.62 0.12 1590.85

13.15 1616.63 0.14 1603.48

1.67 1614.96 - Top Pipe N.E.

1614.65 ✓ 1614.96 - ON N.E.

1560.77 ✓

1541.78 ✓

1610.97 1610.97

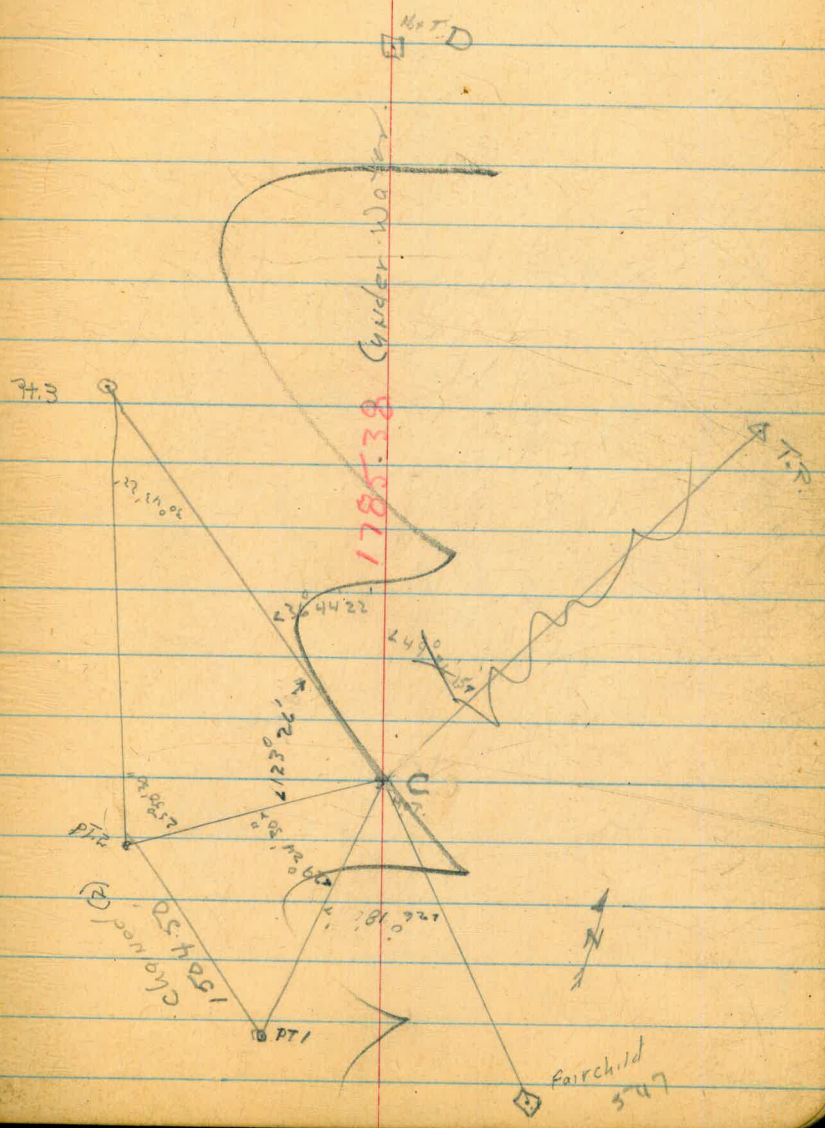
Set on 1530. (275.75)  
288.45 17° 04'Set on 1530 (102.25)  
107 +16.43(21.51)  
24.52 +28° 44' (T)(151.77)  
166.73 +24° 30'

Pipe

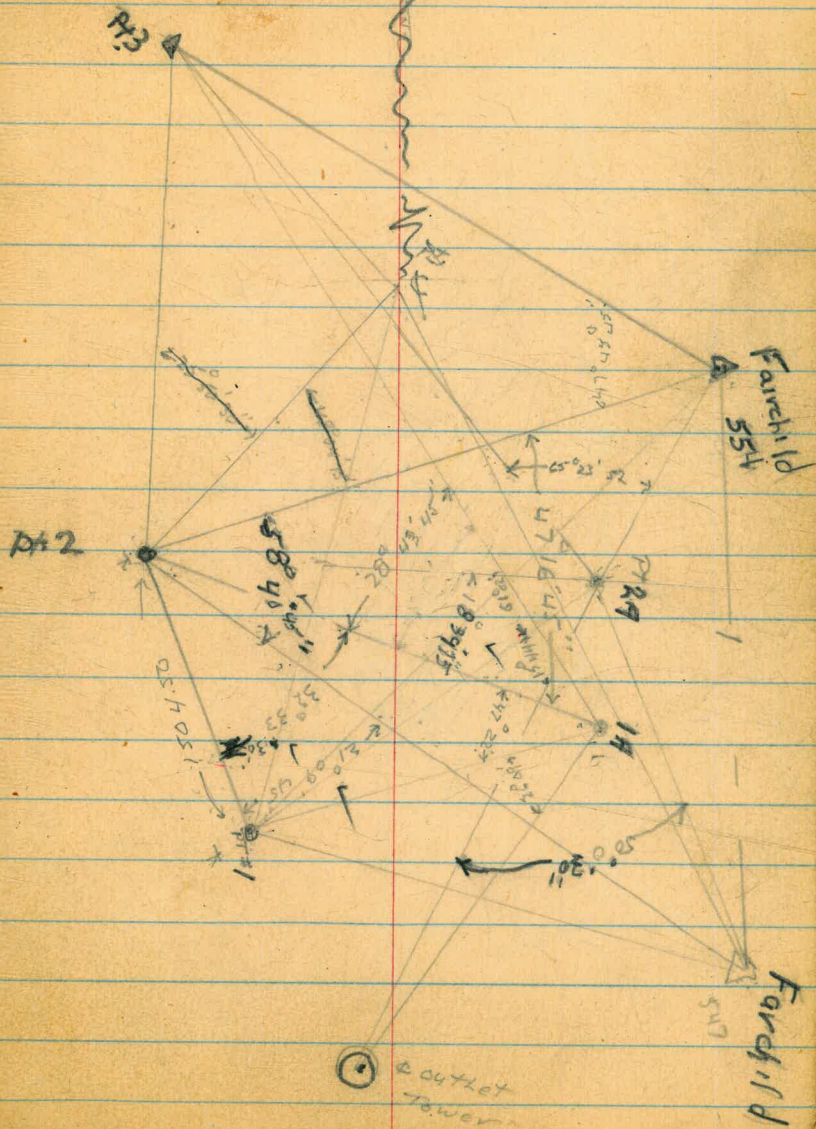
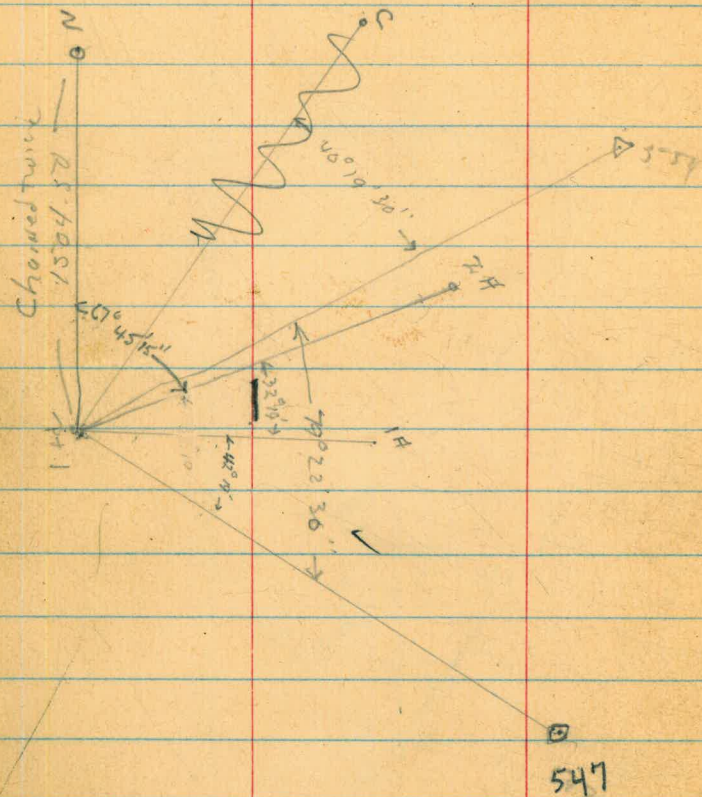
1611



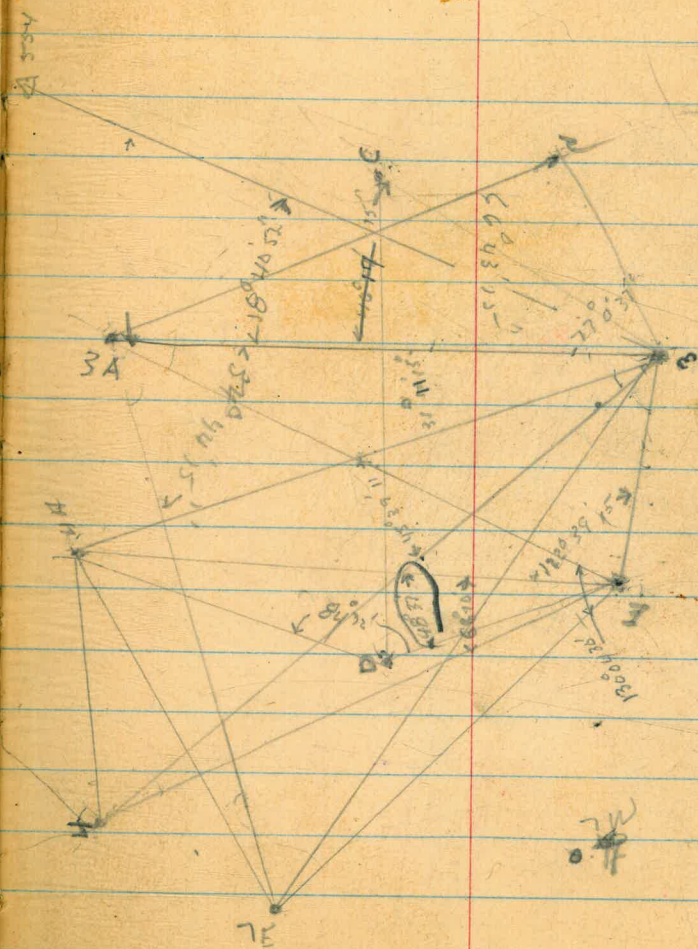
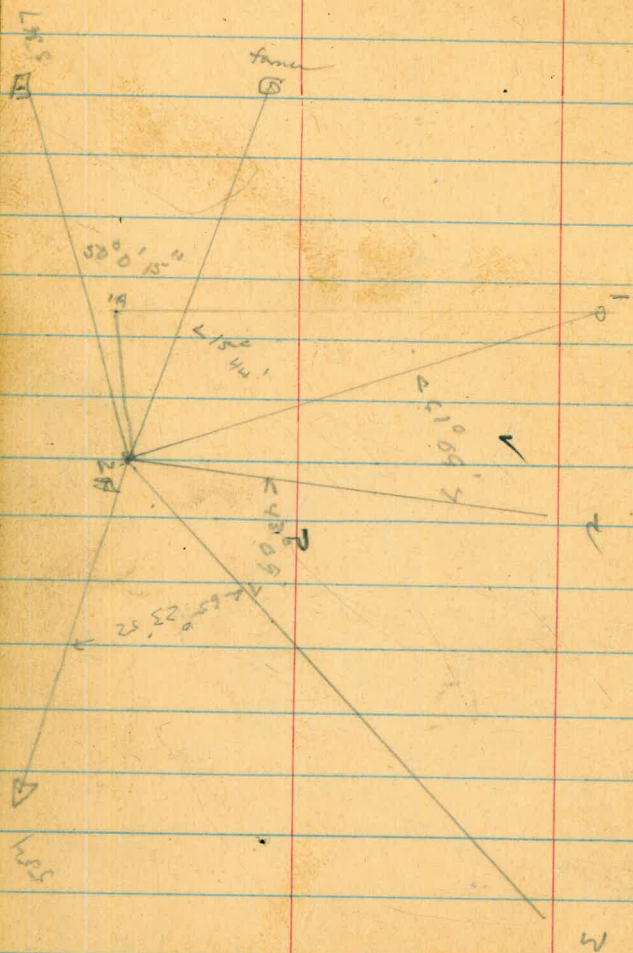
C-D Base line

















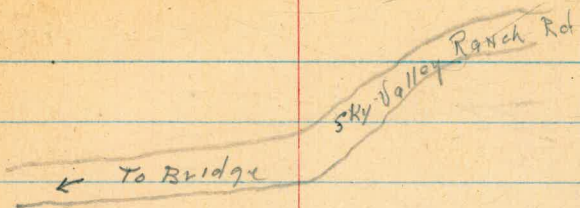
Profile Line # 14

10-24-51  
King

22

TBM.	2.27	1620.27	1618.00
0400		2.3	
0407		3.7	
0422		13.7	
0482		15.0	
1422		16.2	
1450		14.2	1606.0
1460		18.0	1602.2
1486		5.2	
2430		4.8	
2437.08		2.27	(1618.27)
7.2			

1" Pipe



1" Pipe 1618.00 - East 0400

#7

411 D.G.  
General Average 2415



1" Pipe 1618.27



No 1/2 sheet.

6" PLINE  
Honeycutt St.  
Pac. B. Drive - Crown Pt.King 12-31-51  
West  
Williams

23

T.B.M	4.58	25.27		20.69		Top conc. Mon. N.E. cor Honeycutt & Crown Pt. Drive
5700			5.0	20.3	20.0	4.1
4450			4.5	20.8	20.0	4.6
F.H. 4418			4.10	21.2	19.9	1.3
(5)			4.11	21.2	19.9	1.3
4400			4.2	21.1	19.9	5.0
3450			3.8	21.5	19.5	5.8
3100			4.7	20.6	19.3	5.1
2450			5.6	19.7	19.1	4.4
2100			6.9	18.4	18.7	3.8
1450			7.5	17.8	18.4	3.6
1400			7.7	17.6	18.1	3.6
0450			8.0	17.3	17.8	3.4
F.H. 0			7.44	17.9	17.6	0.3
(5)			7.70	17.6	17.6	0.0
0450			6.9	18.4	17.5	4.7 So. Prop. Line FORTUNA
0450 1700			5.8	19.5	17.8	5.5
1400			5.3	20.0	18.4	5.4
J.P	9.44	29.39	5.31	19.95		



Hamouca #84

24

2939

1+50			9.1	20.3	19.2	4.9
2+00			8.7	20.7	20.1	4.4
+50			8.1	21.3	20.8	4.3
3+00			7.3	22.1	21.7	4.2
+50			6.2	23.2	22.8	4.2
4+00			4.7	24.7	23.9	4.6
4+50			3.4	26.0	25.1	4.7
5+00			2.1	27.3	26.4	4.7
+50			1.1	28.3	27.7	4.4
T.P.	6.99	35.32	1.06	28.33		
6+00			5.7	29.6	29.0	4.4
+50			4.5	30.8	30.3	4.3
7+00			3.5	31.8	31.2	4.4
T.B.M	5.54	37.31	3.55	31.77		
			2.03	35.28	35.28	

7 ct. - N.E. cor Hamouca & Pac B. Drive



Barrett Res.  
Silt Survey  
Levels to Line 8

1-15-52  
King  
West  
Williams

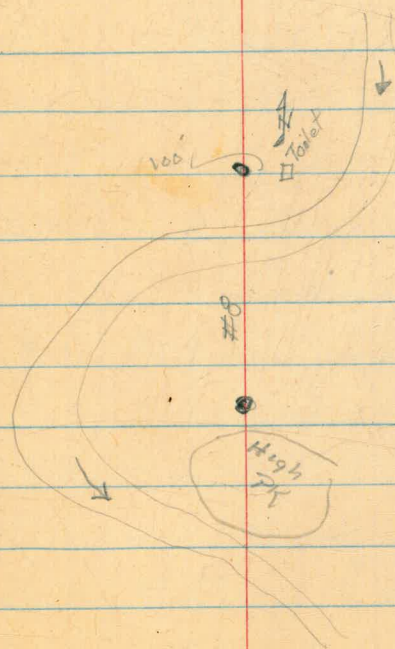
25

T.B.M.	5.26	1622.26		1617.00
T.P.	2.32	1613.89	10.69	1611.57
T.P.	10.55	1622.50	7.94	1614.95
T.B.M.			4.50	1618.00
T.B.M.			5.50	1617.00
T.P.	0.00	1610.97	11.53	1610.97
#7 Pipe West.			0.04	1610.93

Top Pipe N.E. Line 10471

#  
Set 2" Pipe - Line 8 - N.W. Side - 100' W. Toilet

" " " " " S.E. Side - Against big  
blows





Levels to different  
Pipes from Pine Creek  
Bridge - Dold # stream  
1657.70 Ehm

King  
West  
Williams  
1-15-52

B.M.	70.66	1658.66		1658.00
T.P.	1.40	1649.21	10.45	1647.81
T.P.	2.42	1640.43	11.20	1638.01
T.P.	1.86	1630.34	11.95	1628.48
T.B.M.			12.34	1618.00 ✓
T.B.M.			12.07	1618.27 ✓
T.P.	2.27	1620.27 ✓	12.34	1618.00
T.P.	9.36	1619.49	10.14	1610.23
T.B.M.			1.52	1617.97
T.B.M.			1.57	1617.92
T.P.	12.22	1619.56	12.15	1607.34
T.P.	1.66	1619.49	1.73	1617.83
T.B.M.			1.49	1618.00
T.B.M.			0.49	1619.00
T.P.	4.75	1623.66	0.58	1618.91
T.P.	2.63	1621.87	4.42	1619.24
T.B.M.			4.87	1617.00
			4.87	1617.00
			4.87	1617.00

U.S.G.S. B.P. IN ROCK East End bridge - Pine Creek

Top pipe #14 - East side  
" " " " West "

2" Pipe #13 ON East side  
2" " " " " West "

2" Pipe #12 East side  
2" " " " " West "

#10 East - 2" Pipe #11 No. side Pine Creek  
" " West - 2" " Branch Pine Creek  
#11 So. side 2" " - Pine Creek  
See Page - 25



Profile Line #13  
Time Creek

1-23-52

27

0+00					
T.B.M.	0.00	1617.90		1617.90	
T.P.	2.75	1608.65	12.00	1605.90	
0+27			4.1		
0+65			5.4		
0+74			7.3		
1+48			8.6		
1+54			12.9		
1+91			14.3		
2+02			15.0		
2+10			15.0		
2+16			10.2		
		HJ			
π-0+62.4		1608.65	5.0	1608.65	
2+39.13	(176.73) 177	+3°06'		1611.3	
2+82.94	220.94 221	+3°43'		1617.97	1617.97

Top of Pipe West side = 0+00

Top Pipe East side



Profile Line 12  
Barrett

7-23-52  
King  
West  
Williams.

28

T B.M.			E1	1619.00	Top Pipe West side - 0400
0400			1619.00		
0448.21	60 (4820)	-36°32'	1583.3		
0474.01	(74.00) 83	-26°55'	1581.4		
1+00.62	(100.62) 107	-19°53'	1582.6		
2+21.98	(221.98) 225	-9°23'	1582.3		
2+67.62	(267.62) 268	-3°04'	1604.7		
3+03.00	303	0°-00'?	1618.00	1618.00	Top Pipe East side



## Profile Line # 11

1-23-52  
King  
West  
Williams

29

Station	Offset	Angle	Distance	Remarks
0+70.0			1617.00	Top pipe Ho. Side = 0+70.0 - also 0+70.0 - Line 10
TBM				
0+23.6	(23.5) 24	-10°50'	162.5	
1+18.40	(94.80) 97	-12°13'	1596.5	
2+37.58	(213.98) 218	-11°05'	1575.4	
2+62.99	(239.39) 244	-11°09'	1569.8	
2+95.92	C 300	-9°26'	1567.85	
4+22.09	Level shot		- 1.8	1566.03.0 ground
T 4+73.99	(11.9) 12	-6°32'	1564.6	
5+47.49	(85.9) 86	-1°10'	1564.3	
6+12.09	(150) 150	-0°52'	1563.7	
6+14.09	<del>150</del> 152	-0°59'	1564.7	
6+50.09	188	-0°17'	1565.1	
6+60.09	198	+0°51'	1568.9	
7+35.09	(275) 274	+3°20'	1581.9	
7+61.60	(299.0) 300	+4°29'	1589.58	
T 9+06.06	(144.16) 151.50	+10°25'	1616.97	1617.0 Top pipe - So side



Profile Line #10

1-23-52  
King  
West  
Williams

0700 T.B. 21.7			161700	
1+22.37	(122.33) 123.45	-7° 40'	1600.53	
2+08.63	(86.3) 92	-20° 10'	1568.8	
3+21.63	(199.3) 202	-9° 25'	1567.5	
3+50.03	(227.7) 230	-8° 02'	1568.4	
4+04.83	(282.5) 284	-5° 46'	1572.0	
4+21.25	(298.92) 300	-4° 51'	1575.18	
4+74.75	(325) 327	+7° 39'	1582.4	
5+76.25	(355) 356	+5° 38'	1590.5	
6+39.52	(218.21) 219	+4° 39'	1592.94	
7+43.52	+ 104	-1° 11'	1590.8	
7+56.52	(117) 118	-3° 39'	1585.4	
7+67.52	← 128	-2° 09'	1588.1	
8+29.52	190	+0° 53'	1594.3	
9+17.52	278	+2° 44'	1606.2	
9+38.92	(299.4) 300	+3° 17'	1610.13	
9+65.45	(26.53) 27.50	+15° 10'	1617.32	1617.53

Top pipe N.E. side 20700 Line 10411

Top pipe West



Profile Line 8  
Barrett

1-25-52  
King

31

0700 TBM				1617.00
1+09.42	(109.42) 122	-26°15'	1563.04	
1+46.3	(36.91) 45	-34°54'	1536.3	
2+01.9	(92.53) 96	-15°28'	1537.1	
2+29.5	(120.12) 122	-10°05'	1541.7	
2+93.7	(184.35) 185	-4°47'	1547.6	
4+06.7X	(297.35) 398	-3°47'	1543.38	
4+68.1	(89.8) 92	-12°33'	1557.1	
4+99.1	(58.8) 62	-18°37'	1577.1	
5+59.9	(151.24) 155	+12°38'	1596.9	
6+41.6	(88.7) 85	+9°54'	1611.5	
7+13.1	(155.2) 159	+12°29'	1577.38	
7+54.5	(186.59) 200.51	+11°20'	1617.92	1618.00

Top 1" Pipe - So. side = 0401

Top Pipe No. Side



Re - Profile # 14

Jan 28, 1952 32

Clear + Warm

Slope Dist	Vert $\Delta$	Hi	-		
0+00	+43	1622.3		1618.00	$\frac{3}{4}$ IP East side
0+07	0° 00"		-5.6	1616.7	
0+26	-26° 14"			1607.7	
1+01	-6° 30"			1606.7	
1+22	-7° 08"			1602.9	
1+51	-4° 30"			1606.2	
1+59	-5° 52"			1601.8	
1+90	-5° 06"			160.2	
1+93	-5° 32"			1599.3	
2+06	-5° 22"			1598.9	Bottom of creek
2+26	0° 37"			1615.6	
2+37	0° 00"		-4.0	1618.30 =	$\frac{3}{4}$ IP on west side set by level
2+88	+11° 30"		+58.6	1680.90	2x2 Hub 14 W W edge of road

20.3  
1.97

20.27  
3.7  
1.06



## Barrett Lake triangulation.

Jan 28, 52 33

Δ 14 E

13 E to 14 W 85° 34' 00"  
+ 14 W W

set 2x2 Hub at 14.W.W sta 14 W

impossible to see out

10 DIR 15° 40' 30"  
13 E to 13 W 4 DIR 62° 43' 00"

14 W W set on line betw 14 E

MEAN L = 15° 40' 45"

+ 14 W at sta 2+88.4

13 W to 14 W  
14 W W10 DIR 69° 53' 00"  
13 W to 14 W 4 DIR 279° 31' 30"  
+ 14 W W

MEAN L = 69° 52' 53"

2x2 Hub

Δ 14 W W

HILL to 14 E 4 DIR 82° 03' 11"

edge of road

MEAN L = 82° 02' 45"

1 DIR 78° 29'  
14 E to 13 E 4 DIR 313° 57'

MEAN L = 78° 29' 15"

1 DIR 73° 19'  
14 E to A 12 4 DIR 293° 15'

MEAN L = 73° 18' 45"

Δ 13 E W

14 E to 13 E 10 DIR 103° 43' 00"

4 DIR 414° 52' 30"

MEAN L = 103° 43' 08"





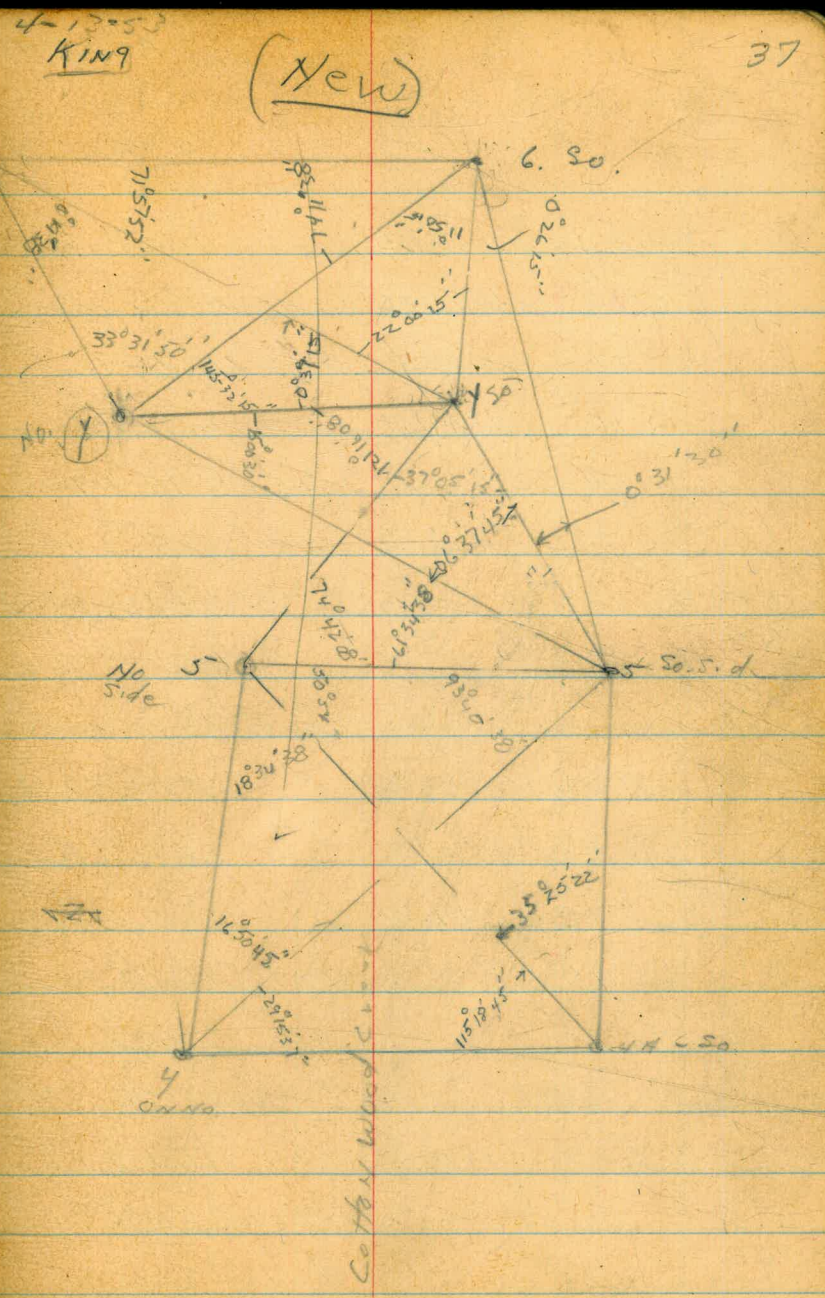
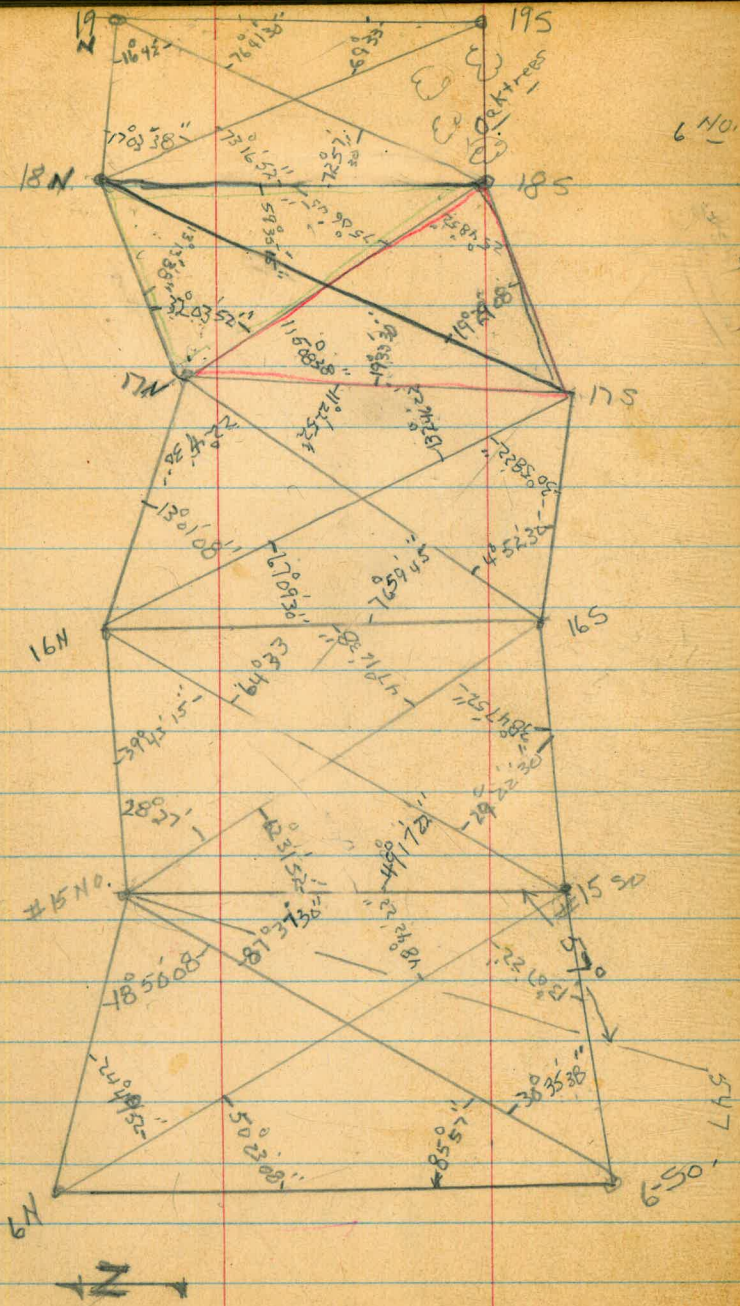














20 wds for X sections Barrett Res

West  
Williams  
Martell  
Varonakis

38

16 Feb 53

Sta	+	H	-	Elev
	7.28	1560.95		1553.67
	10.26	1571.00	0.21	1560.74
	12.21	1582.98	0.23	1570.77
	12.16	1594.62	0.52	1582.46
	12.34	1606.81	0.15	1594.47
	12.68	1618.32	1.17	1605.64
			2.32	1616.00 ✓
			# 15	
			2.32	1616.00
	5.92	1600.39		1594.47 ✓
	12.08	1607.75	4.72	1595.67
	12.17	1619.36	0.56	1607.19
			4.36	1615.00 ✓
			# 16	
			4.42	1614.94
	7.24	1614.36	12.24	1607.12
			1.45	1612.91 ✓
	0.75	1611.00	4.11	1610.25
	9.47	1609.51	10.96	1600.04

Ginnery Line # 6 See page 12

Turn on Large Tree stump

Turn on Rock

Set 1" I.P. on Large Pointed rock

North side on rocky projection of land

Set 1" I.P. on south bank

on peninsula on north side set 1" I.P.

on rocky mound south side set 1" I.P.

TBM on Large Rock



West  
Williams  
Martell  
Yaronfakis

39

230  
675  
55  
48

1609.51

2.42 1600.02 11.91 1597.60

1.20 1590.25 10.97 1589.05

2.74 1581.51 11.48 1578.77

4.48 1573.59 12.40 1569.11

0.19 1562.37 11.41 1562.18

3.85 1556.12 10.10 1552.27

2.44 1553.68 ✓

1553.67 Ginney Line # 6 p. 38

17 Feb 53

1.99 1614.90 16 12.91

TBM on Rock (Painted Red)

12.52 1618.42 8.95 1605.95

10.84 1628.10 1.21 16 17.26

2.10 1620.00 ✓

Painted Red  
Set 1" IP on knob on North Side

17"

12.26 1638.25 2.11 16 25.99

3.28 1634.97 ✓

Set 1" IP in back of rocky island  
has three small oak trees on it.

4.38 1630.37 16 25.99

12.51 1630.44 12.44 16 17.93

Turn on large Rock

7.14 1623.30 #18

Set 1" IP on Rocky pt North Side

12.66 1617.78

Set 1" IP " " " 200 West of Row of Oak trees  
South Side



8.82	1632.12		1623.30
8.40	1639.42	1.10	1631.02
8.52	1647.38	0.56	1638.86
12.14	1651.40	8.12	1639.26
3.87	1651.42	3.85	1647.55
10.49	1660.78	1.13	1650.29
		2.28	1658.50
		3.75	1657.03
1.35	1649.80	12.33	1648.45
2.96	1640.01	12.75	1637.05
3.63	1632.42	11.22	1628.79
1.94	1624.11	10.25	1622.17
		4.22	1619.89
1.33	1621.22		1619.89
4.07	1620.07	5.22	1616.00
3.22	1618.35	4.94	1615.13
4.14	1617.04	5.45	1612.90
3.56	1616.30	4.30	1612.74

Set 1" IP North bank large boulders  
Oak Trees  
Set 1" IP. South Bank

Top edge bank by Flume

BM Large Granite Boulders by Oak  
Tree 5' South of Flume 10' east of Line 19

18 Feb. 53

Check back TBM on rock (red)  
p 39



	1616.30		
3.58	1611.92	7.96	1608.34
4.45	1610.25	6.12	1605.80
2.78	1608.46	4.57	1605.68
4.21	1607.78	4.89	1603.57
3.97	1607.63	4.12	1603.66
4.39	1610.46	1.56	1606.07
6.52	1614.16	2.82	1607.64
		1.16	1613.00 =

West  
Williams  
Martell  
Varon Fakis

18 Feb 53

41

1612<sup>91</sup> TBM on Rock



## Profile Line 19

West  
Williams  
Martell  
Varonfakis

42

19 Feb 53

Sta	Vert 2 Slope Dist	+	Hi	-	Elev.	
0+00			1658.50		1658.50	1" IP North bank
	-24° 33'					
0+95 <sup>5</sup>	94.0'			39.06		
	-13° 47'					
1+70 <sup>93</sup>	176.0		1616.56	41.94	1616.56	Top North edge creek bank P.O.T.
	-27° 58'					
1+91 <sup>3</sup>	23.0			10.70		Bottom of creek
	-7° 42'					
2+53 <sup>2</sup>	83.0			11.12		
	-3° 01'					
3+10 <sup>8</sup>	140.0			7.36		
	-0° 15'					
3+25	154.0			0.63		Top of South creek bank
	+0° 46'					
4+70 <sup>90</sup>	300.0	4.01	1620.57			P.O.T.
	+10° 15'					
5+37 <sup>21</sup>	68.0'	12.11				
	+15° 30'					
6+12 <sup>26</sup>	136.84	36.57			1657.14	= 1657.03 1" IP South side
	+19° 53'					
6+37 <sup>82</sup>	176.43	57.10				Set 2x2 Hub on line above south IP.



Profile Line # 18  
S 23° W

West  
Williams  
marcell  
Varonakis

43

19 Feb 53

Sta	Vert. Z	Slope Dist	+	Hi	-	
0+00					1623.30	1" I.P. North bank of Creek
0+56 <sup>31</sup>		20° 10'				
		60.0'		1623.30	20.70	
		-10° 07'				
1+27		129.0'			22.66	Top of creek bank
		-9° 28'				
1+75 <sup>58</sup>		178.0'			29.28	bottom of creek
		-9° 04'				
2+11 <sup>88</sup>		214'			30.03	creek bed
		-7° 08'				
2+19 <sup>29</sup>		221'			27.44	
		-4° 28'				
2+99 <sup>22</sup>		300.0'		1599.94	23.36	1599.94
		+0° 01'				
5+67 <sup>09</sup>		268.0'	+0.08	1600.02		
		+21° 28'				
6+12 <sup>45</sup>		48.75'	17.84		1617.86 =	1617.78
						1" I.P. South bank

POT Top creek bank

POT Bottom of hill



19 Feb 58

Sta	Vert 2 Slope Dist	+	Hi	-	Elev	
0+00			1626.00		1626.00	1" IP North Side
0+26 <sup>15</sup>	-29° 20' 30.0'			14.70		
1+08 <sup>52</sup>	17° 44' 114.0'			34.72		
2+49 <sup>32</sup>	-8° 17' 252.0'			36.31		
2+97 <sup>22</sup>	-7° 32' 300'		1586.67	39.33	1586.67	POT in Circle Bottom
3+76 <sup>4</sup>	-0° 42' 79.0'			-0.96		
3+83 <sup>2</sup>	10° 46' 86.0'	1.12				
4+07 <sup>4</sup>	+0° 25' 110.0'	.80				
4+17 <sup>4</sup>	+1° 20' 120.0'	2.79				
5+23 <sup>4</sup>	+0° 29' 226.0'	1.91				
5+95 <sup>82</sup>	+5° 43' 300.0'	29.88	1616.55			Pot Top of Rocks
7+62 <sup>11</sup>	+6° 19' 167.21	18.40	1634.95	= 1634.94		Top 1" IP South Side
		4.37	1639.31		1634.94	
		1.73	1635.84	5.20	1634.11	
			5.84	1630.00		Set 2x2" nub south side approx 500' east of 1" IP south side #17



Profile Line 17A East  
From South 2x2" Hub to North 1" IP

West  
Williams  
Varenfakis  
Kemp

25 Feb 53

45

Sta	vert & slope Dist	+	Hi	-	Elev	
0+00		1630.00			1630.00	Top 2x2 Hub South Side
0+50 <sup>02</sup>	-19° 04' 53.0			-17.31		on ridge of large rock
1+97 <sup>79</sup>	8° 35' 200'			-29.68		
2+22 <sup>32</sup>	-8° 51' 225'			-34.62		
2+97 <sup>21</sup>	-7° 05' 300'		1593.00	37.0	1593.00	POT
4+40 <sup>7</sup>	-0° 39' 143'			-1.62		
5+89 <sup>21</sup>	-0° 24' 292.0'		1590.96	2.04	1590.96	POT Top of Creek Bank
5+96 <sup>9</sup>	-26° 14' 8.0			3.54		Creek Bottom sandy
6+24 <sup>1</sup>	-5° 40' 34.5'			3.40		
6+28 <sup>7</sup>	-3° 13' 39.0			2.19		
6+49 <sup>21</sup>	+0° 24' 60.0	0.42				
6+89 <sup>21</sup>	+0° 44' 100.0	1.28				
7+45 <sup>3</sup>	+7° 44' 157.1	31.13				
7+66 <sup>36</sup>	+11.15' 180.11	35.14			1626.10 = 1626.00	Top 1" IP North Side #17N
		4.74	1630.74		1626.00	
		3.46	1630.49	1.71	1629.03	
				0.27	1632.22	
		3.36	1616.27		1612.91	TOM
				3.27	1613.00	Set 2x2" Hub



25 Feb 53

46

Sto	Vert 2 Slope Dist	+	H:	-	Elev	
			1613.00		1613.00	2x2 Hub & Tack
0+00			1613.00			
	-14° 25'					
0+66 <sup>8</sup>	69.0'			17.18		Top Banks
	-16° 10'					
0+87 <sup>4</sup>	91.0'			25.34		
	-5° 21'					
2+66 <sup>8</sup>	268'			24.99		
	-4° 55'					
2+98 <sup>20</sup>	300'		1587.29	25.71	1587.29	POT
	-0° 49'					
3+95 <sup>9</sup>	97.0'			1.38		
	-1° 16'					
4+00	102.0'			2.25		Bottom of rocky slope
	-1° 05'					
4+38 <sup>9</sup>	140'			2.65		
	+10° 00'					
5+44 <sup>51</sup>	249.4'	43.31	1630.60			POT
	+3° 05'					
6+28 <sup>59</sup>	84.20	4.53	1635.13	=	1634.94	Top 1" IP 175



Sta	Vert $\angle$ Slope Dist	+	H.	Elev.	
				1615.00	1" I.P. on point of Land North Side
0+00			1615.00		Top 1" I.P.
	-16° 38'				
0+33 <sup>5</sup>	35.0			10.02	
	-20° 22'				
0+46 <sup>8</sup>	50			17.40	Bottom of Bank
	-17° 31'				
0+80 <sup>1</sup>	84			25.28	on top of steep 4' bank north edge Flume
	-17° 50'				
1+17 <sup>09</sup>	123.0'			37.67	
	-13° 04'				
1+70 <sup>5</sup>	175'			39.56	center of Branch sandy creek
	-7° 22'				
2+97 <sup>52</sup>	300'		1576.53	38.47	1576.53 P.O.T.



48



Sutherland 30 Pipe Line  
 Check on Tunnel Alignment  
 and Grade

A9

Slope Dis Angle

599.84 13° 05' = 292.057

299.60 12° 55' 292.077

300.06 13° 16' 292.052

± √ 8.76.186

292.062

174+88.26 P&T Hub  
 2 48.50

172+39.70

1 47.41

173+87.11 = 173+87.41

- 3 74.20

170+12.91

3 41.68

Spad # 7

164 71.23

2 96.38

Spad # 18

0.21 2+

of Spad

161 74.85

3 16.17

Spad # 24

158+58.68

= Spad # 30  
 158+58.63

Don's Sta

4.5" W of Spad

Sta 170+95.35

2+82.06

173+87.41

Don's Men South side road 1961.59 Elev

Set spike on Tunnel Line



Obsec Levels  
 on Tunnel #2  
 Sutherland St. Pipe Line

+	H <sub>i</sub>	-	
1.02	1898.12		1896.50
4.93	1898.15	4.90	1893.22
4.32	1897.82	4.65	1893.50
3.30	1897.77	3.35	1894.17
4.82	1898.32	4.27	1893.50
3.89	1897.76	4.45	1893.87
4.88	1898.10	4.54	1893.22
		1.57	1896.53

West  
 Williams  
 Varonakis

50

6-20-53

Elev iron pin BM

= 1894.44  
 BM Drill in Tunnel 1584.50



Grades  
Sutherland S.V. P.1 III

West  
Williams  
Marion Forks  
Kemp

8-3-53

51

	5.87	1560.58		1554.71		TBM
352+13 <sup>22</sup>			9.6	1551.0	1542.9	C 8 L
352+13 <sup>22</sup>			7.9	1552.7	1545.4	C 7 3
+75 <sup>24</sup>			7.2	1553.4	1546.0	C 7 4
355+64 <sup>25</sup>			2.6	1558.0	1549.7	C 8 3
+96 <sup>26</sup>	8.41	1568.67	0.32	1560.26	1550.7	C 9 6
356+27 <sup>27</sup>			5.8	1562.9	1551.8	C 11 L
	7.41	1569.94	6.14	1562.53		
362+03 <sup>29</sup>			10.3	1559.6	1552.9	C 6 2
+35 <sup>29</sup>			10.6	1559.3	1553.0	C 6 3
+67 <sup>32</sup>			9.4	1560.5	1554.0	C 6 5
364+00			4.0	1565.9	1559.6	C 6 3
+50			2.5	1567.4	1561.2	C 6 2
+91 <sup>34</sup>			2.1	1567.8	1561.2	C 6 6
	1.08	1568.86	2.16	1567.78		
	0.62	1566.63	12.85	1556.01		
367+79 <sup>35</sup>			1.7	1554.9	1548.7	C 6 2
368+11 <sup>34</sup>			4.4	1552.2	1545.7	C 6 5
	0.17	1544.45	12.35	1544.28		



1544.45

	0.23	1531.83	12.85	1531.60		
370+65 <sup>52</sup>			10.8	1521.0	1514.1	C 62
	0.27	1520.78	11.30	1520.51		
+96 <sup>70</sup>			7.6	1516.2	1509.2	C 70
371+28 <sup>41</sup>			10.3	1510.5	1404.4	C 61
	0.19	1509.59	11.39	1509.39		
+59 <sup>22</sup>			4.1	1505.5	1499.1	C 64
+91 <sup>70</sup>			8.1	1501.5	1494.9	C 65
372+55 <sup>55</sup>	0.95	1498.00	12.53	1497.05	1490.5	C 66
+87 <sup>48</sup>			3.6	1494.4	1489.5	C 51
373+19 <sup>36</sup>			6.3	1491.7	1486.6	C 61
			10.48	1487.62	= 1482.5	



OTAY Lake

West  
Yoronfakis

9-9-03

53

$\angle B$   $59^{\circ} 14' 00''$  "

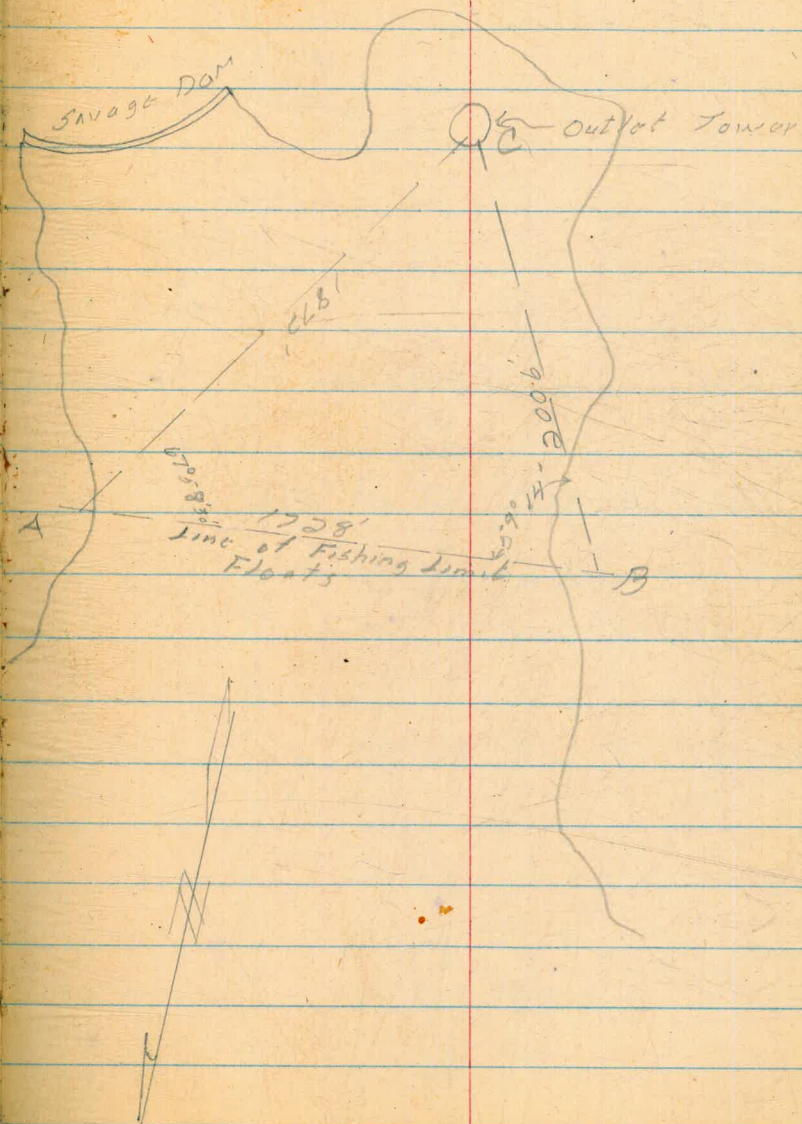
Dist AB = 1728'

Dist BC = 2006'

$\angle A$   $67^{\circ} 59' 30''$

Dist AC = 1872'

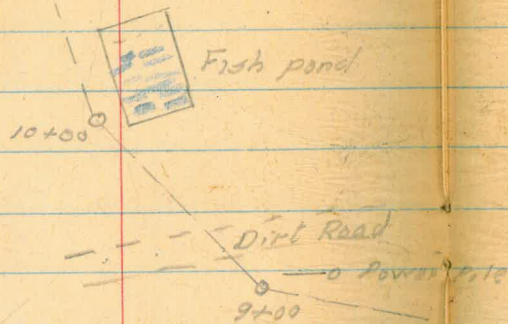
$\angle C$   $52^{\circ} 47' 30''$





Olney Lake Pl.  
for Reclaimed Water

① Gaging sta on West side of Dam.



10+00  $\Delta$   $25^{\circ} 26' 00''$  RT To Gaging Tower Top West side of Dam

9+00  $\Delta$   $33^{\circ} 52' 30''$  RT

7+50  $\Delta$   $45^{\circ} 41' 30''$  LT

4+90  $\Delta$   $18^{\circ} 01' 30''$  LT

2+80  $\Delta$   $10^{\circ} 07' 30''$  RT

1+00  $\Delta$   $27^{\circ} 28' 30''$  LT

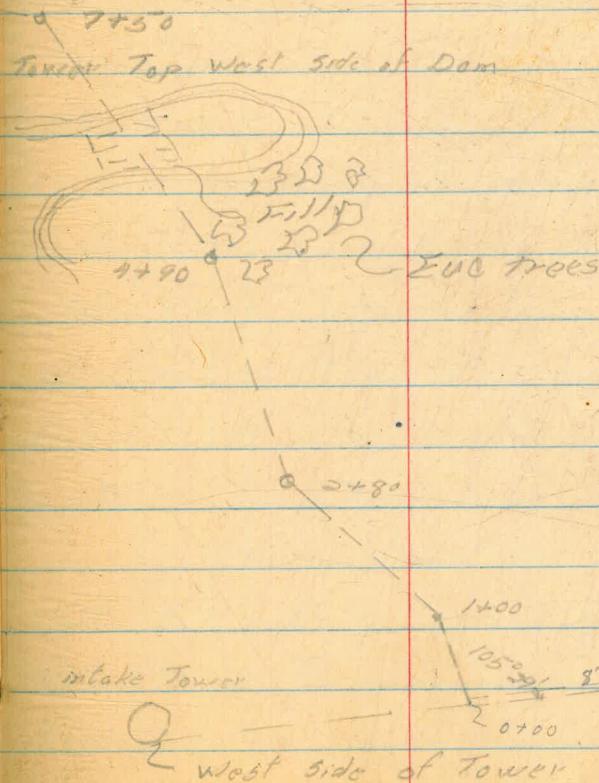
1+00  $\Delta$   $105^{\circ} 29'$  LT

0+00  $\Delta$  end of 8" PL

West  
Varon Fakis

9-11-53

54





SEKs For Otay Lake  
Reclaimed water Pl.

0.2 per  
100'

Ground Grade

	144.68		144.68		
	9.31	152.68	143.37		
0+00			4.5	148.2	
			3.7	149.0	
1+00			2.1	150.6	148.0
	4.67	154.60	2.75	149.93	
+50			4.9	149.7	147.9
2+00			4.0	150.6	147.8
+50			3.9	150.7	147.7
	5.11	152.72	6.99	147.61	
2+80					
3+00			4.7	148.0	147.6
+50			3.9	148.8	147.5
4+00			2.7	150.0	147.4
+50			4.2	148.5	147.3
4+90			3.4	149.3	147.2
	3.70	152.26	4.16	148.56	1
5+50			4.3	148.6	147.1
6+00			5.3	147.0	147.0
+00			8.9	143.4	146.9
7+00			11.4	140.9	146.8

West  
Varonakis

9-11-58

55-

Page on intake Tower

To Flow Line

Top of 8" WI Pipe

C 2<sup>6</sup> (2<sup>7</sup>)

C 1<sup>8</sup>

C 3<sup>8</sup>

C 3<sup>0</sup>

C 0<sup>4</sup>

C 1<sup>3</sup>

C 2<sup>6</sup>

C 1<sup>2</sup>

C 2<sup>4</sup>

C 0<sup>2</sup> (8)

C 0<sup>2</sup> (8)

F 3<sup>3</sup>

F 5<sup>9</sup>



152.26

7+50	2.48	148.96	5.78	146.48	146.7
8+00			3.4	145.6	146.6
+50			3.1	145.9	146.5
9+00			3.6	145.4	146.4
	3.90	149.23	3.63	145.33	
+50			5.2	144.0	146.3
10+00			6.5	142.7	146.2
	9.11	147.23	11.11	138.12	
+50			8.6	138.6	146.1
	2.50	148.84	0.89	146.34	
	1.42	148.41	7.85	140.99	

142.41 = 142.35

intake Tower

F 0<sup>2</sup>  
 F 1<sup>9</sup>  
 F 0<sup>6</sup>  
 F 1<sup>9</sup>  
 F 2<sup>3</sup>  
 F 3<sup>5</sup>  
 F 7<sup>5</sup>



Alley BIK #3  
 N of Redwood E of Highland  
 + HI → EL

0.05	322.64	322.59
1.13	317.21 - 6.53	316.11
3+00	2.3	314.9
2+50	4.3	312.9
2+00	6.5	310.7
1+50	9.5	307.7
1.87	306.01	13.10 304.14
1+00	5.5	300.5
+75	8.8	297.2
+50	13.4	292.6
0+05	29.2	276.8
12.45	0.23	305.79
6.86	318.23	0.11 318.12
	324.91	2.23 322.75 = 322.64

Wust  
 Varontakis  
 Kemp

2-4-5A

57

BM BP NW Cor Highland + Thoro

310.6	C 4	3
308.3	C 4	6
304.6	C 6	4
296.6	11	4
288.4	12	4
285.0	13	3
282.0	C 10	6

Bottom of trench



AUG 5, 1954  
West  
VANTAKIS

58

West 1000 Feet North of 17 North

539 to 1550.

1750. to 1850.

1D 46° 46' 30" 1D 53° 29' 30"

4D 187° 07' 00" <sup>157, 180</sup> 4D 213° 58' 00" <sup>112, 120</sup>

46° 46' 45" 53° 29' 30"

8D 379° 16' 00" <sup>376,</sup> 8D 67° 56' 30" <sup>300</sup>

46° 47' 00" 427° 56' 30" <sup>256, 270</sup>  
53° 29' 35" <sup>270</sup>

1550. to 1650

1850 to 1950. = Hub

1D 14° 15' 00" 1D 19° 10' 00"

4D 56° 54' 00" <sup>52,</sup> 4D 76° 39' 00" <sup>120</sup>

14° 13' 30" 19° 09' 45" <sup>108, 270</sup>

8D 113° 48' 30" <sup>108, 270</sup> 8D 153° 17' 30" <sup>112, 270</sup>

14° 13' 35" 19° 09' 41" <sup>108, 270</sup>

1650. to 1750.

1950. Hub to 539

1D 30° 36' 00" 1D 195° 43' 30"

4D 122° 24' 00" <sup>144,</sup> 4D 62° 56' 00" <sup>720</sup>

30° 36' 00" 782° 56' 00" <sup>126</sup>  
195° 44' 00"

8D 244° 48' 30" <sup>288,</sup>

30° 36' 03"

114  
60  
54

113. 125  
60 120  
53 75

46° 47' 00"

14° 13' 36"

30° 36' 03"

53° 29' 35"

427° 56' 30"

164° 45' 54"

195° 44' 00"

359° 59' 54"



AUG 6, 1954

11:30 - 1:15

Wese

VARON FAKIS

59

Fairchild 539 X

1550 to 1650

538 to 1550 = E. Hor

110 30° 02' 30" 1D 128° 23' 30"

440 120° 10' 00" 4D 153° 33' 30"

30° 02' 30" 128° 23' 22"

880 240° 20' 30"

30° 02' 33"

30° 02' 33"

440 14' 30"

157° 19' 20"

128° 23' 22"

359° 59' 51"

1650 to West

110 44° 14' 30"

440 176° 57' 30"

44° 14' 22"

880 353° 56' 00"

44° 14' 30"

West to 538

110 157° 19' 30"

440 209° 18'

157° 19' 30"

880 178° 35' 30"

157° 19' 20"



AUG 6, 1954

2:00-

Wese  
VAYONFAKIS

60

T 1530.

JIM to 539 JIM to 539

1D 55° 17' 30" 1D 55° 18' 00"

440 221° 12' 30" 40 221° 12' 30"

55° 18' 07" 55° 18' 07"

880 82° 24' 00" 80 82° 24' 30"

55° 18' 00" 55° 18' 03"

539 to West 17500. to Jim CL Hor.

1D 58° 56' 00" 1D 228° 56' 30"

440 235° 45' 00" 40 195° 40' 30"

58° 56' 15"

880 111° 29' 30"

58° 56' 03" 55° 18' 03"

58° 56' 03"

West to 17500. 16° 51' 22"

1D 16° 51' 30" ~~238 55 07~~440 67° 25' 30" ~~360 00 35~~

16° 51' 07"

880 134° 51' 00"

16° 51' 22"



81915A  
West  
Varon Fokis

13 Hol

61

19 South Hub

539 to West

1D 8° 02' 00"

AD 32° 07' 30"

8 01 52"

8D 64° 15' 20"

8° 01' 55"

West to 19N

1D 68° 12' 20"

AD 272° 49' 30"

4 68° 12' 22"

8D 85° 39' 00"

68° 12' 22"

Close Horiz

19N to 539

1D 283° 45' 40"

4D 55° 01' 20"

283° 45' 20"

15 272 49 30

5 45 39 00

3 20

8 5

68 12 33

1080

55 01 20

21 20

1 153.5

283 45 20



8/9/54

West  
Varanforkis

62

↑ 18.5

17.5 to West

10 48° 09' 00"

AD 19.2 36' 30"

48° 09' 07.5"

80 25° 14' 20"

48° 09' 17.5"

West to 18N

10 52° 45' 30"

AD 211° 03' 20"

52° 45' 50"

48 01 17.5    25 14 20  
367  
385 74 20  
32  
62



T 175

16.5 to West

1D 124° 25' 30"

AD 137° 42' 40"

124° 25' 40"

8D 275 25' 20"

124° 25' 40"

West to 18.5

1D 78° 21' 00"

AD 313° 24' 20"

78° 21' 05"

8D 266° 49' 20"

78° 21' 10"

8/9/54  
West  
Vancouver

63

137 42 40  
360  
124 25 40  
197 42 40  
140  
27

275 25 20  
720  
124 25 40  
795 25 50  
3

266  
360  
78 21 10  
626 49 20  
54  
66



K 16' 5

Jim to 539

ID 30° 41' 20"

AD 142 67° 40

35° 44' 25"

8D 285° 50' 20"

35° 44' 25"

539 to West

ID 74° 45' 00"

AD 299° 00' 00"

74° 45' 00"

8D 237° 59' 20"

74° 44' 55"

West to 175

ID 24° 57' 40"

AD 99° 52' 10"

24 58' 02.5"

8D 189° 43' 40"

24° 57' 57.5"

8/9/54

West  
Karonfakis

CA

175 to Jim Close Horiz

ID 224° 32' 10"

AD 178° 09' 50"

224° 32' 27.5"

237 59' 20

360

74 44 65

237 59 20

360

37

71

224

32

27.5

720

178

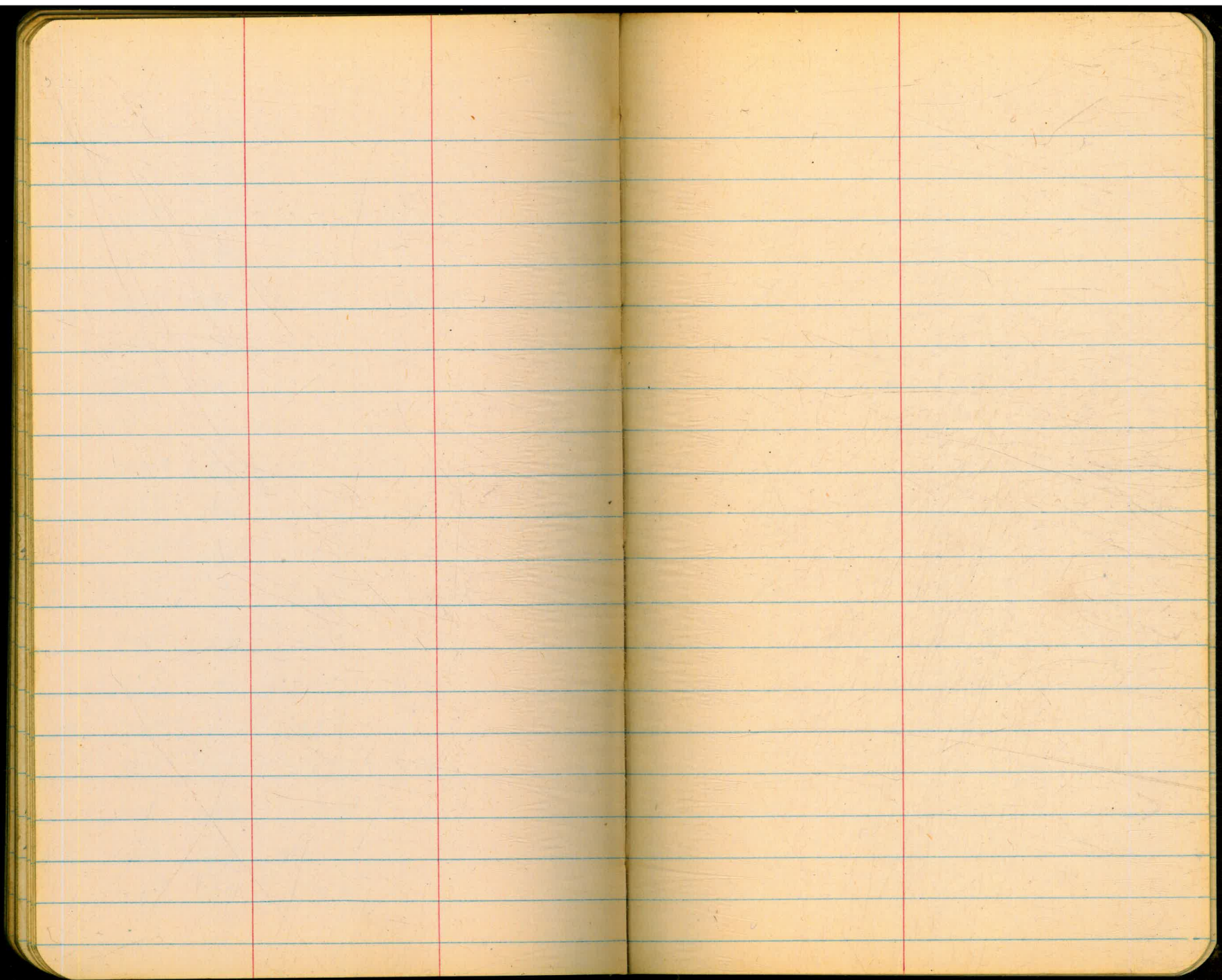
224 32

898 09' 50

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235







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49-36-15

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127 12 30

59 13	59 15 00
59 14	67 59 30
67 58 30	14 30
127 12 30	179 59 60
	127 14 30
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