

LEVELS - UPPER OTAY
TO HARVEY DIVERTING DAM

993

LEVEL BOOK

373

F.B. 993

F.C. Huston
J.E. Shoemaker
2-23-16

2

ON RESIVER. Otag Working Elevations

ROCK

"

"

"

144+50-50' R
SCREW IN 4x6 Redwood 1700'

ROCK

T.P. 142+20-6' L ELEV. 127.23

138+45-10' L

133+15 ROCK ON LINE

PEG 2' L STA 129

126+10 ROCK

PEG 2' L 121

TOP STA 114 144.97

TOP STA 105

ROCK 98+20-20' R

92+50 ROCK ON LINE 144.00

ROCK 20' L STA 89

Check levels Contd.

156.69

OK		5.42	151.27		TOP Road STA 75	157.26
T.P.	2.60	154.18	5.11	151.58	Peg 2' S STA 82	
T.P.	0.11	141.73	12.56	141.62	Peg 30' R STA 179+10	
T.P. OK	10.62	142.08	10.27	131.46	ROCK 78+55 - 10' S	131.62
T.P. OK	10.72	151.57	1.23	140.85	71+65 ROCK on line	141.03
T.P.	6.38	151.13	6.82	144.75	Peg 2' S STA 66+00	
T.P.	4.95	143.18	12.80	138.23	ROCK 62+25 - 25' R	
OK			3.13	140.05	TOP STA 53+00	140.40
T.P.	11.50	148.05	6.63	136.55	Peg 2' S STA 50+00	
T.P.	2.80	147.75	3.10	144.95	Peg - 18' S STA 44+00	
OK			2.82	144.93	HUB - STA H. 44+00	145.34
OK			5.10	142.65	ROCK STA 42+00	142.95
T.P.	9.68	145.51	11.92	135.83	ROCK 10' S STA 41+00	
OK			3.87	141.64	TOP STA 30+00	141.97
T.P.	13.10	151.53	7.08	138.43	TOP STA 29+00	
T.P.	12.25	151.36	12.42	139.11	Peg 21+90 = 40' S	139.11
T.P.	12.69	160.07	3.98	147.38	ROCK 20' S. of Babcock fence	148.09
T.P.	13.00	170.96	2.21	157.86	ROCK 10+75 - 15' S	

7-23-16

OK OK

139.11
 346.65
 485.76 486.09

		170.96			
T.P.	8.15	177.25	1.86	169.10	ROCK - 8+15 = 10' 4
T.P.	5.44	180.34	2.35	174.90	ROCK - 4+20 2' R
OK			5.39	174.95	ROCK 4+10 2 1/2' R file 175.22
OK			6.13	174.21	20" gate file 174.50 Bottom invert of outlet valve upper otay

T.P.	12.91	192.87	0.29	180.06	ROCK S-Side
T.P.	12.89	205.53	0.23	192.64	ROCK
T.P.	6.83	212.23	0.13	205.40	" 2' R. OF STA 1+85 LEVISED LINE
			4.14	209.08	crest of upper otay dam
B.M.			6.00	206.23	
			9.32	202.91	file of spillway
H.W.				209.51	H.W.

Lewis first line from
UPPER OYON

HUSTON
SHOEMACHER
2-24-16

5

T.P.	6.71	553.76	552.05	OL. A. 9.1	Rock 2' R. of 1+85
0+00		4.01	554.75		crest of dam
+85		7.28	514.8		wall of spillway
+87		11.10	47.66		spillway
1+30		12.65	46.11		"
1+33		9.76	49.00		wall of spillway
1+55		3.7	55.1		
1+85 ⁰		5.86	52.90		
2+00		8.0	50.8		

552.05
205.40
346.65

T.P.	2.61	548.44	12.93	545.83	Rock 2+40 5' 2
3-		7.1	41.3		
4-		10.4	38.0		
T.P.	8.14	543.63	12.95	535.49	Rock 4+50 10' 2
4+77		12.83	32.80		
5-		9.0	34.6		
6-		3.8	39.8		
+30		5.4	38.2		
+45		10.7	32.9		
+65		14.2	29.4		

		543.43		
7+00			8.9	34.7
T.P.	12.25	555.48	0.40	543.23
8-			10.4	44.9
+75			1.0	54.5
9-			0.5	55.0
T.P.	5.94	561.32	0.10	555.39
+55			1.7	59.6
[△] 10-			2.36	58.96
+35			5.2	56.1
T.P.	1.58	550.82	12.08	549.24
11-			3.1	47.7
+30			5.2	45.6
+20			8.9	41.9
12-			14.8	35.0
+15			17.8	33.0
+80			1.7	49.1
T.P.	11.45	562.05	0.22	550.60
13			8.2	53.8
T.P.				
+50	4.12	265.96	0.21	561.84

7+85-5' L RICH

ROCK 1' L STAG+00

ROCK 10+85 2' R

ROCK 12+85-5' L

ROCK ON LINE

△	26596		
13+70		1.67	264.29
14-		2.1	63.9
+30		3.3	62.7
+85		10.8	55.2
T.P.			
+95	0.18	55.40 12.14	553.82
15-		1.6	52.4
T.P.	7.27	548.40 12.87	541.13
16-		13.3	35.1
+30		18.1	30.3
17-		17.0	31.4
+30		14.7	33.7
18-		11.4	37.0
+50		7.3	41.1
19		1.3	47.1
T.P.	11.83	559.53 0.65	547.75
20-		6.2	53.4
21-		4.1	55.5
22-		4.7	54.9
23-		6.0	53.6

ROCK 1'-4

ROCK 15+70 - 7'4

TOP STA 10

	559.58				
24-		7.4	552.1		
25-		12.1	47.5		
T.P.	1.90	578.94	12.64	576.94	ROCK - +10. OR LINE
26-		8.0	40.8		
+20		10.1	38.7		
+35		3.1	45.7		
T.P.	12.87	561.46	0.25	548.59	+70-2' R. ROCK
27-		8.9	52.6		
T.P.	12.88	574.19	0.15	561.31	ROCK - +60-10' R
28-		5.8	68.4		
T.P.	12.94	586.89	0.24	578.95	ROCK +20-10' R
+50		6.9	80.0		
29 ⁹		1.7	85.2		
T.P.	7.67	593.54	1.02	585.87	TOP ST. 20
30-		4.1	89.4		
+62 ⁰		3.04	90.50		
31-		3.1	90.4		
+61 ^Δ		4.00	89.54		
32-		3.5	90.0		

59354

33-			4.6	588.9
⁰ 33+75			7.15	86.39
34-			9.5	84.0
T.P.	0.43	581.27	12.70	580.84
35-			8.4	72.9
^{T.P.} +35	0.33	568.54	13.06	568.21
36-			7.3	61.2
^{T.P.} +75	0.00	555.57	12.97	555.57
37-			1.8	53.8
+30			3.1	52.1
+70			9.0	46.6
+95			18.0	37.6
38-			21.0	34.6
+10			21.0	34.6
+15			17.0	38.6
39-			12.3	43.3
+20			9.4	46.2
+25			7.0	48.6
^{T.P.} +60	13.01	568.07	0.51	555.06

2-24/16
CK. O.M.

ROCK 34+15-15' R

peg

ROCK

peg.

568.07

40-			3.6	564.5
T.P.				
+10	1294	580.35	0.66	567.41
+55			2.5	77.9
T.P.				
+65	1287	593.08	0.14	580.21
41-			6.5	86.6
42-			3.5	89.6
43-			2.4	90.7
44-			1.2	91.9
T.P.	10.63	603.24	0.47	592.61
45-			11.9	91.3
46-			10.2	93.0
47-			6.5	96.7
T.P.				
+90	13.10	616.42	0.01	603.23
48-			12.5	3.9
49-			3.6	12.9
T.P.				
+30	13.24	629.65	0.01	616.41
50-			8.4	21.3
51-			4.5	25.2
+80-			3.1	26.6

ROCK

Peg

Top Sta 44+00

center of old County Road

Peg

Peg

center of Road

		429.65		
52-			2.6	627.1
T.P.	12.61	442.26	0.00	429.65
53			11.8	30.5
+50			4.3	36.0
T.P.	12.76	455.01	0.01	442.25
54-			13.8	41.2
+45			6.9	48.1
55-			0.9	54.1
T.P.	10.74	664.70	0.05	454.96
56-			1.3	64.4
+16			1.00	664.70
57-			9.2	56.5
+75			15.2	50.5
58-			15.2	50.5
+25			15.1	50.6
59-			6.7	59.0
T.P.				
+88	12.81	678.44	0.07	665.63
60-			11.2	67.2
+40-			6.5	71.9

peg + 70 - 10' R

Center of Road

peg - 54 + 10 - 15' L

TOP STG 55 + 00

peg

Center of Old County Road

		678.44			
61-			1.0	677.4	
T.P.	9.96	687.42	0.88	677.54	peg 2' R
62-			3.5	84.0	
63 ^o			2.94	684.58	
64-			4.9	82.6	
65-			12.7	74.8	
+50			17.2	70.3	
66-			14.0	73.5	
+50			8.3	79.2	
67-			4.4	82.9	
+40			4.4	83.1	
+70 ^o			7.23	80.49	
68-			11.7	75.8	
T ¹					17007
T.P.	0.23	675.76	11.99	674.53	ROCK + 02'
T.P.	0.32	663.20	12.88	662.88	ROCK + 75'
69-			5.2	58.0	
T.P.	0.04	650.44	12.80	650.40	peg + 40
70-			11.2	39.2	
T.P.	0.15	637.52	13.07	637.37	OK, OK, ROCK + 10 - 5' 2

637.52

T.P. 0.14 624.70 12.94 624.56

71- 1.5 23.2

T.P. 0.13 611.89 12.94 611.76

72- 10.7 601.2

T.P. 0.02 598.88 13.03 598.86

73- 12.5 586.4

T.P. 0.06 586.08 12.86 586.02

+75 9.2 76.9

T.P. 0.43 573.98 12.73 573.55

74- 4.0 70.0

+15 7.4 66.4

75- 5.4 68.6

76- 7.9 66.1

77- 10.4 63.4

T.P. 0.29 561.17 13.10 560.88

78- 7.4 53.8

79- 14.3 44.9

+50 20.4 40.8

ROCK 5' A 70+95

ROCK +35 = 20' 2

ROCK +15 = 30' 4

ROCK 5' 2 STO 73+00

ROCK +85 = 5' R

ROCK +40 = 15' 2

541.17

80-
T.P. 8.4 552.8

+25 12.82 573.85 0.14 541.03

ROCK

+65 4.7 69.2

T.P. 12.92 586.79 +0.02 573.87

ROCK +90 - 10' R

81- 11.3 75.5

T.P. 12.46 598.96 0.29 586.50

ROCK +95 - 20' R

82- 10.5 88.5

T.P. 12.90 611.23 0.43 598.33

ROCK +65 - 10' R

83- 6.8 4.4

T.P. 12.91 623.98 0.14 611.07

ROCK +25 - 5' R

+65 3.6 20.4

T.P.
+80 7.72 631.45 0.25 623.73

ROCK -

84- 5.1 26.4

+60 2.0 29.5

85 1.9 29.6

+10° 2.49 28.96

86- 7.1 24.4

T.P. 0.28 618.95 12.78 618.67 OK-OK

ROCK +40 - 10' R

87- 8.7 10.3

		618.95			
87+25			13.0	606.0	
+35			17.1	1.9	
+50			17.3	1.7	
88-			8.1	10.9	
+15			7.7	11.3	
+45			15	17.5	
T.P.	12.51	631.37	0.09	618.86	
89-			4.2	25.2	
T.P.	12.70	644.05	0.02	631.35	
+70			4.4	37.7	
90-			3.1	41.0	
T.P.					
+20	11.89	655.87	0.07	643.93	
91-			5.8	50.1	
92-			0.9	55.0	
T.P.	6.4	660.95	1.06	654.81	
93-			2.2	58.7	
+20 ^o			1.85	659.00	
94			3.8	57.1	
T.P.	2.74	651.43	12.14	648.69	

ROCK +55 - 10'4

ROCK +30 - 8'4

PEG

ROCK 8' R 82

T.P. STA 95

		607.43		
95			3.9	647.5
96			14.2	37.2
+15			18.4	33.0
+25			18.5	32.9
+50			13.1	38.3
97			6.5	44.9
98			3.1	48.3
+50			5.00	646.43
99			11.6	39.8
+15	T.P.			
	0.65	639.83	12.25	639.18
				2-25-16 OK-OK
+60			11.2	28.6
100			11.1	28.7
T.P.	0.37	627.35	12.80	626.98
				ROCK +50-2.4
101			5.7	21.7
102			8.8	18.6
103			9.9	17.5
+25			7.1	20.3
104			5.1	22.3
105			9.6	17.8

62780

T.P.	102	616.03	12.34	615.01
105+85			4.1	11.9
106			9.6	5.4
+15			17.5	598.5
+55			27.3	82.7
+70			33.3	82.7
107			48.1	68.9
+15			55.8	60.2
+40			72.9	43.1
+65			75.2	40.8
108			67.3	48.7
T.P.+75	901	619.24	5.50	610.23
109			14.4	604.8
110			5.0	14.2
111			3.8	15.4
+35			4.70	14.54
112			11.4	7.8
T.P.				
+N	071	607.21	12.74	606.50
113			11.9	595.3

BOOK
108.75 T.P. 5.60

BOOK

BOOK 2 1

		607.21			
T.P.	0.20	594.37	1304	594.17	Rock 112+00 - 5' R
114			30	85.4	
T.P.					
+60	0.31	581.82	1286	581.51	Rock 5' L
115			3.8	78.0	
116			13.4	68.4	
T.P.	-0.37	568.82	1268	569.19	Target 116
117			6.6	62.2	
T.P.					
+88	0.68	556.47	1200	555.83	Rock
118			2.0	53.6	
T.P.	0.18	543.79	1200	543.61	Rock 110-20' L
119			8.1	35.7	
+50			17.8	24.0	
120			26.7	17.1	
+05			27.0	16.8	Center of Old Road
+15			27.6	16.2	
+25			34.8	9.0	
+35			34.8	9.0	
+50			29.1	14.7	
+85			22.1	21.7	Road

		√4379		
+90			21.5	√223
121-			15.4	28.4
122			4.8	39.0
T.P.	4.25	√4411	39.3	√3984
123			4.9	39.2
124			5.3	38.8
+25			5.65	38.46
+70			9.14	√34.97
125			8.6	35.5
126-			9.8	34.3
127			9.1	35.0
128-			5.2	38.9
T.P.	5.73	√47.19	2.65	√41.46
129			5.8	41.4
+30			5.58	41.61
130			8.1	39.1
131			8.5	38.7
132			9.0	38.2
+20			10.7	36.5

TOP STA 122

ROCK

ROCK + 25 - 10 R

		547.19		
+50			9.1	38.1
133			8.0	39.2
+55			9.7	37.5
134			9.1	38.1
T.P.	7.30	541.92	12.57	534.2
135			22.1	19.8
+75			32.0	9.9
136			28.1	13.8
137			2.4	39.3
T.P.	12.68	553.42	1.18	542.74
138			4.4	48.8
+70			4.40	49.02
139			11.8	41.6
T.P.	0.41	541.27	12.56	540.84
+70			14.8	24.5
140			20.8	20.5
+30			24.0	17.3
+75			14.4	24.7
141			14.0	25.3

Oil Hole + 06'

Rock + 03 - 01'

178
21

188

148

20

		541.27		
141+0			21.0	520.3
142-			10.0	31.3
+20			4.0	37.3
+60	10.63	551.14	0.74	540.53
143			9.0	41.3
144			7.3	43.9
145			2.9	48.3
+60			2.6	48.6
146			3.0	48.2
T.P.	12.41	563.66	0.11	551.05
147			8.8	54.9
148-			5.2	58.5
+25			3.5	40.2
+50			1.0	62.7
+75			1.5	62.2
149			1.5	62.2
T.P.	11.21	574.18	0.60	562.97
+10			10.5	63.7
+70			8.9	65.3

ROCK

ROCK +80-10'R

TOP 149

57418

150 10.4 523.8

151 10.8 43.4

152 6.2 48.0

Old Road

+38 ^Δ 4.78 49.40

153 7.9 66.3

154 9.0 65.2

155 9.5 64.7

156 10.4 63.8

T.P. 4.37 568.82 973 564.45

Top 156

157 5.0 63.8

158 5.7 63.1

159 7.2 61.6

160 9.1 59.7

161 11.6 57.2

T.P. 0.34 55695 12.21 55661

Rock + 85 - 121

162 3.7 53.3

163 13.0 44.0

+70 3.0 54.0

T.P.
+88 6.96 563.58 0.33 55662

Rock on line

543.58

144

4.2

557.3

165

3.5

40.1

+86^Δ

3.27

40.31

146

4.8

58.8

T.P.

12.97

550.61

COK

ROCK 146+85-N'R

2-10-16.

0+00	057	174.78	5	174.21
0+03			45	70.3
+10			71	677
+138			78	670
+20			90	658
+22			41	70.7
+30			48	700
+40			55	694
+50			48	704
+60			46	703
+70			70	67.8
+80			94	654
+87			97	651
+88			120	628
+90			136	612
+97.92			127	626
1+10			106	647
1+20			88	668
1+30			89	659

5' line

Levels to intake of Harvey Ranch

T.P.	0.88	\$51.94		\$51.06
T.P.	6.37	\$46.48	11.83	\$40.11
T.P.	1.73	\$40.12	0.09	\$46.39
T.P.	1.10	\$44.41	4.81	\$43.31
T.P.	5.91	\$38.29	12.03	\$32.38
T.P.	8.96	\$43.73	3.52	\$34.77
T.P.	8.42	\$48.59	3.56	\$40.17
T.P.	6.33	\$47.98	6.94	\$41.55
T.P.	12.10	\$52.01	2.07	\$45.91
			7.35	\$50.66
			5.34	\$52.77
			5.34	\$52.77
B.M.		5.40		\$52.61
		8.4		\$49.6

corrected to Gov. B.M. + 0.45

Water 1 P.M. 3-2-16

S-E End concrete

Wier center

N.W. End concrete

Bed of stream below Wier

17476

3-10-16

26

1+40	97	165.
1+50	95	165.8
+60	83	665
+70	61	68.7
+70.65	62	68.6
+80	61	68.7
+90	44	70.8
2	28	720
+10	18	73.0
+20	16	73.2
+35	35	71.3
+30	35	71.3
+40	33	71.5
+50	32	71.6
3	44	70.4
	308	171.75

2+00

228

174.03

171.75

180.56

171.00
3-10-16
Grade

27

1+74.24 Bent

90

650

11.07

169.54

71.99

170.73

10.0

170.56

168.00

Cut 2.56

C 2'-6 3/4"

1+59.66 "

121

619

12.87

167.69

167.50

" 0.19

C 0'-2"

1+44.26 "

135

605

3.58

167.15

167.00

" 0.15

C 0'-2"

1+28.92 "

124

616

3.26

167.47

167.00

" 0.47

C 0'-5 1/2"

1+13.58 "

135

605

4.41

167.32

167.00

Fill 0.68

F 0'-8"

0+98.08 "

17.1

569

6.71

164.02

167.00

" 2.98

F 2'-11 3/4"

0+82.74 "

12.6

614

1.19

169.54

167.00

Cut 2.54

C 2'-6 1/2"

0+80

110

630

0+70

78

662

180.56

167.79

+60

0

60

670

167.50 ✓

+50

58

682

168.83 ✓

+45

+40

47

693

180.56

18

17

170.86 ✓

0+88.84 Bent

47

698

6.40

174.16

173.00

Cut 1.16

C 1'-2"

PC 0+26.29

4.3

697

6.05

176.25

3.83

170.20

0+18.5 Bent

9.6

667

3.93

177.63

173.42

Cut 4.21

C 4'-2 1/2"

00+03 Bent

6.3

700

7.44

173.12

2.22

0+00

Flex. Bottom Valve

174.21

	12.00		488.46
		501.06	
134+5.		126	488.5
5		130	88.1
+5.		130	88.1
6		120	89.1
+5.		98	91.3
7		66	94.5
+ 2834 P.C.		67	94.4
+5.		63	94.8
	13.36	507.72	670 494.26
8		10.1	497.6
+30.15 P.P.		75	500.2
+5.		63	01.4
9		10	06.7
	10.62	515.43	291 504.81
+5.		27	05.7
140		48	06.6
B.M.		5.44	509.99
	36.58	515.43	
	26.1	488.46	
	✓ 26.97	✓ 26.97	9.61

Rt

Lt

28

 $\frac{14.6}{10}$ $\frac{1.8}{4}$ $\frac{10.0}{10}$ $\frac{13.0}{10}$ $\frac{1.4}{2}$ $\frac{0.6}{0}$ $\frac{7.8}{10}$ $\frac{2.6}{2}$ $\frac{0.1}{0}$ $\frac{13.0}{10}$ $\frac{8.4}{6}$ $\frac{0.7}{0}$ $\frac{2.1}{10}$ $\frac{1.0}{10}$

0

 $\frac{7.9}{10}$ $\frac{0.5}{0}$

0

Reg 12' Lt sta 140

	51543		
140+40		39	511.5
+55		49	510.5
1		47	10.7
+20		34	12.0
+50		34	12.0
2		27	12.7
	1187	52545	1.85
			513.58
+50		93	16.2
3		60	19.5
+50		30	22.5
	1048	53437	1.56
			523.89
4		70	27.4
+50		34	31.0
5		20	32.4
+50		16	32.8
6		47	29.71
+50		64	28.0
7		98	24.6
	7235	53437	
	341	51543	3.41
	18.94	18.94	

2

4

 $\frac{53}{10}$ $\frac{44}{10} 0$ $\frac{37}{10}$ $\frac{61}{10} 0$ $\frac{68}{10}$ $\frac{57}{10} 0$ $\frac{96}{10}$ $\frac{53}{10} 0$ $\frac{31}{10}$ $\frac{17}{10} 0$ $\frac{82}{10}$ $\frac{51}{10} \frac{30}{10} 00$ $\frac{136}{10}$ $\frac{62}{10}$

534.37

Grade

RT

Lt

2.7 526.11 1103 523.34

147+50 3.5 22.6

8 3.0 23.1

+50 7.8 18.3

9 7.8 18.3

+50 11.2 14.9

150 104 15.7 513.7

B.M #16 8.14 517.97

+25 025 514.33 12.03 514.08 x512.7

+50 2.3 12.0 x510.9

+75 151 25 048 x508.5 507.2

+50 204 503.90 12.77 501.86 x501.0

2 +30 33 500.6 x497.8

+50 4.2 499.7 x496.2

+70 3 7.1 496.8 x494.9

+50 9.2 494.7 493.6

4 12.1 492.8 492.8

1.55 493.71 11.74 492.16

6.61

$$\begin{array}{r} 534.37 \\ 493.71 \\ \hline 40.66 \end{array}$$

47.27

$$\begin{array}{r} 47.27 \\ 6.61 \\ \hline 20.66 \end{array}$$

$\frac{5.7}{10}$

$\frac{2.7}{10}$

$\frac{9.6}{10}$

$\frac{6.76}{10}$

$\frac{1.76}{10}$

$\frac{11.1}{10}$

$\frac{11.0}{10}$

Peg 40 Lt Sta. 150

+1.8

$\frac{10.7}{10}$

$\frac{10.8}{10}$

$\frac{1.9}{10}$

$\frac{2.08}{10}$

$\frac{7.1}{10}$

$\frac{7.0}{10}$

$\frac{11.2}{10}$

$\frac{11.6}{10}$

	493.71		Grade				
154+50		19	491.8	492.0	+0.4		
5		22	915	491.2	+0.8 +0.3	$\frac{2.4}{10}$	$\frac{1.7}{10} 0$
+50		28	90.9	490.5	+1.0		
6		35	90.2	489.9	+0.7 +0.3	$\frac{4.0}{10}$	$\frac{3.1}{10} 0$
+50		47	89.0	489.2	+0.6	5	
7		49	88.8	488.6	+1.0 +0.2	$\frac{1.5}{10}$	$\frac{1.4}{10} 0$
+50		50	88.7	488.45	+0.6		
8		54	88.3	488.3	+0.4 00	$\frac{5.2}{10}$	$\frac{5.1}{10} 0$
+50		57	88.0	488.2	+0.2		
9		58	87.9	488.1	+0.3 -0.2	$\frac{6.0}{10}$	$\frac{5.3}{10} 0$
	5.6	493.56	531	488.40			
+50		52	88.4	488.3	+0.5		
160		58	88.9 89.8	488.8	+0.6 +0.1	$\frac{5.1}{10}$	$\frac{4.1}{10} 0$
B.M.#17		57.6	487.80				
+50		58	89.8	489.8	+0.7		
1		20	91.0	490.8	+0.5 +0.2	$\frac{3.4}{10}$	$\frac{3.3}{10}$
+50		19	91.7	491.45	+0.4		
2		10	92.3	492.10	+0.6 +0.3	$\frac{5.5}{10}$	$\frac{1.0}{10}$
	493.71	531					
	493.56	516					
	$\sqrt{0.15}$	$\sqrt{0.15}$					

Peg 25 ~~at~~ Sta. 150+90 beside Pepper tree.

493.56 093 492.63

R L

468 497.31

162+50 48 492.5 492.3 +0.5

3 47 492.6 492.5 +0.2 +0.1

$\frac{4.6}{10}$

$\frac{4.6}{10}$

+50 46 492.7 492.65 -0.5

164 43 493.0 492.8 0.2 +0.1

$\frac{4.4}{10}$

$\frac{4.3}{10}$

+50 32 494.1 494.0 +1.3

+90 18 495.5

1178 507.55 154 495.77

165 100 497.0 496.6 +1.7 +0.3

$\frac{11.8}{10}$

$\frac{9.2}{10}$

+50 55 492.1

+60 12.89 509.89 0.55 507.00 502.1 +2.9

6 125 497.4 507.0 +2.6 +0.6

$\frac{11.6}{10}$

$\frac{10.4}{10}$

+50 68 493.1

+60 11.45 530.67 0.67 519.22 515.0 +3.1

+80 82 518.4 +3.3

$\frac{10.2}{10}$

$\frac{6.9}{10}$

7 22.5 521.2 +2.6 +0.3

+25 5.4 253 523.4 +1.7

+50 4.6 259 524.6 +1.8

$\frac{5.2}{10}$

$\frac{3.8}{10}$

8 3.6 27.1

+40 27.1

+50 3.6

4080 530.67
363 493.56

37.1 37.11

173+20			10.0	521.2			
+40					x519.2	+2.6	
+50			13.0	18.2			
+70					x516.0	+2.1	
	3.70	522.36	12.50	518.66			
4			8.2	14.2	x514.0	+2.6 +0.0	$\frac{11.7}{10}$
+50			10.0	12.4	512.2	+3.7	$\frac{5.0}{10.0}$
5			11.8	10.6			
+80	2.04	518.82	12.58	509.78	x511.0	+4.1	
175			8.3	10.5	511.0	-0.5	$\frac{12.8}{10}$
+10					x511.0	+3.0	
+30					x511.5	+3.2	
+50			6.1	12.7	(512.5)		
6			3.5	15.3	x514.7	+1.8 +0.0	$\frac{7.4}{10}$
+25	12.57	530.95	0.44	518.38	x516.6		$\frac{1.7}{10.0}$
+50			12.2	18.8	x519.0	+3.0	
7			6.7	24.3	x524.0	+2.8 +0.3	$\frac{3.4}{10}$
+39.5					526.5	+1.7 -0.8	
+50			4.6	26.4	x526.4		
8			3.4	27.6	x527.5	+2.3 +0.0	$\frac{5.0}{10}$
	9.76	537.46	3.25	527.70			Elev 5298 $\frac{10}{10}$
+50			8.2	29.3	527.5	+3.4	$\frac{3.0}{10}$
9			7.2	30.3	527.5	+5.9 +2.8	$\frac{4.8}{10.0}$
	35.07	537.46					
	28.77	3116	28.77				
	✓6.30	✓630					

End 8-23-16
Heavy Wind all day 4 in on line
Rain in morning

170+50			40	534.5	527.5	+5.6			
180			64	31.1	x527.5	+8.6	+3.6	$\frac{62}{10}$	$\frac{32}{4}$ $\frac{14}{10}$
+15					x528.2	+8.7			
B.M. #10			7.26	530.20					Peg in crack in boulder 30 Rt sta 180
+20			38	33.7	x529.4	+8.8			
+2.5					x531.4	+5.9			
+85	2.08	545.55	0.99	536.47					
+45					x532.6	+3.8			
+60			93	36.3	x533.6	+3.7			
+85			118	33.8					
1			93	36.3	535.0	+5.0	+1.3	$\frac{138}{10}$ $\frac{128}{8}$	$\frac{51}{10}$
+50			8.9	36.7	536.7	+4.8			
+80					x537.7	+3.0			
2			6.5	39.1	x538.2	+2.6	+0.8	$\frac{88}{10}$	$\frac{47}{10}$
+50			7.2	38.4	538.4	+2.8			
3			6.9	38.7	538.6	+2.3	+0.8	$\frac{90}{10}$	$\frac{47}{10}$
+50			7.7	38.7	x538.2	+1.8			
4			8.5	37.1	x536.8	+2.2	+0.2	$\frac{114}{10}$	$\frac{64}{10}$
	1.32	537.72	9.15	536.40					
+50			4.0	39.7	x533.4	+3.0			
5			6.3	31.1	x530.0	+3.8	+1.4	$\frac{84}{10}$	$\frac{41}{10}$
+2.5					x528.6	+2.7			
+50					x528.0	+1.0			
+60			19.0	24.7					
	10.90	537.72	40.14						
	10.14	37.46							
	0.26	0.26							
									524.44 1.32 535.76 11.32 524.44

538 587.7

R

L

537.72

185+75
+90
6
+65
+20
+40
+60

14.0 5237
10.5 27.2
5.0 32.7

$\times 528.0$
52.8
 $\times 528.2$
 $\times 529.8$
 $\times 534.8$

+1.8
-1.0
+5.1
+5.1
+5.1

145
10

6.0
10.0

343 545.99 1.16 536.56

7
+5
~~+60~~
+80

6.6 39.4
5.4 40.6

$\times 538.0$
540.8
 $\times 542.4$

+5.7 +1.2
+5.5
+7.7

127
10

65 32.20
4 6 10.0

12.13 555.89 2.23 543.76

8
+05
+30
+35 PAT
151

11.4 44.5
7.6 48.3
0.0 55.9

$\times 543.0$

+9.8 +1.5

+15.2

Elev
436
10

31
10.0

557.32 0.08 555.81

+5
+6
+83

6.5 50.8
8.2 49.1
10.5 46.8

+12.8
+9.1

9
+05
+15

14.4 42.9
10.4 40.9
14.5 42.8

543.0

2307
347
19.60

557.32
37.72
595.04

3.47

557.32

189 +25		13.2	544.1	543.0	+5.8 +11
+50		12.1	45.2		+6.8 +22
B.M #20		6.71	550.61		on Rock 25' H Sta 189+50
	441	549.77	1196	545.36	
+75		6.4	43.4		+5.7 +0.5
190		10.3	39.8	543.0	+2.8 -3.4
+75		9.0	40.8		
+50		5.6	44.2		+6.7 -1.0
1		4.1	45.7	543.0	+7.7 +2.9
+30		4.2	45.6		
+1.24 BT					+9.0 +2.7
2		5.3	44.5	543.0	+8.2 +1.7
+40		7.4	42.4		
+50					+3.4 -3.0
+55		10.7	39.1		
+70		4.6	45.2		
3		6.2	43.6	543.0	+9.0 +0.6
+22 BT					+2.2
+50		7.0	42.8		
4		5.2	547.8 44.6	543.0	+10.3 +4.8
+25			546.0		+8.5 +2.2
+50			543.0		
		8.1	41.7		+8.7 0.0

557.32
49.77
47.55

1196
441
7.55

		549.77	691	542.86		
	8.02	550.95				
194+75			142	536.8		
5			146	543.4 56.4	543.0	+8.8 +0.4 +2.7 6.1
+15			93	41.7		
+25 Δ (new)				45.6		+10.7 +4.4
+50			88	44.2		+2.0
+71 ²						+9.6 +2.5
+95			57	45.8		El. 551.87
6			51	46.8 45.9	543.0	+9.8 +3.8 +8.5 +3.0
+40			83	42.7		
+50						+7.1 +1.2
+75			61	44.8		
7			68	44.2 ^{49.3}	543.0	+7.9 +2.3
+25			74	43.6		
+50			40	49.0	✓	+8.6 +3.9
	9.68	560.43	0.20	550.75		
+80			67	50.7		
+81 Δ						+16.1
+83			37	56.7		
8			93	51.1		+10.7 +8.2
	2.69	550.16	12.26	547.47		
	20.46	50.16				
	<u>0.7</u>	49.77	20.07			
✓ 0.39		✓ 3.9				

55016

198+15			48	545.4		
+30			137	537.0		
+50			86	41.6	+2.8	-1.8
9			60	44.2	+8.3	+1.6
+30			84	41.8		
+40			70	43.2		
+50			40	43.2 46.2	+7.4	+0.2
+85			38	46.0		
200			54	44.8	+8.9	+2.0
	276	551.24	168	548.48		
+30			30	48.2		
+50					+11.1	+5.7
+60			43	46.3		
+90			97	42.0		
1			125	38.7	-4.2	-4.3
+15			174	33.8		
+50			87	42.5	+4.0	+0.1
2			78	43.4 = Plume	+6.3	+0.7
+50			76	43.6	+8.3	+1.9

276
168
+1.08

551.24
55016
+1.08

	55124				H/L	-	EI
203			7.6	543.6	543.0		554.15
+192 ² RC						+7.1	+0.1
+50			94	418		+4.7	-1.0
+65			130	38.2			
+75			111	40.1			
4			96	418		+2.3	-1.3
+50			86	428		+4.1	-0.3
5			38	47.4		+8.3	+1.5
+40				545.0		205+25	→ 9.9
	400	553.13	2.11	549.13			544.2
+50			94	43.7	9 ^o Plume 5441		542.2
+7						539.52	11.9
+20			110	42.1			3.5
+75			140	39.1			4.8
+90							536.0
+77							534.7
+95			128	40.3			2.6
							2.8
							536.9
							536.7
6			137	39.4			
	146	541.88	12.71	540.42			
+05 WJ			36	38.3			
+08			29	39.0			
+35			7.0	34.9			
+50			80	33.9			8.9
	546	551.24	14.62				530.6
		542.88	546				
		856	9.56				
+75						7.4	532.1

abandoned
see page 73

	541.88			
207		82	583.7	
B.M. #21		940	592.42	
	3.29	599.97	520	536.68
+ 50		68	33.2	
+ 75		68	33.2	
8		49	35.1	
+ 50		36	36.4	
9		26	37.4	
	9.94	549.43	048	539.49
+ 50			60	43.4
+ 60			4.5	44.9 ✓
+ 80			14	40.0
210			08	40.6
+ 20			10	40.4
+ 35			4.7	44.7 ^{mf} _{Flume}
+ 50			40	45.4
+ 60				
+ 70			80	41.4
211			109	30.5

13.23
5.68
✓ 17.55

550.13
42.88
✓ 47.55

5.68

Peg 30' Pt. Sta 206+75

H.I.
539.52

+ E/CV
7.8 531.7

6.2 531.3

7.3 532.2

6.4 533.1

6.2 533.3

5.4 534.1

5.7 533.8

4.9 534.6

3.7 535.8

		549.43				539.52		
211+45			11.0	530.4				
+50							1.4	538.1
212			38	39.6		545.72	6.4	539.3
+50			88	42.6			6.8	538.9
	773	540.46	870	542.73				
213			60	42.5			8.6	537.1
+50			62	42.3			7.5	538.2
214			60	42.5			5.2	540.5
+05 WW			63	42.2				
+25			47	43.8				
+50			54	43.1			5.0	540.7 Drain
215			75	41.0			6.6	539.1
+75			76	40.9				
+50							6.1	539.6
216			70	41.5			5.7	540.0
+50			23	46.2			5.3	540.4
	420	551.24	142	547.04	+Flume	210+55 Elev 547.5		
217			18	49.4			5.4	540.3
+35			26	48.6				
+50			46	46.6			4.4	541.3
	1193 1012 181	552.24 50.43 1.81	1012					

55124

54572

2.17+8.0

5.0 546.2

8

6.5 44.7 545.0

3.0 542.7

+2.0

4.8 46.4

+36.4

+1.7

+5.0

4.9 46.3

9

5.3 45.9 545.0 +7.2 +0.8

+5.0

+7.6 +1.8

+5.5

4.5 46.7

+8.0

5.2 46.0

22.0

7.0 44.2 545.0 +4.2 -0.7

552 549.72

6.97 544.27

+5.0

5.7 44.1

+5.2

B.M. #22

7.25 542.54

Req 80' Pt Sta 221

1

4.2 45.6 545.0 +6.9 +0.6

+1.0

3.2 46.6

+4.0

5.2 46.6

+5.0

+4.3

2

4.8 45.0 x 545.0 -3.4 0.0

+5.0

545.2

+5.3

+6.5

2.4 47.4

+9.5

2.3 47.5

3

3.7 46.1 545.4 +4.9 +0.7

552.24
550.79
145

697
552
145

549.70

~~223 x 50~~

3.2 545.6

224

4.1 45.7 545.7 +2.3 0.0

+50

3.6 46.2 545.85 +2.0 +0.3

5

3.1 46.7 546.0 +2.4 +0.8

+30³ P.C.

+50

3.3 46.5 546.2 +2.2 +0.5

4.06

550.70

3.15 546.64

6

3.9 46.8 546.4 +1.6 +0.4

+50

3.0 47.7 546.55 +2.4

+70

2.7 48.0

+75

4.2 46.5

+85

2.6 48.1

7

2.3 48.4 546.7 +4.1 +1.8

+50

3.1 47.6 546.85 +4.8

+70

4.0 46.7

548.65 T.P.

8

4.5 46.2 x547.0 +2.5 -0.6

+50

3.2 47.5 x548.0 +1.6

9

2.0 48.7 548.0 +6.8 +0.9

+40

2.4 48.3

$$\begin{array}{r} 4.06 \\ 3.15 \\ \hline 10.91 \end{array}$$

$$\begin{array}{r} 550.70 \\ 49.70 \\ \hline 10.91 \end{array}$$

	862	550.70	091	549.79		
229+45			72	532	548.0	+11.1
+50			63	541		
+60			83	521		
+65			35	54.9		
+70			63	52.1		
+73			91	49.3		
+80			68	51.6		
+92			86	49.8		
+94			93	49.1	548.0	+9.3 +10
230			104	48.0		
+05			57	52.7		
+07			54	53.0		
+16			34	55.0		
+16			44	54.0		
+28			75	50.9		
+30			110	48.4		
+35			143	43.1		
+36						
	862	550.41				
	91	50.70				
	771	771				

+2.6
0.9

558.41

23. +45	11.0	547.4		
+50	102	48.2	548.0	+5.5 -4.2 +7.2 side
+65	122	46.2	Bad creek	
+70	154	43.0		
+75	147	43.7		
1	96	48.8	548.0	+7.6 +0.3
+04	80	49.4		
+05	56	52.8		
+20	82	50.2		
+50	63	52.1	548.33	+10.0 +3.8 +10.3 +4.1
+85	57	52.7		
2 90	65	51.9		
2	61	52.3	548.66 548.0	+4.2 +2.8 +9.9 -13.5
+10	42	54.2		
B.M. #23	1.34	557.07		On T. 1040 L +232 +75
+50	4.1	54.3	549.00 548.2	+5.1 +5.1 +5.9 +5.7
3	93	55.1	549.33 548.4	+4.8 +5.8 +5.7 -16.7
+50	3.1	55.3	549.66 548.0	

55841

234		27	5557	550.0 548.8
+50		25	559	550.33 549.0
5		25	55.9	550.67 549.2
+50		23	56.1	551.00 549.4
	200	1.85	556.56	
6		26	56.0	551.33 549.6
+25		4.2	54.4	
+50		90	49.6	551.67 549.8
7		85	50.1	552.2 x 550.0
+02		82	50.4	
+02		63	52.3	
+03		63	52.3	
		6.29	552.27	Old Elev = 552.61

200	550.56
1.85	550.41
0.15	550.15

Sta	+	H.I.	-	Elev	Grade	10' offset El. Hub.		
23	209+75	550.25	7.1	543.1				
	210		5.6	544.6	x 537.1	+12.7+7.5	549.77	0.48
	+10		6.0	44.2				
	+25		9.8	40.4				
	+50		11.5	538.7	537.66	+6.6 +1.0	544.32	5.53
	+60		12.6	37.6				
	+70		12.0	38.2				
	211		12.6	37.6	538.22	+0.4 -0.6	538.65	11.60
	+50		11.55	538.70	538.78	+0.4 -0.1	539.17	11.08
	212		10.7	39.5	539.34	+0.3 +0.2	539.67	10.58
	+50		9.8	40.4	539.89	+0.8 +0.5	540.74	9.51
	213		9.5	40.7	540.45	+1.3 +0.3	541.71	8.54
	+50		8.8	41.4	x 541.0	+1.4 +0.4	542.43	7.82
	214		8.4	41.8	541.0	+1.8 +0.8	542.81	7.44
	+15		7.6	42.6				
	+30		7.0	43.2				
	+50		7.9	42.3		+2.1 +1.3	543.08	7.17
	T.P.	7.58	7.17	543.08				
	215	550.66	10.4	40.3	541.0	+0.25 -0.7	541.26	9.40
	+37							
	+50		10.0	540.7		+0.1 -0.3	541.08	9.58
	+56							
	216		10.0	540.7	541.0	+1.4 -0.3	542.41	8.35
	+44		9.0	541.7		+6.0 +0.7	546.98	3.68
	+80		8.0	542.7				37 Flume
	217		4.9	45.8	541.0	+9.6 +4.8	550.63	0.03
	+15		6.5	44.2				44 2/3
	+25		7.5	43.2				
	+50		7.9	42.8		+6.9 +1.8	547.93	2.73
	+52							5/3
	+75							
	218		8.0	542.7	541.0	+4.75 +1.7	545.76	4.90

STA	+	H.I.	-	Elev.	Grade				
23	218	550.66	7.3	543.4					
	+20		8.0	42.7					
	+33								
	+50		7.8	42.9	541.0	+7.65	+1.9	548.65	4.01
	+74		10.0	540.7					
	+80		8.3	542.4					
	+83		10.0	540.7					
	219		10.9	539.8	541.0	+5.4	-1.2	546.38	4.28
	+38		10.3	40.4					
	+38		7.7	43.0					
	+50		8.2	42.5		+6.35	+1.5	547.36	3.30
	+62		8.5	42.2					
	+67		9.2	41.5					
	+95		9.0	41.7					
	220		10.1	40.6	541.0	+3.95	-0.4	544.94	5.42
	+13		9.4	41.3					
	+18		10.2	40.5					
	+20		9.3	41.4					
	+31		10.5	40.2					
	+50	548.91	6.9	542.0		+4.0	+1.0	545.04	5.62
	+85								
	221		5.9	543.0	541.0	+5.05	+2.0	546.06	4.60
	+15		7.6	541.3					
	+50		7.7	541.2		+4.0	+0.2	544.96	5.70
	+77		8.3	540.6					
	+87		5.9	543.0					
	222		7.9	541.0	x541.0	+4.7	+0.0	545.68	4.98
	+59.15		5.15	543.76	542.17	+5.4	+1.6	547.56	3.10
	+70		2.6	45.3					
	+75		0.8	548.1					
	+79		2.2	546.7					
	223		6.0	542.9	543.35	+3.7	-0.4	547.08	4.83
	+16.7								
	+36.7								
	+52.6	ED	4.0	44.9	544.57	+1.2	+0.3	545.76	3.15
	+75		3.0	45.9					
	224				x545.7	+2.3	+0.0		
	+50					+2.0	+0.3		

See page 44

H.I. 548.91
544.26

Check Levels

	+	H.I.	-	Elev.
23 B.M.	3.77	518.66		514.89
T.P.			2.55	516.11
T.P.	7.60	523.71	0.10	523.61
	12.85	536.46		
B.M.#21			3.42	533.04 (532.42)
T.P.	9.74	545.55	0.65	535.81
T.P.	4.94	546.07	4.42	541.13
B.M.#22			2.99	543.08 542.54
T.P.	4.11	549.67	0.51	545.56
T.P.	10.18	558.10	1.75	547.92

U.S.G.S. 1/2 mile above Harvey Ranch

5.31 552.79 ^{Lewis}(552.27) ^{Huston}(552.61) Top of Wall - North Wing at Intake

Brunner }
Shoemaker } 10/25/16

North Wing
El. 564

Harvey Diverting Dam 77

R. Points -
Diverting Dam

Organization

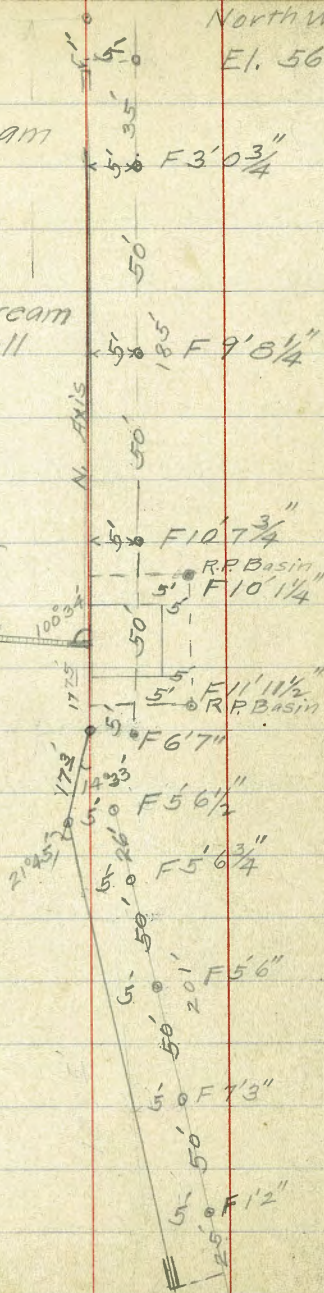
☒ of North wing
= Axis for R.P.'s

13" West of upstream
face of South wall
= Axis for R.P.'s

NOV. 1st 1916

Brunner
Shoemaker

Pipe Line



Lin. Ft.	
North Wall	1812
Mid. "	173
South "	2012
Total	3993

Spillway
El. 558

Mixing 1/5 yard at a time - Capacity 1/3 yard

Mixer Crew	3
Wheeling sand & gravel	2
" concrete	3
" rock	2
Tamping	2
Placing rock	2
Building forms	4
Hauling sand & gravel	2 and team
" rock	2 " "

Total 22 men + 2 teams

Best run 180 sacks per day.

UP TO		
NOV. 14	56	
" 14	64	
" 15	75	
" 16	90	
" 17	18	
" 18	62	
" 19	122	
" 20	3	
" 21	181	
" 22	117	
" 23	13	
" 24	47	
" 25	93	
" 26	141	
" 27	150	
" 28	72	
" 29	65	
Dec. 1	---	

1304 sacks used on 320 yds
Concrete - Av. 4,085 Sacks
per yd - 2 level wheelbarrows
of sand & gravel @ 2.7 cu. ft.
used with each sack cement.
1304 x 5.4 = 7041.6 cu. ft.
= 261 cu. yds sand & gravel
leaving 59 yds (19%) pudding
stone.

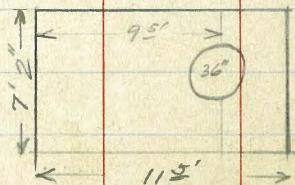
Building 36" wood stave pipe

Building Crew 9 (10th spring 7)

Cinching " 6

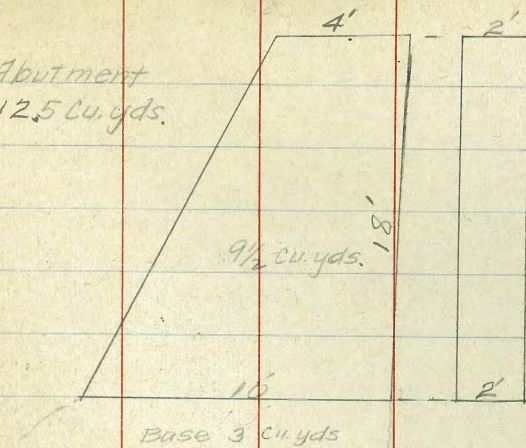
Best crew average 300 ft. per day.

	Cu.ft.	Cu.yds.	
Main Wall	3969	147.0	
High "	423	15.7	
Basin	2088	77.3	
Core Wall	2244	83.1	
Wing "	557	20.6	
Pier	337	12.5	
Support	38	1.4	
Total	9656	357.6	Concrete



Vert. wall at pipe

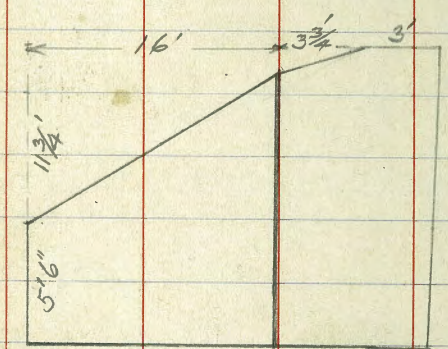
Pier Abutment
12.5 Cu. yds.



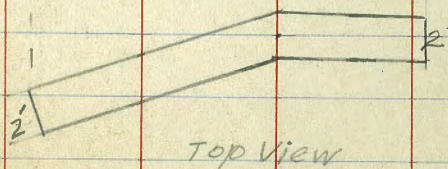
Side View

End View

Wing Wall
20.6 Cu. yds



Elev.



Top View

North Wall - Concrete

Spillway Section
X-sec. Concrete Vols

Alt.	Dist.		Alt.	Dist.	Alt.	Dist.
12-0		On old wall	1'-6"	17'	9'-6"	7'
		Add. overlap 228 cu. ft.			7'-0"	
12-6	6'	overlap at basin = 24 cu. ft.	1'-9"	3	9-6	7
			2-0		7-9	4
10-6	3		2-4	3	7-9	2
		$4 \times \frac{3}{4} \times 76 = 228$			8-0	3
12-0	12	$12 \times \frac{1}{2} \times 76 = 1368$	3-4	3	6-8	2
		$12 \times \frac{1}{2} \times \frac{1}{2} \times 6 = 113$			7-6	3
10-0	2	$11 \times \frac{1}{2} \times 3 = 52$	3-5	3	6-8	2 1/2
		$11 \times \frac{1}{2} \times \frac{1}{2} \times 12 = 202$			9-0	17
10-0	6	$11 \times \frac{1}{2} \times 2 = 33$	4-0	3	6-10	2 1/2
		$10 \times 1.3 \times 6 = 78$			10-3	4
7-0	6	$8 \frac{1}{2} \times 1.2 \times 6 = 61$	4-10	2	7-0	2
		$5 \times \frac{5}{6} \times 18 = 75$			11-6	13
3-0	18	$2 \frac{3}{4} \times \frac{3}{4} \times 8 = 15$	4-10	2		
		$2 \times \frac{7}{12} \times 16 = 19$				
2-6	8	Total 2244 = 83.1 yds.	4-6	2	8-0	2
		North of Basin				
1-6	16		4-6	6	8-0	12

Basin

$\frac{2}{3} \times 20 \times 20$	267	Floor	Add $2 \times 8 \times 12 = +48$	8-0	1 1/2	9-0	6	
			Less sluice - 8					
			" 36" pipe - 18					
$12 \frac{2}{3} \times 2 \times 20$	507	E. Wall	+22	9-0	1 1/2	8-0	1	Less
$12 \frac{2}{3} \times 2 \times 16$	406	N. "		7-5	2	7-4	7	72
$11 \frac{3}{4} \times 2 \times 20$	462	W. "		7-4	2	8-0	7	20
	165	" "					1	8
	60	Weir Wall		7-8	2	7-0	1	81
$12 \frac{2}{3} \times 2 \times 5 \frac{1}{2}$	139	E. Wall		7-8	4 1/2	7-6	9	62
$\frac{1}{2} \times 7 \frac{1}{2} \times 60$	60	Baffle		6-9	3	7-0	1	243
	22	Extra		6-9	1 1/2	8-0	5	
		2088 cu. ft. = 84.8 cu. yds.		7-6	2			

Less Old wall-tapers
 $9 \times 2 \times 6$ wide
 End of spillway

2
T.P. 0.46 556.91 544.88 12.53 544.42
T.P. 0.58 532.58 12.88 532.00
T.P. 0.30 520.02 12.26 519.72
B.M. 558 514.44

0+00 Otag Datum = 346.45 U.S.G.S

Gov. B.M. = 514.887

Above Harvey Ranch

SPILLWAY UPPER CRY

24' X 196' X 14" UPPER 14 X 27.0"

13.70

12.03

1.67

3.34 to 100

	offset		
50	0		
129	+0.5	0	
128+77 ²³	-0.2	0	
128+0	+2.8	3'	35
+50	+2.3	3'	
127	+0.5	0	-2.5
+50	+0.4	0	
126	-0.2	0	
+50	-2.1	0	
125	-1.7	0	
+50	-0.5	5'	+1.0
124	+0.9	10'	+1.4
+50	-1.3	10'	-1.3
123	-1.0	10'	-1.0
+50	-2.2	10'	-2.2
122	-1.4	10'	
	-0.9	10'	
121	-0.3	10'	

Grade Slope
5 up

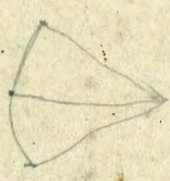
120	+4.2	5'
	+0.6	5'
119	-1.0	5'
	-2.2	
118	-1.0	5'
	-0.7	
117	-0.7	5'
	-0.2	
116	+0.1	5'
	+1.1	
115	+0.7	5'
114	+0.4	5'
	-0.6	5'
113	-2.4	5'

112+2668 P.T. 5'

112 +0.6 5'

514.89

0.0973
1.7420



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1 1/2 TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

MADE IN GERMANY.