

REPORT OF THE 1971 SURVEY OF SEDIMENT BELOW
STREAM GAGE SITES 1, 2, AND 3 ON THE
H. J. ANDREWS EXPERIMENTAL FOREST

by
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and
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No major treatments have been performed in these watersheds for several years. Five years have passed since logging and slash burning on Watershed 1. On Watershed 3, it has been 12 years since roadbuilding, 8 years since logging, 5 years since the slides of December 1964, and 3 years since the slide from the G Road. This past winter, part of the hillside beyond the end of the M Road in unit 9c (L141) slid into the Watershed 3 creek.

MEASUREMENTS AND CALCULATIONS

Measurements and calculations were consistent with those used in previous years.

Lines of sight were checked as each line was measured. Any differences in line of sight measurements were averaged, except in the Watershed 2 basin where the starting and ending benchmark readings were the same. These were assumed to be more nearly correct and were used for line of sight in the calculations. All bench marks, whether permanent or temporary, were checked and found to be nearly identical in elevation with those of the year before.

The sediment basins at #1 and #3 gage sites were cleaned in August 1970 of accumulated sediment by a 1 1/2 cubic yard front-end loader. The following week the initial survey for the ~~1972~~ 1971 report was performed.

Since the basin at Watershed 3 was level with the top of the dam, it was assumed that the elevation was the same as the final reading of last year (8-11-70). Therefore, the data for the final measurement of this report on Watershed 3 is the same as that of August 11, 1970.

DISCUSSION

The storm season this past winter involved mostly snowfall and the effects of snowmelt. One large storm in the middle of November started the filling in of the sediment basins. The snowmelt during the first weeks of December finished the filling of the basin at Watershed 3. The Watershed 1 basin was only about one-half full by the end of the season; but even so, it contained almost 3 times the amount of material of the 1969-1970 season.

Some of the material found in the Watershed 3 basin came from the toe of the Middle Road slide, but most probably came from a slide that originated in unit 9c. The material found in the Watershed 1 basin probably is material left behind after the creek debris was burned in 1966 and may be from high water flows of the November 1969 storm.

The material measured in the Watershed 2 basin was about twice the amount measured for the preceding year. Therefore, it is possible that some of the bedload would have moved down the Watershed 1 and 3 streams had they not been treated.

The cuttings of cottonwood and willow planted across the G Road slide last year did not grow and mature enough to do much in the way of preventing the material from moving. There was evidence that some raveling on the slope took place, and in some cases, carried the cuttings down the slope.

As has been the case in the past, these measurements still only indicate a minimum amount of bedload volume moving through the flumes.

TABLE 1. SEDIMENT ACCUMULATION 1970-71

Year	Number of Points	Line of Sight	Average Rod Reading	Average Bottom Elevation	Change of Bottom Elevation	Basin Area in Sq. Feet	Total Accum. in Cubic Feet	Ave. Accum. in Cubic Feet/ Acre	Ratio
<u>WATERSHED 1</u>									
1970	219	114.299	9.544	104.745					
1971	219	114.448	7.918	106.530	1.785	2133	3,807.405	16.065	1/2 8.40
<u>WATERSHED 2</u>									
1970	21	107.935	7.451	100.484					
	190	107.928	7.586	100.342					
	<u>211</u>		Wt. Ave.	<u>100.356</u>					
1971	211	107.954	7.447	100.507	.151	1887	284.937	1.912	
<u>WATERSHED 3</u>									
1970	202	106.431	10.351	96.080					
1971	202	105.516	7.402	98.114	2.034	896	1,810.260	7.241	3/2 3.787

Table 2

SEDIMENT ACCUMULATION SUMMARY SHEET

Bedload Volume
Cubic Feet per Acre

Year	Undisturbed			After Treatment		Ratio	
	W. S. #2	W. S. #3	W. S. #1	W. S. #3	W. S. #1	3/2	1/2
1957	2.56	1.52	2.30			.59	.90
1958	3.52	2.28	1.40			.65	.40
1959	.61	.26	-.16 ^{4/}			.43	-.26 ^{4/}
1960	.23		.08	.42		1.83*	.35
1961	1.82		.21	1.63		.90	.12
1962	.61		1.23	10.84 ^{2/}		17.77*	2.02
1963	.69			1.28	.13	1.86*	.19
1964	.11			.83	.10	7.55*	.91
1965	11.06			2932.40 ^{2/}	2.82	265.13*	.25
1966	2.06			3.28 ^{3/}	.77 ^{4/}	1.59 ^{3/}	.37
1967	-.04			3.56	13.33	--	--
1968	.09			2.77	16.34	30.78	181.56
1969	1.06			8.91	18.94	8.41	17.87
1970	1.05			5.01	5.65	4.77	5.38
1971	1.91			7.24	16.07	3.787	8.40
				8.25	28.13	21.0	71.59

* Significant at the 95% level.

2/

Includes material from mass soil movements.

3/

Sediment accumulation on watershed 3 from December to April only.

4/

Corrected figures of earlier reports.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Date: 8-20-70

Party: Level AL

Rod GM

Notes RM

Benchmark:

H.I.

Elev.

Experimental Area: HJA

Basin Location: WS# 1

Transects (Designated in ft. starting at crest of dam)

Station*	1		2		3		4		5		6		7	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
.00														
.03														
.06		4.00		4.30		4.73		4.76		4.62		4.36		4.42
.09		5.31		8.41		9.43		10.32		9.94		9.65		6.75
.12		7.98		9.74		11.09		11.48		10.80		11.14		10.79
.15		8.63		10.63		12.46		11.79		11.55		11.63		11.59
.18		8.92		10.94		11.79		11.97		11.69		11.74		11.78
.21		8.51		10.93		11.72		11.85		11.70		11.75		11.79
.24		7.56		10.18		11.54		11.74		11.69		11.34		11.66
.27		7.86		9.76		11.31		11.56		11.52		11.45		11.52
.30		7.35		9.74		11.05		11.41		11.46		11.37		11.36
.33		7.50		9.79		10.45		10.97		11.34		11.03		11.00
.36				8.26		9.53		10.74		10.89		10.77		10.79
.39				6.93		9.72		10.65		10.81		10.56		10.80
.42				5.48		9.53		10.08		10.37		10.74		10.60
.45				4.18		9.01		9.52		10.31		10.45		10.78
.48				4.96		8.52		9.41		10.10		10.71		10.82
.51				4.96		8.25		9.20		9.93		10.15		10.18
.54				5.32		7.38		7.68		9.21		9.61		10.55
.57				4.22	Rock	5.56	Rock	6.63		8.84		9.92		10.53
.60					Rock	4.66	Rock	5.90		8.25		9.39		9.72
.63					CK	5.83	CK	6.23	Edge pond	5.35		8.71		9.63
.66					CK	5.77	CK	6.04		4.48	Edge	6.10		8.59
.69					CK	5.95	CK	5.92		3.86	Edge	6.24		7.35
.72					CK	5.67	CK	5.72				4.64	Edge	5.85
.75							CK	5.49				4.33		4.81

Temporary BM on stump

Survey Start 1.658

Survey End 1.661

End line 3 1.658

" " 5 1.659

" " 7 1.658

" " 9 1.658

" " 11 1.660

" " 14 1.661

Ave BM Reading = 1.659

Total No. of Points = 219

Total Rod Readings 2092.38

Average Rod Readings 9.554

Total Points 219

No. of Points

(7)

(15)

(16)

(19)

(18)

(21)

(21)

Total

56.81

124.89

162.75

189.13

189.90

214.45

218.58

Average

3.04

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Date: 8-20-70
Party: Level _____
Rod _____
Notes _____

Benchmark:

H. I.
Elev.

Experimental Area: HJA
Basin Location: WS-1

Transects (Designated in ft. starting at crest of dam)														
Station*	8		9		10		11		12		13		14	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
03														
06		4.41		3.83										
09		5.33		4.79		4.67		4.42						
12		9.65		8.97		8.10		5.07		4.52				
15		11.38		11.19		10.16		8.77		6.96				
18		11.66		11.87		11.54		10.24		7.21				
21		11.72		11.73		11.60		10.20		6.41				
24		11.93		11.75		11.61		9.77		5.60				
27		11.58		11.61		11.37		9.42		6.04				
30		11.28		11.54		10.02		8.69		4.92			Edge	4.96
33		10.92		10.90		9.61		8.26		5.42		4.59		6.29
36		10.76		10.78		10.02		7.90	Edge	5.30	Edge	6.74		6.84
39		10.49		10.49		9.86	Edge	6.07		7.25		6.94		6.92
42		10.26		10.16		9.59		7.40		7.69		7.24		6.89
45		10.19		10.14		9.17		8.34		8.20		7.70		6.76
48		10.58		10.19		9.32		9.16		8.66		7.74		6.59
51		10.35		9.68		9.60		9.73		8.90		7.70	Edge	5.09
54		10.24		10.01		9.82		9.38		8.95	Edge	5.42		4.72
57		10.52		10.67		10.23		9.15		7.18		5.31		4.36
60		10.24		10.10		9.38		8.85	Edge	6.09		5.15		
63		9.67		9.74		9.08	Edge	7.53		4.96		4.47		
66		8.95		8.88		6.96		5.49		4.84				
69		8.20		7.58	Edge	6.24		5.22						
72	Edge	5.80	Edge	5.99		5.68		4.10						
75		5.04		5.07		4.94								
</														

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATIONELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

Watersheds

Benchmark:

H.I.
Elev.Experimental Area: H.T.A.
Basin Location: US #1Date: 8-5-71
Party: Level M⁹ Lee
Rod Aluminum
Notes End

Station*	Transects (Designated in ft. starting at crest of dam)						
	1	2	3	4	5	6	7
	H.I. Elev.	H.I. Elev.	H.I. Elev.	H.I. Elev.	H.I. Elev.	H.I. Elev.	H.I. Elev.
00							
03							
06	4.39	4.41	4.78	4.70	4.73	4.51	4.58
09	4.67	7.70	9.15	10.10	9.44	9.57	7.27
12	7.30	9.84	11.14	11.14	11.19	11.64	11.07
15	8.11	10.35	11.41	11.54	11.10	11.06	11.22
18	8.68	10.45	10.84	10.86	9.98	10.00	10.15
21	7.86	10.23	10.36	9.90	9.44	9.50	9.33
24	7.60	9.98	9.83	9.79	9.73	9.63	9.23
27	6.96	9.68	9.65	9.86	9.92	9.71	9.31
30	6.98	9.06	9.55	9.63	9.90	9.75	9.40
33	6.83	8.84	9.39	9.65	9.96	9.90	9.15
36		8.49	9.20	9.62	10.08	9.97	8.81
39		7.34	8.97	9.37	9.68	9.28	8.09
42	6.32	6.32	8.05	8.35	8.40	8.15	7.23
45	4.15	4.15	7.24	7.38	7.51	7.23	6.61
48	4.95	4.95	7.14	7.14	7.06	6.27	5.90
51	3.74	3.74	7.28	6.97	6.65	5.92	5.63
54	3.97	3.97	6.91	6.78	6.18	5.83	5.41
57	3.96	3.96	5.72	5.79	6.19	5.65	5.09
60			4.26	4.97	6.28	5.46	4.98
63			4.53	5.75	5.85	5.48	5.08
66			5.05	5.54	5.86	4.94	5.00
69			4.98	5.73	5.64	4.53	5.16
72			4.84	5.63		4.48	4.94
75				5.51		4.48	4.54
Temporary B.M. = Start 1.808							
End 1.808							
B.M. End Line 3 = 1.810							
" " " 3 = 1.809							
" " " 7 = 1.811							
" " " 9 = 1.816							
" " " 11 = 1.815							
" " " 14 = 1.808							
Used Line of sight = 70 1.808							
Total NO. Points = 219							
Total Rod Readings = 1733.96							
Average Rod Readings = 7.918							
Total Points 219							
No. of Points 7							
Total 53.34							
Average 121.12							
146.55							
164.94							
158.69							
168.85							
159.14							

*Numbered to right starting with 0 at borderline which extends upstream from left end of d

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.
Elev.

Experimental Area: H.J.A.
Basin Location: W.S. #1

Date:

Party: Level

Rod

Notes

Station*	Transects (Designated in ft. starting at crest of dam)													
	8		9		10		11		12		13		14	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
03														
06		4.56		4.00										
09		7.99		4.83		4.78		4.51						
12		10.45		9.03		9.29		4.83		4.48				
15		11.44		11.44		10.66		9.45		8.00				
18		10.77		11.42		11.78		10.76		8.70				
21		9.82		10.68		11.65		10.92		8.12				
24		9.46		10.14		11.68		10.64		7.83				
27		9.10		9.68		10.67		10.25		7.71				
30		8.99		9.37		9.65		9.37		5.18				
33		8.93		8.77		8.05		7.97		5.92		5.07		4.84
36		8.15		7.42		6.83		6.84		5.30		3.37		5.05
39		7.20		6.62		6.37		6.63		7.36		7.30		6.55
42		6.51		6.19		5.82		6.51		6.98		7.14		7.11
45		5.80		5.21		4.83		5.48		6.11		6.87		7.41
48		5.17		4.87		4.85		5.09		6.13		6.49		7.41
51		4.96		4.86		5.20		5.99		6.56		6.52		6.71
54		4.80		4.98		6.34		6.64		7.58		8.11		5.41
57		4.85		5.27		6.90		8.19		8.66		6.95		5.10
60		5.06		5.76		7.04		8.71		7.81		5.76		
63		5.17		5.52		6.87		8.60		7.12		5.10		
66		5.19		5.73		7.41		7.56		5.53				
69		6.21		6.65		6.42		6.61						
72		5.91		5.73		5.48		5.47						
75		4.89		4.97		5.10								
Line started Between Point # 2 on Dam to Point one at other End And continued thru 14 lines last line same as Initial Survey.														
No. of Points	22		21		20		18		9		6		6	
Total	161.37		155.54		157.71		145.65		62.69		39.89		38.49	
Average														

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.
Elev.

Experimental Area: H.J.H.
Basin Location: WV #2

Date: 8-4-71
Party: Level mensural
Rod Fehr
Notes mark

Station*	Transects (Designated in ft. starting at crest of dam)													
	1		2		3		4		5		6		7	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
03				3.92		4.48		4.66		5.13		5.57		5.19
06				4.96		5.92		6.70		6.61		6.48		6.30
09				6.04		7.02		7.65		7.50		7.64		7.38
12				6.12		8.00		8.67		8.29		8.09		8.40
15				7.46		8.64		8.88		8.81		8.85		8.48
18				7.94		8.66		8.94		8.58		8.22		7.65
21		6.77		8.43		8.96		8.70		8.50		7.88		7.23
24		7.08		8.60		8.72		8.43		8.19		7.63		7.46
27		7.19		8.56		8.63		8.38		8.29		7.62		7.89
30		6.71		8.39		8.53		8.49		8.36		8.78		8.74
33		7.23		8.57		8.56		8.54		8.34		8.58		8.52
36				8.10		8.54		8.55		8.69		8.59		8.56
39				7.85		7.98		8.50		8.45		8.56		8.31
42				7.65		7.40		8.31		8.37		8.04		8.14
45				7.27		7.02		7.44		7.36		7.32		7.29
48				6.73		6.38		5.42		6.02		6.98		7.09
51				5.77		4.98		5.49		5.98		6.39		6.36
54				5.33		5.15		6.18		6.69		6.16		5.76
57														
60														

Benchmark: Start = 7.955
Benchmark End = 7.953
Line of sight 107.954

Total No. of Points = 211
Total Rod Readings 1571.36
Average Rod Reading 7.447

Aux. Benchmark = 5.087
Aux. B.M. End of line 2 = 5.087
Aux. " " " " 4 = 5.087
Aux. B.M. End of line 6 = 5.087
Aux. " " " " 8 = 5.087
Aux. B.M. End of line 10 = 5.087
Aux. " " " " 12 = 5.087
Aux. B.M. End of line 14 = 5.087
Aux. " " " " 18 = 5.087

Total Points = 211

No. of Points	(5)	(16)	(16)	(17)	(17)	(17)	(17)
Total	34.98	118.81	123.94	133.27	133.03	131.81	129.56
Average							

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.
Elev.

Experimental Area: H.J.A.
Basin Location: WJ # 2

Date: _____
Party: Level _____
Rod _____
Notes _____

Station*	Transects (Designated in ft. starting at crest of dam)													
	8		9		10		11		12		13		14	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
03		4.46		4.88		4.60		5.03		3.98		4.07		4.29
06		6.20		6.64		6.47		6.27		5.22		4.79		5.23
09		7.28		7.44		7.52		7.09		6.60		6.19		6.26
12		8.24		7.94		8.05		8.07		7.71		7.11		6.77
15		8.36		8.50		8.12		8.00		7.68		7.16		6.82
18		7.53		7.34		7.41		8.04		7.87		7.32		6.90
21		7.78		7.35		7.08		8.08		7.93		7.46		6.99
24		8.12		8.31		7.66		7.20		7.67		7.32		6.65
27		8.18		8.44		9.24		7.45		8.10		7.32		6.25
30		8.15		8.34		8.33		8.14		7.87		7.19	Edge	6.01
33		8.64		8.30		7.64		7.50		7.36		6.87		5.21
36		8.30		7.88		7.89		7.84		7.43		6.15	Path	4.56
39		8.30		7.63		7.85		7.42		6.67	Edge	5.78		4.28
42		7.68		7.43		7.25		6.86	Edge	5.70	(Path)	4.42		
45		7.23		7.02		6.78		6.14		4.51	(43)	4.15		
48		6.74		6.52		6.13	Edge	4.94		3.87				
51		6.11	Edge	5.60	Edge	5.26		4.15	(42)	3.58				
54	Edge	4.21		3.97		3.85	(Path)	3.62						
57		4.17		3.92		3.55								
60														

No. of Points	(16)	(15)	(15)	(14)	(12)	(11)	(8)
Total	122.84	115.08	112.42	104.10	88.61	75.89	52.65
Average							

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

Watersheds

Notes

Basin Location: U.S. # 2

No. of Points	Score
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.
Elev.

Experimental Area: H.J.A.
Basin Location: WS # 3

Date: 8-21-70
Party: Level RM
Rod AL
Notes GM

Station*	Transects (Designated in ft. starting at crest of dam)													
	1B		1A		1		2		3		4		5	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
02.5						10.80		11.03		11.39		11.69		11.44
04						11.25		11.66		11.96		12.10		11.97
06						11.66		11.87		11.91		12.04		11.88
08						11.63		11.87		11.95		11.95		11.69
10						11.64		11.71		11.74		11.81		11.55
12						11.58		11.50		11.66		11.71		11.59
14						11.74		11.68		11.58		11.66		11.56
16						11.66		11.44		11.48		11.58		11.47
18						11.47		11.26		11.30		11.45		11.43
20						11.23		10.99		11.24		11.34		11.31
22						11.00		10.84		11.21		11.19		11.20
24						10.62		10.65		11.06		10.96		11.04
26						10.20		10.50		10.84		10.89		11.00
28						9.58		10.05		10.44		10.69		10.49
30						9.22		9.61		10.16		10.32		10.37
32						8.90		9.70		9.63		10.03		9.85
34						8.58		9.07		9.29		9.68		8.90
36						8.31		8.70		8.77		9.33		6.55
38				6.38		7.72		8.16		8.49		8.20		6.05
40				6.29		7.33		7.81		7.95		7.20		
42		6.24		6.30		7.01		7.44		7.06		6.76		
44		6.50		6.53		6.91		6.80		6.55		6.40		
46		6.54		6.68		6.77		6.57		6.43		6.08		
48		6.39		6.55		6.31		6.33		6.08		5.81		

Bm Start survey = 6.449
Bm End survey = 6.448

Bm Reading End line 11 - 6.450
10 6.448
8 6.448
6 6.448
4 6.448
2 6.448
1B 6.448

Total No. of Points = 202
Total Rod Reading = 2090.99
Average Rod Reading = 10.351

Start Survey
at line # 12

No. of Points	(4)	(5)	(24)	(24)	(24)	(24)	(14)
Total	25.67	32.35	233.12	237.24	240.17	240.87	201.34
Average							

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.
Elev.

Experimental Area: H.J.A.
Basin Location: WS # 3

Date: 8-21-70
Party: Level
Rod
Notes

Station*	Transects (Designated in ft. starting at crest of dam)													
	6		7		8		9		10		11		12	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
02.5		11.30		11.38		11.24		11.07		10.78		10.51		10.18
04		12.00		11.05		11.62		11.44		11.25		10.87		10.21
06		11.99		12.04		11.91		11.55		11.68		11.31		10.49
08		12.02		11.90		11.90		11.60		11.61		11.43		10.25
10		11.48		11.79		11.83		11.81		11.46		11.58		
12		11.63		11.51		11.70		11.92		11.95		11.31		
14		11.55		11.55		11.58		11.76		11.88		11.23		
16		11.49		11.49		11.49		11.85		11.74		11.22		
18		11.44		11.50		11.40		11.84		11.18		10.98		
20		11.35		11.41		11.28		11.47		10.92				
22		11.19		11.09		11.36		11.09						
24		11.16		10.75		11.06		10.64						
26		10.74		10.72		10.46								
28		10.28		10.17										
30		10.37		9.64										
32		9.65												
34														
36														
38														
40														
42														
44														
46														
48														
No. of Points		16		15		13		12		10		9		3
Total		179.64		167.99		148.83		137.99		114.45		100.44		30.89
Average														

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.