

Report of 1958 Survey of Catchment Basins
at Stream Gage Sites 1, 2, and 3
H. J. Andrews Experimental Forest

by
J. T. Sabo

The catchment basins in watersheds 1, 2, and 3, below the stream gages, were remeasured in August 1958. This is a report on the re-measurement of these basins and analysis of the sediment accumulation during the 1958 water year.

Measurement.

The measurements were obtained by the method outline by Graber in the initial report. The basins were cross sectioned at 3 ft. intervals. A rod, with a flexible metal plate attached to the bottom, and level were used.

Some difficulty in locating the lines in their proper location was encounter. This problem was also encountered in the 1957 survey. An attempt was made in 1957 to solve this problem by marking lines with aluminum tags. Since the same problem was encountered again this year, the lines were remeasured from the control corners. It was found that the distances between control corners, as reported by Graber in the initial report, were wrong in a couple of instances. To alleviate this problem the distances from control corners to strategic lines and the distances between control corners was remeasured for each catchment basin. Each strategic line was then marked.

with a n aluminum tag. For each catchment basin a new control map was developed and is included in this report.

Calculations.

The same method of calculation used in 1957 was used this year. A description of the method is explained by Jerry Franklin in the 1957 report.

The method used is as follows:

- (1) All points used in 1957 were used in the 1958 calculations whether or not these points were in or out of the water. The points used are marked by red checks on the original field sheets.
- (2) A new map of each area was then drawn and the area determined by polar planimeter.
- (3) The average rod reading and average depth of each basin was determined for 1958 water year. The difference in depths between 1957 and 1958 was then multiplied by the 1958 surface area to get the total cubic foot accumulation of sediment for each basin during the 1958 water year.

After measurement of watershed number 2 catchment basin part of the silt accumulation from line 10 to line 18 was removed. This part of the basin was then remeasured. Next years calculations will have to be based upon the new readings obtained after removal of the silt accumulated in this area of the basin.

While measuring watershed #3 it was found that at the 3 ft station, which is on the dam, the elevation varies considerably depending on the

placement of the rod. Since this measurement is not on the bottom of the basin where it should be it is suggested that these readings either be eliminated from the calculations or be taken at a different location near the bottom of the dam.

Also when placing the rod upon the bench mark (railroad spike in the hemlock) for a reading, place the rod upon the head of the spike.

References.

Graber, Raymond, Measurement of Sediment Accumulation in Catchment Basin at Stream Gage Sites 1, 2, and 3. H. J. Andrews Experimental Forest
 S September, 1956. (RI-NW, WATERSHED MANAGEMENT, Water Yield, Small Watersheds or Water relations, Quality.)

Franklin, Jerry, Report of 1957 Survey of Catchment Basins at Stream Gage Sites 1, 2, and 3, H. J. Andrews Experimental Forest.
 September, 1957. (RI-NW, WATERSHED MANAGEMENT, Water Relations, Quality.)

SEDIMENT ACCUMULATION SUMMARY OF CALCULATIONS 1957^① AND 1958^② WATER YEAR

SEDIMENT BASINS →	STREAM I (237 ACRES)			STREAM II (149 ACRES)			STREAM III (250 ACRES)		
	1956	1957	1958	1956	1957	1958	1956	1957	1958
SUM OF POINTS	1619.39	1747.54	1650.53	1589.78	1318.93	1529.11	1214.89	1551.57	1724.31
TOTAL POINTS	237	237	237	224	224	224	183	183	183
AV. ROD RDG.	6.833	7.374	7.133	7.097	5.888	6.283	6.639	8.478	9.422
WATER LEVEL	4.130	4.950	4.770	5.840	4.860	6.020	3.943	5.927	7.337
AV. DEPTH BASIN	2.703	2.424	2.363	1.267	1.028	.763	2.696	2.551	2.085
DEPTH 1956	2.703			1.267			2.696		
DEPTH 57	2.424	2.424		1.028	1.028		2.551	2.551	
DEPTH 58		2.363			0.763			2.085	
DIFFERENCE	0.279	0.061		0.239	0.265		0.145	0.466	
EL. WATER 56	108.270			102.260			91.617		
EL. WATER 57	108.300	108.300		102.220	102.220		91.707	91.707	
EL. WATER 58		108.350			102.260			91.583	
DIFFERENCE	-.030	-.050		+.040	-.040		-.090	+.124	
DIFFERENCE	0.279	0.061		0.239	0.265		0.145	0.466	
WATER LEVEL CORRECTION	+.030	+.050		-.040	+.040		+.090	+.124	
CORRECT DIFF.	.309	.111		.199	.305		.235	.590	
AREA X DIFF.	309 X 2.111	111 X 2.022		.199 X 2.025	.305 X 1.787		.235 X 1.639	.590 X 1.630	
C.U. FT.	*	*		*	*		*	*	
SED. ACCUM.	652.30	224.44		402.98	545.04		385.16	961.70	
CU. FT./ACRE	2.75	1.95		2.70	3.66		1.54	3.85	

As for both years - all three watersheds 243 cu. ft./acre

- ① THE 1956 & 1957 REPORTS WERE CHECKED AND ALL MISTAKES CORRECTED. CORRECT FIGURES USED IN THIS REPORT.
- ② W/S #2 DISTURBED AFTER MEASUREMENT. CORRECT FIGURES FOR 1959 CALCULATIONS INCLUDED IN THIS REPORT.

SEDIMENT ACCUMULATION

W/S #2

SUMMARY OF CALCULATIONS AFTER PARTIAL REMOVAL OF ACCUMULATED SILT

	1957	1958
SUM OF POINTS	1318.93	1540.74*
TOTAL POINTS	224	224
AV. ROD RDG.	5.888	6.878
WATER LEVEL	4.860	6.020
AV. DEPTH BASIN	1.028	0.858
DEPTH 1957	1.028	
DEPTH 1958	0.858	
DIFFERENCE	0.170	
EL. WATER 57	102.220	
EL. WATER 58	102.260	
DIFFERENCE	- .040	
DIFFERENCE	0.170	
WATER LEVEL CORRECTION	+0.040	
CORRECT DIFF.	0.210	
AREA X DIFF. CUBIC FT. SED. ACCUM.	1787 X 0.210 = <u>375.27</u>	
CU. FT./ACRE	375.27 ÷ 149 <u>2.52</u>	

* 96 REMEASURED POINTS CORRECTED TO
WATER LEVEL 6.020.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.

Elev.

Experimental Area: H.V. ANDREWS

Basin Location: WATERSHED #1

Date: 7/50/58

Party: Level/Hitchcock/Wilson

Rod 560

Notes: Stitchcock/Wilson

Station*	Transects (Designated in ft. starting at crest of dam)													
	LINE 1		LINE 2		LINE 3		LINE 4		LINE 5		LINE 6		LINE 7	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
03											4.26			
04	3.11		3.65		3.60		3.53	WE 8.1	3.58	WE 8.2	3.56	WE 8.4	3.52	WE 8.5
09	4.59	19.11*	5.74	W 8.1	6.03	W 7.7	6.36	✓	5.69	✓	5.28	✓	5.23	✓
12	6.46	W 5.5	7.66	✓	8.07	✓	7.98	✓	7.46	✓	7.67	✓	7.34	✓
15	7.09	W 4.6	9.01	✓	9.54	✓	9.24	✓	9.20	✓	9.33	✓	9.90	✓
18	6.78	W 5.0	8.92	✓	10.39	✓	10.80	✓	10.68	✓	10.65	✓	10.13	✓
21	7.10	W 5.1	9.10	✓	10.43	✓	10.62	✓	10.39	✓	10.20	✓	10.06	✓
24	7.20	W 6.1	8.93	✓	10.03	✓	9.74	✓	9.39	✓	9.18	✓	9.12	✓
27	6.72	W 5.6	8.50	✓	9.39	✓	9.11	✓	9.03	✓	8.69	✓	8.46	✓
30	5.91	W 4.7	8.21	✓	8.77	✓	8.73	✓	8.54	✓	8.36	✓	8.20	✓
33		W 2.9	7.64	✓	8.42	✓	8.42	✓	8.51	✓	8.48	✓	8.16	✓
36		W 0.9	7.29	✓	8.03	✓	8.12	✓	8.62	✓	8.65	✓	8.36	✓
39		W 0.7	6.27	✓	7.52	✓	7.64	✓	8.59	✓	8.89	✓	8.76	✓
42		W 0.5	5.16	✓	7.16	✓	7.15	✓	8.10	✓	8.76	✓	8.79	✓
45			3.68	W 45.0	6.42	✓	7.33	✓	7.87	✓	8.42	✓	8.55	✓
48			4.46	W 48.0	5.45	✓	7.19	✓	7.55	✓	8.04	✓	8.11	✓
51					6.27	✓	7.04	✓	7.69	✓	7.74	✓	7.70	✓
54					6.13	W 56.5	6.60	✓	6.85	✓	7.23	✓	7.47	✓
57					4.25	✓	5.60	✓	5.97	✓	6.88	✓	7.20	✓
60					3.53	✓	4.98	WE 62.0	5.55	✓	6.39	✓	6.74	✓
63		* WE 4.0					4.56	mouth of creek	4.80	W 64.5	6.18	✓	6.51	✓
66		ON LINE 1					3.97	✓	4.59	✓	6.12	✓	6.30	✓
69							3.77	✓	4.34	✓	5.58	✓	6.16	✓
72							3.97	✓	4.32	✓	4.80	WE 72.3	5.62	WE 72.3
75							4.12	✓	4.10	✓			4.06	✓

Check on BM 13.125

(7)

(10)

(16)

(19)

(22)

(22)

(22)

Total	47.26	81.00	128.05	147.21	163.73	171.52	172.87
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. ANDREWS

Basin Location: WATER SHED #1

Date: 7/30/58

Party: Level Rothacker

Rod 5460

Notes Rothacker

Station*	Transects (Designated in ft. starting at crest of dam)													
	Line 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	3.30		3.01											
09	4.63	WE 9.6	4.12	WE 10.0	3.58	W 11.4	3.24							
02	6.66		6.10		5.15		4.29		3.09		2.52			
15	8.19		7.69		6.89		5.84	W 12.8	4.46		3.42			
18	9.68		9.15		8.64		7.63		5.90	W 15.6	4.28			
21	10.09		10.16		9.30		8.28		5.53		3.83			
24	9.39		10.20		9.57		7.73		4.34	W 22.6	3.30			
27	8.64		9.67		9.59		7.20		4.38		2.87		3.78	
30	8.25		9.03		9.58		7.31		4.04		3.09		4.46	
33	8.24		8.45		9.60		6.43		9.01		3.51		5.22	WE 20.5
36	8.00		7.95		9.25		6.10		4.02		3.95	W 38.0	5.38	
39	8.25		8.04		7.66		6.15		4.81	W 38.5	5.28		5.40	
42	7.68		7.91		7.49		6.14		5.22		5.61		5.21	
45	8.32		7.58		7.00		5.55		5.53		5.46		5.22	
48	7.90		6.75		6.10		5.95		5.80		5.21		5.13	
51	7.31		6.92		6.60		6.17		5.67		5.14		5.03	
54	7.30		6.97		6.50		5.89		5.48		5.26		4.90	
57	6.99		6.54		6.27		5.73		5.10		5.14		4.11	WE 52.9
60	6.70		6.60		6.27		5.15		5.07		4.90	W 61.3	3.70	
63	6.62		6.55		5.80		5.35		5.26		3.74		2.48	
66	6.56		6.39		5.31		5.36		4.05	W 64.3	2.73			
69	6.29		5.72		5.47		4.77	W 69.0	3.39					
72	5.16	WE 72.6	5.36	WE 74.0	5.03		3.06							
75	3.72		4.45		3.96	WE 73.2								

ROD ON BM 13.12

Assumed Elev. 100.00

LINE OF SIGHT 113.12

ROD ON WATER SURFACE 4.77

Elev. of water 108.35

H.I. - WATER LEVEL 9.77

9.77

9.77

4.77

(22)

(21)

(20)

(19)

(18)

(9)

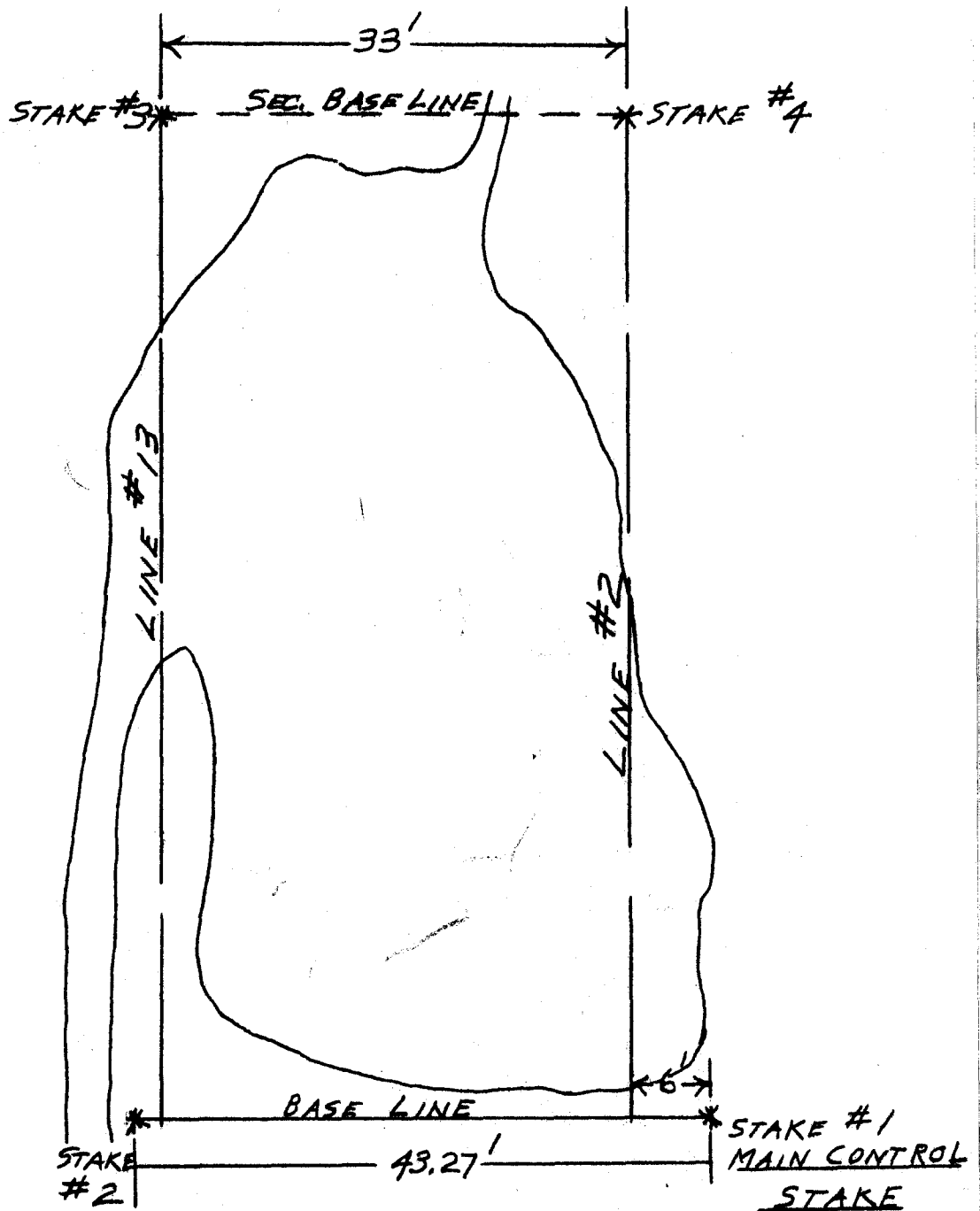
(9)

Total 166.85 159.73 153.07 119.23 88.67 45.74 15.60

Average No. pts. = 237 TOTAL ALL POINTS = 1690.53 Av. = 7.133

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

SEDIMENT BASIN WATERSHED No 1.
LOCATION MAP



LINES 2, 7, & 13 are MARKED WITH
A ALUMINUM TAG ON THE PRIMARY
CONTROL LOG.

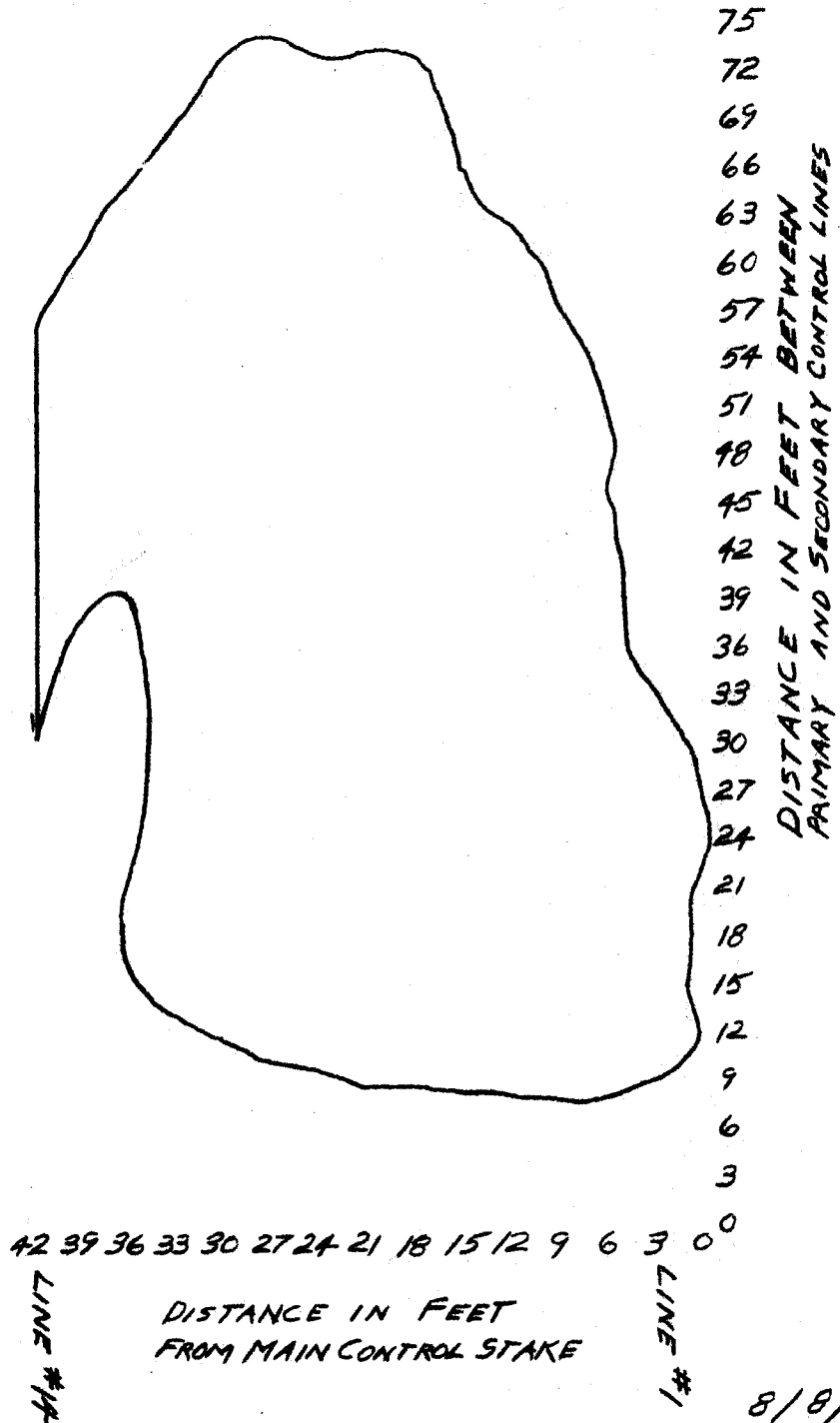
8/8/58
J. T. SABO

SEDIMENT BASIN WATERSHED NO 1.

SURFACE AREA = 14.04 by POLAR PLANIMETER
 X 144
 2022 SQ. FT.

SCALE : 1" = 12'

SURFACE AREA 1957 = 2111 SQ. FT.
 " " 1956 = 1998 " "



8/8/58
 J.T. SABO

Benchmark:
H. I.
Elev.

FORM RI-2

Date: 7/29/58
Party: Level Rothacher
Rod Sabo
Notes Rothacher

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

[illegible]

*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: HJA
Basin Location: WATERSHED #2

Date: 7/29/58
Party: Level Rothacher
Rod 5a60
Notes Rothacher

[illegible]

*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:

Basin Location:

Date:

Party: Level

Rod

Notes

Station*	Transects (Designated in ft. starting at crest of dam)											
	LINE 15		LINE 16		LINE 17				LINE 18			
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00					6.19	3' above railway	West WE 1.8					
03	4.93	WE 5.6	5.46	WE 38	6.50		East WE 2.16					
06	6.15		6.23	L	6.41	WE 1.35	W " 2.8					
09	6.53		6.70	L	6.26	WE 2.25	E WE 1.8					
12	6.73		6.19	L	6.09	WE 1.35		4.94				
15	6.03	WE	6.07	edge of island	6.16	WE 1.95		5.79	WE 9.5			
18	6.04	WE	6.27		5.43	WE 1.9		6.21				
21	6.43		6.25	WE 23.5	4.99	edge of trail		5.02				
24	6.72		5.99		5.02	Trail		6.13				
27	6.60		4.82	edge of trail								
30	6.37		5.03	Trail								
33	6.02	WE 330										
36	5.02	Trail										

CHECK READING ON BM 8.28

(11)

(8)

(7)

(1)

Total 68.64 48.52 43.24 6.21
Average No. pts. = 224 TOTAL ALL POINTS = 1529.47, AV. = 6.828

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

RI - NW

SOIL STABILIZATION

Watersheds

Benchmark:

H.I. LINES 1-9

ELEVATIONS OF SEDIMENT ACCUMULATED

IN CATCHMENT BASINS

FORM RI-2

Date: 7/30/58

Party: Level Rothacher

Rod Sa 60

Notes *Rothacker*

REMEASUREMENT AFTER PARTIAL CLEANOUT

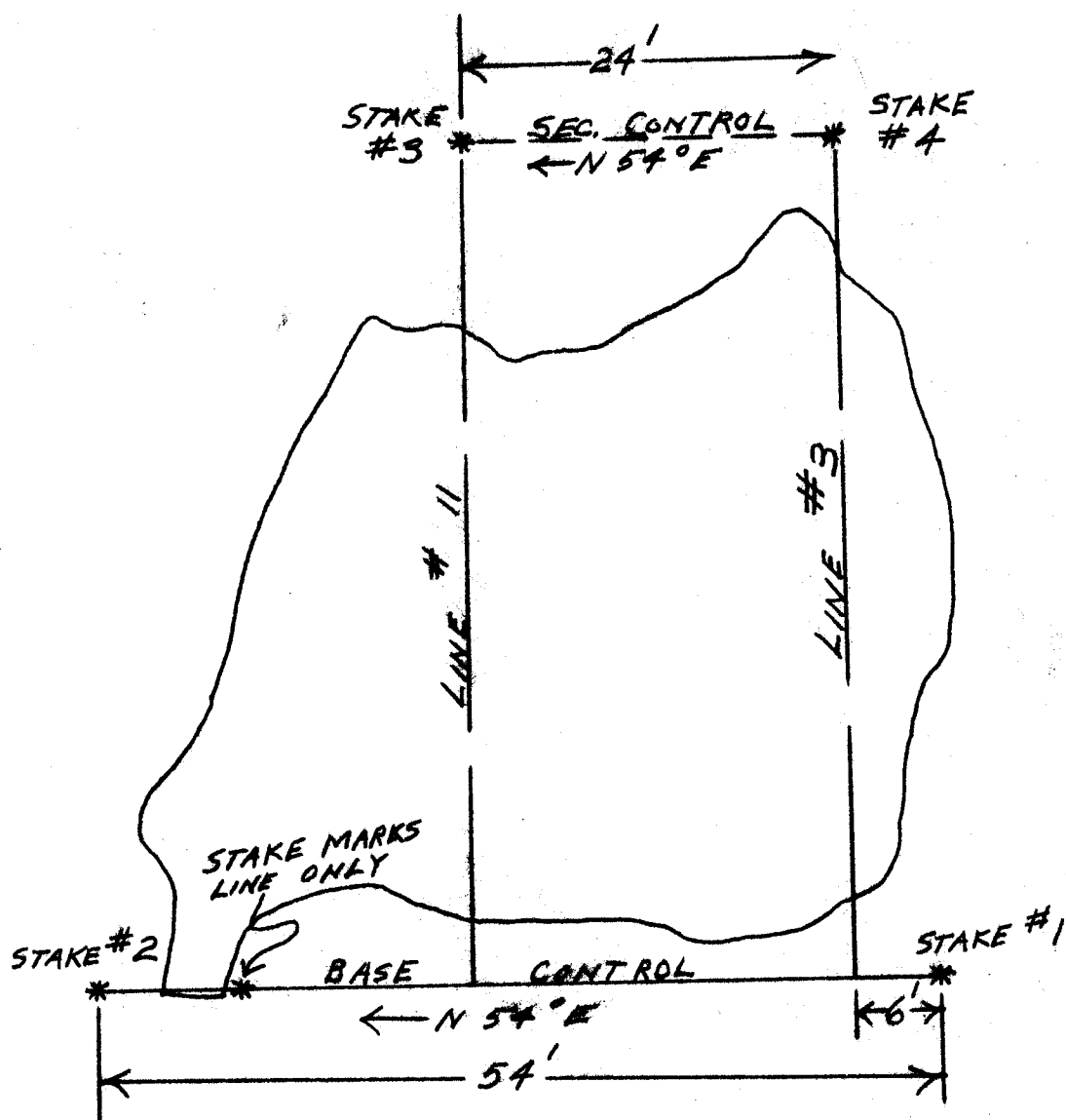
Experimental Area: *H. J. A.*

Elev. SAME AS BEFORE Basin Location: WATERSHED #2

Total	103.94	102.43	96.74	87.13	76.78	68.40	48.86
Average	No POINTS = 224		TOTAL ALL POINTS = 1540.74		Avg = 6.878		

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

SEDIMENT BASIN WATERSHED NO. 2 LINE LOCATION MAP



ALUMINUM TAGS LOCATE LINES 3, 11, & 15
ON BOTH THE PRIMARY AND SECONDARY
CONTROL LINES (LOGS).

8/11/58
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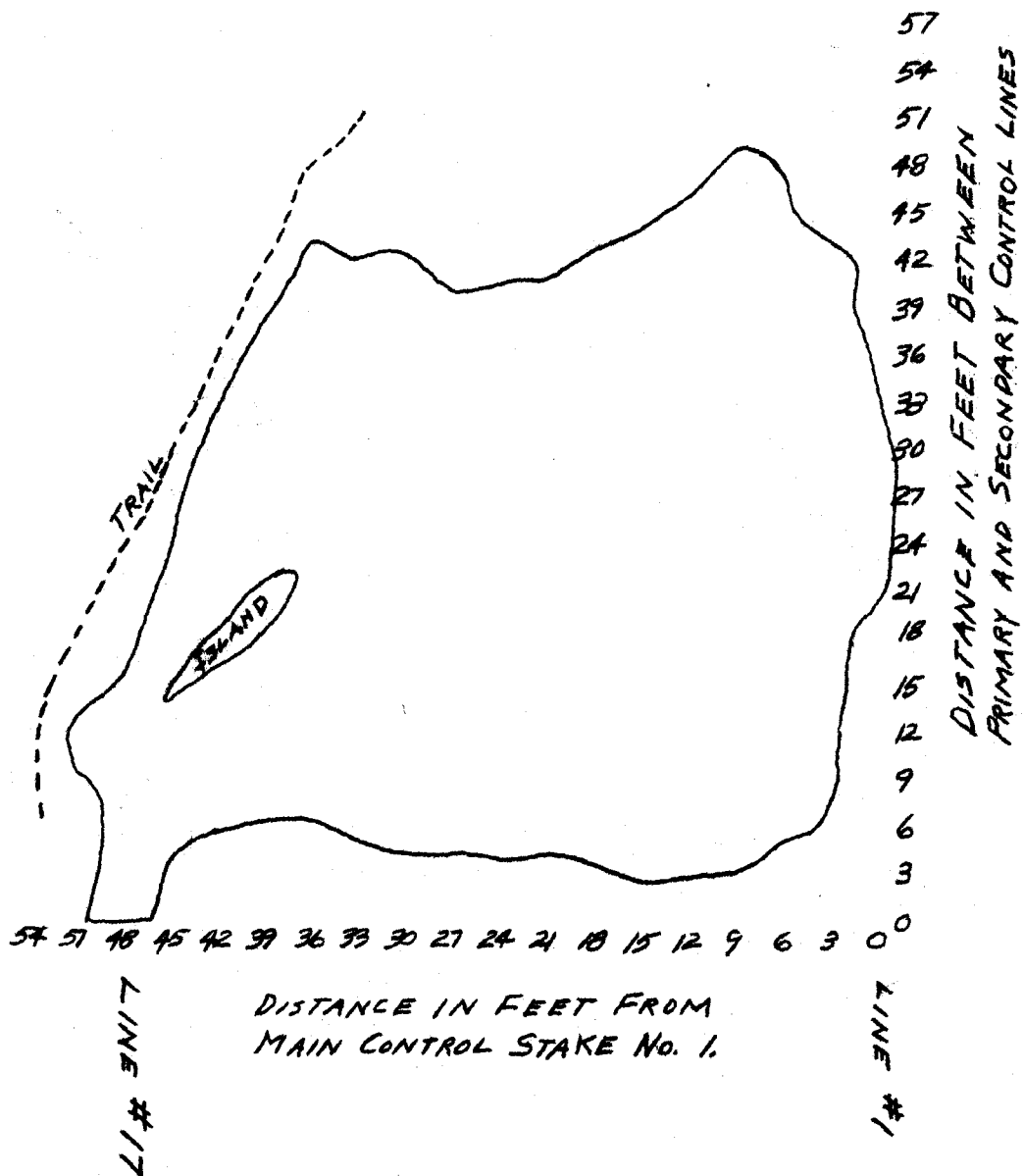
SEDIMENT BASIN WATERSHED No. 2

SURFACE AREA 1958 = 1787 SQ. FT.

" " 1957 = 2025 " "

" " 1956 = 1890 " "

SCALE: 1" = 12'



8/8/58
J. T. SABO

Benchmark:
H.I.
Elev.

Date: 7/31/58
Party: Level Attacher
Rod Scho
Notes Reattacher

Experimental Area: H.J. ANDREWS
Basin Location: W.S. #3

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

Benchmark:
H.I.
Elev.

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

Date: 7/31/58
Party: Level Rathacher
Rod 560
Notes Rathacher

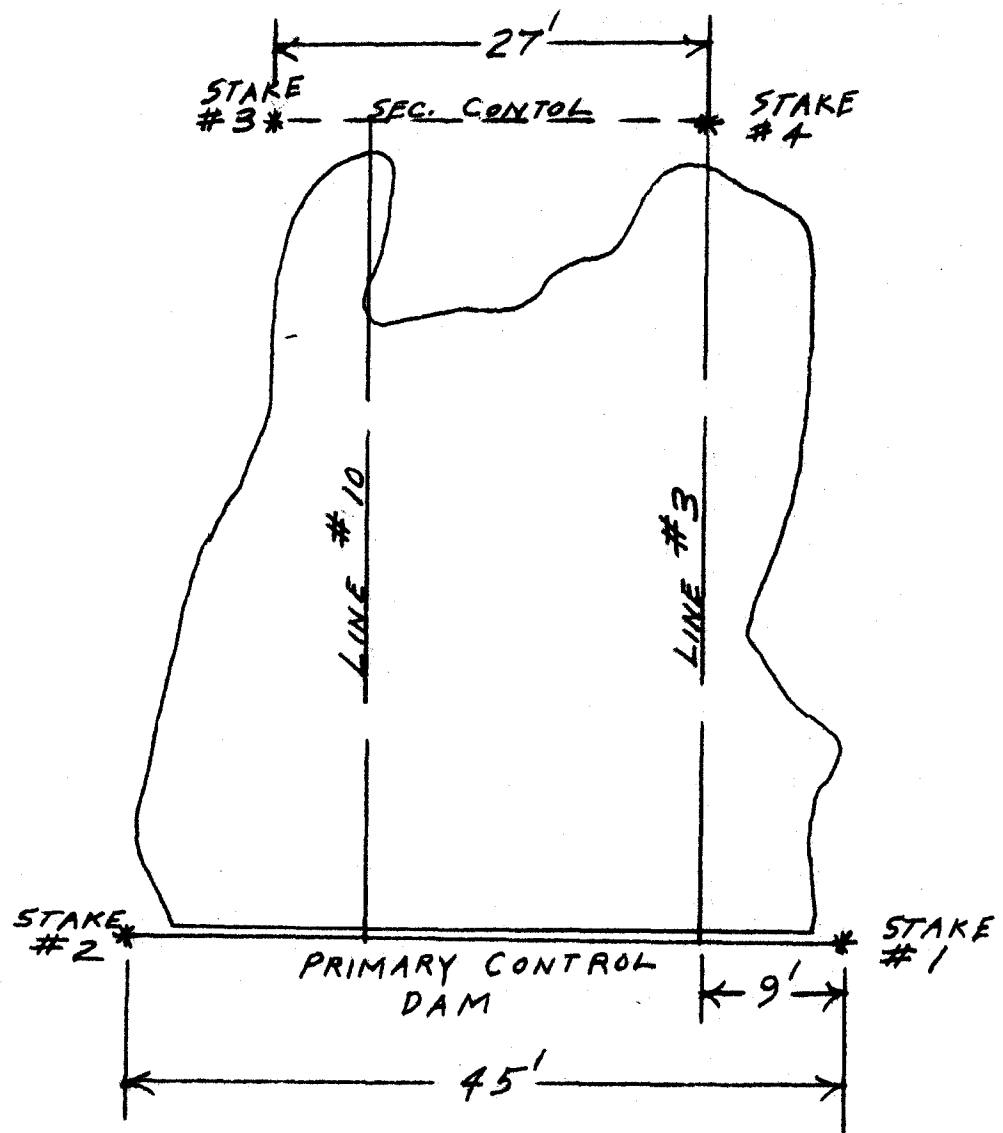
Experimental Area: H. J. ANDREWS
Basin Location: WS #3

[illegible]

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

SEDIMENT BASIN WATERSHED No. 3
LINE LOCATION MAP

ALUMINUM TAGS LOCATE LINES 3 & 10
ON BOTH THE PRIMARY AND SECONDARY
CONTROL LINES (LOGS).



8/11/58
J. T. SABO

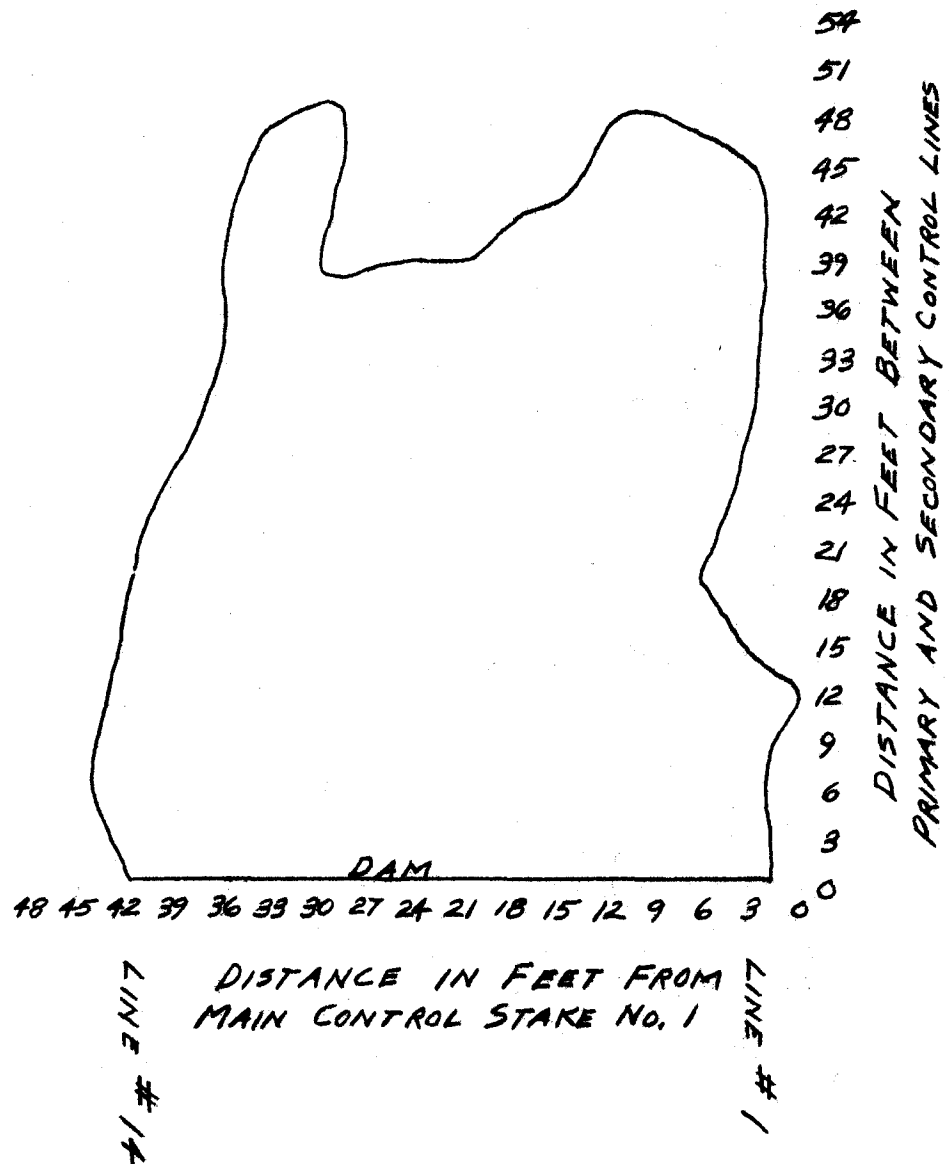
SEDIMENT BASIN WATERSHED No. 3

SURFACE AREA 1958 = 1630 SQ. FT.

" " 1957 = 1639 " "

" " 1956 = 1593 " "

SCALE: 1" = 12'



8/11/58
J. T. SABO