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Nov 24 [illegible]

At Washington Cement Plant
Concrete Wash
HW mark of 1921 marked by
metal tag on upstr door post
of str door of machine shop.
also an edge of bench boards
on upstr side of shop (3 d. post
from upstr door)
1921 HW mark 2.5 ft above floor
at bench. 0.1 ft below top of
bench. Floor not very level.
1921 flood 2.25 above floor at
str door
1909 flood said to have been
4.5 ft above floor. Possibly this
was due to Baker or else it was 3.5
old nail holes 4 ft above floor
L Gardiner may know more about this
Later note 4.5 OK. Great difference
due to this being more a record of the
Baker than the Skagit - Baker mark began in 1917 than 1921
(See pages 19, 22)

1) Levels at Robertsons Born

	BS	HI	FS	BM	BM
	0.59	100.59		100.00	In bump drill at H/W mk's east horse-paths
			1.02	99.57	
	2.15	101.72			
RP			3.87	97.85	at old cedar tree
			1.75	99.97	
TP			1.78	99.94	
	1.30	99.24			
		82.10	13.00	77.24	W.S. opposite upstr. end of dog Kiln for pool
	4.86	82.10			
				78.46	
			3.64	78.46	WS about 200 ft upstr. of abv. riffle about opposite Born

3/ Nov 24 19

Robertsons Born is about ½ mile above Van Horn Ferry.

Found 1921 and 1909 H/W Mark

L Robertson stated 1912 H/W mark was 22" below 1909 = 1.83 below 1909

Marked all three marks by Knife cuts at down st. end cabin on siding board marked with red Keel "H W 1909" "H W 1912" also "1917 per Robertson"

1909 - 0.29 above 1921

1924 = 5.2 above B.M	22.76 + 5.2 = 28.0	100.00	
1909 = 5.49 do	22.76 + 5.5 = 28.3	97.24	
1917 = 3.93 do	22.76 + 3.9 = 26.2	22.76	

Winston Knight about 1917 or 1918 he put 1917 mark 22 inches below 1909 or 1921

1921 = 7.31 above cedar tree RP } on tree
1956 = 14.95 above RP }

1921 = 5.33 above mess hall floor } in
1909 = 5.7 above mess hall floor } mins.

House foundation said to have piers changed between 1909 and 1921

Robertson says crest of 1924 flood about 1 am

Probably see exploration portion of Pop 493

3

Levels 1908 ft above The Dalles

11.97	11.97		0.00	WS
		0.85	11.12	
12.25	23.37			
		0.70	22.67	
11.75	34.25		30.70	
		7.75	7.45	BM

A later 1856 HW on the rock wall at lower end of the Dalles was 9.0 above 1921. As the slope through The Dalles should have been greater in 1856 than 1921, it is possible that 1856 might have been 10 or more than 10 above

4

Nov 24 1922

4ft rock outcropping five ft upstream BM at base of cedar tree headed above BM marked [illegible]

Later note probably 1908 sand

1921 HW
1909 ±0.3 ft above BM
1856 = 7.5 above BM
1921 = 2.0 below BM at Dalles 1200 ft. down stream
Long shot from BM to HW mark on Dalles R side
1921 from other side of the River see page 7

[illegible] 1856 = elev 31.0
1921 = elev 29.1

1856 = 7.2 above 1908
1856 = 9.1 above 1921

1856 was probably high. This is due to the fact that there is very little sand left in the bank from that flood, especially near the crest where the flood only covered the bank for a very short time is possibly only exceed by the waves at times. As the highest found sand was necessarily taken at the crest of the 1856 flood it is no doubt low but how much is not known

[illegible] was today
[illegible]
[illegible]
[illegible]
end of HW [illegible]

5

Levels across river and opposite

5.23	5.23	.000	WS on R side
		5.90	-0.67 WS on
5.20	5.20	0.00	WS on
		9.12	-3.92 RP
4.45	104.45	100.00	Well in
		0.42	104.03
		12.75	91.70
0.63	92.33		
		12.49	79.84
1.27	81.11		
		7.06	74.05 WS today

(Red on WS at the head of The Dalles
12.27 (Red on WS at the mouth of The Dalles
.15 Fall in WS above the Dalles today

The man who lives in the cabin at the top Dalles says the water was low the highest about 1894. A lower crest occurred about here 5 PM

At upper end of The Dalles

Below The Dalles

6

NOV 25 1922

BM marked 456
R side BM but above riffle visible [illegible] at BM on L side is below riffle
R side in same pool as water mark BM on L side

R side opposite BM same place as 605 above WS not more than .1ft below average of all at long pool above BM (Pool above riffle 6.067 ft
Heavy riffle below gage is about 500 ft above The Dalles. There is no riffle in the Dalles at this stage. (Deep water)

WS in the upper end of the Dalles
downstr face of 18" fir at head of The Dalles R side of river 45 ft in front of old cabin 15 ft above the line of sight
[illegible] 1921 high water mark

104.45 Later levels show this mark 105 right on dalles at this date
10580 — this should be 0.45 ft less
7905 —
31.49 —
[illegible] 1921 flood above WS of today
[illegible] at head of The Dalles
31.02

21.42 from 1921 WS on rock tree down to rock (at mouth of The Dalles)

21.42 Taped down from 1921 HW to rock
-3.79 rod on rock
17.63 Line of sight below 1921 HW
9.23 rod on WS at today
26.86 1921 flood above WS today
+.2 at mouth of The Dalles
27.06

R side 5.21 Fall in WS thru dalles

At The Dalles

The man who lives at The Dalles showed the highest point 1921 flood reached. This point was 0.7 ft above sand we found in maple tree. We will use our levels on sand however as they are comparable with other points

On R side of River above The Dalles

	10.15		100.00 Assumed at elev
		7.08	87.07
0.84	9.31		
		12.15	82.76
0.78	83.54		
		11.42	72.12
27.98 Steamer small so ran level back			
11.41	11.41		00.00
		.70	10.71
11.80	22.51	+ 5.9	28.40

10.00
27.12
37.98 1921 above this today

WS today

This indicates .5 error in previous level. This also still looks low

measured up from line of sight

Use 28.4 as 1921 above low water of river at BM 956. Was 1921 flood side of river we must add 0.7 for fall

Nov 25 1922

Later levels show his mark 0.8 over right. We found (Mar 8 that H.W. mk was 5.7 above sand in maple (See bottom page 7) jes 3/9/23

on opposite side of river

167.0 from 1856 flood down to exhibit
10.25 rod on axe below
5.95 1856 flood above line of sight
1.15 1921 flood below line of sight
7.10 1856 above 1921 flood

This is much too low. Daylight did not reach this mark

today. Assuming 0.7 on other side. To make this 28.4 comparable with other river little (see top of page 5) 28.4 + .7 = 29.1

9)

At BM #6 U.S. Army

	1.87	101.97	100.00	RP
TP			13.24	88.63
	0.82	99.45		
			11.20	79.25	WS today

At BM #7 U.S. Army

	0.59	100.59	100.00	
TP			12.96	87.63
	1.11	88.74		
TP			12.61	76.13
	6.71	82.84		
			13.26	69.58	WS today

Below BM #6 about ft See Fesslers

	2.27	112.27	100.00	RP at BM 6
TP			7.35	99.92
	5.22	105.14		
Check on fall in WS today on ax mark TP opposite RP Line of sight 9.35 above WS at mist Road 20.0' on road at Fessenden's Ranch. 19.0 9.35 10.65			.54	104.60	Spud in tree halfway between BM#6 and Joe Fessenden's house. Does not check WS at top dam.
			4.65	100.49
	4.26	104.75		
			3.04	101.71	HW 1921
			26.95	75.80	WS at
	3.44	104.34		101.36	
				72.91	

PP N. Every good check

10)

Nov 25 1922

could not find BM

RP Nail in 2½ ft maple tree about 20 ft from bank and about 50 ft from road 1921 HW 3.10 above RP

Looks a little low compared to rushes marks but water not fallen Sept Nov 25-26 and this pt is near upper end of riffle and has rings to stop thereafter

Nail in hollow burned cedar snag on R bank about 150' from road and 75 ft from River Bank

Maple tree (BM #7) gone but stump may be there yet

Place 1902 about 3' higher than 1922 (8" above this flow could not last winter just showed Surface of flow

Fall in WS from one to Fesslers place 2.65 see lower left hand corner of opposite page

Mark at Fesslers Ranch. Knife cut in cor of bldg

today below line of sight Toped down from tree at Fesslers place

11/

At Skiyou Ferry Nov 26 10 AM
cut bench at WS near downstr
side of 3 ft log, projecting
horizontally into str about 24 ft down
str from ferry. Bench is on edge of
hollow cedar

Nov 26

At Old Lyman Ferry site
Rancher had cut notch in post for
crest of 1921 flood. I also cut a
notch in root of old log on L
bank.

USGS BM found. Can probably
shoot in WS opposite Cochrahams
at same time as I get HWs at
L side of old Lyman Ferry site.

At Skiyou Ferry Dec 12

0.05	100.05	100.00	1921 HW assumed
25.29	74.76		WS Nov 26
26.61	73.44		WS Dec 12

12/

Jan 19

Tapid down

BS	HI
-4.90	95.10

16.78 7832 WS today

100.00
78.32
21.68

Later Note: Found fence post notch WG

Nov 26	3.29	above
Dec 12	26.56	
Jan 19	21.68	

2.33 above
3.65

13

At Hamilton

	12.73	12.73		00.00	W S
TP			4.36	8.37	
	10.68	19.05			
			2.27	16.78	RP

	2.94	96.84		93.90	BM rail
TP			2.90	94.44	
	4.21	98.65			
			3.03	95.62	1917 HW
TP			2.95	93.70	
	3.40	97.10			
TP			4.49	92.61	
	5.87	98.48			
			1.59	96.89	RP described above

14

Nov 27 1922

10 AM

nail in 14" maple tree S.W. edge of old levee

Nov 28

instrument at Hamilton Dept. Elev from USGS Bulletin 670?

55 above 17 = 1917 HW
89 above 17 = 1921 HW

At A J Jacobin Cigar Store. Bldg may have settled since 1921

95.55 − 96.17 = 1907
95.76 − 96.76 = 1921

95.62 − 80.11 = 15.51 = 1917 HW above Stage 11/Nov

96.17 − 80.11 = 16.06 = 1907 HW above Stage 11/Nov

96.76 − 80.11 = 16.35 = 1921 HW above 11/Nov Stage

96.89 − 16.79 = 80.11 Elev of WS Nov 27

Magnus Miller says 1897 flood came to door knob of James Smiths drug store (now drug store raised since then)

Hine across from Hamilton may have 1897 mark

Across and upstr from U.S. Army

	2.61	102.61		100.00	RP
			12.16	90.45	
	0.36	90.81			
			7.29	83.52	WS at 11 AM
Nov 28	10.83	110.43		100.00	RP
			0.95	109.48	~~1927~~ Early Flood (old flood) HW
Jan 20 1923	5.97	105.97		100.00	RP
			20.41	85.56	WS today 1/20/23
			1.80	104.17	1921 HW mk

Nov 27 1922

BM No 12 at 7 or 8' cedar - spike in str face at cedar

Nail in str root of tree

Early Flood (old flood) mode axe mark on cedar — 100.00 + 93.52 = 16.48 + 9.48 = 25.96

Early flood Crest HW above WS at 11/27/22

Probably low 20s after rain subsides 4th

104.17 − 93.52 = 10.65

1921 flood above WS at 11/27/22

17)

	Birds view BM				
	11.62	11.62		00.00	
TP			0.18	11.44	
	12.34	23.78			
TP			0.76	23.32	
	11.95	35.27			
TP			4.11	31.16	
	5.60	36.76			
TP			3.14	33.62	
	7.71	38.33			
			4.77	33.56	USGS BM
Jan 20 1920					
	3.35	145.21		141.86	USGS BM
TP			4.85	140.36	
	0.77	140.83			
TP			12.13	128.70	
	1.50	130.20 ~~130.20~~		117.70 ~~117.70~~	
TP			12.60	~~117.72~~	
	3.00	120.70 ~~120.70~~			USGS BM Jan 20 1920
			10.34	110.36 ~~110.36~~	
			4.62	~~116.98~~ 116.08	Dec 24 1923 H.W. 33.56 3.72

Nov 27 1922

12 Noon HWS about opposite BM

Elev 141.86

141.86
33.56
108.30 Elev of HWS Noon 11/27

2:05 PM Just below old pathouse about 500 ft above BM and at same place as taken in Nov 27

110.36
108.30
2.06 HWS at 2:05 about 1 ft above that of 11/27

See page 26 for levels on opposite side of river giving elev of HW pts

At Concrete

At Concrete (Wolfs residence) 1917 HW mk

2.39	102.39		100.00	
		0.28	102.11	
2.08	104.19			
		7.55	96.64	
4.00	100.64			
		12.33	88.31	
3.85	92.16			
		5.55	86.61	
0.99	87.60			
		7.50	80.10	
4.14	84.24			
		11.60	72.64	WS at Skagit about 249 from

Across from Concrete Dec 20

2.70	12.70		10.00	1909 mk
		3.97	8.73	1921 HW

Nov 27 1922

Lady at Wolfs Residence says 1921 flood highest about 11 A.M. [illegible]

1917 highest about 7 P.M. (Probably was not [illegible])

Mrs Wolf has 1917 and 1921 high water marks

1921 HW 1.52 above 1917

See page 22

100.00	True elev (USGS) 1921 mk	184.55	184.55
72.64		1.52	25.88
27.36		183.03	155.67 elev at mk Nov 27, 1922
1.52		mi mk	
25.84	1921 HW above WS today		

about opposite Wolfs residence

East of Washington Cement Plant in still water at McDaniels residence

10.00
8.73
1.27 1909 above 1921. This is above the Baker River. The Dalles is the control for the Columbia. The record flooding is for all tributaries down to the Dalles.

See also pages 0 and 22. and 30

(20)

On John Larsons Ranch

0.45	100.45		100.00	B.S
		0.66	99.79	1921 flood
		0.82	99.63	1897 flood
		0.96	99.49	1894 flood
		0.73	100.02	1909 flood
		0.82	99.63	
2.45	102.08			
		12.77	89.31	
1.59	90.90			
		13.05	77.85	W.S. 1.45

99.79
77.85
21.94 1921 HW above me today

99.63
77.85
21.78 1897 HW do do do

99.49
77.85
21.64 1894 HW do do do

100.02
77.85
22.17 1909 HW do do do

See page 118 Bottom

(21)

Nov. 27 1922

Larsen says 1921 flood highest from 11:30 to 12 o'clock midnight
1896 & 1897 between 10 & 11 PM

From axe marks made by John Larsen. The difference between low and high water seems too little. Will have to check against other marks. Saw mud on top of stump that he had marks on. He said it was from planing. Did not look reasonable though

1894 Spring flood as indicated by him was 6.7 ft below 1909 flood

Jan 25 Examined stump again. Some mud in spots on top of stump but Larsen insists water never got over stump. He says stump was 1 ft higher in 1894 and that some time after 1896 he cut off 1 ft of stump. Thin mud on top of the stump maybe wind blown silt

22

Levels at Concrete

BS	HI	FS	Elev	
.40	230.91		230.51	BM 1 USC
		5.34	225.57	
1.31	216.94			
		5.30	211.64	
7.45	214.79		207.34	
		0.77	214.02	
2.96	217.28			
		12.82	204.46	
1.92	216.38			
		12.73	203.65	
0.91	194.56			
		12.33	182.23	
4.41	186.63			
		2.18	184.55	

Dec 21 1922

10.5	20.5		10.00	1897 flood crest at the Dalles bridge
		11.2 ± 4.6 low 15.8	4.7	1909 highest
4.7	9.4			1921 highest about 1 cm
		3.0	6.4	1921 HW

TP

These are relative figures only [illegible] and we brought cement plant [illegible] are a few inches [illegible]

23

Nov 28

See pages 18 and 30 also

Measured down 11.24' from first point on telephone pole to rail below. About 2 1/2" below crack

Ground surface 49.12 below line of sight at this point. Now 0.0 of zero flow for old channel Call this pt Elev 210.91

1921 flood mark at Wells Residence

(Mr C Daniels near Washington Cement plant can give 1909 flood)

Leonard Everett says 1897 flood about 9" lower than 1909. Says that log jam in Dalles raised water 10 ft in 2 hrs. He says 1897 about highest midnight 1909 highest a little after midnight possibly 12:30 1921 highest about 1 cm

Considerable distance and slope between 1897 and 1921 marks at [illegible]

1897	10.0
1903	8.4
1921	6.4

Found line of 1909 HW 2.0' above 1921 at Washington cement plant machine shop today

At Presentines Ferry

BS	HI	F.S.	Elev	
4.12	104.12		100.00	1897
		6.89	97.23	1921
1.14	98.37			
		12.33	86.04	
0.70	86.74			
		10.76	75.98	WS Today

1897 HW 2.5' above 1921. This agrees pretty closely with 3.4' at Concrete shown on bottom of page 23

Presentine says Finney Creek had an enormous flood in 1897 and changed its course

Nov 28 1922

HW mark (according to Charlie Presentine) water stood about 2' deep around L Ferry pole

HW (approx) Presentine had no exact mark

$\frac{100.00}{75.98}$ / 24.02 1897 HW above WS today

$\frac{97.23}{75.98}$ / 21.25 1921 HW above WS today

Presentine says big fall of snow one winter, he thinks either 1878 or 80 He says Bell made a large raft that winter to get on if river got very high. (This was probably winter of 78-79) Both see, Presentine near Grosmont

Later Note. Fall and winter of 1879-1880 correct according to other informatim. Freeman Cory very well informed man says 8 ft of snow in Ruby Creek basin. Placer gold mined winter of 79-80. Flood lasted all summer in 1880. Disasterous flood averted due to cool spring and summer

26

At Savage Ranch
(directly across from old Birdsview School)
Jan 20 1923

16.62	116.62		100.00	W.S. ft
		2.92	113.70	1917 Apprx (by rose bush)
		2.24	114.38	1921 Flood (under side of top step)
		1.57	115.05	1909 Flood (of porch next to wall)

At Komerick Ranch

3.37	103.34		100.00	1897 ...t floor in granary
			99.22	
		4.12	~~99.22~~	1921 ...ures probably correct within 2 or 3
TP.		1.49	101.85	
	0.59	102.44		
TP.		11.26	91.18	
	4.85	96.03		
		16.53	79.50	WS ...day at 4:30 PM

At Savage Ranch

Feb 2

11.91	111.91		100.00	W.S.
TP.		1.55	110.36	
1.004	120.40			By Robert Knapp
		3.60	116.80	1909
		4.11	116.29	1921

27

1909 .4' above 1921

See page 17 (bottom) for levels on opposite side of river

1897 about 0.8' above 1921

Komerick Ranch abt 1 mile below Savage Ranch

Comparison of levels of the two places indicate 1897 about the same as 1909

At Concrete Dec 22 nd

	5,90	236.41		230,51	USGS Datum
TP			11:43 rod 11:01 rod 22,47 Hi =	213,94	
	1.78	215,72			
TP			8,22	207,50	cut of sidewalk
	8,85	216,35			
TP			2.78	213,57	
	4.55	218,12			
TP			11.82	206,30	
	1.87	208,17			
TP			12,43	195,74	
	0.59	196,33			
TP			10,97	185,36	
	6,80	192,16			
			7,63	184,53	1921 Hw
TP			10.82	181.34	
	3.91	185,25			
TP			1,31	183,94	
	8,10	192,04			
TP			12,90	179,14	
	3.71	182,85			
TP			2,70	180,15	
	2,06	182,21			
TP			4,13	178,08	
	2,24	180,32			
TP			6,87	173,45	
	3,50	176,95			

See also pages 109 + 22

at Wolfs residence

Contd on next page

		Contd from last page		
		176.95		
TP			3.28	173.67
	3.45	177.12		
TP			0.14	176.98
	10.50	187.48		
TP			1.16	186.32
	11.96	198.28		
TP			8.08	190.20
	11.27	201.47		
TP			11.13	190.34
	0.54	190.88		
			2.66	188.22 BM
TP			13.23	177.65
	2.11	179.76		
			8.74	171.02

177.65 171.02
150.57 20.45
150.57
Elev of RP to 2nd gage = 27.08 diff in gages

Top of 60P bent spike in blaze on maple L side of road going to old ferry about 100 ft from end of ferry road 60 or 70 ft downstream from gage.

RP 60P spike driven vertically in top of 5" fir stump 6' shore ward from 2nd gage tree

Top of lower gage board 20.45

BM is marked 187.24' This was from unchecked level notes. True figure is 188.22

At The Dalles

	600	23.75		23.75	Line of sight on upper section Upper Dalles gage read 2375 for graduation marks on inclined gage
			0.75	23.00	placing
			1.75	22.00	do
			2.75	21.00	do
			3.75	20.00	do
			4.75	19.00	do
			5.75	18.00	do
			6.75	17.00	do
			7.74	16.00	
			8.74	15.00	
			9.74	14.00	
			10.74	13.00	
			11.74	12.00	
			12.74	11.00	
TP			12.56	11.19	TP over upper Dalles gage
	9.625	15.81			
			9.05	6.76	WS at Dalles gage at RP left by Knapp - WS 10' downstr from RP Staff gage about 50' upstr from RP water flows upstr past the Dalles
			9.15	6.66	WS at upper Dalles gage from pt below RP
			9.29	6.52	WS below
TP			1.14	14.67	TP over Lower Dalles gage
	3.30	17.97			
	1795 used in setting gage and other final sights		6.74	11.23	TP over upper Dalles gage
			0.00	17.95	Vert staff lower Dalles gage
			11.55	WS 11.40 6.90	
BM			0.13	17.82	Highest Point on large piece of bed rock in water in front of lower Dalles gage

shows line of collimation not properly adjusted and read 0.2 below on the long shots. correct figures are as shown here and were allowed for in setting lower gage

HI 15.51
FS 1.15
Elev 14.65
BS 7.75
HI 14.45
FS 6.75
Elev 11.70

Dec 23 19[illegible]

36

Soundings between Sedro Woolley highway bridge and N.P. Ry bridge (at 3d jetty downstream)

Dist.	by rope	graduations	de		
	25	0	545	520	7.6
	30	4.8	566	540	5.3
51	50	2.8	586	560	6.7
72	70	1.7	592	570	7.8
93½	90	1.6	605½	580	7.9
113½	110	1.4	595	590	6.5
130	130	1.5	626	600	4.5
157	150	2.4	628	602	0
178½	170	2.5			
199½	190	2.5			
221	210	2.5			
242	230	2.6			
263	250	3.0			
271	260				
284	270	3.5			
297	280				
307	290	4.3			
315½	300				
327½	310	5.0			
339	320	5.3			
359	340	5.9			
379½	360	5.9			
400	380	5.3			
421	400	5.0			
441½	420	4.8			
462	440	4.2			
483	460	4.5			
504	480	4.3			
524	501	4.4			

37

Rope at rope on Stream end of Jetty

Chain gage 4.72 6 pins

25

260 - 280 OK Sedro Woolley

Checking tape to rope

Rope graduations	Tape	
280 - 300	= 21½	steel tape
280 - 320	= 43	do
280 - 360	= 89½	do
280 - 400	= 126	do
280 - 420	= 146½	do
280 - 440	= 167	do
280 - 460	= 188	do
280 - 480	= 209	do

(off ye length etc.)

280	- 500	229½	do
280	- 520	250	do
280	- 540	271	do
280	- 560	291	do
280	- 580	310½	do

Rope graduations	Tape		
260	- 280	21	steel tape
260	- 230	32	do
260	- 210	53	do
260	- 180	74½	do
260	- 170	95½	do
260	- 150	117	do
260	- 130	137	do
260	- 110	159½	do
260	- 90	180½	do

Rope graduations Tape

260-70 302

260-50 223

260-30 244

38

Sedro Woolley Readings

1921	Time	gh	
Nov 28	6:15 A	7.32	
29	8:45	4.16	
Dec 10	2 PM	3.36	
11	12:55 AM	3.35	
16	10:15 A	3.20	
16	1:15 P	3.12	
27	2:55 P	12.30	
Jan 2	6.29	12.40	
Jan 23	5.27	4.45 P	
Jan 9	11:24 A	11.64	
	12:40 P	11.55	
Dec 23	6:05 P	9.00	
24	8:25 P	11.05	
24	8:05 P	14.85	
27	2:20 P	12.14	
Jan 9	11:15 P	10.98	
	2:35 P	10.80	
11	11:10 A	11.02	observer
11	1:10 P	10.84	NP staff 4.85
		10.67	
12	8 A	9.38	
12	12:30 P	9.19	
12	3:05 P	9.12	
12	5:30 P	7.50	
12	5:45	6.64	

39

Some ice effect estimated to be 1.0 ft more than 1.

Gale says gage read 3.06 at 8 A.M. Lots of shore ice, very little floating ice and no anchor ice. Est .2 ice effect today

Mar 9 1920

measured chain 42.99
32.87
22.87
12.86

gh 5.15 A 10.30 A

Ident Sup 1896 + 1897 chan b
Sue in 1917 + 1921

Found 1.00 1.30 on 1.35 Sue 1917

Highway bridge gage 10.95 at 2:20 P

Mar 9 1920

BS	HI	FS	Elev	
2.53	10257		100.00	19.17 on string at Hyde House
		7.75	94.78	1894 HW appx.

40)

G N Bridge readings

Dec	Time	gh
24	7:50A	9.10

41)

42)

Mt Vernon Readings

Dec 1917	Time	gh
20	2:00 P	6.6
20	10:10 A	7.1
24	7:30 A	9.5
24	5:40 P	14.2
24	7:10 P	14.9
24	9:00	15.5
24	9:35	15.65
24	11:20 P	15.95
25	7:10 A	16.6
25	5:20 P	15.15
26	7:15 A	11.25 ?
27	7 P	10.8
Jan 9	6:15 P	11.7
10	7:50 A	17.6

43)

455 Knisely

Copied from pocket receipt book very dim

49

Readings at gage # 1 (above The Dalles near old ferry site)

	Dec 24	High	Low
Coplant	1:30 P	13.10	13.01
	1:45	13.10	13.01
	2:00	13.12	13.03
	2:15	13.10	13.00
	2:30	13.11	13.01
	2:45	13.05	12.99
	3:00	13.05	12.98
	3:15	13.03	12.95
	3:30	13.00	12.90
	3:45	13.01	12.92
	4:00	13.00	12.90
	4:15	13.00	12.89
	4:30	12.95	12.85
	4:45	12.92	12.89
	5:00	12.90	12.90
	5:15	12.91	12.82
	5:30	12.90	12.89
	6:45	12.87	12.81
	6:00	12.85	12.78
	6:15	12.82	12.75
	6:30	12.81	12.75
	6:45	12.80	12.73
	7:00	12.80	12.70
H Cooper	7:15	[illegible]	[illegible]
	7:30	12.9	127

49

Time	High	Low	(probably means 12.705)
Dec 24 7:45 P	12.705	12.7	
8	12.705	12.7	
8:15	12.705	12.7	
8:30	"	"	
8:45	12.605	12.605	← probably means 12.65
9	"	"	
9:15	"	"	
9:30	12.6	12.6	
9:45	"	"	
10:00	"	"	
10:15	12.65		
10:30	12.65		
10:45	12.6		
11:00	"		
11:15	12.55		
11:30	12.5		
11:45	"		
Dec 25 12:00	"		
12:15	12.45		
12:30	12.4		
12:45	12.35		
1:00	12.3		
1:15	"		
1:30	"		
1:45	12.25		
2:00	12.2		

	Time	High	Low			
Dec 25	2:15	12:15				
	2:30	"				
	2:45	12.0				
	3:00	11.85				
	3:15	11.8				
	3:30	11.65				
	3:45	"				
	4:00	11.55				
	4:15	11.5				
	4:30	11.4				
	4:45	11.3				
	5:00	11.0				
	5:15	"				
	5:30	10.85				
	5:45	10.8				
	6:00	10.7				
	6:15	10.6				
	6:30	10.55				
	6:45	10.5				
	7:00	10.4				
	7:15	10.35				
Light	7:30	10.2				
	7:45	10.05	10.0			
	8:00	9.98	9.92			
	8:15	9.9	9.85	9:45	9.71	9.65
	8:30	9.81	9.73	9:00	9.63	9.55

52)

Soundings about 75' below
Upper end of The Dalles
Jan 24 1923

Sta	W Elev ?		
18	0		
30	5.4	Rock	
40	7.7	do	
45	9.0		
50	10.0 and 3.0	do	
60	30.8	?	
70	31.6	Sand	
80	31.6	do	+23.5 ft to get depth of water and flow
90	31.4	do	
100	31.0	do	
105	29.8	Rock	Use 30.0 ft to get
110	24.5	Rock	depths of water and flow
115	28.4	Sand	See gage for Jan 24 1923 opposite page, also level top of page 50
120	28.0	do	
130	25.3	do	
140	24.2	do	
150	24.2	do	
160	22.8	do	
170	21.8	do	
180	21.7	do	247 / 18 / 229 total width
190	21.7	do	
200	21.6	do	
210	21.4	do	
220	22.9	do	
230	22.0	do	
235	21.7	do	
240	8.0	Rock	
247	W Elev 0	Rock	

53)

Later note
Taped distance on 18 Sta and found it to be 1355 ft. Am not sure whether the soundings were made at an angle or whether in sighting in for taping a mistake was made.

Gage heights

Upper end of Dalles (nail in tree) 2185 below RP 1
Lower end of Dalles 31.98 below RP 1 (15 to flowline)
NW 25 W.S. 25.95 ft below RP 1
26.10 ft below RP nail in tree

Dec 23 4.66 at gage

Jan 23
Jan 24 4.1
Jan 25 3.91
Jan 26 3.76
27 3.69
28 3.60
29 3.36
30 3.16 9:10 AM
31 3.19 2:30 P

54

Jan 25 At The Dalles

Shots on 1921 HW

	1921 HW	R	side Dalles	
12.20	35.20		23.00	Lower Dalles gage
		2.7	32.5	
		1.9	33.3	
		2.0	33.2	
		1.5	33.7	
		1.7	33.5	

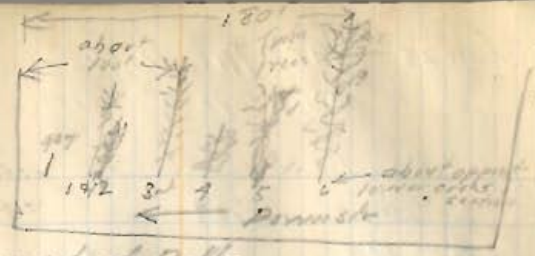
Shot on HW mk at pencil same location shows it to be 33.56 (see sm line from bottom in 4th page) else 33.56

Jan 25 Lower Dalles Gage

9.41	31.41		22.00	Lower Dalles gage
		1.9	30.0	Sand in mess on
12.0	37.8		25.00	Lower Dalles
above line of sight →		+.7	37.7	Highest ground
12.5 rod 7.8 pitching 203 TP	24.21		3.91	WS Pt up on cliff
		0.35	23.86	
11.55	35.41			
		1.85	33.56	1921 HW
0.46	18.28		17.82	
		14.37	3.91	W S Top
		0.00	18.28	Road

At Lower Dalles Gage

55



P/12

two ties, at lower end of Dalles

from lower end of Dalles (not very good shot)

gage

tree

tallest for 2 at small wild crabapple, opposite end of sanding cable

of 3 trees

at lower cross section

Note: found sand in tree

g.h. 30.1' (HW mark of 1921). This is about 0.2' higher than Knight found on same tree earlier levels

gage

stumps about 400' inshore from Lower Dalles gage (1921 HW)

gage

Surface blow Dalles on ground over flowed by elev 4 feet

today Jan 25 1923 7.8 up vert then 15 ft horizontal, then 12' vert

22 above top of cliff

then 10 vert to HW mk

At Lower Cross Sec Jan 25 R side shr

at tree #6 shot from right cliff — notes at top of page

next at on large bed rock in str in front of

on Lower Dalles gage

1921 HW Jan 25 0.65' int

13' vert

WS 3.2 vert 7.8 vert 15' 11'

33.56 3.31 29.63 Elev of 1921 HW above WS of today on R side at str at lower cross section

56/ Jan 25 At The Dalles
Soundings at lower cross section

W E in ft		
2	0	Rock
10	8.3	do
20	12.2	do
30	26.0	do
40	31.2	Sand
50	29.7	do
60	28.1	do
70	27.2	do
80	25.6	do
90	24.1	do
100	22.0	do
110	19.8	do
120	18.0	rock
130	15.4	sand
140	13.8	do
150	12.2	mud
160	10.6	Sand & mud
170	9.5	do
180	9.0	do
190	8.4	do
200	8.9	do
210	8.4	rock
218	7.2	do
220	0	
W E in ft		

220
- 2
218

57/

58)

At upper end of The Dalles

Jan 25 1923

	11.94	11.94		0.00	WS today
			1.27	10.67	
	11.64	22.31			
			1.58	20.73	
	12.21	32.94			
			8.09	24.85	R.P.
			2.82	30.12	HW 1921
			2.71	30.23	HW 1921
			11.00	21.94	26.00
Jan 25	2.19	14.19		12.00	on slope upper
			10.21	3.98	WS today upper
	4.25	104.25		100.00	R P
Jan 25			+1.13	106.38	1921 HW
			+0.1	104.35	1921

Near Lower end of Dalles

Jan 25	9.25	9.25		0.00	1921
			0.2	9.05	HW mk
Jan 24	2.5	103.50		100.00	Sold
			4.6	97.9	old HW
			4.9	97.6	do
TP			12.07	90.43	
	3.75	94.18			
			5.1	89.08	1921
				94.18	3939

57)

about 150 ft below gage at upper end of The Dalles

26.00	3023	
21.94	4.06	
gh 4.06	3429	

marked 100.00 in levels page 5

about as pointed out by man in cabin at Dalles

previously made (Nov 25 page 5) at mph

earliest gage

gage at upper end of Dalles

Dalles gage

10" ft upper end of Dalles

on R side of Dalles about even with lower end of cabin

HW on L side of Dalles about 35' below pt

HW

pt Indian tradition [illegible] about 20 horses at this place

flood sand bar about 30' upstream from cabin at Dalles [illegible] flood. either 1894 or pre tradition

sand bar, same flood [illegible] this mk found in valley. either 1894 or 1861

(Confirmed Oct 1923)

HW mk in old burned maple stump (WS 97.9)

(HO Styles says small branches dipped to something [illegible] of cascades. Piled in stump may be remains of [illegible])

HW 55 ft downstr from stump (at maple tree mark)

00 upper Dalles gage

Skate on sand bar at Dalles in front of Dalles Cabin. Start upper end and go 30 ft [illegible]

69

Jan 26 Upper Dalles section

R side

	12.25	12.25	0.00	WS 7.00
T.P.			7.36	17.89
			5.3	6.95 53.6 vert ft from this point before starting to note a slope above
	12.52	20.47		
			7.85	15.56 29' from
			2.26	18.15 38' from
T.P.			1.23	19.18
	10.70	29.88		
			6.27	23.61 43' from
			3.45	26.43 56'
			0.95	29.43 85
T.P.			0.09	29.77
	12.18	41.97		
			10.52	31.45 97'
			3.00	38.97 110'
			11.68	30.29 1921

L side upper section

Jan 26

Slope 12.5 up vert 14' horizontal

L side lower section Jan 26

12.4 rod 1.3 bottle 13.7	13.7	13.7	0.00	WS today
			4.00	9.7 7ft ft from WS
			0.00	13.7 17.4 upper
Jan 26	0.00	11.91		11.91 on lower Dalles gage water falling at lower
			8.15	3.76
Jan 26	0.00	0.00		0.00 1921 WS
			3.37	0.39 1921 HW

61

slope above this 12.5 vert. and 19 horizontal

x reading on lower Dalles gage could not see for obstructions

c

4.92 at lower end of Dalles on L side at the opposite gage

on afternoon R side Dalles lower end about 40 inches from lower Dalles gage

nearly

21 / 27

shore 9 / 99

shore 5 / 49

do 7 / 53

do 22 / 85 close to 1921 HW at this point

12 / 46

slope continues above this point

HW mark on right

Dalles Section

Measuring length of rope for distances in Dalles

found 1st hundred graduated only 95' due to shrinkage in rope

1st power cross section 150' by tape above lower gage

Upper cross section 561 ft above lower gage

Upper end of Dalles 685 ft above lower gage and lower end of Dalles

Rocks for old floods, station taken about upper upper end of The Dalles

Rope probably about right for the two Dalles sections, as it was graduated while dry but not stretched while it was used wet and stretched.

Corrections to rope based on checks of length when stretched See pages 37 and 69

(Rope not stretched when checked)

64

Levels from Dalles to lower Slope section and return

Sta	BS	HI	FS	Elev	
RP (on page 63)	0.82	179.57		178.75	
			9.06	170.51	
Dist below here Dalles gage = 300'	12.28	182.79			
"600' TP			1.78	181.01	
	3.75	184.76			
"900 TP			10.98	173.78	
"94	1.90	175.38			
930 TP			12.96	162.42	
	0.61	163.03			
"865'			measured + 7.7	170.10	1921 HW at cedar tree
TP			12.26	150.77	
	1.27	152.04			
RP #1 + TP			6.44	145.60	
			7.92	147.12	W.S.
	4.81	150.93			
TP			2.42	147.97	
	5.49	153.46			
TP			6.05	147.43	
	7.95	151.98			
RP #2			1.90	149.98	
TP			4.53	147.35	
	0.55	147.90	0		
TP			4.26	143.64	
	8.65	152.29			
			9.94	142.35	W.S. at
TP			0.55	151.74	

Aug 30 1922

These levels are not tied in to levels on opposite page

14.25 read on gage
11.09 read on WS
3.16 fall in 94 hr. 15 m.

WS Sep 30, .2' below WS A

TP Sep 29, as shown by fall below RP set on 29th

Going down bank

Note
Levels at cross sections above and below indicate that profile is curved

at cedar tree

(see also page 75)
Pencil cross on rock in edge of slough 20ft above big rock 100ft below cedar
in slough about 900ft below lower Dalles gage
WS probably not more than .1 or .2 lower than at gage

Nail in downstream of Cedar tree root. Tree at sta 2700 below lower Dalles Gage

lower cross section 2 PM 30

	BS	HI	FS	Elev.	
	11.27	163.01		151.74	
RP #3			0.43	162.58	
TP			11.26	151.75	
	0.37	152.12			
TP			7.20	144.92	
	7.17	152.09			
TP			6.25	145.84	
	4.77	150.61			
RP #2			0.61	150.00	
TP			2.37	148.24	
	2.89	151.12			
TP			5.11	146.01	
	3.80	149.81			
RP #1			4.16	145.65	
TP			2.21	147.60	
	11.32	158.92			
TP			0.15	158.77	
			0.00	158.92	17.81
	12.33	171.18			
TP			0.44	170.66	
	9.28	179.94			
			3.88	176.06	
			1.05	178.89	

Ther. meter made 5/12/32 JGS

Nail set yesterday (Jan 29 1923). at lower cross section Rside.

4655 ft
618 ft
4037 ft

Section adjustment
Section adjustment July 27 00
use 4655 ft as distance between mid-dates former section

19 stations down stream from RP#2
19 stations down stream from RP#2
55 ft from cross section

4655 ft = Total distance Upper Dalles gage to lower cross section at slope section

Nail in downstr. root of cedar. See previous page. (Same RP)

Pencil cross on rock same as RP #1 and TP previous page (see also page 75)

on Lower Dalles Gage

158.92
17.88
141.04 datum of lower Dalles gage

Highest ground surface about 100' above Dalles in flood plain of old flood. Behind root cliff at The Dalles

R.P. 178.75 (see top of page 64)

176.06
141.04
35.02

67

Soundings at upper end of slope
Sections below the Dalles
Jan 31 1923

Cumulative on R	on rope	soundings	inst FS		
			86		+.2
21	20		10.6	in slough	-2.8 -1.8
42	40		9.45	do	-.7
63½	60		9.15	do	-.4
84½	80		7.9		+0.9
105½	100		7.55		+1.2
126½	120		7.7		+1.1
147	140		8.3		+.5
169	160	0	9.77	W.E.	
190	180	8			
211	200	1.2			
232½	220	1.2			
253½	240	2.4			
274½	260	3.3			
295½	280	4.2			
317	300	4.7			
338	320	5.6			
358½	340	6.0			
379	360	6.5			
400	380	7.0			
420½	400	7.6			
441	420	7.6			
461½	440	7.4			
482	460	7.0	544	520	1.8
503	480	6.7	547	523	0
523½	500	6.0	W.E. on L		
542½	510	5.8			

Level

BS	HI	FS	Elev	(P.M.)
12.11	12.11		000	W.S. 0 of
TP				more than
12.92	25.03	1.30	10.73	on lower
			0.39	gage 2:30
			27.6	
5.40	28.16			
		0.80	27.36	1921 H.W. mark on A.C. 2 unit of

Note
Above W.S. on L side the Bank is a rock cliff 1:1 slope as determined by level and measurements 12ft horizontal to 12 ft vertical

Note
Found where big piece had been torn out of cedar by broken top of enormous tree hitting it.
Tree 7 ft diam. 64ft high
Bottom of scar 26ft above W.S. today.
Back on upper side of tree, healed with in 1ft of top of scar is abt 31.8 ft W.S. today. Flood of 1894 must have been 5ft higher than this, while at Celilo 1894 was only 3ft higher than 1921

67

Checked graduations on rope as follows: Marking 30 ft 160, 84½ on steel tape = 80 on rope
0 - 320 portion of rope stayed dry before stretching
41.2 on steel tape = 40 on rope. This will apply from graduation 320 on
Checks on rope graduation were made while rope was still stretched across river. It is not certain that these checks are applicable to the lower cross section also but probably will have to be assumed so

R side

Sta	BS	HI	FS	Elev	
Same		9.77	8.77	0.00	W.S. at cross section
TP			0.84	7.93	
		9.54	17.47		
TP			0.19	17.28	
		12.53	29.81		
			3.0	26.8	1921 drift
			1.6	28.2	1921 H.W. mk about on A.C. use this
on rope					
-19			11.7	+18.1	
-32			3.25	+26.55	
			1.9	27.9	1921 H.W. sand in stamp 30 upper stem Cross section
				7.93	
		3.94	11.87		
			11.72	0.15	W.S. at lower Dalles gage 2:30 P.M.
			000	11.87	14.76 on gage

Upper section 618 ft below lower Dalles
Gage

14.76
11.87
2.89
4 15.84

Work to be done yet

Check probable error bottom of page 10

Have levels run from Mathes to Hill station, tie in mrs in Cedar Slough and river and highway staff. Type from N end of N & S road (at garage) to Hill with graduations with an error handle.

take TP distances - possibly tie in mrs by weighted tape from TPs on bridge

Find out what BM at Hill Bridge really is - write to Wash

Write to CH at Seattle for their report

Reconnaissance for station at The Dalles

Requirements for water

Get cooperation to continue sub-monthly gage

Talk over Skagit Bay and permit encroachment

Find extreme height of sand at Dalles to tell just what above extremes

Get elev of HW grade across Skagit valley at Mt Vernon Bridge

Get HW profile of Skagit valley at Mt Vernon Bridge

See Thorn about storage

Get more than 1 HW mark

Check above gage lengths

Get Conservancy act & report & forgot

Get Land Sec Irrigation Dist

See Puget Sound Dry Dock

See Portland Gold

See Corps Engineers about

Get rod float above Scatter survey control if it possible to do can we do anything to change from velocity to velocity

Locally steep

Mark at upper slope cross section is about 1 foot higher than at lower end of Dalles both check this. Probably is velocity changing to velocity head

Run levels between RP 2 & 3 on and below Dalles to Low Dalles gage & check run to RP 2 at Arlington

Run levels between Dalles Hood and Celilo Falls

Find out elev of western Dalles gage relation to TP # 2 and at pavement point TP # 2. Set elev at end of pavement run levels at Skagit and Skagit to Hardy

Jan 3

Get cross section Sedro Woolley above highway bridge about 500 ft above bridge. Get high water profile from ½ mile above highway bridge to B side & Alm gage at Mary Ann Betty & Dale

Get cost of gauge at end of concrete. See Superintendent

Get

At the Dalles
Mare

Took samples of sand
1921 (certain for it was) taken below 1921 H
1909 do ½ feet above 1921 H
This sand 1909 also
1897 Fairly certain taken at highest point on sand bar. Thought to be for high for 1909 but these finds make it more certain
1856 Above 1897 and probably below 1856

1820 (or before) Certain taken from top of beach line..

00.00	700		40,08	on upper Dalles
		0.45	39,63	
12.32	51,95			
		1,74	50,21	
9.43	59.64			
		4.5	55.14	old beach line very distinct. This apparently is the highest point reached by flood in hundreds if not thousands of years

Wright made it 56.4

Below The Dalles Mare

BS	H.I.	F.S.	Elev	
3.52	149.17		145.65	RP 7 in rock. RP Elev 145.65 page 66
		0.32	148.85	
5.16	154.01			
		0.00	154.01	12.32 on lower Dalles page

Found stump cut by stiks to have 62 distinct rings

25 ft below Upper Dalles Cross section found 1921 H.W. mk to be 0.57' above mk on maple used previously as 1921 H.W. This maple was 25 ft. above Cross section

76)

Minkler BM Jan 23 1943

	BS	HI	FS	Elev	
	6.02	69.85		63.83	US 65 at SAN MIG
TP			6.98	62.87	
	3.50	66.37			
TP			5.93	60.44	
	7.92	65.36			
TP			3.91	61.45	
	4.68	66.13			
TP			3.30	62.83	
	7.32	70.15			
TP			7.42	62.73	in ditch
	7.19	69.92			
TP			1.48	68.44	
	3.18	71.62			
			1.75	69.87	RP in
			15.65	55.97	
			4.6	67.0	

Jan 23	4.54	68.37		63.83	US 65 BM
			0.44	67.93	
			3.2	68.05	
	7.94	70.69		62.73	TP in
Jan 23			1.2	69.5	
			1.9	68.8	

77)

rod .013 short due to that being gone on lower end. This introduced no error in levels however as rods at back and fore sights were equal

69.83 194 feet
5.57 W 1/32/43
13.26 diff.

6.97
68.05
1.92 Fall in HW surface between the two points about 1500 ft downstr and 3500 ft inshore

Minkler

69.9 #1
68.8 #2
1.1 Fall in WS between

Soundings Lower end of Slope Section below The Dalles

Jan 29 1923

Corrected distances	Sta	Depth	Type procedure	Levels L side BS	HI	FS	Elev	W.S. elev
				11.77	11.79		0.00	
			TP			0.34	11.45	
					23.35			
	W.E. on R.			11.92	23.36		22.63	
						0.72	22.64	
139	132	0	TP			0.06	23.30	
				13.17	35		23.29	
					35.46	0.25	23.21	
158½	150	6				6.35	29.11	
						8.35	31.11	
179½	170	1.2					32.11	

Sta	BS	HI	FS	Elev	W.S.
200½ 190	1.7	159 132	10.92	10.79	0.00
222 210	2.6	106 100		10.55	+.37
243 230	3.1	95 90		10.45	+.27
264 250	4.4	79 70		10.70	+.22
285 270	4.4	54 53		11.1	-.18
		51 50		7.15	13.77
		42 40		9.65	+6.27
		TP		1.79	9.13
306½ 290	4.6	31½ 30		6.8	12.82
327½ 310	5.6	21 20		3.8	16.62
		11½ 10		0.6	19.82
338 320	5.7	TP+RR bolt	2.49	29.54 29.05	0.41 20.06
358½ 340	6.3	0 0			7.25 20.29
379 360	7.2	-20			6.25 18.29
400 380	7.9	-40			7.15 17.39
420½ 400	8.1	-60			3.2 21.34
441 420	8.1	-77 TP	9.96	32.95 32.71	1.35 23.19
461½ 440	8.5	-95			4.65 28.36
482 460	8.9				
503 480	9.0				
523½ 500	9.0				
544½ 520	9.1				
564½ 540	7.3				
580 555	0				

W.E. on L.

1st marker 70' from L shore measured from 540 to 555 with rod

See page 69 for corrections to graduations on rope

from W.E.

1921 flood mk 1.45' above this TP = elev 24.74

Top of bank, flood plain of old big floods

R. side

← Levels R side

nail in tree about 0.5 above HI looks like 1921 HW, moss around all of tree

Brush, trees, logs from sta 30 towards shore very thick could be but very little flow through this during floods

bank old flood plain (big floods). There is some higher ground further back in woods so use top of bank as L side as more nearly indicating level of large floods

Note: HW mk L side 24.75
HW mk R side 24.79
Use 24.8 to add to todays soundings

80

Sedro Woolley

Jan 22

Sta	BS	HI	FS	Elev	Depth of water in stilling well column / Taken
	00.0	48.44 ✓		48.44	2500 on highway
-45			5.75	42.7 ✓	37 Top W bank
-65			2.15	46.3 ✓	Top 2d bank
-100			2.65	45.8 ✓	3
-200			5.0	43.45 ✓	2.7
-300			6.15	42.3 ✓	3.0
-400			10.15	38.3 ✓	7.8
TP			9.96	38.48 ✓	
	4.42	42.90 ✓			
-500			5.6	37.3 ✓	8.8
-600			4.95	37.95 ✓	8.1
-700			3.95	38.95 ✓	7.1
-800			4.95	38.45 ✓	7.7
-900			5.9	37.1 ✓	9.0
-1000			5.9	37.0 ✓	9.1
-1045			3.45	39.45 ✓	6.7 Top of bank
-1060			10.6	32.3 ✓	13.8 ft wat
Approx -1080			Est 6.1	26.2 ✓	19.9
Approx -1100		Below water surface	Est 12.0	20.3 ✓	25.8
-1125			12.4	19.9 ✓	26.2
do -1140			6.7	25.6 ✓	20.5
do -1150			6.1	26.2 ✓	19.9
do -1160			3.8	28.5 ✓	17.6
do -1170			0	32.3 ✓	13.8 ft wat
Est 1200					0 bois

81

from page 110

Levels taken in same line as lower side of highway bridge on L bank

shift page

Stationing connected to zero on bridge rail

Ground elevations computed to nearest half tenth only

bank to slough

edge of slough

edge for slough. Steep slope up hillside from point use 2:1 slope

93

January 23

Sta	BS	HI	FS	Elev	
		46.27 ✓ 47.77			ouch of 1921
+683			7.00	40.5 ✓	3.8 Top of bank
+750			3.9	43.6 ✓	0.7
+850			6.85	40.9 ~~42~~	3.7
+950			7.05	41.3 ~~42~~	4.3
+1,035			6.55	40.9 ✓	3.4
+1,050			8.35	~~39.13~~ 39.4	4.2
+1,060			9.95	39.4 ✓	6.7
1,148			7.3	40.2 ✓	4.1 L bank
TP			7.70	39.77 ✓	
	6.42	46.19 ✓			
+1353 same pt as #77600 RP (copy in)			1.49	44.70 ✓	on end of previous
1147 = 10 Beatty's slough marks					
+1353 RP	0.84	~~47.35~~ ✓		47.70 ✓	on end of previous
			.0.96	~~46.50~~ 46.51 ✓	HI in cor of abutment
			8.15 bucket 12.70 rod 20.85	26.31 ✓ 24.49	HI 5 in

93

Elev of 1921 H.W. appx 13
+6.1 at Hy. Br

Station contd from graduations on bridge rail

R side second bank

Elevation of ground surface to nearest half foot

1147 / 1353

Beattys Slough. R bank 1921 see measurements for soundings

Same as #77600 RP yesterday (See page 110) probably TP of mark

Worked level notes backward with this figure taken from page 110

Beattys Slough today Jan 23

84 Old Ferry site near Comerford

	1.06	189.28	188.22	BM [illegible]
		4.73	184.55	34.00 on
TP		11.71	177.57	
	0.91	178.48		
		10.88	167.60	17.00 on lower vertical staff
		0.00	179.48	27.90 on upper vertical staff
	0.00	157.33	157.33	6.75 reading on lower gage
TP		6.50	150.83	
	4.62	155.45		
TP		6.21	149.24	
	5.36	154.60		
TP		5.91	148.69	
	5.20	153.89		
TP		4.94	148.95	
	4.69	153.64		
TP		4.52	149.12	
	3.02	152.12	extra set up for spirit level	work of gage inspector
		0.2	151.92 → WS about	adhesion top of post
		3.38	148.74 → WS on [illegible]	shore opposite rocks near b shore
	4.52	153.64		
		5.59	148.05	
	4.38	152.43		
		4.28	148.15	
	4.90	153.05		

85 Jan 27

on an apple tree upper vert staff

Note
1921 HW = 52.0 on 9th

184.55 34.00 150.55 — 167.60 17.00 150.60
178.48 27.90 150.58

150.58 elev
6.75
6.75 = 157.33 elev

About a mean of the three

		153.05		
			8.47	144.58 HW 3 of Upper
TP			0.16	152.89 42.0 on index
	12.30	165.19		
TP			0.77	164.42
	11.82	176.24		
TP			1.18	175.06
	5.66	180.72		HW
TP			3.95	176.97
	11.83	188.80		
TP			0.69	188.01
	9.33	197.34		
TP			10.56	186.78
	0.95	187.73		
TP			9.16	178.57
	1.73	180.30		
			1.55	178.75 RP

1897 HW 2.0 above 1909
1949 HW 1.3 above 1921
1897 HW 3.3 above 1921 Baker
Washington Cement Plant.
1949 HW 4.3 above 1921 at Washington Cement Plant and at least 4.3 above at Dalles (see bottom of page 58).

Dalles Bridge 4PM.

152.89 / 1.20 / 140.89 — 144.58 / 3.69 / 140.89 9h today 9PM

(about height of old flood per stills who got the information from old settlers, probably this was 1897 flood but is probably little higher

190.72

39.83 / 34.83 / 3.97 1921 Hood = gh 37.9 — 140.89 — 39.83 gh 1897 Flood

Note Shots (bottom of page 58) show that 1909 flood must have been at least 1.3 and probably some more, of the Baker.

Levels to Dalles near Washington Cement plant show 1897 3.3 higher than 1921 and 2.0 higher than 1909 See page 22. These latter comparisons are dependent on a mixture of Baker and Skagit conditions. Charles Pringle gives 1897 as 2.2 higher than 1921 — half-in downstream face of 2nd stump going upstream where we step onto. Stumps are on str. side of levee

USE 1921 gh 37.9
1909 gh 37.6
1897 gh 39.9

See also page 141 where it is shown that 1897 was 2.0 above 1909. The Everett Beach was on the Skagit above the Baker and as the control is the Dalles (shows) given the gh for Skagit plus the Baker, see page 19 as shows a 1861 1909 flood was 1.3 high

Jan 20 1923

Old Jesse Cory place
1½ miles above Hamilton

	4.16	104.16		100.00	1921 HW in Barge 1½ miles above Hamilton
TP			5.72	98.44	
	3.72	101.86			
			2.1	99.76	Blue Keel Mark in implement shed
TP			12.65	89.21	
	5.72	94.93			
			4.91	90.02	Dec 24 1922 HW W.S. today 11 AM
			12.45	82.48	
			1.57	93.40	R.P. nail driven horizontal in Maple 30 ft from River bank and 9 ft above implement shed

Yr	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1892															
1893															
1894															
1895															
1896	Tax Levy		1897 40 1859												
1897	5,748.50		5,438.25												
1898	5,748.50		5,438.25												
1899	5,748.50		7,251.85												
1900	2,874.25		7,251.85												
1901	5,748.50		8,760.44												
1902	. . - -		7,251.85												
1903	4311.38		7,251.85												
1904	Notes		12,086.34												
1905	3749.10		12,086.34												
1906	3,749.10		12,086.34												
1907	3,749.10		12,086.34												
1908	3,749.10		12,086.34												
1909	3,749.10	Tax	12,086.34	Tax											
1910	37,137.96	6,385.30	17,153.06	526.27	2,894.51			1,153.36	7,921.75			18,360.76	10,963.70		1,567.75
1911	9,218.36	4,083.65	13,943.80	2,693.73	2,645.63			0.7	6,933.7			7,139.60	2,749.70		746.75
1912	1,822.44	3,396.36	5,243.57	858.81	2,541.21			1,112.10	14,175			2,249.25	1,157.77		537.75
1913	4,277.57	3,811.76	2,990.41	2,755.12	3,675.91			0.7	13,210			1,291.85	1,691.35		355.10
1914	7,567.27	4,833.15	4,645.72	3,111.06	5,784.75			96,235	58,535			911.89	1,906.45		1,314.60
1915	5,141.31	4,300.05	2,521.49	627.17	2,234.15			2,178.5	1,551.42			579.09	804.05		812.51
1916	2,941.94	7,054.00	15,282.77	23.67	2,798.50			27,855	15,590			4,168.99	1,384.70		1,152.09
1917	1,866.37	6,747.65	32,98.03	5.34	10,181.30			71.74	20.15			358.06	1,396.02		314.55
1918	35,837.74	3,190.42	16,488.72		11,433.22			976.32	123,459			33,616.20	1,532.96		1,516.60
1919	11004.25	1,537.20	12,963.56	306.91	8491.19							9,342.06	1396.75		2,432.74
1920	13,159.42	2,991.46	9,920.90	164.75	15,198.37			152.44	139.70			952.70	722.35		2,340.26
1921	13,299.32	3,789.44	14,135.16	367.56	9,328.83			501.20	932.10			3,345.32	1071.15		3,990.40
1922				12,305											
1923	49,005	51,140	118,500	1819.0	76,610										

92)

	Below No 3	Expenditures by Diking Districts: in Log Land below Burlington	South of No 2	Delaware No 5	Below Wade Ditch	Delaware below No 13
	16	17	18	19	20	21
1892						
1893						
1894						
1895						
1896						
1897						
1898						
1899						
1900						
1901						
1902						
1903						
1904						
1905						
1906						
1907						
1908						
1909						
1910	163.70	15,517.26				
1911	29.15	1,514.44				
1912	759.06	1,092.22				
1913	497.35	560.86				
1914	379.70	674.65				
1915	366.09	331.67				
1916	259.85	123.82				
1917	553.69	4,564.57	350.15			
1918	149.84	13,435.30	2,795.36	195.80		
1919	253.50	9,019.93	945.36	1,001.31	1,189.85	
1920	121.50	3,934.69	777.32	3,449.53	3,579.37	
1921	79.69	977.93		1,444.71	3,000.51	496.45
1922						
1923						

93)

Grand total of tax land including Ditch

381,463.43 Ditch

1,087,799.80 Dike

	116,930.07	Original 1897	Acr
1	104,772.96 other rang	1897 May 1915	3,272
2	127,603.61	1897	3,988
3	189,755.60	1897	
4	79,764.07	1897 1915	6,426
	13,140.03	1897	1,584
5	44,145.78		
	51,975.70	1897 1915	2,829
6			
7			
8	3,811.38	1897 1915	640
9	18,518.47	1897	1,414
10			
11			
12	142,913.63	1897	13,406
13	52,575.67	1897	1,843
14			
15	28,226.89	1913	900
16	14,529.53	1914	441
17	76,390.87	1915	1,276
18	6,330.82	1915	576
19	7,252.22	1919	1,960
20	5,366.30	1919	527
21			

Private work done to repair dikes
Laconner to Telegraph Slough $4,500.00
Higgins Slough to Indian Slough 6.00

Damage to County (estimated)
Bridges roads ferries dikes
74,350.00

14	3 grs 1 rd	.84
	Stringers	1.50
14	1 rd	.70
	9 grs	.90
13	Stringers	1.50
17	5 grs	1.15
20	4 grs	1.40
22	4 grs 1 rd	1.12
	duplicated	~~1.12~~
24	4 grs 1 rd	1.12
	Stringers	1.50

96) 1/17/20

1896 Flood
Mt Vernon Herald

Thursday
Chinook wind started Nov 12 and continued through Friday Nov 13. Water highest at Mt Vernon Sunday night Nov 15
Highest water in the memory of the white man.
Many cattle and horses drowned
P Gibbons lost over a million feet of logs
W.A. Sparks lost 100 cords of bolts
Two big breaks occured in the levees on the west side, one near E. Edwards place the other at D Stears place
The whole west side including Mt Vernon is a lake
600 ft of the Great Northern track between Burlington and the bridge washed out
1 mile of track (G.N.) between Conway and Stanwood turned upside down in an adjoining field
Bad break at McClinnes place

Mt Vernon not flooded. Dikes raised and kept above flood waters

97)

1897 Flood
Mt Vernon Herald

Wednesday morning Nov 17 a very warm chinook wind started velocity at gale by evening. Rise did not commence until Wednesday evening. Still in banks Thursday Early Friday morning alarm was whistled but water was over levees already.
Mt Vernon flooded - Paper states not as much damage as 1896 flood

1906 Floods

Flood reached 21½ ft Oct 20 PM Mt Vernon gage
Nov 15 to 16 Big flood. Paper states it was at least 8" higher than 1897 (Probably due to dikes. (Gauge on Nov 15 was 23.9 ft above low water mark, 0.1 of 1 ft above 1897 flood)
G.N. Railway bridge greatly damaged
One span of highway bridge carried away
H Peterson killed running against driver on Wednesday preceding Nov.
1909 Floods
20 chinook started
Baker River higher than ever known
Railroad bridge at Concrete carried away
Paper sparks as though crest gauge reached about Nov 25. (Later article says they crest was 2 ft above 1897 flood)
Friday 12 P.M. Nov 29 another chinook started and blew with increasing vigor until Monday morning (66 hrs) water still rising at 8 a.m. Tuesday (Nov

Hamilton Record Herald says 1909
flood 4" higher than 1897 at
Hamilton. More damage done
in 1897 however

1917 flood

Slightly over 21 ft Mt Vernon gage
Dec 12

Chuckanut and Bow ridge flooded Dec 25

1921 flood

Statement that 1909 flood 26'-9"
Mt Vernon gage, and that 1921 flood
1½ inches more

Estimate that Puget Sound and
Baker River Co lost $50,000. worth
of logs & 2 mfg'g plants

1894 spring flood

About May 25 one crest (afternoon) broke at
4th M that day. old settlers said water
10" higher than they had ever known

Mt Vernon flooded

Monday June 4 only backed 2 miles
of keeping as high as before. water fell 3' in
between May 25 & June 4

A Von Pressentin says flood water
16" higher at Sauk than ever known
before

Frank Buck says water at Mt Vernon

10" higher than ever before

J. S. Wilson at Sedro says water
10" higher than he ever saw except
before Reservoir at Valley since 1865

Estimate of $500,000 loss by 1854 flood

Ed Presentine
says 1897 6" higher than 1909 at
Rockport
Says Indians claim 1897 flood higher
on South of all recent floods
Says 1894 Spring flood 6" or 8" below
1897 fall flood

Jan 29 1923 Rockport

0.00	100.00		100.00	Sand bar
		18.7	81.3	W.S. Today

Jan 28 1923 South

17.15	17.15		00.00	W.S. Today
		1.02	16.13	1909 mk
		+1.8	18.95	1921 mk OK

At P Larsons place 1897 about
8" higher than 1909

Jan 29 1923 W.S. 25.5 below 1921 H.W. at Fabor Ferry
See page 20. John Larsens place just above
1 mile below Fabor Ferry. They don't seem
to agree very well

1897
1921 not
98.9 81.3 only 17.6 diff for 1921 mk
17.6 diff for 1897
18.1 diff for 1897

1.1 ft. below this is 1921 mk
1.33 ft below this is 1909 mk ?

Note assume 1921 same as 1909. Big
nail same elev as spike for 1921. Probably 1909 mk
Ed Presentine says 1897 .05' higher
than 1909.

1917
16.2
19.0
1921
1909
1897
18.9

OK Knife cut on small building back of store on river
bank. Could not see back and right to N.B. At another white spot
mk OK 0.9' higher than 1909. This latter 1909 mk may have
settled some but probably not much. Their elev 6.2'. In photo
1909 mk 1.0' higher than last but side raised between them
building 1.0 + 0.9 = 1.9 Amt bldg was raised. 1917 flood
sand 18 pow. Indicated just the amount the building was raised.
Old Sonny Towne (Indian) said during
1909 flood that when he was a boy he
saw river much higher: He is considered to
be 70 yrs old or more now; so flood would
be that of 1856

(102) Center NE ¼ Sec 24 T 35 N R 4 W

Jan 19 1923

1302	113.03 ✓		100.00	W.S. at 4:00 P.M.
		1.32	112.5 ✓	R.P.

Jan 19 1923 Junction of Sturgis and River on Richmond Place

1530	115.28 ✓		100.00	W.S. today 4:45 P.M. 1923
		+1.45	116.83 ✓	

(102)

12.5

16.83

Measurements Sedro

Date	gh	Disch
Dec 11	3.44	3,970
18	3.44	4,340
19	6.79	16,000
19	7.13	16,700
26	10.82	38,500
27	11.43	42,100
27	12.43	50,900
28	12.72	48,800

(106)

At Sodre Wesley
Dec 27

	1.03	101.03		100.00	1921 HW and about
T.P.			0.53	100.50	
	9.61	110.11			
			0.00	110.11	crossdate
T.P.			0.83	109.28	
	4.34	113.62			
T.P.			12.28	101.34	
	3.38	104.72			
			5.29	99.43	1921 HW
	0.00	57.91		57.91	Reading on N.P.
			3.53	54.38	1921 HW
			3.7	54.2	1917 HW

March 9 1923

3.88	103.88		100.00	1921 HW Woods
		4.05	99.83	Top of

(107)

6'

mk on old cedar on downstr side of NP RR grade 20 ft S of Beatty's slough. 1917 HW 0.2 ft below 1921

on S'ther of chain wt. gage read 33.90
10.1
gh 23.8 1921 HW at cedar tree

23.8 / 0.6 / gh 23.2 — 100.00 / 99.43 / 0.57
other mk by Cook

by Cole upstr side of NP trestle by his house
Consider this the best 1921 flood mk

Jan 10 1923

staff

on Ed Woods old home } House is about 5' ft below NP
do } staff gage

Ed Woods brother says 1909 flood highest about 2 A.M. Had fallen some by morning. This does not check statement by Hart and others

residence under
Has Coles George Cole said 1921 HW did not quite get in as the floor. This shows there must have been about 2' drop in the 150' approx between wash house and Coles garage (Through bridge opening)

Soundings at Sedro Woolley Highway Bridge. Start 10:10 AM and 11:53 AM

Start at Pier 650 gage reading 9.8 gage and 9.5

Sta Pier	depth	Sta	depth	Sta	depth
650	2.0	430	8.1	205	21.7
640	6.7	420	13.8	200	23.2
630	9.7	410	11.2	190	19.7
620	9.9	400	11.0	180	17.6
610	10.5	390	10.3	170	16.3
600	10.6	380	10.2	160	15.9
590	10.7	370	10.0	150	15.9
580	10.9	360	10.6	140	13.5
570	11.0	350	11.1	130	8.2
560	11.1	340	11.0	126	7.5 approx
550	11.4	330	10.7	Pier	
540	11.3	320	9.9	99	6.5
530	11.5	310	10.6	90	9.9
520	11.5	300	10.5	80	9.7
510	11.7	290	11.7	70	12.5
500	11.8	280	12.0	60	13.7
490	12.0	270	13.4	50	13.6
480	13.7	260	13.9 end meter 264	40	13.9
470	13.8	250	15.0	30	10.5
460	15.6	240	10.2	20	6.6
450	9.9	234	8.7	10	3.4
446	8.0 with outrigger on pier	Pier		1	.5
Pier		226	11.0 ? drift and rocks	Pier	.5
439	6.5	220	11.7		
		210	16.3		

110)

Sedro Woolley July 22 1940

Sta	BS	HI	FS	Elev	Remarks
	2.37	59.35		55.98	Wilson Hotel BM
TP 1			5.20	53.07	
N 45 side walk TP 2	4.08	57.15	4.73	52.72	
	4.40	57.12			
10 w edge of parking N 45 road TP 3			6.09	51.04	
	7.00	55.04			
+4638 TP 4			6.33	48.71	
	3.73	52.44			on bridge sill, C'sunk bolt
+3795 TP 5			5.39	47.05	south abut
	2.79	49.83			
+2850 TP 6			6.54	43.29	
	4.30	47.59			
+2026 TP 7			6.15	41.44	
	5.39	46.83			
+1720 (+1325)			5.43	41.40	Lowest point in permanent
+1353 (+1780 BP)			2.13	44.70	End of pavement
TP 8			0.21	46.52	
St Monument Grade from Grade Station to Straight Sec. pipe to	12.95	59.37			
TP 9			0.38	58.99	
	7.20	66.19			
Bridge TP			4.92	61.27	
	2.67	63.94			
			3.00 on sill 13.48 on 13.50 on	48.44	2.50 on Wil bridge Grade = 2244
TP			12.73	51.21	

Levels started on opposite page

111)

	Elev
3899	
3885	
3660	
3634	
3600	
3550	
3500	
3200	
3798	
3060	
2990	

Note

Rod 0.013 short due to missing shoe on lower end. As number of each and photographs indicate this will affect no error.

soundings in Slough below bridge floor	3899	S/slough abutment N side	ground surface	11.5' below
	3885	N/S slough	ground surface	11.5' below
	3660	do	do	15.0' do
	3634	do	do	14.5' do
	3600	do	do	17.5' do
	3550	do	do	15.5' do
	3500	do	do	11.5' do
	3200	do	do	11.5' do
	3798	do	do	12.9' do
	3060	do	do	10.6' do
	2990	Edge of slough S side	ground line	rock wall

Sta	BS	HI	FS	Elev	Remarks
	0.15	51.36		51.21	
TP			7.70	43.66	Rod
	4.93	48.39			
TP			4.27	44.12	Rod
	10.31	54.43			
			0.31	54.12	☐ BM chiseled Square cut stone Sill of 2nd NE pier 1 pace east 60.25 on NP Shaft
			3.75	50.95	
TP			2.55	51.38	
	5.75	57.63			
			6.68	50.95	60.00 on NP shaft
			0.00	57.63	36.43 on chain gage across base on bottom of wt 94.6.26 4.75
			3.51	54.12	☐ BM

112) Below Sterling Bend ½ mile below Homberg Place

	22.00	22.00	0.00	WS Dec 15 1927
		0.56	21.44	MH cut
TP		2.39	19.61	
	7.20	26.81		
TP pin		3.76	23.05	
	4.76	27.81		
		1.87	25.94	Spike in top of
		28.35	-.54	WS at old ferry
		.04	27.77	1921 HW at MH
TP pin		4.55	23.26	
	4.01	27.27		
		10.46	16.81	
	5.11	21.92		
		0.99	21.43	MH cut
		27.01	28.93	HW MH at prop

113)

Dec 15 1927

in tree Nov 27 2000' above mouth of slough

5.40
22.95
28.35

cedar stump
cable 17/8 ft
ferry site

27.77
-.54
28.31 1921 HW above WS of 17/8 ft

of 14 cottonwood trees 28.93 1921 HW above WS 17/8 ft

Note! 520 steps 14 cottonwood trees
to old ferry
520 x 2½ = about 1300 ft

28.93
27.77
1.16 Fall of 1921 HW contour in 1300 ft
.54 Fall of WS of 17/8 ft in same 1300 ft

At and below G.N. Bridge
Continued from page 118

	8.72	34.14 ✓		25.42 ✓	
TP			7.21	29.93	
	3.49	33.42 ✓			
			5.48	27.94 ✓	1921 HW check

work on dry pier Checks with 0.01 on circuit

Footbook up to from P.S. & B.R. office

116/

At Avon.

4.95	24.95		20.00	RP
		-0.05	25.00	mk on
		22.16	2.79	WS today
8.66	28.66		20.00	RP
		1.44	27.22	Top of dike
			27.22	Top of dike
			.50	1921 high WS at NAVY
			26.72	

Feb 1 1923 At old Lyman Ferry

1.74	101.74		100.00	1921 sand in moss
		2.12	99.62	1921 H
		2.46	99.28	1921 H
		0.63	101.11	1921 H
TP		7.69	94.10	
2.81	96.91			
		11.31	85.60	WS today

Note; water 2.0' lower than on previous visit (in January) Measured down from RP established at that time

117/

1.03 × .879

2275 / 79 / 221 / 6

Dec 13 1922

set 20.0 ft above WS at Nat 37 pile Lapks, like HW mark but settlers say water nearly to top of dike

water backed up by Jam (ice)

not filled WS, said to have come within 6" of top

On Dec 16 '22 checked this about ½ mile upstr and found mud in bark of tree up to within 6" of top of dike Ice Jam in river so no good to take levels to WS

very light

more filled with sand.

sand in moss on another tree.

mark on under side of root. Same mark as in previous levels

It is likely that the mark on under side of root shows the crest of the wave while the sand in moss shows depth of standing by water. As all of other marks parallel this, and sand in moss we will use that

95.60 WS Feb
19.90

At Great Northern Ry. Bridge

	B.S.	H.I.	F.S.	Elev	
	37.29	35.55		1.26	G.N. rail to Elev
			5.71	29.84	Top of
			1.00	34.55	Bottom of
			7.66	27.89	Top of 1921 H.W.
			1.11	34.44	Bottom
			1.11	34.44	Bottom
			11.55	24.00	Top of
			7.6	27.95	H.W.
			9.8	25.75	At 1st 24
Dec 13 1922	6.17	28.12		27.95	1921 H.W.
			.30	27.82	1921 H.W.
			.34	27.78	1921 H.W.
	5.56	33.51		27.95	1921 H.W. Rail mark
2.00 ft below G.N. Bridge			5.63	27.88	1921 H.W. G.N. Bridge
2.60 below HB			6.10	27.41	1921 H.W.
4.00 below HB			7.06	26.45	1921 H.W.
5.06 below HB			6.51	27.00	1921 H.W.
T.P.			3.57	29.94	
	7.07	34.01			
27.95 below G.N. Bridge T.P.			8.59	25.42	1921 H.W. Telegraph
	7.99	33.91			
			6.04	27.87	1921 H.W.

Dec 13

27 bridge gage today reads approx 1.0' Could not read it due to distance and gage graduated only to 0.1 ft. Elev taken by estimating gage reading and using shot on chip at top of 3rd pier 1st pier from L abutment

Cent L channel span G.N. rail 4.71 above this pt. Dike about 20.0 ft below G.N. bridge (L side) said to have been very close to top of dike

of chord on draw span

of chord R channel span

gage (24.00 ft

mark on concrete pier downstr side Blue Rock not traverse downstr from G.N. bridge. 1921 H.W. mark above this pt. 3.55 / 3.4 = 28.15

Blue Rock mark on concrete pier 22 / 24

mk on house post above G.N. bridge

about 2 (Believe this was to shot at seam near pt 3/4/22)

above G.N. bridge pier on 1st bank below

Good mark at 2nd post below on bridge

mk at foretank house (P.S. and B.R. Ry)

at shore room

is 2.1' above this pt or elev 32.52

behind pt. Pt is 21.5 ft upstream from P.S. & B.R. office

in Puget Sound and Baker River Ry office This an [illegible] There can be no doubt as to it

(cont'd p. 114

Miscellaneous

J. M. Clapp formerly Major Clapp afterwards consulting engineer with Bonday Bldg in Seattle made his maps says surveys of 1887 1917 and 1921 show changes in position of banks. Coast See Canyon map

Below Mt Vernon. about 2 miles West of RR. and N of Cedardale road. May find old trees

Flood fall of 1932 highest before dikes built
First dikes built 1887

Charles Harmon here when jam in at Mt Vernon. Across bridge close to Roy oaks all statues
Damage to ft 25,000
Damage to ft #12 and 5 Starling Road 60,000

Johnson
See Alfred star #3
WS Hinds #17
Matt Beaver. #15
Sophia Sammon #13

Sisson was born in 60's old and feeble. Possibly lives in Anacortes

Stock lost in 1909 shot about 300 head of horses and cattle
500 or 600 head of sheep.
400 tons of hay taken sedan works
Loss of seed crops for 1921 hard to estimate probably at least 5000
Mrs Christensen engine data on damage to seed crops (Kellys man)

George McKay } Burlington
Charles Johnson }

Charlie Stears below Mt Vernon
Felton took out Mt Vernon jam

~~1917~~ English logging Co $ ~~30,000~~ 30,000
1917
1921 12,000
paid for dikes at #12 does not show on warrants

At Mt. Vernon

Assessor says 1897 flood about 1.0' higher than 1896

W.E. Jennings Secretary of Port could give good estimate of damage in Port 2 See auditor

Mount Vernon Argus says water began to recede at 8 a.m. Sunday Nov 30 1919
Attributed this to breaks above ??
Unverified report that water was 2 or 3 ft deep in Olympia Marsh

M. Costello came to Mt Vernon 1 Shields latter 1905 Had Prominent logger. He states that oldest settlers up there state that 1909 flood at least 2½ inches higher than any flood in 72 yrs

1906 Flood reached crest at 7 AM Nov 16 25 ft above low water mark and 1 ft below dikes

1924 24'-10" 2" below 1909 at Mt Vernon late Monday night

Old Timers stated that 1897 only time waters reached downtown streets of Mt Vernon

J.Z. Nelson estimates total flood damage 1921 in Skagit Valley over $500,000.

Nov 27 1922 W.S. 2.05 below RP abv Mt V
Dec 13 1922
W.S. 2.175 below RP below Mt Vernon bridge RP on on nearly last pile in opening Island Side. Highest point of high
Nov 27 1922 was 2.05 below RP above bridge RP. 2 ft below Edmonds Frim Insider book of Canadian Coldwater
Dec 13 1922 was 2.175 below RP Highest point of 1921 2.75

Mt Vernon

Dec 13 1922

1.15	101.15		100.00	HW 1921 at barn door on R bank just above highway bridge
		2.31	98.84	1921 HW at garage 102' down stream
0.3	100.30		100.00	HW 1921 at barn
		25.2	75.1	Low water section just below bridge

Dec 13

At Boat Landing

4.67 rod −0.74 Tape 23.41	25.41	27.91	2.5	Reading on both old and new gages
		2.91	25.00	1921 HW mud mark in stage shed

Dec 13

20.74 Tape 4.68 rod 25.42	25.42	27.92	2.5	Reading on both gages
		2.03	23.89	HW mark on downstream shaft cor whitmarsh bldg (1915 old looking mark use as 1906 mk
27.9 − 4.5 rod 23.4 Tape	dock filler	3.04	24.88	upstr shaft cor do do . Learned after words that this was the first crest of 1909 flood
		2.89	25.05	upstr shaft cor whitmarsh bldg. Learned afterwards that this was 2nd and highest crest of 1909 flood
		4.30	23.62	downstr shaft cor picket fence at cor of whitmarsh bldg use as 1906 mk

Dec 14

4.46	28.13		23.67	USCGS BM at Mt Vernon
		.70	27.43	
5.50	32.93			18.10 above WS at gage
		8.29	24.64	
5.14	28.08	9.79	22.99	
		4.39	23.69	USCGS BM

See pages 96 97 99 and 124 with my levels following elevations mea.

1896 = 23.0 — did not top dikes while 1892 did (Hart 1892 mark 2 ft above 1906 mk at Sabre mill)
1897 = 23.2
1898 = 23.9
1911 = 23.6
1921 = 25.0 — 8" below 1906 see page 97

Level is shown .16' drop at WS in 10 ft
Drop probably nearly all occurred in a distance of 27 ft (length up and downstr of piers and piles)

Above bridge Diff in WS today and HW 1921 24.9'
Below do do do do do do 23.7

Dam is at bridge so does not affect WS below. There is said to be other jams down river though and tide affects stage some what

Reading on both old and new gages Reduction WS

Diff in WS today and HW 1921 22.5

in stage shed

in both gages

on downstr shaft cor whitmarsh bldg (1915 old looking mark use as 1906 mk

upstr shaft cor do do . Learned after words that this was the first crest of 1909 flood

upstr shaft cor whitmarsh bldg. Learned afterwards that this was 2nd and highest crest of 1909 flood

downstr shaft cor picket fence at cor of whitmarsh bldg use as 1906 mk

Picket fence fairly known use as 1906 mk

"0" of gage is therefore above mean tide

2.46
18.10
6.54
3.00
3.54

(126)

At Sedro Woolley

Dec 11

BS	Knight	FS	Elev.	
2.41	65.46		63.05	BM.
		0.00	65.46	Cross hairs on bottom of B and chain 65.37
	Stewarts check			
2.35	65.40 ✓		63.05	BM
		0.00	65.40 ✓	Cross hairs on bottom of B and chain 65.35

Chain could not be lengthened and rivets hard to remove. Make correction in elev. Gage read 93.35 at 12:55 PM

Chain lengths today

12.86
22.87
32.86
42.87

(127)

Get elevations above and below N.P. Embankment to get damming effect of N.P. embankment

Hart says 1913 flood crested near midnight. It had fallen about 1½" at 1 AM. (This seems doubtful taking the wind readings and my levels into consideration)

1909 flood crested about 9 a.m. He says he was at Newhalem and it crested there at midnight. While his family says crest reached Sedro Woolley between 9 and 11 AM next day

1921 flood crested 9 a.m. or a little after according to his daughter (Mrs. Hart came to Sedro Woolley with Beatty about Aug. 1 1897.

Hart says 1897 flood cut 6" embankment across Gages slough and water at Sedro Woolley dropped nearly 2 ft suddenly during middle of fire now although it had been raising 8" per hour. Was up again by 1 PM and finally rose at higher than before 1896 nearly same height as 1897 and not over 2" below 1897.

1909 flood 16" approx above 1917 mark in Stone 1921 0.75 ft below 1909

128

At Sedro Woolley Cont'd

Dec 14

	00.00	29.05	29.60	Read on bottom of chain up Cage road
		4.07	24.93	1921 HW at Hart's place
		4.00	25.00	1917 HW at Hart's place
		3.99	25.01	1917 HW in front of house
		2.82	26.18	1909 at Stump's
		24.71	4.29	W. side of Stump's
		5.01	23.19	1921 HW at N.P. bridge 13.0 ft from stump
	4.62	6.67	63.05	B.M on bridge
		17.45	53.22	1921 HW N.P. bridge
		14.3	53.37	H.W. at Cole's garage about 80 ft downstream from office H.W. mark Cole's garage 13 ft

Note
Sto discrip 9-157
12-11-16 GLP
given 1909 flood
Nov 20 56.1
Nov 1896 = 59.9
Nov 1906 = 59.7

At Cedartree below NP embankment

10.65	30.65	2000	1856 HW
	16.20	14.45	1921 HW above NP
	14.32	16.33	1909 = 1.87 above 1921
	16.42	14.23	1917 HW 1861 = 5.55 above 1921
	3.86	26.79	
TC 0.75	27.54		
	12.96	14.68	1921 HW at other above NP embankment 14.0 ft water shows flow to NP

129

Highest upstream dike in Skagit is 2.5 above Burlington except the one at Cages Slough.

Should see Hart and get more data about Big Spring floods. Beatty says only 1 acre of dry ground above Harts during 1 spring high water.

Year of 1880 water out of banks on 3d of July. Very high all spring. 1896 fall flood 4ft below 1921 extreme H.W. mark at Harts place

March 17 1879 another large flood

NP Ry built in 1890. Trestle across valley filled in about 1910 or 1911

Hart says a temperature of 50° at Sedro Woolley makes a good raise. A temp of 54 for 48 hrs makes a big flood.

Feb 1881 or 82 a fair flood

1894 ~~or 1896~~ Spring flood (probably 1894) drowned out Harts crops twice. Crested both May and June.

1917 flood had dropped over 13 ft (?) by the time Harts had got up in the morning (about 7am). They removed drift from in front of gate on arisins and

At Skiyou Ferry. Andersons and Ring-house barn

Get elev of 1921 HW with respect to low water. HW mark put on back porch of house at ferry landing E side of stream.

Ringhouse says 1902 flood highest about 9 ft. Ringhouse thinks 1921 1½ ft below 1903.

Ringhouse has notch for 1902 flood in 1st stall stream side of barn

Jan 19 1921

1.77	101.77 ✓	100.00	Approx elev HW in Ringhouse barn
	2.89	98.88 ✓	1921 HW (est)
TP	8.26	93.51 ✓	
0.48	93.99 ✓		
	16.1	77.9	WS this day

100.00 1903 HW
77.9 WS this day
22.1 diff

98.88 1921 HW
77.9 WS this day
21.0 diff

1912 and 1921 high water probably the same. Get elev of the 1912 mark with respect to low water also 1903 and 1921. I put mark on 1st post from wall in wagon entry for 1921. Put 2 marks on second post upon one only about 4 above lower. Possibly upper one 1902, 1903 flood just to. Put manger on hill side of barn (Dept Highways). Find out from Ringhouse inside side at manger at WS. He says 1903 flood just reat the bottom of the hay.

BP for low water is notch in wire hanging rest at large cottonwood on L river bank opposite Dam. WS 35 below BP.

Anderson says 1912 and 21 flood about the same at his place. He thinks 1903 about 4 ft higher than 1921 at his place and 1892 about 1 ft higher. From the points he pointed out that the 1892 flood reached would be about 4 ft lower than 1921

132)

At Lyman Ferry and vicinity

Jan 19 1923

		Vicinity		old Lyman Ferry	
	4.38	103.38		99.0	USGS BM
TP			3.39	99.99	
	3.45	103.44			
TP			0.95	102.49	
	1.59	104.08			
TP			12.54	91.54	
	2.91	94.38			
TP			3.95	90.43	
	2.32	92.75			
			8.76	83.99	1921 HW mark on root of old burned fir tree on L bank at ferry made knife cut. This mark is also marked by a notch in one of the fence posts at the road.
				N.G.	
TP			10.16	82.59	
	5.23	87.82			
			1.60	86.22	1921 HW on old fir tree at road
TP			7.60	80.22	
	3.54	83.76			
			10.90	72.86	we took DECRP gone
cut Jan 19	Just above 1.7.93	New Lyman Ferry 114.93		100.00	W.S. Foley 3 PM
			2	114.7	1921 HW on cottonwood tree
Feb 1	117.45	117.45		100.00	
			0.3	117.15	1921 HW on tamarack
			0.1	117.35	1921 HW found today use this for later from

133)

Found USGS BM about 1,000 ft upstr on highway from Blairs Ranch. About 350 ft upstr and across road from very tall fir. BM on R side of road going upstr. About 20 ft from edge of road. BM opposite turnoff of road to former Lyman Ferry.

At old Lyman Ferry site cut a notch on underside of root of old fir log near river and at jam 5.0 ft above WS today. Found 1921 HW mark on root of old burned fir tree on L bank at ferry made knife cut.

Man at end of road had cut a notch in one of his fence posts at 1921 HW mark.

At new Lyman Ferry. The ferryman says that at their place 1921 and 1920 had about the same. This is about ½ mile below old Lyman Ferry site.

Jan 19 1923 cut cross on top of 24" log 6" from outer end. Log ¾ way down jam 150' from W end of jam.

A 22
B 13.23
W. 45

At and near Cochrahams

	21.82	21.82	0.00	WS Dec 12
		20.84	0.98	WS Nov 26 bottom of stake set there
		7.4	14.4	1894 HW Spring (est by Cox)
		5.6	16.2	1921 HW Est by Cox
		4.4	17.4	1909 and 1917 HW Est of Cox
		3.9	17.9	1897 HW Est by Cox
Dec 12	At old Maple		NE Cor Sec 22 East of Cochrahams	HW 104.6
	1.3	101.30	100.00	RP Nail in old maple
		+3.3	104.6	Old extreme HW. Tag will continue to show point of maximum high water
TP		3.29	98.01	
	4.10	102.11		
		20.04	82.07	WS today

100.00	1921 HW
82.07	WS today
17.93	diff
104.6	1856 HW
82.1	WS today
22.5	diff

Cochrahams

W.S. 0.35 Below bench on cotton wood log about 600 ft downstream from house. Water just at base of stake set in water edge directly opposite by chimney house.

Cochrahams is only about 1,000 ft upstr from old Lyman Ferry. Old Lyman Ferry is at drift jam noted in "Lymain Ferry and vicinity"

1897 Spring high water came up very high. Crested Junior two weeks ahead Cochraham Knows it was 1894 because he took mail contract that year

1897 Flood was the highest at this place washed waves in two front gate 1909 and 1917 about the same water over road in front of house but not up to gate

Cochraham says in Jan 1893 -10° at Hum Cochrahan says old Indian about 90 does not remember flood that drowned Indians but remembers flood several feet higher than 1909 and 1921. He knew another Indian that remembered flood. Flood would be 150 yrs or more ago 1856 third growth made HWs

Freeman Cary
Says 1897 flood about 6" below
1909. 1883 or 1882 very high
spring floods. Thinks 1894 spring
flood higher than 1883 & 1882

were able to walk out through gate
dry shod.

Beatty

Beatty says he came in 1898. Cary says 1882
says that in 1881 or 1882 a June freshet
stayed up for a week within about 6"
of high winter freshets. He says
in that high spring freshet only
about 1 acre of ground above water
near river. This was 2 or 3 ft above
Co highway bridge.
March 17 1878 was a high freshet
1909 highest water he has ever seen
One spring freshet about 1882 the
water was red, and made the people sick.
Possibly this was clay or something
that would stain bark like the
old extreme flood.
Sisson settled some place between
Anacortes and Whitney
Tom Hasty here before 1878 lives near
mouth of river.
Hart

Hart says he tried to dig out large stump
of old cedar tree, He dug down 5 ft and
didnt reach the roots of the tree. A cedar
grows on the surface of the ground therefor

The 5th of soil was accumulation of river silt after tree started growing

Possible sources of information as to flood marks.

Concrete

See Otto Presentine near Grassmere

Kaufman on L side of River may have 1897 mark

Mr Bratten at old Bratten Ferry marked old floods. Possibly was not there in 1897

See Magnus Miller again about 1897 flood

Mrs Hamilton on Benson's slough would know possibly where 1897 marks were

Indians

Napoleon. A. Shaker. at Van Horn. Medicineman on Swiatlle

Joe Camel Dead — See Concrete

Jimmy Sius on Swiatlle

Dan Dillard can tell about where Indians are

Jasper Gates At Mt Vernon knows about Indians

Eugene English also knows about Indians

Ask Magnus Miller when cabin were built at Dalles. Examine Cabin at Dalles for mud in walls

30" ave thick
15" Krumm
45" = 3'
47

Middle of second shake 30" above ordinary water mark 3'

Hamilton

Old log house on lower edge of Hamilton below shed house. just across creek. Possibly 1897 mark in crevices

Henry Carey 1½ miles above Hamilton. Can give 1897 flood probably. Considered very intelligent man by others also said to have good memory

Concrete

At Everett Ranch above Concrete Magnus Miller says 1897 water came to middle of 2nd shake, about shake Beam for rafters. This was shed on side of Water came to foot of steps to house did not get in house May have come up to step a little

Leonard Everett says 1897 flood came just to bottom of shakes pitch of shakes 7" in 12"
½ of 12" = 2½" - 2' approx
Makes 1897 = 2 ft above 1909

Says 1897 flood came within 2" of bottom of house floor. Water rose very rapidly about 2" per hour

Sauk and vicinity

1) S B. Ellison and E G Ellison on Sauk River 1½ miles above mouth have all floods. Probably E.G. best and marks at his place. These marks indicate Sauk above probably possibly some backwater from Skagit
4) Hank Stafford at Sauk can possibly give 1897 flood
3) Algy Parker ½ mile downstr from Sauk L side can probably give 1897 flood
4 Old Mrs Wainright or Harry Wainright may have 1897 HW

City of Seattle

J B. Dodge. 1400 Alaska

Skagit River Development

J M. Waters Box 102 Rockport

Edd Obrien Marblemount R E R
2 miles this side of Marblemount
Alec Stafford Hamilton
Stafford Jr Rockport Rawlson
Martin Rockport
Lyman Martin Indian Bacon creek
Charlie Moses Indian do good
William Newby 6 Way Rockport Marblemount

Skagit Co History

Boss 1792 Clerk of Astor Co at Okanogan
Post established Fall of 1811
Pacific Fur trading Co headed by John
Jacob Astor started in 1810.
Northwest Fur Trading Co had no posts
South of 52 North and west of Rockies
in 1811.
Tonquin Astor ship arrived at mouth of
Columbia March 22 1811. Details of voyage
Travels Astoria and Franchères
narrative
Ross Cox Northwest Adventures of Columbia
River
Fort Vancouver on the Columbia Box
established 1825
Fraser River Gold Excitement 1858

IMPROVED TABLES

AND

INFORMATION

Ed Presentine Rockport Nov 26
August Voesch Rockport Co
Harry Wainright Sauk
Jimmy Jones 2 miles below Rockport
Indian
Jimmy Towers Record Boss store
Skagit Reason 6 miles NE Darrington
at Van Horn Ladder and

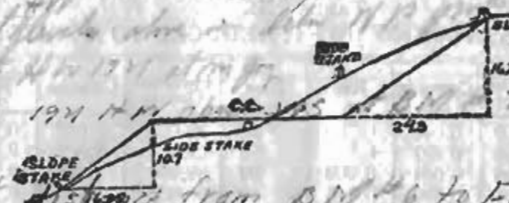
31 Get cross and profile soundings in Skagit and Padilla Bay and data to cover and get latest soundings

32 Get flood data on the Nooksack River and Sumas River

33 Get 1921 [illegible] 7 U.S. Army

34 Get [illegible] from BM #6 to Fosc 2 [illegible]

35 Examine [illegible] from BM #6 to [illegible]



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1½ TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1 65	1 80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3 45	3.60	3 75	3.90	4.05	4.20	4 35	2
3	4.50	4 65	4.80	4.95	5.10	5 25	5 40	5.55	5.70	5.85	3
4	6.00	6 15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7 50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9 00	9 15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10 65	10.80	10.95	11.10	11.25	11.40	11.55	11 70	11.85	7
8	12.00	12 15	12.30	12.45	12.60	12.75	12.90	13 05	13.20	13.35	8
9	13 50	13.65	13 80	13 95	14.10	14.25	14.40	14 55	14.70	14.85	9
10	15.00	15 15	15 30	15 45	15.60	15.75	15.90	16.05	16.20	16 35	10
11	16 50	16 65	16 80	16.95	17 10	17.25	17.40	17.55	17.70	17.85	11
12	18 00	18.15	18.30	18 45	18.60	18 75	18.90	19.05	19.20	19 35	12
13	19 50	19 65	19.80	19.95	20.10	20.25	20 40	20.55	20.70	20.85	13
14	21.00	21 15	21.30	21.45	21 60	21.75	21.90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24 15	24 30	24 45	24.60	24.75	24 90	25 05	25.20	25.35	16
17	25.50	25 65	25.80	25 95	26.10	26 25	26 40	26.55	26.70	26.85	17
18	27.00	27 15	27.30	27 45	27.60	27.75	27.90	28.05	28 20	28.35	18
19	28 50	28 65	28 80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30 00	30 15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31 50	31 65	31.80	31.95	32 10	32 25	32.40	32.55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33.60	33 75	33.90	34.05	34.20	34.35	22
23	34 50	34 65	34.80	34.95	35.10	35 25	35 40	35.55	35.70	35 85	23
24	36.00	36 15	36.30	36 45	36.60	36.75	36.90	37.05	37 20	37.35	24
25	37.50	37.65	37 80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39 00	39 15	39.30	39 45	39 60	39.75	39.90	40.05	40.20	40.35	26
27	40 50	40 65	40 80	40.95	41.10	41.25	41 40	41.55	41.70	41.85	27
28	42 00	42 15	42.30	42.45	42.60	42 75	42.90	43.05	43.20	43.35	28
29	43 50	43 65	43.80	43 95	44.10	44 25	44 40	44.55	44.70	44 85	29
30	45 00	45 15	45.30	45 45	45.60	45.75	45.90	46.05	46 20	46.35	30
31	46.50	46.65	46.80	46 95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48 00	48.15	48.30	48 45	48.60	48 75	48.90	49.05	49 20	49.35	32
33	49.50	49 65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51 00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52 50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54 00	54.15	54.30	54 45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55 50	55 65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57 45	57.60	57 75	57.90	58.05	58.20	58.35	38
39	58 50	58.65	58.80	58 95	59.10	59 25	59.40	59 55	59.70	59.85	39
0	60 00	60 15	60 30	60 45	60 60	60.75	60 90	61.05	61 20	61.35	40
	61.50	61 65	61 80	61 95	62 10	62 25	62.40	62 55	62 70	62.85	41
	63 00	63.15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64.35	42
	64.50	64 65	64 80	64.95	65.10	65 25	65 40	65.55	65.70	65.85	43
	66 00	66 15	66 30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
	67 50	67 65	67 80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
	69 00	69 15	69 30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
	70 50	70 65	70 80	70 95	71.10	71.25	71 40	71.55	71.70	71.85	47
	72 00	72 15	72.30	72.45	72.60	72.75	72.90	73 05	73.20	73 35	48
	73 50	73 65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

63
3
4
5
70° 0'
10' 3.5
20' 1.90
30' 1.33
40' 1.07
50' 0.92

1. Get dredge data, probably about 20¢ per cu yd
2. Study Baker Lake storage
3. Get exact date N Pac built through Sedro 1891 per Mac
4. do trestle was replaced by fill 1918 per Mac
5. Get grade of stream bed Sedro Woolley to mouth probable can obtain from Army Engineers report
6. Enlarge 1922 map 1917 and 1921 flood spots to Mouth and find discharge acreage at Concrete
7. See Jones about rights to River beds. Roberts says law was passed for royalty so that bed could be reclamation project
8. Go to Seattle libraries and look over old histories for floods
9. Find when Canadian Pacific RY was put through Ruby get flood data from them on Fraser River
10. Examine Bench Marks from Power Camp to see if any indications of flood that left them and if there has occurred a higher flood than 1894 in recent history
11. See Charlie Prosentine again and see if there is any ground where we can dig to find leaves that be said to have been covered up by extreme flood.
12. Investigate saddle at Concrete to see if any indication that recent flood passed through
13. Get soundings where USCS type maps do not cover bays
14. Find head of old ditto price to present date
15. Define limits of floods of 1894 1897 1917 1921
16. Run level line from Sterling bend to coast
17. Get tree suffered by flood destroyed
18. Get all data concerning floods and damage from news papers
19. Cost of dikes to protect old channels
20. Salvage value of old channel
21. Put in Slope Stakes possibly Sedro, just above Hamilton and from Concrete Ferry to and above the Dalles
22. Get flood heights at time of great flood mostly at narrowed sections. Consult Army
23. Study possibility of River Control by dams in all tributaries with power development
24. Cost of moving all people out above detention reservoir at the Dalles
25. Study plan to detain [illegible] and amount of

Get list of earliest settlement in BC. also earliest fur trading posts in Rivers in BC.

2) Find oldest and largest Solid Cedar stump. Find depth of roots and count rings for age. Get rate of deposition per century.

3) Study possibility of diverting flood flows from new constructed channel to old channels and sloughs to fill them up.

4) Possibility of tidal gates to keep down stage at mouth of stream at high water.

5) Dam below Concrete to store 90% of flow of Skagit River. Raise water to about about elev. 450' probably depending on bedrock at Darrington. Dam at low water point of about 145'. This to be reduced to 100' by new channel but 350' Dam probably 700 ft high. Drilling from the lake will probably give more information.

6) Drift barrier at The Dalles to reduce flow and hold back drift until new channel below Hamilton is over low water about 40 ft so if at The Dalles

7) New channel below Hamilton to carry 150,000 sec ft. 3 ft in zero. Dredge out side trenches and build levees. Place concrete facings to embankment to below cutting of stream.

8. Channel Sterling pond to Padilla private Sedro so as to later cut channel from Hamilton to channel north of Sedro

9. Ship Channel Sea to Storage dam

10. Dam on Skagit above Baker and below Sauk Sauk dam on Baker to Storage dam

11. Storage on Baker dam

Get BM elevations Army Seattle

Get Sacramento Flood reports Bionp

See Worden

Get rating table

See Landes Skagit diversion to Stillaguamish

Get BMs for Wickersham sheet

See Roberts and Upson

Write for Report on Skagit Flood Control

Get gage readings

Take map to city

Write for Depth Chart reports

Get or take Col Hoffman's report on Skagit

Write to the Seattle Times for data

Write to Seattle Engineering Dept for

Corps

Get min chan for Sedro Lumber

See Pacific Coast Co to Concrete

Take Camera

300

7
500
3500