✓ Sample veg. and [illegible] area
✓ Strut
Sample A [illegible]
✓ Island geometry
✓ Tree diameters
✓ Plots on islands
✓ Section 2
✓ Debris sizes - geometry [illegible]

Aug. 13, 1983

Plum near Louviers, CO

Section 1, at house about 50 m downstream from Louviers bridge and gage. Left end of section is 118 ft downstream of barbed-wire fence post at north side of road. 5 foot intervals - metric kts

Telephone pole on						
0	1.35	110	3.06		220	3.40
5	1.58	115	3.05		225	3.41
10	2.00	120	3.16		230	3.36
15	2.78	125	3.08		235	3.36
20	3.06	130	3.09		240	3.37
25	3.05	135	3.15	136 LEW	245	3.42
30	3.04	140	3.40		250	3.28
35	3.19	145	3.45		255	2.68
40	3.18	150	3.49		260	2.16
45	3.09	155	3.68		265	1.36
50	3.13	160	3.64		270	.55
55	3.11	165	3.59		275	.15
60	3.13	170	3.54			
65	3.12	175	3.43	Island		
70	3.10	180	3.48			
75	3.08	185	3.44			
80	3.09	190	3.46			
85	3.10	195	3.58			
90	3.12	200	3.44			
95	3.10	205	3.43			
100	3.10	210	3.42			
105	3.10	215	3.41			

tree on right at 285, and bold is estimated to be at .45

[Numerous vertebrate fossils at section 2 - 0
1.5 ft below top of A horizon]

8-13-83 Plum Creek

In downstream line along erosional escarpment along west (left) side of stream, took thicknesses of deposition above top of A horizon of upper terrace where large trees and debris piles are.

0 - wire fence along north side of road

55' - 3.2" - questionable

630' - 6" - about 205' upstream from left end of section 2

At 530 feet north of fence have downstream end of coarse sand deposit on terrace - this is for east side of terrace along stream side escarpment

Difference in relief between coarse part of terrace and finer part is about 1 ft, so presumably the A horizon underlies the coarse at about 1.5 feet.

At section 2 - 0 mark - 1.1 ft thick

120 feet NW of section 2. 0 mark, also 1.1 ft

8-14-83 Plum Creek section # 2

Left end 0 is tree trunk at downstream end of top of erosion notch. Right end is immediately downstream of bushy tree growing at and above erosion scarp on right edge of bottom land.

3 top of bank	3.60	125	3.57	250	3.56
5	3.82	130	3.57	255	3.57
10	3.49	135	3.58	260	3.58
LEW 12	3.78	140	3.59	265	3.64
15	4.18	145	3.60	270	3.67
20	4.02	150	3.62	275	3.65
25	3.96	155	3.57	280	3.65
30	3.98	160	3.62	285	3.65
35	3.94	165	3.64	290	3.64
40	3.94	170	3.60	295	3.65
45	3.92	175	3.57	300	3.68
50	3.90	180	3.55	305	3.71
55	3.90	185	3.56	310	3.70
60	3.91	190	3.54	315	3.73
65	3.91	195	3.56	320	3.79
70	3.89	200	3.54	325	3.74
75	3.87	205	3.59	330	3.68
80	3.88	210	3.65	335	3.75
85	3.82	215	3.53	340	3.47 out bank
90	3.83	220	3.57	345	1.12
95	3.85	225	3.61		
100	3.88	230	3.56		
105	3.95	235	3.62		
110	3.93	240	3.59		
114 EW	3.85	245	3.57		
120	3.57				

Stream up banks not obvious no bank samples taken. 2 bags of bed samples taken by walking across stream and scooping handfulls.

3 Nov 1983 Mill Run Block field
on E facing slope
debris oval crosses path, upslope
becomes lg. deb flow deposit upslope
of that is a v. lg. block field complex
southern edge appears fluted from
"recent" flows and has smaller
clasts w/ less lichen

12-8-89 Osterkamp and Doerner - Plum Creek
Photos 1-9 of tire islands in Sedalia reach.
No evidence of any deposition yet at either.
Flow under ice is occurring at western of
the two islands; there is no evidence of flow
having reached the other island yet.
Photos 10-18 upstream, then downstream, from
Lowrens bridge

12-8-89 Plum Creek

West part of section from stake 3, put in earlier this year, to stake 2, where bones were dug out

add 0.80

Top post	1.18 m	40	2.42	Reset level	
0 m	1.69	42	2.45	Top post 2 - to east	
2.	1.73	44	2.39	of 2.25	1.45
4	1.79	46	2.37	0 m	1.59
6	1.78	48	2.46	2	3.48
8	1.80	50	2.56	4 (water)	3.94
10	1.94	52	3.65	6	3.96
12	1.94	54	4.07	8	3.96
14	2.01	56	3.99	10 87.6	3.89
16	1.88	58	4.04	12	3.89
18	1.76	60	4.21	14	3.89
20	1.64	62	4.26	16	3.91
22	1.45	64	4.25	18	3.9[illegible]
24	1.36	66	4.19	20 97.6	3.89
26	1.46	68	4.13	22	3.81
28	1.60	70	4.17	24	3.78
30	1.90	72	3.95	26	3.79
32	2.09	74	3.44	post center of island	3.28
34	2.19	76	2.52	bottom post	3.47
36	2.34	79.6	2.39		
38	2.40	Top post	2.25		

28		3.82	84	3.45
30	101.6	3.83	86	3.34
32		3.89	88	3.48
34		3.40 out of water	90 167.6	3.40
36		3.43	92	3.50
38		3.44	94	3.42
40	117.6	3.40	96	1.83
42		3.37	97.5	1.89
44		3 47	Top coal at end of section	1.59
46		3.34		
48		3.35		
50	127.6	3.37		
52		3.39		
54		3.39		
56		3.39		
58		3.36		
60	137.6	3.33		
62		3.34		
64		3.36		
66				
68		3.34		
70	147.6	3.35		
72		3.34		
74		3.28		
76		3.27		
78		3.48		
80	157.6	3.29		
82		3.32		

Osterkamp alone

Feb. 9, 1990 Plum Creek

Established monument exactly at water edge, right bank, in line with center post of island 5L and post on left side of channel, section 2. From 5L post to new post on right is 6.3 m

Photos 24, 25, 26 - Island 5L

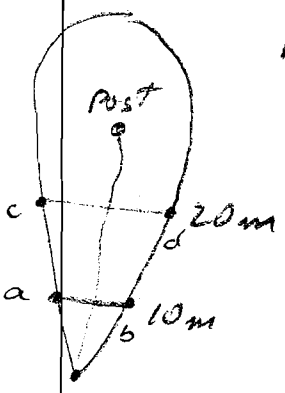
" 27, 28, Island 6LT, 9L behind

" 29, 30 Island 7LT

Island 3L Stretched tape from lower tip of island to mid-island monument. Monument at lower end is 0.9 m upstream from tip of island. From post at tip to post downstream of island and slightly to right is 13.0 m

2-9-90

From tip of island 3L (not post), established perpendiculars at 10 and 20m.



Put in posts at sites shown.

a-b is 9.3m,
island width 9.5m

c-d is ~ 9.1m,
island width 9.3m

Photos 31-36 Island 3L

Photos 1-5 Island 1L

" 6 Island between 1L and 2L - tree

" 7-10 Island 2L

" 11 debris

12-15 Island 4S

2-9-90

Photo	16 - Island on left side S above 10 and 11 ST
"	17 12S in foreground, post in middle is 10ST, behind is 11ST
"	18 Island 12S - tear shape
"	19 Islands 10 and 11 ST
"	20 Island 10ST
"	21 Island 11 ST

067095

Cathy Petty

6-9404

March 1, 1990 - Ostenkamp and Doerner

Established island 135, about 50 m downstream from Seeblick bridge, and with head to right of tail of 45

From monument at tail of 45 to monument at head of 135, 11.5 m. From post to right of 45, not on right edge, but across small embayment, to head of 135, 21.4 m.

Photos 1 and 2, from at head of 135, looking downstream Height post at head 135, 34 cm

Length 135 between posts 131.1 m, extending downstream is another 14.2 m of new grassed island at lower level, and 4.0 m of fresh, unvegetated sand of tail before getting into water. Incorrect line

between up and downstream posts are posts at 30, 60, 90, and 120m from upstream post

Photos 3 and 4 from lower end of run

Normals to posts at:

30m - 3.5 m from LE 135 to post
12.8 m from RE 135 to post

60 m - 17.8 m from LE 135 to post
14.3 m from RE 135 to post - does not include small island now attached to right edge

90 m 11.7 m from LE 135 to post
20.3 m from RE 135 to post

120m 5.0 m from LE 135 to post - point of LE is about 1.0 m upstream and 4m from willows that extend island out to west another 4 m
14.2 m RE 135 to post

Photos 5-9 135 looking to east and progressively downstream

Photos 12 - 8LTM

Osterkamp and Doerner

1

May 3, 1990 11:30

Plum Creek - Carey and Emmett are taking discharges and bedload samples - also suspended

Section below Sedalia through two islands - 10 ST and 11 ST

of planes tires

			32	2.20	60	2.14	
	left post		34	2.24	62	2.14	
	top	0.50	36	2.21	64	2.13	
	0	.71	38	2.13	66	2.13	
	2	1.12	40	2.08	68	2.15	
	4	1.61	41	2.10	70	2.23	
	6	1.69	41.1	2.09	72	2.24	
LEW	8	2.19	top post	1.91	74	2.18	done
7.75	10	2.19	42	2.08	76	2.10	
	12	2.13	44	2.07	78	2.07	
	14	2.15	46	2.08	80	2.09	
island	16	2.19	48	2.09	82	2.15	
	18	2.10	50	2.11	83.8	2.09	rt bank
	20	2.10	52	2.08	84	1.94	
	22	2.15	52.65	2.11	84.95	1.84	
gross	24	2.07	top post	1.87	top post	1.66	
"	26	2.07	54	2.10			
	28	2.19	56	2.11			
	30	2.21	58	2.17			

@ 16 m, moved upstream end of island from first page - going downstream.

0	2.18	2.0	1.76	4.5	2.09
0.1	2.10	2.5	1.88	5.0	2.17
0.5	2.03	3.0	1.97	5.3	2.21
1.0	1.91	3.5	1.97	tail of water	done
1.5	1.89	4.0	2.05		

Plum Creek nr. Louviers - section through tires of section below island 5 6LT and 7LT

left post top	0.81	12.0	1.31	25.05	1.01
0	1.09	13.0	1.31	top post	0.70
LEW 0.25	1.26	14.0	1.33		
1.0	1.26	15.0	1.32		
2.0	1.29	16.0	1.28		
3.0	1.34	17.0	1.28		
4.0	1.28	18.0	1.33		done
5.0	1.27	18.15 bank	1.34		
5.5 bank top post	1.26	top post	1.18		
6.0	1.05	19.0	1.36		
7.0	1.23	20.0	1.38		
8.0	1.26	21.0	1.42		
9.0	1.25	22.0	1.43		
10.0	1.26	23.0	1.54		
11.0	1.27	24.0	1.37	REW	
	1.23	25.0	1.03		

Using same base of left post from last section, measure section through longitude of island 92 just downstream from this section and near left side of channel

Top post	0.81	14.4 base post	1.20
0	1.09	top post downstm	.75
LEW .6	1.31	Top of island	
1.0	1.32		
2.0	1.25		
3.0	1.29		done
4.0	1.26		
5.0	1.24		
6.0	1.24		
7.0	1.25	tape breaks at 8.75 m	
8.0	1.29		
8.35	1.39	upstream edge island	
8.5	1.20	"	
9.0	1.05		
10.0	1.10		
11.0	1.11		
12.0	1.03		
13.0	1.07		
14.0	1.13		

Section from left bank section post of "section 2", through center post of island 5, to post on right bank

Top left post		1.35	20	3.83
base	0	1.48	32	3.89
	2	3.38	Top post	3.29
edge water	3.0	3.85	base	3.90
	4.0	3.89	33.3	
	4.0	3.91		
	8.0	3.88		
	10	3.81		
	12	3.84		
	14	3.81		
	16	3.79		
	18	3.85		
	20	3.78		
	22	3.79		
	24	3.77		
	26	3.77		
	26.4	3.84		
	27	3.37		
Top post	27.5	3.18		
	27.5	3.33		
edge	27.6	3.81		
	28	3.77		

done

add .9m to correct to 12/8/89 data

Bill Duncan

Aug. 17, 1990 Osterkamp & Downey

Plum Creek nr. Lawers

We took sediment samples from bed, bar, and flood-plain surfaces for sending back to Ted Callender for analyses of trace elements.

Photos 25-29, island 1L from left and downstream.

Photos 30-33 island 2L, with Jim holding hammer on stake nr. downstream end

Photo 34 - recent channel deposition to left of island 2L, probably result of very recent flows due to strong monsoon season.

Photos 35-37 island 5L, with notebook on new sand deposit and upstream from new grasses at lee end of island

Photos 1 & 2 looking Right to Left looking at Island 6LT & 7LT

Photo 3 & 4 from 7LT looking downstream

Photo 5 Looking downstream to the left of 6LT.

Photo 6 looking downstream towards Island 6LTn

Photo 7 6LT & 7LT Left to Right

Photo 8 8LTN from Right to Left showing downstream stake in middle of picture

Island 8LTN - is in the process of growing into the island immediately downstream. This is seen in Photo 9

Photo 10 - Jim has foot on stake at former downstream end of island 3L. Stake for reference below island is buried but deposition and vegetation now extends to about that point.

Photo 11 - small wedge of incipient growth on left side of island 3L.

Photos 12-14 - Plum Creek basin showing cloud buildup 11:30 am

11:45 Took soil, bar, and fluvial plant samples for Callender analysis about 100 m upstream from bridge west of Sedalia over East Plum Creek

1230 Took samples from W Plum Creek about 100 m upstream from bridge west of Sedalia. First check-in with property owner Bill Duncan

Photos 15 and 16 - across and north basin 12:45 p

Section CR4n (Castle Rock Trib to north)

Established section tributary to Plum Creek. Site is on north edge of Castle Rock on channel that goes past north part of Douglas County High School. Section is downstream from I-25, and about 50 m downstream from railroad bridge.

ft.					
top left stake	0.35 m	10	1.47	25	1.68
0	0.88	11	1.45	26	1.68
1	0.97	12	1.58	27	1.43
2	1.31	13	1.61	28	1.14
3	1.39	14	1.61	29	0.97
4	1.39	15	1.60	30	0.74
5	1.38	16	1.59	30.4	0.73
6	1.38	17	1.60	top stake	0.28
7	1.40	18	1.61		
8	1.43	19	1.63		
9	1.43	20	1.62	done	
		21	1.63		
		22	1.64		
		23	1.66		
		24	1.67		

At section just measured:

Photo 17 - looking upstream
18 " to right
19 " to left
20 " downstream

There has been flow in this channel within the last couple of days.
Flow depth at least 30 cm
Photos 21 and 22 1:05 pm across basin and to north

9-10-81

Plum Creek

Approximate cross section - upstream of flow - from fence post about 3 feet from fence corner in yard above right bank

0-29' right bank

29'-129' active channel

129-252 - new low floodplain

252-256 - slope of first terrace

256+ old terrace

Photos from above and below section, taken at site just off pic showing corner of fence on channel sands - then from right to left bank

Plum Creek

Section 2 (?) - throne with point on left side

- measurements from edge of point

0-9' left edge of point to left edge AC

9-107

107-307 new flood plain

In both cases, the AC depth was about 6 inches

4-84

10:37

we ought to get photos through time for Plum creek to show islands uniting with banks

Pleem Creek

Slice the biggest trees of each island

Try species identification - willows or cotton

Map the islands

Don't cut any that obviously predate flood

Upstream or downstream one has the best woody vegetation?

Are edge island trees older than those in middle?

Willows are grayer with rougher bark than cottonwoods

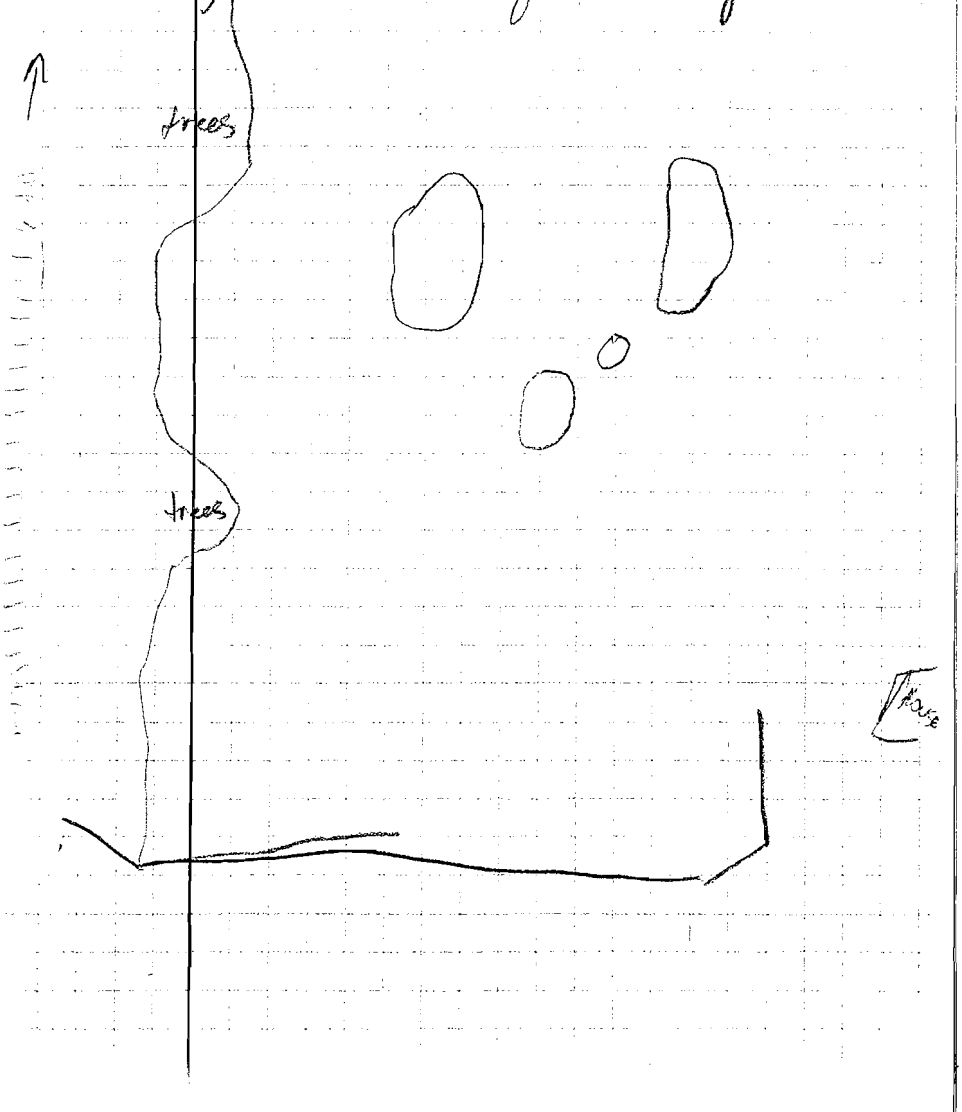
Wednesday April 11, 1984

Waiting for Costa, Church, Williams, Gregory and others at Plum Creek. Took photos from bridge looking downstream, then upstream. Walked upstream about 200 m to wire fence crossing stream. Islands just down from fence have vegetation at upstream end with no vegetation at lower end - just sediment trails. Walked back along abandoned channel along right bank and took several pictures, a couple of which are of a debris pile against a large cotton wood with a large timber in front.

4-11-84

Plum Creek

looking downstream from bridge:



4-13-84

Starting downstream on Plum Creek from upper bridge about a mile above Louviers Co

1. Elm? on left bank 50m below bridge - upstream end of wooded grove

2. Willow? about 70 m below bridge - on island at center left of channel - much better vegetation at upper than lower end Island is about 80-100 m long Photo 17-21 looking downstream to left. 21 shows different levels of deposition 23 looks upstream at 3 levels and cross channel - 24 shows deposition about established vegetation

3. Elm? taken from downstream 50m from 2, at right edge of same island

Photo 24 - recent cutbank on right - looking from site of slice 3 and photo 23

Photo 25 - close up of 24 - with scanned cores and notebook

4. Willow ? at upstream end of small island directly downstream from 3 and about 30m below lower end of last island - about 20m from right bank - there is a reach of many small islands

Photo 26 and 27 shows downstream end of island 4 and recent active channel shelf and floodplain features - saw in photo

5 Largest willow at downstream end of island 4 - probably a tilted tree at time of flood and fully adventitious trunk

6 Smooth-barked tilted tree with flood scarring on upstream side and beaver damage on downstream side. On land former island, now left bank and hardy downstream from last island. Site is about at middle of flood channel, but main channel is only on right half

Tuesday July 24? ~~25~~? 1984

Plum Creek at Louviers, CO

Channel at section 2, where bison bones were found last year, is at base of scarp where bones were found. From erosion scarp on right of section to REW was paced off at 210 feet. This area is depositional and is becoming well vegetated with numerous willows and occasional cotton woods.

Photos 1-3 Box 1 of slides

Recent flow of spring runoff, 1984, has caused much deposition of small gravel and finer sizes on the surface, the vegetation having aided deposition. Flow extended recently (bent grasses) over entire surface to scarp on extreme right.

Sediment samples: (assuming date 7-24)

P-1 new deposition 10m from right scarp

P-2 new deposition 30m from right scarp

P-3 integrated sample across present channel

Photo 4-5 willow before exhumation, 56 ft from base of right scarp and 32 feet downstream from section line

Photo 6 [redacted]ows dug hole around willow and branches coming together

marker shows old soil - finer grained - new deposition exactly 2.0 ft.

willow appears to be 4 years old

Photo 7. cottonwood 6 ft high before exhumation - 900 ft from right edge of section at base of scarp and 150 feet downchannel

Depth to uppermost organic zone - ~~4½~~ 2½ inches

Photo 8 shows hole at cottonwood with original and adventitious roots

Wood slice P-1 - of cottonwood above - section of trunk taken from below surface and just above primary root flair

At site on section 2 and 185 from base of right scarp, depth of recent burial 7½ inches

All holes dug show fresh grasses and other vegetation at the 7½-12½" depth - some still fairly green

At about 185 from right, or 35 from REW, and immediately upstream from section 2 is 20-m wide area that is 3-5 cm higher than area sampled and dug about. It has older trees, better grasses and herbs, and no evidence of recent deposition - older soils.

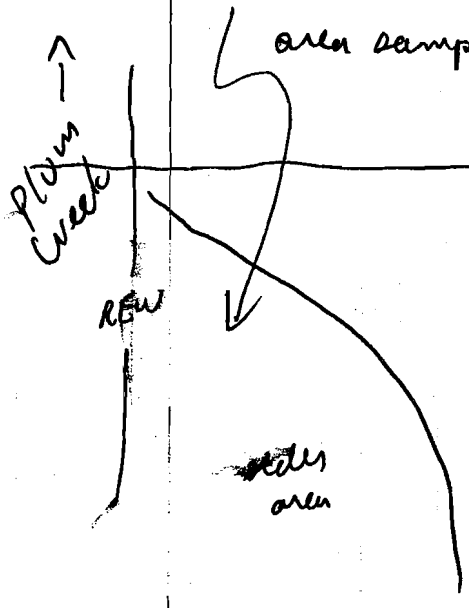
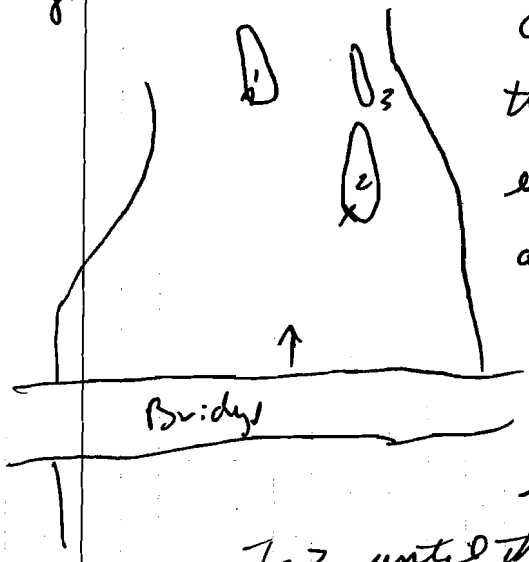


Photo 9 - imbricated trees

Area sketched on last page used to be a channel island. Oldest trees are mostly near upstream end, although several are near downstream end – maybe two islands that joined to right size?

About 100 m downstream from Lourier's bridge are 3 islands:



at 1 and 2 the trees at upstream end are oldest

at 3 all of the trees are young. 3 may have been attached to 2 until the steady high flow this spring.

PI-1 - core from willows on edge of island 2, shown with X

PI-2 - core from willows on edge of island 1, shown with A

7-25-84 - Wednesday

Cores PI-3A and 3B taken from old cotton wood in section 2 line, 850 feet downstream from section 1 line. Tree is on terrace about 20 m west of where bones were found. Much debris on upstream side of tree, core from downstream side.

PI-4 - core from downstream side of large cotton wood with debris pile - about 30 m upstream and 10 m west of PI-3 core tree.

7-25-84

PS-1 Wedge from scarred cottonwood, without debris pile because another tree with pile is 15 m upstream. Tree is about 25-30 m upstream from tree of PI-3 and even with that of PI-4. About 20 east (toward channel) of PI-4 tree. Probably about 50 m west of LEW of Plum Creek

Patch of wild asparagus 20 m upstream from PI-4 tree!

PS-2 - slice of cottonwood - new growth on 1965 surface - about 30 m upstream of PI-4 tree

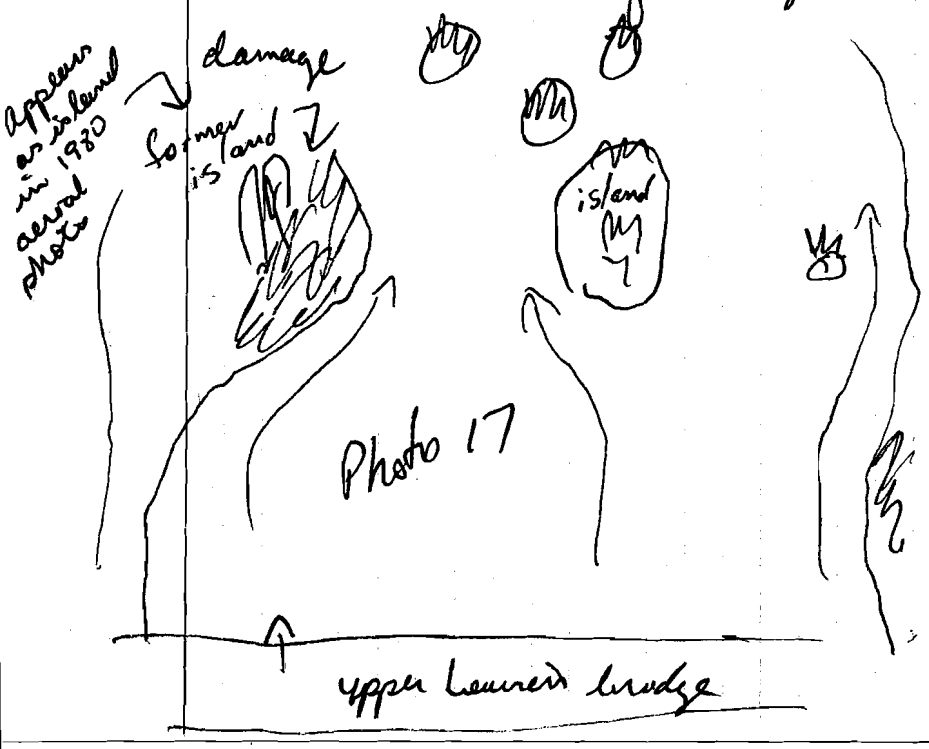
About 5 photos through #14 taken from bridge.

Need to compare sinuosities from aerial photos

PI-5 - taken from cottonwood growing on scarp of "amphitheater" in section 2 850 feet downstream from section 1

Photo 15 shows increment cores in tree

" 16, multiple trunk cottonwoods and willows, indicative of basal flood damage



Upstream end of former island shown on last sheet was sampled by tree slice last spring during World Affairs Conference. Flow does not appear to have occurred on left side of island.

PS-3 - slice of willow from lower part of former island (above : map last sheet) on left side

PI-6 - core from largest willow at downstream end of former island

Ought to try to determine history and date at which island became part of left bank

July 26, Thursday

At channel island (about only one left after this spring's runoff) about 1/4 mile upstream from lower Lourie's bridge and 20 m downstream from fence crossing stream. Island is near center of channel but closer to left side. 3 1/2 inches of recent deposition based on organic layer and root flairs on island trees. Island will be clearly seen in slides taken from bridge.

Channel at extreme right side of Plum creek lowland and immediately upstream from the lower bridge was, according to a longtime resident, the old natural channel of Plum Creek. Channelization took

place by DuPont, probably in the late 1940's, and the channel has been abandoned ever since. It should be datable therefore.

Slice of tree (largest) was taken from the island last spring.

PS-4 - slice of largest cottonwood from lower part of above island - taken about 7 m downstream from the upper slice of last spring. Total length of island presently is about 25 m, but was no doubt longer before the spring and summer runoff. Here, runoff has added deposits to the upper, well vegetated part of the island, but decreased its size. In vegetated part, found numerous small mushrooms.

Photos 18-20 - fossil bone in place with vertical tape for depth from surface. Site is same as for bone site of last year - left bank about 900 feet downstream from bridge; or 850 feet downstream from section 1

July 27 - Friday

PI-7 - from adventitious limb of cottonwood that appears to have been flood damaged by 1965 (?) event. Tree is 50m upstream from road crossing of road ~~north~~ south of Louviers as it winds toward south Louviers bridge from town. Stream is the main tributary

to Plum Creek that enters from the SW just upstream from town. Tree is 15 m to right of stream.

PS-5 - slide from adventitious limb of cottonwood 10 m upstream from last

For 1/2 mile upstream to next road crossing the tributary shows abundant tree scars and 4-5 feet of flood deposits - sand splays, etc.

Met stream gager from Lakewood Subdistrict at Lourier's gage. He said that gage used to be at Titan Road, downstream before the flood - should check. A new gage is near at Titan Road. Resident told gager that in recent years there has been about 3 feet of aggradation at Titan Road. The

channel willows suggest that may be true

Photos 1-6 taken downstream (1-3) and upstream (4-6) from Tatum Road bridge

Sept. 24, 1990

Teel & Waite

13:40 took photos from Louviers bridge with Teel's film

Nov. 30, 1990 Osterkamp and Friedman

Photos 1-6 from Lawrence bridge

Section thru islands 10-S-T + 11-S-T

left to right

all units metric

top left post 1.00

Subtrack 0.5 m in elevation to correct to 5/3/90 Measurements

bottom left post		1.21
1 meter		1.44
2 meters		1.62
3 m		1.87
4 m		2.12
6 m		2.19
7.8 m	edge of channel	2.67
9 m		2.65
13 m		2.60
16 m	head of island	2.54
19 m		2.63
22 m		2.79
23 m		2.61
27 m		2.60
27.4 m		2.84
29.2 m		2.78
29.4 m		2.66
34 m		2.64
38 m		2.62
39.8 m		2.67

Done

41.1	top of post island S-T-10	2,41
41.1	bottom of post S-T-10	2.57
42		2.63
43		2.59
45		2,61
48		2,70
51		2,63
52.5		2,65
52.6	top of post isl. 11-S-T	2.37
	bottom post	2.58
52.9	top of fire	2,62
53		2.70
54		2,63
56.5		2,69
59		2,65
60		2,65
63		2,62
66		2,64
67.7		2,63
68.7		2.70
69.5		2,84
71		2,66
74		2.67
75.3		2,77
75.4		2,61
78.5		2.59
81		2,71
82		2.71
83		2,62

83.8		2.57
84.2		2.41
85		2.36
85	top of post	2.16

Photos 7-12 Section through 10 and 11ST, from left to right showing island cut section, 10ST, 11ST, and right side; then from right to left

Photo 13 - showed tops of enclosures

Near midpoint of section, placed stakes at upstream end of two small islands, one upstream of section a few meters, the other a few meters downstream of section. They will be bisected, with vegetation removed from one side of one island, the other side of the other island.

3-27-89

Section on W Plum Creek

Bed load taken at each 1 foot for one minute and composited - 3" sampler width

Section on E. Plum Creek - 20 feet wide
12:45 1 foot intervals 60 secs each

at Indian Creek it took about 2½ - 3 sec. to fill plastic bag

Culvert [illegible] of water, Indian Creek
[illegible] wide
[illegible] A = .16
150 rev. in 53 secs.

5-11-89

Mon. Island 1

Monumented channel island adjacent to eastbank about 200 m upstream from Hoover's bridge.

Steel stake 1 at lower point of island 2.3 feet upstream from lower vegetated limit.
Stake 2 on left side of island is 43.9 feet upstream of stake 1. Stake 2 is 1.0 foot to right of log that forms left edge of island.

Stake 3 is on left bank of channel adjacent to island, 41.7 feet from stake 2. From stake 2 to 18.4 feet toward stake 3 is poorly vegetated sand; from 18.4 to 37.5 is unvegetated channel; from 37.5 to 41.7 is new flood plain

62.6 feet from stake 1 to stake 3
2.7 feet from stake 1 to edge island; 2.7 to 28.2 is poorly vegetated sand of channel; from 28.2 to 59.0 is unvegetated channel; from 59.0 to 62.6 feet is new flood plain

From stake 2 to snag and rock at upstream end of island is 35.0 feet

Stake 4 is 0.8 foot from edge of right side

5-11-89

of island. Stake 4 to 1 is 43.8 feet

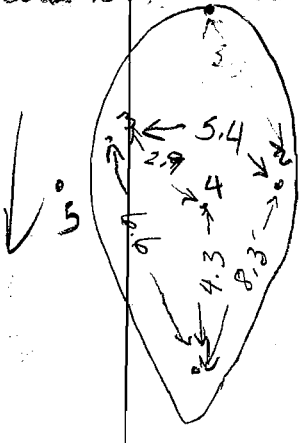
Photos 1, 2, 3 from left looking at island and cutbank behind

4 stake 1
5 " 2
6 " 3
7 " 4
8 island looking downstream toward bridge
9
10
11

Mon. Island 2

Small island 60m upstream from bridge and immediately to upper right of permanent log

Photos 12-19 - including tree



Stake 1 up 1.1 feet upstream from lower tip of island
Stake 2 is 0.2 from left edge of island, with unvegetated depression to left
Stake 3 is 0.5 from right edge and 17.4 from nearest tree on right bank; 15.7 to 17.4 is flood plain, remainder unvegetated channel

May 31, 1989 Carey, Yasu, Jon, Walter

10:20 Bill took bedload sample, East Fork Plum Creek

5 verticals, 1 min each, section 7 feet wide

11:45 West Fork Plum Creek - W = 8.5 feet

1 min for each vertical of bedload measurement

12:45 Indian Creek - 4.0 sec. to fill bucket - no sediment sample - no sediment

13:20 Plum Creek at Lowries - bedload every half foot at 30 sec. W = 11.5 feet

0 1 2 3 4 5 6 7 8

Bleem Creek Courses

June 6, 1989

Jon, Bill, Jason, Wade

Section 2

Monumented 3 sites with fence posts along section 2: at right end about 1/3 of way up cutbank on point of old surface immediately to left of channel and next to tree on old surface about 4 paces east of old channel.

Mon. Island 3

Monumented large island that is approx. about 155 paces upstream of section 2 to lower point of island.

Stake 1 is .9 m upstream of lower point

Stake 2 is 18 paces downstream of Stake 1 at lowermost point of new vegetation and channel-island growth below island

Stake 3 is 9 paces straight to right across channel from stake 1 at right edge of new vegetation - height about about channel is exactly length of this notebook when closed

Top Stake 2 17.1 cm above channel floor

Took 2 susp. samples at gage - Laurie's bridge; none at West and East Forks. Bill took bedload samples. Zack of Colo Dept., Bldg 82, did discharge measurement. Bedload done at each foot for 30 sec.

7-7-89 Detachment alone -

Plum Creek - 5 (Mon. Island 4)

Monumented 1ST island downstream from Sedalia section bridge - about 25 m down from bridge; 10 m from right bank Stake & - fence post - at extreme tail end of island, which is about 30 m long - post is cut to Oak with height above surface exactly the length of this notebook

Post 2 is at extreme right edge of island, about midway between upper and lower ends - driven in 2" deeper than 1

Stake or post 3 is immediately to right of 2 at left edge of 3.4 m island between subject island and right bank - post 3 is near upper end (1 m from upper end)

Post 3 is 2 boat lengths above channel sewels. Island of post 3 is upper one of two in strait between subject island and right bank

Two medium willows are on subject island. One is 2½ m downstream from upper end; other is about 10.12 m upstream from lower end. Otherwise, mostly grass with some small willows up to 2.5 m high

Oct. 16 - Cliff & Waite

Island 4 - 5

Veg > 2m in height

Common willow - one clump of several stems - 3 stems > 2m
Ave. diameter at 1m height 8cm
Bimodal population of sizes of willows
Clump 2 > 2m - 10 stems in clump
6cm ave. diameter
Clump 1 near upstream end of island
Clump 2 12.0 m from downstream fenchpost

Clump 3 - 3 stems > [illegible] m of cottonwood - chewed down by beavers
6cm diameter of main stem
others each 2cm diameter

Divide island into 4 lengths quadrants - each 7m long
Quad 1 is upstream 2m.
All plants > 1/2m high and that are woody.
3 willows: big leaf toothed; broad leaf entire; narrow - leaf entire

None of quad data includes >2 m trees

Species	- 1st quad
Narrow entire	(2) (10) (7), 1, 3, 3 1, 2, 1, 1, 2, 1, 2,
broad entire	(2) (3) (1) 6, 8, 4, 5, 12, 1,
big-leaf toothed	
	2nd quad
narrow	1, 1, 1, 3, 2, 1, 1, 1
broad	8, 3, 4, 5, 2, 1, 1, 1 1, 1, 1, 1, 1, 1
big toothed	1, 5, 2, 7 4,
aider	10

14-21m

broad 3, 1, 1, 1, 4, 1, 1, 1, 2, 5, 3, 4, 1, 2, 7, 3, 3, 1, 1,

7, 1, 2, 3, 1,
3 stems >2m

10, 7, 3,

21-23m stems

7, 7, 3,

2

2,

1989

Oct. 17 10:45

Cliff and I established line across channel 120 paces below section 2 and island 5-L. In line we placed two tires each supported slightly on the inside by L-bar driven into the channel sand. Both tires were filled to the top with sand. The line is monumented with L bars on each side:

0.0 m	L bar to left of left bank
0.5	Left bank, LEW of left distributary
4.0	REW of left distributary
5.6	Center of tire, Island 6-LT
7.9	LEW middle distributary
9.5	REW " "
17.2	LEW right "
18.3	Center of tire Island 7-LT
24.0	REW right distributary

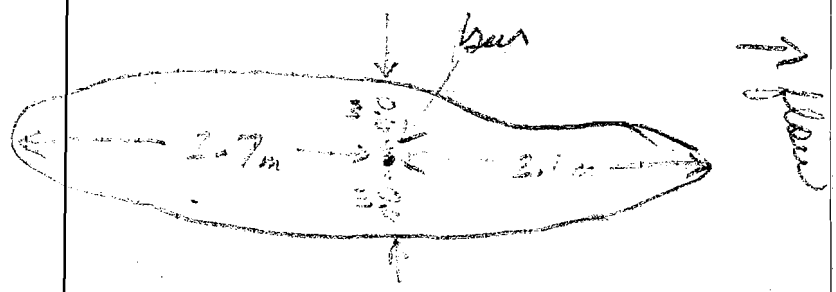
25.2 L bar to right of right bank

Line is essentially normal to channel. From LEW to REW (0.5 - 24.0 m) there is almost no vegetation.

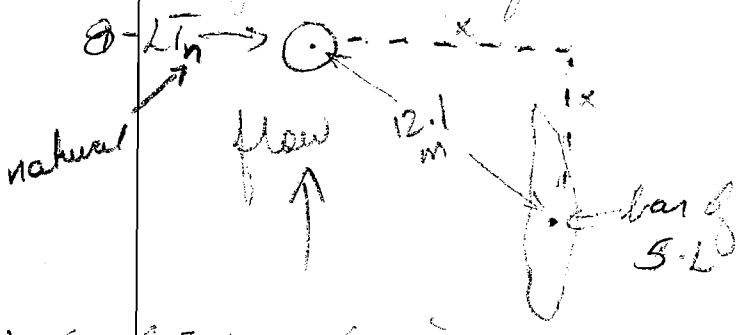
Island 6-LT (Louviers-Tire) is 8.5 m directly upstream of 4-m high toothed willow at head of small island. No other islands are close to 7-LT ← 9L

Island 5-L - monumented with only one L-bar - is the only small channel island at section 2. Bar is 27.2 m to right, or east of fence post on ok scarp at left edge of channel, section 2. Bar is 6.3 m to left of right edge of channel when aligned with fence post of section 2 mentioned above

Island 5-L



Island 8-LTn is 12.1 m to center of tire from bar of 5-L. It is downstream and to left (toward center of present channel) of bar about equal distances.



Island 5-L is heavily grassed to about [illegible] level; it has 21 narrow [illegible] in upper half [illegible] in lower third, up to 2 m above channel level.

Island 8-LTn is 22 paces from LE channel and 20 paces from RE. There is almost no vegetation. One clump of grass 0.2 m [illegible] meter 2 m to right of tire center is only possible island.

8-LTn is 13.6 m from RE channel
15.2 m " " LE "

8-LTn is half buried by natural processes is not barred in place, and appears to have been in place at least one season. There

is sparse channel vegetation to upper left, downstream, and lower left side of tire, as well as in the tire, which is filled to top with sand. All are grasses and herbs.

Island 9-L is the one headed by the toothed willow 8.5 m downstream from 6-LT

Island 3-L

Instrument height ~~1.37~~ Dow

Cross-channel section through center of island 3-L

~~2.32~~ m from instrument to rod, L Bank

Rod, RB			
1.26 m	From instr to: post	5.0 m	
1.39	" " tire	5.0 m	
1.36	float-plain level	4.0 m	44
1.73	Edge of flood plain	6.0 m	42
1.94	Active channel	7.0 m	41
2.02	Standing water, no veg. side channel	9.0 m	39
1.74	Veg. channel bar, high pt.	14.5 m	33.5
1.95	Low point, active channel, right	19.0 m	29
1.91	Edge island 3-L, right side	22.0 m	26
1.40	Top island bank	23.0 m	25
1.43	Half way to post	24.0 m	24
1.10	Top post	27.0 m	21

Dol

1.44 m	Base post	27.0 m	24
1.54 m	Half way to L edge 3 L from post	30.0	18
1.67	Top left bank of 3 L	32.0	16
1.89	Bottom left bank; right edge cham.	35.0	13
1.93	Channel bed	37.0	11
2.07	" " in water	42.0	6
2.15	Thalweg main channel	44	4
2.06	Bottom, right bank flood plain	46	3
1.40	Top flood plain	46	2
1.52	Bottom post	48	0
0.81	Top post	48	0

Taped width of island 12.0 m

Length island 57 m

Longitudinal section, starting at center post (27.0 m) of last section line is from post at downing island to center post (27.6 m) - taped distances

post	(27.6)	0.90
ground	27.6	1.24
	24.0	1.26
	20.0	1.39
	16.0	1.33
	11.0	1.33
	9.0	1.34
	6.6	1.36

Continuing longitudinal section upstream on 3-L from center stake at 27.7

27.7	base stake	1.24	
25.0		1.24	30.4
22.0		1.27	33.4
18.0		1.24	37.4
11.6		1.09	44.0
6.0		1.00	49.4
2.0		.97	53.4

photos 34-35 cliff holding narrow leaf willow

32-33 angle view of 5-L

30-31 side view of 5-L

28-29 field where flood deposits occurred during cross over of flow

Dme

Oct. 19, 1989 - with Cliff Mapp and Jim Doerner

Section, starting on left side at fence post of section 2, going east across S-L to point on right "flood plain" in line with the two monuments. Monument of S-L so the one in center of established

Station		height
Top post		1.14
0.0 bottom post		1.87
0.4		1.30
0.6		2.03
1.0		2.44
2.8	Right Edge of Active Channel/shelf	3.38
3.0	Left Edge of Water	3.58
4.0		3.69

Done

Oct. 19 Cont.

Station		height
9.0		3.70
14.0		3.58
17.0		3.57
21.0		3.70
25.0		3.56
26.2		3.57
26.4		3.62
26.6		3.27
27.05	at Post	3.16
27.05	Top of Post	2.98

Done

Continuation of base line with instrument moved

Station		height
	Top of Post	0.64
11.9	upstream at top of t. Rk. Island 8LT (distance 11.9 m from Post on Island 5L)	1.35
0.0	Post Island 5L	0.83 + 2.33 = 3.16
0.3		0.96 + 2.33 = 3.29

3.16
.83
2.33

Station		Height
0.4		1.03 + 2.33 = 3.36
0.5		1.27 + 2.33 = 3.60
0.7		1.23 = 3.56
2.0		1.21 + 2.33 = 3.54
4.0		1.25 3.58
6.0		1.28 3.61
6.2	Right Edge of Channel	1.32 3.65
6.3		1.06 + 2.33 3.39
6.6		0.97 2.33 3.30

Done

Section line established 10-17-89
through intervals 6-LT and 7-LT

Station		Height
	Top of Post Left Bank	1.31
0.0		1.58
0.4	Right Edge of Active Channel Shelf	1.72
0.5	Left Edge of Water & Channel	1.86
0.9		1.86
2.0		1.82
3.4		1.81
3.7		1.76
5.3	Left Edge of Tire 6LT island	1.54
5.9	Right Edge of Tire 6LT island	1.50
6.1		1.75
9.0		1.77
14.0		1.73
17.3		1.84
17.9		1.81

One

Station		Height
18.0	Left Edge of Tire Island 7LT	1.61
18.6	Right Edge of Tire Island 7LT	1.62
18.7		1.83
20.0		1.89
21.8	Thalweg	1.95
24.0	Right Edge of Wheel	1.85 Dme
24.5		1.77
25.2	Post (Right Side Section)	1.51
25.2	Top of Post	1.20

Post at Left Side through sections of Islands 6LT & 7LT Extends from Post of 6LT & 7LT section downstream into channel to Island 9L Dme

Instrument has not been Repositioned from last section / Section begins at about 75° angle from Last Section.

Station		Height
0.0	Top of Post Left Bank	1.31

Station		Height
0.0		1.57
0.7		1.82
1.3		1.86
6.0		1.83
8.0		1.78
8.7	Base of Willow at Island 9L	1.60
	Note: 20 to 25° Jog to left Section is now longitudinal to Island 9L	
9.1		1.55
9.8		1.56
10.7		1.61
11.8	Base of down stream Willow	1.59
13.5		1.59
14.3		1.64
14.5	Down stream End of old portion of Island	1.69
14.5	Top of Post	1.24

10-19-89

top stake 5	16.15	0.30
16.7		0.66
stake 4	19.9	1.15
top stake 4	19.9	1.07
rebar exposed	20.2	1.24
21.0		1.22
24.8		1.18

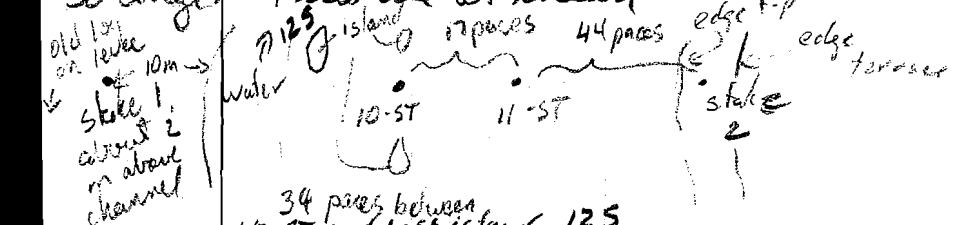
Longitudinal section of lower half inland 1-2

stake 5	16.15 + 0.2m	0.66
top stake 5	DOM	0.30
0.7 m		0.70
1.2		0.73
1.7		0.73
2.2		0.77
2.7		0.80
3.2		0.84
3.7		0.86
4.2		0.83

4.7		0.83
5.2		.82
5.7		.84
6.2		.89
6.7		.91
7.2		.92
7.7		.92
8.2		.92
8.7		.92
9.2		.90
9.7		.92
10.2		.91
10.7		.92
11.2		.94
11.7		.95
12.2		.98
12.7		1.05
13.03	stake 1	1.18
13.03	Leg of stake 1 near tail island	1.15
14.03	channel below island	1.32

Dup

Established island 10-ST and 11-ST about 200 m down stream from Sedalia bridge. Tapes are as shown

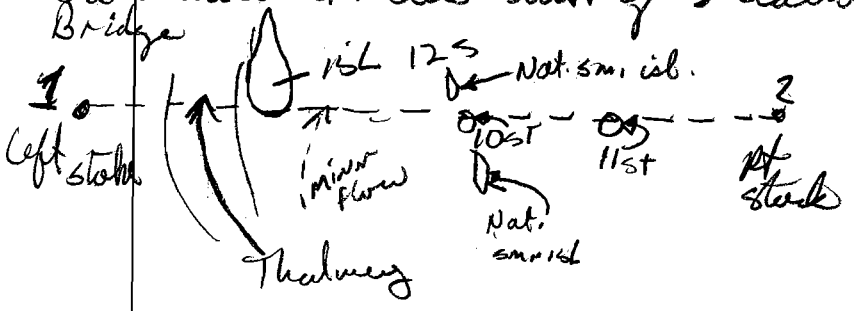


34 paces between 10-ST and left island 125

19 Oct 1989

Plum Creek

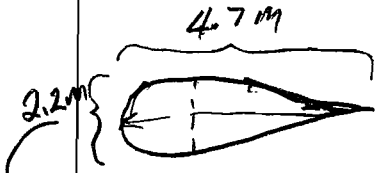
~~200~~ hundred meters dust of Sedalia Bridge



stake 1 is 7.7 waters edge

head of isl 12S is 16.2 m from stake, and is exactly on the transect with isl 10-ST & 11-ST

isl. 12S is almost a perfect teardrop shape

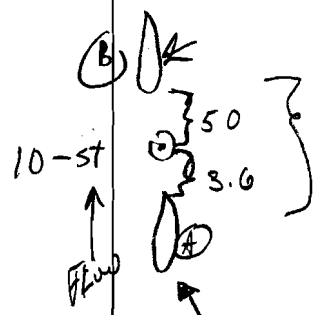


widest part is 1.5 m dust of head and is 2.2 m wide

19 Oct 1989
ARTIFICIAL ISLAND 10ST

Center of 10-ST is 3.6 below tail of upst nat isl.

is 5.0 m upst of head of dust nat. isl.



NO veg woody or herbacous between nat islands

Both isls have woody veg at upper 1/3 of isl on both island the spe

(A) upst 1st (is narrow entire willow approx 85 stems 2-3 yo / 8 m²

(B) odd shape little beast with lots sedg in woody part
50 stems narrow willow in @ 5 m²
+
6 broad entire

On Both islands → willowed area is geomorphically mature, ie they are approaching F.P. level.

Oct. 19 pm

Section across channel (partial) at 2-L including stake 4 and newly placed stake 5 on right bank. Left side not monumented, so distance is arbitrary.

Station		Height	
1.5		1.20	
3.5		1.50	DM
5.0		1.20	
5.2		1.50	
5.9	Edge of island	1.20	
6.4		0.99	
6.9	Top of stake 4	0.76	
6.9		0.82	
7.2		0.91	
7.4		1.00	
7.5	Edge of water	1.21	

Station		Height	
7.7		1.25	
8.6	Thalweg	1.29	
9.7		1.25	
11.0		1.27	
12.2	Edge of Water	1.18	
12.6		0.96	
13.4		0.66	
14.4		0.51	
16.0	Right End of Section	0.41	DNL
16.0	Top of Stake 5	0.19	

Oct 19, 1989

Island 1L section

Station		Height
	Top of stake 3	0.98
0.0	stake 3	1.60
1.3	Right Edge Active Channel/Shelf	1.20
1.4	in Water	1.27
4.0		1.30
6.3	Thalweg	1.40
6.9		1.31
7.3		1.12
10.3		1.13
12.2		1.16
12.4	on log left side of island	1.13
12.6	Top of stake 2	0.98
12.6		1.05
13.1		0.94
15.2		0.68
stake 5	16.15	0.66

Monday, April 18, 1988

Osterkamp, Eberl, Wharton

Took photos from gage-site bridge - Plum Creek, 10:45 am

Took sediment ETR 11:00 am

AC width, section 2, 30.0 m

1/30/91

Plum Ck X-section Island 10 & 11 ST

SEDIMENTA REACH = XS # 55

Dist from LB	X (m)	Y (m)
LB STAKE (Top)		2.05
LB STAKE (Bottom)		2.68 ?
1		2.46 ?
3		2.86
7.5		3.56
16.0		3.64
22.0		3.83
25.0		3.6
27.6		3.91
28.3		3.84
Top of stake Isl. 10 ST		3.48
Bottom stake Isl. 10 ST +1.0m		3.60

1/30/91 p.2 XS-35

X (m)	Y (m)	
Top of stake TSI RST	3.44	
52.5 m, base of slope, TSI. RST	3.51	
60.0	3.77	
65.0	3.73	
70.8	3.79	
75.6	3.65	
79.3	3.66	
83.7	3.47	JP → 6/27/91 add 0.04m to All Elevation to account for ground melting.
Top of "old" slope, RB	3.19 - 3.23	
Base of "old" slope, RB 84.9 m	3.34	3.38
89.0	3.38	3.42

1/30/91, p.3 XS-#35, cont

	X (m)	Y (m)	
	91.1	2.47	+.04 = 2.51
	91.7	2.19	2.23
	93.4	1.69	1.73
	95.3	1.49	1.53
	Bottom "new" stake, 97.8	1.49	1.52
	Top "New" stake = "REFERENCE STAKE"	1.09	1.13
			1.13
Add 97.8 ↓	Top of "Terrain" stake	1.09	= from here on add 97.8
	0, base of Terrain stake	1.47	1.51
	2.3	1.46	1.50
	5.9	1.37	1.41
	12.0	1.45	1.49

6/30/91, p.4

XS-35, cont.

	X (m)	Y (m)	
117.0	19.2	1.34	1.38
	25.7	1.26	1.30
	36.4	1.12	1.16
	45.0	1.01	1.05
	52.3	0.97	1.01
	63.1	0.95	0.99
	70.4	1.10	1.14
	77.7	1.22	1.26
	86.0	1.22	1.26
	96.0	1.38	1.42
	92.5	1.55	1.59
	99.2	1.57	1.61
	104.9	1.25	1.29
	108.1	0.91	0.95
	Top of stake, RB	0.27	0.31

Feb. 1, 1991 Osterkamp and Friedman

Established section 7-L about 50 m downstream from where Indian Creek enters Plum Creek bottom land

Left stake, top		(1.45) 1.43	top island 26.6	3.62	
0	(1.9)	1.86	31.2	3.92	
			ice		
0.4		1.90	54.0	3.89	
3.1		4.04	57.4	3.75	
Bank, Indian Creek			ice		
6.1		4.30	107.0	4.16	channel bottom, [illegible]
Indian Creek					
6.5		4.64	124.4	3.88	right side channel
Indian Creek					
10.1		4.55	125.5	3.61	
Right bank, top					
10.5		4.30	126.7	2.45	Bottom stake
12.8		4.21	Top stake	2.15	
18.2		4.13			
23.5		4.03			

Johnathan - photo of 2L 2/22/91

Section 4S

	(m)	Elevation (m)
Top of Left Stake	0.0	0.89
	0.0	1.41
	2.0	1.48
	4.0	1.54
Edge of Tread	6.0	1.72
Top of Terrace	9.1	3.11
	12.0	3.14
	14.0	3.22
	16.0	3.24
	18.0	3.25
	20.0	3.26
	22.0	3.22
	24.0	3.22
	26.0	3.20
	28.0	3.21
	30.0	3.20
	32.0	3.19
	34.0	3.19
	36.0	3.21
	38.0	3.19
	40.0	3.17
	42.0	3.18

2/22/91

Section 45 cont

Distance (m)		Elevation (m)
44.0		3.10
46.0		3.12
48.0		3.10
50.0	Next to log but not on top of log	3.16
51.7	Edge of island	3.14
52.5		2.86
54.0		2.81
56.0		2.91
58.0		2.83
60.0		—
60.05	Bottom of stake on Island	2.75
60.05	Top of Stake on Island	2.46

Instrument moved to other Side of Channel

Distance (m)		Elevation (m)		
add 60.0m 0.0	Top of Stake on Island	0.77	2.46	add 1.69m
0.0	Base	1.06	2.75	To Elevations
2.0		1.17	2.86	↓
4.0		1.02	2.71	
6.0		1.00	2.69	
6.6	Top of Slope	1.04	2.73	
7.5		1.47	3.16	
8.1	Edge of Channel	—		
8.3	Bottom of Channel	—		
8.5	Thalweg	—		
8.5	Water Surface	1.69	3.38	

Section 45 (cont.)

Distance (m)		Elevation (m)	
10.0		1.79	3.48
12.0		1.72	3.41
14.0		1.71	3.40
16.0		1.74	3.43
16.0		1.87	3.56
18.0	Water surface	1.67	3.36
18.2	Right Bank	1.74	3.43
18.9		1.61	3.30
19.3		1.33	3.02
20.0		1.27	2.96
22.0		1.26	2.95
24.0		1.11	2.86
26.0		1.09	2.78
28.0		1.01	2.70
30.0		1.06	2.75
32.0		0.99	2.68
34.0		1.01	2.70
36.0		0.95	2.64
38.0		0.94	2.63
40.0		0.94	2.63
42.0		1.07	2.76
44.0		1.15	2.84
46.0		1.15	2.84
48.0		1.19	2.88
50.0		1.18	2.87
52.0		1.25	2.94
54.0		1.21	2.90

2/22/91

Section 45 (Cont)

Distance (m)		Elevation (m)	
56.0		1.24	2.93
58.0		1.24	2.93
60.0		1.25	2.94
62.1	Toe of Terrace	1.24	2.93
64.0		0.85	2.54
66.0		0.51	2.20
66.95	Base of stake	0.30	1.99
66.95	Top of stake	0.06	1.75

Feb. 22, 1991 Osterkamp, Duerner, Friedman

Photos 9-11 Upstream on Plum Creek from Beavers bridge

12-14 Downstream from bridge

15 Staff gage SG 6L 08:45
0.27m - is 10m upstream of section 9L (through islands 6 and 7LT)

16 Island 9L looking downstream

17 Islands 6LT and 7LT (in front of 9L) at section 9L

18 Island 8LTn, looking from

19 Island 5L

20-21-22 Island 1L

23 Staff gage SG 5L 09:20
0.31m

Don Tow / 791-4800
X4806 messages

Arapahoe County
Law Enforcement Facility

Cross Section #1. Drive East on Main Road That leads to Arapahoe County Law Enforcement Facility Keeping the Buildings on the North Side (Left) of the Road. Park at gate and head South along fence line to the Channel. The Cross Section is located 24 m East of Fence line across the Channel and 15 meters South of fence line & Open Sided Barn. Further to the North is a large White Barn

7/30/90 Cross Section / Photos

1st Photo - looking North towards Right Terrace stake

2nd Photo - looking South towards Left Terrace stake.

3rd Photo looking North from Left Terrace to Right Terrace

4th Photo Look Downstream from Stake line.

5th Photo looking upstream from fence line (facing East)

6th Photo - looking South from Right Terrace Stake towards Left Terrace

7/30/90 Cross Section #2

40 meters upstream from Bridge on Highway 85, 3/4 mile North of Louviers Turnoff. Stakes are located on First Terrace ~ 1.5 m above Channel.

7/30/90 Cross Section #3

~400 Meters below Bridge on Highway 85, 3/4 mile North of Louviers Turnoff. Stakes are on First low Terrace approx 1.0 m above Channel.

7/30/10 Cross Section #2

7th Photo looking Upstream from Bridge
8th Photo looking Downstream towards Bridge from Stake line
9th Photo looking North towards Right Terrace from Left Terrace Stake
10th Photo looking South Towards Left Terrace from Right Terrace

Cross Section #3

11th Photo looking upstream Towards Bridge from Stake line

12th photo looking Downstream From Stake line

13th photo looking North towards Right Terrace from Left terrace Skake

14th photo looking South towards Left Terrace from Right terrace

7/3/90 East Fork Plum Creek near Sedalia, Co.
Jim Doerner
Air Temperature ~90°F Clear Skies

Measurements taken 300 meters below bridge

No noticeable bedload movement, No samples recovered

Discharge measurement taken at 9:35 am
Water Temperature 20°C.

Suspend Sediment Samples taken at 10:00 A.M.
1 Bottle / 2 Traversers
Intervals: 3.5', 4.0', 4.5', 5.0', 5.5'

7/3/90 West Fork Plum Creek, near Sedalia, Co
Clear Skies, Hot (90°F) @ 10:30 A.M.

Measurements taken 400 meters above bridge. Beaver dam in place below bridge.

Water Temperature [redacted] 24°C

No SS Samples taken

No bedload Samples Recovered.

7/3/90 No flow in Indian Creek

7/3/90 Plum Creek nr Louviers, Co
Air Temp cooling (mid 80's)
11:30 A.M.

Very little flow exists in Channel.
Discharge measurements taken 20 m
above bridge. This is the only location
that flow is in a single Channel.

No bedload Movement observed, no bedload
recovered.
No SS samples taken.

Water Temperature 22°C

7/10/90 Plum Creek near Louviers, Co

9:15 am

Conditions: Sunny, Warm (80°F) Clear Skies, high humidity, No Wind
Water Temperature 20°C.

Flow is in Several channels above and below bridge. Flow is in a single channel in only one location about 20 m above bridge.

9:50 - Bedload measured every foot for 60 sec; 2 traverses

1st Traverse; 1, 2, 3, 4, 5, 6, 7, 8
2nd Traverse; 1, 2, 3, 4, 5, 6, 7, 8

S.S. sampled at 10:15 a.m. - 2 Bottles
Every .5', 1 traverse.

7/10/90 East Fork Plum Creek, Near Sedalia, Co.

10:50 A.M. Sunny, Warm (high 80°F), Winds Calm

Water Temperature 25°C

11:20 A.M.
Bedload Samples taken at 1' intervals for 60 seconds; Two Traverses

1st Traverse: 1, 2, 3, 4, 5, 6, 7
2nd Traverse: 1, 2, 3, 4, 5, 6, 7

SS taken at 11:40 AM, EVERY .5', 1 traverse

7/10/90 West Fork Plum Creek, near Sedalia, Co

12:45 400 m above bridge. Beaver Dam below bridge is still in Place

No Visible bedload movement observed, no bedload Recovered.

SS samples taken at 13:00, Every .5', 1 traverse

7/12/90 Plum Creek Photos/Slides

Photo #	Location
1	100 m below bridge at Louviers
2	300 m below bridge at Louviers
3	250-300 m above bridge at Louviers looking South towards large Island
4	Same as 3rd Photo
5	10 m above big Island looking South (Island is above bridge at Louviers)
6	60 meters above Louviers bridge looking North.
7	East Fork Plum Creek 50 meters below bridge looking up Stream.

7/12/90 Plum Creek

14:20

1 Bottle S.S. taken 30 m above Louviers bridge. Flow is Clear, little evidence of high Water from the Storm (Hail) that hit Denver on 7/11/90.

7/12/90 East Fork Plum Creek

15:00

1 Bottle of Suspended Sediment taken 50 m below bridge

7/12/90 West Fork Plum Creek

15:25 Bill Duncan (Property Owner) Requires that future access to the property be obtained before entering property. He lives in the large White House, the first right on Highway 105.

Plum Creek Drainage Basin

Bedload Weights

6/8/90 Plum Creek near Louviers, Co
10:16 3.714 Kg
Every 20 cm for 60 sec.
Q = 15 ft³/sec

7/10/90 Plum Creek Near Louviers
10:00 Every foot for 60 sec; two Traverses
2.282 Kg

7/10/90 East Fork Plum Creek
11:20 Every 2' for 60 sec; Two Traverses
2.936 Kg

7/30/90 Cross-Section #1. Ephemoral Tributary to Plum Creek. This tributary Enters from the East. For permission to enter land Call Don Tow at the Arapahoe County law Enforcement Facility. The #is 791-4800 or 791-4806 for Messages.

To reach cross-section #1 Drive South from C470 on Highway 85. Turn left (immediately) after bridge that is about 3/4 mile North of the Louviers TURNoff. There is a small sign that identifies this turn off as the one for the law enforcement training facility. After turning left off of Highway 85 head east, after about Two Miles there will a group of buildings to the left (North). Continue driving east, keeping the building on your left. Drive until you reach a gate and stop. —

Head south along the fence line until you reach the channel. Cross the fence heading east. The ~~Stake~~ cross-section is on a line 24 meters East of Fence line. The stake on the Right Terrace (looking downstream) is ~15 meters south of a fence line located to the North. Just to the North of this fence is an open side barn, Further to the North is a larger white barn.

7/30/90 Cross-Section # 3

40 meters upstream from bridge on Highway 85 (3/4 mile North of Louviers turnoff). Stakes are located on First Terrace 1.5 m above Channel.

7/30/90 Cross-Section # 4

~ 350 to 400 m below bridge on Highway 85, 3/4 mile north of Louviers Turnoff. Stakes are on First Terrace about 1.0 m above Channel.

7/30/90 Slides of Ephemeral Tributary To Plum Creek.

Slide #	Location
	Cross-Section # 1
1	looking North towards Right Terrace ~~stake~~.
2	looking South towards Left Terrace stake.
3	looking North from left Terrace to right Terrace
4	looking downstream from stake line.
5	looking upstream from ~~fence~~ line (Facing east)
6	looking South from Right Terrace stake towards left terrace

7/30/90 Slides of Ephemeral Tributary To Plum Creek

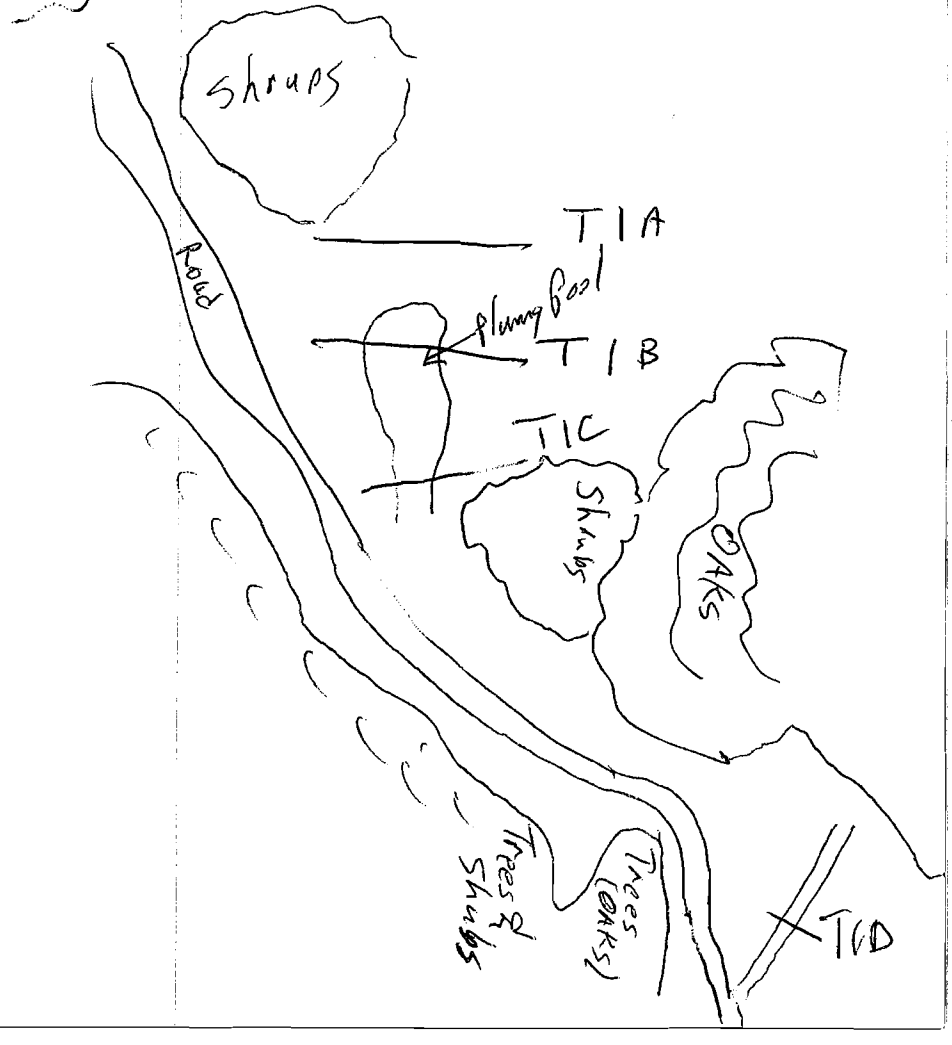
Slide #	Location
	Cross-Section #3
7	looking upstream from bridge
8	looking downstream towards bridge from cross-section
9	looking North across channel to stake on Right Terrace
10	looking South across channel to stake on Left terrace.

7/30/90 Slides of Ephemera (Tributary to Plum Creek

Slide #	Location
	Cross-Section #4
11	looking upstream towards bridge from Cross Section
12	looking downstream from Cross Section
13	looking North across channel from left terrace stake
14	looking South across channel from Right terrace stake.

Trees

Cross Sections T1 A B C & D - Tributaries to Main Ephemeral Tributary to Plum Creek



Photos 8/9/90

Photo 1 (#30) Above Plung pool looking down Stream

photo 2 (#31) Below Plung Pool looking upstream

photo 3 (#32) Below Cross Section T1B looking into Plung pool

Photo 4 (#33) Below T1D looking upStream

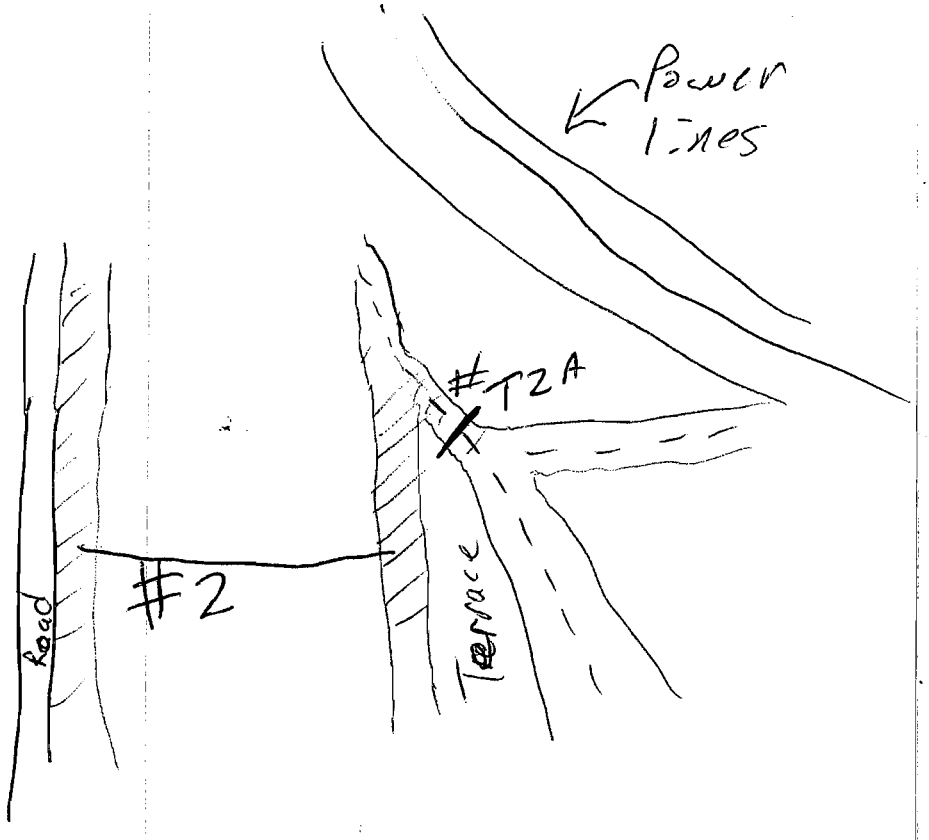
Photo 5 (#34) Above T1D looking downstream

Photo 6 (#35) Left Terrace looking NW Toward T2A

Photo 7 (#36) Look South across Channel from Right Terrace at #2

8/9/90

Cross Sections #2 & T2A



10/26/90 Plum Creek Section 2 (Terrace)

Measurements made by D.U. Geography Field Methods Class, under direction of Jim Doerner

From West Post 3 to East Post 2

add 0.71 m to Correct to 12/8/89 Data

Distance (m)		(m) Elevation
0.0	Top of Post 3	0.47
0.0	Bottom of Post 3	0.98
0.6		1.03
2.6		1.16
3.6		1.06
5.6		1.07
7.6		1.09
9.6		1.23
11.6		1.28
13.6		1.29
15.6		1.21
17.6		1.11
19.6		0.97
21.6		0.79
23.6		0.70
25.6		0.75
27.6		0.85
29.6		1.16
31.6		1.37
33.6		1.57
35.6		1.61

(m) Distance		(m) Elevation
37.6		1.71
39.6		1.72
41.6		1.76
43.6		1.68
45.6		1.66
47.6		1.73
49.6		1.87
51.6		3.11
53.6		3.33
55.6		3.35
57.6		3.29
59.6		3.44
61.6		3.56
63.6		3.53
65.6		3.54
67.6		3.48
69.6		3.44
71.6		3.31
73.6		3.01
75.6		1.80
77.6	Base of Post 2	1.68
77.6	Top of Post 2	1.54

10/26/90 Plum Creek Section Two (Terrace)

D.U. Field Methods Class

From Post 3 to the West

Distance (m)		Elevation (m)
0.0	Top of Post 3	0.94
0.0	Bottom of Post 3	1.45
2.0		1.39
4.0		1.70
6.0		1.75
8.0		1.76
10.0		1.74
12.0		1.66
14.0		1.62
16.0		1.62
18.0		1.57
20.0		1.54
22.0		1.57
24.0		1.55
26.0		1.55
28.0		1.57
30.0		1.63
32.0		1.67
34.0		1.73
36.0		1.88
38.0	32.0 — 2.12 38.0 — 2.37	2.37
39.0		2.48
40.0		2.57
41.0		2.72
42.0		2.93

Distance (m)	Elevation
43.0	3.27
44.0	3.57
45.0	3.68
46.0	3.60
47.0	3.58
48.0	3.51
49.0	3.46
50.0	3.52
51.0	3.49
52.0	3.50
53.0	3.53
54.0	3.56

add 0.24 m to correct to 12/8/89 data

10/26/90 Plum Creek Section Two (Channel)

distance(m)		Elevation(m)
77.6	Top of Post Two	1.680
77.6	Base of Post Two	1.548
78.6		2.909
80.6		4.215
81.6		4.184
82.6		4.069
83.6		4.175
84.6		4.102
85.6		4.081
86.6		4.157
87.6		4.084
88.6		4.267
89.6		3.985
90.6		3.924
91.6		3.941
92.6		4.062
93.6		4.154
94.6		4.081
95.6		3.974
96.6		3.971
97.6		3.956
99.6		3.962
99.6		3.986
100.6		3.962
101.6		3.977
102.6		3.987
103.6		3.944
104.6		3.590
105.6		4.008
107.6		4.053
108.6		4.008
109.6		3.977
110.6		4.066
111.6	Base of Post	4.066
111.6	Top of Post	3.486

10/26/90

Island 5L - New stake (Post) added to Channel island 5L at the downstream end of the island.

Bedload, SS, & discharge measurements taken at Plum Creek near Louviers 25 m upstream from Section Two

Bedload - 2 Traverses Every 1' for 60 sec

SS Samples Every 1' 1 Bottle recovered

2.115 Kg of Bedload on 10/26/90

11/9/90

Plum Creek near Louviers

Discharge, Suspended Sediment, & Bedload Measurement take.

Q = 15.005 cfs

Bedload - every foot for 30 sec 1 Traverse

2.570 Kg

5140
4
20560

Plum Creek Sept 22, 1986

Sample 1 - bed material across channel at section 2

Sample 2 - active channel sheef bank, right side, section 2, .1 m above channel

Sample 3 - new flood plain, right side, section 2

Sample 4 - active channel sheef, left side, about 100 m below section 1

Sample 5 - lowest sand of sequence 2 at John's flood deposits exposure

Sample 6 - middle sand of sequence 2

Sample 7 - upper sand of sequence 2

9-22

Slides 10 11 12 ~~9, 10, 11~~ looking upstream from lower Lowden bridge

Slides 13, 14, 15 looking downstream, lower Lowden bridge

Slides ~~16-24~~ - flood deposits 9-24

Middle sequence has upper 20 cm coarse sand, lower 36 cm fine sand, total thickness 56 cm

Slide 22 - tree embedded in terrace flood deposits near John's pit

Slide ~~23~~ - view at upstream end of island immediately downstream from section 2

Slide ~~24~~ - about same view at Sedalia bridge on old photo

Slide ~~25~~ - lower end view 1 5

Sample 8 - upper sand of lowest sequence, 1, of flood deposits at Johns exposure

Sample 9 - uppermost flood deposit on terrace, just upstream 50 m from Johns exposures

Pete Adams

9-23-86

Section 1 Retaining wall at 29'

Back corner of house - can't see

BC		1.15
0	0.35	meter - edge of fence around house
10	0.42	1.38
20	1.11	3.64
29	1.88	6.17 34 RE channel bottom
30	5.27	17.29
40	5.56	18.24
50	5.55	18.21
60	5.56	18.24
70	5.57	18.27
80	5.60	18.37
90	5.67	18.60
100	5.65	18.54
110	5.57	18.27
120	5.52	18.11
130	5.65	18.54
140	5.32	on vegetation 17.45
150	5.13	16.83
160	5.13	16.83
170	5.09	16.70
180	5.18	16.99
190	5.20	17.06
200	5.12	16.80
210	5.19	17.03
220	5.24	17.19

feet

230	—		
240	—		
250	5.36	17.59	
260	5.37	17.62	
270	4.38	14.37	
280	3.80	2.12 + 1.68 = 3.80	(12.47)
280	0	2.12 + 1.68 = 3.80	12.47
290	10	2.50 + 1.68 = 4.18	13.71
300	20	1.38 + 1.68 = 3.06	10.04
310	30	—	
320	40	1.07 + 1.68 = 2.75	9.02
330	50	1.27 + 1.68 = 2.95	9.68
340	60	1.29 + 1.68 = 2.97	9.74
350	70	1.37 + 1.68 = 3.05	10.01
360	80	1.30 + 1.68 = 2.98	9.78
370	90	1.23 + 1.68 = 2.91	9.55
380	100	1.11 + 1.68 = 2.79	9.15
390	110	1.05 + 1.68 = 2.73	8.96
400	120	.97 + 1.68 = 2.65	8.69
410	130	.92 + 1.68 = 2.60	8.53
420	140	1.04 + 1.68 = 2.72	8.92
430	150	1.11 + 1.68 = 2.79	9.15
440	160	1.17 + 1.68 = 2.85	9.35
450	170	1.37 + 1.68 = 3.05	10.01
460	180	1.60 + 1.68 = 3.28	10.76
470	190	1.79 + 1.68 = 3.47	11.38
480	200	1.76 + 1.68 = 3.44	11.29
490	210	1.88 + 1.68 = 3.56	11.68

Section 1

500	220	1.86 + 1.68 =	3.52	11.55
510	230	1.92 + 1.68 =	3.60	11.81
520	240	2.31 + 1.68 =	3.99	13.09
530	250	3.39 + 1.68 =	5.07	16.63
540	260	3.32 + 1.68 =	5.00	
540	0-260	2.88 + 1.68 + .44 =	5.00	16.40
550	10	2.86 + 2.12 =	4.98	16.34
560	20	2.87 + 2.12 =	4.99	16.37
570	30	2.92 + 2.12 =	5.04	16.54
580	40	2.86 + 2.12 =	4.98	16.34
590	50			
600	60	2.98 + 2.12 =	5.10	16.73
610	70	3.05 + 2.12 =	5.17	16.96
620	80			
630	90	3.24 + 2.12 =	5.36	17.59
640	100	3.41 + 2.12 =	5.53	18.14
650	110	3.24	5.36	17.59
660	120	2.88 edge of pond	5.00	16.40 embank
670	130	2.66 + 2.12 =	4.78	15.68
680	140	2.47 + 2.12 =	4.59	15.06
690	150	2.42 + 2.12 =	4.54	14.90
700	160	2.03 + 2.12 =	4.15	13.62
710	170			
720	180	1.48 + 2.12 =	3.60	11.81
730	190	1.07 + 2.12 =	3.19	10.47
740	200	.43 + 2.12 =	2.55	
750	210	top of embankment for pond		8.37

Section 2 9-23-86

0	3.36	11.02 about 20 from right cattle.
10	3.31	10.86
20	3.33	10.93
30	3.14	10.30
40	3.14	10.30
50	3.07	10.07
60	3.08	10.10
70	3.17	10.40
80	3.18	10.43
90	3.15	10.33
100	3.16	10.37
110	3.18	10.43
120	3.22	10.56
130	3.18	10.53
140	3.16	10.37
150	3.18	10.43
160	3.19	10.47
170	3.24	10.63
180	3.25	10.66
190	3.35	10.99
194	3.63	RE channel 11.91
200	3.59	11.78
210	3.57	11.71
220	3.61	11.84
230	3.59	11.78
240	3.60	11.81
250	3.54	11.61
260	3.53	11.58

Section 2

270		12.11	3.69	
280		11.91	3.63	289½ LE channel
290		11.65	3.55	298 edge of escarpment
300			1.38	
300	0	4.53	1.42 -.04 = 1.38	8' edge of escarpment
310	10	10.24	3.16 -.04 = 3.12	
320	20	10.33	3.19 -.04 = 3.15	
330	30	10.60	3.27 -.04 = 3.23	Prevalent area - tree?
340	40	10.53	3.25 -.04 = 3.21	
350	50	10.66	3.29 -.04 = 3.25	
360	60	10.27	3.17 -.04 = 3.13	
370	70	9.45	2.92 -.04 = 2.88	
380	80	9.42	2.91 -.04 = 2.87	
390	90	7.19	2.23 -.04 = 2.19	about 95 escarpment
400	100	4.63	1.45 -.04 = 1.41	
410	110	4.46	1.40 -.04 = 1.36	
420	120	4.72	1.48 -.04 = 1.44	
430	130	4.56	1.43 -.04 = 1.39	
440	140	4.10	1.29 -.04 = 1.25	
450	150	3.77	1.19 -.04 = 1.15	
460	160	2.66	.85 -.04 = .81	
470	170	1.57	.52 -.04 = .48	
470		170 1.57	1.05 -.57 = .48	move west
480	180	1.18	.93 -.57 = .36	sand spray behind
490	190	1.41	1.00 -.57 = .43	debris pile
500	200	2.46	1.32 -.57 = .75	
510	210	3.05	1.50 -.57 = .93	
520	220	2.99	1.48 -.57 = .91	

Section 2 9-23-86

530	230	1.31 - .57 = .74	2.43
540	240	1.27 - .57 = .70	2.30
550	250	1.33 - .57 = .76	2.49
560	260	1.37 - .57 = .80	2.62
570	270	1.41 - .57 = .84	2.76
580	280	1.47 - .57 = .90	2.95
590	290	1.48 - .57 = .91	2.99
600	300	1.36 - .57 = .79	2.59
600	0	1.25 move instrument - .46 = .79	
610	10	1.18 - .46 = .72	2.35
620	20	1.17 - .46 = .71	2.33
630	30	1.16 - .46 = .70	2.30
640	40	1.10 - .46 = .64	2.10
650	50	1.12 - .46 = .66	2.17
660	60	1.75 - .55 edge of foreset - .46 = 1.29	4.23
670	70	2.53 - .46 = 2.07	6.79
680	80	2.57 - .46 = 2.11	6.92
690	90	2.43 - .46 = 1.97	6.46
700	100	2.39 - .46 = 1.93	6.33
710	110	2.53 - .46 = 2.07	6.79
720	120	3.02 - .46 = 2.56 foreset	8.40
730	130	3.04 - .46 = 2.58	8.46
740	140	3.09 - .46 = 2.63	8.63
750	150	3.21 - .46 = 2.75	9.02
760	160	3.21 - .46 = 2.75	9.02
770	170	3.25 - .46 = 2.79	9.15
780	180	3.26 - .46 = 2.80	9.19
790	190	3.27 - .46 = 2.81	9.22
800	200	2.64 - .46 = 2.18	7.15

Section 2

810	210	2.75 - .46 = 2.29	7.51
820	220	2.59 - .46 = 2.13	6.99
830	230	2.57 - .46 = 2.11	6.92
840	240	2.15 - .46 = 1.69	5.54
850	250	1:12 Pond Embank	.46 = .66 / 2.17
860	260	.28 - .46 = -.18	-.59
870	270	near top of embank and at fence	

9-24-86

at John's flood deposit pit for more samples. Lowest sequence here at top gravel up to 14 × 10 × 4 cm

Sample:

10 Upper sand, middle sequence
11 Middle " " "
12 Lower " " "
13 Upper sand, lowest sequence
14 Middle sand, lowest sequence
15 Unarmored mud ball, middle sand lowest sequence

On right flat at section 2 about 60 m from stream a cottonwood, probably post 1973, with soil zone at 22 cm depth, shows root flair there

Core with dark bands and bark sticking out is tree from bottom last page
Core straw marked w/ small in middle of straw length is from birch (?) 5 m from right edge channel about 1 m upstrm from section 2

9-25-86

Survey of channel islands, starting downstream from Pleem Creek main stem bridge about 1 km below Seelaliz

1. 5 m from left bank, 2 m long, 1 1/2 m wide, no apparent snag, formed of dead grasses with one small willow

2. 15 m from right bank, 25 m long, 7 m wide, 2 m log and other debris at upstream end, mostly formed of grasses with some live willows. Large (3 m) willow behind snag and similar cottonwood and willow at 10 m from lower end

AS

Between right bank and 2 are:

3. 8 m from right bank and 4 m from ~~bank~~ 2 is 3 m wide and 3 m long, island of grasses, snag that is more recent than island, 2-4 about 2 m long

4. 2 m from 2 and 12 from bank is 1-1 m island of grasses ek behind drift wood snag

3 and 4 are filling in right side

5. 120 m long, ave 25 m wide, and nearly 1 m high, ave. 20 m from right bank and 50 m from left bank, snags at upper end of 3 tires and small logs and various logs at other places downstream, (135) almost all grasses with low willows one 15 m cotton wood on left side at edge about midway down; substantial filling in response is occurring along left side of island Sample 16 from grassed area at upper end, 17 from lower end

6 4 m from right edge of 5 and 30 m downstream from upper end of 5 1 1/2 m long and 1 m wide, recent, past grasses snag, all grasses etc.

7 1/2 m wide, 4 m long, 15 m from right bank and 4 m from right edge of 5 formed of grasses and low willows along thin log oriented along flow direction, snag predates island

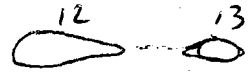
8 1×1 m, 2 m from right edge of 5, grasses and willows (low) behind wood snag

9 1/2 m long 1 m wide, 10 m from right edge 5 and 4 m from right bank, oriented along timber nearly at right angle to flow, formed of weeds and grasses, sediment also piled in front

10 5 m long, 1 1/2 m wide, grasses at wood snag predating island. 2 m from right of 5

11 1×1 m, all grass w/ few low willows, no apparent snag. 2 m from right edge 5 and 20 m from right bank, about 30 m up from lower end of 5

12 3 m from right bank 7 m long, 2 m wide, no apparent predating snag - trails to point and island 13 is in lee parts



13 3 m long, 1 1/2 m wide, wood snags post date island

14. At lower upstream end of 5, 30 m long, ave. 7 m wide, irregular. nearly 1 m high at upstream end, about .1 - .2 m at lower end, no apparent snag Coarse grasses and willows 3 m high at upper passing to weeds and clover at lower

5 at lower end there has been recent filling and obvious accretion downstream Photo 24 shows shovel at last year's bank, lower end

15 2 × 2 m. .6 m high at front, feathered at downstream end, lush grasses and some willows near upper end of 5 - about 30 m left of 1 and 20 m right of left bank - no apparent snag

16 2 m left of middle of 5, 3 m long and 2 m wide .5 m high in front trailing off to feathered edge downstream lush grasses and 2 m high willows no apparent snag

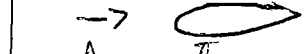
17 2 m directly left of 16, 1 1/2 m wide 2 m long, again feathered edging formed at snag and 8 m high in flow

18 1 x 1 m. 20 m from left bank. lush grass. no snag

19 4 m long 2 m wide feather edge from .6 m and snag and 3 m high willow

20 fs in left. starting 1 m downstream from 19, large tractor tire 1 3/4 m wide is snag, along with wood 35 m long, one 6 m wide, grasses good low willows. 1 largest 4 m high at lower end of S about 7 m to left of T and 30 m from left bank

21 To left of 20 5 m and to right of left bank 15 m, 8 m long and 2 1/2 m wide, feather edge again with point downstream; in present main channel



grasses. a few willows

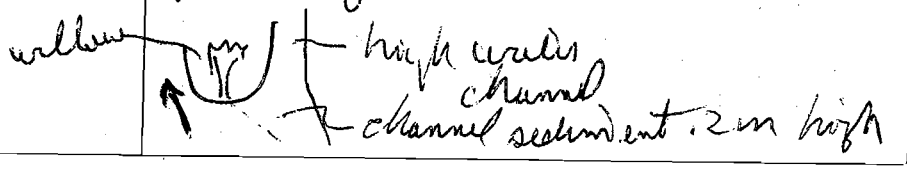
.4 m at upstream end
no apparent snag

22 .5 x .5 m, post planed snag willow .7 m high, 7 m from ~~left bank~~ 25

23 2 m to left of 22, .5 × .5, weeds and wildflowers, good wood snag predating island

24 4 m downstm bed not in lee of 23, 1×1 m, good feather edging of unvegetated sediment on lee good wood predate snag

25 55 m long separated from right bank by 3 m wide high water channel that is almost filled in annual accretion levels along both right side of island and right bank are narrowing channel width of annual accretion varies from 0 to 1½ m, poorly developed feather edging
ave. 15 m wide
almost all grasses and scattered willows
at upper end is predate wood snag and 10 m high willow
flow path except at high water is toward island then veering along left side of it.

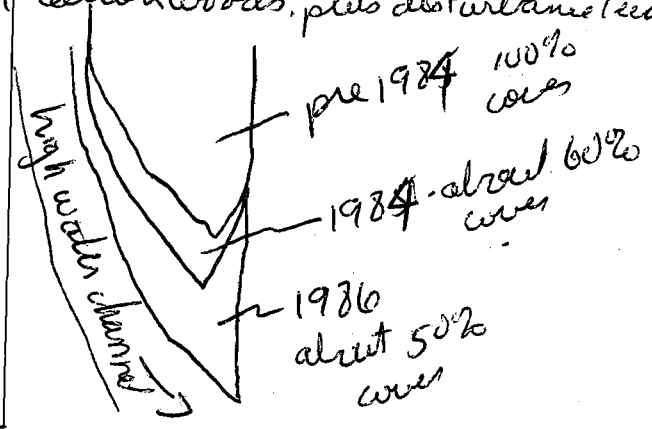


25 continued. Height at upper end of island is .4 m

at lower end, accretion in high water channel forms surface with scattered grasses, occasional clover, and various weeds.

The 1985 (?) surface has scattered willows up to .7 m high, cottonwood seedlings up to .4 m high, and lusher grasses and weeds; the 1984 (?) or earlier surface is fully covered with grasses and weeds, willows up to 1.5 m, and cottonwoods up to 1 m

Growth rings on pre 1985 surface give 3 yrs for cottonwoods, plus disturbance (scouring)



Cottonwood on 1984 surface have 2 growth rings

26 12 m left of right bank at lower end of 25, 1.5 × 1.5 m, feather edge from .3 m in front at thin wood snag - predate
lust grass

27 7 m to left of 26 and 50 m from left bank 2 × 2 m, lush grasses, 1.7 m willows, feather edging and lee side sediment
no apparent snag

28 10 m dnstm from 26, in lee of tree, 3 m long 2 1/2 m wide, tear shaped with feather edging - all lush grasses, .3 m in front

29 10 m dnstm from 26 and in its lee, 10 m to right of 28 - very new, 2 m long, 1 1/2 wide weeds, a little grass and clover almost no height,
post date snag

30 7 m dnstm from 29 and 5 m from right bank grasses and weeds, new predate wood snag, tear shaped
2 m long, 1 1/2 m wide

work up average length/width

31 tear shaped 1 m long 3/4 wide formed behind new willow tree mostly grasses - 30 m from right bank and 50 m from left bank

many tires at places in channel

32 10 m from rt. bank feather edge front .4 m predate wood snag ~~and~~ almost all lush grasses. few cattails and willows

33 Immediately to rear right of 32 is 1 m wide by 1 long at predate wood snag, grasses and weeds. 32 and 32 are in process of merging since 33 is on side of lee sediment from 32

34 1 1/2 m long, 1 m wide no apparent snag and not high about .1 m lush grasses willows 1.3 m high, .8 m cotton wood seedling

35 mid channel to left of 34 about 18 m 3 m long, 2 m wide about .4 m in front, feather edge at rear lush grass, cat tails and willow Post date snag is willow

36 1 1/2 wide, 2 1/2 m long with, as usual, much younger grasses at lee point bush grasses, several willows with 3 years age

37 To left of 36 about 6 m from left bank 2 1/2 m wide, good tear shape, feather edge shape. 4 m long, cattails at upper end, grasses in middle, willows and weeds aiding accretion at lower end, wood predate snags, also wood postdate .2 m high at front, willow is 1.6 m high

38 1/2 m wide 1 m long with 2 m more of lee sand splay, predate wood, now stabilized by good willow 1.8 m high and 2 years old

39 .6 m high, tear shaped to feather edge best grasses, willows in middle 7 m long 2 1/2 m wide, wood and tire snag, also postdate wood

40 2 m from right bank .4 m long 2 1/2 m wide, classic tear shaper and feather edge - bush grass trailing off to new grass, willow at upper end .4 m high, predate wood snag stabilized by willow 1.5 m high

41 2½ m from 8 m willow out from right bank - attachment likely soon. wood snag predate, good willows and grasses, same tear shape .7 m high. Willow is 5 years old, very disturbed, and probably wash swept into place where it took root

42 Photos 1-5 showing large log snag, also of two islands dnstm.
Predate snags - long and narrow along length of log - 10 to 11 m long, are 1½ m wide good willows and grasses. 13 m from left bank

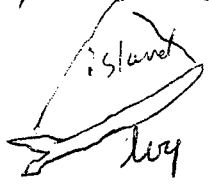
Sample 18 from unvegetated lee sediment

In band about .2 to .4 m wide at lower end of 42 new shoots of tough pointed grass is just coming up through the otherwise nearly unvegetated sand. Island growth is definitely downstream and to sides

43 1 1/2 m from left bank, all flow presently between LB and 43
1 1/2 m wide, 3 m long, lower part nearly unvegetated - samples 19, photo 6 (B & W)
good wood predate snag, willows grasses, weeds
shovel flat at sample site

44 Photos 7, 8 and 9 - also showing 45
Good wood predate snags 7 m long, ave 2 1/2 wide. log along right side
good grasses, willows. lower part of island is a separate predate snag - the two have combined to form 44
willow 5 years old

45 Also formed dnstrm and to left of long log - much pre and post date wood
8 m wide, 10 m long - also tires



46 1 x 1 m - almost all grass no apparent snag, 6 m from left bank
- 5 m high poor tear shape, but
the sediment has comined with 47,
about 5 m dnstm

47 4 m long, 3 m wide, almost all
one multiple trunk willow 5 m high
Took section of willow 5 years
2-4 snag - probably post date

48 Island recently attached to left bank
Formed by several good wood predate
snags, grasses and willows in sample
20 sediment
Sample 21 is sediment of recent fill
- about 40-50% veget atrt cover
island 48 has 90% veg. cover
photo 7, 10, 11, 12 - note
filling on upstm side and diversion
of flow around former island

Cottonwoods and willows are in 3rd
years of growth on recent fill
Willow of island in 4th year

49 48 is actually 2 islands, 49 immediately
downstream from 48, both
well pre-snagged by logs

50 .5 m high, same tear shape and feather edging - mostly grasses, little willow 2.2 m long, 1.1 m wide no apparent snag

51 Snag is tree (photo 13) and wood .7 m wide, 1.2 m long midway in channel, which is 90-100 m wide

52 20 m dnstm from 51, 1½ m long, .9 m wide, small pre date wood snag

53 8 m long, ave 2 m wide, along large log - photos 14-15 great pre snag. Willow 5 m high at upper end at least 4 years old, at lower end 2-m willow 2 years

54-57 A series of at least 4 snagged (pre) islands in downstream orientation that have been recently joined to right bank - old channel shown in photo 16 at shovel. One snag on left, upper island is high vegetation old bank in foreground

58 Photos 17 and 18 - note scars on cotton-
woods in background
Great post and predated debris
30 m long - good tear shape
ave 12 m wide - featheredging
Island is recently attached to
left bank - ecelon at upper end
cored - number 2
island 1.2 m high at upper end
Good date of smooth-barked, near white
tree with leaves
gave 17 years -
about 8 m high

Plum Creek - Sealaska Ranch

June 18, 1991 Osterkamp and Doerner (while Hupp and Friedman do vegetation)

Section 45 - about 200 m downstream from Islands 10ST and 11ST

Distance in meters, height in feet

Photo 1

Top, left stake	2.99	34	11.03	
0	5.07	36	10.96	
2	5.33	38	11.02	
4	5.50	40	11.00	
6	6.05	42	10.98	
6.5	6.24	44	10.68	
8	8.84	46	10.81	
9	10.88	48	10.74	
10	10.89	50	11.02	
12	10.81	51.7	10.75	edge island
14	10.97	52	10.41	
16	11.03	53	9.76	
18	11.26	54	9.77	
20	11.19	55	9.90	
22	11.10	56	10.05	
24	11.05	58	9.90	
26	10.98	60	9.63	
28	11.14	60.25	9.63	base of bar
30	11.04	60.25	8.55	top stake
32	10.98			

(over)

Reset instrument

top post	7.78	same as 8.55 from last page
base post	9.71	same as 9.63 " " "
2	8.71	
4	8.61	
6	8.50	
7	9.02	
7.5	10.12	
8	10.68	
8.2	11.21	edgewater, left
9	11.23	
10	11.24	
12	11.32	
14	11.27	
16	11.89	
18	11.74	REW
19	9.74	
20	9.27	
22	9.46	
26	8.84	
28	8.48	
30	8.49	
32	8.52	
34	8.49	
36	8.31	
38	8.30	
40	—	
42	—	
44	8.80	

46	9.03	
48	—	
50	9.24	
52	9.37	
54	9.28	
56	9.33	
58	9.36	
60	9.47	
62	9.51	
64	8.09	
65	7.63	
66	6.96	
67.1	6.22	[illegible] right post
67.1	5.45	top post rt.

Photo #2 6/18/91

Cross Section #5 Sedalia

Distance in Meters, Height in feet

about 50 m downstream from Chris Waythomas' paleoflood cut bank

Distance (m)		Height (ft)
0.0	Top of stake	3.25
0.0	Base of stake	4.73
2.0		5.40
3.0		6.60
4.0		8.44
5.0		9.45
7.0		9.41
9.0		9.32
11.0		9.28
13.0		9.27

#5 Continued

Distance (m)	Height (ft)	Distance	Height
15.0	9.14	42.0	10.82
17.0	9.13	44.0	10.91
19.0	9.47	46.0	11.08
21.0	9.88	48.0	10.90
23.0	9.73	50.0	10.87
25.0	9.79	52.0	11.05
26.0	10.64	54.0	12.35
28.0	10.54	55.0	9.38
30.0	10.44	* 56.0	9.15
32.0	10.51	57.0	9.28
33.0	10.65	58.0	10.57
33.5	11.07	59.0	11.58
34.5	10.62	61.0	11.01
35.0	10.43	63.0	—
36.0	11.12	64.0	10.98
38.0	11.13	66.0	10.97
40.0	10.90	68.0	11.29
		69.0	—
		70.0	—

* AT 56 m there is a Prominate mid channel Island 29.3 ft in length

Cross Section Sedalia #5 6/18/91

Reset Instrument

Distance (m)		Height (ft)	Distance (ft)	Height (ft)
64.0		14.29	89.0	12.67
66.0		14.28	91.0	12.97
68.0		14.60	93.0	12.83
69.0		14.24	95.0	12.79
70.0		13.88	96.0	9.14
72.0		14.04	97.0	6.54
74.0		14.87	97.5 Base of Post	4.93
75.0	Attached Island	12.62	97.5 Top of Post	3.67
76.0		13.76		
78.0	Thick Cattails	14.66		
80.0	Old Channel Vegetated	14.52		
82.0		14.38		
84.0		14.41		
85.5		14.65		
87.0		12.97		

Photo 3 of 4 Showing various levels of Island in Section #5

6/18/91

Section 6 - Sedalia 200 to 300 m Downstream from Chris's Paleoflood Deposits

Distance = M
Elevation = ft

Photo 5 - Cross Section #6

Distance (m)		Elevation (ft)	Distance	Elevation
0.0	Top of Post	2.95	24.0	9.53
0.0	Base of Post	4.20	26.0	9.55
1.0		4.56	28.0	9.87
2.0		5.89	30.0	9,67
3.0		8.72	32.0	9.78
4.0		9.58	34.0	9.64
6.0		9.47	36.0	9.69
8.0		9.56	38.0	9.67
10.0		9.66	40.0	9.83
12.0		9.61	42.0	10.48
14.0		9.51	44.0	9.91
16.0		9.53	46.0	9.87
18.0		9.74	48.0	9.55
20.0		9.65	50.0	9.43
22.0		9.61	52.0	9.95
			53.0	9.98
			53.5	10.89
			54.0	11.20
			56.0	11.08
			58.0	10.90
			60.0	11.06
			62.0	11.08
			64.0	11.06

#6

Distance (ft)		Elevation (ft)
66.0		11.20
68.0		11.43
70.0		11.17
72.0		10.97
74.0		10.99
76.0		10.94
78.0		10.89
80.0		10.96
82.0		10.91
83.5		10.65
86.0		4.33
87.6	Base of Stake	2.59
87.6	Top of Stake	1.75

Section 35 - highest section, below Sedalia bridge through Islands 10ST and 11ST Photo 6

Top stake, Left	4.01	40	9.30		
0 m	9.71 ft	41.3	8.81	top stake base 10ST	
2	5.99	41.3	9.46		
4	7.65	42	9.34		
6	7.93	44	9.34	82	9.86
8	9.54	46	9.28	84	8.72
10	9.41	48	9.30	85	8.37
12	9.28	50	9.41	base post	
14	9.30	52	9.29	85	7.65
16	9.19	54	9.40	top post	
18	9.27	56	9.65		
20	9.44	58	9.76		
21	9.76	59	9.30		
22	10.05	60	9.28		
22.5	9.83	62	9.55		
23	9.30	64	9.83		
24	9.21	66	9.66		
26	9.12	68	9.64		
27	9.92	70	9.56		
28	9.12	72	9.54		
30	9.62	74	9.51		
32	9.51	75	9.78		
34	9.43	76	9.41		
36	9.58	78	9.25		
38	9.35	80	9.27		

6-19-91 Plum Creek

Photos 7, 8, 9 Island 21 S

10, 11, 12 Island 12 S

Length 12S, 5.0m; at lower end another 2.7m is vegetated as type 2 island. Width near center at point of maximum height, 2.8m

Photo 13 Island 10 ST

14 Island 11 ST

15, 16, 17 Hole showing Scirpus lacustris burned 12 cm by three months (one year) - annual growth from root stock

18 Lower end of Island 13 S. Stake is old 135 m marker. Island now ~ 144 m long

19 New growth, right end of 13 S

20	Levels showing growth, right side Island 135
21	Upper end, with stake, original island 135
22	Island 45, from lower end; island currently extends 0.7m downstream from stake at lower end
23	Stake at right center edge, 45
24	Island 45
25	Island 135
26	Both 45 & 135

June 20

Photos	1-5	Island	1L
	6-9	"	2L
	10-13	"	3L
	14-16	"	5L
	17	"	8LTH
	18-19	"	11ST
	20-21	"	10ST
	22-24	"	12S

Section at Indian Creek established by Jonathan last winter

Distances and heights in meters
Two mid-channel monuments
Photo 25

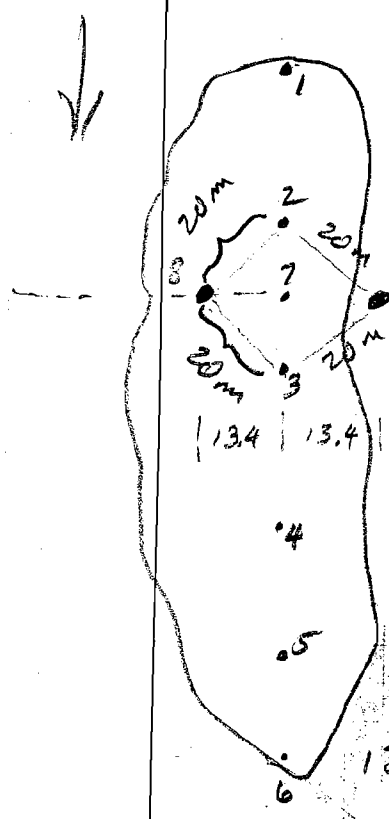
Top left post	1.35	30	3.89
0	1.80	32	3.93
0.5	1.88	32.5	4.05
1	2.20	33	4.10
2	3.07	34	4.02
3	3.65	36	4.07
3.5	4.03	38	3.90
4	4.07	40	3.88
5	4.11	42	3.87
6	4.22	44	3.89
7	4.64	46	3.92
8	4.57	48	3.85
9	4.59	50	3.84
10	4.29	52	3.93
12	4.20	54	3.83
14	4.02	56	3.69
16	4.07	56.7	3.65 base post
18	4.10	56.7	3.14 top post
20	3.98	Repeat tional level; shot	
22	3.94	at 56.7 (3.14) = 1.0m	
24	3.94		
26	3.53	1.0	0.94 left post
28	3.74	1.0	.43 top post

2	1.02	47.3	2.15	top post
3	1.14	47.3	3.04	base post
5	1.28	48	3.02	
7	1.23	49	3.07	
9	1.26	51	2.97	
11	1.31	53	3.06	
13	1.40	55	3.00	
15	1.30	57	2.90	
17	1.29	59	2.91	
19	1.25	61	2.88	
21	1.27	63	2.97	
23	1.25	65	3.14	
25	1.09	67	2.99	
27	1.11	69	2.88	
29	1.16	69.5	2.19	
31	1.15	70	1.58	
33	1.22	71	1.38	
35	1.12	71.4	1.34	base right
37	1.07	71.4	1.03	top right post
39	1.00			
41	1.14			
43	1.22			
45	1.26			
47	1.15			
47.3	0.46	top post		
47.3	1.34	bottom post		

Moved instrument, met tape; repeat last two measurements

Island 135

Installed two more monuments as shown.



$15^2 = 225$

$13.4^2 = 179.6$

$179.6 + 225 = 404.0$

1, 2, 3, 4, 5, and 6 are old monuments. 8 and 9 are new, and 7 is not monumented permanently.

From 8 to right edge island, perpendicular to established line 1.4 m

From 7 to left edge of old island, 8.9 m

From 9 to left edge of present island 18.0 m

Photo 26-27 shows vertical accretion to island 135 at left with near monument 9 by recent high water; depths up to 10 cm

From 6 to present end of island, 7.5 m, but if measured to longest part, slightly to right, distance from to edge is 8.4 m

5-11-89

Mon. Island 1

Monumented channel island adjacent to cutbank about 200 m upstream from bourne bridge.

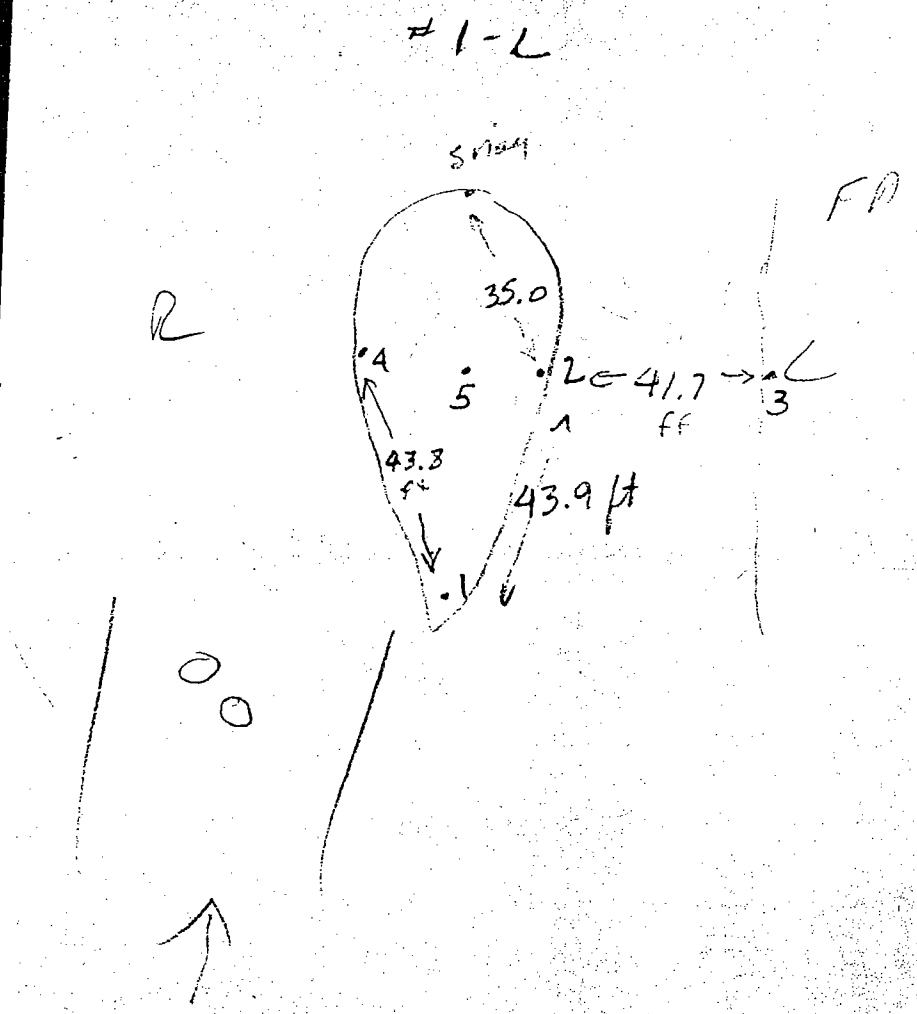
Steel stake 1 at lower point of island 2.3 feet upstream from lower vegetated limit.
Stake 2 on left side of island is 43.9 feet upstream of stake 1. Stake 2 is 1.0 foot to right of log that forms left edge of island.

Stake 3 is on left bank of channel adjacent to island 41.7 feet from stake 2. From stake 2 to 18.4 feet toward stake 3 is poorly vegetated sand; from 18.4 to 37.5 is unvegetated channel; from 37.5 to 41.7 is new flood plain

62.6 feet from stake 1 to stake 3
2.7 feet from stake 1 to edge island. 2.7 to 28.2 is poorly vegetated sand of channel; from 28.2 to 59.0 is unvegetated channel. from 59.0 to 62.6 feet is new flood plain

From stake 2 to snag and rock at upstream end of island is 35.0 feet

Stake 4 is 0.8 foot from edge of right side



5-11-89

Mon. Island 1

Monumental channel island adjacent to

of island. Stake 4 to 1 is 43.8 feet

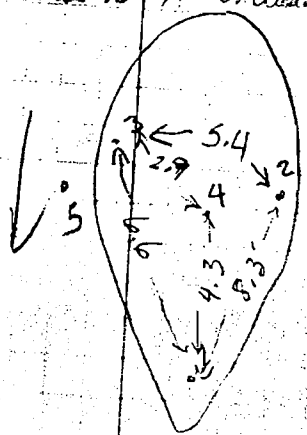
Photos 1, 2, 3 from left looking at island and cutbank behind

4 stake 1
5 " 2
6 " 3
7 " 4
8 island looking down toward bridge
9
10
11

Mon. Island 2

Small island 60m upstream from bridge and immediately to upper right of permanent log

Photos 12-19 - including tree



Stake 1 up 1.1 feet upstream from lower tip of island
Stake 2 is 0.2 from left edge of island, with unvegetated deposition to left
Stake 3 is 0.5 from right edge and 17.4 from nearest tree on right bank; 15.7 to 17.4 is flood plain, remainder unvegetated channel

May 31, 1989 Carey, Yasui, Jon, Wasto

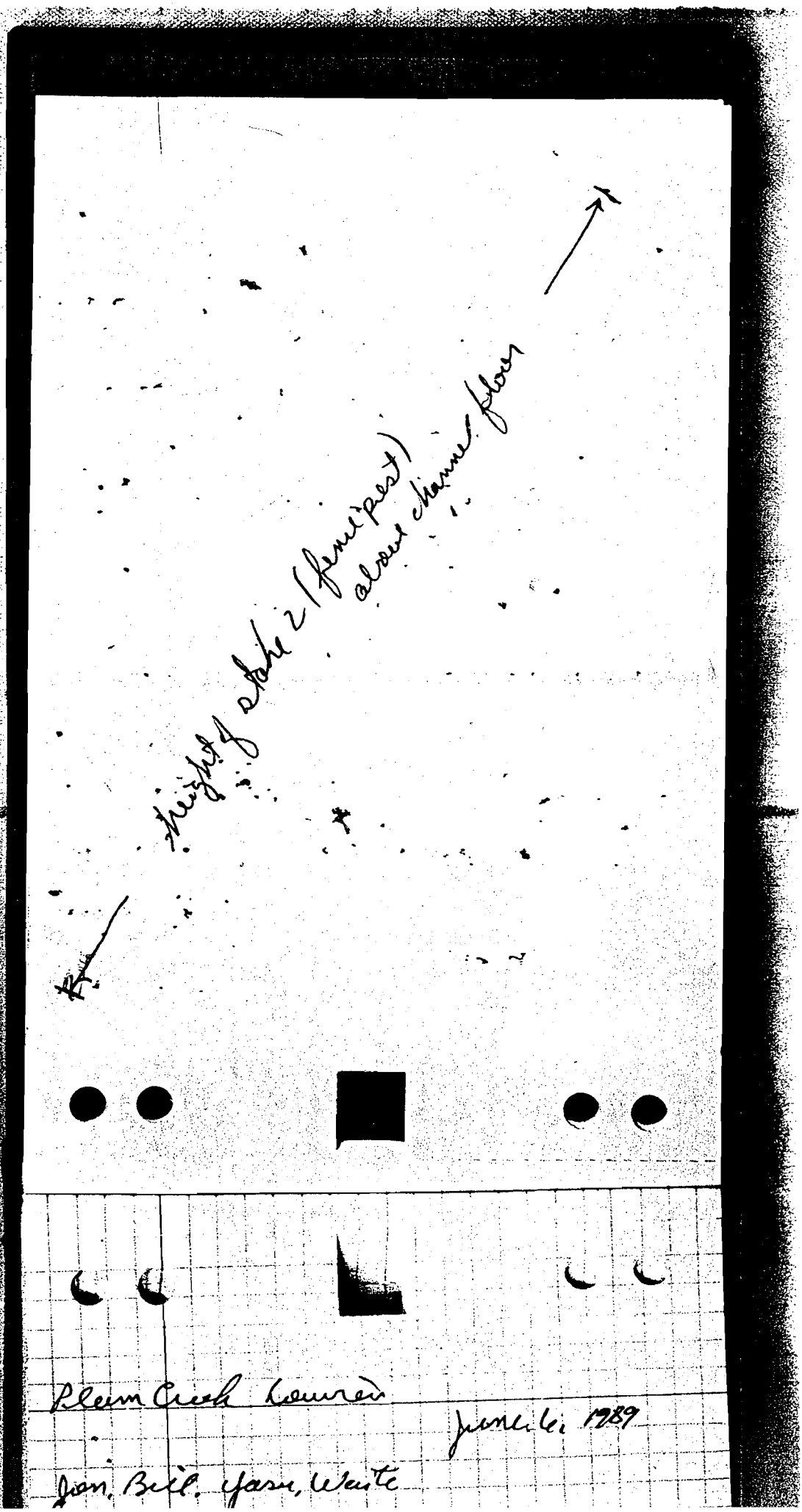
10:20 Bill took bedload sample, East Fork Plum Creek

5 verticals, 1 min each, section 7 feet wide

11:45 West Fork Plum Creek - W = 8.5 feet 1 min for each vertical of bedload measurement

12:45 Indian Creek - 40 sec. to fill bucket - no sediment sample - no sediment

13:20 Plum Creek at Lawrence - bedload every half foot at 30 sec. W = 11.5 feet



height of stake 2 (fence post)
about channel floor

Plum Creek Louvres

June 6, 1989

Jon, Bill, Yasu, Waite

Kleen Creek Louvers

June 6, 1989

Jon, Bill, Jack, Waite

Monumented 3 sites with fence posts along
section 2: at right end about 1/3 of way up
outbank on point of old surface immediately
to left of channel and next to tree on old
surface about distance east of old channel.

Mon. Island 3

Monumented large island that is opposite
about 155 paces upstream of section 2 to
lower point of island.

Stake 1 is 9 m upstream of lower point
Stake 2 is 18 paces downstream of Stake 1 at
lowermost point of new vegetated and
channel-island growth below island
Stake 3 is 9 paces straight to right across
channel from stake 1 at right edge of new
vegetation - height about about channel is
exactly length of this notebook when closed

Took 2 susp. samples at gage - Louvers bridge,
none at West and East Forks. Bill took
bedload samples. Zack & Bob Dirt., Clay
82, did discharge measurement. Bedload
done at each post for 30 sec.

7-7-89 Detailing above -

Plum Creek - 5 (Mon. Island 4)

Monumented 1ST island downstream from Sedalia section bridge - about 25 m down from bridge; 10 m from right bank

Stake 1 - fence post - at extreme tail end of island, which is about 30 m long

- post is cut to Qal with height above surface exactly the length of this notebook

Post 2 is at extreme right edge of island, about midway between upper and lower ends - driven in 2" deeper than 1

Stake or post 3 is immediately to right of 2 at left edge of 3.4 m island between subject island and right bank - post 3 is near upper end (1 m from upper end)

Post 3 is 2 book lengths above channel sands. Island of post 3 is upper one of two in strait between subject island and right bank

Two medium willows are on subject island. One is 2½ m dnstrm from upper end; other is about 10-12 m upstrm from lower end. Otherwise, mostly grass with some small willows up to 2.5 m high

Oct. 16 - Cliff: Waite

Island 4 - S

Veg > 2m in height

Common willow - one clump of several stems - 3 stems > 2m
Ave. diameter at 1m height 8cm
Bimodal population of sizes of willow
Clump 2 > 2m - 10 stems in clump
6cm are diameter
Clump 1 near upstream end of island
Clump 2 12.0m from downstream fenceposts

Clump 3 - 3 stems > 2m of cottonwood - chucked down by beavers
6cm diameter of main stem
others each 2cm diameter

Divide island into 4 length quadrants - each 7m long
Quad 1 is upstream 7m
all plants > 1/2m high and that are woody.
3 willows: big leaf toothed; broad leaf entire; narrow leaf entire

Field Records Library
Geologic Division
U. S. Geological Survey
Denver, Colorado

NO-7722

None of quad data includes >2 m trees

Species - 1st quad

Narrow entire (2) (10) (2), 1, 3, 3, 1, 2, 1, 1, 2, 1, 2,

broad entire (2) (3) (1) 6, 3, 4, 5, 2, 1

big-leaf bother

2nd quad

narrow 1, 1, 1, 2, 2, 1, 1, 1

broad 8, 3, 4, 5, 2, 1, 1, 1, 1, 1

big bother 1, 5, 2, 2, 4

aldus [illegible]

3rd quad 14-21m

broad 3, 1, 1, 1, 4, 1, 1, 1, 2, 5, 3, 1, 1, 2,
7, 3, 3, 1, 1.

narrow 7, 1, 2, 3, 1,
3 stemed 22m
This quad has lower large wallen

toothed 10, 7, 3,

4th quad 21-23m - lower end

broad 7, 7, 2,

narrow 2

toothed 2,

Oct. 17 10:45

Cliff and I established line across channel 120 paces below section 2 and island 5-L. In line we placed two tires each supported slightly on the inside by L-bar driven into the channel sand. Both tires were filled to the top with sand. The line is monumented with L bars on each side.

0.0 m	L bar to left of left bank
0.5	Left bank, LEW of left distributary
4.0	REW of left distributary
5.6	Center of tire. Island 6-LT
7.9	LEW middle distributary
9.5	REW " "
17.2	LEW right "
18.3	Center of tire Island 7-LT
24.0	REW right distributary

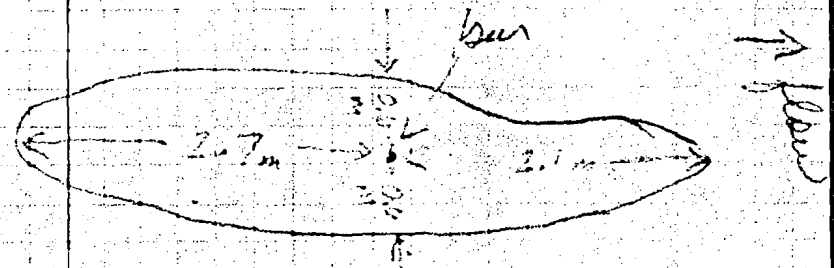
25.2 L bar to right of right bank

Line is essentially normal to channel. From LEW to REW (0.5 - 24.0 m) there is almost no vegetation.

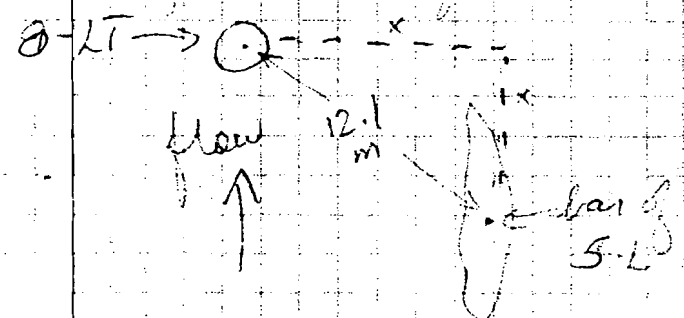
Island 6-LT (Louviers Tire) is 2.5 m directly upstream of 4-m high toothed willow at head of small island. No other islands are close to 7-LT ← 9L

Island 5-L - monumented with only one L-bar - is the only small channel island at section 2. Bar is 27.2 m to right, or east, of Line post on old surface at left edge of channel section 2. Bar is 6.3 m to left of right edge of channel when aligned with fence post of section 2 mentioned above

Island 5-L



Island 8-LT is 12.1 m to center of tire from bar of 8-L. It is downstream and to left (toward center of present channel) of bar about equal distances.



Island 5-L is heavily grassed to about [illegible] plain level, it has 21 narrow [illegible] [illegible] in upper half [illegible] in lower third, up to 2 m above channel level.

Island 8-LT is 22 paces from LE channel and 30 paces from RE. There is almost no vegetation. One clump [illegible] 2 m in diameter 2 m to right of tire center is only possible island.

8-LT is 13.6 m from RE channel
15.2 m " " LE "

8-LT is half barrel by national [illegible] is not barred in [illegible], and appears to have been in slow at least one season. This

is sparse channel vegetation to upper left downstream [illegible] left side [illegible] as well as in the tire, which is filled to top with [illegible]. All are grasses and herbs.

Island 9-L is the one headed by the toothed willow 8.5 m downstream from 6-LT

Island 3-L

Instrument height 1.37

Cross-channel section through center of island 3-L

~~2.3~~ m from instrument to rod, L bank

Rod, RB

1.26 m	From instr to: post	5.0 m
1.39	" " tire	5.0 m
1.36	[illegible]	4.0 m
1.73	[illegible]	6.0 m
1.94	Active channel	[illegible]
2.02	Standing water, no veg. side channel	9.0 m
1.74	Veg. channel [illegible]	14.5 m
1.95	[illegible]	[illegible]
1.91	[illegible] 3-L, right side	[illegible]
1.40	Top island [illegible]	23.0 m
[illegible]	[illegible] post	24.0 m
1.10	Top post	27.0 m

1.44 m	Base post	27.0 m
1.54 m	Half way to Ledge 3 L from post	30.0
1.67	Top left bank & 3 L	32.0
1.39	Bottom left bank, right [illegible]	35.0
1.93	[illegible]	37.0
2.07	" " in water	42.0
2.15	Thalweg main channel	44
2.66	Bottom right bank [illegible]	46
1.40	Top [illegible]	46
1.52	Bottom post	43
0.81	Top post	43

Taped width of island 12.0 m

Length island 57 m

Longitudinal section, starting at centerpost (27.0 m) & last section line in from post at downing island to centerpost (27.6 m) - taped distances

post	(27.6)	0.90
ground	27.6	1.24
	24.0	1.26
	20.0	1.39
	16.0	1.33
	11.0	1.33
	8.0	1.34
	6.6	1.36

NO-7722

Continuous longitudinal section upstream on 3-L from center stake at 27.7

27.7	base stake	1.24
25.0		1.24
22.0		1.27
18.0		1.24
11.6		1.09
5.0		1.00
2.0		.97

34-35 cliff holding narrow leaf ribbon

32-33 angle view of 5-L

30-31 side view of 5-L

28-29 field where bed deposits occurred during cross bed flow

Oct. 19, 1989 - with Cliff Hupp and Jim Doerner

Section, starting on left side at fence post of section 2, going east across 5 L to point on right "flood plain" in line with the two monuments. Monument of 5 L is the one in center of island.

Station	Height
Top post	1.14
0.0 bottom post	1.27
0.4	1.30
0.6	2.03
1.0	2.44
2.3 Right edge at Active Channel	3.38
3.0 Left Edge of Water	3.58
4.0	3.69

Oct. 19
Cont.

Station		height
9.0		3.70
14.0		3.58
17.0		3.57
21.0		3.70
25.0		3.56
26.2		3.57
26.4		3.62
26.6		3.27
27.05	at Post	3.16
27.05	Top of Post	2.98

Continuation of same line with instrument moved

Station	height
Top of Post	0.64
1.9 upstream at tip of t. Rc. Island 8LT (distance 11.9 m from Post on) (Island 5L)	1.35
0.0 Post Island 5L	0.83
0.3	0.96

Station	Height
0.4	1.03
0.5	1.27
0.7	1.23
2.0	1.21
4.0	1.25
6.0	1.28
6.2 Right Edge of Channel	1.32
6.3	1.06
6.6	0.97

Section line established 10-17-89
through reference points 6-LT and 7-LT

Station		Height
	Top of Post Left Bank	1.31
0.0		1.58
0.4	Right Edge of Active Channel Shelf	1.72
0.5	Left Edge of Water & Channel	1.86
0.9		1.86
2.0		1.82
3.4		1.81
3.7		1.76
5.3	Left Edge of Tire 6LT [illegible]	1.54
5.9	Right Edge of Tire 6LT [illegible]	1.50
6.1		1.75
9.0		1.77
14.0		1.73
17.3		1.84
17.9		1.81

Station		Height
18.0	Left Edge of Tire Island 7LT	1.61
18.6	Right Edge of Tire Island 7LT	1.62
18.7		1.83
20.0		1.89
21.8	Thalweg	1.95
24.0	Right Edge of Water	1.85
24.5		1.77
25.2	Post (Right Side Section)	1.51
25.2	Top of Post	1.20

Post at Left Side through Sections of Islands 6LT & 7LT Extends from Post of 6LT&7LT section downstream ... to channel to Island 9L

Instrument has not been repositioned from last section / section begins at about 75° angle from Last Section

Station		Height
0.0	Top of Post Left Bank	1.31

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Denver, Colorado

Station		Height
0.0		1.67
0.7		1.82
1.3		1.86
6.0		1.83
8.0		1.78
8.7	Base of Willow at Island QL Note: 20 to 25° Jog to left Section is now longitudinal to Island QL	1.60
9.1		1.55
9.8		1.56
10.7		1.61
11.8	Base of downstream Willow	1.59
13.5		1.59
14.3		1.64
14.5	Downstream End of old portion of Island	1.69
14.5	Top of Post	1.24

Oct 19 pm

Section across channel (partial) at 2-L including stake 4 and newly placed stake 5 on right bank. Left side not monumented so distance is arbitrary.

Station		Height
1.5		1.20
3.5		1.50
5.0		1.20
5.2		1.50
5.9	Edge of island	1.20
6.4		0.99
6.9	Top of stake 4	0.76
6.9		0.82
7.2		0.91
7.4		1.00
7.5	Edge of water	1.21

Station		Height
7.7		1.25
8.6	Thalweg	1.29
9.7		1.25
11.0		1.27
12.2	Edge of Water	1.18
12.6		0.96
13.4		0.66
14.4		0.51
16.0	Right End of Section	0.41
16.0	Top of Stake 5	0.19

Oct 19, 1989

Island IL section

Station		Height
	Top of Stake 3	0.98
0.0	stake 3	1.60
1.3	Right Edge Active Channel/Shelf	1.20
1.4	in Water	1.27
4.0		1.30
6.3	Thalweg	1.40
6.9		1.31
7.3		1.12
10.3		1.13
12.2		1.16
12.4	on log left side of island	1.13
12.6	Top of stake 2	0.98
12.6		1.05
13.1		0.94
15.2		0.68
stake 5	16.15	0.66

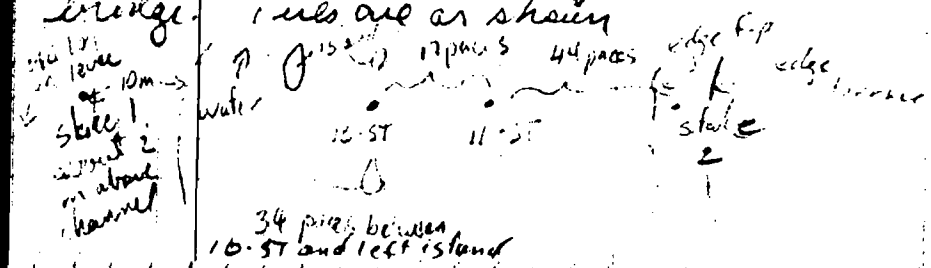
top stake 5 16.15	0.30
16.7	0.66
stake 4 19.9	1.15
top stake 4 19.9	1.07
edge inland 20.2	1.24
21.0	1.22
24.8	1.78

Longitudinal section of lower half inland 1-2

stake 5 16.15 + 0.2m	0.66
top stake 5	0.30
0.7 m	0.70
1.2	0.73
1.7	0.73
2.2	0.77
2.7	0.80
3.2	0.84
3.7	0.86
4.2	0.83

4.7	0.83
5.2	.82
5.7	.84
6.2	.89
6.7	.91
7.2	.92
7.7	.92
8.2	.92
8.7	.92
9.2	.90
9.7	.92
10.2	.91
10.7	.92
11.2	.94
11.7	.95
12.2	.98
12.7	1.05
13.03 stake 1	1.18
13.03 top stake 1 near tail island	1.15
14.03 channel below island	1.32

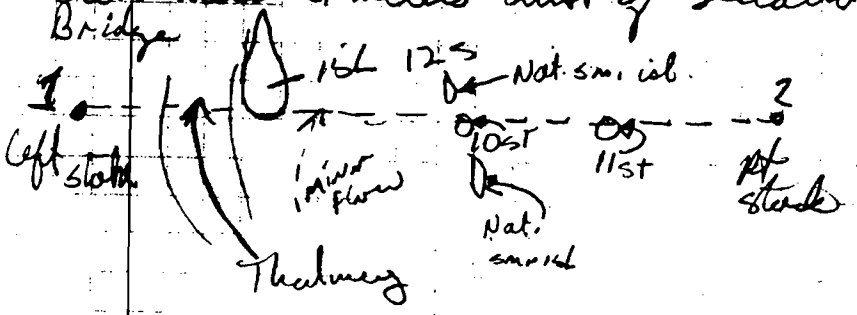
Established island 10-ST and 11-ST about 200 m down stream from Sedalia bridge. Tiles are as shown



19 Oct 1989

Plum Creek

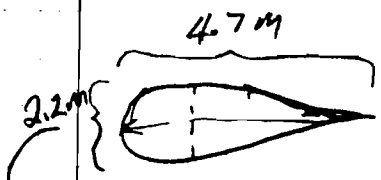
see hundred meters dust of Sedalia Bridge



stake 1 is 7.7 waters edge

head of ISL 12S is 16.2 m from stake, and is exactly on the transect with ISL 10-ST & 11-ST

ISL 12S is almost a perfect teardrop shape



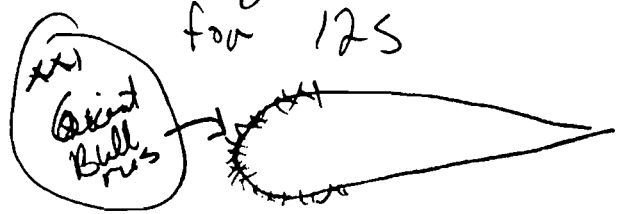
widest part is 1.5 m dust of head and is 2.2 m wide

19 Oct 1989
ARTIFICIAL ISLAND 10ST

Veg Analysis

Mature geomorphically

for 12S



Wilbars only on upper 1/3-1/4 all of Narrow entire type

15 stems 2.5 m high 2-2.5 cm dia

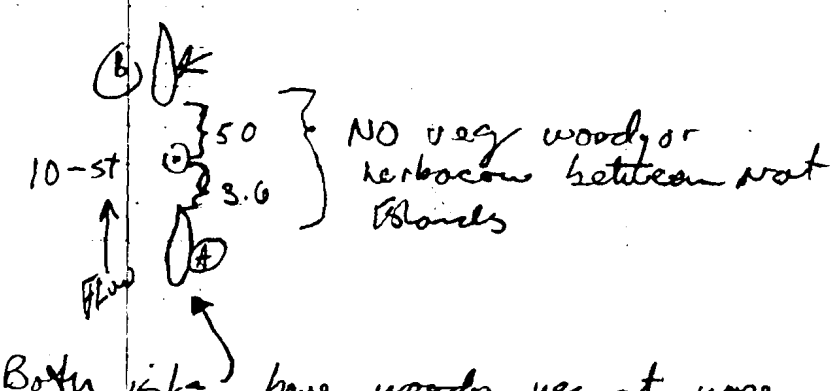
15 stems/9 m2 + 2 large toothed type small < 0.5 cm dia

Giant Bullrush (Juncus) @ head margins

19 Oct 1989
ARTIFICIAL ISLAND 10ST

Center of 10-ST is 3.6 below tail of upst nat isl.

is 5.0 m upst of head of dust nat. isl.



Both isls have woody veg at uppe 1/3 of isl on both island the spe

(A) upst 1st (is narrow entire willow approx 85 stems 2-3 yo / 8 m²

(B) odd shape little beast with lots sedg in woody part
50 stems narrow willow in @ 5 m²
+
6 broad entire

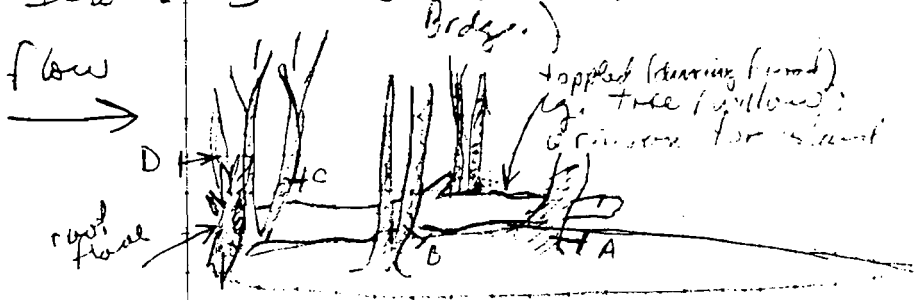
On Both islands → willowed area is geomorphically mature, ie they are approaching F.P. level.

NO-7722

17 Oct 1989

Plum Creek CO

Island 3L (West from Louviers Bridge.)



A - 20-25yo (possible older and protected during flood by toppled big tree) willow

B - free standing willow 15-17yo on island top behind

C - sprout from fallen tree? willow 16yo

D - emergent cottonwood just behind root flare 14-15yo

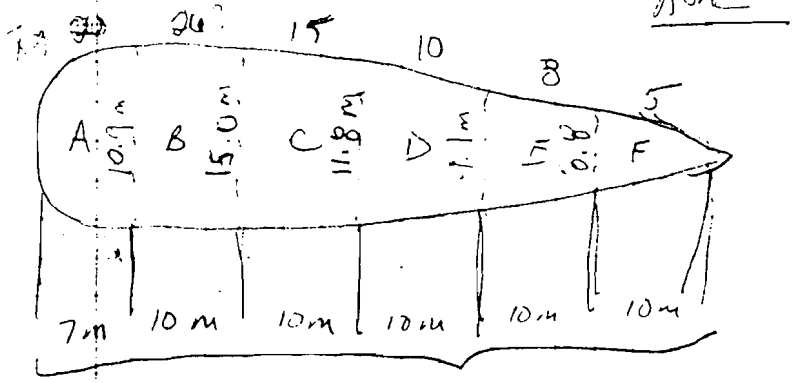
17 Oct cont

Island 3L

↳ Length is now 57 m

(Tree stems greater than 3 m high + dbh > 5 cm

AGE



[illegible] 1,1 57 m

↳ A willow lg. toothed - 6, 3,
cottonwood 1, 1, 2, 2

B willow lg. toothed - 3, 3, 6, 1, 2
cottonwood 1, 1

C cottonwood 1, 1,

D willow lg toothed, 3, 3

E willow -do- 1, 1, 1, 1, 1

F willow broad entire 1
cottonwood 1

large trees only

Island 3L

In general

(1) Stems concentrated on island margins especially willows and alders
while the occasional cottonwoods tend to more central area of island

(2) [illegible] most islands stem diameter is strongly bimodal

(3) Narrow entire willow rarely if even get into the lg diameter group, ie always a [illegible]
& the broad entire [illegible] only occasionally is in [illegible]
→ lg willows are [illegible] the [illegible] toothed species.

(4) Biggest trees are near island [illegible] and may have survived [illegible] as saplings protected by [illegible] of tree

(5) [illegible] for 1yr seedlings [illegible] [illegible] clumped in plan distribution

Island 3L

$\bar{X}$ Diameter for

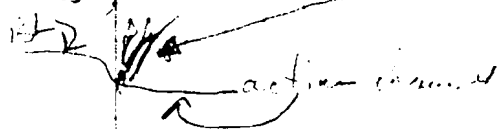
(small shrubby willows both narrow + broad culms
<1cm to 5cm $\bar{X}$ = 2.5

(lg twisted big → "survivors" are 26-36cm in dia

(lg cottonwoods & elm willows AND lg (non-survivor) [illegible] are 12-18cm diam.

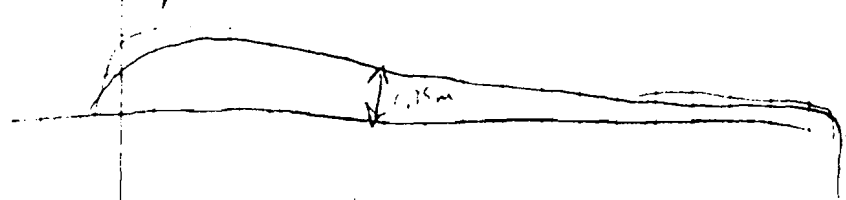
(Alders all <1cm - 3cm

Note - cattails grow in small patches along dust half of island edges.



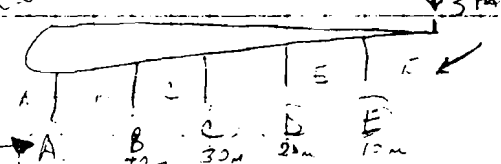
Alders only on dust half of island and on areas [illegible]

Island profile



Island 3L

Transect lower veg 5 m dia @ 1m



Transect analyses → 1.75 mi wide (ie)

(E) lg toothed, 4, 3

narrow entire 2, 2, 9, 6, 5, 4, 9, 4
2,

cottonwood 1

broad entire 12, 8, 3, 5, 6, 7

elder 4

(T) [illegible] 7, 10, 4, 3, 4, 5, 2, 4
2, 4, 2, 3, [illegible], 3, 9
[illegible]othe 2, 3, 3

[illegible], 4, 8

[illegible] lowest [illegible] kind of Fabaceae
[illegible], 11

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Island 3L

NOTE Unk. Fabaceae?
on Isl. 3L

Cespitose shrub, pinnately compound
pronounced stipules
leaves [illegible] + [illegible],
ett. [illegible] scar, older stems
[illegible] (fruit, leaflet, stem collected)

another ID note:
good entire willow [illegible]
[illegible] some [illegible] galls [illegible]

[illegible] cont.

(2) narrow entire [illegible], 3, 3, 1, 1, 1, 7
[illegible], 4, 1, 4, 1, 1, 2, 1, 2, 2, 3, 4, 2, 7, 2
[illegible] 3, 3,

[illegible] [illegible]

(note good [illegible] w/ small
less than [illegible] seedlings of
with [illegible]
also a sedge ([illegible] and
a mint - spearmint (lab type)
and a Rosa, [illegible] Cinquefoil,
Solidago, [illegible]
[illegible] foliolate [illegible]

[illegible] [illegible]
[illegible] [illegible]

Transects cont

(B) – Now into area of much [illegible] – [illegible] already tallied in [illegible] + sub canopy

note

[illegible] entire 8, 3, 4, 5, 5, 10, 1
1, 2, 1, 4, [illegible], 3

lg. toothed 3, 1, 6

Red willow (corrus [illegible]) 1, 2, 1
opp. w. red stem

[illegible] entire 1, [illegible], 1, 3, 1, 1, 1, 3
3,

[illegible], soldanella, [illegible]

(A) 7 m from [illegible] island – [illegible] canopy (75 m) coverage

Nor[illegible] [illegible], 1, 4, 5

broad [illegible] 1, 2, 1, 6, 3
1, [illegible], 3, 5

red willow 6

[illegible] elm willow [illegible]

[illegible] like [illegible] w/ [illegible]

Narrow [illegible] [illegible] [illegible]
at [illegible] [illegible]

Note > [illegible]
[illegible] [illegible]
[illegible]
and [illegible]

5 leaves [illegible]

LOVE | of bed [illegible] [illegible] 3L (water surf[illegible])

top of stake 0.46 [illegible]

Dnst end 1.449 1.60/1.30 @ 30m

Upst end 1.09 1.22/0.95

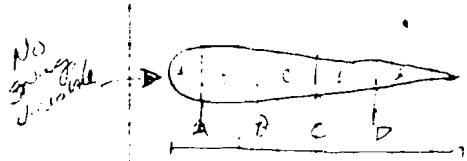
Towards Cort

[illegible] into area of [illegible]

18 Oct 989
Dunn Creek Dnst of Louvain
Briggs.

Smallest natural Island (5L)

Physical Dimensions.



4.6 m

Widths A 1.6 m
B 1.2 m
C 1.0 m
D 0.8 m

largest stems
1.5 cm dia
10 cm above
ground

[illegible] only woody species [illegible]
narrow entire & lg. toothed

WOODY
All veg sampled.

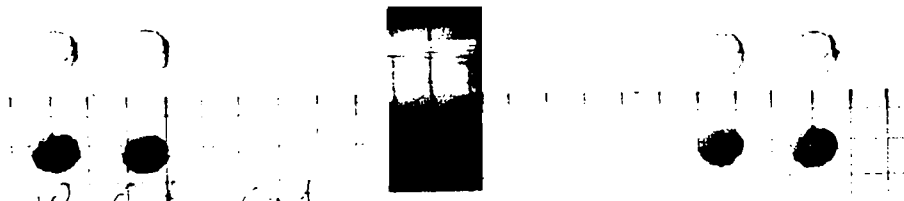
(A) Narrow entire 1.5, 0.5, 0.75, 0.9, 0.75
0.5, 0.3, 1.1, 0.5, 0.3, 0.5, 0.3, 0.25
0.3, 0.7

dia cm

Not strongly [illegible]
ground [illegible] → [illegible] grass

[illegible]
[illegible]
[illegible]

All dia [illegible]



18 Oct cont
smallest island (5L)

Veg sampling Cont

(B) narrow entire 1.1, 1.75, 1.5, 0.75, 0.5
eg. toothed all in one clump
(only on margin) 1.0, .75, .75, .5, .75
→ appears to have been an early plant
⇒ there is a 2.0 cm prostrate parent
stem from which all sprout have
come
- ground [illegible] same as (A)
which is true for [illegible] island

(C) narrow entire 1.1
that's all

(D) narrow entire 0.3, 0.3, 0.75

(E) ZIP WOODIES

IN GENERAL
1) WILLOWS are concentrated at head
on isl. surf and upper ½ of MARGINS

2) The toothed willow may be from
the initial head [illegible] dust

18 Oct 1989
Smallest ISL Cont.

Age Data (WILLOWS)

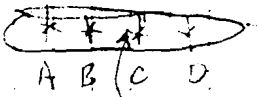
OLDEST Plants are 3yo
Age (A) = 2.0 yrs
(B) = 2.5 yrs
(C) = 1.5
(D) = 1.0
E = 0

LEVELING - SMALLEST ISLAND (5L)

Top of stake 0.805
base 0.99

tail of
isl → hand bed 1.351

A B C D



D = 1.15
C = 1.00
B = 0.99
A = 0.90

stake

soil samples taken near stake

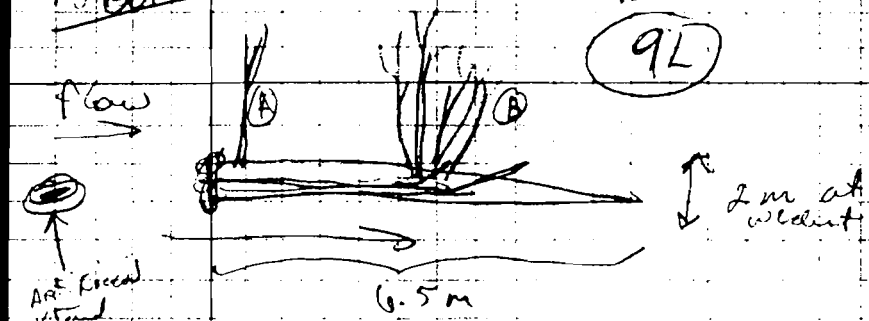
I m in front of isl = 1.31

preliminary island soil inspection
beginning soil devel on island (humus)
→ lower core much more pebbly sand
than the pebble rich bed [illegible]

19 Oct

Island

9L



Note – this is a coalescing island complex with a high bar between veg clump islands

veg (A) → singer lg toothed willow

(B) 8 stems from cespitose lg toothed willow

all stems 5-7 cm in dia 10-15 cm above ground.

Note both @ A & B there are many 1-2 yr shoots at the bases

No other woody veg!

Ground cover grasses + bactylus sedges, Ludwigia, Cardus, 2 spe mint, clover, oxa seedling of lg entire willow

Asc = all lg. stems 6-8 yo

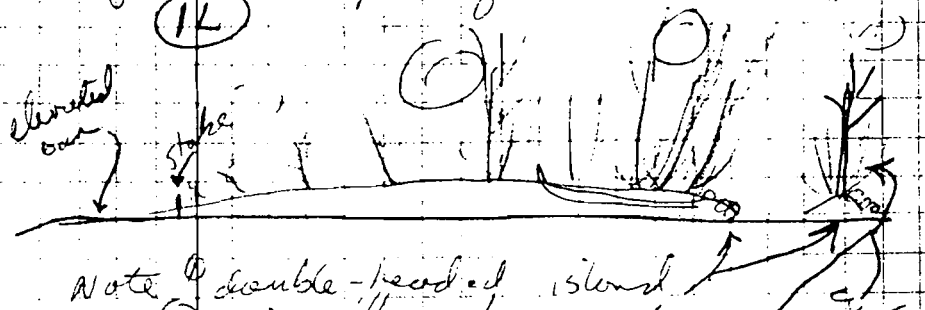
9L

18 Oct 1989
Plum Creek

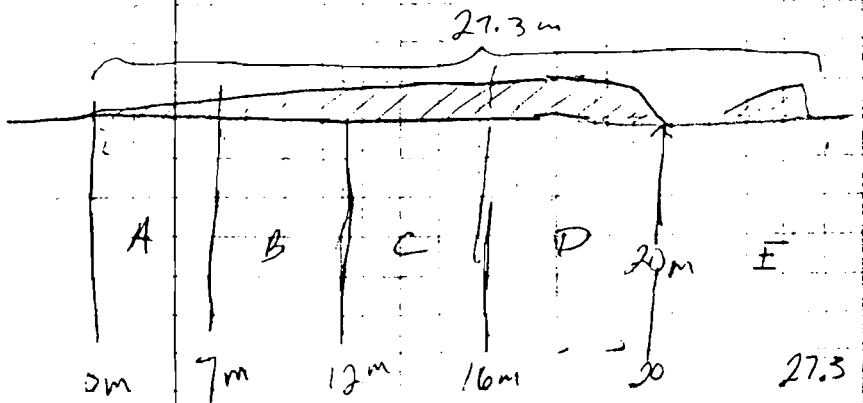
(1L)

Big island upst of Lexington Bridge

(1L)



Note ① double-headed island
② big willows have a large radiating spray of shoots at base
③ Apparent good age gradient



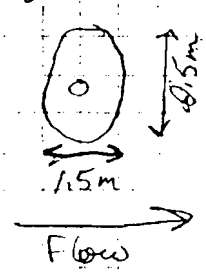
Veg Analysis (1L)

(E)

All willows - island is basically just willow stems - most soil has been eroded

→ all stems are apparently the same individual.

Plan



Age
oldest sprouts are 4 yo

spe is large toothed willow

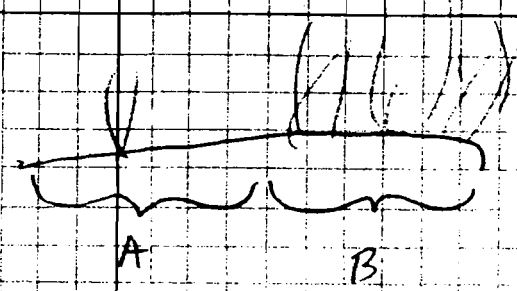
approx 140 stump/root sprouts

dia range 0.5 cm → 3.5 cm
$\bar{x}$ = 2.5 cm

big parent stem is dead but has a dia of @ 12 cm

Phot
25 single stem < 2.0 dia
narrow [illegible] near this clip

18 Oct cont



(2L)

Veg Analysis

A – Cg. entire 4 clump stems 0.5 – 1.1 cm
1 single ≤ 0.5
Age 4 years

B – Large stems only

Lg toothed willow clump of 3
[illegible]
Clump of 3 [illegible] 4.0, 1.5
Single [illegible]

Sectional single 4.5

All the rest of [illegible]
[illegible] 2.0 cm

18 Oct 1989
Plum Creek (22)

B Narrow Entire 3, 4, 4

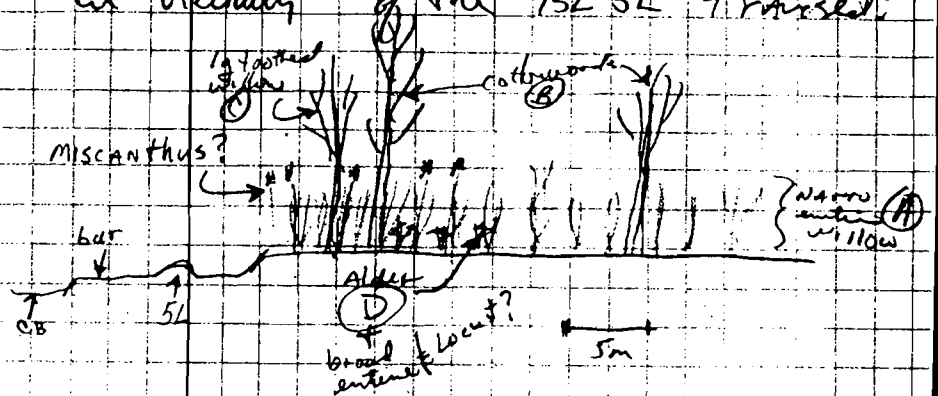
Broad Entire one massive clump
about 40 stems all about
2 cm diameter

Age 10 yrs max age

19 Oct 1989.

Plum Creek

Vegetation of the flood plain in vicinity of the 1SL 5L transect.



(A) Area dominated at subcanopy level by 4-5 yo 2-3.5 m high narrow entire Willows, as usual in clumps of 6 or more stems 1.5-2.5 cm in dia @ about .75-1 m above ground. density @ 25 stems/4m²

occ. Alder @ this stage + height

(B) Cottonwoods 4-12 m or more high scattered < 1/10m², 10-20 cm in dia @ 1m above ground.

→ Some appear to be of the big toothed Aspen variety, which is prob. not the same as the smaller leaved type on islands

use of most is @ 15 yr some older oldest are 17-19 yo

see note above

19 Oct 1988
Plum Creek

NOTE: 19 Oct near SL

These two apparent spec. of cottonwood are distinguished by one having large teeth on leaves and rough light bark – the other has larger leaves with smaller teeth and a decidedly smooth bark even down low on the trunk → lg. tooth variety is probably one on islands

Geo
From
(see O
Leveler
∴ the
depo
Ground co
(sedges dens
near the bu

19 Oct cont

(C) cont. from previous page
large toothed willow like the cottonwoods but less common
→ same ope as on the islands

(D) scattered cespitose individuals of Alder, broad entire willow, locust (or woody compound-leaf bean of some sort)
→ all less than 2m in height
→ most are fairly young - 2-3 y.o. with narrow stems typically < 2cm in dia @ 0.5 m above ground - esp. trees for the willow + bean → alder can be a little ~~[illegible]~~ stouter @ 2.0-2.5 cm in dia

Note Alder + broad entire willow collected → alder has large (as large as bud) stipules at leaves and buds) - bean was also collected

Miscanthus or other similar very tall grass (Phragmites?) Setaria?) is locally common + thick on Flood plain.

Narrow entire is dense + esp common all along Flood plain banks + all shelf bank → may b the CS dominant

Geomorph of Flood plain @ 5L

From cutbank to cut bank entire area ~~[illegible]~~ was part of channel bed during flood (see Osterkamp for Valley section already leveled)

∴ the present flood plain surf is a freshly deposited feature (since 1965)

Ground cover : most a dense layer of sedges maybe carex w/ scattered mullein solidago, grasses, clover, carduus crispus Panicum, Dactylus, Rosa, Cinquefoil, Plantago

(sedges densest near the banks)

cover much less dense under the dense willow subcanopy

19 Oct 1964

(a) cont. from previous page

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19 Oct 1989

At 9L Flood very similar to that at 5L
but there are occa cattails @
Flood plain edge. + one fuzzy
spe similar to willow (collected)

PHOTOS 19 Oct 1987 – pm

At big island 3L

#9 Low vegetated bar – mostly herbaceous
wet NON-active ANAbranch in
foreground – looking upst

#10 left side (w/ thalweg) of 3L (oblique

#11 head of 3L w/ both side channels
visable looking dnst

#12 head of 3L close up – debris stack,
tire & stake visable, view dnst

#13 unvegetated bar near 3L view dnst

#14 Right side of 3L view dnst

#15 well vegetated old channel anabranch
now becoming Flood plain, view upst

PHOTOS CONT.

#16 Right side, lower half of 3L, view is dust

#17 looking across transect (X sect) view is Right to left across channel

#18 toe of island, vegetated bar in foreground, view dust and across channel Rt to left

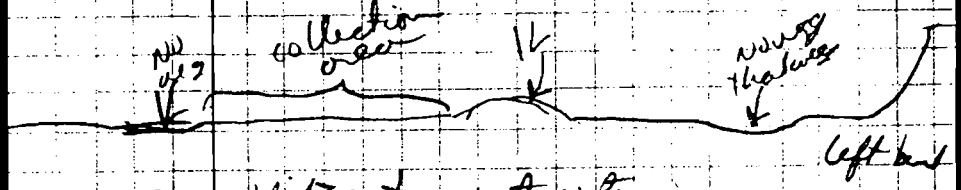
#19 entire lg. island 3L toe on left of pic, head at Rt, view is upst

#20 } two across channel shots of 2L
#21 } entire Is. visable, floodway in background, view left to Rt.

#22 channel upst of Lauviers bridge between 1L & 2L, Wanda & Jen visable, view upst

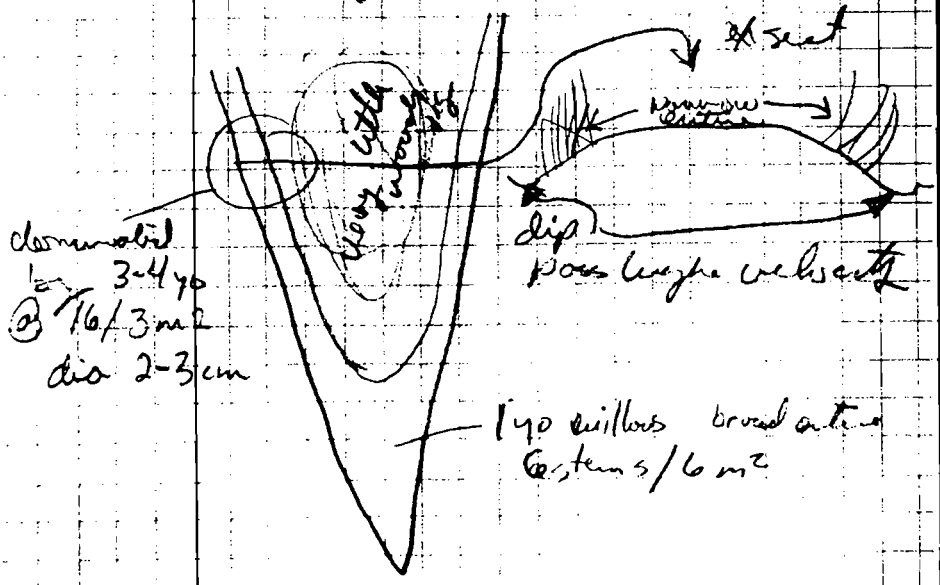
19 Oct 1989
cont

Herbarium reg collection
Several spp were collected on
IL transect bar



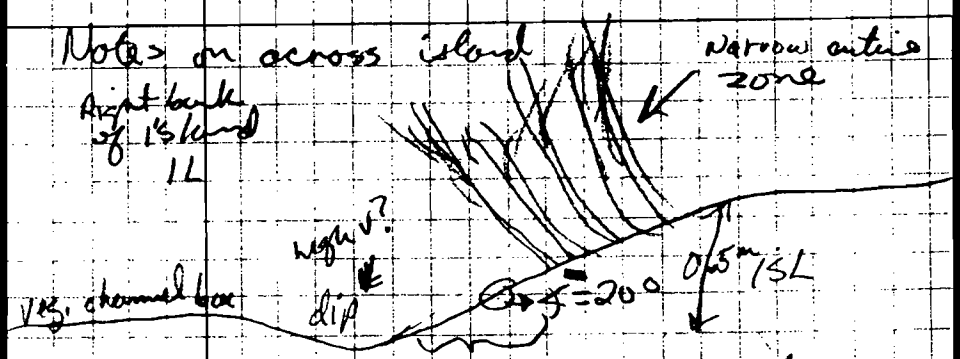
see WAITES transect notes.

Lower plan of ISL IL



19 Oct 1989

Notes on across island



last 2-3 yrs deposition

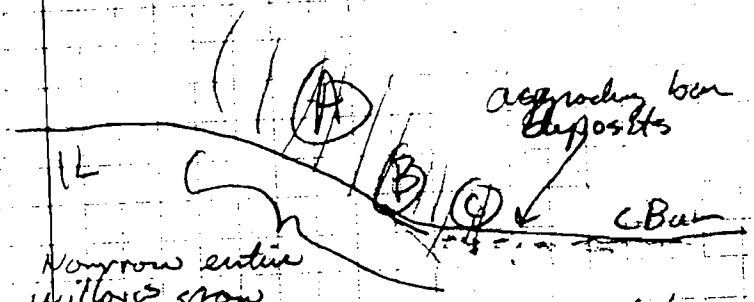
This area has no woody veg. probably due to shading by willow zone above but may also be too geomorphically active for establishment, high v, dep proximity to thin rate

Thus, once island is densely vegetated as or most large or old islands, it may take 3 or years of island growth for an UN veg (woody) to be suitable for estab due (1) shading by other estab plants, (2) rapid dep or velocity, (3) high flow duration

19 Oct 1989
cont

Left bank of island

No high V dip lean



4/40
(A) Dense clumps 2-2.5 cm in dia density = 24 stems/2m²

2/40
(B) 1-2 cm stems 11 stems/2m²

1/40
(C) <1 cm stems 4 stems/2m²