

8-23-2004

Ex. 281-US-423

R. Nawa
Oregon Department of Fish and Wildlife

K. Hartzell
Oregon Department of Fish and Wildlife

Follow this and additional works at: <https://digitalcommons.law.uidaho.edu/klamath>

Recommended Citation

Nawa, R. and Hartzell, K., "Ex. 281-US-423" (2004). *In re Klamath River (Klamath Tribe)*. 240.
<https://digitalcommons.law.uidaho.edu/klamath/240>

This Expert Report is brought to you for free and open access by the Hedden-Nicely at Digital Commons @ UIdaho Law. It has been accepted for inclusion in In re Klamath River (Klamath Tribe) by an authorized administrator of Digital Commons @ UIdaho Law. For more information, please contact annablaine@uidaho.edu.

Stream: **Crooked Creek** > Wood River
Survey Type: **ODFW Stream Habitat**
Access: Canoe
Reach: 1
Start: T34S-R71/2E-S25
Quad: Agency Lake
Date Surveyed: 23 August 04
Surveyors: R. Nawa, K. Hartzell
Distance Surveyed: 4,813 m

ADD GRAVEL COUNT, PHOTOS, NOTES

Land Use

The stream flows through a cattle ranch with irrigated pastures.

Valley and stream channel geometry

Low lying marshes, narrow floodplains, dikes, and low terraces bordered the 14 m wide stream. A 500 m long dike on the south bank constrained lateral movement of the stream in the lower portions of the reach (Map). Sporadic smaller dikes further upstream constrained marsh development. Above the lower marsh area, the creek meanders in a pasture over 1 km wide. Extremely low map measured stream gradient (0.01%) was accompanied by high sinuosity (2.1). Due to extreme sinuosity, unit 29 has a high potential for a meander cutoff because only 17 m separates the channel flowing in opposite directions (Map). Meander cutoffs would significantly increase channel and streambank erosion that would be very difficult to correct.

Substrate

The streambed was 99 percent sand and organics. Patches of pumice gravel covered less than 1 percent. A hard claypan was exposed on about 30 percent of the stream bottom in the upper portion of the reach. This claypan functions similar to bedrock but was not classified as bedrock.

Spawning Gravel

Scattered surficial deposits of pumice gravel did not appear to be suitable for spawning. The reach had no riffles that would concentrate gravel deposition.

Riparian Vegetation

For the first 500 m of stream, forested wetlands and dense willows bordered the stream. Sedge dominated marshes bordered the lower portions of the stream (U1-U7). Grass dominated pastures in the upper portions of the reach (Photo 160). Sparse patches of willows were occasionally found in pasture areas. Shade averaged 4 percent and streambed erosion was only 2 percent. Apparently grass cover and existing sparse willow growth is adequate to protect most streambanks except at sharp meander bends. Artificially sloped dikes, erosion control plantings, and rock had been placed at sharp meander bends to reduce erosion.

Wood

Wood (0.8 piece/100m) was concentrated at meander bends where logs have been artificially placed into streambanks. Except for the first 500 m, almost no conifers or hardwoods are located close enough to the stream to contribute future wood debris. Overall, wood is neither a pool forming factor or significant source of cover.

Rearing and Adult Holding Habitat

The stream has a canal-like appearance due to the lack of riffles and exposed gravel bars (Photo 160). About 27 percent of the stream was pool habitat and 73 percent glides. Pools were distinguished from glides by maximum depths greater than 1.5 m, otherwise the two habitat types were similar. Average maximum pool depths were 1.9 m; glides maintained average depths of about 0.9 m. Pools often formed at sharp meander bends demonstrating that high sinuosity was the major pool forming factor (e.g., U13,U16,U19,U27,U29). An estimated 30 percent of the streambanks were undercut. Undercut streambanks provide ample cover for juvenile and adult fish, irrespective of wood densities and pool depths. Algae and emergent vegetation dominated the stream bottom in lower portions of the reach, providing excellent cover for fish. Three adult rainbow trout (40-60cm) were observed near a bridge about 750 m above the mouth (U4).

Stream Temperature

Maximum spot stream temperature was 11°C at 1530 pdt.

Photo 160 Unit 10.
The stream was a continuous glide with scour holes >1.5 m deep at meander bends. Lush grasses dominated riparian zones.

Stream: **Crooked Creek** > Wood River
Survey Type: **ODFW Stream Habitat**
Access: Canoe
Reach: 2
Start: T34S-R71/2E-S13SE
Quad: Agency Lake, Fort Klamath
Date: 23 August 04
Surveyors: R. Nawa, K. Hartzell
Distance Surveyed: 8,298 m

ADD GRAVEL COUNT, PHOTOS, NOTES

Valley and stream channel geometry

Low terraces gently slope to form narrow floodplains that border the 13 m wide creek. In some areas the stream is bordered by marshes (wetlands) which confounds measurements of wetted width and active channel. Lateral accretions at the base of vertical cut banks was narrowing the channel in some locations. Extremely low stream gradient (0.01%) was accompanied by high sinuosity (2.3). Due to extreme sinuosity, some oxbows were particularly vulnerable to meander cutoffs. A meander cutoff with 10 percent of the flow diverted was developing at unit 44 (UTM 10 N:0587006;E:4720043 and Map). A meander cutoff with 2 percent of the flow diverted was developing at unit 44. At one location (UTM 10 N:586918;E:4720382), three sharp oxbows has a high meander cutoff potential (Map). Meander cutoffs would significantly increase channel and streambank erosion that would be very difficult to correct. Developing meander cutoffs channels could be blocked with wood, soil and large rocks. A washed out beaver dam above Highway 62 bridge (U71) suggests that beaver formerly caused channels to be more diverse and dynamic.

Substrate

The streambed was 96 percent sand and organics. About 4 percent was scattered surficial patches of 12-32 mm pumice gravel.

Spawning Gravel

An estimated 58 m² of pumice gravel were counted as suitable for spawning steelhead, although the quality of this gravel is likely poor. About 40 m² of high quality gravel suitable for both Chinook and steelhead has been placed at the end of reach 2 where a major spring from the Klamath Fish Hatchery enters the stream (Photo 223; Map). This gravel placement creates the only riffle in the entire reach. Tecumseh Spring (map) had 2 m² of suitable spawning gravel below the road crossing and an estimated 5 m² of gravel above the road crossing. Spawning gravel at Tecumseh Spring could be increased significantly with the placement of artificial gravel. Overall, the reach had an estimated 12 m² suitable steelhead spawning gravel per km surveyed.

Riparian Vegetation

The stream is primarily bordered by pasture grasses, marsh sedges, and patches of willows. At one location the stream abuts a forested high terrace that was recently logged. Willows, aspen, cottonwood, and occasional ponderosa pines provided canopy cover (Photo 167). Shade averaged 13 percent. About 5 percent of the streambanks were actively eroding. Apparently grass cover and existing sparse willow growth is adequate to protect most streambanks except at sharp meander bends. At unit 35 in the lower portion of the reach, formerly eroding streambanks were grassed over. At unit 39 lateral accretions of fine textured soil was accumulating at the base of formerly vertical cut banks. Rushes were colonizing the newly deposited soil. Erosion increased in the middle portion of the reach where grazing and trampling removed protective streambank vegetation (U40-U50).

Wood

Wood averaged 1.3 pieces/100m but was not evenly distributed. Wood was concentrated in local areas where the stream abutted forested terraces (estimated 5-10% of reach; Photo 176). Conversely, most of the stream (90-95%) had no wood because few conifers and hardwoods are located close enough to the stream to contribute wood debris.

Rearing and Adult Holding Habitat

The stream has a canal-like channel best described as a continuous glide with scour holes at meander bends. About 15 percent of the stream was scour pools and 85 percent glides. Pools were distinguished from glides by maximum depths usually greater than 1.5 m, otherwise the two habitat types were similar. Average maximum pool depths were 1.7 m; glides maintained average depths of about 0.8 m. Pools often formed at sharp meander bends (U41 and U53). High sinuosity was the major pool forming factor. An estimated 40 percent of the streambanks were undercut. Undercut streambanks provide ample cover for juvenile and adult fish (Photo 169). Three dead rainbow trout (25-40 cm) were observed below the hatchery (U79,U80). A worker at the hatchery was informed of these mortalities.

Stream Temperature/Streamflow

Maximum spot stream temperature was 11°C at U70 at 1410 PDT. A screened diversion ditch upstream from Tecumseh Spring was not diverting flow (Photo 210 U64).

Photo 167 Unit 36
Gallery riparian
forests of willows,
cottonwoods and
pine bordered the
stream in some
areas.

Photo 169 Unit 38.
An estimated 40% of
the streambanks are
undercut which
provide abundant
hiding cover for fish.

Photo 176 Unit 176.
The few trees that
fall into the stream
provide stable wood
and excellent cover.

Photo 210 Unit 64.
Screened diversion
ditch on west bank.
No flow was being
diverted.

Photo 223 Unit 84.
Approximately 40 m²
of placed spawning
gravel was in a riffle
fed by spring water
passed through the fish
hatchery.

REACH # 3 OF 2

STREAM: Crooked Cr.

CREW: RN, KH

BASIN: Wood

USGS 7.5' MAP NAMES:

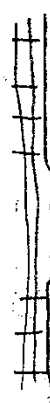
DATE	REACH #	UNIT NUMBER	CHANL FORM	VALLEY FORM	VWI	VEG CLASS		LAND USE		WATER TEMP	STRM FLOW	LOCATION TWN-RNG-SEC-1/4	PHOTO #	REACH NOTE
						DOM.	SUB-DOM.	DOM.	SUB-DOM.					
9/1/04	3	05	US	WF	42	P	S	AG	LG	66°F	LF	34S76E15W2417C1		

UTM: _____

UTM: _____

UTM: 0506254
4722463

FP



ACW = 4m
ACH = 0.1m
FPW = 100m

UTM: _____

UTM: _____

UTM: _____

REACH

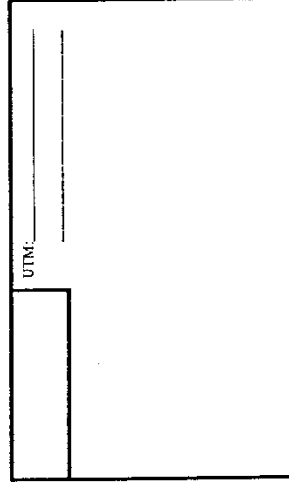
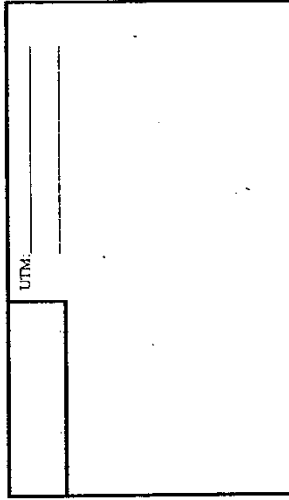
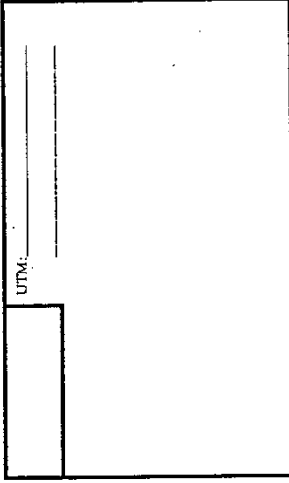
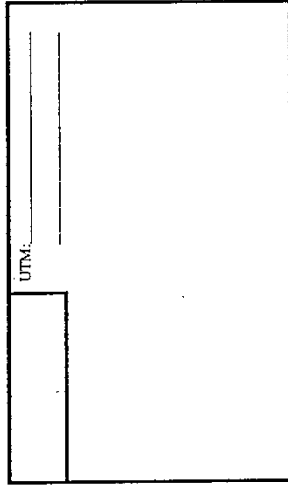
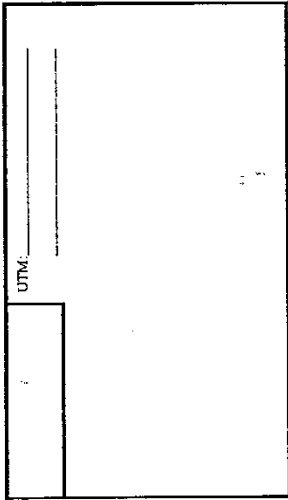
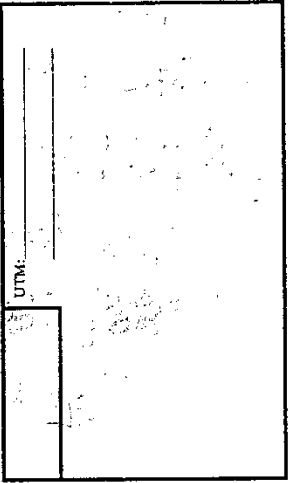
STREAM: _____

CREW: _____

BASIN: _____

USGS 7.5' MAP NAMES: _____

DATE	REACH #	UNIT NUMBER	CHANL FORM	VALLEY FORM	VWI	VEG CLASS DOM.	SUB-DOM.	LAND USE DOM.	SUB-DOM.	WATER TEMP	STRM FLOW	LOCATION TWR-RNG-SEC-1/4	PHOTO # / TIME	REACH NOTE



REACH

PAGE: 7 OF 2

STREAM: Crooked Cr. / Agency Cr.

CREW: KH, RN

BASIN: Wood

USGS 7.5' MAP NAMES:

DATE	REACH #	UNIT NUMBER	CHNL FORM	VALLEY FORM	VWI	VEG CLASS DOM.	VEG CLASS SUB-DOM.	LAND USE DOM.	LAND USE SUB-DOM.	WATER TEMP	STRM FLOW	LOCATION TWIN-RNG-SEC-1/4	PHOTO # / TIME	REACH NOTE
8/23/04	1	1	US	WF	50	P	S	AG	LG	52°F	LF	345, 75E, 75N	1091320	Wood River
8/24/04	2	2	US	WF	38	P	S	AG	LG	51°F	LF	347, 5E, 75N	1151025	Agency Cr
8/25/04	1	1	US	WF	40	P	S	AG	LG	51°F	LF	345, 75E, 75N	1020	Crooked Cr

UTM: 0586622
4716578

ACW = 27m
ACH = 1.2m
FPW > 100m

FP

Dike
Confluence with Wood River

UTM: 0586924
4718843

ACW = 22m
ACH = 1.3m
FPW > 100m

FP

Confluence with Agency Cr

UTM: _____

UTM: _____

UTM: _____

Agency Cr

UTM: 0586927
4718874

ACW = 5m
ACH = 0.8m
FPW > 100m

FP

Confluence with Crooked Cr

PAGE: _____ OF: _____

REACH # _____

STREAM: _____ CREW: _____

BASIN: _____

USGS 7.5' MAP NAMES: _____

DATE	REACH #	UNIT NUMBER	CHANL FORM	VALLEY FORM	VWI	VEG CLASS		LAND USE		WATER TEMP	STRM FLOW	LOCATION TWP-RNG-SEC-1/4	PHOTO # / TIME	REACH NOTE
						DOM.	SUB-DOM.	DOM.	SUB-DOM.					

UTM: _____

UTM: _____

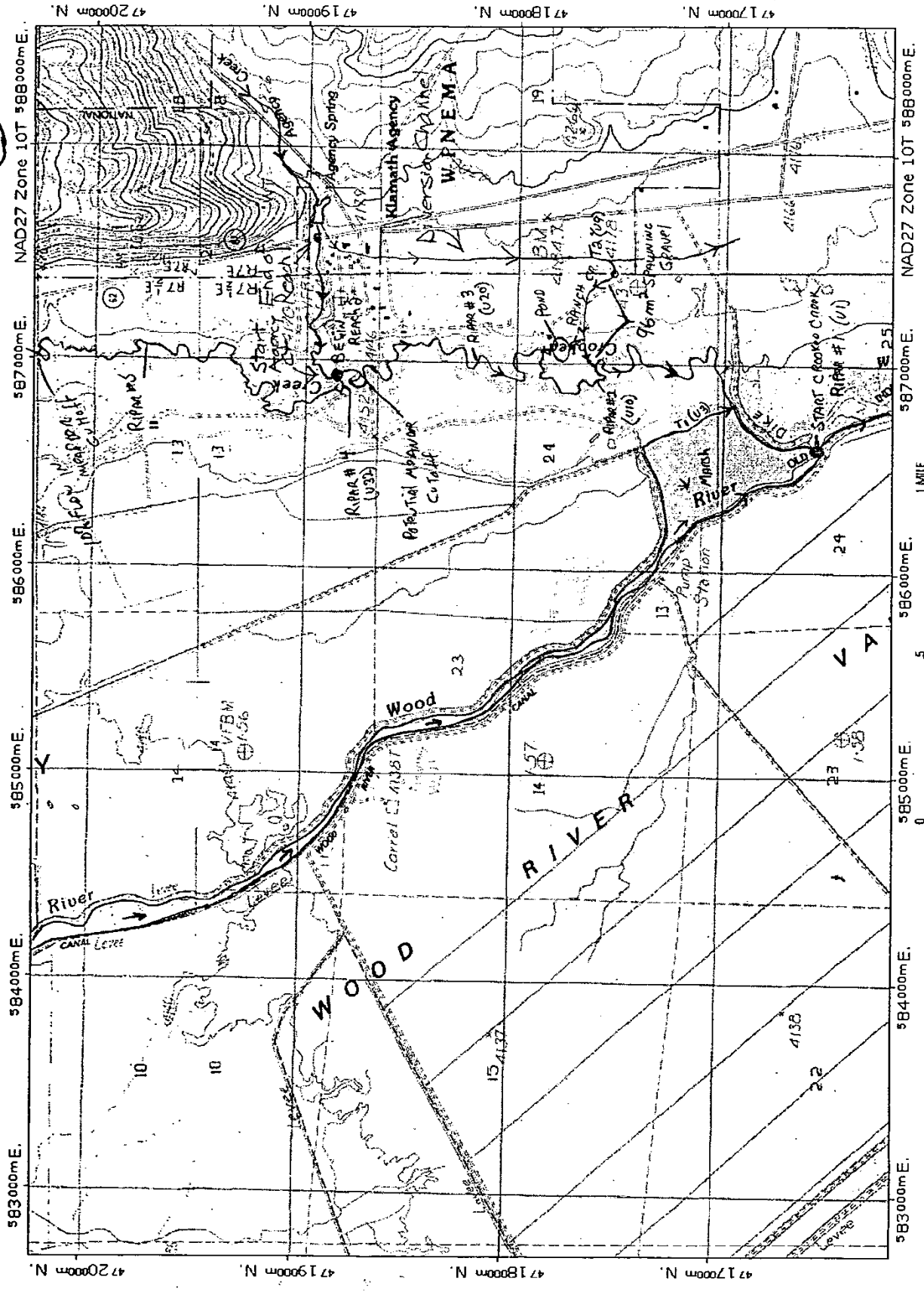
UTM: _____

UTM: _____

UTM: _____

UTM: _____

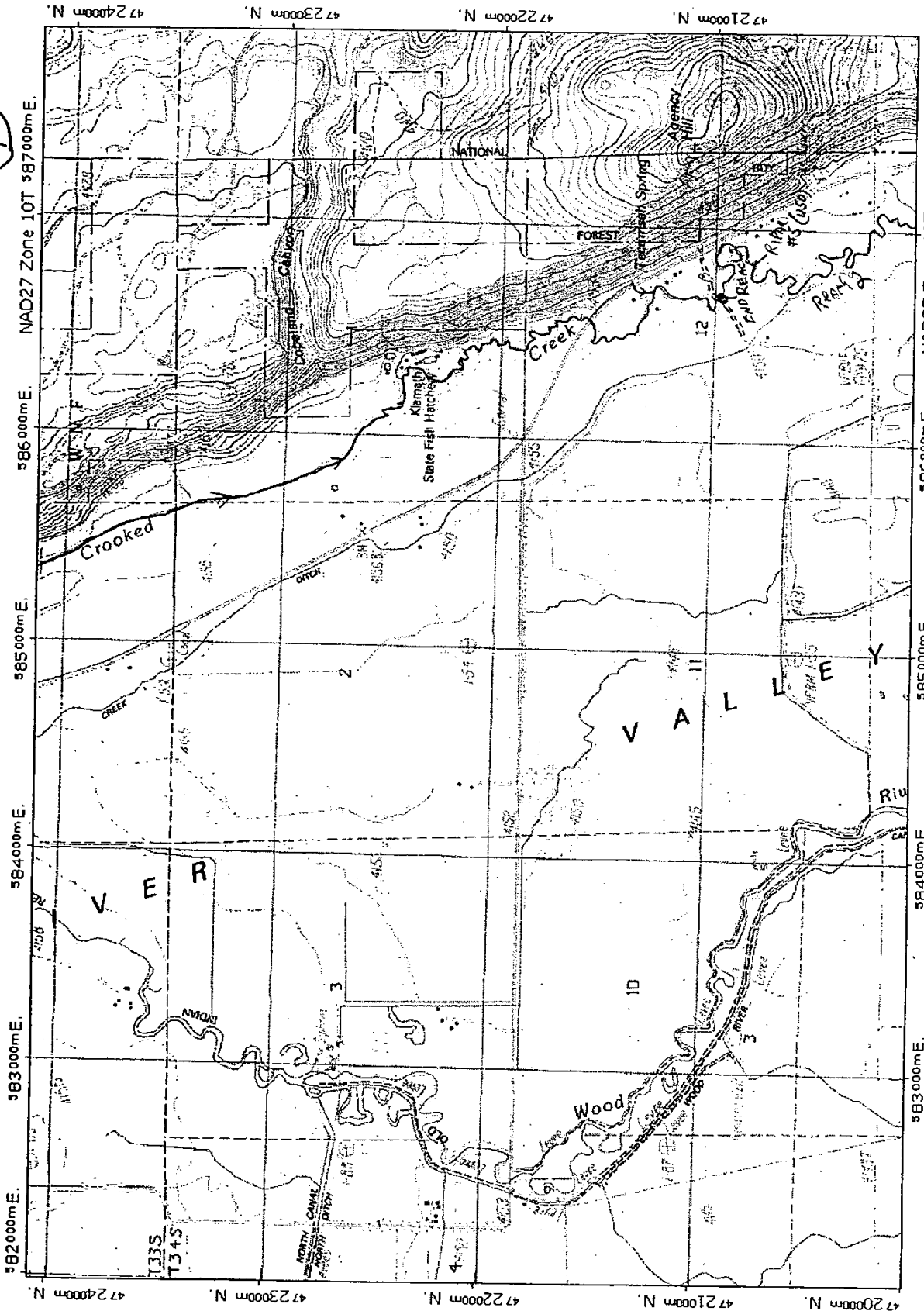
(2/1)



Choked Creek Reach 14-2
 Wood River + tributary
 Anson Tract - Ranch 1

Map created with TOPOI® ©2002 National Geographic (www.nationalgeographic.com/topo)

57



CROOKED CREEK REACH 2
 WOOD RIVER + TRIBUTARIES

Map created with TOPO © 2002 National Geographic (www.nationalgeographic.com/topo)

UNIT - 1

PAGE 1 OF 3

STREAM: Crooked Cr.

DATE: 8/23/04

ESTIMATOR: Hartzell

REACH #	UNIT #	UNIT TYPE	CHANL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)		ACTIVE CHANNEL		FLOOD PRONE		TERRACE		NOTE	
								LEFT	RIGHT	HT.	WIDTH	HT.	WIDTH	HT.	WIDTH		VMT
1	GL	00	00	100	250	15	0.5	8	14	1.2	27	2.4	700	3.3	7200	50	R. Terrace (Dike) Only
2	GL	01	90	100	250	14	0.5	3	20								Cont. w/ Wood R.
3	GL	00	100	100	75	10	0.5										LB Outflow from Marsh
4	GL	00	100	250	250	21	0.5										
5	GL	00	100	250	250	17	0.5										
6	GL	00	100	250	250	19	0.5										
7	GL	00	100	250	250	19	0.5										
8	LP	01	85	900	16	16	0.5		3								
9	RL	11	15	21	2.6	2.6	3										
10	GL	00	100	30	30	15	0.5			1.4	18	2.8	700	None			RB Tib (Ranch Cr.)
11	LP	00	100	28	28	5	0.5										
12	GL	00	100	250	250	12	0.5										
13	LP	01	95	165	12	12	0.5										
14	RL	11	5	12	2.1	2.1	3										
15	GL	00	100	20	20	13	0.5										
16	LP	00	100	62	62	12	0.5										
17	GL	00	100	250	250	4	0.5										
18	GL	00	100	120	120	13	0.5										
19	LP	00	100	78	78	9	0.5										
20	GL	00	100	180	180	19	0.5			1.4	20	2.8	7200	None			50
21	LP	00	100	55	55	6	0.5										
22	GL	00	100	145	145	7	0.5										
23	LP	00	100	52	52	6	0.5										
24	GL	00	100	250	250	18	0.5										
25	GL	00	100	250	250	7	0.5										
26	GL	00	100	156	156	8	0.5										
27	LP	00	100	58	58	16	0.5										
28	GL	00	100	154	154	16	0.5										
29	LP	00	100	60	60	13	0.5										
30	GL	00	100	90	90	16	0.5										

* MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL. TAKE THE MEASUREMENT AT POOL TAIL CREST ON POOL UNITS.

ESTIMATOR: Hartzell

DATE: 8/24/04

UNIT - 1

STREAM: Cracked Cr.

REACH #	UNIT #	UNIT TYPE	CHNL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)		ACTIVE CHANNEL HT.*	FLOOD PRONE		TERRACE		NOTE	
								LEFT	RIGHT		HT.	WIDTH	HT.	WIDTH		VWI
1	31	GL	11	20	60	3.0	0.5		8	1.3	2.2	2.6	7100	None	38	Agency Cr.
2	32	GL	01	80	250	4	0.5		7							
2	33	GL	00	100	250	4	0.5		10							
2	34	GL	00	100	155	4	0.5		6							
2	35	LP	00	100	172	6	0.5		13							
2	36	GL	00	100	250	4	0.5		13							
2	37	GL	00	100	250	5	0.5									
2	38	GL	00	100	250	6	0.5		60							
2	39	GL	00	100	250	5	0.5		20							
2	40	GL	00	100	220	6	0.5			1.3	31	2.6	7200	None		27
2	41	LP	00	100	77	4	0.5		36							
2	42	GL	00	100	250	5	0.5		3							
2	43	GL	00	100	180	4	0.5		4							
2	44	LP	00	100	370	6	0.5									
2	45	GL	00	100	250	4	0.5		8							
2	46	GL	00	100	250	5	0.5		2							
2	47	GL	00	100	250	4	0.5		3							
2	48	GL	00	100	250	4	0.5		60							
2	49	GL	00	100	250	4	0.5		3	1.4	20	2.8	7150	None		40
2	50	GL	00	100	250	6	0.5									
2	51	GL	00	100	250	5	0.5									
2	52	GL	00	100	110	6	0.5		10							
2	53	LP	00	100	39	4	0.5		10							
2	54	GL	00	100	250	6	0.5		60							
2	55	GL	00	100	250	4	0.5		6							
2	56	GL	00	100	76	15	0.5		6							

End @ Single Lane Bldg
Just South of
Tecumseh Spring
RT-62 Bridge

* MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL. TAKE THE MEASUREMENT AT POOL TAIL. CREST ON POOL UNITS.

UNIT - 1

PAGE: 3 OF 3

STREAM: Crooked Cr.

DATE: 9/1/04

ESTIMATOR: Hartzell

REACH #	UNIT #	UNIT TYPE	CHANL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)		ACTIVE CHANNEL HT.*	ACTIVE CHANNEL WIDTH	FLOOD PRONE		TERRACE		NOTE
								LEFT	RIGHT			HT.	WIDTH	HT.	WIDTH	
2	57	GL	00	100	250	16	0.5	49	1							Slanted Single Lane Bridge
2	58	GL	01	80	250	5	0.6	50	36							
2	59	GL	11	20	102	2	0.5	60	40							Tecumseh Spring Outflow
2	60	GL	00	100	97	5	0.6	2	44	1.1	16	2.2	150	3.5	7300	44 Left Bank Ter. Ht.
2	61	LP	00	100	67	5	0	1	29							
2	62	GL	00	100	49	4	0.5	1	31							
2	63	LP	00	100	149	4	0	1	34							
2	64	GL	00	100	28	5	0.6	1	36							
2	65	LP	00	100	43	4	0	1	3							SP
2	66	GL	00	100	58	5	0.5	1	12							
2	67	LP	00	100	56	5	0	1	2							
2	68	GL	00	100	90	4	0.5	1	30							
2	69	LP	00	100	33	1	0	21	35	1.25	11	2.5	7100	3.0	7300	50 Hwy 62 BC Rt Bank Terrace Ht.
2	70	GL	00	100	161	1	0.5	1	43							
2	71	LP	00	100	35	19	0	1	2							
2	72	GL	01	100	250	15	0.5	1	10							
2	73	GL	02	0	30	3	0	15	15							
2	74	GL	00	100	250	14	0.5	2	10							
2	75	GL	00	100	79	2	0.5	2	10							
2	76	LP	00	100	17	10	0	3	26							
2	77	GL	00	100	250	6	0.5	2	15							
2	78	LP	00	100	45	7	0	1	14							
2	79	GL	00	100	212	8	0.5	1	7							
2	80	GL	01	80	250	7	0.5	1	1	1.2	14	2.4	2100	None	42	Flood plain to Rt HS
2	81	GL	02	20	61	6	0.5	1	1							
2	82	GP	00	100	27	16	0	10	27							Hatchery Outflow
2	83	GL	00	100	271	9	0.5	90	90							Major Spring Outflow
2	84	GL	11	80	80	8	1.0	1	60							Start of Smaller Chan.
3	85	GL	00	20	60	2	0.5	1	1							

* MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL. TAKE THE MEASUREMENT AT POOL TAIL CREST ON POOL UNITS.

UNIT-2

PAGE: 1 OF 3

STREAM: Crookio Creek DATE: 23 Aug 04 NUMERATOR: R. NAWA

UNIT #	UNIT TYPE	DEPTH* M/AK	DEPTH** PTC	VERIFIED LENGTH	WIDTH	S/O	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
							SND	GRVL	CBLE					
1	GL	1.0/1.8				95	5				50		Marsh LB Dike RB-57°E	
2	GL	1.0/1.8				95	5				50		Marsh	
3	GL	.9				100					40	BP	BRM DGA AT LB/dike 64°E	
4	GL	1.0/1.8				95	5				60	BC		
5	GL	1.1				95	5				30	CS	Dike RB: Marsh LB-	
6	GL	1.0				100					30	CS	Marsh RD; Dike LB	
7	GL	1.1				100					30	CS	Dike at 50m	
8	LP	1.9	1.1			100					30	CS	Dike LB 50m @ 1507	
9	RS	0.25				100					30	CS	55°E 153m 0587004-4717622	
V 10	GL	.8				100	50	50		5	30			
11	LP	2.1	.8			100								
12	GL	.9				100					30	CS	LB Dike 100m	
13	LP	2.0	.9			100					30		Marsh → Pool	
14	LP	0.15				100				4			outlet from Marsh T 26	
15	GL	.9				110	30	70			30			
16	LP	2.0	.9			100					20	GB	Marsh → Pool	
17	GL	.9				100					20			
18	GL	.9				100					20			
19	LP	2.4	.9			100					30		Marsh → Pool	
V 20	GL	1.0				100					20		Pipe # 7	
21	LP	1.9	1.0			100					20			
22	GL	1.0				100					20			
23	LP	1.6	1.0			100					20			
24	GL	1.0				100					20	SD	PUMP RB	
25	GL	0.8				95	5				20		50°E 0920	
26	GL	0.8				95	5				20	BC	willow RB	
27	LP	1.6	0.8			100					20		Marsh → Pool	
28	GL	0.7				95	5				20		LB willow / RB Errovia	
29	LP	1.8	.7			100					20		Marsh Pool - Bottom Marsh RB	
V 30	GL	0.7				95	5				20	CS	Dim RB	

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS
 ** ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

UNIT-2

PAGE: 2 OF 3

STREAM: Crooked Creek DATE: 24 AUG 04 NUMERATOR: R. NAWA

UNIT #	UNIT TYPE	DEPTH*	DEPTH** FTC	VERIFIED LENGTH	WIDTH	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
						S/O	SND	GRYL					
31	GL	0.30				95		5		40		ALCANY CREEK (13) 510 @ 400	
32	GL	0.9				95		5		30		Riprap # 4 / LOC AT ANCHOR TO APPROX. E 400	
33	CL	1.0				95		5		30	UD	GRAVEL < 1/2" / PUMP LB. IN SCREEN?	
34	CL	1.0	1.0			95		5		30		GRAVEL < 1/2"	
36	GL	1.0				95		5		40		STREAMBANK HOOLING LB	
37	GL	0.9				95		5		40		50° @ 1140	
38	CL	0.9				95		5		60		MASH RUBOS LB/RB	
39	GL	0.9				100				60			
V 40	GL	1.0				100				60	BC	Riprap # 5 - Collapse Basins - High Water Pool	
41	LP	1.9	1.9			100				30		MANURE BANK → POOL	
47	GL	1.0				95		5		40			
47	GL	0.8				95		5		40			
47	LP	2.0	1.8			95		5		60	UD	MEASURE CUTTUFF FLOWING @ POOL WEIRSTONE	
48	CL	1.0				95		5		60		DESIGNER'S PUMP # RB	
46	GL	0.9				95		5		50			
47	GL	0.9				95		5		40		APPROX WITH S. A. S. P.	
48	GL	0.8				95		5		50			
49	GL	0.7				100				30	DS		
V 50	GL	1.0/1.8				100				40		Riprap # 6	
51	GL	0.9				95		5		30			
52	GL	1.0				96		5		40		HICK SIMONITY	
53	LP	2.2	1.0			100				50		APPROX → POOL	
54	GL	1.0				95		5		50			
55	GL	1.0				95		5		50			
56	GL	0.9				95		5		50	BC	ENTER BRIDGE	
V													

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS
 ** ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

UNIT-2

PAGE: 3 OF 3

STREAM: Crooked Cr DATE: 1 sept 04 NUMERATOR: R. NAWA

UNIT #	UNIT TYPE	DEPTH* PTC	DEPTH** PTC	VERIFIED LENGTH	WIDTH	SIO	PERCENT SUBSTRATE	BLDR	BDRCK	BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
57	GL	0.8				100					30	30	BC	0580346-4734990
58	GL	0.8				100					30	30	BC	51° @ 1150
59	GL	0.6				95		30					BC	2 m ² SPRAWLING CANAL 48°
60	GL	0.6				95					20	40	BC	51° @ 1216
61	LP	1.6	.6			95						30		
62	GL	0.8				95						30		
63	LP	1.9	0.8			95						30		
64	GL	0.8				95					5	20	JD	IRIGATION CANAL LIB-NO FLOW
65	LP	1.4	0.6			95					30	20		SEASONAL POOL AT CANAL
V66	GL	0.8				95					20	30		
67	LP	1.8	0.8			100					40	30		
68	GL	0.7				95			3		10	30		62 Hwy BRIDGE
69	LP	1.7	0.6			90					20	20	GS	STAT CANAL = 1.7
70	GL	0.7				90					5	30		520 @ 1410
71	LP	1.8	0.4			100					30	30		Washes out Brown Dam
72	GL	0.6				95					5	30		
73	AL	0.3				100								COMPLEX ALCOVE
74	GL	0.6				95					60	60	SS	MARSH RB
75	GL	0.6				95					60	60	SS	MARSH RB
V76	LP	1.4	.4			95			3		30	30	SS	MARSH LB
77	GL	1.7				95					60	60	SS	MARSH LB - SPINE DUMPS 10-14"
78	LP	1.4	.4			95					5	40	SS	51° @ 1510
79	GL	.6				95					5	30		20000 Rainbow 10-14"
80	GL	.7				95					5	20		Beaver cuttings 1 Deep RB 15"
81	GL	.7				100					20	10		500 channel
82	PP	1.4	.3			95					20	20	SS	51° @ 1530 - SPINE FROM CANAL 70°
83	GL	.9				95					30	30		51° @ 1600
84	RT	.3				60							SS, GS	DIR STAKE AT HATCHERY - GS = 0.88/41.80
85	GL	.4				100								6.6 @ 1730

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS
 ** ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

PHOTO RECORD

PAGE: 2 OF: 2

STREAM: Crooked Cr. SURVEY TYPE: OR. PLAN BASIN MIXED
 BASIN OR GCG: Wood FILM: DIGITAL SLIDE PRINTS
 SURVEY CREW: RN, KH ROLL #: _____ MAILER #: _____

102 C4008-1

112

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION	
1: 14	64	9/1/04	1240	AS/LR View of Diversion	A 0210
2: 15	69.70		1405	US View	211
3: 16				US View Including Hwy 62 Bridge	212
4: 17				LR View	213
5: 18				RR View	214
6: 19	20		1555	US View Including Arrowline to Hatchery	215
7: 20	21		1555	US View	216
8: 21	22		1615	RB View of Hatchery Outflow	217
9: 22	23		1635	US View	218
10: 23	23		1635	AS View	219
11: 24	25		1727	US View of Much Smaller Crooked Cr.	220
12: 25	23		1727	US View of Combined Flow	221
13: 26	24		1727	US View of Spring Riffle	222
14: 27	24		1735	View of ODFW Placed Spawning Gravel	223
15:					
16:					
17:					
18:					
19:					
20:					
21:					
22:					
23:					
24:					
25:					
26:					
27:					
28:					
29:					
30:					
31:					
32:					
33:					
34:					
35:					
36:					
37:					
38:					
39:					
40:					

PHOTO RECORD

PAGE: _____ OF: _____

STREAM: _____ SURVEY TYPE: OR. PLAN BASIN MIXED

BASIN OR GCG: _____ FILM: DIGITAL SLIDE PRINTS

SURVEY CREW: _____ ROLL #: _____ MAILER #: _____

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1:				
2:				
3:				
4:				
5:				
6:				
7:				
8:				
9:				
10:				
11:				
12:				
13:				
14:				
15:				
16:				
17:				
18:				
19:				
20:				
21:				
22:				
23:				
24:				
25:				
26:				
27:				
28:				
29:				
30:				
31:				
32:				
33:				
34:				
35:				
36:				
37:				
38:				
39:				
40:				

PHOTO RECORD

PAGE: 1 OF: 2

STREAM: Crooked SURVEY TYPE: OR. PLAN BASIN MIXED

BASIN OR GCG: WOOD FILM: DIGITAL SLIDE PRINTS

SURVEY CREW: RN, KH ROLL #: _____ MAILER #: _____

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1: <u>A 154</u>	<u>1</u>	<u>23 AUG 04</u>	<u>1310</u>	<u>UPSTREAM (NAME CARD)</u>
2:	<u>155</u>	<u>"</u>	<u>"</u>	<u>DOWN</u>
3:	<u>156</u>	<u>"</u>	<u>"</u>	<u>RIGHT BANK</u>
4:	<u>157</u>	<u>"</u>	<u>1530</u>	<u>SPAWN GAP in RANCH CREEK *</u>
5:	<u>158</u>	<u>-</u>		<u>RANCH CREEK GAP in Tailout</u>
6:	<u>159</u>	<u>10</u>	<u>1630</u>	<u>UPSTREAM - DIKE LB</u>
7:	<u>160</u>	<u>10</u>	<u>1630</u>	<u>DOWNSTREAM</u>
8:	<u>161</u>	<u>20</u>	<u>"</u>	<u>UPSTREAM</u>
9:	<u>162</u>	<u>20</u>	<u>"</u>	<u>DOWNSTREAM FOOTING</u>
10:	<u>163</u>	<u>32</u>	<u>24 AUG 1030</u>	<u>UPSTREAM</u>
11:	<u>164</u>	<u>30</u>	<u>"</u>	<u>DOWNSTREAM - DIKE RB</u>
12:	<u>165</u>	<u>31</u>	<u>"</u>	<u>MOUTH ACELERY CREEK RB</u>
13:	<u>166</u>	<u>35</u>	<u>" 1130</u>	<u>FORMER EROSION LB NOW HEALING OVER WITH GRASS</u>
14:	<u>167</u>	<u>36</u>	<u>" 1145</u>	<u>GALLERY RIPARIAN FOREST RB: GRASS/WILLOW/ASPEN/PINE</u>
15:	<u>168</u>	<u>36</u>	<u>"</u>	<u>FORMER EROSION LB NOW HEALING OVER W/ GRASS COVER</u>
16:	<u>169</u>	<u>38</u>	<u>" 1150</u>	<u>UNDERCUT RB</u>
17:	<u>170</u>	<u>40</u>	<u>" 1220</u>	<u>UPSTREAM RIPARIAN #5</u>
18:	<u>171</u>	<u>40</u>	<u>" 1230</u>	<u>DOWNSTREAM</u>
19:	<u>172</u>	<u>40</u>	<u>" 1230</u>	<u>RB - Willows</u>
20:	<u>173</u>	<u>42</u>	<u>" 1320</u>	<u>LB - EROSION IN GRAZED PASTURE</u>
21:	<u>174</u>	<u>49</u>	<u>" 1400</u>	<u>WOOD DEBRIS JAM ACROSS STREAM</u>
22:	<u>175</u>	<u>50</u>	<u>" 1630</u>	<u>UPSTREAM MUDWATER</u>
23:	<u>176</u>	<u>50</u>	<u>" 1630</u>	<u>DOWNSTREAM WOOD</u>
24:	<u>A 177</u>	<u>50</u>	<u>" 1630</u>	<u>RIGHT BANK WILLOWS</u>
25:				
26:				
27:				
28:				
29:				
30:				
31:				
32:				
33:				
34:				
35:				
36:				
37:				
38:				
39:				
40:				

061

012

RANCH

PHOTO RECORD

PAGE: _____ OF: _____

STREAM: _____ SURVEY TYPE: OR. PLAN BASIN MIXED

BASIN OR GCG: _____ FILM: DIGITAL SLIDE PRINTS

SURVEY CREW: _____ ROLL #: _____ MAILER #: _____

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1:				
2:				
3:				
4:				
5:				
6:				
7:				
8:				
9:				
10:				
11:				
12:				
13:				
14:				
15:				
16:				
17:				
18:				
19:				
20:				
21:				
22:				
23:				
24:				
25:				
26:				
27:				
28:				
29:				
30:				
31:				
32:				
33:				
34:				
35:				
36:				
37:				
38:				
39:				
40:				

SPAWNING HABITAT FORM

Stream Crooked Reach 2 Date 1 Sept 04
 Surveyor(s) R. NAWA

Surface area (m ²)	Class (G, GC, C)	Percent wetted	Percent usable	UNIT	Pumice rock - 50% SAND/FC Comments
4	G	100	100	61	30% >1 - >50% SAND/FC
2	G	100	100	63	20% >1 750% SAND/FC
4	G	100	100	66	20% >1 750% SAND/FC
2	G	100	100	66	" "
2	G	"	"	68	" "
2	G	"	"	70	" "
2	G	"	"	73	30% >1 "
3	G	"	"	71	" - Pumice Rock?
2	G	"	"	75	20% >1 - >50% SAND/FC
2	G	"	"	77	30% >1 - >50% SAND
1	"	"	"	"	20% >1 "
1	"	"	"	"	" "
4	"	"	"	78	40% >1 - Pumice Rock
2	"	"	"	78	30% >1 "
3	"	"	"	79	" Pumice Rock
3	"	"	"	79	" "
4	"	"	"	79	20% >1 "
4	"	"	"	79	" "
3	"	"	"	80	" "
3	"	"	"	80	" "
3	"	"	"	80	" "
2	"	"	"	82	10% >1 Pumice Rock
4	GC	"	"	84	NOT Pumice mostly!
10	GC	90	60	84	46" NOT Pumice - PLACED? Red sp
10	GC	"	60	84	46" NOT Pumice PLACED GROUP NOT Pumice
6	GC	"	50	84	46" NOT "
2	G	"	"	84	4 30% SAND
4	G	"	"	84	"
4	G	"	"	84	"

PUMICE POOR QUALITY

PUMICE POOR QUALITY

PLACED

EXCELLENT QUALITY

Class: G= gravel; C= small cobble (<150mm [6"])
 Usable habitat is at least 150mm (6") deep and has water velocities between 1 and 4 feet/second.

WOOD

PAGE: 1 OF: 3

NAME: R. MAUR

DATE: 23 AUG 04

STREAM: CROOKED CR.

UNIT NUMBER	UNIT TYPE	CONFIG.	DEBRIS TYPE	LOCAT	DBH CLASS	RW < 3	3	6	9	12	15	18	21	24	28	32	36+	WOOD NOTE
1	GL	S	RN	S	30													
2	GL	S	N	F	30													
2	"	S	N	S	30													
2	"	S	C	M	30													
2	"	S	C	S	30													
2	"	S	C	M	30													
2	"	S	C	S	30													
4	GL	A	C	M	30													
4	GL	A	N	F	30													
6	GL	S	C	S	30													
7	GL	S	N	S	15													
8	LP	S	C	F	15													
8	LP	S	N	S	30													
11	LP	A	N	S	30													
13	LP	A	C	S	30													
14	RI	S	C	F	30													
16	LP	S	N	S	45													
16	LP	S	N	S	30													
19	LP	S	C	S	30													
21	LP	S	C	S	30													
22	LP	A	C	S	36													
24	GL	S	C	M	30													
26	GL	S	C	M	30													
28	GL	S	C	S	30													
28	GL	S	C	M	45													
30	GL	S	C	M	60													
31	GL	S	C	M	30													
32	GL	S	C	S	30													
32	GL	A	C	S	30													
32	GL	S	C	S	30													

Place Artificially
Place Artificially

Place Artificially
Place Artificially

WOOD

PAGE: 2 OF 3

DATE: 8/24/04 NAME: Hartzell

STREAM: Cratered Cr.

UNIT NUMBER	UNIT TYPE	CONFIG	DEBRIS TYPE	LOCAT	DBH CLASS	RW<3	3	6	9	12	LENGTH CLASS (m)						WOOD NOTE		
											15	18	21	24	28	32		36+	
33	GL	S	C	M	45		1												
34	GL	S	RW	S	45				1										Fallow Area?
39	GL	S	C	S	30														
38	GL	S	C	S	45														
40	GL	A	C	S	30														
40	GL	A	C	S	45														
40	GL	A	C	S	30														
41	GL	A	C	S	45														
41	GL	A	C	S	30														
44	GL	A	C	S	30				2										
45	GL	A	C	S	45				2										
45	GL	A	C	S	30				2										
46	GL	A	C	S	45				2										
46	GL	A	C	S	30				2										
46	GL	A	C	S	45				2										
46	GL	A	C	S	30				2										
47	GL	A	C	S	45				2										
47	GL	A	C	S	30				2										
47	GL	A	C	S	45				2										
47	GL	A	C	S	30				2										
48	GL	A	C	S	45				2										
48	GL	A	C	S	30				2										
48	GL	A	C	S	45				2										
48	GL	A	C	S	30				2										
49	GL	A	C	S	45				2										
49	GL	A	C	S	30				2										
49	GL	A	C	S	45				2										
49	GL	A	C	S	30				2										
50	GL	A	C	S	45				2										
50	GL	A	C	S	30				2										
51	GL	A	C	S	45				2										
51	GL	A	C	S	30				2										
51	GL	A	C	S	45				2										
51	GL	A	C	S	30				2										
52	GL	A	C	S	45				2										
52	GL	A	C	S	30				2										
52	GL	A	C	S	45				2										
52	GL	A	C	S	30				2										
53	GL	A	C	S	45				2										
53	GL	A	C	S	30				2										
53	GL	A	C	S	45				2										
53	GL	A	C	S	30				2										
54	GL	A	C	S	45				2										
54	GL	A	C	S	30				2										
54	GL	A	C	S	45				2										
54	GL	A	C	S	30				2										
55	GL	A	C	S	45				2										
55	GL	A	C	S	30				2										
55	GL	A	C	S	45				2										
55	GL	A	C	S	30				2										

WOOD

PAGE: 3 OF: 3

STREAM: Crooked CR.

DATE: 1 Sept 04

NAME: R. NAWA

UNIT NUMBER	UNIT TYPE	CONFIG	DEBRIS TYPE	LOCAT	DBH CLASS	RW < 3	3	6	9	12	15	18	LENGTH CLASS (m)				WOOD NOTE	
													21	24	28	32		36+
56	GL	J	C	S	30													
56	GL	J	C	M	15	2												
57	GL	S	N	S	30		1											
57	CL	S	N	S	30													
57	CL	S	RW	S	30													
58	CL	S	C	S	30													
59	GL	J	N	F	30		2	2										
59	CL	S	N	M	30													
59	CL	S	N	M	30													
59	CL	S	N	S	45													
59	CL	S	N	M	30													
60	CL	S	RW	M	45													
60	CL	S	N	M	30													
63	LP	S	RW	S	30													
68	GL	S	N	S	15													
69	LP	A	N	S	15		2											Fallen ASPEN
69	LP	A	N	S	30													
70	CL	S	N	F	30													
70	GL	A	N	F	30													
70	CL	S	N	S	45													
71	LP	S	N	S	45													
71	LP	S	N	M	30													
72	GL	S	N	M	30													
83	CL	S	N	F	30													
84	RI	S	N	F	45													

RIPARIAN

PAGE: 3 OF: 5

NAME: R. Nawa

DATE: 24 Aug 04

STREAM: C. Rooked Creek (R2)

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE	
								3-15	15-30	30-50	50-90	90+		
46	LEFT	1	FP	4	0	0	100	CONIFER						
		2	FP	0	0	0	100	HARDWOOD						
		3	FP	0	0	0	100	CONIFER						
40	RIGHT	1	FP	0	0	20	100	HARDWOOD						
		2	FP	0	0	40	100	CONIFER						
		3	FP	4	20	40	80	HARDWOOD	2					willow
50	LEFT	1	HT	40	0	0	80	CONIFER						
		2	HT	5	20	0	100	HARDWOOD			1			Ponooos+
		3	HS	5	0	0	100	CONIFER						
50	RIGHT	1	FP	4	0	0	100	HARDWOOD						
		2	FP	0	0	20	100	CONIFER						
		3	FP	0	0	0	100	HARDWOOD						
0586993 - 4719616		UNIT # 40		0634908 - 4702058		NO							UNIT # 50 0586740 - 4720702 HT Ac=17 X W Y FP	

RIPARIAN

PAGE _____ OF _____

STREAM: _____ DATE: _____ NAME: _____

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)				RIPARIAN NOTE	
								3-15	15-30	30-50	50-90		90+
	LEFT	1						CONIFER					
								HARDWOOD					
		2						CONIFER					
								HARDWOOD					
		3						CONIFER					
								HARDWOOD					
	RIGHT	1						CONIFER					
								HARDWOOD					
		2						CONIFER					
								HARDWOOD					
		3						CONIFER					
								HARDWOOD					
	LEFT	1						CONIFER					
								HARDWOOD					
		2						CONIFER					
								HARDWOOD					
		3						CONIFER					
								HARDWOOD					
	RIGHT	1						CONIFER					
								HARDWOOD					
		2						CONIFER					
								HARDWOOD					
		3						CONIFER					
								HARDWOOD					
UNIT # _____													
UNIT # _____													

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.

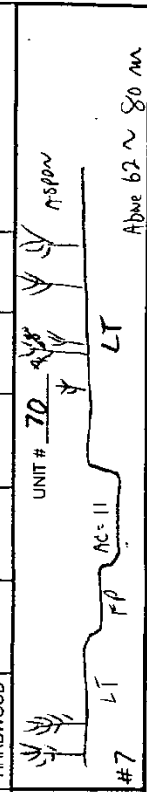
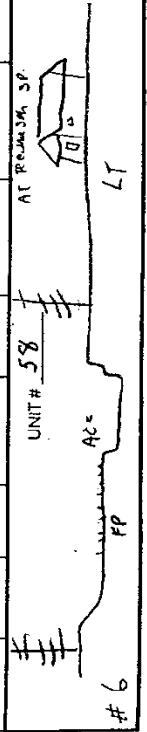
RIPARIAN

PAGE: 4 OF 5
 NAME: R. NAWA

DATE: 1 Sept 04

STREAM: C Rooker

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	CRASS/ROSB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE	
								TREE	3-15	15-30	30-50	50-90		90+
58	LEFT	1	FP	15	0	0	100	CONIFER					1	PANDOROSSA PINE
		2	FP	0	0	0	100	HARDWOOD						
		3	FP	LT	20	0	100	CONIFER						
58	RIGHT	1	LT	15	40	0	100	HARDWOOD						
		2	LT	0	20	0	100	CONIFER						
		3	LT	0	0	0	100	HARDWOOD						
70	LEFT	1	LF	10	0	20	100	CONIFER						
		2	LT	0	0	0	100	HARDWOOD						
		3	LT	0	0	20	100	CONIFER						
70	RIGHT	1	LT	30	60	70	100	HARDWOOD						ASPER
		2	LT	0	40	40	100	CONIFER						ASPER
		3	LT	0	60	60	80	HARDWOOD						



Abne 62 ~ 80 AM

RIPARIAN

PAGE: 5 OF 6
 NAME: N. NAWA

DATE: 1 Sept 04

STREAM: Crook Rd CA

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	TREE	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE	
									3-15	15-30	30-50	50-90	90+		
80	LEFT	1	FP	4	0	0	100	CONIFER							
		2	LT	2	0	0	100	HARDWOOD							
		3	LT	0	0	0	100	CONIFER							
80	RIGHT	1	FP	2	0	20	100	CONIFER							
		2	FP	0	0	60	100	HARDWOOD							
		3	FP	0	20	60	100	CONIFER							
80	LEFT	1	FP	4	0	0	100	HARDWOOD							
		2	LT	0	0	0	100	CONIFER							
		3	LT	0	0	0	100	HARDWOOD							
85	RIGHT	1	FP	2	40	20	100	CONIFER							
		2	LT	0	0	0	100	HARDWOOD							
		3	LT	0	0	0	100	CONIFER							
#8	UNIT # <u>80</u> 586 275 - 472 2757 AC = <u>14</u> <u>ASPN/willow</u>								UNIT # <u>85</u> <u>Willow</u> <u>FP</u> <u>House</u> <u>FP</u> <u>LT</u> <u>FP</u>					#9	

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.

RIPARIAN

STREAM: Cracked Cr.

DATE: 8/23/04

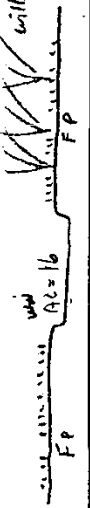
NAME: Nana

PAGE: 2 OF 5

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE	
								TRÉE	3-15	15-30	30-50	50-90		90+
20	LEFT	1	FP	6	0	0	100	CONIFER						
		2	LT	0	0	0	100	HARDWOOD						
		3	FP	5	0	0	100	CONIFER						
20	RIGHT	1	FP	4	0	0	100	HARDWOOD						
		2	FP	0	0	0	100	CONIFER						
		3	FP	0	0	0	100	HARDWOOD						
32	LEFT	1	FP	5	0	0	100	CONIFER						
		2	FP	0	0	0	100	HARDWOOD						
		3	FP	0	0	0	100	CONIFER						
32	RIGHT	1	FP	5	20	20	100	CONIFER						Willows
		2	FP	0	60	40	40	CONIFER						Willows
		3	FP	0	20	20	100	HARDWOOD	3					Willows

UNIT # 20 0587014 - 4719197

UNIT # 32 0586924 - 4718843



RIPARIAN

PAGE: 1 OF 6
 NAME: R. Ngwa / KH

DATE: 23 Aug 04

STREAM: Crookton Creek

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FOB % COVER	TREE	COUNT (DBH in CENTIMETERS)				RIPARIAN NOTE	
									3-15	15-30	30-50	50-90		90+
1	LEFT	1	FP	0	20	0	100	CONIFER						
		2	FP	0	20	0	100	HARDWOOD						
		3	FP	0	80	0	100	CONIFER						
1	RIGHT	1	FP	30	0	0	60	HARDWOOD						
		2	HT	30	0	0	40	CONIFER						
		3	FP	10	0	0	20	HARDWOOD						
10	LEFT	1	FP	2	0	0	100	CONIFER						
		2	FD	0	0	0	100	HARDWOOD						
		3	FP	0	0	0	100	CONIFER						
10	RIGHT	1	FP	2	0	0	100	HARDWOOD						
		2	FP	0	0	0	100	CONIFER						
		3	FP	0	0	0	100	HARDWOOD						
										UNIT # <u>10</u>	<u>100 m</u> of <u>Stream</u>	<u>RANCH</u> <u>Creek</u>		
										UNIT # <u>1</u>	<u>0586677-4716578</u>	<u>MANSH</u> <u>FP</u>		

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.

STREAM SUMMARY

CROOKED CREEK

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m ²)	Substrate Percent Wetted Area						Large Boulders (#>0.5m)
					S/O	Snd	Grvl	Cbl	Bldr	Bdrk	
84	13,552	13.7	1.07	196,460	94	0	4	1	0	0	17

Habitat Group	Wetted Area	
	(m ²)	Percent
Dammed & BW Pools	90	0.05%
Scour Pools	38,282	19.49%
Glides	157,368	80.10%
Riffles	720	0.37%
Rapids	0	0.00%
Cascades	0	0.00%
Step/Falls	0	0.00%
Dry	0	0.00%
Culverts	0	0.00%

REACH 1 T34S-R07E-S25NE REACH 1

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)

Narrow Valley Floor		Broad Valley Floor	
Steep V-shape	0%	Constraining Terraces	0%
Moderate V-shape	0%	Multiple Terraces	0%
Open V-shape	0%	Wide Floodplain	100%
Valley Width Index	21.7 45	WVI Range:	20-25 36-50

Channel Morphology (Percent Reach Length)

Constrained		Unconstrained	
Hillslope	0%	Single Channel	100%
Bedrock	0%	Multiple Channel	0%
Terrace	0%	Braided Channel	0%
Alt. Terrace/Hill	0%		
Landuse	0%		

Channel Characteristics

Type	Length (m)	Area (m2)	Dry Units
Primary	4,813	77,863	0
Secondary	168	710	0

Channel Dimensions (m)

Wetted		Active		Floodprone n = 3		First Terrace n = 1	
Width:	14.3	Width:	21.7	216.7 (150 - 250)		250.0 (250 - 250)	
Depth:	1.15	Height:	1.3	2.7 (2.4 - 2.8)		3.3 (3.3 - 3.3)	

W:D ratio: 16.5

Stream Flow Type: LF

Average Unit Gradient 0.4%

Water temperature (°C) 11.0 - 11.0

Entrenchment (ACW:FPW ratio): 10.6

Habitat Units/100m (total channel length): 0.6

Habitat Units/100m (primary channel length) 0.6

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	AG	LG
Riparian Vegetation:	P	S

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	2%	Reach avg: 4%
Undercut Banks:	30%	Range: 1 - 17

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	37	0.8
Volume (m ³):	18	0.4
Key pieces (>=12m x 0.60m):	0	0.0

OREGON DEPARTMENT OF FISH AND WILDLIF

CROOKED CREEK

HABITAT INVENTORY

Report Date: 9/26/2004

Survey Date:

8/23/2004

REACH 1		T34S-R07E-S25NE					REACH 1					
HABITAT DETAIL												
Habitat Type	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m ²)	Large Boulders (#>0.5m)	Substrate Percent Wetted Area					
							S/O	Snd	Grv	Cbl	Bldr	Bdrk
GLIDE	20	3,590	15.0	0.89	57,347	0	98	0	2	0	0	0
POOL-LATERAL SCOUR	9	1,358	15.6	1.92	21,146	0	100	0	0	0	0	0
RIFFLE	2	33	2.4	0.20	80	9	0	0	40	60	0	0
Total:	31	4,981	14.3	1.15	78,573	9 Avg	92	0	4	4	0	0

HABITAT SUMMARY								
Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders	
					(m ²)	Percent	Number	(# / 100m ²)
Dammed & BW Pools	0	0			0	0.00%	0	0.0
Scour Pools	9	1,358	15.6	1.92	21,146	26.91%	0	0.0
Glides	20	3,590	15.0	0.89	57,347	72.99%	0	0.0
Riffles	2	33	2.4	0.20	80	0.10%	9	11.3
Rapids	0	0			0	0.00%	0	0.0
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	0	0			0	0.00%	0	0.0
Dry	0	0			0	0.00%	0	0.0
Culverts	0	0			0	0.00%	0	0.0

POOL SUMMARY				
	Total	Total of all Channel Lengths		Primary Channel Length
		# / Km	# / Km	# / Km
All Pools:	9	1.8		1.9
Pools >=1m deep:	9	1.8		1.9
Complex pools (LWD pieces>=3):	3	0.6		0.6
Pool frequency (channel widths/pool):	25.5			
Residual pool depth (avg):	1.02			

REACH 2

T34S-R07E-S13SE

REACH 2

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)

Narrow Valley Floor		Broad Valley Floor	
Steep V-shape	0%	Constraining Terraces	0%
Moderate V-shape	0%	Multiple Terraces	0%
Open V-shape	0%	Wide Floodplain	100%
Valley Width Index	25.3 40	VWI Range:	11-24 27-50

Channel Morphology (Percent Reach Length)

Constrained		Unconstrained	
Hillslope	0%	Single Channel	100%
Bedrock	0%	Multiple Channel	0%
Terrace	0%	Braided Channel	0%
Alt. Terrace/Hill	0%		
Landuse	0%		

Channel Characteristics

Type	Length (m)	Area (m2)	Dry Units
Primary	8,298	115,567	0
Secondary	273	2,320	0

Channel Dimensions (m)

<u>Wetted</u>		<u>Active</u>		<u>Floodprone</u> n = 6	<u>First Terrace</u> n = 2
Width:	13.3	Width:	19.0	175.0 (150 - 250)	350.0 (350 - 350)
Depth:	1.03	Height:	1.3	2.5 (2.2 - 2.8)	3.3 (3 - 3.5)
W:D ratio:	15.0	Entrenchment (ACW:FPW ratio):	9.8		
Stream Flow Type:	LF	Habitat Units/100m (total channel length):	0.6		
Average Unit Gradient	0.4%	Habitat Units/100m (primary channel length):	0.6		
Water temperature (°C)	10.5 - 10.5				

Riparian, Bank, and Wood Summary

	<u>Primary</u>	<u>Secondary</u>
Land Use:	AG	LG
Riparian Vegetation:	P	S

Bank Condition and Shade

<u>Bank Status</u>	<u>Percent Reach Length</u>	<u>Shade (% of 180)</u>
Actively Eroding:	5%	Reach avg: 13%
Undercut Banks:	40%	Range: 1 - 100

Large Wood Debris

	<u>Total</u>	<u>Total / 100m primary channel</u>
All pieces (>=3m x 0.15m):	106	1.3
Volume (m ³):	83	1.0
Key pieces (>=12m x 0.60m):	1	0.0

OREGON DEPARTMENT OF FISH AND WILDLIF

CROOKED CREEK

HABITAT INVENTORY

Report Date: 9/26/2004

Survey Date:

8/23/2004

REACH 2		T34S-R07E-S13SE					REACH 2					
HABITAT DETAIL												
Habitat Type	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m ²)	Large Boulders (>0.5m)	Substrate Percent Wetted Area					
							S/O	Snd	Grvl	Cbl	Bldr	Bdrk
GLIDE	38	7,312	13.5	0.83	100,021	3	96	0	4	0	0	0
POOL-ALCOVE	1	30	3.0	0.30	90	0	100	0	0	0	0	0
POOL-LATERAL SCOUR	12	1,122	13.8	1.74	16,704	3	96	0	3	0	0	0
POOL-PLUNGE	1	27	16.0	1.40	432	0	95	0	5	0	0	0
RIFFLE	1	80	8.0	0.30	640	2	60	0	40	0	0	0
Total:	53	8,571	13.3	1.03	117,887	8	Avg 95	0	4	0	0	0

HABITAT SUMMARY									
Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders		
					(m ²)	Percent	Number	(#/ 100m ²)	
Dammed & BW Pools	1	30	3.0	0.30	90	0.08%	0	0.0	
Scour Pools	13	1,149	14.0	1.72	17,136	14.54%	3	0.0	
Glides	38	7,312	13.5	0.83	100,021	84.84%	3	0.0	
Riffles	1	80	8.0	0.30	640	0.54%	2	0.3	
Rapids	0	0			0	0.00%	0	0.0	
Cascades	0	0			0	0.00%	0	0.0	
Step/Falls	0	0			0	0.00%	0	0.0	
Dry	0	0			0	0.00%	0	0.0	
Culverts	0	0			0	0.00%	0	0.0	

POOL SUMMARY			
	<u>Total</u>	Total of all Channel Lengths	
		<u># / Km</u>	Primary Channel Length <u># / Km</u>
All Pools:	14	1.6	1.7
Pools >=1m deep:	13	1.5	1.6
Complex pools (LWD pieces>=3):	3	0.4	0.4
Pool frequency (channel widths/pool):	32.2		
Residual pool depth (avg):	1.05		

RIPARIAN ZONE VEGETATION

Reach 1

Reach 1

Unit	Side	Zone	Surface	Slope	Cover (percent)				Diameter class (cm)					Notes				
					Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90					
1	LF	1	FP	0	20	0	100											
																		Conifer
																		Hardwood
1	LF	2	FP	0	20	0	100											Conifer
																		Hardwood
1	LF	3	FP	0	80	0	100											Conifer
																		Hardwood
1	RT	1	FP	30	0	0	60											Conifer
																		Hardwood
1	RT	2	HT	30	0	0	40											Conifer
																		Hardwood
1	RT	3	FP	10	0	0	20											Conifer
																		Hardwood
10	LF	1	FP	2	0	0	100											Conifer
																		Hardwood
10	LF	2	FP	0	0	0	100											Conifer
																		Hardwood
10	LF	3	FP	0	0	0	100											Conifer
																		Hardwood
10	RT	1	FP	2	0	0	100											Conifer
																		Hardwood
10	RT	2	FP	0	0	0	100											Conifer
																		Hardwood
10	RT	3	FP	0	0	0	100											Conifer
																		Hardwood
20	LF	1	FP	5	0	0	100											Conifer
																		Hardwood
20	LF	2	LT	0	0	0	100											Conifer
																		Hardwood
20	LF	3	FP	5	0	0	100											Conifer
																		Hardwood
20	RT	1	FP	4	0	0	100											Conifer
																		Hardwood
20	RT	2	FP	0	0	0	100											Conifer
																		Hardwood
20	RT	3	FP	0	0	0	100											Conifer
																		Hardwood

58	LF	2	FP	0	0	0	100	Conifer				
								Hardwood				
58	LF	3	LT	15	20	0	100	Conifer				
								Hardwood				
58	RT	1	LT	15	40	0	100	Conifer				
								Hardwood				
58	RT	2	LT	0	20	0	100	Conifer				
								Hardwood				
58	RT	3	LT	0	0	0	100	Conifer				
								Hardwood				
70	LF	1	LT	10	0	20	100	Conifer				
								Hardwood				
70	LF	2	LT	0	0	0	100	Conifer				
								Hardwood				
70	LF	3	LT	0	0	20	100	Conifer				
								Hardwood				
70	RT	1	LT	30	60	20	100	Conifer				ASPEN
								Hardwood	1	1	1	
70	RT	2	LT	0	40	40	100	Conifer				ASPEN
								Hardwood	1	1	1	
70	RT	3	LT	0	60	60	80	Conifer				
								Hardwood				
80	LF	1	FP	4	0	0	100	Conifer				
								Hardwood				
80	LF	2	LT	2	0	0	100	Conifer				
								Hardwood				
80	LF	3	LT	0	0	0	100	Conifer				
								Hardwood				
80	RT	1	FP	2	0	20	100	Conifer				
								Hardwood				
80	RT	2	FP	0	0	60	100	Conifer				
								Hardwood				
80	RT	3	FP	0	20	60	100	Conifer				WILLOW
								Hardwood	1			

CROOKED CREEK

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE_ESTIMATOR	NOTE_NUMERATOR
1	1	GL	00	250		RT TERRACE (DIKE) ONLY	LB MARSH; RB DIKE
1	2	GL	01	500			MARSH
1	3	GL	11		BD	LB OUTFLOW FROM MARSH	BEAVER DAM AT LB DIKE
1	4	GL	00	750	BC		
1	5	GL	00	1000	CS		RB DIKE; LB MARSH
1	6	GL	00	1250	CS		RB MARSH; LB DIKE
1	7	GL	00	1500	CS		RB DIKE FOR 50M
1	8	LP	01	2300	CS		LB DIKE FOR 50M
1	9	RI	11			RB TRIB (RANCH CREEK)	12.5C AT 1530
1	12	GL	00	2608	CS		LB DIKE FOR 100M
1	13	LP	01	2773			MEANDER POOL
1	14	RI	11			RB TRIB (POND OUTFLOW)	OUTLET FROM POND
1	16	LP	00	2915	GS		MEANDER POOL
1	19	LP	00	3363			MEANDER POOL
1	24	GL	00	4045	SD		PUMP RB
1	25	GL	00	4295			10C AT 0920
1	26	GL	00	4451	BC		WILLOWS RB
1	27	LP	00	4509			MEANDER POOL
1	28	GL	00	4663			LB WILLOWS; RB ERODING
1	29	LP	00	4723			MEANDER POOL
1	30	GL	00	4813	CS		RB DIKE
1	31	GL	11			AGENCY CREEK	AGENCY CREEK; 10.5C AT 1000
2	32	GL	01	5063			LOGS AT MEANDER FOR EROSION
2	34	GL	00	5468	UD		GRAVEL <1/2"; LB PUMP
2	35	LP	00	5640			GRAVEL <1/2"
2	36	GL	00	5890			STREAMBANKS HEALING LB
2	37	GL	00	6140			10C AT 1140
2	38	GL	00	6390			MARSH RUSHES LB/RB
2	40	GL	00	6860	BC		COLLAPSED BRIDGE
2	41	LP	00	6937			MEANDER BEND POOL
2	44	LP	00	7757			MEANDER CUTOFF FLOWING 5%
2	45	GL	00	8007	UD		2" RESIDENT'S PUMP RB
2	49	GL	00	9007	DJ		
2	52	GL	00	9617			HIGH SINUOSITY
2	53	LP	00	9656			MEANDER POOL
2	56	GL	00	10232	BC	END AT SINGLE LANE BRIDGE	END AT BRIDGE
2	57	GL	00	10482	BC		
2	58	GL	01	10732	BC		10.5C AT 1150
2	59	GL	11		BC	TECUMSEH SPRING OUTFLOW	2 SQ M SPAWNING GRAVEL
2	60	GL	00	10829		LB TERRACE HT	10.5C AT 1215
2	64	GL	00	11121	SD	SD	IRRIGATION CANAL LB, NO FLOW
2	66	GL	00	11222			SCATTERED PATCHES OF GRAVEL
2	68	GL	00	11368		HWY 62 BC	HWY 62 BRIDGE
2	69	LP	00	11401	GS	RB TERRACE HT	STAFF GAUGE = 1.7
2	70	GL	00	11562			11C AT 1410
2	71	LP	00	11597			WASHED OUT BEAVER DAM
2	72	GL	01	11847	SS		
2	73	AL	10				COMPLEX ALCOVE
2	74	GL	00	12097	SS		MARSH RB
2	75	GL	00	12169			MARSH RB

CROOKED CREEK

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE_ESTIMATOR	NOTE_NUMERATOR
2	79	GL	00	12693			2 DEAD RAINBOW 10-14"
2	80	GL	01	12943		FLOODPLAIN TO RT HS	1 DEAD RAINBOW 15"
2	81	GL	02				SIDE CHANNEL
2	82	PP	00	12970	SS	HATCHERY OUTFLOW	SPRING FROM CULVERT
2	83	GL	00	13111			10.5C AT 1600
2	84	R!	11		SS,GS	MAJOR SPRING OUTFLOW	BIG SPRING AT HATCHERY

STREAM SUMMARY

SPRING CREEK

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m ²)	Substrate Percent Wetted Area						Large Boulders (#>0.5m)
					S/O	Snd	Grvl	Cbl	Bldr	Bdrk	
36	4,104	48.3	1.45	232,030	56	3	12	6	3	21	12

Habitat Group	Wetted Area	
	(m ²)	Percent
Dammed & BW Pools	0	0.00%
Scour Pools	3,078	1.33%
Glides	219,700	94.69%
Riffles	7,302	3.15%
Rapids	1,914	0.82%
Cascades	0	0.00%
Step/Falls	36	0.02%
Dry	0	0.00%
Culverts	0	0.00%

CREW: RN, KH

REACH: Crooked Cr.

USGS 1:5 MAP NAMES:

BASIN: Wood


DATE	REACH #	UNIT NUMBER	CHANL FORM	VALLEY FORM	VWI	VEG CLASS DOM.	SUB-DOM.	DOM.	LAND USE SUB-DOM.	WATER TEMP.	STRM FLOW	LOCATION TWN-RNG-SEC-1/4	PHOTO #	REACH NOTE
9/1/04	3	025	US	WF	24	P	S	AG	LG	68°F	FP	34S78E13W241721		

UTM: _____

UTM: _____

UTM: 0586254
4722463

FP



ACW = 4m
AGH = 0.9m
FPW = 100m

UTM: _____

UTM: _____

UTM: _____

PHOTO RECORD

PAGE: 1 OF:

STREAM: Creaked Cr. SURVEY TYPE: OR. PLAN BASIN MIXED

BASIN OR GCG: Wood FILM: DIGITAL SLIDE PRINTS

SURVEY CREW: RN, KH ROLL #: MAILER #:

PHOTO # OR DIGITAL ID	UNIT #	DATE	TIME	STREAM / PHOTO DESCRIPTION
1: B 14/210	64	9/1/04	1240	AS/RR View of Diversion
2: 15/211	69.70		1405	US View
3: 16/212				US View Including Hwy 62 Bridge
4: 17/213				LR View
5: 18/214	↓		↓	RR View
6: 19/215	80		1555	US View Including Pipeline to Hatchery
7: 20/216	81		1555	US View
8: 21/217	82		1615	RR View of Hatchery Outflow
9: 22/218	83		1635	US View
10: 23/219	83		1635	US View
11: 24/220	85		1727	US View of Much Smaller Creaked Cr.
12: 25/221	83		1727	US View of Combined Flow
13: 26/222	84		1727	US View of Spring Riddle
14: B 27/223	84	✓	1735	View of ODFW Placed Spawning Gravel
15:				
16:				
17:				
18:				
19:				
20:				
21:				
22:				
23:				
24:				
25:				
26:				
27:				
28:				
29:				
30:				
31:				
32:				
33:				
34:				
35:				
36:				
37:				
38:				
39:				
40:				

UNIT -1

PAGE 1 OF 1

ESTIMATOR: Hartzell

DATE: 9/1/04

STREAM: Crooked Cr

REACH #	UNIT #	UNIT TYPE	CHANL TYPE	% FLOW	UNIT LENGTH	UNIT WIDTH	SLOPE %	SHADE (0-90)		ACTIVE CHANNEL HT*	ACTIVE CHANNEL WIDTH	FLOOD PRONE		TERRACE		NOTE
								LEFT	RIGHT			HT.	WIDTH	HT.	WIDTH	
2	58	GL	00	100	250	16	0.5	40	1							Started Single Lane Bridge
2	59	GL	01	80	250	5	0.5	50	36							
2	59	GL	11	20	102	2	0.5	60	40							Tecumseh SPONN Outflow
2	60	GL	00	100	97	15	0.5	2	44	1.1	16	2.2	150	3.5	7300	24 Left Bank Ter. Ht.
2	61	LP	00	100	67	15	0.5	1	28							
2	62	GL	00	100	44	4	0.5	34	31							
2	63	LP	00	100	140	4	0.5	34	34							
2	64	GL	00	100	29	5	0.5	1	36							SD
2	64	LP	00	100	43	4	0.5	3	3							
2	66	GL	00	100	58	5	0.5	1	12							
2	67	LP	00	100	56	6	0.5	1	2							
2	68	GL	00	100	90	4	0.5	1	30							
2	69	LP	00	100	33	7	0.5	2	35	26	11	2.5	7100	3.0	7300	24 HANKER RC Bank Terrace Ht.
2	70	GL	00	100	16	1	0.5	1	43							
2	71	LP	00	100	35	4	0.5	1	2							
2	72	GL	01	100	250	15	0.5	15	10							
2	73	LP	02	80	30	3	0.5	15	15							
2	74	GL	00	100	250	14	0.5	2	10							
2	75	GL	00	100	72	12	0.5	2	10							
2	76	LP	00	100	17	10	0.5	2	26							
2	77	GL	00	100	50	6	0.5	2	14							
2	79	LP	00	100	45	6	0.5	1	14							
2	80	GL	00	100	212	6	0.5	1	7							
2	80	GL	01	80	250	7	0.5	1	12	14	14	2.4	7100	None	74	Floodplain to R.H.S
2	81	GL	02	20	61	6	0.5	1	1							
2	82	LP	00	100	27	6	0.5	10	27							
2	83	GL	00	100	47	9	0.5	90	90							
2	84	GL	11	80	30	8	1.0	1	60							
2	85	GL	00	20	60	2	0.5	1	1							

MEASURE FROM THE STREAMBED TO THE TOP OF THE ACTIVE CHANNEL. TAKE THE MEASUREMENT AT POOL TAIL CREST ON POOL UNITS.

UNIT-2

PAGE: 1 OF 1

STREAM: Crooked Cr. DATE: Sept 04 NUMERATOR: R. NAWA

UNIT #	UNIT TYPE	DEPTH* FT	DEPTH** FT	VERIFIED LENGTH	WIDTH	S/O	SND	PERCENT SUBSTRATE			BLDR COUNT	% ACTIVE EROSION	% UNDER CUT	COMMENT CODES	NOTE
								GRVL	CBLE	BLDR	BDRCK				
57	GL	0.9				100						30	BC	05803467 4734990	
58	GL	0.8				100						30	BC	51° @ 1150	
59	GL	0.2				95		5		30		40	BC	2 MG - SPANNING CHANNEL 480	
60	GL	0.6				96		5				40		51° @ 1216	
61	GL	1.6	.6			95		5				50			
62	GL	0.8				95		5				30			
63	GL	1.9	0.8			95		5				30			
64	GL	0.8				98		5				20	30	IRIGATION TUNNEL LIB-NOFLOW	
65	GL	1.4	0.6			96		5				20			
V 66	GL	0.8				95		5				30		SEVERE POVERTY OF CHANNEL	
67	GL	0.8	0.8			100						30			
68	GL	0.7				95		6			3	40		62 HWY BRIDGE	
69	GL	1.7	0.6			90		5	5			20	GS	SOFT GRASS @ 1.7	
70	GL	0.7				90		5				30		520 @ 1410	
71	GL	1.8	0.4			100						30		WASHES OUT BEAVER DAM	
72	GL	0.6				95		5				30			
73	GL	0.3				100						60	SS	COMPLETE ALGAE	
74	GL	0.6				95		5				60	SS	MINOR RB	
75	GL	0.6				96		5				60		MARSH RB	
V 76	LR	1.4	.4			95		5			3	30	SS	MARSH LB	
77	GL	1.7				96		5				60	SS	MARSH LB	
78	LR	1.4	.4			95		5				40	SS	MARSH LB - SPANNING CHANNEL WITH IRIGATION PIPE	
79	GL	.6				95		5				30		51° @ 1510	
80	GL	.7				96		5				20		2 Deep Rainbow 10-14"	
81	GL	.7				100		5				20		Beaver Cuttings 1 Deep RB 15"	
82	PP	1.4	.3			96		5				10		510 channel	
83	GL	.9				95		5				20	SS	51° @ 1530 - SPRING FROM CULVERT 70840	
84	RT	.3				60		40			2	30	SS, GS	51° @ 1600	
85	GL	.4				100						10		ONE STRAIN AT HATCHERY - GS = 0.88/PP	
V														66° @ 1780	

AX DEPTH POOLS - MODAL DEPTH IN FAST WATER UNITS

** ONLY MEASURED @ POOLS (EXCEPT OFF-CHANNEL POOLS)

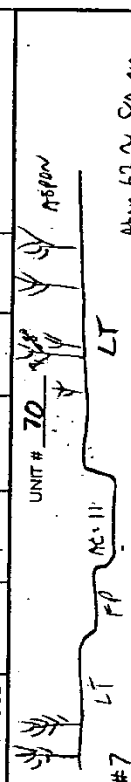
RIPARIAN

STREAM: Crooked

DATE: 1 Sept 04

PAGE: 1 OF 2
NAME: R. NACUA

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	TREE	COUNT (DBH in CENTIMETERS)				RIPARIAN NOTE
									3-15	15-30	30-50	50-90	
58	LEFT	1	FP	15	6	0	100	CONIFER				1	Ponderosa Pine
		2	FP	0	0	0	100	HARDWOOD					
		3	FP	LT	20	0	100	CONIFER					
58	RIGHT	1	LT	15	40	0	100	CONIFER					
		2	LT	0	20	0	100	HARDWOOD					
		3	LT	0	0	0	100	CONIFER					
70	LEFT	1	LF	10	0	20	100	CONIFER					
		2	LT	0	0	0	100	HARDWOOD					
		3	LT	0	0	20	100	CONIFER					
70	RIGHT	1	LT	30	60	20	100	CONIFER					
		2	LT	0	40	40	100	HARDWOOD					Aspen
		3	LT	0	60	60	80	CONIFER					Aspen



SPAWNING HABITAT FORM

Stream Crooked Reach 2 Date 1 SEPT 04
 Surveyor(s) R. NAWA

Surface area (m ²)	Class (G, GC, C)	Percent wetted	Percent usable	UNIT	Pumice Rock - 50% Sand/Gravel Comments
4	G	100	100	61	30% >1 - >50% sand/gravel
2	G	100	100	63	20% >1 - 75% sand/gravel
4	G	100	100	66	20% >1 - >50% sand/gravel
2	G	100	100	66	" "
2	G	"	"	68	" "
2	G	"	"	70	" "
2	G	"	"	73	30% >1 "
3	G	"	"	71	" - Pumice Rock?
2	G	"	"	75	20% >1 - >50% sand/gravel
2	G	"	"	77	30% >1 - 75% sand/gravel
1	G	"	"	77	20% >1 "
1	"	"	"	"	" "
2	"	"	"	78	40% >1 - Pumice Rock
2	"	"	"	78	30% >1 "
3	"	"	"	79	" Pumice Rock
3	"	"	"	79	" "
4	"	"	"	79	20% >1 "
4	"	"	"	79	3" " "
3	"	"	"	80	" "
3	"	"	"	80	" "
3	"	"	"	80	" "
2	"	"	"	82	10% >1 Pumice Rock
4	GC	"	"	84	NOT Pumice mostly!
10	GC	90	60	84	10% NOT pumice - PLACED? REAR
10	GC	"	60	84	10% Nice PLACED GRAVEL NOT pumice
6	GC	"	50	84	<6" deep "
2	G	"	"	84	30% SAND
4	G	"	"	84	"
4	G	"	"	84	"

Natural Pumice
Placed

Pumice poor quality
Pumice quality

Class: G= gravel, C= small cobble (<150mm [6"])
 Usable habitat is at least 150mm (6") deep and has water velocities between 1 and 4 feet/second.

RIPARIAN

STREAM: Choochoo CR

DATE: 1 Sept 04

NAME: _____

PAGE: 2 OF 2

NAME: N. Nawa

UNIT NUMBER	SIDE	ZONE	SURFACE	SLOPE	CANOPY CLOSURE	SHRUB % COVER	GRASS/FORB % COVER	COUNT (DBH in CENTIMETERS)					RIPARIAN NOTE		
								3-15	15-30	30-50	50-90	90+			
#80	LEFT	1	FP	4	0	0	100	CONIFER							
		2	LT	2	0	0	100	HARDWOOD							
		3	LT	0	0	0	100	CONIFER							
#80	RIGHT	1	FP	2	0	20	100	HARDWOOD							
		2	FP	0	0	60	100	CONIFER							
		3	FP	0	20	60	100	HARDWOOD							Willow
#80	LEFT	1	FP	4	0	0	100	HARDWOOD							
		2	LT	0	0	0	100	CONIFER							
		3	LT	0	0	0	100	HARDWOOD							
#86	RIGHT	1	FP	2	40	20	100	CONIFER							
		2	LT	0	0	0	100	HARDWOOD							
		3	LT	0	0	0	100	CONIFER							
#88	RIGHT	1	FP	2	0	0	100	HARDWOOD							
		2	LT	0	0	0	100	CONIFER							
		3	LT	0	0	0	100	HARDWOOD							
#88	UNIT # <u>80</u> <u>586275-472-2257</u> AC: <u>14</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> UNIT # <u>85</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u> <u>FP</u>														

FOR EACH RIPARIAN TRANSECT, DRAW AND LABEL THE SURFACES (HT, LT, FP, HS, ETC) OF A CROSS SECTION IN THE BOX PROVIDED ABOVE. DRAWING AND LABELING VEGETATION IS NOT NECESSARY.

