Phil Craig
3/5/04

Completion Report
South Fork Crooked River Aquatic Habitat Survey - OWEB 201-191
Crooked River Watershed Council

1. Project description (background and problem)

The South Fork of the Crooked River is one of the major tributaries of the Crooked River and originates from a series of springs in the desert that provide nearly all of the baseflow. It flows through both public and private land before joining the mainstem Crooked River several miles downstream of Paulina. Both public and private reaches of the South Fork are extensively grazed and many areas are lacking riparian vegetation and show evidence of unstable stream channel conditions. This stream once supported one of the healthiest populations of redband trout in the Crooked River Watershed, however continued land management activities have had a negative impact on this population.

In response to these conditions, ODFW and the BLM entered into a cooperative monitoring agreement to assess riparian conditions, water quality and fish populations in an attempt to determine the impact of current management regimes. It was determined that one of the most effective tools in making this determination was the collection of baseline data both on private and public lands through an Aquatic Habitat Inventory, to be performed by ODFW researchers.

ODFW researchers performed this data collection during the summers of 2001 and 2003. Of the stream segments included in the study area, 32 miles out of a possible of 34 miles were included, with access denied by only one landowner. Prior to the 2001 field season, access was denied to a 5-mile stretch of private land. In 2002, the Council developed a relationship with a new landowner who had recently purchased this property. This opportunity allowed for the inclusion of this new area into the study and fieldwork was completed in 2003 on this segment.

The goal of the study was to quantify habitat conditions on the river. Some of the variables that were quantified during field data collection included channel dimension, channel morphology (including the number and depth of pools), valley characteristics, surrounding land use, vegetation cover and type and large woody debris. This data was presented in a summary report (enclosed) that included data tables, maps and summary descriptions of each reach. The data will be used in conjunction with an ongoing BLM monitoring study to assess changes in conditions over time. This study will be replicated in 10 years to assess changes in habitat over time. This will allow for effectiveness monitoring of ongoing and recently initiated restoration efforts and changes in grazing management facilitated by both the BLM and the Council in this area.

2. Volunteer List

There were no volunteers associated with this project with the exception of the landowners who allowed access to their property in order to gather data (Brooks Regan, Norm Hyatt, Otto Keller).

3. List of Other Participants

Other participants included Brett Hodgson (ODFW) who was the local lead and contact for the inventory work. Kim Jones (ODFW) was the field crew contact and ODFW field crew staff included Jamien Leckey, Alexis Vaivoda, Russ Macal and Justin Gerding. Michelle McSwain (BLM) coordinated efforts on federal property for the project.

4. Materials and Methods Used

Most of the data relevant to this study was obtained through field reconnaissance. A list of the equipment and materials used are attached to this report. The study area was divided into 10 distinct reaches. The entire length of each reach was surveyed on foot. Qualitative data from visual observation was recorded on data sheets for the following variables:

- Channel form
- Valley form
- Dominant vegetation type
- Dominant land use type
- Flow level (relative to bankful)
- Geomorphic channel units
- Percent eroding bank
- Percent undercut bank

Quantitative data from field measurements was recorded on data sheets for the following variables:

- Active channel height
- Active channel width
- Floodprone height
- Floodprone width
- Terrace height
- Valley floor width
- Valley width index
- Water temperature
- Slope
- Channel shade
- Pool depth
- Channel feature length (pool, riffle, glide)
- Substrate type
- Boulder count
- Woody debris (type, amount, location, size

5. Results

The results are displayed in the enclosed report. The study is intended as a baseline report rather than an effort that generates definitive conclusions. The value of the study is in the ability to compare the conditions at the time of data collection with similar data obtained from a time in the future, likely 10 years. However, the Council and local ODFW staff have reviewed the document and offer the following points of interest:

- Virtually no deciduous trees were found in the riparian zone. This is likely a significant departure from the historic condition in this watershed, and reflects the continuing influence of livestock and big game populations.
- Temperatures ranged from 65 – 75 degrees Fahrenheit, which considering the time of year (September) and streamflow (low) were perhaps lower than expected. This reflects the relatively high percentage of flow that originates from cold-water springs.
- The percentage of eroding banks was relatively low, but higher in privately owned segments. Again this reflects the influence of grazing but also that most private lands are in meadow systems, while much of the public land is in a bedrock-constrained system.
- The width to depth ratios and entrenchment ratios were higher than expected for this type of stream, particularly in the privately-owned segments. The lack of significant riparian vegetation (as bank/channel stabilization) is likely the largest contributor to these values.
- The percentage and depth of pools were at or above average for a stream of this type.

6. Other Information (strengths and weaknesses)

The project was sound due to its reliance on widely accepted protocol for assessing aquatic habitat. Access was granted to a large enough portion of the study area to produce results that can be used to effectively characterize the watershed. Most data collection was made prior to several restoration efforts, which allows the ability to measure the value of these efforts when the area is studied again in 10 years.

South Fork Crooked River Aquatic Habitat Inventory Project (OWEB 201-191)

Funding Source	Proposed Budget	Actual Expenditures	Comments
BLM	$26,645.00	$25,636.00	
OWEB	$16,304.00	$16,304.00	
ODFW	$13,104.00	$15,230.00	
Totals	$56,053.00	$57,170.00	
Total Match Funding		$40,866.00	
Total OWEB Funding		$16,304.00	
Total Match on OWEB Funds		2.5 to 1	

OWEB Funds Summary

Expense	Amount
ODFW - Survey Labor	$15,296.44
Cabela's - Waders	$98.90
Mail Boxes Etc - Copies	$15.60
CRWC - Administration	$893.06
Total	$16,304.00

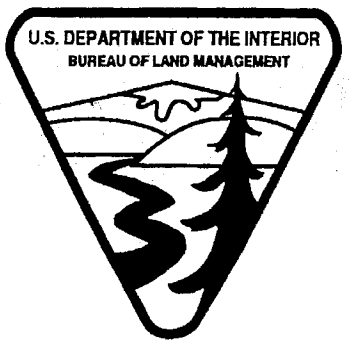
Oregon Department of Fish and Wildlife

Crooked River Watershed Council

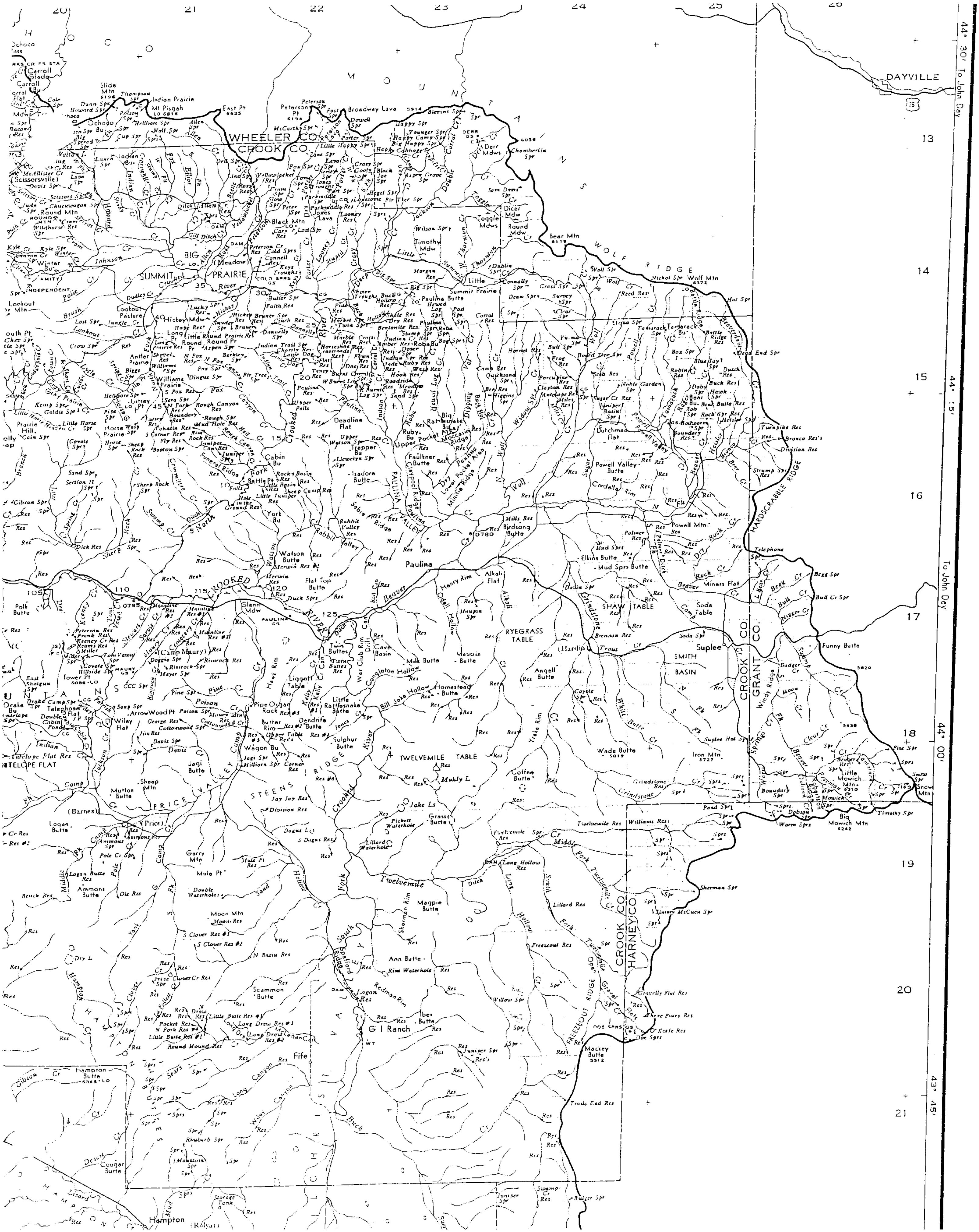
Bureau of Land Management

Aquatic Inventories Project

Physical Habitat Surveys



South Fork Crooked River Basin


20
21
22
23
24
25
26
DAYVILLE
44° 30' To John Day
13
14
15
16
17
18
19
20
21
44° 15'
44° 00'
43° 45'
To John Day
WHEELER CO.
CROOK CO.
CROOK CO.
GRANT CO.
CROOK CO.
HARNEY CO.
O C H O C O
M O U N T A I N S
WOLF RIDGE
HARDSCRABBLE RIDGE
BIG SUMMIT PRAIRIE
Paulina
Suplee
SMITH BASIN
SHAW TABLE
RYEGRASS TABLE
TWELVEMILE TABLE
PAULINA VALLEY
PRICE VALLEY
STEENS RIDGE
G I Ranch
Fife
Hampton
FREEZEOUT RIDGE
Powell Butte
Mt Pisgah
Round Mtn
Wolf Mtn
Bear Mtn
Funny Butte
Big Mowich Mtn
Snow Mtn
Paulina Butte
Watson Butte
Flat Top Butte
Twin Buttes
Mill Butte
Moupin Butte
Angell Butte
Wade Butte
Iron Mtn
Coffee Butte
Magpie Butte
Ann Butte
Scammon Butte
Mackey Butte
Hampton Butte
Cougar Butte
Polk Butte
Logan Butte
Mutton Butte
Ammons Butte
Moon Mtn
Garry Mtn
Mule Pt
Sulphur Butte
Dendrite Butte
Powell Mtn
Birdsong Butte
Crooked River
Beaver Cr
Twelvemile Cr
Grindstone Cr
Trout Cr
Camp Maury
Lookout Mtn
Slide Mtn
East Pt
Peterson Pt
Broadway Lava
Carroll
Ochoco
Summit Prairie
Antler Prairie
Williams Prairie
Gray Prairie
Horse Prairie
Cave Basin
Liggett Table
Pipe Organ Rock
Arrow Wood Pt
Wiley Flat
Telephone Flat
Deadline Flat
Cabin Bu
York Bu
Isadore Butte
Faultner Butte
Dutchman Flat
Alkali Flat
Henry Rim
Soda Table
Miners Flat
Muhly L
Jake Ls
Grass Butte
Logan Res
Ibex Butte
Redman Rim
Twelvemile
Trails End Res
Wagon Bu
Jagi Butte
Sheep Mtn
Tower Pt
East Shotgun
Indian
Antelope Flat Res
ANTELOPE FLAT
Price
Barnes
Long Canyon
Wiley Canyon
Buck Cr
Sears Cr
Storage Tank
Rolyat

ODFW AQUATIC INVENTORY PROJECT

STREAM REPORT

STREAM: South Fork Crooked River

BASIN: Deschutes River

DATES: July 22, 2003

SURVEY CREW: Charles Stein and Staci Stein

REPORT PREPARED BY: Peggy Kavanagh

STREAM ORDER: 6 BASIN AREA: 810km^2 FIRST ORDER TRIBUTARIES: >100

USGS MAPS: Liggett Table

ECOREGION: Blue Mountains – Uplands, Valleys, and Basins

HUC NUMBER: 17070304 LLID: 1200526441018

REACH DESCRIPTION (T17S-R22E-S35SE):

The 2003 South Fork Crooked River habitat survey had been a previously unsurveyed reach of the 2001 South Fork Crooked River survey. Land ownership changed; the new landowners permitted access to survey the river. The 2003 habitat survey extended 7312 meters between fence lines. A portion of this section is also owned by the Bureau of Land Management. The channel was constrained by alternating hillslopes and multiple terraces in a broad valley floor. The average valley width index was 9.9 (range: 7-15). The primary land use within the reach was light grazing. The average unit gradient was 1.1%, and the dominant instream habitat types reflected the low gradient system, as they were primarily scour pools (34%) and glides (51%). The substrate was dominated by fine sediment (sand, silt, organic material) (48%) and gravel (28%). Some hardpan clay was noted. Eleven percent of the reach length had actively eroding banks. There were neither key pieces of wood nor enough wood to calculate wood volume (7 pieces recorded). Trees in the riparian zone were sparse and were primarily junipers in the 15-30cm dbh range (based on seven riparian transects). The crew observed fish through unit 105 (5987m). The upper limit of distribution was not determined; a fish presence/absence survey was not conducted. Most fish were unidentified and were presumed to be northern pike minnow. Suckers and bass were also observed. A deceased adipose fin-clipped rainbow trout was noted. Other wildlife sightings included dragonflies, ducks, dove, clams, belted kingfisher, beaver chewings (mostly older activity), mallard and ducklings, frog, snake, and otter scat. The current landowner planted willow sprigs and has begun to re-fence his property to exclude cows from the river.

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 7/22/2003

REACH 3 — T17S-R22E-S35SE — REACH 3

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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 9.9 — VWI Range: 7 - 15

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

Type	Length (m)	Area (m2)	Dry Units
Primary	7,312	52,276	0
Secondary	706	3,217	10

Channel Dimensions (m)

Wetted		Active		Floodprone n = 13		First Terrace n = 13	
Width:	5.9	Width:	12.0	29.0	(16.2 - 48)	36.3	(20.1 - 59)
Depth:	0.61	Height:	0.6	1.1	(0.9 - 1.3)	2.0	(1.2 - 2.8)

W:D ratio: 22.7 — Entrenchment (ACW:FPW ratio): 2.9

Stream Flow Type: MF — Habitat Units/100m (total channel length): 1.6

Average Unit Gradient: 1.1% — Habitat Units/100m (primary channel length): 1.8

Water temperature (°C): 24.0 - 24.0

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	B	G

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	11%	Reach avg: 13%
Undercut Banks:	1%	Range: 4 - 44

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	7	0.1
Volume (m^3):	1	0.0
Key pieces (>=12m x 0.60m):	0	0.0

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 7/22/2003

REACH 3 — T17S-R22E-S35SE — REACH 3

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
DRY CHANNEL	9	402	4.6	0.00	2,653	0	12	39	24	22	2	0
GLIDE	36	3,461	7.4	0.49	28,381	30	22	30	31	13	4	0
POOL-ALCOVE	2	54	3.1	0.40	163	0	62	22	17	0	0	0
POOL-BACKWATER	4	57	3.1	0.60	190	0	71	26	3	0	0	0
POOL-DAMMED	1	7	7.0	0.70	49	7	17	17	26	17	13	9
POOL-LATERAL SCOUR	50	2,873	6.1	0.98	18,799	41	25	27	28	12	3	5
POOL-STRAIGHT SCOUR	1	34	6.0	1.10	204	0	0	20	50	30	0	0
PUDDLED UNIT	1	115	0.7	0.00	81	0	76	19	5	0	0	0
RAPID/BOULDERS	1	21	4.1	0.25	86	8	0	5	10	29	29	29
RIFFLE	24	960	4.7	0.28	4,723	39	13	14	32	32	6	3
RIFFLE W/ POCKETS	1	34	4.8	0.35	163	4	0	5	19	57	19	0
STEP/STRUCTURE	1	0	8.0	0.10	3	5	0	0	5	38	57	0
Total:	131	8,018	5.9	0.61	55,493	134	**Avg:** 22	26	28	17	4	3

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	7	118	3.7	0.56	401	0.72%	7	1.7
Scour Pools	51	2,907	6.1	0.98	19,003	34.24%	41	0.2
Glides	36	3,461	7.4	0.49	28,381	51.14%	30	0.1
Riffles	25	994	4.7	0.28	4,886	8.81%	43	0.9
Rapids	1	21	4.1	0.25	86	0.16%	8	9.3
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	1	0	8.0	0 10	3	0.01%	5	156.3
Dry	10	517	4.2	0.00	2,733	4.92%	0	0.0
Culverts	0	0			0	0.00%	0	0.0

POOL SUMMARY

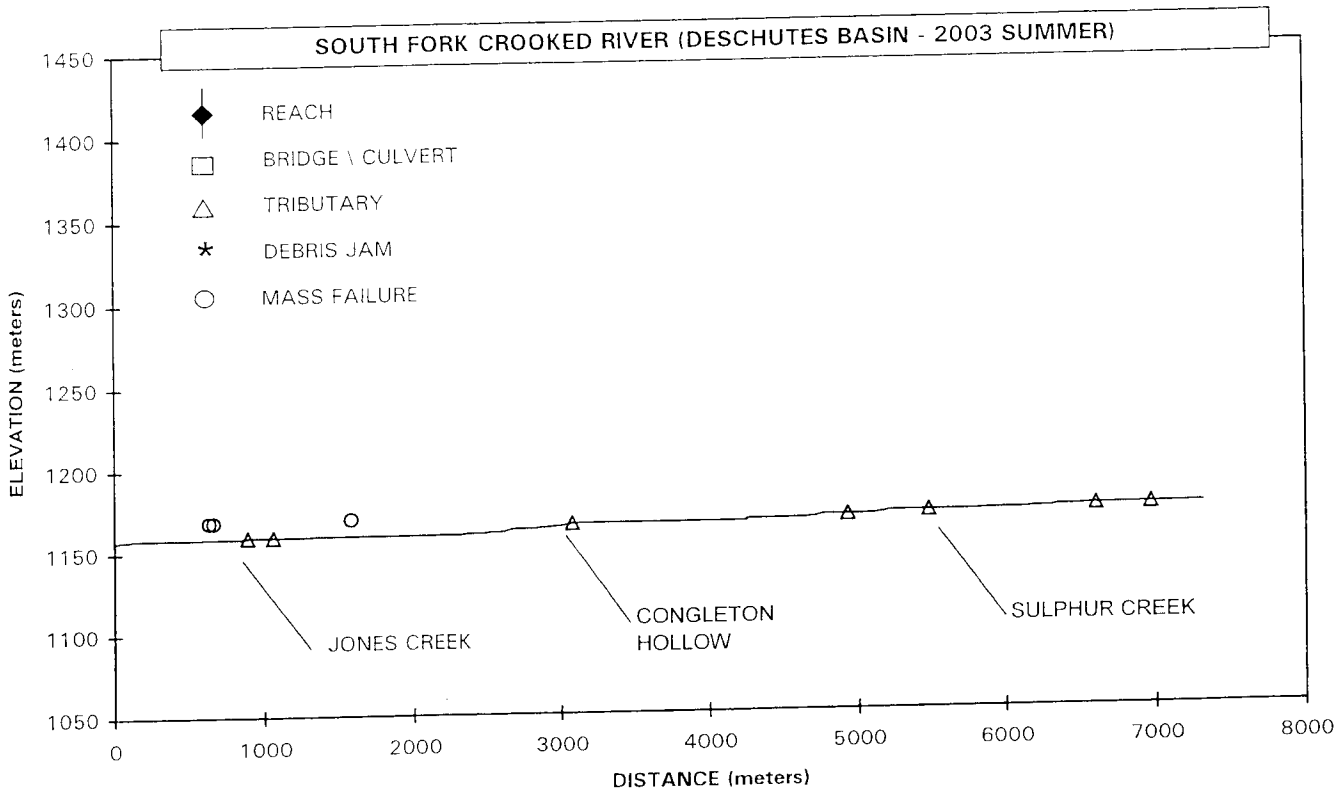
	Total of all Channel Lengths Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	58	7.2	7.9
Pools >=1m deep:	22	2.7	3.0
Complex pools (LWD pieces>=3):	1	0.1	0.1
Pool frequency (channel widths/pool):	11.5		
Residual pool depth (avg):	0.62		

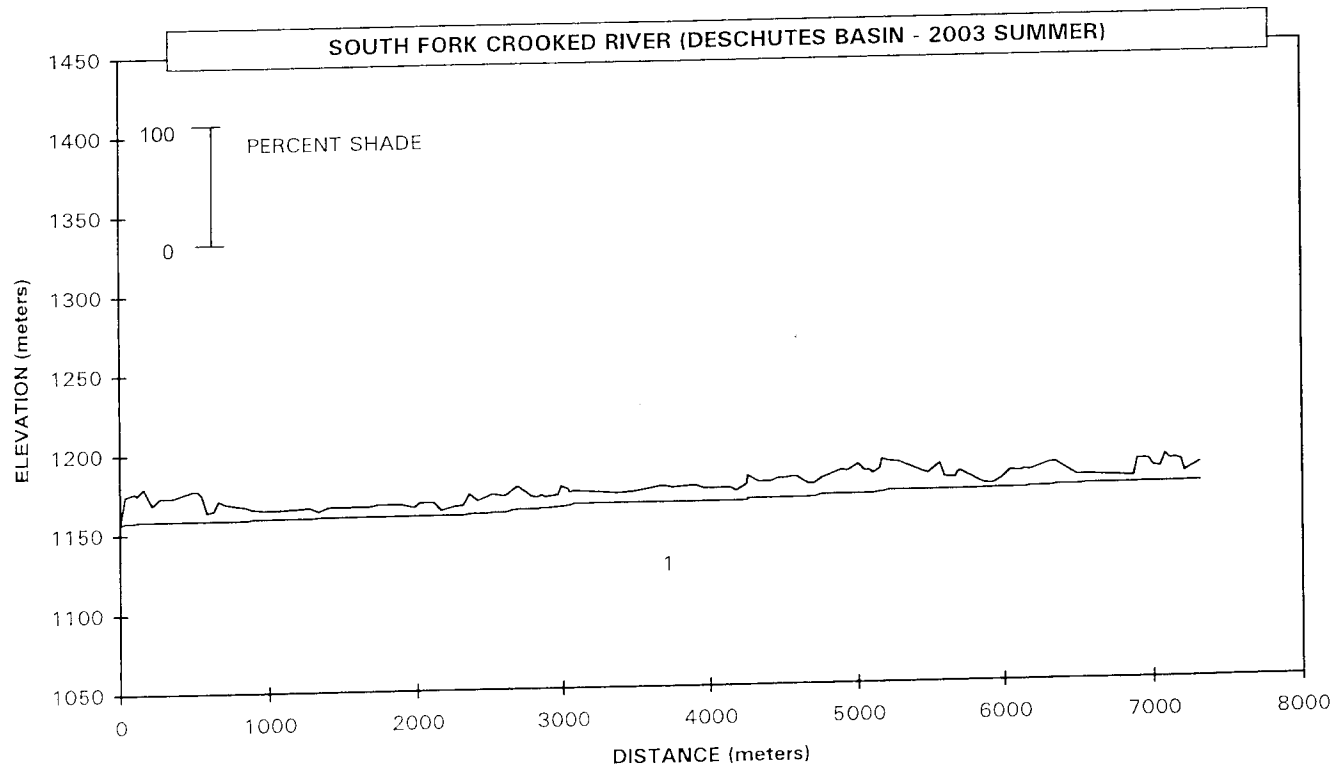
STREAM SUMMARY

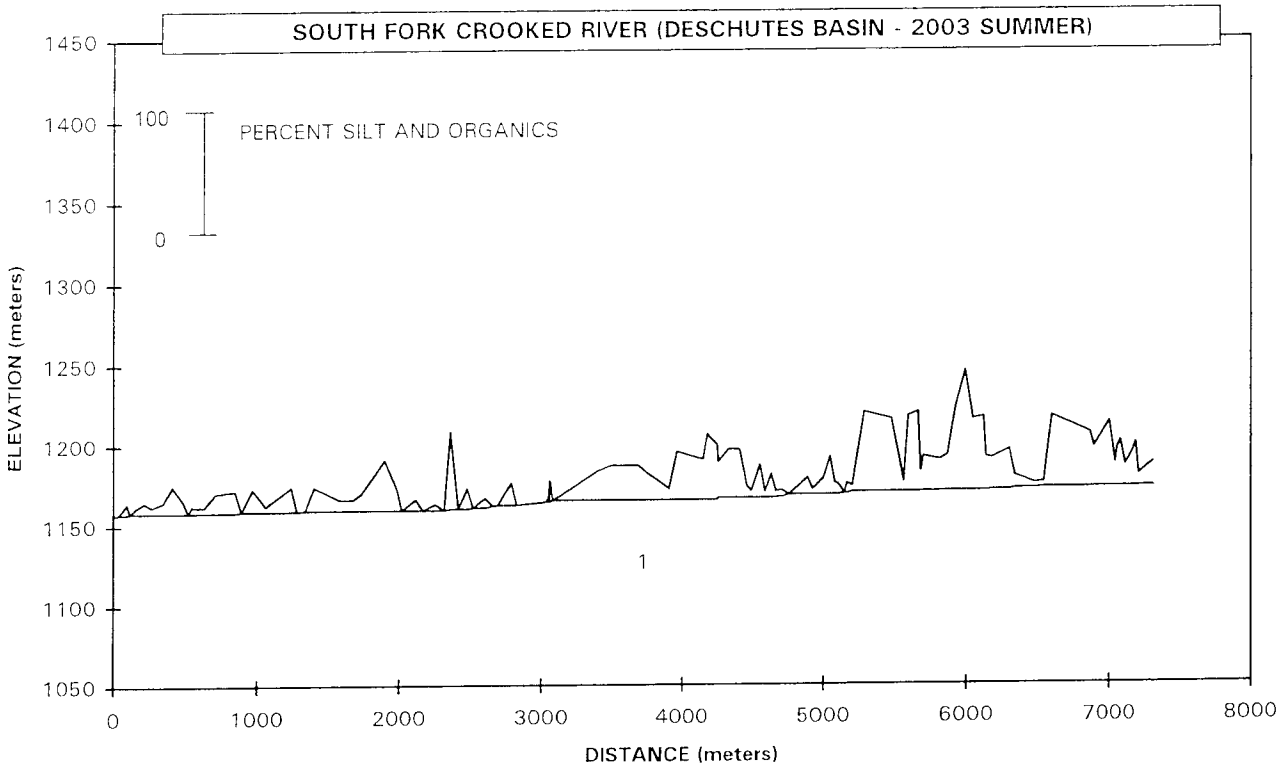
SOUTH FORK CROOKED RIVER

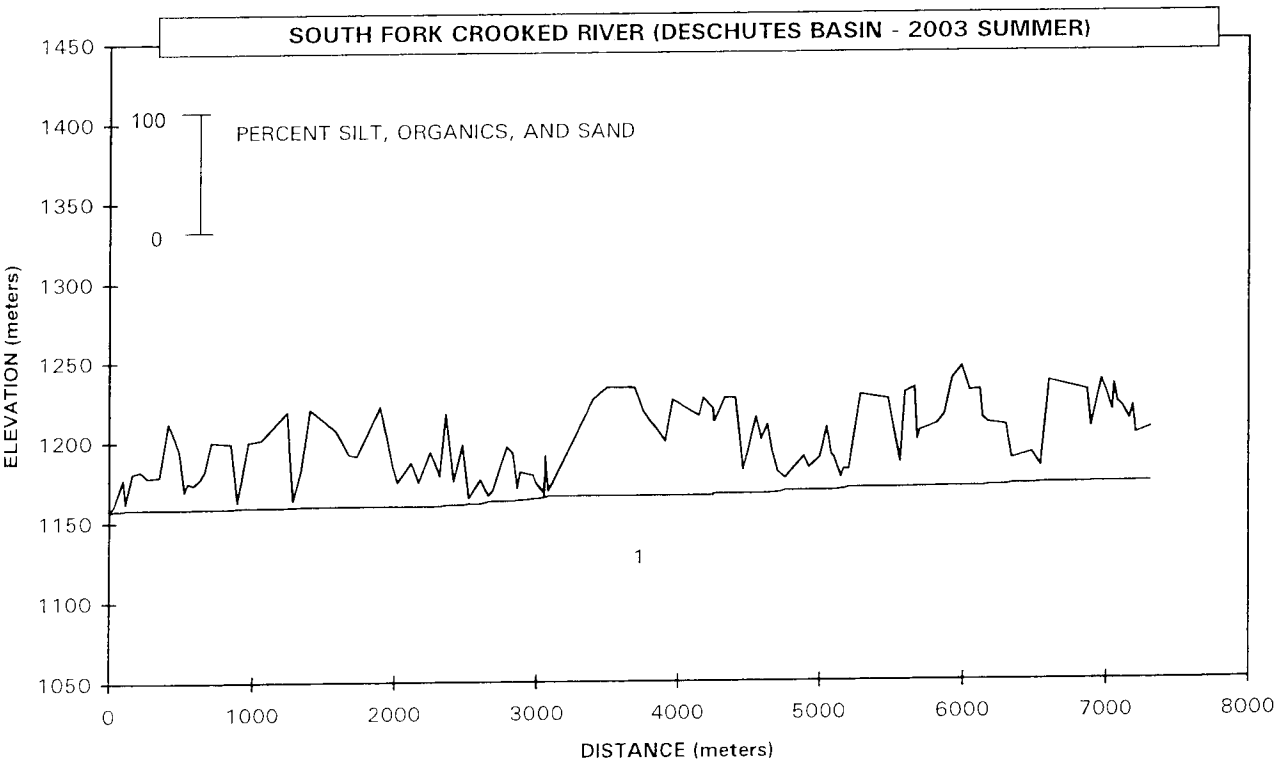
Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m^2)	Substrate Percent Wetted Area S/O	Snd	Grvl	Cbl	Bldr	Bdrk	Large Boulders (#>0.5m)
131	8,018	5.9	0.61	55,493	22	26	28	17	4	3	134

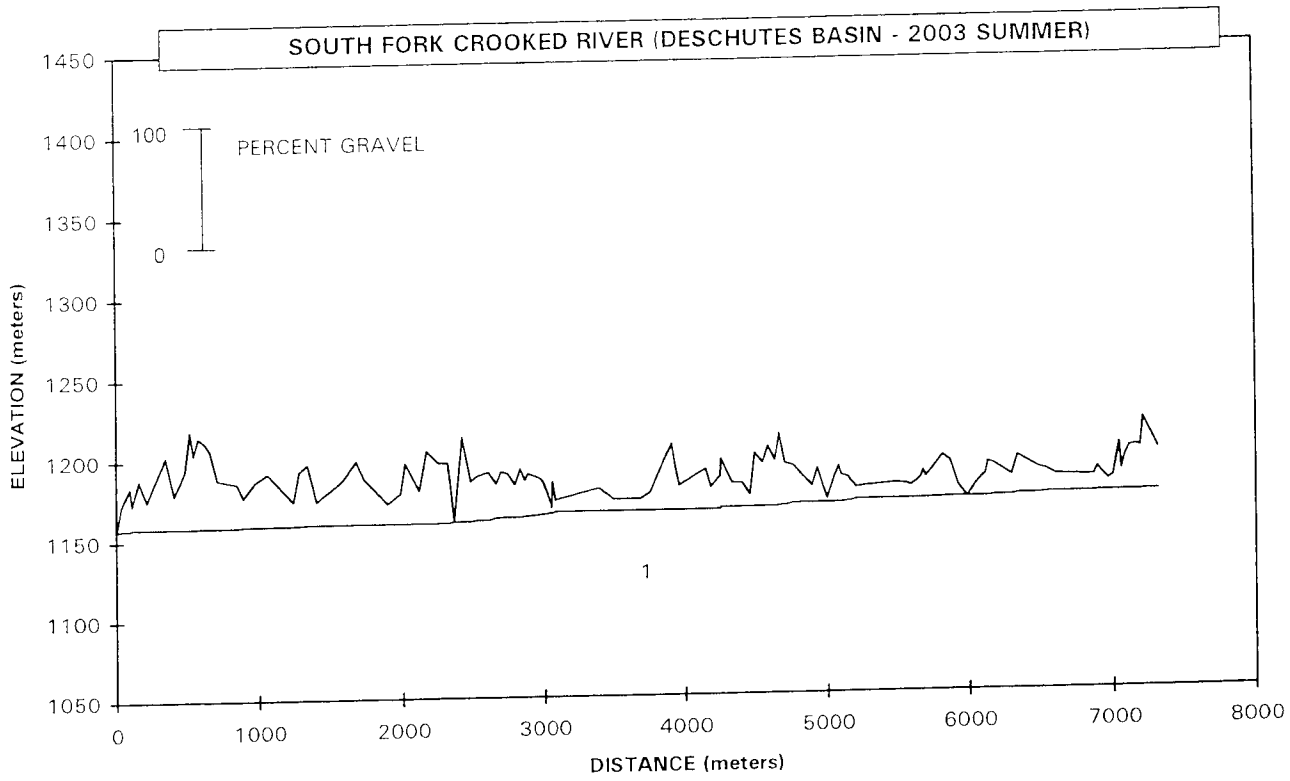
Habitat Group	Wetted Area (m^2)	Percent
Dammed & BW Pools	401	0.72%
Scour Pools	19,003	34.24%
Glides	28,381	51.14%
Riffles	4,886	8.81%
Rapids	86	0.16%
Cascades	0	0.00%
Step/Falls	3	0.01%
Dry	2,733	4.92%
Culverts	0	0.00%

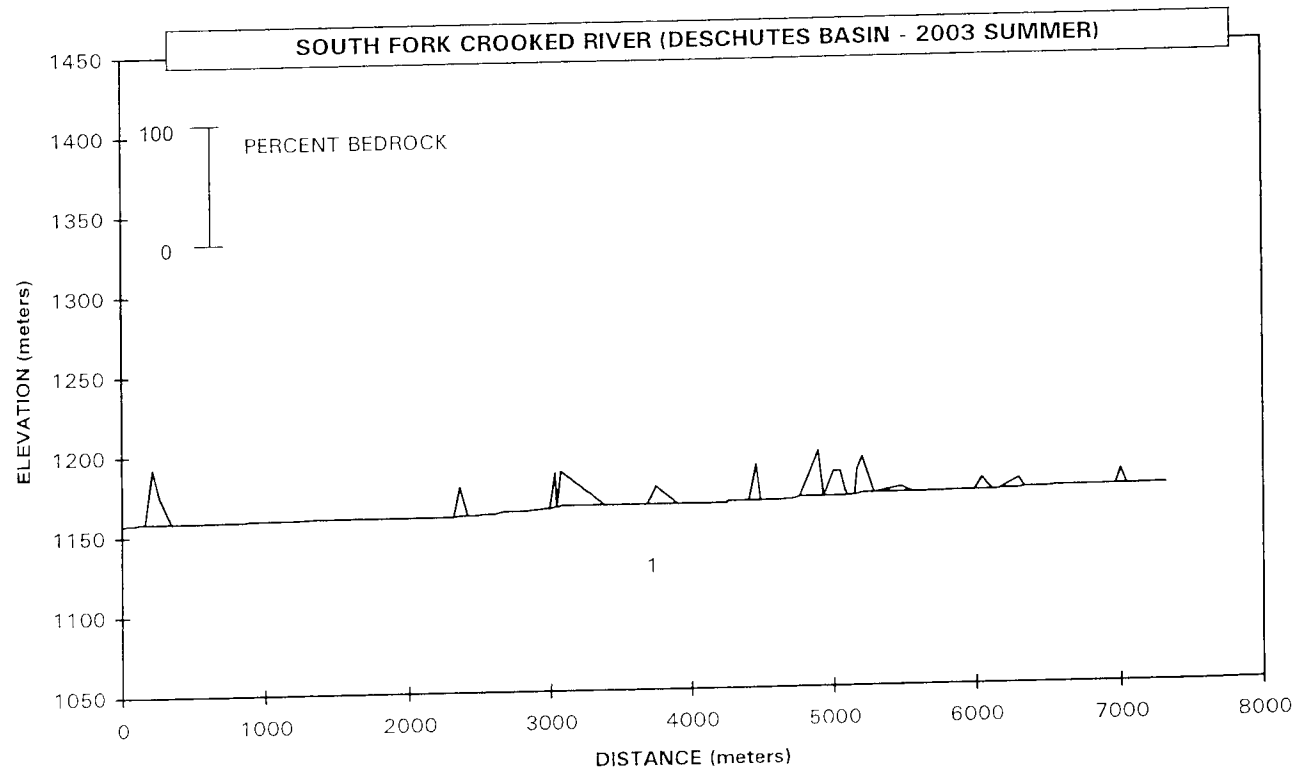

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
REACH
BRIDGE \ CULVERT
TRIBUTARY
DEBRIS JAM
MASS FAILURE
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
JONES CREEK
CONGLETON HOLLOW
SULPHUR CREEK
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)

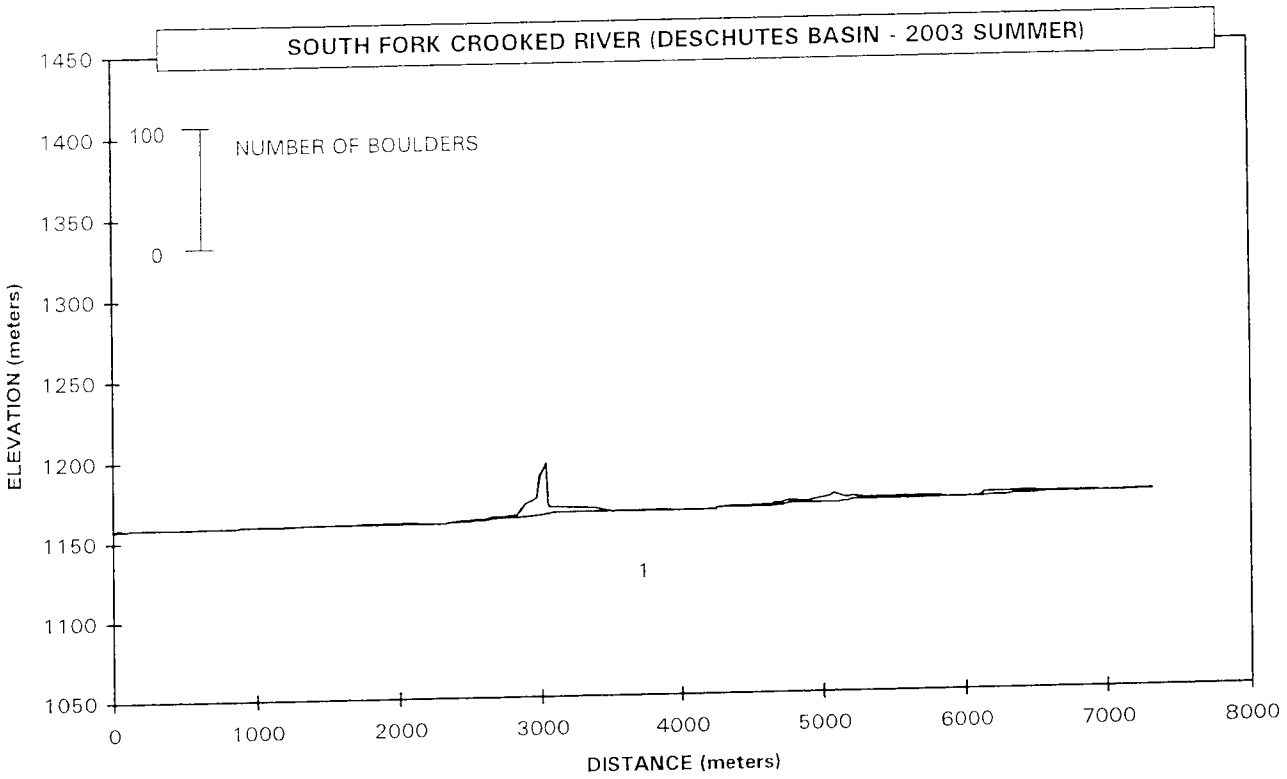

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
100
PERCENT SHADE
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
1
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)

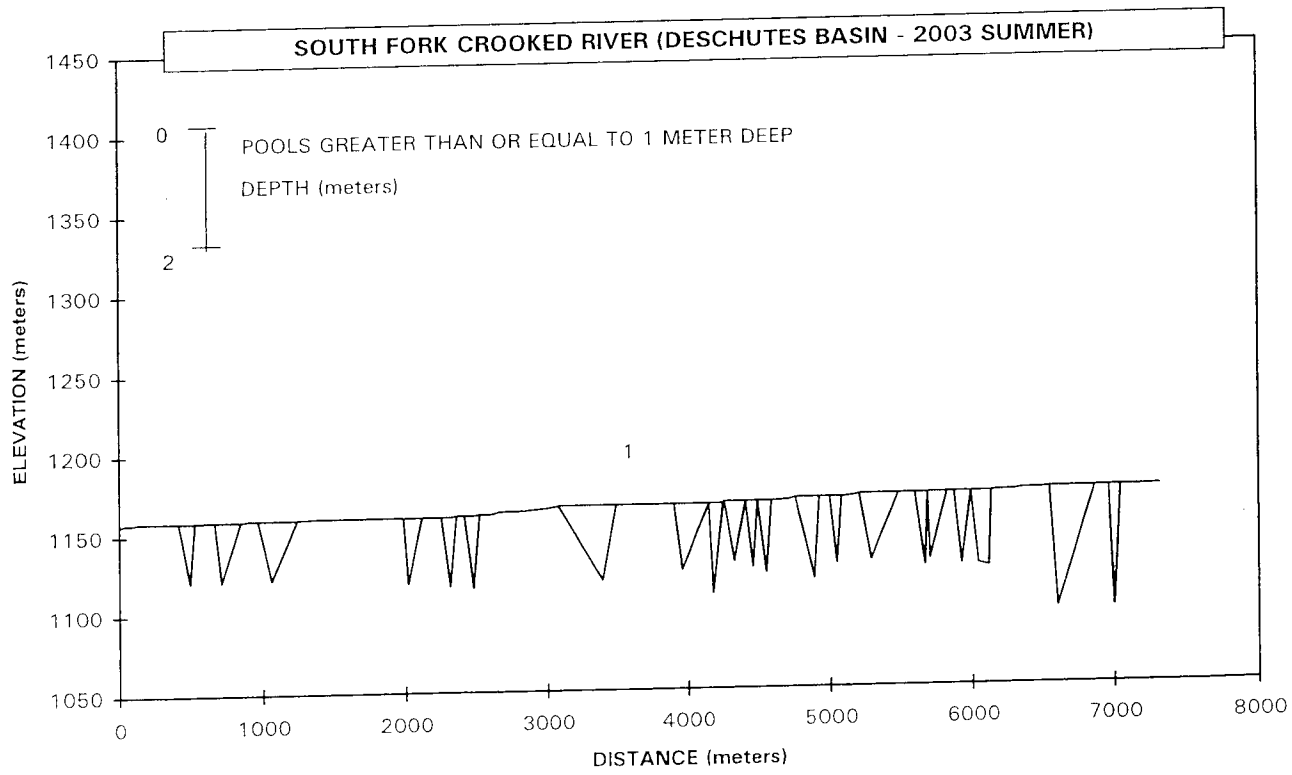

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
PERCENT SILT AND ORGANICS
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)
1

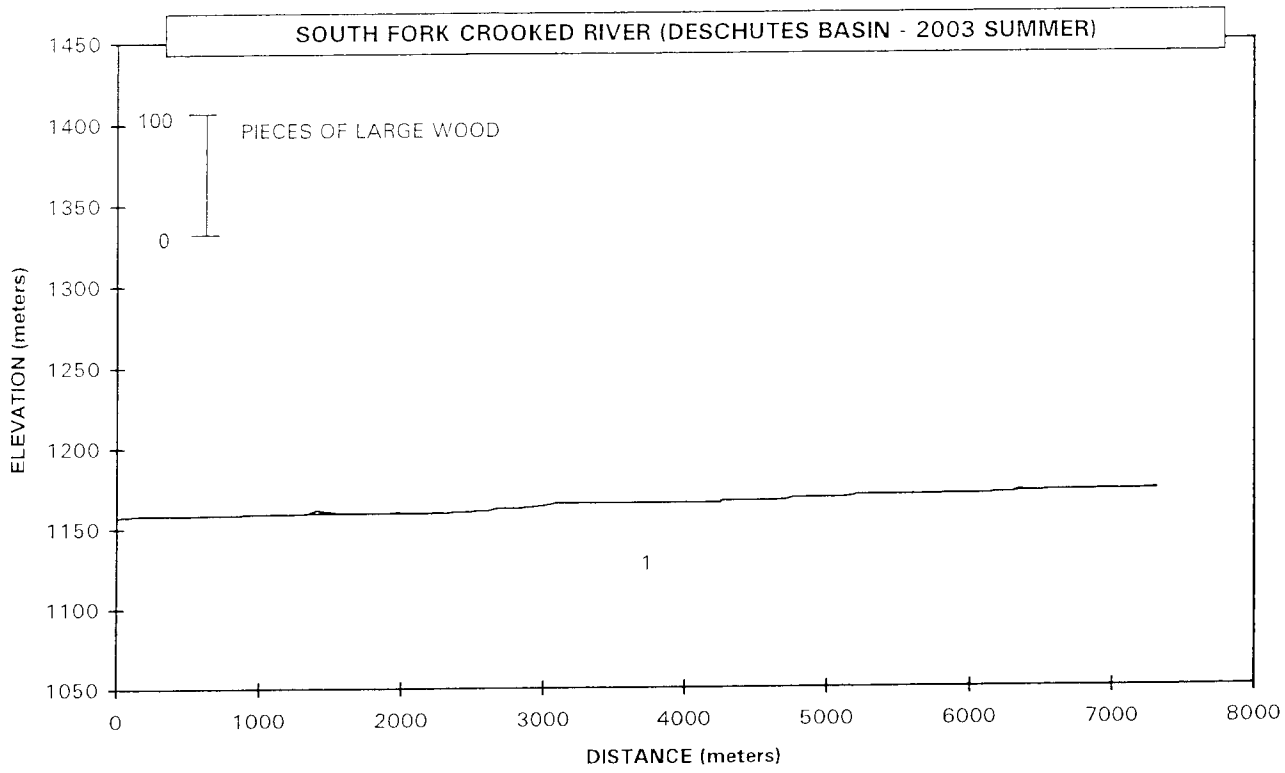

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
PERCENT SILT, ORGANICS, AND SAND
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)
1

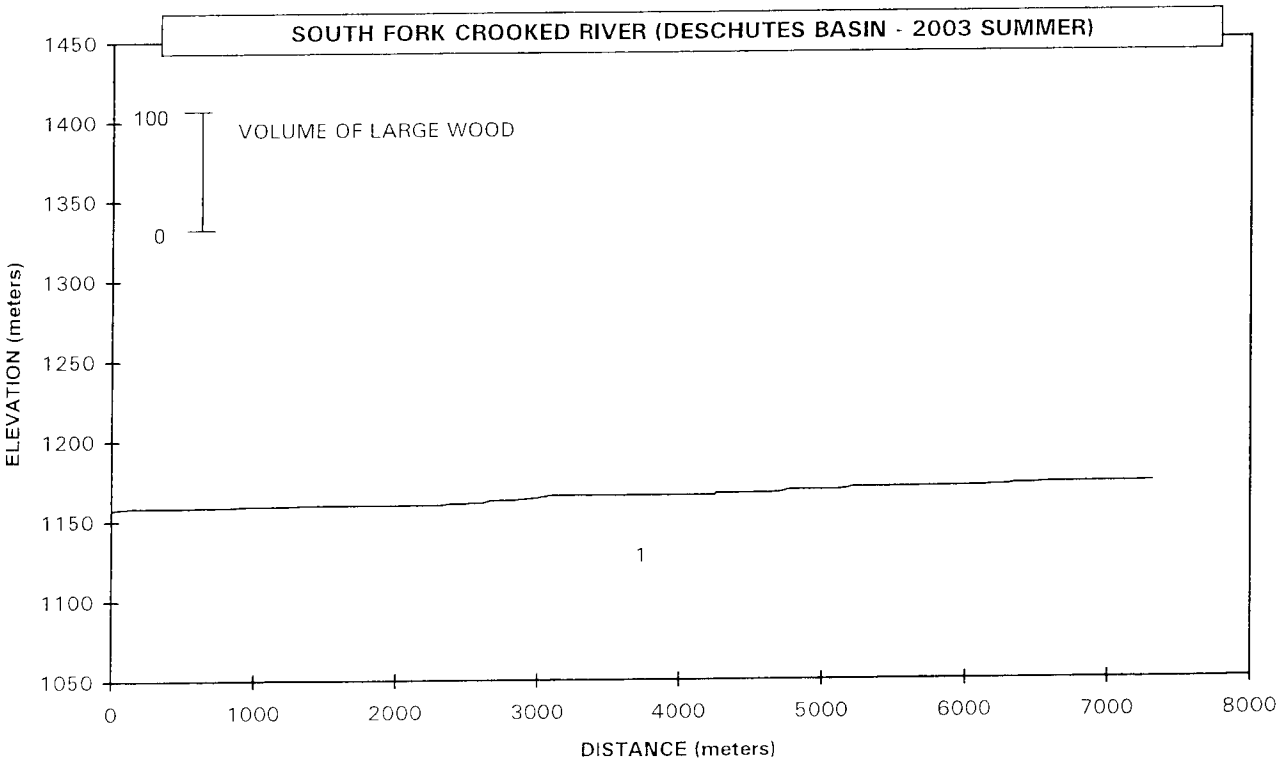

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
PERCENT GRAVEL
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)
1

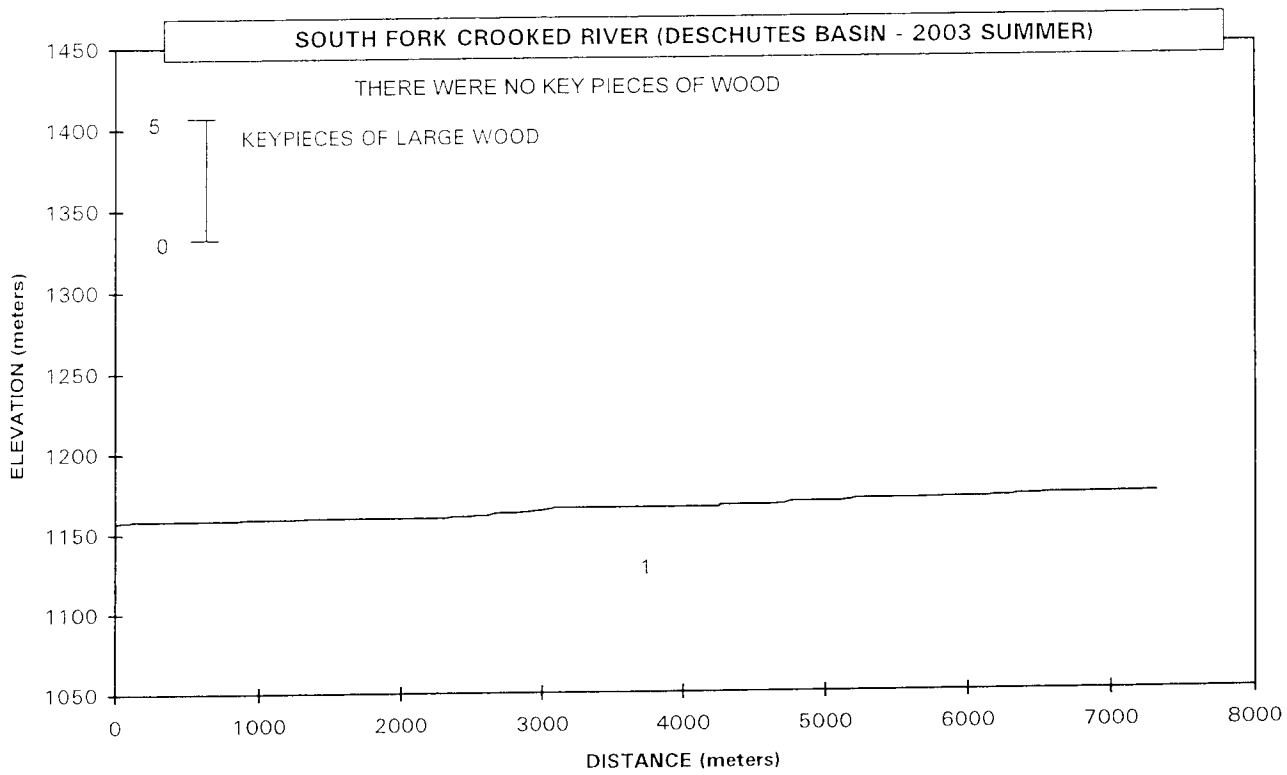

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
PERCENT BEDROCK
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)
1


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
NUMBER OF BOULDERS
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
1
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)

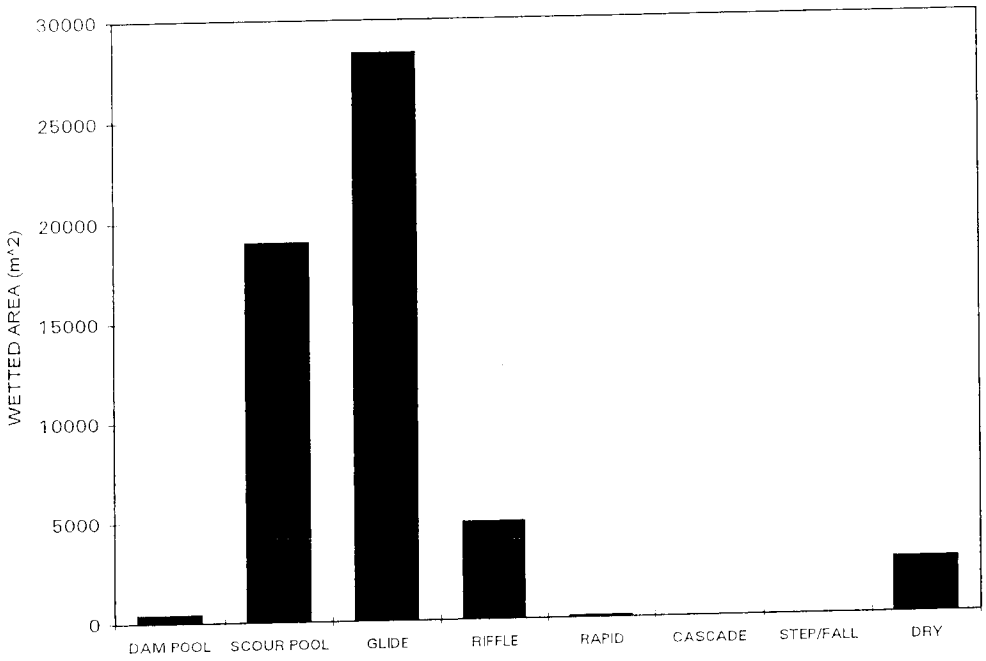

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
POOLS GREATER THAN OR EQUAL TO 1 METER DEEP
DEPTH (meters)
0
2
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
1
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
PIECES OF LARGE WOOD
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
1
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
VOLUME OF LARGE WOOD
100
0
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
1
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER)
THERE WERE NO KEY PIECES OF WOOD
5
KEYPIECES OF LARGE WOOD
0
1
ELEVATION (meters)
1450
1400
1350
1300
1250
1200
1150
1100
1050
0
1000
2000
3000
4000
5000
6000
7000
8000
DISTANCE (meters)

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2003 SUMMER): HABITAT DISTRIBUTION



OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/12/2003 — Survey Date: 7/22/2003

RIPARIAN ZONE VEGETATION SUMMARY

REACH 1 — REACH 1

Summary of Riparian Zone (0-30m) 7 transects

Total hardwoods/1000	0
Total conifers/1000 ft	44
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-30cm	0.0	0.0	0.1	0.0	0.3	0.0	0.4	0.0
30-50cm	0.0	0.0	0.1	0.0	0.1	0.0	0.3	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.0	0.0	0.3	0.0	0.4	0.0	0.2	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	0	1	3
Shrub cover	15	23	26
Grass/forb cover	72	50	44

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	14	21	21
High terrace	36	57	50
Low terrace	43	21	21
Floodplain	7	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	7
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	9	14	14

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY - RIPARIAN SURVEY — 7/22/2003

Summary of Riparian Zone (0-30m) for all reaches — 7 transects

Summary of riparian zone (0-100 feet) extrapolated to 1,000 feet along stream

Total hardwoods/1000	0
Total conifers/1000 ft	44
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-m wide band

Diameter class (cm)	Zones 1-3 0-30 meters Conifer	Hardwood
3-15cm	0.0	0.0
15-30cm	0.4	0.0
30-50cm	0.3	0.0
50-90cm	0.0	0.0
>90cm	0.0	0.0

SOUTH FORK CRO .ED RIVER (2003 SUMMER - [SCHUTES BASIN)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
1	1	RP	00	34		START @ FENCLINE	START @ FENCLINE @ OLD JAKE'S
1	2	GL	00	96			PROPERTY LINE
1	3	RI	00	114			T = 21 DEG C @0800
1	4	LP	00	160		GULLY ON RT- NO EVIDENT CHANNE	PHOTO 3&4 UPST. START FROM FNC
1	5	LP	01	216			BEDROCK = HARDPAN
1	6	BW	10				LOTS FISH UNIDENTIFIABLE
1	7	LP	00	267			BDRK = HARDPAN
1	8	GL	00	348			LOTS OF ALGAE THROUGHOUT
1	10	LP	00	488		RIP TRANSECT	RIP T#1 10T 0736682 4881299
1	12	LP	00	547		FENCE CROSSING AREA	PHOTO 5&6 LIGHT GRAZING
1	13	RI	00	581		UPSTRM FROM XING- BEEN GRAZED	PHOTO 7 UPSTRM FENCE XING
1	14	LP	00	630	/AE		/AE
1	15	LP	00	661	/AE		/AE
1	16	LP	00	710			GRASS IN H20,LIGHT GRAZING
1	17	GL	00	845		WHITE POST/ REBAR #22	MAX DEPTH 0.9
1	18	RI	01	890	/TJ	JONES CR ON RIGHT- DRY	DRY = JONES CR
1	19	DC	11			ACW = 3.8 METERS	
1	20	LP	00	967			LOTS GRASS IN CREEK
1	21	LP	01	1061	/TJ		DRY
1	22	DC	11			ACW = 1.3- DRY	
1	23	GL	00	1241		WHITE POST#20	
1	25	RI	00	1336	WL	FRESH H20 MUSSEL	
1	26	LP	00	1400			LOTS GRASS IN CREEK
1	27	GL	00	1580	/AE	DRAGONFLIES EVERYWHERE	
1	28	GL	00	1672		WHITEPOST #18	COW FENCE RT
1	29	LP	01	1731	BV		/OLD BV DEN ISLAND IN MID
1	30	BW	10			DIGGINGS FRM ROCK HOUNDS ON RT	PEPPERS
1	31	GL	00	1896		RIPARIAN TRANSECT	RIPT 10T 0737643/ 4880938
1	32	LP	00	1984			@ 11:09 T = 24 DEG C
1	33	SP	00	2018		WHITE POST/ REBAR #16	
1	34	LP	00	2115			LOTS OF FISH
1	36	LP	01	2250	FC	WHITE POST #1	
1	37	DC	02				GRASSY SUB
1	38	LP	00	2314			(3)- 40CM FISH = SUCKERS?
1	40	GL	00	2415			LOTS OF AQUATIC VEG & GRASS
1	41	LP	00	2477	WL	6 DUCKS	
1	49	AL	10		/AL		
1	50	RI	00	2862	WL	DOVE	RIP T = 10T 0738224/ 4881468
1	51	LP	00	2883	BV/		T = 24.5 @ 12:30
1	52	RI	01	2971			CHEWINGS ON JUNIPER
1	53	BW	10				BACKWATER ON RIGHT
1	54	AL	10				ALCOVE ON LEFT
1	55	GL	00	2991	WL		FRESH WATER CLAMS
1	56	RI	01	3037	FC		MANMADE BLDR DAM-NOT EFFECTIVE
1	58	LP	00	3048		ROCK HOUNDS DIGGING ON RT	1 LG BOULDER
1	59	SS	00	3048		H = .30 HUMAN MADE DAM CBBL/BLDR	MANMADE BLDR STEP
1	60	DP	00	3055			HARDPAN
1	61	RB	01	3076	TJ/	CONGLETON HOLLOW	CONGELTON GULCH
1	62	DC	11			ACW = 4.8 METERS = DRY	
1	63	LP	00	3391		T = 26.5 DEG C @1:00	ROCKHARD BRIDGE OVER CR.
1	64	GL	00	3493	FC	WALKWAY CROSSING STREAM	T = 26.5 DEG C,FC @ TOP = OTTO PRP
1	65	GL	00	3687		START OTTO'S PROPERTY	OTTO'S PROPERTY STARTS
1	66	LP	00	3751			BDRK = HDPN LOTS OF AQUA VEG.
1	67	GL	00	3906	WL	BELTED KINGFISHER	ALGAE

SOUTH FORK CRO. .ED RIVER (2003 SUMMER - D :CHUTES BASIN)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
1	68	LP	00	3961	WL	MALLARD W/ 5 DUCKLINGS	
1	69	GL	00	4145			T = 27 DEG C @ 15:03
1	70	LP	00	4179		WHITE POST #13 @ TAILOUT	10T 0738313/ 4880747 RIP-T
1	74	GL	00	4405		LARGE SUCKERS 37.5CM	
1	75	LP	00	4457		WILLOW PLANTINGS ON LF BANK	WILLOW PLANTING BDRK = HDPN
1	77	LP	00	4549		LITTLE RATTLESNAKE BUTTE ON RT	1-VW SIZE BLD ON RT
1	79	LP	00	4631		WHITE POST #11	
1	80	RI	00	4665		WILLOW PLANTINGS CONT	
1	81	GL	00	4703			TRAILER-OTTO'S/
1	82	RI	00	4757			SUCKERS
1	83	LP	00	4889			LOTS OF ALGAE/H20 VEG BDRK = HDP
1	84	GL	01	4927	/TJ	HILLSLOPE ON RT	MEVER DRAW
1	85	DC	11			ACW = 2.5M = MEVER DRAW	
1	86	LP	00	4999			BDRK = HARDPAN
1	87	LP	00	5048		HILLSLOPE STILL ON RT	WILLOW PLANTINGS/ YOUNG
1	89	LP	00	5102			T = 27.5 DEG C @ 16:14
1	90	RI	01	5147			UTM 10T 0738002/4880043
1	91	LP	01	5165		T = 27.5 @ 16:00	BDRCK = HDPN
1	92	RI	01	5203			WILLOW PLANTINGS/ BDRCK = HDPN
1	93	PD	02				DRY = GRASSES/ DIRT
1	94	LP	00	5285		HILLSLOPE ENDS ON RT	KINGFISHER
1	95	GL	01	5478	/TJ	SULFER CR ENTERS @ TOP OF U 95	SULPHUR CREEK
1	96	DC	11				SULPHUR CREEK
1	97	GL	00	5563		T = 23 DEG C	LG ROCK/ PHOTO #8 LOOK. UPSTRM
1	98	LP	00	5594			PHOTO #9 DWNSTRM BY SULPHUR CR
1	99	LP	00	5662	WL	FROG	T = 23 DEG C
1	100	RI	00	5680			LOTS AQU. VEG/ ALGAE
1	101	LP	00	5697			LOTS FISH
1	102	GL	00	5818	RF	WHITEPOST #8 NEAR TOP OF UNIT	TOP OF UNIT FR ON MAP
1	103	GL	00	5868			PHOTO #10 UPSTRM
1	105	GL	01	5987		DEAD HATCHERY TROUT 28 CM	FROG METHANE H20
1	107	LP	00	6042			HARDPAN/ LOTS AQU VEG
1	108	LP	00	6114	BV		OLD BV
1	110	RI	00	6172		RIP TRANSECT	RIP T 10T 0738800/ 4879883
1	111	GL	00	6298		PHOTO #10	BDRCK = HDPN
1	112	RI	00	6339	WL	SNAKE-TAN/GREEN	GREEN/ GREY SNAKE
1	113	GL	00	6481		4X4 ROAD ON LF	
1	114	RI	00	6542		OLD IRRIGATION PIPE ON BANK	
1	115	LP	01	6599	TJ/	WHITEPOST #5 ACW = 2.8	ON MAP NO NAME: OLD FENCE
1	117	GL	00	6864			PHOTO#14 UPST. /FENCELINE
1	118	RI	00	6890	WL	HILL BEGINS RIGHT	FRESHWATER CLAM
1	119	GL	01	6965	TJ/	WHITEPOST #3	BILL JAKE HOLLOW (MAP)
1	121	LP	00	7000		T = 24 DEG C	BDRCK = HDPN
1	122	GL	01	7044		WHITEPOST #2	WILLOW PLANTINGS/
1	123	LP	01	7058	WL		FISH FRESHWATER CLAMS
1	124	GL	02			WILLOW PLANTINGS	
1	130	DC	02			GRASS COVERED	GRASSES/ DIRT
1	131	GL	00	7312	FC	OTTER SCAT- FRESH	END SURVEY

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

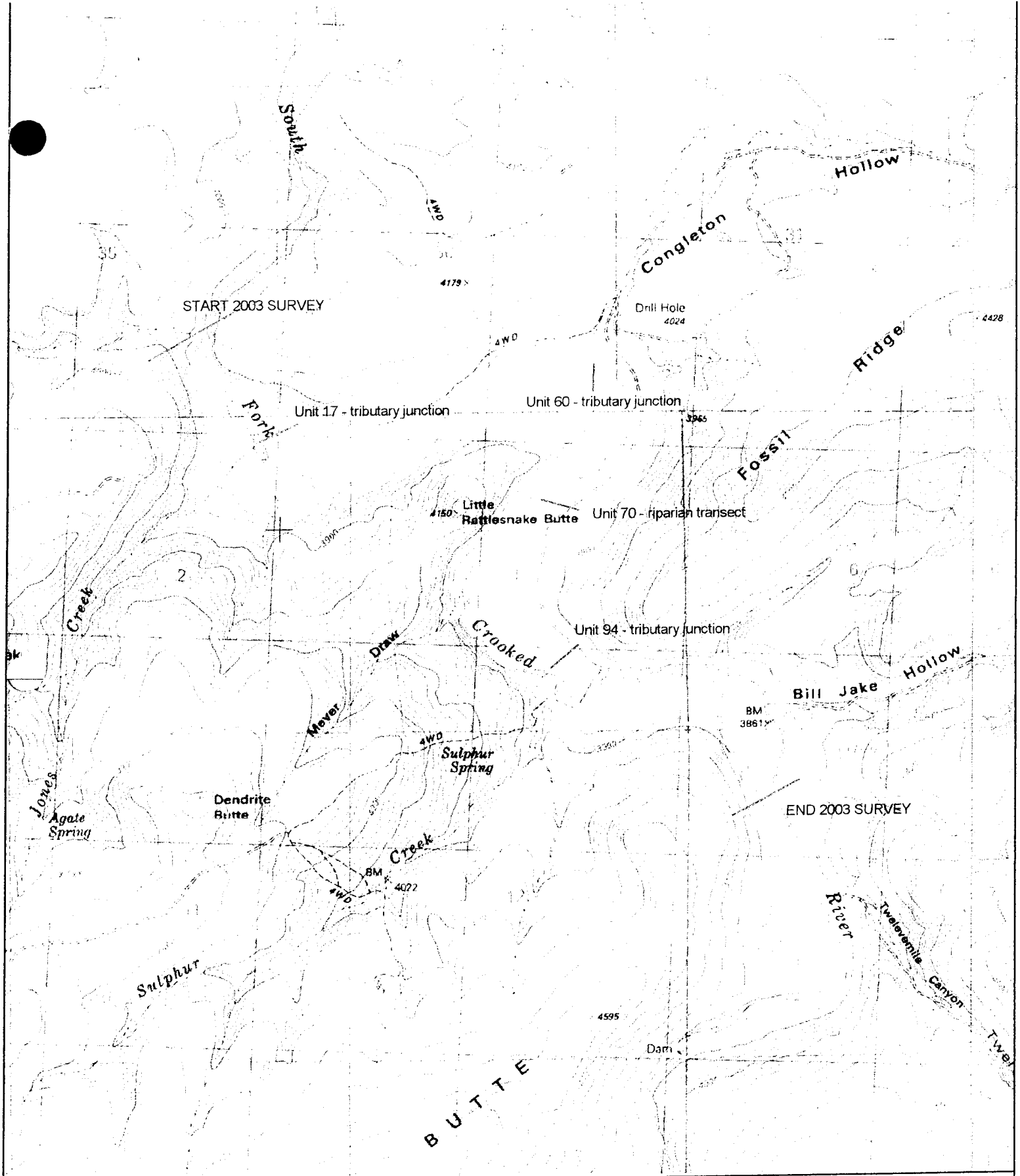
HABITAT INVENTORY Report Date: 11/12/2003 — Survey Date: 7/22/2003

RIPARIAN ZONE VEGETATION

Reach 1 — Reach 1

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
10	LF	1	HS	90	0	40	35	Conifer						10T 0736681/4881299
								Hardwood						
10	LF	2	HS	90	0	0	0	Conifer						ALL ROCK
								Hardwood						
10	LF	3	HS	90	0	10	0	Conifer						90% ROCK
								Hardwood						
10	RT	1	HT	0	0	15	75	Conifer						
								Hardwood						
10	RT	2	HT	0	0	25	70	Conifer						
								Hardwood						
10	RT	3	HT	0	0	45	50	Conifer						
								Hardwood						
31	LF	1	HT	0	0	35	40	Conifer						10T 0737644/4880939
								Hardwood						
31	LF	2	HT	0	5	40	40	Conifer		1				JUNIPER
								Hardwood						
31	LF	3	HT	0	0	40	45	Conifer						
								Hardwood						
31	RT	1	FP	0	0	0	100	Conifer						
								Hardwood						
31	RT	2	LT	0	0	5	90	Conifer						
								Hardwood						
31	RT	3	LT	0	0	40	40	Conifer						
								Hardwood						
50	LF	1	HS	10	0	40	40	Conifer						10T 0738224/4881468
								Hardwood						
50	LF	2	HS	15	0	40	30	Conifer						
								Hardwood						
50	LF	3	HS	15	0	55	35	Conifer						
								Hardwood						
50	RT	1	LT	0	0	0	80	Conifer						
								Hardwood						
50	RT	2	LT	0	0	0	95	Conifer						
								Hardwood						
50	RT	3	LT	0	0	5	95	Conifer						
								Hardwood						
70	LF	1	HT	30	0	30	30	Conifer						SLOPE-TRAN. TO HIGH TERRACE
								Hardwood						

70	LF	2	HT	0	5	35	40	Conifer		1	JUNIPER
								Hardwood			
70	LF	3	HT	0	0	25	40	Conifer			
								Hardwood			
70	RT	1	LT	0	0	0	100	Conifer			
								Hardwood			
70	RT	2	LT	0	0	0	95	Conifer			
								Hardwood			
70	RT	3	LT	0	0	0	90	Conifer			
								Hardwood			
90	LF	1	LT	0	0	5	90	Conifer			10T 0738002/ 4880043
								Hardwood			
90	LF	2	HT	0	0	50	40	Conifer			
								Hardwood			
90	LF	3	HT	0	0	50	45	Conifer			
								Hardwood			
90	RT	1	LT	0	0	0	100	Conifer			
								Hardwood			
90	RT	2	HS	90	5	5	30	Conifer			
								Hardwood			
90	RT	3	HS	85	35	0	25	Conifer		1	JUNIPER
								Hardwood			
110	LF	1	HT	0	0	30	65	Conifer			10T 073800/ 4879883
								Hardwood			
110	LF	2	HT	0	0	40	60	Conifer			
								Hardwood			
110	LF	3	HT	0	0	50	50	Conifer			
								Hardwood			
110	RT	1	LT	0	0	0	100	Conifer			
								Hardwood			
110	RT	2	HT	0	0	20	25	Conifer			
								Hardwood			
110	RT	3	HT	0	5	5	30	Conifer	2		JUNIPER
								Hardwood			
131	LF	1	LT	0	0	5	85	Conifer			10T 0739426/ 4879257
								Hardwood			
131	LF	2	HT	0	5	20	40	Conifer			JUNIPER
								Hardwood			
131	LF	3	HT	0	0	10	10	Conifer			
								Hardwood			
131	RT	1	HT	0	0	5	65	Conifer			
								Hardwood			
131	RT	2	HT	0	0	40	50	Conifer			
								Hardwood			
131	RT	3	SC	0	0	25	60	Conifer			
								Hardwood			



Name: LIGGETT TABLE
Date: 11/13/2003
Scale: 1 inch equals 2000 feet

Location: 044° 02' 20.5" N 120° 01' 39.5" W
Caption: SOUTH FORK CROOKED RIVER
DESCHUTES RIVER BASIN
2003 SUMMER

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SOUTH FORK CROOKED RIVER (DESCHUTES BASIN) 2003 SUMMER

Reach 1 – unit 4 – start of survey

Reach 1 – unit 97 – reach photo

Reach 1 – unit 12 – fence line mid-stream with grazing impacts

Reach 1 – unit 103 – riparian zone and road ford

Reach 1 – unit 60 – downstream view of river

Reach 1 – units 10 – 114 - snorkeling to identify fish

ODFW AQUATIC INVENTORY PROJECT

STREAM REPORT

STREAM: South Fork Crooked River

BASIN: Crooked River

DATES: August 28 –September 11, 2001, July 22, 2003

SURVEY CREW: Jamien Leckey and Alexis Vaivoda - reaches 1, 5, 6, 8
Russ Macal and Justin Gerding - reaches 2, 4
Charles Stein and Staci Stein - reach 3

REPORT PREPARED BY: Peggy Kavanagh

STREAM ORDER: 6 BASIN AREA: 810 km^2 FIRST ORDER TRIBUTARIES: >100

USGS MAPS: Ligget Table, Sand Hollow & Hardin Ranch

ECOREGION: Blue Mountains- Uplands, Valleys, and Basins

HUC NUMBER: 17070303 LLID: 1200526441018

GENERAL DESCRIPTION:

The South Fork Crooked River habitat survey began at the boundary of Bureau of Land Management (BLM) property and Twin Buttes Ranch, 2.3 kilometers from the confluence of Beaver Creek. The survey encompassed 47,749 meters of primary stream channel. The survey ended at the property boundary between BLM land and the G.I. Ranch. Reaches 1, 2, 4, 5, 6, and 8 were surveyed during the 2001 summer; reach 3 was surveyed during the 2003 summer; reach 7 was not surveyed as access was denied. The eight reaches were based upon property boundaries, hydrology, valley form, and channel morphology. Land uses within the valley were predominantly light and heavy grazing. The stream gradient was very low. There was little countable wood. The trees found most frequently in the riparian zone were coniferous species (primarily juniper) 3-50 cm dbh.

REACH 1 (T17S-R22E-S24NW) The length of primary channel was 4,096 meters. Reach one began at the property boundary of BLM land and Twin Buttes Ranch, and ended at a hydrology site marker. The channel was unconstrained within a broad valley with multiple terraces. The valley width index was 8.4 (range: 4.5 - 20.0). Light grazing was the primary land use. The average unit gradient was 0.7 percent. Stream habitat was mainly riffles (45%), scour pools (29%), and glides (24%). Stream substrate was evenly distributed between fine sediment (silt/organics and sand), gravel, cobble, and boulders. There was neither bank erosion nor large wood in this reach. The trees found most frequently in the riparian zone were coniferous species 3-15 cm dbh (based on 4 riparian transects).

REACH 2 (T17S-R22E-S25NW) The length of primary channel was 3165 meters. Reach two began at a hydrology site marker and extended to the property boundary between BLM land and the Jake Place. The channel was unconstrained within a broad valley with multiple terraces. The average valley width index was 3.2 (range: 3.0 - 3.5). Land use for the reach was light grazing. The average unit gradient was 0.4 percent. Stream habitat was primarily comprised of scour pools (38%), glides (32%), and riffles (24%). Stream substrate was dominated by gravel (56%). Eleven percent of the reach length had actively eroding banks. Nine pieces of wood were counted; none large enough to calculate wood volume. The trees found most frequently in the riparian zone were coniferous species 15-30 cm dbh (based on 4 riparian transects).

REACH 3 (T17S-R22E-S35SE) The length of primary channel was 7,312 meters. Reach three extended to the southern portion of the Jake Place property. Due to a change in ownership, this portion of the river was able to be surveyed in 2003. The channel was constrained by alternating hillslopes and multiple terraces in a broad valley floor. The average valley width index was 9.9 (range: 7.0-15.0). The primary land use within the reach was light grazing. The average unit gradient was 1.1 percent, and the dominant instream habitat types reflected the low gradient system, as they were primarily scour pools (34%) and glides (51%). The substrate was dominated by fine sediment (sand, silt, organic material) (48%) and gravel (28%). Some hardpan clay was noted. Eleven percent of the reach length had actively eroding banks. There were neither key pieces of wood nor enough wood to calculate wood volume (7 pieces recorded). Trees in the riparian zone were sparse and were primarily junipers in the 15-30 cm dbh range (based on seven riparian transects).

REACH 4 (T17S-R23E-S7NW) The length of primary channel was 4,128 meters. Reach four began at the southern property boundary of the Jake Place and ended just north of Bedell Canyon. The channel was unconstrained within a broad valley with multiple terraces. The average valley width index was 5.9 (range: 2.0 - 10.0). Land use for the reach was light grazing. Pools (63%) dominated the stream habitat. Stream substrate was dominated by gravel (51%) and fine sediment (35%). Wood volume was less than 0.1 m^3/100m. The trees found most frequently in the riparian zone were coniferous species 3-50 cm dbh (based on 4 riparian transects).

REACH 5 (T18S-R22E-S24NE) The length of primary channel was 9,783 meters. Reach five begins extended to the Twelvemile Creek tributary junction. The channel was constrained by terraces within a broad valley with multiple terraces. The average valley width index was 7.9 (range: 3.0 - 20.0). Light grazing was the land use. The average unit gradient was 0.2 percent. Stream habitat was dominated by scour pools (56%), riffles (21%), and glides (20%). Stream substrate was dominated by gravel (31%), cobble (25%), and fine sediment (26%). Wood volume was less than 0.1 m^3/100m. The trees found most frequently in the riparian zone were coniferous species 3-50 cm dbh (based on 10 riparian transects).

REACH 6 (T19S-R22E-S11SE) The length of primary channel is 8,589 meters. Reach six began at the Twelvemile Creek tributary junction and ended at the property boundary of Cold Springs Ranch and the G.I. Ranch. The channel was constrained by terraces within a broad valley with multiple terraces. The average valley width index was 19.1 (range: 12.0 - 20.0). This reach was on the Cold Springs Ranch, and it had been fenced to exclude cattle from the channel. The secondary land use description for reach six was wetland, although it was a result of altered hydrology from irrigation ditches. The average unit gradient was 0.2 percent. Stream habitat is primarily comprised of scour pools (53%), dammed pools (26%), and glides (14%). Stream substrate was dominated by fine sediment (43%) and gravel (32%). There was no wood in reach six (based on 8 riparian transects); there were no trees found in the riparian transects.

REACH 7 (T19S-R22E-S25NE) The length of primary channel was 2,700 meters. Reach seven began at the property boundary between Cold Springs Ranch and the G.I. Ranch and encompassed the G.I. Ranch property. This reach was not surveyed.

REACH 8 (T19S-R22E-S36NE) The length of primary channel was 7,976 meters. Reach eight began at the southern end of the property boundary of Cold Springs Ranch and the G.I. Ranch and ended at the property boundary of BLM and another section of the G.I. Ranch. The channel was unconstrained within a broad valley with multiple terraces. The average valley width index was 15.8 (range: 2.5 - 20.0). Land uses for the reach were heavy grazing and wetlands (again due to altered hydrology). The average unit gradient was 0.1 percent. Stream habitat was dominated by scour pools (59%). Stream substrate was dominated by fine sediment (47%) and gravel (30%). There was no wood in reach eight (based on 10 riparian transects).

COMMENTS:

There were BLM hydro survey markers throughout the survey.

There were three splash dams in the surveyed section. The structure at unit 635 (46,265m, height=0.8m) may be a potential barrier to fish migration. The other potential barrier was a step-over-bedrock at unit 23 (744m).

The crew observed fish through unit 621 (44,883m). The upper limit of distribution was not determined; a fish presence/absence survey was not conducted.

Many fish were unidentified and were presumed to be northern pike minnow. Suckers, sculpin, dace, and bass were also observed. A deceased adipose fin-clipped rainbow trout was noted in reach 3

The crews also noted wildlife sightings and observations, including: dragonflies, ducks, dove, clams, belted kingfisher, beaver chewings (mostly older activity), mallard and ducklings, frog, snake, crayfish, red winged blackbird, wild horses, blue heron, lizard, cattle, swallows, rattlesnake, and otter scat.

In reach 3, the current landowner planted willow sprigs and has begun to re-fence his property to exclude cows from the river.

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER
HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 8/28/2001

REACH 1 — T17S-R22E-S24NW — 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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 8.4 VWI Range: 4.5 - 20

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	4,096	25,347	0
Secondary	311	800	0

Channel Dimensions (m)

Wetted		Active		Floodprone n = 10		First Terrace n = 0	
Width:	5.4	Width:	11.3	38.1	(26.8 - 60)	(-	)
Depth:	0.35	Height:	0.7	1.5	(1.2 - 1.6)	(-	)

W:D ratio: 15.6
Stream Flow Type: LF
Average Unit Gradient: 0.7%
Water temperature (°C): 24.5 - 24.5

Entrenchment (ACW:FPW ratio): 3.6
Habitat Units/100m (total channel length): 2.1
Habitat Units/100m (primary channel length): 2.2

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	B	G

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	0%	Reach avg: 18%
Undercut Banks:	6%	Range: 11 - 28

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):		
Volume (m^3):		
Key pieces (>=12m x 0.60m):		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER
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REACH 2 — T17S-R22E-S25NW — 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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 3.2 — VWI Range: 3 - 3.5

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	3,165	17,834	0
Secondary	221	1,056	3

Channel Dimensions (m)

Wetted		Active		Floodprone *n* = 5	First Terrace *n* = 0
Width:	5.3	Width:	9.0	28.8 (21.6 - 33.6)	(-)
Depth:	0.45	Height:	0.5	1.1 (1 - 1.2)	(-)

W:D ratio: 16.9
Stream Flow Type: LF
Average Unit Gradient: 0.0%
Water temperature (°C): 16.0 - 16.0

Entrenchment (ACW:FPW ratio): 3.2
Habitat Units/100m (total channel length): 1.7
Habitat Units/100m (primary channel length): 1.8

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	G	S

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	11%	Reach avg: 26%
Undercut Banks:	3%	Range: 19 - 44

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	9	0.3
Volume (m^3):	1	0.0
Key pieces (>=12m x 0.60m):	0	0.0

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 7/22/2003

REACH 3 — T17S-R22E-S35SE — REACH 3

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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 9.9 — VWI Range: 7 - 15

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

Type	Length (m)	Area (m2)	Dry Units
Primary	7,312	52,276	0
Secondary	706	3,217	10

Channel Dimensions (m)

Wetted		Active		Floodprone n = 13		First Terrace n = 13	
Width:	5.9	Width:	12.0	29.0	(16.2 - 48)	36.3	(20.1 - 59)
Depth:	0.61	Height:	0.6	1.1	(0.9 - 1.3)	2.0	(1.2 - 2.8)

W:D ratio: 22.7
Stream Flow Type: MF
Average Unit Gradient: 1.1%
Water temperature (°C): 24.0 - 24.0

Entrenchment (ACW:FPW ratio): 2.9
Habitat Units/100m (total channel length): 1.6
Habitat Units/100m (primary channel length): 1.8

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	B	G

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	11%	Reach avg: 13%
Undercut Banks:	1%	Range: 4 - 44

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	7	0.1
Volume (m^3):	1	0.0
Key pieces (>=12m x 0.60m):	0	0.0

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REACH 4 — T17S-R23E-S7NW — REACH 4

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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 5.9 VWI Range: 2 - 10

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	4,127	26,771	0
Secondary	95	284	0

Channel Dimensions (m)

Wetted		Active		Floodprone n = 6		First Terrace n = 2	
Width:	6.0	Width:	10.9	29.0	(21 - 45)	30.7	(25.8 - 35.5)
Depth:	0.67	Height:	0.6	1.1	(0.8 - 1.2)	2.5	(2 - 3)

W:D ratio: 21.7
Stream Flow Type: LF
Average Unit Gradient: 0.0%
Water temperature (°C): 20.0 - 20.0

Entrenchment (ACW:FPW ratio): 3.0
Habitat Units/100m (total channel length): 1.5
Habitat Units/100m (primary channel length): 1.5

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	G	S

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	5%	Reach avg: 26%
Undercut Banks:	5%	Range: 11 - 36

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	8	0.2
Volume (m^3):	2	0.0
Key pieces (>=12m x 0.60m):	0	0.0

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HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 9/5/2001

REACH 5 — T18S-R22E-S24NE — REACH 5

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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 7.9 — VWI Range: 3 - 20

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

Type	Length (m)	Area (m2)	Dry Units
Primary	9,784	87,088	0
Secondary	781	3,018	10

Channel Dimensions (m)

Wetted		Active		Floodprone n = 16	First Terrace n = 4
Width:	7.5	Width:	13.3	26.5 (19.8 - 52.3)	29.5 (26 - 34)
Depth:	0.60	Height:	0.6	1.2 (1 - 1.4)	2.6 (1.8 - 3.4)

W:D ratio: 22.5
Stream Flow Type: LF
Average Unit Gradient: 0.2%
Water temperature (°C): 19.0 - 19.0

Entrenchment (ACW:FPW ratio): 2.1
Habitat Units/100m (total channel length): 1.5
Habitat Units/100m (primary channel length): 1.6

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	B	G

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	13%	Reach avg: 27%
Undercut Banks:	8%	Range: 11 - 100

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):	10	0.1
Volume (m^3):	4	0.0
Key pieces (>=12m x 0.60m):	0	0.0

REACH 6 — T19S-R22E-S11SE — REACH 6

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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 19.1 VWI Range: 12 - 20

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

Type	Length (m)	Area (m2)	Dry Units
Primary	8,589	59,705	0
Secondary	0	0	0

Channel Dimensions (m)

Wetted		Active		Floodprone n = 9		First Terrace n = 3	
Width:	6.3	Width:	8.3	24.1	(9.7 - 50)	13.7	(11.2 - 18)
Depth:	0.80	Height:	0.6	1.1	(1 - 1.2)	1.5	(1.4 - 1.7)

W:D ratio: 14.9
Stream Flow Type: LF
Average Unit Gradient: 0.2%
Water temperature (°C): 16.5 - 16.5

Entrenchment (ACW:FPW ratio): 3.0
Habitat Units/100m (total channel length): 0.9
Habitat Units/100m (primary channel length): 0.9

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	EX	WL
Riparian Vegetation:	G	B

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	29%	Reach avg: 14%
Undercut Banks:	23%	Range: 6 - 100

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):		
Volume (m^3):		
Key pieces (>=12m x 0.60m):		

REACH 7 T19S-R22E-S25NE REACH 7

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	0%

Valley Width Index VWI Range: -

Channel Morphology (Percent Reach Length)

Constrained		Unconstrained	
Hillslope	0%	Single Channel	0%
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	2,700	0	0
Secondary	0	0	0

Channel Dimensions (m)

Wetted		Active	Floodprone n = 0	First Terrace n = 0
Width:	0.0	Width:	(-)	(-)
Depth:	0.00	Height:	(-)	(-)

W:D ratio:
Stream Flow Type:
Average Unit Gradient: 0.2%
Water temperature (°C): -

Entrenchment (ACW:FPW ratio):
Habitat Units/100m (total channel length): 0.0
Habitat Units/100m (primary channel length): 0.0

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:		
Riparian Vegetation:		

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	0%	Reach avg: 0%
Undercut Banks:	0%	Range: 0 - 0

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):		
Volume (m^3):		
Key pieces (>=12m x 0.60m):		

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REACH 8 — T19S-R22E-S36NE — REACH 8

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	100%
Open V-shape	0%	Wide Floodplain	0%

Valley Width Index 15.8 VWI Range: 2.5 - 20

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	7,976	50,266	0
Secondary	192	664	0

Channel Dimensions (m)

Wetted		Active		Floodprone n = 8	First Terrace n = 0
Width:	5.7	Width:	7.6	115.9 (9 - 200)	(-)
Depth:	0.95	Height:	0.6	1.3 (1.2 - 1.4)	(-)

W:D ratio: 12.1
Stream Flow Type: LF
Average Unit Gradient: 0.1%
Water temperature (°C): 20.0 - 20.0

Entrenchment (ACW:FPW ratio): 16.4
Habitat Units/100m (total channel length): 0.7
Habitat Units/100m (primary channel length): 0.8

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	HG	WL
Riparian Vegetation:	G	B

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding:	42%	Reach avg: 14%
Undercut Banks:	20%	Range: 6 - 33

Large Wood Debris

	Total	Total / 100m primary channel
All pieces (>=3m x 0.15m):		
Volume (m^3):		
Key pieces (>=12m x 0.60m):		

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HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 8/28/2001

REACH 1 — T17S-R22E-S24NW — 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	Grvl	Cbl	Bldr	Bdrk
CASCADE/BEDROCK	3	26	1.7	0.22	44	1	0	0	0	7	3	90
GLIDE	19	1,061	6.0	0.32	6,212	95	0	20	26	26	19	9
POOL-BACKWATER	4	68	2.9	0.31	204	0	19	34	29	11	6	0
POOL-LATERAL SCOUR	22	948	6.7	0.61	7,644	60	2	23	28	23	16	9
RAPID/BOULDERS	2	67	3.9	0.18	309	9	0	6	17	44	28	6
RIFFLE	39	2,236	4.9	0.26	11,729	208	1	18	24	27	21	10
STEP/BEDROCK	1	1	3.0	0.03	2	0	0	0	0	10	10	80
STEP/BOULDERS	1	1	6.1	0.03	4	7	0	0	0	20	80	0
Total:	91	4,407	5.4	0.35	26,147	380	**Avg:** 2	19	24	25	19	12

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	4	68	2.9	0.31	204	0.78%	0	0.0
Scour Pools	22	948	6.7	0.61	7,644	29.23%	60	0.8
Glides	19	1,061	6.0	0.32	6,212	23.76%	95	1.5
Riffles	39	2,236	4.9	0.26	11,729	44.86%	208	1.8
Rapids	2	67	3.9	0.18	309	1.18%	9	2.9
Cascades	3	26	1.7	0.22	44	0.17%	1	2.3
Step/Falls	2	1	4.5	0.03	6	0.02%	7	125.8
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 # / Km	Primary Channel Length # / Km
All Pools:	26	5.9	6.3
Pools >=1m deep:	0	0.0	0.0
Complex pools (LWD pieces>=3):	0	0.0	0.0
Pool frequency (channel widths/pool):	15.1		
Residual pool depth (avg):	0.45		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

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REACH 2 — T17S-R22E-S25NW — 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
DRY UNIT	3	209	4.8	0.00	998	15	20	28	28	22	2	0
GLIDE	12	1,065	6.0	0.33	6,101	95	11	20	58	10	1	0
POOL-LATERAL SCOUR	19	1,182	5.7	0.88	7,214	45	8	18	58	14	2	0
RAPID/BOULDERS	1	28	4.5	0.20	128	11	0	5	50	30	15	0
RIFFLE	22	901	4.8	0.22	4,450	225	3	12	57	25	4	0
Total:	57	3,386	5.3	0.45	18,891	391	**Avg:** 7	16	56	18	3	0

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	0	0			0	0.00%	0	0.0
Scour Pools	19	1,182	5.7	0.88	7,214	38.19%	45	0.6
Glides	12	1,065	6.0	0.33	6,101	32.29%	95	1.6
Riffles	22	901	4.8	0.22	4,450	23.56%	225	5.1
Rapids	1	28	4.5	0.20	128	0.68%	11	8.6
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	0	0			0	0.00%	0	0.0
Dry	3	209	4.8	0.00	998	5.29%	15	1.5
Culverts	0	0			0	0.00%	0	0.0

POOL SUMMARY

	Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	19	5.6	6.0
Pools >=1m deep:	6	1.8	1.9
Complex pools (LWD pieces>=3):	0	0.0	0.0
Pool frequency (channel widths/pool):	19.8		
Residual pool depth (avg):	0.73		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 7/22/2003

REACH 3 — T17S-R22E-S35SE — REACH 3

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
DRY CHANNEL	9	402	4.6	0.00	2,653	0	12	39	24	22	2	0
GLIDE	36	3,461	7.4	0.49	28,381	30	22	30	31	13	4	0
POOL-ALCOVE	2	54	3.1	0.40	163	0	62	22	17	0	0	0
POOL-BACKWATER	4	57	3.1	0.60	190	0	71	26	3	0	0	0
POOL-DAMMED	1	7	7.0	0.70	49	7	17	17	26	17	13	9
POOL-LATERAL SCOUR	50	2,873	6.1	0.98	18,799	41	25	27	28	12	3	5
POOL-STRAIGHT SCOUR	1	34	6.0	1.10	204	0	0	20	50	30	0	0
PUDDLED UNIT	1	115	0.7	0.00	81	0	76	19	5	0	0	0
RAPID/BOULDERS	1	21	4.1	0.25	86	8	0	5	10	29	29	29
RIFFLE	24	960	4.7	0.28	4,723	39	13	14	32	32	6	3
RIFFLE W/ POCKETS	1	34	4.8	0.35	163	4	0	5	19	57	19	0
STEP/STRUCTURE	1	0	8.0	0.10	3	5	0	0	5	38	57	0
Total:	131	8,018	5.9	0.61	55,493	134	**Avg:** 22	26	28	17	4	3

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	7	118	3.7	0.56	401	0.72%	7	1.7
Scour Pools	51	2,907	6.1	0.98	19,003	34.24%	41	0.2
Glides	36	3,461	7.4	0.49	28,381	51.14%	30	0.1
Riffles	25	994	4.7	0.28	4,886	8.81%	43	0.9
Rapids	1	21	4.1	0.25	86	0.16%	8	9.3
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	1	0	8.0	0.10	3	0.01%	5	156.3
Dry	10	517	4.2	0.00	2,733	4.92%	0	0.0
Culverts	0	0			0	0.00%	0	0.0

POOL SUMMARY

	Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	58	7.2	7.9
Pools >=1m deep:	22	2.7	3.0
Complex pools (LWD pieces>=3):	1	0.1	0.1
Pool frequency (channel widths/pool):	11.5		
Residual pool depth (avg):	0.62		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 8/29/2001

REACH 4 — T17S-R23E-S7NW — REACH 4

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	5	431	7.5	0.48	3,254	5	12	36	39	11	2	0
POOL-LATERAL SCOUR	30	2,279	6.3	1.04	15,886	52	15	29	45	11	1	0
POOL-STRAIGHT SCOUR	3	199	5.5	0.77	1,160	2	15	23	55	7	0	0
RIFFLE	25	1,314	5.4	0.26	6,755	53	6	17	61	15	1	0
Total:	63	4,222	6.0	0.67	27,055	112	**Avg:** 11	24	51	12	1	0

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	0	0			0	0.00%	0	0.0
Scour Pools	33	2,478	6.2	1.02	17,046	63.00%	54	0.3
Glides	5	431	7.5	0.48	3,254	12.03%	5	0.2
Riffles	25	1,314	5.4	0.26	6,755	24.97%	53	0.8
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 of all Channel Lengths Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	33	7.8	8.0
Pools >=1m deep:	18	4.3	4.4
Complex pools (LWD pieces>=3):	0	0.0	0.0
Pool frequency (channel widths/pool):	11.8		
Residual pool depth (avg):	0.80		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 9/5/2001

REACH 5 — T18S-R22E-S24NE — REACH 5

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
CULVERT CROSSING	1	10	2.5	0.12	26	0	11	22	44	22	0	0
DRY CHANNEL	10	367	5.1	0.00	1,818	5	27	12	23	25	13	0
GLIDE	24	1,992	8.6	0.38	17,949	42	3	26	35	23	13	1
POOL-LATERAL SCOUR	64	5,003	8.9	1.04	49,035	118	3	25	33	23	14	3
POOL-STRAIGHT SCOUR	4	187	8.1	0.75	1,504	9	6	19	23	25	23	5
RAPID/BOULDERS	2	107	9.8	0.42	1,050	35	0	17	15	24	44	0
RIFFLE	54	2,898	5.9	0.29	18,724	161	1	20	31	27	20	1
Total:	159	10,564	7.5	0.60	90,105	370	**Avg:** 4	22	31	25	16	2

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Percent	Large Boulders Number	(# / $100m^2$)
Dammed & BW Pools	0	0			0	0.00%	0	0.0
Scour Pools	68	5,190	8.8	1.02	50,539	56.09%	127	0.3
Glides	24	1,992	8.6	0.38	17,949	19.92%	42	0.2
Riffles	54	2,898	5.9	0.29	18,724	20.78%	161	0.9
Rapids	2	107	9.8	0.42	1,050	1.17%	35	3.3
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	0	0			0	0.00%	0	0.0
Dry	10	367	5.1	0.00	1,818	2.02%	5	0.3
Culverts	1	10	2.5	0.12	26	0.03%	0	0.0

POOL SUMMARY

	Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	68	6.4	7.0
Pools >=1m deep:	29	2.7	3.0
Complex pools (LWD pieces>=3):	1	0.1	0.1
Pool frequency (channel widths/pool):	11.7		
Residual pool depth (avg):	0.82		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 9/10/2001

REACH 6 — T19S-R22E-S11SE — REACH 6

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	12	1,295	6.3	0.34	8,054	0	1	38	38	17	5	0
POOL-DAMMED	3	1,531	9.8	2.10	15,499	0	7	43	27	17	7	0
POOL-LATERAL SCOUR	48	5,042	6.4	1.02	31,983	0	6	42	31	15	6	0
RIFFLE	13	717	5.6	0.30	4,144	2	3	25	35	28	9	0
STEP/COBBLE	1	1	9.1	0.12	8	0	0	10	30	55	5	0
STEP/STRUCTURE	3	3	4.5	0.06	17	0	0	30	27	20	23	0
Total:	80	8,589	6.3	0.80	59,705	2	**Avg:** 5	38	32	18	7	0

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	3	1,531	9.8	2.10	15,499	25.96%	0	0.0
Scour Pools	48	5,042	6.4	1.02	31,983	53.57%	0	0.0
Glides	12	1,295	6.3	0.34	8,054	13.49%	0	0.0
Riffles	13	717	5.6	0.30	4,144	6.94%	2	0.0
Rapids	0	0			0	0.00%	0	0.0
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	4	4	5.6	0.08	25	0.04%	0	0.0
Dry	0	0			0	0.00%	0	0.0
Culverts	0	0			0	0.00%	0	0.0

POOL SUMMARY

	Total of all Channel Lengths Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	51	5.9	5.9
Pools >=1m deep:	24	2.8	2.8
Complex pools (LWD pieces>=3):	0	0.0	0.0
Pool frequency (channel widths/pool):	20.2		
Residual pool depth (avg):	0.92		

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 9/11/2001

REACH 7 — T19S-R22E-S25NE — REACH 7

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
MIX OF HABITATS	1	2,700	0.0	0.00	0	0	17	17	17	17	17	17
Total:	1	2,700	0.0	0.00	0	0	**Avg:** 17	17	17	17	17	17

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	0	0			0	#Num!	0	0.0
Scour Pools	0	0			0	#Num!	0	0.0
Glides	0	0			0	#Num!	0	0.0
Riffles	0	0			0	#Num!	0	0.0
Rapids	0	0			0	#Num!	0	0.0
Cascades	0	0			0	#Num!	0	0.0
Step/Falls	0	0			0	#Num!	0	0.0
Dry	0	0			0	#Num!	0	0.0
Culverts	0	0			0	#Num!	0	0.0

POOL SUMMARY

	Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	0	0.0	0.0
Pools >=1m deep:	0	0.0	0.0
Complex pools (LWD pieces>=3):	0	0.0	0.0
Pool frequency (channel widths/pool):	0.0		
Residual pool depth (avg):			

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY — Report Date: 2/5/2004 — Survey Date: 9/11/2001

REACH 8 — T19S-R22E-S36NE — REACH 8

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	9	1,358	7.1	0.45	10,998	0	0	38	32	20	11	0
POOL-DAMMED	2	577	9.1	2.05	5,504	0	0	40	30	20	10	0
POOL-LATERAL SCOUR	38	5,431	5.5	1.17	30,444	2	1	55	30	9	4	0
RAPID/BOULDERS	1	47	4.0	0.44	190	0	0	20	20	30	30	0
RIFFLE	8	752	4.6	0.40	3,774	0	0	30	36	26	8	0
STEP/BOULDERS	1	3	6.6	0.25	19	0	0	10	10	30	50	0
STEP/STRUCTURE	1	0	4.5	0.15	2	0	0	10	10	20	60	0
Total:	60	8,168	5.7	0.95	50,930	2	**Avg:** 1	46	30	14	8	0

HABITAT SUMMARY

Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders (# / $100m^2$)
Dammed & BW Pools	2	577	9.1	2.05	5,504	10.81%	0	0.0
Scour Pools	38	5,431	5.5	1.17	30,444	59.78%	2	0.0
Glides	9	1,358	7.1	0.45	10,998	21.59%	0	0.0
Riffles	8	752	4.6	0.40	3,774	7.41%	0	0.0
Rapids	1	47	4.0	0.44	190	0.37%	0	0.0
Cascades	0	0			0	0.00%	0	0.0
Step/Falls	2	3	5.6	0.20	21	0.04%	0	0.0
Dry	0	0			0	0.00%	0	0.0
Culverts	0	0			0	0.00%	0	0.0

POOL SUMMARY

	Total of all Channel Lengths Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	40	4.9	5.0
Pools >=1m deep:	27	3.3	3.4
Complex pools (LWD pieces>=3):	0	0.0	0.0
Pool frequency (channel widths/pool):	27.0		
Residual pool depth (avg):	0.88		

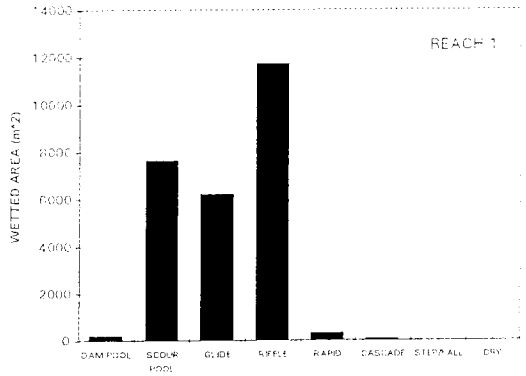
STREAM SUMMARY

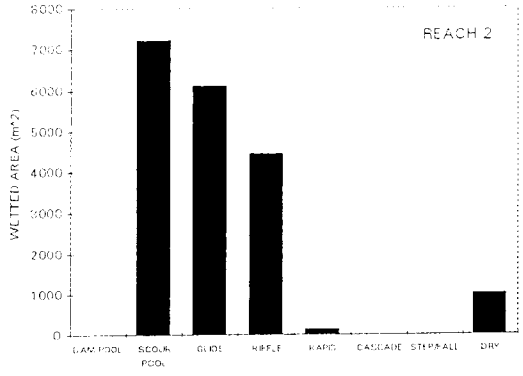
SOUTH FORK CROOKED RIVER

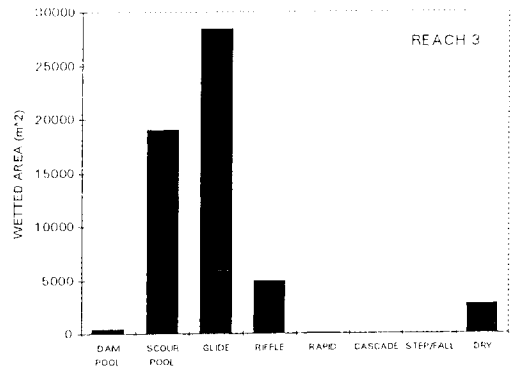
Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m^2)	Substrate Percent Wetted Area S/O	Snd	Grvl	Cbl	Bldr	Bdrk	Large Boulders (#>0.5m)
642	50,054	6.2	0.62	328,327	8	26	34	20	9	3	1,391

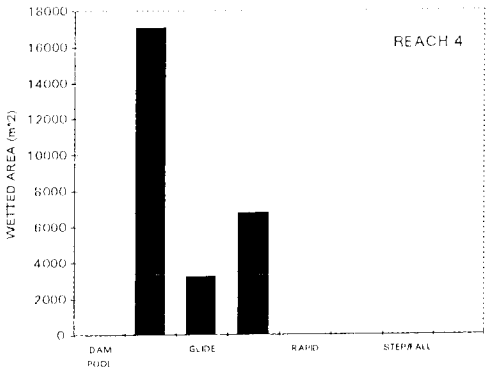
Habitat Group	Wetted Area (m^2)	Percent
Dammed & BW Pools	21,609	6.58%
Scour Pools	163,872	49.91%
Glides	80,948	24.65%
Riffles	54,462	16.59%
Rapids	1,763	0.54%
Cascades	44	0.01%
Step/Falls	54	0.02%
Dry	5,549	1.69%
Culverts	26	0.01%

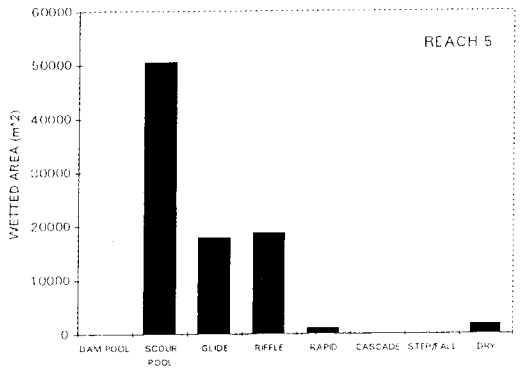
SOUTH FORK CROOKED RIVER (DESCHUTES BASIN) 2001-2003: HABITAT DISTRIBUTION

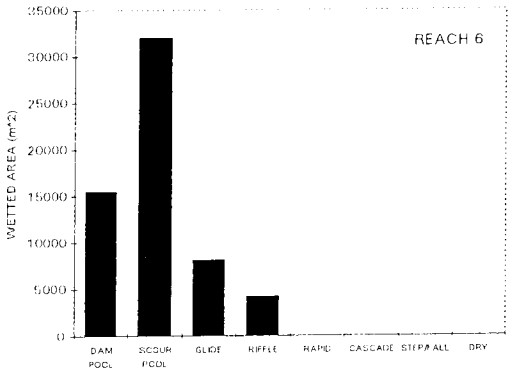




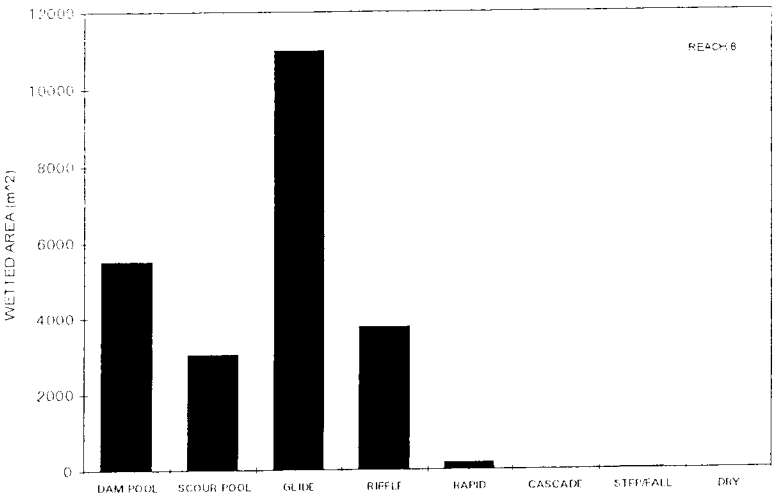


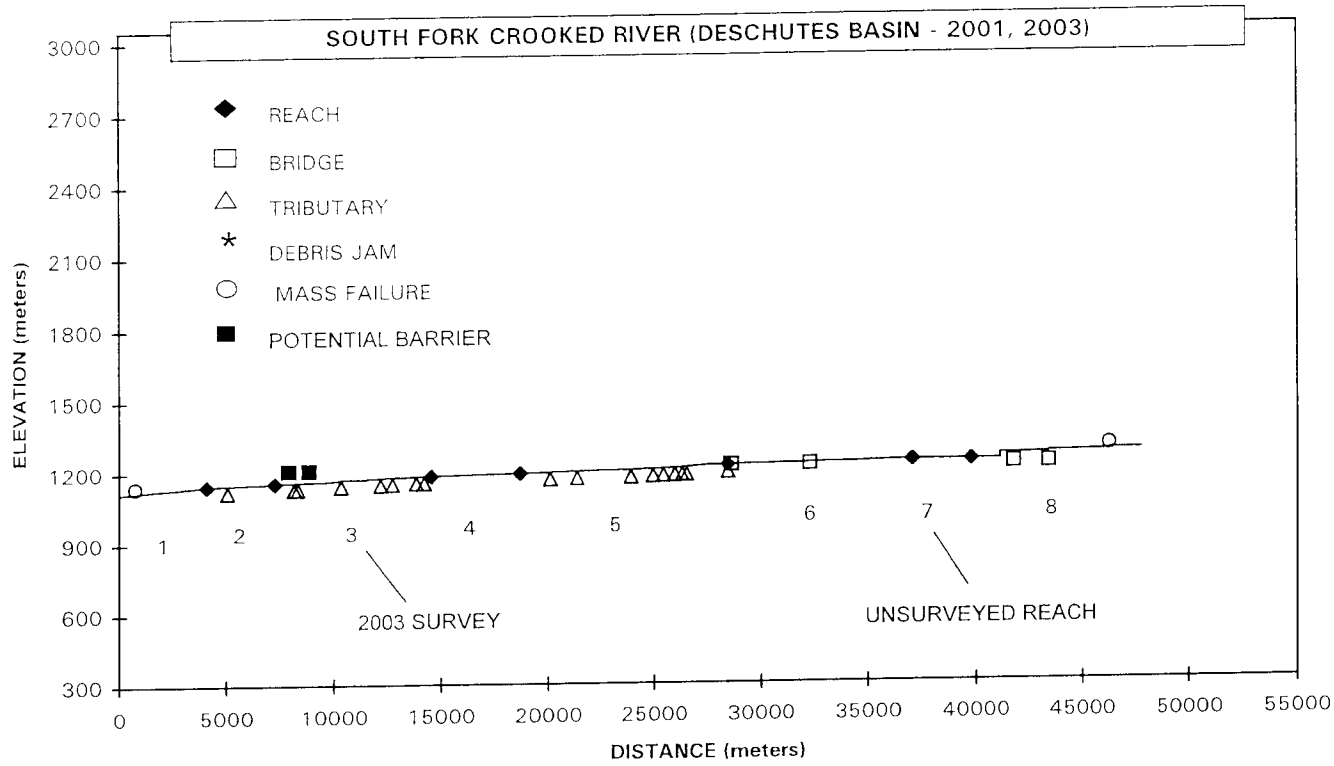


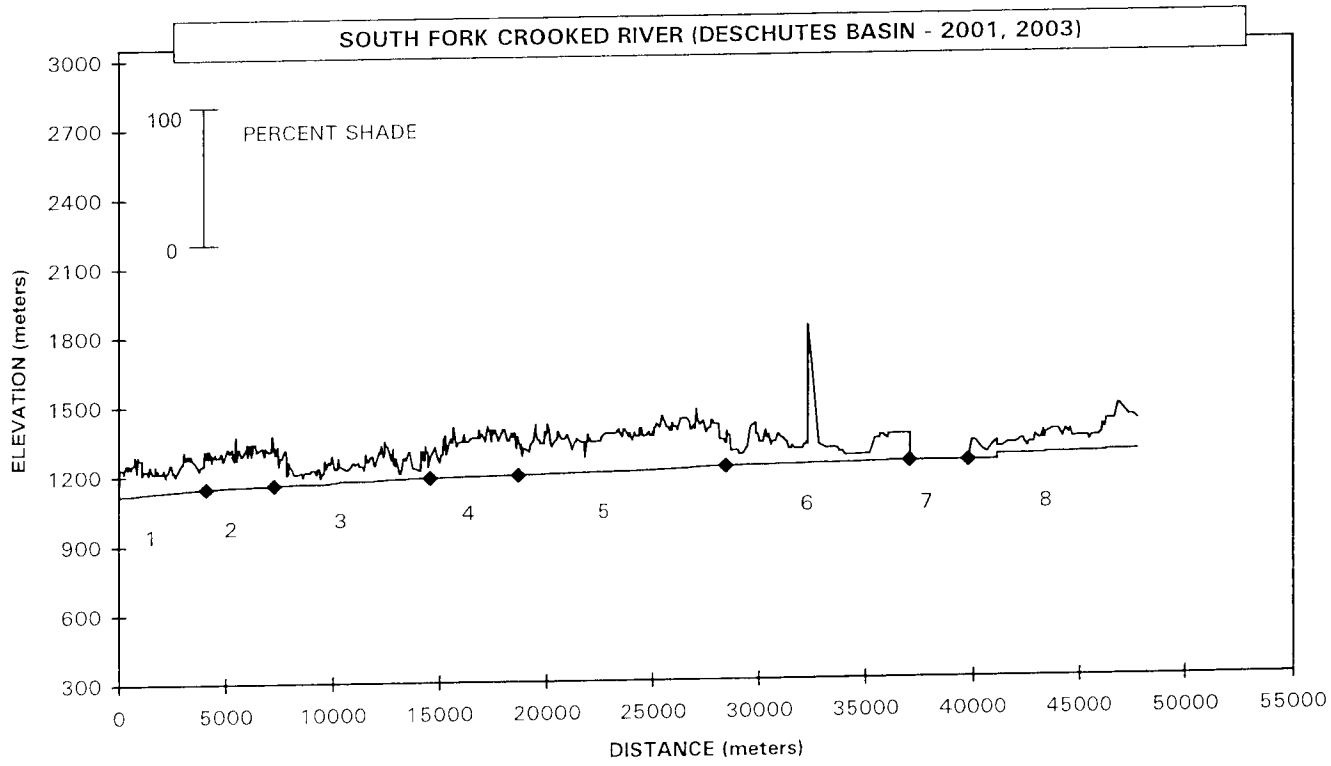


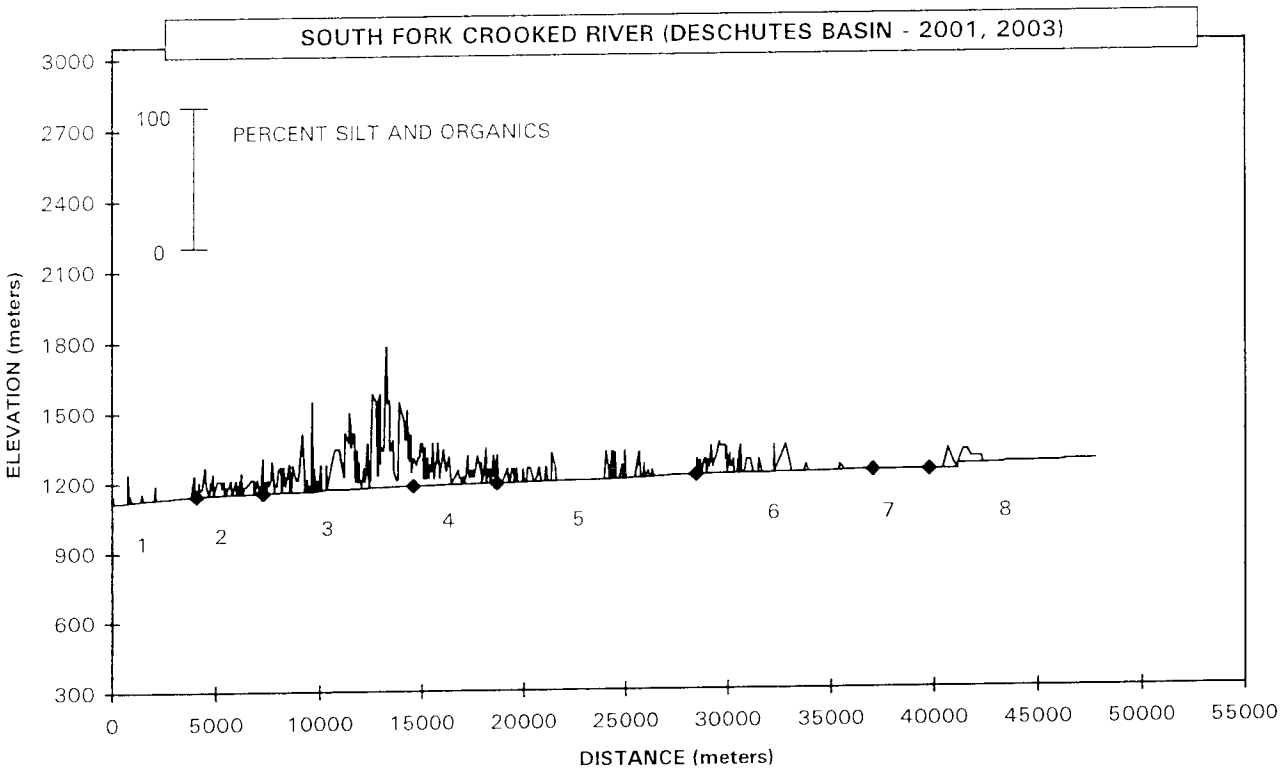


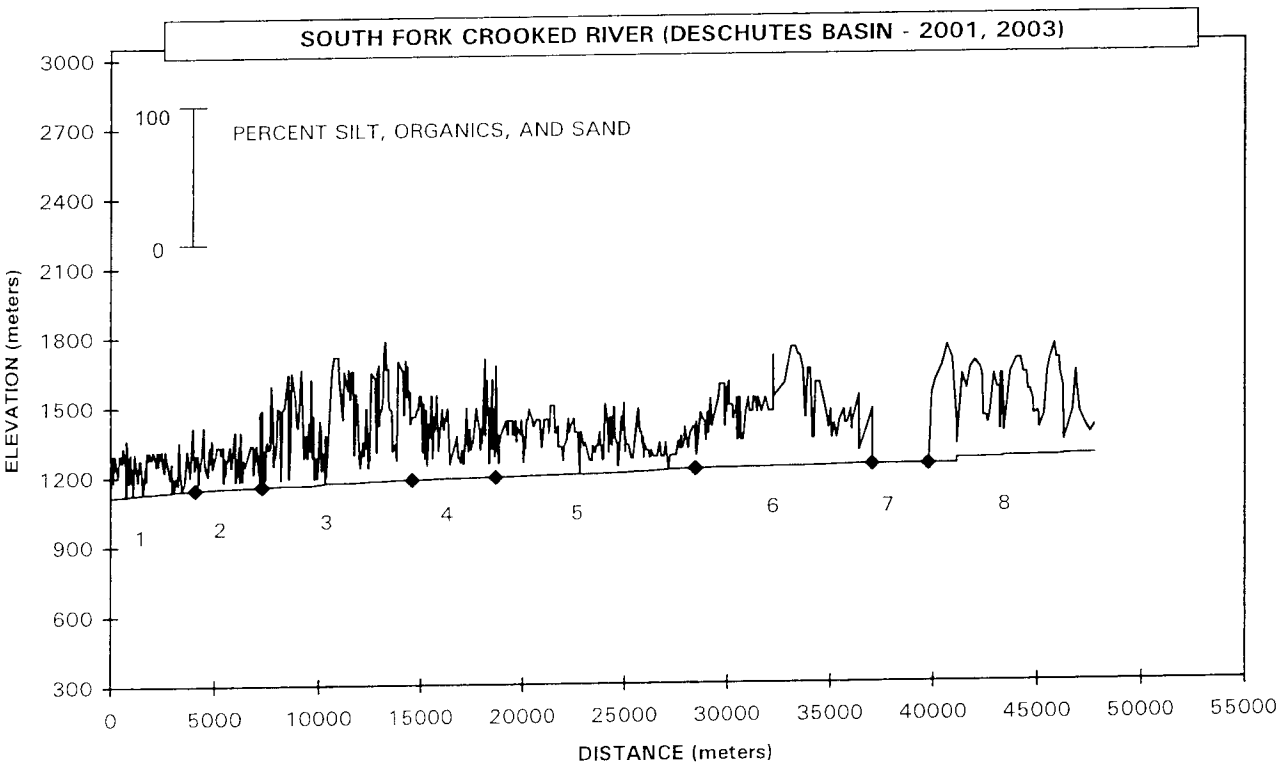
SOUTH FORK CROOKED RIVER (DESCHUTES BASIN) 2001-2003: HABITAT DISTRIBUTION

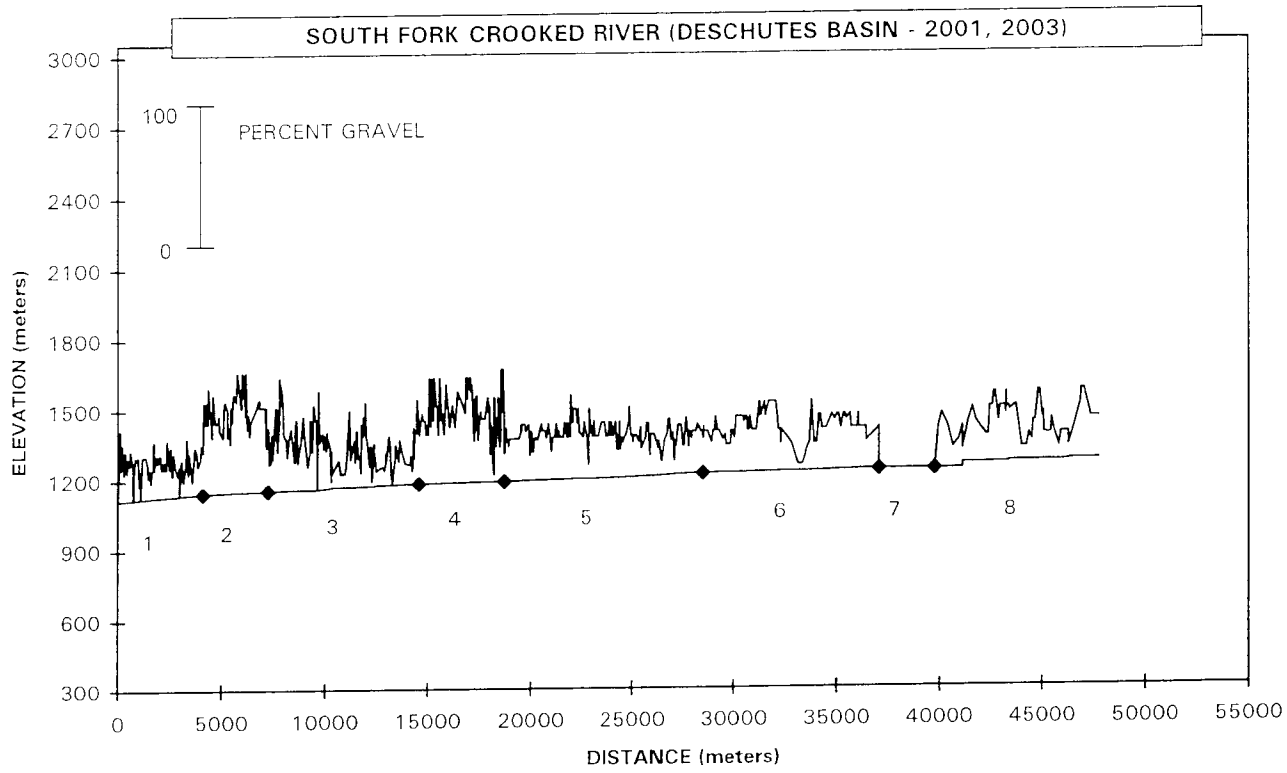


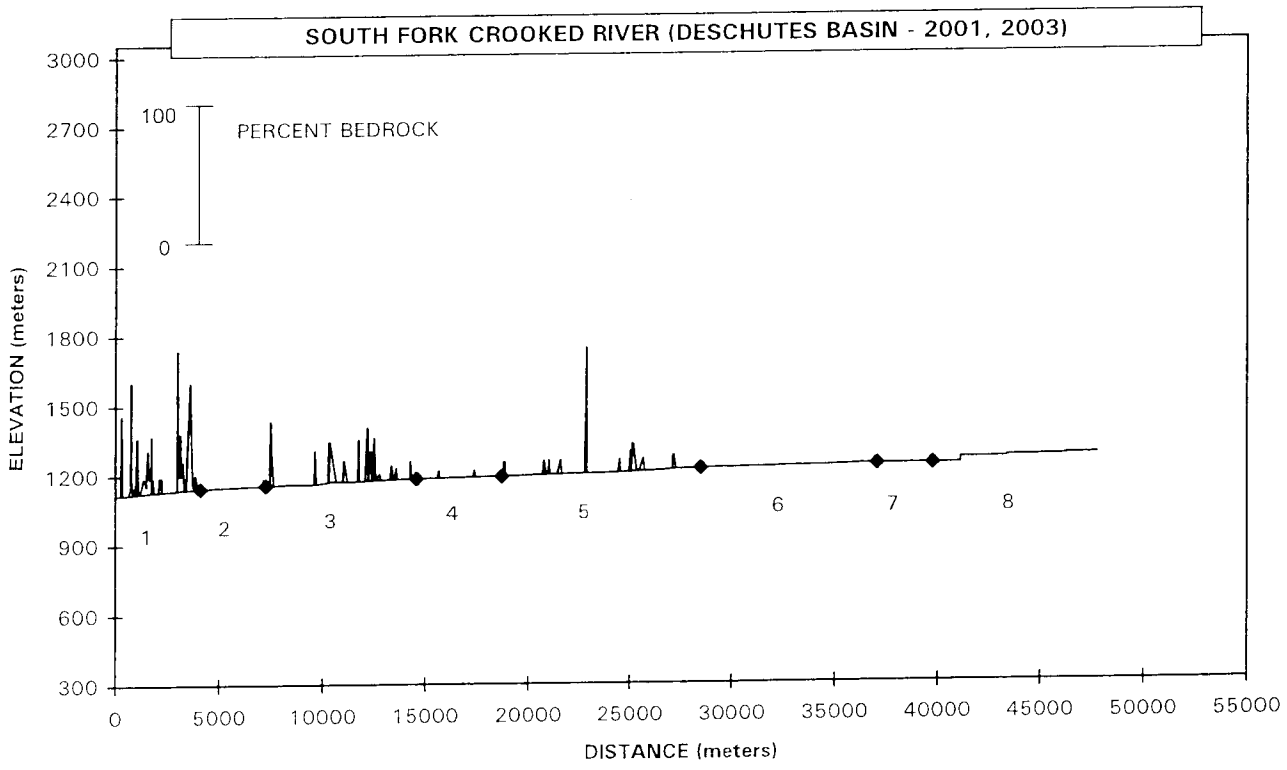

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
REACH
BRIDGE
TRIBUTARY
DEBRIS JAM
MASS FAILURE
POTENTIAL BARRIER
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
2003 SURVEY
UNSURVEYED REACH
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)

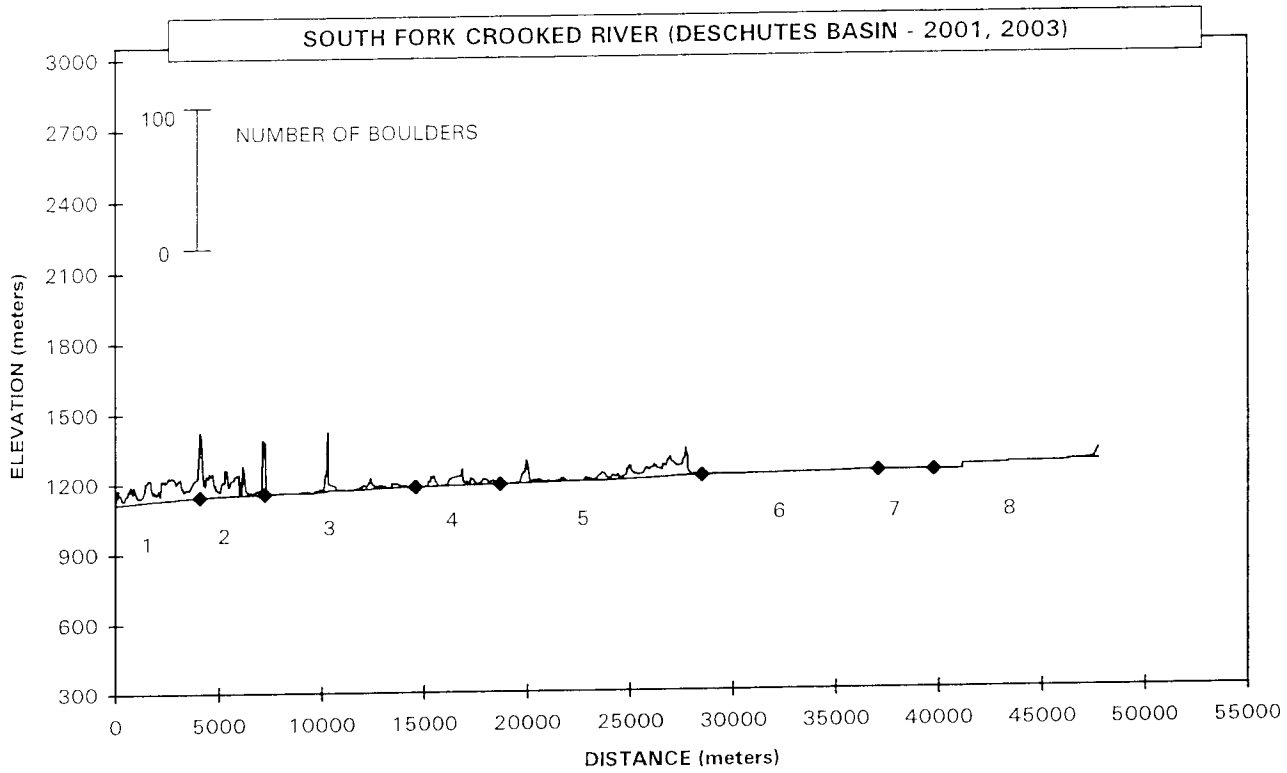

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
100
PERCENT SHADE
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)

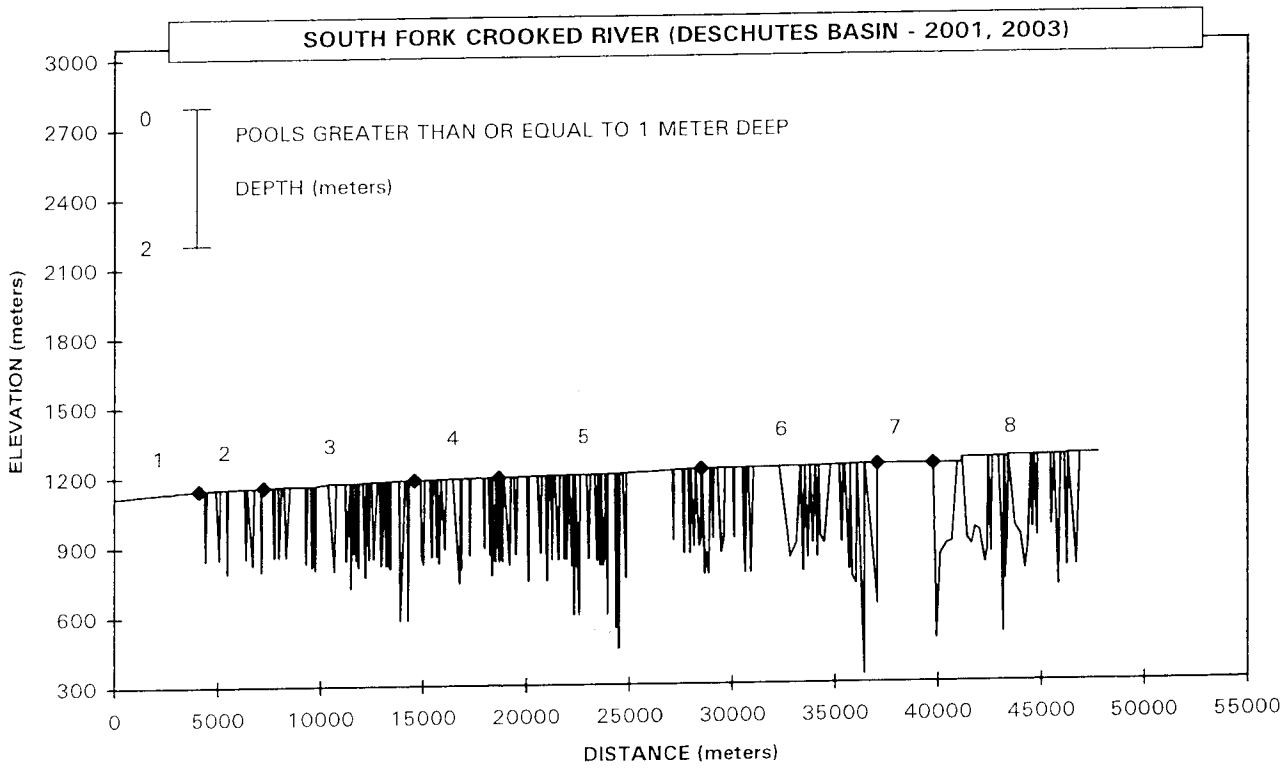

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
PERCENT SILT AND ORGANICS
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)

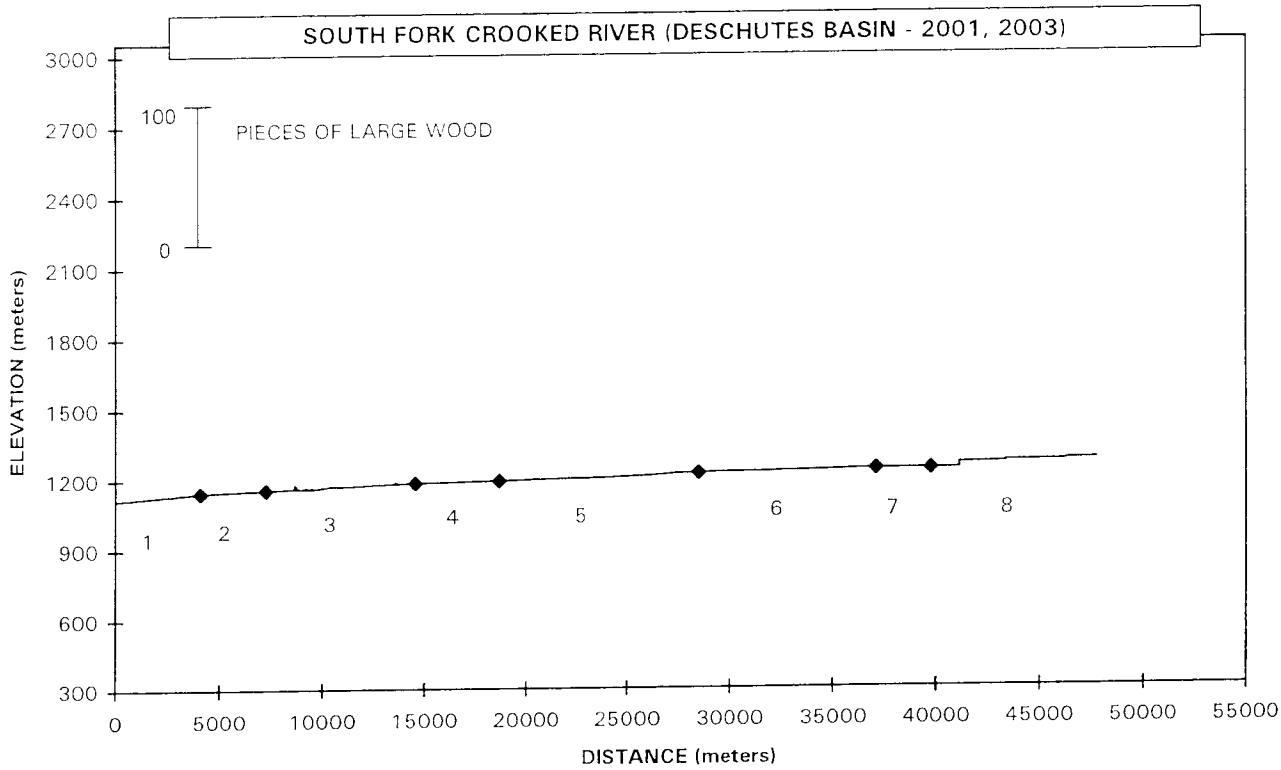

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
PERCENT SILT, ORGANICS, AND SAND
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)

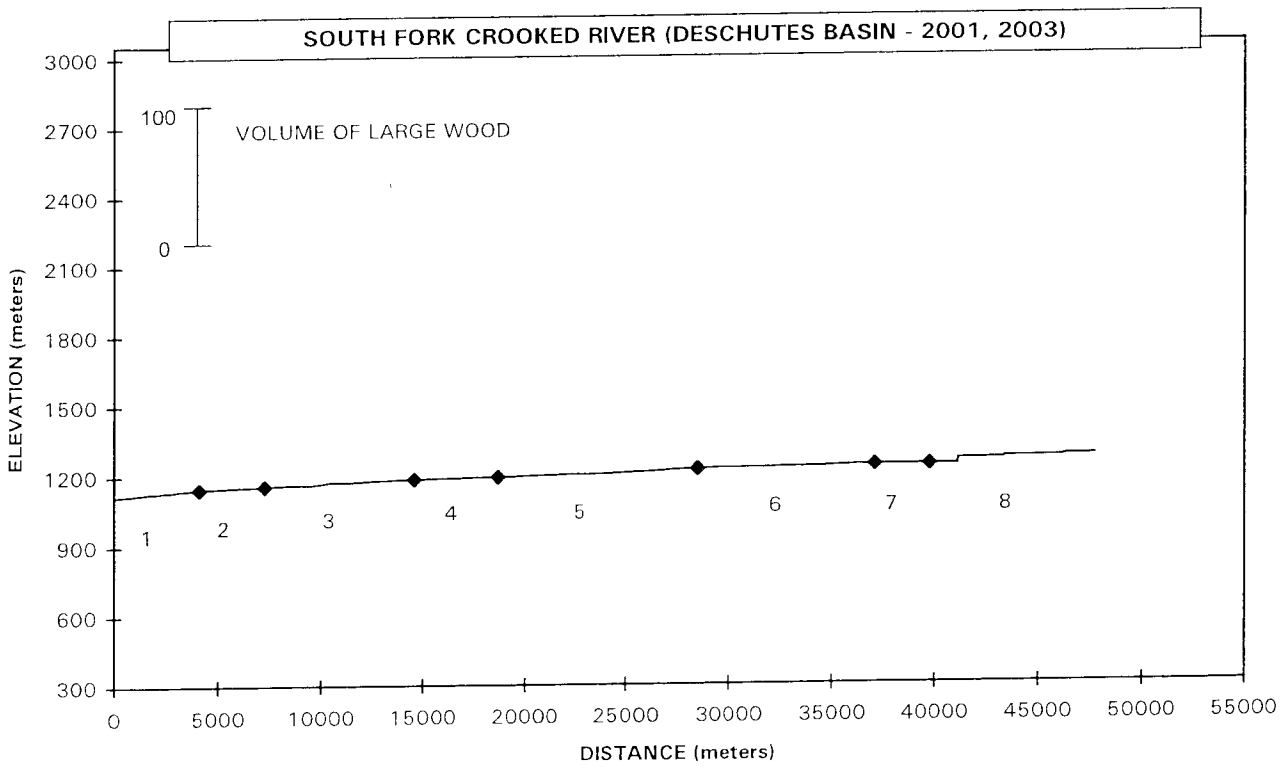

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
PERCENT GRAVEL
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)

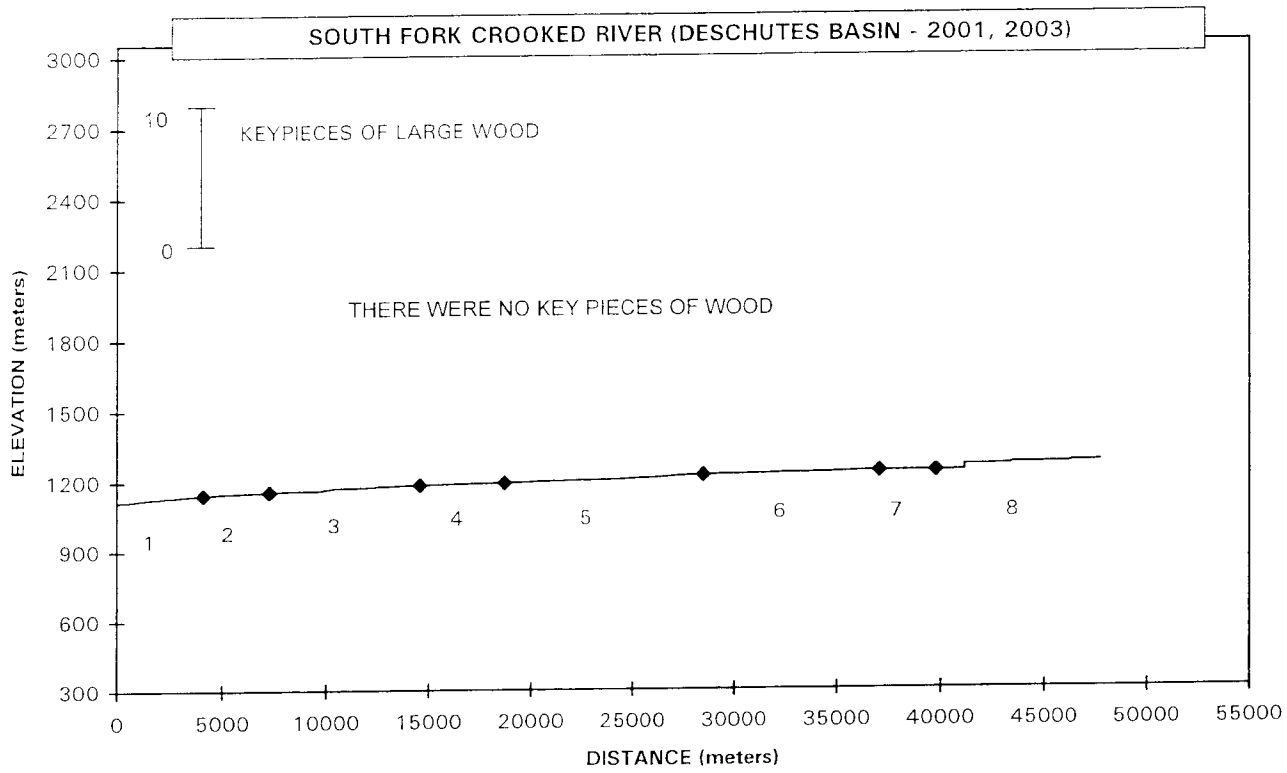

SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
PERCENT BEDROCK
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
NUMBER OF BOULDERS
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
POOLS GREATER THAN OR EQUAL TO 1 METER DEEP
DEPTH (meters)
0
2
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
PIECES OF LARGE WOOD
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
VOLUME OF LARGE WOOD
100
0
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)


SOUTH FORK CROOKED RIVER (DESCHUTES BASIN - 2001, 2003)
10
KEYPIECES OF LARGE WOOD
0
THERE WERE NO KEY PIECES OF WOOD
ELEVATION (meters)
3000
2700
2400
2100
1800
1500
1200
900
600
300
1
2
3
4
5
6
7
8
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
55000
DISTANCE (meters)

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 8/28/2001

RIPARIAN ZONE VEGETATION SUMMARY

REACH 1 — REACH 1

Summary of Riparian Zone (0-30m) 4 transects

Total hardwoods/1000	0
Total conifers/1000 ft	198
Total conifers >20" dbh/1000 ft	15
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.3	0.0	1.0	0.0	1.3	0.0
15-30cm	0.3	0.0	0.3	0.0	0.3	0.0	0.8	0.0
30-50cm	0.0	0.0	0.5	0.0	0.5	0.0	1.0	0.0
50-90cm	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.3	0.0	1.3	0.0	1.8	0.0	1.1	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	2	19	4
Shrub cover	4	9	14
Grass/forb cover	79	43	41

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	0	25	38
High terrace	13	38	38
Low terrace	88	25	13
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	13
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	0	4	20

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 8/28/2001

RIPARIAN ZONE VEGETATION SUMMARY

REACH 2 — REACH 2

Summary of Riparian Zone (0-30m) 4 transects

Total hardwoods/1000	0
Total conifers/1000 ft	274
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters Conifer	Zone 1 0-10 meters Hardwood	Zone 2 10 - 20 meters Conifer	Zone 2 10 - 20 meters Hardwood	Zone 3 20 - 30 meters Conifer	Zone 3 20 - 30 meters Hardwood	Zones 1-3 0-30 meters Conifer	Zones 1-3 0-30 meters Hardwood
3-15cm	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
15-30cm	0.0	0.0	0.8	0.0	1.5	0.0	2.3	0.0
30-50cm	0.3	0.0	0.8	0.0	0.3	0.0	1.3	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.3	0.0	1.5	0.0	2.8	0.0	1.5	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	0	13	12
Shrub cover	2	9	14
Grass/forb cover	91	57	39

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	0	38	75
High terrace	38	25	25
Low terrace	63	38	0
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	0	13	24

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 7/22/2003

RIPARIAN ZONE VEGETATION SUMMARY

REACH 3 — REACH 3

Summary of Riparian Zone (0-30m) 7 transects

Total hardwoods/1000	0
Total conifers/1000 ft	44
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-30cm	0.0	0.0	0.1	0.0	0.3	0.0	0.4	0.0
30-50cm	0.0	0.0	0.1	0.0	0.1	0.0	0.3	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.0	0.0	0.3	0.0	0.4	0.0	0.2	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	0	1	3
Shrub cover	15	23	26
Grass/forb cover	72	50	44

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	14	21	21
High terrace	36	57	50
Low terrace	43	21	21
Floodplain	7	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	7
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	9	14	14

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 8/29/2001

RIPARIAN ZONE VEGETATION SUMMARY

REACH 4 — REACH 4

Summary of Riparian Zone (0-30m) 4 transects

Total hardwoods/1000	0
Total conifers/1000 ft	274
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.8	0.0	0.8	0.0	1.5	0.0
15-30cm	0.0	0.0	0.5	0.0	1.0	0.0	1.5	0.0
30-50cm	0.0	0.0	0.5	0.0	1.0	0.0	1.5	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.0	0.0	1.8	0.0	2.8	0.0	1.5	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	0	8	19
Shrub cover	12	16	14
Grass/forb cover	49	29	26

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	38	63	63
High terrace	25	25	25
Low terrace	38	13	13
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	13	18	16

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 9/5/2001

RIPARIAN ZONE VEGETATION SUMMARY

REACH 5 — REACH 5

Summary of Riparian Zone (0-30m) — **10 transects**

Total hardwoods/1000	6
Total conifers/1000 ft	274
Total conifers >20" dbh/1000 ft	18
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.5	0.0	0.4	0.0	0.5	0.0	1.4	0.0
15-30cm	0.4	0.0	0.3	0.0	0.5	0.0	1.2	0.0
30-50cm	0.5	0.0	0.5	0.0	0.6	0.1	1.6	0.1
50-90cm	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	1.5	0.0	1.4	0.0	1.6	0.1	1.5	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	8	13	16
Shrub cover	13	26	26
Grass/forb cover	57	31	30

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	35	35	55
High terrace	10	45	40
Low terrace	55	20	5
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	0	0	0
Riprap	0	0	0
Surface slope (%)	17	15	25

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 9/10/2001

RIPARIAN ZONE VEGETATION SUMMARY

REACH 6 — REACH 6

Summary of Riparian Zone (0-30m) 8 transects

Total hardwoods/1000	0
Total conifers/1000 ft	0
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-30cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	0	0	0
Shrub cover	12	13	15
Grass/forb cover	73	67	68

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	6	6	19
High terrace	31	63	56
Low terrace	63	19	19
Floodplain	0	0	0
Wetland/meadow	0	6	0
Stream channel	0	0	0
Roadbed/Railroad	0	6	6
Riprap	0	0	0
Surface slope (%)	3	3	8

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 9/11/2001

RIPARIAN ZONE VEGETATION SUMMARY

REACH 8 — REACH 8

Summary of Riparian Zone (0-30m) — **10 transects**

Total hardwoods/1000	0
Total conifers/1000 ft	0
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10 - 20 meters		Zone 3 20 - 30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-30cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	0	0	0
Shrub cover	23	24	22
Grass/forb cover	64	53	56

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	20	25	30
High terrace	25	25	25
Low terrace	55	40	40
Floodplain	0	0	0
Wetland/meadow	0	5	5
Stream channel	0	0	0
Roadbed/Railroad	0	5	0
Riprap	0	0	0
Surface slope (%)	5	9	11

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY - RIPARIAN SURVEY — 8/28/2001

Summary of Riparian Zone (0-30m) for all reaches — 47 transects

Summary of riparian zone (0-100 feet) extrapolated to 1,000 feet along stream

Total hardwoods/1000	1
Total conifers/1000 ft	128
Total conifers >20" dbh/1000 ft	5
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-m wide band

Diameter class (cm)	Zones 1-3 0-30 meters Conifer	Hardwood
3-15cm	0.6	0.0
15-30cm	0.7	0.0
30-50cm	0.7	0.0
50-90cm	0.1	0.0
>90cm	0.0	0.0

SOUTH FORK CRO. .ED RIVER (DESCHUTES BASIN 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
1	1	LP	00	26	FC	BEGIN SURVEY AT PROPERTY LINE	BEGIN SURVEY; FISH
1	2	RI	00	41		N.PIKE MINNOW, CHISELMOUTH	T = 15.0C
1	3	LP	00	74	SS/	FRESHWATER MUSSEL	
1	5	LP	00	117	WL		FISH; FRESHWATER CLAMS
1	6	RB	00	134	WL		CRAYFISH
1	7	RI	00	143	WL	REDWINGED BLACKBIRD	
1	8	LP	00	189			FISH
1	11	GL	00	288	WL		BIRDS; CRAYFISH; CLAMS
1	13	RI	00	376			FISH
1	17	RI	00	563	WL		FROGS
1	19	BW	10			FLICKER	
1	20	RI	00	720			FISH
1	23	SR	00	744	PN	STEP HT = 0.9M	SOME CONCRETE ADDED
1	24	LP	00	766	WL	DACE	FROG
1	25	GL	00	837	FC;WL	TROUT	FROGS; FISH
1	26	RI	00	884	WL	CADDISFLY	T = 21.0C
1	27	RI	00	956	WL		CRAYFISH
1	30	SB	00	1084	BV	STEP HT = 0.3M	OLD BEAVER CHEWS
1	34	GL	00	1388	WL		SNAKE
1	38	LP	00	1623	WL		T = 24.5C; SNAKE
1	41	GL	00	1731			FISH
1	42	LP	00	1764			FISH
1	43	RI	00	1814	BV	VWI DUE TO LARGE MEANDER	
1	51	RI	01	2182		SCULPIN	
1	55	GL	00	2249	FC		
1	60	GL	00	2504			BLM HYDRO-SURVEY MARKER
1	61	RI	00	2588	WL		FISH, CRAYFISH, AND BIRDS
1	62	LP	00	2639			BLM HYDRO-SURVEY MARKER
1	63	RI	00	2736	FC		
1	64	RI	00	2846	FC		BLM HYDRO-SURVEY MARKER
1	65	RI	00	2931			EXCLOSURE
1	69	LP	01	3100	WL	TROUT	BLM HYDRO-SURV MARKER;CRAYFISH
1	71	RI	02				FISH
1	75	GL	00	3134	WL		CRAYFISH
1	77	GL	00	3232	WL		FISH, CRAYFISH, CLAMS
1	78	RI	00	3282			FISH
1	81	LP	00	3389			FISH
1	84	LP	00	3678			FISH
1	86	RI	00	3831	WL		FROG
1	87	LP	00	3958	WL		FISH; FROG
1	91	RI	00	4096		END REACH 1	
2	92	GL	00	4135	WL	T = 16.0C; BEGIN NEW CREW	WILD HORSES;BLM HYDRO SITE MKR
2	94	LP	00	4195			FISH
2	97	LP	00	4302	WL		FROG
2	99	LP	00	4382			FISH;BLM HYDRO SITE MARKER
2	102	GL	00	4574			FISH
2	104	GL	00	4763	FC		FISH
2	107	RI	01	4893	FC		
2	110	LP	01	5055	/TJ		FISH; TRIB UNNAMED ON MAP
2	112	GL	01	5107			FISH
2	114	LP	01	5265			FISH
2	117	GL	00	5390			FISH
2	119	LP	00	5455			FISH
2	120	RI	00	5500	FC		
2	121	LP	00	5542	FC		EXCLOSURE

SOUTH FORK CRO .ED RIVER (DESCHUTES BASIN 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
2	122	LP	00	5597			EXCXLOSURE
2	123	GL	00	5705			BLM HYDRO SITE MARKER
2	127	LP	00	6013			FISH
2	128	LP	00	6047			FISH
2	130	LP	00	6140			FISH
2	131	LP	00	6160			FISH
2	133	LP	00	6219			FISH
2	136	LP	00	6363			FISH
2	138	LP	00	6712			FISH
2	139	GL	00	6781			FISH
2	142	GL	00	6977			FISH
2	144	LP	00	7122			FISH
2	146	LP	00	7159			FISH
2	147	GL	00	7252			FISH
2	148	RI	00	7261	FC	END REACH 2	BLM/PRIVATE PROP. BOUNDARY
3	149	RP	00	7295		START @ FENCLINE	START @ FENCLINE @ OLD JAKE'S
3	150	GL	00	7357			PROPERTY LINE
3	151	RI	00	7375			T = 21 DEG C @0800
3	152	LP	00	7421		GULLY ON RT- NO EVIDENT CHANNE	PHOTO 3&4 UPST. START FROM FNC
3	153	LP	01	7477			BEDROCK = HARDPAN
3	154	BW	10				LOTS FISH UNIDENTIFIABLE
3	155	LP	00	7528			BDRK = HARDPAN
3	156	GL	00	7609			LOTS OF ALGAE THROUGHOUT
3	158	LP	00	7749		RIP TRANSECT	RIP T#1 10T 0736682 4881299
3	160	LP	00	7808		FENCE CROSSING AREA	PHOTO 5&6 LIGHT GRAZING
3	161	RI	00	7842		UPSTRM FROM XING- BEEN GRAZED	PHOTO 7 UPSTRM FENCE XING
3	162	LP	00	7891	/AE		
3	163	LP	00	7922	/AE		
3	164	LP	00	7971			GRASS IN H20,LIGHT GRAZING
3	165	GL	00	8106		WHITE POST/ REBAR #22	MAX DEPTH 0.9
3	166	RI	01	8151	/TJ	JONES CR ON RIGHT- DRY	DRY = JONES CR
3	167	DC	11			ACW = 3.8 METERS	
3	168	LP	00	8228			LOTS GRASS IN CREEK
3	169	LP	01	8322	/TJ		DRY
3	170	DC	11			ACW = 1.3- DRY	
3	171	GL	00	8502		WHITE POST#20	
3	173	RI	00	8597		FRESH H20 MUSSEL	
3	174	LP	00	8661			LOTS GRASS IN CREEK
3	175	GL	00	8841	/AE	DRAGONFLIES EVERYWHERE	
3	176	GL	00	8933		WHITEPOST #18	COW FENCE RT
3	177	LP	01	8992	BV		/OLD BV DEN ISLAND IN MID
3	178	BW	10			DIGGINGS FRM ROCK HOUNDS ON RT	PEPPERS
3	179	GL	00	9157		RIPARIAN TRANSECT	RIPT 10T 0737643/ 4880938
3	180	LP	00	9245			@ 11:09 T = 24 DEG C
3	181	SP	00	9279		WHITE POST/ REBAR #16	
3	182	LP	00	9376			LOTS OF FISH
3	184	LP	01	9511	FC	WHITE POST #1	
3	185	DC	02				GRASSY SUB
3	186	LP	00	9575			(3)- 40CM FISH = SUCKERS?
3	188	GL	00	9676			LOTS OF AQUATIC VEG & GRASS
3	189	LP	00	9738	WL	6 DUCKS	
3	197	AL	10		/AL		
3	198	RI	00	10123	WL	DOVE	RIP T = 10T 0738224/ 4881468
3	199	LP	00	10144	BV		T = 24.5 @ 12:30
3	200	RI	01	10232			CHEWINGS ON JUNIPER

SOUTH FORK CRC :ED RIVER (DESCHUTES BASI! 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
3	201	BW	10				BACKWATER ON RIGHT
3	202	AL	10				ALCOVE ON LEFT
3	203	GL	00	10252	WL		FRESH WATER CLAMS
3	204	RI	01	10298	FC		MANMADE BLDR DAM-NOT EFFECTIVE
3	206	LP	00	10309		ROCK HOUNDS DIGGING ON RT	1 LG BOULDER
3	207	SS	00	10310		H=.30 HUMAN MADE DAM CBBL/BLDR	MANMADE BLDR STEP
3	208	DP	00	10317			HARDPAN
3	209	RB	01	10338	TJ/	CONGLETON HOLLOW	CONGELTON GULCH
3	210	DC	11			ACW=4.8 METERS=DRY	
3	211	LP	00	10653		T=26.5 DEG C @1:00	ROCKHARD BRIDGE OVER CR.
3	212	GL	00	10755	FC	WALKWAY CROSSING STREAM	T=26.5 DEG C,FC @ TOP=OTTO PRP
3	213	GL	00	10949		START OTTO'S PROPERTY	OTTO'S PROPERTY STARTS
3	214	LP	00	11013			BDRK=HDPN LOTS OF AQUA VEG.
3	215	GL	00	11168	WL	BELTED KINGFISHER	ALGAE
3	216	LP	00	11223	WL	MALLARD W/ 5 DUCKLINGS	
3	217	GL	00	11407			T=27 DEG C @ 15:03
3	218	LP	00	11441		WHITE POST #13 @ TAILOUT	10T 0738313/ 4880747 RIP-T
3	222	GL	00	11666		LARGE SUCKERS 37.5CM	
3	223	LP	00	11718		WILLOW PLANTINGS ON LF BANK	WILLOW PLANTING BDRK= HDPN
3	225	LP	00	11810		LITTLE RATTLESNAKE BUTTE ON RT	1-VW SIZE BLD ON RT
3	227	LP	00	11892		WHITE POST #11	
3	228	RI	00	11926		WILLOW PLANTINGS CONT	
3	229	GL	00	11964			TRAILER-OTTO'S/
3	230	RI	00	12018			SUCKERS
3	231	LP	00	12150			LOTS OF ALGAE/H20 VEG BDRK=HDP
3	232	GL	01	12188	/TJ	HILLSLOPE ON RT	MEVER DRAW
3	233	DC	11			ACW=2.5M=MEVER DRAW	
3	234	LP	00	12260			BDRK= HARDPAN
3	235	LP	00	12309		HILLSLOPE STILL ON RT	WILLOW PLANTINGS/ YOUNG
3	237	LP	00	12363			T=27.5 DEG C @ 16:14
3	238	RI	01	12408			UTM 10T 0738002/4880043
3	239	LP	01	12426		T=27.5 @ 16:00	BDRCK=HDPN
3	240	RI	01	12464			WILLOW PLANTINGS/ BDRCK=HDPN
3	241	PD	02				DRY= GRASSES/ DIRT
3	242	LP	00	12546	WL	HILLSLOPE ENDS ON RT	KINGFISHER
3	243	GL	01	12739	/TJ	SULFER CR ENTERS @ TOP OF U 95	SULPHUR CREEK
3	244	DC	11				SULPHUR CREEK
3	245	GL	00	12824		T=23 DEG C	LG ROCK/ PHOTO #8 LOOK. UPSTRM
3	246	LP	00	12855			PHOTO #9 DWNSTRM BY SULPHUR CR
3	247	LP	00	12923		FROG	T=23 DEG C
3	248	RI	00	12941			LOTS AQU. VEG/ ALGAE
3	249	LP	00	12958			LOTS FISH
3	250	GL	00	13079	RF	WHITEPOST #8 NEAR TOP OF UNIT	TOP OF UNIT FR ON MAP
3	251	GL	00	13129			PHOTO #10 UPSTRM
3	253	GL	01	13248		DEAD HATCHERY TROUT 28 CM	FROG METHANE H20
3	255	LP	00	13303			HARDPAN/ LOTS AQU VEG
3	256	LP	00	13375	BV		OLD BV
3	258	RI	00	13433		RIP TRANSECT	RIP T 10T 0738800/ 4879883
3	259	GL	00	13559		PHOTO #10	BDRCK=HDPN
3	260	RI	00	13600	WL	SNAKE-TAN/GREEN	GREEN/ GREY SNAKE
3	261	GL	00	13742		4X4 ROAD ON LF	
3	262	RI	00	13803		OLD IRRIGATION PIPE ON BANK	
3	263	LP	01	13860	TJ/	WHITEPOST #5 ACW=2.8	ON MAP NO NAME: OLD FENCE
3	265	GL	00	14125			PHOTO#14 UPST. /FENCELINE
3	266	RI	00	14151	WL	HILL BEGINS RIGHT	FRESHWATER CLAM

SOUTH FORK CRO :ED RIVER (DESCHUTES BASI 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
3	267	GL	01	14226	TJ/	WHITEPOST #3	BILL JAKE HOLLOW (MAP)
3	269	LP	00	14261		T = 24 DEG C	BDRCK = HDPN
3	270	GL	01	14305		WHITEPOST #2	WILLOW PLANTINGS/
3	271	LP	01	14319	WL		FISH FRESHWATER CLAMS
3	272	GL	02			WILLOW PLANTINGS	
3	278	DC	02			GRASS COVERED	GRASSES/ DIRT
3	279	GL	00	14573	FC	OTTER SCAT- FRESH	END REACH 3
4	281	RI	00	14709	WL	T = 20.0C	FROG; BLM/PRIV PROP BOUNDARY
4	282	SP	00	14789			THICK ALGAL MAT
4	284	LP	00	14916			FISH
4	285	LP	00	15010	WL BV		QUAIL
4	286	RI	00	15079			FISH
4	287	LP	00	15144	WL FC BV		FROGS
4	288	RI	00	15185			CATTLE ACCESS TO STREAM
4	289	SP	00	15269	FC		
4	291	LP	00	15407			FISH
4	293	LP	00	15518			FISH
4	295	LP	00	15649	WL		FISH; CLAMS
4	297	LP	00	15784	WL		FISH; FROGS
4	299	LP	00	16067	WL		FISH; FROGS
4	300	RI	00	16144			FISH
4	301	GL	00	16187			FISH
4	302	LP	00	16328			FISH
4	303	RI	01	16455			FISH
4	305	LP	00	16795			FISH
4	306	LP	00	16844			FISH
4	307	LP	00	16872	WL		FISH; BLUE HERON & DUCKS
4	308	SP	00	16907			FISH
4	309	RI	00	16970			FISH
4	310	LP	00	17040		T = 22.5C	FISH
4	311	LP	00	17071		T = 16.5C	FISH
4	313	LP	00	17222			FISH
4	315	LP	00	17280			FISH
4	317	GL	00	17412	WL		FISH; FROGS
4	319	LP	00	17529	SS/		FISH
4	321	LP	00	17741			FISH
4	323	LP	00	17911			FISH
4	327	GL	00	18160	WL		FISH; FROGS; ALGAE
4	329	LP	00	18251			FISH
4	331	LP	00	18349	WL		FROG
4	333	LP	00	18406	WL		FISH; FROGS
4	334	LP	00	18458	WL		FISH; FROGS
4	335	LP	00	18502			FISH
4	336	LP	00	18515			FISH
4	338	LP	00	18552			FISH
4	339	RI	00	18579			FISH
4	340	LP	00	18604			FISH
4	343	LP	00	18701		T = 20.5C	END REACH 4
5	344	RI	01	18762		NEW CREW	NEW CREW
5	345	LP	01	18787			FISH
5	348	RI	01	18876	WL		SNAILS
5	349	GL	01	18926			FISH
5	352	LP	02		WL		FISH; FROGS
5	354	LP	00	19190			FISH
5	355	GL	00	19253			FISH

SOUTH FORK CRO ED RIVER (DESCHUTES BASIN 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
5	357	LP	00	19397	WL		DUCKS
5	365	RI	01	19909			FISH
5	366	RI	02				FISH
5	371	LP	01	20089	/TJ	TRIB UNNAMED ON MAP	
5	372	DC	11			DRY TRIB CHANNEL; 4.0 = ACW	
5	375	RI	00	20225			FISH
5	380	LP	00	20731	FC		
5	382	RI	01	20925	WL	T = 19.0C	FROG
5	383	RI	02				02 CHANNEL
5	384	LP	00	20985			FISH
5	388	LP	00	21237			FISH
5	390	LP	01	21332	TJ/	TRIB UNNAMED ON MAP	
5	391	DC	11			DRY TRIB CHANNEL	
5	396	GL	00	21727	WL	FLICKER	FISH
5	397	LP	00	21742	WL		SNAKE
5	403	RI	00	21996	WL		FROG
5	404	LP	00	22026			FISH
5	406	GL	00	22243			FISH
5	409	LP	00	22515	WL		GOLDFINCH
5	415	LP	00	22994		T = 19.5C	FISH
5	418	GL	00	23266	WL		BIRDS
5	419	LP	00	23398			FISH
5	427	LP	01	23912	/TJ	TRIB UNNAMED ON MAP	
5	428	DC	11			DRY TRIB CHANNEL	
5	430	GL	00	24044			FISH
5	437	LP	00	24470	WL	FLICKERS	FISH
5	438	RI	00	24516	WL		FROGS; CLAMS
5	442	GL	00	24854			FISH
5	444	RI	01	24950	TJ/	TRIB NOT ON MAP	
5	445	DC	11			DRY TRIB CHANNEL	
5	446	RI	00	25006	FC		
5	447	LP	00	25043		CADDIS	
5	448	LP	00	25064			FISH
5	451	RI	00	25322	WL		DRAGON FLY
5	453	RI	01	25430	/TJ	TRIB ON MAP- PICKETT CANYON	
5	454	DC	11			DRY TRIB CHANNEL	
5	455	GL	00	25632	BV		
5	461	GL	01	25956	/TJ BV	TRIB UNNAMED ON MAP	
5	462	DC	11			DRY TRIB CHANNEL	
5	469	SP	01	26298	/TJ	TRIB UNNAMED ON MAP	
5	470	DC	11			DRY TRIB CHANNEL	
5	471	RI	00	26430			FISH
5	472	LP	01	26525	TJ/	TRIB UNNAMED ON MAP	
5	473	DC	11			DRY TRIB CHANNEL	
5	476	RI	01	26774	WL		SNAKE
5	478	GL	00	26842	WL		DUCKS
5	480	LP	00	27009	BV		FISH
5	481	RB	00	27073	WL		LIZARD
5	485	LP	00	27392	WL		SNAKE
5	488	LP	00	27642	FC		FISH
5	491	RB	00	27766		T = 17.5C	COLD SPRINGS RANCH
5	500	RI	01	28485	TJ/ /CE	END REACH 5	TWELVEMILE CREEK
5	501	CC	11			TRIB UNIT	
5	502	RI	11		RF	TRIB UNIT	
6	503	LP	00	28512		EXCLOSURE U#372-387	

SOUTH FORK CRO ED RIVER (DESCHUTES BASIN 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
6	504	SC	00	28513	RF		
6	505	LP	00	28641	BC		
6	507	LP	00	28827	SS/		SEEPS ARE FROM IRRIGATION
6	510	LP	00	29048	SS/, WL		BEAVER SKULL
6	512	LP	00	29199			FISH
6	513	RI	00	29264	SS/ RF FC		CATTLE CROSSING STREAM
6	514	LP	00	29463	SS/		
6	515	LP	00	29563	SS/		FISH
6	516	LP	00	29628	SS/		
6	517	LP	00	29853	SS/		
6	518	RI	00	29875	SS/		
6	519	LP	00	29929	RF FC		CATTLE CROSSING STREAM
6	520	LP	00	29965		T = 11.5C	
6	521	LP	00	30037	SS/	EXCLOSURE U#390-400	
6	524	LP	00	30185	SS/		
6	525	LP	00	30266	SS/		
6	528	LP	00	30443	SS/		
6	530	RI	00	30515	SS/		
6	531	LP	00	30551	SS/		
6	532	LP	00	30619		CATTLE CROSSING	
6	533	RI	00	30658	RF FC	EXCLOSURE U#402-417	
6	540	LP	00	31287	WL		FLICKER
6	542	GL	00	31479	WL		DUCKS
6	547	LP	00	32122			FISH
6	550	LP	00	32285	RF		
6	551	SS	00	32288	BC	SPLASH DAM HT = 1.55M	
6	553	LP	00	33130	/SS WL		CRAYFISH
6	555	LP	00	33460			FISH
6	557	LP	00	33671	FC WL		RED-WINGED BLACKBIRD
6	558	RI	00	33776	RF		
6	559	LP	00	33912	WL		BLUE HERON
6	560	LP	00	34034	/SS FC		
6	569	LP	00	35196	SS/		
6	571	GL	00	35379	SS/		
6	573	LP	00	35661	SS/		
6	574	RI	00	35704	/SS WL		FROG
6	576	LP	00	36009	FC SS/		
6	577	RI	00	36051	SS/ WL	T = 16.5C	FROG
6	579	SS	00	36068		SPLASH DAM HT = 0.8M	
6	581	SS	00	36436		SPLASH DAM HT = 0.3M	
6	582	DP	00	37073	FC	END REACH 6	
7	583	MX	00	39773		GI RANCH PROPERTY-NOT SURVEYED	ENTERS BULL PASTURE
8	584	DP	00	39932		COLD SPRINGS RANCH PROPERTY	CATTLE ALLOWED ON STREAM
8	585	LP	00	40094	SS/		
8	586	LP	00	40400	SS/		
8	588	LP	02		WL		SWALLOWS
8	592	LP	00	41378	SS/		
8	593	LP	00	41608	SS/		
8	594	LP	00	41776	BC FC		
8	599	LP	00	42551			CATTLE CROSSING STREAM
8	600	RI	00	42615			CATTLE CROSSING STREAM
8	610	LP	00	43346			CATTLE CROSSING STREAM
8	611	RI	00	43397	BC		
8	612	LP	00	43708	/SS		
8	615	LP	00	44328	/SS		

SOUTH FORK CRC :ED RIVER (DESCHUTES BASII 2001, 2003)

REACH	UNIT#	TYPE	CHAN	DIST.(m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
8	620	RI	00	44816			CATTLE CROSSING STREAM
8	621	LP	00	44883			FISH
8	623	GL	00	45055	SS/		
8	625	RI	00	45304	FC		
8	628	LP	00	45591		T = 20.0C	
8	629	LP	00	45815	WL		DUCKS; WILD HORSES
8	631	GL	00	46054	FC		
8	635	SS	00	46265	PA	SPLASH DAM HT = 0.8M	CONCRETE IRRIGATION DAM
8	636	DP	00	46684	FC		
8	637	GL	00	46852	WL		RATTLE SNAKE
8	643	GL	00	47749	FC BV	END OF SURVEY	END OF SURVEY

OREGON DEPARTMENT OF FISH AND WILDLIFE

SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003

Survey Date: 8/28/2001

RIPARIAN ZONE VEGETATION

Reach 1

Reach 1

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
2	LF	1	LT	0	0	0	100	Conifer						
								Hardwood						
2	LF	2	HS	15	60	0	80	Conifer		1	1			JUNIPER
								Hardwood						
2	LF	3	TC	0	20	0	70	Conifer	2		1			IRRIGATION CHANNEL;
								Hardwood						JUNIPER
2	RT	1	HT	0	0	0	90	Conifer						
								Hardwood						
2	RT	2	HT	0	0	0	90	Conifer						
								Hardwood						
2	RT	3	HT	0	0	0	100	Conifer						
								Hardwood						
25	LF	1	LT	0	15	5	95	Conifer		1				JUNIPER
								Hardwood						
25	LF	2	HS	20	5	10	15	Conifer						
								Hardwood						
25	LF	3	HS	110	5	15	10	Conifer		1				JUNIPER
								Hardwood						
25	RT	1	LT	0	0	0	100	Conifer						
								Hardwood						
25	RT	2	LT	0	0	0	100	Conifer						
								Hardwood						
25	RT	3	HS	9	0	0	100	Conifer						
								Hardwood						
43	LF	1	LT	0	0	10	50	Conifer						
								Hardwood						
43	LF	2	HT	0	0	40	30	Conifer						
								Hardwood						
43	LF	3	HT	0	0	40	20	Conifer						
								Hardwood						
43	RT	1	LT	0	0	10	90	Conifer						
								Hardwood						
43	RT	2	HT	0	10	10	20	Conifer	1					JUNIPER
								Hardwood						
43	RT	3	HT	0	10	10	30	Conifer			1			JUNIPER
								Hardwood						
76	LF	1	LT	0	0	5	50	Conifer						
								Hardwood						

76	LF	2	LT	0	30	5	10	Conifer Hardwood		1		JUNIPER
76	LF	3	LT	0	0	15	0	Conifer Hardwood	2			JUNIPER
76	RT	1	LT	0	0	5	60	Conifer Hardwood				
76	RT	2	HT	0	50	10	0	Conifer Hardwood			1	JUNIPER; FENCE CROSSING
76	RT	3	HS	40	0	30	0	Conifer Hardwood				

OREGON DEPARTMENT OF FISH AND WILDLIFE

SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003

Survey Date: 8/28/2001

RIPARIAN ZONE VEGETATION

Reach 2

Reach 2

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
92	LF	1	HT	0	0	0	95	Conifer						10T0737240 UTM4883607
								Hardwood						
92	LF	2	HS	35	35	0	45	Conifer		1	1			JUNIPER
								Hardwood						
92	LF	3	HS	35	40	0	40	Conifer		5				JUNIPER
								Hardwood						
92	RT	1	LT	0	0	0	100	Conifer						
								Hardwood						
92	RT	2	HT	0	15	5	20	Conifer		1				JUNIPER & SAGE
								Hardwood						
92	RT	3	HS	15	0	5	30	Conifer	2					JUNIPER & SAGE
								Hardwood						
112	LF	1	HT	0	0	0	100	Conifer						10T0736675 UTM4883249
								Hardwood						
112	LF	2	HS	10	10	20	70	Conifer		1	1			JUNIPER
								Hardwood						
112	LF	3	HS	10	0	20	60	Conifer						
								Hardwood						
112	RT	1	LT	0	0	0	100	Conifer						
								Hardwood						
112	RT	2	LT	0	0	0	100	Conifer						
								Hardwood						
112	RT	3	HS	30	50	50	25	Conifer		1	1			JUNIPER
								Hardwood						
126	LF	1	LT	0	0	5	95	Conifer						10T0736872 UTM4882627
								Hardwood						
126	LF	2	LT	0	0	10	60	Conifer						SAGEBRUSH
								Hardwood						
126	LF	3	HT	0	0	15	60	Conifer						SAGEBRUSH
								Hardwood						
126	RT	1	LT	0	0	0	100	Conifer			1			
								Hardwood						
126	RT	2	HS	55	10	20	30	Conifer						SAGEBRUSH
								Hardwood						
126	RT	3	HS	65	0	0	10	Conifer						SCREE FIELD
								Hardwood						
141	LF	1	LT	0	0	0	100	Conifer						10T0736843 UTM4881932
								Hardwood						

141	LF	2	LT	0	0	0	100	Conifer Hardwood				
141	LF	3	HS	35	5	0	50	Conifer Hardwood	1			JUNIPER
141	RT	1	HT	0	0	10	35	Conifer Hardwood				SAGE
141	RT	2	HT	0	30	20	30	Conifer Hardwood		1		JUNIPER
141	RT	3	HT	0	0	25	35	Conifer Hardwood	1			JUNIPER

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 7/22/2003

RIPARIAN ZONE VEGETATION

Reach 3 — Reach 3

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
158	LF	1	HS	90	0	40	35	Conifer						10T 0736681/4881299
								Hardwood						
158	LF	2	HS	90	0	0	0	Conifer						ALL ROCK
								Hardwood						
158	LF	3	HS	90	0	10	0	Conifer						90% ROCK
								Hardwood						
158	RT	1	HT	0	0	15	75	Conifer						
								Hardwood						
158	RT	2	HT	0	0	25	70	Conifer						
								Hardwood						
158	RT	3	HT	0	0	45	50	Conifer						
								Hardwood						
179	LF	1	HT	0	0	35	40	Conifer						10T 0737644/4880939
								Hardwood						
179	LF	2	HT	0	5	40	40	Conifer		1				JUNIPER
								Hardwood						
179	LF	3	HT	0	0	40	45	Conifer						
								Hardwood						
179	RT	1	FP	0	0	0	100	Conifer						
								Hardwood						
179	RT	2	LT	0	0	5	90	Conifer						
								Hardwood						
179	RT	3	LT	0	0	40	40	Conifer						
								Hardwood						
198	LF	1	HS	10	0	40	40	Conifer						10T 0738224/4881468
								Hardwood						
198	LF	2	HS	15	0	40	30	Conifer						
								Hardwood						
198	LF	3	HS	15	0	55	35	Conifer						
								Hardwood						
198	RT	1	LT	0	0	0	80	Conifer						
								Hardwood						
198	RT	2	LT	0	0	0	95	Conifer						
								Hardwood						
198	RT	3	LT	0	0	5	95	Conifer						
								Hardwood						
218	LF	1	HT	30	0	30	30	Conifer						SLOPE-TRAN. TO HIGH TERRACE
								Hardwood						

218	LF	2	HT	0	5	35	40	Conifer		1	JUNIPER
								Hardwood			
218	LF	3	HT	0	0	25	40	Conifer			
								Hardwood			
218	RT	1	LT	0	0	0	100	Conifer			
								Hardwood			
218	RT	2	LT	0	0	0	95	Conifer			
								Hardwood			
218	RT	3	LT	0	0	0	90	Conifer			
								Hardwood			
238	LF	1	LT	0	0	5	90	Conifer			10T 0738002/ 4880043
								Hardwood			
238	LF	2	HT	0	0	50	40	Conifer			
								Hardwood			
238	LF	3	HT	0	0	50	45	Conifer			
								Hardwood			
238	RT	1	LT	0	0	0	100	Conifer			
								Hardwood			
238	RT	2	HS	90	5	5	30	Conifer			
								Hardwood			
238	RT	3	HS	85	35	0	25	Conifer		1	JUNIPER
								Hardwood			
258	LF	1	HT	0	0	30	65	Conifer			10T 073800/ 4879883
								Hardwood			
258	LF	2	HT	0	0	40	60	Conifer			
								Hardwood			
258	LF	3	HT	0	0	50	50	Conifer			
								Hardwood			
258	RT	1	LT	0	0	0	100	Conifer			
								Hardwood			
258	RT	2	HT	0	0	20	25	Conifer			
								Hardwood			
258	RT	3	HT	0	5	5	30	Conifer		2	JUNIPER
								Hardwood			
279	LF	1	LT	0	0	5	85	Conifer			10T 0739426/ 4879257
								Hardwood			
279	LF	2	HT	0	5	20	40	Conifer			JUNIPER
								Hardwood			
279	LF	3	HT	0	0	10	10	Conifer			
								Hardwood			
279	RT	1	HT	0	0	5	65	Conifer			
								Hardwood			
279	RT	2	HT	0	0	40	50	Conifer			
								Hardwood			
279	RT	3	SC	0	0	25	60	Conifer			
								Hardwood			

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 8/29/2001

RIPARIAN ZONE VEGETATION

Reach 4 — Reach 4

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
290	LF	1	HT	0	0	35	15	Conifer						10T0739806 UTM4878623; SAGE
								Hardwood						
290	LF	2	HS	10	0	40	10	Conifer						SAGE
								Hardwood						
290	LF	3	HS	15	0	40	10	Conifer						SAGE
								Hardwood						
290	RT	1	LT	0	0	0	100	Conifer						
								Hardwood						
290	RT	2	LT	0	0	0	100	Conifer						
								Hardwood						
290	RT	3	LT	0	0	20	75	Conifer						SAGE
								Hardwood						
301	LF	1	HS	20	0	20	25	Conifer						10T0739320 UTM4878207; CANAL
								Hardwood						
301	LF	2	HS	30	25	0	20	Conifer	1		1			JUNIPER
								Hardwood						
301	LF	3	HS	5	15	5	15	Conifer	1	1				JUNIPER & SAGE
								Hardwood						
301	RT	1	LT	0	0	5	95	Conifer						SAGE & SEDGES
								Hardwood						
301	RT	2	HT	0	0	30	50	Conifer						SAGE & CHEAT GRASS
								Hardwood						
301	RT	3	HT	0	30	15	40	Conifer	1					JUNIPER & SAGE
								Hardwood						
310	LF	1	HS	45	0	10	30	Conifer						10T0738968 UTM4877604; SAGE
								Hardwood						
310	LF	2	HS	45	0	20	15	Conifer						SAGE
								Hardwood						
310	LF	3	HS	50	50	0	5	Conifer		3	1			JUNIPER
								Hardwood						
310	RT	1	HT	0	0	20	30	Conifer						SAGE
								Hardwood						
310	RT	2	HT	0	0	25	20	Conifer						SAGE
								Hardwood						
310	RT	3	HT	0	0	30	35	Conifer						SAGE
								Hardwood						
326	LF	1	LT	0	0	0	60	Conifer						10T0738927 UTM4876649; SAGE
								Hardwood						

326	LF	2	HS	35	5	0	10	Conifer		1		JUNIPER
								Hardwood				
326	LF	3	HS	35	15	0	15	Conifer			1	JUNIPER
								Hardwood				
326	RT	1	HS	40	0	5	40	Conifer				SEDGES, SAGE & CHEAT
								Hardwood				
326	RT	2	HS	25	30	10	10	Conifer	2	1	1	JUNIPER, SAGE & CHEAT
								Hardwood				
326	RT	3	HS	25	40	0	10	Conifer	1		2	JUNIPER
								Hardwood				

OREGON DEPARTMENT OF FISH AND WILDLIFE — SOUTH FORK CROOKED RIVER

HABITAT INVENTORY Report Date: 11/13/2003 — Survey Date: 9/5/2001

RIPARIAN ZONE VEGETATION

Reach 5 — Reach 5

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
344	LF	1	LT	0	0	0	95	Conifer						10T0738745 UTM4876179; SEDGES
								Hardwood						
344	LF	2	LT	0	0	5	30	Conifer						SAGE & CHEAT GRASS
								Hardwood						
344	LF	3	LT	0	0	20	30	Conifer						SAGE & CHEAT GRASS
								Hardwood						
344	RT	1	HT	0	5	30	50	Conifer	1					JUNIPER, SAGE & CHEAT
								Hardwood						
344	RT	2	HT	0	0	30	50	Conifer						SAGE & CHEAT GRASS
								Hardwood						
344	RT	3	HT	0	0	30	50	Conifer						SAGE & CHEAT GRASS
								Hardwood						
371	LF	1	HS	70	20	5	30	Conifer	2		1			JUNIPER
								Hardwood						
371	LF	2	HS	60	20	5	60	Conifer			1			JUNIPER
								Hardwood						
371	LF	3	HS	60	30	5	40	Conifer	1		1			JUNIPER
								Hardwood						
371	RT	1	LT	0	0	5	60	Conifer						
								Hardwood						
371	RT	2	HT	0	60	5	50	Conifer	1	1	1			JUNIPER
								Hardwood						
371	RT	3	HT	0	50	5	50	Conifer			2			JUNIPER
								Hardwood						
382	LF	1	HS	20	0	10	40	Conifer						
								Hardwood						
382	LF	2	HS	10	0	50	10	Conifer						SAGE
								Hardwood						
382	LF	3	HS	10	10	10	5	Conifer	2					JUNIPER
								Hardwood						
382	RT	1	HS	50	5	20	30	Conifer						
								Hardwood						
382	RT	2	HT	0	0	50	10	Conifer						
								Hardwood						
382	RT	3	HS	50	10	5	20	Conifer	1	1				JUNIPER
								Hardwood						
400	LF	1	HS	85	0	20	40	Conifer						
								Hardwood						

400	LF	2	HS	85	50	10	20	Conifer			1	JUNIPER
								Hardwood				
400	LF	3	HS	85	40	10	10	Conifer				JUNIPER
								Hardwood		1		
400	RT	1	LT	0	0	0	100	Conifer				
								Hardwood				
400	RT	2	LT	0	0	40	40	Conifer				
								Hardwood				
400	RT	3	HT	0	0	80	20	Conifer				
								Hardwood				
415	LF	1	LT	0	0	0	90	Conifer				
								Hardwood				
415	LF	2	LT	0	5	0	90	Conifer				
								Hardwood				
415	LF	3	HS	20	40	10	80	Conifer	1			
								Hardwood				
415	RT	1	HT	0	0	70	10	Conifer				SAGE
								Hardwood				
415	RT	2	HT	0	10	40	40	Conifer			1	JUNIPER
								Hardwood				
415	RT	3	HT	0	10	40	50	Conifer				
								Hardwood				
430	LF	1	LT	0	0	10	80	Conifer				
								Hardwood				
430	LF	2	HT	0	0	20	40	Conifer				
								Hardwood				
430	LF	3	HS	60	20	10	70	Conifer		1		JUNIPER
								Hardwood				
430	RT	1	LT	0	0	0	100	Conifer				
								Hardwood				
430	RT	2	HS	35	25	75	20	Conifer				SAGE
								Hardwood				
430	RT	3	HT	0	0	80	10	Conifer				
								Hardwood				
446	LF	1	LT	0	10	30	50	Conifer		1		JUNIPER
								Hardwood				
446	LF	2	HS	10	0	60	10	Conifer				SAGE
								Hardwood				
446	LF	3	HS	20	40	5	40	Conifer	2			JUNIPER
								Hardwood				
446	RT	1	LT	0	0	0	100	Conifer				
								Hardwood				
446	RT	2	HT	0	0	20	30	Conifer				
								Hardwood				
446	RT	3	HS	20	0	10	50	Conifer				
								Hardwood				

460	LF	1	HS	75	15	5	20	Conifer Hardwood		1			JUNIPER
460	LF	2	HS	75	10	0	30	Conifer Hardwood		1			JUNIPER
460	LF	3	HS	75	0	0	20	Conifer Hardwood					
460	RT	1	LT	0	20	5	35	Conifer Hardwood	2	1			
460	RT	2	HT	0	40	10	20	Conifer Hardwood		1	2		
460	RT	3	HT	0	20	70	20	Conifer Hardwood		2			JUNIPER
475	LF	1	LT	0	40	5	60	Conifer Hardwood		2	2		JUNIPER
475	LF	2	LT	0	5	20	30	Conifer Hardwood					
475	LF	3	HS	75	0	0	0	Conifer Hardwood					SCREE FIELD
475	RT	1	HS	25	40	5	40	Conifer Hardwood			1	1	JUNIPER
475	RT	2	HT	0	10	5	20	Conifer Hardwood	3				JUNIPER
475	RT	3	HT	0	0	10	10	Conifer Hardwood					
490	LF	1	HS	20.1	0	30	30	Conifer Hardwood					
490	LF	2	HT	0	0	40	10	Conifer Hardwood					
490	LF	3	HS	15	20	60	10	Conifer Hardwood			1		JUNIPER
490	RT	1	LT	0	0	10	80	Conifer Hardwood					
490	RT	2	HS	15.3	30	30	15	Conifer Hardwood			1		JUNIPER
490	RT	3	HT	0	30	50	10	Conifer Hardwood			1		JUNIPER

RIPARIAN ZONE VEGETATION

Reach 6 Reach 6

Unit	Side	Zone	Surface	Slope	Cover (percent) Canopy	Shrub	Grass		Diameter class (cm) 3-15	15-30	30-50	50-90	>90	Notes
506	LF	1	HT	0	0	10	90	Conifer						
								Hardwood						
506	LF	2	HT	0	0	0	100	Conifer						FENCE CROSSING
								Hardwood						
506	LF	3	HT	0	0	0	100	Conifer						ADJACENT TO IRRIGATION
								Hardwood						
506	RT	1	LT	0	0	40	50	Conifer						
								Hardwood						
506	RT	2	LT	0	0	80	5	Conifer						
								Hardwood						
506	RT	3	LT	0	0	80	5	Conifer						
								Hardwood						
519	LF	1	HT	0	0	10	40	Conifer						FENCE CROSSING
								Hardwood						
519	LF	2	WL	0	0	20	80	Conifer						
								Hardwood						
519	LF	3	HT	0	0	10	90	Conifer						
								Hardwood						
519	RT	1	LT	0	0	5	70	Conifer						
								Hardwood						
519	RT	2	HT	0	0	0	60	Conifer						FENCE CROSSING
								Hardwood						
519	RT	3	HT	0	0	10	60	Conifer						
								Hardwood						
536	LF	1	HT	0	0	0	95	Conifer						
								Hardwood						
536	LF	2	HT	0	0	0	100	Conifer						
								Hardwood						
536	LF	3	HT	0	0	0	100	Conifer						
								Hardwood						
536	RT	1	HS	40	0	5	50	Conifer						FENCE CROSSING
								Hardwood						
536	RT	2	RB	0	0	0	20	Conifer						DIRT ROAD
								Hardwood						
536	RT	3	HS	50	0	10	50	Conifer						
								Hardwood						
550	LF	1	LT	0	0	0	90	Conifer						
								Hardwood						

550	LF	2	HT	0	0	0	90	Conifer	
								Hardwood	
550	LF	3	HT	0	0	0	90	Conifer	FENCE CROSSINGS
								Hardwood	
550	RT	1	LT	0	0	10	20	Conifer	
								Hardwood	
550	RT	2	HT	0	0	30	10	Conifer	
								Hardwood	
550	RT	3	RB	0	0	0	40	Conifer	
								Hardwood	
555	LF	1	LT	0	0	0	100	Conifer	
								Hardwood	
555	LF	2	HT	0	0	0	100	Conifer	FENCE CROSSING
								Hardwood	
555	LF	3	HT	0	0	0	100	Conifer	CATTLE
								Hardwood	
555	RT	1	HT	0	0	30	65	Conifer	
								Hardwood	
555	RT	2	HT	0	0	10	80	Conifer	
								Hardwood	
555	RT	3	HT	0	0	5	90	Conifer	
								Hardwood	
565	LF	1	LT	0	0	0	100	Conifer	
								Hardwood	
565	LF	2	HT	0	0	0	100	Conifer	
								Hardwood	
565	LF	3	HT	0	0	0	100	Conifer	
								Hardwood	
565	RT	1	LT	0	0	0	100	Conifer	
								Hardwood	
565	RT	2	HT	0	0	30	40	Conifer	
								Hardwood	
565	RT	3	HT	0	0	10	80	Conifer	FENCE CROSSING
								Hardwood	
574	LF	1	LT	0	0	0	90	Conifer	
								Hardwood	
574	LF	2	LT	0	0	0	95	Conifer	
								Hardwood	
574	LF	3	LT	0	0	0	100	Conifer	
								Hardwood	
574	RT	1	HT	0	0	0	100	Conifer	FENCE CROSSING
								Hardwood	
574	RT	2	HT	0	0	0	100	Conifer	
								Hardwood	
574	RT	3	HS	30	0	50	30	Conifer	
								Hardwood	

582	LF	1	LT	0	0	5	80	Conifer
								Hardwood
582	LF	2	LT	0	0	5	80	Conifer
								Hardwood
582	LF	3	LT	0	0	5	40	Conifer
								Hardwood
582	RT	1	LT	0	0	70	20	Conifer
								Hardwood
582	RT	2	HS	50	0	40	10	Conifer
								Hardwood
582	RT	3	HS	50	0	60	10	Conifer
								Hardwood

IRRIGATION CHANNEL

RIPARIAN ZONE VEGETATION

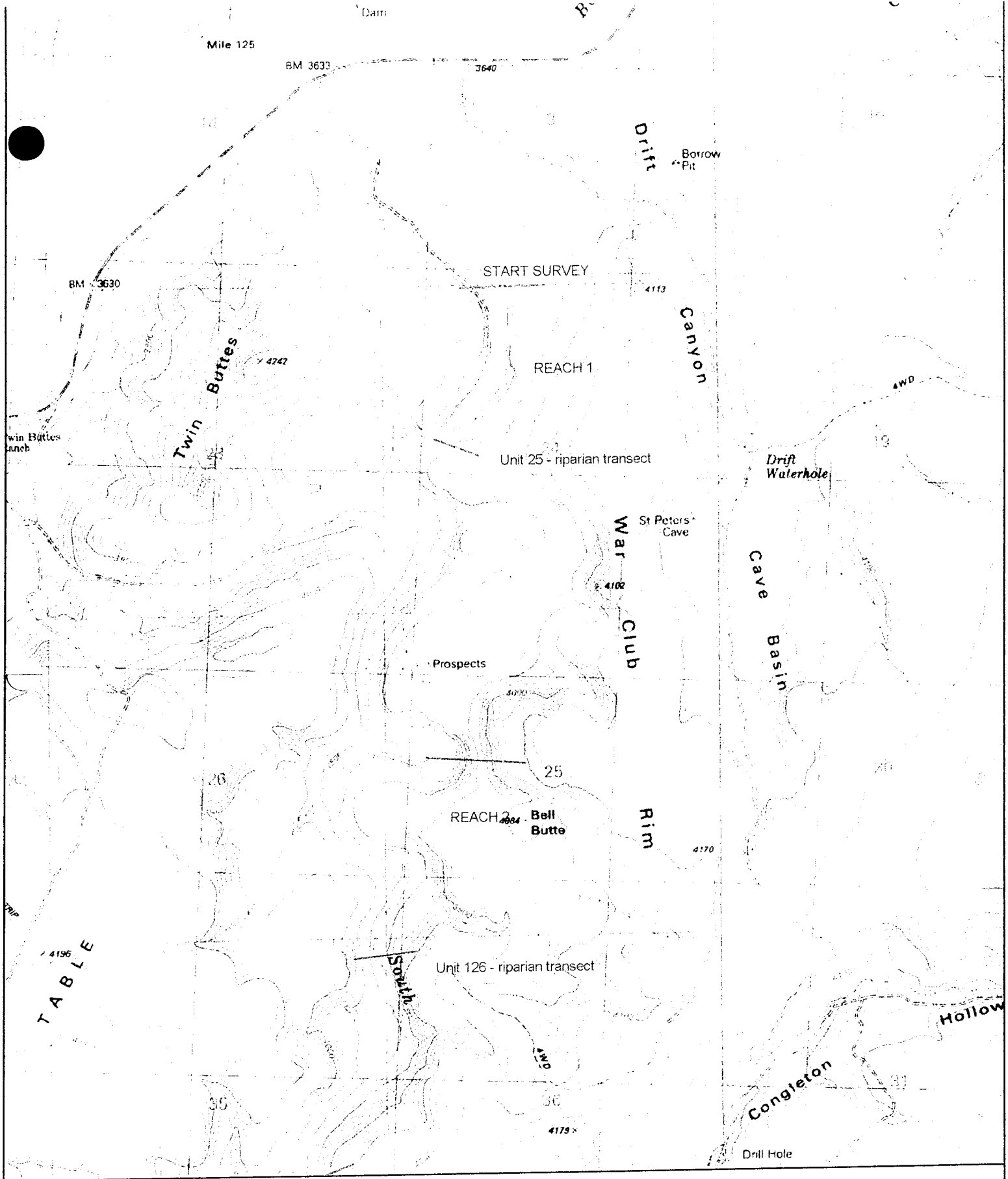
Reach 8 Reach 8

Unit	Side	Zone	Surface	Slope	Cover (percent)				Diameter class (cm)					Notes
					Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	
584	LF	1	HS	20	0	30	50	Conifer						
								Hardwood						
584	LF	2	RB	0	0	40	20	Conifer						DIRT ROAD
								Hardwood						
584	LF	3	HS	20	0	50	30	Conifer						
								Hardwood						
584	RT	1	LT	0	0	0	100	Conifer						
								Hardwood						
584	RT	2	LT	0	0	0	100	Conifer						
								Hardwood						
584	RT	3	LT	0	0	0	100	Conifer						
								Hardwood						
590	LF	1	LT	0	0	0	90	Conifer						
								Hardwood						
590	LF	2	HT	0	0	0	10	Conifer						
								Hardwood						
590	LF	3	HT	0	0	0	10	Conifer						
								Hardwood						
590	RT	1	LT	0	0	5	90	Conifer						
								Hardwood						
590	RT	2	WL	0	0	0	100	Conifer						
								Hardwood						
590	RT	3	WL	0	0	0	100	Conifer						
								Hardwood						
596	LF	1	HT	0	0	60	20	Conifer						PASTURE
								Hardwood						
596	LF	2	HT	0	0	60	20	Conifer						
								Hardwood						
596	LF	3	HT	0	0	30	20	Conifer						
								Hardwood						
596	RT	1	HT	0	0	20	80	Conifer						PASTURE
								Hardwood						
596	RT	2	HT	0	0	20	80	Conifer						
								Hardwood						
596	RT	3	HT	0	0	10	90	Conifer						
								Hardwood						
603	LF	1	LT	0	0	0	100	Conifer						
								Hardwood						

603	LF	2	LT	0	0	0	50	Conifer	
								Hardwood	
603	LF	3	LT	0	0	0	70	Conifer	
								Hardwood	
603	RT	1	HT	0	0	0	100	Conifer	
								Hardwood	
603	RT	2	HT	0	0	0	100	Conifer	
								Hardwood	
603	RT	3	HT	0	0	30	60	Conifer	
								Hardwood	
611	LF	1	LT	0	0	0	50	Conifer	PRIMARY CHANNEL
								Hardwood	
611	LF	2	LT	0	0	0	40	Conifer	PRIMARY CHANNEL
								Hardwood	
611	LF	3	LT	0	0	0	100	Conifer	
								Hardwood	
611	RT	1	LT	0	0	0	100	Conifer	
								Hardwood	
611	RT	2	LT	0	0	0	100	Conifer	
								Hardwood	
611	RT	3	LT	0	0	0	100	Conifer	
								Hardwood	
617	LF	1	LT	0	0	10	80	Conifer	PASTURE
								Hardwood	
617	LF	2	LT	0	0	0	100	Conifer	
								Hardwood	
617	LF	3	LT	0	0	10	80	Conifer	
								Hardwood	
617	RT	1	LT	0	0	0	100	Conifer	PASTURE
								Hardwood	
617	RT	2	LT	0	0	0	100	Conifer	
								Hardwood	
617	RT	3	LT	0	0	0	100	Conifer	
								Hardwood	
627	LF	1	LT	0	0	90	10	Conifer	
								Hardwood	
627	LF	2	LT	0	0	90	10	Conifer	
								Hardwood	
627	LF	3	LT	0	0	90	10	Conifer	
								Hardwood	
627	RT	1	LT	0	0	30	70	Conifer	
								Hardwood	
627	RT	2	LT	0	0	60	40	Conifer	
								Hardwood	
627	RT	3	LT	0	0	40	60	Conifer	
								Hardwood	

636	LF	1	HS	40	0	5	50	Conifer
								Hardwood
636	LF	2	HS	50	0	20	60	Conifer
								Hardwood
636	LF	3	HS	80	0	10	70	Conifer
								Hardwood
636	RT	1	LT	0	0	50	30	Conifer
								Hardwood
636	RT	2	HS	20	0	50	40	Conifer
								Hardwood
636	RT	3	HS	20	0	50	40	Conifer
								Hardwood
640	LF	1	HS	10	0	50	50	Conifer
								Hardwood
640	LF	2	HS	15	0	40	30	Conifer
								Hardwood
640	LF	3	HS	15	0	40	30	Conifer
								Hardwood
640	RT	1	HT	0	0	50	10	Conifer
								Hardwood
640	RT	2	HS	25	0	30	10	Conifer
								Hardwood
640	RT	3	HS	25	0	30	10	Conifer
								Hardwood
643	LF	1	HS	30	0	40	50	Conifer
								Hardwood
643	LF	2	HS	60	0	20	30	Conifer
								Hardwood
643	LF	3	HS	60	0	0	20	Conifer
								Hardwood
643	RT	1	HT	0	0	10	40	Conifer
								Hardwood
643	RT	2	HT	0	0	50	20	Conifer
								Hardwood
643	RT	3	HT	0	0	40	10	Conifer
								Hardwood

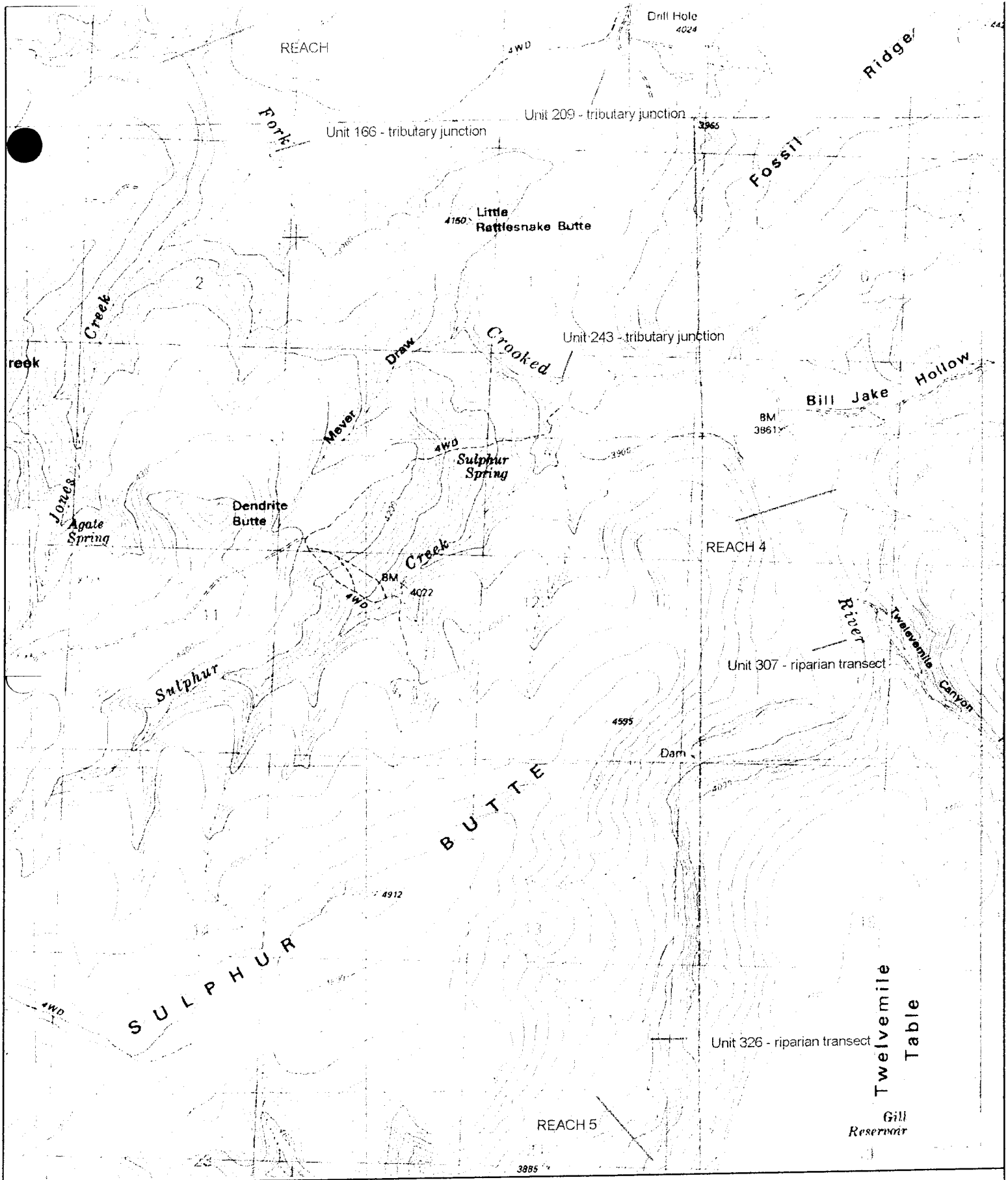
IRRIGATION
CHANNEL



Name: LIGGETT TABLE
Date: 11/13/2003
Scale: 1 inch equals 2000 feet

Location: 044° 04' 35.7" N 120° 02' 05.1" W
Caption: SOUTH FORK CROOKED RIVER
DESCHUTES RIVER BASIN
SUMMER 2001 AND 2003

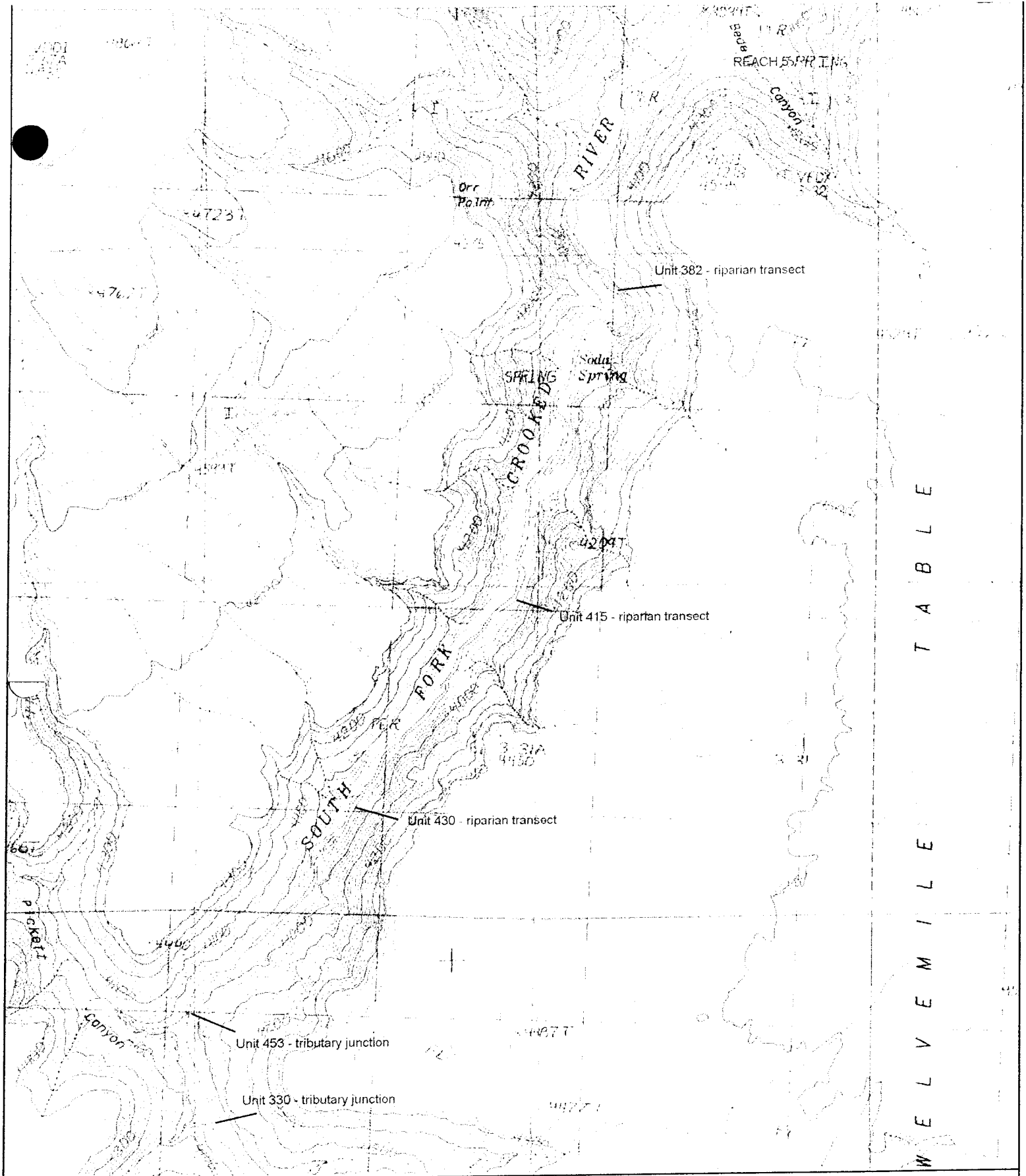
Copyright (C) 1997, Maptech, Inc.



Name: LIGGETT TABLE
Date: 11/13/2003
Scale: 1 inch equals 2000 feet

Location: 044° 01' 33.3" N 120° 01' 43.9" W
Caption: SOUTH FORK CROOKED RIVER
DESCHUTES RIVER BASIN
SUMMER 2001 AND 2003

Copyright (C) 1997, Maptech, Inc.



Name: SAND HOLLOW
Date: 11/13/2003
Scale: 1 inch equals 2000 feet

Location: 10 0737493 E 4873295 N
Caption: SOUTH FORK CROOKED RIVER
DESCHUTES RIVER BASIN
SUMMER 2001 AND 2003

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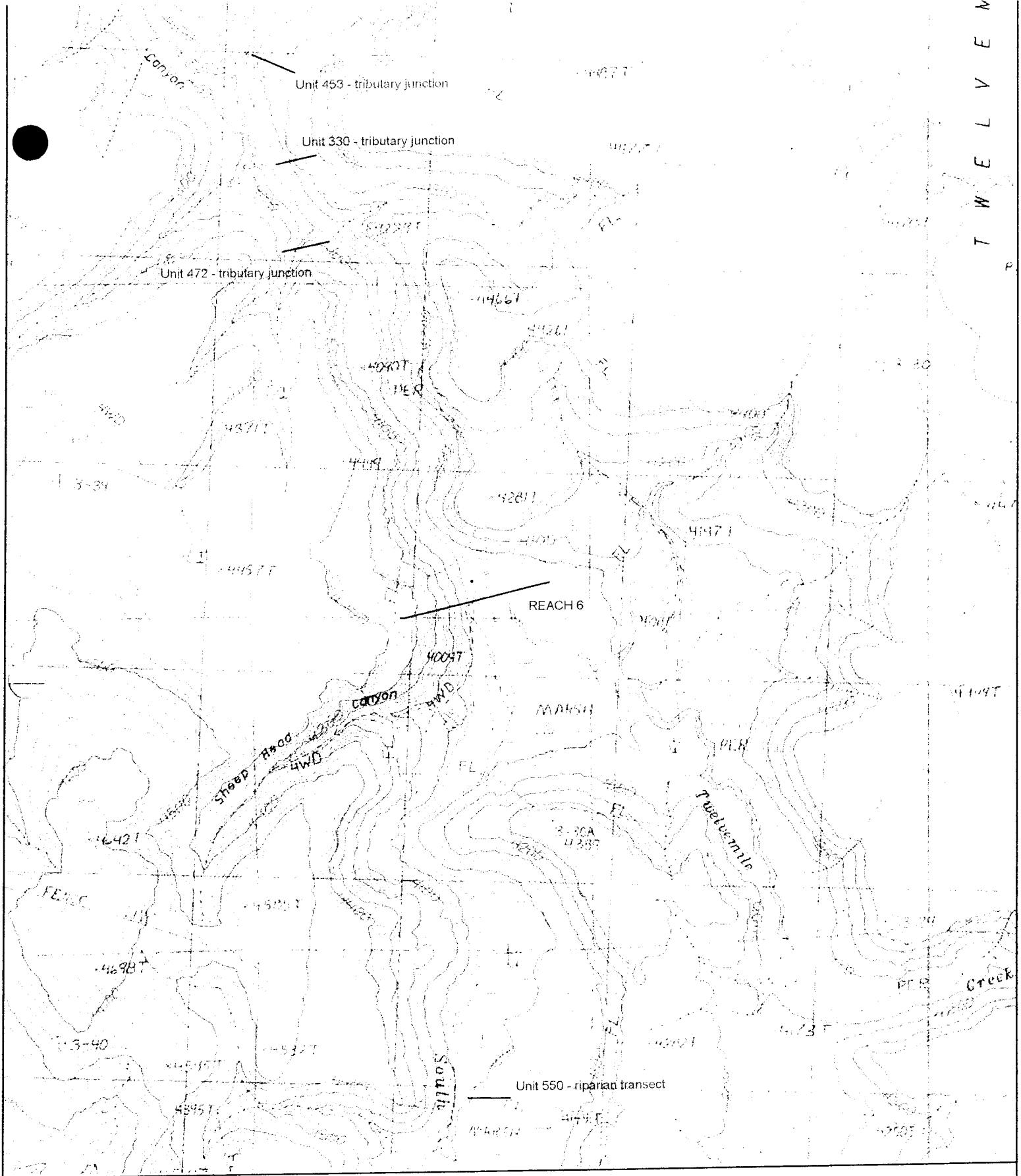

Name: SAND HOLLOW
Date: 11/13/2003
Scale: 1 inch equals 2000 feet

Location: 10 0737377 E 4868645 N
Caption: SOUTH FORK CROOKED RIVER
DESCHUTES RIVER BASIN
SUMMER 2001 AND 2003

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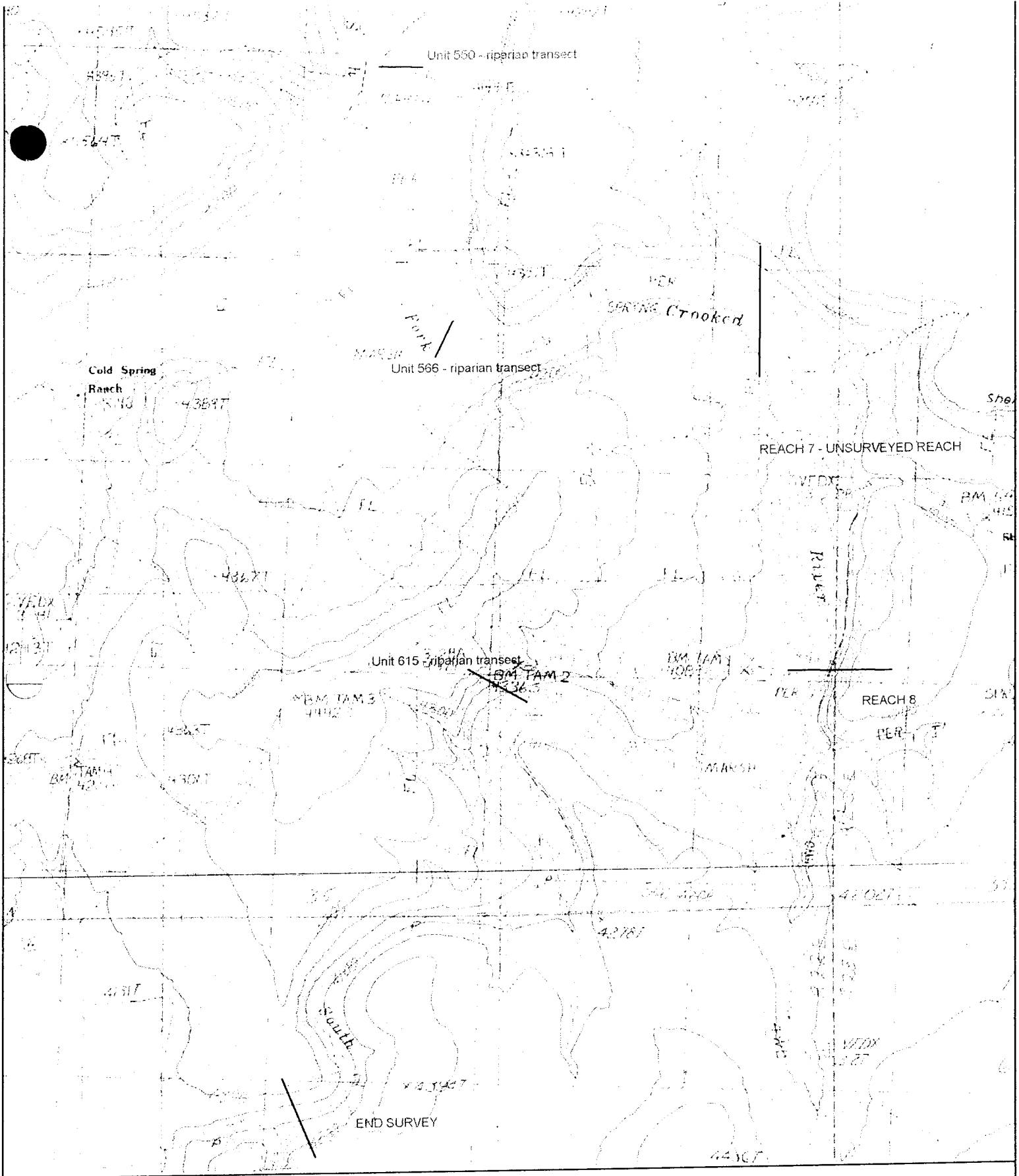

Name: SAND HOLLOW
Date: 11/13/2003
Scale: 1 inch equals 2000 feet

Location: 10 0737981 E 4863635 N
Caption: SOUTH FORK CROOKED RIVER
DESCHUTES RIVER BASIN
SUMMER 2001 AND 2003

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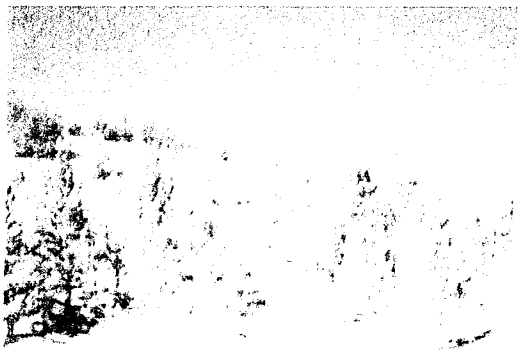
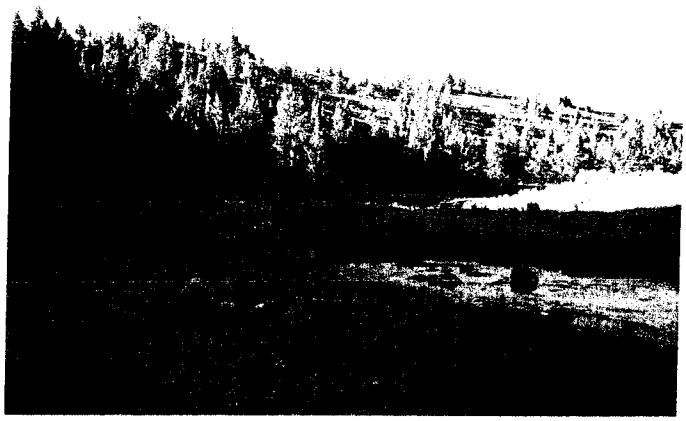
Crooked River Basin
Summer 2001

Reach 1-Unit 1: Looking downstream at start of survey



Reach 1-Unit 2: Right side riparian

Reach 1-Unit 23: Step over structure-irrigation dam



Reach 2-Unit 92: Typical reach and riparian

Reach 2-Unit 148: Fence crossing start of Jake Ranch looking upstream

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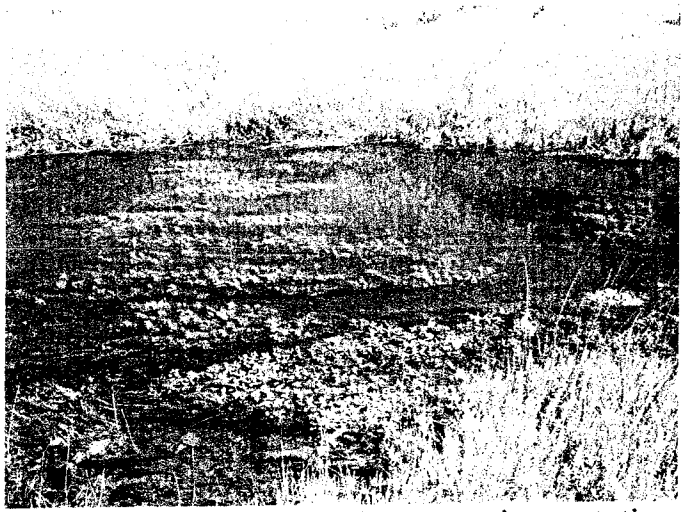
Crooked River Basin
Summer 2001

Reach 4-Unit 150: Looking downstream from Jake Ranch/BLM property line

Reach 5-Unit 315: Right side riparian from left bank



Reach 4-Unit 160: Abundant aquatic vegetation that covers substrate

Reach 6-Unit 448: Step over structure-.8m high irrigation dam and channel

Reach 5-Unit 318: Typical riffle unit

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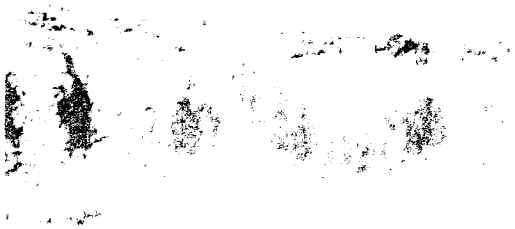
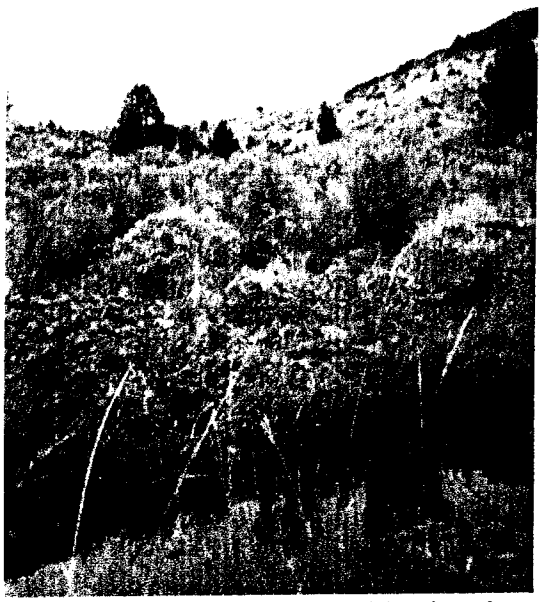
Crooked River Basin
Summer 2001



Reach 8-Unit 502: Lateral scour pool and typical reach photo

Reach 6-Unit 451: Left side riparian

Reach 8-Unit 453: Looking at downstream riparian on unsurveyed GI Ranch property



Reach 8-Unit 502: Right side riparian

ODFW AQUATIC INVENTORY PROJECT

STREAM REPORT

STREAM: Twelvemile Creek

BASIN: Crooked River

DATES: August 30 –September 13, 2001

SURVEY CREW: Jamien Leckey / Alexis Vaivoda

REPORT PREPARED BY: Alexis Vaivoda

STREAM ORDER: 5 BASIN AREA: 44 km^2 FIRST ORDER TRIBUTARIES: 67

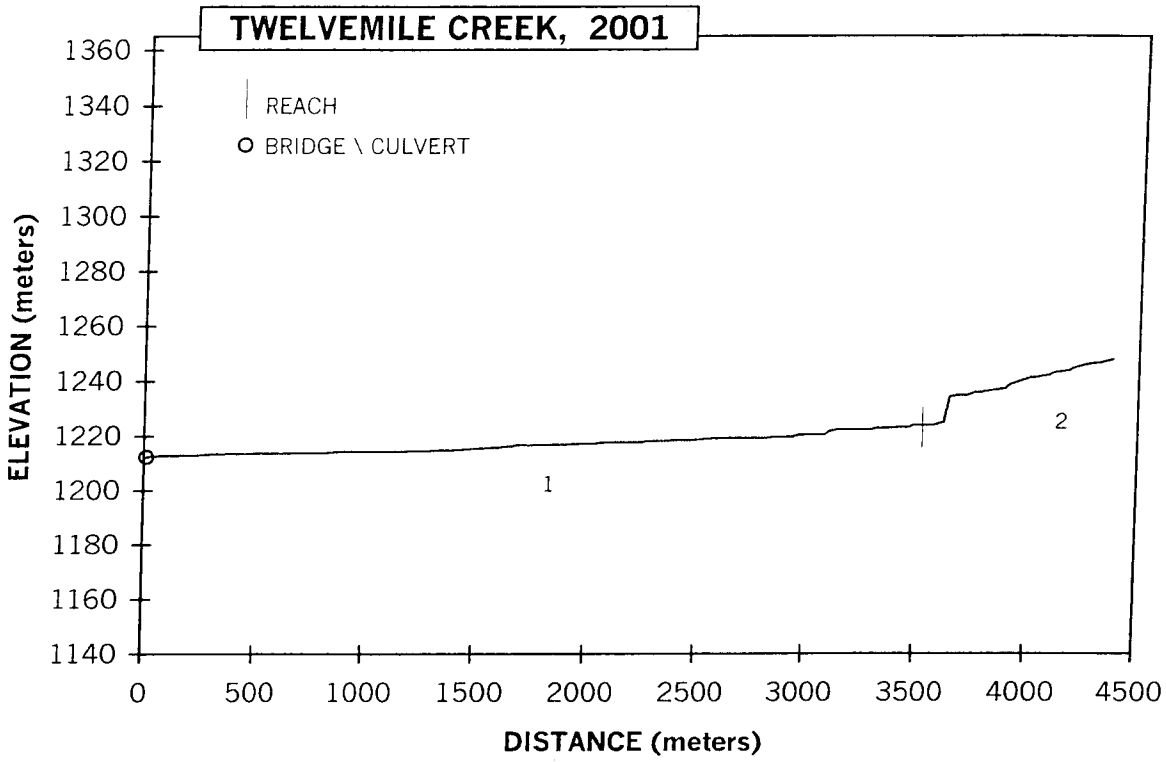
USGS MAPS: Sand Hollow & Hardin Ranch

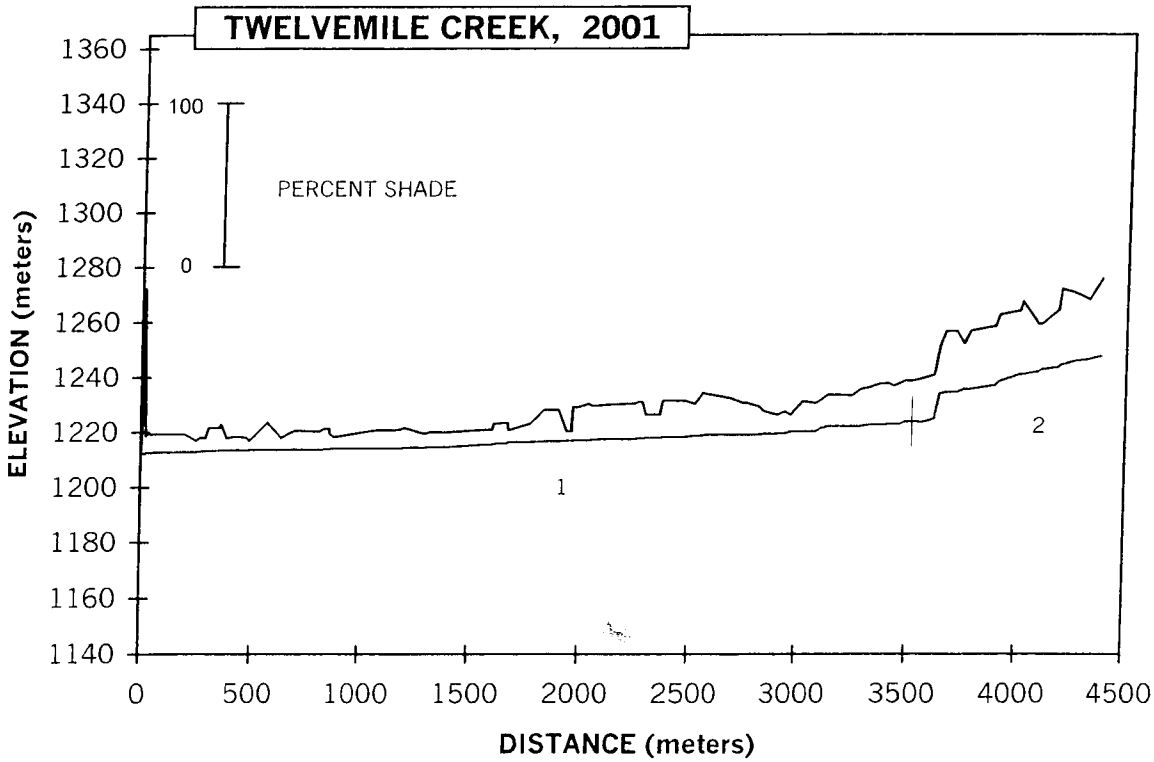
ECOREGION: Blue Mountains- Uplands, Valleys, and Basins

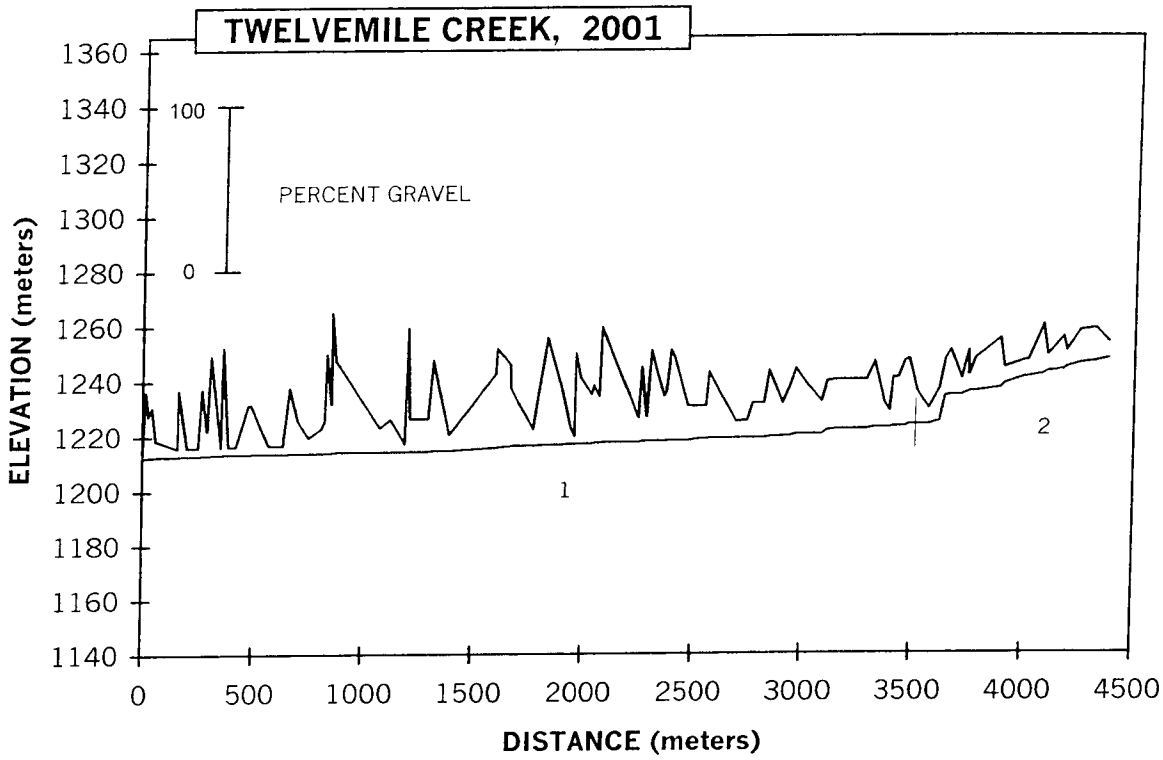
HUC NUMBER: 17070303 LLID: 1200456439316

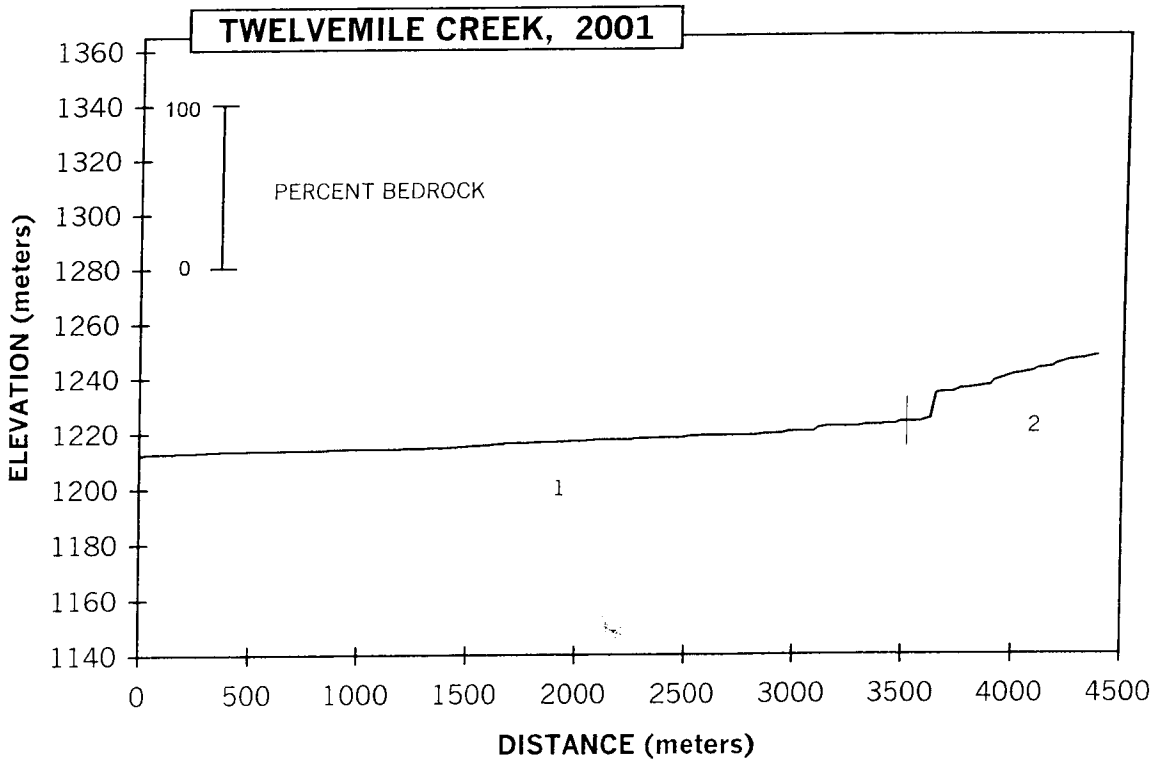
GENERAL DESCRIPTION:

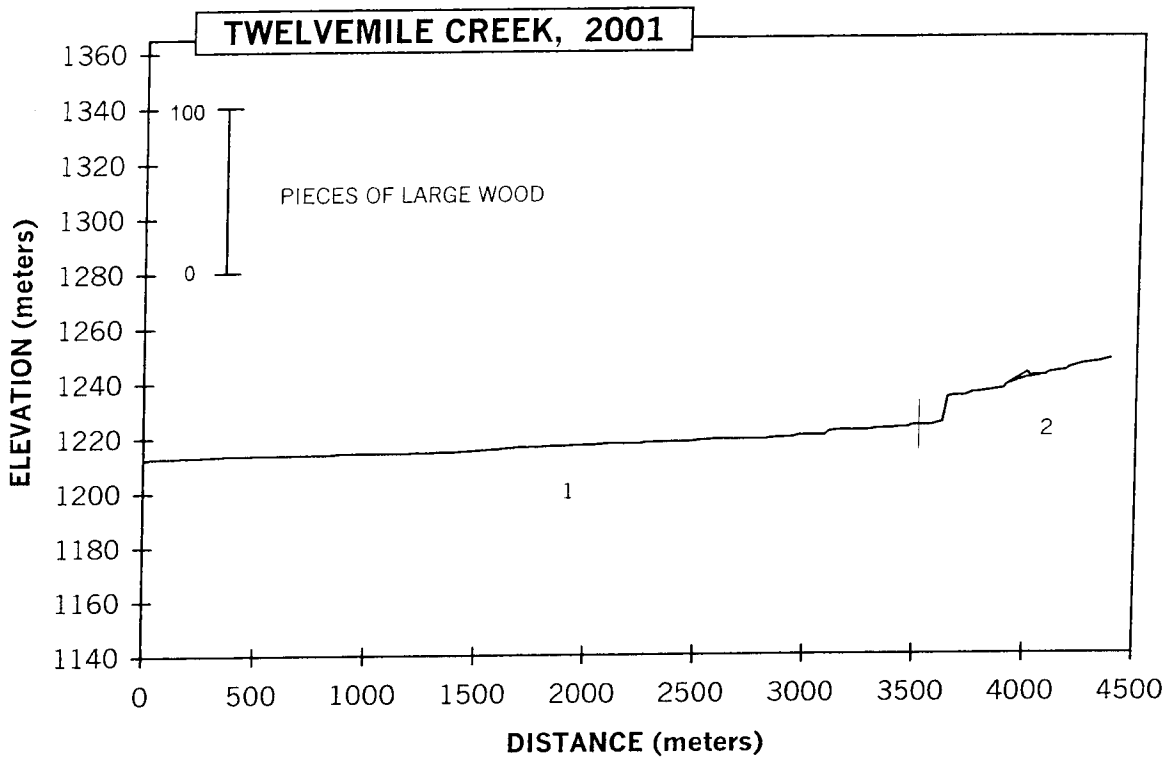
The 2001 Twelvemlie Creek habitat survey began at the confluence with the South Fork Crooked River and encompassed 4,381 meters of primary stream channel. The survey ended approximately 600 meters upstream of the last irrigation dam. The survey length was subdivided into two reaches based upon valley form, hydrology, and channel morphology. The two reaches were subdivided into a total of 110 habitat units, based upon changes in instream fish habitat variables that the survey crew measured directly within each habitat unit. Land use within the valley is predominantly light and heavy grazing. The trees found most frequently in the riparian zone are coniferous species 30-50 cm dbh.

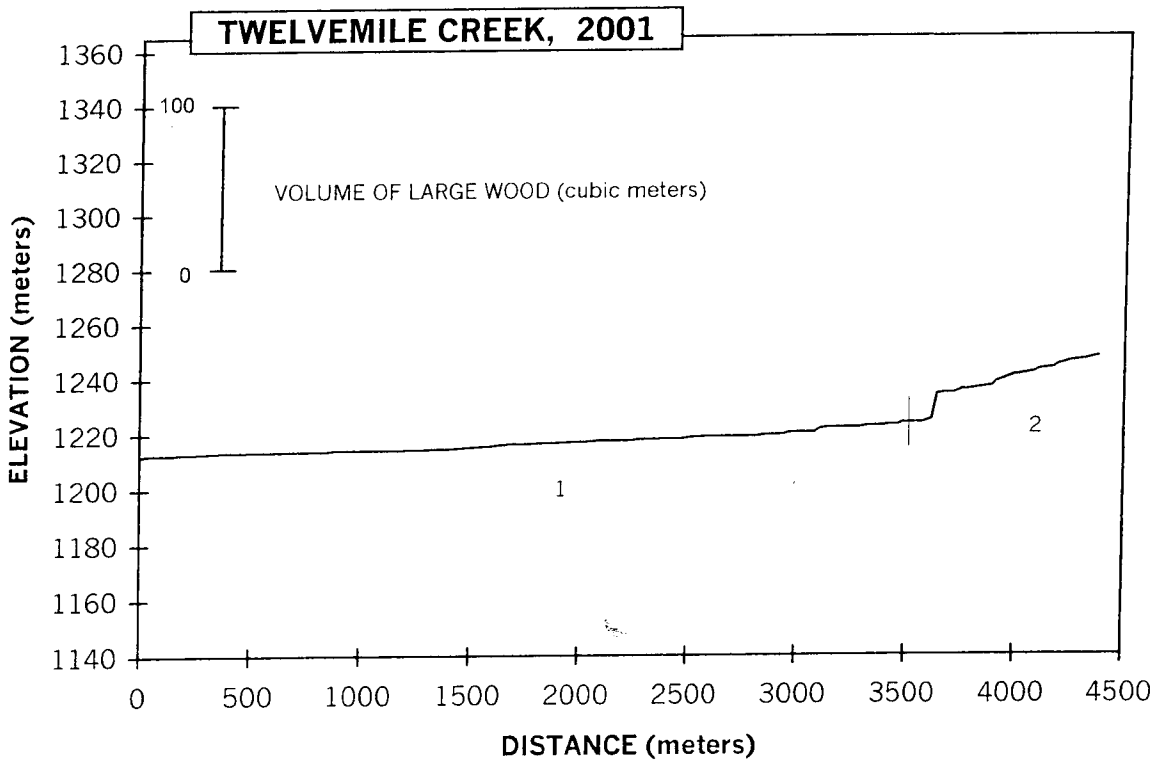

TWELVEMILE CREEK, 2001
REACH
BRIDGE \ CULVERT
ELEVATION (meters)
1360
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1140
0
500
1000
1500
2000
2500
3000
3500
4000
4500
DISTANCE (meters)
1
2


TWELVEMILE CREEK, 2001
100
PERCENT SHADE
0
ELEVATION (meters)
1360
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1140
0
500
1000
1500
2000
2500
3000
3500
4000
4500
DISTANCE (meters)
1
2

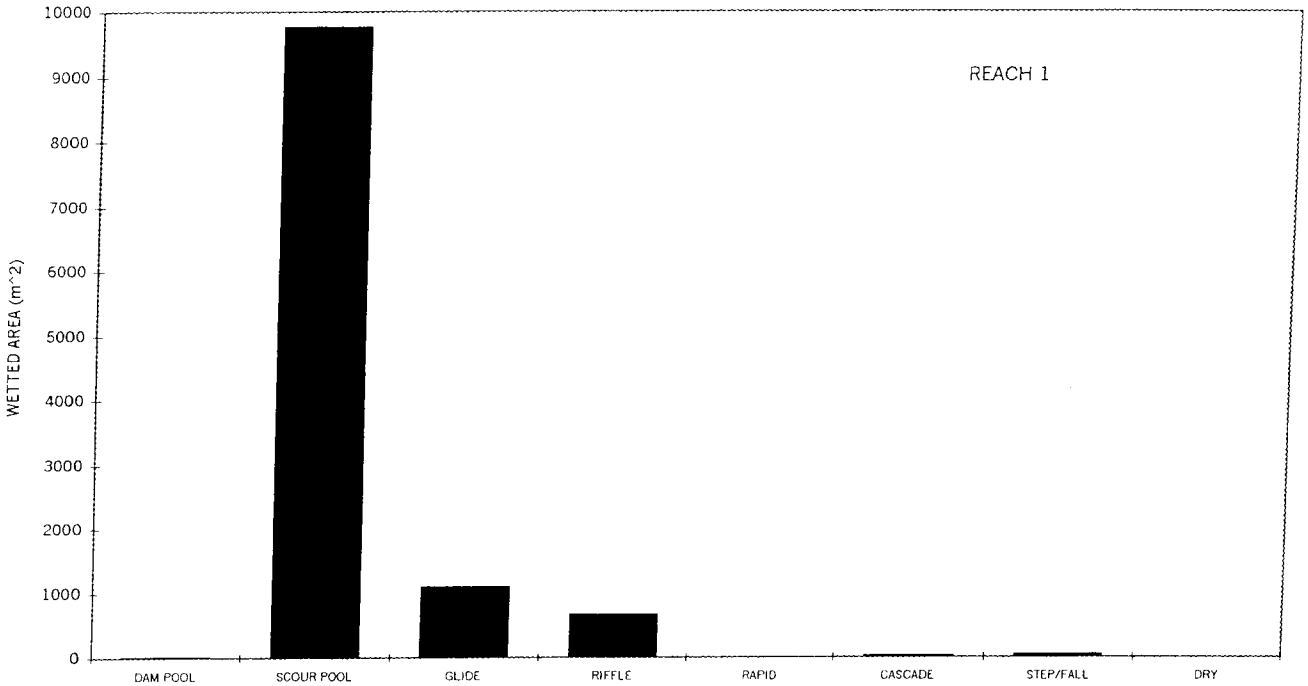

TWELVEMILE CREEK, 2001
ELEVATION (meters)
1360
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1140
100
0
PERCENT GRAVEL
1
2
0
500
1000
1500
2000
2500
3000
3500
4000
4500
DISTANCE (meters)

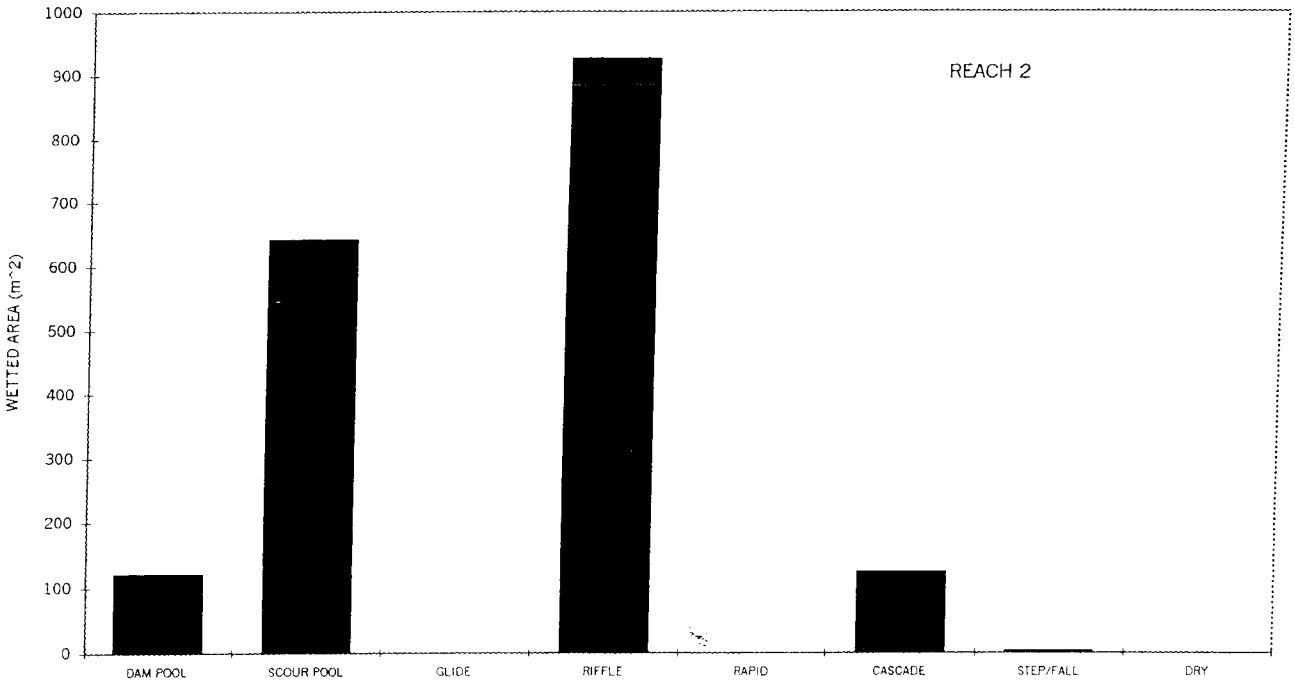

TWELVEMILE CREEK, 2001
ELEVATION (meters)
1360
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1140
100
0
PERCENT BEDROCK
1
2
0
500
1000
1500
2000
2500
3000
3500
4000
4500
DISTANCE (meters)


TWELVEMILE CREEK, 2001
100
0
PIECES OF LARGE WOOD
1
2
ELEVATION (meters)
1360
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1140
0
500
1000
1500
2000
2500
3000
3500
4000
4500
DISTANCE (meters)


TWELVEMILE CREEK, 2001
100
0
VOLUME OF LARGE WOOD (cubic meters)
1
2
ELEVATION (meters)
1360
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1140
0
500
1000
1500
2000
2500
3000
3500
4000
4500
DISTANCE (meters)

TWELVEMILE CREEK: HABITAT DISTRIBUTION





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	100
Open V-shape	0	Wide Floodplain	0

Valley Width Index avg: 10.0 range: 4.5-20.0

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

Type	Length(m)	Area (m2)	Dry Units
Primary	859	1,750	0
Secondary	25	64	0

Channel Dimensions(m)

Wetted		Active		Floodprone	First Terrace
Width	2.3	Width	5.3	14.7	0.0
Depth	0.33	Height	0.5	1.0	0.0
		W:D ratio	10.5	Entrenchment 3.2	

Stream Flow Type: LF Water Temp: 18.0-18.0^{O}C
Avg. Unit Gradient: 2.8% Habitat Units/100m: 2.4

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	LG	
Riparian Vegetation:	B	P

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding	1%	Reach avg: 35%
Undercut Banks	11%	Range: 27- 47

Large Woody Debris

	Total	Total/100m
All pieces (≥3m x 0.15m)	4	0.5
Volume (m^3)	0	***.*
Key pieces (≥10m x 0.6m)	0	0.0

OREGON DEPT. FISH AND WILDLIFE
HABITAT INVENTORY Report Date: 11/20/01

TWELVEMILE CREEK
Survey Date: 09/13/01

REACH 2 T19S-R22E-S24NE 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	Cbbl	Bldr	Bdrk
CASCADE/BOULDERS	4	63	2.0	0.10	124	7	3	5	13	38	43	(
POOL-BACKWATER	1	12	3.1	0.70	36	1	20	20	10	40	10	(
POOL-DAMMED	1	28	3.0	0.60	85	3	10	10	20	20	40	(
POOL-LATERAL SCOUR	4	139	4.5	0.95	641	14	18	20	13	25	23	(
RIFFLE	10	640	1.5	0.14	925	56	3	8	21	46	21	(
STEP/BOULDERS	1	2	1.3	0.08	3	1	5	5	10	10	70	(
Total:	21	884	2.3	0.33	1,814	82	**Avg:** 7	10	17	37	28	(

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders #/100m^2
Dammed & BW Pools	2	40	3.1	0.65	121	6.68	4	3.3
Scour Pools	4	139	4.5	0.95	641	35.34	14	2.2
Glides	0	0	-	-	0	0.00	0	0.0
Riffles	10	640	1.5	0.14	925	50.98	56	6.1
Rapids	0	0	-	-	0	0.00	0	0.0
Cascades	4	63	2.0	0.10	124	6.84	7	5.6
Step/Falls	1	2	1.3	0.08	3	0.16	1	34.5
Dry	0	0	-	-	0	0.00	0	0.0

POOL SUMMARY

	Total	#/Km
All Pools	6	6.8
Pools ≥1m deep:	3	3.4
Complex pools (LWD pieces≥3):	0	0.0
Pool Frequency (channel widths/pool):	28.0	
Residual pool depth (avg)	0.80m	

REACH 1 RIPARIAN ZONE VEGETATION SUMMARY REACH 1

Summary of Riparian Zone (0-30m) (3 transects)

Total hardwoods/1000 ft	0
Total conifers/1000 ft	0
Total conifers >20" dbh/1000 ft	0
Total conifers >35" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters		Zones 1-3 0-30 meters	
Diameter class (cm)	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-30cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m^2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10-20 meters (%)	Zone 3 20-30 meters (%)
Canopy closure	0	0	0
Shrub cover	17	28	24
Grass/forb cover	52	28	38

Predominant landform in each zone

	Zone 1 0-10 meters	Zone 2 10-20 meters	Zone 3 20-30 meters
Hillslope	17	0	17
High terrace	0	50	67
Low terrace	50	17	17
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	33	0	0
Riprap	0	0	0
Surface slope (%)	7	3	2

Summary of Riparian Zone (0-30m) for all reaches (5 transects)

Summary of riparian zone (0-100ft) extrapolated to 1,000 feet along stream

Total hardwoods/1000 ft	
Total conifers/1000 ft	73
Total conifers >20" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zones 1-3 Conifer	Hardwood
3-15cm	0.4	0.0
15-30cm	0.2	0.0
30-50cm	0.6	0.0
50-90cm	0.0	0.0
>90cm	0.0	0.0

OREGON DEPARTMENT OF FISH AND WILDLIFE
HABITAT INVENTORY Report Date: 11/20/01

TWELVEMILE CREEK
Survey Date: 08/30/01

RIPARIAN ZONE VEGETATION

Reach 2

Reach 2

VEGETATION DETAIL

					Cover (percent)				Diameter class (cm)					
Unit	Side	Zone	Surface	Slope	Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	Notes
90	LF	1	LT	0.0	0	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	CATTLE PASTURE
90	LF	2	HS	50.0	30	10	20	Conifer	0	1	0	0	0	
								Hardwood	0	0	0	0	0	JUNIPER
90	LF	3	HS	50.0	0	20	20	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
90	RT	1	LT	0.0	15	30	60	Conifer	0	0	1	0	0	
								Hardwood	0	0	0	0	0	JUNIPER; CATTLE PA
90	RT	2	HT	0.0	0	30	70	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
90	RT	3	HT	0.0	0	40	60	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
110	LF	1	HS	25.0	0	10	50	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
110	LF	2	HS	50.0	0	20	50	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
110	LF	3	HS	50.0	0	20	50	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
110	RT	1	LT	0.0	10	10	40	Conifer	2	0	0	0	0	
								Hardwood	0	0	0	0	0	JUNIPER
110	RT	2	HT	0.0	50	5	30	Conifer	0	0	1	0	0	
								Hardwood	0	0	0	0	0	JUNIPER
110	RT	3	HT	0.0	40	5	25	Conifer	0	0	1	0	0	
								Hardwood	0	0	0	0	0	JUNIPER

UNIT_NUMB	UNIT_LENGT	UNIT_WIDTH	VER_LENGTH	VER_WIDTH
10.0	45.0	3.5	51.0	4.9
20.0	75.0	4.2	83.4	6.2
30.0	17.0	3.9	44.2	5.3
40.0	190.0	2.1	185.5	2.7
51.0	45.0	1.8	56.5	2.6
61.0	10.0	0.5	20.6	1.3
70.0	22.0	3.3	37.3	4.3
70.0	47.0	2.1	37.3	4.3
80.0	96.0	4.1	91.2	5.2
90.0	46.0	4.2	44.3	4.8
100.0	16.5	1.6	18.9	1.6
110.0	52.0	0.8	61.6	1.7

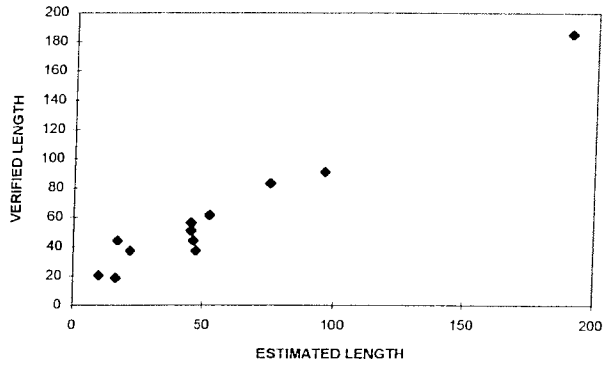
TWELVEMILE CREEK, 2001

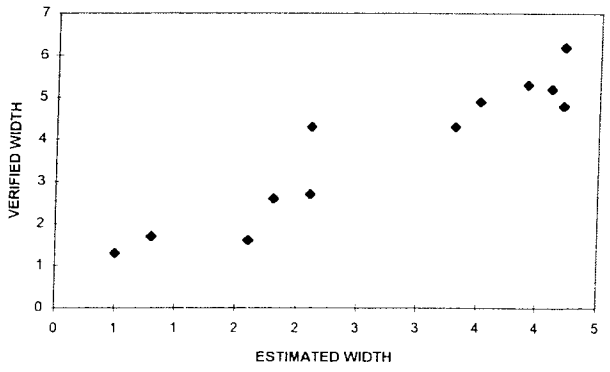
LENGTH: REGRESSION OUTPUT

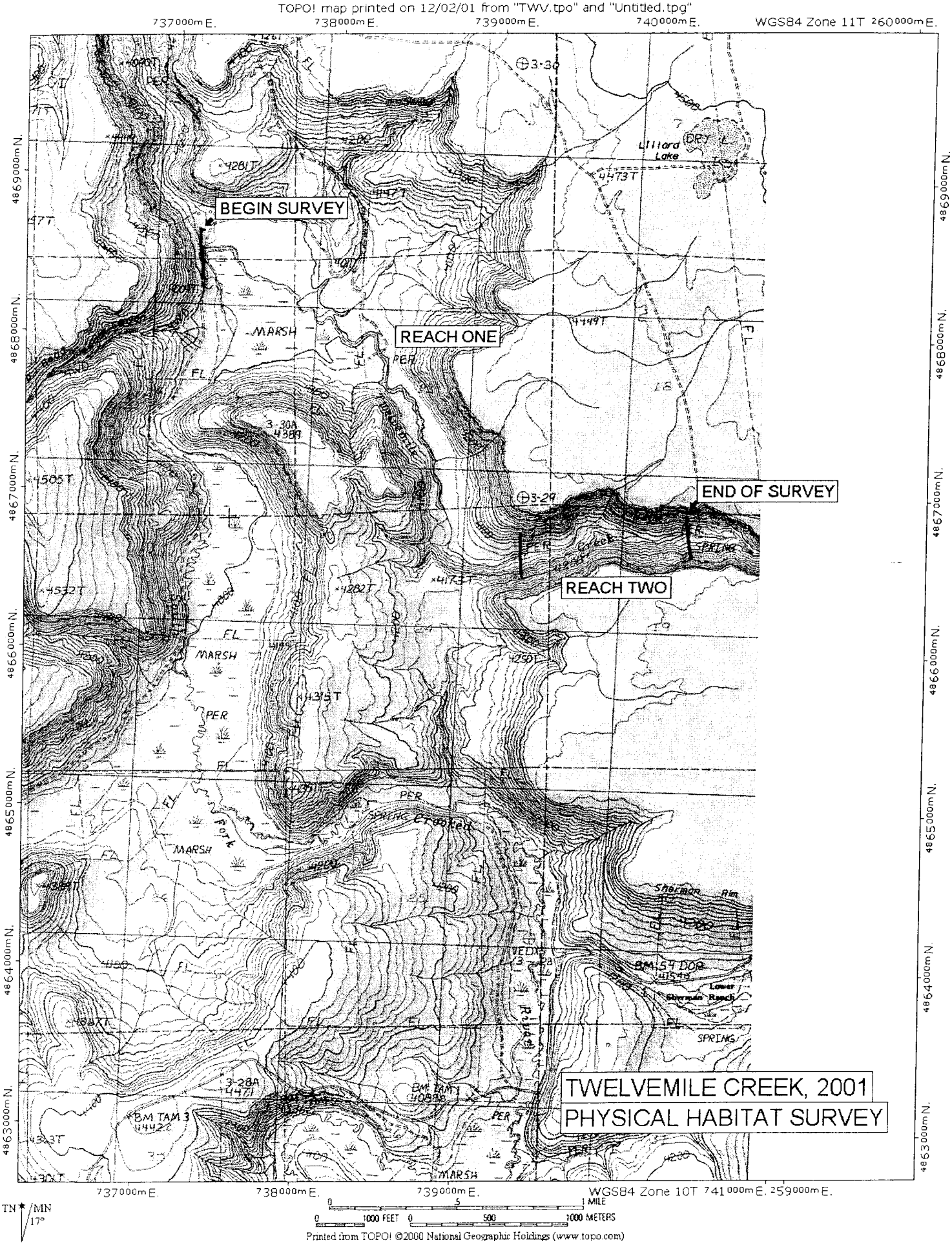
Constant:	0
Std Err of Y Est:	10.09
R Squared:	0.96
No. of Observations:	12
Correction Factor:	0.90

WIDTH: REGRESSION OUTPUT

Constant:	0
Std Err of Y Est:	0.48
R Squared:	0.88
No. of Observations:	12
Correction Factor:	0.71







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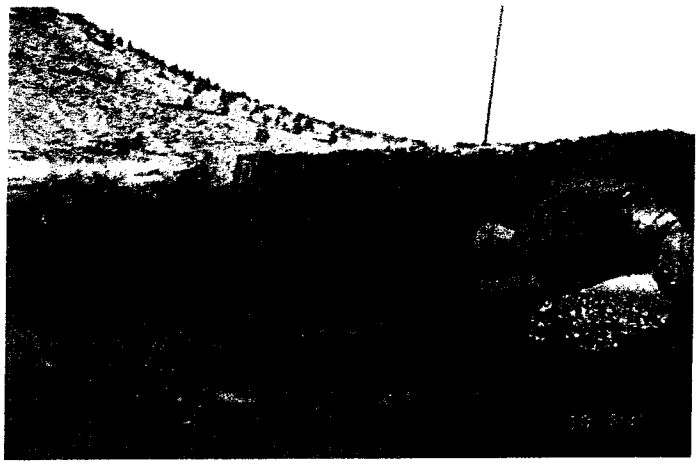
Twelvemile Creek Summer 2001
Crooked River Basin



Reach 1-Unit 1: Start of survey, culvert crossing

Reach 1-Unit 78: Typical riparian

Reach 1-Unit 6: Glide, typical reach photo

Reach 2-Unit 90: Left side riparian

Reach 2-Unit 99: Riffle, smaller VWI, and typical reach photo