

**ODFW AQUATIC INVENTORY PROJECT**  
**OREGON PLAN FOR SALMON & WATERSHEDS**  
**STREAM RESTORATION HABITAT REPORT**

STREAM: Arrow Creek (NC-315)  
BASIN: Nehalem River  
SURVEY TYPE: Pre-Tx  
DATE: July 22, 2005  
SURVEY CREW: David Stewart, Ben Walczak  
REPORT PREPARED BY: Paul Jacobsen  
BASIN AREA: 0.3 km<sup>2</sup>  
USGS MAPS: Soapstone Lake  
ECOREGION: Coastal Lowlands

**GENERAL DESCRIPTION:**

The Arrow Creek habitat survey extended 448 meters. The channel was constrained by terraces in a broad valley floor. The average valley width index was 4.9 (range: 1.2-10.0). Land use for the reach was rural residential and light grazing. The average unit gradient was 4.2 percent. Riffles (51%) dominated stream habitat. Silt (36%), gravel (29%) and sand (28%) dominated stream substrate. Wood volume was very low at 0.7 m<sup>3</sup>/100m.

**COMMENTS:**

There was one potential barrier to upstream fish migration in the surveyed length. This was a 0.75 m high step to a culvert in unit 40, just below Hwy 53 near the end of the survey.

REACH 1

T04N-R09W-S32SW

REACH 1

**Valley and Channel Summary**

Valley Characteristics (Percent Reach Length)

<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
Steep V-shape	0%	Constraining Terraces	100%
Moderate V-shape	0%	Multiple Terraces	0%
Open V-shape	0%	Wide Floodplain	0%
Valley Width Index	4.9	VWI Range:	1.2 - 10

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

<u>Type</u>	<u>Length (m)</u>	<u>Area (m2)</u>	<u>Dry Units</u>
Primary Channel	448	253	0
Secondary Channel	9	4	1
Off-Channel Units	32	16	0

Channel Dimensions (m)

<u>Wetted</u>	<u>Active</u>	<u>Floodprone</u> n = 5	<u>First Terrace</u> n = 2
Width: 0.6	Width: 2.5	3.4 ( 2.3 - 6 )	5.1 ( 3.4 - 6.8 )
Depth: 0.12	Height: 0.1	0.3 ( 0.2 - 0.3 )	0.4 ( 0.4 - 0.45 )

W:D ratio: 17.9  
 Stream Flow Type: MF  
 Average Unit Gradient: 4.2%  
 Water temperature (°C): -

Entrenchment (ACW:FPW ratio): 1.4  
 Habitat Units/100m (total channel length): 8.6  
 Habitat Units/100m (primary channel length): 9.4

**Riparian, Bank, and Wood Summary**

	<u>Primary</u>	<u>Secondary</u>
Land Use:	RR	LG
Riparian Vegetation:	G	

Bank Condition and Shade

<u>Bank Status</u>	<u>Percent Reach Length</u>	<u>Shade (% of 180)</u>
Actively Eroding:		Reach avg: 42%
Undercut Banks:	2%	Range: 22 - 100

Large Wood Debris

	<u>Total</u>	<u>Total / 100m primary channel</u>
All pieces (>=3m x 0.15m):	12	2.7
Volume (m <sup>3</sup> ):	3	0.7
Key pieces (>=12m x 0.60m):	0	0.0

OREGON DEPT OF FISH AND WILDLIFE

ARROW CREEK PRE-TX (1-NC, 315)

HABITAT INVENTORY

Report Date: 4/26/2006

Survey Date:

7/22/2005

REACH 1		T04N-R09W-S32SW					REACH 1					
HABITAT DETAIL												
Habitat Type	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m <sup>2</sup> )	Large Boulders (#>0.5m)	Substrate Percent Wetted Area					
							S/O	Snd	Grvl	Cbl	Bldr	Bdrk
CASCADE/BOULDERS	4	70	0.6	0.05	38	0	9	9	63	20	0	0
CULVERT CROSSING	2	34	0.6	0.05	23	0	23	23	38	18	0	0
POOL-LATERAL SCOUR	3	33	0.8	0.27	25	0	58	37	5	0	0	0
POOL-PLUNGE	5	4	0.8	0.25	3	0	25	25	39	11	0	0
PUDDLED UNIT	1	9	0.5	0.10	4	0	45	45	10	0	0	0
RAPID/BOULDERS	4	64	0.5	0.08	32	0	13	13	65	10	0	0
RIFFLE	14	265	0.5	0.13	138	0	52	37	10	1	0	0
STEP/COBBLE	3	4	0.7	0.05	4	0	15	15	63	7	0	0
STEP/LOG	4	6	0.9	0.05	6	0	54	41	5	0	0	0
STEP/STRUCTURE	2	1	0.5	0.05	0	0	23	23	38	18	0	0
<b>Total:</b>	<b>42</b>	<b>489</b>	<b>0.6</b>	<b>0.12</b>	<b>273</b>	<b>0</b>	<b>Avg: 36</b>	<b>28</b>	<b>29</b>	<b>7</b>	<b>0</b>	<b>0</b>

HABITAT SUMMARY								
Habitat Group	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area		Large Boulders	
					(m <sup>2</sup> )	Percent	Number	(# / 100m <sup>2</sup> )
Dammed & BW Pools	0	0			0	0.00%	0	0.0
Scour Pools	8	37	0.8	0.26	28	10.39%	0	0.0
Glides	0	0			0	0.00%	0	0.0
Riffles	14	265	0.5	0.13	138	50.68%	0	0.0
Rapids	4	64	0.5	0.08	32	11.63%	0	0.0
Cascades	4	70	0.6	0.05	38	13.90%	0	0.0
Step/Falls	9	11	0.7	0.05	9	3.41%	0	0.0
Dry	1	9	0.5	0.10	4	1.56%	0	0.0
Culverts	2	34	0.6	0.05	23	8.43%	0	0.0

POOL SUMMARY			
	Total	Total of all Channel Lengths # / Km	Primary Channel Length # / Km
All Pools:	8	16.4	17.9
Pools >=1m deep:	0	0.0	0.0
Complex pools (LWD pieces>=3):	1	2.0	2.2
Pool frequency (channel widths/pool):	24.3		
Residual pool depth (avg):	0.18		

OREGON DEPARTMENT OF FISH AND WILDLIFE  
HABITAT INVENTORY

ARROW CREEK PRE-TX  
GCG: 1-NC SITE ID: 315

Survey Date 7/22/2005

RIPARIAN ZONE

Report Date: 4/26/2006

VEGETATION SUMMARY

REACH 1

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

Total hardwoods/1000	142
Total conifers/1000 ft	488
Total conifers >20" dbh/1000 ft	61
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	1.7	0.0	0.7	0.0	2.3	0.0
15-30cm	1.7	1.3	1.0	1.0	0.7	0.0	3.3	2.3
30-50cm	1.0	0.0	0.0	0.0	0.3	0.0	1.3	0.0
50-90cm	0.3	0.0	0.3	0.0	0.3	0.0	1.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m2	3.0	1.3	3.0	1.0	2.0	0.0	2.7	0.8

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Canopy closure	67	33	33
Shrub cover	2	2	2
Grass/forb cover	80	80	80

Predominant landform in each zone

	Zone 1 0-10 meters (%)	Zone 2 10 - 20 meters (%)	Zone 3 20 - 30 meters (%)
Hillslope	67	67	67
High terrace	33	33	33
Low terrace	0	0	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 (%)	3	3	3

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

3 transects

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

Total hardwoods/1000	142
Total conifers/1000 ft	488
Total conifers >20" dbh/1000 ft	61
Total conifers >35" dbh/1000 ft	0

**Average number of trees in a 5-m wide band**

Diameter class (cm)	Zones 1-3	
	<u>0-30 meters</u>	
	<u>Conifer</u>	<u>Hardwood</u>
3-15cm	2.3	0.0
15-30cm	3.3	2.3
30-50cm	1.3	0.0
50-90cm	1.0	0.0
>90cm	0.0	0.0

**RIPARIAN ZONE VEGETATION**

Reach 1

Reach 1

Unit	Side	Zone	Surface	Slope	Cover (percent)				Diameter class (cm)					Notes	
					Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90		
19	RT	3	HT	0	0	0	100	Conifer							
								Hardwood							
19	LF	1	HT	0	20	0	100	Conifer							3D
								Hardwood							0436277/50706
															21
19	LF	2	HT	0	0	0	100	Conifer							
								Hardwood							
19	LF	3	HT	0	0	0	100	Conifer							
								Hardwood							
19	RT	1	HT	0	20	0	100	Conifer							
								Hardwood							
19	RT	2	HT	0	0	0	100	Conifer							
								Hardwood							
25	RT	2	HS	5	0	0	100	Conifer							
								Hardwood							
25	RT	1	HS	5	80	0	100	Conifer							
								Hardwood							
25	LF	3	HS	5	0	0	100	Conifer			3				
								Hardwood							
25	LF	1	HS	5	80	0	100	Conifer							3D
								Hardwood							0436394/50706
											1				59
25	RT	3	HS	5	0	0	100	Conifer	1						
								Hardwood							
25	LF	2	HS	5	0	0	100	Conifer							
								Hardwood							
34	RT	2	HS	5	100	0	0	Conifer	5	3			1		
								Hardwood							
34	RT	3	HS	5	100	0	0	Conifer	1	2	1	1			
								Hardwood							
34	RT	1	HS	5	100	0	0	Conifer		5	2	1			
								Hardwood							
34	LF	3	HS	5	100	10	80	Conifer							
								Hardwood							
34	LF	1	HS	5	100	10	80	Conifer				1			3D
								Hardwood							0436444/50706
															22
34	LF	2	HS	5	100	10	80	Conifer							
								Hardwood			3				

# Comment Summary

## Restoration Monitoring Sites 2005

MONITORING AREA: 1-NC      SITE ID: 315      ARROW CREEK PRE-TX

UNIT#	TYPE	CHAN	DIST. (m)	COMMENTS	NOTE ESTIMATOR	NOTE NUMERATOR
1	RI	00	9.3		START AT CONFLUENCE	
2	SL	00	10.1		H=0.3M	
5	SL	01	27		H=0.55M	
7	LP	01	51.2	/TJ	2D 0435876/5070478	
8	RI	11	51.2	BV		
11	LP	00	81.9	BC		FOOTBRIDGE
14	SL	00	110.2		H=0.15M	
16	SL	00	125.9		H=0.15M	
19	RI	00	162		RIPARIAN 1	
23	RI	00	273.4	BC		FOOTBRIDGE
24	SC	00	273.9		H=0.4M	
25	RB	00	293.9		RIPARIAN 2	
26	SC	00	294.4		H=0.2M	
29	SC	00	319.65		H=0.25M	
32	CB	00	355.75	BC		FOOTBRIDGE
33	CB	00	381.45			WATER WITHDRAWAL HOS
34	CB	00	390.25		RIPARIAN 3	
36	SS	00	391.25		H=0.2M	
37	CC	00	401.25	CC	0.5M DIA ROUND GALVAN	
40	SS	00	413.95	PA	H=0.75M, ROUND CONCR	
41	CC	00	437.95	CC		HWY 53 CC

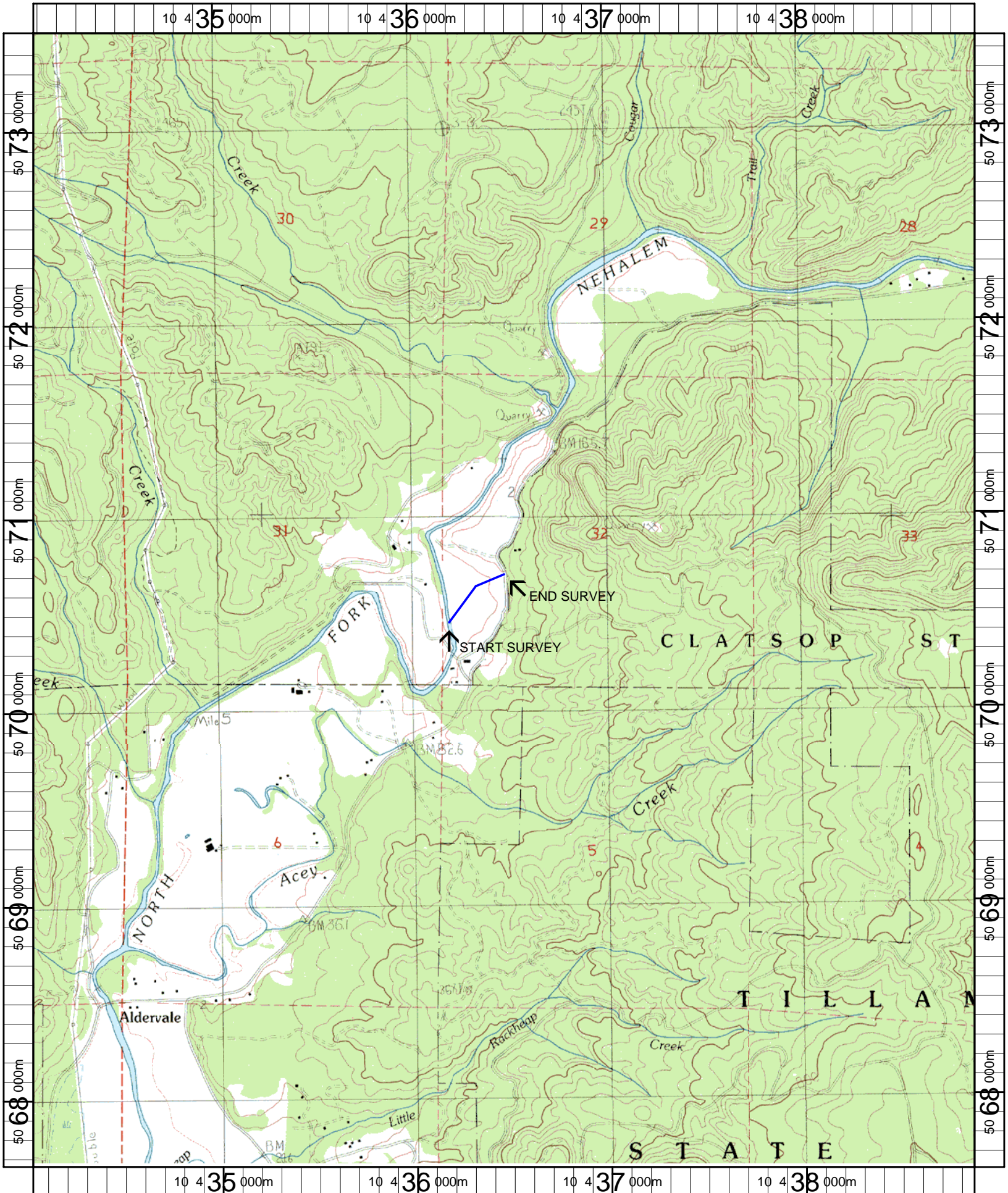
# Comment Summary

## Restoration Monitoring Sites 2005

MONITORING AREA: 1-NC      SITE ID: 315      ARROW CREEK PRE-TX

<u>UNIT#</u>	<u>TYPE</u>	<u>CHAN</u>	<u>DIST. (m)</u>	<u>COMMENTS</u>	<u>NOTE ESTIMATOR</u>	<u>NOTE NUMERATOR</u>
42	RB	00	448.15		END	END SURVEY





Name: SOAPSTONE LAKE  
 Date: 5/1/2006  
 Scale: 1 inch equals 2000 feet

Location: 10 436471 E 5070564 N  
 Caption: ARROW CREEK RESTORATION SITE - NEHALEM BASIN