

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

STREAM: Hamilton Creek (#NC 107)  
 BASIN: Nehalem River  
 SURVEY TYPE: Post-Tx  
 DATE: October 30, 2003  
 REPORT PREPARED BY: Paul Jacobsen

The Hamilton Creek restoration project was treated in 1995, and then monitored in 1996 and again in 2001 for post-treatment conditions. There is also baseline information available from two years prior to treatment. This site has a companion reference reach located just downstream. Pool area has increased since restoration activities as have the number of complex pools, and pools occur somewhat more frequently. Riffle gravel is higher, while riffle fines are lower. Large wood pieces, volume, and key pieces are all higher than pre-treatment conditions and in the year immediately after treatment.

Habitat Variable	ODFW	Benchmark	AQI Survey	Post Project	Post Project
	Desirable	Undesirable			
Pool Area	>35%	<10%	36.4	28.2	42.8
Pool Frequency	5-8	>20%	4.9	3.9	3.8
Residual Pool Depth	.5-1m	.2-.5m	.52	.56	.47
Complex Pools/km	>2.5	<1	1.5	8.8	10.5
Width/Depth Ratio	<15	>30	19.2	20.1	19.1
Riffle Gravel % area	>35%	<15%	10	45	34
Silt-Sand-Organic %	<8%	>15%	8	6	3
Shade %	>70%	< 60%	86	91	93
LWD - pieces/100m	>20	<10	12.5	11.1	15.3
LWD - Volume/100m	>30	<20	15.8	17.2	20.5
LWD - Key pieces/ 100m	>3	<1	.4	0.6	0.8

**COMMENTS:**

There were no potential barriers to upstream fish migration in the surveyed length.

The crew noted evidence of beaver activity during the survey. The crew recorded three habitat structures in 1996, and six were recorded in 2001.

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

STREAM: Hamilton Creek (NC-107)  
BASIN: Nehalem River  
SURVEY TYPE: Post-Tx  
DATE: August 1, 2001  
SURVEY CREW: Rachel Werner, Sean Allen  
REPORT PREPARED BY: Paul Jacobsen  
BASIN AREA: 16.8 km<sup>2</sup>  
USGS MAPS: Vinemaple  
ECOREGION: Coast Range Astoria Willapa

**GENERAL DESCRIPTION:**

The Hamilton Creek habitat survey extended 622 meters. The channel was alternately constrained by hillslopes and terraces in a broad valley floor. The average valley width index was 7.1 (range: 3.5 – 15.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 1.6 percent. Scour pools (40%) and riffles (32%) dominated stream habitat. Cobble (39%) and gravel (29%) dominated stream substrate. Wood volume was moderate at 20.5 m<sup>3</sup>/100m.

**COMMENTS:**

There were no potential barriers to upstream fish migration in the surveyed length.  
The crew noted several habitat structures during the survey.

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

STREAM: Hamilton Creek (#NC 107)  
 BASIN: Nehalem River  
 SURVEY TYPE: Post-Tx  
 DATE: September 9, 2002  
 SURVEY CREW: Sean Allen, Rachel Werner  
 REPORT PREPARED BY: Paul Jacobsen  
 BASIN AREA: 16.8 km<sup>2</sup>  
 USGS MAPS: Vinemaple  
 ECOREGION: Coast Range Astoria Willapa

**GENERAL DESCRIPTION:**

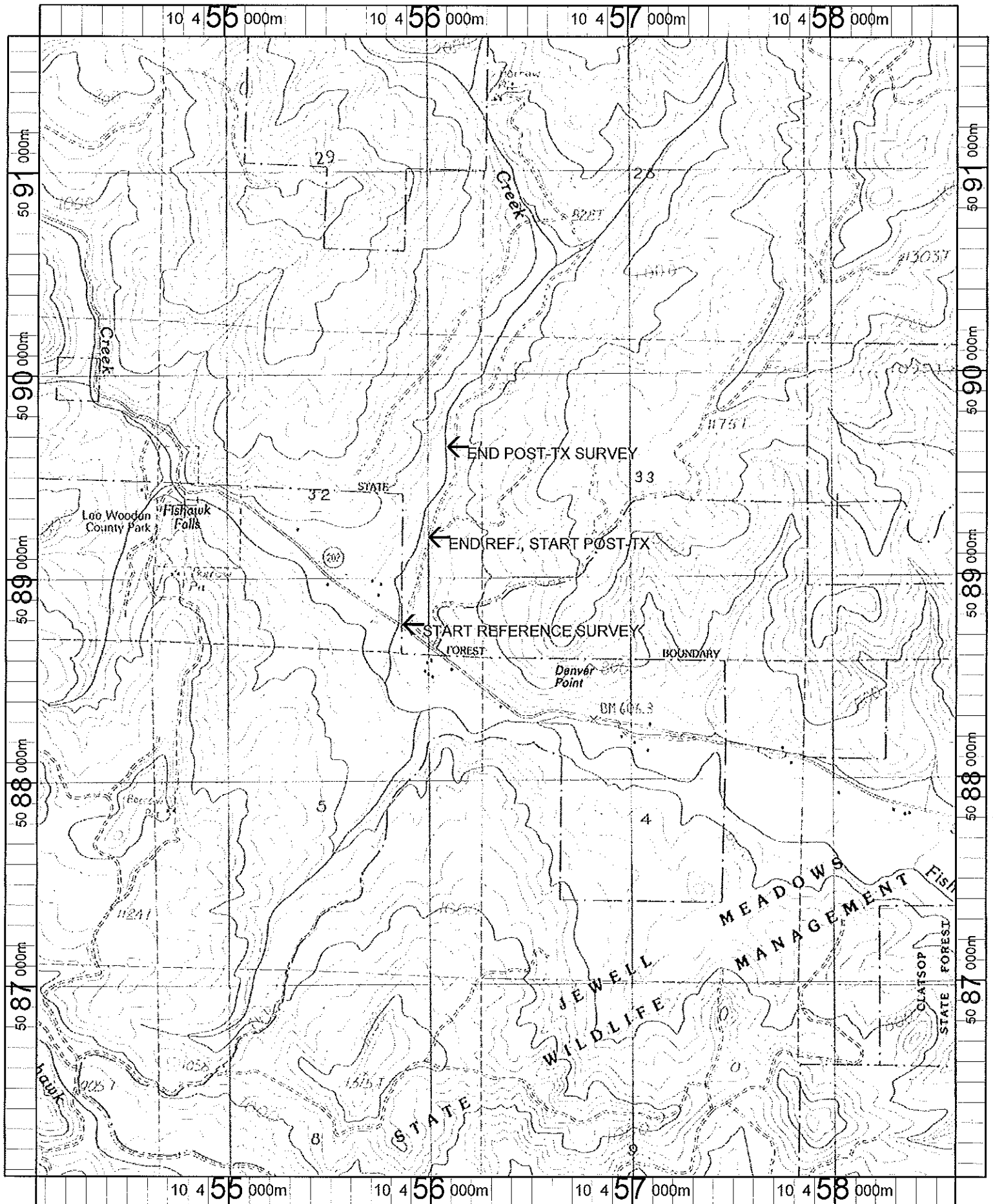
The Hamilton Creek habitat survey extended 622 meters. The channel was alternately constrained by hillslopes and terraces in a broad valley floor. The average valley width index was 7.1 (range: 3.5-15.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 1.6 percent. Scour pools (40%) and riffles (32%) dominated stream habitat.

	ODFW	Benchmark		AQI Survey	Post Project	Post Project	Post Project
Habitat Variable	Desirable	Undesirable		9/14/93	7/3/96	8/1/01	2/6/02
Pool Area	>35%	<10%		36.4	28.2	42.8	43.6
Pool Frequency	5-8	>20%		4.9	3.9	3.8	3.6
Residual Pool Depth	.5-1m	.2-.5m		.52	.56	.47	.23
Complex Pools/km	>2.5	<1		1.5	8.8	10.5	9.1
Width/Depth Ratio	<15	>30		19.2	20.1	19.1	21.3
Riffle Gravel % area	>35%	<15%		10	45	34	22
Silt-Sand-Organic %	<8%	>15%		8	6	3	10
Shade %	>70%	< 60%		86	91	93	
LWD - pieces/100m	>20	<10		12.5	11.1	15.3	16.9
LWD - Volume/100m	>30	<20		15.8	17.2	20.5	15.8
LWD - Key pieces/ 100m	>3	<1		.4	0.6	0.8	0.6

**COMMENTS:**

There were no potential barriers to upstream fish migration in the surveyed length.

The crew noted evidence of beaver activity during the survey.



Name: VINEMAPLE  
 Date: 1/10/2002  
 Scale: 1 inch equals 2000 feet

Location: 10 456342 E 5088855 N  
 Caption: 4-6 YEAR POST-TX AND REFERENCE SURVEYS -  
 HAMILTON CREEK - NEHALEM BASIN

REACH 1

T7N-R6W-S32NE

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	0
Moderate V-shape	0	Multiple Terraces	100
Open V-shape	0	Wide Floodplain	0

Valley Width Index avg: 7.1 range: 3.5-15.0

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

<u>Type</u>	<u>Length(m)</u>	<u>Area (m2)</u>	<u>Dry Units</u>
Primary	622	3,316	0
Secondary	143	558	3

Channel Dimensions (m)

<u>Wetted</u>	<u>Active</u>	<u>Floodprone</u>	<u>First Terrace</u>
Width 5.0	11.7	27.1	19.2
Depth 0.31	0.6	1.2	1.5
W:D ratio	19.1	Entrenchment	2.2

Stream Flow Type: LF Water Temp: 11.5-11.5°C  
 Avg. Unit Gradient: 1.6% Habitat Units/100m: 5.5

Riparian, Bank, and Wood Summary

	<u>Primary</u>	<u>Secondary</u>
Land Use:	ST	
Riparian Vegetation:	D30	C30

Bank Condition and Shade

<u>Bank Status</u>	<u>Percent Reach Length</u>	<u>Shade (% of 180)</u>
Actively Eroding	19%	Reach avg: 93%
Undercut Banks	7%	Range: 72-100

Large Woody Debris

	<u>Total</u>	<u>Total/100m</u>
All pieces ( $\geq 3m \times 0.15m$ )	95	15.3
Volume (m <sup>3</sup> )	127	20.5
Key pieces ( $\geq 10m \times 0.6m$ )	5	0.8

REACH 1

T7N-R6W-S32NE

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	Cbbl	Bldr	Bdrk
POOL-ALCOVE	1	26	2.0	0.20	52	0	30	60	10	0	0	0
POOL-BACKWATER	1	11	4.3	0.40	45	0	5	5	55	30	5	0
POOL-ISOLATED	1	8	3.0	0.40	24	0	30	70	0	0	0	0
POOL-LATERAL SCOUR	10	183	6.0	0.59	1,126	0	3	5	39	34	8	13
POOL-STRAIGHT SCOUR	4	83	5.2	0.49	410	2	1	3	29	29	5	34
PUDDLED CHANNEL	3	63	5.5	0.33	364	0	12	22	13	45	8	0
RAPID/BOULDERS	7	110	4.7	0.10	514	2	1	1	30	53	13	1
RIFFLE	7	167	4.6	0.16	764	1	0	3	34	53	10	0
RIFFLE W/ POCKETS	4	94	5.2	0.25	484	2	0	3	23	28	9	38
STEP/BEDROCK	1	5	0.6	0.01	3	0	0	0	0	0	0	100
STEP/BOULDERS	1	4	6.5	0.05	28	0	0	0	10	70	20	0
STEP/COBBLE	2	11	5.7	0.05	59	0	0	0	30	58	13	0
<b>Total:</b>	<b>42</b>	<b>764</b>	<b>5.0</b>	<b>0.31</b>	<b>3,874</b>	<b>7</b>	<b>Avg: 3</b>	<b>7</b>	<b>29</b>	<b>39</b>	<b>9</b>	<b>12</b>

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m <sup>2</sup> )	Percent	Large Boulders Number	#/100m <sup>2</sup>
Dammed & BW Pools	3	44	3.1	0.33	121	3.12	0	0.0
Scour Pools	14	266	5.8	0.56	1,536	39.66	2	0.1
Glides	0	0	-	-	0	0.00	0	0.0
Riffles	11	260	4.8	0.20	1,248	32.21	3	0.2
Rapids	7	110	4.7	0.10	514	13.26	2	0.4
Cascades	0	0	-	-	0	0.00	0	0.0
Step/Falls	4	21	4.6	0.04	91	2.34	0	0.0
Dry	3	63	5.5	0.33	364	9.41	0	0.0

POOL SUMMARY

	<u>Total</u>	<u>#/Km</u>
All Pools	17	22.2
Pools ≥1m deep:	0	0.0
Complex pools (LWD pieces ≥3):	8	10.5
Pool Frequency (channel widths/pool):	3.8	
Residual pool depth (avg)	0.47m	

STREAM SUMMARY

HAMILTON CR POST-TX (#107)

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m <sup>2</sup> )	Substrate Percent Wetted Area						Total Large Boulder
					S/O	Sand	Grvl	Cbbl	Bldr	Bdrk	
42	764	5.0	0.31	3,874	3	7	29	39	9	12	7

Wetted Area

Habitat Group	(m <sup>2</sup> )	Percent
Scour Pool	1,536	39.7
Backwater Pools	121	3.1
Glide	0	0.0
Riffle	1,248	32.2
Rapid	514	13.3
Cascade	0	0.0
Step	91	2.3
Dry	364	9.4

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REACH 1

RIPARIAN ZONE VEGETATION SUMMARY

REACH 1

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

Total hardwoods/1000 ft	589
Total conifers/1000 ft	589
Total conifers >20" dbh/1000 ft	81
Total conifers >35" dbh/1000 ft	41

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1		Zone 2		Zone 3		Zones 1-3	
	0-10 meters		10-20 meters		20-30 meters		0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.3	1.7	1.0	2.0	0.3	0.7	1.7	4.3
15-30cm	1.7	1.3	0.7	2.0	2.7	0.3	5.0	3.7
30-50cm	0.0	1.0	1.0	0.0	0.7	0.0	1.7	1.0
50-90cm	0.0	0.3	0.3	0.0	0.3	0.3	0.7	0.7
>90cm	0.0	0.0	0.7	0.0	0.0	0.0	0.7	0.0
Total/100m <sup>2</sup>	2.0	4.3	3.7	4.0	4.0	1.3	3.2	3.2

Canopy closure and ground cover

	Zone 1		Zone 2		Zone 3	
	0-10 meters		10-20 meters		20-30 meters	
	(%)		(%)		(%)	
Canopy closure	66		67		76	
Shrub cover	43		43		28	
Grass/forb cover	51		25		19	

Predominant landform in each zone

	Zone 1	Zone 2	Zone 3
	0-10 meters	10-20 meters	20-30 meters
Hillslope	0	17	50
High terrace	33	67	33
Low terrace	67	17	0
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	0	0	17
Riprap	0	0	0
Surface slope (%)	4	9	18



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

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

Total hardwoods/1000 ft	589
Total conifers/1000 ft	589
Total conifers >20" dbh/1000 ft	81

Average number of trees in a 5-meter wide band

<u>Diameter</u> <u>class (cm)</u>	<u>Zones 1-3</u>	
	<u>Conifer</u>	<u>Hardwood</u>
3-15cm	1.7	4.3
15-30cm	5.0	3.7
30-50cm	1.7	1.0
50-90cm	0.7	0.7
>90cm	0.7	0.0

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RIPARIAN ZONE VEGETATION

Reach 1

Reach 1

VEGETATION DETAIL

Unit	Side	Zone	Surface	Slope	Cover (percent)				Diameter class (cm)					Notes
					Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	
14	LF	1	LT	3.0	75	60	40	Conifer	0	0	0	0	0	
								Hardwood	0	0	1	1	0	
14	LF	2	LT	0.0	75	70	25	Conifer	0	0	0	0	1	
								Hardwood	0	0	0	0	0	2.5M DBH SPRUCE
14	LF	3	HS	30.0	80	65	30	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	1	0	
14	RT	1	LT	0.0	65	65	30	Conifer	0	0	0	0	0	
								Hardwood	2	0	2	0	0	
14	RT	2	HT	6.0	70	75	20	Conifer	0	0	0	0	0	
								Hardwood	4	3	0	0	0	
14	RT	3	HT	0.0	90	50	35	Conifer	0	0	0	0	0	
								Hardwood	1	1	0	0	0	
21	LF	1	HT	10.0	80	0	80	Conifer	0	4	0	0	0	
								Hardwood	0	0	0	0	0	
21	LF	2	HT	8.0	85	0	0	Conifer	0	1	1	0	0	
								Hardwood	0	0	0	0	0	
21	LF	3	HS	25.0	80	0	0	Conifer	0	3	1	1	0	
								Hardwood	0	0	0	0	0	
21	RT	1	HT	10.0	75	40	60	Conifer	0	1	0	0	0	
								Hardwood	0	1	0	0	0	
21	RT	2	HT	0.0	75	30	70	Conifer	3	0	0	0	0	
								Hardwood	2	3	0	0	0	
21	RT	3	RB	35.0	15	0	30	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
32	LF	1	LT	0.0	40	10	85	Conifer	1	0	0	0	0	
								Hardwood	2	1	0	0	0	
32	LF	2	HT	14.0	90	0	20	Conifer	0	1	2	1	1	
								Hardwood	0	0	0	0	0	
32	LF	3	HT	0.0	95	0	0	Conifer	1	3	1	0	0	
								Hardwood	0	0	0	0	0	
32	RT	1	LT	0.0	60	85	10	Conifer	0	0	0	0	0	
								Hardwood	1	2	0	0	0	
32	RT	2	HS	25.0	5	80	15	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	TALL ELDERBERRY
32	RT	3	HS	20.0	95	50	20	Conifer	0	2	0	0	0	
								Hardwood	1	0	0	0	0	