

VEGETATION APPENDIX

Vegetation Statistics

Table Veg_Apdx: BLM Acres by Stand Age (RMP and Timber Management Age Classes) from GIS FOI Data Updated to 1997

		Early Seral	Mid Seral		Late Seral and Old Growth			NF	all BLM ac.	BLM ac. with 80-yr.+ old stands	percent ac. with 80 yr.+ old stands
		0-30 yrs	31-60 yrs	61-80 yrs	81-160 yrs	161-200 yrs	201+ yrs				
Acres by drainage in the Panther Ck. Subwatershed	Bear Gulch	275	57				59	0	390	59	15.0%
	Little Cow Ck.	78					76		154	76	49.6%
	Lost1 Ck.								0	0	
	Panther Ck.	108	56	260	71		247		743	579	77.8%
	Williams R.								0	0	
	Wilson Ck.	183			34		257	2	477	292	61.2%
Total for Panther Ck. Subwatershed		644	113	260	105	0	639	2	1,764	1,005	57.0%
Acres by drainage in the Cedar Ck. Subwatershed	Arrow Ck.	409				0	453		861	453	52.6%
	Goose Gulch	67	777				7	15	866	7	0.9%
	Mid. Williams R	131	10	6	21			0	168	27	16.1%
	Lower Cedar Ck.	63	2		23			0	88	23	26.0%
	Upper Cedar Ck.	482	171	80	589		133		1,455	803	55.1%
Total for Cedar Ck. Subwatershed		1,151	960	86	633	0	593	15	3,439	1,313	38.2%
Acres by drainage in the Tioga Ck. Subwatershed	Burnt Ck.	370	433	10	1,243		309	2	2,367	1,562	66.0%
	Lower Tioga Ck.	2,312	861	72	79		1,818	29	5,170	1,969	38.1%
	Middle Tioga Ck.	933	223	781	1,034		583		3,554	2,398	67.5%
	Upper Tioga Ck.	1,866	1,361		44		1,401	15	4,687	1,445	30.8%
Total for Tioga Ck. Subwatershed		5,480	2,878	864	2,400	0	4,111	46	15,778	7,375	46.7%
Acres by drainage in the South Coos Subwatershed	Daniels Ck.	1,473	497	688	1,045		54	1	3,757	1,787	47.6%
	Dellwood								0	0	
	Coos Mouth	3			278			2	283	278	98.2%
	So. Fk. Coos R.	581	405				460	12	1,458	460	31.6%
	Cox Ck.	450	768				275		1,493	275	18.4%
	Coal Ck.	501	48		19		1,086		1,654	1,105	66.8%
	Fall Ck.								0	0	
	Mink Ck.	787	13		54		620		1,473	674	45.7%
	Bottom Ck.	185			0	5	268		457	273	59.7%
	Lower Williams R.	272	6	2	336		537	16	1,169	875	74.8%
Total for South Coos Subwatershed		4,250	1,737	690	1,731	5	3,300	31	11,744	5,726	48.8%
Total BLM acres in the South Fork Coos Watershed		11,525	5,688	1,901	4,869	5	8,644	94	32,726	13,518	41.3%
Percent of BLM acs. in each age class		35.2%	17.4%	5.8%	14.9%	0.0%	26.4%				

Table Veg_Apdx: BLM Nonforest Acres in FOI

Drainage	NH	NR	NW	total non forest
Bear Gulch	0			0
Burnt Ck.	2			2
Coos Mouth			2	2
Daniels Ck.			1	1
Goose Gulch	15			15
Lower Cedar Ck.			0	0
Lower Tioga Ck.	4	20	5	29
Upper Tioga Ck.	15			15
Lower Williams R.			16	16
Middle Williams R.			0	0
South Fk. Coos R.			12	12
Wilson Ck.		2		2
total nonforest	36	22	36	94

Table Veg_Apdx: BLM Potential Harvest Acres in the Matrix Based on FOI

	GFMA Land		Connectivity		total potential harvest acres on BLM
	commercial thin	regeneration cut	density management	regeneration cut	
	30 to 59 yrs.	60+ yrs.	30 to 120 yrs.	150+ yrs.	
Panther Ck. Subwatershed	46	85	53	0	184
Cedar Ck. Subwatershed	181	158	77	0	416
Tioga Ck. Subwatershed	368	104	0	0	472
South Coos Subwatershed	227	268	309	0	804
Total potential harvest acs. in the So. Fk. Coos Watershed on BLM	822	615	439	0	1876

(GIS data updated to 1997)

Note: This table shows the potential thinning and regeneration harvest acres in the Matrix. The potential thinning and regeneration harvest acres are those BLM stands left after subtracting the stands on lands that are reserved, withdrawn, unsuitable or otherwise unavailable for timber harvest, or are too young to harvest.

Table Veg_Apdx: Forest Classes Based on Landsat Data from summer 1993.
(Four class reclassification of the data set)

		no data	water, nonforest, clearcuts, & young plantations	conifer stands	hdwds stands	mixed stands	total
Acres by drainage in the Panther Ck. Subwatershed	Bear Gulch	0.13	734	1,588	37	13	2,371
	Little Cow Creek	0.13	1,081	1,354	28	8	2,471
	Lost1 Creek	0.14	2,296	2,277	94	21	4,688
	Panther Creek	0.08	999	4,060	49	11	5,119
	Williams River		2,354	4,909	173	44	7,480
	Wilson Creek	0.56	1,931	3,277	99	29	5,337
Total for Panther Ck. Subwatershed		1.04	9,394	17,465	481	127	27,467
Acres by drainage in the Cedar Ck. Subwatershed	Arrow Creek	0.58	1,800	4,553	192	27	6,572
	Goose Gulch		85	2,601	136	28	2,851
	Middle Williams River		3,415	5,249	390	161	9,215
	Lower Cedar Creek		1,689	2,409	196	54	4,348
	Upper Cedar Creek	0.18	3,136	8,212	344	87	11,779
Total for Cedar Ck. Subwatershed		0.76	10,125	23,024	1,258	356	34,765
Acres by drainage in the Tioga Ck. Subwatershed	Burnt Creek		277	2,531	76	34	2,918
	Lower Tioga Creek		1,009	7,159	691	106	8,965
	Middle Tioga Creek	0.60	442	5,532	1,023	82	7,079
	Upper Tioga Creek	0.44	782	4,618	245	42	5,687
Total for Tioga Ck. Subwatershed		1.04	2,510	19,839	2,035	264	24,650
Acres by drainage in the South Coos Subwatershed	Daniels Creek	1.58	3,256	5,027	1,426	313	10,023
	Dellwood	1.25	3,844	6,444	1,495	310	12,094
	Coos Mouth	0.39	1,656	1,186	495	126	3,463
	South Fk. Coos River	0.51	1,942	7,075	845	137	9,999
	Cox Creek	0.41	172	1,345	217	34	1,769
	Coal Creek	0.03	53	2,327	233	29	2,642
	Fall Creek	0.26	1,999	10,355	517	70	12,940
	Mink Creek	0.31	179	2,554	241	40	3,015
	Bottom Creek	0.38	2,205	8,801	360	73	11,439
	Lower Williams River		1,824	3,907	274	78	6,084
Total for South Coos Subwatershed		5.12	17,129	49,020	6,102	1,211	73,467
Total Ac for the South Fork Coos Watershed		7.96	39,159	109,348	9,877	1,957	160,348
Percent of acres in the South Fork Coos Watershed		0.0%	24.4%	68.2%	6.2%	1.2%	100.0%

Table Veg_Apdx: Acres of Hardwoods in Stands Based on a Range of Minimum Stand Area Thresholds. Data from 1993 Landsat Satellite Imagery

		all patches & stands		stands ≥ 1ac.		stands ≥ 10 ac.		stands ≥ 50 ac.		stands ≥ 100 ac	
		no. sites	total acres	no. sites	total acres	no. sites	total acres	no. sites	total acres	no. sites	total acres
Acres by drainage in the Panther Ck. Subwatershed	Bear Gulch	64	37	11	22						
	Little Cow Creek	62	28	10	15						
	Lost1 Creek	185	94	25	51						
	Panther Creek	69	49	13	34						
	Williams River	252	173	53	113	1	12				
	Wilson Creek	176	99	25	57	1	12				
Total for Panther Ck. Subwatershed		808	481	137	292	2	24	0	0	0	0
Acres by drainage in the Cedar Ck. Subwatershed	Arrow Creek	262	192	48	119	3	42				
	Goose Gulch	59	136	27	124	3	44				
	Middle Williams River	347	390	87	313	4	80				
	Lower Cedar Creek	189	196	52	154	4	54				
	Upper Cedar Creek	484	344	87	220						
Total for Cedar Ck. Subwatershed		1,341	1,258	301	930	14	220	0	0	0	0
Acres by drainage in the Tioga Ck. Subwatershed	Burnt Creek	69	76	21	60						
	Lower Tioga Creek	341	691	97	609	12	341	2	146		
	Middle Tioga Creek	232	1,023	98	974	16	735	5	517	1	238
	Upper Tioga Creek	156	245	33	208	5	150	1	66		
Total for Tioga Ck. Subwatershed		798	2,035	249	1,850	33	1,227	8	730	1	238
Acres by drainage in the South Coos Subwatershed	Daniels Creek	639	1,426	201	1,294	30	783	4	268		
	Dellwood	471	1,495	189	1,409	28	915	6	487	1	151
	Coos Mouth	223	495	68	449	5	253	2	198	1	107
	South Fk. Coos River	401	845	122	753	18	471	2	139		
	Cox Creek	83	217	35	200	8	127				
	Coal Creek	107	233	41	210	3	89	1	63		
	Fall Creek	373	517	88	429	4	177	1	93		
	Mink Creek	124	241	41	213	5	113				
	Bottom Creek	449	360	96	261	1	13				
Lower Williams River	285	274	66	210	3	41					
Total for South Coos Subwatershed		3,155	6,102	947	5,429	105	2,982	16	1,248	2	259
Total Ac for the So. Fk. Coos Watershed		6,102	9,877	1,634	8,501	154	4,453	24	1,977	3	497
	mean (acres)		2		5		29		82		166
	maximum stand size (acres)		238		238		238		238		238
	minimum stand size (acres)		<1		1		10		50		107
	range (acres)		238		237		228		188		131
	variance		43		141		839		1,520		2,958
	standard deviation		7		12		29		39		54

In Stream Coarse Woody Debris Recruitment Potential Appendix

The instream coarse woody debris (CWD) recruitment potential analysis was done by reclassing Western Oregon Digital Image Product (WODIP) data. The WODIP vegetation data are satellite data captured by the Landsat Thematic Mapper in the summer of 1993. We reclassified the WODIP data following the streamside vegetation classification protocol in the Washington DNR's Riparian Function Assessment: Large Organic Debris Recruitment Module (Washington Forest Practices Board 1992). We departed from the DNR protocol for the following ways:

- ? We classified the vegetation 100 feet either side of the 3rd, 4th, and 5th order streams. The DNR protocol is to classify vegetation 66 feet either side of fish bearing streams.
- ? Streams in GIS are lines and therefore have no width. This means the inner boundary of the vegetation classification strip, to either side of the stream, is the stream centerline. This contrasts with the manual method where the inner boundary is on the stream bank. This is not a problem with 5th order and smaller streams because the forest canopy typically reaches out over these smaller streams and hides those streams from view. However, 6th order and larger streams are too wide for the streamside vegetation totally to block the water surface from the satellite's view. Consequently, when modeling a 6th and 7th order streams as lines, the computer data shows some "streamside vegetation" to be water. We attempted to compensate for this by classing vegetation 150-foot either side of the 6th order and larger streams so to increase the vegetation sample size. We found this attempted fix caused an unintended consequence of also increasing the representation of roads, sidecast debris and other nonforest conditions in the data set.
- ? The reclass options in WODIP do not directly correspond to the DNR class breaks. We approximated the DNR class breaks, using WODIP data as follows:

DNR classification component:	WODIP Reclass:
<p>Age: In western Washington, size class is approximated using age. We used the tree size classification, based on D.B.H., for eastern Washington.</p> <p>Young - D.B.H. <12" Mature - D.B.H. ≥12" and <20" Old - D.B.H. ≥20"</p>	<p>Age: WODIP contains size classes but not age classes. The WODIP age classes do not directly match the DNR eastern Washington classes but they are close. We used the following reclass:</p> <p>Young - D.B.H. <10" Mature - D.B.H. 10"-19" Old - D.B.H. 20"-29" & D.B.H. >30"</p>
<p>Density: Density is sparse if more than 1/3 of the ground is exposed.</p>	<p>Density: Crown closure from 5% to 65% = sparse. Crown closure from 75% to 95% = dense</p>
<p>Vegetation Class: 70% conifer = conifer 70% hardwood = hardwood All others = mixed</p>	<p>Vegetation Class: 66% + conifer = conifer 66% + hardwood = hardwood All others = mixed</p>

WODIP Data Limitations (taken from the WODIP Guidebook):

The Landsat data has a pixel size of 30 by 30 meters. Any feature less than 30 meters across will probably not be identified in the imagery. Exceptions include features that are drastically different from their surroundings.

Vegetation maps derived from satellite data strive to attain an overall accuracy of 80%. Some cover types have unique energy reflective properties that are easier to identify, and therefore are classified more accurately. Other land cover types have similar reflective characteristics, which leads to miss-classification. Examples of these cover types are agriculture fields and recent clearcuts, dense brush and small hardwoods. For additional information on WODIP, see The WODIP Guidebook (Nighbert *et al.* 1997).

Data stratification: Initially we stratified the streamside vegetation data into 3 groups:

0, 1st and 2nd order streams

Generally the 0, 1st and 2nd order draws are source areas for pulses of CWD mixed with gravel, cobbles, rocks, and fines that enter the lower gradient streams as debris torrents and debris avalanches. These debris torrents and avalanches contribute CWD material that provides the woody structure in fish bearing streams. We eventually dropped this stratum because to use this data we would have had to combine this analysis with an analysis of debris avalanche/ debris torrent potential. This is not an impossible task. However, we were running out of time and decided to leave that work for another time.

3rd, 4th, and 5th order streams

Stream side trees that fall into the 3rd, 4th, and to a lesser extent 5th order streams have a reasonably good

chance of staying within these systems and contributing to the CWD habitat.

6th and 7th order streams

We put these larger order streams in a separate stratum for two reasons: First, is the problem of analyzing CWD recruitment on a computer where streams are modeled as line data. This is discussed at length above. Second, the 6th order and larger streams have a low probability of retaining CWD that enter the streams individually or in small groups. These larger order systems are more likely to retain a large pulse input of CWD provided there are catch points where jams can accumulate.

Reliability/ suitability of using Landsat data and GIS to analyze CWD recruitment potential:

The strengths of using reclassified satellite data are:

- ? Computer analysis provides a consistent vegetation classification.
- ? The computer process is quicker than manual classification at the subwatershed scale.
- ? The computer process requires no more time to class the vegetation next to all streams than it does to class vegetation next to fish bearing streams.
- ? Since the process is automated, vegetation is classifiable down to a 30 by 30 meter patch size. Conceptually, we can extract subsets from this data set based on what is considered the minimum size for an operational unit.

The limitations of using reclassified satellite data are:

- ? Clearcuts, brush fields, and other unforested lands are indistinguishable from very young plantations.
- ? Vegetation is classed in a zone that begins at the stream centerline. This is not a problem for 5th order and smaller streams. However, the “streamside” data along larger streams includes water. Our attempt to compensate for this by classing vegetation 150-foot either side of the 6th order and larger streams, so to increase the vegetation sample size, also increased the representation of roads, sidecast debris and other nonforest conditions in the data set.
- ? The down side of consistent vegetation classification is there little opportunity to practice “professional judgement” on a stand by stand scale. For example based on strict adherence to definitions, a pre-crown closure conifer plantation on a good site is classed as “high risk.” A human classifier familiar with stand development would anticipate crown closure in the near future and classify the stand as “medium risk.”
- ? Alders are indistinguishable from other hardwood species.

We found differences in how streamside vegetation was classified when we compared the computer CWD analysis with results obtained by manually classifying streamside vegetation. We compared the vegetation classes generated by the two methods with the aerial photos. We found the differences attributable to the difficulties of making a call on border line stands and differences in resolution: Practical limitations force people, who are following the manual approach, to “lump” streamside stands into 100 by 2,000-foot blocks, whereas the computer can “split” those stands into 30 by 30 meter patches.

References

Nighbert, J.; O’Neil, J.; Byrd, A. 1997. *Western Oregon Digital Image Project WODIP Guidebook*. Oregon State Office-BLM, Portland, OR. 43 pgs.

Washington Forest Practice Board. 1992. *Standard Methodology for Conducting Watershed Analysis Under Chapter 222-22 WAC*- ver. 1.10 Oct 1992.

1857/1871/1872 Vegetation Communities on the Lower Coos River Flood Plains and Terraces¹

Introduction:

Harvey Gordon and Flint, both 19th century surveyors, included descriptions of vegetation, and the locations where vegetation types changed, in their line descriptions notes. These notes on vegetation and vegetation type breaks, for survey lines transecting the Coos River and lower Daniels Creek flood plains, compare favorably to the mapped boundaries displayed on soils maps. In effect, the survey lines notes are a sampling of vegetation across a landscape that are stratifiable based on geology and soil series. The limits to this approach are first and foremost the level of detail recorded by the surveyor. Some surveyors recorded only a broadly generalized vegetation descriptions. Others made the effort to record major vegetation type breaks to the nearest link. In the later case, the surveyor's reason to note a vegetation break reflected the value of the land for agriculture, home sites, and timber production. For example, the breaks between swamp and forest; prairie and forest; or green and burnt forest. Also, the surveyors were precise in their language. Terms like marsh, and swamp, had distinct meanings to them, where as many people today may use those terms interchangeably. In no case, however, are the vegetation descriptions sufficiently detailed to distinguish plant associations. Even the best surveyors, from a vegetation mapping stand point, were not likely to give a separate vegetation description for small features. Consequently survey records are more likely to contain useable descriptions for large features like the Coos River flood plain and provide little useful information for Ren Smith Creek and rarely any information for a 1st or 2nd order draw beyond its width and course.

The soils and current vegetation information used in this analysis are from the Coos County soil survey (Haagen 1989). The 19th century vegetation cover found growing on each soil series are from 19th century cadastral survey notes.

Soils are classified based on genesis and observable characteristics that affect their productivity. The location of the different soils on the landscape are not random. These observable characteristics and patterns, and their effect on the vegetation they support, are basis for extrapolating the pre-management vegetation where there is insufficient detail in the cadastral survey notes to delineate vegetation. For example, the lateral depositional patterns during flooding result in the Gardiner, Kirkendall and Nehalem soils being deposited in natural levees and bars where the river first overflows it banks. Quosatana and Willanch soils are located in the concave parts of the flood plain behind the natural levees and bars that are poorly drained backswamps and old channels. Drainage, the river's access to the flood plain and resulting vegetation are also affected by geologic uplift. The upper end of the lower Coos River flood plain area appears to have a more rapid rate of uplifting than the lower end. This is most clearly suggested by the change in vegetation occupying Coquille soils, observed in 1857, as one travels up stream. In this example, tidally flooded marsh prairies covered the Coquille soils at the mouth of Coos River. While up stream at the confluence of the South fork and Millicoma, Coquille soils supported poorly-drained bottomland hardwood stands and crab apple thickets.

Overview on the Interpretation and Reliability of the Data:

Map Veg-1: 1857/1871/1872 Vegetation next to the Lower Coos River and Daniels Creek is based on the land survey notes by Harvey Gordon and A. Flint. Of the two, Gordon's notes were the more useful because:

- ? Gordon recorded more detailed notes on vegetation,
- ? Flint did not consistently record when he entered and left the bottomland, and
- ? Gordon's survey covered the Coos River flood plain, which has larger contiguous areas of the different vegetation types, where as Flint's surveys covered Daniels Creek, which has narrower bottomland areas. The surveyors generally describe large contiguous areas of unique vegetation as distinct features and combine small patches of different vegetation types into a single encompassing list of observed plants seen though each mile of survey line.

Therefore, many more of the patches of vegetation along Coos River, than in Daniels Creek, are classified based on observations within each patch. The vegetation communities along Daniels Creek were more often classified by

¹ This effort to map the late 19th century vegetation along the lower Coos River was inspired by Patricia Benner's work: "Historical Reconstruction of the Coquille River and Surrounding Landscape" contained in Near Coastal Waters National Pilot Project "Action Plan for Oregon Coastal Watersheds, Estuary, and Ocean Waters" 1988-1991, Prepared for: The U.S. Environmental Protection Agency Grant X-000382-01, Oregon Dept. of Environmental Quality, 811 SW 6th Ave., Portland, OR 97204-1390.

assuming the vegetation community occupying a particular soil type in Coos River would also occupy that same soil type where it occurs in Daniels Creek. In those cases where we have no record of the 19th century vegetation on a particular soil type, soil characteristics and recent vegetation observations are used to estimate the likely pre-management vegetation condition.

The 19th century bottomland plant communities were mapped using several lines of evidence. They are listed below in decreasing order of reliability as predictive tools:

- ? The most reliable evidence is a vegetation description in the survey notes for a specific area, which is delineated by features like stream banks or the base of the adjacent slopes, and is specifically described as to type of community, for example “skunk cabbage swamp” or “marsh prairie.” Usually but not always these are contiguous blocks of the same plant community growing on a single soil type. In several cases the bearing and distance from a section corner to a vegetation type change, recorded in the survey notes, corresponds to the distance and bearing to the boundary between soil types.
- ? Bottomland hardwood stands were further classified into well-drained and poorly-drained stands based on soil characteristics. Often the surveyors did not distinguish between upland forest and bottomland forest when listing tree and undergrowth species in the line summary. Consequently, the likely species composition for the bottomland hardwood stands is based on a combination of the general line summaries, soils characteristics, and on each plant’s site requirements.
- ? The 19th century plant communities for several sites were predicted by extrapolating from those sites where the surveyors provided vegetation descriptions to other sites based on the two sites having the same soils.
- ? The 19th century survey notes did not provide site specific vegetation information for the high terrace. However, the tree species lists included in the general description for each mile by the land surveyors were comparable with the current vegetation on unmanaged areas listed in the county soil survey. Therefore, the soil survey current vegetation was used to predict the 19th century vegetation on terrace and upland soils.
- ? Differences between the 19th century vegetation descriptions and the current vegetation listed in the soil survey suggests current vegetation is not a reliable indicator of 19th century vegetation on poorly drained soils where dyking and/or draining have altered site conditions. Those plants requiring well-drained soils to survive, which are part of the current plant assemblage on dyked and drained lands today, are assumed to be rare or absent in the 19th century before the land was cleared dyked and drained.

Vegetation maps:

“Map Veg-1: 1857/1871/1872 Vegetation next to the Lower Coos River and Daniels Creek” is a first approximation of the 19th century vegetation cover in the study area. “Map Veg Apdx-1: Soils Data Used to Prepare the 1857/1871/1872 Vegetation Map” and “Map Veg Apdx-2: Bearing Tree, Vegetation Notes from Line Summaries and Selected Additional Notes from the 1857/1871/1872 Land Surveys for Land Next to Coos River and Daniels Creek” display much of the information used to prepare Map Veg-1. The vegetation boundaries shown on Map Veg-1 are based on a GIS soils theme, which in turn is the same soils map contained in the Soil Survey of Coos County (Haagen 1989). The initial draft of Map Veg-1 was developed by assigning vegetation types to soil types based on the vegetation descriptions in the survey the survey notes. In some cases, the survey notes indicated that different vegetation types occurred on a given soil type in different locations in the study area. When this occurred, we revised the predicted vegetation for individual soil type polygons by taking into account the affect of geologic uplift on soil drainage. In other cases, the survey notes provided a description of vegetation on a particular line that was notably more detailed than normal, but not necessarily a different vegetation community from that assigned to other polygons with the same soil type. We broke those sites out as separate map units on the chance that they represented a unique vegetation assemblage. However, we cannot say for certain that the “ash, myrtle, maple” assemblage assigned to one concave site is really different from another concave site that “may include wet site associated hdwds.”

We made 5 polygon changes that were not part of the initial GIS soils data. Three are wetlands. The survey notes showed a “swamp” on the south line of section 29, T.25S.,R.11W., and a “marsh” on the south line of section 32, T.25S.,R12W. that did not have a corresponding soil polygon. We delineated a additional swamp, in section 5, T.26S.,R11W. based on the site’s similarity to swamp to the northeast. The prairie described in the survey notes and shown on Veg Map-1 was possibly maintained by Indian set fires, and therefore is related to human use patterns and not soil conditions. We also altered the map to remove a short man-made waterway in section 28, T25S.,R12W., that did not exist in the 19th century.

Soils and the Vegetation Communities They Supported in the mid to Late 19th Century:

Fluvaquents-Histosols complex (23): marsh prairie

Fluvaquents are on the lower position within the mapped areas of this complex, and are covered by average high tides. They also occur in the surge channels higher up. Histosols are on the upper position within the mapped area and are covered by extreme high tides. The Fluvaquents are barren whereas the Histosols are covered by salt-tolerant grasses, sedges and rushes.

Histosols soils supported level marsh prairies that were submerged by high tides in the winter. The Histosols have inclusions of low convex ground (natural levees and bars, and areas where sediment has accumulated around drift wood) that support patches of willow and spruce.

Langlois silty clay loam (34): marsh prairie

Deep very poorly-drained alluvium soils on flood plains and old tidal flats. Mottles are distinct or prominent. In some pedons, the A horizon may have layers of peat as much as 5 inches thick. The A horizon is medium acid to strongly acid. In some pedons, the Cg horizon may contain thin layers of peat, charcoal or tree limbs and roots.

This soil supported level marsh prairies, which were submerged by high tides in the winter. The Langlois soils have inclusions of low convex ground (natural levees and bars, and areas where sediment has accumulated around drift wood) that support patches of crab apple, willow and spruce.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
34 Langlois	very slow	very poorly-drained - flood plain/ old tidal flats	frequent	long	Nov-Mar	+ .5-3.0	Marsh prairie
On average 20% of mapping unit consists of these inclusions: Coquille Chetco Nestucca	very slow very slow very slow	very poorly very poorly somewhat poorly	rare * frequent frequent	-- long brief	-- Oct-May Dec-Apr	0-2.0 0-1.5 1.0-2.0	The soil inclusions may have supported the following patch types within the matrix of the dominant plant community: Marsh prairie no data Poorly-drained bottomland hdwds and brush swamps

* Most areas of Coquille soil are dyked. Before dyking these soils were subject to river and tidal flooding.

Coquille silt loam (12): marsh prairie, and poorly-drained bottomland hardwoods . See below for where the different vegetation communities occurred on the landscape.

Coquille silt loam soils are deep poorly-drained alluvial soils on flood plains. Unless diked and drained, these soils have a permanent water table at or near the surface that fluctuates with the tides. Most areas of this soil are protected from flooding by dikes. Soils are commonly very strongly acid.

Along the lower Coos River, the vegetation communities on Coquille soils are influenced by geologic uplift subsequent to soil deposition. The rate of geologic uplift, along the Lower Coos River, increases with distance up stream. As a result, Coquille soils near the mouth of Coos River were subject to tidal flooding in the winter favoring marsh prairie. Coquille soils farther upstream by the confluence of the South Fork and the Millicoma were subject to river flooding and supported crab apple and poorly-drained bottomland hardwood stands.

Marsh prairie sites: Coquille soils supported level marsh prairies, which were submerged by high tides in the winter. The Coquille soils have inclusions of low convex ground (natural levees and bars, and areas where sediment has accumulated around drift wood) that support patches of crab apple, willow and spruce. The survey notes suggest crab apple was more common than willow near where Coos River and Catching Slough come into Coos Bay. The higher areas of convex ground supported some myrtle and possibly other bottomland hardwood species. Currently, most areas of this soil are diked and so are no longer regularly subject to tidal and river flooding. Therefore, the plant assemblage supported by the diked and drained Coquille soils are unlike that which occupied the sites before settlement. This means there are few, if any, reference sites that could show us the pre-management conditions for the Coquille soil areas.

Poorly-drained bottomland hardwood sites: Myrtle was likely the dominant overstory tree species around the confluence of the South Fork Coos River and the Millicoma. Other trees may include bigleaf maple, and spruce. The understory contained crab apple. Willows are also present where there are gaps and edges that allow in sufficient light. Slight surface variations on the flood plain controlled the vegetation composition allowing myrtles, maples and spruce to establish in some areas and limiting vegetation cover to willow and crab apple in concave

areas. The high watertable would have restricted rooting depth and so windthrow would have been a common disturbance in the forested areas creating additional gaps. The probable vegetation cover type was poorly-drained bottomland hardwoods with gaps occupied by brush swamps

The vegetation on the flood plains along the South Fork Coos, above confluence, is not specifically described by the surveyors but rather are lumped into an over all description for each line. These descriptions do not include crab apple or willow. Dominant trees likely myrtle and maple. Considering soil characteristics and available vegetation descriptions, Coquille soils above the confluence supported vegetation similar to that at the confluence of the South Fork and Millicoma.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
12 Coquille	very slow	very poorly-drained	rare *	--	--	0-2.0 *	below confluence of So Fk Coos & Millicoma: Marsh Prairie. At confluence and up stream: Poorly-drained Bottomland Hardwoods/ Brush Swamp Mix.
On average 25% of mapping unit consists of these inclusions: Langlois Clatsop Chetco Nestucca	very slow very slow very slow very slow	very poorly very poorly very poorly somewhat poorly	frequent frequent frequent frequent	long brief long brief	Nov-Mar Dec-Mar Oct-May Dec-Apr	*+.5-3.0 0-2.0 0-1.5 1.0-2.0	The soil inclusions may have supported the following patch types within the matrix of the dominant plant community: Marsh prairie no data no data Poorly-drained bottomland hdwds and brush swamps

* Most areas of Coquille soil are dyked. Before dyking these soils were subject to river and tidal flooding.

Willanch fine sandy loam (62): Skunk cabbage swamps, ash swamps, brush swamps, and/or poorly-drained bottomland hardwoods.

Willanch soils are deep poorly-drained soils alluvial soils in depressional areas on flood plains. Unless drained, these soils are saturated during winter and have a seasonal high water table during stormy periods. Soil may be 60 inches deep but rooting depth may be limited by the seasonally high watertable. Mottles are faint to prominent.

Swamp sites: Gordon noted a swamp on Willanch soils on the line between sections 35 and 36, T.25S., R12W. The summary for that line shows the swamp was occupied by skunk cabbage. Flint noted ash, which tolerates swampy conditions, on the bottom land where Ren Smith Creek enters Daniels Creek in T.26S., R.12W., which is another area with Willanch soils. On the north boundary of section 2, T.26S., R12W., Flint also noted a “brush bottom,” possibly a brush swamp given that he also noted “swampy” conditions in the summary for that line. Vegetation communities on this soil on those sites were likely skunk cabbage swamps, ash swamps, and crab apple/willow thickets.

Poorly-drained bottomland hardwood sites: Line summaries also suggest Willanch soils supported myrtle, maple, and conifer on some sites. For example, the surveyor did not note swamps where the lines between sections 13 and 24, and sections 25 and 36, T.25S, R.12W., intersected Willanch soils. The surveyor did note myrtle and maple suggesting bottomland hardwood stands. However, those vegetation descriptions may reflect vegetation found on Nestucca and Nehalem inclusions in the areas mapped as Willanch or cover other soils besides Willanch crossed by the survey line. Trees like bigleaf maples, alders and others, which can survive on a wide range of sites, can grow on swampy sites. However, these species on swampy sites are often stunted and have poor growth form.

The county soil survey shows red alder, rushes, sedges, and black cottonwood also grow on Willanch soils. The locations of these plants types are tied to slight surface variations, which in turn, control drainage.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
62 Willanch	very slow	poorly-drained	frequent	brief	Nov-Mar	+0.5-2.0	Swamps: skunk cabbage swamps; ash swamps; brush swamps (crab apple & willow thickets) and/or poorly-drained bottomland hardwood stands
On average 25% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Nestucca	very slow	somewhat poorly	frequent	brief	Dec-Apr	1.0-2.0	Poorly-drained bottomland hdwds and brush swamps
Nehalem	slow	well-drained	frequent	brief	Dec-Apr	3.0-6.0	well-drained bottomland hardwoods

Nestucca-Willanch complex (42):

The Nestucca-Willanch complex are found on depressional areas of flood plains. The Willanch soils are generally found along old channels and the Nestucca soils further away from the old channels. The two soils are so intermingled as to make it not practical to map each separately. The Nestucca soils are somewhat poorly-drained and the Willanch soils are poorly-drained. Both are deep soils.

Graveyard Point is the only area visited by the 19th century land surveyors where Nestucca-Willanch complex is mapped. That site was described by Gordon to be a level marsh prairie which is submerged by high tides in the winter. This area likely had inclusions of low convex ground (natural levees and bars, and areas where sediment has accumulated around drift wood) that support patches of crab apple, willow and spruce.

Based on aerial photos, soil characteristics and current vegetation described in the county soil survey, the other areas with this soil likely supported intermingled poorly-drained bottomland hardwood stands and swamps.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
42 Nestucca-Willanch complex							At mouth of Coos River: marsh prairie in other locations intermingled poorly-drained bottomland hdwds and swamps
the components of the complex are:							
40% of area is Willanch soil	very slow	poorly-drained	frequent	brief	Nov-Mar	+0.5-2.0	Swamps: skunk cabbage swamps; ash swamps; brush swamps (crab apple & willow thickets).
45% of area is Nestucca soil	very slow	somewhat poorly	frequent	brief	Dec-Apr	1.0-2.0	Poorly-drained bottomland hdwds and brush swamps
On average 15% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Coquille	very slow	very poorly-drained	rare *	--	--	0-2.0 *	below confluence of So Fk Coos & Millicoma: Marsh Prairie. At confluence and up stream: Poorly-drained Bottomland Hardwoods/ Brush Swamp Mix.
Nehalem	slow	well-drained	frequent	brief	Dec-Apr	3.0-6.0	well-drained bottomland hardwoods

* Most areas of Coquille soil are dyked. Before dyking these soils were subject to river and tidal flooding.

Quosatana silt loam (48): poorly-drained bottomland hardwood stands

Quosatana soils are deep poorly-drained alluvium soils on flood plains. Profiles are medium to slightly acid. Quosatana soils formed in old channels and other concave areas on the flood plain.

Only about 3.5 chains of survey lines intersected Quosatana soils. Line description shows Douglas-fir, hemlock, cedar myrtle maple and ash on the line that crossed Quosatana. However, most of the line crossed upland soils. Since ash was listed in the line summary, and given that Quosatana soils are poorly-drained, ash was likely present, and possibly abundant, on the Quosatana bottomland soils at that location. The county soil survey description shows Douglas-fir, western hemlock, western redcedar, red alder, and black cotton wood growing on these soils with evergreen huckleberry, swordfern, bracken fern, soft rush and skunk cabbage in the understory. The presence of species characteristic of well-drained sites, like Douglas-fir, may be an artifact of management actions to drain these soils and therefore may not reflect the likely mid-19th century vegetation. If Douglas-firs were present in the areas

mapped as Quosatana soil before the sites were converted to agriculture then that species was likely confined to well-drain inclusions. Based on soil drainage characteristics, Quosatana likely supported poorly-drained bottomland hardwood stands with inclusions of well-drained hardwoods and swampy areas.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
48 Quosatana	very slow	poorly-drained	frequent	brief	Nov-Mar	0-1.5	poorly-drained bottomland hardwood stands with inclusions of well-drained hardwoods and swampy areas.
On average 20% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Unspecified poorly-drained soils	--	--	--	--	--	--	no data
Unspecified well-drained soils	--	--	--	--	--	--	no data

Nestucca silt loam (41): poorly-drained bottomland hardwood stands

Nestucca soils are deep somewhat poorly-drained alluvium soils on flood plains. These soils have a high watertable during the winter unless they are artificially drained. Nestucca soils are found between the natural levees and the upland. Dominant woody vegetation was myrtle, maple, alder, and crab apple. Where the soil occurs close to the bay, it supported some Sitka spruce. Spruce may have been also a stand component on this soil in cool shaded areas that are either north facing or in narrow draws.

These soils supported poorly-drained bottomland hardwood stands. Myrtle and bigleaf maples were the dominant tree species in the forested areas. Vegetation descriptions suggest that some areas supported closed canopy myrtle stands with little understory. Elsewhere, the myrtles grew in mixed stands with bigleaf maple. In some places, the stand understory contained crab apple. Alders were present where there was disturbance like stream bank erosion. Willows are also present where there are gaps and edges that allow in sufficient light. If Douglas-fir also grew on the area mapped as Nestucca, those Douglas-firs were likely on inclusions of soil types that have convex surfaces and thus are better drained.

Nestucca soils also supported crab apple or willow thickets on the wettest sites, along stand edges and in gaps. The crab apple dominated areas were more common near the mouth of Coos River where the Nestucca soils are next to those Coquille and Langlois soils that supported marsh prairies (where intersected by line between sections 28 and 29, and between sections 31 and 32, T.25S., R.12W.)

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
41 Nestucca	very slow	somewhat poorly-drained - flood plain	frequent	brief	Dec-Apr	1.0-2.0	Poorly-drained bottomland hardwoods and brush swamps (crab apple & willow thickets)
On average 20% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Langlois	very slow	very poorly	frequent	long	Nov-Mar	*+0.5-3.0	Marsh prairie
Coquille	very slow	very poorly	rare *	--	--	0-2.0	Marsh prairie, or poorly-drained bottomland hardwoods- brush swamp mix
Chetco	very slow	very poorly	frequent	long	Oct-May	0-1.5	no data
Nehalem	slow	well-drained	frequent	brief	Dec-Apr	3.0-6.0	well-drained bottomland hardwoods

* Most areas of Coquille soil are dyked. Before dyking these soils were subject to river and tidal flooding.

Nehalem silt loam (40): well-drained bottomland hardwood stands

Nehalem soils are deep well-drained alluvium soils on flood plains. Faint high-chroma mottles below the depth of 20 inches in some pedons. Medium to strong acid profile. Thin discontinuous lenses of sandy loam and loam in some pedons. Nehalem is found on natural levees next to streams.

Nehalem soils supported well-drained bottomland hardwood stands dominated by myrtle and bigleaf maple.

Crab apple trees occupied gaps and edges. These soils potentially could have supported scattered conifers that are tolerant of winter flooding. The line summaries suggest that Douglas-firs may have grown on the Nehalem soils. Nehalem soils are well-drained, a necessary condition for Douglas-fir survival on a site, however, frequent flooding would have limited Douglas-firs to hummocks. The surveyor's use of hardwoods instead of conifers for bearing trees indicates there were no conifers close enough to the meander post to be used suggesting that conifers, if present, were scattered. Salmonberry recorded in the shrub layer.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
40 Nehalem	slow	well-drained - flood plain	frequent	brief	Dec-Apr	3.0-6.0	well-drained bottomland hardwoods with some sites supporting a scattering of conifers
On average 20% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Langlois	very slow	very poorly	frequent	long	Nov-Mar	+0.5-3.0	Marsh prairie
Coquille	very slow	very poorly	rare *	--	--	0-2.0	Marsh prairie, or poorly-drained bottomland hardwoods- brush swamp mix
Chetco	very slow	very poorly	frequent	long	Oct-May	0-1.5	no data
Nestucca	very slow	somewhat poorly-drained	frequent	brief	Dec-Apr	1.0-2.0	Poorly-drained bottomland hardwoods - and brush swamp mix

* Most areas of Coquille soil are dyked. Before dyking these soils were subject to river and tidal flooding.

Kirkendall silt loam (33): well-drained bottomland hardwood stands

Kirkendall soils are deep, well-drained soils on flood plains. Soils are mix alluvial. Faint mottles below 20 inches in some pedons. Thin lenses of sandy loam or silty clay present in some pedons. The profile is medium acid to slightly acid. Narrow stream valleys characteristically have well-drained natural levees next to the stream and a poorly-drained backswamp at the edge of the flood plain. Kirkendall soils formed on natural levees next to streams, and Quosatana soils formed in channels and other concave areas on the flood plain.

The 19th century survey notes are not specific about how the vegetation on Kirkendall soils may have differed from the adjacent alluvial soils. The survey notes do show myrtle growing on Kirkendall soils along the river bank. Kirkendall, like Nehalem soil is a sandy loam, and is found on the natural levees next to streams. Therefore, it is higher and better drained than the alluvial soils behind the natural levees. Based on similarities to Nehalem soils, Kirkendall likely supported well-drained bottomland hardwoods stands composed of myrtles and bigleaf maple, possibly with a scattering of conifers on some sites.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
33 Kirkendall	slow	well-drained	frequent	brief	Nov-Apr	2.5-6.0	well-drained bottomland hardwoods with some sites supporting a scattering of conifers
On average 20% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Unspecified poorly-drained soils	--	--	--	--	--	--	no data
Unspecified well-drained soils	--	--	--	--	--	--	no data

Gardiner sandy loam (24)- well-drained bottomland hardwoods

Gardiner soils are deep well-drained soils on flood plains. These soils form in mixed alluvial. The soil profile is strongly acid to medium acid. Gardiner soils are found on the natural levees next to streams.

Before settlement, this soil supported well-drained bottomland hardwood stands where the dominant tree species were myrtle, bigleaf maple. These soils are found on convex areas on the flood plain, have a sandy loam texture and therefore well-drained. Of all the flood plain soils on Coos River, Gardiner provides the most favorable conditions

for those trees with a low tolerance of saturated conditions or extended flooding, for example Douglas-fir. The surveyor reports “fir” along with myrtle and maple along the survey lines crossing Gardiner soils. However, the description may be a summary of vegetation on adjacent upland in addition to that on Gardiner soils. The surveyor did not select Douglas-firs bearing trees while on Gardiner soils showing none were close enough to the corners and the meander posts to be used. This suggests a low Douglas-fir density. The most likely stand type on these soils is well-drained bottomland hardwoods dominated by myrtle and bigleaf maple, and containing a scattering of Douglas-fir.

The survey notes show the shrub layer ranged from salmonberry in the more moist areas to hazel on warm sites. Also, noted were vine maple, and thimble berries. Alders are also recorded in the survey notes. The alders likely occurred on the stream banks where either erosion and/or new deposition provided suitable seed beds and full sunlight coming in from over the river is assured.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
24 Gardiner	high	well-drained - flood plain	frequent	brief	Nov-Apr	>6.0	well-drained bottomland hardwoods with some sites supporting a scattering of conifers
On average 15% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Kirkendall	slow	well-drained	frequent	brief	Nov-Apr	2.5-6.0	well-drained bottomland hardwoods with some sites supporting a scattering of conifers
Quosatana	very slow	poorly-drained	frequent	brief	Nov-Mar	0-1.5	poorly-drained bottomland hardwood stands

Eilertsen silt loam (17): conifer overstory, myrtle understory

Eilertsen is a deep well-drained soil on stream terraces and is formed on mixed alluvium. The 19th century land survey notes do not describe the premanagement vegetation on this soil. Based on soil characteristics, position on the landscape, and current vegetation this soil likely supported stands with a conifer overstory and a myrtle understory. These soils are suited to growing Douglas-fir.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
17 Eilertsen	moderate	well-drained stream terrace	none	--	--	>6.0	conifer overstory, myrtle understory
On average 25% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Kirkendall	slow	well-drained	frequent	brief	Nov-Apr	2.5-6.0	well-drained bottomland hardwoods with some sites supporting a scattering of conifers
Gardiner	high	well-drained	frequent	brief	Nov-Apr	>6.0	well-drained bottomland hardwoods with some sites supporting a scattering of conifers

Meda loam (37C): conifer overstory, myrtle understory

Meda soils are deep well-drained soils on alluvium fans on 3 to 15% slopes. Meda soils developed from gravelly sediment deposits. These areas are alluvial fans that formed where steep ephemeral second or third order streams enter the less sloping terraces.

Meda soils are crossed by the survey lines only once. The “sample size” is small and the survey description does not distinguish a difference between Meda and Nestucca soils. The survey description suggests a closed canopy myrtle stand with little undergrowth. Soil characteristics and vegetation descriptions in the soil survey show that besides myrtle, Meda soils are likely to support Douglas-fir, western hemlock, vine maple, salal, red huckleberry, and swordfern. Disturbed forested sites will also have red alder, and trailing blackberries. The sampled site supported a myrtle stand. However, this soil should typically support a mixed stand with a conifer overstory and myrtle understory.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
37 Meda	moderate	welled drained - alluvial fans	none	--	--	>6.0	Conifer overstory, myrtle understory
On average 15% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Chismore	very slow	moderately well-drained	none	--	--	1.0-3.0	conifer overstory, myrtle understory
Gauldy Variant	moderate	somewhat excessive - high terrace	none	--	--	>6.0	conifer overstory, myrtle/ maple understory
Pyburn	very slow	poorly-drained - high terrace	none	--	--	0-3.0	No data

Chismore silt loam (10): conifer overstory, myrtle understory

These alluvium soils are deep, moderately well-drained soils on terraces and fans. The 19th century land survey notes do not describe the premanagement vegetation on this soil. Based on soil characteristics, position on the landscape, and current vegetation this soil likely supported stands with a conifer overstory and a myrtle understory.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
10 Chismore	very slow	moderately well-drained	none	--	--	1.0-3.0	conifer overstory, myrtle understory
On average 15% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Dement	moderate	well-drained	none	--	--	>6.0	no data
Unspecified poorly-drained soils	--	--	--	--	--	--	no data
Unspecified well-drained soils	--	--	--	--	--	--	no data

Gaudy Variant loam (25): conifer overstory, myrtle/ maple understory

Gaudy Variant soils are deep somewhat excessively drained alluvium soils on high terraces. The A & B horizon contain 5% cobbles. The C horizon contains 10 to 50% gravel and 5 to 15% cobbles. The Gauldy Variant formed in old stream channels where coarse texture sediment was deposited. The 19th century land survey notes do not describe the premanagement vegetation on this soil. Based on soil characteristics, position on the landscape, and current vegetation this soil likely supported stands with a conifer overstory and a myrtle/ bigleaf maple understory.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
25 Gauldy Variant	moderate	somewhat excessive - high terrace	none	--	--	>6.0	conifer overstory and a myrtle/ maple understory
On average 25% of mapping unit consists of these inclusions:							The soil inclusions may have supported the following patch types within the matrix of the dominant plant community:
Chismore	very slow	moderately well-drained	none	--	--	1.0-3.0	conifer overstory and a myrtle understory
Pyburn	very slow	poorly-drained - high terrace	none	--	--	0-3.0	No data

Wintley silt loam (63B, 63C, 63D): conifer overstory, myrtle understory

Wintley soils are deep well-drained alluvium soils on high terraces. Soil profiles are strongly acid to very strongly acid. The 19th century land survey notes show firs and hemlocks selected as bearing trees, but do not give a

good description of the premanagement vegetation on this soil. Survey notes indicate these terrace soils supported “myrtle, maple and fir.” Based on soil characteristics, position on the landscape, and current vegetation this soil likely supported stands with a conifer overstory and a myrtle understory.

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				Likely mid-19th century vegetation
			frequency	duration	months	watertable depth	
Wintley	moderate	well-drained - high terrace	none	--	--	>6.0	conifer overstory, myrtle understory
Depending on the percent slope, the average area of inclusion is from 15 to 25% of mapping unit							

Udorthents, level (57): Unknown see text below

These are flood plains and marshes that have been filled and leveled for commercial and industrial purposes. Based on the land survey notes, the area mapped as Udorthents on the line between sections 28 and 29, T.25S., R.11W., likely supported myrtle, bigleaf maple with a scattering of Douglas-fir making it a well-drained bottomland hardwood site. The 19th century vegetation on the other Udorthents sites on the lower Coos River is unknown due to a lack of data.

The following are vegetation breaks described in the 19th century notes that are not associated with soil mapping unit boundaries. These vegetation changes are likely a response to inclusions of soils with different physical characteristics from the mapped soil type:

- ? Swamp inclusion in marsh prairie on Coquille soils: East on line between sections 30 & 31, T.25S.-R.12W. - Mostly level marsh submerged by high tides in winter except for 56.50 *Enter swamp* . . . 67.27 *leave swamp* . . .
- ? Swamp inclusion on Langlois soils between marsh prairie and upland: East on south boundary of section 32, T.25S.-R.12W. - 26.50 *leave prairie marsh enter swamp* . . . 34.50 *foot of mountain leave swamp* . . .

Supporting Information for the 1857/1871 Vegetation Map: Notes on Soils, Geomorphic Surfaces, Soil Characteristics And Current Vegetation

Geomorphic Surface and Age for the Alluvial Soils from the Coos County Soil Survey (pg.162-169)

Soil series	Geomorphic surface	Age (based on Willamette Valley data)
12 Coquille 34 Langlois 40 Nehalem 41 Nestucca 62 Willanch	Ingram Surface (marine), Note: Coquille and Langlois are very young.	Same as inland Ingram (?)
33 Kirkendall 48 Quosatana	Ingram Surface (inland alluvial valley)	550 to 3,290 years old
17 Eilertsen	Winkle Surface (inland alluvial valley) Note: Winkle surface lies 10 to 25 feet higher than Ingram on the Coquille River.	Middle to early Holocene 5,250 to 12,240 years old
37 Meda	Senecal or Winkle overlain by Ingram Meda soils form from small alluvial fans on top of an older surface	
10 Chismore 25 Gaudy Variant	Senecal Surface (inland alluvial valley) Note: Senecal surface is about 50 feet higher than Winkle in vicinity of Coquille, OR.	
63 Wintley	Dolph Surface (inland alluvial valley)	Middle Pleistocene

Selected Flooding and Woodland management Information for Alluvial Soils from the Coos County Soil Survey

soil name and map symbol	infiltration rate	drainage	flooding (from table 14.--Water Features)				trees (from table 6. --Woodland Management and Productivity) note: the table did not show any hardwoods in the list of trees to plant.	
			frequency	duration	months	watertable depth	common trees	trees to plant
12 Coquille	very slow	very poorly drained - flood plain	rare *	--	--	0-2.0 *	none listed (main uses: hay, pasture & wildlife habitat)	none listed
34 Langlois	very slow	very poorly drained - flood plain/ old tidal flats	frequent	long	Nov-Mar	*+.5-3.0	none listed (main uses: hay, pasture & wildlife habitat)	none listed
62 Willanch	very slow	poorly drained - flood plain	frequent	brief	Nov-Mar	*+.5-2.0	none listed (main uses: hay & pasture)	none listed
48 Quosatana	very slow	poorly drained - flood plain	frequent	brief	Nov-Apr	0-1.5	none listed (main uses: hay & pasture)	none listed
41 Nestucca	very slow	somewhat poorly drained - flood plain	frequent	brief	Dec-Apr	1.0-2.0	none listed (main uses: hay & pasture)	none listed
40 Nehalem	slow	well drained - flood plain	frequent	brief	Dec-Apr	3.0-6.0	none listed (main uses: hay & pasture)	none listed
33 Kirkendall	slow	well drained - flood plain	frequent	brief	Nov-Apr	2.5-6.0	none listed (main uses: hay & pasture)	none listed
24 Gardiner	high	well drained - flood plain	frequent	brief	Nov-Apr	>6.0	none listed (main uses: hay & pasture)	none listed
17 Eilertsen	moderate	well drained - stream terrace	none	--	--	>6.0	df, wrc, wh, ra, gf (main uses: hay, pasture, home sites, timber)	df
37C Meda	moderate	welled drained - alluvial fans	none	--	--	>6.0	none listed (main uses: hay & pasture)	none listed
10 Chismore	very slow	moderately well drained	none	--	--	1.0-3.0	none listed	none listed
25 Gauldy Variant	moderate	somewhat excessive - high terrace	none	--	--	>6.0	none listed (main uses: hay, pasture & home sites)	none listed
63B, 63C, 63D Wintley	moderate	well drained - high terrace	none	--	--	>6.0	df, wh, gf, wrc, poc, ra, myr (main uses on 63B & C: hay, pasture & home sites; 63D: pasture & wildlife habitat)	df

* Most areas of Coquille soil are diked. Before diking these soils were subject to river and tidal flooding

Frequency defined: None - flooding is not probable
Rare - chance of flooding in any year 0 to 5%
Frequent - chance of flooding in any year >50%

duration defined: brief - 2 to 7 days

in the water table column, a plus sign indicates the water table is above the surface of the soil.

Soils are grouped by geomorphic surface and the groups separated by heavy lines

Vegetation Observed on the Alluvial Soils -active & abandoned flood plains from the Coos County Soil Survey

Soils	23	12	34	62	42	48	41	40	33	24
	Fluvaquents-Histosols	Coquille (see note)	Langlois	Willanch	Nestucca - Willanch complex	Quosatana	Nestucca	Nehalem	Kirkendall	Gardiner
	Fluvaquent are barren. The Histosols vegetated: mud flats/ salt marsh	poorly drained alluvium-unless diked and drained has a permanent water table at or near the surface that fluctuates with the tide	poorly drained alluvium on flood plains & old tidal flats	poorly drained depression areas on the flood plain/ occurs along old stream channels	Willanch and Nestucca soils are intricately intermingled. Willanch soils generally are along old stream channels. Nestucca soils are in areas farther away from the old channels.	found in old channels and other concave areas on the flood plain Drainage required for maximum production as an agricultural soil	found in concave areas on the flood plain between the natural levee and uplands Drainage required for maximum production as an agricultural soil	found on convex areas of flood plains, like natural levees, and are well drained.	formed on natural levees & bars. Soil are silt loam & silty clay loam.	found on natural levees & bars. Soils are sandy loams.
Douglas-fir						X	X	X	X	X
Western hemlock		X			X	X	X	X	X	X
Western redcedar		X				X	X	X	X	X
Port-Orford-Cedar										
Grand fir										
Sitka spruce		X	X		X			X		
Pacific Dogwood					X					
Red alder		X	X	X	X	X	X	X	X	X
Bigleaf maple										
Myrtle								X	X	X
Pacific willow			X	X	X					
Black cottonwood			X	X	X	X	X			
Trailing blackberry										
Salmonberry										
Rhododendron										
Salal										
Evergreen huckleberry		X				X	X	X	X	X
Red huckleberry										
Vine maple										
Tall Oregon grape								X	X	X
Cascade Oregon grape										
oxalis								X	X	X
Skunk cabbage		X	X	X	X	X	X			
Sword fern		X				X	X	X	X	X
Hairy brackenfern						X	X			
Sickle-leafed rush				X						
Large-headed rush				X						
Brown-headed rush			X	X						
Slough sedge		X	X	X	X					
Soft rush		X	X	X	X	X	X			
Eelgrass	X									
Seaside arrowgrass	X									
Pacific bulrush	X									
Tufted hairgrass	X									
Baltic rush	X									

Notes: Most Coquilles soil areas are now diked. Current vegetation on uncultivated sites do not represent the pre-management vegetation assemblage.

Vegetation Observed on the Alluvial Soils (terrace sites) from the Coos County Soil Survey

Soils	10B/C	17B	63B/C/ D	37C	25				
	Chismore	Eilertsen	Wintley	Meda	Gauldy variant				
	moderately well drained soils on terraces and fans of alluvium origin	well drained soils on stream terraces of alluvium origin	well drained high terraces of alluvium origin	well drained soils on alluvium fans	excessively well drained alluvium on high terraces				
Douglas-fir	X	X	X	X	X				
Western hemlock	X	X	X	X	X				
Western redcedar	X	X	X						
Port-Orford-Cedar									
Grand fir									
Sitka spruce									
Pacific dogwood									
Red alder	X	X	X	X					
Bigleaf maple					X				
Myrtle	X	X	X	X	X				
Pacific willow									
Black cottonwood									
Trailing blackberry			X	X					
Salmonberry	X				X				
Rhododendron	X		X						
Salal				X					
Evergreen huckleberry	X	X	X						
Red huckleberry				X	X				
Vine maple				X	X				
Tall Oregon grape									
Cascade Oregon grape		X							
oxalis		X	X						
Skunk cabbage									
Sword fern	X	X	X	X	X				
Hairy brackenfern					X				
Sickle-leaved rush									
Large-headed rush									
Brown-headed rush									
Slough sedge									
Soft rush									
Eelgrass									
Seaside arrowgrass									
Pacific bulrush									
Tufted hairgrass									
Baltic rush									

Supporting Information for the 1857/1871 Vegetation Map: Land Survey Notes Organized by Soil Types

Land survey notes are from the exterior survey of T.25S., R.12W. completed by Harvey Gordon (1858b).
Soils information from the Soil Survey of Coos County (Haagen 1989).

<u>soil</u>	<u>location and description/ bearing trees</u>
12: Coquille	<p>East on S. boundary of Sec. 31</p> <p>20.00 <i>foot of hill leave timber</i> [enter Coquille soil]</p> <p>21.50 <i>Slough 50 lks wide course N.</i></p> <p>22.00 <i>Set flag. Marsh, many sloughs impassable on line.</i> <i>Regained line on left bank of Kitchen [Catching] Slough. Set meander post drove charred stake raised mound with trench as per instruction. . . [mound & trench used when there are no suitable trees to use a bearing trees]</i></p> <p>39.27 <i>to meander post on left bank</i></p> <p>44.68 <i>to meander post on right bank . . . [no bearing trees listed indicating there were none available/suitable to scribe]</i></p> <p>80.00 <i>Land mostly level marsh overflowed by highest tides in winter but offering a heavy growth of grass useful for hay and pasture during the summer. Land 2nd rate.</i> [line crossed from Coquille to Langlois soil at about 60.00]</p>
34: Langlois	<p>East on S. boundary of Sec. 31</p> <p>80.00 <i>Set post corner of 5, 6, 31, & 32 from which</i> <i>A spruce 6 in dia . . .</i> <i>A crab apple 4 in dia . . .</i> <i>No other bearing trees convenient.</i> <i>Land mostly level marsh overflowed by highest tides in winter but offering a heavy growth of grass useful for hay and pasture during the summer. Land 2nd rate.</i></p> <p>East on S. Boundary of Sec 32</p> <p>26.50 <i>Leave prairie marsh Enter swamp . . . [area where a small stream enters Coos River flood plain. Similar areas to NE have Nestucca and Willanch soils]</i></p> <p>34.50 <i>Foot of mountain leave swamp</i></p> <p>40.00 <i>. . . not practicable to run this line through the full mile. Land same as last mile [Land mostly level marsh overflowed by highest tides in winter but offering a heavy growth of grass useful for hay and pasture during the summer. Land 2nd rate.]</i></p>
41: Nestucca	<p>North on E Boundary of sec 13</p> <p>36.00 <i>Enter River Bottom</i> [enter Nestucca soil]</p> <p>40.00 <i>Set qu[arter] sec post from which</i> <i>An alder 4 in dia . . .</i> <i>An alder 4 in dia . . .</i></p> <p>80.00 <i>. . . Land part mountainous soil 3rd rate and part bottom soil 1st rate. Timber fir maple myrtle & alder. Undergr[owth] - briars crab apple and gooseberry.</i></p> <p>[Bottom soils are Gardiner and Nestucca. Myrtle maple alder crab apple likely grew on the Nestucca soil. If fir was present, it grew on inclusions of better drained soil. Fir is likely included in line description to reflect conditions on upland soils and Gardiner soil. Briars and gooseberry suggest there are gaps in the overstory allowing direct sunlight to reach the forest floor. These gaps may be the result of fire (the surveyor noted burned timber on the uplands) or windthrow.]</p> <p>East on boundary of sect 31 [T.25S., R.11W.]</p> <p>5.01 <i>Set a meander post on left bank from which</i> <i>a maple 6 in dia. . .</i> <i>Vine maple 4 in dia . . . [Uncertain from the soil map if the meander post bearing trees are on Nestucca soils or on Meda loam, 3 to 15% slopes, soils.]</i></p> <p>34.50 <i>leave bottom begin to ascend mountain . . .</i> <i>. . . Land and soil 1st rate. Timber myrtle. Remainder of this line is too mountainous to</i></p>

be surveyed. [Description applies to Nestucca and Meda soils. Most of line crosses Nestucca soil. The vegetation description of “timber myrtle” without an “undergrowth” suggests an area of closed canopy myrtle with little understory vegetation.]

24: Gardiner

North on E Boundary of sec 13

52.85 *Left Bank of Millicoma River*

Set post from which

A myrtle 24 in dia . . .

Maple 28 in dia . . .

80.00 . . . *Land part mountainous soil 3rd rate and part bottom soil 1st rate. Timber fir maple myrtle & alder. Undergr[owth] - briars crab apple and gooseberry.*

[bottom soils are Gardiner and Nestucca. Crab apple more likely found on Nestucca and less likely on the Gardiner soil.]

South on E boundary of sec 36

60.50 *Enter River Bottom . . .*

80.00 . . .

A Maple 24 in dia . . .

A Maple 14 in dia . . .

Myrtle 24 in dia . . .

Myrtle 30 in dia . . .

Land mostly mountains. S. 1/4 mile level bottom soil 1st rate. Timber fir myrtle maple.

Undergrowth vine maple hazel briars and thimble berry.

[The mix of vine maple, hazel and thimble berries suggest moist well drained warm conditions.]

West on S Boundary of sec 36

4.18 *Right bank of Coos River. Set meander post from which*

A maple 1_ in dia . . .

A maple 24 in dia . . .

8.47 *set meander post on left bank at foot of perpendicular bluff . . . East of river soil 1st rate Timber myrtle. West of river mountainous & impractical to survey.*

East on boundary of sect 31 [T.25S., R.11W.]

1.83 *right bank of Coos River Set post from which*

A maple 24 in dia . . .

A maple 4 in dia . . .

34.50 . . . *Land and soil 1st rate. Timber myrtle.* [Only the first 1.83 chains on Gardiner soils. Most of line crosses Nestucca soils]

37C: Meda

East on boundary of sect 31 [T.25S., R.11W.]

5.01 *Set a meander post on left bank from which*

a maple 6 in dia . . .

Vine maple 4 in dia . . . [Uncertain from the soil map if the meander post bearing trees are on 41 or 37C]

34.50 *leave bottom begin to ascend mountain . . .*

. . . Land and soil 1st rate. Timber myrtle. Remainder of this line is too mountainous to be surveyed. [Description applies to Nestucca and Meda soils. Most of line on Nestucca.]

Survey notes are from the interior survey of T.25S., R.12W. completed by Harvey Gordon (1858a). Soils information from the Soil Survey of Coos County (Haagen 1989).

- soil** **location and description/ bearing trees**
- 23: Histosols North between secs 31 & 32 -
58.96
Right bank of Coos River set post from which
A willow 5 in dia . . .
A willow 4 in dia . . .
61.50 *Slough 30 lks courses W called "The Cut Off"*
80.00 . . . *Mostly level marsh submerged by high tides in winter. Soil 2nd rate. Undergrowth crab apple and briers.*
- [only about 2 chains of 23 - Histosols soils intersected by this line. Line description primarily reflects conditions on 12 - Coquille soils]
- E. on line between sec 30 & 31
- 2.00 *Enter prairie*
4.42 *Shore of Coos Bay at mouth of Kitchen Slough [Catching Slough] on its left bank. Set meander post which*
A spruce 12 in dia . . .
A spruce 4 in dia . . .
36.21 *Set meander post on Right bank of Kitchen Slough drove charred stake Corner is deemed ____ ____ without a trench and it is omitted*
40.00 *Set qu[arter] sec[tion] post drove charred stake raised mound with trench . . .*
40.50 *Left bank of Coos River set meander post drove charred stake raised mound with trench . . . [all these meander/ corner stakes witnessed with mounds and trenches, indicate no trees, including willow, near by that are large enough to scribe]*
80.00 . . . *Same as last mile [Mostly level marsh submerged by high tides in winter. Soil 2nd rate. Undergrowth crab apple and briers]*
- 12: Coquille (lower end of flood plain)
- North between secs 31 & 32 -
The line intersects many sloughs impassable at high tide . . .
40.00 *Set qu[arter] sec post from which*
A crab apple __ in dia . . .
A crab apple 6 in dia . . .
72.50 *Foot of Mountain (Estimated distance having ____ _____ [leave Coquille soil]*
80.00 . . . *Mostly level marsh submerged by high tides in winter. Soil 2nd rate. Undergrowth crab apple and briers.*
- E. on line between sec 30 & 31
- 56.50 *Enter swamp . . . [unmapped inclusion on area mapped as Coquille soils]*
67.27 *leave swamp*
71.00 *leave [? word not clear] prairie [leave Coquille soil] Enter timber foot of mountain*
80.00 *Same as last mile [Mostly level marsh submerged by high tides in winter. Soil 2nd rate. Undergrowth crab apple and briers.]*
- East on true line between sec 29 & 32 . . .
- 9.50 *Enter prairie marsh [enter Coquille soils]*
21.45 *Right Bank of Coos River set post from which*
A willow 5 in dia . . .
A myrtle 15 in dia . . .
32.71 *Left Bank of Coos River set post from which*
A willow 5 in dia . . .
40.00 *Set qu[arter] sec[tion] post drove charred stake raised mound with trench . . .*

- [boundary between Coquille and Langlois soils approximately 52 chains]
 68.50 *Leave prairie . . .*
 80.00 *Land mostly level marsh inundated by high tides in winter. Timber spruce.
 Undergrowth crab apple*

North between sec 28 & 29

- 54.00 [line summary covering Coquille, Langlois and Nestucca soils :] . . . *Land S of River
 marsh prairie with some crab apple trees & brush. . . . Soil 2nd rate.*

12: Coquille- (middle segment of the flood plain reach)

South between 26 & 27

- . . . *corner of secs. 22, 23, 26, & 27 set post from which*
A maple 24 in . . .
A maple 18 in . . .
A myrtle 18 in . . .
A myrtle 12 in . . .
 5.00 *Enter prairie*
 13.00 *Leave prairie. Enter timber and brush . . .*
 20.33 *Set post on left bank from which*
A vine maple 4 in dia . . .
A vine maple 4 in dia . . .
 25.00 *leave bottom . . . [line parallels boundary between Coquille and 63C- Wintley soils.]*
 40.00 . . . [Description for line:] *Land part level & part hilly. Soil 2nd rate. Timber fir maple
 & myrtle. S ½ mile not surveyed on account of brush and hilly.*

[The Douglas-fir referred to likely reflects vegetation on the Wintley soils. Given the location and description, the surveyor chose not to survey a narrow flat with Coquille soils south of the quarter corner because it was covered of heavy brush - most likely crab apple and/or willow.]

East between sections 23/ 26

- 40.00 *Set qu[arter] sec post from which*
A crab apple 4 in . . .
A crab apple 4 in . . .
 80.00 . . . [Line description, which covers Coquille soils, Gardiner and Nehalem soils on the levees by the Millicoma and upland soils.] *Land mostly level. Soil 1st rate. Timber
 myrtle maple and fir. Undergr[owth] crab apple & salmon bushes. [Fir most likely
 observed on the upland soils and possibly on the levees.]*

North between 22/ 23

- 10.00 . . . *Land part level soil 1st rate and part mountainous & unfit for settlement. Timber fir
 spruce maple & myrtle. Undergr[owth] gooseberry, briers & salmon bushes.*

[This 10 chain line samples roughly equal parts of 12- Coquille, 41-Nestucca and 51E an upland soil. The line description does not separate out the vegetation by position on the landscape]

South between sections 25/ 26

- 40.00 *Set qu[arter] sec post [quarter corner is on the approximate boundary between Coquille
 and Gardiner soils] from which*
A maple 24 in . . .
A maple 20 in . . .
 51.50 *Leave bottom [leave Coquille soils] . . .*
 80.00 . . . *Land part hilly & part bottom. Soil 1st & 2nd rate. Timber fir, myrtle and maple.
 Underg[rowth] hazel cherry, vine maple & briers [Neither crab apple nor willow noted
 on this line. Vegetation description does not distinguish between bottomland and
 upland. Undergrowth most likely reflect conditions on upland soils on this line.]*

Discussion on 12- Coquille soils:

The surveyor classified the Langlois soils and most of the Coquille soils as “2nd rate.” Taken in context with the rest of his descriptions, and considering modern soil survey descriptions, the surveyor applied the 2nd rate class to those soils that must be dyked and drained before they can be farmed. The surveyor applied the classification of “1st rate” to all other level soils including those that have seasonally high watertables and subject to winter flooding. The definition of 1st rate at the time of the survey apparently also allowed for inclusions of problem ground like swamps.

Down stream from confluence of the Millicoma and South Fork- Level marsh prairie which is submerged by high tides in the winter. The Coquille soils have inclusions of low convex ground (natural levees and bars, and areas where sediment has accumulated around drift wood) that support patches of crab apple, willow and spruce. The higher areas of convex ground may support some myrtle and possibly other bottomland hardwood species. Currently, most areas of this soil are diked and therefore no longer regularly subject to tidal and river flooding. Therefore the plant assemblage supported by the diked and drained Coquille soils are unlike that which occupied the sites before settlement. This means there are few, if any, reference sites that could show us the pre-management conditions for the Coquille soil areas.

North bank of the Millicoma by confluence- On tree covered areas, myrtle is likely the dominant species. Other trees may include scattered bigleaf maple, and spruce. Understory contains crab apple. Willows are also present where there are gaps and edges that allow in sufficient light. Slight surface variations (convex and concave areas on the flood plain) affect the vegetation composition allowing myrtles, maples and spruce to establish in some areas and limiting vegetation cover to willow and crab apple in others. The over all vegetation cover type was likely poorly drained bottomland hardwoods. However, vegetation in concave areas may have been limited to crab apple and willow. The high watertable would have restricted rooting depth and so the windthrow would have been a common disturbance in the forested areas creating gaps.

Flood plains on South Fork Coos (above confluence)- Vegetation on these Coquille soils is not specifically described by the surveyors but rather lumped in an over all description for each line. These descriptions do not include crab apple or willow. Dominant trees likely myrtle and maple.

34: Langlois North between secs 31 & 32 -

The line intersects many sloughs impassable at high tide . . .

80.00 . . . Mostly level marsh submerged by high tides in winter. Soil 2nd rate. Undergrowth crab apple and briers. [only 5 chains of this line include Langlois soil. Line description primarily reflects conditions on 12 - Coquille soils]

East on true line between sec 29 & 32 . . .

[boundary between Coquille and Langlois soils approximately 52 chains]

68.60 Leave prairie

69.75 slough - 25 lks wide course NE

80.00 set post corner of sec 28, 29, 32 & 33 from which

A spruce 18 in dia . . .

A willow 4 in dia . . .

An alder 4 in dia . . .

A fir 24 in dia . . . [the section corner appears to be on boundary between Langlois soils

and 63B - Wintley soils] Land mostly level marsh inundated by high tides in winter.

Timber spruce. Undergrowth crab apple [The vegetation type between edge of prairie at 68.60 and slough at 69.75 is not described. Speculate that this area was a natural levee possibly supporting crab apple and spruce.]

North between sec 28 & 29

54.00 [line summary covering Coquille, Langlois and Nestucca soils :] . . . Land S of River marsh prairie with some crab apple trees & brush. N of River Mountainous with fir and myrtle timber. Soil 2nd rate.

62: Willanch East between sections 13/ 24

22.25 Enter ____'s field . . . [22.25 chains is on the boundary between Willanch and Templeton soils (54D). The field boundary falling on the break between the two soils suggests Willanch was, to the settler, less suited to agriculture than Templeton soils. This is consistent with the relative drainage characteristics of the two soils in that

Templeton is a well drained soil, and Willanch is poorly drained.]

34.75 *Stream 4 lks wide course N enter bottom*

40.00 *Set qu[arter] sec post from which*

A maple 14 in dia . . .

A maple 14 in dia . . .

41.00 *Leave bottom foot of mountain . . .*

80.00 *Land same as last mile [on river bottom soils 1st rate. Timber description for entire line, both bottom land and upland, was fir, myrtle, maple]*

East between secs 25/ 36

23.00 *Leave bottom, Foot of mountain . . . [line crosses 3 different bottom land soils]*

80.00 . . . *Timber same as last mile [Timber fir, myrtle and maple]*

[vegetation description does not distinguish between the bottomland soils (Gardiner, Willanch, Nestucca) nor between bottomland and upland soils]

South between secs 35/ 36

5.00 *Enter swamp [enter Willanch soils]*

10.00 *Leave swamp . . . [leave Willanch soils]*

40.00 *Set qu[arter] sec post from which*

A yellow wood [cascara] 6 in . . .

A willow 5 in . . .

Near foot of mountain. S ½ mile mountainous and unsurveyable. N ½ mile soil 1st rate. Timber myrtle, maple. Undergr[owth] hazel, vine maple, salmonberry, crab apple, gooseberry skunk cabbage & briers too various to be classified. [The hazel likely only on the Gardiner soils. Briers suggest disturbance (possibly either fire or windthrow) had opened the stand prior to the survey.]

41: Nestucca

North between secs 31 & 32 -

45.80 *Set meander post on left bank of Coos River from which*

A crab apple 6 in dia . . .

A crab apple 6 in dia . . .

80.00 . . . *Mostly level marsh submerged by high tides in winter. Soil 2nd rate. Undergrowth crab apple and briers.*

[Only about 1 chain of Nestucca soils intersected by this line. Line description primarily reflects conditions on Coquille soils.]

North between sec 28 & 29

38.00 *Left Bank of Coos River set post from which*

A willow 4 in dia . . .

A ___ 4 in dia . . .

48.08 *Meander post on right bank [46F soils] from which*

A myrtle 36 in dia . . .

A myrtle 36 in dia . . .

54.00 . . . *Land S of River marsh prairie with some crab apple trees & brush. N of River [46F soils] Mountainous with fir and myrtle timber. Soil 2nd rate.*

[Most of line crossed Coquille and Langlois soils. Nestucca soils mapped along 5 chains of the section line next to the river. Cannot tell if Nestucca soils here supported marsh prairie or if there was not of sufficient area to merit a separate description. The bearing tree notes show Nestucca soils here supporting myrtle and willow. However, the line summary suggests the vegetation on this area of Nestucca soils was mostly “crab apple trees & brush”.]

South between lines 27 & 28

8.75 *Foot of hill enter bottom*

16.93 *Set meander post on right bank of Coos River from which*

A willow 4 in . . .

A crab apple 4 in . . .

- 23.00 *Set meander post on left bank of Coos River from which
A myrtle 12 in . . .
An alder 5 in . . .*
- 40.00 . . . *south of river the mountain is steep and unfit for settlement [narrow band of
Coquille soils between river and upland which does not fit this description]. Land on N
½ mile 2nd rate. Timber myrtle spruce and alder. Undergrowth briers and crab apple.*

North between 22/ 23

- 10.00 . . . *Land part level soil 1st rate and part mountainous & unfit for settlement. Timber fir
spruce maple & myrtle. Undergr[owth] gooseberry, briers & salmon bushes.*
[This 10 chain line samples roughly equal parts of 12- Coquille, 41-Nestucca and 51E an upland
soil. The line description does not separate out the vegetation by position on the landscape]

North between sections 23/ 24

- 80.00 . . . *On river bottom soils 1st rate. Timber fir myrtle & maple.*
[Line description for vegetation did not distinguish between upland and bottom land sites. Since
the line crossed Nestucca soils for only 2.5 chains, and considering the properties of Nestucca
soils, the vegetation description may not reflect the actual vegetation on the Nestucca soil in 1857.]

East between 25/ 36

- 23.00 *Leave bottom, Foot of mountain . . .* [line crosses 3 different bottom land soils]
80.00 . . . *Timber same as last mile* [Timber fir, myrtle and maple]
[vegetation description does not distinguish between the bottomland soils (Gardiner, Willanch,
Nestucca) nor between bottomland and upland soils]

42: Nestucca-Willanch Complex

North between secs 31 & 32 -

- 47.98 *Set meander post on Right bank [of Coos River (now the Cooston Channel)]. Drove
charred stake raised mound with trench . . .*
- ___.61 *Set meander post on the "Cut Off" Drove charred stake without mound . . .*
- 52.35 *Set meander post drove charred stake without mound or trench* [all these meander/
corner stakes witnessed with mounds and trenches, indicate no trees, including willow,
near by that are large enough to scribe]
- 80.00 . . . [line description:] *Same as last mile* [Mostly level marsh submerged by high tides
in winter. Soil 2nd rate. Undergrowth crab apple and briers.]

40: Nehalem

East between sections 23/ 26

- 52.70 *Left bank of the Millicoma R. set post from which
A myrtle 6 in . . .
A crab apple 5 in . . .*
- 57.00 *Leave bottom, foot of mountain*
- 80.00 . . . [Line description, which covers Coquille soils, Gardiner and Nehalem soils on the
levees by the Millicoma and upland soils.] *Land mostly level. Soil 1st rate. Timber
myrtle maple and fir. Undergr[owth] crab apple & salmon bushes.* [Fir most likely
observed on the upland soils and possibly on the levees.]

North between sections 23/ 24

- 58.02 [Right bank of Millicoma R.] *Set post from which
A myrtle 12 in . . .
A maple 15 in . . .*
- 80.00 . . . *On river bottom soils 1st rate. Timber fir myrtle & maple.*
[Line description for vegetation did not distinguish between upland and bottom land sites.
Description covers 9 chains of Nehalem, 2.5 chains of Nestucca and the balance are upland soils.]

- 24: Gardiner East between sections 23/ 26
- 49.10 *Right bank of the Millicoma R. set post from which*
A myrtle 18 in . . .
A myrtle 18 in . . .
- 80.00 . . . [Line description, which covers Coquille soils, Gardiner and Nehalem soils on the levees by the Millicoma and upland soils.] *Land mostly level. Soil 1st rate. Timber myrtle maple and fir. Undergr[owth] crab apple & salmon bushes. [Fir most likely observed on the upland soils and possibly on the natural levees.]*
- East between sections 13/ 24
- 14.55 *Meander post on left bank from which*
A myrtle 30 in dia . . .
A hazel 4 in dia . . .
- South between sections 25/ 26
- 36.00 *Set meander post on left bank [of Coos R.] from which*
A myrtle 24 in . . .
A maple 18 in . . .
- 40.00 *Set qu[arter] sec post [quarter corner is on the approximate boundary between Coquille and Gardiner soils] from which*
A maple 24 in . . .
A maple 20 in . . .
- 51.50 *Leave bottom [leave Coquille soils] . . .*
- 70.75 *Enter bottom [enter Gardiner soils]*
- 76.75 *Left bank of Coos River course NE. Set post from which*
A myrtle 18 in . . .
A myrtle 14 in . . .
- 80.00 *Set meander post [on Right bank Coos R.] from which*
A maple 8 in . . .
A maple 24 in . . .
A myrtle 10 in . . .
No tree NW
Land part hilly & part bottom. Soil 1st & 2nd rate. Timber fir, myrtle and maple. Underg[rowth] hazel cherry, vine maple & briers [vegetation description does not distinguish between bottomland and upland]
- West between 26/ 35
- 5.28 *Set meander post on left bank of Coos River from which*
A myrtle 24 in . . .
A maple 18 in . . .
- 6.75 *Leave bottom, foot of mountain.*
- 9.00 . . . *part bottom 1st rate. Timber same as last mile [Timber fir, myrtle and maple]*
- East between 25/ 36
- 23.00 *Leave bottom, Foot of mountain . . . [line crosses 3 different bottom land soils]*
- 80.00 . . . *Timber same as last mile [Timber fir, myrtle and maple]*
- [vegetation description does not distinguish between the bottomland soils (Gardiner, Willanch, Nestucca) nor between bottomland and upland soils]
- South between secs 35/ 36
- 5.00 *Enter swamp [leave Gardiner soils]*
- 10.00 *Leave swamp . . . [enter Gardiner soils]*
- 21.20 *Right bank of Coos River. Set post from which*
A myrtle 8 in . . .
A maple 18 in . . .
- 24.50 *Left bank set post from which*

A hazel 4 in . . .

A hazel 4 in . . .

40.00 . . . N ½ mile soil 1st rate. Timber myrtle, maple. Undergr[owth] hazel, vine maple, salmonberry, crab apple, gooseberry skunk cabbage & briers too various to be classified. [The crab apple, and skunk cabbage likely only on the Willanch soils. Briers suggest disturbance (possibly either fire or windthrow) had opened the stand prior to the survey.]

63B: Wintley South between sections 25/ 26
32.90 Right bank of Coos River set post from which
A fir 70 in . . .
A fir 60 in . . .

63C: Wintley South between sections 26/ 27
20.33 Set post on left bank from which
A vine maple 4 in dia . . .
A vine maple 4 in dia . . .
25.00 leave bottom . . . [line parallels boundary between Coquille and 63C- Wintley soils.]
40.00 Begin to descend. Set qu[arter] sec post from which
A fir 60 in . . .
A fir 45 in . . .
Land part level & part hilly. Soil 2nd rate. Timber fir maple & myrtle. S ½ mile not surveyed on account of brush and hilly.

Gordon's comments introducing the meander notes for interior survey of T.25S., R.12W.: *Much of the meandering in this township was run with a Smackalers magnetic compass and measured with a tape line 150 lks long using two boats.*

General Description recorded in the interior survey of T.25S, R.12W.: *The land in this Township is mostly mountainous and not deemed fit for settlement or cultivation. Through out its whole extent the timber has been mostly killed by fire and a large proportion has fallen down.*

The surveyed portion along Coos River includes much worthless land but there are some valuable locations already improved and a few places yet remain which will be occupied. The timber along the river is myrtle maple spruce & fir. On the mountains spruce and fir. Undergrowth briers goose berry vine maple and crab apple.

Land survey notes are from the subdivision of T.25S., R.11W. completed by Harvey Gordon (1858c). Soils information from the Soil Survey of Coos County (Haagen 1989).

<u>soil</u>	<u>location and description/ bearing trees</u>
41: Nestucca	<p>East between 29/ 32</p> <p>40.69 <i>Set meander post [on right bank Coos River] from which</i> A maple 9 in . . . A myrtle 12 in . . .</p> <p>51.50 <i>Leave bottom . . .</i> . . . <i>Land mostly 1st rate Timber myrtle maple & fir</i></p> <p>[description covers more than one soil; section line intersects the right bank approximately on the boundary between 41-Nestucca soil and 24-Gardiner soil therefore cannot tell from the notes if in fact the line summary accurately reflects the vegetation on the Nestucca soil on this bottom]</p> <p>South between 32/ 33</p> <p>28.50 <i>Enter bottom</i> 32.25 <i>Enter field</i></p> <p>[The boundary between bottom and field corresponds with line on soil map between 41-Nestucca and 24-Gardiner. The settler in 1857 must have found the Gardiner soil suitable for agriculture but not the Nestucca which is understandable based on soil characteristics]</p>
40: Nehalem	<p>East between 30/ 31</p> <p>73.29 <i>set meander post on left bank from which</i> A Myrtle 9 in . . . A Maple 20 in . . .</p> <p>73.70 <i>Enter Jackson's field</i></p> <p>80.00 . . . <i>corner of secs 29, 30, 31, 32</i> Maple 24 in . . . Willow 6 in . . . Yellowwood [another name for cascara] 10 in . . . Yellowwood 8 in . . .</p> <p><i>Land east of river level bottom. Soil 1st rate, Timber myrtle-maple-undergrowth salmon bushes</i></p> <p>South between 31/ 32</p> <p>1.00 <i>Leave field . . .</i> 8.00 <i>Leave bottom . . .</i> 35.50 . . . <i>Timber fir myrtle & maple undergrowth Salmonberry & Whortleberry</i></p> <p>North between 29/ 30</p> <p>0.90 <i>Leave field</i> 5.90 <i>Left bank Coos River . . . set meander post from which</i> A Maple 36 in . . . A Myrtle 34 in . . .</p> <p>8.75 . . . <i>on south side of river level bottom . . . Timber same as last mile [Timber fir myrtle & maple undergrowth Salmonberry & Whortleberry]</i></p> <p>East between 29/ 32</p> <p>0.50 <i>Leave Jackson's field</i> 1.50 <i>Enter marsh</i> 8.00 <i>Leave marsh</i> 33.75 <i>Enter Jackson's field</i> 37.50 <i>Left bank of Coos River set meander post from which</i> A maple 20 in . . . A maple 10 in . . .</p> <p>80.00 . . . <i>Land mostly 1st rate Timber myrtle maple & fir</i></p>

[Description covers more than one soil. The marsh is not reflected on the soil map as a separate unit. However, the photo base used for the soils map shows a break between fields at about the 1.5 chain mark, and slight changes in gray tones suggest a long narrow area of different conditions - possibly a low wet area]

33: Kirkendall

North between 27/ 28

41.05 *Right bank of Coos River course W. Set meander post from which*

A myrtle 9 in . . .

A myrtle 24 in . . .

51.00 *Leave bottom [leave Kirkendall soil]*

80.00 *. . . North of river soil mostly 1st rate. Timber myrtle maple and fir. Undergrowth salmon & whortle brushes. [Soils 46 E and 46F are north of Kirkendall soils and also covered by the same vegetation description. The survey notes show myrtle growing on Kirkendall soil at the river bank. Considering both soil characteristics and line description, Kirkendall likely supported myrtle, bigleaf maple and Douglas-fir.]*

24: Gardiner

East between 29/ 32

68.49 *Set meander post [on left bank of Coos River] from which*

A myrtle 25 in . . .

Vine maple 4 in . . .

Set corner of sec 28, 29, 32, & 33 from which

A maple 30 in . . .

A maple 24 in . . .

A maple 8 in . . .

A myrtle 15 in . . .

Land mostly 1st rate Timber myrtle maple & fir [description covers more than one soil]

South between 32/ 33

12.02 *Left bank of Coos river course E. Set meander post from which*

A myrtle 24 in . . .

A myrtle 18 in . . .

14.80 *Set meander post [on right bank] from which*

A maple 20 in . . .

A maple 24 in . . .

17.50 *Leave bottom . . . [leave Gardiner soil]*

32.25 *Enter field [reenter Gardiner soil]*

37.75 *Leave field*

38.00 *Right bank of Coos River course W. Set meander post from which*

A myrtle 24 in . . .

A myrtle 10 in . . .

40.11 *[end of survey line on left bank Coos River]*

. . . Land mostly level bottom soil 1st rate Timber same as last mile [Timber myrtle maple & fir]

North between 28/ 29

2.00 *Enter potato patch*

3.86 *Set meander post on left bank of Coos River from which*

A maple 36 in . . .

A maple 12 in . . .

47.50 *[Line covered both bottom land and upland soils]*

. . . Timber same as last mile [Timber myrtle maple & fir]. Undergrowth salmon & whortleberry bushes.

East between 28/ 33

4.50 *Leave bottom . . . [leave Gardiner soil]*

32.01 *Set meander post [soil 38f end of line] . . .*

Land level soil 1st rate. Timber same as last mile [myrtle maple & fir].

- 63C: Wintley East between 28/ 33
4.50 *Leave bottom [enter Wintley soil]*
6.00 *Top of hill*
7.95 *Left bank of Coos River course NW.*
Set meander post from which
A hemlock 30 in . . .
A hemlock 12 in . . .
32.01 *. . . Timber same as last mile [myrtle maple & fir].*
- 57: Udorthents North between 28/ 29
7.07 *Set meander post from which*
A maple 20 in . . .
A myrtle 15 in . . .
14.00 *Leave bottom*
47.50 *[Line covered both bottom land and upland soils]*
. . . Timber same as last mile [Timber myrtle maple & fir]. Undergr[owth] salmon &
whortleberry bushes.
[note: Udorthents are soils on filled and leveled sites. The original soil series is unknown]
- East between 28/ 33
7.95 *. . . line to right bank [of Coos River] distance 6.83*
14.78 *A myrtle stump 8 in dia is meander corner from which*
A myrtle 36 in . . .
No other bearing tree convenient S of line
Enter field
20.25 *Leave field*
26.78 *Right bank of Coos River. Set meander post from which*
A maple 12 in . . .
A maple 18 in . . .
32.01 *Set meander post [soil 38f end of line] . . .*
Land level soil 1st rate. Timber same as last mile [myrtle maple & fir].

Discussions on Nestucca- 41: In this township, Nestucca soils, likely supported poorly drained bottomland hardwood stands dominated by myrtle and bigleaf maple. The Coos County Soil survey documents this soil's poorly drained condition. Line descriptions do not break the Nestucca soils out from the better drained Nehalem and Gardiner soils. The vegetation description of myrtle maple and fir, which is applied to all three soils, may not truly reflect conditions on the Nestucca soils. Based on soil and vegetation descriptions in the Coos Soil Survey, the likely 1857 vegetation was likely poorly drained bottomland forest dominated by myrtle-bigleaf maple. The settler's exclusion of the Nestucca soil from his field (in notes for line between sections 32 and 33, T.25S.,R.11W.) suggests a problem with that soil from an agricultural perspective. If Douglas-fir was present, it would be limited to hammocks and inclusions of better drained soils.

Discussions on 24 - Gardiner, and 40 - Nehalem: Line descriptions do not break out Nehalem or Gardiner soils from each other or from adjacent areas of 41: Nestucca. However, a vegetation description of "Timber myrtle maple & fir" is consistently applied and fir would be expected given Nehalem's and Gardiner's well drained characteristic. The surveyor did not select Douglas-firs bearing trees while on these soils showing none were close enough to the corners and the meander posts to be used. This suggests a low fir density. The most likely stand type on these soils is well drained bottomland hardwoods dominated by myrtle and bigleaf maple and containing a scattering of Douglas-fir.

Additional information from the T.25S., R.11W. notes on the nature of Coos River in 1857:

On line between sections 22 and 27 at 45.55 chains: Right bank of Coos River at falls considered a valuable water power and above the head of ordinary tide water. The opposite shore is a high rocky bluff. As the country on the stream above does not seem suited for cultivation its survey was omitted. . .

[There is no longer a waterfall at this site. The size and nature of the fall is unknown but presumably if the fall in 1857 merited comment as a power site it had to have some size to it. Since we have seen no other record of the fall (an given Harvey Gordon is a reliable observer) we can only suspect the fall was blasted out of existence to facilitate the early log drives on the river.]

Gordon's comments introducing the meander notes for T.25S., R.11W.: *Both the Millicoma and Coos Rivers are rather narrower than such as the "Printed Manual" requires to be "meandered." Yet they are so surveyed for the following reasons. They are actually navigable at all seasons and indispensable as a means of conveyance and are in every instance regarded by claimants as a natural boundary. . .*

General Description [for T.25S., R.11W.]

This township is mostly timbered mountainous impossible to be settled or cultivated or surveyed. It is however ----- by the two branches of Coos River along which there is a little excellent bottom land mostly claimed under domation & preemption rights. The Millicoma & Coos River are navigable for vessels of a hundred tons burden as far as meandered. The Timber along the rivers is myrtle, maple, fir & ash. Undergrowth crab apple, vine maple & briers of many kinds - almost impenetrable -: on the mountains the timber is mostly fir and much of it is killed with fire.

[Gordon's map shows the upper extent of meandering and thus the upper extent of navigation for "vessels of a hundred tons burden" for the South Fork Coos to be just east of the center of section 27. Bill Hudson, BLM fish biologist and former member of the US Coast Guard, observed that area is still the upper extent of deep water on Coos River. He also observed that a 100-ton vessel, designed for river travel, could still get that far upstream with difficulty. The river bottom is now silted in to where a 100-ton vessel would have problems making it that far up during drier times of the year.]

Land survey notes are from the exterior survey of T.26S., R.12W. completed by Flint (1872a). Soils information from the Soil Survey of Coos County (Haagen 1989).

<u>soil</u>	<u>location and description/ bearing trees</u>
62: Willanch	West on South boundary sec 35, T.25S., R.12W. / North boundary sec 2, T.26S., R.12W <i>43.00 Enter beaver pond - deep mud and water [On Nestucca soil. Cross onto Willanch approximately 45 chains.]</i> <i>57.00 Across beaver dam - enter brush bottom</i> <i>65.00 Dry creek 5 lks runs SE</i> <i>68.00 Foot of mountain - . . . Daniels Creek which is rich alluvial and inclined to be swampy. Daniels Creek is a handsome stream of clear good water - Beaver plenty - Land all claimed by settlers. . .</i>
41: Nestucca	West on South boundary sec 35, T.25S., R.12W. / North boundary sec 2, T.26S., R.12W <i>43.00 Enter beaver pond - deep mud and water</i> <i>68.00 . . . Daniels Creek which is rich alluvial and inclined to be swampy. Daniels Creek is a handsome stream of clear good water - Beaver plenty - Land all claimed by settlers. . .</i>
40: Nehalem	West on South boundary of sec 35, T.25S., R.12W. / North boundary of sec 2, T.26S., R.12W. <i>34.00 Low bottoms - N&S [enter Nehalem soils]</i> <i>38.00 Daniels Creek 30 lks runs NE</i> <i>38.50 Wagon road up and down creek</i> <i>40.00 Set post to quarter section corner from which a Myrtle 30 in dia . . . Willow 18 in dia . . .</i> <i>68.00 Foot of mountain - burnt and brushy . . . Land mountainous - rough and very brushy - Timber nearly all killed by fire - surface loose shell rock sandy formation - except the valley of Daniels Creek which is rich alluvial and inclined to be swampy. Daniels Creek is a handsome stream of clear good water - Beaver plenty - Land all claimed by settlers. Dickmons house and improvements are situated on said valley, about 20. chs. North from quarter section past. -Daniels Creek derives its name from a man by that name one of the first settlers in the vicinity - August 25th 1871.</i>

Land survey notes are from the interior survey of T.26S., R.12W. completed by Flint (1872c). Soils information from the Soil Survey of Coos County (Haagen 1989).

<u>soil</u>	<u>location and description/ bearing trees</u>
62: Willanch	N between sec 11 & 12 <i>80.00 Set post to corner of secs 1, 2, 11, & 12 from which Cedar 28 in . . . Fir 26 in . . . Maple 6 in . . . Maple 6 in mile post is near the west bank of said creek - Timber is partly dead - fir, hemlock, cedar, myrtle, maple, & alder. [Flint did not record the point where the line entered the bottom so it is unclear if the corner is on Willanch soil or the adjacent upland soil (38F). The soils map shows the corner on Willanch soils.]</i>
	W between sec 1 & 12 <i>73.20 Enter bottom of Daniels Creek [Morgan Ck]</i> <i>73.60 Trail NW</i> <i>76.20 Daniels Creek [Morgan Ck] 30 lks wide course N10°W (E fork)</i> <i>80.70 The corner to secs 1, 2, 11, & 12- Soil 3rd rate except in creek bottom which is __ rate soil. Timber fir hemlock cedar myrtle & maple.</i>

S between sec 1 & 2

65.00 *Enter Daniels Creek [Morgan Ck] bottom.*

70.00 *Daniels Creek [Morgan Ck] 30 lks wide course N20°W*

80.16 *Corner to secs 1, 2, 11, & 12*

Soil in Daniels Creek [Morgan Ck] bottom 1st rate. The balance of south half of mile is good for stock grazing. The north half mile is 3rd rate soil rough and broken into ridges and canyons. Timber principally dead consisting of fir, hemlock, maple & myrtle-

West between secs 11 & 14

47.46 *Enter creek bottom [Ren Smith Ck bottom was not mapped differently from the adjacent uplands on the soils map - too narrow to consider unique?]*

52.26 *Creek 15 lks course N55°W*

52.71 *Leave creek bottom*

70.46 *enter creek bottom [near junction of Ren Smith and Daniels Creeks]*

76.96 *Daniels creek 30 lks wide course N10°W*

77.96 *Leave Creek bottom*

80.46 *The corner to secs 10, 11, 14, & 15*

Soil 3rd rate - excepting in the creek bottoms which is 1st rate. Timber fir hemlock & cedar on upland; & maple myrtle & ash in bottom lands.

North between sec 10 & 11

2.50 *Enter creek bottom [Enter Willanch soils]*

7.25 *Daniels Creek 30 lks wide course NW*

9.50 *Leave bottom [Leave Willanch soils]*

19.50 *Enter creek bottom [Enter Quosatana soils]*

20.00 *Creek 8 lks wide course SW*

23.00 *Leave creek bottom [leave Quosatana soils] - foot of ridge NE . . . Soil in creek bottom 1st rate. Timber fir, hemlock, cedar, myrtle maple ash.*

Note: One of Flint's two vegetation description specific to the bottom lands soils was for line between sections 11 and 14, which crosses Willanch soils. He noted ash on the bottom lands on that line, and he also noted ash on the line between sections 10 and 11. Based on these survey notes, ash's tolerance of flooding, and soils information, ash most likely grew on the flood plain where Ren Smith enters Daniels Creek..

48: Quosatana North between sec 10 & 11

19.50 *Enter creek bottom [Enter Quosatana soils]*

20.00 *Creek 8 lks wide course SW*

23.00 *Leave creek bottom [leave Quosatana soils] - foot of ridge NE . . .*

80.00 *. . . Soil in creek bottom 1st rate. Timber fir, hemlock, cedar, myrtle, maple, ash.*

41: Nestucca South between secs 2 & 3

48.86 *Trail down Daniels Creek*

49.86 *Enter [Daniels] creek bottom and potato patch [enter Nestucca soils]*

51.36 *Leave potato patch*

51.86 *Daniels creek 30 lks wide course east*

60.86 *Leave creek bottom [leave Nestucca soils]*

80.86 *The corner to secs 2, 3, 10, & 11. Soil in creek bottom 1st rate - the balance of the mile 3rd rate - suited only to stock range - Timber deadened by fire and much of it down.*

West between sec 3 & 10

37.15 *Daniels Creek 30 lks wide courses north. [no entry made on where line entered or left bottom]*

80.44 *. . . Timber hemlock, fir, cedar, myrtle & maple - Undergrowth vine maple, hazel, salmon, thimble & huckleberry bushes . . .*

Note: Flint's survey notes provided no vegetation description specific to Nestucca soils. Soil Survey descriptions and vegetation notes from Harvey Gordon's surveys on Coos River indicate Nestucca soils supported poorly drained bottomland hardwoods. Dominant trees were myrtle and bigleaf maple.

33: Kirkendall North between secs 14 & 15

31.50 *Enter creek bottom* [enter Gaudy Variant & crossed onto Kirkendall soils at approximately 37 chains]

63.30 *Daniels Creek 25 lks wide course NW*

40.00 *Set quarter post from which a
vine maple 8 in dia . . .
Vine maple 5 in dia . . .*

42.15 *Creek 2 lks wide course SW*

52.50 *Creek 2 lks wide course SW*

58.50 *Daniels creek 25 lks wide course N10°E*

[Flint did not record leaving the bottom. Based on the soils map, the section line crosses on to an upland soil (46E) at approximately 65 chains]

80.00 *Set post to corner secs 10, 11, 14, & 15*

Cherry 3 in dia . . .

Cherry 5 in dia . . .

Cherry __ in dia . . .

Cherry 3 in dia . . .

Soil 3rd rate timber fir, hemlock, cedar, maple & cherry.

[The 3rd rate soil class suggests Flint was considering the suitability of the land over all (to both sides of the narrow bottom) for agriculture and not just assessing the land directly under the survey line. The cherry trees likely observed growing on the upland soils.]

Note: Flint's survey notes provide no vegetation description specific to Kirkendall soils. Soil Survey descriptions and vegetation notes from Harvey Gordon's surveys on Coos River indicate Kirkendall soils supported well drained bottomland hardwoods. Dominant trees were myrtle and bigleaf maple with a possible scattering of Douglas-fir.

25: Gaudy Variant

North between secs 14 & 15

31.50 *Enter creek bottom* [enter Gaudy Variant & crossed onto Kirkendall soils at approximately 37 chains. Insufficient detail to determine vegetation composition from the notes.]

General Description

The quality of the soil in this township is usually 3rd rate, excepting in the bottoms near the streams which is 1st rate. The southern and eastern part of the township from about a line diagonally across from SE corner of sec 1 to SW corner sec 19 is green timber and will eventually be valuable; the balance of the township has been burnt by fire making the timber of little or no value.

Timber in the high lands is fir hemlock cedar spruce chittimwood [cascara] and dogwood; and maple, myrtle ash and alder on the bottom lands. The "Blue Ridge" running north and south through the south-eastern part of the township is covered with valuable timber; and from indications rich deposits of iron or are abundant in this ridge. Water is abundant and good.

A. R. Flint and L. L. Williams

Surveyed August 1871 to August 1872

Approved 11/6/1872

Discussion - Flint's notes covering the Daniels Creek area are not as informative as Gordon's notes are for the Coos and Millicoma Rivers. This is due to the smaller number of survey lines crossing the Daniels Creek bottoms compared to lines crossing the Coos and Millicoma. Another factor is Flint's survey is 14 years after Gordon's which means settlers had more time to modify the landscape. For example, Gordon makes no refer to a land access route from Coos River to Daniels Creek in 1857, where as Flint found a wagon road in 1871 on the north boundary of section 2 of T.26S., R.12W. However, we may be able to extrapolate from Gordon's description of Coos and

Millicoma to the Daniels Creek bottom.

Flint, in his notes for the north boundary of section 2 said the bottom land there was “inclined to be swampy” and had “beaver plenty”. This area is shown on the geology map as “marsh and peat.” Flint also noted a “brushy bottom” corresponding to a narrow spurting off the west of the Daniels Creek bottom. This suggests that at least along this edge, if not the whole “marsh and peat” area, that willow and possibly crab apple occupied this area before Euro-American settlement.

Flint noted some land being suitable for grazing livestock/ cattle. Taken in the context of the other notes, this suggests that settlers may have allowed cattle to free range on burned over steep upland areas that are near the bottom lands.

Flint’s notes suggest Oregon ash grew along the flatter reaches of Ren Smith Creek (sec line between 11 & 14; 12 & 13) , at the junction of Ren Smith and Daniels Creek (sec line between 11 & 10), on two tributaries to Daniels Creek (sec lines between 22 & 23; 23 & 24), headwall areas and mid-slopes (sec lines between 3 & 4; 15 & 22; 22 & 27; 12 & 13; 13 & 24).

Oregon ash is particularly suited to heavy clay/ silty-clay soils that are rich in humus, and poorly drained areas. Oregon ash will survive on sites too wet for any other species. Oregon ash has a fairly high tolerance to summer drought. The species will grow on sandy, rocky and gravelly soils in riparian areas or other areas subject to seasonal flooding (Niemiec et al. 1995). The following is speculative: Oregon ash probably disappeared from the bottom lands in the Daniels Creek drainage because the flood prone areas were converted to agriculture. The presence of Oregon ash in 1872 on upland sites and its absence from those sites today suggests that, in the absence of periodic disturbance, ash was out competed by the taller trees species on the upland areas.

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Cadastral Survey Notes Excerpts for the Eastern Part of the South Fork Coos Watershed

Exterior Lines

West boundary of T.27S., R.7W. Will. Mer.

From SW cor T.27S., R.7W. North on True line between secs 31 & 36. . .
60.00 Leave oak and enter fir timber at foot of mountain . . .

Land rolling - First three fourths mile timber oak destitute of undergrowth; last fourth fir & scattering cedar. Soil 2nd rate [This part of the township is to the southwest and just outside the South Fork Coos River Watershed. I included this entry because it shows oak woodlands were close to the Watershed.]

D. Hathorn
Survey done 1855
Survey approved 7/7/1856

North Boundary of T.28S. R.8W.

West on N boundary of sec.1. . .
37.00 Enter prairies N & S. . .
60.00 Enter oak openings is N & S. . .

Land is mostly hilly oak openings Soil 2 rate. [This part of the township is to the southwest and just outside the South Fork Coos River Watershed. I included this entry because it shows oak woodlands were close to the Watershed.]

West on N boundary of sec 2
0.50 Enter fir timber & commence ascending S. slope of mountain. . .
Land Mountainous & in places very steep & rocky. Well timbered with fir, & some hemlock & cedar. Soil 3 rate.
D. Hathorn
Survey done 1855
Survey approved 7/7/1856

West boundary of T.27S., R.8W. Will. Mer.

North between secs. 7 and 12.
. . . Timber fir and hemlock, dead and mostly fallen.

General Description

This line passes over very fair land and through excellent timber except the last two miles [west boundary of sections 5 & 6 which corresponds to edge of "timberless area" on the 1900 vegetation map] which are mountainous covered with fallen timber brush and briars. Total length of line over mountainous land or through dense undergrowth 480.08 chains.

William P. Heydon
Survey done in 1896
Survey approved 9/10/1897

Exterior lines of T.26S., R.8W. Will. Mer.:

Wm. Callahan was chainman, and L. C. Bateman was axman on this survey.
"West on true line, on north boundary sec. 3- . . . 35.50 Swamp grass - for animals- "
A. R. & S. C. Flint
Survey done in 1881
Survey approved 1/14/1882

South Boundary of T.27S., R.8W. Will. Mer.

General Description

The 6th Standard parallel South, for the first three miles through Range 8 West is over very rough land, terminating in a very abrupt descent to Wilsons Creek. The last three miles are through good fir, cedar and other varieties of timber.

No stone of value was observed along the line.
The land along the last two miles would make good family farms is cleared.
The country is well watered from Wilson Creek west.

The old markings along this line are plain except from the summit of the Coast Range Mountains, east to the northwest cor. Of sec. 1.

William P. Heydon
Survey done in 1896
Survey approved 9/10/1897

Interior lines

T.25S., R.8W. Will. Mer.

General Description

This township is similar (sic) in soil and timber to the other fractional townships we have surveyed. The ridges and canyons, (as a general thing) are quite as sharp and deep as any we have had: and particularly in the west and northwest parts of the township the cliff of rock are equal if not worse than any we have had to contend with this summer. There are strong indications of coal in several localities. One in section 14 where the outcropping (sic) are visible (sic) and by good judges said to be of superior quality.

S. C. Flint
Survey done in 1881
Survey approved 1/14/1882

T.25S., R.8W. Will. Mer. (Retracement and Resurvey)

North on retracement of West bdy. Of Sec. 28.

. . . No further trace of old survey line.

40.00 Almost impassable jungle of small fir, hemlock and fallen burnt timber: no trace of 1/4 sec. cor.

[the survey note entry for this 1/4 corner, made by Flint in 1881, reads:

40.00 Hemlock tree 6 ins. diam. For 1/4 sec. cor. wit. trees-

A fir 24 ins. diam. bears N 85 W 20 lks dist.

Fir 30 ins. diam. bears N 70 E 25 lks dist.]

79.90 . . . Post, destroyed; bearing trees badly decayed, otherwise, marked and witnessed as described by the surveyor General. . . Dense undergrowth of little fir, hemlock and fallen logs.

North, on retracement of W. Bdy. sec. 21.

Ascend along rocky ridge, in dense growth of little fir, hemlock and fallen timber. Exceptionally difficult to survey.

No traces of old sec. line north of cor. of secs. 21 and 28.

40.00 No trace of 1/4 sec. cor. [the survey note entry for this 1/4 corner, made by Flint in 1881, reads:

40.00 Set oak 1/4 post 3 feet long 3 in. sqr. from which a

Laurel 8 ins. diam bears S 60 E 15 lks. dist.

Fir 30 ins. diam bears N 60 W 26 lks. dist]

East bet. secs. 20 and 29.

Ascending steep ridge, through burnt timber and dense underbrush, exceptionally difficult to survey. . .

24.00 Deserted cabin, bears N. 5 chs. dist. . .

Soil 2nd and 3rd rate. Timber, largely burnt, -fir hemlock, cedar and madrone. Dense undergrowth, little fir, hemlock and rhododendron. . .

Other notes

Alder noted on boundary common to sections 19 and 30.

“Little fir” noted in the undergrowth description for several lines suggesting the stands had been opened enough to allow regeneration in the understory of the shade intolerant Douglas-fir. A likely cause would be a low to moderate severity underburn.

General Description

This Township is situated on the dividing watershed between the Umpqua and Coos Rivers. It is high, extremely mountainous, mainly covered with heavy timber of fir, hemlock, cedar, madrone, chinquapin, and alder, with a dense and heavy undergrowth of little fir hemlock, rhododendron, and salal with a heavy growth of poison ivy on the higher peaks. Several peaks rise to a height of 3000' above sea level. Green Peak lies in the S. 1/2 Sec. 5, with an elevation of 3500 ft. The soil ranges from 1st to 3rd rate. It is well watered with springs and creeks. Rocky ledges and rim-rocks are found through the Township. There are no indications of any mineral of any description nor of coal. There are no towns or villages, and but three Settlers in the Township; viz. Clark Haines in SW 1/4 of sec. 16. Ray Chandler in SE 1/4 SE 1/4 Sec. 8 and NE 1/4, NE 1/4 (sec) Sec.17: and W. L. Haines in NE 1/4 Sec. 16.

Clark Haines improvements consist of house 20' by 30', 1 story: barn. Woodshed. Out-houses. He has about two acres slashed, one acre fenced and in garden on which he raises vegetables necessary for his family of wife and child. Value of improvements, about \$400.00. Has been on the place since 1909.

W.L. Haines improvements consist of house 20' by 24', one story and well furnished. Two barns with out-buildings. He has about three acres slashed and about ? acres fenced and in gardens and small fruits, on which he raises enough vegetables for his family. Value of improvements about \$400.00

Ray Chandler's improvements consist of house, barn, out-buildings, sheds etc. He has about one acres slashed and 1/2 acre in garden. Value of improvements about \$250.

These three men are to be credited with the construction of about five (5) miles of good horse-trail, which must have cost them about \$1000.00 in labor to construct. Access to this country would be impossible but for this trail which the above have constructed, and which should be added to their improvements.

All have families and have no other homes. Their residence dates from 1908 and 1909.

Morris Wygant

Survey done in 1911
Survey approved 4/26/1913

Subdivision T.26S., R.8W. Will. Mer.

. . . line bet. Secs. 12 and 13. . .

80.00 At this point I made diligent search but find no trace of the cor. of sections 7, 12, 13, and 18, it is no doubt having been destroyed by fire.

Timber dead and fallen and timber mostly dead and fallen noted on several lines. Those lines, when partly or fully inside the South Fork Coos Watershed are shown on a map at the end of this section.

Willow is associated with riparian areas and requires full sunlight. Willow was noted on the following lines common to: 35&36, 23 & 24, 13& 24, 23 & 26, 10 & 11, 22 & 27, 28 & 33, 21 & 28, 8 & 9, 29 & 30, 20 & 29, 19 & 30, 19 & 20, 7 & 18, 6 & 7, 5 & 6,

Alder was noted on the following lines common to: 23 & 24,

White fir was noted on the following lines common to: 13 & 24, 22 & 23.

A 5 inch live oak was used as a bearing tree at the 1/4 corner common to sections 9 & 10

White cedar noted on the following lines common to: 8 & 9, 7 & 8, 6 & 7, 5 & 6,

The following is in the notes for the line common to 6 and 7: "Timber - excellent fir hemlock white and red cedar. Considerable of the white cedar in secs. 6 and 7 is burned and dead."

The surveyor recorded conditions too smokey to take latitude on the following days:
September 16, 1896; October 7, 15 & 18, 1896

General Description

This Thp contains nearly every variety of soil, from a rocky cinnabar formation to rich black loam, which is found along Coos River and some of its northern branches; any of it capable of producing excellent grain, grass or fruit, with the exception of a few stony ridges.

The mountain slopes are nearly all good soil.

This Tsp lies west of the Coast Range Mountains, with the exception of sec 1 and 2 & a part of secs 10 and 13, which lie upon the waters of the Umpqua River.

There is stove coal in sec 1 of a very good quality, near the center of the NE 1/4.

Plenty of fine building stone, is found in many places along the streams in the north part of the Thp.

The forest fires have destroyed the greater part of the timber through the central part of the Thp from the NE to the SW cor and its place is taken by dense growth of young timber. Poison laurel, mountain myrtle willow and vine maple.

The Callahan Trail extends along a divide of 2nd rate land, where many good ranches could be located; it passes through the south tier of sections and its final termination is at tide-water, on Coos River, in Range 11 W.

William B Heydon
Survey completed 1896
Survey accepted 9/10/1897

Subdivision T.27S., R.8W. Will. Mer.

The surveyor recorded conditions too smokey to take latitude on the following days:

August 5, 6, 8, 10, 11, 12, 13, 14, 18, 19, 20, 21, 22, 25, 26 & 27, 1896

September 2, 3, 4, 5, 6?, 7, 8,

In some of these entries, the surveyor also noted the forest fires were to the north.

Sugar pine noted on the lines between 34 & 35, 26 & 35,

Willow noted on the lines between: 2 & 3, 15 & 22, 28 & 33, 4 & 9, 4 & 5, 31& 32, 17 & 20, 18 & 19, 7 & 18, 8 & 8, 5 & 8,

Alder noted on the lines between: 5 & 8,

Yew noted on the lines between: 22 & 23, 14 & 23, 14 & 15, 28 & 29,

. . . S89°59' W. on a true line bet. Secs. 14 and 23. . . 70.00 Top of yew ridge. . .

N. 0°2'W. Bet. Secs 14 and 15, 4.00 top of yew ridge . . .

. . . line bet. sec. 2 and 3 . . . Timber nearly all yew and dead . . .

. . . true line bet. secs. 15 and 22 . . . Timber scattering fir, hemlock and cedar.

N.0°3'W bet. secs. 20 and 21 . . .

25.00 Swampy flat 25 ft above branch covered with very heavy timber (fir and cedar)

29.75 Leave swampy flat course nearly E and W.

. . . Line bet secs 4 and 5 . . .

Could find no trace of old cor. to secs. 4, 5, 32, 33 on north boundary of the Thp it having been destroyed by fire. . .

40.00 Found no trace of the 1/4 sec cor. . .

N.0°4' W. bet secs. 29 and 30. . .

20.00 Swamp 75 ft. below cor.

N.0°4'W. bet. secs. 7 and 8 . . .

74.00 Coos River 75 lks wide course NW 800 ft below section cor

74.40 Offset E. 75 lks to avoid rocky bank of river. . .

Soil 4th rate. Timber fir, hemlock and cedar, with some myrtle along Coos River. Undergrowth laurel, willow and vinemaple . . .

S.89°53'W. on a true line bet secs 5 and 8. . .

40.10 Set yew post, 15 lks from right bank of river. . . [*bearing trees are a fir 30 ins diam and fir 40 ins diam*]

48.00 Coos River 75 lks wide course NW . . .

80.20 . . . Timber fir, hemlock and cedar, nearly all dead except on last 15.00 chains. Undergrowth willow, alder, vine maple briars and fern. . .

N.89°57'E. on a true line bet secs 6 and 7. . .

61.50 Coos River 75 lks wide course NW

63.50 Leave Coos River and ascend. . .

. . . Soil is 4th rate. Timber poor quality of fir, hemlock and cedar; nearly all dead and fallen. Undergrowth fir laurel, hemlock and briars. . .

General Description

This township is located upon the headwaters of Coos River, and is drained by five of its southern branches. The surface is mountainous, the soil ranging from first to fourth rate. Along the streams and on top of ridges the surface is comparatively level.

There are fine forest of excellent timber, and the land upon which they stand when cleared will be adapted to grazing purposes and some of it for agriculture in fact first class grazing lands.

The timber in the central portions has been mostly destroyed by fire, and its place taken by dense undergrowth of fir, hemlock, cedar and briars being so thick on some of the lines as to be almost impenetrable especially where timber has fallen.

There are croppings of good sandstone on Coos River below the junction of Panther Creek also some indication of stove coal near the lines between sections 27 and 28.

At a moderate expense a fair wagon road could be constructed on the line of the old Coos Bay trail leading to the SW corner of this township.

William P Heydon

Survey don in 1896

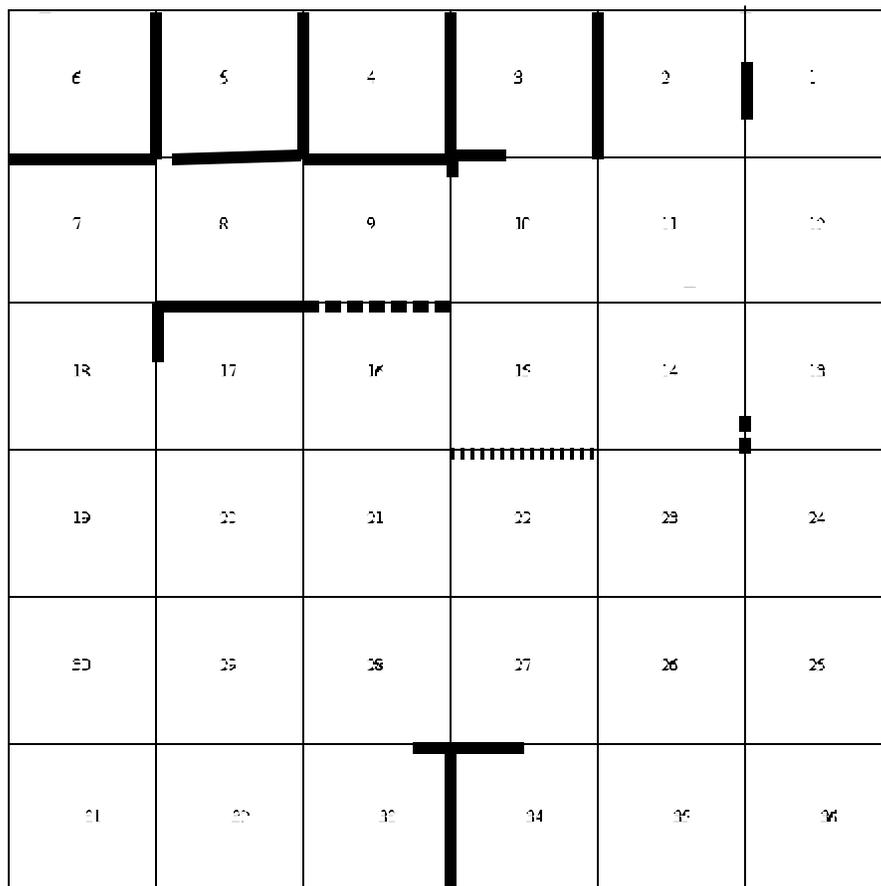
Survey accepted 9/10/1897

Location of Dead and Fallen Trees in T. 26 S., R. 8 W. Will. Mer. Noted in the 1896 Land Survey

6	5	4	3	2	1
7	8	9	10	11	12
13	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Heavy black lines mark where surveyor noted "Dead and fallen" or "Mostly dead and fallen" trees

Location of Dead and Fallen Trees in T. 27 S., R. 8 W., Will. Mer. Noted in the 1896 Land Survey



- Heavy block lines mark where surveyor noted "Dead and fallen" or "Mostly dead and fallen" trees
- - - - - Dashed black lines mark where surveyor noted "partly dead" or "partly dead and fallen" trees
- ||||| Timber Scattering