TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

TN FORESTRY-26

Davis, California
February 1980

CULMINATION OF MEAN ANNUAL INCREMENT OF DOUGLAS-FIR, PONDEROSA PINE, REDWOOD, WHITE FIR AND CALIFORNIA RED FIR

The attached tables were adapted from Woodland Technical Note WOOD-4, Washington, February 1977; Woodland Technical Note No. 2, Oregon, January 1979 and California red fir, white fir, and redwood by Jack Bramhall and Sherman Finch.

Woodland productivity of a particular soil is of considerable importance to a land manager. The most common expression of productivity is site index (total height of trees in the dominant crown canopy at a base age, usually 50 or 100 years.) Service employees recognize the significance of site index in relative terms, that is, land with a site index of 160 is more productive than site index 140, but less productive than site index 180. However, most technical materials refer to site index without explaining what it represents in terms of cubic feet or board feet volumes.

The attached tables express site index in such a way it can be related to volumes. It is necessary, for comparative purposes, to use a method that expresses one value for each site index. The method chosen is culmination of mean annual increment (CMAI). This is shown for both cubic and board feet and metric conversion.

Mean annual increment (MAI) is the average yearly increase per acre in the volume of the stand. This is computed by dividing the total volume by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. This point where a stand reaches its maximum annual rate of growth is called the <u>culmination of mean annual increment</u> (CMAI).

This age or point may be thought of as the most efficient time to harvest as far as tree growth is concerned. Other factors, such as stumpage values, taxes, interest rates, and management objectives affect the "art" of choosing when to harvest.

MAY 28 1980

This information can be used as follows:

1. Conservation Planning - It provides a means of discussing the potential productivity of a woodland soil on an annual basis. This provides a good basis for discussing alternate land uses in conservation planning.

2. Soil Survey Report - The culmination of mean annual increment (CMAI) will be used as the basis of rating woodland productivity in soil survey reports. This rating will be shown in metric units only.

In the following tables, the culmination of mean annual increment (CMAI) and the age when it occurs is shown for the corresponding site indices. For example, using a site index of 156 for Douglas-fir, the following volumes can be expressed:

1. A 60 year old stand will produce 165 cubic feet volume per acre per year at CMAI, or 9,900 (60 x 165) total cubic feet volume.

2. A 100 year old stand will produce 780 board feet (Scribner) volume per acre per year at CMAI or 78,000 (100 x 780) total board feet volume.

SHERMAN FINCH
State Woodland Conservationist

Enclosure

Table 1

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
80	58	70	4.1	146	160	291	110
81	60	70	4.2	151	160	299	110
82	61	70	4.3	156	160	307	110
83	62	70	4.3	162	160	316	110
84	63	70	4.4	167	160	324	110
85	64	70	4.5	172	160	332	110
86	66	70	4.6	178	160	340	110
87	67	70	4.7	183	160	348	110
88	68	70	4.8	189	160	356	110
89	69	70	4.8	194	160	365	110
90	70	60	4.9	199	160	373	110
91	72	60	5.0	206	160	382	110
92	73	60	5.1	212	160	391	110
93	74	60	5.2	219	160	401	110
94	75	60	5.3	225	160	410	110
95	77	60	5.4	232	160	420	110
96	78	60	5.5	238	160	429	110
97	79	60	5.5	244	150	438	110
98	81	60	5.7	251	150	448	110
99	82	60	5.7	258	150	457	110
100	84	60	5.9	265	150	467	100

Table 1

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
101	85	60	5.9	273	150	478	100
102	86	60	6.0	280	150	490	100
103	88	60	6.2	888	150	501	100
104	89	60	6.2	296	150	512	100
105	91	60	6.3	304	150	524	100
106	92	60	6.4	312	150	535	100
107	94	60	6.6	320	140	547	100
108	95	60	6.6	329	140	558	100
109	97	60	6.8	337	140	569	100
110	98	60	6.9	345	140	581	100
111	100	60	7.0	354	140	594	100
112	101	60	7.1	363	140	606	100
113	103	60	7.2	372	130	619	100
114	105	60	7.3	381	130	631	100
115	106	60	7.4	390	130	644	90
116	108	60	7.6	399	130	656	90
117	110	60	7.7	408	130	669	90
118	111	60	7.8	418	130	681	90
119	113	60	7.9	427	130	694	90
120	115	60	8.0	437	120	710	90
121	116	60	8.1	446	120	723	90

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
122	118	60	8.3	456	120	736	90
123	119	60	8.3	465	120	749	90
124	121	60	8.5	475	120	762	90
125	122	60	8.5	485	120	776	90
126	124	60	8.7	494	120	789	90
127	125	60	8.7	504	120	802	90
128	127	60	8.9	513	120	815	90
129	128	60	9.0	523	120	828	90
130	129	60	9.0	532	110	841	90
131	131	60	9.2	542	110	853	90
132	133	60	9.3	552	110	865	90
133	134	60	9.4	562	110	877	90
134	136	60	9.5	572	110	889	90
135	138	60	9.7	581	110	901	80
136	139	60	9.7	591	110	914	80
137	140	60	9.8	601	110	927	80
138	142	60	9.9	611	110	940	80
139	144	60	10.1	621	110	953	80
140	145	60	10.1	631	110	966	80
141	146	60	10.2	640	110	978	80
142	148	60	10.3	649	110	990	80

Table 1

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX			Metric (m^3/ha)	SCRIBNER (BD-FT)		INTERNATIONAL RULE (1/8) (BD-FT)	
	Vol 1/	Age	Vol 2/	Vol 3/	Age	Vol 4/	Age
143	149	60	10.4	658	110	1002	80
144	150	60	10.5	667	110	1014	80
145	152	60	10.6	676	110	1026	80
146	153	60	10.7	686	100	1037	80
147	154	60	10.8	695	100	1049	80
148	156	60	10.9	705	100	1061	80
149	157	60	11.0	714	100	1073	80
150	158	60	11.1	724	100	1085	80
151	159	60	11.1	733	100	1096	80
152	161	60	11.3	743	100	1106	80
153	162	60	11.3	752	100	1117	80
154	163	60	11.4	762	100	1127	80
155	164	60	11.5	771	100	1138	80
156	165	60	11.5	780	100	1148	80
157	167	60	11.7	790	100	1159	80
158	168	60	11.8	799	100	1169	80
159	169	60	11.8	809	100	1180	80
160	170	60	11.9	818	100	1190	80
161	171	60	12.0	827	100	1200	80
162	172	60	12.0	835	100	1209	80
163	173	60	12.1	844	100	1219	80

Table 1

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
164	174	60	12.2	852	100	1228	80
165	176	60	12.3	861	100	1238	80
166	177	60	12.4	870	100	1247	80
167	178	60	12.5	878	100	1257	80
168	179	60	12.5	887	100	1266	80
169	180	60	12.6	895	100	1276	80
170	181	60	12.7	904	100	1285	80
171	182	60	12.7	912	100	1295	80
172	183	60	12.8	921	100	1305	80
173	184	60	12.9	930	100	1315	80
174	185	60	12.9	938	100	1325	80
175	186	60	13.0	946	100	1336	80
176	187	60	13.1	955	100	1346	80
177	188	60	13.2	964	90	1356	80
178	189	60	13.2	973	90	1366	80
179	190	60	13.3	982	90	1376	80
180	191	60	13.4	991	90	1386	80
181	192	60	13.4	1000	90	1395	80
182	193	60	13.5	1009	90	1404	80
183	194	60	13.6	1018	90	1413	80
184	194	60	13.6	1027	90	1422	80

Table 1

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
185	195	60	13.6	1036	90	1431	80
186	196	60	13.7	1044	90	1440	80
187	197	60	13.7	1053	90	1449	80
188	198	60	13.9	1062	90	1458	80
189	199	60	13.9	1071	90	1467	80
190	200	60	14.0	1080	90	1476	80
191	201	60	14.1	1088	90	1484	80
192	202	60	14.1	1097	90	1493	80
193	202	60	14.1	1105	90	1501	80
194	203	60	14.2	1114	90	1509	80
195	204	60	14.3	1122	90	1518	80
196	205	60	14.3	1131	90	1526	80
197	206	60	14.4	1139	90	1534	80
198	207	60	14.5	1148	90	1542	80
199	208	60	14.6	1156	90	1551	80
200	208	60	14.6	1164	90	1559	80
201	209	60	14.6	1173	90	1567	80
202	210	60	14.7	1181	90	1575	80
203	211	60	14.8	1189	90	1583	80
204	211	60	14.8	1198	90	1591	80
205	212	60	14.8	1206	90	1599	80

Table 1

CONVERSION TABLE FOR DOUGLAS-FIR YIELDS/AC/YR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
206	213	60	14.9	1214	90	1607	80
207	214	60	15.0	1223	90	1615	80
208	214	60	15.0	1231	90	1623	80
209	215	60	15.0	1239	90	1631	80
210	216	60	15.1	1248	90	1639	80

DOUGLAS-FIR YIELDS

1/ Cubic foot: computed using yields from Table 2, USDA Technical Bulletin No. 201, Rev. Oct. 1949 (Interpolated for intervening site indices), for trees 1.5 inches (d.b.h.) and larger.

2/ Metric: 1 cubic meter per hectare (m^3/ha) = 14.3 cu.ft.; Figure 15, Misc. Publication 225, USDA, pg. 42.

3/ Board-foot: (Scribner): computed using yields from Table 4 (Scribner Rule), USDA Technical Bulletin No. 201 Rev. Oct. 1949 (Interpolated for intervening site indices), for trees 12 inches (d.b.h.) and larger.

4/ Board-foot: (International 1/8): computed using yields from Table 3 (International 1/8), USDA. Technical Bulletin No.201, Rev. Oct. 1949 (Interpolated for intervening site indices), for trees 7 inches (d.b.h.) and larger.

Table 2

CONVERSION TABLE FOR WESTERN HEMLOCK YIELDS/AC/YEAR

AT CULMINATION OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/4) (BD-FT) Vol 4/	Age
100	142	60	9.9	60[illegible]	100	789	90
101	144	60	10.1	612	90	801	90
102	145	60	10.1[illegible]	624	90	813	90
103	147	60	[illegible].3	637	90	826	90
104	149	60	10.4	649	90	838	90
105	151	[illegible]0	10.6	661	90	850	[illegible]
106	153	60	10.7	673	90	862	90
107	[illegible]4	60	10.8	686	90	874	90
108	156	60	10.9	698	90	88[illegible]	90
109	158	60	11.1	710	90	[illegible]99	90
[illegible]0	160	50	11.2	722	90	925	80
111	162	50	11.3	732	90	939	80
112	164	50	11.5	742	90	953	80
113	166	50	11.6	752	90	966	80
114	168	50	11.8	762	90	980	80
115	170	50	11.9	772	90	994	80
116	172	50	12.0	[illegible]82	90	1008	80
117	174	50	12.2	792	90	1021	80
118	176	50	12.3	802	80	1035	80
119	178	50	[illegible].5	814	80	1049	80
120	180	50	12.6	825	80	1063	80

Table 2

CONVERSION TABLE FOR PONDEROSA PINE YIELDS/AC/YR

AT THE CULMINATION POINT OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
40	30	60	2.1	55	200	84	200
41	31	60	2.2	59	200	88	200
42	31	60	2.2	63	200	93	200
43	32	60	2.2	67	200	98	200
44	33	60	2.3	71	200	102	200
45	34	60	2.4	75	200	107	200
46	34	60	2.4	79	200	111	200
47	35	60	2.4	83	200	116	200
48	36	60	2.5	87	200	121	200
49	37	60	2.6	91	200	125	200
50	38	60	2.7	95	200	130	200
51	38	60	2.7	98	200	134	200
52	39	60	2.7	102	200	139	200
53	40	60	2.8	105	200	143	200
54	41	60	2.9	109	200	147	200
55	42	60	2.9	112	200	152	200
56	42	60	2.9	115	200	156	200
57	43	60	3.0	119	200	160	200
58	44	60	3.1	122	200	164	200
59	45	60	3.1	126	200	169	200
60	46	50	3.2	129	190	177	160

CONVERSION TABLE FOR PONDEROSA PINE YIELDS/AC/YR

AT THE CULMINATION POINT OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
61	47	50	3.3	133	190	182	160
62	48	50	3.4	137	190	187	160
63	49	50	3.4	142	190	192	160
64	50	50	3.5	146	190	198	160
65	50	50	3.5	150	190	203	160
66	51	50	3.6	154	190	208	160
67	52	50	3.6	158	190	213	160
68	53	50	3.7	166	190	218	160
69	54	50	3.8	167	190	224	160
70	55	50	3.8	172	160	232	130
71	56	50	3.9	177	160	240	130
72	58	50	4.1	182	160	247	130
73	59	50	4.1	188	160	255	130
74	60	50	4.2	193	160	263	130
75	62	50	4.3	198	160	270	130
76	63	50	4.4	203	160	278	130
77	64	50	4.5	209	160	285	130
78	65	50	4.5	214	160	293	130
79	67	50	4.7	219	160	300	130
80	69	40	4.8	225	150	313	110
81	70	40	4.9	232	150	321	110

Table 2

CONVERSION TABLE FOR PONDEROSA PINE YIELDS/AC/YR

AT THE CULMINATION POINT OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
82	72	40	5.0	238	150	330	110
83	74	40	5.2	245	150	339	110
84	75	40	5.2	252	150	347	110
85	77	40	5.4	258	150	356	110
86	78	40	5.5	265	150	365	110
87	80	40	5.6	271	150	373	110
88	82	40	5.7	278	150	382	110
89	83	40	5.8	284	150	391	110
90	85	40	5.9	292	130	403	100
91	87	40	6.1	300	130	413	100
92	88	40	6.2	308	130	423	100
93	90	40	6.3	316	130	433	100
94	92	40	6.4	324	130	443	100
95	94	40	6.6	332	130	453	100
96	96	40	6.7	340	130	463	100
97	97	40	6.8	348	130	473	100
98	99	40	6.9	356	130	483	100
99	101	40	7.1	364	130	493	100
100	102	40	7.1	372	120	507	90
101	104	40	7.3	381	120	519	90
102	106	40	7.4	390	120	530	90

Table 2

CONVERSION TABLE FOR PONDEROSA PINE YIELDS/AC/YR

AT THE CULMINATION POINT OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
103	108	40	7.6	399	120	542	90
104	110	40	7.7	408	120	554	90
105	112	40	7.8	417	120	566	90
106	114	40	8.0	426	120	578	90
107	116	40	8.1	435	120	590	90
108	118	40	8.3	444	120	602	90
109	120	40	8.4	453	120	614	90
110	122	40	8.5	462	110	626	80
111	124	40	8.7	473	110	641	80
112	126	40	8.8	484	110	657	80
113	128	40	9.0	495	110	672	80
114	130	40	9.1	506	110	687	80
115	132	40	9.2	517	110	702	80
116	134	40	9.4	528	110	717	80
117	136	40	9.5	539	110	732	80
118	137	40	9.6	550	110	747	80
119	139	40	9.7	561	110	762	80
120	141	40	9.9	572	110	776	70
121	144	40	10.1	584	110	793	70
122	146	40	10.2	597	110	810	70
123	149	40	10.4	610	110	827	70

Table 2

CONVERSION TABLE FOR PONDEROSA PINE YIELDS/AC/YR

AT THE CULMINATION POINT OF

MEAN ANNUAL INCREMENT

SITE INDEX	Vol 1/	Age	Metric (m^3/ha) Vol 2/	SCRIBNER (BD-FT) Vol 3/	Age	INTERNATIONAL RULE (1/8) (BD-FT) Vol 4/	Age
124	151	40	10.6	622	110	844	70
125	154	40	10.8	635	110	861	70
126	156	40	10.9	647	110	879	70
127	159	40	11.1	660	110	896	70
128	161	40	11.3	672	110	913	70
129	164	40	11.5	685	110	930	70
130	166	40	11.6	700	100	947	70
131	168	40	11.7	714	100	964	70
132	170	40	11.9	729	100	981	70
133	173	40	12.1	743	100	998	70
134	175	40	12.2	758	100	1015	70
135	177	40	12.4	772	100	1031	70
136	179	40	12.5	786	100	1048	70
137	181	40	12.7	801	100	1065	70
138	183	40	12.8	815	100	1082	70
139	185	40	12.9	830	100	1099	70
140	188	40	13.1	844	100	1116	70
141	190	40	13.3	859	100	1133	70
142	192	40	13.4	873	100	1150	70
143	194	40	13.6	888	100	1168	70
144	197	40	13.8	903	100	1185	70

Table 2

CONVERSION TABLE FOR PONDEROSA PINE YIELDS/AC/YR

AT THE CULMINATION POINT OF

MEAN ANNUAL INCREMENT

SITE INDEX			Metric (m^3/ha)	SCRIBNER (BD-FT)		INTERNATIONAL RULE (1/8) (BD-FT)	
	Vol 1/	Age	Vol 2/	Vol 3/	Age	Vol 4/	Age
145	199	40	13.9	918	100	1202	70
146	201	40	14.1	932	100	1219	70
147	203	40	14.2	947	100	1237	70
148	205	40	14.3	962	100	1254	70
149	208	40	14.5	976	100	1271	70
150	210	40	14.7	991	90	1289	70
151	212	40	14.8	1006	90	1307	70
152	215	40	15.0	1022	90	1325	70
153	217	40	15.2	1037	90	1343	70
154	220	40	15.4	1052	90	1361	70
155	222	40	15.5	1068	90	1379	70
156	224	40	15.7	1083	90	1397	70
157	227	40	15.9	1098	90	1416	70
158	229	40	16.0	1114	90	1434	70
159	232	40	16.2	1129	90	1452	70
160	234	40	16.4	1114	90	1472	60

PONDEROSA PINE TABLE

1/ Cubic - foot: computed using Table 6, USDA Technical Bulletin 630 (Interpolated for intervening site indices), for trees 0.6 inches and more in diameter.

2/ Metric: 1 cubic meter per hectare (m^3/ha) = 14.3 cu. ft.; figure 15, Misc. Publication 225, USDA, Pg. 42.

3/ Board-foot: (Scribner Rule) computed using Table 16, USDA Technical Bulletin 630 (Interpolated for intervening site indices), for trees 11.6 inches (d.b.h.) and more in diameter.

4/ Board-foot: (International 1/8) computed using Table 11, USDA Technical Bulletin 630 (Interpolated for intervening site indices), for trees 6.6 inches (d.b.h.) and larger.

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha) VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
101	125	144	8.7	200	145
102	126	143	8.8	237	144
103	128	142	8.9	273	144
104	129	142	9.0	310	143
105	130	141	9.1	346	142
106	132	140	9.2	383	141
107	133	139	9.3	419	141
108	134	139	9.4	456	140
109	136	138	9.5	493	139
110	137	137	9.6	529	138
111	138	136	9.7	566	138
112	139	136	9.8	602	137
113	141	135	9.8	639	136
114	142	134	9.9	676	135
115	143	134	10.0	712	135
116	144	133	10.1	749	134
117	145	132	10.2	785	133
118	147	131	10.3	822	132
119	148	131	10.3	858	132
120	149	130	10.4	895	131
121	150	129	10.5	909	130

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
122	151	128	10.6	924	130
123	153	128	10.7	938	129
124	154	127	10.8	953	129
125	155	126	10.9	967	128
126	156	125	10.9	982	127
127	157	124	11.0	996	127
128	159	124	11.1	1011	126
129	160	123	11.2	1025	126
130	161	122	11.3	1040	125
131	164	121	11.5	1054	124
132	167	121	11.7	1068	124
133	170	120	11.9	1083	123
134	173	119	12.1	1097	123
135	177	119	12.3	1112	122
136	180	118	12.6	1126	121
137	183	117	12.8	1141	121
138	186	116	13.0	1155	120
139	189	116	13.2	1170	120
140	192	115	13.4	1184	119
141	194	114	13.5	1201	118
142	196	113	13.7	1218	118

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha) VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
143	199	113	13.9	1235	117
144	201	112	14.0	1253	117
145	204	112	14.3	1270	116
146	206	111	14.4	1287	116
147	208	111	14.5	1305	115
148	211	110	14.7	1322	115
149	213	110	14.9	1339	114
150	216	109	15.1	1357	114
151	218	108	15.2	1374	113
152	220	108	15.3	1391	113
153	223	107	15.5	1408	112
154	225	107	15.7	1426	112
155	228	106	15.9	1443	111
156	230	106	16.0	1460	111
157	232	105	16.2	1478	110
158	235	105	16.4	1495	110
159	237	104	16.5	1512	109
160	240	104	16.8	1530	109
161	243	103	17.0	1552	109
162	246	103	17.2	1575	108
163	249	102	17.4	1597	108

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha) VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
164	252	101	17.6	1619	107
165	255	101	17.8	1642	107
166	258	100	18.0	1664	106
167	261	99	18.3	1686	106
168	264	98	18.5	1709	105
169	267	98	18.7	1731	105
170	270	97	18.9	1754	105
171	273	96	19.1	1775	104
172	276	96	19.3	1798	104
173	279	95	19.5	1821	103
174	282	94	19.7	1843	103
175	285	94	19.9	1865	102
176	288	93	20.1	1888	102
177	291	92	20.4	1910	101
178	294	91	20.6	1932	101
179	297	91	20.8	1955	100
180	300	90	21.0	1977	100
181	303	89	21.1	2002	99
182	307	88	21.4	2028	99
183	311	87	21.7	2053	98
184	315	86	22.0	2079	98

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha) VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
185	319	85	22.3	2104	97
186	323	84	22.5	2130	97
187	326	83	22.8	2155	96
188	330	82	23.0	2181	96
189	334	81	23.3	2206	95
190	338	80	23.6	2232	95
191	342	79	23.9	2257	94
192	346	78	24.2	2283	94
193	350	77	24.4	2308	93
194	353	76	24.6	2334	93
195	357	75	24.9	2359	92
196	361	74	25.2	2385	92
197	365	73	25.5	2410	91
198	369	72	25.8	2436	91
199	373	71	26.0	2461	90
200	377	70	26.4	2487	90
201	381	69	26.7	2516	90
202	385	69	27.0	2545	89
203	390	68	27.2	2574	89
204	394	68	27.5	2603	88
205	398	67	27.8	2632	88

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha) VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
206	402	66	28.1	2661	87
207	406	66	28.4	2690	87
208	410	65	28.7	2719	86
209	415	65	29.0	2748	85
210	419	64	29.3	2777	85
211	423	63	29.6	2805	85
212	427	63	29.9	2834	84
213	432	62	30.2	2863	84
214	436	62	30.5	2892	83
215	440	61	30.8	2921	83
216	444	60	31.1	2950	82
217	448	60	31.4	2979	82
218	453	59	31.7	3008	81
219	457	59	31.9	3037	81
220	461	58	32.2	3006	80
221	465	57	32.5	3098	79
222	470	57	32.8	3130	79
223	475	56	33.2	3162	78
224	480	56	33.5	3195	78
225	484	56	33.8	3227	77
226	489	55	34.2	3259	77

Table 3

CONVERSION TABLES FOR REDWOOD YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	VOLUME 1/ CUBIC FEET	AGE	METRIC (m^3/ha) VOLUME 2/	INTERNATIONAL RULE ¼ INCH RULE BOARD FEET VOLUME 3/	AGE
227	494	55	34.5	3291	76
228	499	54	34.9	3324	76
229	503	54	35.1	3356	75
230	508	54	35.5	3388	75
231	513	53	35.8	3420	74
232	518	53	36.2	3453	74
233	522	52	36.5	3485	73
234	527	52	36.8	3517	73
235	532	52	37.2	3549	72
236	537	51	37.5	3582	72
237	541	51	37.8	3614	71
238	546	50	38.1	3646	71
239	551	50	38.5	3678	70
240	556	50	38.9	3711	70

Redwood Yields

1/ Cubic Feet: Computed using yields from personal communications from James Lindquist, December 23, 1977 and from California Agricultural Experiment Station, Bulletin 796, August 1963. Table 8 for trees, 4.5 inches (d.b.b.) and larger (interpolated for intervening site indices).

2/ Metric: 1 cubic meter per hectare (m^3/ha) = 14.3 cubic foot. Figure 15, Miscellaneous Publication 225, USDA, page 42.

3/ International ¼ inch rule board foot: Computed using yields from personal communications from James Lindquist, December 23, 1977 and from California Agricultural Experiment Station, Bulletin 796, August 1963, Table 15, for trees larger than 4.5 inches (d.b.b.) and larger (interpolated for intervening site indices).

Table 4

CONVERSION TABLE FOR WHITE FIR YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	AGE 1/	Volume CUBIC FEET 1/	Volume m^3/Ha	Volume BF 2/ Intl. 1/8
30	70	51	3.6	163
31	70	52	3.7	176
32	70	54	3.8	188
33	70	55	3.9	201
34	70	56	4.0	214
35	70	57	4.1	226
36	70	59	4.1	239
37	70	60	4.2	252
38	70	61	4.3	265
39	70	63	4.4	277
40	70	64	4.5	290
41	70	67	4.7	309
42	70	69	4.9	329
43	70	72	5.1	348
44	70	75	5.3	368
45	70	77	5.4	387
46	70	80	5.6	406
47	70	83	5.8	426
48	70	86	6.0	445
49	70	88	6.2	465
50	70	91	6.4	484

Table 4

SITE INDEX	AGE 1/	Volume CUBIC FEET 1/	m^3/Ha	BF 2/ Intl. 1/8
74	70	176	12.3	1139
75	70	179	12.5	1167
76	70	183	12.8	1196
77	70	186	13.0	1224
78	70	189	13.2	1252
79	70	193	13.5	1280
80	70	196	13.7	1308
81	70	198	13.8	1330
82	70	200	14.0	1351
83	70	202	14.1	1373
84	70	204	14.3	1395
85	70	206	14.4	1416
86	70	209	14.6	1438
87	70	211	14.7	1460
88	70	213	14.9	1482
89	70	215	15.0	1503
90	70	217	15.2	1525

1/ Table 1, University of California Ag. Exp. Sta. Bul. 407.

2/ Table 2, University of California Ag. Exp. Sta. Bul. 407.

JWB 10-9-79

Table 4

SITE INDEX	AGE 1/	Volume CUBIC FEET 1/	Volume m^3/Ha	Volume BF 2/ Intl. 1/8
51	70	95	6.6	511
52	70	98	6.9	537
53	70	102	7.1	564
54	70	106	7.4	590
55	70	109	7.6	617
56	70	113	7.9	644
57	70	117	8.1	670
58	70	121	8.4	697
59	70	124	8.6	723
60	70	128	8.9	750
61	70	131	9.1	778
62	70	135	9.4	805
63	70	138	9.6	833
64	70	142	9.9	861
65	70	145	10.1	888
66	70	149	10.4	916
67	70	152	10.9	944
68	70	156	10.9	972
69	70	159	11.1	999
70	70	163	11.4	1027
71	70	166	11.6	1055
72	70	170	11.9	1083
73	70	173	12.1	1111

Table 5

CONVERSION TABLE FOR CALIFORNIA RED FIR YIELDS/ACRE/YEAR

AT CULMINATION OF MEAN ANNUAL INCREMENT

SITE INDEX	AGE 1/	Volume		
		CUBIC FEET 1/	m^3/Ha	BF 2/ Intl. 1/8
20	140	76	5.3	447
21	140	79	5.5	474
22	140	82	5.7	502
23	140	84	5.9	529
24	140	87	6.1	556
25	140	90	6.3	583
26	140	93	6.5	611
27	140	96	6.7	638
28	140	98	6.9	665
29	140	101	7.1	693
30	140	104	7.3	720
31	140	107	7.5	743
32	140	110	7.7	770
33	140	113	7.9	795
34	140	116	8.1	820
35	140	119	8.3	845
36	140	123	8.6	871
37	140	126	8.8	896
38	140	129	9.0	921

1/ Table 1, University of California Ag. Exp. Sta. Bul. 456.
2/ Table 2, University of California Ag. Exp. Sta. Bul. 456

Table 5

SITE INDEX	AGE 1/	Volume CUBIC FEET 1/	Volume m^3/Ha	BF 2/ Intl. 1/8
39	140	132	9.2	946
40	140	135	9.4	971
41	140	139	9.6	998
42	140	142	9.9	1025
43	140	146	10.1	1052
44	140	149	10.4	1079
45	140	153	10.6	1105
46	140	157	10.9	1132
47	140	160	11.1	1159
48	140	164	11.4	1186
49	140	167	11.6	1213
50	140	171	11.9	1240
51	140	175	12.2	1270
52	140	180	12.5	1301
53	140	184	12.8	1331
54	140	188	13.1	1361
55	140	192	13.4	1391
56	140	197	13.7	1422
57	140	201	14.0	1452
58	140	205	14.3	1482
59	140	210	14.6	1513
60	140	214	14.9	1543