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Redwood Forest Handbook
1948.

ARNOLD F. WALLEN

Arnold F Wallen

STATE OF CALIFORNIA
DIVISION OF FORESTRY
DEPARTMENT OF NATURAL RESOURCES

410 ROSENBERG BUILDING
SANTA ROSA, CALIF.
TELEPHONE: 3910

Jack L. Reveal

N. W. SPAULDING'S

TABLE

FOR THE

MEASUREMENT OF LOGS

CALIFORNIA SAW WORKS

721 BRANNAN STREET

SAN FRANCISCO

TABLES & MISCELL. DATA

This is from a field notebook I carried on the farm forestry project - Sebastopol. 1942-46(47)
This was a forerunner of the Redwood Forest Handbook that Lucede Waller + I did circa 1950..

Diam. 20' O.B.	Distance from ⊙ of Tree - ft. 20'	30'	40'	50'	60'
	Plus Correction in Inches.				
24	1.2	0.7	0.6	–	–
30	1.8	1.2	1.0	0.7	–
36	2.6	1.7	1.4	1.1	–
42	3.6	2.4	1.9	1.6	1.2
48	4.8	3.4	2.4	2.0	1.7
54	6.0	4.3	3.1	2.4	2.1
60	7.4	5.3	3.8	2.9	2.4
66	9.1	6.0	4.6	3.6	2.9
72	10.8	7.2	5.3	4.3	3.6
78	12.7	8.4	6.5	5.0	4.3

BASAL AREAS

DBH	BA. □'	DBH	B.A. □'
4	.09	32	5.58
5	.14	34	6.30
6	.20	36	7.07
7	.27	38	7.88
8	.35	40	8.73
9	.44	42	9.62
10	.54	44	10.56
11	.66	46	11.54
12	.78	48	12.57
13	.92	50	13.63
14	1.07	52	14.75
15	1.23	54	15.90
16	1.40	56	17.10
17	1.58	58	18.35
18	1.77	60	19.63
19	1.97		
20	2.18		
21	2.40		
22	2.64		
23	2.88		
24	3.14		
25	3.41		
26	3.69		
27	3.98		
28	4.28		
29	4.59		
30	4.91		

DIAMETERS OF Logs, required to Square into timbers.

DIAM. OF Log INSIDE-Bark (inches)	Side of Square (inches)
8.5	6
11.3	8
13.2	10
17.0	12
19.7	14
22.6	16
25.3	18
28.4	20
31.2	22
33.8	24

Note: allow for saw-kerf, crooked logs.

Plot Dimensions:

1 Acre:	208.7'□	- radis	117.75'
½ "	147.57'□	- "	83.26'
¼ "	104.35'□	"	58.88'
⅕ "	93.34'□	"	52.66'
1/10 "	66.□	"	37.2'
1/40	33'□	"	18.6'
1/~~40~~ 160	16½'	"	9.3

LOCAL VOLUME TABLES

******

OLD GROWTH REDWOOD

D.O.B. 20 ft.	Height* Feet	Bark Thickness	Volume Bd. Ft.
26		5	750 880
28			101 116
30	79	6	130 145
32			1590 180
34			201 214
36			227 246
38			264
40	97	8	305 325
42			3450
44			393 418
46			444
48			495 530
50	109	9	546
52			6030 633
54			663 695
56			727 758
58			789 821
60	117	10	852 885
62			9170
64			994
66			1068
68			1144 1184
70	123		1223
72			13050
74			1377

*Merchantable height to a diameter i. b. 60% of the 20' diameter i. b.

Prepared from volume tables for olg growth redwood by Wm. Hallin, USFS.

USDA-SCS Sonoma Farm Forestry Proj

Board feet Spaulding Log Scale

Diameter in inches	Number of 16' logs in merchantable length													Diameter in inches
	2	3	4	5	6	7	8	9	10	11	12	13	14	
14	250													14
15	270													15
16	300	500												16
17	340	540												17
18	370	590	810											18
19	400	640	880											19
20	440	700	960	1200										20
21	490	760	1030	1290										21
22	530	820	1110	1390										22
23	590	890	1190	1490										23
24	640	960	1280	1590	1880									24
25	700	1040	1370	1690	2000									25
26	760	1120	1470	1800	2140									26
27	840	1200	1570	1910	2260									27
28	920	1290	1670	2030	2390	2770								28
29	1000	1390	1770	2150	2520	2920								29
30	1090	1490	1880	2280	2660	3070								30
31	1180	1590	1990	2410	2810	3240								31
32	1280	1700	2110	2550	2960	3420	3890							32
33	1380	1820	2240	2710	3130	3600	4030							33
34	1490	1940	2390	2870	3310	3790	4240							34
35	1600	2070	2540	3030	3500	3970	4460							35
36	1720	2200	2690	3200	3690	4180	4680							36
37	1860	2340	2860	3380	3880	4370	4890							37
38	2000	2510	3040	3570	4090	4590	5130	5670						38
39		2680	3210	3760	4290	4820	5370	5920						39
40		2850	3400	3960	4500	5050	5600	6190	6710					40

OLD-GROWTH REDWOOD

Figures below lines obtained by extending curves.

Samuel Fritz and
H. A. Spoehel
University of California
May, 1999

	8	9	10	11	12	13	14	
71	20670	21720	22960	24320	26810	28140		71
72	21320	22430	23700	25230	27790	29130		72
73		23120	24470	26160	28670	30130		73
74		23850	25230	27160	29600	31190		74
75		24570	26010	28950	30600	32260		75
76		25240	26820	28820	31580	33330		76
77			27690	29130	30800	32590	34580	77
78			28440	30020	31780	33600	36000	78
79			29260	30920	32720	34770	37500	79
80			30080	31830	33710	34970	38910	80
81			30900	32720	34770	37200	40630	81
82			31700	33600	35800	38460	42000	82
83			32500	34500	36850	39770	43580	83
84			33400	35400	37900	41070	45170	84
85			34300	36300	38950	42470	46800	85
86			37200	39980	43600	48420		86
87			38100	41020	44900	50050		87
88			39000	42070	46150	51700		88
89				43300	47570	53350		89
90				44310	48840	55000		90
91				45380	50130	56650		91
92				46410	51400	58200		92
93				47470	52680	59880		93
94				48500	53960	61880		94
95				49970	55280	63400		95
96				50400	56480	65280		96

	4	5	6	7	8	9	10	11	12	13	14	
41	3630	4390	4740	5390	5860	6450	7000					41
42	3860	4410	4990	5550	6020	6720	7280	7850				42
43		4650	5240	5810	6390	7010	7570	8150				43
44		4900	5500	6080	6690	7300	7880	8470	9160			44
45		5170	5780	6360	6980	7600	8190	8800	9480			45
46		5460	6080	6650	7290	7920	8520	9160	9830			46
47		5760	6380	6960	7620	8250	8860	9500	10190			47
48		6090	6700	7300	7980	8610	9240	9900	10550	11180		48
49			7040	7660	8330	8990	9650	10280	10940	11600		49
50			7400	8030	8730	9390	10040	10680	11350	12040		50
51			7790	8420	9140	9810	10470	11120	11710	12510		51
52			8200	8860	9570	10240	10910	11590	12280	12990	13700	52
53			8630	9310	10030	10700	11390	12080	12690	13500	14220	53
54			9080	9770	10490	11180	11890	12600	13320	14040	14800	54
55				10240	10980	11680	12410	13130	13860	14620	15390	55
56				10740	11480	12200	12970	13700	14450	15230	16030	56
57				11240	12020	12770	13530	14300	15060	15860	16680	57
58				11770	12530	13320	14120	14900	15680	16490	17330	58
59				12290	13010	13900	14710	15500	16320	17140	18030	59
60				12860	13660	14490	15330	16170	16980	17840	18730	60
61				13420	14230	15100	15960	16800	17630	18530	19450	61
62				14000	14830	15720	16610	17490	18350	19270	20230	62
63				14590	15420	16360	17260	18180	19050	20030	21000	63
64				15180	16010	17010	17930	18890	19780	20800	21800	64
65				15770	16690	17670	18630	19590	20540	21580	22600	65
66				16390	17320	18300	19320	20300	21310	22400	23160	66
67					17990	18960	20010	21030	22090	23140	24330	67
68					18670	19630	20720	21790	22850	24120	25240	68
69					19330	20310	21470	22550	23710	25000	26180	69
70					19990	21020	22190	23320	24550	25880	27140	70

Table of Contents
Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7 Page 8 Page 9 Page 10 Page 11 Page 12 Page 13 Page 14

LOCAL VOLUME TABLES

REDWOOD 2nd

DBH (")	Volume Bd.Ft.	Volume Cords	Height	Vol. 1/4" kerf
6		.03	36	
8	15	.06	43	14
10	31	.105	50	29
12	58	.168	57	52
14	99	.246	63	89
16	144	.338	68	130
18	203	.446	73	183
20	272	.570	77	245
22	348	.692	80	313
24	437	.843	83	393
26	528	.996	85	475
28	643	1.18	88	579
30	760	1.37	90	684
32	915	1.61	93	824
34	1080	1.89	96	972
36	1270	2.20	99	1143
38	1480	2.53	102	1332
40	1700	2.86	105	1530

Prepared by Mors, Aug. 1940
1.5' stump; 5" DIB at top
Trees scaled Inter. Rule 1/8" kerf
in 16.3' logs
1 cord equals 90 cu. ft.

for 1/4" kerf reduce by 9.5 %

CUMULATIVE - VOLUME TALLY - 2ND. GROWTH REDWOOD

SPAULDING RULE 1/5 ACRE PLOT

DBH	NUMBER OF 16 FOOT LOGS PER TREE 8" top i.b.			
	2	3	4	5
12	6·13·19·26·32 38·45·58·64 70·77·83·90	9·17·26·34 43·52·69·69 77·86·95·103	13·26·39·52 64·77·90·103 116·129·142	PLOT NO. .... TYPE .... LOCATION .... OWNER ..... CRUISER .... DATE ..... CULL %
14	9·18·27·36·44 53·62·71·80 89·98·107·116	13·22·34·45 56·67·78·90 101·112·123	18·36·54·72 90·107·127·145 163·181·199	
16	11·22·34·45·56 67·78·90·101 112·123·134	17·35·52·69 86·104·121·138 155·173·190	23·47·70·94 117-140·164 187·211·234	
18	14·29·43·58·72 87·101·116·130 145·159·174	22·45·67·89 111·134·156·178 201-223·245	30·60·90·120 150·181·211·241 271·301·331	38·76·114·152 189·227·265 303·341·379
20	17·35·52·70 87·104·122 139·157·174	27·54·80·107 131·158·185 211·238·265	36·72·108·144 179·215·251·287 323·359·395	45·90·136·182 227-272·316 362·407·453

	2	3	4	5	6
22	21-43·64 85·106·128 149·170·192	32·64·96 128·159·191 223·255·287	43·87·130 173·216·260 303·356·390	55·109·164 219·273·328 383·438·492	VOLUME IN TENS OF BOARD FEET PLOT RADIUS 52.7'
24	24·44·73·98 122·147·171 196·220·245	38·76·113 151·189·227 265·302·340	51·103·154 205·256·308 359·410·462	64·129·193 258·322·387 451·516·580	
26	28·57·85·114 142·171·199 228·256·285	44·88·131·175 219·263·307 350·394·438	59·118·176 235·294·383 412·470·524	75·149·224 298·373·448 522·597·671	92·184·276 368·480·553 645·737·829
28	33·66·98·131 164·198·230 262·295·328	50·101·151·201 251·302·352 402·453·503	67·135·202 270·337·404 472·539·609	87·174·262 349·436·523 610·698·785	105·209·314 418·523·628 732·837·941
30	37·74·112 149·186·223 260·298·335	57·114·171 228·285·343 400·457·514	78·156·234 312·389·467 545·623·701	97·194·292 389·486·583 680·778·875	120·239·359 479·598·718 838·958·1077

	4	5	6	7	8
32	88·175·263 351·438·526	111·221·332 442·553·664	134·269·403 538·672·846	157·314·471 628·785·943	181·362·543 724·904·1085

REDWOOD VOLUME TABLE

Scribner Gross Volume

DOB 20 FT	Number of 20 FT. LOGS 1	2	3	4	5	6	7	8	TOP DIB
16	120	230	310						12
18		240	370	470	600				12
20		280	430	570	740				12
22		330	530	710	910				12
24			670	880	1100				12
26			810	1060	1300				13
28			950	1270	1530				14
30			1100	1470	1790	2180			15
32			1300	1690	2030	2490	2900		16
34			1450	1910	2300	2800	3290	3790	17
36			1750	2150	2590	3180	3680	4230	18
38			1840	2400	2900	3500	4100	4680	19
40			2050	2690	3220	3860	4500	5200	20
44			2500	3240	3980	4650	5500	6210	22
48				3810	4700	5580	6580	7420	24

Sheet 1

DOB 20 FT	Number of 20 FT. LOGS 1	2	3	4	5	6	7	8	TOP DIB
52	4570	5600	6470	7640	8800				26
56	5300	6500	7960	8950	10450				28
60		7420	9120	10330	12030	13350			30
64		8450	10390	11730	13680	15150			32
68		9600	11570	13770	15360	17560			34
72		10800	12980	15450	17130	19640			36
76		12200	14360	17100	19100	21770	23720		38
80		13800	15870	17960	21030	23990	26150		40
88		15900	18890	21740	24230	27640	30120		43
92		18100	20890	24790	28650	31530	34370		46
98		20750	23660	28070	31300	35670	38860		49
104		23250	26620	31610	35240	40160	43750		52
110		25750	29720	35240	39270	44780	48830		55

Table by J.W. Gifford 1946 - from "TABLES FOR OLD GROWTH REDWOOD" by Wm. HALLIN, CF&RES. CDF-USFS

Sheet 2

CDF - USFS 1946

VOLUME — SECOND GROWTH REDWOOD — SPAULDING RULE

DBH	NUMBER OF 16 FT. LOGS TO 8" TOP DIB -							
INCHES	1	2	3	4	5	6	7	8
12	32	64	86	129				
14	46	89	135	181				
16	54	112	173	234	292	350		
18	70	145	223	301	379	462		
20	90	174	268	359	455	551		
22		213	319	433	547	656		
24		245	378	513	645	788	912	
26		285	438	588	746	921	1158	
28		328	503	674	872	1046	1123	1442
30		372	571	779	972	1197	1406	1596
32			645	877	1106	1344	1571	1809
34			723	982	1324	1508	1785	2028
36			800	1089	1386	1673	1872	2263
38			893	1210	1545	1850	2185	2510
40			979	1332	1686	2053	2406	2764

PREPARED FROM TABLE BY BRUCE & SHUMACHER - A.F. WALLEN

Douglas Fir.

Local Vol. Table - Mendocino

DBH	No Log	volume
18	5	370
20		435
22		509
24	6	728
26		832
28		941
30		1062
32		1195
34		1333
36	7	1782
38		1955
40		2150
42		2340
44	8	2949
46		3180
48		3414
50		3660
52		3908
54		4153

- DOUGLAS FIR -
VOLUME IN Board Feet.

DBH	Number of 16-Foot logs								
	2	3	4	5	6	7	8	9	10
8									
10									
12	80	133	183	235	286	338			
14	88	147	210	274	338	400			
16	96	163	242	320	399	478			
18	109	190	280	370	459	550	640		
20	123	221	330	435	543	651	758	865	
22	136	258	383	509	633	760	884	1011	1136
24	151	292	438	584	728	882	1035	1188	1340
26	170	333	500	666	832	1013	1190	1368	1546
28	188	371	560	750	941	1144	1346	1551	1752
30			638	850	1062	1291	1518	1749	1975
32			716	955	1195	1449	1700	1954	2211
34			791	1059	1333	1614	1898	2180	2463
36			882	1175	1494	1782	2095	2410	2721
38			978	1290	1614	1955	2306	2660	2985

DBH	Number of 16-Ft. Logs.								
	5	6	7	8	9	10	11	12	13
40	1410	1779	2150	2523	2892	3266	3634	3995	
42	1541	1937	2340	2735	3138	3528	3920	4301	
44	1663	2090	2520	2949	3376	3812	4240	4651	
46	1790	2255	2724	3180	3638	4094	4550	5008	
48	1920	2420	2927	3414	3905	4400	4890	5400	
50		2606	3130	3660	4190	4725	5259	5774	
52		2775	3330	3908	4480	5055	5620	6168	
54		2944	3550	4153	4760	5389	6010	6610	

For Second Growth Douglas Fir - All Sites.
Source: Tech. Bul. 201, U.S.D.A.-F.S.
Rule: Scribner; 8" top; 2' stump.
Basis: 1,493 trees; Oregon, Washington.

U30A - SCS

LOCAL-

VOLUME - DOUGLAS FIR

Scribner

D.B.H.	Total Av. Ht. ft.	Total 16'-logs. No.	Scribner Volume. Bd. Ft
12	64	2	57
14	71	2 1/2	104
16	78	3	163
18	85	3 1/2	236
20	90	3 1/2	311
22	95	4	393
24	98	4	476
26	101	4 1/4	568
28	104	4 1/2	666
30	106	4 1/2	760
32	108	4 1/2	860
34	111	4 3/4	974
36	115	5	1125
38	120	5	1256
40	124	5	1400
42	126	5	1540
44	128	5	1690
46	130	5 1/4	1840
48	132	5 1/4	2000
50	134	5 1/4	2150
52	136	5 1/4	2315

Prepared from: Tech. Bul. 201, USDA.

Stump: 2 ft; Top: 8" d.i.b.

U.S.D.A.-S.C.S.
OCT. 1944.

Sonoma Farm
Forestry Project.

4/400

LOCAL VOLUME TABLES

DOUGLAS FIR

DBH (")	VOLUMES Bd.Ft.	Cords	HEIGHT Feet
8	4	.066	46
10	30	.124	55
12	70	.209	64
14	128	.310	71
16	203	.440	78
18	293	.599	85
20	384	.763	90
22	488	.954	95
24	600	1.13	98
26	715	1.34	101
28	856	1.59	104
30	988	1.81	106
32	1132	2.07	108
34	1292	2.36	111
36	1480	2.67	115
38	1700	3.03	120
40	1990	3.44	125

Prepared by Mors, Aug. 1940 from Calif. Agric. Exp. Sta. Bul. #491.

Stump Height: 1'0"
International Rule 1/8" kerf
16' logs to a 5" top dib.

Mendocino-Trinity Co.

VOLUME TABLE

DOUGLAS FIR – BD. FT.

DBH	60	70	80	90	100	180
6	4	10	15	19	25	30
8	20	32	42	50	60	68
10	40	58	81	97	112	128
12	59	87	115	144	165	187
HT. →	80	90	100	110	120	130
14	162	198	223	259	280	320
16	214	254	291	332	370	415
18	268	317	365	415	461	518
20	320	384	445	505	559	628
HT. →	100	110	120	130	140	150
22	525	600	662	750	836	907
24	617	705	774	880	975	1060
26	705	807	890	1010	1120	1210
28	815	918	1010	1150	1270	1390
HT.	100	110	120	130	140	150
30	910	1040	1140	1300	1430	1560
32	1020	1160	1270	1440	1590	1740
34	1130	1280	1400	1600	1750	1920
36	1250	1400	1560	1760	1920	2130
38	1380	1530	1700	1910	2100	2320
	110	120	130	140	150	160
40	1680	1890	2090	2300	2550	2730
42	1800	2000	2240	2490	2720	3000
44	1950	2170	2440	2690	2950	3330
46						
48						

Rule: International 1/8" kerf.
5" DIB top
Prep. by C.D.F. 1927.

Local Volume Tables.

Hardwoods

D.B.H. (D.B.-inch)	Volume Cords	Volume Cu. Ft.	Height Ft.
4	.017	1.53	24
5	.028	2.52	
6	.039	3.51	30
7	.055	4.95	
8	.071	6.39	35
9	.091	8.19	
10	.110	9.90	40
11	.145	13.0	
12	.180	16.2	44
13	.225	20.2	
14	.269	24.2	48
15	.329	29.6	
16	.390	35.1	51
17	.465	41.8	
18	.540	48.6	54
19	.632	56.9	
20	.725	65.2	57
21	.842	75.8	
22	.960	86.4	60
23	1.07	96.3.	
24	1.18	106.2	63
25	1.29	116.1	
26	1.40	126.0	66
27	1.51	135.9	
28	1.62	145.8	68
29	1.73	155.7	
30	1.85	166.5	70

.28 cds. per Sq. ft. of B.A.

VOLUME TABLE - EUCALYPTUS

Cu. Ft. Vol. by height Classes

D.B.H.	30	40	50	60	70	
4	1.2	1.6	2.0	2.4		
6	2.6	3.5	4.4	5.3	6.2	
8		6.1	7.6	9.1	10.6	
10			11.5	13.7	16.0	
D.B.H.	50	60	70	80	90	100
12	15.9	19.1	22.3	25.4	28.6	
14		25.2	29.4	33.6	37.8	
16		31.9	37.2	42.6	47.9	
18		39.0	45.5	52.0	58.5	65.0
D.B.H.	80	90	100	110	120	130
20	62.0	69.7	77.5	85.3	93.0	
22	73.3	82.4	91.6	100.8	109.2	
24		92.0	102.2	112.4	122.6	132.9
26		103.3	114.8	126.3	137.8	149.2
	100	110	120	130	140	
28	125.8	138.4	151.0	163.5	176.1	
30	142.4	156.6	170.9	185.1	199.4	

Diameter inside bark of top, 8 inches.

Form 874-n
(Revised July, 1915)

1913
WESTERN YELLOW PINE

(*Pinus ponderosa*)

Boise, Salmon, Weiser, and Payette National Forests, Idaho

E. R. Hodson (Revised by L. F. Watts, 1915)

Curved — Scribner Decimal C

Diameter breast-high	Number of 16-Foot Logs										Basis
	1	2	3	4	5	6	7	8	9	10	
	Volume—Board feet in tens										
Inches											*Trees*
10	3	4	6	-----	-----	-----	-----	-----	-----	-----	4
11	3	5	8	-----	-----	-----	-----	-----	-----	-----	7
12	4	7	10	-----	-----	-----	-----	-----	-----	-----	7
13	4	8	12	-----	-----	-----	-----	-----	-----	-----	14
14	5	9	14	-----	-----	-----	-----	-----	-----	-----	11
15	6	11	16	20	-----	-----	-----	-----	-----	-----	19
16	7	13	19	24	30	-----	-----	-----	-----	-----	31
17	8	15	21	28	34	-----	-----	-----	-----	-----	50
18	9	16	24	31	39	-----	-----	-----	-----	-----	49
19	10	18	26	35	43	51	-----	-----	-----	-----	60
20	-----	19	29	38	47	56	-----	-----	-----	-----	76
21	-----	21	32	42	52	63	-----	-----	-----	-----	97
22	-----	23	34	46	58	69	81	-----	-----	-----	83
23	-----	25	37	51	64	77	90	-----	-----	-----	101
24	-----	27	41	55	70	84	99	-----	-----	-----	120
25	-----	29	44	60	76	92	108	123	-----	-----	87
26	-----	-----	47	65	82	100	118	135	-----	-----	81
27	-----	-----	51	70	89	108	128	147	-----	-----	88
28	-----	-----	55	76	96	117	138	159	-----	-----	94
29	-----	-----	59	81	104	126	148	171	-----	-----	57
30	-----	-----	-----	87	112	135	159	183	-----	-----	54
31	-----	-----	-----	95	120	145	170	195	-----	-----	52
32	-----	-----	-----	103	129	155	181	208	-----	-----	40
33	-----	-----	-----	112	139	166	193	220	246	-----	37
34	-----	-----	-----	120	149	176	205	233	260	-----	45
35	-----	-----	-----	128	158	188	218	248	277	-----	32
36	-----	-----	-----	137	169	200	231	263	294	-----	33
37	-----	-----	-----	147	180	213	246	279	311	-----	18
38	-----	-----	-----	158	192	226	260	294	328	-----	31
39	-----	-----	-----	-----	205	241	278	314	350	386	23
40	-----	-----	-----	-----	219	257	295	334	373	412	26
41	-----	-----	-----	-----	233	273	314	355	396	437	11
42	-----	-----	-----	-----	246	290	333	376	420	463	13
43	-----	-----	-----	-----	261	307	353	400	446	492	10
44	-----	-----	-----	-----	276	325	374	423	472	521	5
45	-----	-----	-----	-----	293	344	395	446	498	549	3
46	-----	-----	-----	-----	310	363	417	470	524	577	9
47	-----	-----	-----	-----	330	384	440	496	551	606	7
48	-----	-----	-----	-----	350	406	463	521	578	635	4
49	-----	-----	-----	-----	-----	426	492	559	616	692	7
50	-----	-----	-----	-----	-----	447	522	597	675	750	
Basis	12	31	93	232	429	453	224	84	32	9	1,599

8—2329

Diameter inside bark of top, 8 inches.

DOUGLAS FIR

Height of Average "Dominate" tree

AGE Yrs.	Site Index - Ht. of Aver. Dom. at 50 Yrs 60	80	100	120
30	39	54	67	81
50	60	80	100	120
70	74	98	122	147
90	83	110	138	166
110	89	118	152	179
130	96	125	159	189
150	99	130	164	196

DOUGLAS FIR

Number of trees 8" and over per Acre.

AGE-YEARS	SITE INDEX 60	80	100	120
	No. of trees 8" and over per Acre			
30		185	265	258
50	191	274	258	221
70	266	260	203	165
90	260	210	158	124
110	225	174	122	91
130	199	146	94	70
150	178	124	79	58

Tables for "Normal" stands:
~~from~~ Calif. Tech. Bul. 491.

U.S.D.A. - S.C.S.

SITE QUALITY - Doug. Fir.

Age	Site V		Site IV		Site III	
	INDEX 80 FT.	90	100	120	130	150
20	21	24	26	31	34	39
40	48	54	60	72	78	90
60	63	70	78	93	101	117
80	73	82	91	109	118	136
100	80	90	100	120	130	150
120	85	96	106	128	138	160
140	88	99	110	133	144	166
160	90	102	113	136	147	170

Age	Site II			Site I		
	160	170	180	190	200	210
20	42	44	47	49	52	54
40	96	102	108	114	120	126
60	124	132	140	148	156	163
80	145	154	163	172	181	190
100	160	170	180	190	200	210
120	170	181	192	202	213	224
140	177	188	199	210	221	232
160	181	192	203	215	226	237

Site Index Age 100 Yrs.
from Tech. Bul. 201, USDA.

AGE	60	80	100	120	140	Site Index
40	50	68	86	102	120	(50 years)
60	68	89	112	135	156	
80	79	104	131	158	182	
100	86	114	146	173	201	
120	92	122	156	185	216	
140	98	128	162	193	224	
160	100	132	165	198	232	

from Calif. Bul. 491. Site Index = ht. of Dom. and Co. Dom. at Age 50.

DOUGLAS FIR

Volume Board M to the Acre*

Age Years	Site Index - Ht. Av. Dom. 50 yrs. 60	80	100	120
30	—	7,760	17,050	27,900
40	—	16,000	31,700	47,700
50	8,940	25,200	45,000	64,800
60	15,060	34,300	56,900	77,400
70	21,000	42,700	67,300	89,000
80	26,500	49,650	76,200	98,400
90	31,400	55,700	83,800	107,400
100	35,900	60,600	91,000	115,300
110	39,400	65,650	97,600	—
120	42,200	68,200	102,700	—

* International 1/8" Rule; 1' stump; 5" top DIB

Approx. Top Utilization: Doug. Fir.

	Top			
22"	11-13"	38" -	16"-18"	50" = 21-22
24-26"	12-14"	40" -	17-19	54 - 23-24
28"	13-15	42-44 -	18-20	
32"	14-16	46 -	19-21	58" = 24-25
36"	15-17	48" -	20-21	64" = 26-29

Age	Trees Per Acre		Av. No. in Feet. Dominant Trees		Aver D.B.H.		Vol./Acre MBM		Aver. Growth Board ft.	
	II	III	II	III	II	III	II	III	II	III
20	980	1020	49	43	7.2	6.9	7	—	370	—
25	765	777	60	52	8.9	8.7	22	13	880	520
30	628	638	71	61	10.4	10.1	38	27	1260	980
35	543	556	80	70	11.6	11.2	53	40	1620	1140
40	484	500	90	78	12.5	12.1	68	53	1700	1330
45	447	453	100	86	13.3	12.9	82	65	1830	1450
50	406	412	109	92	14.1	13.7	95	76	1900	1530
55	374	384	118	102	14.7	14.3	110	86	1930	1600
60	348	356	126	109	15.4	14.9	115	93	1920	1550

All trees 2.6" + DBH.

Preliminary Yield Tables - Zone Growth P.W.

50 1500

U.S.

Form 874-22.

SCRIBNER DECIMAL C LOG RULE.

Diameter.	Length—Feet.											Diameter.
	6	7	8	9	10	11	12	13	14	15	16	
	Contents—Board Feet.											
Ins.												Ins.
6					1	1	1	1	1	1	2	6
7	.5	.5	.5	.5	1	2	2	2	2	2	3	7
8	.5	1	1	1	1	2	2	2	2	2	3	8
9	1	1	1	1	2	2	2	3	3	3	4	9
10	1	2	2	2	3	3	3	3	4	5	6	10
11	2	2	3	3	3	3	3	4	4	5	6	11
12	2	2	3	3	4	4	4	5	5	6	7	12
13	3	3	4	4	5	5	6	6	7	7	8	13
14	4	4	5	5	6	7	7	8	8	9	10	14
15	4	5	6	6	7	8	9	9	10	11	11	15
16	5	6	7	8	9	10	11	12	12	13	14	16
17	6	7	8	9	10	11	12	13	14	15	16	17
18	7	8	9	10	12	13	14	15	16	17	18	18
19	8	9	11	12	13	15	16	17	19	20	21	19
20	9	10	12	13	15	16	18	19	21	22	24	20
21	11	12	14	16	17	19	21	23	24	26	28	21
22	12	13	15	17	19	21	23	25	27	28	30	22
23	13	15	17	19	21	23	25	27	29	31	33	23
24	14	16	19	21	23	26	28	31	33	35	38	24
25	15	18	21	23	25	28	30	33	35	38	40	25
26	17	20	23	26	29	31	34	37	40	43	46	26
27	19	22	25	28	31	34	37	41	44	47	50	27
28	21	24	27	31	34	38	41	44	48	51	55	28
29	22	25	29	33	36	40	44	47	51	54	58	29
30	23	27	31	35	38	42	46	49	53	57	61	30
31	25	29	33	37	41	45	49	53	57	62	66	31
32	27	31	36	40	44	49	53	58	62	67	71	32
33	28	32	37	41	46	51	55	60	64	69	74	33
34	29	34	39	44	49	54	59	64	69	73	78	34
35	30	35	40	45	50	55	60	65	70	75	80	35
36	33	38	44	49	55	60	66	71	77	82	88	36
37	35	40	46	52	58	63	69	75	81	86	92	37
38	39	45	51	58	64	71	77	84	90	96	103	38
39	40	47	54	60	67	73	80	87	93	100	107	39
40	42	49	56	63	70	77	84	91	98	105	112	40
41	45	53	60	68	75	83	90	98	105	113	120	41
42	48	56	64	72	79	87	95	103	111	119	127	42
43	50	59	67	76	84	93	101	109	117	126	134	43
44	52	61	70	79	87	96	105	113	122	131	140	44
45	55	65	74	83	93	102	111	120	129	139	148	45
46	57	66	76	85	95	104	114	123	133	143	152	46
47	59	69	79	89	99	109	119	129	139	149	159	47
48	62	72	83	93	104	114	124	134	145	155	166	48
49	65	76	86	97	108	119	130	140	151	162	173	49
50	67	79	90	101	112	124	135	146	157	168	180	50
	70	82	94	105	117	129	140	152	164	175	187	

8—2239

Hardwoods -No. EAST. U.S.

Tree diameter class [2] (inches) (1)	Board feet per tree (2)	Cords per tree (3)
6		0.10
7		.15
8		.20
9		.25
10	42	.30
11	61	.35
12	75	.40
13	95	.48
14	114	.56
15	137	.65
16	160	.75
17	192	.85
18	224	.95
19	255	1.07
20	286	1.18
22	354	
24	421	
26	500	
28	600	
30	700	

From OWI-90- Apr '44.

INTERNATIONAL (¼-INCH) RULE

Diameter of log	8 feet	10 feet	12 feet	14 feet	16 feet
8	16	21	27	33	39
10	29	37	45	54	64
12	44	57	70	83	97
14	62	80	107	117	136
16	84	108	131	156	181
18	110	139	169	201	232
20	138	174	212	251	290
22	168	215	259	307	354
24	203	257	311	367	424

SLOPE CORRECTION FOR 66 FOOT CHAIN.

TOPO SLOPE %	SLOPE DIST	CORRECTION
5	66.19	.19
7	66.37	.37
9	66.61	.61
11	66.91	.91
12	67.08	1.08
13	67.26	1.26
14	67.46	1.46
15	67.82	1.82
16	67.91	1.91
17	68.16	2.16
18	68.41	2.41
19	68.68	2.68
20	68.96	2.96
21	69.26	3.26
22	69.57	3.57
23	69.90	3.90
24	70.23	4.23
25	70.58	4.58
26	70.93	4.93
27	71.31	5.31
28	71.69	5.69
29	72.09	6.09
30	72.50	6.50
31	72.92	6.92
32	73.35	7.35
33	73.79	7.79
34	74.24	8.24
35	74.71	8.71

Tanbark Oak – Growth – D.B.H.

DBH	Growth Per Decade	DBH.	Growth Per Decade.
4	3.5	14	2.9
6	3.4	16	2.8
8	3.2	18	2.6
10	3.1	20	2.5
12	3.0	20+	2.4

Data: Joy Woods, Sonoma Co., Calif.
1943. – Sonoma Co. F.F. Project.
USDA – S.C.S.

Tanbark – Average Values.

Cords tanbark per Sq. Ft of Basal Area ..... .079

Basal Area per Cord of tanbark 12.7

Number of trees per Cord of tanbark 7-8

Fuelwood per Sq. ft. B.A. .... .28 Cds.

Basal A. per Cord fuel from tanoak peeled 3.6

Ratio: Bark to fuel – 1:3

(Data: 249 trees, average DBH: 18.3")

Walt Kessler.
Chungwapin
5.00 / M fall & buck
2.00 / M to load
12.00 / M for stumpage.
19.00 / M load on truck

There a following notes had to do w/ some hardwood logs we purchased from Walt Kessler & --- Berry (Annapolis & Cazadero) to ship to the Forest Prod. Lab in Madison Wisc. for testing, etc.

2809
17
19663
2809
$47.753 110 M

20th

M 182
M 191 M
M 80
761
M 69
C 70 M 70
C 70
70
744

117

1152
620
1037
2809

21st
80 M
73 M
83 M
64 M
117 M
97 C
107 C
69
90
69

We are dalt. $47.75
64
69

Yarding & Loading
18 2
19th - 2 hrs
20 2 "
21 3 "
22 - 1½ "
22 2
12½ @ 4.00 $47.75

125
4
500
47.75

Hauled.

2809
17

#4 Ching 5 logs - 546
2 T.O. logs. 248
794

#3
3-22-46
M - 13-8 = 53
14-10 = 80
all T.O 620
C-12-12 70
C-11-14 70
893

Logs - cut at Henslers -
3-15-46, 3-16-46 & 3,-18-46.
Int 1/4" Rule.

Madrone.

10 - 16'	#1	64
13 - 8'		53
11 - 14'	#2	69
14 - 10'		80
17 - 8'		110
9 - 16'	#3	52
12 - 14'		83
14 - 10'	#4	80
15 - 8'		73
14 - 14'	#5	117
17 - 14	#6	180
19 - 12		191
Σ - 12 logs		1152

Tanoak.

12" - 10'	#1	57
9 - 16'		52
16 - 12'	#2	131
14 - 14'		117
11 - 10'	#3	47
9 - 12'		36
8 - 12'		27
12 - 12'	#4	70
10 - 14'		44
8 - 16'		39
Σ 10 logs.		620

Laurel (Berry)

11 - 8'	35
8 - 8'	15
12 - 8'	45
10 - 10'	35
13 - 8'	55
15 - 8'	75
16 - 8'	85
14 - 12'	100
10 - 16'	65
	510

H.W. Logs - (Continued.) Henster March '46

Chinquapin.

12 - 14'	#1	83
14 - 12		107
12 - 16'	#2	97
10 - 16'		64
17 - 12'	#3	150
15 - 12		119
14 - 12		107
13 - 14		100
12 - 12		70
12 - 12'	#1	70
11 - 14'		70
2 11 logs		1037 B.F.

M.	1152
TO	620
C.	1037
L	510
	3319

H.W. Logs Hensler
Int'l 4

3-15-46

10½ - 16	M	64			
13½ - 8	M	53			
11 - 14	M	69			
14½ 10	M	80			
17 - 8	M	110			
9 - 16	M	52			
12½ - 14	M	83	3-16-46		
14" - 10'	M	80			
15" - 8'	M	73	Σ	664	
14 - 14	M	117		781	
17 - 14	M	180		961	
19 - 12	M	191		1152	8F

12 log

Tan Oak -

3-16-46

12" - 10'	57			
9 - 16'	52			
3-12 16" - 12'	131			
14" - 14'	117	Σ	357	
11" - 10'	47			
9 - 12	36			
8' - 12	27	Σ	467	
12 - 12	70			
9 - 14	44			
8 - 16	39			
	620			

1152
620
1037
Σ 2809

Chinquapin - Hessler

3-15-46

X	C - 12 - 14	83	
	C - 14 - 12	107	X
326	C - 12 - 16'	97	X
X	C 10 - 16'	64	Σ 351
	C 17 - 12'	150	546
	15 - 12'	119	
	14 - 12'	107	
	13 - 14'	100	
	12 - 12'	70	546 Σ 897
	12 - 12	70'	140
	11 - 14	70	Σ 1037

11 Corp

Laurel - (Berry)

Mus. Vinthei -

24" = 3000' lbs Cling

18" = 1750'

12" = 762'

3.14

18
16
108
18
288
65
284
1728
1756

3.25
16
192
32
512
51
60
3060

.78
16
468
78
1248

125
61
125
750
7625

McCabe & Bailey
McMullan & Pierce

11.7

130 BF 265

10 - 45 pos x 7

6 - 2x2 pickets

Feb 12 1946

Photo 1 to 5 -

	DF		R		Cul
14 -			4	400	1
16			1	144	
18	1	236	1	203	
20	1 (P)				
22					
24	4	1904	1	437	
26	1	568			1
28	1	666			
30	3	2280	2 + 1 (D-10 MX)	2600 760	
32	1	860	3 + 1 (20')	2745 1590	
34	1	974	1	1080	
42			1 (284)	1700	
44	1	1690			1
		9178		11,115	
				9178	
				20,293 BF	
				per ac	

476 × 4 = 1904

760 × 3 = 2280

Plots 6-10 feb 12 '46

	DF		R	
20	1	435		
22	3	1527	1	348
24				
26	1	666		
28	2	941		
30	5	5310		
32	1	1195		
42			1	3450
44	1	2520	1	3930
50	1	3130		10828
		15,724		

1444

1062
5
5310

280
6
0

370
6
2220

15,724
10828
26,552

435
4
1740

19562
26552
20293
3/66407/22,136

110620
13 2816
1,438840 total

Plots 11-15

	DF		R	
18	6	2220		
20	4	1740	1	272
22	1	509		
26	2	1332		
30	1	850		
32	1	1195		
34	2	2666		
36	2	3988	1	2270
44	1	2520		
		17020		2542
		2542		
		19,562		

2542
10828
11115
3/24485/8161

816
6
4900
4960
51,942, reduced

Get Spaulding
Scale book for
Walt H.

Chungungo -

① 119" circum. BH.
5 logs -
no butt swell.
24" IB at top log.

② Circ. BH = 14' - 1/2" dead.
3. " BH ~~14'~~ 11 2/12 - dying
4 " BH 14' 25 living
4 ——— above swell 12 9' 3 logs to 1st Br.

Curtis James
Rt. 2 Box 490
McMurray R.
Sebastopol.

THE REDWOOD FOREST HANDBOOK

CALIFORNIA STATE BOARD OF FORESTRY
1948

STATE OF CALIFORNIA
Earl Warren, Governor

DEPARTMENT OF NATURAL RESOURCES
Warren T. Hannum
Director

DIVISION OF FORESTRY
DeWitt Nelson
State Forester

THE REDWOOD FOREST HANDBOOK

by

JACK REVEAL
Redwood Farm Forestry Project, Forest Service
U. S. Department of Agriculture

and

ARNOLD WALLEN
Redwood Forest District, Division of Forestry
California Department of Natural Resources

First Edition, 1948