

FOREST RESEARCH REPORT



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Forest Management Planning

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Nova Scotia's Hardwood Resource:

Estimated Sawlog Volumes by Species, Quality, and Accessibility

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INTRODUCTION

In Nova Scotia as elsewhere, hardwood value is related to quality more than quantity. Prices paid for high quality sawlogs may be 5 to 10 times that paid for low quality sawlogs (per mfbm), and veneer log prices may be 15 to 20 times higher.

Forest inventory reports have shown that Nova Scotia has an abundance of hardwood volume (NSDNR, 2000; Townsend, 2004). However, concern has been expressed that the quality portion of this resource may be low and in some cases inaccessible due to land-use constraints and/or inoperable slopes.

Recent developments in NSDNR data collection and GIS mapping now make it possible to report on the quality component of Nova Scotia's hardwood resource and to estimate volumes which are considered accessible and available for management.

The objectives of this report are:

1. To estimate commercial hardwood volumes in Nova Scotia by quality class.
2. To relate these quality class volumes to overall hardwood volumes.
3. To report quality class volumes by species, region, and ownership.
4. To estimate hardwood volume reductions due to land-use and operability constraints.

METHODS

Quality Hardwood Volumes:

In 1998, NSDNR Inventory Section began collecting grade data for all sawlog size hardwood trees found in their permanent sample plot (PSP) system. The grading system used is derived from a USDA Forest Service system and is designed to evaluate standing hardwood trees for conversion into sawlogs for lumber (Calvert and Petro, 1993).

Basically, the system generates a tree grade based on the best 12 foot, 14 foot, or 16 foot section found in the first 16 foot butt log¹. Both scale and face grade defects are considered, as well as tree diameter. Possible tree grades are G1, G2, and G3 - with G1 being the best grade and G3 the worst. Below grade trees are either classed as roundwood or cull wood, depending on their condition.

For this report, inventory data collected between 2001-2005 were used to assign hardwood tree grades. This 5-year span captures an entire PSP measurement period and is the latest period from which complete data are available. Once tree grades were assigned, specific rules were followed to estimate the volumes of each related log grade in the tree (see Appendix 1).

¹ Imperial units are the standard in hardwood grading and are used as necessary in this report.

Provincial, regional, and ownership volumes were then estimated based on roll-up factors derived from total PSP areas contained within each administrative unit of interest (Table 1).

Accessibility Reductions:

To estimate reductions in available hardwood due to land-use and operability constraints, volumes were re-calculated after removing designated crown land C3 areas (NSDNR, 2007), proposed crown land old forest areas (NSDNR, 2006), and areas with slopes greater than 30% (all ownership classes). Inventory PSPs associated with these areas were also removed. Revised roll-up factors were based on data shown in Tables 2 and 3.

To avoid double or triple counting of constraint areas, designated C3 land was removed first, then remaining old forest areas, then remaining slope areas. Only constraint areas identified up to December, 2006 are included in this assessment.

Table 1. Provincial forest ownership areas and associated inventory PSPs by region (Federal land excluded). Each PSP is equal to 0.04 ha (area values taken from NSDNR Report FOR 2000-1).

Region	Crown Land Area (ha)	Crown Land PSPs (#)	Industrial Private Area (ha)	Industrial Private PSPs (#)	Small Private Area (ha)	Small Private PSPs (#)	Total Area (ha)	Total PSPs (#)
Eastern	514310	454	69361	56	615347	406	1199018	916
Central	338732	328	496210	333	709847	538	1544789	1199
Western	366533	300	339903	246	664762	514	1371198	1060
All	1219575	1082	905474	635	1989956	1458	4115005	3175

Table 2. Provincial forest ownership areas and associated inventory PSPs by region with designated C3 and old forest areas removed (Federal land also excluded). Each PSP is equal to 0.04 ha.

Region	Crown Land Area (ha)	Crown Land PSPs (#)	Industrial Private Area (ha)	Industrial Private PSPs (#)	Small Private Area (ha)	Small Private PSPs (#)	Total Area (ha)	Total PSPs (#)
Eastern	390528	370	69361	56	615347	406	1075236	832
Central	263217	252	496210	333	709847	538	1469274	1123
Western	217663	190	339903	246	664762	514	1222328	950
All	871408	812	905474	635	1989956	1458	3766838	2905

Table 3. Provincial forest ownership areas and associated inventory PSPs by region with designated C3, old forest, and slope >30% areas removed (Federal land also excluded). Each PSP is equal to 0.04 ha.

Region	Crown Land Area (ha)	Crown Land PSPs (#)	Industrial Private Area (ha)	Industrial Private PSPs (#)	Small Private Area (ha)	Small Private PSPs (#)	Total Area (ha)	Total PSPs (#)
Eastern	376948	353	69128	56	596351	393	1042427	802
Central	261373	252	495803	331	707473	538	1464649	1121
Western	217442	190	339870	246	661827	513	1219139	949
All	855763	795	904801	633	1965651	1444	3726215	2872

This report includes data on sugar maple (sM), red maple (rM), yellow birch (yB), white birch (wB), white ash (wA), red oak (rO), trembling aspen (tA), largetooth aspen (ltA), and beech (Be). Minor commercial species were grouped and are reported under “Other.” These species include black cherry, black ash, ironwood, balsam poplar, elm, and grey birch. Reported volumes are based on 3 inch (7.6 cm) and 8 inch (20.3 cm) tops - merchantable and sawlog tops respectively.

In addition to tree and log volume data, estimated lumber yields for sugar maple, yellow birch, red maple, white birch, and red oak were calculated based on functions developed by Hanks (1976). These functions relate average lumber yields to species, tree grade, breast height diameter, and merchantable length. Estimates are for lumber classes adopted by the National Hardwood Lumber Association (NHLA, 1998).

Note: Lumber estimates are presented in this report so that users have a means to relate tree grade data to possible product value. Although tree grade has been directly linked to product outputs in an earlier study in Cape Breton (Keys and McGrath, 2002), lumber yield functions developed by Hanks have not been directly tested in Nova Scotia and should be interpreted with caution.

RESULTS

Tables 4-8 show provincial estimates of hardwood volumes by species, product class, and quality - with and without accessibility and operability constraints. This is followed by regional and ownership breakdowns (Tables 9-23 and Tables 24-34 respectively). Provincial and regional estimates of lumber yields by species and product class are shown in Tables 35-37. All volumes exclude federal land.

For interpretive purposes, G3 estimates represent *low quality* sawlog volumes generally associated with poorer quality trees, upper bole sections of higher quality trees, and/or small diameter sawlogs. G3 trees generally contain some quality lumber, but yields are low. *High quality* sawlog volumes are represented by G2 and G1 estimates, with the potential for veneer grades mainly associated with

G1 trees (Keys and McGrath, 2002).

The inventory PSP system is designed to be most rigorous when all plots are used to estimate species volumes. Relative error can increase as sample sizes are reduced to report on smaller administrative units. To check the validity of volume estimates made for smaller units, unit volumes were added together and compared to totals derived from the entire data set. For regional roll-ups, volumes were within 1% (+/-) of provincial totals. Ownership roll-up volumes were less accurate, but totals were still within 5% (+/-) of provincial volumes.

DISCUSSION

Total merchantable hardwood volume for commercial species in the province is estimated to be over 132 million m³ with red maple (57.6 million), yellow birch (19.4 million), sugar maple (18.0 million), and white birch (13.3 million) leading the way (Table 4). Percent sawlog volumes for these species are approximately 14.9% (rM), 29.6% (yB), 31.8% (sM), and 10.7% (wB).

Volumes for red oak (3.2 million m³) and white ash (2.8 million m³) are the lowest for all major commercial species with sawlog percentages of 24.8% (rO) and 20.4% (wA).

Although sawlog volume percentage is high for many species, volumes are mainly comprised of low quality (G3) logs (Table 4). Combined G1 and G2 volumes only add up to 2.5% (rM), 7.4% (yB), 8.7% (sM), 1.3% (wB), 4.5% (rO), and 2.8% (wA) of species merchantable volumes. This equates to approximately 4.6 million m³ of quality maple and birch in the province (combined) and about 223,000 m³ of quality oak and ash (combined).

Volume reductions due to access and operability constraints vary by species (Tables 5-6) with sugar maple, yellow birch, red oak, and beech the most affected (Tables 7-8). However, it is important to note that reductions do not disproportionately affect quality volumes, as seen by similar grade percentage values in Tables 4, 5, and 6.

Not surprisingly, species volume reductions vary by region (Tables 12-13, 17-18, 22-23). Reductions in available sugar maple and yellow birch occur only in eastern and central regions, whereas red oak reductions are mainly in the west. Slope constraints are almost exclusively found in eastern Nova Scotia, affecting mainly sugar maple and beech.

C3 and old forest constraints are only associated with crown land which leads to significant volume reductions on this limited land base (Tables 24-27). Combined with slope constraints, reductions are 30% or more for several species including sugar maple and yellow birch (Table 28). In comparison, operability constraints result in relatively minor volume reductions on private lands (Tables 31 and 34), especially industrial holdings.

SUMMARY

The system used to grade standing hardwood trees in Nova Scotia is directly related to expected yields of recognized lumber classes. Therefore inventory grade data can be used to assess overall hardwood quality condition in the province, at least for major species such as sugar maple, red maple, yellow birch, white birch, red oak, and white ash.

Current data show that quality hardwood volumes are relatively low with respect to overall merchantable volumes in the province. G1 and G2 sawlog volumes total just over 4.6 million m³ for maple and birch (combined) and approximately 223,000 m³ for red oak and white ash (combined). When accessibility and operability constraints are considered, these volumes are reduced to about 4.0 million m³ and 192,000 m³ respectively.

Low quality (G3) sawlog volumes are much higher than G1 and G2 volumes, with provincial totals of 16.9 million m³ for maple and birch (combined) and 1.1 million m³ for red oak and white ash (combined). When accessibility and operability constraints are taken into account, these volumes are reduced to 14.9 million m³ and 1.0 million m³ respectively.

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**Table 4. Provincial hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	18,040,963	7,999,605	5,741,024	2,258,581	10,041,358	31.8	68.2
rM	57,611,040	12,120,688	8,579,547	3,541,141	45,490,352	14.9	85.1
yB	19,357,912	8,291,192	5,723,811	2,567,381	11,066,720	29.6	70.4
wB	13,309,512	1,999,959	1,430,567	569,392	11,309,553	10.7	89.3
rO	3,176,037	1,121,579	787,989	333,590	2,054,458	24.8	75.2
wA	2,835,408	839,350	579,268	260,082	1,996,058	20.4	79.6
tA	8,162,237	2,823,657	1,933,398	890,259	5,338,580	23.7	76.3
ltA	4,274,672	1,672,288	1,171,966	500,322	2,602,384	27.4	72.6
Be	3,917,229	855,994	568,396	287,598	3,061,235	14.5	85.5
Other	1,374,619	49,468	37,862	11,606	1,325,151	2.8	97.2
Total	132,059,629	37,773,780	26,553,828	11,219,952	94,285,849	20.1	79.9

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	470,126	1,093,185	4,177,713	2.6	6.1	23.2	31.8
rM	305,132	1,144,569	7,129,846	0.5	2.0	12.4	14.9
yB	420,319	1,011,345	4,292,147	2.2	5.2	22.2	29.6
wB	0	169,041	1,261,526	0.0	1.3	9.5	10.7
rO	0	141,894	646,095	0.0	4.5	20.3	24.8
wA	40,608	40,177	498,483	1.4	1.4	17.6	20.4
tA	109,179	341,853	1,482,366	1.3	4.2	18.2	23.7
ltA	56,347	172,621	942,998	1.3	4.0	22.1	27.4
Be	27,781	79,175	461,440	0.7	2.0	11.8	14.5
Other	0	0	37,862	0.0	0.0	2.8	2.8
Total	1,429,492	4,193,860	20,930,476	1.1	3.2	15.8	20.1

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 5. Provincial hardwood volumes by species, product class, and quality.
(C3 and old forest constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	15,331,396	6,911,299	4,970,305	1,940,994	8,420,097	32.4	67.6
rM	55,141,579	11,667,628	8,261,573	3,406,055	43,473,951	15.0	85.0
yB	17,485,437	7,524,290	5,233,089	2,291,201	9,961,147	29.9	70.1
wB	12,457,336	1,842,214	1,311,064	531,150	10,615,122	10.5	89.5
rO	2,791,716	912,555	620,819	291,736	1,879,161	22.2	77.8
wA	2,823,745	839,744	579,540	260,204	1,984,001	20.5	79.5
tA	8,065,994	2,824,985	1,934,307	890,678	5,241,009	24.0	76.0
ltA	4,039,168	1,559,141	1,085,108	474,033	2,480,027	26.9	73.1
Be	3,854,680	856,396	568,663	287,733	2,998,284	14.8	85.2
Other	1,371,785	49,491	37,880	11,611	1,322,294	2.8	97.2
Total	123,362,836	34,987,743	24,602,348	10,385,395	88,375,093	19.9	80.1

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	427,886	933,819	3,608,600	2.8	6.1	23.5	32.4
rM	305,276	1,123,959	6,832,338	0.6	2.0	12.4	15.0
yB	389,406	936,912	3,906,771	2.2	5.4	22.3	29.9
wB	0	162,995	1,148,069	0.0	1.3	9.2	10.5
rO	0	111,528	509,291	0.0	4.0	18.2	22.2
wA	40,627	40,196	498,717	1.4	1.4	17.7	20.5
tA	109,230	342,014	1,483,063	1.4	4.2	18.4	24.0
ltA	56,373	165,603	863,132	1.4	4.1	21.4	26.9
Be	27,794	79,212	461,657	0.7	2.1	12.0	14.8
Other	0	0	37,880	0.0	0.0	2.8	2.8
Total	1,356,592	3,896,238	19,349,518	1.1	3.2	15.7	19.9

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 6. Provincial hardwood volumes by species, product class, and quality.
(C3, old forest, and slope constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	14,133,116	6,119,712	4,424,604	1,695,108	8,013,404	31.3	68.7
rM	54,757,844	11,546,832	8,178,102	3,368,730	43,211,012	14.9	85.1
yB	16,824,772	7,163,052	5,009,173	2,153,879	9,661,720	29.8	70.2
wB	12,220,263	1,787,252	1,278,733	508,519	10,433,011	10.5	89.5
rO	2,787,724	913,086	621,180	291,906	1,874,638	22.3	77.7
wA	2,825,388	840,233	579,877	260,356	1,985,155	20.5	79.5
tA	8,070,688	2,826,629	1,935,433	891,196	5,244,059	24.0	76.0
ltA	4,035,947	1,560,049	1,085,741	474,308	2,475,898	26.9	73.1
Be	3,043,627	737,727	498,663	239,064	2,305,900	16.4	83.6
Other	1,372,584	49,520	37,902	11,618	1,323,064	2.8	97.2
Total	120,071,953	33,544,092	23,649,408	9,894,684	86,527,861	19.7	80.3

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	374,801	805,564	3,244,239	2.7	5.7	23.0	31.3
rM	305,454	1,124,613	6,748,035	0.6	2.1	12.3	14.9
yB	389,633	865,603	3,753,937	2.3	5.1	22.3	29.8
wB	0	150,454	1,128,279	0.0	1.2	9.2	10.5
rO	0	111,593	509,587	0.0	4.0	18.3	22.3
wA	40,651	40,219	499,007	1.4	1.4	17.7	20.5
tA	109,294	342,213	1,483,926	1.4	4.2	18.4	24.0
ltA	56,406	165,700	863,635	1.4	4.1	21.4	26.9
Be	27,910	48,715	422,038	0.9	1.6	13.9	16.4
Other	0	0	37,902	0.0	0.0	2.8	2.8
Total	1,304,149	3,654,674	18,690,585	1.1	3.0	15.6	19.7

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 7. Estimated percent (%) reductions in provincial hardwood volumes by species, product class, and quality due to C3 and old forest constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	15	14	16	9	15	14
rM	4	4	4			4
yB	10	9	10	7	7	9
wB	6	8	6		4	9
rO	12	19	9		21	21
wA						
tA						
ltA	6	7	5		4	8
Be						
Other						
Total	7	7	6	5	7	8

Table 8. Estimated percent (%) reductions in provincial hardwood volumes by species, product class, and quality due to C3, old forest, and slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	22	23	20	20	26	22
rM	5	5	5			5
yB	13	14	13	7	14	13
wB	8	11	8		11	11
rO	12	19	9		21	21
wA						
tA						
ltA	6	7	5		4	8
Be	22	14	25		38	9
Other						
Total	9	11	8	9	13	11

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 9. Eastern region hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	8,628,412	5,184,661	3,611,704	1,572,957	3,443,751	41.9	58.1
rM	13,168,076	2,975,689	2,015,352	960,337	10,192,387	15.3	84.7
yB	11,053,665	5,105,199	3,393,342	1,711,857	5,948,466	30.7	69.3
wB	4,486,840	589,350	406,280	183,070	3,897,490	9.1	90.9
rO	72,541	64,629	36,551	28,078	7,912	50.4	49.6
wA	521,494	168,555	113,087	55,468	352,939	21.7	78.3
tA	692,512	100,820	68,820	32,000	591,692	9.9	90.1
ItA	196,106	60,117	35,866	24,251	135,989	18.3	81.7
Be	2,738,947	650,632	445,203	205,429	2,088,315	16.3	83.7
Other	57,701	0	0	0	57,701	0.0	100.0
Total	41,616,294	14,899,652	10,126,205	4,773,447	26,716,642	24.3	75.7

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	316,192	790,942	2,504,570	3.7	9.2	29.0	41.9
rM	48,693	196,705	1,769,954	0.4	1.5	13.4	15.3
yB	311,528	536,512	2,545,302	2.8	4.9	23.0	30.7
wB	0	92,570	313,710	0.0	2.1	7.0	9.1
rO	0	0	36,551	0.0	0.0	50.4	50.4
wA	0	7,652	105,435	0.0	1.5	20.2	21.7
tA	0	0	68,820	0.0	0.0	9.9	9.9
ItA	0	11,162	24,704	0.0	5.7	12.6	18.3
Be	11,373	54,113	379,717	0.4	2.0	13.9	16.3
Other	0	0	0	--	--	--	0.0
Total	687,786	1,689,656	7,748,763	1.7	4.1	18.6	24.3

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 10. Eastern region hardwood volumes by species, product class, and quality.
(C3 and old forest constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	7,277,428	4,371,640	3,058,513	1,313,127	2,905,788	42.0	58.0
rM	12,321,185	2,744,611	1,854,922	889,689	9,576,574	15.1	84.9
yB	9,241,395	4,380,307	2,933,411	1,446,896	4,861,088	31.7	68.3
wB	4,098,730	515,360	362,621	152,739	3,583,370	8.8	91.2
rO	71,619	63,808	36,087	27,721	7,811	50.4	49.6
wA	501,919	166,414	111,651	54,763	335,505	22.2	77.8
tA	670,837	99,540	67,946	31,594	571,297	10.1	89.9
ltA	193,617	59,354	35,410	23,944	134,263	18.3	81.7
Be	2,664,496	642,370	439,550	202,820	2,022,126	16.5	83.5
Other	56,968	0	0	0	56,968	0.0	100.0
Total	37,098,194	13,043,404	8,900,111	4,143,293	24,054,790	24.0	76.0

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	269,857	653,021	2,135,635	3.7	9.0	29.3	42.0
rM	48,074	181,523	1,625,325	0.4	1.5	13.2	15.1
yB	276,565	504,511	2,152,335	3.0	5.5	23.3	31.7
wB	0	91,394	271,227	0.0	2.2	6.6	8.8
rO	0	0	36,087	0.0	0.0	50.4	50.4
wA	0	7,555	104,096	0.0	1.5	20.7	22.2
tA	0	0	67,946	0.0	0.0	10.1	10.1
ltA	0	11,020	24,390	0.0	5.7	12.6	18.3
Be	11,228	53,426	374,896	0.4	2.0	14.1	16.5
Other	0	0	0	--	--	--	0.0
Total	605,724	1,502,450	6,791,937	1.6	4.0	18.3	24.0

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 11. Eastern region hardwood volumes by species, product class, and quality.
(C3, old forest, and slope constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	6,177,048	3,631,962	2,547,044	1,084,918	2,545,086	41.2	58.8
rM	11,989,474	2,632,580	1,777,153	855,427	9,356,894	14.8	85.2
yB	8,651,265	4,039,221	2,722,908	1,316,313	4,612,044	31.5	68.5
wB	3,877,538	462,188	331,553	130,635	3,415,350	8.6	91.4
rO	72,031	64,175	36,294	27,881	7,856	50.4	49.6
wA	504,805	167,371	112,294	55,077	337,434	22.2	77.8
tA	674,696	100,113	68,337	31,776	574,583	10.1	89.9
ItA	189,148	59,695	35,614	24,081	129,453	18.8	81.2
Be	1,886,081	526,682	371,521	155,161	1,359,399	19.7	80.3
Other	57,296	0	0	0	57,296	0.0	100.0
Total	34,079,382	11,683,987	8,002,718	3,681,269	22,395,395	23.5	76.5

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	236,562	529,689	1,780,793	3.8	8.6	28.8	41.2
rM	48,351	182,567	1,546,235	0.4	1.5	12.9	14.8
yB	278,156	435,427	2,009,325	3.2	5.0	23.2	31.5
wB	0	79,261	252,292	0.0	2.0	6.5	8.6
rO	0	0	36,294	0.0	0.0	50.4	50.4
wA	0	7,599	104,695	0.0	1.5	20.7	22.2
tA	0	0	68,337	0.0	0.0	10.1	10.1
ItA	0	11,084	24,530	0.0	5.9	13.0	18.8
Be	11,293	23,135	337,093	0.6	1.2	17.9	19.7
Other	0	0	0	--	--	--	0.0
Total	574,362	1,268,762	6,159,594	1.7	3.7	18.1	23.5

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 12. Estimated percent (%) reductions in eastern region hardwood volumes by species, product class, and quality due to C3 and old forest constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	16	16	16	15	17	15
rM	6	8	6		8	8
yB	16	14	18	11	6	15
wB	9	13	8			14
rO						
wA	4		5			
tA	3		3			
ltA						
Be	3		3			
Other						
Total	11	12	10	12	11	12

Table 13. Estimated percent (%) reductions in eastern region hardwood volumes by species, product class, and quality due to C3, old forest, and slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	28	30	26	25	33	29
rM	9	12	8		7	13
yB	22	21	22	11	19	21
wB	14	22	12		14	20
rO						
wA	3		4			
tA	3		3			
ltA	4		5			
Be	31	19	35		57	11
Other						
Total	18	22	16	16	25	21

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 14. Central region hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	8,322,127	2,340,566	1,750,365	590,201	5,981,561	21.0	79.0
rM	19,425,250	4,422,170	3,371,704	1,050,466	15,003,080	17.4	82.6
yB	5,849,505	2,124,629	1,558,327	566,302	3,724,876	26.6	73.4
wB	4,082,894	452,504	381,655	70,849	3,630,390	9.3	90.7
rO	166,437	33,738	31,833	1,905	132,699	19.1	80.9
wA	590,928	164,425	103,363	61,062	426,503	17.5	82.5
tA	4,895,983	1,674,847	1,155,998	518,849	3,221,136	23.6	76.4
ltA	1,626,656	533,558	411,986	121,572	1,093,098	25.3	74.7
Be	285,376	0	0	0	285,376	0.0	100.0
Other	908,303	49,175	37,638	11,537	859,128	4.1	95.9
Total	46,153,459	11,795,612	8,802,869	2,992,743	34,357,847	19.1	80.9

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	90,314	268,104	1,391,947	1.1	3.2	16.7	21.0
rM	89,146	517,499	2,765,059	0.5	2.7	14.2	17.4
yB	71,819	240,089	1,246,419	1.2	4.1	21.3	26.6
wB	0	39,127	342,528	0.0	1.0	8.4	9.3
rO	0	10,601	21,232	0.0	6.4	12.8	19.1
wA	0	0	103,363	0.0	0.0	17.5	17.5
tA	74,986	164,222	916,790	1.5	3.4	18.7	23.6
ltA	15,929	68,370	327,687	1.0	4.2	20.1	25.3
Be	0	0	0	--	--	--	0.0
Other	0	0	37,638	0.0	0.0	4.1	4.1
Total	342,194	1,308,012	7,152,663	0.7	2.8	15.5	19.1

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 15. Central region hardwood volumes by species, product class, and quality.
(C3 and old forest constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	6,965,257	2,031,346	1,510,696	520,650	4,933,911	21.7	78.3
rM	19,287,540	4,451,747	3,398,417	1,053,330	14,835,793	17.6	82.4
yB	5,734,172	2,048,025	1,506,605	541,420	3,686,147	26.3	73.7
wB	3,931,123	459,511	387,564	71,947	3,471,612	9.9	90.1
rO	154,527	23,442	19,453	3,989	131,085	12.6	87.4
wA	600,078	166,971	104,964	62,007	433,107	17.5	82.5
tA	4,956,507	1,700,780	1,173,897	526,883	3,255,727	23.7	76.3
ltA	1,648,981	541,819	418,365	123,454	1,107,162	25.4	74.6
Be	264,988	0	0	0	264,988	0.0	100.0
Other	922,368	49,937	38,221	11,716	872,431	4.1	95.9
Total	44,465,541	11,473,578	8,558,182	2,915,396	32,991,963	19.2	80.8

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	91,712	240,397	1,178,587	1.3	3.5	16.9	21.7
rM	90,526	525,512	2,782,379	0.5	2.7	14.4	17.6
yB	72,931	193,725	1,239,949	1.3	3.4	21.6	26.3
wB	0	39,732	347,832	0.0	1.0	8.8	9.9
rO	0	10,765	8,688	0.0	7.0	5.6	12.6
wA	0	0	104,964	0.0	0.0	17.5	17.5
tA	76,147	166,765	930,985	1.5	3.4	18.8	23.7
ltA	16,176	69,428	332,761	1.0	4.2	20.2	25.4
Be	0	0	0	--	--	--	0.0
Other	0	0	38,221	0.0	0.0	4.1	4.1
Total	347,492	1,246,324	6,964,366	0.8	2.8	15.7	19.2

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 16. Central region hardwood volumes by species, product class, and quality.
(C3, old forest, and slope constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	6,888,214	1,996,166	1,487,992	508,174	4,892,048	21.6	78.4
rM	19,252,677	4,445,651	3,393,763	1,051,888	14,807,026	17.6	82.4
yB	5,697,396	2,045,221	1,504,542	540,679	3,652,175	26.4	73.6
wB	3,925,741	458,882	387,033	71,849	3,466,859	9.9	90.1
rO	154,315	23,410	19,426	3,984	130,905	12.6	87.4
wA	599,256	166,742	104,820	61,922	432,514	17.5	82.5
tA	4,949,719	1,698,451	1,172,290	526,161	3,251,268	23.7	76.3
ltA	1,646,723	541,077	417,792	123,285	1,105,646	25.4	74.6
Be	264,626	0	0	0	264,626	0.0	100.0
Other	921,104	49,868	38,168	11,700	871,236	4.1	95.9
Total	44,299,771	11,425,468	8,525,826	2,899,642	32,874,303	19.2	80.8

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	72,906	238,113	1,176,973	1.1	3.5	17.1	21.6
rM	90,402	524,792	2,778,569	0.5	2.7	14.4	17.6
yB	72,831	193,460	1,238,251	1.3	3.4	21.7	26.4
wB	0	39,678	347,355	0.0	1.0	8.8	9.9
rO	0	10,750	8,676	0.0	7.0	5.6	12.6
wA	0	0	104,820	0.0	0.0	17.5	17.5
tA	76,043	166,536	929,711	1.5	3.4	18.8	23.7
ltA	16,153	69,333	332,306	1.0	4.2	20.2	25.4
Be	0	0	0	--	--	--	0.0
Other	0	0	38,168	0.0	0.0	4.1	4.1
Total	328,335	1,242,662	6,954,829	0.7	2.8	15.7	19.2

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 17. Estimated percent (%) reductions in central region hardwood volumes by species, product class, and quality due to C3 and old forest constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	16	13	18		10	15
rM						
yB		4			19	
wB	4		4			
rO	7	31				59
wA						
tA						
ltA						
Be	7		7			
Other						
Total	4	3	4		5	3

Table 18. Estimated percent (%) reductions in central region hardwood volumes by species, product class, and quality due to C3, old forest, and slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	17	15	18	19	11	15
rM						
yB	3	4			19	
wB	4		5			
rO	7	31				59
wA						
tA						
ltA						
Be	7		7			
Other						
Total	4	3	4	4	5	3

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 19. Western region hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	1,123,826	510,593	403,378	107,215	613,233	35.9	64.1
rM	24,984,036	4,716,807	3,186,189	1,530,618	20,267,229	12.8	87.2
yB	2,524,087	1,096,957	794,804	302,153	1,427,130	31.5	68.5
wB	4,750,610	959,382	643,134	316,248	3,791,228	13.5	86.5
rO	2,931,161	1,021,689	718,398	303,291	1,909,472	24.5	75.5
wA	1,721,310	506,083	362,622	143,461	1,215,227	21.1	78.9
tA	2,546,552	1,037,029	701,035	335,994	1,509,523	27.5	72.5
ItA	2,439,485	1,073,971	720,634	353,337	1,365,514	29.5	70.5
Be	916,457	211,372	127,337	84,035	705,085	13.9	86.1
Other	403,005	0	0	0	403,005	0.0	100.0
Total	44,340,529	11,133,883	7,657,531	3,476,352	33,206,646	17.3	82.7

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	66,074	40,265	297,039	5.9	3.6	26.4	35.9
rM	166,923	428,404	2,590,862	0.7	1.7	10.4	12.8
yB	39,541	238,148	517,115	1.6	9.4	20.5	31.5
wB	0	37,952	605,182	0.0	0.8	12.7	13.5
rO	0	130,979	587,419	0.0	4.5	20.0	24.5
wA	40,530	32,538	289,554	2.4	1.9	16.8	21.1
tA	33,682	176,316	491,037	1.3	6.9	19.3	27.5
ItA	40,246	92,615	587,773	1.6	3.8	24.1	29.5
Be	16,488	25,546	85,303	1.8	2.8	9.3	13.9
Other	0	0	0	--	--	--	0.0
Total	403,484	1,202,763	6,051,284	0.9	2.7	13.6	17.3

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 20. Western region hardwood volumes by species, product class, and quality.
(C3 and old forest constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	1,117,813	507,861	401,221	106,640	609,952	35.9	64.1
rM	23,480,993	4,467,045	3,008,933	1,458,112	19,013,948	12.8	87.2
yB	2,510,580	1,091,087	790,551	300,536	1,419,493	31.5	68.5
wB	4,414,492	863,003	558,775	304,228	3,551,489	12.7	87.3
rO	2,546,888	818,927	560,966	257,961	1,727,961	22.0	78.0
wA	1,712,099	503,375	360,681	142,694	1,208,724	21.1	78.9
tA	2,461,474	1,031,479	697,283	334,196	1,429,995	28.3	71.7
ltA	2,193,566	955,171	630,044	325,127	1,238,395	28.7	71.3
Be	911,553	210,241	126,656	83,585	701,312	13.9	86.1
Other	397,396	0	0	0	397,396	0.0	100.0
Total	41,746,854	10,448,189	7,135,110	3,313,079	31,298,665	17.1	82.9

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	65,721	40,050	295,450	5.9	3.6	26.4	35.9
rM	166,030	417,755	2,425,148	0.7	1.8	10.3	12.8
yB	39,329	236,874	514,348	1.6	9.4	20.5	31.5
wB	0	31,671	527,104	0.0	0.7	11.9	12.7
rO	0	100,080	460,886	0.0	3.9	18.1	22.0
wA	40,313	32,364	288,004	2.4	1.9	16.8	21.1
tA	33,502	175,372	488,409	1.4	7.1	19.8	28.3
ltA	40,030	85,075	504,939	1.8	3.9	23.0	28.7
Be	16,400	25,409	84,847	1.8	2.8	9.3	13.9
Other	0	0	0	--	--	--	0.0
Total	401,325	1,144,650	5,589,135	1.0	2.7	13.4	17.1

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 21. Western region hardwood volumes by species, product class, and quality.
(C3, old forest, and slope constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	1,116,071	507,070	400,594	106,476	609,001	35.9	64.1
rM	23,438,883	4,460,085	3,004,245	1,455,840	18,978,798	12.8	87.2
yB	2,506,669	1,089,387	789,320	300,067	1,417,282	31.5	68.5
wB	4,407,615	861,659	557,905	303,754	3,545,956	12.7	87.3
rO	2,537,359	817,651	560,092	257,559	1,719,708	22.1	77.9
wA	1,709,432	502,591	360,120	142,471	1,206,841	21.1	78.9
tA	2,457,639	1,029,872	696,197	333,675	1,427,767	28.3	71.7
ltA	2,190,148	953,683	629,063	324,620	1,236,465	28.7	71.3
Be	889,346	209,913	126,458	83,455	679,433	14.2	85.8
Other	396,777	0	0	0	396,777	0.0	100.0
Total	41,649,939	10,431,911	7,123,994	3,307,917	31,218,028	17.1	82.9

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	65,618	39,987	294,989	5.9	3.6	26.4	35.9
rM	165,771	417,104	2,421,370	0.7	1.8	10.3	12.8
yB	39,268	236,505	513,547	1.6	9.4	20.5	31.5
wB	0	31,622	526,283	0.0	0.7	11.9	12.7
rO	0	99,924	460,168	0.0	3.9	18.1	22.1
wA	40,251	32,313	287,556	2.4	1.9	16.8	21.1
tA	33,450	175,099	487,648	1.4	7.1	19.8	28.3
ltA	39,968	84,943	504,152	1.8	3.9	23.0	28.7
Be	16,374	25,370	84,714	1.8	2.9	9.5	14.2
Other	0	0	0	--	--	--	0.0
Total	400,700	1,142,867	5,580,427	1.0	2.7	13.4	17.1

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 22. Estimated percent (%) reductions in western region hardwood volumes by species, product class, and quality due to C3 and old forest constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM						
rM	6	5	6			6
yB						
wB	7	10	6		17	13
rO	13	20	10		24	22
wA						
tA	3		5			
ltA	10	11	9		8	14
Be						
Other						
Total	6	6	6		5	8

Table 23. Estimated percent (%) reductions in western region hardwood volumes by species, product class, and quality due to C3, old forest, and slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM						
rM	6	5	6		3	7
yB						
wB	7	10	6		17	13
rO	13	20	10		24	22
wA						
tA	3		5			
ltA	10	11	9		8	14
Be	3		4			
Other						
Total	6	6	6		5	8

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 24. Crownland hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	6,819,332	3,221,267	2,250,984	970,283	3,598,065	33.0	67.0
rM	13,668,125	2,887,145	2,033,878	853,267	10,780,980	14.9	85.1
yB	6,349,330	2,943,763	1,968,832	974,931	3,405,567	31.0	69.0
wB	3,621,180	491,906	381,845	110,061	3,129,274	10.5	89.5
rO	979,815	331,134	250,197	80,937	648,681	25.5	74.5
wA	521,860	110,490	75,421	35,069	411,370	14.5	85.5
tA	1,093,216	372,057	253,958	118,099	721,159	23.2	76.8
ltA	1,178,852	475,287	334,708	140,579	703,565	28.4	71.6
Be	744,185	240,653	137,005	103,648	503,532	18.4	81.6
Other	169,989	0	0	0	169,989	0.0	100.0
Total	35,145,884	11,073,702	7,686,828	3,386,874	24,072,182	21.9	78.1

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	111,403	447,189	1,692,392	1.6	6.6	24.8	33.0
rM	66,503	242,641	1,724,734	0.5	1.8	12.6	14.9
yB	150,829	341,751	1,476,252	2.4	5.4	23.3	31.0
wB	0	20,554	361,291	0.0	0.6	10.0	10.5
rO	0	55,002	195,195	0.0	5.6	19.9	25.5
wA	0	0	75,421	0.0	0.0	14.5	14.5
tA	0	30,208	223,750	0.0	2.8	20.5	23.2
ltA	13,935	39,674	281,099	1.2	3.4	23.8	28.4
Be	0	19,821	117,184	0.0	2.7	15.7	18.4
Other	0	0	0	--	--	--	0.0
Total	342,670	1,196,840	6,147,318	1.0	3.4	17.5	21.9

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 25. Crownland hardwood volumes by species, product class, and quality.
(C3 and old forest constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	4,243,180	2,163,156	1,503,069	660,087	2,080,024	35.4	64.6
rM	10,995,427	2,369,180	1,669,959	699,221	8,626,247	15.2	84.8
yB	4,554,439	2,224,233	1,501,192	723,041	2,330,206	33.0	67.0
wB	2,752,333	337,014	264,095	72,919	2,415,319	9.6	90.4
rO	626,692	152,030	106,590	45,440	474,662	17.0	83.0
wA	486,110	105,198	71,808	33,390	380,912	14.8	85.2
tA	958,025	354,237	241,795	112,442	603,788	25.2	74.8
ltA	941,852	374,264	256,657	117,607	567,588	27.3	72.7
Be	655,249	229,126	130,443	98,683	426,123	19.9	80.1
Other	158,967	0	0	0	158,967	0.0	100.0
Total	26,372,274	8,308,438	5,745,608	2,562,830	18,063,836	21.8	78.2

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	70,925	293,450	1,138,694	1.7	6.9	26.8	35.4
rM	63,318	213,516	1,393,125	0.6	1.9	12.7	15.2
yB	117,857	278,529	1,104,806	2.6	6.1	24.3	33.0
wB	0	14,500	249,595	0.0	0.5	9.1	9.6
rO	0	27,180	79,410	0.0	4.3	12.7	17.0
wA	0	0	71,808	0.0	0.0	14.8	14.8
tA	0	28,761	213,034	0.0	3.0	22.2	25.2
ltA	13,268	31,899	211,490	1.4	3.4	22.5	27.3
Be	0	18,872	111,571	0.0	2.9	17.0	19.9
Other	0	0	0	--	--	--	0.0
Total	265,368	906,707	4,573,533	1.0	3.4	17.3	21.8

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 26. Crownland hardwood volumes by species, product class, and quality.
(C3, old forest, and slope constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	3,729,972	1,762,510	1,228,962	533,548	1,967,462	32.9	67.1
rM	10,985,143	2,353,811	1,654,696	699,115	8,631,332	15.1	84.9
yB	4,333,655	2,124,080	1,434,369	689,711	2,209,575	33.1	66.9
wB	2,718,416	322,929	254,061	68,868	2,395,487	9.3	90.7
rO	628,601	152,493	106,915	45,578	476,108	17.0	83.0
wA	487,591	105,519	72,027	33,492	382,072	14.8	85.2
tA	960,943	355,316	242,531	112,785	605,627	25.2	74.8
ltA	940,098	375,404	257,438	117,966	564,694	27.4	72.6
Be	519,571	194,620	111,911	82,709	324,951	21.5	78.5
Other	159,451		0	0	159,451	0.0	100.0
Total	25,463,441	7,746,682	5,362,910	2,383,772	17,716,759	21.1	78.9

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	59,395	227,508	942,059	1.6	6.1	25.3	32.9
rM	63,511	214,167	1,377,018	0.6	1.9	12.5	15.1
yB	118,216	263,667	1,052,486	2.7	6.1	24.3	33.1
wB	0	14,544	239,517	0.0	0.5	8.8	9.3
rO	0	27,263	79,652	0.0	4.3	12.7	17.0
wA	0	0	72,027	0.0	0.0	14.8	14.8
tA	0	28,849	213,682	0.0	3.0	22.2	25.2
ltA	13,308	31,996	212,134	1.4	3.4	22.6	27.4
Be	0	0	111,911	0.0	0.0	21.5	21.5
Other	0	0	0	--	--	--	0.0
Total	254,430	807,994	4,300,486	1.0	3.2	16.9	21.1

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 27. Estimated percent (%) reductions in crownland hardwood volumes by species, product class, and quality due to C3 and old forest constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	38	33	42	36	34	33
rM	20	18	20	5	12	19
yB	28	24	32	22	18	25
wB	24	31	23		29	31
rO	36	54	27		51	59
wA	7	5	7			5
tA	12	5	16		5	5
ltA	20	21	19	5	20	25
Be	12	5	15		5	5
Other	6		6			
Total	25	25	25	23	24	26

Table 28. Estimated percent (%) reductions in crownland hardwood volumes by species, product class, and quality due to C3, old forest, and slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	45	45	45	47	49	44
rM	20	18	20	4	12	20
yB	32	28	35	22	23	29
wB	25	34	23		29	34
rO	36	54	27		50	59
wA	7	4	7			5
tA	12	4	16		4	4
ltA	20	21	20	4	19	25
Be	30	19	35		100	4
Other	6		6			
Total	28	30	26	26	32	30

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 29. Industrial private hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	3,849,826	1,476,662	1,109,792	366,870	2,373,164	28.8	71.2
rM	12,954,140	2,881,872	2,109,400	772,472	10,072,268	16.3	83.7
yB	3,419,671	1,609,391	1,266,784	342,607	1,810,280	37.0	63.0
wB	2,540,160	372,678	273,502	99,176	2,167,482	10.8	89.2
rO	1,131,119	475,745	334,992	140,753	655,374	29.6	70.4
wA	189,360	15,659	8,622	7,037	173,701	4.6	95.4
tA	760,482	288,457	218,365	70,092	472,025	28.7	71.3
ltA	924,863	489,843	309,332	180,511	435,020	33.4	66.6
Be	181,559	48,298	27,749	20,549	133,261	15.3	84.7
Other	171,362	0	0	0	171,362	0.0	100.0
Total	26,122,542	7,658,605	5,658,538	2,000,067	18,463,937	21.7	78.3

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	147,338	202,603	759,851	3.8	5.3	19.7	28.8
rM	107,551	331,291	1,670,558	0.8	2.6	12.9	16.3
yB	141,490	217,017	908,277	4.1	6.3	26.6	37.0
wB	0	23,670	249,832	0.0	0.9	9.8	10.8
rO	0	70,034	264,958	0.0	6.2	23.4	29.6
wA	0	0	8,622	0.0	0.0	4.6	4.6
tA	0	0	218,365	0.0	0.0	28.7	28.7
ltA	23,669	44,324	241,339	2.6	4.8	26.1	33.4
Be	0	10,499	17,250	0.0	5.8	9.5	15.3
Other	0	0	0	--	--	--	0.0
Total	420,048	899,438	4,339,052	1.6	3.4	16.6	21.7

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 30. Industrial private hardwood volumes by species, product class, and quality.
(slope constraints only)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	3,785,267	1,444,782	1,089,895	354,887	2,340,485	28.8	71.2
rM	12,931,921	2,888,829	2,114,491	774,338	10,043,092	16.4	83.6
yB	3,366,224	1,583,218	1,245,690	337,528	1,783,006	37.0	63.0
wB	2,542,710	373,577	274,164	99,413	2,169,133	10.8	89.2
rO	1,116,380	463,327	326,425	136,902	653,053	29.2	70.8
wA	189,818	15,697	8,643	7,054	174,121	4.6	95.4
tA	762,317	289,153	218,892	70,261	473,164	28.7	71.3
ItA	905,737	469,667	296,333	173,334	436,070	32.7	67.3
Be	181,997	48,414	27,816	20,598	133,583	15.3	84.7
Other	171,775	0	0	0	171,775	0.0	100.0
Total	25,954,146	7,576,664	5,602,349	1,974,315	18,377,482	21.6	78.4

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	127,256	200,954	761,685	3.4	5.3	20.1	28.8
rM	107,811	332,090	1,674,590	0.8	2.6	12.9	16.4
yB	141,831	197,372	906,487	4.2	5.9	26.9	37.0
wB	0	23,728	250,436	0.0	0.9	9.8	10.8
rO	0	70,203	256,222	0.0	6.3	23.0	29.2
wA	0	0	8,643	0.0	0.0	4.6	4.6
tA	0	0	218,892	0.0	0.0	28.7	28.7
ItA	23,726	44,431	228,176	2.6	4.9	25.2	32.7
Be	0	10,525	17,291	0.0	5.8	9.5	15.3
Other	0	0	0	--	--	--	0.0
Total	400,624	879,303	4,322,422	1.5	3.4	16.7	21.6

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 31. Estimated percent (%) reductions in industrial private hardwood volumes by species, product class, and quality due to slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM				14		
rM						
yB					9	
wB						
rO		3				3
wA						
tA						
ltA		4				5
Be						
Other						
Total				5		

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 32. Small private hardwood volumes by species, product class, and quality.
(No accessibility or operability constraints)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	7,056,134	3,110,185	2,257,789	852,396	3,945,949	32.0	68.0
rM	31,718,991	6,509,571	4,553,076	1,956,495	25,209,420	14.4	85.6
yB	9,423,827	3,626,232	2,431,050	1,195,182	5,797,595	25.8	74.2
wB	7,199,729	1,153,751	782,337	371,414	6,045,978	10.9	89.1
rO	1,075,496	324,776	206,211	118,565	750,720	19.2	80.8
wA	2,172,733	735,119	510,433	224,686	1,437,614	23.5	76.5
tA	6,543,782	2,246,903	1,519,488	727,415	4,296,879	23.2	76.8
ltA	2,188,850	716,667	532,791	183,876	1,472,183	24.3	75.7
Be	3,050,229	563,793	406,104	157,689	2,486,436	13.3	86.7
Other	1,077,719	52,093	39,872	12,221	1,025,626	3.7	96.3
Total	71,507,490	19,039,090	13,239,151	5,799,939	52,468,400	18.5	81.5

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	219,156	415,786	1,622,847	3.1	5.9	23.0	32.0
rM	137,856	594,408	3,820,812	0.4	1.9	12.0	14.4
yB	124,562	443,479	1,863,009	1.3	4.7	19.8	25.8
wB	0	130,468	651,869	0.0	1.8	9.1	10.9
rO	0	15,790	190,421	0.0	1.5	17.7	19.2
wA	42,763	42,309	425,361	2.0	1.9	19.6	23.5
tA	114,974	323,418	1,081,096	1.8	4.9	16.5	23.2
ltA	19,808	91,316	421,667	0.9	4.2	19.3	24.3
Be	29,255	49,326	327,523	1.0	1.6	10.7	13.3
Other	0	0	39,872	0.0	0.0	3.7	3.7
Total	688,374	2,106,300	10,444,477	1.0	2.9	14.6	18.5

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

**Table 33. Small private hardwood volumes by species, product class, and quality.
(slope constraints only)**

All volumes are m³

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Estimated Total Sawlog Volume	Total Sawlog Tree Top Volume	Total Roundwood Tree Volume	Percent Sawlog Volume	Percent Roundwood Volume
sM	6,506,617	2,815,979	2,050,179	765,800	3,690,638	31.5	68.5
rM	31,244,269	6,387,104	4,474,183	1,912,921	24,857,165	14.3	85.7
yB	8,966,338	3,321,567	2,255,375	1,066,192	5,644,771	25.2	74.8
wB	6,962,206	1,111,027	759,259	351,768	5,851,179	10.9	89.1
rO	1,066,768	323,920	205,668	118,252	742,848	19.3	80.7
wA	2,167,003	733,180	509,087	224,093	1,433,823	23.5	76.5
tA	6,526,527	2,240,978	1,515,481	725,497	4,285,549	23.2	76.8
ltA	2,183,078	714,777	531,386	183,391	1,468,301	24.3	75.7
Be	2,362,984	481,796	355,077	126,719	1,881,188	15.0	85.0
Other	1,074,877	51,956	39,766	12,190	1,022,921	3.7	96.3
Total	69,060,667	18,182,284	12,695,461	5,486,823	50,878,383	18.4	81.6

Species	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume	G1% of Total Merchantable Volume	G2% of Total Merchantable Volume	G3% of Total Merchantable Volume	Total % Sawlog Volume
sM	196,937	366,112	1,487,130	3.0	5.6	22.9	31.5
rM	137,492	592,841	3,743,850	0.4	1.9	12.0	14.3
yB	124,234	386,787	1,744,354	1.4	4.3	19.5	25.2
wB	0	116,867	642,392	0.0	1.7	9.2	10.9
rO	0	15,749	189,919	0.0	1.5	17.8	19.3
wA	42,650	42,198	424,239	2.0	1.9	19.6	23.5
tA	114,671	322,565	1,078,245	1.8	4.9	16.5	23.2
ltA	19,756	91,075	420,555	0.9	4.2	19.3	24.3
Be	29,178	41,089	284,810	1.2	1.7	12.1	15.0
Other	0	0	39,766	0.0	0.0	3.7	3.7
Total	664,918	1,975,283	10,055,260	1.0	2.9	14.6	18.4

Note: Percent Roundwood Volumes include merchantable Sawlog Tree Top Volumes (the volume between 8 inch and 3 inch top diameter).

G1 + G2 + G3 Volumes = Total Sawlog Volume.

Table 34. Estimated percent (%) reductions in small private hardwood volumes by species, product class, and quality due to slope constraints.

Species	Total Merchantable Volume	Total Sawlog Tree Volume	Total Roundwood Tree Volume	Estimated Total G1 Volume	Estimated Total G2 Volume	Estimated Total G3 Volume
sM	8	9	6	10	12	8
rM						
yB	5	8	3		13	6
wB	3	4	3		10	
rO						
wA						
tA						
ltA						
Be	23	15	24		17	13
Other						
Total	3	5	3	3	6	4

Note: Reductions of 2% or less are not shown as these values are within error limits associated with volume calculations.

Total values are reductions based on all species volumes combined.

**Table 35. Estimated hardwood lumber volumes by species and product class.
(No accessibility or operability constraints)**

Province										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	37,990	75,300	51,559	196,267	--	--	284,372	216,524	348,469	1,210,481
rM	82,708	96,201	63,335	272,656	384,265	674,568	--	196,789	93,184	1,863,706
yB	50,147	57,747	33,311	234,635	--	--	253,882	211,310	267,974	1,109,006
wB	5,531	na	22,639	35,693	--	--	77,030	75,211	51,028	267,132
rO	2,754	10,380	5,364	20,628	--	--	41,093	47,854	30,275	158,348

Eastern Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	28,373	54,065	32,290	139,618	--	--	187,764	131,907	205,085	779,102
rM	18,663	20,271	13,032	66,314	86,669	157,809	--	48,693	24,573	436,024
yB	33,361	35,916	19,951	149,946	--	--	143,894	125,746	162,428	671,242
wB	2,617	na	7,517	11,728	--	--	23,010	21,484	11,693	78,049
rO	178	343	129	1,847	--	--	2,575	2,471	1,928	9,471

Central Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	7,625	15,562	16,138	42,693	--	--	78,952	70,414	123,546	354,930
rM	28,262	41,305	27,813	96,262	162,496	276,150	--	72,741	30,993	736,022
yB	8,988	13,142	8,755	53,451	--	--	73,865	59,022	75,702	292,925
wB	1,207	na	6,100	9,086	--	--	18,392	19,109	14,546	68,440
rO	29	684	181	1,159	--	--	1,617	1,379	818	5,867

Western Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	2,222	6,102	3,347	15,049	--	--	19,000	15,056	21,084	81,860
rM	35,731	34,513	22,411	109,950	134,729	240,061	--	75,258	37,604	690,257
yB	8,058	8,947	4,740	32,336	--	--	37,031	27,378	30,936	149,426
wB	1,723	na	9,043	14,912	--	--	35,676	34,650	24,770	120,774
rO	2,544	9,334	5,044	17,600	--	--	36,846	43,936	27,490	142,794

**Table 36. Estimated hardwood lumber volumes by species and product class.
(C3 and old forest constraints)**

Province										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	31,929	63,916	45,034	164,542	--	--	246,181	186,734	305,079	1,043,415
rM	80,821	94,080	61,628	262,557	370,732	650,066	--	189,169	89,242	1,798,295
yB	46,835	52,144	30,487	210,954	--	--	231,682	191,829	242,765	1,006,696
wB	5,197	--	20,926	32,935	--	--	71,273	68,905	46,287	245,523
rO	2,448	7,975	4,188	17,286	--	--	32,003	36,880	23,563	124,343

Eastern Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	22,683	43,814	27,681	112,266	--	--	158,491	111,503	177,282	653,720
rM	17,625	19,020	12,164	61,212	79,539	145,625	--	44,855	22,626	402,666
yB	31,436	31,171	17,318	128,342	--	--	123,868	106,949	138,222	577,306
wB	2,443	--	6,990	10,305	--	--	20,435	19,110	10,155	69,438
rO	176	339	128	1,823	--	--	2,542	2,440	1,903	9,351

Central Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	7,006	13,963	14,031	37,147	--	--	68,727	60,305	107,025	308,204
rM	28,625	41,890	28,179	97,235	164,171	278,192	--	73,234	31,156	742,682
yB	7,281	12,007	8,435	50,218	--	--	70,912	57,592	73,728	280,173
wB	1,225	--	6,194	9,227	--	--	18,677	19,404	14,772	69,499
rO	0	640	120	779	--	--	938	537	210	3,224

Western Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	2,210	6,069	3,329	14,969	--	--	18,898	14,975	20,971	81,421
rM	34,500	33,222	21,331	103,963	127,230	226,481	--	71,031	35,387	653,145
yB	8,015	8,899	4,715	32,163	--	--	36,833	27,232	30,770	148,627
wB	1,520	--	7,713	13,347	--	--	32,010	30,265	21,292	106,147
rO	2,254	6,947	3,911	14,571	--	--	28,303	33,638	21,280	110,904

**Table 37. Estimated hardwood lumber volumes by species and product class.
(C3, old forest, and slope constraints)**

Province										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	27,629	55,502	40,309	144,415	--	--	218,601	168,206	275,726	930,388
rM	80,455	93,577	61,171	260,106	367,203	643,246	--	187,176	88,178	1,781,112
yB	45,480	50,049	28,758	202,068	--	--	222,327	183,454	231,345	963,481
wB	5,059	--	19,932	31,772	--	--	69,275	67,461	45,317	238,816
rO	2,449	7,980	4,190	17,296	--	--	32,022	36,901	23,577	124,415

Eastern Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	18,686	36,457	23,360	94,036	--	--	132,931	94,155	149,286	548,911
rM	17,312	18,571	11,739	58,956	76,246	139,252	--	43,006	21,638	386,720
yB	30,233	29,221	15,667	120,055	--	--	115,073	99,062	127,436	536,747
wB	2,316	--	6,022	9,179	--	--	18,510	17,732	9,215	62,974
rO	177	340	128	1,834	--	--	2,557	2,454	1,914	9,404

Central Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	6,796	13,082	13,731	35,705	--	--	67,325	59,538	106,307	302,484
rM	28,589	41,832	28,140	97,102	163,946	277,811	--	73,133	31,114	741,667
yB	7,271	11,991	8,423	50,149	--	--	70,815	57,514	73,627	279,790
wB	1,224	--	6,186	9,214	--	--	18,651	19,378	14,751	69,404
rO	0	639	119	778	--	--	936	536	210	3,218

Western Region										
Species	Estimated FAS Volume (mfbm)	Estimated FAS-1S Volume (mfbm)	Estimated SELECT Volume (mfbm)	Estimated NO. 1C Volume (mfbm)	Estimated NO. 2A Volume (mfbm)	Estimated NO. 2B Volume (mfbm)	Estimated NO. 2C Volume (mfbm)	Estimated NO. 3A Volume (mfbm)	Estimated NO. 3B Volume (mfbm)	Total
sM	2,206	6,060	3,324	14,945	--	--	18,869	14,952	20,939	81,295
rM	34,446	33,170	21,297	103,801	127,032	226,128	--	70,920	35,332	652,126
yB	8,003	8,885	4,708	32,113	--	--	36,776	27,189	30,722	148,396
wB	1,517	--	7,701	13,326	--	--	31,960	30,218	21,259	105,981
rO	2,251	6,936	3,905	14,548	--	--	28,259	33,586	21,247	110,732

Appendix 1.

Rules used to estimate quality log volumes based on tree grade and size.

When a tree is assigned a G1 or G2 grade, this grade mainly applies to the butt log of the tree. As you move up the tree, related log grade will decrease due to defects and/or smaller diameter. Estimates of actual G1, G2, and G3 volumes found in individually graded trees were based on functions and assumptions listed below:

1. Stump diameter inside bark was calculated based on dbhob (Honer *et al.* 1983).
2. If stump height > 1.3 m, stump diameter inside bark = dbhob * 0.9
3. Stump to dbh log section volume (stlog) was calculated using the Neiloid frustum function (Husch *et al.* 1982) with assumed dbh bark thickness of 10%.
4. The first log length (1log) was estimated based on merchantable length (mlength), diameter inside bark at 16 feet (dib16), diameter inside bark at 12 feet (dib12), and merchantable length diameter inside bark (mdib) data, with volumes calculated using Smalian's function (Husch *et al.* 1982).

If mlength > 16, and dib16 >= 13 in, 1log length = 16 - dbh height.

If mlength > 16, and dib16 < 13 in, 1log length = 12 - dbh height.

If mlength < 16, 1log length = mlength - dbh height.

5. The second log length (2log) was estimated based on mlength, dib16, dib12, and mdib data, with volumes calculated using Smalian's function (Husch *et al.* 1982).

If mlength > 16, and dib16 >= 13 in, 2log length = mlength - 16.

If mlength > 16, and dib16 < 13 in, 2log length = mlength - 12.

If mlength < 16, 2log length = 0.

6. Total volumes by grade were calculated based on tree grade (Tgrade) and mdib data.

If Tgrade = 1 and mdib >= 11 in:

G1 vol = stlog + 1log

G2 vol = 2log

G3 vol = 0

If Tgrade = 1 and mdib < 11 in:

G1 vol = stlog + 1log

G2 vol = 0

G3 vol = 2log

If Tgrade = 2: G1 vol = 0
G2 vol = stlog + 1log
G3 vol = 2log

If Tgrade = 3: G1 vol = 0
G2 vol = 0
G3 vol = stlog + 1log + 2log