COAST ISLANDS WORKING CIRCLE

HARDWICKE E. & W. THURLOW

AND

SUNORA FORESTS

1938

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B.C. FOREST SERVICE

ECONOMICS DIVISION

"Coast Islands" Working Circle

Hardwicke, West Thurlow, East Thurlow and

Sonora Forests

Re-survey and Report by

W.C. Phillips, 1938.

Management Recommendations by

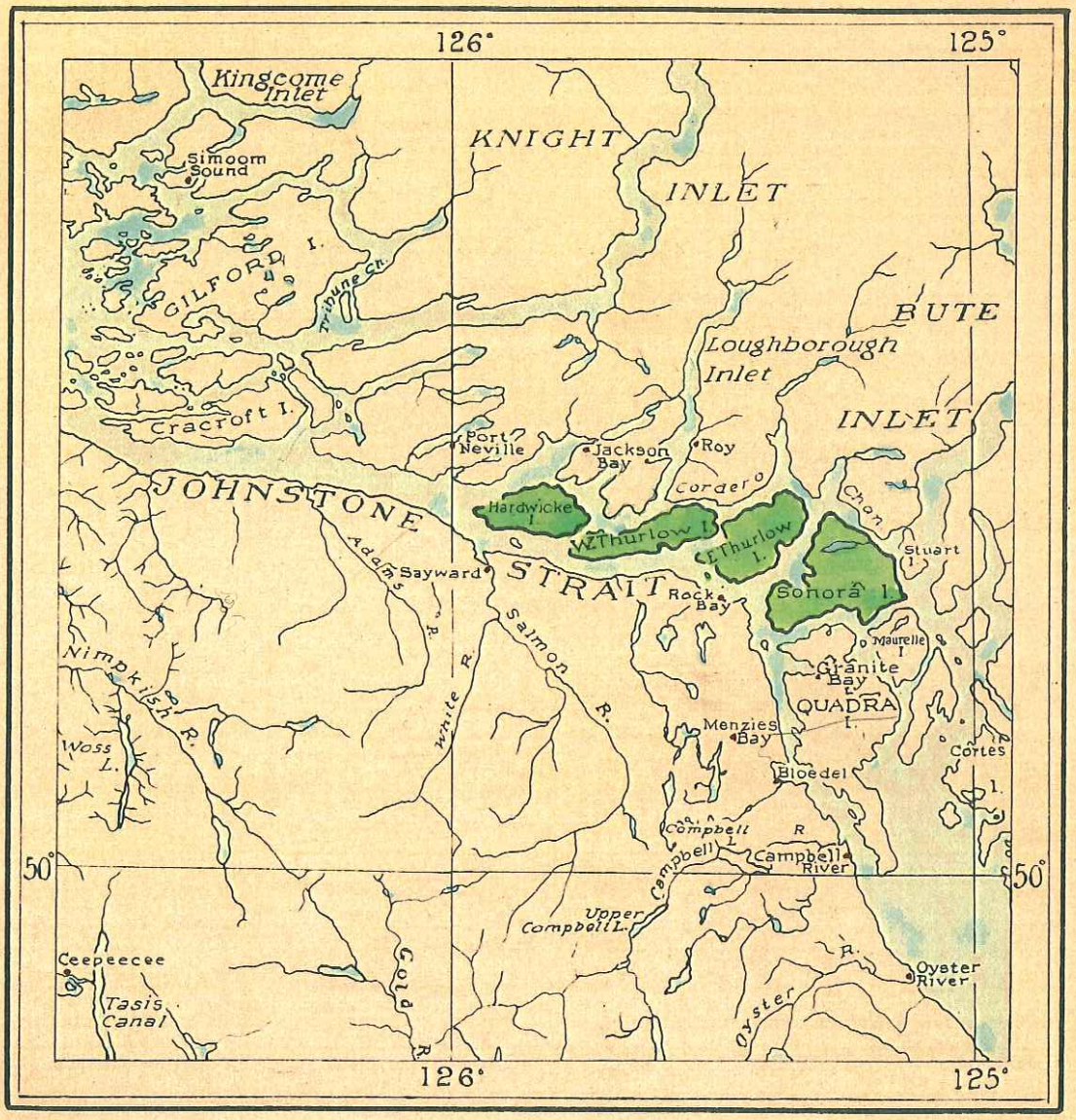
H.J. Hodgins, 1939.

Maps accompanying this report:

2 forest cover maps
scale 2 inches to 1 mile

1 key map
scale 2 miles to 1 inch

Forest Survey Nos. R 6 to 9 inc.
Survey file 0132022
Administration file



INDEX MAP

- Scale - 15.78 Miles to 1 Inch -

PREFACE

The proposed "Coast Islands" Working Circle comprises four Provincial Forests located in the heart of one of the more important logging centres in the Vancouver Forest District. The Forests were originally surveyed and reported on for preliminary management purposes in 1926 and during 1938 a resurvey was conducted over the area by W. C. Phillips.

The area comprises 21,640 and 30,320 acres of mature and immature timber respectively. There are, in addition, 12,610 acres of productive forest land, unsatisfactorily stocked, the majority of which will require planting. Merchantable timber of a quality acceptable in existing markets totals 460,960,000 f.b.m.

Utilization in this region greatly exceeds the allowable annual cut and the necessity for regulative measures to insure continuous forest production warrants immediate consideration. The annual cut averaged 15,700,000 f.b.m. over the past four years, as compared with a present sustained yield capacity of 11,000,000 f.b.m. per annum. Crown timber sales provided 48% of the annual cut owing to the high proportion of forest values under Crown ownership.

This area is recommended as a working circle for continuous production of forest crops and the detailed proposals in this report which involve the instigation and maintenance of such a policy are recommended for immediate consideration.

H. J. Hodgins

Assistant Forester.

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SYNOPSIS

General Location: The "Coast Islands" working circle includes the Sonora, East and West Thurlow and Hardwicke Forests. These four islands lie between the northern portion of Vancouver Island and the mainland, approximately 150 miles northwest of Vancouver.

Classification of Areas (acres)
(All accessible)

	Sonora	E. Thurlow	W. Thurlow	Hardwicke	Total
Mature timber	9,410	4,330	2,750	5,150	21,640
Immature timber					
1 - 10 years	490	20	660	120	1,290
10 - 20 "	4,930	2,360	7,000	1,720	16,010
21 - 40 "	3,890	7,110	1,400	30	12,430
41 - 60 "	380		190	20	590
Total	9,690	9,490	9,250	1,890	30,320
Not satisfactorily stocked					
Logged	1,010	770	660	300	2,740
Logged and burned	440	20	350	3,210	4,020
Burned	130	600	90	1,990	2,810
Non commercial cover					
Deciduous	350	250	500	180	1,280
Coniferous	760	190	560	250	1,760
Total	2,690	1,830	2,160	5,930	12,610
Total productive forest sites	21,790	15,650	14,160	12,970	64,570
Non productive sites					
Barren	210				210
Alpine and scrub	15,680	8,840	5,540	4,970	35,030
Swamp	100	80	20		200
Water	1,540	1,380	60	80	3,060
Total non productive sites	17,530	10,300	5,620	5,050	38,500
Total area, acres	39,320	25,950	19,780	18,020	103,070
Total area, square miles	61.5	40.5	31	28	161

Estimates of Mature Timber

(M.B.M. over 11" d.b.h., all accessible)

SONORA FOREST

Ownership	Area	Douglas Fir	Hemlock	Red Cedar	Balsam	W. Pine	Spruce	Totals
Vacant Crown Timber	7,510	44,450	70,830	28,590	8,560	820	2,920	156,170
Leases and Licences	1,900	32,100	20,470	7,740	1,020	710	250	62,290
Crown Grants								Nil
Totals	9,410	76,550	91,300	36,330	9,580	1,530	3,170	218,460
% of total		35.0	41.8	16.6	4.4	0.7	1.5	100.0%

EAST THURLOW FOREST

Ownership	Area	Douglas Fir	Hemlock	Red Cedar	Balsam	W.Pine	Spruce	Totals
Vacant Crown Timber	3,520	15,520	23,560	13,110	3,620	1,700	190	57,700
Leases and Licences	700	2,290	7,440	3,910	720	260	40	14,660
Crown Grants	110	850	650	520				2,020
Totals	4,330	18,660	31,650	17,540	4,340	1,960	230	74,380
% of total		25.1	42.6	23.6	5.8	2.6	0.3	100.0%

WEST THURLOW FOREST

Ownership	Area	Douglas Fir	Hemlock	Red Cedar	Balsam	W.Pine	Spruce	Totals
Vacant Crown Timber	2,250	6,520	26,260	7,550	6,570	570		47,470
Leases and Licences	480	490	6,480	1,820	2,040	220		11,050
Crown Grants	20		250	40	120			410
Totals	2,750	7,010	32,990	9,410	8,730	790		58,930
% of total		11.9	56.0	16.0	14.8	1.3		100.0%

Estimates of Mature Timber (Cont'd)

HARDWICKE FOREST

Ownership	Area	Douglas Fir	Hemlock	Red Cedar	Balsam	W.Pine	Spruce	Totals
Vacant Crown Timber	3,250	6,670	33,500	15,910	10,200	2,200	400	68,880
Leases and Licences	1,780	2,320	17,480	9,400	5,840	1,590	400	37,030
Crown Grants	120	1,070	1,510	450	20		230	3,280
Totals	5,150	10,060	52,490	25,760	16,060	3,790	1,030	109,190
% of Total		9.2	48.2	23.6	14.7	3.5	0.8	100.0%

GRAND TOTALS

Ownership	Area	Douglas Fir	Hemlock	Red Cedar	Balsam	W.Pine	Spruce	Total
Vacant Crown Timber	16,530	73,160	154,150	65,160	28,950	5,290	3,510	330,220
Leases and Licences	4,860	37,200	51,870	22,870	9,620	2,780	690	125,030
Crown Grants	250	1,920	2,410	1,010	140		230	5,710
Totals	21,640	112,280	208,430	89,040	38,710	8,070	4,430	460,960
% of Total		24.4	45.2	19.3	8.4	1.7	1.0	100.0%

Estimated Capacity for Sustained Annual Yield

Present capacity ..... 11,000 M.B.M.
Regulated capacity ..... 17,400 M.B.M.

Depletion

Current cut (1938) ..... 18,600 M.B.M.
Average annut cut (1935-38 inclusive) .... 15,700 M.B.M.
Average fir depletion (1935-38 Inclusive). negligible
Average annual cut, private timber
(1935-38 inclusive) .... 8,200 M.B.M.

Regulation

Crown timber sales to be limited to ..... 2,800 M.B.M. per annum

DESCRIPTION OF AREA

Boundaries

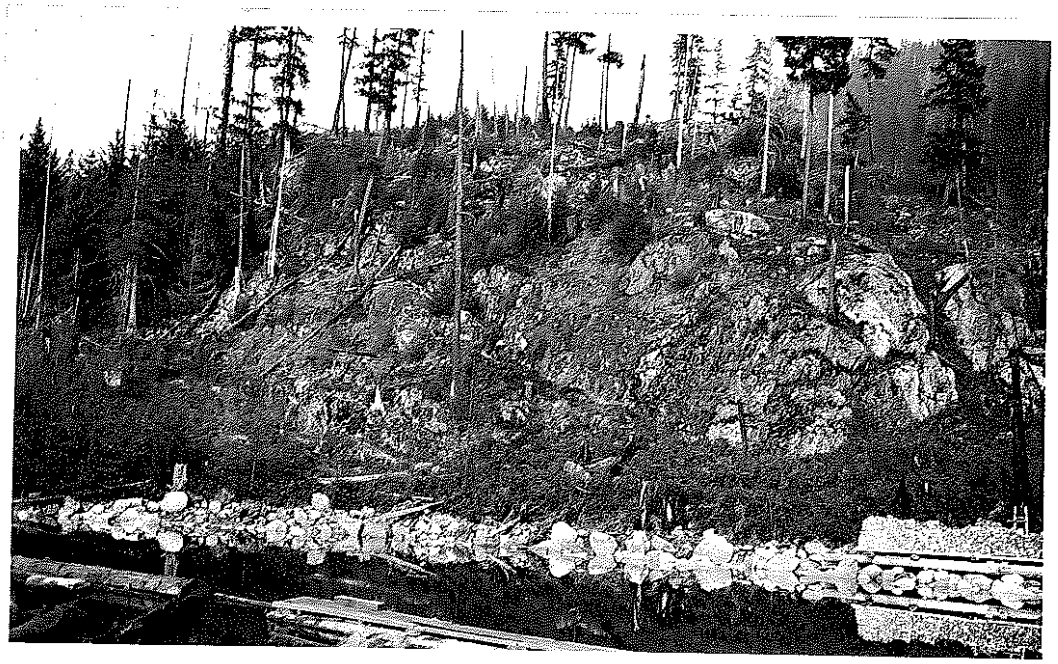
The four Islands, comprising the Sonora, East and West Thurlow, and Hardwicke Forests, lie between the northern part of Vancouver Island and the mainland. On the south they are bounded by Okisollo Channel and Johnstone Strait and on the north by Cordero, Chancellor, Wellbore and Sunderland Channels. Land suitable for agricultural development was excluded from the Forest boundaries by previous surveys.

General Topography

The topography is fairly low, generally under 2,000 ft. elevation, with mountains on Hardwicke and Sonora Islands rising to 3,000 ft.

There are numerous small water courses on all the islands, many of which drain from lakes, especially on Sonora and East Thurlow Islands.

For the most part the shore lines of the islands are rough and rugged with many small rocky bluffs. The shores are compartively smooth with few good harbours and bays.



Rocky shores bordering
Okisollo Channel.

Climate

These Forests enjoy the mild, south coast weather with an average fire season. The average annual precipitation is about 70 inches and the mean temperature about 48°F. , as shown by recordings at Thurston Bay. Climatic conditions are conducive to average forest growth of the lower coast.

Industries (other than timber)

The Islands are essentially forest producing. Fair farming land exists on several parts of the islands but it is doubtful if any large communities, depending directly on agriculture, will ever develop.

The following settlements are now occupied:

1. Owen Bay - a few families dependent on handlogging, milling and fishing.
2. Thurston Bay and Cameleon Harbour - the Forest Branch station and a small mill producing boat lumber for the station.
3. Shoal Bay (Thurlow) - a small community with a store, post office and dock. Some of the residents have small "truck" gardens but they depend mainly on logging and fishing.
4. Blind Channel - a small community with a store, mill and dock. The residents depend on milling, handlogging and fishing for their existence.
5. Earles Ledge - The home of the Bendicksons, who have been logging in the vicinity for years.

In addition there are five small logging operators with temporary headquarters on the Islands.

All land which will be used for agriculture for many years has been excluded from the Forests and it is reasonable to assume that, as in the past, logging will continue to be the main industry of these Forests.

Forest Branch Boat Station - Thurston Bay.

Hunting and Fishing

Deer, fish and game birds are plentiful on the Islands and the many old logging roads give easy access to their haunts. Hunting and fishing are enjoyed chiefly by the local inhabitants.

Mining

Prospecting or development work has not shown any mineral values on the Islands with the exception of the hill due east from Shoal Bay. Some development work was done there about 30 years ago and during 1938 the work was resumed. Good showings of gold were reported and active mining may commence if a sufficient body of ore can be located.

Trapping

Mink and marten are found on the Islands but very little trapping is done at present.

Power Development

There is only one power site on the Islands and it is being used by the Forest Branch Station at Thurston Bay. Ample power is supplied from Florence Lake, which has a storage basin covering 800 acres and an elevation of about 250 feet.

Transportation

The Union Steamships call weekly at several points on the Islands.

DESCRIPTION OF FOREST

Forest Species

Common Name	Abbreviation	Botanical Name
Western hemlock	H	Tsuga heterophylla
Douglas fir	F	Pseudotsuga taxifolia
Western red cedar	C	Thuja plicata
Balsam (silver fir)	B	Abies amabilis
Sitka spruce	S	Picea sitchensis
Western white pine	Pw	Pinus monticola
Yellow cedar (cypress)	Cy	Chamaecyparis nootkatensis

Forest Types

Two major forest types are found in the working circle, namely: Douglas fir-red cedar-hemlock and the hemlock-balsam. The former occurs chiefly at the lower altitudes and, in the past, has been the chief source of supply for logging operators. The hemlock-balsam type occurs on localized areas at the lower elevations but is chiefly found above the range of the Douglas fir-red cedar-hemlock type.

Timber Quality

Hemlock: On the better sites hemlock is tall, clean, has good quality timber, and is generally free from abnormal defects. On the poorer sites the trees are short, of small diameter and more defective. Conk and buttrot are the main defects. The usual amount of cat-faced, crooked and limby trees are also found. In general, the hemlock is of a good pulp grade.

Douglas Fir: Good quality Douglas fir occurs in these Forests in spite of the fact that they approach the northern limits of the species. In general the trees are tall, clean and straight. Buttrot is the most prevalent defect in this species.

Cedar: Most of the cedar is of shingle grade quality. The trees are not very tall and taper rapidly. Butt and top rot are quite prevalent throughout.

Balsam: This species is fairly tall, clean and straight. The over-mature trees only are subject to serious defect, usualy trunk rot.

Sitka spruce and Western white pine: These species are of the average size and quality found on the lower coast.

Yellow cedar: This species occurs, primarily, above the range of commercial timber. It is associated with scrub growth hemlock and balsam and has no particular commercial significance at the present time.

Reproduction and Factors Affecting It

Reproduction on extensively logged areas is, for the most part, unsatisfactory. The primary cause for this condition is attributed to an inadequate seed supply. In many cases recurring fires on logged areas have greatly impeded the establishment of reproduction and permitted bracken and other herbacious and deciduous growth to gain a strong foothold. Fires and erosion have, on certain areas, reduced soil values to such an extent that they are now non-productive, whereas at one time they were forested with a fine stand of timber.

On the whole 74% of the productive areas affected by fires or logging (exclusive of coniferous non-commercial cover) have re-stocked satisfactorily. The following table indicates, in detail, the history of all such areas and their present conditioN:

HISTORY TABLE

CLASSIFICATION	Hardwicke Forest (acres)					West Thurlow Forest (acres)					East Thurlow Forest (acres)					Sonora Forest (acres)					Totals (acres)				
	Logged	Logged & Burned	Burned	Miscellaneous *	Total	Logged	Logged & Burned	Burned	Miscellaneous	Total	Logged	Logged & Burned	Burned	Miscellaneous	Total	Logged	Logged & Burned	Burned	Miscellaneous	Total	Logged	Logged & Burned	Burned	Miscellaneous	TOTALS
Immature																									
1-10 years	120				120	60	600/			660	20				20	490				490	690	600			1,290
11-20 "	940	780			1,720	3,640	3,360			7,000	440	1,920			2,360	1,290	3,640			4,930	6,310	9,700			16,010
21-40 "	30				30	1,310		90		1,400	940	6,170			7,110	990	2,900			3,890	3,270	9,070	90		12,430
41-60 "	20				20			190		190						70		310		380	90		500		590
Totals	1,110	780			1,890	5,010	3,960	280		9,250	1,400	8,090			9,490	2,840	6,540	310		9,690	10,360	19,370	590		30,320
Unsatisfactorily Stocked																									
No cover	300	3,210	1,990		5,500	660	350	90		1,100	770	20	600		1,390	1,010	440	130		1,580	2,740	4,020	2,810		9,570
Deciduous	90	90			180	130	370			500	120	130			250	30	70	250		350	370	660	250		1,280
Coniferous (N.C.C.)				250	250				560	560				190	190				760	760				1,760	1,760
Totals	390	3,300	1,990	250	5,930	790	720	90	560	2,160	890	150	600	190	1,830	1,040	510	380	760	2,690	3,110	4,680	3,060	1,760	12,610
Grand Totals	1,500	4,080	1,990	250	7,820	5,800	4,680	370	560	11,410	2,290	8,240	600	190	11,320	3,880	7,050	690	760	12,380	13,470	24,050	3,650	1,760	42,930

/ Includes 600 acres planted in 1932.
* Includes minor patches of conifers, such as seed trees.

Artificial reforestation was conducted over a portion of West Thurlow Island during 1932, details of which have been reported under File R. 8 Reforestation. The majority of the unsatisfactorily stocked areas will require planting if they are to be brought into a productive condition within a reasonable period of time. The areas which should receive first consideration in this respect are as follows:

A. Sonora Forest

1. Lots 514 and 515, south of Hardinge Island.

B. East Thurlow Forest

1. S.T.L's. 36321 and 34796, logged in 1922.
2. North end of Mellon Lake, burned twice.

C. West Thurlow Forest

The majority of the unsatisfactorily stocked areas of importance were planted in 1932. Minor areas only will require planting in the future. In many of the immature stands the degree of stocking is sparse. However, on the whole this condition was accepted as satisfactory.

D. Hardwicke Forest

The majority of the eastern end of the Island is unsatisfactorily stocked. A considerable portion of this unit was logged and burned prior to 1925 and was reburned in 1931.

Site Quality

The growing site in the Working Circle is indicative of average Lower Coast conditions. The site index averages 100, expressed in terms of total height at 100 years for Douglas fir and Hemlock of the older age classes.

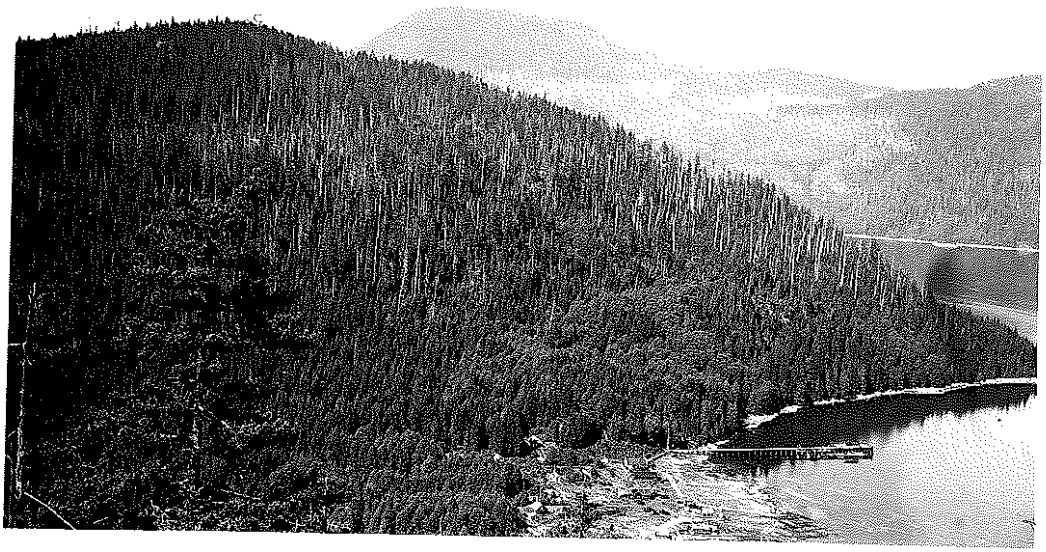
Disease and Infestations

Defects are chiefly the result of buttrot (Polyporous schweinitzii) in red cedar. In the other species, conk (Trametes pini), toprot (Fomes roseus) and trunk rot (Fomes officinalis) cause most of the defects.

The immature stands are particularly healthy with the exception of white pine, on which the blister rust is quite active.

There are no abnormal insect infestations in the Forests.

Showing scattered seed trees in a stand of immature timber.



Immature timber behind Shoal Bay.

Hemlock-cedar, 1910, behind Thurston Bay.

F.H. 1917. Near Islets Point. Note rocky bluffs along water's edge.

FOREST UTILIZATION

Present Utilization

Practically all of the merchantable timber in these Forests is suitable for immediate utilization, being either mature or over mature. From the physical standpoint all stands are considered accessible, although many of them are economically inaccessible at the present market prices, especially for species such as balsam and some of the hemlock and cedar.

The markets for the output of these Islands have been the Powell River Pulp and Paper Company for pulp and the Vancouver open market for sawlogs and shingle cedar. It is reasonable to assume that this condition will continue in the future.

Two small mills operate intermittently, one at Cameleon Harbour and the other at Blind Channel. Most of their output is consumed locally by the Thurston Bay Forest Branch Station, logging camps and local residents.

Current Logging Operations 1938

Sonora Forest

1. Cline Bros.: employing 7 men, yarding and roading with an R.D.8 caterpillar equipped with a bummer. Daily output averages about 30 M.B.M.

2. Tilton: employing 4 men, yarding and roading with an R.D.8 equipped with an arch. Daily output averages about 10 M.B.M.

East Thurlow Forest

1. Carson Logging Company: employing 35 men, yarding with cold deck and roading with 2 trucks. Daily output averages about 60 M.B.M. from T.L. 10603 P.

2. Thurlow Island Logging Company: located near Simmons Lake, employing 30 men, yarding with a cold deck and roading with 1 truck and a caterpillar tractor. Daily output averages about 50 M.B.M.

West Thurlow Forest

De Mille's Logging Company: Located near the south west end of the Island, employing 10 men, yarding and roading with an R.D.8 caterpillar tractor. Daily capacity about 30 M.B.M.

Truck logging from cold deck. Near Simmons Lake.

Cedar boom from area near Simmons Lake.

Logs from X21503. Cline's logging, Okisolla Channel.

Old logging at the mouth of Florence Lake.

Present Output

The following table shows in detail the actual annual cut on privately owned and Crown owned timber lands for the period 1935-1938 inclusive, during which time cutting ledgers were maintained:

Average annual output - by Forests - 1935 to 1938 inclusive.
F.B.M.

Forest	Timber Sales	Alienated Timber	Total Cut
Sonora	5,111,840	3,601,250	8,713,090
East Thurlow	184,540	2,056,640	2,241,180
West Thurlow	1,288,430	2,512,280	3,800,710
Hardwicke	968,780		968,780
Total	7,553,590	8,170,170	15,723,760

Total annual output - 1935 to 1938 inclusive
F.B.M.

Year	Timber Sales	Alienated Timber	Total Cut
1935	3,863,540	7,249,550	11,113,090
1936	6,575,750	7,657,600	14,233,350
1937	10,868,370	8,045,250	18,913,620
1938	8,906,700	9,728,270	18,634,970
Total	30,214,360	32,680,670	62,895,030
Average	7,553,590	8,170,170	15,723,760

Blocks of Crown Timber Available

The following tables show a summary, by Forests, of the more important blocks of Crown timber available:

BLOCKS OF CROWN TIMBER

SONORA FOREST

Comp't No.	Location	Forest Type	Acreage (areas)	Total Volume M.B.M.
1	Main type	H.C.	1,300	20,680
1	Near Lookout	H.B.	250	11,250
2	Main type, south of Florence Lake	H.F.C.	1,320	22,170
2	T.L. 1499P	H.F.	160	3,420
2	S.T.L. 37277	H.F.	240	5,790
2	Davis Point	F.	90	3,230
2	West Florence Lake	H.F.	50	500
3	Main type	H.F.	2,120	39,760
4	Main type	H.C.	1,000	21,830
5	S.T.L. 37237	H.	270	3,620
6	T.L. 4324P	F.H.	230	11,120
6	Between T.L. 12738 & 4321	F.H.	240	6,620
6	North of T.L. 34827	F.H.	290	5,720
Totals			7,560	155,710

EAST THURLOW FOREST

1	Artificial Lake	F.H.C.	280	8,410
1	South of Mellon L.	H.B.C.	390	4,410
1	L. 21	H.F.C.	120	2,340
1	Adjacent T.L. 10603	H.	410	9,690
2	L. 46	F.H.	230	4,220
2	South of Storey L.	F.H.	220	4,000
3	S.T.L. 34796	B.F.H.	100	1,890
3	L. 27 S. Hemming L.	H.C.	620	12,260
3	L. 27	H.F.C.	810	5,400
3	S. of Jap Lake	C.H.	60	1,440
3	Vera Lake	H.C.	150	3,320
Totals			3,390	57,380

WEST THURLOW FOREST

Comp't No.	Location	Forest Type	Acreage (acres)	Total Volume M.B.M.
1	N. of Lot 349	H.	190	3,610
1	L. 3499	H.C.	70	1,050
1	L. 327	H.C.	170	2,720
1	L. 111	F.H.C.	160	4,000
1	L. 350	F.H.C.	140	3,500
1	T.L. 11559P & L.351	H.C.	290	8,250
1	T.L. 13105P	H.F.	140	4,020
3	Main type	H.B.	450	9,350
3	Green Point Rapids	H.C.	80	960
3	Adjacent L. 905	F.H.	40	960
3	S.T.L. 30574P	H.B.	520	9,050
Total			2,250	47,470

HARDWICKE FOREST

1	Near Wellbore Channel	H.F.	50	910
1	L. 723	H.B.	740	13,120
1	L. 667	H.C.B.	200	5,400
1	L. 667	H.F.	60	670
2	Main type	H.C.	1,330	31,580
2	East of T.L. 1652P	H.F.	80	2,030
2	L.182	H.	90	1,250
3	L.722	F.H.	70	2,400
3	L.726	H.C.B.	250	4,600
3	Adjacent T.L. 6888P	H.	270	3,900
3	L. 19 and T.L. 1646P	H.F.	110	3,020
Total			3,250	68,880
GRAND TOTALS			16,450	329,440

MANAGEMENT RECOMMENDATIONS

by, H. J. Hodgins

This area is in a preferred position, from the standpoint of executing detailed management plans, inasmuch as the four Provincial Forests involved have a high ratio of Crown equity. Following the survey it was found that the Crown owned:

1. 72% of the merchantable timber volume
2. 76% " " " " acreage
3. 90% " " immature timber
4. 89% " " unsatisfactorily stocked areas
5. 85% " " productive forest sites

The four Forests do not represent an ideal unit for sustained yield management. However, in order to introduce such a policy on the coast and in order to provide factual data for an extention of such a policy, it is recommended that the Sonora, West Thurlow, East Thurlow and Hardwicke Forests be considered, for the time being, as a working circle. Consideration should be given in the future to extending the boundaries to adjacent Forests to include all areas directly tributary to the recommended working circle.

Objects of Management

The immediate objects of management should be:

1. To regulate the cutting of Crown timber so that the total depletion from fires and logging is within the sustained yield capacity.

2. To study and develop cutting plans, in co-operation with timber operators, which will provide for natural regeneration following logging.

3. To conduct a progressive reforestation programme on the more valuable unstocked Crown areas.

4. To provide adequate fire prevention and control measures.

Determination of Sustained Annual Yield

More than one-half of the immature forests are less than 20 years old, thus making it impracticable to utilize Normal Yield tables in the orthodox manner for predicting future yield values.

Sustained yield calculations were, therefore, based on an emperical yield table prepared for this region at the time of the original forest survey in 1926. This table, extended by graphical methods, is as follows:

Total Age of Stand (years)	Average Volume (f.b.m. per acre)	Mean Annual Increment (f.b.m.)
50	12,000	240
60	15,300	254
70	18,500	266
80	21,400	268
90	24,300	270
100	27,300	270
110	29,500	268
120	31,900	265
130	34,100	261
140	36,200	259
150	38,200	258
160	39,900	250

120 cuft.

The maximum mean annual increment occurs between 90 and 100 years, thus indicating that a rotation age of 100 years with a mean annual increment of 270 f.b.m. per acre could be anticipated in the immature stands.

The growing stock available for sustained yield purposes is as follows:

Classification	Total Area (acres)	Crown Area (acres)
Immature		
1 - 20 years	17,300	15,510
21 - 40 "	12,430	11,320
41 - 60 "	590	590
Total	30,320	27,420
Unsatisfactorily restocked		
Logged	2,740	2,150
Logged and burned	4,020	3,730
Burned	2,810	2,410
Deciduous	1,280	1,180
Coniferous N.C.C.	1,760	1,730
Total	12,610	11,200
Merchantable timber	21,640 (460,960 M.B.M.	16,530 (330,220 M.B.M.)
Total Productive Forest Sites	64,570	55,150

(all accessible)

Calculations

The calculations for present sustained yield are based on the assumptions that mortality and decay in merchantable timber is offset by increment in such stands; that reforestation of the logged areas will follow logging within a reasonable period of time as a result of improved silvicultural practice, or failing this, by planting; and that improved utilization within the next 40-45 years will make it possible to log smaller and younger timber, than is at present being logged.

Regardless of ownership: With a total volume of 460,960,000 f.b.m. of merchantable timber, over 11" d.b.h., and 30,320 acres of immature timber a sustained annual yield of 12,800,000f.b.m.✓ is indicated by Hanzlik's formula. However, with the existing deficiency of intermediate age classes it would be necessary to confine the annual cut to about 11,000,000 f.b.m. in order to maintain sustained yield production at the present time. When there is an equitable distribution of age classes and forest practice has developed to the stage that all productive forest sites are producing commercial forests, an ultimate sustained annual yield capacity of 17,400,000 f.b.m.✱ can be anticipated.

Crown ownership only: With a total volume of 330,220,000 f.b.m. of merchantable timber, over 11" d.b.h., and 27,420 acres of immature timber a sustained annual yield of 10,700,000 f.b.m.X is indicated by Hanzlik's formula. However, with the existing deficiency of intermediate age classes it would be necessary to confine the annual cut to about 8,500,000 f.b.m. in order to maintain sustained yield production at the present time. When there is an equitable distribution of age classes and forest practice has developed to the stage that all productive forest sites are producing commercial forests, an ultimate sustained annual yield capacity of 14,900,000 f.b.m.✚ can be anticipated.

Forest Regulation

During the past four years (1935-38), for which detailed cutting ledgers have been maintained, the annual cut has averaged 15,700,000 f.b.m.#, 7,500,000 f.b.m. of which was from Crown timber sales. Fire losses for the same period have been negligible. If managed for sustained yield production the working circle could now supply 11,000,000 f.b.m. annually, 8,500,000 f.b.m. being contributed by Crown timber. In order that the working circle be sustained as a perpetual timber producing unit it will be necessary to curtail the sale of Crown timber to maintain sufficient growing stock to balance the excessive depletion of privately owned timber, which has been cut at the rate of 8,200,000 f.b.m. per annum.

✓ $\frac{460,960,000}{100} + 270 \times 30,320 = 12,796,000$ f.b.m.

✱ $64,570 \times 270 = 17,434,000$ f.b.m.

X $\frac{330,220,000}{100} + 27,420 \times 270 = 10,706,000$ f.b.m.

✚ $55,150 \times 270 = 14,890,000$ f.b.m.

See "Utilization" chapter , page 13 .

It is recommended that the future cutting budget for Crown timber be based on the difference between the average annual cut of private timber during the past four years and the present sustained yield capacity. On this basis it would be necessary to limit Crown sales to a total of 2,800,000 f.b.m. per annum, subject to a future revision of the working plan.

Miscellaneous Management Recommendations

1. In order to maintain a uniform administrative policy it is recommended that the working circle be under the supervision and direction of one forest ranger, preferably one having a technical forestry training. Until such a time as it will be practicable to comply with this recommendation all administrative and protection matters should have particularly rigid supervision from the Vancouver District and Victoria Headquarters staffs.

2. The condition of Crown owned logging shows is, generally speaking, uniformly overmature and an operating budget involving selection of logging units for cutting, in priority to others, on a basis of decadence appears to be impracticable. Future timber sales should be directed to the most accessible logging shows and detailed cutting plans should be prepared in advance of logging. As a result it may be possible to isolate minor areas of thrifty mature timber within a unit and withhold such areas from immediate cutting. The cutting plans should include experimentation with various silvicultural practices in order to determine the most satisfactory method of obtaining natural regeneration. Detailed stumpage appraisals are essential and adequate financial provision should be made for operators who may be unduly handicapped as a result of experimental silvicultural restrictions. The areas of Crown timber available are recorded in the "Utilization" chapter, page 17 .

Particular attention should be given to the area designated as Timber Sale 5201 on Hardwicke Island (see files X5201 and 037941 Victoria for preliminary reports). It is recommended that immediate consideration be given to opening up this unit with a skeleton road system, by relief labour, preparatory for logging.

3. A progressive planting programme is recommended for the unsatisfactorily stocked Crown land when funds can be made available for such a purpose.

4. Prior to the instigation of the management policies recommended heretofore it is recommended that:

(a) Crown sales be controlled as provided under "Regulation".
(b) Clear cutting on Crown areas be confined to small units, not exceeding 50 acres, flanked by standing timber to serve as a seed supply. On larger shows a system of staggered settings should be followed.
(c) Detailed examinations of logged areas be made prior to recommending slash disposal by broadcast burning. Slash burns, when undertaken, to be conducted so as to do the least damage to seed supplies and to forest growth on adjacent areas.

5. The working plan provided should be periodically revised. Tentatively, the next major revision should be made at the end of the year 1942.

PROTECTION

Fire damage during the past decade (1929 - 1938 inclusive)

During the last 10 years approximately 10,000 acres have been burned by forest fires. Full particulars concerning fire damage and suppression costs during this period are detailed in the accompanying table. The most significant features of this analysis are:

1. 90% of the areas burned are productive forest sites.
2. An average of 210 acres of immature timber were burned annually.
3. The annual loss of merchantable timber was negligible.
4. 12 fires, or an average of 1.2 per annum, occurred in the working circle.
5. Approximately 75% of the area burned over was the result of one fire in 1931, attributed to smokers.
6. 58% of the fires were definitely attributed to human causes, the origin of fires being tabulated as follows:

	No. of fires	Percentages
(a) Campers and smokers	4	33.3
(b) Lightning	3	25.0
(c) Unknown	2	16.8
(d) Land clearing	1	8.3
(e) Escaped slash burns	1	8.3
(f) Incendiary	1	8.3
Totals	12	100.0

Fire hazards

The area is not considered to be particularly hazardous. The most serious hazard is on logged and logged and burned areas where there is an excess of slash or other "flash" material and where such areas are exposed to human agencies, such as campers and fishermen. Past records indicate that special precautions should be taken in the future to cope with this situation.

Existing field organization

This region is under the direction of the Campbell River Supervisor of the Vancouver Forest District. The East Thurlow Forest, the southern portion of West Thurlow Forest and the majority of the Sonora Forest are within the Thurston Bay Ranger District. Whereas the Hardwicke Forest and the remainder of West Thurlow Forest are under the jurisdiction of the Port Neville Ranger. A small portion of the Sonora Forest falls within the Lund Ranger District. One assistant ranger, with headquarters at Thurston Bay, is employed during the fire season.

FIRE DAMAGE AND SUPPRESSION COSTS

(1929 - 1938 inclusive)

HARDWICKE FOREST

(Compiled from final fire reports)

Date	Cause	Area Burned - Acres						Volume Destroyed M.B.M.	Value of forest burned $	Fire suppression costs $
		Mature	Immature	Burn	Slash	Scrub	Total			
9/8/31	Smokers		1,220	2,040	3,780	600	7,640	180(F & B)	6,820	1,415
7/7/32	Incendiary					65	65			229
2/5/35	Land clearing		25	40			65		150	207
Totals	3		1,245	2,080	3,780	665	7,770	180	6,970	1,851

EAST THURLOW FOREST

30/8/34	Smokers					5	5			202
7/9/35	Campers		540	75		60	675		2,466	232
31/5/36	Lightning				5		5			17
Totals	3		540	75	5	65	685		2,466	451

SONORA FOREST

18/9/30	Escaped slash fire	50			20		70			14
11/8/31	Lightning	(inac.)	300	400	400	300	1,400		2,075	1,366
-/5/35	Campers				5		5			8
30/7/35	Lightning				spot		spot			16
28/7/37	Unknown				"		"			16
21/5/38	Unknown				95	15	110		8	240
Totals	6	50	300	400	520	315	1,585		2,083	1,660
Grand Totals	12	50	2,085	2,555	4,305	1,045	10,040	180	11,519	3,962

(No fires in West Thurlow Forest)

Fire patrol is maintained, in conjunction with other duties, throughout the entire ranger districts mentioned, by motor launch, one for each field man noted in the previous paragraph. Each launch is equipped with trans-receiver radio for communication with Forest Branch radio bases at Campbell River and Thurston Bay.

There are no lookouts in the region at the present time, Sonora lookout, near Thurston Bay, not having been occupied since 1937.

The essentially important parts of the Islands are accessible by trails and old logging grades, the maintenance and construction of such improvements having been greatly facilitated by Y.F.T.P. trail crews.

Recommendations

The vital pre-requisite to maintaining this working circle on a sustained yield basis is adequate forest fire prevention and control. Past records indicate that about one half of one percent (57,000 f.b.m.) of the sustained yield capacity (11,000,000 f.b.m.) would account for fire losses in producing areas during the past decade. It would appear, therefore, that the working circle is amply provided with forest protection facilities. A study of the statistics provided in the table in this section will further substantiate this statement.

Provided that no special forest officer is delegated to directing activities in the working circle as recommended under "Management", the existing organization plan supplemented by the establishment of lookouts and trail maintenance work is recommended for the immediate future. It is understood that lookout facilities for the Vancouver Forest District are now under review by a special forest officer whose activities will cover this region. No recommendations will be made here pending a report from this source. Following the acceptance of recommendations made under "Management" with regard to personnel it will be necessary to modify the field staff arrangements in the future.

APPENDIX I

Classification of areas adjacent to Forests
" " total areas within Forests
" " Crown " " "
" " total volumes " "
" " " " by ownership to Forests

CLASSIFICATION OF AREAS (in acres).

"Coast Islands" Working Circle. Provincial Forest.

A 84A—1M-1135-6482

Comp't No.	PRODUCTIVE FOREST SITES. MATURE (1). Accessible	MATURE (2).	IMMATURE. 1 to 20 yrs.	21 to 40 yrs.	41 to 60 yrs.	61 to 80 yrs.	81 to 100 yrs.	100 to yrs.	Total	NOT SATISFACTORILY STOCKED. Logged.	Logged and Burned.	Burned.	Non-commercial Cover. Deciduous.	Coniferous.	NOT SUITABLE FOR FORESTS. Alpine Pastures.	Lowland Range.	Wild Hay.	Culti-vated.	Towns, Villages.	NON-PRODUCTIVE. Barren.	Scrub and Alpine.	Swamp.
SONORA FOREST																						
1	1,550		200	660	140							130	30	20						20	1,220	
2	2,110		810	590	40					170	220		250	70						190	2,580	
3	2,140		1,140	490	200						140		70	330							6,880	40
4	1,130			100										30							590	
5	290		740							220	60			40							2,410	20
6	2,190		2,530	2,050						620	20			270							2,000	40
Totals	9,410		5,420	3,890	380					1,010	440	130	350	760						210	15,680	100
EAST THURLOW FOREST																						
1	1,650		1,940	2,200						320	20	600	110	20							3,610	50
2	510		230	3,050						90			90	90							2,700	
3	2,170		210	1,860						360			50	80							2,530	30
Totals	4,330		2,380	7,110						770	20	600	250	190							8,840	80
WEST THURLOW FOREST																						
1	1,300		2,480	590	90					550	350	90	200	200							2,250	
2			4,000										220	140							2,450	20
3	1,450		1,180	810	100					110			80	220							840	
Totals	2,750		7,660	1,400	190					660	350	90	500	560							5,540	20
HARDWICKE FOREST																						
1	1,530		320							10	1,540	780	150	80							1,420	
2	2,800		1,460							140	70	410	10	90							1,580	
3	820		60	30	20					150	1,600	800	20	80							1,970	
Totals	5,150		1,840	30	20					300	3,210	1,990	180	250							4,970	
Grand Totals	21,640		17,300	12,430	590					2,740	4,020	2,810	1,280	1,760						210	35,030	200

(See Report for areas excluded from Forests)

Total immature 30,320 acres.

Total not satisfactorily stocked 12,610 acres.

Total not suitable for forests ..... acres.

Total non-productive 38,500

Total productive forest sites 64,570 acres.

S (in acres). "Coast Islands" Working Circle. Provincial Forest. Date, 19 38 Sheet No. 29

PRODUCTIVE FOREST SITES.											NOT SUITABLE FOR FORESTS.					NON-PRODUCTIVE.				TOTAL.	Comp't No.	REMARKS.				
IMMATURE.					NOT SATISFACTORILY STOCKED.																					
.	61 to 80 yrs.	81 to 100 yrs.	100 to yrs.	Total	Logged.	Logged and Burned.	Burned.	Non-commercial Cover. Deciduous.	Non-commercial Cover. Coniferous.		Alpine Pastures.	Lowland Range.	Wild Hay.	Culti-vated.	Towns, Villages.	Barren.	Scrub and Alpine.	Swamp.	Water.			Forest Type.	History.	Accessibility.	Grazing under cover.	
0							130	30	20							20	1,220			3,970	1					
0					170	220		250	70							190	2,580		870	7,900	2					
0						140		70	330								6,880	40	640	12,070	3					
									30								590			1,850	4					
					220	60			40								2,410	20	10	3,790	5					
					620	20			270								2,000	40	20	9,740	6					
0					1,010	440	130	350	760							210	15,680	100	1,540	39,320						
					320	20	600	110	20								3,610	50	940	11,460	1					
					90			90	90								2,700		20	6,780	2					
					360			50	80								2,530	30	420	7,710	3					
					770	20	600	250	190								8,840	80	1,380	25,950						
0					550	350	90	200	200								2,250		30	8,130	1					
								220	140								2,450	20	20	6,850	2					
0					110			80	220								840		10	4,800	3					
0					660	350	90	500	560								5,540	20	60	19,780						
					10	1,540	780	150	80								1,420		70	5,900	1					
					140	70	410	10	90								1,580		10	6,570	2					
0					150	1,600	800	20	80								1,970			5,550	3					
0					300	3,210	1,990	180	250								4,970		80	18,020						
0					2,740	4,020	2,810	1,280	1,760							210	35,030	200	3,060	103,070						

(See Report for areas excluded from Forests)

30,320 acres. Total not satisfactorily stocked 12,610 acres. Total not suitable for forests acres. Total non-productive 38,500 acres.

productive forest sites 64,570 acres.

A = accessible.
I = inaccessible.

CLASSIFICATION OF AREAS (in acres). on Crown Land. "Coast Islands" Working Circle Provincial Forest.

B. 84A—1M-1135-6482

Comp't No.	PRODUCTIVE FOREST SITES. MATURE (1). Accessible	MATURE (2).	IMMATURE. 1 to 20 yrs.	21 to 40 yrs.	41 to 60 yrs.	61 to 80 yrs.	81 to 100 yrs.	100 to yrs.	NOT SATISFACTORILY STOCKED. Logged.	Logged and Burned.	Burned.	Non-commercial Cover. Deciduous.	Coniferous.	NOT SUITABLE FOR FORESTS. Alpine Pastures.	Lowland Range.	Wild Hay.	Culti-vated.	Towns, Villages.	NON-PRODUCTIVE. Barren.	Scrub and Alpine.	Swamp.	W
SONORA FOREST																						
1	1,550		200	660	140						130	30	20						20	1,220		
2	1,870		610	520	40				170	220		250	70						190	2,500		
3	2,120		1,140	490	200					140		70	330							6,830	40	
4	1,000																			540		
5	270		690						60	30			40							2,330	20	
6	700		2,340	1,860					420	20			270							1,330	40	
Totals	7,510		4,980	3,530	380				650	410	130	350	730						210	14,720	100	1
EAST THURLOW																						
1	1,230		1,740	2,050					200	20	600	40	20							2,870	50	
2	450		230	2,860					90			90	90							2,540		
3	1,840		270	1,600					270			50	80							1,840	30	
Totals	3,520		2,240	6,510					560	20	600	180	190							7,250	80	1
WEST THURLOW																						
1	1,160		2,000	440	90				550	150	70	180	200							2,080		3
2			3,690									220	140							2,440	20	2
3	1,090		1,120	810	100				90			70	220							820		1
Totals	2,250		6,810	1,250	190				640	150	70	470	560							5,340	20	6
HARDWICKE																						
1	1,050		320						10	1,510	500	150	80							1,260		7
2	1,500		1,100						140	70	310	10	90							1,060		1
3	700		60	30	20				150	1,570	800	20	80							1,940		
Total	3,250		1,480	30	20				300	3,150	1,610	180	250							4,260		8
Grand Total	16,530		15,510	11,320	590				2,150	3,730	2,410	1,180	1,730						210	31,570,	200	3,06

Total immature 27,420 acres.

Total productive forest sites 55,150 acres.

Total not satisfactorily stocked 11,200 acres.

Total not suitable for forests acres.

Total non-productive 35,040 acres.

S (in acres). on Crown Land. "Coast Islands" Working Circle ..... Provincial Forest. Date, 19 38 Sheet No. 30

PRODUCTIVE FOREST SITES.											NOT SUITABLE FOR FORESTS.					NON-PRODUCTIVE.				TOTAL.	Comp't No.	REMARKS.				
IMMATURE.					NOT SATISFACTORILY STOCKED.																					
rs.	61 to 80 yrs.	81 to 100 yrs.	100 to yrs.		Logged.	Logged and Burned.	Burned.	Non-commercial Cover. Deciduous.	Non-commercial Cover. Coniferous.		Alpine Pastures.	Lowland Range.	Wild Hay.	Culti-vated.	Towns, Villages.	Barren.	Scrub and Alpine.	Swamp.	Water.			Forest Type.	History.	Accessibility.	Grazing under cover.	
0							130	30	20							20	1,220			3,970	1					
0					170	220		250	70							190	2,500		870	7,310	2					
00						140		70	330								6,830	40	640	12,000	3					
																	540			1,540	4					
					60	30			40								2,330	20	10	3,450	5					
					420	20			270								1,330	40	20	6,970	6					
0					650	410	130	350	730							210	14,720	100	1,540	35,240						
					200	20	600	40	20								2,870	50	940	9,760	1					
					90			90	90								2,540		20	6,370	2					
					270			50	80								1,840	30	420	6,400	3					
					560	20	600	180	190								7,250	80	1,380	22,530						
0					550	150	70	180	200								2,080		30	6,950	1					
								220	140								2,440	20	20	6,530	2					
					90			70	220								820		10	4,330	3					
90					640	150	70	470	560								5,340	20	60	17,810						
					10	1,510	500	150	80								1,260		70	4,950	1					
					140	70	310	10	90								1,060		10	4,290	2					
20					150	1,570	800	20	80								1,940			5,370	3					
20					300	3,150	1,610	180	250								4,260		80	14,610						
90					2,150	3,730	2,410	1,180	1,730							210	31,570,	200	3,060	90,190						

re 27,420 acres. Total not satisfactorily stocked 11,200 acres. Total not suitable for forests ..... acres. Total non-productive 35,040 acres.

tal productive forest sites 55,150 acres.

A = accessible.
I = inaccessible.

"Coast Islands" Working Circle — PROVINCIAL FOREST, 193 8 — TOTAL TIMBER SUM

F.B. 311A	COMPARTMENT NUMBER	ACRES OF: MATURE (1) Accessible	MATURE (2)	IMMATURE	BURNED	LOGGED	NON-COMMERCIAL	BARREN	SCRUB	GRASS	SWAMP	WATER	TOTAL ACRES
FOREST													
SONORA	1	1,550		1000	130		50	20	1220			[illegible]	3,970
	2	2,110		1440	220	170	320	190	2580			870	7,900
	3	2,140		1830	140		400		6880		40	640	12,070
	4	1,130		100			30		590				1,850
	5	290		740	60	220	40		2410		20	10	3,790
	6	2,190		4580	20	620	270		2000		40	20	9,740
	Totals	9,410		9690	570	1010	1110	210	15,680		100	1540	39,320
EAST THURLOW	1	1,650		4140	620	320	130		3610		50	940	11,460
	2	510		3280		90	180		2700			20	6,780
	3	2,170		2070		360	130		2530		30	420	7,710
	Totals	4,330		9490	620	770	440		9840		80	1380	25,950
WEST THURLOW	1	1,300		3160	90	900	400		2250			30	8,130
	2			4000			360		2450		20	20	6,850
	3	1,450		2090		110	300		840			10	4,800
	Totals	2,750		9250	90	1010	1060		5540		20	60	19,780
HARDWICKE	1	1,530		320	780	1550	230		1420			70	5,900
	2	2,800		1460	410	210	100		1580			10	6,570
	3	820		110	800	1750	100		1970				5,550
	Totals	5,150		1890	1990	3510	430		4970			80	18,020
	Grand Totals	21,640											

FOREST TYPE	PRODUCT: Sawtimber and Pulp									
UNIT OF MEASURE	M.B.M.									
SPECIES	F	H	C	B	Pw	S		Total		
MINIMUM DBH	11 inches									
SONORA	3,890	19,390	4,740	3,740	130	40		31,930		
	13,330	17,920	6,650	1,280	130			39,310		
	14,270	17,010	7,110	410		1,350		40,150		
	680	9,700	9,210	3,330		1,750		24,670		
	650	2,450	640	60	230	30		4,060		
	43,730	24,830	7,980	760	1,040			78,340		
Totals	76,560	91,300	36,330	9,580	1,530	3,170		218,460		
EAST THURLOW	6,770	16,720	6,950	1,890	1,420	30		33,780		
	5,660	2,420	1,180					9,260		
	6,230	12,510	9,410	2,450	540	200		31,340		
Totals	18,660	31,650	17,540	4,340	1,960	230		74,380		
WEST THURLOW	6,320	16,120	6,760	1,150	790			31,140		
	690	16,870	2,650	7,580				27,790		
Totals	7,010	32,990	9,410	8,730	790			58,930		
HARDWICKE	2,900	14,580	4,810	5,820	500			28,610		
	3,330	28,940	18,260	9,120	3,150	580		63,380		
	3,830	8,970	2,690	1,120	140	450		17,200		
Totals	10,060	52,490	25,760	16,060	3,790	1,030		109,190		
Grand Totals	112,280	208,430	89,040	38,710	8,070	4,430		460,960	All accessible	

SCRUB.	GRASS.	SWAMP.	WATER.		TOTAL ACRES.	FOREST TYPE. PRODUCT / UNIT OF MEASURE / SPECIES / MINIMUM DBH	Sawtimber and Pulp M.B.M. F	H	C	B	Pw	S		Total	
									11 inches						
1220			[illegible]		3,970		3,890	19,390	4,740	3,740	130	40		31,930	
2580			870		7,900		13,330	17,920	6,650	1,280	130			39,310	
6880		40	640		12,070		14,270	17,010	7,110	410		1,350		40,150	
590					1,850		680	9,700	9,210	3,330		1,750		24,670	
2410		20	10		3,790		650	2,450	640	60	230	30		4,060	
2000		40	20		9,740		43,730	24,830	7,980	760	1,040			78,340	
15,680		100	1540		39,320		76,550	91,300	36,330	9,580	1,530	3,170		218,460	
3610		50	940		11,460		6,770	16,720	6,950	1,890	1,420	30		33,780	
2700			20		6,780		5,660	2,420	1,180					9,260	
2530		30	420		7,710		6,230	12,510	9,410	2,450	540	200		31,340	
8840		80	1380		25,950		18,660	31,650	17,540	4,340	1,960	230		74,380	
2250			30		8,130		6,320	16,120	6,760	1,150	790			31,140	
2450		20	20		6,850										
840			10		4,800		690	16,870	2,650	7,580				27,790	
5540		20	60		19,780		7,010	32,990	9,410	8,730	790			58,930	
1420			70		5,900		2,900	14,580	4,810	5,820	500			28,610	
1580			10		6,570		3,330	28,940	18,260	9,120	3,150	580		63,380	
1970					5,550		3,830	8,970	2,690	1,120	140	450		17,200	
4970			80		18,020		10,060	52,490	25,760	16,060	3,790	1,030		109,190	
							112,280	208,430	89,040	38,710	8,070	4,430		460,960	All accessible

"Coast Islands" Working Circle

PROVINCIAL FOREST, 193 8

TIMBER SU

F.B. 341A—180 520-8000	COMPARTMENT NUMBER	ACRES OF: MATURE (1).	MATURE (2).	IMMATURE.	BURNED.	LOGGED.	NON-COMMERCIAL.	BARREN.	SCRUB.	GRASS.	SWAMP.	WATER.	TOTAL ACRES.
FOREST													
EST THURLOW													
	1	1,160											
	2												
	3	1,090											
V.C.L.	Total	2,250											
	1	140											
	2												
	3	340											
T.L.	Total	480											
	1												
	2												
	3	20											
C.G.	Total	20											
Grand	Total	2,750											
HARDWICKE													
	1	1,050											
	2	1,500											
	3	700											
V.C.L.	Total	3,250											
	1	480											
	2	1,300											
T.L.	Total	1,780											
	3	120											
C.G.	Total												
Grand	Total	5,150											
TOTALS - ALL FORESTS													
	V.C.L.	16,530											
	T.L.s	4,860											
	C.G.s	750											
Grand	Total	21,640											

FOREST TYPE.	PRODUCT. / UNIT OF MEASURE / SPECIES / MINIMUM D.B.H.	By Status: M.B.M. F	C	H	B	Pw	S		Total
V.C.L.		5,830	13,940	5,660	1,150	570			27,150
		690	12,320	1,890	5,420				20,320
		6,520	26,260	7,550	6,570	570			47,470
T.L.		490	2,180	1,100		220			3,990
			4,300	720	2,040				7,060
		490	6,480	1,820	2,040	220			11,050
C.G.									
			250	40	120				410
			250	40	120				410
		7,010	32,990	9,410	8,730	790			58,930
V.C.L.		1,970	10,390	3,450	3,990	300			20,100
		1,940	15,650	10,220	5,110	1,760	180		34,860
		2,760	7,460	2,240	1,100	140	220		13,920
		6,670	33,500	15,910	10,200	2,200	400		68,880
T.L.		930	4,190	1,360	1,830	200			8,510
		1,390	13,290	8,040	4,010	1,390	400		28,520
		2,320	17,480	9,400	5,840	1,590	400		37,030
		1,070	1,510	450	20		230		3,280
		10,060	52,490	25,760	16,060	3,790	1,030		109,190
		73,160	65,160	154,150	28,950	5,290	3,510		330,220
		37,200	22,870	51,870	9,620	2,780	690		125,030
		1,920	1,010	2,410	140		230		5,710
		112,280	89,040	208,430	38,710	8,070	4,430		460,960

SCRUB.	GRASS.	SWAMP.	WATER.		TOTAL ACRES.	FOREST TYPE. / PRODUCT. / UNIT OF MEASURE / SPECIES / MINIMUM D.B.H.	By Status M.B.M. F	C	H	B	Pw	S		Total
						V.C.L.								
							5,830	13,940	5,660	1,150	570			27,150
							690	12,320	1,890	5,420				20,320
							6,520	26,260	7,550	6,570	570			47,470
						T.L.								
							490	2,180	1,100		220			3,990
								4,300	720	2,040				7,060
							490	6,480	1,820	2,040	220			11,050
						C.G.								
								250	40	120				410
								250	40	120				410
							7,010	32,990	9,410	8,730	790			58,930
						V.C.L.								
							1,970	10,390	3,450	3,990	300			20,100
							1,940	15,650	10,220	5,110	1,760	180		34,860
							2,760	7,460	2,240	1,100	140	220		13,920
							6,670	33,500	15,910	10,200	2,200	400		68,880
						T.L.								
							930	4,190	1,360	1,830	200			8,510
							1,390	13,290	8,040	4,010	1,390	400		28,520
							2,320	17,480	9,400	5,840	1,590	400		37,030
							1,070	1,510	450	20		230		3,280
							10,060	52,490	25,760	16,060	3,790	1,030		109,190
							73,160	65,160	154,150	28,950	5,290	3,510		330,220
							37,200	22,870	51,870	9,620	2,780	690		125,030
							1,920	1,010	2,410	140		230		5,710
							112,280	89,040	208,430	38,710	8,070	4,430		460,960

"Coast Islands" Working Circle — PROVINCIAL FOREST, 1938 — TIMBER SU

F.B.341A—(80-536-8,000)

FOREST	COMPARTMENT NUMBER.	ACRES OF: MATURE (1)	MATURE (2)	IMMATURE	BURNED	LOGGED	NON-COMMERCIAL	BARREN	SCRUB	GRASS	SWAMP	WATER	TOTAL ACRES	FOREST TYPE	PRODUCT: Sawtimber & Pulp	UNIT OF MEASURE: M.B.M.	SPECIES: F	H	C	B	Pw	S		Total
															MINIMUM D.B.H.				11 inches					
SONORA														V.C.L.										
	1	1,550															3,890	19,390	4,740	3,740	130	40		31,930
	2	1,870															12,100	16,040	5,760	1,260	110			35,270
	3	2,120															14,140	16,850	7,040	400		1,330		39,760
	4	1,000															600	8,580	8,150	2,950		1,550		21,830
	5	270															630	2,280	480		230			3,620
	6	700															13,090	7,690	2,420	210	350			23,760
V.C.L.	Total	7,510															44,450	70,830	28,590	8,560	820	2,920		156,170
														T.L.										
	1																1,230	1,880	890	20	20			4,040
	2	240															130	160	70	10		20		390
	3	20															80	1,120	1,060	380		200		2,840
	4	130															20	170	160	60		30		440
	5	20															30,640	17,140	5,560	550	690			54,580
	6	1,490															32,100	20,470	7,740	1,020	710	250		62,290
T.L.	Total	1,900															76,550	91,300	36,330	9,580	1,530	3,170		218,460
Grand	Total	9,410																						
EAST THURLOW														V.C.L.										
	1	1,230															5,330	11,760	5,400	1,470	1,180	30		25,170
	2	450															5,130	2,180	910					8,220
	3	1,840															5,060	9,620	6,800	2,150	520	160		24,310
V.C.L.	Total	3,520															15,520	23,560	13,110	3,620	1,700	190		57,700
														T.L.										
	1	370															1,120	4,550	1,300	420	240			7,630
	2																1,170	2,890	2,610	300	20	40		7,030
	3	330															2,290	7,440	3,910	720	260	40		14,660
T.L.	Total	700												C.G.										
	1	50															320	410	250					980
	2	60															530	240	270					1,040
	3																							
C.G.	Total	110															850	650	520					2,020
Grand	Total	4,330															18,660	31,650	17,540	4,340	1,960	230		74,380

BARREN	SCRUB	GRASS	SWAMP	WATER	TOTAL ACRES	FOREST TYPE / PRODUCT / UNIT OF MEASURE / SPECIES / MINIMUM D.B.H.	Sawtimber & Pulp M.B.M. F	H	C	B	Pw	S		Total
									11 inches					
						V.C.L.								
							3,890	19,390	4,740	3,740	130	40		31,930
							12,100	16,040	5,760	1,260	110			35,270
							14,140	16,850	7,040	400		1,330		39,760
							600	8,580	8,150	2,950		1,550		21,830
							650	2,260	480		230			3,620
							13,090	7,690	2,420	210	350			23,760
							44,450	70,830	28,590	8,560	820	2,920		156,170
						T.L.								
							1,230	1,880	890	20	20			4,040
							130	160	70	10		20		390
							80	1,120	1,060	380		200		2,840
							20	170	160	60		30		440
							30,640	17,140	5,560	550	690			54,580
							32,100	20,470	7,740	1,020	710	250		62,290
							76,550	91,300	36,330	9,580	1,530	3,170		218,460
						V.C.L.								
							5,330	11,760	5,400	1,470	1,180	30		25,170
							5,130	2,180	910					8,220
							5,060	9,620	6,800	2,150	520	160		24,310
							15,520	23,560	13,110	3,620	1,700	190		57,700
						T.L.								
							1,120	4,550	1,300	420	240			7,630
							1,170	2,890	2,610	300	20	40		7,030
							2,290	7,440	3,910	720	260	40		14,660
						C.G.								
							320	410	250					980
							530	240	270					1,040
							850	650	520					2,020
							18,660	31,650	17,540	4,340	1,960	230		74,380

ADJACENT AREAS NOT INCLUDED IN FORESTS

Classification	Areas by Forests, in acres				
	Sonora	East Thurlow	West Thurlow	Hardwicke	Total
Mature timber	100	110			210
Immature "	1,290	950	210	370	2,820
Logged		20	60		80
Logged and burned		10			10
Burn				120	120
Deciduous cover	100	60	340	130	630
Scrub	150	210	10	120	490
Cultivated	30	10		20	60
Totals	1,670	1,370	620	760	4,420

APPENDIX II

Compartment Descriptions

COMPARTMENT DESCRIPTIONS

SONORA FOREST

Compartment 1

Hemlock - cedar — **1,300 acres**

Site - Fair
Volume - Volume averages 16 M.B.M. per acre.
General - This type contains good pulp hemlock and shingle bolt cedar. There is also a scattering of rough Douglas fir.
Logging - When logged, this timber will probably be cold decked and swung with a tight line or chute to tidewater.

Hemlock - silver fir — **250 acres**

Site - Fair to good
Volumes - Averages 45 M.B.M. per acre.
General - This is a thrifty to mature stand with very little defect. The trees are unusually tall and clean for the elevation. This timber should not be logged for some time.

Miscellaneous Areas

On the west shore along Nodales Channel handloggers have removed most of the timber. This is mainly a scrub site with occasional pockets of a few short trees.

On the east shore two burns have run over the area. However, reproduction is well established on the fairly steep slope.

Logged Areas

Two patches of timber well back from the shore were loggedin 1934 and 1936. Both are reseeding from adjacent seed trees.

Compartment 2

Hemlock - fir - cedar — **1,560 acres**

Site - Fair
Volume - The better and more accessible timber along the shore of Florence Lake has been logged. The memaining timber only carries a volume of 17 M.B.M. per acre.
General - This area of timber is badly cut up with scrub timber.

Logging - Various forms of logging will be required to remove this timber. Some of the timber can be logged to the lake. The western tip of this type could be logged by tractor and the timber around ~~Earth~~ Lake will likely be cat logged with compartment 4. Edith

Miscellaneous Areas

Hemlock - fir 240 and 160 acres

These areas were left from the 1929 logging and contain good hemlock and fir. They will probably be cold decked and tight lined to the lake.

Hemlock - fir 50 acres

This timber is on the shore and will probably be used for improvement work on the power development . Suitable for handlogging.

Logged Areas

The timber around the shore was logged from 1927 to 1929. Areas that extend less than 10 chains from the water have restocked. The remaining areas are now badly eroded and are not likely to restock.

Hemlock - cedar 1910 260 acres

Site - Good. This area was ground lead logged in 1910 and an excellent immature cover is now established.

Compartment 3

Hemlock - fir 2,140 acres

Site - Fair
Volume - Averages 19 M.B.M. per acre.
General - Good timber is found in the creek bottoms which flow into Saint Aubyn Lake. There are some pockets of excellent lumber cedar in this type.
Logging - There is a good chance to tractor log this timber to St. Aubyn Lake and then to Barnes Bay or Owen Bay for booming.
The timber around Mitchell Lake will go out to the bay at Mushkin Indian Reserve.

Miscellaneous Areas

Most of the immature is hemlock - cedar 1918, resulting from logging and burning.

Compartment 4

Hemlock - cedar 1,130 acres

Site - Fair to good
Volume - Average 22 M.B.M. per acre.
Logging - There is an excellent chance to log this area with tractors using the easy grade of the creek. The type contains good hemlock and clear cedar with occasional pockets of fir.

Compartment 5

Hemlock - fir 1919 240 acres

Site - Good. A good stand of fir - hemlock was ground logged from this area. The immature stand averages about 20 years with a height growth of 25 feet. Diameters average over 2 inches.

Hemlock 270 acres

Site - Fair
Volume - Averages 13 M.B.M. per acre.
General - The better timber closer to tidewater was logged in 1937 and this poor stand of hemlock has been left.

Compartment 6

Fir - hemlock 1917 4,070 acres

Site - Good. This is an extensive area that was ground logged and has a fine immature growth. The stocking is excellent over the whole area.

Fir - hemlock 990 acres

Site - Good.
Volume - Averages about 28 M.B.M. per acre.
General - This is a good stand with excellent logging possibilities but most of the area is held privately.

Fir - hemlock 920 acres

Site - Good
Volume - averages 48 M.B.M. per acre.
General - This is a good stand with excellent fir. The stand is situated back from the water but could be logged easily with tractors. Most of the timber is held privately. Part of this type is being logged at present (1938 to 1939) with tractors.

Fir - hemlock **200 acres**

Site - Fair to good
Volume - Average 29 M.B.M. per acre.
General - This is a good stand of Crown timber and is being logged with tractors.

EAST THURLOW FOREST

Compartment 1

Hemlock - fir 1900 — 1,730 acres

Site - Good. This immature stand followed logging and burning. The trees are about 38 years old with heights ranging from 40 to 60 feet and diameters from 4 to 8 inches. The stocking is good and well distributed.

Hemlock — 690 acres

Site - Fair to good.
Volumes - Averages 24 M.B.M. per acre. Hemlock comprises 63% of the volume and the remaining volume contains fir - cedar - white pine and spruce of good quality.
General - This area is being logged by cold deck and trucks to the bay near Erasmus Island.

Hemlock - fir - cedar — 170 acres

Site - Fair
Volume - Averages 19 M.B.M. per acre.
General - This is a patch of timber on the sidehill that was left when the valley was logged. It contains good timber and could be logged with a road along the bottom.

Fir - hemlock - cedar — 280 acres

Site - Fair to good.
Volume - Averages 30 M.B.M. per acre.
General - This is fair timber that could be logged with a tractor road up the creek.

Compartment 2

Hemlock - fir 1906 — 2,710 acres

Site - Good. This is a good stand of immature timber containing patches of merchantable seed trees that may offer logging possibilities, in which case great care for the young stand must be exercised.

Fir - hemlock — 230 acres

Site - Fair.
Volume - Averages 18 M.B.M. per acre.
General - This timber was left when the more accessible timber was logged. The timber is small and merges into scrub growth but the quality is fairly good.

Logging - To safeguard the immature, this timber should be roaded with tractors.

Compartment 3

Hemlock - cedar 1916 — 1,010 acres

Site - Good. This is good immature resulting from logging and burning. At present, fir is a minor species but is likely to be co-dominant at maturity, having good height and diameter growth at present.

Silver fir-fir-hemlock — 100 acres

Site - Fair
Volume - Averages 19 M.B.M. per acre.
General - This is a good pulp stand with some good fir trees. It could be logged by tractor using the road built for the adjacent 1922 logging.

Hemlock - cedar — 750 acres

Site - Fair to good
Volume - The fir was logged from the greater part of this area in 1912 and the remaining stand carries a volume of 20 M.B.M. per acre.
Logging - This stand could be logged using the old railroad grade.

Hemlock - fir - cedar — 810 acres

Site - Good
Volume - This stand was partly logged 20 to 30 years ago and patches of timber were left. Over the whole area the volume runs 7 M.B.M. per acre.
General - Great care must be exercised when logging as the stand carries a good understory of hemlock immature. It would be advisable to log only the more dense patches of mature trees.

Hemlock - cedar — 160 and 190 acres

Site - Good
Volume - These two stands carry volumes of 20 and 24 M.B.M. per acre.
Logging - Good cedar and pulp hemlock. The timber could be logged via the railroad grade.

WEST THURLOW

Compartment 1

Hemlock - fir 1926 — 2,290 acres

Site - Good. This immature is the result of logging, and logging and burning. On the latter area the stocking is 20 to 30%, unsatisfactory. However, this understocking is likely to be recovered before the stand matures.

Hemlock — 190 acres

Site - Fair
Volume - Averages 19 M.B.M. per acre
General - Small timber suitable for pulp or boomsticks and piling. Loggable by tractors.

Hemlock - cedar — 240 acres

Site - Fair
Volume - Average 16 M.B.M. per acre
General - Small pulp and shingle bolt timber.

Fir - hemlock - cedar — 140 and 160 acres

Site - Good
Volume - averages 25 M.B.M. per acre
General - Good small pockets of timber that can be logged with tractors.

Hemlock - cedar — 400 acres

Site - Good
Volume - Averages 28 M.B.M.
General - Good, small timber. An easy tractor show.

Hemlock - fir — 170 acres

Site - Good
Volume - Averages 29 M.B.M. per acre.
General - These areas were left at higher elevations from the old logging. The timber can be easily logged with tractors.

Compartment 2

Hemlock - fir - cedar 1924 — 3,380 acres

Site - Fair to good. A stand of 40 to 60 M.B.M. per acre was logged from this area. Very few seed trees were left and the restocking has been poor and slow. The areas with the poorest regeneration were planted in 1932; this 600 acres of plantation is in addition to the above acreage. The whole stand averages 800 trees per acre. Considerable white pine is present but it is badly infected with blister rust. The remaining stands appear to be very healthy.

Compartment 3

Hemlock - silver fir — 810 acres

Site - Good
Volume - Averages 21 M.B.M. per acre.
General - This is a good stand of pulp timber. The timber is mature but the central portion is privately held and it would be advisable to retain the Crown timber until the private timber is logged.

Hemlock - cedar — 80 acres

This timber extends along the shore at Green Point Rapids. There is an understory of thrifty hemlock cedar with good quality large trees suitable for handlogging.

Hemlock - silver fir — 520 acres

Site - Good
Volume - Averages 17 M.B.M. per acre
General - This area contains small trees with very little defect suitable for pulp.
Logging - A tractor show.

Hemlock - cedar 1915
and Hemlock - cedar — 530 acres

Site - Good. This area was partially logged in 1915 and now has a good hemlock - cedar immature stand with seed tree volume of 10 M.B.M. per acre. It is not considered advisable to log much of this seed tree volume as it would damage the immature stand.

Hemlock - cedar - fir - 1922 — 1,070 acres

Site - Good. The immature timber is the result of logging and burning. It is overstocked but appears to be thinning out.

HARDWICKE ISLAND

Compartment 1

Logged and burned 1,540 acres

This area was logged and burned about 1925 and reburned in 1931. There is practically no immature cover present.

The burn covered a greater area than was logged.

The merchantable timber is all in scattered patches and situated well back from the shore. Tractors are the only feasible means of logging this timber.

Compartment 2

Hemlock - cedar 2,370 acres

Site - Fair to good
Volume - Averages 24 M.B.M. per acre.
General - This is an over mature hemlock - cedar type, similar to the coastal timber types in this vicinity.
Logging - This area could best be logged with trucks and tractors. The logs should be yarded to the bay at the beginning of strip #76, for the best booming ground. 50% of the area is held privately. The remaining timber in this compartment has been left from old logging and could best be logged with tractors.

Compartment 3

Logged and burned 1,600 acres

This area was logged and reburned in 1931 leaving at least 20% of the area non productive. There is very little immature cover and the burn removed most of the adjacent trees which might reseed the area.

The remaining patches of timber are poor in quality but could be logged easily with tractors.

APPENDIX III

Method of survey
Base maps
Party organization
Labour distribution, costs, etc.
Volume tables.

Method of Survey

Field methods of the survey were based on "Instructions for Forest Surveys" issued in 1928.

Prior to the survey, Mr. G. S. Andrews conducted an air survey of the islands. Vertical air photographs were taken from an altitude of 10,000 feet and were stereoscopically plotted to provide an accurate forest type and base map for use by the field party. The few gaps in the air photo coverage were eliminated by spotting photographs taken later in the summer by the Royal Canadian Air Force.

Due to logging and burning and the age of the land survey, most of the horizontal control was based on topographic features controlled by air photos.

Base Maps

Base maps were prepared on a scale of 40 chains to the inch from vertical air photographs using land surveys and hydrographic charts of the shore as the basis.

Party Organization

Chief of Party	W.C. Phillips
Cruisers	R.C. Shaw
	G.W. Minns
Compassmen	R.C. Telford
	A.H. Bamford
	A.B. Anderson
	W.M. Sloan
Boat Engineer	T.A. Hunter
Cook	A. Hold

Labour Distribution (field)

Cruising	38.4%
Mapping	7.6
Compiling	4.7
Sundays and Sickness	15.7
Cooking	13.2
Engineer	13.8
Travelling	6.0
Checking	0.6
	100.0%

Cost of Survey (field)

Salaries	$1,400.85	
Meals	283.70	
Travelling expenses	50.40	
Miscellaneous	41.29	
Launch costs	86.33	
Total	$1,862.57	(including Party Chief)

Equipment

The survey operated from the M.V. "B. C. Forester", using it as a houseboat and for major transportation. In addition, an inboard and an outboard tender were used for auxiliary transportation.

VOLUME TABLES

Western Hemlock

D.B.H. Class	SHORT		MEDIUM		TALL	
	Total height	f.b.m.	Total height	f.b.m.	Total height	f.b.m.
12	88	100	101	120	114	150
14	94	160	107	200	121	230
16	99	240	114	290	129	340
18	104	330	120	400	135	460
20	109	430	125	520	141	600
22	114	550	131	660	148	760
24	119	690	136	820	153	960
26	123	840	141	1,000	159	1,160
28	127	1,000	146	1,200	165	1,400
30	131	1,180	150	1,400	169	1,650
32	135	1,380	155	1,650	175	1,920
34	139	1,600	160	1,900	181	2,250
36	143	1,820	164	2,180	185	2,550
38	146	2,070	168	2,480	190	2,930
40	149	2,320	171	2,800	193	3,300
42	152	2,570	175	3,100	198	3,650
44	155	2,820	179	3,400	202	4,000
46	158	3,070	182	3,700	205	4,350
48	161	3,300	185	4,000	209	4,700
50	164	3,500	188	4,300	212	5,050
52	166	3,700	190	4,550	215	5,350
54	168	3,900	192	4,800	217	5,600

DOUGLAS FIR

D.B.H. Class	SHORT		MEDIUM		TALL	
	Total Height	f.b.m.	Total Height	f.b.m.	Total Height	f.b.m.
12		70		100		130
14		80		160		180
16		150		220		260
18	97	260	105	330	114	390
20	103	350	116	450	129	550
22	110	430	128	580	145	720
24	117	550	137	750	158	950
26	122	700	146	970	170	1,220
28	127	820	153	1,200	180	1,500
30	131	980	160	1,430	190	1,840
32	135	1,160	167	1,700	198	2,200
34	141	1,370	172	1,950	206	2,560
36	143	1,550	177	2,220	213	2,890
38	147	1,760	182	2,530	219	3,280
40	150	2,010	185	2,880	223	3,740
42	153	2,300	190	3,250	227	4,250
44	155	2,610	193	3,650	229	4,700
46	158	2,880	194	4,050	230	5,200
48	159	3,210	196	4,480	232	5,600
50	161	3,540	197	4,870	234	6,200
52	163	3,870	198	5,300	234	6,700
54	165	4,200	199	5,730	234	7,250
56	165	4,570	200	6,170	234	7,750
58	167	4,930	201	6,630	235	8,300
60	168	5,350	202	7,100	235	8,900

WESTERN RED CEDAR

D.B.H. class	SHORT		MEDIUM		TALL	
	Total Height	f.b.m.	Total Height	f.b.m.	Total Height	f.b.m.
12		90		130		160
14		110		160		190
16	70	130	85	180	95	230
18	79	160	94	220	108	280
20	86	190	103	270	120	350
22	92	250	112	370	132	490
24	97	330	119	500	142	670
26	101	420	126	650	152	880
28	105	520	132	820	159	1,110
30	109	630	138	1,000	166	1,350
32	112	760	143	1,200	172	1,640
34	116	880	148	1,400	178	1,910
36	119	1,010	152	1,620	183	2,210
38	122	1,160	155	1,850	187	2,530
40	124	1,320	157	2,100	190	2,860
42	126	1,510	159	2,370	192	3,220
44	128	1,680	161	2,650	193	3,590
46	130	1,870	162	2,940	194	3,980
48	132	2,090	163	3,250	195	4,380
50	133	2,320	164	3,570	196	4,820
52	134	2,580	165	3,920	197	5,240
54	135	2,850	166	4,300	198	5,710
56	136	3,120	167	4,650	199	6,160
58	137	3,440	168	5,020	199	6,580
60	137	3,770	169	5,400	200	7,000

BALSAM (Silver fir)

D.B.H. class	SHORT		MEDIUM		TALL	
	Total Height	f.b.m.	Total Height	f.b.m.	Total Height	f.b.m.
12	82	70	96	120	112	170
14	89	110	101	180	118	260
16	94	160	105	240	124	360
18	99	240	109	340	130	450
20	103	330	114	460	137	580
22	106	420	119	560	142	710
24	110	520	123	630	148	850
26	113	630	128	830	153	1,030
28	117	750	133	970	158	1,200
30	121	900	137	1,150	163	1,400
32	124	1,060	141	1,360	168	1,640
34	127	1,230	145	1,590	173	1,940
36	130	1,420	149	1,850	178	2,280
38	134	1,600	153	2,190	183	2,730
40	137	1,810	157	2,540	187	3,250
42	139	2,030	160	2,920	191	3,810
44	141	2,300	163	3,390	195	4,480
46	144	2,640	166	3,850	198	5,060
48	146	3,000	169	4,270	201	5,540
50	148	3,380	172	4,680	203	5,990
52	150	3,780	174	5,160	204	6,310
54	152	4,160	176	5,670	205	6,930
56	154	4,540	177	6,180	206	7,510

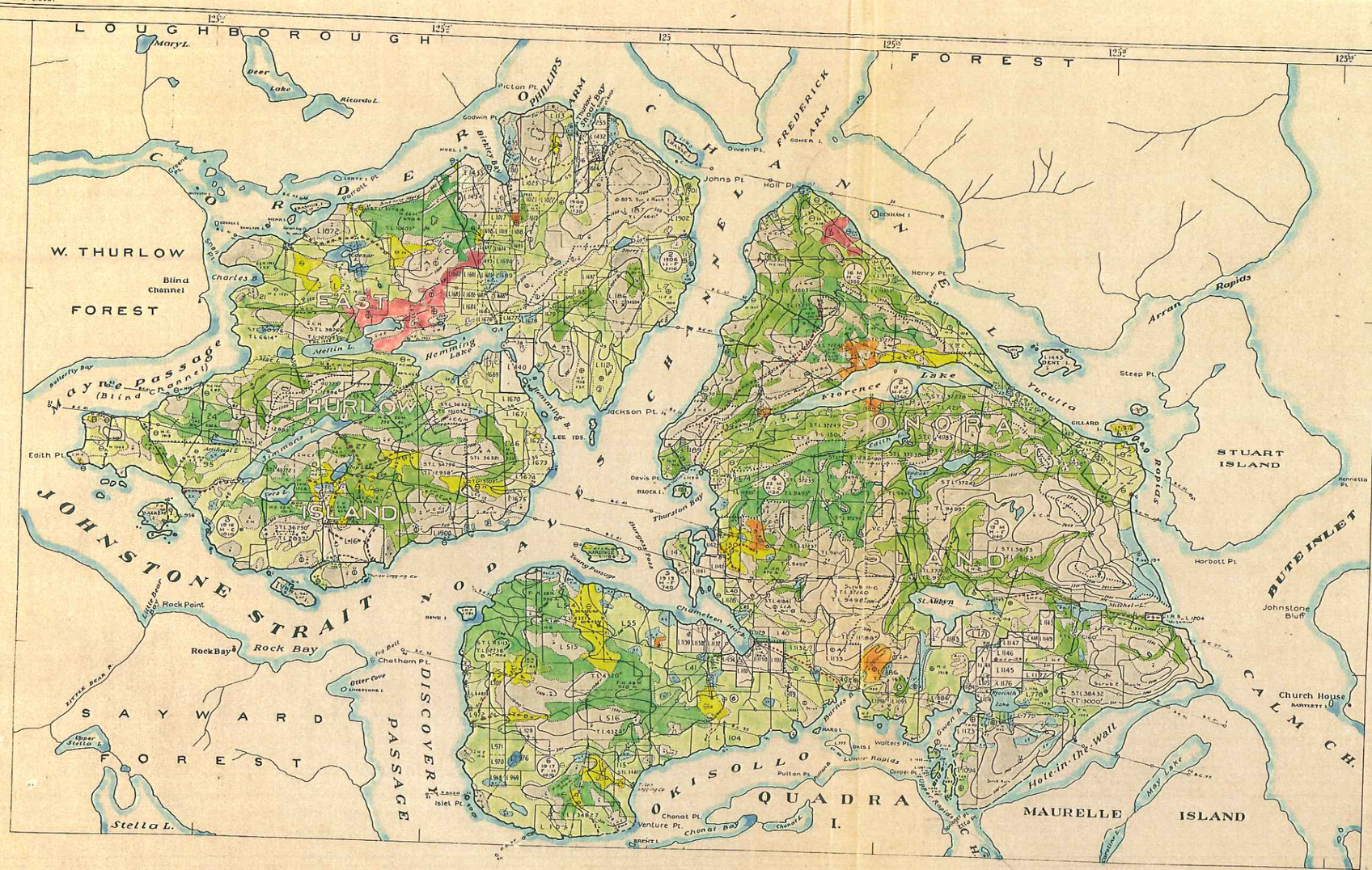
SITKA SPRUCE

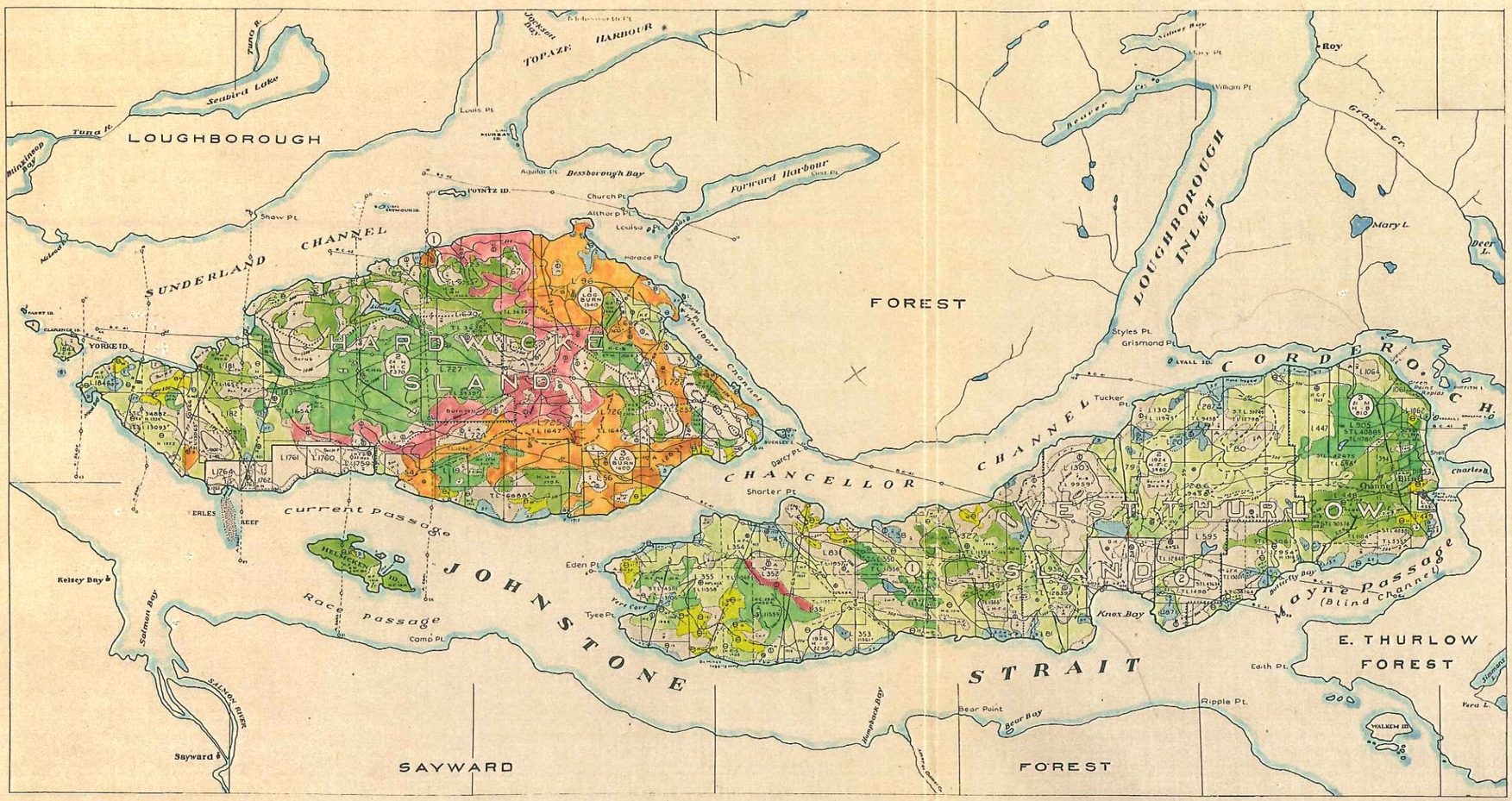
D.B.H. class	Volume - f.b.m.		
	Short	Medium	Tall
12	60	130	200
14	80	150	220
16	110	220	330
18	150	300	450
20	220	400	580
22	310	530	750
24	410	780	1,150
26	530	900	1,270
28	690	1,100	1,510
30	890	1,330	1,770
32	1,100	1,560	2,020
34	1,300	1,870	2,440
36	1,600	2,200	2,800
38	1,900	2,600	3,300
40	2,250	2,930	3,610
42	2,540	3,380	4,220
44	2,860	3,850	4,840
46	3,230	4,220	5,210
48	3,640	4,700	5,760
50	4,120	5,230	6,340
52	4,610	5,810	7,010
54	5,170	6,460	7,750
56	5,800	7,230	8,660
58	6,490	8,010	9,530
60	7,240	8,850	10,460

WHITE PINE

(Tall table for Interior White Pine)

D.B.H. class	Total Height	Volume f.b.m.
12	83	140
14	93	210
16	103	280
18	111	370
20	119	480
22	126	650
24	132	830
26	138	1,070
28	144	1,300
30	148	1,520
32	153	1,800
34	156	2,100
36	158	2,440
38	160	2,800
40	162	3,140
42	164	3,430
44	165	3,750
46	165	4,090
48	165	4,390
50	165	4,700


LOUGH B O R O U G H
FOREST
W. THURLOW
Blind Channel
FOREST
EAST THURLOW ISLAND
SONORA ISLAND
STUART ISLAND
JOHNSTONE STRAIT
DISCOVERY PASSAGE
SAYWARD FOREST
QUADRA I.
MAURELLE ISLAND
BUTE INLET
CALMCH.
Rock Bay
Rock Point
Stella L.
Johnstone Bluff
Church House
Harbott Pt.
Steep Pt.
Henry Pt.
Johns Pt.
Hall Pt.
Jackson Pt.
Davis Pt.
Thurston Bay
Walters Pt.
Pulton Pt.
Chonat Pt.
Venture Pt.
Chonat Bay
Isiel Pt.
Chatham Pt.
Edith Pt.
Arran Rapids
Yuculta Rapids
Lower Rapids
Hole-in-the-Wall
Florence Lake
St. Alban L.
Hemming Lake
Mellin L.
Maryl.
Deer Lake
Ricardo L.
Picton Pt.
Godwin Pt.
Owen Pt.
Cayne Passage (Blind Channel)
Butterfly Bay
Thurston Bay
Burgoyne Bay
Young Passage
Chameleon Arm
Burrard Inlet
Gillard I.
Henrietta Pt.
May Lake
Gowlland L.
Upper Stella R.
Little Bear R.
Otter Cove
Kinsmen Pt.
Fox Bell
Burrard A.
Owen A.
Chonat A.
Chonat R.
Hardy I.
Davis I.
Block I.
Lee Ids.
Denham I.
Gomer I.
Hanbury I.
Brent I.
Hawe I.
Burgoyne Bay
Thunder Bay
Shoot Bay
Bitter Bay
Sunset Pt.
Charles B.
Max L.
Jimmore L.
Tora L.
Arthur L.
Sorry L.
Kaiser
Dent L.
Mitchell L.
Walters Pt.
Lower Rapids
Pulton Pt.
Chonat Pt.
Venture Pt.
Chonat Bay
Chonat R.
Isiel Pt.
Chatham Pt.
Fox Bell
Otter Cove
Kinsmen Pt.
Upper Stella R.
Little Bear R.
Stella L.
Rock Bay
Rock Point
Edith Pt.
Butterfly Bay
Cayne Passage (Blind Channel)
Max L.
Jimmore L.
Tora L.
Arthur L.
Mellin L.
Hemming Lake
Hemming B.
Sorry L.
Kaiser
Dent L.
Mitchell L.
St. Alban L.
Florence Lake
Gillard I.
Henrietta Pt.
Harbott Pt.
Johnstone Bluff
Church House
Steep Pt.
Henry Pt.
Johns Pt.
Hall Pt.
Jackson Pt.
Davis Pt.
Block I.
Thurston Bay
Burgoyne Bay
Young Passage
Chameleon Arm
Burrard Inlet



BRITISH COLUMBIA FOREST SERVICE

E. C. Manning, Chief Forester; Victoria, B. C.

THE HARDWICKE AND WEST THURLOW FORESTS

-1938-

SCALE - 2 MILES TO 1 INCH

FOREST ECONOMICS DIVISION

SOURCES OF INFORMATION

PARK BLOCKS FROM OFFICIAL LAND RECORDS, COAST TRIANGULATION AND AVAILABLE VERTICAL AIR PHOTOGRAPHS. FOREST COVER AND TOPOGRAPHY FROM PRIVATE CRUISES, FOREST SERVICE RECORDS AND VERTICAL AIR PHOTOGRAPHS. ROAD AND RAILWAY DATA FROM AIR PHOTOGRAPHS BY R.C.A.F. (1937-1938) AND R.C.M.P. (1938-1939). BOUNDARY, AREAS, SEA LEVEL - CONTOUR INTERVAL 200 FT.

W. C. Phillips
Assistant Forester

-REFERENCE-

Boundary of Forests
Compartment Boundary
Forest Cover Type Boundary
Trail
Post-Office
Town, Village
Wharf
Examination Stations
Air Photograph Principal Points
Plotted
Sketched
Royal Canadian Air Force - A-3601
British Columbia Forest Service - B.C.A.
Logging Railroad
Abandoned
Planted Area e.g. P 1952 P

-ABBREVIATIONS-

Western Red Cedar	C	Douglas Fir	F
Hemlock	H	Balsam	B
Sitka Spruce	S	Scrub	X
Yellow Cedar	Y	Alpine, Barren	A
Alder	D	Cultivated	C
Willow	W	Acres	Ac
Seed Trees	ST		

Previous History of Immature etc. areas:
Logged (1921) - O
Burned (1919) - B
Logged (1923) - Burned (1919) - B

INDEX MAP

-Scale - 13.78 miles - 1 inch-

-REFERENCE-

-Descriptive Circles-

Mature Timber: Compartment number; Average M per acre; Forest type; Acres in type
Immature Timber: Compartment number; Date of establishment; Forest type; Acres in type

Sub compartment descriptions - Number prefixed, e.g. Sub 2.

-Colour Chart-

Mature Timber
- 20 MBM per acre and over
- Under 20 MBM per acre
Immature Timber
Logged
Burned
Logged-Burned
Non Commercial Cover
Scrub
Swamp
Water
Barren, Alpine (Unvisited)

Revised		
Revised		
Revised		
Field Map by	W.C.P.	1938
Final Map by	R.S.M.	1939
Checked	R.S.M.	1939
Coloured by	R.S.M.	1939