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Timber Resource Statistics for the Willow Block, Susitna River Basin Multiresource Inventory Unit, Alaska, 1978

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Abstract

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A multiresource inventory of the Willow block, Susitna River basin inventory unit, was conducted in 1978. Statistics on forest area, timber volumes, and growth and mortality from this inventory are presented. Timberland area is estimated at 230,200 acres and net growing stock volume, mostly birch, at 231.9 million cubic feet. Net annual growth of growing stock is estimated at 7.4 million cubic feet and annual mortality at 742,000 cubic feet.

Keywords: Forest surveys, timber inventory, multiresource inventory, statistics (forest), resources (forest), Alaska (south-central), Alaska (Susitna River basin).

Summary

The Forest Inventory and Analysis (FIA) work unit of the Pacific Northwest Forest and Range Experiment Station conducted its first multiresource inventory for Alaska in the Susitna River basin. Fieldwork began in 1978 in the Willow block. The 978,516-acre block lies east of the Big Susitna River and is bounded on the north by the Talkeetna Mountains and on the south and east by Cook Inlet.

Statistics on forest area, timber volumes, and net annual growth and mortality are presented from the 1978 multiresource inventory of the Willow block. Timberland area is estimated at 230,200 acres and net growing stock volume at 231.9 million cubic feet. Net annual growth of growing stock is estimated at 7.4 million cubic feet and annual mortality at 742,000 cubic feet.

Preface

Forest Inventory and Analysis is a nationwide project of the USDA Forest Service authorized by the Forest and Rangeland Renewable Resources Research Act of 1978. Work units of the project, located at Forest Service Experiment Stations, conduct forest resource inventories throughout the 50 States. The Pacific Northwest Forest and Range Experiment Station at Portland, Oregon, is responsible for inventories in Alaska, California, Hawaii, Oregon, and Washington.

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Highlights[1/]

Area

- Gross area of the Willow block is 978,500 acres.

- Forest land area is 621,300 acres, which is equivalent to 63-1/2 percent of the gross area in the block.

- Timberland accounts for 230,200 acres, or 37 percent of all forest land. Timberland is capable of producing 20 cubic feet or more of wood per acre per year.

- Birch is the predominant forest type, accounting for 310,000 acres and almost 50 percent of the total forest land. The black spruce type follows closely with 277,000 acres and about 45 percent of the total forest land.

- The predominant vegetation class on timberland is closed deciduous forest, medium age stands-deciduous/mixed. This class occupies about 48 percent of the timberland area, but only about 18 percent of all forest land.

- The predominant vegetation class on all forest land (timberland and other forest land combined) is the closed coniferous forest, short stands-black spruce.

- About 53 percent of the total forested vegetation class area is comprised of deciduous/mixed stands. Black spruce stands comprise another 37 percent.

- Site class 4 land (capable of producing 20-49 cubic feet per acre per year) supports 92 percent of the timberland, or 34 percent of the total forest land, and averages 1,015 cubic feet of growing stock volume per acre.

1/ Values presented in this section are estimates and are subject to sampling error.

Inventory

- Growing stock volume on timberland is 231.9 million cubic feet, with the majority of it, 48.9 percent, in sawtimber trees.

- Of the sound wood volume, 6.4 percent is from rough, rotten, and salvable dead trees, or 15.9 million cubic feet.

- Birch makes up 69.1 percent of the growing stock volume and 65.7 percent of the sawtimber volume. The remaining volume is mostly white spruce.

- Average softwood volume per acre of timberland (including all timber classes) is 251 cubic feet. Hardwood volume equals 825 cubic feet per acre.

- There are an average of 28 trees per acre of sawtimber-sized growing stock on timberland.

- There are an average of 283 trees per acre of growing stock less than sawtimber size.

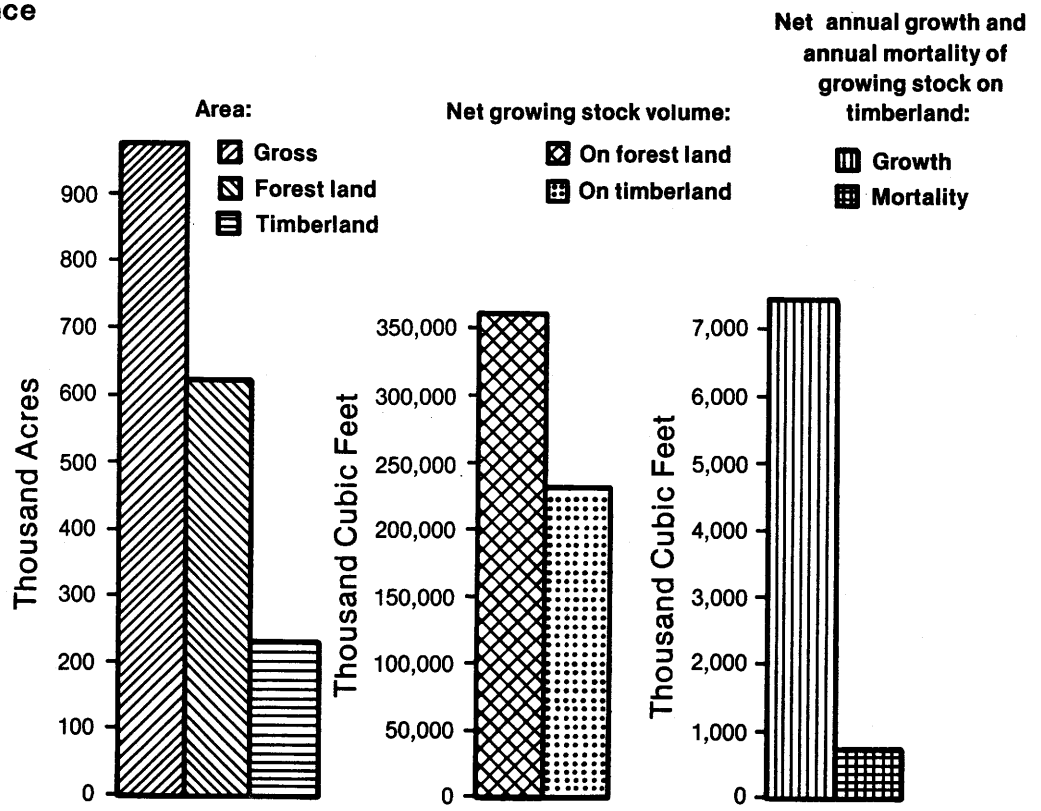
Growth

- Net annual growth of growing stock on timberland is 7.4 million cubic feet. Of the growing stock, 82 percent, or 6.0 million cubic feet, is in the birch type.

Mortality

- Annual mortality of growing stock on timberland is 742,000 cubic feet.

Willow Block at a Glance



Introduction

In 1977, the Alaska Forest Inventory and Analysis (FIA) work unit of the USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, joined with other agencies to plan and conduct a multiresource inventory of the Susitna River basin, south-central Alaska. Cooperating agencies were the USDA Forest Service, Alaska Region, State and Private Forestry; USDA Soil Conservation Service; and the State of Alaska, Department of Natural Resources.

The 978,516-acre Willow block is part of the Susitna River basin multiresource inventory unit. The Susitna River basin is bordered on the north and west by the Alaska Range, on the south by Cook Inlet, and on the east by the Copper River plateau (figs. 1-3). The Willow block is between 61°15' and 62° N. latitude, and 149° and 150° W. longitude. Major drainages in the block are the Little Susitna River and Willow Creek.

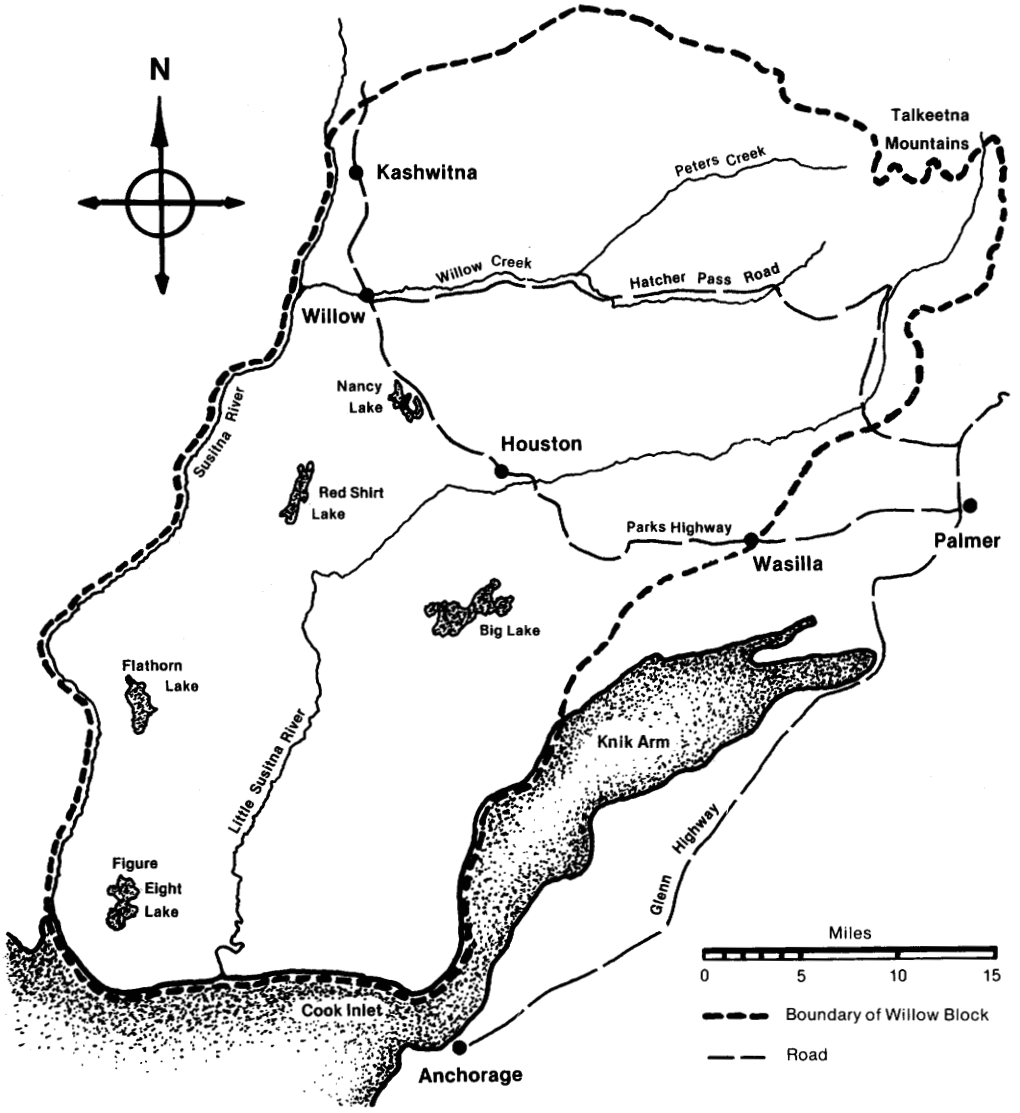


Figure 1.--Willow block, Susitna River basin.

Figure 2.--Many of the highest volume stands in the Willow block are inaccessible because they grow among mazes of meandering streams and on islands. Sites are also subject to frequent short-term flooding.

Figure 3.--Older birch trees in the Willow block often have rot columns accompanied by substantial volume loss. External defect indicators are not always apparent.

In 1978, public interest in the Willow block area was high because of the pending move of the State capitol and associated development. The new capitol was to be located in the block, near the town of Willow. Because of the high likelihood for development at that time, the Willow block was chosen as the first portion of the Susitna River basin to be inventoried.

Inventory Procedures

Sampling strata for the Willow block follow. Land cover/vegetation classes for all strata except water are detailed beginning on page 13.

Forest and woodland (greater than 10-percent tree crown cover):
- Stratum 1. Closed forest (greater than 50-percent tree crown cover)
- Stratum 2. Open forest (10- to 50-percent tree crown cover)

Nonforest (less than 10-percent tree crown cover):
- Stratum 3. Nonforest
- Stratum 4. Cultural influence
- Stratum 5. Nonvegetated-barren
- Stratum 6. Water

Forest, nonforest:
- Stratum 7. Unclassified.

Vegetation for the study area was mapped according to type on 1:120,000-scale color infrared aerial photography enlarged to approximately 1:60,000. This provided a stratum or polygon map that could be associated with estimates of mean volumes made for each stratum. A double sampling method was used to derive estimates (Bickford 1952).

To be mapped, type polygons had to be at least 5 acres in size. Each polygon was labeled with a primary vegetation type or land class code. Secondary and tertiary labels were added if a polygon contained small inclusions (less than 5 acres) of other vegetation.

Sampling of a representative number of type polygons followed, using a double sampling procedure. Primary aerial photo points were located at 1 000-meter Universal Transverse Mercator (UTM) intersections on 1:63,360-scale quadrangle maps of the U.S. Geological Survey. Next, these points were visually transferred to aerial photos. A sampling stratum for each point was then interpreted and a predominant vegetation type assigned to the usually circular, 5-acre area surrounding each point. Points for ground measurements were located in the same mapped polygons as the associated intersections of the grid.

From the photo points, 102 were selected for ground observation and measurements. Sample points were established in 10-point clusters and measured within each 5-acre location. These measurements are the basis for the estimates given in this paper.2/

On forested points, measurements of trees larger than 5 inches in d.b.h. were made on variable radius plots using a nonmetric prism with 40 basal area factor. Trees less than 5 inches were measured on 1/300-acre, circular, fixed radius plots.

2/ Forest Inventory and Analysis staff, Anchorage work unit. Field procedures for the cooperative vegetation inventory of the Susitna River basin, Alaska, Willow block. Anchorage: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory; 1978. 91 p. Unpublished report.

Reliability of Inventory Data

Area and volume statistics reported here are estimates based on sampling and, therefore, are subject to sampling error. The reliability of the inventory is expressed in terms of relative sampling errors at the 68-percent confidence level:

	Design sampling error 3/	Sampling error achieved	Sampling error of the total estimate
		Percent	
Timberland area:			
Per million acres	3.0	5.9	
For the total 230,299 acres			±12.3
Other forest land area:			
Per million acres	10.0	8.4	
For the total 391,077 acres			±13.5
Net growing stock volume:			
Per billion cubic feet	10.0	7.1	
For the total 231.915 million cubic feet			±14.8
Net growth of growing stock:			
Per billion cubic feet	10.0	1.7	
For the total 7.436 million cubic feet			±19.5

The estimate of net growing stock volume for the Willow block is 231.915 million cubic feet, ±14.8 percent, yielding 68-percent confidence limits of 197.592 and 266.238 million cubic feet. A 68-percent confidence level means that if repeated samples were taken of this population, the total volume would be between 197.592 and 266.238 million cubic feet 68 percent of the time.

Design sampling error for timberland area (3 percent), was not met. Design sampling errors for other forest land area cubic-foot net growing stock volume, and net growth (all 10 percent) were met.

3/ Forest Service Handbook 4813.1, Chapter 10, Operational Procedures 11.1--1; 1967.

Terminology [4/]

Acceptable trees--Trees meeting the specifications for growing stock but not qualifying as desirable trees.

Area condition class--Area condition class provides a general stratification of timberland by management opportunity class as indicated by the stocking or area controlled by tree and cover class.

Area condition class codes--

10 Areas 100 percent or more stocked with desirable trees and not overstocked. Stands in this category generally do not require any treatment at present to maintain high level of growth.

20 Areas 100 percent or more stocked with desirable trees and overstocked. Stands in this category need a treatment such as thinning to produce maximum levels of growth of desirable trees.

30 Areas 60 to 100 percent stocked with desirable trees, and with less than 30 percent of the area controlled by acceptable growing stock trees, inhibiting vegetation, slash, or nonstockable conditions. Stands in this category generally have conditions favorable for natural improvement of stocking without special treatment.

40 Areas 60 to 100 percent stocked with desirable trees and with 30 percent or more of the area controlled by other trees (or overstocked areas) or conditions that ordinarily prevent occupancy by desirable trees. Stands in this category generally have little prospect for improvement in desirable tree stocking without special treatment such as thinning or cull tree removal.

50 Areas less than 60 percent stocked with desirable trees but with 100 percent or more stocking with growing stock trees. Stands in this category generally have little prospect for improved desirable tree stocking without special treatment. Stands almost to rotation age would usually not be treated.

4/ Terminology is from the manual of field procedures for the Susitna River basin inventory (see footnote 2), and Forest Service Handbook 4813.1 (see footnote 3).

60 Areas less than 60 percent stocked with desirable trees but with 60- to 100-percent stocking with growing stock trees. Stands in this category generally have little prospect for improved desirable tree stocking without special treatment such as timber stand improvement or planting.

70 Areas less than 60 percent stocked with desirable trees and with less than 60-percent stocking with growing stock trees. Stands in this category generally have little prospect for improved desirable tree or growing stock stocking without treatment such as site preparation or regeneration.

Basal area--A measure of square feet of space occupied by the stem of a tree at diameter breast height.

Census water--Streams, sloughs, estuaries, and canals more than one-eighth mile wide; and lakes, reservoirs, and ponds of more than 40 acres.

Commercial species--Tree species presently or potentially suitable for industrial wood products.

Cull material--Portions of a tree unusable for industrial products because of rot, form, or other defect.

Cull trees--Live trees of sawtimber or poletimber size that are not merchantable for saw logs now nor are they likely to become merchantable because of defect, rot, or species.

D.b.h.--Diameter at breast height, a point 4-1/2 feet above the ground on the uphill side of a tree, where, on a normally formed tree, the diameter is measured.

Desirable trees--Growing stock trees with no serious defects in quality limiting present or prospective use, relatively high vigor, and hosting no pathogens that could result in death or serious deterioration before rotation age. They include the type of trees forest managers aim to grow; that is, the trees left in silvicultural cutting or favored in cultural operations.

Diameter class--A classification of trees based on diameter of the tree outside the bark, measured at breast height (4-1/2 feet above the ground). Two-inch diameter classes are commonly used by FIA, with the even inch the approximate midpoint for a class.

Forest land--Land at least 16.7 percent stocked by forest trees of any size, or land formerly having such tree cover, and not currently developed for nonforest use.

Forest trees--Woody plants having a well-developed stem and usually more than 12 feet tall at maturity.

Forest types--A classification of forest land based on the species forming a plurality of the live tree stocking.

Black spruce--Forests in which a plurality of the stand is black spruce. Black spruce most often occurs in nearly pure stands but can be found mixed with tamarack, white spruce, paper birch, and aspen. Black spruce is fairly characteristic of poorer forest land.

White spruce--Forests in which a plurality of the stand is white spruce. Common associates include paper birch and balsam poplar, and occasionally black spruce or quaking aspen.

Balsam poplar--Forests in which a plurality of the stand is balsam poplar. South of the Alaska Range, balsam poplar may be replaced by black cottonwood or hybrids between the two. As the poplar ages, it is usually replaced by white spruce; however, it is usually found as a nearly pure type with only an occasional associate of white spruce or paper birch.

Black cottonwood--Forests in which a plurality of the stand is black cottonwood. Black cottonwood is found south of the Alaska Range in pure stands along major rivers. It hybridizes extensively with balsam poplar where their ranges overlap and in this overlap, area types are not easily distinguished by species but are usually reported as cottonwood/poplar. Black cottonwood stands are replaced by white spruce as they age and the pure stands contain only an occasional white spruce or paper birch.

Paper birch--Forests in which a plurality of the stand is paper birch. Paper birch can occur in pure stands but is more often mixed with white spruce, quaking aspen, or black spruce.

Quaking aspen--Forests in which a plurality of the stand is aspen. Aspen is usually found as a pure type following fire and a willow stage of succession. As the aspen ages, it is usually replaced by spruce, except on very dry sites where it may remain as a pure type. Common associates include black spruce and white spruce and occasionally paper birch.

Gross growth--Annual increase in net volume of trees that have not been cut or have not died.

Growing stock trees--Sawtimber trees, poletimber trees, saplings, and seedlings; that is, all live trees except cull trees.

Growing stock volume--The net cubic-foot volume of sound wood in the bole of growing stock trees 5.0 inches in d.b.h. and larger, from stump to a minimum 4.0-inch top outside the bark or to the point where the central stem breaks into limbs.

Hardwoods--Dicotyledonous trees, usually broadleaved and deciduous. Hardwood species in interior Alaska are balsam poplar, black cottonwood, paper birch, and quaking aspen.

International 1/4-inch rule--A log rule using diameter and length to give yields of logs in board feet of lumber produced when 1-inch boards are cut. It assumes one-half inch of taper per 4 feet of log and a saw kerf of one-fourth inch.

Land area--Area reported as land by the Bureau of the Census. Total land area includes dry land and land temporarily or partially covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 120 feet wide; and lakes, reservoirs, and ponds less than 1 acre in area.

Land class--A classification of land by the predominant vegetative cover on it, such as forest land. The minimum size area for classification is 1 acre.

Mean annual increment (MAI)--A measure of the volume of wood, in cubic feet, produced on 1 acre during 1 year. FIA minimum standard for timberland is the ability to produce at least 20 cubic feet per acre per year.

Mortality--Number of or the sound wood volume from live trees dying from natural causes during a specified period (5 years).

Net annual growth of growing stock--The annual change in volume of sound wood in live sawtimber and poletimber trees.

Net annual growth of sawtimber--The annual change in net board-foot volume of live sawtimber trees.

Net volume--The gross volume of a tree less deductions for rot, sweep, or other defect affecting product use.

Non-Census water--Streams, sloughs, estuaries, and canals between 120 feet and one-eighth mile wide; and lakes, reservoirs, and ponds between 1 and 40 acres in area.

Noncommercial species--Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Nonforest land--Land that does not qualify as forest land. Includes land that has never supported forests and lands formerly forested where forest use is precluded by development for nonforest uses, such as crops, improved pasture, residential areas, and city parks. Also includes improved roads and certain areas of water classified by the Bureau of Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size to qualify as nonforest land.

Nonstockable land--Areas of forest land not capable of supporting forest growth because of rock or water.

Nonstocked areas--Timberland less than 16.7 percent stocked with growing stock trees.

Other forest land--Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions (producing less than 20 cubic feet per acre per year). This includes sterile or poorly drained forest land, subalpine forests, and steep, rocky areas where topographic conditions are likely to prevent management for timber production. Also included is productive forest land withdrawn from commercial timber use by statute or administrative regulation.

Other forest land, inoperable--Other forest land with a gross volume less than 800 cubic feet per acre.

Other forest land, operable--Other forest land with a gross volume of 800 cubic feet or more per acre.

Overstocked areas--Areas where growth of trees is substantially reduced by excessive numbers of trees.

Poletimber stands--Stands at least 16.7 percent stocked with growing stock trees, with half or more of this stocking in poletimber and sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Poletimber trees--Trees 5.0 to 8.9 inches in d.b.h. for softwoods and 5.0 to 10.9 inches in d.b.h. for hardwoods.

Rotten trees--Live trees 5.0 inches in d.b.h. and larger that do not contain a saw log now and are not likely to, primarily because of rot.

Rough trees--Live trees 5.0 inches in d.b.h. and larger that do not contain a saw log now and are not likely to, primarily because of roughness, poor form, or because they are a noncommercial species.

Salvable dead trees--Standing dead trees that are considered currently or potentially merchantable by regional standards. A poletimber tree must be more than one-half sound, a sawtimber tree more than one-third sound (board measure).

Sapling trees--Trees 1.0 to 4.9 inches in d.b.h.

Saw log--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum small-end diameter of 6 inches inside the bark for softwoods and 8 inches for hardwoods.

Saw-log portion--The bole of sawtimber trees between the stump and the saw-log top.

Saw-log top--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum top diameter is 7.0 inches outside the bark for softwoods and 9.0 inches outside the bark for hardwoods.

Sawtimber stands--Stands at least 16.7 percent stocked with growing stock trees, with half or more of this stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to that of poletimber.

Sawtimber trees--Trees at least 9.0 inches in d.b.h. for softwoods and 11.0 inches in d.b.h. for hardwoods.

Sawtimber volume--The volume of sawtimber trees measured in board feet. Net volume equals gross volume less deductions for rot, sweep, crook, and other defects that affect use for lumber.

Seedling--An established tree less than 1.0 inch in d.b.h.

Seedling and sapling stands--Stands at least 16.7 percent stocked with growing stock trees and with seedlings and/or saplings comprising more than half of this stocking.

Site class--A classification of forest land based on its capacity to grow crops of industrial wood. Site classifications are based on the mean annual cubic-foot growth of growing stock attainable in fully stocked stands at culmination of mean annual increment.

Softwoods--Coniferous trees, usually evergreen with needles or scalelike leaves. Species in interior Alaska are white spruce, black spruce, and tamarack.

Stand size class--A classification of forest land based on the predominant size of growing stock present: sawtimber, poletimber, or seedlings and saplings.

Stand volume class--A classification of forest land based on cubic-foot or board-foot timber volume per acre.

Stocking--The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared with the basal area or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard.

Timber class--A classification of trees based on characteristics of quality such as vigor, size of limbs and knots, and presence or absence of rot. Classes include growing stock; desirable and acceptable trees; and rough, rotten, and salvable dead trees.

Timberland--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. Areas qualifying as timberland could produce more than 20 cubic feet per acre per year of industrial wood under management.

Tree size class--A classification of trees based on the diameter of the tree at breast height.

Type map--A map showing classifications of vegetated and barren land, based on interpretation of aerial photographs. Like areas are delineated, labeled, and referred to as polygons.

Upper-stem portion--That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside the bark or to the point where the main stem or fork breaks into limbs.

UTM--Universal transverse mercator grid system is a 1000-meter grid named for the map projection on which it is based. It consists of 60 grid zones, each 6° longitude in width. The origin of the grid zone lies at the intersection of the central meridian, which is a straight north-south line passing through Greenwich, England, and the equator, a straight east-west line. Grid lines within a zone are parallel and delineated on USGS quadrangle maps by blue tick marks on map margins.

Vegetation class--A classification of forest and nonforest vegetation based on species, canopy coverage, and height and/or age of vegetation. A classification system unique to FIA was developed for the Susitna River basin multiresource inventory. Classes are defined in the following section.

Water--See Census water and non-Census water.

Vegetation/ Land Cover Classes

I. Forest and woodland (greater then 10-percent crown cover)

A. Closed coniferous forest (greater than 50-percent crown cover)

1. Short stands-white spruce. Main canopy usually less than 30 feet tall. Usually found at higher elevations as isolated pockets in areas dominated by alder; grassland; or open, mixed stands.

2. Tall stands-white spruce. Main canopy usually greater than 30 feet tall. Usually found at lower elevations on better sites; almost always found mixed with old and decadent deciduous trees (very rarely found as a pure type in Susitna River basin).

3. Short stands-black spruce. Main canopy usually less than 30 feet tall. Generally found on wet and/or cold (poor) sites; may be found mixed with birch of poor quality but usually found as a pure type forming islands and stringers in bog areas or transition zones between bog and forest areas. Understory is usually a thick moss and/or sedge mat.

4. Tall stands-black spruce. Main canopy usually greater than 30 feet tall. Can usually be identified as a fire-formed stand, on relatively good sites. Stands are remarkably pure, and the stocking density is usually quite high; may be found mixed with very scattered birch.

B. Closed deciduous forest (greater than 50-percent crown cover)

1. Young stands-deciduous/mixed. Canopy is usually very finely textured when viewed from above; openings in stands are very rare. Composed mostly of birch and/or aspen. This type very rarely mixed with other types except when found as a remnant condition in burned areas. Spruce is not usually evident as a component of the overstory in these young stands. Stands are 0-40 years old.

2. Medium age stands-deciduous/mixed. Canopy is usually fine textured when viewed from above; openings may be fairly common but are usually small. Vegetation elements of this type include birch, spruce, and aspen. Birch is usually found as a main component of this type, but percent composition may vary greatly depending on a number of factors: as the type increases in age, the percentage of white spruce as a crown component usually increases with the amount of understory and number of stand openings. Stands are 40-100 years old.

3. Old stands-deciduous/mixed. Canopy is usually somewhat coarse textured when viewed from above; openings are common and may appear in nearly half the stand. Canopy may also appear smooth, but openings appear as definite holes in the crown. Deciduous trees in these old stands are usually decadent. Spruce is often becoming the dominant species. The understory is usually visible from above and most commonly includes *Calamagrostis* sp. and *Alnus* sp. Stands are always older than 100 years.

4. Young stands-cottonwood. Most commonly found on new islands, downstream ends of old islands, and point bars of rivers. Cottonwood or poplar is usually mixed with large alder and/or willow; understory is sparse to nonexistent. Stands are 0-40 years old.

5. Medium age stands-cottonwood. Most commonly found within a mile of a river (alluvial soils). Stands are usually pure cottonwood or poplar; spacing is even and crown closure approaches 100 percent. Understory in the Susitna River basin is dominated by alder and devil's club. Stands are 40-100 years old.

6. Old stands-cottonwood. Most commonly found near rivers (alluvial soils). Stands may be mixed with young white spruce. Cottonwood trees are extremely large (30-40 inches in diameter) and decadent (larger trees may be only shells). Stands appear somewhat clumpy because of openings. Understory includes large quantities of alder, devil's club, and willow. Stands are older than 100 years.

C. Open coniferous forest (10- to 50-percent crown cover)

1. Short stands-white spruce. Usually found at higher elevations as a transition type between closed forest and high elevation, nonforest areas. Usually found mixed with vegetation elements of the higher elevation type: if the higher elevation type is a mixture of alder and grass, the open white spruce transition type will normally be forming a complex type with alder and grass. Trees are shorter than 30 feet.

2. Tall stands-white spruce. Same as short stands of white spruce normally found at lower elevations or on better sites. Commonly found in creek bottoms mixed with alder/willow and grass. Trees are taller than 30 feet.

3. Short stands-black spruce. Found in association with bog types. Black spruce trees are usually of very poor form. Site is either wet or cold or both. Trees are usually shorter than 15 feet tall.

D. Open deciduous forest (10- to 50-percent crown cover)

1. Medium age stands-deciduous/mixed. Similar to short stands of white spruce except normally found at lower elevations (as elevation increases, so does proportion of spruce in mixed types). Although birch/aspen stands are not usually found as a transition type between forest and high elevation, nonforest areas, they are often found just below areas of open, short white spruce. Stands are 0-40 years old.

2. Old stands-deciduous/mixed. Found in same general location as open, tall stands of white spruce. Found in association with grass and alder. Birch is usually found growing in very small, tight clumps. Spruce are usually found to have an open-grown form and are normally much younger than the hardwood component of the type.

3. Medium age stands-cottonwood. Usually found at tree line just above elevational limit of open white spruce. Found in pockets among low shrubs.

4. Old stands-cottonwood. Two elevational phases of this type seem to occur. The high elevation phase, consisting of balsam poplar, may be found mixed with streamside alder/willow along flowing water on high elevation flats. The low elevation phase, consisting of cottonwood, may be found on major river flood plains growing with a confusing mixture of other types such as open spruce, open birch, alder, and grass.

II. Nonforest (0- to 10-percent crown cover)

A. Tall shrub

1. Alder. This type is dominated by tall (10-15 feet) alder growing in dense thickets with grasses, ferns, and a great variety of forbs growing in the understory. Devil's club can be found as a dominant understory to the alder on wetter and steeper sites. Devil's club will normally exclude other understory vegetation. The type is found at or above tree line.

2. Alder willow (streamside vegetation). This type is dominated by a mixture of very large alder and willow and is normally found on frequently flooded ground such as new islands and point bars. Understory is sparse but may include *Equisetum* and *Calamagrostis* sp. This type is often found mixed with young, open cottonwood; in younger stands the cottonwood is almost indistinguishable from the willow and alder.

B. Low shrub (willow-resin birch)

This type is dominated by either willow or resin birch or a combination thereof. The type is often found in sheltered areas at high elevations such as draws in mountainous terrain. This type is found at and above the transition between tall shrubland and tundra.

C. Grassland (*Calamagrostis*)

This type is dominated by *Calamagrostis* sp., 3-6 feet tall. Fireweed and various ferns are sometimes common. This type is most often found as an understory in the more open forest types and woodland areas where it is commonly associated with alder patches; it can also be found unassociated with other types along small streams.

D. Tundra

1. Sedge-grass tundra. This type is found above tree line on relatively flat, wet areas. Vegetation consists almost entirely of various wet sedges.

2. Herbaceous tundra. This type is found above tree line and is almost always found mixed with and above shrub tundra. The variety of species found is immense, consisting mainly of various grasses and forbs. Soil varies in depth and may be intermixed with rock outcroppings. Vegetation may not be continuous.

3. Shrub tundra. This type is dominated by dwarf shrub birch and ericaceous shrubs along with various short grasses and a large number of forbs. This type is almost always found mixed with and below herbaceous tundra. Density of the shrubs varies considerably and may often appear quite patchy.

4. Mat and cushion tundra. This type is dominated by such plants as dryas, crowberry, bearberry, sedge, grass, lichens, and low-growing forbs. Climatic conditions are extreme at the elevation where this type is found. Vegetation cover may be complete (closed mat cushion) or relatively sparse (scattered mat cushion) with a large percentage of the vegetation being lichens. This type is often mixed with rock.

E. Saltwater wetlands

1. Grassland. *Elymus*-dominated grassland in areas of tidal influence. Usually found at edge of normal high water in sandy soil, where the shoreline gradient is relatively steep, and as a belt of grass along the shore.

2. Low shrub. *Myrica*-dominated shrubland located on tidal flats. Water level is usually fluctuating seasonally. In areas that are more continuously wet, sedge replaces *Myrica*.

3. Tidal marsh. Usually found in areas with many shallow lakes and little topographic relief (within tidal influence). Vegetation is dominated by sedges. Woody plants may occur on the drier sedge and peat ridges that are common to this type.

F. Fresh water wetlands

1. *Sphagnum bog*. Cover is dominated by varying amounts of sedge, *Equisetum* and moss (especially *Sphagnum*). This type is usually found as a floating mat over several feet of water or as a thick mat directly over saturated or frozen soil. Shrubs and stunted trees (if present) may be found on drier peat ridges. This type is similar to tidal marsh except that shallow lakes are less common, the peat ridges form a more continuous and regular pattern and the type is found inland beyond tidal reach. Usually found as a pure type.

2. *Sphagnum*/shrub bog. Vegetation of this type is dominated by a thick moss mat (*Sphagnum*) and/or sedge tussocks. Grass, ericaceous shrubs, *Salix*, blueberry, and cranberry may also be present. Ground water level usually varies seasonally, but this type is usually not as wet as a *Sphagnum bog*. Usually mixed with open stands of short black spruce. Many other types may also be found in close association with this type; they are usually found on glacial moraines and eskers within the bog area.

III. Cultural influence

May be broadly defined as land that has been obviously affected by human activity. Includes agricultural land, urban areas, and land developed to support or provide services to agricultural and urban land. This "type" may be vegetated, but vegetation that is present may not be natural in either composition or spacing.

IV. Nonvegetated-barren

A. Mud flat. Confined to tidal areas (for example, Cook Inlet) and the mouths of major rivers. This "type" may appear vegetated on infrared and normal color photography or from the air, but the "vegetation" is usually algal blooms, and/or other sea plants. Mud flats are usually well patterned with ripple marks or water drainage patterns, are normally submersed during high tide, and may be used as resting and feeding areas by waterfowl.

B. Rock. Includes exposed bedrock and scree commonly found with mat and cushion tundra at high elevations. This "type" is also used to describe large landslides, fresh moraines, and other natural barren areas.

C. Snow field. High-elevation, snow accumulation areas. Appears to be a permanent or nearly year-round part of the landscape. May be found as small pockets on slopes protected from the sun, on lee slopes, or in gulleys. Can be found over bare ground or mat and cushion tundra.

D. Glacier. Includes both icefields and glaciers. Usually found covering several square miles. Considered a permanent part of the landscape. This "type" covers much larger areas than does the snow-field type; crevasses, moraines, and other glacial features are usually present.

V. Unclassified

Locations or "points" that could not be classified because of cloud cover or deep shadows on the aerial photographs.

Names Of Trees

Common Name	Scientific Name 5/
Softwoods:	
Black spruce	*Picea mariana* (Mill.) B.S.P.
White spruce	*Picea glauca* (Moench) Voss
Hardwoods:	
Balsam poplar	*Populus balsamifera* L.
Black cottonwood	*Populus trichocarpa* Torr. and Gray
Paper birch	*Betula papyrifera* Marsh
Quaking aspen	*Populus tremuloides* Michx.

5/ Scientific names are according to Viereck and Little (1972).

Tables

Estimates in this report are developed from statistically based samples and therefore are subject to sampling error. Sampling errors for estimates of various sizes are presented in the section "Reliability of Inventory Data."

TABLE 1--AREA BY VEGETATION/LAND COVER CLASS AND LAND CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

VEGETATION/ LAND COVER CLASS	LAND CLASS									
	TIMBERLAND	OTHER FOREST LAND, OPERABLE	OTHER FOREST LAND, INOPERABLE	TOTAL FOREST LAND	NONFOREST LAND	NON-CENSUS WATER	TOTAL NONFOREST	CENSUS WATER	UNCLASSIFIED	ALL CLASSES
					ACRES					
CLOSED CONIFEROUS FOREST	17,318	5,772	230,800	253,891	--	--	--	--	--	253,892
CLOSED DECIDUOUS FOREST	195,933	68,933	63,160	328,026	--	--	--	--	--	328,026
OPEN CONIFEROUS FOREST	16,978	--	22,411	39,389	--	--	--	--	--	39,389
SHRUBLAND	--	--	--	--	40,552	--	40,552	--	--	40,552
TUNDRA	--	--	--	--	121,656	--	121,656	--	--	121,656
BOG	--	--	--	--	20,276	--	20,276	--	--	20,276
CULTURAL INFLUENCE	--	--	--	--	53,327	--	53,327	--	--	53,327
NONVEGETATED-BARREN	--	--	--	--	69,610	--	69,610	--	--	69,610
WATER	--	--	--	--	--	20,170	20,170	20,170	--	40,340
UNCLASSIFIED	--	--	--	--	--	--	--	--	11,447	11,447
ALL CLASSES	230,229	74,705	316,371	621,306	305,421	20,170	325,591	20,170	11,447	978,516

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 2--AREA OF FOREST LAND BY VEGETATION/LAND COVER CLASS, STAND SIZE CLASS, AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

VEGETATION/ LAND COVER CLASS AND STAND SIZE CLASS	SITE CLASS (CUBIC FEET) 1/ 1-9	10-14	15-19	20-49	50-84	ALL CLASSES
			ACRES			
CLOSED CONIFEROUS FOREST, SHORT STANDS-WHITE SPRUCE:						
SAWTIMBER	--	--	11,206	--	--	11,206
POLETIMBER	--	--	--	--	--	--
SEEDLING AND SAPLING	--	--	--	5,773	--	5,773
NONSTOCKED AREAS	--	--	--	5,772	--	5,772
TOTAL	--	--	11,206	11,545	--	22,751
CLOSED CONIFEROUS FOREST, SHORT STANDS-BLACK SPRUCE:						
SAWTIMBER	--	--	--	--	--	--
POLETIMBER	--	11,546	--	--	--	11,546
SEEDLING AND SAPLING	112,925	11,545	5,773	5,773	--	136,016
NONSTOCKED AREAS	51,758	--	20,276	--	--	72,034
TOTAL	164,683	23,091	26,049	5,773	--	219,596
CLOSED CONIFEROUS FOREST, TALL STANDS-BLACK SPRUCE:						
SAWTIMBER	--	--	--	--	--	--
POLETIMBER	--	5,773	--	--	--	5,773
SEEDLING AND SAPLING	--	5,772	--	--	--	5,772
NONSTOCKED AREAS	--	--	--	--	--	--
TOTAL	--	11,545	--	--	--	11,545
CLOSED DECIDUOUS FOREST, YOUNG STANDS-DECIDUOUS/MIXED:						
SAWTIMBER	5,773	--	--	11,545	--	17,318
POLETIMBER	--	5,773	11,205	5,772	--	22,750
SEEDLING AND SAPLING	--	11,546	5,773	5,773	5,773	28,865
NONSTOCKED AREAS	--	5,772	--	--	--	5,772
TOTAL	5,773	23,091	16,978	23,090	5,773	74,705
CLOSED DECIDUOUS FOREST, MEDIUM AGE STANDS-DECIDUOUS/MIXED:						
SAWTIMBER	--	28,524	5,773	46,182	--	80,479
POLETIMBER	5,772	5,772	28,863	46,182	11,546	98,135
SEEDLING AND SAPLING	--	--	--	5,773	--	5,773
NONSTOCKED AREAS	--	--	--	--	--	--
TOTAL	5,772	34,296	34,636	98,137	11,546	184,387
CLOSED DECIDUOUS FOREST, OLD STANDS-DECIDUOUS/MIXED:						
SAWTIMBER	--	--	5,773	45,842	--	51,615
POLETIMBER	--	--	5,772	11,545	--	17,317
SEEDLING AND SAPLING	--	--	--	--	--	--
NONSTOCKED AREAS	--	--	--	--	--	--
TOTAL	--	--	11,545	57,387	--	68,932
OPEN CONIFEROUS FOREST, SHORT STANDS-WHITE SPRUCE:						
SAWTIMBER	--	--	--	--	--	--
POLETIMBER	--	--	--	11,205	--	11,205
SEEDLING AND SAPLING	--	11,206	--	--	--	11,206
NONSTOCKED AREAS	--	--	11,206	5,773	--	16,979
TOTAL	--	11,206	11,206	16,978	--	39,390
ALL CLASSES	176,228	103,229	111,620	212,910	17,319	621,306

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 3--AREA OF FOREST LAND BY FOREST TYPE, STAND SIZE CLASS, AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE AND STAND SIZE CLASS	SITE CLASS (CUBIC FEET) 1/ 1-9	10-14	15-19	20-49	50-84	ALL CLASSES
			ACRES			
BLACK SPRUCE:						
SAWTIMBER	5,773	--	--	--	--	5,773
POLETIMBER	--	17,318	11,545	5,773	--	34,636
SEEDLING AND SAPLING	112,925	40,069	5,773	5,772	--	164,539
NONSTOCKED AREAS	51,757	--	20,276	--	--	72,033
TOTAL	170,455	57,387	37,594	11,545	--	276,981
WHITE SPRUCE:						
SAWTIMBER	--	5,773	11,206	--	--	16,979
POLETIMBER	--	--	--	--	--	--
SEEDLING AND SAPLING	--	--	--	--	--	--
NONSTOCKED AREAS	--	--	--	5,773	--	5,773
TOTAL	--	5,773	11,206	5,773	--	22,752
COTTONWOOD:						
SAWTIMBER	--	--	--	--	--	--
POLETIMBER	--	--	--	--	--	--
SEEDLING AND SAPLING	--	--	--	--	--	--
NONSTOCKED AREAS	--	--	--	--	--	--
TOTAL	--	--	--	--	--	--
ASPEN:						
SAWTIMBER	--	--	--	--	--	--
POLETIMBER	--	--	--	11,545	--	11,545
SEEDLING AND SAPLING	--	--	--	--	--	--
NONSTOCKED AREAS	--	--	--	--	--	--
TOTAL	--	--	--	11,545	--	11,545
BIRCH:						
SAWTIMBER	--	22,751	11,546	103,569	--	137,866
POLETIMBER	5,773	11,545	34,296	57,387	11,546	120,547
SEEDLING AND SAPLING	--	--	5,773	17,318	5,773	28,864
NONSTOCKED AREAS	--	5,773	11,205	5,773	--	22,751
TOTAL	5,773	40,069	62,820	184,047	17,319	310,028
ALL TYPES AND CLASSES	176,228	103,229	111,620	212,910	17,319	621,306

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 4--AREA OF TIMBERLAND BY CUBIC-FOOT STAND VOLUME CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

STAND VOLUME CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
CUBIC FEET PER ACRE			*ACRES*			
0-299	--	5,772	--	--	16,978	22,750
300-799	11,545	--	--	--	51,955	63,500
800-1,499	--	--	--	11,546	80,818	92,364
1,500-2,199	--	--	--	--	51,615	51,615
ALL CLASSES	11,545	5,772	--	11,546	201,366	230,229

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 5--AREA OF TIMBERLAND BY STAND VOLUME CLASS, INTERNATIONAL 1/4-INCH RULE, AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

STAND VOLUME CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
BOARD FEET, INTERNATIONAL 1/4-INCH RULE			*ACRES*			
0-299	5,773	--	--	5,773	34,636	46,182
300-799	--	--	--	5,773	28,524	34,297
800-1,499	5,773	--	--	--	17,318	23,091
1,500-2,199	--	5,772	--	--	11,546	17,318
2,200-2,999	--	--	--	--	34,636	34,636
3,000-4,999	--	--	--	--	28,864	28,864
5,000-6,999	--	--	--	--	34,296	34,296
7,000 AND OVER	--	--	--	--	11,545	11,545
ALL CLASSES	11,546	5,772	--	11,546	201,365	230,229

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 6--AREA OF TIMBERLAND BY CUBIC-FOOT STAND VOLUME CLASS AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

STAND VOLUME CLASS	SITE CLASS (CUBIC FEET) 1/ 20-49	50-84	85-119	ALL CLASSES
CUBIC FEET		*ACRES*		
0-299	11,205	--	--	11,205
300-799	51,955	11,545	--	63,500
800-1,499	86,591	5,773	--	92,364
1,500-2,199	51,615	--	--	51,615
2,200 AND OVER	--	--	--	--
UNCLASSIFIED	11,545	--	--	11,545
ALL CLASSES	212,911	17,318	--	230,229

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 7--AREA OF TIMBERLAND BY AREA CONDITION CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

AREA CONDITION CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
			ACRES			
10 and 20	--	--	--	--	--	--
30 and 40	--	--	--	--	--	--
50	5,773	--	--	11,546	98,136	115,455
60	--	--	--	--	74,705	74,705
70	5,772	5,773	--	--	28,524	40,069
ALL CLASSES	11,545	5,773	--	11,546	201,365	230,229

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 8--NUMBER OF GROWING STOCK TREES ON TIMBERLAND BY DIAMETER CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
INCHES AT BREAST HEIGHT				*THOUSAND TREES*					
1.0-2.9	4,329	8,486	12,815	6,225	--	--	--	6,225	19,040
3.0-4.9	2,078	3,810	5,888	14,028	--	693	--	14,721	20,609
5.0-6.9	2,295	1,447	3,742	8,714	--	1,582	--	10,296	14,038
7.0-8.9	1,924	575	2,499	5,094	--	541	--	5,636	8,133
9.0-10.9	1,140	--	1,140	2,890	--	368	--	3,259	4,398
11.0-12.9	845	--	845	2,125	28	57	--	2,210	3,055
13.0-14.9	122	--	122	1,060	--	43	--	1,104	1,225
15.0-16.9	71	--	71	558	15	17	18	608	679
17.0-18.9	14	--	14	213	--	--	--	213	228
19.0-20.9	11	--	11	65	--	--	--	65	76
21.0-22.9	--	--	--	18	8	--	--	27	27
23.0-24.9	--	--	--	7	--	--	--	7	7
25.0 AND LARGER	--	--	--	--	--	--	8	8	8
ALL CLASSES	12,829	14,318	27,147	40,997	51	3,301	26	44,379	71,522

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 9--NUMBER OF ROUGH TREES ON TIMBERLAND BY DIAMETER CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
INCHES AT BREAST HEIGHT				*THOUSAND TREES*					
1.0-2.9	3,117	3,810	6,927	6,408	--	520	--	6,928	13,855
3.0-4.9	1,039	1,039	2,078	2,078	--	866	--	2,944	5,022
5.0-6.9	192	235	427	716	--	135	--	851	1,278
7.0-8.9	--	159	159	384	--	--	--	384	543
9.0-10.9	--	--	--	219	--	--	--	219	219
11.0-12.9	--	--	--	91	--	--	--	91	91
13.0-14.9	--	--	--	90	--	--	--	90	90
15.0-16.9	--	--	--	35	--	--	--	35	35
17.0-18.9	--	--	--	14	--	--	--	14	14
19.0-20.9	--	--	--	11	--	--	--	11	11
21.0-22.9	--	--	--	17	--	--	--	17	17
23.0-24.9	--	--	--	--	--	--	--	--	--
25.0 AND LARGER	--	--	--	--	--	--	2	2	2
ALL CLASSES	4,348	5,243	9,591	10,063	--	1,521	2	11,586	21,177

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 10--NUMBER OF ROTTEN TREES ON TIMBERLAND BY DIAMETER CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
DIAMETER AT BREAST HEIGHT				*THOUSAND TREES*					
1.0-2.9	--	--	--	866	--	--	--	866	866
3.0-4.9	--	173	173	173	--	--	--	173	346
5.0-6.9	--	--	--	122	--	118	--	239	239
7.0-8.9	--	--	--	153	--	--	--	153	153
9.0-10.9	--	--	--	297	--	--	--	297	297
11.0-12.9	--	--	--	351	--	--	--	351	351
13.0-14.9	--	--	--	127	--	--	--	127	127
15.0-16.9	--	--	--	34	--	--	--	34	34
17.0-18.9	--	--	--	29	--	--	--	29	29
19.0-20.9	--	--	--	21	--	--	--	21	21
21.0-22.9	--	--	--	--	--	--	--	--	--
23.0-24.9	--	--	--	--	--	--	--	--	--
25.0 AND LARGER	--	--	--	7	--	7	--	13	13
ALL CLASSES	--	173	173	2,180	--	124	--	2,304	2,477

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 11--NUMBER OF LIVE TREES ON TIMBERLAND BY DIAMETER CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
DIAMETER AT BREAST HEIGHT				*THOUSAND TREES*					
1.0-2.9	7,447	12,296	19,743	13,498	--	520	--	14,018	33,760
3.0-4.9	3,117	5,022	8,140	16,279	--	1,559	--	17,838	25,977
5.0-6.9	2,487	1,682	4,169	9,552	--	1,834	--	11,386	15,555
7.0-8.9	1,924	734	2,658	5,630	--	541	--	6,171	8,828
9.0-10.9	1,140	--	1,140	3,406	--	368	--	3,773	4,914
11.0-12.9	845	--	845	2,568	28	57	--	2,653	3,498
13.0-14.9	122	--	122	1,277	--	43	--	1,320	1,442
15.0-16.9	71	--	71	627	15	17	18	678	748
17.0-18.9	14	--	14	256	--	--	--	256	271
19.0-20.9	11	--	11	97	--	--	--	97	109
21.0-22.9	--	--	--	36	8	--	--	44	44
23.0-24.9	--	--	--	7	--	--	--	7	7
25.0 AND LARGER	--	--	--	7	--	7	10	23	23
ALL CLASSES	17,177	19,734	36,911	53,240	52	4,946	28	58,265	95,176

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 12--NET VOLUME OF GROWING STOCK BY FOREST TYPE AND LAND CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	TIMBERLAND	OTHER FOREST LAND, OPERABLE	OTHER FOREST LAND, INOPERABLE	TOTAL FOREST LAND	NONFOREST LAND	ALL CLASSES
			THOUSAND CUBIC FEET			
BLACK SPRUCE	6,452	11,185	23,557	41,194	--	41,194
WHITE SPRUCE	1,527	7,125	4,196	12,848	--	12,848
COTTONWOOD	--	--	--	--	--	--
ASPEN	12,076	--	--	12,076	--	12,076
BIRCH	211,860	61,202	19,916	292,978	--	292,978
UNCLASSIFIED	--	--	--	--	1,255	1,255
ALL TYPES	231,915	79,512	47,668	359,095	1,255	360,351

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 13--NET VOLUME OF SAWTIMBER BY FOREST TYPE AND LAND CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	TIMBERLAND	OTHER FOREST LAND, OPERABLE	OTHER FOREST LAND, INOPERABLE	TOTAL FOREST LAND	NONFOREST LAND	ALL CLASSES
			THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE			
BLACK SPRUCE	6,058	17,521	29,132	52,711	--	52,711
WHITE SPRUCE	8,894	20,370	21,874	51,138	--	51,138
COTTONWOOD	--	--	--	--	--	--
ASPEN	3,424	--	--	3,424	--	3,424
BIRCH	545,679	147,873	11,924	705,476	--	705,476
UNCLASSIFIED	--	--	--	--	9,420	9,420
ALL TYPES	564,055	185,764	62,930	812,749	9,420	822,169

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 14--NET VOLUME OF GROWING STOCK ON TIMBERLAND BY DIAMETER CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
INCHES AT BREAST HEIGHT			*THOUSAND CUBIC FEET*			
5.0-6.9	3,216	--	--	3,239	30,344	36,798
7.0-8.9	1,978	--	--	4,084	40,682	46,744
9.0-10.9	--	--	--	4,414	42,480	46,893
11.0-12.9	517	497	--	340	43,984	45,337
13.0-14.9	551	249	--	--	25,017	25,818
15.0-16.9	--	--	--	--	18,286	18,286
17.0-18.9	191	--	--	--	6,233	6,424
19.0-20.9	--	507	--	--	2,646	3,153
21.0-22.9	--	--	--	--	1,055	1,055
23.0-24.9	--	--	--	--	488	488
25.0 AND LARGER	--	274	--	--	645	919
ALL CLASSES	6,452	1,527	--	12,076	211,860	231,915

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 15--NET VOLUME OF SAWTIMBER ON TIMBERLAND BY DIAMETER CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
INCHES AT BREAST HEIGHT			*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*			
9.0-10.9	--	--	--	2,588	63,671	66,259
11.0-12.9	2,431	2,756	--	836	204,306	210,330
13.0-14.9	2,735	1,401	--	--	121,242	125,378
15.0-16.9	--	--	--	--	95,038	95,038
17.0-18.9	892	--	--	--	34,151	35,043
19.0-20.9	--	2,904	--	--	13,950	16,854
21.0-22.9	--	--	--	--	5,719	5,719
23.0-24.9	--	--	--	--	2,769	2,769
25.0 AND LARGER	--	1,833	--	--	4,832	6,665
ALL CLASSES	6,058	8,894	--	3,424	545,679	564,055

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 16--NET VOLUME OF GROWING STOCK ON TIMBERLAND BY DIAMETER CLASS AND CUBIC-FOOT STAND VOLUME CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	STAND VOLUME CLASS (CUBIC FEET PER ACRE)					
	0-299	300-799	800-1,499	1,500-2,199	2,200 AND OVER	ALL CLASSES
INCHES AT BREAST HEIGHT	*THOUSAND CUBIC FEET*					
5.0-6.9	1,464	10,648	15,850	8,836	--	36,798
7.0-8.9	--	8,203	26,179	12,362	--	46,744
9.0-10.9	--	5,393	22,932	18,569	--	46,893
11.0-12.9	893	4,127	16,843	23,475	--	45,337
13.0-14.9	622	3,804	7,499	13,892	--	25,818
15.0-16.9	--	1,886	10,309	6,092	--	18,286
17.0-18.9	--	937	2,809	2,677	--	6,424
19.0-20.9	507	495	725	1,426	--	3,153
21.0-22.9	--	--	570	485	--	1,055
23.0-24.9	--	488	--	--	--	488
25.0 AND LARGER	919	--	--	--	--	919
ALL CLASSES	4,405	35,980	103,715	87,815	--	231,915

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 17--NET VOLUME OF TIMBER ON TIMBERLAND BY TIMBER CLASS AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

TIMBER CLASS	SITE CLASS (CUBIC FEET) 1/ 20-49	50-84	85-119	ALL CLASSES
	THOUSAND CUBIC FEET			
SAWTIMBER TREES:				
SAW-LOG PORTION	95,156	--	--	95,156
UPPER STEM PORTION	18,192	--	--	18,192
TOTAL	113,348	--	--	113,348
POLETIMBER TREES	102,723	15,844	--	118,567
ALL GROWING STOCK	216,071	15,844	--	231,915
ROUGH TREES:				
SAWTIMBER	3,605	--	--	3,605
POLETIMBER	7,137	242	--	7,379
TOTAL	10,741	242	--	10,984
ROTTEN TREES:				
SAWTIMBER	1,953	--	--	1,953
POLETIMBER	835	62	--	896
TOTAL	2,787	62	--	2,849
SALVABLE DEAD TREES:				
SAWTIMBER	1,336	--	--	1,336
POLETIMBER	735	--	--	735
TOTAL	2,070	--	--	2,070
ALL CLASSES	231,670	16,148	--	247,818

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 18--NET VOLUME OF TIMBER ON TIMBERLAND BY TIMBER CLASS AND DIAMETER CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

TIMBER CLASS	DIAMETER CLASS (INCHES AT BREAST HEIGHT) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0 AND LARGER	ALL CLASSES
	THOUSAND CUBIC FEET											
SAWTIMBER TREES:												
SAW-LOG PORTION	--	--	10,314	35,308	21,906	16,416	5,898	2,950	1,002	461	902	95,156
UPPER STEM PORTION	--	--	1,555	10,029	3,911	1,870	525	204	52	28	17	18,192
TOTAL	--	--	11,869	45,337	25,818	18,286	6,424	3,153	1,055	488	919	113,348
POLETIMBER TREES	36,798	46,744	35,025	--	--	--	--	--	--	--	--	118,567
ALL GROWING STOCK	36,798	46,744	46,894	45,337	25,818	18,286	6,424	3,153	1,055	488	919	231,915
ROUGH TREES:												
SAWTIMBER	--	--	--	513	781	777	543	139	768	--	83	3,605
POLETIMBER	2,983	2,725	1,671	--	--	--	--	--	--	--	--	7,379
TOTAL	2,983	2,725	1,671	513	781	777	543	139	768	--	83	10,984
ROTTEN TREES:												
SAWTIMBER	--	--	--	1,117	204	97	146	158	--	--	230	1,953
POLETIMBER	172	145	579	--	--	--	--	--	--	--	--	896
TOTAL	172	145	579	1,117	204	97	146	158	--	--	230	2,849
SALVABLE DEAD TREES:												
SAWTIMBER	--	--	1,218	118	--	--	--	--	--	--	--	1,336
POLETIMBER	735	--	--	--	--	--	--	--	--	--	--	735
TOTAL	735	--	1,218	118	--	--	--	--	--	--	--	2,070
ALL CLASSES	40,688	49,614	50,361	47,086	26,803	19,161	7,113	3,451	1,822	488	1,232	247,818

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 19--NET VOLUME OF TIMBER ON TIMBERLAND BY TIMBER CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

TIMBER CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
	THOUSAND CUBIC FEET								
SAWTIMBER TREES:									
SAW-LOG PORTION	30,146	--	30,146	59,782	1,397	2,520	1,312	65,011	95,156
UPPER STEM PORTION	2,877	--	2,877	14,705	225	310	75	15,315	18,192
TOTAL	33,023	--	33,023	74,487	1,622	2,830	1,387	80,326	113,348
POLETIMBER TREES	15,746	5,632	21,377	85,747	--	11,443	--	97,189	118,567
ALL GROWING STOCK	48,769	5,632	54,400	160,234	1,622	14,273	1,387	177,515	231,915
ROUGH TREES:									
SAWTIMBER	--	--	--	3,522	--	--	83	3,605	3,605
POLETIMBER	366	1,211	1,577	5,523	--	279	--	5,802	7,379
TOTAL	366	1,211	1,577	9,045	--	279	83	9,407	10,984
ROTTEN TREES:									
SAWTIMBER	--	--	--	1,723	--	230	--	1,953	1,953
POLETIMBER	--	--	--	835	--	62	--	896	896
TOTAL	--	--	--	2,557	--	292	--	2,849	2,849
SALVABLE DEAD TREES:									
SAWTIMBER	1,218	--	1,218	118	--	--	--	118	1,336
POLETIMBER	578	--	578	156	--	--	--	156	735
TOTAL	1,796	--	1,796	274	--	--	--	274	2,070
ALL CLASSES	50,931	6,843	57,773	172,110	1,622	14,843	1,470	190,045	247,818

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 20--NET VOLUME OF GROWING STOCK ON TIMBERLAND BY BASAL AREA CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

BASAL AREA CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
SQUARE FEET PER ACRE	*THOUSAND CUBIC FEET*								
1-19	893	--	893	2,594	--	--	919	3,513	4,406
20-39	2,246	2,018	4,264	13,088	--	3,111	--	16,199	20,464
40-59	7,965	1,533	9,498	31,906	535	--	--	32,441	41,939
60-79	9,168	495	9,663	36,447	--	8,671	--	45,118	54,782
80-99	27,955	1,586	29,541	67,674	1,087	2,490	468	71,719	101,260
100-119	541	--	541	8,524	--	--	--	8,524	9,066
120 AND OVER	--	--	--	--	--	--	--	--	--
ALL CLASSES	48,768	5,632	54,400	160,234	1,622	14,272	1,387	177,515	231,915

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 21--NET VOLUME OF SAWTIMBER ON TIMBERLAND BY BASAL AREA CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

BASAL AREA CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
SQUARE FEET PER ACRE	*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*								
1-19	5,107	--	5,107	5,227	--	--	6,665	11,892	16,999
20-39	9,276	--	9,276	27,151	--	--	--	27,151	36,428
40-59	25,647	--	25,647	55,171	2,100	--	--	57,271	82,918
60-79	21,621	--	21,621	84,286	--	836	--	85,122	106,794
80-99	120,956	--	120,956	176,688	6,154	11,002	2,170	196,015	316,971
100-119	2,997	--	2,997	999	--	--	--	999	3,996
120 AND OVER	--	--	--	--	--	--	--	--	--
ALL CLASSES	185,604	--	185,604	349,524	8,254	11,838	8,835	378,451	564,055

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 22--NET ANNUAL GROWTH OF GROWING STOCK ON TIMBERLAND BY FOREST TYPE AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	SITE CLASS (CUBIC FEET) 1/ 20-49	50-84	85-119	ALL CLASSES
	THOUSAND CUBIC FEET			
BLACK SPRUCE	647	--	--	647
WHITE SPRUCE	21	--	--	21
COTTONWOOD	-	--	--	--
ASPEN	673	--	--	673
BIRCH	5,231	864	--	6,095
ALL TYPES	6,572	864	--	7,436

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 23--NET ANNUAL GROWTH OF SAWTIMBER ON TIMBERLAND BY FOREST TYPE AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	SITE CLASS (CUBIC FEET) 1/ 20-49	50-84	85-119	ALL CLASSES
	THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE			
BLACK SPRUCE	111	--	--	111
WHITE SPRUCE	131	--	--	131
COTTONWOOD	-	--	--	--
ASPEN	103	--	--	103
BIRCH	19,899	--	--	19,899
ALL TYPES	20,245	--	--	20,245

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 24--NET ANNUAL GROWTH OF GROWING STOCK ON TIMBERLAND BY DIAMETER CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
INCHES AT BREAST HEIGHT			*THOUSAND CUBIC FEET*			
5.0-6.9	572	--	--	419	2,812	3,802
7.0-8.9	58	--	--	105	1,220	1,384
9.0-10.9	--	--	--	140	874	1,015
11.0-12.9	8	10	--	9	613	640
13.0-14.9	7	3	--	--	287	298
15.0-16.9	--	--	--	--	243	243
17.0-18.9	2	--	--	--	1/ -3	-1
19.0-20.9	--	5	--	--	27	31
21.0-22.9	--	--	--	--	11	11
23.0-24.9	--	--	--	--	4	4
25.0 AND LARGER	--	3	--	--	7	10
ALL CLASSES	647	21	--	673	6,095	7,436

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Negative net annual growth indicates that annual mortality exceeded gross annual growth.

TABLE 25--NET ANNUAL GROWTH OF SAWTIMBER ON TIMBERLAND BY DIAMETER CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
INCHES AT BREAST HEIGHT			*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*			
9.0-10.9	--	--	--	75	1,660	1,735
11.0-12.9	53	57	--	28	14,360	14,498
13.0-14.9	47	25	--	--	1,991	2,062
15.0-16.9	--	--	--	--	1,538	1,538
17.0-18.9	12	--	--	--	36	48
19.0-20.9	--	29	--	--	160	190
21.0-22.9	--	--	--	--	77	77
23.0-24.9	--	--	--	--	23	23
25.0 AND LARGER	--	20	--	--	55	75
ALL CLASSES	111	131	--	103	19,899	20,245

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 26--NET ANNUAL GROWTH OF GROWING STOCK ON TIMBERLAND BY BASAL AREA CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

BASAL AREA CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
SQUARE FEET PER ACRE	*THOUSAND CUBIC FEET*								
1-19	19	--	19	90	--	--	10	100	119
20-39	1/ -35	52	17	607	--	585	--	1,192	1,209
40-59	249	40	289	1,115	17	--	--	1,131	1,421
60-79	91	12	103	1,085	--	520	--	1,604	1,708
80-99	735	36	771	1,455	19	56	11	1,541	2,311
100-119	12	--	12	657	--	--	--	657	668
120 AND OVER	--	--	--	--	--	--	--	--	--
ALL CLASSES	1,071	140	1,211	5,008	36	1,161	21	6,225	7,436

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Negative net annual growth indicates that annual mortality exceeded gross annual growth.

TABLE 27--NET ANNUAL GROWTH OF SAWTIMBER ON TIMBERLAND BY BASAL AREA CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

BASAL AREA CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
SQUARE FEET PER ACRE	*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*								
1-19	102	--	102	71	--	--	75	146	247
20-39	1/ -352	--	-352	460	--	--	--	460	108
40-59	607	--	607	107	109	--	--	216	823
60-79	461	--	461	2,599	--	28	--	2,627	3,087
80-99	2,657	--	2,657	12,739	135	295	68	13,236	15,893
100-119	70	--	70	16	--	--	--	16	86
120 AND OVER	--	--	--	--	--	--	--	--	--
ALL CLASSES	3,545	--	3,545	15,991	244	323	142	16,700	20,245

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Negative net annual growth indicates that annual mortality exceeded gross annual growth.

TABLE 28--NET ANNUAL GROWTH OF GROWING STOCK ON TIMBERLAND BY DIAMETER CLASS AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

	SITE CLASS (CUBIC FEET) 1/			
DIAMETER CLASS	20-49	50-84	85-119	ALL CLASSES
INCHES AT BREAST HEIGHT		*THOUSAND CUBIC FEET*		
5.0-6.9	3,182	621	--	3,802
7.0-8.9	1,219	164	--	1,384
9.0-10.9	936	79	--	1,015
11.0-12.9	640	--	--	640
13.0-14.9	298	--	--	298
15.0-16.9	243	--	--	243
17.0-18.9	2/ -1	--	--	-1
19.0-20.9	31	--	--	31
21.0-22.9	11	--	--	11
23.0-24.9	4	--	--	4
25.0 AND LARGER	10	--	--	10
ALL CLASSES	6,572	864	--	7,436

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

2/ Negative net annual growth indicates that annual mortality exceeded gross annual growth.

TABLE 29--NET ANNUAL GROWTH OF SAWTIMBER ON TIMBERLAND BY DIAMETER CLASS AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	SITE CLASS (CUBIC FEET) 1/ 20-49	50-84	85-119	ALL CLASSES
INCHES AT BREAST HEIGHT	*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*			
9.0-10.9	1,735	--	--	1,735
11.0-12.9	14,498	--	--	14,498
13.0-14.9	2,062	--	--	2,062
15.0-16.9	1,538	--	--	1,538
17.0-18.9	48	--	--	48
19.0-20.9	190	--	--	190
21.0-22.9	77	--	--	77
23.0-24.9	23	--	--	23
25.0 AND LARGER	75	--	--	75
ALL CLASSES	20,245	--	--	20,245

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 30--ANNUAL MORTALITY OF GROWING STOCK ON TIMBERLAND BY FOREST TYPE AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	SITE CLASS (CUBIC FEET) 1/			ALL CLASSES
	20-49	50-84	85-119	
	THOUSAND CUBIC FEET			
BLACK SPRUCE	--	--	--	--
WHITE SPRUCE	--	--	--	--
COTTONWOOD	--	--	--	--
ASPEN	62	--	--	62
BIRCH	680	--	--	680
ALL TYPES	742	--	--	742

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 31--ANNUAL MORTALITY OF SAWTIMBER ON TIMBERLAND BY FOREST TYPE AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	SITE CLASS (CUBIC FEET) 1/ 20-49	50-84	85-119	ALL CLASSES
	THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE			
BLACK SPRUCE	--	--	--	--
WHITE SPRUCE	--	--	--	--
COTTONWOOD	--	--	--	--
ASPEN	--	--	--	--
BIRCH	1,668	--	--	1,668
ALL TYPES	1,668	--	--	1,668

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 32--ANNUAL MORTALITY OF GROWING STOCK ON TIMBERLAND BY DIAMETER CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
INCHES AT BREAST HEIGHT			*THOUSAND CUBIC FEET*			
5.0-6.9	--	--	--	--	149	149
7.0-8.9	--	--	--	62	66	128
9.0-10.9	--	--	--	--	93	93
11.0-12.9	--	--	--	--	215	215
13.0-14.9	--	--	--	--	86	86
15.0-16.9	--	--	--	--	--	--
17.0-18.9	--	--	--	--	70	--
19.0-20.9	--	--	--	--	--	--
21.0-22.9	--	--	--	--	--	--
23.0-24.9	--	--	--	--	--	--
25.0 AND LARGER	--	--	--	--	--	--
ALL CLASSES	--	--	--	62	680	742

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 33--ANNUAL MORTALITY OF SAWTIMBER ON TIMBERLAND BY DIAMETER CLASS AND FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	BLACK SPRUCE	WHITE SPRUCE	COTTONWOOD	ASPEN	BIRCH	ALL TYPES
INCHES AT BREAST HEIGHT	*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*					
9.0-10.9	--	--	--	--	--	--
11.0-12.9	--	--	--	--	970	970
13.0-14.9	--	--	--	--	294	294
15.0-16.9	--	--	--	--	--	--
17.0-18.9	--	--	--	--	404	404
19.0-20.9	--	--	--	--	--	--
21.0-22.9	--	--	--	--	--	--
23.0-24.9	--	--	--	--	--	--
25.0 AND LARGER	--	--	--	--	--	--
ALL CLASSES	--	--	--	--	1,668	1,668

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 34--ANNUAL MORTALITY OF GROWING STOCK ON TIMBERLAND BY BASAL AREA CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

BASAL AREA CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
SQUARE FEET PER ACRE	*THOUSAND CUBIC FEET*								
1-19	--	--	--	--	--	--	--	--	--
20-39	92	--	92	--	--	--	--	--	92
40-59	--	--	--	274	--	--	--	274	274
60-79	216	--	216	98	--	62	--	160	376
80-99	--	--	--	--	--	--	--	--	--
100-119	--	--	--	--	--	--	--	--	--
120 AND OVER	--	--	--	--	--	--	--	--	--
ALL CLASSES	307	--	307	373	--	62	--	434	742

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 35--ANNUAL MORTALITY OF SAWTIMBER ON TIMBERLAND BY BASAL AREA CLASS AND SPECIES, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

BASAL AREA CLASS	SOFTWOODS			HARDWOODS					ALL SPECIES
	WHITE SPRUCE	BLACK SPRUCE	TOTAL SOFTWOODS	PAPER BIRCH	BALSAM POPLAR	QUAKING ASPEN	BLACK COTTONWOOD	TOTAL HARDWOODS	
SQUARE FEET PER ACRE	*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*								
1-19	--	--	--	--	--	--	--	--	--
20-39	523	--	523	--	--	--	--	--	523
40-59	--	--	--	977	--	--	--	977	977
60-79	--	--	--	168	--	--	--	168	168
80-99	--	--	--	--	--	--	--	--	--
100-119	--	--	--	--	--	--	--	--	--
120 AND OVER	--	--	--	--	--	--	--	--	--
ALL CLASSES	523	--	523	1,145	--	--	--	1,145	1,668

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

TABLE 36--ANNUAL MORTALITY OF GROWING STOCK ON TIMBERLAND BY DIAMETER CLASS AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

DIAMETER CLASS	SITE CLASS (CUBIC FEET) 1/			ALL CLASSES
	20-49	50-84	85-119	
INCHES AT BREAST HEIGHT	*THOUSAND CUBIC FEET*			
5.0-6.9	149	--	--	149
7.0-8.9	128	--	--	128
9.0-10.9	93	--	--	93
11.0-12.9	215	--	--	215
13.0-14.9	86	--	--	86
15.0-16.9	--	--	--	--
17.0-18.9	70	--	--	70
19.0-20.9	--	--	--	--
21.0-22.9	--	--	--	--
23.0-24.9	--	--	--	--
25.0 AND LARGER	--	--	--	--
ALL CLASSES	742	--	--	742

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 37--ANNUAL MORTALITY OF SAWTIMBER ON TIMBERLAND BY DIAMETER CLASS AND CUBIC-FOOT SITE CLASS, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

	SITE CLASS (CUBIC FEET)1/			
DIAMETER CLASS	20-49	50-84	85-119	ALL CLASSES
INCHES AT BREAST HEIGHT	*THOUSAND BOARD FEET, INTERNATIONAL 1/4-INCH RULE*			
1.0-2.9	--	--	--	--
3.0-4.9	--	--	--	--
5.0-6.9	--	--	--	--
7.0-8.9	--	--	--	--
9.0-10.9	--	--	--	--
11.0-12.9	970	--	--	970
13.0-14.9	294	--	--	294
15.0-16.9	--	--	--	--
17.0-18.9	404	--	--	404
19.0-20.9	--	--	--	--
21.0-22.9	--	--	--	--
23.0-24.9	--	--	--	--
25.0 AND LARGER	--	--	--	--
ALL CLASSES	1,668	--	--	1,668

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Potential yield per acre, mean annual increment.

TABLE 38--NUMBER OF GROWING STOCK TREES, CUBIC-FOOT VOLUME PER ACRE, AND VOLUME PER ACRE IN INTERNATIONAL 1/4-INCH RULE ON TIMBERLAND AND ALL FOREST LAND BY FOREST TYPE, WILLOW BLOCK, SUSITNA UNIT, ALASKA, 1978

FOREST TYPE	TREES PER ACRE 1/	VOLUME PER ACRE	VOLUME PER ACRE
	NUMBER	*CUBIC FEET*	*BOARD FEET, INTERNATIONAL 1/4-INCH RULE*
TIMBERLAND:			
BLACK SPRUCE	143	559	525
WHITE SPRUCE	11	265	1,541
COTTONWOOD	--	--	--
ASPEN	238	1,046	296
BIRCH	136	1,052	2,710
ALL TIMBERLAND	138	1,007	2,450
FOREST LAND:			
BLACK SPRUCE	37	149	190
WHITE SPRUCE	58	565	2,248
COTTONWOOD	--	--	--
ASPEN	238	1,046	296
BIRCH	135	945	2,276
ALL FOREST LAND	90	578	1,308

Estimates are subject to sampling error.

Totals may be off because of rounding.

-- = no data were collected.

1/ Trees 5.0 inches in d.b.h. and larger.

Metric Equivalents

1 inch = 25.4 millimeters (mm)
1 inch = 0.0254 meter (m)
1 foot = 0.3048 meter (m)
1 mile = 1.609 kilometers (km)
1 acre = 0.4047 hectare (ha)
1 cubic foot = 0.0283 cubic meter (m^3)
1 cubic foot per acre = 0.069 97 cubic meter per hectare (m^3/ha)
20 cubic feet per acre = 1.3994 cubic meters per hectare (m^3/ha)
1 square foot basal area per acre = 0.2296 square meter per hectare (m^2/ha)

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Setzer, Theodore S.; Mead, Bert R.; Carroll, Gary L. Timber resource statistics for the Willow block, Susitna River basin multiresource inventory unit, Alaska, 1978. Resour. Bull. PNW-114. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station; 1984. 47 p.

A multiresource inventory of the Willow block, Susitna River basin inventory unit, was conducted in 1978. Statistics on forest area, timber volumes, and growth and mortality from this inventory are presented. Timberland area is estimated at 230,200 acres and net growing stock volume, mostly birch, at 231.9 million cubic feet. Net annual growth of growing stock is estimated at 7.4 million cubic feet and annual mortality at 742,000 cubic feet.

Keywords: Forest surveys, timber inventory, multiresource inventory, statistics (forest), resources (forest), Alaska (south-central), Alaska (Susitna River basin).

The **Forest Service** of the U.S. Department of Agriculture is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives — as directed by Congress — to provide increasingly greater service to a growing Nation.

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