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Forest Service

**Intermountain
Forest and Range
Experiment Station**

Resource Bulletin
INT-25

October 1981

Forest Area and Timber Resource Statistics for State and Private Lands in Bernalillo, Sandoval, and Torrance Counties, New Mexico, 1978

Dorothy G. Felt

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DOROTHY G. FELT is a Supervisory Statistical Assistant with the Resources Evaluation research work unit at the Intermountain Forest and Range Experiment Station, Ogden, Utah.

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RESEARCH SUMMARY

Presents land area, commercial timberland area, timber inventory, growth, and mortality data based on Resources Evaluation standards.

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INTRODUCTION

This resource bulletin presents the principal findings of the second forest inventory of State and private lands in Bernalillo, Sandoval, and Torrance Counties, New Mexico (fig. 1). Fieldwork began in September 1977 and was completed in November 1978. This bulletin does not note changes and trends since the Statewide inventory in 1966. The 1966 inventory did not sample these counties intensively and did not report findings at the working circle level.

The primary objective of Resources Evaluation, a continuing nationwide undertaking conducted by the USDA Forest Service, is to provide an assessment of the renewable resource situation on the Nation's forest and range lands. Fundamental to the accomplishment of this objective are the periodic State-by-State resource inventories. Originally, Resources Evaluation--formerly Forest Survey--was authorized by the McSweeney-McNary Act of 1928. The current authorization is through the Renewable Resources Research Act of 1978.

The resource inventories for the Rocky Mountain States of Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming, and western South Dakota are administered by the Intermountain Forest and Range Experiment Station with headquarters in Ogden, Utah. These inventories provide information on the extent and condition of State and privately owned forest lands, volume of timber, and rates of timber growth and mortality. These data, when combined with similar information on Federal lands, provide a basis for the formulation of forest policies and programs and for the orderly development and use of the resources.

The three-county area covered by this report is one of 11 working circles in New Mexico. Similar reports have been issued for Colfax, Santa Fe, San Miguel, and Taos-Rio Arriba Working Circles. Comparable reports will be issued as the State-wide inventory continues.

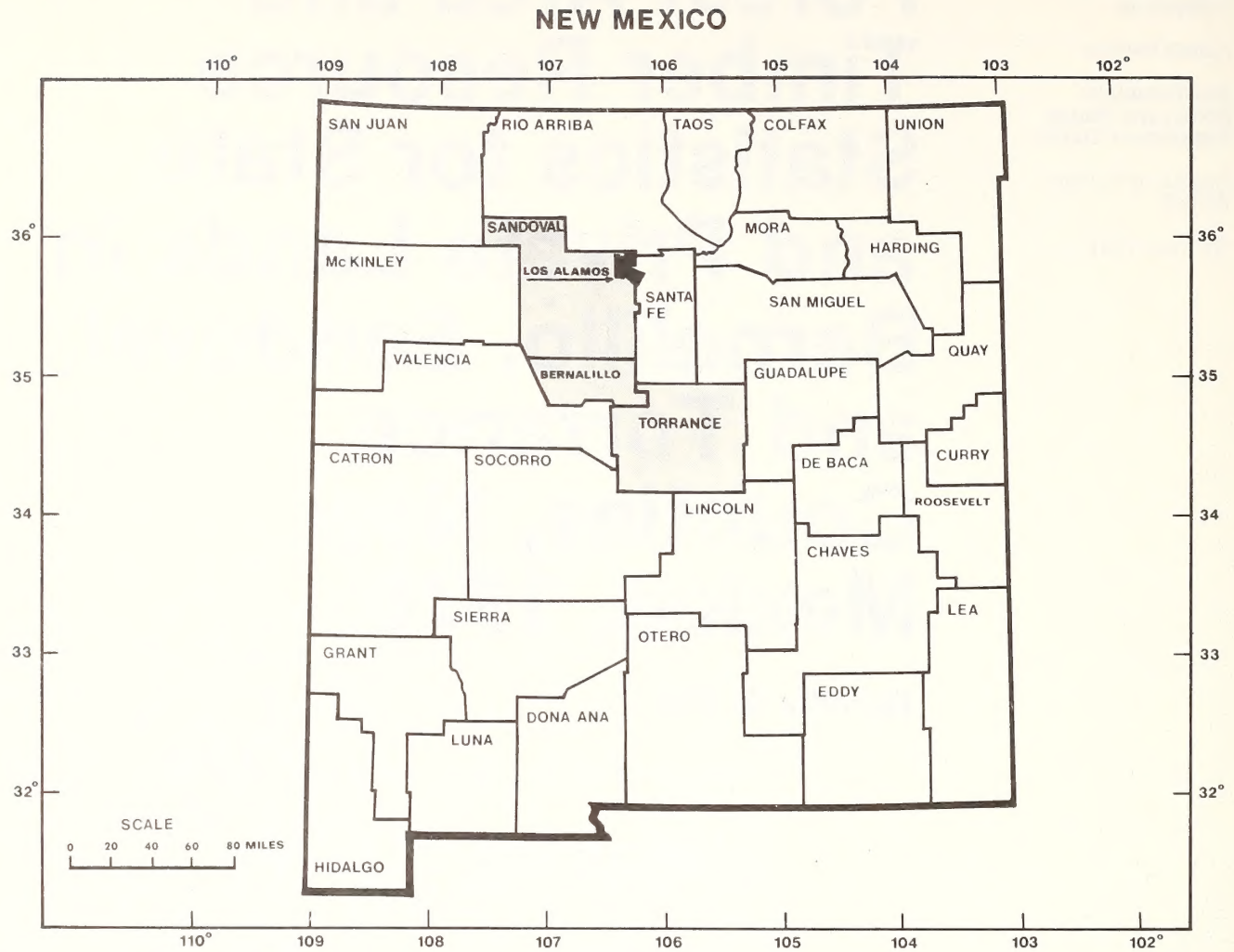

Figure 1.--Bernalillo, Sandoval, and Torrance Counties, New Mexico.

The total land area in Bernalillo, Sandoval, and Torrance Counties is 5,266,560 acres (2 131 310 hectares). The Forest Service, Bureau of Land Management, Bureau of Indian Affairs, and the National Park service together manage 2,169,649 acres (878 029 hectares), or 41 percent of this land. The remaining 3,096,911 acres (1 253 281 hectares) are in State, private, and other ownerships. THE DATA PRESENTED HERE ARE FOR STATE, PRIVATE, AND MISCELLANEOUS FEDERAL LANDS ONLY.

Highlights show the area of commercial timberland in comparison to total forest land area, and the distribution of this area by forest type, stand-size class, and site class. Discussions of the data reliability and terminology are included. These two items should be reviewed carefully when using this information.

HIGHLIGHTS

Area

- The forest land area is 692 thousand acres (280 thousand hectares), or 22 percent of the total State and private land area in Bernalillo, Sandoval, and Torrance Counties.
- Of the forest land, 82.8 thousand acres (33.5 thousand hectares), almost 12 percent, is classified as commercial timberland.
- Private ownership accounts for 82.2 thousand acres (33.3 thousand hectares), 99 percent of the commercial timberland.
- Ponderosa pine, Douglas-fir, aspen, and Engelmann spruce are the predominant types and occupy 86 percent of the commercial timberland. White fir, spruce-subalpine fir, southwestern white pine, cottonwood, and pinyon-juniper[1] cover the remaining area.
- Over 60 percent of the commercial timberland is in the 50 to 84 cubic foot productivity class, 99 percent of this is privately owned.

Inventory

- Growing stock volume amounts to 128.5 million cubic feet (3.6 million cubic meters) and sawtimber volume totals 505.2 million board feet.[2]
- Rough, rotten, and salvable dead trees comprise 10.8 million cubic feet (306 thousand cubic meters), nearly 8 percent of the total sound wood volume.
- The largest share of the total growing stock volume is made up of Douglas-fir (27 percent), aspen (23 percent), and ponderosa pine (18 percent). Engelmann spruce, white fir, southwestern white pine, subalpine fir, pinyon/juniper, and cottonwood account for the remaining volume.
- Private owners control 99 percent of both the total growing stock and the sawtimber volume.

Growth and Mortality

- Net annual growth totals 3,124 thousand cubic feet (88 thousand cubic meters). Growth and mortality were not measured for pinyon and juniper trees.
- Ninety-nine percent of the total net growth is on private lands.
- The annual mortality of 138 thousand cubic feet (4 thousand cubic meters) offsets 4 percent of the gross annual growth.

---

[1] The area occupied by pinyon-juniper forest type classified as commercial is so classified because the site index for other associated species in these stands (usually ponderosa pine or Douglas-fir) was high enough to produce 20 cubic feet per acre per year average annual growth, and nonstockable indicators were not present in sufficient quantities to lower yield capability below 20 cubic feet per acre per year. Although pinyon/juniper usually occurs on unproductive forest land, when it occurs in mixtures with other species on productive sites, it is reported in the commercial timber land statistics.

[2] International 1/4-inch rule.

HOW THE INVENTORY WAS CONDUCTED

The inventory was designed to provide reliable statistics primarily at the State and working circle levels. Procedures were as follows:

1. Initial area estimates were based on the classification of 10,383 sample points systematically placed on the latest aerial photographs available. The sample points were summarized and grouped into strata for subsequent field sampling. The photo points, adjusted to meet known land areas, were used to compute area expansion factors for the field stratum means.

2. Land classification and estimates of timber characteristics and volume were based on observations and measurements recorded at 349 ground sample locations. Sample trees were selected using a 10-point cluster which includes fixed plots (1/300 acre) for trees less than 5.0 inches d.b.h. and variable plots (40 BAF [basal area factor]) for trees 5.0 inches d.b.h. or larger.

3. Equations prepared from detailed measurements collected on standing trees throughout the Southwest were used to compute the volume and defect of individual tally trees.

4. All photo and field data were sent to Ogden, Utah, for editing and were punched onto cards and stored for machine computing, sorting, and tabulation. Final estimates were based on statistical summaries of the data.

DATA RELIABILITY

Individual cells within tables should be used with caution. Some are based on very small sample sizes, and so result in high sampling errors. The standing error percents shown in tables 1 and 2 were calculated at the 67 percent confidence level.

Table 1.--*Area of forest land in Bernalillo, Sandoval, and Torrance Counties, with percent standard error, 1978*

Item	Softwood types		Hardwood types		All types	
	Acres	Percent standard error	Acres	Percent standard error	Acres	Percent standard error
Commercial timberland	68,034	6.1	14,766	18.0	82,800	4.8
Other forest land:						
Unproductive nonreserved	574,790	2.0	3,863	38.3	578,653	2.0

Table 2.--*Net volume, net annual growth, and annual mortality of growing stock and sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, with percent standard error, 1978*

Item	Softwoods		Hardwoods		All species	
	Volume	Percent standard error	Volume	Percent standard error	Volume	Percent standard error
Net volume:						
Growing stock (M cubic feet)	99,094	7.6	29,407	18.3	128,501	7.4
Sawtimber (M board feet[1])	409,569	8.6	95,620	21.3	505,189	8.3
Net annual growth:						
Growing stock (cubic feet)	2,435,971	8.3	687,846	17.1	3,123,817	7.7
Sawtimber (board feet[1])	9,389,088	10.2	2,423,866	31.7	11,812,954	10.4
Annual mortality:						
Growing stock (cubic feet)	137,702	44.6	--	--	137,702	44.6
Sawtimber (board feet[1])	685,120	46.7	--	--	685,120	46.7

[1]International 1/4-inch rule.

TERMINOLOGY AND DATA TABLES

The following section contains definitions that are relevant to the timber resource data presented in this resource bulletin. Forest area and timber resource data for Bernalillo, Sandoval, and Torrance Counties in New Mexico are displayed in tables 3 through 23.

TERMINOLOGY

Land

Bureau of the Census.--Area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, estuaries, and canals less than one-eighth of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area. Includes noncensus water. See definition below.

Water

Census water.--As defined by the Bureau of the Census, streams, sloughs, estuaries, and canals more than one-eighth of a statute mile in width; and lakes, reservoirs, and ponds more than 40 acres in area.

Noncensus water.--The same as defined by the Bureau of the Census, except minimum width of streams, sloughs, estuaries, and canals is 120 feet and minimum size of lakes, reservoirs, and ponds is 1 acre.

Land Use Classes

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

Commercial timberland.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Areas qualifying have the capability of producing in excess of 20 cubic feet per acre per year of industrial wood under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.)

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial timberland, but withdrawn from timber utilization through statute, administrative designation, or exclusive use for Christmas tree production.

Other forest land.--Forest land incapable of producing 20 cubic feet per acre of industrial wood under management, because of adverse site conditions; includes both reserved and nonreserved forest land.

Nonforest land.--Land that has never supported forests and lands formerly forested where use for timber management is precluded by development for other uses.

Public Ownership Classes

National Forest lands.--Federal lands legally designated as National Forest or purchase units and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Bureau of Land Management lands.--Federal lands administered by the Bureau of Land Management.

Indian lands.--Tribal lands held in fee by the Federal Government, but administered for Indian tribal groups and Indian trust allotments.

State lands.--Lands owned by States, or lands leased to these governmental units for 50 years or more.

Private and Other

County and municipal lands.--Lands owned by counties and local public agencies or municipalities, or lands leased to these governmental units for 50 years or more.

Forest industry lands.--Lands owned by companies or by individuals operating wood-processing plants.

Farmer-owned lands.--Lands owned by farm operators. (These exclude lands leased by farm operators from such nonfarm owners as railroad companies and States.)

Miscellaneous Federal lands.--Federal lands other than the following: (1) National Forest lands; (2) lands administered by the Bureau of Land Management; and (3) Indian lands.

Miscellaneous private lands.--Privately owned lands other than forest industry and farmer-owned lands.

Forest Type and Tree Species

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

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

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

Softwoods.--Coniferous trees, usually evergreen, having needles or scalelike leaves.

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Area Condition Classes

Stocking.--Stocking is an effort to express the extent to which growing space is effectively utilized by present or potential growing stock trees of commercial species. "Percent of stocking" is synonymous with "percentage of growing space occupied" and means the ratio of actual stocking to full stocking for comparable sites and stands. Basal area is used as a basis for measuring stocking.

"Stocking percentages" express current area occupancy in relation to specified standards for full stocking based on number, size, and spacing of trees considered necessary to fully utilize the forest land.

Full utilization of the site is assumed to occur over a range of basal area. As an interim guide, 60 percent of the normal yield table values has been used to establish the lower limit of this range which represents full-site occupancy. This is called 100-percent stocking. The upper limit of full stocking has been set at 132 percent. Sites with less than 100-percent stocking represent understocking with less than full-site occupancy. Overstocking is characterized by sites with over 133-percent stocking.

Class 10.--Areas fully stocked (100 to 132 percent) with desirable trees and not overstocked (133 percent or more).

Class 20.--Areas fully stocked with desirable trees, but overstocked with all live trees.

Class 30.--Areas medium to fully stocked (60 to 99 percent) with desirable trees and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40.--Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50.--Areas poorly stocked (16.7 to 59 percent) with desirable trees, but fully stocked with growing stock trees.

Class 60.--Areas poorly stocked with desirable trees, but with medium to full stocking of growing stock trees.

Class 70.--Areas nonstocked (less than 16.7 percent) or poorly stocked with desirable trees, and poorly stocked with growing stock trees.

Class 80.--Low-risk old-growth stands.

Class 90.--High-risk old-growth stands.

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

Class of Timber

Growing stock trees.--Live trees of commercial species qualifying as desirable or acceptable trees. (Excludes rough, rotten, and dead trees.)

Desirable trees.--Growing stock trees (1) having no serious defect in quality limiting present or prospective use for timber products; (2) of relatively high vigor; and (3) containing no pathogens that may result in death or serious deterioration before rotation age.

Acceptable trees.--Growing stock trees meeting specified standards of size and quality, but not qualifying as desirable trees.

Rough trees.--(1) Live trees that do not contain at least one 12-foot saw log or two noncontiguous saw logs, each 8 feet long or longer, now or prospectively, and/or do not meet Rocky Mountain regional specifications for freedom from defect primarily because of roughness or poor form; and (2) all live trees of noncommercial species.

Rotten trees.--Live trees that do not contain at least one 12-foot saw log or two noncontiguous saw logs, each 8 feet long or longer, now or prospectively, and/or do not meet Rocky Mountain regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of the cull volume (cubic-foot basis) in a tree is rotten.

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Rocky Mountain regional standards.

Saw-log portion.--That part of the bole of sawtimber trees between the stump and the saw-log top. A 1-foot stump is used.

Upper-stem portion.--That part of the bole of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs, whichever occurs first.

Tree Size Classes

Seedlings.--Live trees less than 1.0 inch in diameter at breast height.

Saplings.--Trees 1.0 to 4.9 inches in diameter at breast height.

Poletimber trees.--Trees at least 5.0 inches in d.b.h., but smaller than sawtimber size.

Sawtimber trees.--Trees exceeding poletimber size. In the Intermountain States, the minimum d.b.h. for softwood sawtimber is 9.0 inches and for hardwoods, 11.0 inches.

Volume

Cull volume.--Portions of a tree's volume that are not usable for industrial wood products because of rot, form, or other defect.

Net volume.--Gross volume less deductions for cull.

Growing stock volume.--Net volume in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) outside bark. Net volume equals gross volume less deduction for rot and missing bole sections.

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

Growth and Mortality

Net annual growth.--The increase in net growing stock volume of a specified size class for a specific year. (Components of net annual growth include the increment in net volume of trees at the beginning of the specific year and surviving to its end, plus the net volume of trees reaching the size class during the year, minus the net volume of trees that died during the year, minus the net volume of trees that became rough or rotten trees during the year.)

Mortality.--Number or sound-wood volume of growing stock trees dying from natural causes during a specified period, usually annually.

Site

Site class.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood.

Site classifications are based upon the mean net annual growth of growing stock (not including thinnings or mortality loss) attainable at culmination of mean net annual growth over age. Height-age relationships are usually used as indicators of the specified volume-site class.

Stand-Size Classes

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

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

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing stock trees in which more than half of the stocking is saplings and/or seedlings.

Nonstocked land.--Commercial timberland less than 16.7 percent stocked with growing stock trees.

Table 3.--*Total land and water area in Bernalillo, Sandoval, and Torrance Counties, by ownership class, 1978*

Ownership class	Acres	Hectares
National Forest	626,010	253 338
Bureau of Land Management	619,581	250 737
National Park Service[1]	29,902	12 101
Bureau of Indian Affairs	894,156	361 853
State	394,154	159 509
Private and other	2,702,757	1 093 772
Total land area	5,266,560	2 131 310
Census water	7,872	3 186
Gross area[2]	5,274,432	2 134 496

[1]Not included with miscellaneous Federal ownership (a category of the Private and other ownership class) for purposes of clarity.

[2]U.S. Bureau of the Census, land and water area of the United States, 1970.

Table 4.--*Total land area in Bernalillo, Sandoval, and Torrance Counties, by major land class and ownership class, 1978*

Land class	Ownership class					
	State		Private[1]		Total	
	Acres	Hectares	Acres	Hectares	Acres	Hectares
Commercial timberland	599	242	82,201	33 266	82,800	33 508
Other forest land:						
Unproductive reserved	300	121	29,902	12 101	30,202	12 222
Unproductive nonreserved	99,926	40 439	478,727	193 735	578,653	234 174
Total forest land	100,825	40 802	590,830	239 102	691 655	279 904
Nonforest land	293,329	118 707	2,141,829	866 771	2,435,158	985 478
Total land area	394,154	159 509	2,732,659	1 105 873	3,126,813	1 265 382

[1]On this and all following tables, the private ownership category includes a small portion of miscellaneous Federal, and county and municipal ownership.

Table 5.--*Area of commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by forest type, stand-size class, and site class, 1978*

Forest type and stand-size class	Site class				All classes
	120+	85-119	50-84	20-49	
	Acres				
Douglas-fir:					
Sawtimber	--	1,341	15,899	5,074	22,314
Poletimber	--	--	--	611	611
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	1,341	15,899	5,685	22,925
Ponderosa pine:					
Sawtimber	--	--	13,314	3,691	17,005
Poletimber	--	--	1,323	1,967	3,290
Sapling and seedling	--	--	1,254	1,820	3,074
Nonstocked	--	--	--	--	--
Total	--	--	15,891	7,478	23,369
Southwestern white pine:					
Sawtimber	--	--	670	--	670
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	670	--	670
Spruce-subalpine fir:					
Sawtimber	--	--	671	670	1,341
Poletimber	--	--	670	--	670
Sapling and seedling	--	--	--	607	607
Nonstocked	--	--	--	--	--
Total	--	--	1,341	1,277	2,618
White fir:					
Sawtimber	--	592	1,975	3,194	5,761
Poletimber	--	--	644	--	644
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	613	--	613
Total	--	592	3,232	3,194	7,018
Engelmann spruce:					
Sawtimber	--	611	3,785	--	4,396
Poletimber	--	670	2,454	--	3,124
Sapling and seedling	--	--	661	1,929	2,590
Nonstocked	--	--	--	662	662
Total	--	1,281	6,900	2,591	10,772
Pinyon-juniper:					
Sawtimber	--	--	--	662	662
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	662	662
Aspen:					
Sawtimber	--	661	5,852	1,253	7,766
Poletimber	611	--	662	--	1,273
Sapling and seedling	--	--	1,829	3,237	5,066
Nonstocked	--	--	--	--	--
Total	611	661	8,343	4,490	14,105
Cottonwood:					
Sawtimber	--	--	--	--	--
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	661	661
Total	--	--	--	661	661
All types:					
Sawtimber	--	3,205	42,166	14,544	59,915
Poletimber	611	670	5,753	2,578	9,612
Sapling and seedling	--	--	3,744	7,593	11,337
Nonstocked	--	--	613	1,323	1,936
Total	611	3,875	52,276	26,038	82,800

Table 6.--*Area of State-owned commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by forest type, stand-size class, and site class, 1978*

Forest type and stand-size class	Site class				All classes
	120+	85-119	50-84	20-49	
	Acres				
Douglas-fir:					
Sawtimber	--	11	84	27	122
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	11	84	27	122
Ponderosa pine:					
Sawtimber	--	--	100	28	128
Poletimber	--	--	38	39	77
Sapling and seedling	--	--	19	13	32
Nonstocked	--	--	--	--	--
Total	--	--	157	80	237
Southwestern white pine:					
Sawtimber	--	--	6	--	6
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	6	--	6
Spruce-subalpine fir:					
Sawtimber	--	--	6	5	11
Poletimber	--	--	6	--	6
Sapling and seedling	--	--	--	4	4
Nonstocked	--	--	--	--	--
Total	--	--	12	9	21
White fir:					
Sawtimber	--	--	12	29	41
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	12	29	41
Engelmann spruce:					
Sawtimber	--	--	16	--	16
Poletimber	--	5	4	--	9
Sapling and seedling	--	--	6	17	23
Nonstocked	--	--	--	7	7
Total	--	5	26	24	55
Pinyon-juniper:					
Sawtimber	--	--	--	19	19
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	19	19
Aspen:					
Sawtimber	--	6	43	6	55
Poletimber	--	--	7	--	7
Sapling and seedling	--	--	4	26	30
Nonstocked	--	--	--	--	--
Total	--	6	54	32	92
Cottonwood:					
Sawtimber	--	--	--	--	--
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	6	6
Total	--	--	--	6	6
All types:					
Sawtimber	--	17	267	114	398
Poletimber	--	5	55	39	99
Sapling and seedling	--	--	29	60	89
Nonstocked	--	--	--	13	13
Total	--	22	351	226	599

Table 7.--*Area of privately owned commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by forest type, stand-size class, and site class, 1978*

Forest type and stand-size class	Site class				All classes
	120+	85-119	50-84	20-49	
			Acres		
Douglas-fir:					
Sawtimber	--	1,330	15,815	5,047	22,192
Poletimber	--	--	--	611	611
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	1,330	15,815	5,658	22,803
Ponderosa pine:					
Sawtimber	--	--	13,214	3,663	16,877
Poletimber	--	--	1,285	1,928	3,213
Sapling and seedling	--	--	1,235	1,807	3,042
Nonstocked	--	--	--	--	--
Total	--	--	15,734	7,398	23,132
Southwestern white pine:					
Sawtimber	--	--	664	--	664
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	664	--	664
Spruce-subalpine fir:					
Sawtimber	--	--	665	665	1,330
Poletimber	--	--	664	--	664
Sapling and seedling	--	--	--	603	603
Nonstocked	--	--	--	--	--
Total	--	--	1,329	1,268	2,597
White fir:					
Sawtimber	--	592	1,963	3,165	5,720
Poletimber	--	--	644	--	644
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	613	--	613
Total	--	592	3,220	3,165	6,977
Engelmann spruce:					
Sawtimber	--	611	3,769	--	4,380
Poletimber	--	665	2,450	--	3,115
Sapling and seedling	--	--	655	1,912	2,567
Nonstocked	--	--	--	655	655
Total	--	1,276	6,874	2,567	10,717
Pinyon-juniper:					
Sawtimber	--	--	--	643	643
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	643	643
Aspen:					
Sawtimber	--	655	5,809	1,247	7,711
Poletimber	611	--	655	--	1,266
Sapling and seedling	--	--	1,825	3,211	5,036
Nonstocked	--	--	--	--	--
Total	611	655	8,289	4,458	14,013
Cottonwood:					
Sawtimber	--	--	--	--	--
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	655	655
Total	--	--	--	655	655
All types:					
Sawtimber	--	3,188	41,899	14,430	59,517
Poletimber	611	665	5,698	2,539	9,513
Sapling and seedling	--	--	3,715	7,533	11,248
Nonstocked	--	--	613	1,310	1,923
Total	611	3,853	51,925	25,812	82,201

Table 8.--*Area of commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by stand volume and ownership class, 1978*

Stand volume per acre[1]	Ownership class		
	State	Private	State and private
	Acres		
Less than 1,500 board feet	162	15,730	15,892
1,500 to 4,999 board feet	216	29,540	29,756
5,000 to 9,999 board feet	120	22,154	22,274
10,000 board feet or more	101	14,777	14,878
All classes	599	82,201	82,800

[1]International 1/4-inch rule.

Table 9.--*Area of commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by forest type and area condition class, 1978*

Forest type	Area condition class									Nonstocked	All classes	
	10	20	30	40	50	60	70	80	90			
	Acres											*Hectares*
Douglas-fir	--	--	592	3,115	3,779	3,883	607	4,423	6,526	--	22,925	9 278
Ponderosa pine	--	--	662	1,967	2,589	8,733	5,042	2,493	1,883	--	23,369	9 457
Southwestern white pine	--	--	--	--	--	--	670	--	--	--	670	271
Spruce-subalpine fir	--	607	--	1,341	--	670	--	--	--	--	2,618	1 060
White fir	--	--	--	1,255	592	1,975	--	644	1,939	613	7,018	2 840
Engelmann spruce	--	--	1,923	2,466	1,282	3,231	--	538	670	662	10,772	4 359
Pinyon-juniper	--	--	--	--	--	--	--	--	662	--	662	268
Aspen	--	--	--	661	5,860	3,662	1,268	--	2,654	--	14,105	5 708
Cottonwood	--	--	--	--	--	--	--	--	--	661	661	267
All types	--	607	3,177	10,805	14,102	22,154	7,587	8,098	14,334	1,936	82,800	33 508

Table 10.--*Area of unproductive reserved and unproductive nonreserved forest land in Bernalillo, Sandoval, and Torrance Counties, by land class, ownership class, and forest type, 1978*

Land class	Forest type								All types	
	Ponderosa pine	White fir	Juniper	Mixed softwoods	Total softwoods	Aspen	Mixed hardwoods	Total hardwoods		
	Acres									*Hectares*
Other forest land area:										
Unproductive reserved:										
State	4	--	292	4	300	--	--	--	300	121
Private	10,385	--	15,065	4,452	29,902	--	--	--	29,902	12 101
Total	10,389	--	15,357	4,456	30,202	--	--	--	30,202	12 222
Unproductive nonreserved:										
State	1,217	6	97,520	1,160	99,903	6	17	23	99,926	40 439
Private	9,150	665	459,669	5,403	474,887	655	3,185	3,840	478,727	193 735
Total	10,367	671	557,189	6,563	574,790	661	3,202	3,863	578,653	234 174
Total all areas:										
State	1,221	6	97,812	1,164	100,203	6	17	23	100,226	40 560
Private	19,535	665	474,734	9,855	504,789	655	3,185	3,840	508,629	205 836
Total acres	20,756	671	572,546	11,019	604,992	661	3,202	3,863	608,855	--
Total hectares	8 400	272	231 702	4 459	244 833	267	1 296	1 563		246 396

Table 11.--*Number of growing stock trees on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by species and diameter class, 1978*

Species	Diameter class (inches at breast height)															
	1.0-2.9	3.0-4.9	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	25.0-26.9	27.0-28.9	29.0+	All classes
	Thousand trees															
Douglas-fir	947	1,373	724	414	362	236	176	92	85	52	39	33	17	10	24	4,584
Ponderosa pine	1,131	1,733	1,070	814	360	219	101	65	42	37	25	19	11	7	15	5,649
Southwestern white pine	185	96	113	51	27	16	22	13	9	6	3	--	1	1	([1])	543
Subalpine fir	545	238	110	41	32	15	5	7	5	1	--	--	--	--	([1])	999
White fir	990	917	426	337	221	165	89	40	24	19	21	13	12	9	16	3,299
Engelmann spruce	1,505	1,004	813	625	276	135	77	59	24	19	11	4	5	1	2	4,560
Pinyon/juniper	405	326	123	62	--	7	9	6	5	--	--	--	--	--	--	943
Total softwoods	5,708	5,687	3,379	2,344	1,278	793	479	282	194	134	99	69	46	28	57	20,577
Aspen	2,740	2,104	1,077	517	451	254	227	69	46	15	4	3	1	--	--	7,508
Cottonwood	--	--	--	--	--	--	--	--	--	1	--	1	2	--	--	4
Total hardwoods	2,740	2,104	1,077	517	451	254	227	69	46	16	4	4	3	--	--	7,512
All species	8,448	7,791	4,456	2,861	1,729	1,047	706	351	240	150	103	73	49	28	57	28,089

[1]Less than 500 trees.

Table 12.--*Number of cull and salvable dead trees on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by ownership class, and softwoods and hardwoods, 1978*

Ownership class and species group	Cull trees			Salvable dead trees
	Sound	Rotten	Total	
	Thousand trees			
State:				
Softwoods	2	([1])	2	3
Hardwoods	([1])	3	3	2
Total	2	3	5	5
Private:				
Softwoods	252	19	271	447
Hardwoods	15	465	480	305
Total	267	484	751	752
State and private:				
Softwoods	254	19	273	450
Hardwoods	15	468	483	307
Total	269	487	756	757

[1]Less than 500 trees.

Table 13.--*Net volume of growing stock on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by ownership class, forest type, and stand-size class, 1978*

Ownership class	Forest type	Stand-size class				All classes	
		Sawtimber	Poletimber	Sapling/seedling	Nonstocked		
		Thousand cubic feet					*Thousand cubic meters*
State:							
	Douglas-fir	281	--	--	--	281	8
	Ponderosa pine	143	47	5	--	195	6
	Southwestern white pine	5	--	--	--	5	(1)
	Spruce-subalpine fir	32	6	1	--	39	1
	White fir	53	--	--	--	53	2
	Engelmann spruce	39	15	13	(2)	67	2
	Pinyon-juniper	11	--	--	--	11	(1)
	Aspen	177	7	8	--	192	5
	Cottonwood	--	--	--	2	2	(1)
	All types	741	75	27	2	845	24
Private:							
	Douglas-fir	50,132	684	--	--	50,816	1 439
	Ponderosa pine	17,399	1,699	629	--	19,727	558
	Southwestern white pine	668	--	--	--	668	19
	Spruce-subalpine fir	3,890	745	98	--	4,733	134
	White fir	8,612	478	--	233	9,323	264
	Engelmann spruce	10,112	4,280	1,341	53	15,786	447
	Pinyon-juniper	384	--	--	--	384	11
	Aspen	21,792	2,332	1,923	--	26,047	738
	Cottonwood	--	--	--	172	172	5
	All types	112,989	10,218	3,991	458	127,656	3 615
State and private:							
	Douglas-fir	50,413	684	--	--	51,097	1 447
	Ponderosa pine	17,542	1,746	634	--	19,922	564
	Southwestern white pine	673	--	--	--	673	19
	Spruce-subalpine fir	3,922	751	99	--	4,772	135
	White fir	8,665	478	--	233	9,376	266
	Engelmann spruce	10,151	4,295	1,354	53	15,853	449
	Pinyon-juniper	395	--	--	--	395	11
	Aspen	21,969	2,339	1,931	--	26,239	743
	Cottonwood	--	--	--	174	174	5
	All types	113,730	10,293	4,018	460	128,501	3 639

[1]Less than 0.5 thousand cubic meters.
[2]Less than 0.5 thousand cubic feet.

Table 14.--*Net volume of sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by ownership class, forest type, and stand-size class, 1978*

Ownership class	Forest type	Stand-size class				All classes
		Sawtimber	Poletimber	Sapling/seedling	Nonstocked	
		Thousand board feet[1]				
State:						
	Douglas-fir	1,263	--	--	--	1,263
	Ponderosa pine	572	101	13	--	686
	Southwestern white pine	24	--	--	--	24
	Spruce-subalpine fir	129	10	--	--	139
	White fir	220	--	--	--	220
	Engelmann spruce	182	23	39	3	247
	Pinyon-juniper	48	--	--	--	48
	Aspen	631	16	15	--	662
	Cottonwood	--	--	--	9	9
	All types	3,069	150	67	12	3,298
Private:						
	Douglas-fir	218,676	1,603	--	--	220,279
	Ponderosa pine	72,347	3,605	2,415	--	78,367
	Southwestern white pine	2,928	--	--	--	2,928
	Spruce-subalpine fir	15,629	1,224	--	--	16,853
	White fir	33,571	904	--	963	35,438
	Engelmann spruce	43,312	7,634	4,041	271	55,258
	Pinyon-juniper	1,609	--	--	--	1,609
	Aspen	80,452	3,623	6,173	--	90,248
	Cottonwood	--	--	--	911	911
	All types	468,524	18,593	12,629	2,145	501,891
State and private:						
	Douglas-fir	219,939	1,603	--	--	221,542
	Ponderosa pine	72,919	3,706	2,428	--	79,053
	Southwestern white pine	2,952	--	--	--	2,952
	Spruce-subalpine fir	15,758	1,234	--	--	16,992
	White fir	33,791	904	--	963	35,658
	Engelmann spruce	43,494	7,657	4,080	274	55,505
	Pinyon-juniper	1,657	--	--	--	1,657
	Aspen	81,083	3,639	6,188	--	90,910
	Cottonwood	--	--	--	920	920
	All types	471,593	18,743	12,696	2,157	505,189

[1]International 1/4-inch rule.

Table 15.--*Net volume of growing stock on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by species and diameter class, 1978*

Species	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	25.0-26.9	27.0-28.9	29.0+	All classes
	Thousand cubic feet													
Douglas-fir	1,163	1,827	3,130	3,584	3,935	2,873	3,445	2,795	2,722	2,660	1,599	1,074	4,432	35,239
Ponderosa pine	1,273	2,884	2,251	2,550	1,890	1,628	1,511	1,696	1,488	1,373	980	734	2,358	22,616
Southwestern white pine	287	238	229	228	453	395	330	263	122	--	73	57	33	2,708
Subalpine fir	240	225	307	250	144	258	206	73	--	--	--	--	69	1,772
White fir	718	1,526	1,826	2,107	1,889	1,170	914	927	1,325	1,015	992	881	2,444	17,734
Engelmann spruce	1,526	3,252	2,885	2,116	1,990	2,182	1,129	1,193	882	383	532	163	312	18,545
Pinyon/juniper	53	91	--	44	113	118	61	--	--	--	--	--	--	480
Total softwoods	5,260	10,043	10,628	10,879	10,414	8,624	7,596	6,947	6,539	5,431	4,176	2,909	9,648	99,094
Aspen	2,447	3,486	6,050	5,127	6,208	2,627	2,136	730	223	151	48	--	--	29,233
Cottonwood	--	--	--	--	--	--	--	40	--	32	102	--	--	174
Total hardwoods	2,447	3,486	6,050	5,127	6,208	2,627	2,136	770	223	183	150	--	--	29,407
All species	7,707	13,529	16,678	16,006	16,622	11,251	9,732	7,717	6,762	5,614	4,326	2,909	9,648	128,501

Table 16.--*Net volume of sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by species and diameter class, 1978*

Species	Diameter class (inches at breast height)												
	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	25.0-26.9	27.0-28.9	29.0+	All classes
	Thousand board feet, International 1/4-inch rule											
Douglas-fir	9,902	15,302	19,070	14,881	18,649	15,554	15,450	15,273	9,240	6,230	25,955	165,506
Ponderosa pine	7,508	11,681	9,504	8,840	8,593	9,560	8,663	8,018	5,764	4,349	14,039	96,519
Southwestern white pine	772	975	2,114	1,962	1,675	1,362	649	--	406	324	191	10,430
Subalpine fir	1,057	1,211	735	1,329	1,061	372	--	--	--	--	375	6,140
White fir	6,205	9,248	8,643	5,301	4,020	3,920	5,355	4,010	3,883	3,455	9,736	63,776
Engelmann spruce	10,477	10,305	10,251	11,325	5,846	6,162	4,556	1,990	2,787	865	1,667	66,231
Pinyon/juniper	--	133	328	337	169	--	--	--	--	--	--	967
Total softwoods	35,921	48,855	50,645	43,975	40,013	36,930	34,673	29,291	22,080	15,223	51,963	409,569
Aspen	XXXX	27,223	34,643	14,770	11,845	3,980	1,193	791	255	--	--	94,700
Cottonwood	XXXX	--	--	--	--	220	--	169	531	--	--	920
Total hardwoods	XXXX	27,223	34,643	14,770	11,845	4,200	1,193	960	786	--	--	95,620
All species	35,921	76,078	85,288	58,745	51,858	41,130	35,866	30,251	22,866	15,223	51,963	505,189

Table 17.--*Net volume of growing stock and sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by ownership class and species, 1978*

Ownership class	Species											All species
	Douglas-fir	Ponderosa pine	Southwestern white pine	Subalpine fir	White fir	Engelmann spruce	Pinyon/juniper	Total softwoods	Aspen	Cottonwood	Total hardwoods	
	GROWING STOCK *Thousand cubic feet*											
State	206	210	15	14	95	97	9	646	198	1	199	845
Private	35,033	22,406	2,693	1,758	17,639	18,448	471	98,448	29,035	173	29,208	127,656
Total	35,239	22,616	2,708	1,772	17,734	18,545	480	99,094	29,233	174	29,407	128,501
	GROWING STOCK *Thousand cubic meters*											
State	6	6	([1])	([1])	3	3	([1])	18	6	([1])	6	24
Private	992	634	77	50	499	522	14	2 788	822	5	827	3 615
Total	998	640	77	50	502	525	14	2 806	828	5	833	3 639
	SAWTIMBER *Thousand board feet, International 1/4-inch rule*											
State	983	788	60	48	349	365	17	2,610	679	9	688	3,298
Private	164,523	95,731	10,370	6,092	63,427	65,866	950	406,959	94,021	911	94,932	501,891
Total	165,506	96,519	10,430	6,140	63,776	66,231	967	409,569	94,700	920	95,620	505,189

[1]Less than 500 cubic meters.

Table 18.--*Net volume of timber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by class of timber, and softwoods and hardwoods, 1978*

Class of timber	Softwoods	Hardwoods	All classes
	Thousand cubic feet		
Sawtimber trees:			
Saw log portion	79,834	16,703	96,537
Upper-stem portion	3,957	721	4,678
Total	83,791	17,424	101,215
Poletimber trees	15,303	11,983	27,286
All growing stock trees	99,094	29,407	128,501
Sound cull trees	2,572	193	2,765
Rotten cull trees	236	1,867	2,103
Salvable dead trees	4,648	1,292	5,940
All timber	106,550	32,759	139,309

Table 19.--*Net volume of growing stock on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by forest type and species, 1978*

Forest type	Species												All species
	Douglas-fir	Ponderosa pine	Southwestern white pine	Subalpine fir	White fir	Engelmann spruce	Pinyon/juniper	Total softwoods	Aspen	Cottonwood	Total hardwoods		
	Thousand cubic feet												*Thousand cubic meters*
Douglas-fir	28,925	3,005	1,780	--	10,186	1,977	176	46,049	5,048	--	5,048	51,097	1 447
Ponderosa pine	963	16,935	80	--	1,153	272	133	19,536	386	--	386	19,922	564
Southwestern white pine	267	--	377	--	29	--	--	673	--	--	--	673	19
Subalpine fir	58	--	--	1,198	--	3,374	--	4,630	142	--	142	4,772	135
White fir	1,046	702	173	--	5,546	292	--	7,759	1,617	--	1,617	9,376	266
Engelmann spruce	1,736	711	231	275	359	10,104	--	13,416	2,437	--	2,437	15,853	449
Pinyon-juniper	--	224	--	--	--	--	171	395	--	--	--	395	11
Aspen	2,244	1,039	67	299	461	2,526	--	6,636	19,603	--	19,603	26,239	743
Cottonwood	--	--	--	--	--	--	--	--	--	174	174	174	5
All types	35,239	22,616	2,708	1,772	17,734	18,545	480	99,094	29,233	174	29,407	128,501	--
	Thousand cubic meters												
All types	998	640	77	50	502	525	14	2 806	828	5	833	--	3 639

Table 20.--*Net volume of sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by forest type and species, 1978*

Forest type	Species											All species
	Douglas-fir	Ponderosa pine	Southwestern white pine	Subalpine fir	White fir	Engelmann spruce	Pinyon/juniper	Total softwoods	Aspen	Cottonwood	Total hardwoods	
	Thousand board feet, International 1/4-inch rule											
Douglas-fir	134,086	15,697	6,810	--	38,073	8,571	482	203,719	17,823	--	17,823	221,542
Ponderosa pine	4,837	69,043	399	--	3,421	1,038	108	78,846	207	--	207	79,053
Southwestern white pine	1,344	--	1,475	--	133	--	--	2,952	--	--	--	2,952
Subalpine fir	290	--	--	3,334	--	13,368	--	16,992	--	--	--	16,992
White fir	5,111	3,251	741	--	19,239	977	--	29,319	6,339	--	6,339	35,658
Engelmann spruce	9,180	3,090	767	1,409	1,190	31,400	--	47,036	8,469	--	8,469	55,505
Pinyon-juniper	--	1,280	--	--	--	--	377	1,657	--	--	--	1,657
Aspen	10,658	4,158	238	1,397	1,720	10,877	--	29,048	61,862	--	61,862	90,910
Cottonwood	--	--	--	--	--	--	--	--	--	920	920	920
All types	165,506	96,519	10,430	6,140	63,776	66,231	967	409,569	94,700	920	95,620	505,189

Table 21.--*Net annual growth of growing stock and sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by ownership class and species, 1978*

Ownership class	Species										
	Douglas-fir	Ponderosa pine	Southwestern white pine	Subalpine fir	White fir	Engelmann spruce	Total softwoods	Aspen	Cottonwood	Total hardwoods	All species
	GROWING STOCK *Cubic feet*										
State	3,821	8,583	204	317	1,708	2,535	17,168	3,801	48	3,849	21,017
Private	656,729	707,739	43,654	39,079	354,372	617,230	2,418,803	679,063	4,934	683,997	3,102,800
Total	660,550	716,322	43,858	39,396	356,080	619,765	2,435,971	682,864	4,982	687,846	3,123,817
	GROWING STOCK *Cubic meters*										
State	108	243	6	9	48	72	486	108	1	109	595
Private	18 597	20 041	1 236	1 106	10 035	17 478	68 493	19 229	140	19 369	87 862
Total	18 705	20 284	1 242	1 115	10 083	17 550	68 979	19 337	141	19 478	88 457
	SAWTIMBER *Board feet, International 1/4-inch rule*										
State	15,500	31,760	703	776	6,159	5,759	60,657	16,551	243	16,794	77,451
Private	2,775,097	2,807,855	138,651	98,069	1,535,330	1,973,429	9,328,431	2,382,235	24,837	2,407,072	11,735,503
Total	2,790,597	2,839,615	139,354	98,845	1,541,489	1,979,188	9,389,088	2,398,786	25,080	2,423,866	11,812,954

Table 22.--*Annual mortality of growing stock and sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by ownership class, and softwoods and hardwoods, 1978*

Species group and ownership class	Growing stock		Sawtimber
	- Cubic feet -	*- Cubic meters -*	*- Board feet*[1] *-*
Softwoods:			
State	1,109	31	5,499
Private	136,593	3 868	679,621
Total	137,702	3 899	685,120
Hardwoods:			
State	--	--	--
Private	--	--	--
Total	--	--	--

[1]International 1/4-inch rule.

Table 23.--*Annual mortality of growing stock and sawtimber on commercial timberland in Bernalillo, Sandoval, and Torrance Counties, by cause of death and species, 1978*

Cause of Death	Species										All species
	Douglas-fir	Ponderosa pine	Southwestern white pine	Subalpine fir	White fir	Engelmann spruce	Total softwoods	Aspen	Cottonwood	Total hardwoods	
	GROWING STOCK *Cubic feet*										
Insects	--	--	--	--	--	24,843	24,843	--	--	--	24,843
Disease	--	--	--	--	13,473	--	13,473	--	--	--	13,473
Weather	--	13,608	11,642	--	--	--	25,250	--	--	--	25,250
Unknown	16,899	--	--	--	--	57,237	74,136	--	--	--	74,136
Total	16,899	13,608	11,642	--	13,473	82,080	137,702	--	--	--	137,702
	GROWING STOCK *Cubic meters*										
Insects	--	--	--	--	--	703	703	--	--	--	703
Disease	--	--	--	--	382	--	382	--	--	--	382
Weather	--	385	330	--	--	--	715	--	--	--	715
Unknown	478	--	--	--	--	1 621	2 099	--	--	--	2 099
Total	478	385	330	--	382	2 324	3 899	--	--	--	3 899
	SAWTIMBER *Board feet, International 1/4-inch rule*										
Insects	--	--	--	--	--	128,443	128,443	--	--	--	128,443
Disease	--	--	--	--	58,880	--	58,880	--	--	--	58,880
Weather	--	82,099	45,212	--	--	--	127,311	--	--	--	127,311
Unknown	72,110	--	--	--	--	298,376	370,486	--	--	--	370,486
Total	72,110	82,099	45,212	--	58,880	426,819	685,120	--	--	--	685,120

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Felt, Dorothy G.
1981. Forest area and timber resource statistics for State and private lands in Bernalillo, Sandoval, and Torrance Counties, New Mexico, 1978. USDA For. Serv. Resour. Bull. INT-25, 22 p. Intermt. For. and Range Exp. Stn., Ogden, Utah 84401.

Presents land area, commercial timberland area, timber inventory, and growth and mortality data based on Resources Evaluation standards.

KEYWORDS: forest survey (regional), forest area classification, stand volume.

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