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Vegetation Survey and Forest Inventory, American Samoa

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INTRODUCTION

The unincorporated Territory of American Samoa is the only United States possession south of the equator. Knowledge of the extent and composition of its vegetation, including forest land, is needed for land-use planning. To fill this need, the USDA Forest Service, at the request of the Government of American Samoa, mapped the vegetation types of American Samoa and conducted a forest survey in cooperation with three American Samoan agencies: the Department of Agriculture, the American Samoa Community College Land Grant Program, and the Office of Economic Development and Planning. These maps are intended to provide guides for land-use planning and forest resource management.

The major employers in American Samoa are the local government and the two tuna canneries. Together they employ about 50 percent of American Samoa's labor force. Subsistence farming is the main agricultural enterprise. The main crops are bananas, breadfruit, coconuts, and taro. U.S. Department of Agriculture, Soil Conservation Service soil scientists have mapped and described 20 soil series, families, and variants on American Samoa as guides for farmers, land managers, developers, and others (Nakamura 1984).

Figure 1—The islands of American Samoa are located in the South Pacific Ocean, more than 2600 statute miles southwest of Hawaii.

This bulletin presents four vegetation maps (see maps in back pocket) and statistics on the timberland area and volume that were developed from the survey. Descriptions of the various vegetation types and their ecological functions and uses are included.

GEOGRAPHY AND CLIMATE

The Polynesian islands of American Samoa are part of the Samoan group, which includes the independent nation of Western Samoa. We surveyed the main island of Tutuila; the Manu'a Islands of Ofu, Olosega, and Ta'u; and two smaller islands, Aunu'u and Nu'utele. Taputapu, Nu'usetoga, and Pola, three satellite islands adjacent to Tutuila, were also mapped and their area included in the information on Tutuila.

American Samoa is located in the South Pacific Ocean, just east of the International Date Line (lat. 14°18' S. and long. 170°41' E.) (fig. 1). These islands are about 1000 statute miles (1600 km) south of the equator and about 2604 statute miles (4190 km) south southwest of Honolulu.

The highest point in American Samoa is Mt. Lata on Ta'u Island, which rises to 3166 ft (965 m). The highest point on the main island of Tutuila is Mt. Matafao at 2142 ft (653 m) (American Samoa Government 1981). The topography is steep with about 50 percent of the land exceeding 70 percent slope (fig. 2; Nakamura 1984).

The climate is hot, wet and humid. Average annual rainfall measured at the Pago Pago International Airport weather station is 125 inches (3175 mm). Rainfall varies with elevation and aspect. In Pago Pago Harbor, estimated rainfall is 200 inches (5080 mm) per year, and on Ta'u Island, Mt. Lata's rainfall is estimated at 300 inches (7600 mm) or more annually. The average annual temperature is 26 °C (79 °F) at sea level and slightly lower at higher elevations. Average monthly temperatures vary from the annual average by no more than 1.7 °C (3 °F) and the average daily temperature range is only 8.40 °C (15 °F) throughout the year. Relative humidity ranges from 72 to 77 percent during the day and 87 to 93 percent at night (National Oceanic and Atmospheric Administration 1983).

Hurricanes are fairly common to American Samoa, with five since 1966. The most recent—Hurricane Tusi—struck the Manu'a Islands of Ta'u, Ofu, and Olosega on January 17, 1987, inflicting heavy damage to the towns and natural resources of the islands. Statistical information in this bulletin does not reflect the impact of Hurricane Tusi.

Figure 2—Pago Pago Harbor, American Samoa, is one of the best deep water ports in the South Pacific. Mt. Matafao in the background is the highest point on Tutuila and typifies the rugged interiors of the islands.

VEGETATION SURVEY

Survey Methods

American Samoa's vegetation types were identified and delineated on black and white photographs taken in 1984 at a nominal scale of 1:10,000. Before vegetation typing began, a vegetation mapping scheme was devised. Because much of the islands is inaccessible by road and funds were limited, vegetation types were restricted to those that could be recognized on the photos without intensive ground checking. Also, the type characteristics delineated were those most useful to foresters and land-use planners. After field reconnaissance, we adopted the classification scheme described herein.

Vegetation differences can often be recognized by examining photographs stereoscopically for differences in tone, texture, and image patterns. In some cases, individual plants may be recognized by their distinctive shape. Thus, after comparing photo imagery with ground conditions in the field, a skilled interpreter becomes fairly proficient at recognizing vegetative types on aerial photos. Overall accuracy depends on these factors: scale, age, and quality of the photographs; skill of the interpreter; degree to which

the types differ in image characteristics; and the amount of ground training and checking by the interpreter.

Types were delineated on the photos after stereoscopic examination and ground checking in 1986, along roads and trails. The Engineering Geomtronics Section of the Forest Service's Pacific Southwest Regional Office transferred the delineated types to base maps and measured the type areas.

Type Classifications

For mapping purposes, the islands of American Samoa were divided into four broad land classes—forest, secondary vegetation, agroforest, and nonforest (*table 1, figs. 3-5*). Minimum area typed is 1 acre (0.4 ha).

Forest—The forest class consists of five types of areas vegetated with live trees:

- Upland forest (UP)
- Coastal forest (CF)
- Mangrove forest (MN)
- Dwarf forest (DF)
- Moss forest (MS)

These types have been further subdivided into size and density classes (*table 2*), identified by these codes:

Code	Size class
0	Short, shrub-like stands smaller than 5 inches (12.5 cm) in diameter at breast height (d.b.h.).
1	Trees averaging less than 12 inches (30 cm) in d.b.h. but larger than or equal to 5 inches (12.5 cm) in d.b.h.
2	Trees averaging 12 inches (30 cm) or more in d.b.h.

Code	Density class
H	High—crown closure of main canopy over 70 percent.
M	Medium—crown closure of main canopy from 30 to 70 percent.
L	Low—crown closure of main canopy less than 30 percent.

Secondary Vegetation—Secondary vegetation (SV) includes vines, shrubs, and small trees on recently disturbed areas.

Agroforest—The agroforest (AG) class primarily consists of areas under cultivation for both fruit and other food crops, and for trees and wood products.

Nonforest—Nonforest areas include grasslands, marshes, degraded sites, and areas developed for urban use. The seven types in this class are:

- Grassland (G)
- Strand (S)
- Marsh (M)
- Cropland (C)
- Urban (U)
- Barren (B)
- Water (W)

On the maps, the vegetative areas are numbered and identified by symbols in the legend (*table 3*). In each symbol, the vegetation type is shown first, followed by the size class and density class. For example, CF1H indicates coastal forest trees that are less than 12 inches (30 cm) but at least 5 inches (12.5 cm) in diameter, with a crown closure greater than 70 percent. Where possible, predominant species are identified. In such cases, the density class is followed by a period, then by the first letter of the genus name, as in MS1H.C when *Cyathea* spp. (tree fern) makes up at least 20 percent of the moss forest stand. Occasionally, two-storied stands are identified by a slash between the overstory and understory classes,

with size and density classes given only for the overstory type. For example, UP2M.R/SV.H would indicate an overstory composed of scattered, large *Rhus taitensis* trees overtopping secondary vegetation with a *Hibiscus tiliaceus* component.

Vegetation Type Descriptions

Before the arrival of the Polynesians more than 3,000 years ago, nearly all of American Samoa, from the seashore to the tops of the mountains, was covered with rain forests. But due to human activities—mostly shifting cultivation, and since the 1880's, the development of commercial coconut plantations—the forest was replaced by secondary vegetation. Today, the little virgin forest that remains is mostly on steep interior slopes and in the wet, cool montane regions away from villages.

Five types of native forest—upland (UP), coastal (CF), mangrove (MN), dwarf vegetation (DV), and moss (MS)—are distinguished here (*figs. 6-8*). The upland forest type includes several subtypes: upland forest with *Cyathea* spp. (UP.C), montane scrub (UP0), and the disturbed subtypes; upland forest with secondary vegetation (UP/SV); upland forest with *Rhus taitensis* (UP.R); and upland forest with coconuts (UP.CO) (*fig. 9*). All plant species mentioned in this bulletin are listed in *table 4*.

Upland Forest (UP)

The upland (or rainforest) is the climax vegetation for most of American Samoa. These forests were well developed, probably falling into our UP1 size class, with trees exceeding 12 inches (30 cm) or more in diameter. Few now are left that exceed 3 feet (1 m) in diameter. Stands that do reach this size have upper canopy layers that are over 80 feet (24 m) tall. The forest floor is often rich

Figure 3—Percentages of major land classes found on the islands of American Samoa.

Figure 4—Percentages of major land classes on the main island of Tutuila.

Table 1—Area of six islands of American Samoa, by land class and type, 1985

Table 1—Area of six islands of American Samoa, by land class and type, 1965

Land class and type	Symbol	Island						Total	
		Tutuila	Ta'u	Ofu	Olo-sega	Au-nu'u	Nu'u-tele		
<i>Acres (hectares)</i>									
Forest:									
Upland forest	UP	17,173	4,594	808	188	-	-	22,763	(9,212)
Coastal forest	CF	462	966	190	420	32	15	2,085	(844)
Mangrove forest	MN	121	-	-	-	8	-	129	(52)
Dwarf forest	DV	20	442	129	76	-	-	667	(270)
Moss forest	MS	-	2,948	-	94	-	-	3,042	(1,231)
Total forest		17,776	8,950	1,127	778	40	15	28,686	(11,609)
Secondary vegetation:	SV	576	25	-	-	7	-	608	(246)
Agroforest:									
Agroforest	AG	32	57	47	-	-	-	136	(55)
Agroforest with coconuts	AG.CO	12,264	425	12	76	173	-	12,950	(5,241)
Agroforest with bananas	AG/C.B	7	-	-	-	-	-	7	(3)
Coconut plantation	CO	15	1,431	487	413	49	22	2,417	(978)
Total agroforest		12,318	1,913	546	489	222	22	15,510	(6,277)
Nonforest:									
Marsh, fresh	M.F	5	17	3	7	40	-	72	(29)
Marsh, saline	M.S	-	-	-	-	12	-	12	(5)
Grasslands	G	267	84	44	5	3	-	403	(163)
Strand	S	69	104	12	22	13	-	220	(89)
Cropland	C	72	-	2	-	17	-	91	(37)
Urban	U	2,016	49	30	3	27	-	2,125	(860)
Urban/crops, urban/agro-forest	U/C, U/AG	143	67	-	-	-	-	210	(85)
Barren	B	10	-	-	-	-	-	10	(4)
Water, fresh	W.F	-	-	-	-	7	-	7	(3)
Water, saline	W.S	57	-	-	-	-	-	57	(23)
Total nonforest		2,639	321	91	37	119	-	3,207	(1,298)
Total area		33,309	11,209	1,764	1,304	388	37	48,011	(19,430)

Figure 5—Percentages of major land classes on the island of Ta'u.

Figure 6—Percentages of forest types on the islands of American Samoa.

Table 2—Area of forest land, by size and density classes, Tutuila and Ta'u islands, American Samoa, 1985¹

Island and type	Size class ²	Density classes ³			Total	
		Low	Medium	High		
	Acres (hectares)					
Tutuila:						
Upland forest	0	-	-	168	168	(68)
Upland forest	1	415	1,856	2,256	4,527	(1,832)
Upland forest	2	-	2,273	10,205	12,478	(5,050)
Coastal forest	0	-	-	12	12	(5)
Coastal forest	1	20	96	158	274	(111)
Coastal forest	2	-	74	101	175	(71)
Mangrove forest	0	-	-	52	52	(21)
Mangrove forest	1	-	-	40	40	(16)
Mangrove forest	2	-	-	30	30	(12)
Dwarf forest	0	-	-	20	20	(8)
Total		435	4,299	13,042	17,776	(7,194)
Ta'u:						
Upland forest	1	-	547	2,063	2,610	(1,056)
Upland forest	2	-	-	1,984	1,984	(803)
Coastal forest	1	-	96	527	623	(252)
Coastal forest	2	-	-	343	343	(139)
Dwarf forest	0	-	-	442	442	(179)
Moss forest	1	-	-	2,948	2,948	(1,193)
Total		-	643	8,307	8,950	(3,622)
Total forest		435	4,942	21,349	26,726	(10,816)

¹Adjusted by the proportion of field plots mapped as forest but were found to be agroforest.

²0—Short, shrub-like trees smaller than 5 in. (12.5 cm) in d.b.h.

1—Trees averaging less than 12 in. (30 cm) in d.b.h., but larger than 5 in. (12.5 cm) in d.b.h.

2—Trees averaging 12 in. (30 cm) or more in d.b.h.

³Crown closure of main canopy: Low <30 pct; medium 30-70 pct; high >70 pct.

Figure 8—Percentages of forest types for the island of Ta'u.

Figure 7—Percentages of forest types for the island of Tutuila.

Figure 9—Percentages of upland forest types and subtypes on American Samoa.

Figure 10—Rainmaker Mountain (North Pioa Mt.) is vegetated by montane scrub. These old trachyte plugs are inhospitable sites for plants, but certain adapted species thrive.

layers that are over 80 feet (24 m) tall. The forest floor is often rich in ferns such as *Lomagramma cordipinna*. Vines such as *Piper graeffei*, *Freycinetia* spp., *Raphidophora graeffei*, and *Epipremnum pinnatum* abound in the lower canopy, while epiphytic orchids and ferns cover many of the branches in the upper canopy.

Many species are found in the upland forests—particularly in wetter areas at higher elevations. On the basis of dominant tree species and species composition, several vegetation subtypes can be distinguished in the otherwise similar forest structure. Differences in dominant species result from differences in elevation, rainfall, soil, insolation, topography, and utilization.

In areas where the ground is covered with rough, geologically recent lava flows, such as the Tafuna Plain, the dominants of the natural vegetation (only a small remnant of which is still standing) are *Pometia pinnata*, *Planchonella torricellensis*, *Dysoxylum samoense*, *D. maota*, *Syzygium inophylloides*, *Kleinhovia hospita*, *Litsea samoensis*, *Neonauclea forsteri*, *Myristica fatua*, and *Ficus prolixa*. On lowland ridges where the soil is drier, the dominant species are *Syzygium inophylloides*, *Planchonella linggensis*, *Fagraea berteriana*, *Canarium samoense*, *Intsia bijuga*, *Rhus taitensis*, and *Alphitonia zizyphoides*. In the montane areas, the dominant species include *Dysoxylum huntii*, *Aglaiia samoensis*, *Arytera* spp., *Flacourtia rukam*, *Inocarpus fagifer*, *Terminalia richii*, *Canarium samoense*, *Myristica fatua*, *M. hypargyrea*, *Buchanania merrillii*, and *Syzygium samoense*. Understory species include *Diospyros samoensis*, *Alstonia* spp., and *Psychotria* spp.

Upland Forest/*Cyathea* spp. (UP.C)

This upland forest subtype is found only on Ta'u and consists of a low to medium height upland forest with a large percentage of *Cyathea* spp. (tree ferns) in the overstory. *Cyathea* spp. is listed separately in tables 3 and 6. Upland forest/*Cyathea* spp. subtype appears to be a transition zone between lower elevation upland forest and the higher elevation moss forest types. The dominant forest species are similar to the upland forest and the moss forest types.

Montane Scrub (UP0)

This scrub form of the upland forest type is found only in the mountains of Tutuila and is restricted to the summits of old trachyte plugs, most notably Matafao, Rainmaker, and Tau Mountains (fig. 10). Fertility is low on the hard clay soil of these plugs and the rooting depth is shallow. Many of the species growing on trachyte plugs are found only in these inhospitable sites.

The type is dominated by scrubby understory species with scattered trees of low stature. The most common understory species are *Dicranopteris linearis*, *Lycopodium cernuum*, *Dipteris conjugata*, *Cyathea truncata*, *Nephrolepis biserrata*, *Davallia epiphylla*, *Freycinetia* spp., *Scleria polycarpa*, and *Machaerina falcata*. The dominant trees are *Pandanus reineckeii*, *Rapanea myricifolia*, *Syzygium brevifolium*, *Astronidium navigatorum*, *Metrosideros collina*, and *Spiraeanthemum samoense*.

Table 3—Vegetation type and subtype codes, by land class, American Samoa, 1985

Vegetation codes	Vegetation types, subtypes, and components ^{1,2}	Vegetation codes	Vegetation types, subtypes, and components ^{1,2}
Forest			
UP	Upland forest, various size and density classes apply	CF.CO	Coconut component
UP.C	<i>Cyathea</i> spp. component	CF/SV	Secondary vegetation understory
UP.R	<i>Rhus</i> component	CF/SV.H	<i>Hibiscus</i> understory
UP.CO	Coconut component	CF/SV.V	Vine understory
UP.R.CO	<i>Rhus</i> and coconut components		
UP/S	Strand understory	MN	Mangrove forest, various size and density classes apply
UP/SV	Secondary vegetation understory	MN.B	<i>Bruguiera</i> component
UP/SV.G	Grass understory		
UP/SV.H	<i>Hibiscus</i> understory		
UP/SV.S	Shrub understory	DV	Dwarf forest, various density classes apply, but only size class 0 applicable
UP/SV.V	Vine understory		
UP.R/SV.H	<i>Rhus</i> and <i>Hibiscus</i> component		
CF	Coastal forest, various size and density classes apply	MS.C	Moss forest, <i>Cyathea</i> spp. component, various size and density classes apply
Secondary vegetation			
SV	Secondary vegetation, size and density classes do not apply	SV.L	<i>Leucaena</i>
SV.G	Grass component	SV.S	Shrub component
SV.G.S	Grass and shrub components	SV.V	Vine component
SV.H	<i>Hibiscus</i> component	SV.V.H	Vine and <i>Hibiscus</i> components
Agroforest			
AG	Agroforest	AG.CO/U	Urban inclusions
AG/C.B	Banana understory		
AG/SV	Secondary vegetation understory	CO	Coconut plantation, various size and density classes apply
AG.CO	Coconut component		
AG.CO.UP	Upland forest component	CO.CF	Coastal forest component
AG.CO.UP.R	<i>Rhus</i> component	CO.UP	Upland forest component
AG.CO/C.B	Banana understory	CO.UP.C	<i>Cyathea</i> spp. component
AG.CO/SV	Secondary vegetation understory	CO.UP.R	<i>Rhus</i> component
AG.CO/SV.G	Grass understory	CO/SV	Secondary vegetation understory
AG.CO/SV.H	<i>Hibiscus</i> understory	CO/SV.G	Grass understory
AG.CO/SV.S	Shrub understory	CO/SV.G.S	Grass and shrub understory
AG.CO/SV.V	Vine understory		
Nonforest			
G	Grassland	M.F.S	<i>Cyclosorus</i> marsh
G.F	Fern component		
G.G	Grass component	C	Cropland
G.G.C	Grass with cultivated inclusions	C.B	Banana cultivation
G.G.S	Grass and shrub components		
G.S	Shrub component	U	Urban land
		U/AG	Agroforest inclusions
S	Strand	U/AG.CO	Coconut inclusions
S.P	<i>Pandanus</i> component	U/C	Cropland inclusions
S.S	Shrub component		
		B.D	Barren, disturbed
M.F	Freshwater marsh		
M.F.A	<i>Acrostichum</i> marsh	W.F	Water, fresh
M.F.C	Cultivated marsh (taro)	W.S	Water, saline

¹Size classes and density codes are used only with the forest class and with the coconut plantation type.

²All components, inclusions, or understory species must be present on at least 20 percent of the mapped area.

Table 4—List of species mentioned in text and tables

Genus	Species	Author	Family
<i>Acrostichum</i>	<i>aureum</i>	L.	Adiantaceae
<i>Aglaia</i>	<i>samoensis</i>	A. Gray	Meliaceae
<i>Alstonia</i>	spp.		Melastomataceae
<i>Alphitonia</i>	<i>zizyphoides</i>	(Spreng.) A. Gray	Rhamnaceae
<i>Artocarpus</i>	<i>altilis</i>	(Park) Fosb.	Moraceae
<i>Arytera</i>	spp.		Sapindaceae
<i>Ascarina</i>	<i>diffusa</i>	A.C. Smith	Chloranthaceae
<i>Astronidium</i>	<i>navigatorium</i>	Chr.	Melastomataceae
<i>Astronidium</i>	<i>pickeringii</i>	(A. Gray) Chr.	Melastomataceae
<i>Barringtonia</i>	<i>asiatica</i>	(L.) Kurz	Lecythidaceae
<i>Barringtonia</i>	<i>samoensis</i>	A. Gray	Lecythidaceae
<i>Bischofia</i>	<i>javanica</i>	Bl.	Euphorbiaceae
<i>Bruguiera</i>	<i>gymnorhiza</i>	(L.) Lmk.	Rhizophoraceae
<i>Buchanania</i>	<i>merrillii</i>	Chr.	Anacardiaceae
<i>Calophyllum</i>	<i>inophyllum</i>	L.	Guttiferae
<i>Calophyllum</i>	<i>samoense</i>	Chr.	Guttiferae
<i>Cananga</i>	<i>odorata</i>	(Lam.) Hook. & Thoms.	Annonaceae
<i>Canarium</i>	<i>samoense</i>	Eng.	Burseraceae
<i>Canavalia</i>	<i>maritima</i>	(Aubl.) Thou.	Papilionatae
<i>Canavalia</i>	<i>rosea</i>	(Sw.) DC.	Papilionatae
<i>Cerbera</i>	<i>manghas</i>	L.	Apocynaceae
<i>Cocos</i>	<i>nucifera</i>	L.	Palmae
<i>Colubrina</i>	<i>asiatica</i>	(L.) Brongn.	Rhamnaceae
<i>Cordia</i>	<i>subcordata</i>	Lam.	Boraginaceae
<i>Cyathea</i>	spp.		Cyatheaceae
<i>Cyathea</i>	<i>truncata</i>	(Brack.) Copel.	Cyatheaceae
<i>Cyclosorus</i>	<i>interruptus</i>	(Willd.) H. Ito	Thelypteridaceae
<i>Davallia</i>	<i>epiphylla</i>	(Forst. f.) Spreng.	Davalliaceae
<i>Dicranopteris</i>	<i>linearis</i>	(Burm.) Underw.	Gleicheniaceae
<i>Dipteris</i>	<i>conjugata</i>	Reinw.	Polypodiaceae
<i>Diospyros</i>	<i>elliptica</i>	(Forst.) P.S. Green	Ebenaceae
<i>Diospyros</i>	<i>samoensis</i>	A. Gray	Ebenaceae
<i>Dysoxylum</i>	<i>huntii</i>	Merr.	Meliaceae
<i>Dysoxylum</i>	<i>maota</i>	Rein.	Meliaceae
<i>Dysoxylum</i>	<i>samoense</i>	A. Gray	Meliaceae
<i>Dysoxylum</i>	spp.		Meliaceae
<i>Eleocharis</i>	<i>dulcis</i>	(Burm. f.) Hens.	Cyperaceae
<i>Epipremnum</i>	<i>pinnatum</i>	(L.) Eng.	Araceae
<i>Erythrina</i>	<i>variegata</i>	(L.)	Leguminosae
<i>Eugenia</i>	spp.		Myrtaceae
<i>Fagraea</i>	<i>berteriana</i>	A. Gray	Loganiaceae
<i>Ficus</i>	<i>obliqua</i>	Forst. f.	Moraceae
<i>Ficus</i>	<i>prolixa</i>	Forst. f.	Moraceae
<i>Ficus</i>	<i>scabra</i>	Forst. f.	Moraceae
<i>Fimbristylis</i>	<i>cymosa</i>	R. Br.	Cyperaceae
<i>Flacourtia</i>	<i>rukam</i>	Zoll. et Mor.	Flacourtiaceae
<i>Freycinetia</i>	spp.		Pandanaceae
<i>Garcinia</i>	<i>myrtifolia</i>	A.C. Smith	Guttiferae
<i>Girroniera</i>	<i>celtidifolia</i>	Gaud.	Olmaceae
<i>Glochidion</i>	<i>ramiflorum</i>	Forst.	Euphorbiaceae
<i>Hernandia</i>	<i>nymphaeifolia</i>	(Presl) Kub.	Hemandiaceae
<i>Hibiscus</i>	<i>tiliaceus</i>	L.	Malvaceae
<i>Inocarpus</i>	<i>fagifer</i>	(Park.) Fosb.	Leguminosae
<i>Intsia</i>	<i>bijuga</i>	(Colebr.) O. Ktze.	Leguminosae
<i>Ipomoea</i>	<i>pes-caprae</i>	(L.) Roth	Convolvulaceae
<i>Kleinhovia</i>	<i>hospita</i>	L.	Sterculiaceae

Table 4—List of species mentioned in text and tables (continued)

Genus	Species	Author	Family
<i>Lepturus</i>	<i>repens</i>	(Forst. f.) R. Br.	Gramineae
<i>Leucaena</i>	<i>leucocephala</i>	(Lmk.) de Wit	Leguminosae
<i>Litsea</i>	<i>samoensis</i>	(Christ.) A.C. Sm.	Lauraceae
<i>Lomagramma</i>	<i>cordipinna</i>	Holtum	Lomariopsidaceae
<i>Lycopodium</i>	<i>cernuum</i>	L.	Lycopodiaceae
<i>Macaranga</i>	<i>harveyana</i>	Muell.-Arg.	Euphorbiaceae
<i>Macaranga</i>	<i>stipulosa</i>	Muell.-Arg.	Euphorbiaceae
<i>Machaerina</i>	<i>falcata</i>	(Nees) T. Koyama	Cyperaceae
<i>Mangifera</i>	<i>indica</i>	L.	Anacardiaceae
<i>Melastoma</i>	<i>denticulatum</i>	Labill.	Melastomataceae
<i>Melochia</i>	<i>aristata</i>	A. Gray	Sterculiaceae
<i>Metrosideros</i>	<i>collina</i>	(Forst.) A. Gray	Myrtaceae
<i>Mikania</i>	<i>micrantha</i>	H.B.K.	Compositae
<i>Morinda</i>	<i>citrifolia</i>	L.	Rubiaceae
<i>Musa</i>	spp.		Musaceae
<i>Myristica</i>	<i>fatua</i>	Houtt.	Myristicaceae
<i>Myristica</i>	<i>hypargyreae</i>	A. Gray	Myristicaceae
<i>Neonauclea</i>	<i>forsteri</i>	(Seem.) Merr.	Rubiaceae
<i>Nephrolepis</i>	<i>biserrata</i>	(Sw.) Schott	Davalliaceae
<i>Pandanus</i>	<i>reineckeii</i>	Warb.	Pandanaceae
<i>Pandanus</i>	<i>tectorius</i>	Park.	Pandanaceae
<i>Paspalum</i>	<i>conjugatum</i>	Berg.	Gramineae
<i>Paspalum</i>	<i>distichum</i>	L.	Gramineae
<i>Paspalum</i>	<i>paniculatum</i>	L.	Gramineae
<i>Planchonella</i>	<i>grayana</i>	St. John	Sapotaceae
<i>Planchonella</i>	<i>linggensis</i>	(Burck.) Pierre	Sapotaceae
<i>Planchonella</i>	<i>torricellensis</i>	(Schum.) H.J. Lam	Sapotaceae
<i>Piper</i>	<i>graeffei</i>	C. DC.	Piperaceae
<i>Pipturus</i>	<i>argenteus</i>	(Forst. f.) Wedd.	Urticaceae
<i>Pisonia</i>	<i>grandis</i>	R. Br.	Nyctaginaceae
<i>Pometia</i>	<i>pinnata</i>	Forst.	Sapindaceae
<i>Psidium</i>	<i>guajava</i>	L.	Myrtaceae
<i>Psychotria</i>	spp.		Rubiaceae
<i>Rapanea</i>	<i>myricifolia</i>	(A. Gray) Mez.	Myrsinaceae
<i>Raphidophora</i>	<i>graeffei</i>	Eng.	Araceae
<i>Reynoldsia</i>	<i>lanutoensis</i>	Hoch.	Araliaceae
<i>Rhizophora</i>	<i>mangle</i>	L.	Rhizophoraceae
<i>Rhus</i>	<i>taitensis</i>	Guill.	Anacardiaceae
<i>Scaevola</i>	<i>taccada</i>	(Gaertn.) Roxb.	Goodeniaceae
<i>Scleria</i>	<i>polycarpa</i>	Boeck.	Cyperaceae
<i>Spiraeanthemum</i>	<i>samoense</i>	A. Gray	Cunoniaceae
<i>Streblus</i>	<i>anthropophagorum</i>	(Seem.) Comer	Moraceae
<i>Syzygium</i>	<i>brevifolium</i>	(A. Gray) C. Muell.	Myrtaceae
<i>Syzygium</i>	<i>clusiaefolium</i>	(A. Gray) C. Muell.	Myrtaceae
<i>Syzygium</i>	<i>dealatum</i>	(Burk.) A.C. Smith	Myrtaceae
<i>Syzygium</i>	<i>inophylloides</i>	(A. Gray) C. Muell.	Myrtaceae
<i>Syzygium</i>	<i>samarangense</i>	(Bl.) Merr. & Perry	Myrtaceae
<i>Syzygium</i>	<i>samoense</i>	(Burk.) Whistler	Myrtaceae
<i>Terminalia</i>	<i>richii</i>	A. Gray	Combretaceae
<i>Thespesia</i>	<i>populnea</i>	(L.) Sol.	Malvaceae
<i>Trichospermum</i>	<i>richii</i>	(A. Gray) Seem.	Tiliaceae
<i>Vigna</i>	<i>marina</i>	(Burm.) Merr.	Leguminosae
<i>Wedelia</i>	<i>biflora</i>	(L.) DC.	Compositae
<i>Weinmannia</i>	<i>affinis</i>	A. Gray	Cunoniaceae
<i>Xylocarpus</i>	<i>moluccensis</i>	(Lmk.) Roem.	Meliaceae

Sources: Christophersen (1935) and Amerson and others (1982).

Upland Forest/Secondary Vegetation (UP/SV)

This forest subtype, also called secondary forest (Amerson and others 1982), is a transitional stage between cleared or plantation land and climax forest. Many variations between the two are apparent. What distinguishes the upland forest/secondary vegetation subtype is the dominance of species in the canopy and understory layers that thrive on disturbance. These tree species usually have small, readily dispersed seeds, and fast growth rates that allow them to shade out and inhibit the slower growing upland forest species.

In its mature stages this forest subtype is most often characterized by two species: *Rhus taitensis* and *Alphitonia zizyphoides*. Large areas on the foothills are dominated by *Rhus* forest (UP.R). The even, homogeneous canopies of the *Rhus* trees are easily recognized on aerial photographs. In the younger stages of secondary forest, the dominant species include *Hibiscus tiliaceus*, *Macaranga harveyana*, *M. stipulosa*, *Bischofia javanica*, *Dysoxylum* spp., *Cananga odorata*, *Trichospermum richii*, *Glochidion ramiflorum*, and *Neonauclea forsteri*. In some areas, coconut palms are found in the overstory, indicating that the secondary forest is replacing a former coconut plantation (UP.CO).

Coastal Forest (CF)

This forest type characteristically occurs on a narrow strip between the strand or littoral vegetation (Amerson and others 1982) and the upland forest type. They are particularly prevalent on volcanic tuff cones and steep coastal slopes. The species found are not as salt-tolerant as those that dominate along the shoreline. On the moist inland slopes, coastal forest species are replaced by rain forest species. In their narrow zone—particularly on volcanic tuff cones and on steep coastal slopes—however, coastal forest species predominate.

Coastal forest trees are generally shorter than those of the upland forest. They are often closely spaced and have small to moderate trunk diameters. The forest floor is usually relatively open and epiphytes are sparse, but several species of lianas occur here. The dominant tree species in the coastal forest are *Diospyros samoensis*, *D. elliptica*, *Syzygium dealatum*, *Cerbera manghas*, *Cordia subcordata*, *Syzygium clusiaefolium*, *Planchonella grayana*, and *Ficus obliqua*. In contrast to strand species, coastal forest species usually have wind- or bird-dispersed seeds rather than seeds that are distributed by sea.

Littoral forest, located between the strand and coastal forest, is mapped as coastal forest in our survey. Although littoral forest is a distinct vegetation type (Amerson and others 1982), the boundary between the coastal and littoral forest types is very difficult to determine on aerial photographs. Therefore, it was grouped with the adjacent coastal forest vegetation and not the shrubby strand vegetation or littoral vegetation.

Littoral forest has predominately salt-tolerant trees with seeds that are dispersed by seawater or sea birds. The most common of these species are *Barringtonia asiatica*, *Calophyllum inophyllum*, *Pisonia grandis*, *Erythrina variegata*, *Thespesia populnea*, *Hibiscus tiliaceus*, *Cocos nucifera*, *Hernandia nymphaeifolia*, and *Pandanus tectorius*.

Mangrove (MN)

Undisturbed mangrove forest is comprised almost entirely of a single species, *Bruguiera gymnorhiza*, the oriental mangrove. These trees have large diameters and form a closed canopy 40 to 50 ft (12 to 15 m) high. The forest floor is open and the only plants able to survive among the breathing roots (pneumatophores) protruding from the black, mucky, saline soil, are seedlings of *Bruguiera*. Mangrove forest occupies wet places at the mouths of streams and along the edges of lagoons. If these wet coastal areas do not have a direct access to the sea (and, therefore, are not directly affected by seawater), a coastal marsh (M) will develop.

In disturbed mangrove stands or along their sunny margins, another mangrove species, *Rhizophora mangle*, predominates. Species such as *Xylocarpus moluccensis* and trees typical of the littoral forest are also found along the margins of the mangrove forest. Clumps of the marsh fern, *Acrostichum aureum*, sometimes occur in disturbed areas and on the margins of the forest.

Only few areas of mangrove forest remain. The most extensive stands occur at Pala Lagoon and Masefau on Tutuila and on Aunu'u Island. Mangrove is not found in the Manu'a Islands.

Dwarf Forest (DV)

This low-stature forest is located on the steep, windswept cliffs on the south slope of Mt. Lata on Ta'u, and below Mt. Piumafua on Olosega. Dwarf forests are usually comprised of the same species as moss forests (MS), but are stunted because of the harsh sites they occupy.

Moss Forest (MS)

Moss forest, commonly called "cloud forest," occurs only on the summits of Ta'u and Olosega. The dominant trees are *Syzygium samoense*, *Weinmannia affinis*, *Astronidium pickeringii*, *Dysoxylum huntii*, *Fagraea berteriana*, *Syzygium samarangense*, *Ascarina diffusa*, *Reynoldsia lanutoensis*, *Garcinia myrtifolia*, and *Streblus anthropophagorum*. This low open-canopy forest occurs in areas of high rainfall. This condition accounts for the ground and trees being densely covered by mosses, ferns, orchids, and other epiphytes, and by climbers such as *Freycinetia* spp. A major overstory component of Samoan moss forest is tree fern, *Cyathea* spp. (MS.C).

Secondary Vegetation

Secondary vegetation (SV) is dominated by shrubs and small trees, and is a successional stage between grasslands (G), agroforests (AG), or croplands (C) and secondary forest (UP/SV). The dominant species include *Melastoma denticulatum*, *Macaranga harveyana*, *Pipturus argenteus*, *Morinda citrifolia*, *Psidium guajava*, *Hibiscus tiliaceus*, *Melochia aristata*, and *Leucaena leucocephala*. Numerous herbaceous weeds and some weedy vines are also found in this type of vegetation.

Several successional stages can be seen on geologically recent lava flows near the Tafuna Airport on Tutuila. There, *Leucaena leucocephala* has been replaced by *Macaranga harveyana*, which in turn is being overgrown and shaded out by such rain forest species as *Dysoxylum samoense*.

Agroforest

Agroforests (AG)

Such forests are generally located along the coast, in valleys, and near villages. They are a mix of forest and food-producing trees and other cultured plants. Various food plants include coconuts (*Cocos nucifera*), breadfruit (*Artocarpus altilis*), various taro varieties, bananas (*Musa spp.*), mango (*Mangifera indica*), and a few other fruit trees of minor importance. Most agroforests in Samoa, especially on Tutuila, include a coconut component and are coded AG.CO. Managed agroforests, as found in Micronesia, however, are fairly rare in Samoa.

Coconut Plantation (CO)

Dense groves of coconut trees, originally planted for commercial reasons, are designated as CO. A distinctive characteristic on the aerial photographs of coconut plantation type is the geometric planting pattern of the groves. Remnant coconut plantations are fairly common in the lowlands, especially on Ta'u. Although the production of copra has virtually ceased in American Samoa, these groves are still used for food, fiber, and other purposes.

Nonforest

Grassland (G)

This type of vegetation occurs only in small patches and often occupies recently abandoned croplands (mostly taro). Grasslands represent the first successional stage of reclamation of disturbed lands. Among the dominant species in these grasslands are *Paspalum conjugatum*, *P. paniculatum*, and *Mikania micrantha*, and numerous other species.

Strand (S)

Strand vegetation (Amerson and others 1982) occupies undisturbed coasts on all of the islands of American Samoa. On the basis of physiognomy and species composition, several different types occur. If the shore is sandy, the area is usually dominated by creeping vines and is termed "sand strand." These vine species dominate: *Canavalia rosea*, *Vigna marina*, and *Ipomoea pes-caprae*, and—to a lesser extent—the grass or sedge species *Lepturus repens*, *Paspalum distichum*, and *Fimbristylis cymosa*.

If the shore is rocky, grasses and succulents dominate. Species common to this rock strand include *Lepturus repens* and *Fimbristylis cymosa*.

Commonly associated with the herbaceous rock and sand strands is a zone of shrubby vegetation which usually separates the littoral forest from the shoreline strand. Species found in this area include *Scaevola taccada*, *Wedelia biflora*, and *Ficus scabra*. Occasionally (on southwest slopes of Olosega Island) this zone of shrubs develops into a major vegetative community. In addition, dense stands of *Pandanus tectorius* form small pockets along many coastlines.

Marsh (M)

Freshwater marshes usually occur along the coast in areas where stream outlets to the sea are blocked by sand barriers. These barriers cause the streams to spread out into low lying areas, saturating the soil. Despite the proximity of these marshes to the sea, mangrove trees are not present, possibly because the seeds cannot disperse across the sand barrier.

The dominant species in marshes are *Cyclosorus interruptus*, *Acrostichum aureum*, and *Eleocharis dulcis*. The most extensive area of marsh in American Samoa is found in Aunu'u Crater.

Cropland (C)

Cropland is cultivated land without tree cover. The most common crop is taro, primarily dryland taro that grows on the hills and valleys of the lowlands and sometimes in patches in the inland forests. Other crops include yams, cassava, and bananas (C.B).

Urban (U)

Urban land includes villages, buildings, roads, airports, and other development projects. Vegetation is usually sparse with lawns and hedges being the major types in villages. When trees are present, this type may intergrade into agroforest (U/AG) and coconut (U/AG.CO).

Barren (B)

Areas that lack natural vegetation because of rocks, sterile soil, bulldozing, and others are delineated as barren.

Water (W)

Includes fresh (W.F.) and saline (W.S) water.

FOREST INVENTORY

Inventory Procedures

Field data for the current inventory of forest resources were collected in 1986. The inventory was limited to forest lands on the islands of Aunu'u, Nu'utele, Olosega, Ofu, Ta'u, and Tutuila. Nonforest lands, secondary vegetation, agroforest, and areas incapable of growing trees over 5 inches (12.5 cm) in diameter at breast height (d.b.h.) (see *Glossary*) were excluded from the inventory (*table 5*). The location and area of forest lands—timberland and other forest—were determined from the vegetation type maps for American Samoa (see maps in the back pocket). The type maps were based on aerial photographs taken in 1984. This inventory provides volume estimates only for timberland area.

Sampling was used in the inventory for three purposes:

1. To adjust typed timberland area for land class changes since the 1984 photography.
2. To estimate the proportion of timberland area too steep to permit growing and harvesting continuous crops of industrial roundwood.
3. To estimate timberland area and volume in a way that allows calculation of sampling errors for these statistics.

Table 5—Area by land class and island, American Samoa, 1985

Land class	Island				Total	
	Tutuila ¹	Ta'u	Ofu ²	Olosega		
	Acres (hectares)					
Timberland	12,424	3,840	361	—	16,625	(6,728)
Other forests:						
Steep ^{3,4}	4,364	1,720	652	608	7,344	(2,972)
Scrub ^{4,5}	1,028	442	129	76	1,675	(678)
Moss ⁴	—	2,948	—	94	3,042	(1,231)
Total timberland	17,816	8,950	1,142	778	28,686	(11,609)
Agroforest	12,540	1,913	568	489	15,510	(6,277)
Secondary vegetation	583	25	-	-	608	(246)
Nonforest	2,758	321	91	37	3,207	(1,298)
Total area	33,697	11,209	1,801	1,304	48,011	(19,430)

¹Includes Aunu'u.²Includes Nu'utele.³Timberland generally with slopes in excess of 100 percent (>45°).⁴Land incapable of producing continuous crops of trees for commercial use.⁵Includes dwarf forest.

A square grid (0.9 mile [1.5 km]) was superimposed on the type maps. At each grid intersection falling in a timberland type, a plot was field-checked for steepness and classification accuracy; 26 plots were examined on Tutuila, 6 on Ta'u, and 2 on Ofu. Examination revealed that some land typed as timberland was actually agroforest. These classification differences occurred for two reasons: (1) the conversion of forest land, and (2) typing inaccuracies due to the presence of clouds on the aerial photography. Additionally, five plots on Tutuila and two each on Ta'u and Ofu had slopes exceeding 100 percent and were reclassified "other forests—steep."

Because few grid intersections occurred on Ofu, Olosega, and Ta'u, the sample was augmented by selecting supplementary plots within mapped timberland types. These additional plots were examined only for steepness in order to improve the area estimate for timberland and other forests—steep. The use of supplemental points was possible because field reconnaissance on the three islands indicated that no timberland grid plots had been converted to other land uses since the photographs were taken. On Tutuila, the conversion of two timberland grid plots to agroforest prevented the use of supplemental plots to evaluate steepness and timberland.

After adjustments for steepness, land-use conversion and type errors due to cloud cover, 20 plots on the grid remained classified as timberland: 16 on Tutuila and 4 on Ta'u. Field crews carefully located each of these plots at its pinpricked location on the aerial photographs. Cloud patterns on the photographs obscured several plots; the crews located these using topographical maps. Each plot was referenced on the ground for future remeasurements.

A cluster of five systematically chosen sample points was established at each location with the points distributed across about 6 acres (2.5 ha). At each point, all trees with d.b.h. between 5 inches (12.5 cm) and 35 inches (90 cm) were tallied, if selected, using a variable plot sampling calibrated to a basal area factor of 30.5 ft² per acre (7 m²/ha) (Grosenbaugh 1958). Additionally, all trees over 35 inches (90 cm) d.b.h. within 55.8 ft (17 m) of point center were tallied, as were trees less than 5 inches (12.5 cm) within 7.7 ft (2.36 m) of point center.

Species, diameter at breast height, and total height were recorded for each tally tree. Each tree was visually divided into segments, and the length and end diameters of the segments were measured or estimated. Each segment was classified as either a sawlog, poletimber, roughwood, upper stem, craftwood bolt, crotch, tip, or branch (see *Glossary*). Rotten segments were identified. With these data the cubic volume in each sound segment of every tally tree was computed. Then for timberland, we calculated total net cubic volume by island:

Island:	Net timberland volume	
	<i>1,000 ft³ (1,000 m³)</i>	
Tutuila (including Aunu'u)	6,209	(175.8)
Ta'u	1,918	(54.3)
Ofu (including Nu'utele)	180	(5.1)
Olosega	-	(-)
Total volume	8,307	(235.2)

We also computed total net timberland volume, by tree species (table 6), and by tree component:

Tree component:	Net timberland volume 1,000 ft ³ (1,000 m ³)	
Sawtimber:		
Sawlog	3,796	(107.5)
Upper stem	735	(20.8)
Craftwood bolts	212	(6.0)
Branch and crotch	491	(13.9)
Tip	56	(1.6)
Roughwood	343	(9.7)
Total	5,633	(159.5)
Poletimber:		
Poletimber	2,278	(64.5)
Tip	251	(7.1)
Branch	145	(4.1)
Total	2,674	(75.7)
Total volume	8,307	(235.2)

Each sample point was marked and referenced and each tally tree was tagged and numbered to facilitate relocation and remeasurement. When the plots are revisited, measurements of diameter at breast height, growth, and tree mortality will be possible.

Reliability of Inventory Data

Timberland area estimates for Ofu (including Nu'utele); Olosega, Ta'u, and Tutuila (including Aunu'u) were developed by treating mapped timberland area for each island as a separate, independent population. On each island, the area estimate for timberland was calculated by multiplying the mapped timberland area by the proportion of regular and supplemental plots that proved to be timberland. These estimates were subject to sampling error unless all or none of the plots classified as timberland on the type maps were correctly classified. Sampling errors were calculated by using the formula for random sampling (Cochran 1963).

The timberland area estimate for American Samoa is the sum of estimates for the four islands, and the overall sampling error is derived from the sum of the four variances.

Volume estimates are also subject to sampling error since they are derived from sample measurements. Volume per unit of area is a mean value based on all field-measured timberland plots (n=20).

Estimates of timberland area and volume and the associated confidence intervals at the 67 percent probability level for American Samoa are:

Timberland area:	
	16,625 acres ± 1850 acres (6,728 ha ± 749 ha)
Net timberland volume:	
	8,307,000 ft ³ ± 1,931,700 ft ³
	(235,200 m ³ ± 54,700 m ³)

Confidence intervals are quantitative expressions of the reliability of the timberland area and volume statistics. Thus, a two-in-three chance exists that there are between 14,775 and 18,475 acres (5979 and 7477 ha) of timberland and between 6,375,300 and

10,238,700 ft³ (180,500 and 289,900 m³) of timberland volume within American Samoa.

In an earlier appraisal, Nelson (1964) estimated that the forest land on which timber crops could be managed in Tutuila totaled 10,000 acres (4000 ha), with another 8,000 acres (3200 ha) on which watershed values should be protected because of steep topography.

Table 6—Net timberland volume, by species, American Samoa, 1985

Species (common name)	Net volume 1000 ft ³ (1000 m ³)	
<i>Aglaia samoensis</i> (laga'ali)	131	(3.7)
<i>Alphitonia zizyphoides</i> (toi)	49	(1.4)
<i>Alstonia</i> spp.	60	(1.7)
<i>Arytera</i> spp. (lau'lili'i)	42	(1.2)
<i>Barringtonia samoensis</i> (falaga)	46	(1.3)
<i>Bischofia javanica</i> ('o'a)	152	(4.3)
<i>Calophyllum samoense</i> (tamanu)	869	(24.6)
<i>Cananga odorata</i> (moso'oi)	39	(1.1)
<i>Cerbera manghas</i> (leva)	131	(3.7)
<i>Cocos nucifera</i> (niu)	201	(5.7)
<i>Colubrina asiatica</i> (fisoa)	57	(1.6)
<i>Cordia subcordata</i> (tauanave)	71	(2.0)
<i>Diospyros samoensis</i> ('au'auli)	357	(10.1)
<i>Dysoxylum huntii</i> (maota mea)	138	(3.9)
<i>Dysoxylum maota</i> (maota)	290	(8.2)
<i>Erythrina variegata</i> (gatae)	42	(1.2)
<i>Eugenia</i> spp.	53	(1.5)
<i>Ficus</i> spp. (mati)	42	(1.2)
<i>Flacourtia rukam</i> (filimoto)	258	(7.3)
<i>Gironniera celtidifolia</i> (lau'nini'i)	81	(2.3)
<i>Hibiscus tiliaceus</i> (fau)	258	(8.0)
<i>Inocarpus fagifer</i> (ifi)	332	(9.4)
<i>Kleinhovia hospita</i> (fu'afu'a)	60	(1.7)
<i>Litsea samoensis</i> (papaono)	74	(2.1)
<i>Mangifera indica</i> (mago)	170	(4.8)
<i>Myristica</i> spp. ('atone)	1,373	(38.9)
<i>Neonauclea forsteri</i> (afa)	64	(1.8)
<i>Planchonella torricellensis</i> (mamalava)	360	(10.2)
<i>Psychotria</i> spp. (matalafi)	92	(2.6)
<i>Rhus taitensis</i> (tavai)	1,338	(37.9)
<i>Syzygium inophylloides</i> (asi)	201	(5.7)
<i>Terminalia richii</i> (malili)	402	(11.4)
Others	474	(13.4)
Total	8,307	(235.2)
<i>Cyathea</i> spp. (olioli)	208	(5.9)
Total	8,515	(241.1)

Sources: Christophersen (1935), Amerson and others (1982), and Whistler (1984).

GLOSSARY

- Agroforest:** Land where planted fruit trees and other agricultural plants are cultured among forest trees.
- Bolt:** A 6-ft (2-m) section of a tree that is at least 11 inches (27.5 cm) in d.b.h. Must have a mid-point diameter of at least 10 inches (25 cm) and must not meet sawlog specifications.
- Branch:** Tree limb not meeting sawlog or bolt specifications.
- Crotch:** The swollen portion of a tree stem at a fork.
- Cull:** A volume deduction for rotten wood.
- Cull trees, rotten:** Trees that are more than 75 percent defective because of rot.
- D.b.h.:** Diameter at breast height. Tree diameter outside bark measured at breast height, 54 inches (1.3 m) above the ground.
- Forest land:** Land at least 10 percent stocked by live trees or land formerly having such tree cover and not currently developed for nonforest use.
- Land area:** Land area includes dry land and land temporarily or partially covered by water, such as marshes, swamps, and river flood plains.
- Land class:** A classification of land by major use or major vegetative characteristics, i.e., forest, secondary vegetation, agroforest, and nonforest.
- Net volume:** The cubic volume, exclusive of rotten wood.
- Nonforest land:** Land that has never supported forests or was formerly forested and is currently developed for nonforest use.
- Other forest land:** Forest land incapable of producing trees of merchantable size (5 inches [12.5 cm] d.b.h.) because of adverse site conditions or land that is physically unsuited for the production of industrial crops of wood because of rocky or steep terrain.
- Poletimber tree:** A live tree that is between 5 inches (12.5 cm) and 11 inches (27.5 cm) in d.b.h.
- Poletimber volume:** The net cubic volume in poletimber trees.
- Rough wood:** Logs of sawtimber size that fail to meet saw-log specifications because of poor form or excessive limbs.
- Saw-log:** A straight segment of a sawtimber tree that is at least 8.2 ft (2.5 m) long and no less than 9 inches (22.5 cm) in diameter outside the bark at the small end.
- Sawtimber tree:** A live tree that is at least 11 inches (27.5 cm) in d.b.h.
- Sawtimber volume:** The net cubic volume in sawtimber trees.
- Secondary vegetation:** A vegetation type characterized by small, fast-growing trees and vines, usually weedy invaders.
- Stump:** The portion of a tree that lies below a point 12 inches (0.3 m) above the ground.

Timberland: Forest land capable of producing 20 ft³ per acre (1.4 m³ per ha) per year or more of industrial wood (commercial roundwood other than firewood) and not withdrawn from timber utilization.

Timber volume: Includes the net cubic volume of all poletimber and sawtimber trees, including tip and branches but excluding stump.

Tip: The portion of the main stem of a sawtimber or poletimber tree that is less than 4 inches (10 cm) in diameter outside the bark.

Tree component: A segment of a tree with specific utilization characteristics (bolt, branch, crotch, rough wood, saw log, tip, upper stem).

Upper-stem: The bole of a sawtimber tree above the saw-log top—9 inches (22.5 cm) outside the bark—to a minimum top diameter of 4 inches (10 cm) outside the bark or to the point where the central stem breaks into limbs.

Vegetation type: An area delineated on the vegetation maps as having species composition similar to one of the types described in the section on type classification.

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TUTUILA ISLAND
West Half
Sheet 1 of 4

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AMERICAN SAMOA
Index Map

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TOPOGRAPHIC MAP
WEST HALF

TUTUILA ISLAND

AMERICAN SAMOA

VEGETATION LEGEND

For explanation of vegetation type codes see "page 2"

ITEM	AREA	ITEM	AREA	ITEM	AREA	ITEM	AREA
1	2.4	101	1.1	191	1.1	281	1.1
2	0.4	102	1.1	192	1.1	282	1.1
3	11.1	103	1.1	193	1.1	283	1.1
4	1.0	104	1.1	194	1.1	284	1.1
5	1.0	105	1.1	195	1.1	285	1.1
6	1.0	106	1.1	196	1.1	286	1.1
7	1.0	107	1.1	197	1.1	287	1.1
8	1.0	108	1.1	198	1.1	288	1.1
9	1.0	109	1.1	199	1.1	289	1.1
10	1.0	110	1.1	200	1.1	290	1.1
11	1.0	111	1.1	201	1.1	291	1.1
12	1.0	112	1.1	202	1.1	292	1.1
13	1.0	113	1.1	203	1.1	293	1.1
14	1.0	114	1.1	204	1.1	294	1.1
15	1.0	115	1.1	205	1.1	295	1.1
16	1.0	116	1.1	206	1.1	296	1.1
17	1.0	117	1.1	207	1.1	297	1.1
18	1.0	118	1.1	208	1.1	298	1.1
19	1.0	119	1.1	209	1.1	299	1.1
20	1.0	120	1.1	210	1.1	300	1.1
21	1.0	121	1.1	211	1.1	301	1.1
22	1.0	122	1.1	212	1.1	302	1.1
23	1.0	123	1.1	213	1.1	303	1.1
24	1.0	124	1.1	214	1.1	304	1.1
25	1.0	125	1.1	215	1.1	305	1.1
26	1.0	126	1.1	216	1.1	306	1.1
27	1.0	127	1.1	217	1.1	307	1.1
28	1.0	128	1.1	218	1.1	308	1.1
29	1.0	129	1.1	219	1.1	309	1.1
30	1.0	130	1.1	220	1.1	310	1.1
31	1.0	131	1.1	221	1.1	311	1.1
32	1.0	132	1.1	222	1.1	312	1.1
33	1.0	133	1.1	223	1.1	313	1.1
34	1.0	134	1.1	224	1.1	314	1.1
35	1.0	135	1.1	225	1.1	315	1.1
36	1.0	136	1.1	226	1.1	316	1.1
37	1.0	137	1.1	227	1.1	317	1.1
38	1.0	138	1.1	228	1.1	318	1.1
39	1.0	139	1.1	229	1.1	319	1.1
40	1.0	140	1.1	230	1.1	320	1.1
41	1.0	141	1.1	231	1.1	321	1.1
42	1.0	142	1.1	232	1.1	322	1.1
43	1.0	143	1.1	233	1.1	323	1.1
44	1.0	144	1.1	234	1.1	324	1.1
45	1.0	145	1.1	235	1.1	325	1.1
46	1.0	146	1.1	236	1.1	326	1.1
47	1.0	147	1.1	237	1.1	327	1.1
48	1.0	148	1.1	238	1.1	328	1.1
49	1.0	149	1.1	239	1.1	329	1.1
50	1.0	150	1.1	240	1.1	330	1.1
51	1.0	151	1.1	241	1.1	331	1.1
52	1.0	152	1.1	242	1.1	332	1.1
53	1.0	153	1.1	243	1.1	333	1.1
54	1.0	154	1.1	244	1.1	334	1.1
55	1.0	155	1.1			335	1.1
56	1.0	156	1.1			336	1.1
57	1.0	157	1.1			337	1.1
58	1.0	158	1.1			338	1.1
59	1.0	159	1.1			339	1.1
60	1.0	160	1.1			340	1.1
61	1.0	161	1.1			341	1.1
62	1.0	162	1.1			342	1.1
63	1.0	163	1.1			343	1.1
64	1.0	164	1.1			344	1.1
65	1.0	165	1.1			345	1.1
66	1.0	166	1.1			346	1.1
67	1.0	167	1.1			347	1.1
68	1.0	168	1.1			348	1.1
69	1.0	169	1.1			349	1.1
70	1.0	170	1.1			350	1.1
71	1.0	171	1.1			351	1.1
72	1.0	172	1.1			352	1.1
73	1.0	173	1.1			353	1.1
74	1.0	174	1.1			354	1.1
75	1.0	175	1.1			355	1.1
76	1.0	176	1.1			356	1.1
77	1.0	177	1.1			357	1.1
78	1.0	178	1.1			358	1.1
79	1.0	179	1.1			359	1.1
80	1.0	180	1.1			360	1.1
81	1.0	181	1.1			361	1.1
82	1.0	182	1.1			362	1.1
83	1.0	183	1.1			363	1.1
84	1.0	184	1.1			364	1.1
85	1.0	185	1.1			365	1.1
86	1.0	186	1.1			366	1.1
87	1.0	187	1.1			367	1.1
88	1.0	188	1.1			368	1.1
89	1.0	189	1.1			369	1.1
90	1.0	190	1.1			370	1.1
91	1.0	191	1.1			371	1.1
92	1.0	192	1.1			372	1.1
93	1.0	193	1.1			373	1.1
94	1.0	194	1.1			374	1.1
95	1.0	195	1.1			375	1.1
96	1.0	196	1.1			376	1.1
97	1.0	197	1.1			377	1.1
98	1.0	198	1.1			378	1.1
99	1.0	199	1.1			379	1.1
100	1.0	200	1.1			380	1.1
101	1.0	201	1.1			381	1.1
102	1.0	202	1.1			382	1.1
103	1.0	203	1.1			383	1.1
104	1.0	204	1.1			384	1.1
105	1.0	205	1.1			385	1.1
106	1.0	206	1.1			386	1.1
107	1.0	207	1.1			387	1.1
108	1.0	208	1.1			388	1.1
109	1.0	209	1.1			389	1.1
110	1.0	210	1.1			390	1.1
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114	1.0	214	1.1			394	1.1
115	1.0	215	1.1			395	1.1
116	1.0	216	1.1			396	1.1
117	1.0	217	1.1			397	1.1
118	1.0	218	1.1			398	1.1
119	1.0	219	1.1			399	1.1
120	1.0	220	1.1			400	1.1
121	1.0	221	1.1				
122	1.0	222	1.1				
123	1.0	223	1.1				
124	1.0	224	1.1				
125	1.0	225	1.1				
126	1.0	226	1.1				
127	1.0	227	1.1				
128	1.0	228	1.1				
129	1.0	229	1.1				
130	1.0	230	1.1				
131	1.0	231	1.1				
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148	1.0	248	1.1				
149	1.0	249	1.1				
150	1.0	250	1.1				
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152	1.0	252	1.1				
153	1.0	253	1.1				
154	1.0	254	1.1				
155	1.0	255	1.1				
156	1.0	256	1.1				
157	1.0	257	1.1				
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159	1.0	259	1.1				
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162	1.0	262	1.1				
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164	1.0	264	1.1				
165	1.0	265	1.1				
166	1.0	266	1.1				
167	1.0	267	1.1				
168	1.0	268	1.1				
169	1.0	269	1.1				
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171	1.0	271	1.1				
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179	1.0	279	1.1				
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181	1.0	281	1.1				
182	1.0	282	1.1				
183	1.0	283	1.1				
184	1.0	284	1.1				
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192	1.0	292	1.1				
193	1.0	293	1.1				
194	1.0	294	1.1				
195	1.0	295	1.1				
196	1.0	296	1.1				
197	1.0	297	1.1				
198	1.0	298	1.1				
199	1.0	299	1.1				
200	1.0	300	1.1				
201	1.0	301	1.1				

TUTUILA ISLAND
 East Half
 Sheet 2 of 4

Cole, Thomas G.; Whitesell, Craig D.; Whistler, W. Arthur; McKay, Neil;
 Ambacher, Alan H. Vegetation survey and forest inventory, American Samoa.
 Resour. Bull. PSW-25. Berkeley, CA: Pacific Southwest Forest and Range
 Experiment Station, Forest Service, U.S. Department of Agriculture; 1988. 16 p. + 4 maps.

AMERICAN SAMOA
 Index Map

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AREA			AREA			AREA			AREA		
ITEM	LABEL	ITEM	LABEL	ITEM	LABEL	ITEM	LABEL	ITEM	LABEL	ITEM	LABEL
TUTUHA											
232	UPH	1813	720.8	386	UQ COV SV	8	0.0	446	CF1/2 SV	40	10.0
233	AG COV SV	175	70.0	387	UQ SV	18	1.0	447	CF1H	81	20.0
234	UPH	201	10.0	388	UPH SV	24	13.0	448	UPH SV	8	0.1
235	U	18	1.3	389	UPH	28	10.0	449	UPH SV	75	18.0
236	U	18	1.3	390	U	0	0.0	450	SVH	62	25.0
237	UPH	201	10.0	391	U	0	0.0	451	UPH SV	11	0.0
238	UPH	29	11.0	392	AG COV SV	40	10.0	452	UPH SV	18	10.0
239	UPH	8	1.1	393	UPH	41	10.0	453	UPH	22	10.0
240	UPH	201	63.8	394	UPH SV	30	10.0	454	UPH	22	10.0
241	UPH	177	11.8	395	AG COV SV	11	0.0	455	UPH SV	18	10.0
242	UPH	18	1.3	396	AG COV	40	10.0	456	UPH	29	11.0
243	UPH SV	10	0.0	397	CF1H	0	0.0	457	UPH	29	11.0
244	UPH	81	10.0	398	UPH SV	18	10.0	458	UPH SV	18	10.0
245	UPH	18	1.0	400	CF1H	12	0.3	501	AG COV	30	8.0
246	UPH	18	1.0	401	CF1H	34	10.0	502	CF1H	0	0.0
247	AG COV SV	788	42.0	402	CF1H	0	0.0	503	UPH SV	8	0.0
248	U	45	18.2	403	CF1H	1	0.0	504	UPH SV	73	11.0
249	UPH	11	0.4	404	CF1H	1	0.0	505	UPH SV	11	0.0
250	AG COV SV	27	87.0	405	COV SV	7	1.0	506	AG COV SV	19	20.0
251	UPH	877	8.0	406	UPH	11	0.0	507	UPH SV	11	0.0
252	UPH	8	1.2	407	SV	8	0.0	508	UPH	24	11.0
253	AG COV	263	116.1	408	U	75	0.0	509	AG COV	42	14.2
254	UPH	18	1.3	409	UPH	34	10.0	510	AG COV	11	0.0
255	U	8	0.0	410	DF1H	11	1.0	511	U	11	0.0
256	UPH	118	1.0	411	CF1H	1	0.0	512	UPH SV	12	1.2
257	UPH SV	56	22.0	412	UPH SV	81	10.0	513	UPH SV	101	20.0
258	UPH	6	1.0	413	UPH SV	27	11.0	514	UPH SV	101	20.0
259	U	120	10.0	414	UPH SV	81	10.0	515	CF1H	11	0.3
260	UPH	27	51.8	415	U	164	0.0	516	UPH	32	11.0
261	SV	10	1.0	416	UPH	28	11.0	517	UPH SV	36	10.0
262	SV	8	1.0	417	UPH	1	1.0	518	UPH SV	36	10.0
263	SV	81	29.1	418	CF1H	18	1.0	519	UPH	0	1.0
264	CF1H SV	40	8.0	419	UPH SV	2	10.0	520	CF1H	1	0.0
265	UPH	238	8.0	420	UPH SV	18	0.0	521	CF1H	7	1.0
266	UPH	142	54.1	421	UPH SV	18	0.0	522	CF1H	7	1.0
267	UPH	43	11.1	422	UPH SV	27	10.0	523	U	11	1.0
268	UPH SV	18	11.0	423	UPH SV	29	11.0	524	UPH SV	1	0.0
269	UPH SV	18	1.1	424	UPH SV	29	11.0	525	SVH	1	0.0
270	CF1H	0	0.0	425	UPH SV	29	11.0	526	UPH SV	1	0.0
271	UPH	1867	81.0	426	UQ COV	100	0.0	527	UPH	20	10.0
272	UPH	18	1.0	427	UQ SV	8	0.0	528	UPH	20	10.0
273	UPH SV	18	1.1	428	UPH SV	18	0.0	529	CF1H	11	0.0
274	UPH SV	18	1.1	429	UPH SV	18	0.0	530	CF1H	11	0.0
275	UPH SV	18	1.1	430	UPH SV	18	0.0	531	UPH SV	21	8.0
276	UPH SV	18	1.1	431	UPH SV	18	0.0	532	UPH SV	21	8.0
277	AG COV	11	1.3	432	UPH SV	18	0.0	533	UPH SV	21	8.0
278	AG COV SV	811	100.0	433	UPH SV	18	0.0	534	UPH SV	21	8.0
279	UPH	434	179.0	434	UPH SV	18	0.0	535	UPH SV	21	8.0
280	AG COV SV	30	18.1	435	UPH SV	22	8.0	536	UPH SV	21	8.0
281	UPH	128	10.0	436	UPH SV	22	8.0	537	UPH SV	21	8.0
282	UPH SV	11	8.5	437	UPH SV	22	8.0	538	UPH SV	21	8.0
283	UPH SV	11	8.5	438	UPH SV	22	8.0	539	UPH SV	21	8.0
284	UPH SV	11	8.5	439	UPH SV	22	8.0	540	UPH SV	21	8.0
285	UPH SV	11	8.5	440	UPH SV	22	8.0	541	UPH SV	21	8.0
286	UPH SV	11	8.5	441	UPH SV	22	8.0	542	UPH SV	21	8.0
287	UPH SV	11	8.5	442	UPH SV	22	8.0	543	UPH SV	21	8.0
288	UPH SV	11	8.5	443	UPH SV	22	8.0	544	UPH SV	21	8.0
289	UPH SV	11	8.5	444	UPH SV	22	8.0	545	UPH SV	21	8.0
290	UPH SV	11	8.5	445	UPH SV	22	8.0	546	UPH SV	21	8.0
291	UPH SV	11	8.5	446	UPH SV	22	8.0	547	UPH SV	21	8.0
292	UPH SV	11	8.5	447	UPH SV	22	8.0	548	UPH SV	21	8.0
293	UPH SV	11	8.5	448	UPH SV	22	8.0	549	UPH SV	21	8.0
294	UPH SV	11	8.5	449	UPH SV	22	8.0	550	UPH SV	21	8.0
295	UPH SV	11	8.5	450	UPH SV	22	8.0	551	UPH SV	21	8.0
296	UPH SV	11	8.5	451	UPH SV	22	8.0	552	UPH SV	21	8.0
297	UPH SV	11	8.5	452	UPH SV	22	8.0	553	UPH SV	21	8.0
298	UPH SV	11	8.5	453	UPH SV	22	8.0	554	UPH SV	21	8.0
299	UPH SV	11	8.5	454	UPH SV	22	8.0	555	UPH SV	21	8.0
300	UPH SV	11	8.5	455	UPH SV	22	8.0	556	UPH SV	21	8.0
301	UPH SV	11	8.5	456	UPH SV	22	8.0	557	UPH SV	21	8.0
302	UPH SV	11	8.5	457	UPH SV	22	8.0	558	UPH SV	21	8.0
303	UPH SV	11	8.5	458	UPH SV	22	8.0	559	UPH SV	21	8.0
304	UPH SV	11	8.5	459	UPH SV	22	8.0	560	UPH SV	21	8.0
305	UPH SV	11	8.5	460	UPH SV	22	8.0	561	UPH SV	21	8.0
306	UPH SV	11	8.5	461	UPH SV	22	8.0	562	UPH SV	21	8.0
307	UPH SV	11	8.5	462	UPH SV	22	8.0	563	UPH SV	21	8.0
308	UPH SV	11	8.5	463	UPH SV	22	8.0	564	UPH SV	21	8.0
309	UPH SV	11	8.5	464	UPH SV	22	8.0	565	UPH SV	21	8.0
310	UPH SV	11	8.5	465	UPH SV	22	8.0	566	UPH SV	21	8.0
311	UPH SV	11	8.5	466	UPH SV	22	8.0	567	UPH SV	21	8.0
312	UPH SV	11	8.5	467	UPH SV	22	8.0	568	UPH SV	21	8.0
313	UPH SV	11	8.5	468	UPH SV	22	8.0	569	UPH SV	21	8.0
314	UPH SV	11	8.5	469	UPH SV	22	8.0	570	UPH SV	21	8.0
315	UPH SV	11	8.5	470	UPH SV	22	8.0	571	UPH SV	21	8.0
316	UPH SV	11	8.5	471	UPH SV	22	8.0	572	UPH SV	21	8.0
317	UPH SV	11	8.5	472	UPH SV	22	8.0	573	UPH SV	21	8.0
318	UPH SV	11	8.5	473	UPH SV	22	8.0	574	UPH SV	21	8.0
319	UPH SV	11	8.5	474	UPH SV	22	8.0	575	UPH SV	21	8.0
320	UPH SV	11	8.5	475	UPH SV	22	8.0	576	UPH SV	21	8.0
321	UPH SV	11	8.5	476	UPH SV	22	8.0	577	UPH SV	21	8.0
322	UPH SV	11	8.5	477	UPH SV	22	8.0	578	UPH SV	21	8.0
323	UPH SV	11	8.5	478	UPH SV	22	8.0	579	UPH SV	21	8.0
324	UPH SV	11	8.5	479	UPH SV	22	8.0	580	UPH SV	21	8.0
325	UPH SV	11	8.5	480	UPH SV	22	8.0	581	UPH SV	21	8.0
326	UPH SV	11	8.5	481	UPH SV	22	8.0	582	UPH SV	21	8.0
327	UPH SV	11	8.5	482	UPH SV	22	8.0	583	UPH SV	21	8.0
328	UPH SV	11	8.5	483	UPH SV	22	8.0	584	UPH SV	21	8.0
329	UPH SV	11	8.5	484	UPH SV	22	8.0	585	UPH SV	21	8.0
330	UPH SV	11	8.5	485	UPH SV	22	8.0	586	UPH SV	21	8.0
331	UPH SV	11	8.5	486	UPH SV	22	8.0	587	UPH SV	21	8.0
332	UPH SV	11	8.5	487	UPH SV	22	8.0	588	UPH SV	21	8.0
333	UPH SV	11	8.5	488	UPH SV	22	8.0	589	UPH SV	21	8.0
334	UPH SV	11	8.5	489	UPH SV	22	8.0	590	UPH SV	21	8.0
335	UPH SV	11	8.5	490	UPH SV	22	8.0	591	UPH SV	21	8.0
336	UPH SV	11	8.5	491	UPH SV	22	8.0	592	UPH SV	21	8.0
337	UPH SV	11	8.5	492	UPH SV	22	8.0	593	UPH SV	21	8.0
338	UPH SV	11	8.5	493	UPH SV	22	8.0	594	UPH SV	21	8.0
339	UPH SV	11	8.5	494	UPH SV	22	8.0	595	UPH SV	21	8.0
340	UPH SV	11	8.5	495	UPH SV	22	8.0	596	UPH SV	21	8.0
341	UPH SV	11	8.5	496	UPH SV	22	8.0	597	UPH SV	21	8.0
342	UPH SV	11	8.5	497	UPH SV	22	8.0	598	UPH SV	21	8.0
343	UPH SV	11	8.5	498	UPH SV	22	8.0	599	UPH SV	21	8.0
344	UPH SV	11	8.5	499	UPH SV	22	8.0	600	UPH SV	21	8.0
345	UPH SV	11	8.5	500	UPH SV	22	8.0	601	UPH SV	21	8.0
346	UPH SV	11	8.5	501	UPH SV	22	8.0	602	UPH SV	21	8.0
347	UPH SV	11	8.5	502	UPH SV	22	8.0	603	UPH SV	21	8.0
348	UPH SV	11	8.5	503	UPH SV	22	8.0	604	UPH SV	21	8.0
349	UPH SV	11	8.5	504	UPH SV	22	8.0	605	UPH SV	21	8.0
350	UPH SV	11	8.5	505	UPH SV	22	8.0	606	UPH SV	21	8.0
351	UPH SV	11	8.5	506	UPH SV	22	8.0	607	UPH SV	21	8.0
352	UPH SV	11	8.5	507	UPH SV	22	8.0	608	UPH SV	21	8.0
353	UPH SV	11	8.5	508	UPH SV	22	8.0	609	UPH SV	21	8.0
354	UPH SV	11	8.5	509	UPH SV	22	8.0	610	UPH SV	21	8.0
355	UPH SV	11	8.5	510	UPH SV	22	8.0	611	UPH SV	21	8.0
356	UPH SV	11	8.5	511	UPH SV	22	8.0	612	UPH SV	21	8.0
357	UPH SV	11	8.5	512	UPH SV	22	8.0	613	UPH SV	21	8.0
358	UPH SV	11</									

ITEM	LAIRS	AREA
ALHAFU		
1	CFM	0.23
2	CFM	0
3	WHM	0
4	COIN	0
5	WHM	0
6	WHM	0
7	WHM	0
8	U	23
9	U	23
10	WJC	11
11	CS	0
12	WJC	11
13	WJC	0
14	WJC	0
15	WJC	0
16	WJC	0
17	WJC	0
18	WJC	0
19	WJC	0
20	WJC	0
21	WJC	0
22	WJC	0
23	WJC	0
24	U	23
25	WJC	0
26	WJC	0
27	WJC	0
28	WJC	0
29	WJC	0
30	WJC	0
31	WJC	0
32	WJC	0
33	WJC	0
34	WJC	0
35	WJC	0
36	WJC	0
37	WJC	0
38	WJC	0
39	WJC	0
40	WJC	0
41	WJC	0
42	WJC	0
43	WJC	0
44	WJC	0
45	WJC	0
46	WJC	0
47	WJC	0
48	WJC	0
49	WJC	0
50	WJC	0
51	WJC	0
52	WJC	0
53	WJC	0

Vegetables may be supplied by Florida, Mississippi, Texas and Virginia. Citruses, Apples and Peaches are produced in Texas and Florida. Cucumbers, Melons, Peaches, Apples, and Pears are produced in Florida. Apples, Peaches, Pears, and Plums are produced in Virginia. Apples, Peaches, Pears, and Plums are produced in Mississippi. Apples, Peaches, Pears, and Plums are produced in Texas.

MANUA ISLANDS

West Half

Sheet 3 of 4

Cole, Thomas G.; Whitesell, Craig D.; Whistler, W. Arthur; McKay, Neil; Ambacher, Alan H. Vegetation survey and forest inventory, American Samoa. Resour. Bull. PSW-25. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 1988. 16 p. + 4 maps.

AMERICAN SAMOA

Index Map

PACIFIC

For explanation of vegetation type codes see Table 3

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TOPOGRAPHIC MAP
WEST HALF
MANUA ISLANDS
AMERICAN SAMOA

Map and publish in the G.O., at 15 100
Cost: US\$ 1.30 US\$ 6

[illegible]

$\mathcal{F}_1 = \{ \mathbf{f}_1, \dots, \mathbf{f}_n \}$ and $\mathcal{F}_2 = \{ \mathbf{f}_1, \dots, \mathbf{f}_n \}$
 TO GO: find $\mathbf{f}_1, \dots, \mathbf{f}_n$ such that $\mathbf{f}_1, \dots, \mathbf{f}_n$ are linearly independent
 and $\mathbf{f}_1, \dots, \mathbf{f}_n$ are linearly dependent.

Typeset and proof composed by Pacific Southwest Forest and Range Experiment Station and Pacific Northwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture. Cartography by Allen H. Anderson, USFS - Forest Station, Pacific Southwest Region, Improving Watersheds Section, TR-1.

MANUA ISLANDS

East Half

Sheet 4 of 4

Cole, Thomas G.; Whitesell, Craig D.; Whistler, W. Arthur; McKay, Neil;
Ambacher, Alan H. Vegetation survey and forest inventory, **American Samoa**.
Resour. Bull. PSW-25. Berkeley, CA: Pacific Southwest Forest and Range
Experiment Station, Forest Service, U.S. Department of Agriculture; 1988. 16 p. + 4 maps.

AMERICAN SAMOA

Index Map

VEGETATION LEGEND
For explanation of vegetation type codes see Table 3

ITEM	LABEL	AREA (ACRES)	AREA (HECTARES)	ITEM	LABEL	AREA (ACRES)	AREA (HECTARES)
1	S	9	3.6	81	UP2H	119	48.2
2	AG CO	21	8.5	82	MSHC	2039	1189.4
3	COIM/SV G	48	19.4	83	DV1H	443	179.3
4	S	3	1.2	84	CFIM/SV	98	39.8
5	U/AG	18	7.3	85	COIM/UP	426	172.4
6	AG	15	6.1	86	UP1H	712	288.1
7	CF1H	44	17.8	87	S	7	2.8
8	COIM/SV G	37	15.0	88	CO1H	50	20.2
9	CF1H	8	3.2	89	S	14	5.7
10	U	17	6.9	90	U/AG	8	3.2
11	MFC	43	17.4	91	CO1H/UP	48	19.4
12	U	6	2.4	92	SVS	10	4.0
13	AG	42	17.0	93	COIM/SV G	41	16.6
14	GGS	27	10.9	94	UP1H	27	10.9
15	UP1H	6	2.4	95	COIM/SV G	21	8.5
16	G G	1	.4	96	CO1H	117	47.3
17	G G	3	1.2	97	S	63	25.5
18	SV	2	.8	98	AG CO	17	6.8
19	SV	2	.8	99	GGS	9	3.6
20	CF1H	48	19.4	100	GGS	26	10.5
21	G G	2	.8	101	COIM/UP	37	15.0
22	UP1H R	11	4.5	102	UP1H	503	203.6
23	AG CO/UP R	214	86.6	103	UP2H R	78	31.6
24	UP1H	60	24.3	104	UP1H	353	141.7
25	UP1H R	6	2.4	105	UP2H R	684	276.8
26	UP1H R	14	5.7	106	UP1H C	13	5.3
27	COIM/UP	181	73.2	107	UP2H	204	82.0
28	S	2	.8	108	UP1H C	205	82.0
29	CO1H/UP	325	131.5	109	CF1H	38	15.4
30	UP1H/SV	18	7.3	110	CF1H	343	138.8
31	CO1H/UP	28	11.3	111	CF1H	9	3.6
32	UP1H/CO	13	5.3	112	CF1H	183	74.1
33	UP1H	91	36.8	113	UP1H	113	45.7
34	UP2H C	12	4.8	114	COIM/SV G S	6	2.4
35	G G	7	2.8	115	SVS	13	5.3
36	CO1H	5	2.0	116	CO1H	48	19.4
37	UP2H	32	12.9	117	CO1H	101	40.9
38	UP1H/SV	15	6.1	118	UP2H R	232	93.9
39	UP1H	15	6.1	119	UP1H	36	14.3
40	UP2H	42	17.0	120	AG CO	126	51.0
41	UP2H R	38	14.6	121	COIM/SV	18	7.3
42	S	41	16.6				
43	UP2H	127	51.4				
44	MSHC	9	3.6				
45	CF1H	97	39.3				
46	CO1H	62	25.1				
47	G G	5	2.0				
48	G G	5	2.0				
49	SVS	5	2.0				
50	UP2H R	53	21.4				

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TOPOGRAPHIC MAP
EAST HALF
MANUA ISLANDS
AMERICAN SAMOA

Vegetation map compiled by Pacific Southwest Forest and Range
Experiment Station and Pacific Northwest Forest and Range
Experiment Station, Forest Service, U.S. Department of Agriculture
Copyright by Alan H. Anderson, USDA, Forest Service, Pacific
Southwest Region, Engineering Geomorphology Section, 1987

Cole, Thomas G.; Whitesell, Craig D.; Whistler, W. Arthur; McKay, Neil; Ambacher, Alan H. 1988. **Vegetation survey and forest inventory, American Samoa.** Resour. Bull. PSW-25. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 14 p. + 4 maps.

The vegetation of American Samoa, in the South Pacific Ocean, was mapped and the forest resources surveyed for land-use planning and forest resource management. Four maps show the location and extent of vegetation types identified from 1984 aerial photographs. A 1986 ground survey identified changes in land use since 1984. Adjusted forest area is estimated at 28,686 acres (11,609 ha), with an additional 15,510 acres (6277 ha) in agroforest. Timberland volume is estimated to be 8,307,000 ft³ (235,200 m³).

Retrieval Terms: vegetation survey, vegetation maps, forest types, forest inventory, Tutuila, American Samoa, Polynesia