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Southeastern US Coastal Plain soil series lists by modified Cooperative Research in Forest Fertilization (CRIFF) soil groups for use in loblolly and slash pine site index estimation

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INTRODUCTION

Determining what modified soil groups and soil series are present on a forest landowner's property

Recent work (Zhao and others 2024, Dickens and others 2024) by the University of Georgia Warnell School of Forestry and Natural Resources (UGA – WSFNR) and the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil scientists have found a strong correlation between loblolly pine (*Pinus taeda*) site index (a measure of site productivity, using the heights of the tallest trees; the codominant and dominant trees) and University of Florida Cooperative Research in Forest Fertilization (CRIFF, Fisher and Garbett 1980, Kushla and Fisher 1980, Jokela and others 1991) soil groups (Figure 1) modified by UGA-WSFNR (Figure 2) and surface soil available phosphorus (P) using the Mehlich 1 extraction procedure. The CRIFF classification system and how it designates soil series into groups are described in Figure 1. The WSFNR faculty found a less pronounced but still meaningful correlation (more SI variation within the modified soil groups) between slash pine (*Pinus elliottii*) site index and the modified CRIFF soil groups and surface soil available P.

This paper lists the soil series within each CRIFF soil group and modified CRIFF soil groups to aid forest landowners, practicing foresters and land managers in decision-making in their site prepared, planted loblolly and slash pine stands in the southeastern US Coastal Plain. Refer to 2025 papers by Clabo and others (2025) for the (1) loblolly, (2) slash and (3) loblolly compared to slash pine (Dickens and others 2025) papers to assist with pine species deployment based on the modified soil groups.

The Coastal Plain Physiographic Region

The southeastern Coastal Plain covers an area from Virginia to Texas that is about 150 miles wide along the Atlantic Ocean and up to 400 miles wide along the Gulf Coast (Pritchett and Gooding 1975). Elevation ranges from sea level to a few hundred feet and is relatively flat to undulating. Sixty-three percent (101 million acres) of this land base is in the rolling to hilly topography of the Upper Coastal Plain and 37 percent (60 million acres) occupies the Lower Coastal Plain, coastal lowlands, sometimes referred to as the Flatwoods (Pritchett and Comerford 1983).

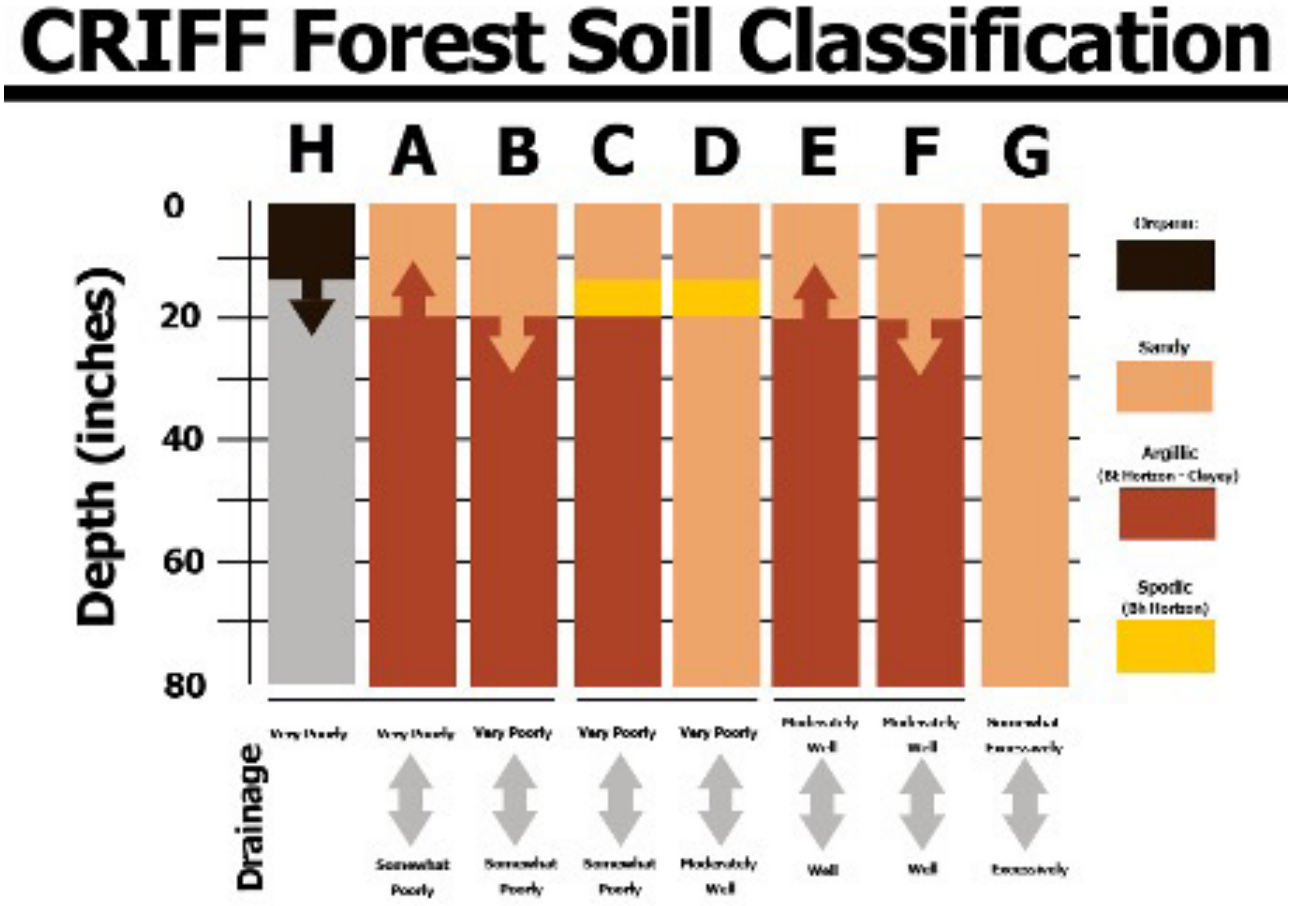

Figure 1: *A method of classifying soil types based on the University of Florida's Cooperative Research in Forest Fertilization (CRIFF) classification system. This system of classifying soils was specifically created for soils in the Coastal Plain region of northern Florida and southern Georgia. The figure was redrawn from Jokela and Long (2022). An argillic horizon, designated as Bt in soil descriptions, indicates the accumulation of silicate clay that has been translocated or illuviated from one part of the soil profile to another with the clay content being higher than the horizon above the Bt. These horizons show an increase in the clay content, which can affect water availability and tree growth. A spodic horizon, formed from weathering processes that strip organic matter combined with aluminum (with or without iron) from the surface layer and deposit them in the subsoil and is designated as Bh.*

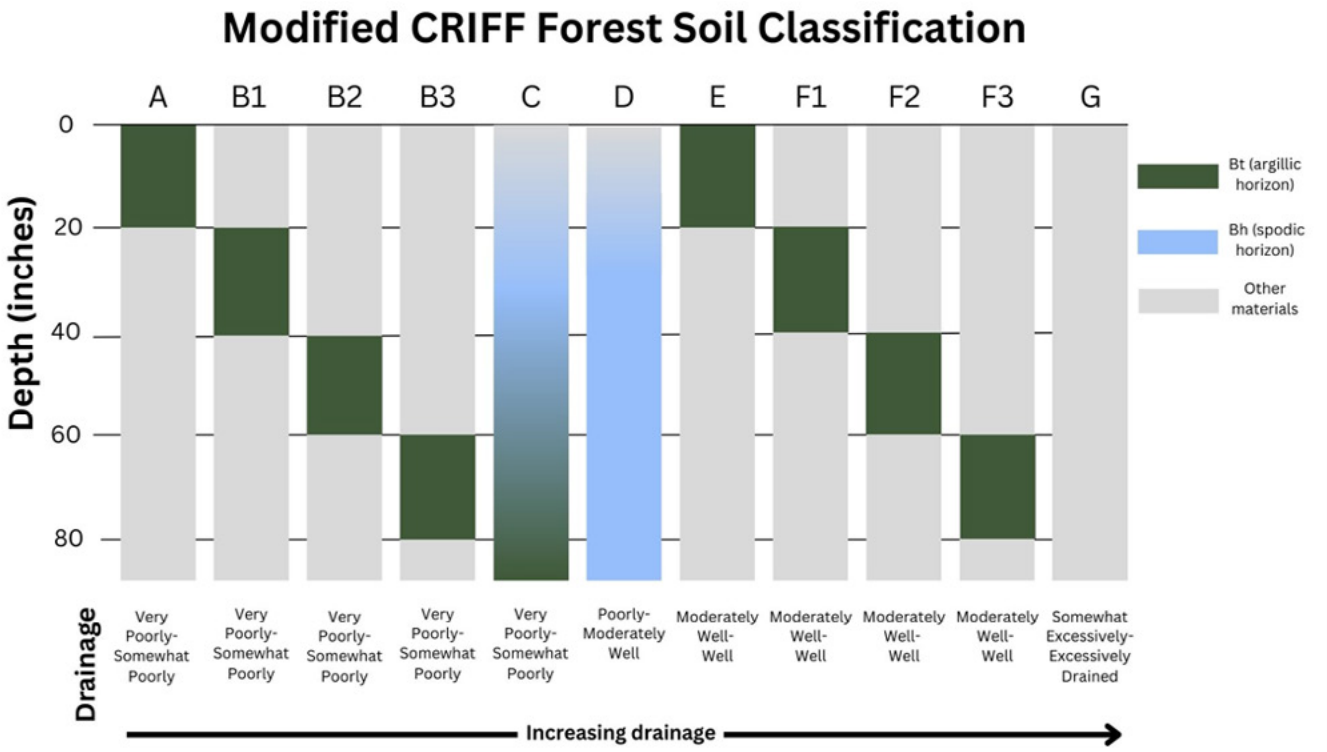

Figure 2: *The modified University of Florida Cooperative Research in Forest Fertilization (CRIFF) soil classification system used in the site index and mean annual increment analyses. Soils are sorted by increasing drainage, and argillic/ spodic horizon depths are noted in green and blue, respectively. B3 soils include very poorly to somewhat poorly drained classes with no argillic (Bt) within 80". Some of these B3 soils occur in the lower toe and foot-slope positions close to bodies of water; these soils can have higher productivity than soils in slightly higher landscape positions. Often, these soils also have a thicker and darker surface ("black" or "dark brown" soil) indicating higher nutrient and organic matter content like some Typic Fluvaquents; these soils contrast with lower productivity levels of soils found in more upland areas like Aquic Quartzipsamments. These soils often have a 'yellow' appearance throughout the soil profile.*

SOIL SERIES BY CRIFF SOIL GROUPS

Table 1. CRIFF Soil Group A, somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain/Flatwoods soils with an argillic horizon within 20 inches of the surface (no spodic horizon present).

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Ardilla	Fragiaquic	Paleudults	A	AL, FL, GA	SPD
Basin	Fragiaquic	Paleudults	A	A, MSL	SPD
Bayboro	Umbric	Paleaquults	A	AL, FL, GA, NC, SC, VA	VPD**
Bertie	Aeric	Endoaquults	A	NC, VA	SPD
Bethera	Typic	Paleaquults	A	AL, FL, GA, NC, SC, VA	PD
Bladen	Typic	Albaquults	A	AL, FL, GA, NC, SC	PD
Byars	Umbric	Paleaquults	A	AL, FL, SC, NC	VPD**
Cantey	Typic	Albaquults	A	FL, SC	PD
Cape Fear	Typic	Umbraquults	A	GA, NC, SC	VPD**
Coxville	Typic	Paleaquults	A	AL, FL, GA, SC	PD
Daleville	Typic	Paleaquults	A	AL, MS, SC, VA	PD
Deloss	Typic	Umbraquults	A	NC, VA	VPD**
Escambia	Plinthaquic	Paleudults	A	AL, FL, MS	SPD
Florala	Plinthaquic	Paleudults	A	AL, FL, GA	SPD
Gourdin	Typic	Epiaquults	A	SC	PD
Grady	Typic	Paleaquults	A	AL, FL, GA, SC	PD
Grantham	Typic	Paleaquults	A	NC	PD
Hazlehurst	Aeric	Paleaquults	A	GA	SPD
Hobcaw	Typic	Umbraquults	A	SC	VPD**
Hyde	Typic	Umbraquults	A	AL, MS, NC, SC, VA	VPD**
Jedburg	Aeric	Paleaquults	A	AL, SC, VA	SPD
Leaf	Typic	Albaquults	A	AL, GA, LA, MS, NC	PD
Lenoir	Aeric	Paleaquults	A	AL, GA, MS, NC, VA	SPD
Lumbee	Typic	Endoaquults	A	GA, NC, SC, VA	PD
Lynchburg	Aeric	Paleaquults	A	AL, FL, GA, MS, NC, SC, VA	SPD
McColl	Typic	Fragiaquults	A	NC, SC	PD
Myatt	Typic	Endoaquults	A	AL, FL, GA, NC, SC, VA	PD

Table 1. (continued) CRIFF Soil Group A, somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain/Flatwoods soils with an argillic horizon within 20 inches of the surface (no spodic horizon present).

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Nahunta	Aeric	Paleaquults	A	MS, NC, SC, VA	SPD
Ogeechee	Typic	Endoaquults	A	GA, SC	PD
Pantego	Umbric	Paleaquults	A	FL, NC, SC	VPD**
Paxville	Typic	Umbraquults	A	AL, NC, SC	VPD**
Pooler	Typic	Endoaquults	A	FL, GA, VA	PD
Bayou	Typic	Paleaqults	A	AL	PD
Quitman	Aquic	Paleudults	A	AL, MS	SPD
Rains	Typic	Paleaquults	A	AL, FL, GA, NC, SC, VA	PD
Rembert	Typic	Endoaquults	A	GA, SC	PD
Robertsdale	Plinthaquic	Paleudults	A	AL, FL, GA	SPD
Saucier	Plinthaquic	Paleudults	A/E	AL, LA, MS	MWD
Smithboro	Aeric	Paleaquults	A	SC	SPD
Smithton	Typic	Paleaquults	A	AL, MS	PD
Stallings	Aeric	Paleaquuts	A	AL, NC, SC	SPD
Tomotley	Typic	Endoaquults	A	NC, VA	PD
Torhunta	Typic	Humaquepts	A	FL, NC, SC, VA	VPD**
Wahee	Aeric	Endoaquults	A	AL, FL, GA, SC	SPD
Weston	Typic	Endoaquults	A	AL, FL, GA, VA	PD
Woodington	Typic	Paleaquults	A	FL, NC, SC, VA	PD
Yemassee	Aeric	Endoaquults	A	FL, SC, VA	SPD
Zephyr	Typic	Albaquults	A	FL	VPD**

**VPD soils may not be suitable for intensive pine management

Table 2. CRIFF soil group B broken down into B1 (argillic >20-40"), B2 (argillic >40-60") and B3 (argillic >60-80") or no argillic horizon (designated by a * and great groups ending in -ents or epts), somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain / Flatwoods soils. Soils in this group with no argillic horizon are not well developed; this is mainly because the soils are actively undergoing pedogenesis or soil formation, as in the case of soils in lower depositional parts of the landscape. In more upland areas, these soils have high amounts of material that is resistant to weathering, so these soils remain relatively underdeveloped.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Adamsville	Aquic	Quartzipsamments	B3*	FL	SPD
Alapaha	Arenic Plinthic	Paleaquults	B1	FL, GA	PD
Albany	Grossarenic	Paleudults	B2	AL, FL, GA, SC	SPD
Arapahoe	Typic	Humaquepts	B3*	NC, VA	VPD**
Atmore	Plinthic	Paleaquults	B1	AL, MS	PD
Bakersville	Cumulic	Humaquepts	B3*	FL	VPD**
Ballahack	Cumulic	Humaquepts	B3*	NC	VPD**
Basinger	Spodic	Psammaquents	B3*	FL	VPD**
Blichton	Arenic Plinthic	Paleaquults	B1	FL	VPD**
Bonsai	Typic	Psammaquents	B3*	FL	VPD**
Braden	Aquic Arenic	Hapludults	B1	FL	SPD
Brewton	Fragiaquic	Paleudults	B1	AL, MS	SPD
Brickyard	Typic	Endoaquepts	B3*	FL	VPD**
Canaveral	Aquic	Quartzipsamments	B3*	FL	MWD, SPD
Chewacla	Fluvaquentic	Dystrudepts	B3*	AL, FL, GA, MS, NC, SC, VA	SPD
Chipley	Aquic	Quartzipsamments	B3*	FL, GA, NC, SC, VA	SPD
Clara	Spodic	Psammaquents	B3*	FL	PD, VPD**
Dawhoo	Typic	Humaquepts	B3*	VA	VPD**
Ellabelle	Arenic Umbric	Paleaquults	B1	FL, GA	VPD**
Ft. Drum	Aeric	Endoaquepts	B3*	FL	PD
Garcon	Aquic Arenic	Hapludults	B1	AL, FL, GA	SPD
Herod	Typic	Fluvaquents	B3*	AL, GA, SC	PD
Hosford	Cumulic	Humaquepts	B3*	FL	VPD**
Johnston	Cumulic	Humaquepts	B3*	AL, FL, GA, MS, NC, SC, VA	VPD**
Jumper	Arenic Plinth-aquic	Paleudults	B1	FL	SPD
Kanapaha	Grossarenic	Paleaquults	B2	FL	PD

Table 2. (continued) CRIFF soil group B broken down into B1 (argillic >20-40"), B2 (argillic >40-60") and B3 (argillic >60-80") or no argillic horizon (designated by a * and great groups ending in -ents or epts), somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain / Flatwoods soils. Soils in this group with no argillic horizon are not well developed; this is mainly because the soils are actively undergoing pedogenesis or soil formation, as in the case of soils in lower depositional parts of the landscape. In more upland areas, these soils have high amounts of material that is resistant to weathering, so these soils remain relatively underdeveloped.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Leefield	Arenic Plinth-aquic	Paleudults	B1	FL, GA	SPD
Lochloosa	Aquic Arenic	Paleudults	B1	FL	SPD
Mantachie	Fluventic	Endoaquepts	B3*	AL, FL, MS, SC, NC, TX, VA	SPD
Mashulaville	Typic	Fragiaquults	B1	AL, MS	PD
Masontown	Cumulic	Humaquepts	B3*	NC	VPD**
Muckalee	Typic	Fluvaquents	B3*	AL, GA, NC, VA	PD
Mulat	Arenic	Endoaquults	B1	FL	PD
Nobleton	Aquic Arenic	Paleudults	B1	FL	SPD
Ocilla	Aquic Arenic	Paleudults	B1	AL, FL, GA, MS, NC, SC, VA	SPD

*Indicates soils with no argillic horizon present within 80 inches of the soil surface.
** VPD soils may not be suitable for intensive pine management.

Table 3. CRIFF soil group C, somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain / Flatwoods soil with a spodic (Bh) horizon and an underlying argillic (Bt) horizon.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Ankona	Arenic Ultic	Alaquods	C	FL	PD, VPD**
Bimini	Oxyaquic	Alorthods	C	FL	SPD
Chaires	Alfic	Alaquods	C	FL	PD, VPD**
Delks	Ultic	Alaquods	C	FL	PD
Eaugallie	Alfic	Alaquods	C	FL	PD, VPD**
Electra	Oxyaquic	Alorthods	C	FL	SPD
Farmton	Arenic Ultic	Alaquods	C	FL	PD
Lynne	Ultic	Alaquods	C	FL	PD
Mascotte	Ultic	Alaquods	C	FL, GA	VPD**
Melvina	Oxyaquic	Alorthods	C	FL	SPD
Monteocha	Ultic	Alaqouds	C	FL	VPD
Nettles	Alfic Arenic	Alaquods	C	FL	PD, VPD**
Newnan	Oxyaquic	Alorthods	C	FL	SPD
Oldsmar	Alfic Arenic	Alaquods	C	FL	PD, VPD**
Olustee	Ultic	Alaquods	C	FL, GA	PD
Pepper	Alfic	Alaquods	C	FL	PD
Pomona	Ultic	Alaquods	C	FL	PD, VPD**
Rigdon	Oxyaquic	Alorthods	C	GA	SPD
Sapelo	Ultic	Alaquods	C	FL, GA	SPD, PD
Steinhatchee	Alfic	Alaquods	C	FL	PD
Susanna	Ultic	Alaquods	C	FL	PD
Tantile	Ultic	Alaquods	C	FL	PD
Tocoi	Ultic	Alaquods	C	FL	PD
Wabasso	Alfic	Alaquods	C	FL	PD, VPD**
Wauchula	Ultic	Alaquods	C	FL	PD

**VPD soils may not be suitable for intensive pine management.

Table 4. CRIFF soil group D, moderately well (MWD, with a few well drained; WD soil series), somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain / Flatwoods soils with a spodic horizon without an underlying argillic horizon.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Allanton	Arenic Umbric	Alaquods	D	FL, GA	PD/VPD**
Basinger	Spodic	Psammaquents	D	FL	VPD**/PD
Boulogne	Typic	Alaquods	D	FL	PD
Cassia	Oxyaquic	Alorthods	D	FL	SPD
Dade	Spodic	Quartzipsamments	D	FL	WD
Daytona	Arenic	Alorthods	D	FL	MWD
Deland	Grossarenic	Alorthods	D	FL	WD
Duette	Grossarenic	Alorthods	D	FL	MWD
Echaw	Oxyaquic	Alorthods	D	FL, GA, NC, SC	MWD
Estero	Typic	Alaquods	D	FL	VPD**
Evergreen	Histic	Alaquods	D	FL	VPD**
Hurricane	Oxyaquic	Alorthods	D	FL, GA	SPD
Immokalee	Arenic	Alaquods	D	FL	VPD**/PD
Janney	Typic	Alaquods	D	FL	PD
Kingsferry	Arenic Umbric	Alaquods	D	FL	VPD**
Lawnwood	orstein Aeric	Alaquods	D	FL	PD
Leon	Aeric	Alaquods	D	AL, FL, GA, SC	VPD**/PD
Lynn Haven	Typic	Alaquods	D	FL, GA, MS, NC, SC, VA	PD/VPD**
Mandarin	Oxyaquic	Alorthods	D	FL, GA, NC	SPD
Moultrie	Spodic	Psammaquents	D	FL	VPD**
Myakka	Aeric	Alaquods	D	FL	VPD**/PD
Narcoosee	Oxyaquic	Alorthods	D	FL	SPD
Ona	Typic	Alaquods	D	FL	PD
Orsino	Spodic	Quartzipsamments	D	FL	MWD
Peckish	Typic	Sulfaquents	D	FL	VPD**
Pendarvis	Oxyaquic	Alorthods	D	FL	MWD
Pomello	Oxyaquic	Alorthods	D	FL	SPD/MWD
Pottsburg	Grossarenic	Alaquods	D	FL	SPD/PD
Punta	Grossarenic	Alaquods	D	FL	PD
Ridgeland	Oxyaquic	Alorthods	D	FL, GA, SC	SPD
Rosedhu	Typic	Aloquods	D	SC	PD
Salerno	Grossarenic	Alaquods	D	FL	PD
Seagate	Typic	Haplohumods	D	NC, SC, VA	SPD/MWD
Seewee	Aeric	Alaquods	D	SC	SPD

Table 4. (continued) CRIFF soil group D, moderately well (MWD), somewhat poorly drained (SPD), poorly drained (PD), and very poorly drained (VPD) Coastal Plain / Flatwoods soils with a spodic horizon without an underlying argillic horizon.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Smyrna	Aeric	Alaquods	D	FL	PD/VPD
St. Johns	Typic	Alaquods	D	FL	PD/VPD
Talquin	Aeric	Alaquods	D	FL	PD
Waveland	Arenic	Alaquods	D	FL	VPD**/PD
Wesconnett	Typic	Alaquods	D	FL	VPD
Witherbee	Aeric	Alaquods	D	SC	SPD
Zolfo	Oxyaquic	Alorthods	D	FL	SPD

** VPD soils may not be suitable for intensive pine management.

Table 5. CRIFF soil group E, upland Coastal Plain soils that are moderately well (MWD), well (WD) and somewhat excessively drained (SED) with an argillic horizon within 20" of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Americus	Rhodic	Paleudults	E	Al, FL, GA	SED
Annemaine	Aquic	Hapludults	E	AL	MWD
Bama	Typic	Paleudults	E	AL, FL	WD
Barnwell	Typic	Kanhapludults	E	SC	WD
Bassfield	Typic	Hapludults	E	AL, LA	WD
Baxterville	Plinthic	Paleudults	E	AL	MWD
Benndale	Typic	Paleudults	E	AL	WD
Boswell	Vertic	Paleudults	E	AL, GA, LA, MS	MWD
Brantley	Ultic	Hapludalfs	E	AL, FL	WD
Cahaba	Typic	Hapludults	E	AL, GA, LA, MS	WD
Canton Bend	Ultic	Hapludalfs	E	AL	WD
Carnegie	Plinthic	Kandiudults	E	AL, FL, GA	WD
Charleston	Aquultic	Hapludalfs	E	NC, SC	MWD
Chatom	Aquic	Hapludults	E	AL	MWD
Dothan	Plinthic	Kandiudults	E	AL, FL, GA, NC, SC, VA	WD
Cowarts	Typic	Kanhapludults	E	AL, FL, GA, NC, SC	WD
Eulonia	Aquic	Hapludults	E	GA, SC, VA	MWD
Goldsboro	Aquic	Paleudults	E	AL, FL, GA, NC, SC, VA	MWD

Table 5. (continued) CRIFF soil group E, upland Coastal Plain soils that are moderately well, (MWD), well (WD) and somewhat excessively drained (SED) with an argillic horizon within 20" of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Harleston	Aquic	Paleudults	E	AL, LA, MS	MWD
Herty	Oxyaquic Vertic	Hapludalfs	E	LA	MWD
Kalmia	Typic	Hapludults	E	AL, FL, NC, SC, VA	WD
Kolomoki	Typic	Hapludults	E	AL, GA	WD
Kurth	Oxyaquic	Glossudalfs	E	LA	MWD
Latonia	Typic	Hapludults	E	AL, LA	WD
Lexington	Ultic	Hapludalfs	E	LA, MS	WD
Loring	Oxyaquic	Fragiudalfs	E	LA, MS	MWD
Lucedale	Rhodic	Paleudults	E	AL, LA	WD
Luverne	Typic	Hapludults	E	AL, LA	WD
Malbis	Plinthic	Paleudults	E	AL, FL, LA, MS	MWD/WD
McKamie	Vertic	Hapludalfs	E	LA	WD
Brogdon	Plinthic	Paleudults	E	SC	WD
Nansemond	Aquic	Hapludults	E	SC, VA	MWD
Neeses	Typic	Kanhapludults	E	NC, SC	WD
Nemours	Aquic	Hapludults	E	SC	MWD
Noboco	Oxyaquic	Paleudults	E	GA, NC, SC	MWD/WD
Norfolk	Typic	Kandiudults	E	AL, FL, GA, NC, SC, VA	WD
Pelion	Fragiaquic	Kanhapludults	E	SC, GA	MWD
Suffolk	Typic	Hapludults	E	AL, GA, NC, SC, VA	WD
Tetotum	Aquic	Hapludults	E	SC	MWD
Turbeville	Typic	Kandiudults	E	NC, SC, VA	WD
Varina	Plinthic	Paleudults	E	AL, NC, SC, VA	WD
Valdosta	Psammentic	Paleudults	E*/G	GA, FL	SED
Archer	Typic	Hapludalfs	E	FL	WD
Cadeville	Albaquic	Hapludalfs	E	AL, LA, MS	MWD
Darley	Typic	Hapludults	E	LA	WD
Faceville	Typic	Kandiudults	E	AL, FL, GA, NC, SC, VA	WD
Forbing	Vertic	Paleudalfs	E	LA	MWD
Gore	Vertic	Paleudalfs	E	LA	WD
Hornsville	Aquic	Hapludults	E	FL, GA, SC	MWD
Kisatachie	Typic	Hapludalfs	E	LA	WD
Lugoff	Typic	Paleudults	E	SC	WD
Marlboro	Typic	Paleudults	E	AL, FL, GA, NC, SC, VA	WD
Hallsummit	Ultic	Hapludalfs	E	LA	WD

Table 5. (continued) CRIFF soil group E, upland Coastal Plain soils that are moderately well (MWD), well (WD) and somewhat excessively drained (SED) with an argillic horizon within 20" of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Morse	Chromic	Hapludalfs	E	LA	WD
Natchitoches	Vertic	Hapludalfs	E	LA	WD
Oktibbeha	Chromic	Dystruderts	E	AL, FL, GA, LA	MWD
Oula	Vertic	Hapludalfs	E	LA	WD
Padlock	Aquic	Paleudults	E	FL	MWD
Persanti	Aquic	Paleudults	E	SC, GA	MWD
Ruple	Typic	Rhodudults	E	LA	WD
Searcy	Aquic	Paleudalfs	E	AL	MWD
Shadygrove	Typic	Hapludalfs	E	AL	MWD
Sugartown	Ultic	Hapludalfs	E	LA	MWD
Suggsville	Chromic	Dystruderts	E	AL	WD
Summerton	Typic	Paleudults	E	SC	WD
Sunsweet	Plinthic	Paleudults	E	GA, AL, FL, SC	WD
Tadlock	Rhodic	Paleudalfs	E	AL	WD
Telfair	Aquic	Hapludults	E	GA	MWD
Tumbleton	Typic	Kanhapludults	E	AL	WD
Williston	Typic	Hapludalfs	E	FL	WD
Zuber	Typic	Paleudalfs	E	FL	WD
Beatrice	Vertic	Hapludults	E	AL	MWD
Beauregard	Plinthaquic	Paleudults	E	LA, MS	MWD
Benevolence	Typic	Kandiudults	E	GA, AL	WD
Bistineau	Typic	Paleudalfs	E	LA	WD
Caspiana	Typic	Argiudolls	E	LA	WD
Clarendon	Plinthaquic	Paleudults	E	AL, FL, GA, SC	MWD
Clayham	Ultic	Hapludualfs	E	SC	WD
Compass	Plinthic	Paleudults	E	AL, FL	MWD
Darbonne	Typic	Paleudalfs	E	LA	WD
Debute	Typic	Fragiudults	E	LA	MWD
Dexter	Ultic	Hapludalfs	E	LA, MS	WD
Dossman	Ultic	Hapludalfs	E	LA	WD
Dubach	Typic	Paleudults	E	LA	WD
Foreston	Aquic	Paleudults	E	SC	MWD
Glenmora	Glossaquic	Paleudalfs	E	LA	MWD
Keithville	Glossaquic	Paleudalfs	E	LA	MWD
Kenefick	Ultic	Hapludalfs	E	LA, TX	WD

Table 5. (continued) CRIFF soil group E, upland Coastal Plain soils that are moderately well (MWD), well (WD) and somewhat excessively drained (SED) with an argillic horizon within 20" of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Kleinpeter	Oxyaquic	Glossudalfs	E	LA	MWD
Levyville	Typic	Paleudalfs	E	FL	WD
Libuse	Typic	Fragiudalfs	E	LA	MWD
Lytle	Typic	Paleudults	E	LA	WD
Mahan	Typic	Hapludults	E	LA	WD
Nankin	Typic	Kanhapludults	E	AL, FL, GA, NC, SC	WD
Noboco	Oxyaquic	Paleudults	E	SC	MWD/WD
Notcher	Plinthic	Paleudults	E	AL, FL	MWD
Olanta	Humic	Hapludults	E	SC	MWD
Olla	Typic	Hapludults	E	LA	WD
Orangeburg	Typic	Kandiudults	E	AL, FL, GA, MS, NC, SC, VA	WD
Pedro	Typic	Hapludalfs	E	FL	WD
Perdido	Plinthic	Paleudults	E	FL	WD
Pikeville	Typic	Paleudults	E	AL	WD
Pine Flat	Rhodic	Paleudults	E	AL	WD
Poarch	Plinthic	Paleudults	E	AL, FL, MS	WD/MWD
Red Bay	Rhodic	Kandiudults	E	AL, FL, GA, SC	WD
Ruston	Typic	Paleudults	E	AL, FL, LA	WD
Rutan	Typic	Hapludults	E	AL	WD/SED
Shatta	Typic	Fragiudults	E	LA, AL	MWD
Springhill	Typic	Kanhapludults	E	AL, SC	WD
Subran	Aquic	Paleudults	E	AL	MWD
Tangi	Typic	Fragiudults	E	LA	MWD
Thursa	Typic	Kandiudults	E	NC, SC	WD
Tifton	Plinthic	Kandiudults	E	GA, AL, FL	WD
Toula	Typic	Fragiudults	E	LA	MWD
Vaucluse	Fragic	Kanhapludults	E	SC, GA	WD
Yauhannah	Aquic	Hapludults	E	SC	MWD

Table 6. CRIFF soil group F, upland Coastal Plain soils that are moderately well (MWD), well (WD) and somewhat excessively drained (SED) soils broken into three subgroups: F1 having an argillic horizon @ >20-40", F2 @ >40-60", and F3 @ >60-80" (not common) of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Bienville	Psammentic	Paleudalfs	F2	LA, TX	SED
Blaney	Arenic	Hapludults	F1	GA, SC	WD
Bonneau	Arenic	Paleudults	F1	AL, FL, GA, SC	WD
Chisolm	Arenic	Hapludults	F1	SC, GA	WD
Cocoa	Psammentic	Hapludalfs	F1	FL	WD
Doucette	Arenic Plinthic	Paleudults	F1	LA	WD
Eustis	Psammentic	Paleudults	F1	AL, GA, SC	SED
Frierson	Glossic	Paleudalfs	F1	LA	WD
Gist	Oxyaquic	Glossudalfs	F1	LA	MWD
Kirvin	Typic	Hapludults	F1	LA	WD
Larue	Arenic	Paleudalfs	F1	LA	WD
Letney	Arenic	Paleudults	F1	LA, TX	WD
Lovett	Arenic	Paleudults	F2	FL	MWD
Lowndes	Arenic	Paleudults	F1	GA, FL	WD
Lucknow	Grossarenic	Kandiudults	F2	GA, SC	SED/WD
Lucy	Arenic	Kandiudults	F1	AL, FL, GA, LA, MS, NC, SC, VA	WD
Meldrim	Oxyaquic	Paleudults	F2/ F3	GA	MWD
Miccosukee	Humic Pachic	Dystradepts	F2	FL	MWD
Rattlesnake Forks	Lamellic	Quartzipsamments	F1/G	AL, MS	SED
Wagram	Arenic	Kandiudults	F1	AL, FL, GA, NC, SC	SED
Wakulla	Psammentic	Hapludults	F1	NC, SC	SED
Ailey	Arenic	Kanhapludults	F1	GA, NC, SC	WD/SED
Apopka	Grossarenic	Paleudults	F2	FL	WD
Arredondo	Grossarenic	Paleudults	F3	FL	WD
Bearhead	Typic	Hapludults	F1	LA	MWD
Blanton	Grossarenic	Paleudults	F2	AL, FL, GA, MS, NC, SC	SED
Bonifay	Plinthic	Paleudults	F2/F3	AL, FL, GA	WD
Bulow	Arenic	Hapludalfs	F2	FL	WD
Cadillac	Grossarenic	Paleudalfs	F2	FL	WD
Candler	Lamellic	Quartzipsamments	F3	FL	ED
Chiefland	Arenic	Hapludalfs	F1	FL	MWD/WD

Table 6. (continued) CRIFF soil group F, upland Coastal Plain soils that are moderately well (MWD), well (WD) and somewhat excessively drained (SED) soils broken into three subgroups: F1 having an argillic horizon @ >20-40", F2 @ >40-60", and F3 @ >60-80" (not common) of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Chipola	Arenic	Kanhapludults	F1	FL	WD
Coosaw	Aquic Arenic	Hapludults	F1	SC	MWD
Eddings	Grossarenic	Paleudults	F2	SC	WD
Hague	Arenic	Hapludalfs	F1	FL	WD
Jonesville	Arenic	Hapludalfs	F1	FL	WD
Keatchie	Glossic	Paleudalfs	F1	LA	WD
Kendrick	Arenic	Paleudults	F1	FL	WD
Masaryk	Grossarenic	Paleudults	F3	FL	MWD
Messer	Oxyaquic	Glossudalfs	F1	LA	MWD
Millhopper	Grossarenic	Paleudults	F2/ F3	FL	MWD
Otela	Grossarenic	Paleudalfs	F2	FL	MWD
Pineisland	Oxyaquic	Fraglossudalfs	F2	LA	MWD
Pocalla	Arenic Plinthic	Paleudults	F2	SC	SED
Shadeville	Arenic	Hapludalfs	F1	FL	MWD
Stilson	Oxyaquic	Paleudults	F1	GA, FL	MWD
Toinette	Arenic	Hapludults	F2	AL	WD/SED
Troup	Grossarenic	Kandiudults	F2	AL, FL, GA, MS, NC, SC	SED
Uchee	Arenic	Kanhapludults	F1	AL, GA, NC, SC	WD
Wadley	Grossarenic	Paleudults	F3	AL, FL, MS	WD/SEWD
Wicksburg	Arenic	Paleudults	F1	AL, FL, GA	WD

Table 7. CRIFF soil group G: upland Coastal Plain soils that are well (WD, with some moderately well drained; MWD soil series), somewhat excessively (SED) and excessively drained (ED) without an argillic (or spodic) horizon within 80 inches of the soil surface.

Soil Series	Subgroup Modifier	Great Group	CRIFF Grouping	States	Drainage Class
Archbold	Typic	Quartzipsamments	G	FL	WD
Astatula	Typic	Quartzipsamments	G	FL	ED
Bigbee	Typic	Quartzipsamments	G	AL, FL, GA, LA	ED
Florahome	Humic Psammentic	Dystrudepts	G	FL	MWD
Fort Meade	Humic Psammentic	Dystrudepts	G	FL	WD
Foxworth	Typic	Quartzipsamments	G	AL, FL, GA, SC	MWD/ED
Fripp	Typic	Quartzipsamments	G	AL, FL, GA, SC	EWD
Gainesville	Typic	Quartzipsamments	G	FL	WD
Hainesville	Lamellic	Quartzipsamments	G	LA	SED
Lake	Typic	Quartzipsamments	G	FL	ED
Lakeland	Typic	Quartzipsamments	G	AL, FL, GA, LA, MS, NC, SC	ED
Neilhurst	Typic	Quartzipsamments	G	FL	EW
Newhan	Typic	Quartzipsamments	G	SC, FL	ED
Ochlockonee	Typic	Udifluvents	G	AL, FL, GA, LA, MS, SC	WD
Orlando	Humic	Psammentic Dystrudepts	G	FL	WD
Ortega	Typic	Quartzipsamments	G	FL	MWD
Palm Beach	Typic	Quartzipsamments	G	FL, LA	WD/EWD
Paola	Spodic	Quartzipsamments	G	FL	EWD
Penney	Lamellic	Quartzipsamments	G	FL	EWD
Peveto	Typic	Udipsamments	G	LA	SED
Rattlesnake Forks	Lamellic	Quartzipsamments	G	AL, MS	SED
Resota	Spodic	Quartzipsamments	G	FL	MWD
Seabrook	Aquic	Udipsamments	G	NC, SC, VA	MWD
Tarboro	Typic	Udipsamments	G	NC, SC, VA	SED
Tavares	Typic	Quartzipsamments	G	FL	MWD
Welaka	Spodic	Quartzipsamments	G	FL	WD
St. Lucie	Typic	Quartzipsamments	G	FL	EWD

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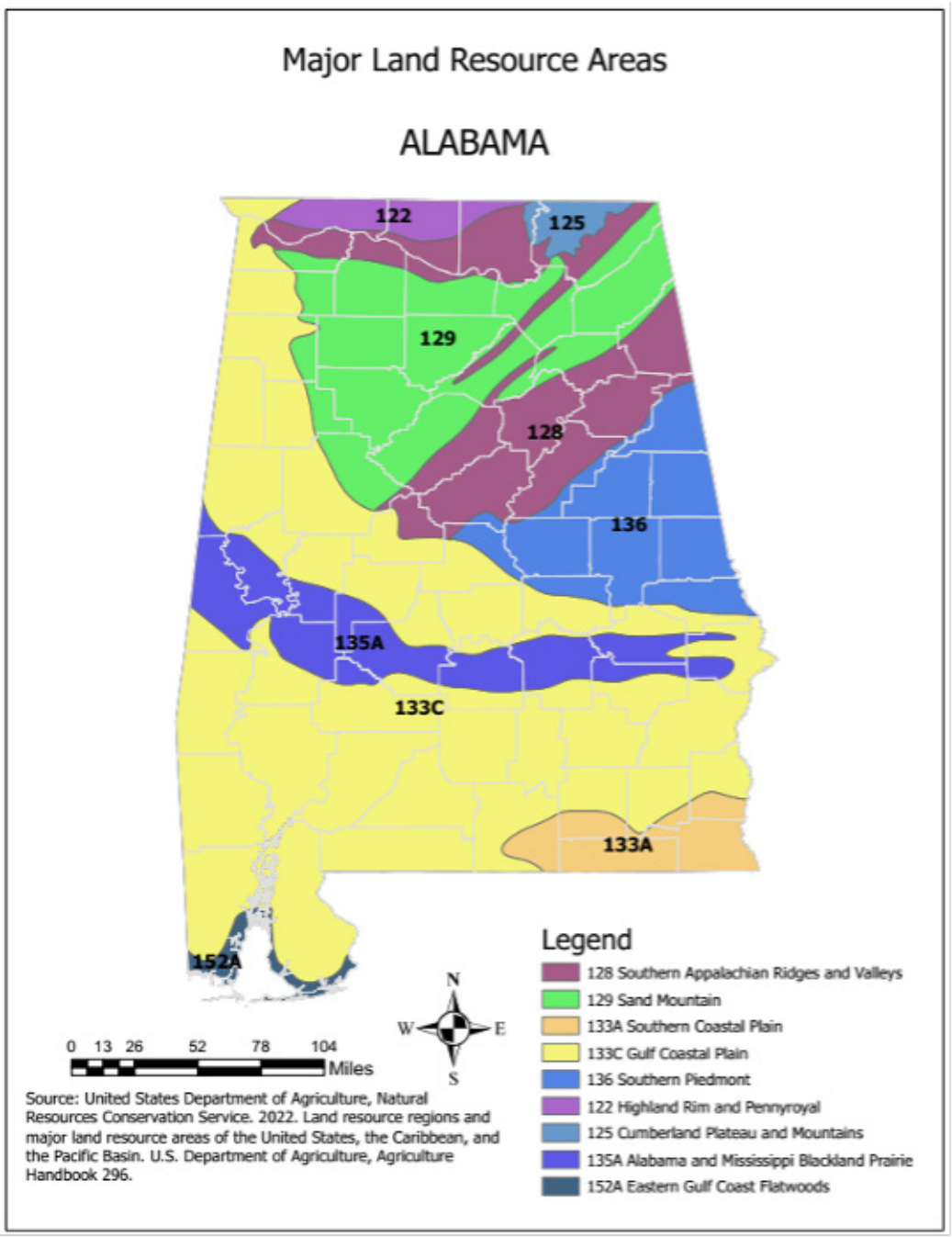

Figure 3: *United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) map of the major land resource areas (MLRAs) for Alabama. The Gulf Coastal Plain region is noted by number 133A and 133C.*

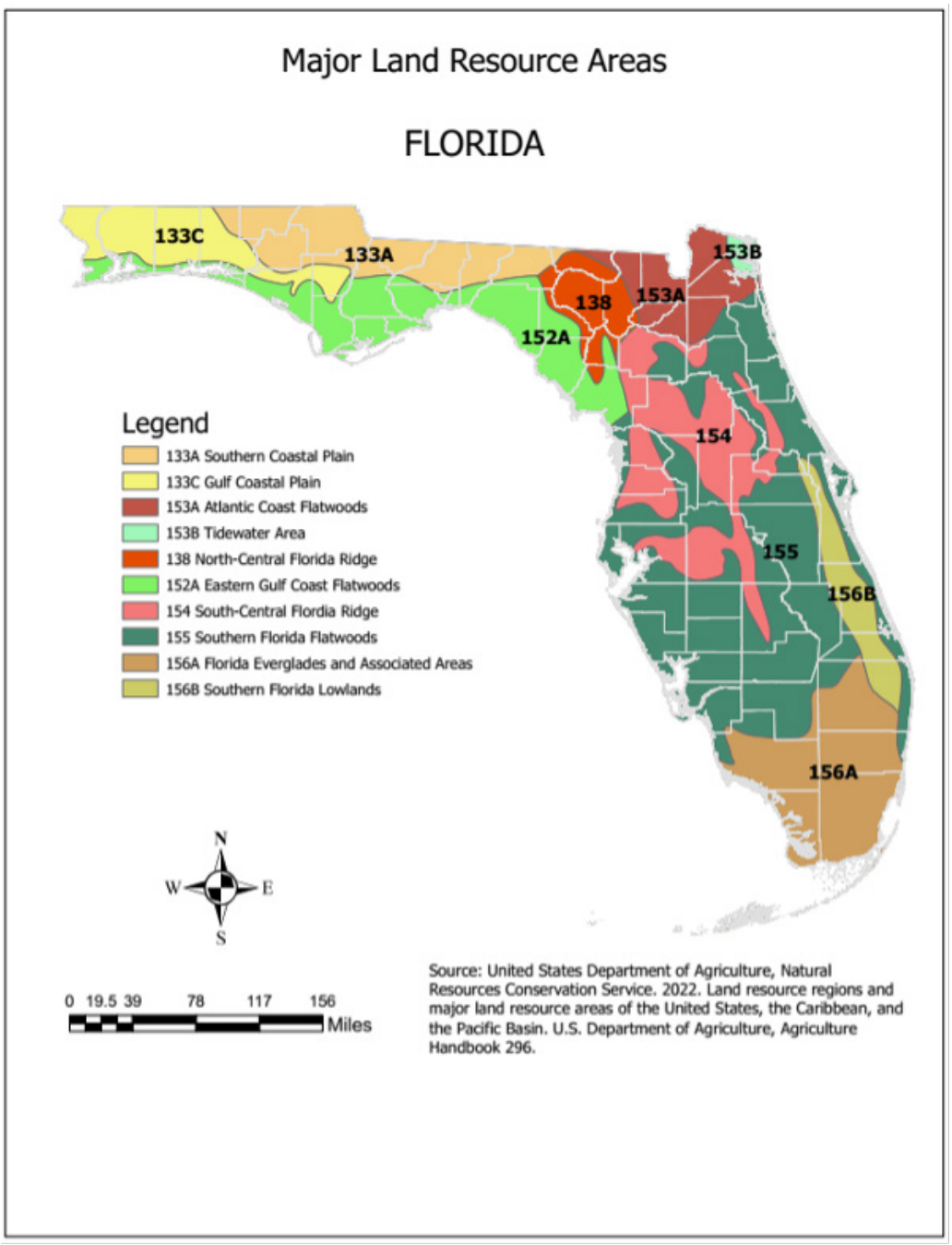

Figure 4: *United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) map of the major land resource areas (MLRAs) for Florida. The Flatwoods regions in Florida are noted by numbers 152A (Eastern Gulf Coast Flatwoods), 153A (Atlantic Coast Flatwoods), 154 (South-Central Florida Ridge), and 155 (Southern Florida Flatwoods).*

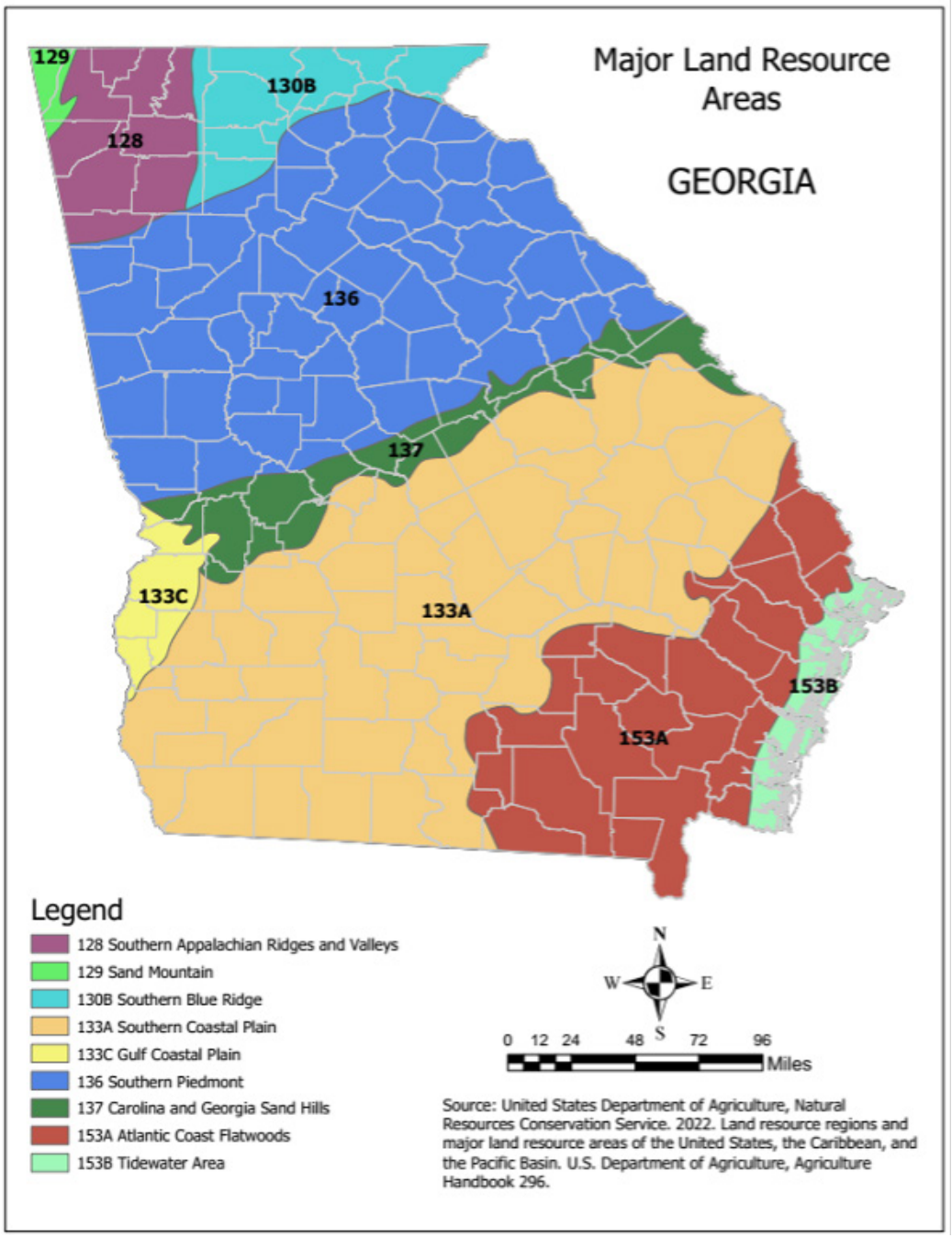

Figure 5: *United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) map of the major land resource areas (MLRAs) for Georgia. The Flatwoods region is noted by number 153A (Atlantic Coast Flatwoods).*

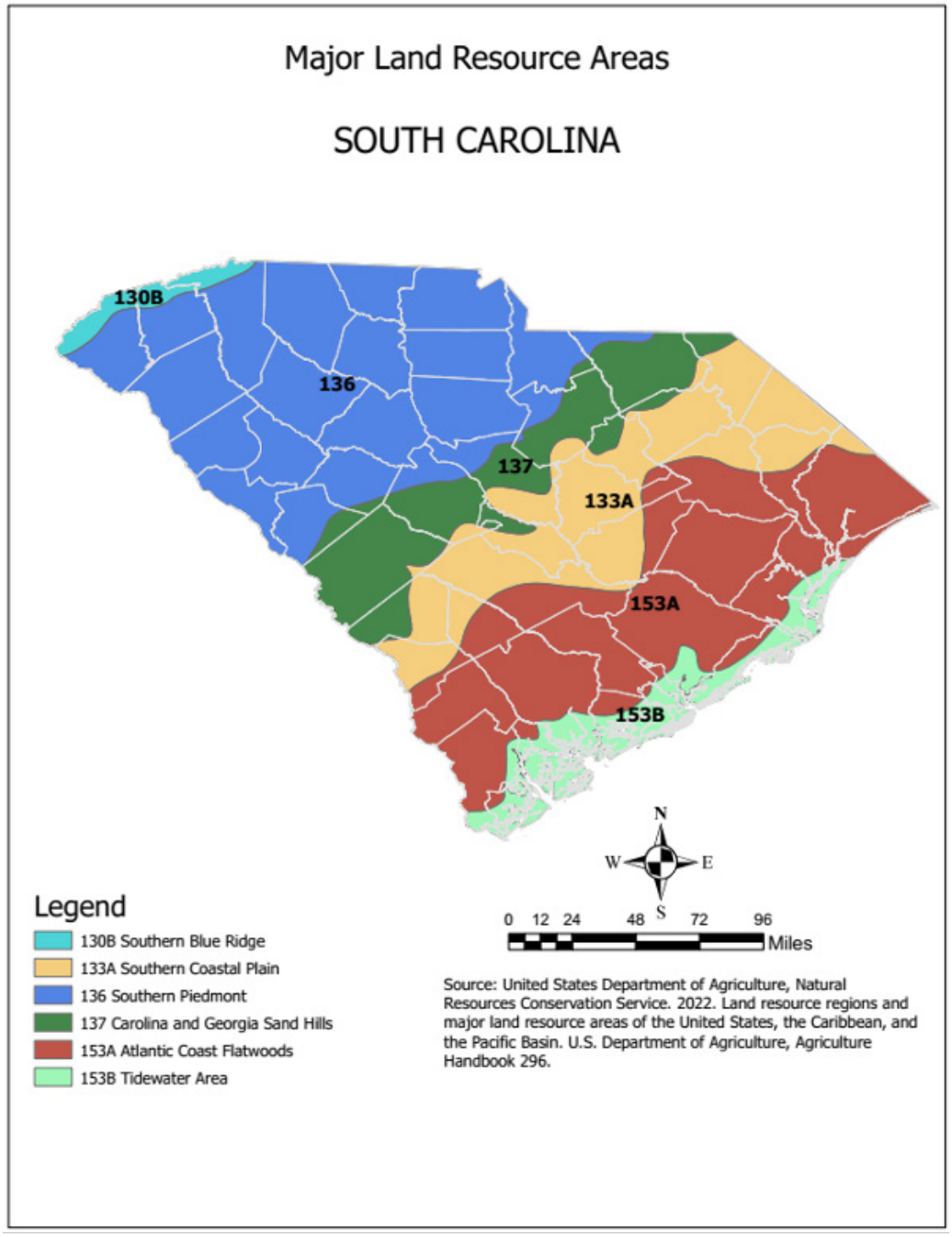

Figure 6: *United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) map of the major land resource areas (MLRAs) for South Carolina. The Flatwoods region is noted by number 153A (Atlantic Coast Flatwoods).*