

Ecological site F144AY028MA

Wet Outwash

Last updated: 2/10/2025
Accessed: 09/16/2026

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 144A—New England and Eastern New York Upland, Southern Part

MLRA 144A: New England and Eastern New York Upland, Southern Part. The eastern half of the eastern part of this MLRA is in the Seaboard Lowland Section of the New England Province of the Appalachian Highlands. The western half of the eastern part and the southeastern half of the western part are in the New England Upland Section of the same province and division. The northwestern half of the western part is in the Hudson Valley Section of the Valley and Ridge Province of the Appalachian Highlands. This MLRA is a very scenic area of rolling to hilly uplands that are broken by many gently sloping to level valleys that terminate in coastal lowlands. Elevation ranges from sea level to 1,000 feet (0 to 305 meters) in much of the area, but it is 2,000 feet (610 meters) on some hills. Relief is mostly about 6 to 65 feet (2 to 20 meters) in the valleys and about 80 to 330 feet (25 to 100 meters) in the uplands. This area has been glaciated and consists almost entirely of till hills, drumlins, and bedrock-controlled uplands with a mantle of till. It is dissected by narrow glacio-fluvial valleys. The southernmost boundary of the area marks the farthest southward extent of Wisconsinian glaciation on the eastern seaboard. The river valleys and coastal plains are filled with glacial lake sediments, marine sediments, and glacial outwash. The bedrock in the eastern half of the area consists primarily of igneous and metamorphic rocks of early Paleozoic age. Granite is the most common igneous rock, and gneiss, schist, and slate are the most common metamorphic rocks. In the parts of the MLRA in eastern and southeastern New York, Devonian- to Pennsylvanian-age sandstone, shale, and limestone are dominant. Carbonate rocks, primarily dolomite and limestone, are the dominant kinds of bedrock in the part of this MLRA in northwestern Connecticut.

Classification relationships

HIERARCHICAL CLASSIFICATION RELATIONSHIPS USDA-NRCS (USDA 2006): Land Resource Region (LRR): N—East and Central Farming and Forest Region Major Land Resource Area (MLRA): 144A— New England and Eastern New York Upland, Southern Part. USDA-FS (Cleland et al. 2007) Province: 221 - Eastern Broadleaf Province Section: 221A - Lower New England Subsection: 221Aa – Boston Basin 221Ac – Narragansett-Bristol Lowland and Islands 221Ad – Southern New England Coastal Lowland 221Ae – Hudson Highlands 221Ag - Southeast New England Coastal Hills and Plains 221Ah - Worcester-Monadnock Plateau 221Ai – Gulf of Maine Coastal Plain 221Ak - Gulf of Maine Coastal Lowland Section: 221B – Hudson Valley Subsection: 221Ba – Hudson Limestone Valley 221Bb - Miami – Taconic Foothills 221Bc – Hudson Glacial Lake Plains

Ecological site concept

The Wet Outwash ecological site consists of very deep, poorly drained sandy to loamy soils formed in outwash and stratified drift. They are nearly level to gently sloping soils in low-lying positions on terraces and plains. Representative soils include Walpole, Wareham, Raypol, Mashpee, Massasoit. The plant community is highly variable. Representative plant communities are typically dominated by red maple and or blackgum with a dense shrub layer. Other community-types include Atlantic white cedar. and red spruce swamps.

Associated sites

F144AY027MA	Moist Sandy Outwash
F144AY031MA	Very Wet Outwash

Similar sites

F144AY017NH	Well Drained Lake Plain
R144AY046RI	Subaqueous Freshwater Organic Deposits

Table 1. Dominant plant species

Tree	(1) <i>Acer rubrum</i> (2) <i>Nyssa sylvatica</i>
Shrub	(1) <i>Vaccinium corymbosum</i>
Herbaceous	Not specified

Physiographic features

This site occurs across a variety of landforms in plains and is not subject to flooding.

Table 2. Representative physiographic features

Landforms	(1) Coastal plain > Delta (2) Lake plain > Depression (3) Outwash plain > Terrace (4) Drainageway (5) Ground moraine (6) Marine terrace (7) Outwash plain (8) Outwash terrace
Runoff class	Negligible to very high
Flooding frequency	None
Ponding frequency	None to frequent
Elevation	0 – 310 m
Slope	0 – 10 %

Water table depth	10 – 30 cm
Aspect	Aspect is not a significant factor

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs varies between Dfb (Warm-summer humid continental) in the North, and Dfa (Hot-summer humid continental) in the southern portion of the MLRA. Precipitation is usually uniformly distributed throughout the year. Near the coast, however, it is slightly lower in summer. Precipitation is slightly higher in spring and fall in inland areas. Rainfall occurs as high-intensity, convective thunderstorms during the summer. During the winter, most of the precipitation occurs as moderate-intensity storms (northeasters) that produce large amounts of rain or snow. The freeze-free period increases in length to the south.

Table 3 Representative climatic features

Frost-free period (characteristic range)	130-140 days
Freeze-free period (characteristic range)	150-190 days
Precipitation total (characteristic range)	1,120-1,220 mm
Frost-free period (actual range)	120-160 days
Freeze-free period (actual range)	150-200 days
Precipitation total (actual range)	1,040-1,250 mm
Frost-free period (average)	140 days
Freeze-free period (average)	170 days
Precipitation total (average)	1,170 mm

- (1) ORANGE MUNI AP [USW00054756], Orange, MA
- (2) RUTLAND [USC00436995], Rutland, VT
- (3) GLOVERSVILLE [USC00303319], Gloversville, NY
- (4) MILLBROOK 3 W [USW00064756], Millbrook, NY
- (5) BELVIDERE BRG [USC00280734], Bangor, NJ
- (6) GROTON NEW LONDON AP [USW00014707], Groton, CT
- (7) PLYMOUTH MUNI AP [USW00054769], Carver, MA
- (8) DURHAM 2 SSW [USW00054795], Durham, NH

Influencing water features

Poorly drained

Water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods.

Internal free water occurrence is shallow or very shallow and common or persistent. Free water is commonly at or near the surface long enough during the growing season that most mesophytic crops cannot be grown, unless the soil is artificially drained. The soil, however, is not continuously wet directly below plow depth. Free water at shallow depth is common. The water table is commonly the result of low or very low saturated hydraulic conductivity, nearly continuous rainfall, or a combination of these.

Wetland description

National Wetland Classification (Cowardin et al., 1979):

Palustrine, class variable, leaf morphology variable, water regime variable, chemistry modifier variable.

Soil features

This site consists of shallow to very deep, poorly drained soils formed from wind or water deposited materials. Representative soils are Walpole, Mashpee, Massasoit, Raypol, and Wareham.

Table 4. Representative soil features

Parent material	(1) Eolian deposits – granite and gneiss (2) Glaciofluvial deposits – igneous and sedimentary rock (3) Lacustrine deposits – schist (4) Glaciolacustrine deposits (5) Glaciomarine deposits (6) Outwash
Surface texture	(1) Sand (2) Silt loam (3) Loamy sand (4) Fine sandy loam (5) Very fine sandy loam (6) Loamy fine sand
Family particle size	(1) Coarse-loamy (2) Coarse-loamy over clayey (3) Coarse-loamy over sandy or sandy-skeletal (4) Sandy
Drainage class	Poorly drained
Permeability class	Slow to rapid
Depth to restrictive layer	30 – 180 cm

Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	2.54 – 17.78 cm
Soil reaction (1:1 water) (Depth not specified)	3.5 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 30 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

The Wet Outwash ecological site is characteristic of the North-Central Appalachian Acidic Swamp system (CES202.604). Representative plant communities are typically dominated by red maple and or blackgum with a dense shrub layer. Other community types in Atlantic white cedar swamps, and red spruce swamps. Natural disturbances include climate extremes such as, excessive droughts, or storm activity ranging from windthrows to downbursts to ice-storms. Other agents-of-change include land conversions and fragmentation by agricultural, development and logging. Where they occur, Atlantic White cedar swamps are considered a successional community. Invasive plants include reedgrass (*Phragmites australis* ssp. *australis*), multiflora rose (*Rosa multiflora*), Asiatic bittersweet (*Celastrus orbiculatus*), and Norway spruce (*Picea abies*).

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 3.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 12. Community 3.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Inventory data references

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

REFERENCES

Cleland, D.T., J.A. Freeouf, J.E. Keys, G.J. Nowacki, C.A. Carpenter, and W.H.McNab. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States. [Map. presentation scale 1:3,500,000, colored; A.M. Sloan, cartographer] Gen. Tech. Report WO-76D. U.S. Department of Agriculture, Forest Service, Washington, DC. (<https://www.fs.fed.us/research/publications/misc/73326-wo-gtr-76d-cleland2007.pdf>)

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K., Snow, and J.Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

Cowardin, L.M. et. al. 1979. Classification of Wetlands and Deepwater habitats of the United States. FWS/OBS-79/31, U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC.

Edinger, G.J., Evans, D.J., Gebauer, S., Howard, T.G., Hunt, D.M., and A.M. Olivero, A.M. (eds.). 2014. Ecological Communities of New York State, Second Edition: A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Enser, R.W. and Lundgren, J.A. 2006. Natural Communities of Rhode Island. A joint project of the Rhode Island Dept. of Environmental Management Natural Heritage Program and The Nature Conservancy of Rhode Island. Web published by R.I. Natural History Survey, Kingston, RI. www.rinhs.org.

FGDC [Federal Geographic Data Committee]. 2008. National Vegetation Classification Standard, Version 2. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC..

Gawler, S.C. and Cutko, A., 2010. Natural landscapes of Maine: a guide to natural communities and ecosystems. Maine Natural Areas Program, Department of Conservation.

Marks, C.O., K.A. Lutz, A.P. Olivero-Sheldon. 2011. Ecologically important floodplain forests in the Connecticut River watershed. The Nature Conservancy, Connecticut River Program. 44pp.

Metzler, K.J. and Barrett, J.P., 2006. The Vegetation of Connecticut, a Preliminary Classification. Department of Environmental Protection, State Geological and Natural History Survey of Connecticut. Rpt of Investigations No. 12.

NatureServe 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: December 2015).

PRISM Climate Group, Oregon State University. Available <http://prism.oregonstate.edu>, (created February 26, 2013).

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agricultural Handbook 296. (https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf).

Sperduto, D.D., & Nichols, W.F. 2011. Natural Communities of New Hampshire, Second Ed. NH Natural Heritage Bureau, Concord, NH.

Publ. UNH Cooperative Extension.

Swain, P.C. and Kearsley, J.B., 2001. Classification of the natural communities of Massachusetts. Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries and Wildlife.

Thompson, E.H. and Sorenson, E.R., 2000. Wetland, woodland, wildland. Vermont Department of Fish and Wildlife and The Nature Conservancy. Publ. University Press of New England.

USNVC [United States National Vegetation Classification]. 2017 (Date accessed). United States National Vegetation Classification Database V2.01. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC.

Contributors

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Approval

Nels Barrett, 2/10/2025

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Michael Margo and tech team provided earlier drafts. Josh Hibit made compliance updates w/ 2021 Checklist V.2

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	02/10/2025
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
