

Major Land Resource Area 144B

New England and Eastern New York Upland, Northern Part

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Description

The area in MLRA 144B spans across six Northeastern states: Maine (56 percent), New Hampshire (22 percent), Vermont (14 percent), Massachusetts (5 percent), New York (2 percent), and Connecticut (1 percent). It makes up about 20,500 square miles (53,125 square kilometers). Most of this area is in Maine and New Hampshire, but a small, separate part is on the Vermont- Massachusetts border with New York. The majority of Maine's population is in this MLRA. This is the easternmost MLRA in the country. It includes the cities of Bangor, Augusta, and Portland, Maine; the towns of Littleton, Plymouth, and Laconia, New Hampshire; and the towns of Montpelier, Barre, and St. Johnsbury, Vermont. The separate part of the MLRA on the eastern border of New York has no cities. Interstates 89, 90, 91, 93, and 95 cross different parts of this MLRA. Some of the White Mountain National Forest is in the part of the MLRA in New Hampshire, and the Acadia National Park is in the part in Maine. The Rachel Carson National Wildlife Refuge is in the part in southeast Maine. A large number of State forests and State parks are throughout this MLRA.

Physiography This area is the New England Province of the Appalachian Highlands. The separate western part of the area is in the Taconic Section of the province. The rest of the area is mostly in the New England Upland Section. The part in southeastern Maine is in the Seaboard Lowland Section. This MLRA includes the entire coastal zone of Maine and extends inland along the major river valleys. Most of the area is characterized by rolling to hilly uplands. The area has some isolated mountain peaks. In the part of the area in southeastern Maine, gently sloping to level valleys terminate in coastal lowlands. Elevation ranges from sea level to 1,000 feet (0 to 305 meters) in much of the area. It is 2,000 feet (610 meters) on some hills and 2,950 feet (900 meters) on a few isolated peaks. Local relief is mostly low or moderate. It generally is highest in the northern part of the area and decreases as sea level is approached. An exception is the Taconic Mountains along the New York-Massachusetts border, where relief is substantial. Relief is mostly about 5 to 65 feet (2 to 20 meters) in the valleys and about 80 to 330 feet (25 to 100 meters) in the uplands. The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Connecticut (0108), 20 percent; Maine Coastal (0105), 15 percent; Saco (0106), 15 percent; Kennebec (0103), 13 percent; Merrimack (0107), 11 percent; Penobscot (0102), 9 percent; Androscoggin (0104), 6 percent; Richelieu (0201), 4 percent; Upper Hudson (0202), 3 percent; St. Francois (0111), 2 percent; Connecticut Coastal (0110), 2 percent. In this area, the Piscataqua and Saco Rivers begin in New Hampshire and flow into Maine. The Penobscot and Saco Rivers are in the part of this area in Maine. Another major river in the

area is the Merrimack River in New Hampshire. The part of the area in Vermont encompasses the upper end of the Connecticut River drainage and the headwaters of the Lamoille and Winooski Rivers. The small, separate part of the MLRA on the eastern border of New York has short reaches of the Batten Kill River in Vermont, the Kinderhook River in New York, and the headwaters of the Housatonic River in Massachusetts. Geology Most of this MLRA is characterized by till-mantled, rolling to hilly uplands. The northern and eastern parts of the area are underlain mostly by granite, gneiss, and schist bedrock. Limestone, dolomite, and marble beds interspersed with basalt flows occur in the southern and western parts. Stratified drift deposits of unconsolidated sand and gravel, primarily glacial outwash, fill most of the narrow river valleys. Some marine sediments occur at the lower end of the valleys that terminate in the coastal lowlands in southeastern Maine. Some glacial lake sediments occur on valley floors behind glacial moraines. The areas of marine and glacial lake sediments are not extensive but are important agricultural areas. Climate The average annual precipitation in most of this area is 33 to 45 inches (840 to 1,145 millimeters). It is 45 to 69 inches (1,145 to 1,755 millimeters) in a few scattered, higher elevation areas and along the coast. The precipitation generally is evenly distributed throughout the year. Near the coast, however, it is slightly lower in summer. In inland areas, it is slightly higher in spring and fall. 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. Heavy snowfalls commonly occur late in winter. The average annual temperature is 39 to 48 degrees F (4 to 9 degrees C). The freeze-free period averages 160 days and ranges from 120 to 195 days. Temperatures and the length of the freeze-free period increase from north to south and closer to the coast. Water Following are the estimated withdrawals of freshwater by use in this MLRA: Public supply—surface water, 13.4% ground water, 4.5% Livestock—surface water, 0.2% ground water, 0.3% Irrigation—surface water, 0.2% ground water, 0.0% Other—surface water, 73.2% ground water, 8.3% The total withdrawals average 885 million gallons per day (3,350 million liters per day). About 13 percent is from ground water sources, and 87 percent is from surface water sources. Abundant precipitation, many perennial streams, and many natural lakes and ponds are important sources of surface water. Many large and small reservoirs provide municipal and industrial water. The surface water in the area is of good quality and is suitable for almost all uses with no or minimal treatment. Acid rain and municipal and industrial waste discharges are the primary sources of contamination of the surface water. Ground water is scarce on the till-mantled uplands but is abundant in the deep outwash deposits in the valleys. Most public supplies and industries that use ground water obtain the water from the stratified drift aquifer in the river valleys. The water from this aquifer is soft to very hard, is acidic, and has very low levels of total dissolved solids, 75 to 125 parts per million (milligrams per liter). The aquifer is only about 100 feet (30 meters) thick, and the water table is typically at a depth of 30 feet (10 meters). As a result, water in the aquifer is very susceptible to contamination from surface activities. Domestic and some public supply and light industry water is obtained from wells drilled in the granite, gneiss, and schist bedrock under the uplands in Vermont, New Hampshire, and Maine. This water has slightly more total dissolved solids and generally is harder than the water in the valley fill aquifers. Also, there are more instances of iron concentrations exceeding 300 parts per

billion (micrograms per liter) in water from the crystalline bedrock aquifer. This is the national and State secondary standard for iron in drinking water. High levels of radon-222 occur in wells drilled into granite that has high amounts of muscovite and biotite. Industrial and domestic wells pump water from a carbonate aquifer on the western edge of Massachusetts, in the northeast corner of Connecticut, and along the eastern border of New York. This aquifer consists of beds of limestone, dolomite, and marble interspersed with beds of schist and quartzite. The water from this aquifer is very hard and has more than 500 parts per million (milligrams per liter) total dissolved solids. This level exceeds the national secondary drinking water standard.

Soils The dominant soil orders in this MLRA are Inceptisols and Spodosols. The soils in the area dominantly have a frigid soil temperature regime, an aquic or udic soil moisture regime, and isotic, illitic, or mixed mineralogy. They are shallow to very deep, generally excessively drained to poorly drained, and loamy or sandy. Eutrudepts (Buxton series) and Epiaquepts (Scantic series) formed in glaciomarine or glaciolacustrine deposits on coastal lowlands and in valleys. Dystrudepts formed in till on till plains and moraines (Lanesboro, Shelburne, and Colrain series) and on hills and ridges (Taconic series). Haplorthods formed in glaciofluvial deposits on outwash plains and eskers (Adams and Colton series); in till on till plains, ridges, and moraines (Bangor, Berkshire, Dixmont, Hermon, Lyman, Monadnock, and Tunbridge series); and in dense till on drumlins and uplands (Marlow and Peru series).

Biological Resources This area supports northern hardwoods. Beech, white birch, yellow birch, sugar maple, and hemlock are dominant on the better drained soils. Spruce and balsam fir are dominant on the wetter soils and on mountaintops. The northern aspects of mountain slopes favor spruce and fir, and the southern aspects support northern hardwoods. White pine is common on abandoned farmland, in river valleys, and on outwash plains. Spruce fir, mountain cranberry, and similar acid-tolerant plants grow on alpine or subalpine mountaintops. Some of the major wildlife species in this area are white-tailed deer, beaver, snowshoe hare, muskrat, mink, and ruffed grouse. The species of fish in the area include trout, salmon, alewife, striped bass, smelt, and eel.

Land Use Following are the various kinds of land use in this MLRA: Cropland—private, 4% Grassland—private, 2% Forest—private, 76%; Federal, 1% Urban development—private, 7% Water—private, 6% Other—private, 4% Almost four-fifths of this area is in hardwood and conifer forests, most of which are in small holdings. Some areas are in State forests or in other large holdings. Sawlogs and pulp for paper mills are the principal products, but maple syrup and Christmas trees are produced on some sites. The forests are widely used for hunting and other kinds of recreation. A significant acreage of the forestland is used for residential and leisure home developments. Forage crops for dairy cattle are grown on most of the cropland in the area. Truck crops, small fruits, and apples are grown on some farms, mainly near the larger towns and cities. Native lowbush blueberries are produced in an area in the extreme eastern part of this MLRA. This is the largest blueberry production area in the world. Many farmsteads are used as rural residences, and the residents earn their living from nonfarm occupations. Urban development is increasing in this populous MLRA. The major soil resource concerns are sheet, rill, and gully erosion on cropland and on logging roads and forest landings and sedimentation in urban areas during periods of construction. Other resource concerns on cropland include nutrient management, maintenance of the content of organic matter in the soils, maintenance of soil quality, and

the loss of important farmland to development. Conservation practices on cropland generally include crop residue management (no-till), diversions, grassed waterways, cover crops, and filter strips. They also include management of the storage and utilization of all sources of nutrients on farms. Conservation practices on forestland generally include riparian buffer zones, sediment control on roads and in ditches, and proper stream crossings, which prevent sedimentation and help to maintain water quality.

Ecological site keys

PES KEY MLRA 144B

- 1a. Site occurs immediately adjacent to an ocean or estuary (ESG 0—Coastal)
 - 2a. Soils are sand dunes, never inundated by ocean tides ... F144BY010ME – Coastal Dune (reserved)
 - 2b. Soils inundated periodically by ocean tides, site nearly flat (non dunes)
 - 3a. Soils are sandy with very little vegetation ... F144BY009ME – Sandy Beach (reserved)
 - 3b. Soils are silty, loamy, or sandy, covered in vegetation ... F144BY020ME – Tidal Marsh Complex (reserved)
- 1b. Site occurs inland, not immediately adjacent to an ocean or estuary
 - 4a. Site occurs along major rivers and streams and experiences regular flooding, or would in the absence of dams and other water control structures (ESG 1—Floodplains)
 - 5a. Broad floodplain of large river system. Includes channel banks, stream terraces, and/or natural levies and associated oxbow ponds and marshes ... F144BY110ME – Broad Floodplain Riparian Complex
 - 5b. Floodplain of small river system. Includes channel banks, stream terraces, and sometimes small marshes and oxbow ponds if flooded regularly ... F144BY120ME – Small Floodplain Riparian Complex (reserved)
 - 4b. Site does not occur along major rivers and streams, or if it does occur near major rivers and streams it is not influenced by regular flooding events (even in the absence of dams)
 - 6a. Soils poorly- and/or very poorly-drained throughout site
 - 7a. Wetland area consisting of multiple associated plant communities, most of which are too wet to support greater than 20% tree cover (ESG 2—Open Wetlands)
 - 8a. Soils mostly muck ... F144BY210ME – Marsh Wetland Complex
 - 8b. Soils mostly peat or mucky peat
 - 9a. Soil pH mostly greater than 4.5 throughout site ... F144BY220ME – Semi-acidic Peat Wetland Complex

9b. Soil pH mostly less than 4.5 throughout site ... F144BY230ME – Acidic Peat Wetland Complex

7b. Wetland area consisting of multiple associated plant communities, most of which support greater than 20% tree cover (ESG 3—Wooded Wetlands)

10a. All soils are very poorly-drained with greater than 16 inches (40 cm) of organic mucky peat deposits on the surface ... F144BY302ME – Mucky Swamp

10b. Most soils on the site have less than 16 inches (40 cm) organic deposits on surface

11a. Soils are clay or silty clay in texture ... F144BY304ME – Wet Clay Flat

11b. Soil texture coarser than silty clay (silty to sandy)

12a. Soils sandy in texture (often intermixed with organic soils) ... F144BY303ME – Acidic Swamp

12b. Soil textures coarse-silty to coarse-loamy often with a densely compacted horizon within 43 inches (108 cm) of the soil surface

13a. All soils are poorly-drained and water table within 18 inches of soil surface. Red and/or black spruce dominate with low northern white cedar cover ... F144BY305ME – Wet Loamy Flat

13b. Soils are a complex of both poorly- and very poorly-drained, with water table less than 12 inches below soil surface. High northern white cedar cover ... F144BY301ME – Loamy Till Swamp

6b. Soils somewhat poorly-drained or drier, or, a combination of poorly-drained soils with drier soils in a complex throughout site

14a. Site occurs in exposed areas high in rock outcrop with little soil available for plants, too harsh to support greater than 20% tree cover (ESG 8—Rockland) ... F144BY801ME – Rockland (reserved)

14b. Site capable of producing greater than 20% persistent tree cover

15a. Shallow soils less than 20 inches (50 cm) deep, or a combination of shallow and moderately deep soils 20-40 inches (100 cm) deep, over bedrock

16a. Shallow organic soils (less than 20 inches [50 cm] deep) with pH less than 4.5 and large areas of sparse canopy with exposed bedrock ... F144BY704ME – Shallow Organic Rock Pocket

16b. Mineral soils, or a combination of organic and mineral soils together

17a. Soils formed over bedrock with calcareous members (northern white cedar is a typical indicator species on shallow calcareous

- sites) ... F144BY705ME – Shallow and Mod-deep Semi-rich Till
- 17b. Soils formed over bedrock lacking any calcareous members
 - 18a. All soils less than 12 inches (30 cm) deep over bedrock ... F144BY706ME – Very Shallow Till
 - 18b. Soils deeper than 12 inches (30 cm) over bedrock, or a combination of shallow and moderately-deep soils 1-40 inches (2.5-100 cm) in depth over bedrock
 - 19a. All soils 10 to 24 inches (25-60 cm) deep over bedrock ... F144BY701ME – Shallow Till
 - 19b. Combination of shallow and moderately-deep soils 10-40 inches (25-100 cm) in depth over bedrock
 - 20a. Soils with very high organic matter content, very dark brown and/or maroon in color below the E horizon ... F144BY703ME – Shallow and Moderately-deep Humic Till
 - 20b. Soils lacking very dark colors associated with high organic matter content ... F144BY702ME – Shallow and Moderately-deep Till
- 15b. All soil components greater than 20 inches deep (50 cm)
 - 21a. Predominant soil texture is sandy or sandy-skeletal (ESG 6—Sandy Forests)
 - 22a. Soil well-drained or drier ... F144BY601ME – Dry Sand
 - 22b. Soil moderately well-drained or somewhat poorly-drained ... F144BY602ME – Sandy Toeslope
 - 21b. Predominant soil texture is finer than sandy
 - 23a. Predominant soil texture is clay (fine or fine-silty) (ESG 4—Clay Forests)
 - 24a. Soils are poorly- to somewhat-poorly drained ... F144BY401ME – Clay Flat
 - 24b. Soils are moderately well- to well-drained ... F144BY402ME – Clay Hills
 - 23b. Predominant soil texture is coarser than clay (ESG 5—Loamy Forests)
 - 25a. Soil parent material includes some calcareous members, with predominant pH over 6.0
 - 26a. Site occurs on poorly- to somewhat poorly-drained toeslope of a large watershed where nutrients and water accumulate ... F144BY507ME – Semi-rich Till Toeslope
 - 26b. Site occurs on moderately well- to well-drained

backslopes ... F144BY506ME – Semi-rich Till Slope

25b. Soil parent material lacks calcareous members, with pH mostly below 6.0

27a. Loamy surface soils underlain by sandy or sandy-skeletal strata ... F144BY505ME – Loamy over Sandy

27b. Loamy surface soils underlain by loamy subsoils

28a. Soils somewhat-poorly drained, including poorly-drained soils that are mapped with somewhat poorly-drained components

29a. Site occurs on poorly- to somewhat poorly-drained toeslope of a large watershed where nutrients and water accumulate ... F144BY502ME – Loamy Till Toeslope

29b. Site occurs on relatively flat expanses with less than 5% slope, rather than the toeslope of a large watershed ... F144BY503ME – Loamy Flat

28b. Soils moderately well- to well-drained, including somewhat poorly-drained components mapped with drier components

30a. Site occurs in protected coves and drainageways with very thick, dark surface A horizon greater than 12 inches (30 cm), very high in organic matter ... F144BY504ME – Enriched Loamy Cove

30b. Site occurs on gentle to steep slopes (greater than 5%) lacking significant organic matter accumulation ... F144BY501ME – Loamy Slope (Northern Hardwoods)