The following describes standards for assigning Important Farmland Classes to soil survey map units of Massachusetts soil survey areas.

**Criteria for the designation “Prime Farmland” per Code of Federal Regulations (CFR)**

The prime farmland class is assigned to soil map units, the major component/s relative value data[[1]](#footnote-1) for which, meet prime farmland criteria per 7CFR657.5 as edited to exclude soil properties and climate not relevant to Massachusetts, and to quantify adequate available water holding capacity as follows:

* available water capacity of 3.5 in (8.9 cm) or more[[2]](#footnote-2) within a depth of 40 in (1 m) or the depth to an impermeable layer if less than 40 in (1 m) and,
* pH between 4.5 and 8.4 in all horizons within a depth of 40 in (1 m) and,
* water table, if present, not shallower than 15 in (38 cm) during May through October and,
* infrequent (less often than once in 2 years) or no flooding during May through October and,
* the product of Kw (erodibility factor, whole soil) of the mineral soil surface and percent slope is less than 2.0[[3]](#footnote-3); and,
* permeability rate of at least 0.06 in (0.15 cm) per hour in the upper 20 in (50 cm); and,
* upper 6 in (15 cm) of the soil surface contains less than 10 percent rock fragments by volume coarser than 3 in (7.6 cm) diameter; and,
* not more than 0.1 percent of the soil surface is covered by stones 10 in (25cm) to 24 in (60cm) diameter, and/or boulders >24 in (60 cm) diameter, and.
* less than 2 percent bedrock exposure.

Qualifiers for data application to Massachusetts soil survey map unit prime farmland criteria per CFR:

* Entire pH data range is applied to the pH criterion. All soil survey map unit components that otherwise meet prime farmland criteria have mineral horizon pH ranges w/in the CFR criterion.Tillage and accepted agricultural practices negate the pH limitation where attribute relative value is less than 4.5.
* Map units having a predominance of soils of coarse-loamy or coarse-silty particle size class overlying densic contact on 0 to 8% slopes with available water capacity data values <3.5 in (8.1 cm), and that meet remaining criteria per CFR are designated prime farmland. Although attribute data indicates the available water holding capacity minimum of 3.5 in (8.1 cm) is not met, these soils maintain a reservoir of moisture that supports plant growth due to reduced gravitational water loss and meets criteria per CFR of adequate moisture supply for the crops commonly grown. This qualifier is applicable to soil map components with moderately coarse to medium textured mantles overlying lodgment till.
* Where the product of K and slope percent is 2 or less for the lower part of a 3 to 8 percent map unit slope phase range but exceeds 2 for the upper part of the slope range, and remaining criteria per CFR are met, the map unit is designated prime farmland.
* Map units that meet all prime farmland criteria per CFR except the relative value data representing the predominant components reflects available water capacity of less than 3.5 in (8.9 cm) through the upper 40 in (1 m) but has sufficient available water capacity in the upper profile, are designated prime farmland. This qualifier is applicable to soil survey map unit components having moderately coarse to medium textured mantles overlying coarse textured deposits.
* Complexes and Associations - Soil map units with more than 50 percent components that meet any of the above scenarios are designated prime.

**Criteria for the designation “Farmland of Statewide Importance”**

* Soil map units, the predominant composition of which does not meet criteria for prime farmland and have all the following characteristics…
* available water capacity of 2.0 in (5.1 cm) or more[[4]](#footnote-4) within a depth of 40 in (1 m); and,
* pH between 4.5 and 8.4 in all horizons within a depth of 40 in (1 m) and,
* water table, if present, not shallower than 15 in (38 cm) during May through October; and,
* infrequent (less often than once in 2 years) or no flooding during May through October; and,
* the product of Kw (erodibility factor, whole soil) of the mineral soil surface and percent slope is less than 4.2[[5]](#footnote-5); and,
* permeability rate of at least 0.06 in (0.15 cm) per hour in the upper 20 in (50 cm); and,
* upper 6 in (15 cm) with less than 35 percent rock fragments by volume coarser than 3 in (7.6 cm); and,
* not more than 3 percent of the soil surface is covered by stones 10 in (25 cm) to 24 in (60 cm) diameter and,
* not more than 0.1 percent of the surface is covered by boulders >24 in (60 cm) diameter, and
* less than 2 percent bedrock exposures.

Qualifiers for data application to Massachusetts Farmland of Statewide Importance Criteria

* Where the product of K and slope percent is 4.2 or less for the lower part of an 8 to 15 percent map unit slope phase range but exceeds 4.2 for the upper part of the slope range, and remaining criteria are met, the map unit is designated farmland of statewide importance.
* Complexes and Associations - Soil map units with more than 50 percent components that meet the above criteria are designated farmland of statewide importance.

**Important Farmland Soil Map Unit Designation Overriding Scenarios**

Application of anomalous or non-representative data elements to important farmland criteria may result in inaccurate class placement. The consideration of the characteristics of the soil survey map unit as a whole as assessed by Massachusetts NRCS staff overrides point specific data.

K factors and available water capacity data for the same nominal component may vary among soil survey areas resulting in different data-derived farmland classes. The characteristics of the predominant condition based on acreage extent will be applied state-wide for prime farmland and farmland of state-wide importance designations.

The following address specific scenarios where calculations based on attribute data may inaccurately place a map unit in prime farmland or farmland of statewide Importance classes. Soil map units having any of the following characteristics are precluded from important farmland designations:

* A major component that is shallow to lithic contact: complex slopes, surface stones and boulders associated with these map units, and very shallow components within these landscapes are significant limitations to agriculture.
* Slope phase range that includes 20 percent or more. Per recommendation from MA NRCS ecological sciences staff, 20 percent slope or greater is limiting for equipment operations.
* Hydric soil composition greater than or equal to 50 percent.
* Quartzipsamment composition greater than or equal to 50 percent: droughty, inherently low fertility.
* A major component of urban land and/or major component classified to level above series i.e. Udorthents.
* Map unit complexes associated with the undulating, rolling, irregular slopes of the Cape Cod terminal moraines.

Soil map units having any of the following characteristics are precluded from the designation, Prime Farmland:

* Composition of soil components in the sandy-skeletal particle size class greater than or equal to 50 percent.
* Slope phase range that exceeds 8 percent.[[6]](#footnote-6)

**Unique Farmland**

Soil survey map units designated as Unique Farmland, are those suitable for, and have an established history of cranberry production. The Unique Farmland designation is excluded from soil survey areas with few or no lands with cranberry production.

1. Relative value refers to the value assigned to specific data elements in the National Soils Information System. Application of anomalous or non-representative values to important farmland criteria may result in inaccurate class placement. The consideration of the characteristics of the soil map unit as a whole overrides point specific data as determined by Massachusetts NRCS staff. [↑](#footnote-ref-1)
2. Available water capacity needs determined from “*Conservation Irrigation Guide for Massachusetts, 1981”* [↑](#footnote-ref-2)
3. Slope range values applied to this criterion exclude the lowest whole number in the range to separate overlap with the adjacent lower slope phase as follows: 0-3, 4-8, 9-15. [↑](#footnote-ref-3)
4. Available water capacity needs determined from *Conservation Irrigation Guide for Massachusetts, 1981* [↑](#footnote-ref-4)
5. Product of K and slope criterion based on historical precedent, MA Soil Conservation Service document, *“Additional Farmland of State or Local Importance”*,1/17/1986. Slope range values applied to this criterion exclude the lowest whole number in the range to separate overlap with the adjacent lower slope phase as follows: 0-3, 4-8, 9-15. [↑](#footnote-ref-5)
6. Based on data, some map units meet Prime Farmland criteria on the lower part of the 8-15 percent slope range. About a dozen map units with available water capacity >3.5 inches and Kw of .1, .2, .15, or .17 were noted, all of which have loamy surface textures and parent material like other map units with higher Kw factors. The decision to exclude slopes greater than 8 percent from Prime Farmland is based on the preponderance of attribute data for similar soils. [↑](#footnote-ref-6)