

Appendix A
Soil Series Description

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Soil Series Description

The following descriptions are taken from the Middlesex County Soil Survey (USDA, 1987).

Atsion Series

The Atsion series consists of deep, poorly drained soils that formed in acid, sandy Coastal Plain sediments and are in low positions on the landscape. The slope ranges from 0 to 2 percent but is generally less than 1 percent. Atsion soils occur near Klej, Manahawkin, Lakehurst, and Hammonton soils.

At - Atsion sand. This soil is nearly level and poorly drained. It is located along drainageways, in basins, and in low-lying flats throughout the southern part of Middlesex County in irregular areas that range from 6 to 200 acres.

The surface is generally covered by a layer of loose leaves and peat 2 inches thick. The surface layer is black sand 4 inches thick. The subsurface layer is gray sand 12 inches thick. The upper part of the subsoil is dark brown loamy sand 6 inches thick, and the lower part is brown sand 14 inches thick. The substratum is brown sand to a depth of 60 inches or more.

The permeability is moderately rapid in the upper part of the subsoil and rapid in the lower part of the subsoil and in the substratum. The available water capacity is low, with additional water available from the seasonal water table. The organic matter content is moderate. The root zone is restricted by a seasonal high water table that is close to the surface during the winter and spring and is at a depth of 2 to 4 feet in summer. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid. Runoff is slow.

Wetness limits most types of crop production unless drainage is provided. The soil is poorly suited to woodland production. The seasonal high water table limits this soil for most types of community development.

Chalfont Series

The Chalfont series consists of deep, somewhat poorly drained soils that are formed in a silty mantle over material weathered from metamorphosed shale and argillite bedrock. The Chalfont soils are on uplands near Heathcote Brook and consist of slopes ranging from 0 to 5 percent. Chalfont soils generally occur near Fallsington, Reaville Variant, and Mount Lucas soils and Humaquepts. These soils have a well-developed fragipan, gently sloping to steep areas, and are generally not subject to flooding.

ChA - Chalfont Silt Loam on 0 to 2 percent slopes. This soil is nearly level and somewhat poorly drained. It is located on divides, side slopes, toe slopes, and areas irregular in shape ranging from 5 to 200 acres.

Typically, the surface layer is dark grayish brown silt loam 6 inches thick. The subsoil is yellow-brown, mottled silty clay loam 44 inches thick. The lower 24 inches of the subsoil is very firm. The substratum is olive-brown silty clay loam to 60 inches or more.

The permeability in the subsoil and substratum of this Chalfont soil is slow. Available water capacity is high. Root growth and air and water movement are restricted to a depth of 26 inches by the firm part of the subsoil. The organic matter content is slight, and natural fertility is medium. Runoff is slow, and the erosion hazard is moderate. The water table is perched on the subsoil from late fall to early spring. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid.

The soil is moderately well suited to most cultivated crops and to pasture and hay, but most of the acreage is in native vegetation. The soil is moderately well suited to a variety of trees. The water table and low permeability are a limitation of the soil as a site for local roads and streets.

ChB - Chalfont Silt Loam on 2 to 5 percent slopes. This soil is gently sloping and somewhat poorly drained. It is located on divides, side slopes, toe slopes, and areas irregular in shape ranging from 5 to 200 acres.

Typically, the surface layer is dark grayish brown silt loam 6 inches thick. The subsoil is yellow-brown, mottled silty clay loam 44 inches thick. The lower 24 inches of the subsoil is very firm. The substratum is olive-brown silty clay loam to 60 inches or more.

The permeability in the subsoil of this Chalfont soil is slow. Available water capacity is high. Root growth and air and water movement are restricted to a depth of 26 inches by the firm part of the subsoil. The organic matter content is moderate, and natural fertility is medium. Runoff is medium, and the erosion hazard is moderate. The water table is perched on the subsoil from late fall to early spring. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid.

The soil is moderately well suited to most cultivated crops and to pasture and hay, but most of the acreage is in native vegetation. The soil is suited to a variety of trees. The water table is a limitation of the soil as a site for local roads and streets.

Downer Series

The Downer series consists of deep, well-drained soils that formed in acid, moderately coarse textured Coastal Plain sediments. They are found on divides, terraces, side slopes, and toe slopes. They are generally found near Hammonton, Evesboro, Fort Mott, Klej, and Sassafra soils.

DnC - Downer loamy sand, 5 to 10 percent slopes. This soil is sloping and well drained. It is found on smooth or convex slopes in long and narrow or irregular areas ranging from 10 to 40 acres. Typically, a layer of dark brown peat about 2 inches thick covers the surface. The surface layer is very dark brown loamy sand 2 inches thick. The subsurface layer is very dark brown or strong brown loamy sand 11 inches thick. The

subsoil is strong brown sandy loam 17 inches thick. The substratum is strong brown loamy sand to a depth of 60 inches or more.

The permeability is moderate or moderately rapid, and available water capacity is moderate. Organic matter content and natural fertility are low. The root zone extends to a depth of 60 inches. Runoff is medium. The erosion hazard by water or wind is severe. In unlimed areas the surface layer is extremely acid and the subsoil and substratum are strongly acid.

This soil is suited to farming and trees, and potential productivity is moderately high. The sandy surface limits this soil for recreation uses. Erosion and sedimentation are hazards in areas that have been cleared of trees.

Elkton Series

The Elkton series consists of deep, poorly drained soils that are formed in acid, moderately fine textured Coastal Plain sediments. These nearly level soils are on broad low-lying flats, basins, and drainageways. These soils generally occur near Keyport, Woodstown, and Manahawkin soils and Humaquepts and contain more clay than the Woodstown, and Manahawkin soils and Humaquepts.

Ek - Elkton loam. Elkton loam is nearly level and poorly drained. It is in Coastal Plain basins, slopes are concave, and areas are irregular in shape ranging from about 4 to 200 acres. Typically, the surface layer is grayish brown loam about 8 inches thick. The subsoil is mostly gray clay loam about 27 inches thick. The substratum is mottled, gray and yellowish brown clay loam to a depth of 60 inches or more.

The permeability of this Elkton soil is low. Available water capacity is high. Organic matter content is moderately low. Runoff is slow, and the erosion hazard is slight. The root zone extends to a depth of 60 inches. Water is frequently ponded on the soil in late winter and in spring. In unlimed areas the surface layer is extremely acid and the subsoil and substratum mainly strongly acid. In places the substratum turns extremely acid when excavated.

Most of the acreage of this soil is in woodland. Some areas have been drained and used for cultivated crops and pasture. Unless drained, this soil is poorly suited to crop production. If adequately drained, the soil is suited to pasture. Drainage can be accomplished with open ditches or shallow surface drains. This soil is also suited to trees.

The seasonal high water table, the permeability and low strength are the main limitations of this soil. The low strength is a limitation of the soil as a site for local roads and streets.

Evesboro Series

This series consists of deep, excessively drained soils that formed in acid, coarse textured Coastal Plain sediments containing small amounts of silt and clay. The soils are

found on uplands, sandy knolls and terraces, and slope ranges from 0 to 15 percent. Evesboro soils generally occur near Klej, Downer, Lakewood, and Lakehurst soils.

EvB – Evesboro sand, 0 to 5 percent slopes. This soil is nearly level or gently sloping and is excessively drained. It is found on stream terraces in low positions, on convex slopes ranging from 4 to 150 acres.

The surface layer is typically dark grayish brown sand 3 inches thick. The subsoil is strong brown sand 37 inches thick. The substratum is reddish yellow sand to a depth of 60 inches or more.

The permeability is rapid in the subsoil and substratum and available water capacity is low. Organic matter content and natural fertility are low. Tilt is good, and the soil is easily worked. The root zone extends to a depth of 60 inches or more. Runoff is slow, and in unlimed areas the surface layer and subsoil commonly are very strongly acid. Wind erosion is a hazard in unprotected areas.

The soil is poorly suited to cultivated crops and to hay and pasture, mainly because of the available water capacity. The soil is suited to woodland, and much of the acreage is wooded; potential productivity is moderately high. The sand in the surface layer, and permeability, and the available water capacity are the main limitations of the soil for community development.

Fallsington Series

The Fallsington series consists of deep, poorly drained soils that formed in acid, moderately fine textured Coastal Plain sediments. These soils are located in low-lying flats and basins. The Fallsington soils generally occur near Nixon and Nixon Variant soils. The slopes of this soils series ranges from 0 to 2 percent but is dominantly less than 1 percent; while the permeability is moderate to moderately rapid and the available water capacity is moderate.

Fb – Fallsington loam. Fallsington loam is level to nearly level and is poorly drained with areas irregular in shape ranging from 5 to 150 acres. Typically, a layer of dark brown peat about 3 inches thick covers the surface. The surface layer is very dark gray and is 4 inches thick. The subsoil is mottled and gray and about 23 inches thick; it is loam in the upper part and sandy clay loam in the lower part. The substratum is light yellowish brown to yellowish brown gravelly loam sand and loamy sand to a depth of 60 inches or more. The permeability is moderate to moderately rapid. Available water capacity is moderate. The frost-action potential is high. The subsoil is slightly sticky and has a moderate shrink-swell potential. The seasonal high water is between the surface and a depth of 1 foot from late fall to late spring. The root zone is restricted to depth of 25 inches by the wetness. Runoff is slow and organic matter content is moderate. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid.

Unless drained, this soil is poorly suited to cultivated crops. The seasonal high water table and lack of suitable drainage outlets are major limitations. Similarly, most areas of this soil that are used for pasture require surface drainage. This soil is suited to a wide variety of trees, and the potential productivity is high. The seasonal high water table is a major limitation of this soil for urban use, especially for roads and streets.

Fallsington Variant Series

The Fallsington Variant consists of deep, poorly drained soils that formed in acid, moderately fine textured Coastal Plain sediments. The Fallsington Variant soils are in low-lying flats and basins. Slope ranges from 0 to 2 percent but is generally less than 1 percent. Fallsington Variant soils are found near with Nixon and Nixon Variant soils, and resemble Fallsington soils except for small amounts of red shale fragments and detroidal shale.

Fd - Fallsington Variant loam. Fallsington Variant loam is level to nearly level and is poorly drained. Typically, the surface layer is gray loam about 5 inches thick. The subsoil is 24 inches thick and consists of gray silt loam in the upper part and weak red clay loam in the lower part. The substratum extends to a depth of 60 inches or more, and is brownish gray, yellowish brown and dark gray stratified sandy loam and loamy sand or loam.

The permeability is slow in the subsoil, and available water capacity is high. The root zone generally extends to a depth of 60 inches or more but is seasonally restricted by wetness to a depth of about 25 inches. Organic matter content is moderate. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid. Areas near streams are frequently flooded for brief periods in winter, spring, and early summer.

The soil is poorly suited to cultivated crops and pasture, due to flooding and the seasonal high water table. The soil is suited to trees, and most of the acreage is wooded.

The seasonal high water table, flooding, and the slow permeability of the subsoil are major limitations for community development, especially as a site for septic systems, dwellings with basements, and local roads and streets.

Hammonton Series

The Hammonton series consists of deep, moderately well drained or somewhat poorly drained soils that have formed in acid, moderately coarse textured Coastal Plain sediments and are located on terraces. Slopes range from 0 to 3 percent. These soils are on the landscape with Downer, Fallsington, Sassafras, Woodstown, and Klej soils.

HeA - Hammonton loamy sand, 0 to 3 percent slopes. This soil is nearly level to gently sloping and is moderately well drained. It is found on terraces, on smooth or concave slopes in areas ranging from 5 to 100 acres. The soil is generally found with Downer Fort Mott and Woodstown soils.

The surface layer is typically brown loamy sand about 8 inches thick. The subsurface layer is yellowish brown loamy sand 10 inches thick. The subsoil is yellowish brown loamy sand 12 inches thick. The substratum is mottled, dark yellowish brown and gray loamy sand to a depth of 60 inches or more.

The permeability is moderate or moderately rapid, and available water capacity is moderate. Organic matter content is low. The seasonal high water table is at a depth of 1.5 to 4 feet. Runoff is slow and the erosion hazard is slight, but wind erosion is a hazard in winter. In unlimed areas the surface and subsurface layers are extremely acid and the subsoil is very strongly acid.

This soil is moderately well suited to cultivated crops and is suited to pasture and trees. The seasonal high water table is the main limitation of Hammonton loamy sand as a site for community development.

HmA - Hammonton sandy loam, 0 to 2 percent slopes. Hammonton sandy loam with 0 to 2 percent slopes is nearly level and moderately well drained. It is found on divides and terraces in East Brunswick, South Brunswick, Monroe and Plainsboro Townships. Slopes are smooth or convex and areas are long and narrow ranging from 5 to 60 acres.

Typically, the surface layer is brown sandy loam about 8 inches thick. The subsurface layer is yellowish brown sandy loam 10 inches thick. The subsoil is mottled, yellowish brown sandy loam 12 inches thick. The substratum is mottled, dark yellowish brown loamy sand to a depth of 60 inches or more.

The permeability is moderate or moderately rapid. Available water capacity is moderate. Organic matter content is moderate. The root zone extends to a depth of 60 inches but is restricted by a seasonal high water table of a depth of about 30 inches from late fall to late spring. In unlimed areas the surface and subsurface layers are extremely acid and the subsoil is very strongly acid.

Most of the acreage of this soil is used for cultivated crops. A few areas are in woodland and pasture. Some areas are in urban uses. The soil is also suited to pasture and well suited to trees. The seasonal high water table limits this soil for most urban uses.

Humaquepts

Humaquepts consist of somewhat poorly drained to very poorly drained soils on flood plains that are subject to flooding several times each year. The soils formed in stratified sandy or loamy sediments of fluvial origin with slopes ranging from 0 to 2 percent. The solum ranges from 24 to 48 inches in thickness. These soils are extremely acid to slightly acid. Pebbles make up 0 to 20 percent of some lower horizons.

HU - Humaquepts, frequently flooded. Humaquepts that frequently flood consist of nearly level, deep, somewhat poorly drained to very poorly drained soils on flood plains along small, permanent and intermittent streams. Slopes range from 0 to 2 percent.

These soils consist of material that ranges in texture from sandy to clayey. Most of the areas are covered by recent alluvium, mainly loamy, and consist of sediments deposited by the stream during flooding. The water covering some areas is several feet deep during flood stage.

Most areas of this unit are in woodland. Flooding and the instability and variability of the soil material make the unit generally unsuitable for crops, pasture, or woodland and for most urban uses.

Keyport Series

The Keyport Series consists of deep, moderately well drained soils that formed in acid, moderately fine textured Coastal Plains sediments. They are located on divides, terraces, side slopes and toe slopes. Slopes range from 0 to 15 percent. They are generally found with Woodstown, Elkton, and Sassafra soils.

KeA - Keyport sandy loam, 0 to 2 percent slopes. This soil is nearly level and moderately well drained. It is mostly found on divides. The areas are irregular in shape and range from 5 to 100 acres.

Typically, the surface layer is brown sandy loam about 8 inches thick. The subsoil is 32 inches thick. The upper part of the subsoil is yellowish brown sandy loam 7 inches thick. The middle part is yellowish brown sandy clay loam 12 inches thick. The lower part is light brownish gray clay loam 13 inches thick. The substratum is mottled, light brownish gray clay loam to a depth of 60 inches or more.

The permeability of this soil is slow. Available water capacity is high. Organic matter content is moderate. The lower part of the subsoil has a moderate shrink-swell potential. Frost-action potential is high. The root zone extends to a depth of 60 inches or more. The seasonal high water table is at a depth of 1.5 to 4 feet from late fall to late spring. Runoff is slow and the erosion hazard is slight. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid.

The soil is suited to cultivated crops and to trees. Potential productivity is high. The slow permeability, moderate shrink-swell potential in the subsoil, and seasonal wetness limit this soil for most urban uses.

KeB - Keyport sandy loam, 2 to 5 percent slopes. This soil is gently sloping and moderately well drained. It is found on divides, side slopes, and toe slopes. The areas are irregular in shape and range from 5 to 100 acres.

Typically, the surface layer is brown sandy loam about 8 inches thick. The subsoil is 32 inches thick. The upper part of the subsoil is yellowish brown sandy loam 7 inches thick. The middle part is yellowish brown sandy clay loam 12 inches thick. The lower part is light brownish gray clay loam 7 inches thick. The substratum is mottled, light brownish gray clay loam to a depth of 60 inches or more.

The permeability of this soil is slow. Available water capacity is high. Organic matter content is moderate. The lower part of the subsoil has a moderate shrink-swell potential. Frost-action potential is high. The root zone extends to a depth of 60 inches or more. The seasonal high water table is at a depth of 1.5 to 4 feet from late fall to late spring. Runoff is moderately slow and the erosion hazard is moderate. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid.

The soil is suited to cultivated crops and to trees. Potential productivity is high. The slow permeability, moderate shrink-swell potential in the subsoil, and seasonal wetness limit this soil for most urban uses.

KfA - Keyport loam, 0 to 2 percent slopes. This soil is nearly level and moderately well drained. It is found on high terraces and divides. The areas are irregular in shape and range from 5 to 100 acres.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil is yellowish brown mottled clay loam 32 inches thick. The substratum is a firm layer of mottled, grayish brown silty clay loam to a depth of 60 inches or more.

The permeability of this soil is slow. Available water capacity is high. Organic matter content is moderate. The lower part of the subsoil has a moderate shrink-swell potential. Frost-action potential is high. The root zone extends to a depth of 60 inches or more. The seasonal high water table is at a depth of 1.5 to 4 feet from late fall to late spring. Runoff is slow and the erosion hazard is slight. In unlimed areas the surface layer is extremely acid and the subsoil is very strongly acid.

Most of the acreage of this soil is used for crops and pasture. A few areas are used for homesites. This soil is suited to cultivated crops and to trees. Potential productivity is high. The slow permeability, high frost-action potential, and seasonal wetness limit this soil for most urban uses.

Lansdowne Series

The Lansdowne Series consists of deep, moderately well drained and somewhat poorly drained soils that formed in acid, fine-textured Piedmont sediments. They are located on low-lying flats at the base of the Piedmont. Slope ranges from 0 to 5 percent. They are found with Fallsington Variant, Keyport, Klinsville, Penn, Reaville, and Reaville Variant soils.

LnA - Lansdowne silt loam, 0 to 2 percent slopes. This soil is nearly level and moderately well to somewhat poorly drained. It is on divides and low-lying flats in irregular areas between 5 and 100 acres.

The surface layer is typically dark brown silt loam about 7 inches thick. The upper part of the subsoil is yellowish red silty clay loam 9 inches thick. The middle part is mottled, yellowish red silty clay 20 inches thick. The lower part is mottled, red silty clay 14 inches thick. The substratum is red very shaly silty clay to a depth of 60 inches or more.

The permeability of this soil is slow. Available water capacity is high. A seasonal high water table is at a depth of 1 to 2.5 feet from October to June. Organic matter content is moderate. Runoff is slow, and the erosion hazard is slight. The rooting zone extends to a depth of 60 inches. Unless the soil has been limed, the surface layer is very strongly acid and the subsoil and substratum are strongly acid or very strongly acid.

Most of the acreage of this soil is used for cultivated crops and pasture. If drained, it is suited to cultivated crops and pasture, and trees. The seasonal high water table, slow permeability, frost-action potential, and low strength are the main limitations of the soil for community development.

LnB - Lansdowne silt loam, 2 to 5 percent slopes. This soil is gently sloping and moderately well to somewhat poorly drained. It is on side slopes and toe slopes in irregular areas between 5 and 100 acres.

The surface layer is typically dark brown silt loam about 7 inches thick. The upper part of the subsoil is yellowish red silty clay loam 9 inches thick. The middle part is mottled, yellowish red silty clay 20 inches thick. The lower part is mottled, red silty clay 14 inches thick. The substratum is red very shaly silty clay to a depth of 60 inches or more.

The permeability of this soil is slow. Available water capacity is high. A seasonal high water table is at a depth of 1 to 2.5 feet from October to June. Organic matter content is moderate. Runoff is slow, and the erosion hazard is slight. The rooting zone extends to a depth of 60 inches. Unless the soil has been limed, the surface layer is very strongly acid and the subsoil and substratum are strongly acid or very strongly acid.

Most of the acreage of this soil is used for cultivated crops and pasture. It is suited to cultivated crops and pasture, and trees. The seasonal high water table, slow permeability, frost-action potential, and low strength are the main limitations of the soil for community development.

LUA - Lansdowne-Urban land complex, 0 to 5 percent slopes. This unit mainly consists of nearly level to gently sloping, moderately well drained and somewhat poorly drained soils and areas that are used for urban development. It is located on terraces and in draws, in irregular areas that range from 20 to 400 acres. About 40 percent of this unit is Lansdowne soils. Typically, they have a surface layer of dark brown silt loam about 7 inches thick. The upper part of the subsoil is yellowish red silty clay loam 9 inches thick. The middle part is mottled, yellowish red silty clay 20 inches thick. The lower part is mottled, red silty clay 14 inches thick. The substratum is red very shaly silty clay to a depth of 60 inches or more. About 40 percent of this unit is areas covered mainly by concrete, asphalt, buildings or other impervious surfaces.

The permeability in this unit is slow in areas where the soils are relatively undisturbed and is variable in areas dominated by cuts, fill, and Urban land. Runoff is slow, and the erosion hazard is light. The available water capacity is high in the relatively

undisturbed areas, and is low to very low in areas dominated by cuts, fills, and Urban land. Most unlimed areas are very strongly acid.

Matapeake Series

The Matapeake series consists of deep, well drained soils that formed in acid, medium-textured Coastal Plain sediments, on divides and side slopes. These soils, with slopes ranging from 0 to 5 percent, are located on the landscape with Mattapex, Sassafras, and Woodstown soils. The Matapeake soils do not have the mottles in the Bt horizon that are common to Mattapex and Woodstown soils and have a higher silt content than the Sassafras soils.

MeA - Matapeake silt loam, 0 to 2 percent slopes. Matapeake silt loam on 0 to 2 percent slopes is nearly level and well drained on areas ranging from about 10 to 400 acres.

The surface layer is typically dark brown and yellowish brown silt loam about 13 inches thick. The substratum is strong brown gravelly sandy loam to a depth of 60 inches or more.

The permeability is moderate to moderately slow. Available water capacity is high, runoff is medium, and the erosion hazard is slight. The soil is moderate in organic matter content. In unlimed soils, the surface layer and subsoil are very strongly acid.

This soil is well suited to crops, hay and pasture, and most of the acreage is used for farming. The erosion hazard and the need to maintain organic matter content are the major management concerns. The soil is also well suited to trees, and potential productivity is moderately high. There are few limitations for most nonfarm uses. The permeability limits the soil as a site for septic tank absorption fields and most recreation uses.

MeB - Matapeake silt loam, 2 to 5 percent slopes. Matapeake silt loam on 2 to 5 percent slopes is gently sloping and well drained on areas ranging from about 10 to 400 acres.

The surface layer is typically dark brown and yellowish brown silt loam about 13 inches thick. The upper part of the subsoil is strong brown silt loam about 8 inches thick. The lower part of the subsoil is yellowish brown loam 10 inches thick. The substratum is strong brown gravelly sandy loam to a depth of 60 inches or more.

The permeability is moderate to moderately slow. Available water capacity is high, runoff is medium, and the erosion hazard is slight. The soil is moderate in organic matter content. In unlimed soils, the surface layer and subsoil are generally very strongly acid.

This soil is well suited to farming, and most of the acreage is farmed. The erosion hazard and the need to maintain organic matter content are the major management concerns. The soil is also well suited to trees, and potential productivity is moderately

high. There are few limitations for most nonfarm uses. The permeability limits the soil as a site for septic tank absorption fields and most recreation uses.

Mattapex Series

The Mattapex series consists of deep, moderately well drained soils that formed in acid, moderately-fine textured Coastal Plain sediments, on divides and side slopes. These soils are located on the landscape with Matapeake, Woodstown, Sassafra, and Fallsington soils. The Mattapex soils contain more silt in the solum than the Woodstown, Sassafra, or Fallsington soils and are not so gray in the solum as the Fallsington soils. Slopes range from 0 to 5 percent.

MgA – Mattapex silt loam, 0 to 2 percent slopes. Mattapex silt loam on 0 to 2 percent slopes is nearly level and moderately well drained, and is commonly found in long or irregular areas ranging from about 4 to 100 acres.

Typically, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is 30 inches thick. It is yellowish brown silt loam in the upper part and yellowish brown silty clay loam in the lower part. The substratum is yellowish brown fine sandy loam to a depth of 60 inches or more.

Permeability is moderate to moderately slow. Available water capacity is high, runoff is slow, and the erosion hazard is slight. Tilth is fair, and the soil is moderate in organic matter content. The root zone extends to a depth of 60 inches or more. In unlimed areas the surface layer and the subsoil commonly are very strongly acid. The seasonal water table is at a depth of 1.5 to 2.5 feet from January to April.

This soil is well suited to cultivated crops and to hay and pasture, and most of the acreage is farmed. Water ponds for short periods in depressions, and such areas are usually difficult to drain. It is also suited to trees, although little acreage is wooded. The permeability and the seasonal high water table limit this soil for most nonfarm uses, especially as a site for septic tank filter fields, dwelling foundations, and local roads and streets.

MgB – Mattapex silt loam, 2 to 5 percent. This soil is gently sloping and moderately well drained. The slopes are smooth or convex, with areas commonly long or irregularly shaped, ranging from 4 to 100 acres. Typically, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is 30 inches thick. It is yellowish brown silt loam in the upper part and yellowish brown silty clay loam in the lower part. The substratum is yellowish brown fine sandy loam to a depth of 60 inches or more.

The permeability of this Mattapex soil is moderate to moderately slow. Available water capacity is high, runoff is slow and the erosion hazard is moderate. Tilth is fair, and the soil is moderate in organic matter content. The root zone extends to a depth of 60 inches or more. In unlimed areas the surface layer and the subsoil commonly are very

strongly acid. The seasonal water table is at a depth of 1.5 to 2.5 feet from January to April.

This soil is well suited to cultivated crops and to hay and pasture, and most of the acreage is farmed. Water ponds for short periods in depressions, and such areas are usually difficult to drain. The soil is also suited to trees, but little acreage is wooded. The permeability and the seasonal high water table limit this soil for most nonfarm uses, especially as a site for septic tank filter fields, dwelling foundations, and local roads and streets.

Mount Lucas Series

The Mount Lucas series consists of deep, moderately well drained soils that formed from weathered diabase and basalt rocks. Mount Lucas soils are on south-facing slopes and slight knolls and flats. Slope ranges from 0 to 5 percent. They are generally found with Watchung, Keyport, Elkton, Woodstown, and Chalfont soils.

MoA – Mount Lucas silt loam, 0 to 2 percent slopes. This soil is nearly level and moderately well drained. It is found on narrow, convex ridge tops and side slopes, in oblong or irregular areas from 5 to 80 acres.

Typically, the surface layer is dark grayish brown silt loam about 6 inches thick. The subsoil is yellowish brown and strong brown silty clay loam about 24 inches thick and is 10 to 15 percent diabase rock cobbles and stones. The substratum extends to a depth of 60 inches or more. It is strong brown gravelly clay loam and is 40 to 50 percent diabase cobbles and stones.

The permeability of this soil is moderate to slow. Available water capacity is high. Runoff is slow. Tilt is fair, and the soil is high in natural fertility and moderate in organic matter content. The subsoil has a moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more. Unless limed, the surface layer and subsoil commonly are medium acid. Bedrock is commonly at a depth of 6 to 10 feet. The seasonal high water table is at a depth of 6 inches to 3 feet.

This soil is moderately well suited to cultivated crops and to pasture and hay, and is suited to trees. Low strength, slow permeability, the seasonal wetness, and the shrink-swell potential limit the soil for many urban uses.

MsB – Mount Lucas very stony silt loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and is moderately well drained. It is found on narrow, convex side slopes adjacent to streams and on undulating uplands in South Brunswick Township. The areas of this soil commonly are oblong or irregular in shape and range from 5 to 80 acres.

Typically, the surface layer is dark grayish brown silt loam about 6 inches thick. The subsoil is yellowish brown and strong brown silty clay loam about 24 inches thick and is 10 to 15 percent gravel, cobbles and stones. The substratum extends to a depth of 60

inches or more. It is strong brown gravelly clay loam and is 40 to 50 percent diabase cobbles and stones.

The permeability of this soil is moderate to slow. Available water capacity is high. Runoff is medium. Tilth is fair, and the soil is high in natural fertility and moderate in organic matter content. The subsoil has a moderate shrink-swell potential. The root zone extends to a depth of 60 inches or more. Unless limed, the surface layer and subsoil commonly are medium acid. Bedrock is commonly at a depth of 6 to 10 feet. The seasonal high water table is at a depth of 6 inches to 3 feet.

This soil is too stony for cultivated crops or pasture, but is suited to trees. Low strength, slow permeability, the seasonal wetness, and the shrink-swell potential limit the soil for many urban uses.

Mullica Series

This series consists of deep, very poorly drained soils that formed in acid, moderately coarse textured Coastal Plain sediments. They are found in low, wet areas that receive runoff from the surrounding soils. Slope generally is less than one percent. They are found on the landscape with Hammonton, Woodstown, and Fallsington soils.

Mu - Mullica sandy loam. This soil is nearly level and very poorly drained. It is found in low-lying upland flats, slight depressions, and along drainageways in irregular areas that range from 5 to 500 acres.

Typically, the surface is covered with black muck about 4 inches thick. The surface layer is very dark gray sandy loam about 7 inches thick. The subsoil is mottled and is about 21 inches thick. It is light brownish gray sandy loam in the upper part and light brownish gray gravelly sandy loam in the lower part. The substratum extends to a depth of 60 inches or more and is greenish gray sandy loam, sandy clay loam, and loamy sand.

The permeability is moderate in the subsoil and moderately rapid in the substratum. If the soil is drained, available water capacity is moderate but water is available to plants from the water table. The seasonal high water table is at the surface from December to May and some areas have water ponded on the surface. The root zone extends to a depth of 60 inches but is generally restricted by the seasonal high water. Organic matter content is high, and natural fertility is medium. In unlimed areas, the surface layer is extremely acid and the subsoil and substratum are very strongly acid. Runoff is very slow.

The soil is suited to cultivated crops and pasture if drained, and also suited to trees. Potential productivity is moderate. The seasonal high water table limits the soil for most urban uses.

Nixon Series

The Nixon series consists of deep, well-drained soils that formed in acid, moderately fine-textured Coastal Plain sediments. These soils are found on high terraces, divides, and side slopes ranging from 0 to 5 percent. Nixon soils are on the landscapes with Nixon Variant, Lansdowne, Fallsington Variant, and Sassafras soils.

NaA - Nixon loam with 0 to 2 percent slopes. Nixon loam with 0 to 2 percent slopes are nearly level and well drained with slopes that are dominantly convex, ranging in length from 100 to 300 feet. The areas are irregular in shape and range from 5 to 200 acres.

Typically, the surface layer is brown loam about 8 inches thick. The subsurface layer is strong brown loam 3 inches thick. The upper part of the subsoil is yellowish red loam 19 inches thick. The lower part is yellowish red sandy loam 10 inches thick. The substratum extends to a depth of 60 inches or more. It is strong brown stratified sandy loam.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, natural fertility is medium, and the organic matter content is moderate. The water table is rarely perched in the subsoil for more than a few hours. The root zone extends to a depth of 60 inches or more. In unlimed areas the surface layer and the subsoil are very strongly acid. Tilt is good, runoff is slow, and the erosion hazard is slight.

The soil is well suited to such cultivated crops as corn, soybeans, hay, fruit, and nursery crops, and much of the acreage is used for crops. It is also suited to trees, and potential productivity is high. This soil is generally suitable for most urban uses.

NaB - Nixon loam, 2 to 5 percent slopes. Nixon loam with 2 to 5 percent slopes are gently sloping and well drained soils, with slopes ranging in length from 100 to 300 feet. The areas are irregular in shape and range from 5 to 200 acres. Typically, the surface layer is brown loam about 8 inches thick. The subsurface is strong brown loam 3 inches thick. The upper part of the subsoil is yellowish red loam 19 inches thick. The lower part is yellowish red sandy loam 10 inches thick. The substratum extends to a depth of 60 inches or more. It is strong brown stratified sandy loam.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, natural fertility is medium, and the organic matter content is moderate. The water table is rarely perched in the subsoil for more than a few hours. The root zone extends to a depth of 60 inches or more. In unlimed areas the surface layer and the subsoil are very strongly acid. Tilt is good, and the soil is easily worked. Runoff is slow, and the erosion hazard is slight.

The soil is well suited to such cultivated crops as corn, soybeans, hay, fruit, and nursery crops, and much of the acreage is used for crops. It is also suited to trees, and potential productivity is high. This soil is generally suitable for most urban uses.

Nixon Variant Series

The Nixon Variant series consists of deep, moderately well drained soils that form in acid, moderately fine-textured Coastal Plain sediments. These soils are found on high terraces, intermediate positions on the landscape, and the toe slopes ranging from 0 to 5 percent. Nixon Variant soils are located on the landscape with Nixon, Lansdowne, Fallsington Variant, and Sassafras soils.

NfA - Nixon Variant loam, 0 to 2 percent slopes. Nixon Variant loam with 0 to 2 percent slopes are nearly level and moderately well drained with slopes that are smooth or convex, ranging in length from 50 to 300 feet. The areas are irregular in shape ranging from 5 to 100 acres. Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The subsurface layer is dark brown and strong brown loam 8 inches thick. It is loam in the upper part and sandy loam in the lower part. The substratum is very pale brown sandy loam to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is high. A seasonal high water table is at a depth of 1 to 4 feet from late winter to early spring. The soil is subject to frost heaving. Water is perched in the subsoil for short periods following heavy rains. Runoff is slow. The root zone extends to a depth of 60 inches or more. Natural fertility is medium, and organic matter content is moderate. In unlimed areas the surface layer and subsoil are strongly acid. Tilth is fair, and the soil dries slowly in the spring.

Most of the acreage of this soil is farmed; a few acres are in pasture and a few are in woodland. The seasonal high water table and the permeability limit this soil for nonfarm uses.

NfB - Nixon Variant loam, 2 to 5 percent slopes. Nixon Variant loam with 2 to 5 percent slopes is smooth or convex ranging in length from 50 to 300 feet. The areas are irregular in shape and range from 5 to 100 acres.

Included with this soil in mapping are small areas of soils with a surface layer of silt loam; Nixon, Woodstown, and Sassafras soils; and soils with a sandy surface layer or a surface layer that has a small amount of cobbles in it. Together, they make up as much as 30 percent of the unit, and they generally are managed the same as this soil. Also included are small areas where red shale bedrock is at a depth of less than 60 inches and areas of Fallsington Variant soils. They make up as much as 20 percent of the unit. The soils with a surface layer of sandy loam, those with cobbles in the surface layer, and those with red shale bedrock are on slight knolls. The soils with a surface layer of silt loam are throughout the unit. The Fallsington Variant soils are in slight depressions and drainageways.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is high. A seasonal high water table is at a depth of 1 to 4 feet from later winter to early spring. This soil is subject to frost heaving. Water is perched in the subsoil for short periods following heavy rains. Runoff is slow. The root zone

extends to a depth of 60 inches or more. In unlimed areas the surface layer and subsoil are strongly acid. Tilt is fair, and the soil dries slowly in the spring.

Most of the acreage of this soil is farmed. A few acres are in pasture, and woodland. The seasonal high water table and the permeability limit this soil for nonfarm use, especially for shallow excavations, septic tank absorption fields, and dwellings with basements.

NGA – Nixon Variant-Urban land complex, 0 to 5 percent slopes. This unit is nearly level to gently sloping and moderately well drained Nixon Variant soils and areas that are used for urban development. It is generally found on high terraces and divides in areas that are irregular in shape and range from 20 to 200 acres.

About 40 percent of this unit is Nixon Variant soils. Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The subsurface layer is dark brown and strong brown loam 8 inches thick. The subsoil is yellowish red and is 22 inches thick. It is loam in the upper part and sandy loam in the lower part. The substratum is very pale brown sandy loam to a depth of 60 inches or more. About 40 percent of the unit consists of areas covered by concrete, buildings, or other structures.

The permeability of the Nixon Variant soils is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is high in the undisturbed areas and low in the areas dominated by cuts, fills, and Urban land. Runoff is slow and the erosion hazard is slight.

Phalanx Series

The Phalanx series consists of deep, well drained soils that formed in acid, moderately coarse textured Coastal Plain sediments. They are found mostly on hills, mountains, and side slopes, generally at the highest elevation in the area. Slope ranges from 2 to 15 percent. They are generally found near Downer, Evesboro, Sassafra, and Keyport soils.

PhD – Phalanx loamy sand, 2 to 15 percent slopes. This soil is gently sloping to moderately steep and is well drained. It is found on side slopes and on caps or divides of knolls or mounts in South Brunswick Township.

Typically, the surface layer is yellowish red loamy sand 7 inches thick. The subsoil is yellowish red gravelly sand loam 23 inches thick and is 30 percent angular ironstone fragments. The substratum is red gravelly loamy sand to a depth of 60 inches or more and is up to 40 percent angular ironstone fragments.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate. Organic matter content is low, and natural fertility is medium. In unlimed soil the surface layer is extremely acid and the subsoil and substratum are very strongly acid. Runoff is medium. Ironstone fragments restrict rooting depth in the soil.

This soil has limited use for crops or pasture, but is suited to trees. Slope limits the soils for most recreational uses.

Pits, sand and gravel - PM

This unit is dominantly the spoil that remains in a borrow or sand or gravel pit after mining has taken place. Some pits have been smoothed and others have mounds.

The characteristics of this unit are variable. The water table is within several feet of the surface, and there is a wide range in the texture of the soil.

Onsite investigation is needed to determine the suitability of the unit for any use.

Psamments

Psamments in Middlesex County consist of moderately deep to deep, excessively drained to somewhat poorly drained soils that formed in stratified or graded sandy fill material.

PN - Psamments, nearly level. This unit consists of deep, well drained or moderately well drained soils dominantly in regraded sand pit or borrow areas that have been smoothed.

The thickness of the fill material in this unit is as much as 48 inches, but in most areas it is about 24 inches. The content of pebble is as much as 50 percent. The other characteristics are variable.

Some areas of this unit are used for building sites, but the variability of the unit makes onsite investigation necessary to determine the suitability of the unit for any use.

Reaville Series

The Reaville series consists of shallow, moderately well drained soils that are formed in acid, medium-textured red shale. They are found on divides and side slopes and have slopes from 0 to 5 percent. They are found on the landscape with Lansdowne, Klinesville, Ellington, and Rowland soils.

ReA - Reaville silt loam, 0 to 2 percent slopes. This soil is nearly level and moderately well drained. It is found on side slopes, divides, and toe slopes in irregular areas that range from 50 to 100 acres.

Typically, the surface layer is dark reddish brown silt loam about 10 inches thick. The subsoil is light reddish brown and reddish brown shaly silt loam about 12 inches thick. The substratum is reddish brown shaly silt loam 6 inches thick. Reddish brown, partially weathered shale bedrock is at a depth of 28 inches.

The permeability is moderate to slow. Available water capacity is moderate. This soil is subject to severe frost heaving. The subsoil is friable to firm. Excess water is perched in the subsoil in winter and early spring and following heavy rains. Runoff is slow, and

the erosion hazard is slight. Root penetration is restricted by the shale bedrock. Natural fertility is medium and organic matter content is moderate. In unlimed areas the surface layer and subsoil are slightly acid.

If drained, this soil is suitable for cultivated crops and pasture. It is also suited to trees, and potential productivity is moderate. The seasonal high water table and the depth to bedrock are the main limitations of the soil for community development.

Reaville Variant

The Reaville Variant series consists of moderately deep, moderately well drained and somewhat poorly drained soils that are formed in residuum from siltstone or shale. These nearly level and gently sloping soils are on upland flats, in depressions, and on concave lower slopes at the heads of drainageways. This series, having slopes ranging from 0 to 2 percent, is found on the landscape with Reaville, Lansdowne Variant, and Parsippany soils.

Rh – Reaville Variant silt loam. Reaville Variant silt loam soils are level or nearly level and poorly drained. They are found mainly on convex slopes and oblong flats or depressions at the upper end of streams and adjacent to the stream heads. Some areas border drainageways where slopes range from 0 to 2 percent, and areas range from 10 to 100 acres.

Typically, the surface layer is dark reddish brown silt loam about 8 inches thick. The upper part of the subsoil is mottled gray, firm silty clay loam about 12 inches thick. The lower part is mottled, reddish brown silty clay loam about 5 inches thick. The substratum is dark reddish brown very shaly silty clay loam 5 inches thick. Red shale bedrock is at a depth of 30 inches.

The permeability is moderate to moderately slow. Available water capacity is high, runoff is slow, and the erosion hazard is slight. The depth to bedrock is 20 to 40 inches. Natural fertility is medium and organic matter content is moderate. The root zone extends to a depth of about 30 inches. Unless limed, the soil ranges from medium acid near the surface to strongly acid in the subsoil. During winter and spring this soils has a seasonal high water table spring between the surface and a depth of 6 inches.

Because of the high water table this soil is poorly suited to cultivated crops. This soil is suited to woodland and potential productivity is moderately high. Seasonal wetness, the permeability and a severe frost action potential limit the soil for local roads and streets.

Rowland Series

The Rowland series consists of deep, moderately well drained or somewhat poorly drained soils that formed in medium-textured alluvium. The Rowland soils are in stream bottoms and their slope ranges from 0 to 2 percent. They are generally found near Reaville Variant, Klinessville, Lansdowne, Dunelle, Ellington, and Reaville soils.

Ro – Rowland silt loam. This soil is nearly level and moderately well drained or somewhat poorly drained. It is found on flood plains along streams and large drainageways. It extends to the toe slopes of the valley sides in long, narrow areas that range from 5 to 100 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil is dark brown and reddish brown silt loam 33 inches thick. The substratum is gray silt loam and dark gray sandy loam to a depth of 60 inches or more.

The permeability of this soil is moderate or moderately slow. Available water capacity is high. The water table is at a depth of 1 foot to 3 feet from late winter to early spring. The rooting depth is restricted by the seasonal high water table. Runoff is slow, and the erosion hazard is light. Flooding usually occurs at least once a year. In unlimed areas the surface layer is medium acid and the subsoil is strongly acid.

Flooding limits this soil for cultivation, but it is moderately well suited to pasture and well suited to a variety of trees. The seasonal high water table and flooding limit the soil for many urban uses.

Sassafras Series

The Sassafras series consists of deep, well-drained soils that formed in acid, moderately fine textures Coastal Plain sediments. These soils are on uplands and side slopes, ranging from 0 to 15 percent. Sassafras soils are on the landscape with Woodstown, Downer, Matapeake, and Mattapex soils.

SaB – Sassafras sandy loam, 2 to 5 percent slopes. Sassafras sandy loam with 2 to 5 percent slopes are gently sloping and well drained soils found on high terraces and divides and side slopes that are smooth or convex, ranging in size from 5 to 200 acres.

Typically, the surface layer is dark brown sandy loam about 8 inches thick. The subsurface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 25 inches thick. It is yellowish brown and strong brown sandy clay loam and strong brown sandy loam. The substratum is strong brown gravelly loamy sand and extends to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, runoff is medium, and the erosion hazard is slight. Natural fertility is medium, and organic matter content is moderate. The root zone extends to a depth of about 60 inches. In unlimed areas the surface layer and the subsoil are very strongly acid.

This soil is well suited to cultivated crops, and most of the acreage is farmed. It is also well suited to trees, and some of the acreage is wooded; potential productivity is high. This soil has few or no limitations for urban uses.

SaC – Sassafras sandy loam, 5 to 10 percent. Sassafras sandy loam with 5 to 10 percent slopes are well drained and found on high terraces and divides and side slopes that are smooth or convex, irregular in shape, and range in size from 5 to 200 acres.

Typically, the surface layer is dark brown sandy loam about 8 inches thick. The subsurface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 25 inches thick. It is yellowish brown and strong brown sandy clay loam and strong brown sandy loam. The substratum is strong brown gravelly loamy sand and extends to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, runoff is medium, and the erosion hazard is moderate. Natural fertility is medium, and organic matter content is moderate. Tilt is good, and this soil is easily worked. The root zone extends to a depth of 60 inches. In unlimed areas the surface layer and the subsoil are very strongly acid.

This soil is suited to cultivated crops, and most of the acreage is farmed. It is also well suited to trees; some of the acreage is wooded and potential productivity is high. Slope limits this soil for some urban uses.

SgB – Sassafras gravelly sandy loam, 2 to 5 percent slopes. Sassafras gravelly sandy loam with 2 to 5 percent slopes is gently sloping and well drained. They are found on high terraces and divides and side slopes. Slopes are smooth or convex with areas irregular in shape ranging from 5 to 200 acres in size.

The surface layer is typically dark brown gravelly sandy loam about 8 inches thick. The subsurface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 25 inches thick. It is yellowish brown and strong brown sandy clay loam and strong brown sandy loam. The substratum is strong brown gravelly loamy sand and extends to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, runoff is medium, and the erosion hazard is slight. Natural fertility is medium, and organic matter content is moderate. The root zone extends to a depth of about 60 inches. In unlimed areas the surface layer and subsoil are very strongly acid.

The soil is well suited to trees and cultivated crops, and most of the acreage is farmed. It is also well suited to trees; some of the acreage is wooded and potential productivity is high. The permeability in the subsoil is a limitation of this soil as a site for waste disposal. The slope and gravel content limit recreation uses.

SgC – Sassafras gravelly sandy loam, 5 to 10 percent slopes. Sassafras gravelly sandy loam with 2 to 5 percent slopes is gently sloping and well drained. It is found on high terraces and divides and side slopes. Slopes are smooth or convex with areas irregular in shape ranging from 5 to 200 acres in size.

The surface layer is typically dark brown gravelly sandy loam about 8 inches thick. The subsurface layer is yellowish brown sandy loam about 9 inches thick. The subsoil is about 25 inches thick. It is yellowish brown and strong brown sandy clay loam and strong brown sandy loam. The substratum is strong brown gravelly loamy sand and extends to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, runoff is medium, and the erosion hazard is moderate. Natural fertility is medium, and organic matter content is moderate. The root zone extends to a depth of about 60 inches. In unlimed areas the surface layer and subsoil are very strongly acid.

The soil is well suited to trees and cultivated crops, and most of the acreage is farmed. It is also well suited to trees; some of the acreage is wooded and potential productivity is high. The permeability in the subsoil is a limitation of this soil as a site for waste disposal. The slope and gravel content limit recreation uses.

SIA - Sassafras loam, 0 to 2 percent slope. Sassafras loam with 0 to 2 percent slopes is nearly level and well drained. They are found on high terraces and divides with smooth or convex slopes and generally occupy areas that are irregular in shape ranging from 5 to 200 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsurface layer is yellowish brown loam about 4 inches thick. The upper part of the subsoil is yellowish brown loam 13 inches thick, and the lower part is strong brown sandy clay loam 6 inches thick. The substratum is yellowish brown gravelly loam sand to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, runoff is slow, and the erosion hazard is slight. Natural fertility is medium, and the organic matter content is moderate. In unlimed areas the surface layer and the subsoil are very strongly acid.

This soil is well suited to cultivated crops, and most of the acreage is farmed. It is also suited to a variety of trees; potential productivity is high. This soil has few or no limitations for urban uses.

SIB - Sassafras loam, 2 to 5 percent slope. Sassafras loam with 2 to 5 percent slopes is gently sloping and well drained, on high terraces and divides. Slopes are smooth or convex and uniform. The areas are irregular in shape ranging from 5 to 200 acres.

The surface layer is typically dark brown loam about 8 inches thick. The subsurface layer is yellowish-brown loam about 4 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 6 inches thick. The substratum is yellowish brown gravelly loamy sand to a depth of 60 inches or more.

The permeability is moderate in the subsoil and moderately rapid in the substratum. Available water capacity is moderate, runoff is slow, and the erosion hazard is slight. Natural fertility is medium, and the organic matter content is moderate. In unlimed areas the surface layer and subsoil are very strongly acid.

This soil is well suited to crops, and most of the acreage is farmed. It is also suited to a variety of trees; potential productivity is high. This soil has few or no limitations for urban uses.

Udorthents

Udorthents in Middlesex County consist of moderately deep to deep, well drained to somewhat poorly drained soils. They formed in stratified or graded, sand or loamy fill material containing up to 35 percent gravel. Slope ranges from 0 to 3 percent. These soils have been disturbed in some way, mainly by filling or cutting an excessively drained to very poorly drained area.

UB - Udorthents, bedrock substratum. This unit is nearly level to gently sloping. The areas are irregular in shape and range mainly from 2 to 15 acres. This unit has been cut and smoothed or otherwise extensively disturbed to a depth of 3 feet or more. The original soil has been removed. Some areas are in native vegetation. Some areas are used for parking lots, landfills, or recreation areas. The variability of the characteristics of this unit makes onsite investigation necessary to determine the suitability of the unit for any use.

UC - Udorthents, clayey substratum. This unit consists of deep, moderately well drained to somewhat poorly drained soils mostly in regraded clay pits or borrow areas. The surface has been smoothed and the areas are nearly level. Most areas are used for residential, commercial, or industrial development. The variability of the characteristics of the unit makes onsite investigation necessary to determine the suitability of the unit for any use.

Urban land - UL

This unit consists of areas where industrial plants, shopping and business centers, and other structures cover more than 80 percent of the surface. The areas generally range from 2 to 1000 acres. Most are nearly level to moderately sloping, but a few are strongly sloping and steep. Fill material has been used in places to build up wet soils. Most areas have been excavated or filled with material that is now almost totally paved. Onsite investigation is needed to determine the potentials and limitations of this unit for any use.

Watchung Series

This series consists of poorly drained soils that formed in acid, fine-textured material weathered from diabase and basalt rocks. Slope ranges from 0 to 2 percent. They are generally found on the landscape with Mount Lucas, Chalfont, Woodstown, and Manahawkin soils. They are underlain with hard diabase or basalt bedrock.

Wa - Watchung very stony silt loam, 0 to 2 percent slopes. This soil is nearly level and poorly drained. It is found on toe slopes and in low-lying flats and basins in irregular areas from 5 to 100 acres. Stones cover 3 to 15 percent of the surface.

Typically, the surface is covered by about 3 inches of loose leaves and twigs. The surface layer is 8 inches thick. It is dark brown silt loam and mottled, light gray silt loam. The subsoil is mottled, light gray silty clay 29 inches thick. The substratum extends to a depth of 60 inches or more. It is brown to strong brown loam that is mottled in the lower part. The substratum contains 5 to 25 percent rounded diabase or basalt stones or rocks.

The permeability is slow. Available water capacity is moderate and the soil has a seasonal high water table that is at or near the surface from November to May. This soil is subject to severe frost heaving. The subsoil is firm and has a moderate shrink-swell potential. Runoff is slow, and the erosion hazard is slight. The root zone of most crops extends to a depth of about 27 inches. Natural fertility is medium and organic matter content is moderate. In unlimed areas the surface layer is strongly acid and the subsoil is medium acid. Some areas of this soil have water ponded on the surface.

The seasonal high water table and a high stone content make this soil generally unsuitable for crops. It is suited to pasture if drained and is suitable to trees. The wetness, slow permeability and abundance of stones limit the soil for urban and recreational uses.

Woodstown

The Woodstown series consists of deep, moderately well drained soils that formed in acid, moderately fine textured Coastal Plain sediments. These soils are on intermediate positions, on terraces, and on toe slopes. The slopes of this series ranges from 0 to 5 percent. The soils are located on the landscape with Sassafras, Fallsington, Downer and Hammonton soils.

WdB - Woodstown sandy loam, 2 to 5 percent slopes. Woodstown sandy loam on 2 to 5 percent slopes is moderately well drained. These soils are found on the side slopes of depressions and draws and on slight knolls in South Brunswick, Monroe, East Brunswick and Cranbury Townships. Slopes are concave or convex and uniform. The areas are irregular in shape ranging from 5 to 100 acres.

The surface layer typically is dark grayish brown sand loam 8 inches thick. The subsurface layer is yellowish brown sandy loam 4 inches thick. The upper part of the subsoil is mottled, yellowish brown sandy clay loam 13 inches thick. The lower part is mottled, yellowish brown sandy loam 11 inches thick. The substratum is yellowish brown loamy sand to a depth of 60 inches or more.

The permeability of this Woodstown soil is moderate. Available water capacity is high and additional water is available seasonally from the water table. Runoff is moderately slow, and the erosion hazard is moderate. Natural fertility is medium, and organic

content is moderate. The root zone extends to a depth of 60 inches or more. The surface layer is extremely acid, and the subsoil and substratum are very strongly acid. A seasonal high water table is at a depth of 18 to 30 inches in late winter and early spring.

This soil is well suited to cultivated crops, and most of it is farmed. The soil is also well suited to woodland, and potential productivity is high. The seasonal high water table limits the soil for most urban uses including local roads and streets.

WkA – Woodstown sandy loam, clayey substratum, 0 to 2 percent slopes. This soil is nearly level and moderately well drained. These soils are found on terraces and slight knolls in irregular areas ranging from 5 to 100 acres.

The surface layer typically is dark grayish brown sandy loam 8 inches thick. The subsurface layer is yellowish brown sandy loam 4 inches thick. The upper part of the subsoil is mottled, yellowish brown and strong brown sandy clay loam 13 inches thick. The lower part is mottled, yellowish brown sandy loam 11 inches thick. The substratum is yellowish brown loamy sand to a depth of 45 inches and is yellowish brown sandy clay from 45 inches to a depth of 60 inches or more.

The permeability of this Woodstown soil is moderate in the upper layers and slow in the substratum. Available water capacity is high and additional water is available seasonally from the water table. Runoff is slow, and the erosion hazard is slight. Natural fertility is medium, and organic content is moderate. The root zone extends to a depth of 45 inches or more. The surface layer is extremely acid, and the subsoil and substratum are very strongly acid. A seasonal high water table is at a depth of 18 to 30 inches in late winter and early spring.

This soil is well suited to cultivated crops. The soil is also well suited to woodland, and potential productivity is high. The seasonal high water table and slow permeability in the substratum limit the soil for some urban uses.

WIA – Woodstown loam, 0 to 2 percent slopes. Woodstown loam with 0 to 2 percent slopes is nearly level and moderately well drained. They are found in slight depressions, in draws, and on terraces. Slopes are smooth or convex and uniform, areas are irregular in shape ranging from 5 to 400 acres.

The surface layer typically is dark grayish brown loam about 8 inches thick. The subsurface layer is yellowish brown loam 4 inches thick. The upper part of the subsoil is mottled, yellowish brown sandy clay loam 13 inches thick. The lower part is mottled, yellowish brown sand loam 11 inches thick. The substratum is yellowish brown loamy sand to a depth of 60 inches or more.

The permeability is moderate. Available water capacity is high, and additional water is available seasonally from the water table. Runoff is slow, and the erosion hazard is slight. Tilt is good. Natural fertility is medium, and organic content is moderate. The root zone extends to a depth of 60 inches or more. In unlimed areas the surface and

subsurface layers are extremely acid and the subsoil and substratum are very strongly acid. A seasonal high water table is at a depth of 18 to 30 inches in this soil in late winter and early spring.

This soil is well suited to cultivated crops, and most of it is farmed. It is also well suited to woodland, and potential productivity is high. The seasonal high water table limits the soil for most urban uses, especially local roads and streets.

WIB - Woodstown loam, 2 to 5 percent slopes. Woodstown loam with 2 to 5 percent slopes is gently sloping and moderately well drained. These soils are found on the side slopes of depressions, draws and terraces. Slopes are smooth or convex and uniform and are irregular in shape ranging from 5 to 400 acres.

Typically, the surface layer is a dark grayish brown loam about 8 inches thick. The subsurface layer is yellowish brown loam about 8 inches thick. The subsurface layer is yellowish brown loam 4 inches thick. The upper part of the subsoil is mottled, yellowish brown sandy clay loam 13 inches thick. The lower part is mottled, yellowish brown sandy loam 11 inches thick. The substratum is yellowish brown loamy sand to a depth of 60 inches or more.

The permeability is moderate. Available water capacity is high, and additional water is available seasonally from the water table. Runoff is moderately slow, and the erosion hazard is moderate. Tilt is good. Natural fertility is medium, and organic content is moderate. The root zone extends to a depth of 60 inches or more. In unlimed areas the surface and subsurface are very strongly acid. A seasonal high water table is at a depth of 18 to 30 inches in late winter and early spring.

This soil is well suited to cultivated crops and pasture. Most of the acreage is farmed, but some has been converted to urban uses. It is also well suited to woodland, and potential productivity is high. The seasonal high water table limits the soil for use for most local roads and streets.