





Soils Report

Conditional Rezoning Application

SPSA Regional Landfill

Suffolk, Virginia June 2016





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The Southeastern Public Service Authority (SPSA) is proposing to expand the Regional Landfill located off Bob Foeller Drive in Suffolk, Virginia. The Regional Landfill property consists of approximately 833 acres, and is comprised of three parcels owned by SPSA, Tax Map Nos. 27*37, 27*37*1 and 27*38A. The existing landfill is comprised of six cells (Cells I-VI) which have been constructed on parcels 27*37 and 27*37*1. Cells I-IV are closed with a final cover system and Cells V and VI are currently operational. Cell VII has been permitted with the Virginia Department of Environmental Quality (VADEQ) for construction onto a portion of parcel 27*38A, which portion is currently zoned as Heavy Manufacturing (M-2). The Cell VII area is currently being used by SPSA as a soil borrow area in accordance with the Erosion and Sediment Control Permit, ESC-2009-00002.

SPSA is requesting through applications to the City of Suffolk, conditional rezoning of the remaining portion of parcel 27*38A from Agricultural (A) to M-2 and Conditional Use approval of Cell VII landfill and development of a sand or gravel extraction (soil borrow operation) and vegetative composting system on 129 aces of property within portions of the property to be rezoned.

In accordance with Appendix B-4(e)(5) and B-20 of the Unified Development Ordinance, this Soils Report is being submitted as a supplement to SPSA's application for the Conditional Rezoning of a portion of parcel 27*28A. The rezoning of the property will provide for future expansion of the landfill onto the property, with subsequent VADEQ permitting and conditional use approvals through the City.

Applicable soils information for the existing Regional Landfill Property and proposed area to be rezoned have been obtained from the Soil Survey of City of Suffolk (Soil Survey), Virginia (United States Department of Agriculture, Soil Conservation Service, June 1981), in accordance with Appendix B-20(a)(2).

2 Overview

SPSA is requesting approval to rezone the approximate 440.34 acre portion of parcel 27*28A from the Agricultural District to Heavy Manufacturing (Figure 2). Within these 440.34 acres, SPSA has established a 50-acre wetland preservation area, 12-acre wetland restoration area, a 36-acre wetland enhancement area, and a 73-acre area for Cell VII landfill and ancillary facilities. The 98 acres of wetland protection were in response to mitigation required for the 12 acres of jurisdictional wetland disturbance associated with the Cell VII landfill and soil borrow operations.

Most of the area proposed for rezoning consists of jurisdictional wetlands. SPSA proposes to use the rezoned property for soil borrow areas, composting, future landfill cells and associated stormwater management. Additional wetland mitigation measures associated with future development onto portions of 27*28A would most likely be completed off-site.

3 Soil Information

3.1 General Soil Information

The approximate property boundaries are depicted on the General Soil Map (Figure 1). Two general soil types are present within the site: Tomotley-Weston-Dragston (7) and Torhunta-Deloss (9). The majority of the soil in the parcel to be rezoned consists of the Torhuna-Deloss association. Classifications provided by the U.S. Department of Agriculture Soil Conservation Service for these soil types are as follows:

- Tomotley-Weston Dragston: Poorly drained and somewhat poorly drained soils that have a subsoil of mostly loam, sandy clay loam, and sandy clay loam below the surface layer; in low-lying swamps
- Torhunta-Deloss: Very poorly drained soils that have a subsoil of mostly organic material below the surface layer; in the Dismal Swamp

3.2 Detailed Soil Information

According to the USGS detailed soil maps, the SPSA property, consisting of 833 acres, contains a total of 11 soil classifications (Figure 2). The attachment includes the approximate acres of each type within the property as well as the lands capability rating and detailed soil property information, as applicable. Additional detailed soil property information is included in Attachment A. The following are descriptions of soil classifications found on the site.

3.2.1 Bellhaven Muck

Areas containing this soil type are often very deep layers of black, decomposed organic material. The soil is very poorly drained and is very common within the Dismal Swamp. This soil contained a slow permeability rate and a high available water capacity which causes surface runoff in these areas to be slow. The high water table makes it difficult to grow crops. Vegetation in this area is mostly wooded.

3.2.2 Deloss mucky loam

Like Belhaven muck, this soil is also very deep, poorly drained, and high in organic matter. It is a common soil type around the perimeter of the Dismal Swamp that contains layers of dark gray mucky loam, dark grayish brown fine sandy loam, mottled, gray sandy clay loam, and greenish gray stratified loam. Deloss mucky loam has a moderate permeability and a high available water capacity allowing water to pond on the surface in the winter and spring. The high water table also makes it difficult to grow crops. Vegetation in this area is mostly wooded.

3.2.3 Dragston fine sandy loam

This soil type is deep, somewhat poorly drained, and is common between drainageways and along the edges of upland swamps. The soil contained layers of dark grayish brown fine sandy loam, mottled, brown fine sandy loam, and mottled, brownish yellow fine sand. Dragston has a moderately rapid permeability and a low available water capacity. Surface runoff in these areas is slow. Unlike Belhaven muck and Deloss mucky loam, these soils are low in organic matter. Most areas are well suited to cultivating crops when drained.

3.2.4 Kalmia fine sandy loam, wet substratum, 2 to 6% slopes

This soil type is deep, gently sloping, and well drained. It contains layers of dark grayish brown fine sandy loam, light yellowish brown and light gray fine sandy loam, dark yellowish brown sandy clay loam, and light yellowish brown and brownish yellow loamy fine sand and fine sandy loam. Kalmia has a moderate permeability and available water capacity. Areas of this soil have a medium surface runoff. This soil type is low in organic matter and most areas are either farmed or wooded.

3.2.5 Levy silty clay loam

Like Belhaven muck and Deloss mucky loam, this soil type is deep and very poorly drained. Areas of this soil can be found on flood plains and in swamps along drainageways. It contains layers of very dark grayish brown silty clay loam and gray clay. Levy soil has a low permeability and high available water capacity. It also has a slow surface runoff with the soil being continuously saturated. Ponding occurs frequently throughout the year with this soil.

3.2.6 Pactolus loamy fine sand

Pactolus soil is deep and moderately well drained. This soil can be found on low ridges and along streams. It contains layers of gray loamy fine sandy and brown and gray loamy sand. Pactolus soil has a rapid permeability and a low available water capacity. Surface runoff is slow on this soil. The soil is low in organic matter and is moderately well suited to cultivate crops. While this soil is good for crops, most of the area is woodland.

3.2.7 Rains fine sandy loam

Rains soil is deep and very poorly drained. It can be found on low-lying upland flats and in depressions. The soil type contains layers of very dark grayish brown fine sandy loam, gray loam, and mottled sandy clay loam. This soil has a moderate permeability, high available water capacity, and a very slow surface runoff. Areas of this soil are mostly woodland but can be farmed if well drained.

3.2.8 Tetotum fine sandy loam, 2 to 6% slopes

Tetotum is a deep and moderately well drained soil. This soil can be found in elevations of less than 30 feet. It contains layers of brown fine sandy loam, brown and gray fine sandy loam, sandy clay loam, clay loam, loam, gray mottles, and mottled, yellowish brown sandy loam. Tetotum has a moderate permeability and available water capacity with a medium surface runoff rate. It is low in organic matter and most areas of this soil are farmed.

3.2.9 Tomotley loam

Like other soils within the property boundary, this soil is also deep and poorly drained. Tomotley is often found on flats with elevation less than 30 feet and in areas near the Dismal Swamp. It contains layers of dark gray loam, gray sandy clay loam, loam, and light gray loam fine sand. Tomotley has a moderate permability and available water capacity and the surface runoff is slow. The soil contains a moderate level of organic matter and most of the area it covers is woodland. However, well drained areas are suitable to be farmed.

3.2.10 Torhunta loam

This soil type is deep and very poorly drained. Torhunta can be found on flats along the northern and western parts of the Dismal Swamp and in Briars Pocosin and other upland swamps. The surface layers typically contain very dark grayish brown loam, grayish brown fine sandy loam, yellowish brown and dark greenish gray loamy sand and sandy loam. Torhunta has a moderately rapid permeability and a moderate available water capacity. Surface runoff for this soil type is very slow. It has a moderate level of organic matter and can be frequently flooded. Ponding occurs on the surface for extended periods during the winter and spring. The frequent pondings prevents this soil type from being suitable to farm, so most areas of this soil are wooded.

3.2.11 Udorthents, loamy

This soil type consists of soils that have been disturbed by grading for roads, house developments, and other commercial uses. Sanitary landfills, and sand and clay pits are included into this soil unit. Udorthents contains a moderate to slow permeability with variable runoff and internal drainage. Soil properties for this site are extremely variable and can be determined through a site investigation.

3.3 Specific Soils in Rezoned Area

The 440.34 acre area to be rezoned contains seven of the 11 soil classifications listed above. They are as follows:

- Belhaven muck
- Deloss mucky loam
- Levy silty clay loam
- Pactolus loam fine sand
- Rains fine sandy loam
- Tomotley loam
- Torhunta loam

Most of the soils in the 440.34 acres are either Deloss Mucky Loam or Torhunta loam. These soils are classified as severe for supporting recreational and building site development. The portion of the property to be rezoned was formerly owned by the Kirk Lumber Company and was actively logged prior to SPSA acquiring it in 2002.

4 Proposed Development

The property is planned for the expansion of the solid waste management facility, including development of sand and gravel extraction areas in advance of landfill cell development. Figure 3 depicts the limits of existing paved and gravel roadways and parking areas associated with the operation of the transfer station and the operation and closure of the Cells I-VI. The proposed development of soil borrow areas and future Cells VII-XII will require construction of gravel access roadway around the perimeters of the landfill cells. These perimeter roadways will typically be 30 feet in width and their approximate locations are also depicted on Figure 3. The development of the rezoned parcel will include vegetated surfaces of the exterior landfill slopes



either on intermediate soils cover materials or as part of a final capping system. The relative percentage of impervious soil coverage of the rezoned parcel will be less than 3% of the total 440.34 acre area.

5 Summary

The existing soils on the 440.34 acres to be rezoned are comprised of poorly to very poorly draining materials. The parcel had been commercially forested prior to SPSA acquiring the land for expansion of its Regional Landfill in 2002. Much of the parcel is located within jurisdictional wetlands, and it's development for uses other than a solid waste management facility and borrow area are limited. The Conditional Rezoning application to change the zoning from A to M-2 is proposing to restrict the future use of the rezoned parcel to Solid Waste Management Facility, Sand or Gravel Extraction, and Vegetative Waste Composting System, as these uses are consistent with SPSA's mission to provide a long-term solid waste disposal system for the region.

While the Soil Survey identifies the dominant soils in the portion to be rezoned (Deloss Mucky loam and Torhunta loam), as severe and poor with respect to use as a sanitary landfill and cover materials due to ponding, SPSA will utilize techniques to artificially drain the soil as needed for use as cover material and for construction of the landfill cells.









TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

| | | Management concerns | | Potential productivity | | | | | |
|-------|-----------------------------|---------------------------------|-------------------|---|------------------------------------|------------------------------|---|----------------------------|---|
| | Soil name and map symbol | Ordi- nation symbol | Erosion hazard | Equip- ment limita- tion | Seedling mortal- ity | Wind- throw hazard | Common trees | Site index | Trees to plant |
| | 1B Alaga | 3s | Slight | Moderate | Moderate | Slight | Loblolly pine | 80 | Loblolly pine. |
| : | 2 Belhaven | 4w | Slight | Severe | Severe | Moderate | Loblolly pine Pond pine Baldcypress | 65 60 | Loblolly pine. |
| J | l Deloss | 3w | Slight | Severe | Severe | Slight | Atlantic white-cedar Loblolly pine Baldcypress | 80 | |
| | 5A, 5B2 Dogue | Зw | Slight | Moderate | Slight | Slight | Loblolly pine Southern red oak Sweetgum Yellow-poplar White oak | 90 80 90 95 80 | Loblolly pine. |
| (| Dragston | 3w | Slight | Moderate | Slight | Slight | Southern red oak Loblolly pine Sweetgum Yellow-poplar | 80 85 90 90 | Loblolly pine, sweetgum, yellow- poplar. |
| | 7A, 7B2 Emporia | 30 | Slight | Slight | Slight | Slight | Loblolly pine Southern red oak | 76 70 | Loblolly pine, sweetgum. |
| 8 | 3A, 8B Eunola | 2w | Slight | Moderate | Slight | Slight | Loblolly pine Sweetgum | 90 90 | Loblolly pine, sweetgum, yellow-poplar. |
| ġ | A, 9B2 Goldsboro | 2w | Slight | Moderate | Slight | Slight | Loblolly pine Sweetgum Southern red oak White oak | 90 90 | Loblolly pine, yellow-poplar, American sycamore, sweetgum. |
|] | 0A, 10B Kalmia | 20 | Slight | Slight | Slight | Slight | Loblolly pine Sweetgum Yellow-poplar Southern red oak White oak | 90 88 96 | Loblolly pine, yellow- poplar. |
| 1 | 1 Kenansville | 38 | Slight | Moderate | Moderate | Slight | Loblolly pine | 80 | Loblolly pine. |
| נ | 2 Kenansville | 3s | Slight | Moderate | Moderate | Slight | Loblolly pine | 80 | Loblolly pine. |
| 1 | 3 Levy | 3w | Slight | Severe | Severe | Slight | Water tupelo Sweetgum Red maple Baldcypress | 80 | Baldcypress. |
| נ | 4 Lynchburg | 2w | Slight | Moderate | Slight | Slight | Loblolly pine Yellow-poplar Sweetgum Southern red oak White oak Blackgum | 86 92 90 | Loblolly pine, American sycamore, sweetgum. |
| נ | 5B, 15D Nansemond | 2w | Slight | Moderate | Slight | Moderate | Loblolly pine Sweetgum Shortleaf pine | 88 84 77 | Loblolly pine, yellow- poplar, black walnut, sweetgum. |

| | T | P | Management | concerna | 3 | Potential productiv | rity | |
|-----------------------------|---------------------------|---------------------------|-----------------------------------|----------------------------|-----------------------------|---|----------------------|---|
| Soil name and map symbol | Ordi- nation symbol | Erosion hazard | Equip- ment limita- tion | Seedling mortal- ity | Wind- throw hazard | Common trees | Site index | Trees to plant |
| 15E Nansemond | 2r | Moderate | Moderate | Slight | Moderate | Loblolly pine Sweetgum Shortleaf pine | 88 84 77 | Loblolly pine, yellow- poplar, black walnut, sweetgum. |
| 16A, 16B Nansemond | 2w | Slight | Moderate | Slight | Moderate | Loblolly pine Sweetgum Shortleaf pine | 88 84 77 | Loblolly pine, yellow- poplar, black walnut, sweetgum. |
| 17 Pactolus | 2w | Slight | Moderate | Moderate | Slight | Loblolly pine | 84 | Loblolly pine. |
| 18 Pungo | 5w | Slight | Severe | Severe | Moderate | Pond pine Baldcypress Water tupelo | 55 | Loblolly pine. |
| 19 Rains | 2w | Slight | Severe | Severe | Moderate | Loblolly pine Sweetgum | 94 90 | Loblolly pine, sweetgum, American sycamore. |
| 20A, 20B Rumford | 30 | Slight | Slight | Slight | Slight | Southern red oak Virginia pine Loblolly pine | 65 70 80 | Loblolly pine. |
| 21A, 21B State | 20 | Slight | Slight | Slight | Slight | Southern red oak Yellow-poplar Virginia pine Loblolly pine | 75 95 80 86 | Black walnut, yellow- poplar, loblolly pine. |
| 22A, 22B Suffolk | 30 | Slight | Slight | Slight | Slight | Loblolly pine Southern red oak | 83 70 | Loblolly pine. |
| 23A, 23B Tetotum | 3w | Slight | Moderate | Slight | Slight | Loblolly pine Sweetgum Southern red oak | 84 80 70 | Loblolly pine. |
| 24 Tomotley | 2w | Slight | Severe | Severe | Slight | Loblolly pine Sweetgum Water tupelo | 94 90 | Loblolly pine, sweetgum, American sycamore. |
| 25 Torhunta | 3w | Slight | Severe | Severe | Moderate | Lobiolly pine Sweetgum Water tupelo | 80 90 | Loblolly pine, sweetgum, American sycamore, Shumard oak. |
| 28 Wahee | 2w | Slight | Moderate | Moderate | Slight | Loblolly pine Sweetgum | 86 90 | Loblolly pine, sweetgum, American sycamore, water oak. |
| 29 Weston | 2w | Slight | Severe | Severe | Moderate | Loblolly pine Sweetgum Southern red oak Water oak | 90 90 | Loblolly pine, Shumard oak, Nuttall oak, sweetgum. |

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

TABLE 7.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|-----------------------------|---|--|---|--------------------------------------|---|
| 1B Alaga | Slight | Slight | Moderate: slope. | Slight | Moderate: droughty. |
| 2 Belhaven | Severe: floods; wetness; excess humus. | Severe: wetness, excess humus. | Severe: excess humus, wetness. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| 3 Bohicket | Severe: floods, ponding, percs slowly. | Severe: ponding, excess salt. | Severe: ponding, floods. | Severe: ponding. | Severe: excess salt, excess sulfur, ponding. |
| 4 Deloss | Severe: ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. |
| 5A Dogue | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: wetness. | Moderate: wetness. |
| 5B2 Dogue | Moderate: wetness, percs slowly. | Moderate: wetness, percs slowly. | Moderate: slope, wetness, percs slowly. | Moderate: wetness. | Moderate: wetness. |
| 6 Dragston | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness, droughty. |
| 7A Emporia | Moderate: percs slowly. | Moderate: percs slowly. | Moderate: small stones, percs slowly. | Slight | Slight. |
| 7B2 Emporia | Moderate: percs slowly. | Moderate: percs slowly. | Moderate: slope, small stones, percs slowly. | Slight | Slight. |
| 8A Eunola | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. |
| 8B Eunola | Moderate: wetness. | Moderate: wetness. | Moderate: slope, wetness.' | Moderate: wetness. | Moderate: wetness. |
| 9A Goldsboro | Moderate: wetness. | Moderate: wetness. | Moderate: small stones, wetness. | | Moderate: droughty. |
| 9B2 Goldsboro | Moderate: wetness. | Moderate: wetness. | Moderate: slope, small stones, wetness. | Slight | Moderate: droughty. |
| 10A Kalmia | Slight | Slight | Slight | Slight | Slight. |
| 10B Kalmia | Slight | Slight | Moderate: slope. | Slight | Slight. |
| 11Kenansville | Slight | Slight | Moderate: slope. | Slight | Moderate: droughty. |

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
|-----------------------------|---|---|--------------------------------------|--------------------------------------|------------------------------------|
| 12 Kenansville | Slight | Slight | Moderate: •slope. | Slight | Moderate: droughty. |
| 13 Levy | Severe: floods, ponding. | Severe: ponding. | Severe: ponding, floods. | Severe: ponding. | Severe: ponding, floods. |
| 14 Lynchburg | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 15B Nansemond | Moderate: wetness. | Moderate: wetness. | Moderate: slope, wetness. | Moderate: wetness. | Moderate: droughty. |
| 15D Nansemond | Moderate: slope, wetness. | Moderate: slope, wetness. | Severe: slope. | Moderate: wetness. | Moderate: slope, droughty. |
| 15E Nansemond | Severe: slope. | Severe: slope. | Severe: slope. | Moderate: slope, wetness. | Severe: slope. |
| 16A Nansemond | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. | Slight. |
| 16B Nansemond | Moderate: wetness. | Moderate: wetness. | Moderate: slope, wetness. | Moderate: wetness. | Slight. |
| 17 Pactolus | Moderate: wetness. | Moderate: wetness. | Moderate: slope, wetness. | Moderate: wetness. | Moderate: wetness, droughty. |
| 18 Pungo | Severe: floods, wetness, excess humus. | Severe: wetness, excess humus, too acid. | Severe: excess humus, wetness. | Severe: wetness, excess humus. | Severe: wetness. |
| 19 Rains | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 20A Rumford | Slight | Slight | Slight | Slight | Moderate: droughty. |
| 20B Rumford | Slight | Slight | Moderate: slope. | Slight | Moderate: droughty. |
| 21A State | Slight | Slight | Slight | Slight | Slight. |
| 21B State | Slight | Slight | Moderate: slope. | Slight | Slight. |
| 22A Suffolk | Slight | Slight | Slight | Slight | Slight. |
| 22B Suffolk | Slight | Slight | Moderate: slope. | Slight | Slight. |
| 23A Tetotum | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. |

| | 1 | r | Г. | | |
|-----------------------------|------------------------------------|----------------------------------|--|----------------------------------|--------------------------------|
| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails | Golf fairways |
| 23B Tetotum | Moderate: wetness. | Moderate: wetness. | Moderate: slope, wetness. | Moderate: wetness. | Moderate: wetness. |
| 24 Tomotley | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 25 Torhunta | Severe: floods, ponding. | Severe: ponding. | Severe: ponding, floods. | Severe: ponding. | Severe: ponding, floods. |
| 26 *. Udorthents | | | | 1 | |
| 27 *. Urban land | | | | | |
| 28 Wahee | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 29 Weston | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |

| TABLE | 7RECREATIONAL | DEVELOPMENTContinued |
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|-------|---------------|----------------------|

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

| | | 1 | | | | |
|-----------------------------|--|---|---|--|---|---|
| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
| 1B Alaga | Severe: cutbanks cave. | Slight | Moderate: wetness. | Slight | Slight | Moderate: droughty. |
| 2 Belhaven | Severe: excess humus, wetness. | Severe: floods, wetness, low strength. | Severe: floods, wetness. | Severe: floods, wetness, low strength. | Severe: wetness, low strength. | Severe: wetness, excess humus. |
| 3 Bohicket | Severe: ponding. | Severe: floods, ponding, shrink-swell. | Severe: floods, ponding, shrink-swell. | Severe: floods, ponding, shrink-swell. | Severe: low strength, ponding, floods. | Severe: excess salt, excess sulfur, ponding. |
| 4 Deloss | Severe: ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. | Severe: ponding. |
| 5A Dogue | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: low strength. | Moderate: wetness. |
| 5B2 Dogue | Severe: wetness. | Moderate: wetness, shrink-swell. | Severe: wetness. | Moderate: wetness, shrink-swell, slope. | Severe: low strength. | Moderate: wetness. |
| 6 Dragston | Severe: wetness, cutbanks_cave. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness, droughty. |
| 7A Emporia | Moderate: wetness. | Moderate: shrink-swell. | Moderate: wetness, shrink-swell. | Moderate: shrink-swell. | Moderate: low strength. | Slight. |
| 782 Emporia | Moderate: wetness. | Moderate: shrink-swell. | Moderate: wetness, shrink-swell. | Moderate: slope, shrink-swell. | Moderate: low strength. | Slight. |
| 8A Eunola | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness. |
| 8B Eunola | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Moderate: wetness. | Moderate: wetness. |
| 9A, 9B2 Goldsboro | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. | Slight. |
| 10A Kalmia | Severe: cutbanks cave. | Slight | Moderate: wetness. | Slight | Slight | Slight. |
| 10B Kalmia | Severe: cutbanks cave. | Slight | Moderate: wetness. | Moderate: slope. | Slight | Slight. |
| 11 Kenansville | Severe: cutbanks cave. | Slight | Slight | Slight | Slight | Moderate: droughty. |
| 12 Kenansville | Severe: cutbanks cave. | Slight | Moderate: wetness. | Slight | Slight | Moderate: droughty. |
| 13 Levy | Severe: ponding. | Severe: floods, ponding, shrink-swell. | Severe: floods, ponding, shrink-swell. | Severe: floods, ponding, shrink-swell. | Severe: low strength, ponding, floods. | Severe: ponding, floods. |
| 14 Lynchburg | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |

| TABLE 9BUILDING SITE | DEVELOPMENTContinued |
|----------------------|----------------------|
|----------------------|----------------------|

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|-------------------------------|---|---|---|---|--|--|
| | | | | | | |
| 15B Nansemond | Severe: wetness, cutbanks cave. | Moderate: wetness. | Severe: wetness. | Moderate: slope, wetness. | Moderate: wetness. | Moderate: wetness, droughty. |
| 15D Nansemond | Severe: wetness, cutbanks cave. | Moderate: slope, wetness. | Severe: wetness. | Severe: slope. | Moderate: slope, wetness. | Moderate: slope, wetness, droughty. |
| 15E Nansemond | Severe: slope, wetness, cutbanks cave. | Severe: slope. | Severe: slope, wetness. | Severe: slope. | Severe: slope. | Severe: slope. |
| 16A Nansemond | Severe: wetness, cutbanks cave. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. | Slight. |
| 16B Nansemond | Severe: wetness, cutbanks cave. | Moderate: wetness. | Severe: wetness. | Moderate: slope, wetness. | Moderate: wetness. | Slight. |
| 17 Pactolus | Severe: cutbanks cave, wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: wetness, droughty. |
| 18 Pungo | Severe: excess humus, wetness. | Severe: floods, low strength, wetness. | Severe: floods, wetness, low strength. | Severe: floods, wetness, low strength. | Severe: wetness. | Severe: wetness. |
| 19 Rains | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 20A Rumford | Severe: cutbanks cave. | Slight | Slight | Slight | Slight | Moderate: droughty. |
| 20B Rumford | Severe: cutbanks cave. | Slight | Slight | Moderate: slope. | Slight | Moderate: droughty. |
| 21A State | Slight | Slight | Moderate: wetness. | Slight | Slight | Slight. |
| 21B State | Slight | Slight | Moderate: wetness. | Moderate: slope. | Slight | Slight. |
| 22A Suffolk | Slight | Slight | Slight | Slight | Slight | Slight. |
| 22B Suffolk | Slight | Slight | Slight | Moderate: slope. | Slight | Slight. |
| 23A Tetotum | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: low strength, wetness. | Moderate: wetness. |
| 23B Tetotum | Severe: wetness. | Moderate: wetness. | Severe: wetness. | Moderate: wetness, slope. | Moderate: low strength, wetness. | Moderate: wetness. |
| 24 Tomotley | - Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| 25 Torhunta | - Severe: cutbanks cave ponding. | Severe: floods, ponding. | Severe: floods, ponding. | Severe: floods, ponding. | Severe: ponding, floods. | Severe: ponding, floods. |
| 26*. Udorthents | | | | | | |

See footnote at end of table.

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets | Lawns and landscaping |
|-----------------------------|---|-----------------------------------|--------------------------------|----------------------------------|---|----------------------------|
| 27 *. Urban land | | | | | | |
| 28 Wahee | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: low strength, wetness. | Severe: wetness. |
| 29 Weston | Severe: cutbanks cave, wetness. | Severe: wetness. | Severe: wetness. | Severe: | Severe: wetness. | Severe: wetness. |

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover |
|-----------------------------|--|---|---|-------------------------------------|---|
| 1B Alaga | Severe: poor filter. | Severe: seepage. | Severe: seepage, wetness, too sandy. | Severe: seepage. | Poor: seepage, too sandy. |
| 2 Belhaven | Severe: wetness, percs slowly. | Severe: seepage, floods, excess humus. | Severe: seepage, wetness. | Severe: seepage, wetness. | Poor: wetness. |
| 3 Bohicket | Severe: floods, ponding, percs slowly. | Severe: floods, ponding. | Severe: floods, ponding, too clayey. | Severe: floods, ponding. | Poor: too clayey, hard to pack, ponding. |
| 4 Deloss | Severe: Severe: Severe: Severe: Severe: ponding. ponding. ponding. | | Poor: ponding. | | |
| 5A, 5B2 Dogue | Severe: wetness, percs slowly. | Severe: seepage, wetness. | Severe: seepage, wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack. |
| 6 Dragston | Severe: wetness, poor filter. | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, thin layer. |
| 7A, 7B2 Emporia | Severe: wetness, percs slowly. | Moderate: seepage, wetness. | Moderate: wetness, too clayey. | Slight | Fair: too clayey, wetness. |
| 8A, 8B Eunola | Severe: wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: wetness. | Fair: wetness, thin layer. |
| 9A, 9B2 Goldsboro | Severe: wetness. | Severe: seepage, wetness. | Severe: wetness. | Severe: seepage, wetness. | Fair: wetness. |
| 10A, 10B Kalmia | Moderate: wetness. | Severe: seepage. | Severe: seepage, wetness. | Severe: seepage. | Good. |
| ll Kenansville | Severe: poor filter. | Severe: seepage. | Severe: seepage, too sandy. | Severe: seepage. | Poor: seepage, too sandy. |
| 12 Kenansville | Moderate: wetness. | Severe: seepage. | Severe: seepage, wetness, too sandy. | Severe: seepage. | Poor: seepage, too sandy. |
| 13 Levy | Severe: floods, ponding, percs slowly. | Severe: floods, ponding. | Severe: floods, ponding, too clayey. | Severe: floods, ponding. | Poor: too clayey, hard to pack, ponding. |
| 14 Lynchburg | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Poor: wetness. |
| 15B Nansemond | Severe: wetness, poor filter. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Fair: too sandy, wetness. |

TABLE 10.--SANITARY FACILITIES--Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|-----------------------------|--|---|--|--|---|
| 15D Nansemond | - Severe: wetness, poor filter. | Severe: seepage, wetness, slope. | Severe: seepage, wetness. | Severe: seepage, wetness. | Fair: slope, too sandy, wetness. |
| 15E Nansemond | Severe: slope, wetness, poor filter. | Severe: seepage, wetness, slope. | Severe: seepage, wetness, slope. | Severe: seepage, slope, wetness. | Poor: Slope. |
| 16A, 16B Nansemond | Severe: wetness, poor filter. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Fair: too sandy, wetness. |
| 17 Pactolus | Severe: wetness, poor filter. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Fair: too sandy, wetness. |
| 18 Pungo | Severe: percs slowly, wetness. | Severe: seepage, floods, excess humus. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, excess humus. |
| 19 Rains | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Poor: wetness. |
| 20A, 20B Rumford | Slight | Severe: seepage. | Severe: seepage, too sandy. | Severe: seepage. | Poor: seepage, too sandy. |
| 21A, 21B State | Moderate: wetness. | Severe: seepage. | Severe: seepage, wetness. | Moderate: wetness. | Good. |
| 22A, 22B Suffolk | Slight | Severe: seepage. | Severe: seepage. | Slight | Good. |
| 23A, 23B Tetotum | Severe: wetness. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: wetness. | Fair: too clayey, wetness. |
| 24 Tomotley | Severe: wetness, percs slowly. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Poor: wetness. |
| 25 Torhunta | Severe: floods, ponding, poor filter. | Severe: seepage, floods, ponding. | Severe: floods, seepage, ponding. | Severe: floods, seepage, ponding. | Poor: ponding. |
| 26 *. Udorthents | | | | | |
| 27 *. Urban land | | | | | |
| 28 Wahee | Severe: wetness, percs slowly. | Severe: wetness. | Severe: wetness, too clayey. | Severe: wetness. | Poor: too clayey, hard to pack, wetness. |
| 29 Weston | Severe: wetness, percs slowly. | Severe: seepage, wetness. | Severe: seepage, wetness. | Severe: wetness. | Poor: wetness. |

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," fair, "poor," "probable, and "improbable." Absence of an entry indicates that the soil was not rated]

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|-----------------------------|---|---|---|------------------------------------|
| 1B Alaga | Good | Probable | Improbable: too sandy. | Fair: too sandy. |
| 2 Belhaven | Poor: wetness, low strength. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess humus, wetness. |
| 3 Bohicket | Poor: low strength, wetness, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess salt, wetness. |
| 4 Deloss | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| 5A, 5B2 Dogue | Fair: wetness. | Probable | Improbable: too sandy. | Poor: thin layer. |
| 6 Dragston | Fair: wetness. | Probable | Improbable: too sandy. | Fair: thin layer. |
| 7A, 7B2 Emporia | Fair: low strength, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 8A, 8B Eunola | Fair: wetness. | Probable | Improbable: too sandy. | Good. |
| 9A, 9B2 Goldsboro | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| 10A, 10B Kalmia | Good | Improbable: excess fines. | Improbable: excess fines. | Fair: thin layer. |
| 11 Kenansville | Good | Probable | Improbable: too sandy. | Fair: too sandy. |
| 12 Kenansville | Good | Probable | Improbable: too sandy. | Good. |
| 13 Levy | Poor: low strength, wetness, shrink-swell. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| 14 Lynchburg | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| 15B Nansemond | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 15D Nansemond | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Fair: slope. |
| 15E Nansemond | Fair: slope, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: slope. |
| 16A, 16B Nansemond | Fair: low strength. | Improbable: excess fines. | Improbable: excess fines. | Good. |
| 17 Pactolus | Fair: wetness. | Probable | Improbable: too sandy. | Fair: too sandy. |

| TABLE | 11CONSTRUCTION | MATERIALSContinue | d |
|-------|----------------|-------------------|---|
|-------|----------------|-------------------|---|

| Soil name and map symbol | Roadfill | Sand | Gravel | Topsoil |
|-----------------------------|------------------------------------|-------------------------------------|--------------------------------|------------------------------------|
| 18 Pungo | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: excess humus, wetness. |
| 19 Rains | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| 20A, 20B Rumford | Good | Probable | Probable | Fair: too sandy. |
| 21A, 21B State | Good | Improbable: excess fines. | Improbable: excess fines. | lGood. |
| 22A, 22B Suffolk | Good | Probable | Improbable: too sandy. | lGood. |
| 23A, 23B Tetotum | Fair: wetness. | Improbable: excess fines. | Improbable: excess fines. | Fair: too clayey. |
| 24 Tomotley | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |
| 25 Torhunta | Poor: wetness. | Probable | Improbable: too sandy. | Poor: wetness. |
| 26 *. Udorthents | | | | |
| 27 *. Urban land | | | | |
| 28 Wahee | Poor: low strength, wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: thin layer, wetness. |
| 29 Weston | Poor: wetness. | Improbable: excess fines. | Improbable: excess fines. | Poor: wetness. |

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

| | | | | | r | | | Eros | ion | |
|-----------------------|-------------|-----------------|----------------|-------------------|----------------|-----------|--------------|--------|-----|-------------------|
| | Donth | 0107 2000 | Motet | Permeahility | Available | Soil | Shrink-swell | fact | ors | Organic |
| Soil name and | Depin | | hulk | ltermeapriroy | water | reaction | potential | | | matter |
| map symbol i | | | density | 1 | lcanacity | | - | K I | T | |
| | Tn | Pot | G/cm3 | In/hr | In/in | Hq | | | | Pct |
| | <u>+111</u> | 100 | <u>u · om-</u> | <u></u> | 1 | - | | | | |
| 10 | 0-0 | 2_12 | 1.30-1.50 | >6.0 | 10.05-0.09 | 4.5-6.0 | Low | 0.17 | 5 | .5-1 |
| Alege | 0_8n | 2-12 | 1.30-1.50 | >6.0 | 10.05-0.09 | 4.5-6.0 | Low | 0.17 | | |
| Alaga | 9-00 | | | 1 | | 1 | | | | |
| 2 | 0_44 | | 0.40-0.65 | 0.2-6.0 | 10.20-0.26 | l <4.5 | Low | | | 20-80 |
| Pelberen | 11-62 | 10-35 | 1.30-1.45 | 0.2-0.6 | 10.12-0.20 | 3.6-6.5 | Low | 0.241 | | |
| Detliaveli | 44-02 | 10 55 | | | i | ĺ | | | | |
| 2 | 0-13 | 30-60 | 1.20-1.40 | 0.06-0.2 | 10.14-0.18 | 6.1-8.4 | High | 0.32 | 5 | |
| Poblokot | 13-60 | 35-60 | 1.30-1.60 | <0.06 | 10.12-0.16 | 6.1-8.4 | High | 0.24 | | |
| DONICKEU | 1)-00 | 55.00 | | | | | | | | |
| Ji | 0_17 | 5-20 | 1.20-1.50 | i 2.0-6.0 | 10.10-0.16 | 14.5-6.5 | Low | 0.28 | 5 | 2-9 |
| Deloss | 17-31 | 18-35 | 1.30-1.60 | 0.6-2.0 | 0.12-0.18 | 14.5-5.5 | Low | 0.24 | | |
| DEIOSS | 31-75 | | | | | | | | | |
| | 54 12 | 1 | | | 1 | i | 1 | | | |
| 54 | 0-16 | 5-10 | 1.35-1.50 | 2.0-6.0 | 0.08-0.15 | 13.6-5.5 | Low | 0.28 | 4 | •5-1 |
| | 16-63 | 35-50 | 11.45-1.60 | 0.2-0.6 | 10.12-0.19 | 13.6-5.5 | Moderate | 0.28 | | |
| DoBre | | | | i | 1 | 1 | | | | |
| 5B2 | 0_10 | 5-10 | 11.35-1.50 | 2.0-6.0 | 0.08-0.15 | 13.6-5.5 | Low | 0.28 | 4 | .5-1 |
| Dogue | 110-63 | 35-50 | 11.45-1.60 | 0.2-0.6 | 0.12-0.19 | 13.6-5.5 | Moderate | 0.28 | | |
| Dogue | 10-05 | 1 35-50 | 1 | ••• | | <u> </u> | <u> </u> | | | |
| 6 | 1 0-9 | i 4-12 | 1,20-1,50 | 2.0-6.0 | j0.08-0.15 | 14.5-5.5 | Low | 0.17 | 4 | .5-1 |
| Dragaton | 0-37 | 10-20 | 11.25-1.45 | 2.0-6.0 | 10.08-0.16 | 14.5-5.5 | Low | 0.17 | | |
| Dragacon | 1 27-66 | 1 2-12 | 1.35-1.55 | 1 >6.0 | 10.04-0.08 | 4.5-5.5 | Low | 0.17 | | |
| | 137-00 | 1 2712 | 11.35-1.55 | ,,,,, | 1 | | İ | | | 1 |
| 7.4 | 0_10 | 7-18 | 1 30-1.40 | 2.0-6.0 | 10.10-0.17 | 14.5-5.5 | Low | 0.28 | 4 | <3 |
| Encordo | 110-11 | 1 18_35 | 11.35-1.45 | 0.2-2.0 | 10.10-0.18 | 4.5-5.5 | Low | 0.28 | l | ļ |
| Emporta | 111-72 | 1 21-40 | 11.45-1.60 | 0.06-0.6 | 10.10-0.16 | 14.5-5.5 | Moderate | 0.20 | | |
| | 141-12 | 1 21-40 | | | 1 | 1 | 1 | 1 | 1 | l |
| 700 | 10-6 | 1 7_18 | 11.30-1.40 | 2.0-6.0 | 10.10-0.17 | 14.5-5.5 | Low | 0.28 | 4 | <3 |
| (B2================== | 1 6-27 | 1 18-35 | 11.35-1.45 | 0.2-2.0 | 10.10-0.18 | 14.5-5.5 | Low | 0.28 | | ļ |
| Emporta | 137-72 | 1 21-40 | 11.45-1.60 | 0.06-0.6 | 10.10-0.16 | 14.5-5.5 | Moderate | 10.20 | | l |
| | 151-12 | 1 21-40 | 1 | | | 1 | 1 | Ι. | | |
| 84 88 | 0_9 | 1 3-11 | 11.25-1.40 | 2.0-6.0 | 0.06-0.11 | 4.5-5.5 | Low | 0.28 | 4 | .5-2 |
| Eurole | 1 0-15 | 18-35 | 11.30-1.40 | 0.6-2.0 | 0.12-0.17 | 14.5-5.5 | Low | 0.28 | | |
| Eunora | 105-63 | 18_45 | 11.30-1.40 | 0.6-2.0 | 10.12-0.16 | 14.5-5.5 | Low | 10.32 | | |
| | 149-03 | 1 10-45 | | | | 1 | 1 | 1 | | |
| 0.4 | 1 0-18 | 5-15 | 11.40-1.60 | 2.0-6.0 | 10.08-0.12 | 4.5-6.0 | Low | 10.20 | 5 | .5-4 |
| galdeboro | 118_70 | 1 18-25 | 11.30-1.50 | 0.6-2.0 | 10.11-0.15 | 14.5-5.5 | Low | 0.2 | 1 | |
| GOTUSDOFO | 110-10 | | | | Ì | 1 | | 1 | | |
| 082 | 0-11 | 5-15 | 11.40-1.60 | oi 2.0-6.0 | 10.08-0.12 | 24.5-6.0 | Low | 0.20 | 15 | 1.5-4 |
| Goldaboro | 111-70 | 18-25 | 11.30-1.50 | 0.6-2.0 | 0.11-0.15 | 514.5-5.5 | Low | 0.24 | 1 | |
| 601030010 | 111-10 | 10 25 | 12030 2090 | | | 1 | 1 | | | |
| 104 108 | 1 0-22 | 4-12 | 11.60-1.75 | 5 2.0-6.0 | 10.06-0.10 | 14.5-6.0 | Low | 0.20 | 14 | .5 - 2 |
| Yolmio | 122-21 | 18-35 | 11.40-1.60 | 0.6-2.0 | 10.12-0.16 | 5 4.5-5.5 | Low | 10.24 | | |
| Kaimia | 121-72 | | 11.60-1.75 | 6.0-20 | 10.03-0.06 | 514.5-5.5 | Low | 10.10 | 1 | |
| | 1 34-14 | | 12000 2072 | | | + | + | | | |
| 11 | 1 0-23 | 1 3-10 | 11.50-1.70 | 0 6.0-20 | 0.04-0.10 | 14.5-6.0 | Low | 10.15 | 5 | .5-2 |
| Venenguille | 123-118 | 5-18 | 11.30-1.50 | 2.0-6.0 | 10.10-0.14 | 114.5-6.0 | Low | 10.15 | 1 | |
| Venansvirre | 148-72 | 1-10 | 11.50-1.70 | 6.0-20 | i <0.05 | 4.5-6.0 | Low | 10.10 | Į. | |
| | 140-12 | 1 1-10 | | 1 000 -0 | 1 | 1 | 1 | | 1 | |
| 12 | 1 0-23 | 1 3-10 | 11.50-1.70 | oj 6.0-20 | 0.04-0.10 | 014.5-6.0 | Low | 0.15 | 15 | 1.5-2 |
| Konongville | 123-118 | <u>1 5-18</u> | 11.30-1.50 | 2.0-6.0 | 0.10-0.1 | 514.5-6.0 | Low | 0.15 | ļ | |
| Kellalls ville | 148-72 | 1_10 | 11.50-1.70 | 6.0-20 | 0.05 | 14.5-6.0 | Low | 0.10 | | |
| | 110=11 | | | | | | | | | - |
| 12 | i 0_10 | ni 27-60 | 11.20-1.40 | 0.06-0.2 | 10.16-0.2 | 213.6-5.5 | High | 0.32 | 15 | |
| 1.evv | 110-60 | 60-80 | 11.30-1.60 | 0.06-0.2 | 0.16-0.2 | 213.6-5.5 | High | ·10.35 | 1 | 1 |
| 2013 | 1 | | 1 | 1 | + | 1 | | 10.0- | | |
| 14 | 1 0-11 | 3 5 - 20 | 11.30-1.60 | 2.0-6.0 | 0.09-0.1 | 313.6-5.5 | Low | 10.20 | 4 | 1.5-5 |
| Lynchhurg | 113-6 | 18-35 | 11.30-1.50 | 0.6-2.0 | 0.12-0.1 | 6 3.6-5.5 | Low | ·10.20 | 1 | 1 |
| JJ IIVIID WI B | 1-3-3. | 1 55 | 1 | 1 | 1 | 1 | 1 | | | 1 |
| 15B 15D 15E | .i 0-10 | 4-12 | 11.20-1.4 | 5 2.0-20 | 0.05-0.1 | 0 4.5-5.5 | Low | 10.15 | 13 | 1.5-1 |
| Nansemond | 110-20 | 51 10-20 | 11.25-1.4 | 5 2.0-6.0 | 10.09-0.1 | 414.5-5.5 | Low | 10.17 | | 1 |
| Handemond | 129-6 | 51 4-12 | 1.30-1.5 | 5 2.0-6.0 | 0.05-0.1 | 0 3.6-5.5 | Low | -10.15 | | 1 |
| | 166-7 | 2-12 | 1.35-1.5 | 5 6.0-20 | 0.02-0.1 | 0 3.6-5.5 | Low | -j0.15 | 1 | |
| | 1 | i | | | 1 | l | 1 | 1 | 1 | I |
| | • | • | • | • | | | | | | |

| Soil name and | Depth | Clay <2mm | Moist | Permeability | Available | Soil | Shrink-swell | Ero fac | sion tors | Organic |
|----------------------------|-----------------------------------|-------------------------------|--|---|---|---|-------------------------------|------------------------|--------------|-----------|
| | | Bet | density | | capacity | reaction | potential | к | Т | matter |
| | <u> </u> | <u>FCU</u> | Grems | <u>in/nr</u> | <u>1n/1n</u> | рн | | | | Pct |
| Nansemond | 0-8 8-29 29-66 66-70 | 6-15 10-20 4-12 2-12 | 1.20-1.50 1.25-1.45 1.30-1.55 1.35-1.55 | 2.0-6.0 2.0-6.0 2.0-6.0 6.0-20 | 0.08-0.13 0.09-0.14 0.05-0.10 0.02-0.10 | 4.5-5.5 4.5-5.5 3.6-5.5 3.6-5.5 | Low Low | 0.20 0.17 0.1 | 3 | 1–2 |
| 17 Pactolus | 0-38 38-80 | 2-10 2-10 | | 6.0-20 6.0-20 | 0.05-0.10 0.03-0.0 | 4.5-6.0 4.5-5.5 | Low | 0.10 | 4 | |
| 18 Pungo | 0-102 102- 110 | 30-45 | 0.35-0.60 1.25-1.40 | 0.2-6.0 0.2-0.6 | 0.20-0.26 0.12-0.18 | <4.5 3.6-5.5 | Low Moderate | | | 40-90 |
| 19 Rains | 0-6 6-65 | 5-20 18-35 | 1.30-1.60 1.30-1.50 | 2.0-6.0 0.6-2.0 | 0.08-0.12 0.10-0.15 | 4.5-6.5 4.5-5.5 | Low | 0.17 | 5 | 1-6 |
| 20A, 20B Rumford | 0-10 10-36 36-72 | 2-12 8-18 2-18 | 1.25-1.45 1.25-1.45 1.25-1.50 | >6.0 2.0-6.0 >2.0 | 0.06-0.10 0.10-0.15 0.04-0.10 | 3.6-5.5 4.5-6.0 3.6-6.5 | Low Low Low | 0.24 0.17 0.17 | 4 | •5-1 |
| 21A, 21B State | 0-22 22-52 52-65 | 5-15 18-34 2-15 | 1.25-1.40 1.35-1.50 1.35-1.50 | 0.6-6.0 0.6-2.0 >2.0 | 0.10-0.20 0.14-0.19 0.02-0.10 | 4.5-5.5 4.5-5.5 4.5-6.0 | Low Low Low | 0.28 0.28 0.17 | 4 | <2 |
| 22A, 22B Suffolk | 0-11 11-38 38-65 | 4-10 10-33 4-10 | 1.40-1.50 1.40-1.50 1.40-1.50 | 2.0-20 0.6-2.0 2.0-20 | 0.06-0.10 0.12-0.20 0.04-0.10 | 3.6-5.5 3.6-5.5 3.6-6.0 | Low Low Low | 0.24 0.28 0.17 | 4 | •5-1 |
| 23A, 23B Tetotum | 0-20 20-65 65-85 | 5-15 18-35 5-30 | 1.20-1.40 1.25-1.45 1.25-1.45 | 2.0-6.0 0.6-2.0 0.6-20 | 0.08-0.15 0.14-0.19 0.06-0.15 | 3.6-5.5 3.6-5.5 3.6-5.5 | Low Low Low | 0.32 0.32 0.24 | 4 | •5-2 |
| 24 Tomotley | 0-7 7-43 43-61 | 5-27 18-35 | 1.20-1.40 1.30-1.50 | 2.0-6.0 0.6-2.0 | 0.12-0.18 | 3.6-5.5 | Low | 0.20 | 5 | 1-6 |
| 25 Torhunta | 0-16 16-30 30-65 | 5-15 5-18 5-20 | 1.30-1.50 1.30-1.50 1.30-1.50 | 2.0-6.0 2.0-6.0 6.0-20 | 0.10-0.15 0.10-0.15 <0.05 | 3.6-5.5 3.6-5.5 3.6-5.5 | Low Low Low | 0.15 0.15 0.10 | | |
| 26 *. Udorthents | | - | | | | | | | | |
| 27 *. Urban land | | | | | | | | | | |
| 28 Wahee | 0-4 4-46 46-62 | 10-27 35-55 | 1.20-1.50 1.40-1.60 | 0.2-2.0 0.06-0.2 0.2-0.6 | 0.15-0.20 0.12-0.20 0.12-0.20 | 4.5-5.5 4.5-5.5 4.5-5.5 | Low Moderate Moderate | 0.28 0.28 0.28 | 5 | •5-5 |
| 29 Weston | 0-8 8-39 39-62 | 5-15 5-18 5-18 | 1.30-1.50 1.30-1.50 1.20-1.50 | 0.6-2.0 0.2-0.6 0.06-6.0 | 0.10-0.15 0.10-0.20 0.10-0.18 | 4.5-6.0 4.5-5.0 4.5-5.0 | Low Low Low | 0.24 0.24 0.32 | 5 | 1-3 |

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the text explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

| | | <u>ر</u> ۱ | Plooding | | High | water ta | able | Bee | irock | Risk of c | orrosion |
|---|-----------------------------|--------------|------------|----------|----------------------|-------------------|------------------|--------------------|---------------|-------------------|----------------|
| Soil name and map symbol | Hydro- logic group | Frequency | Duration | Months | Depth | Kind | Months | Depth | Hard- ness | Uncoated steel | Concrete |
| 1B Alaga | A | None | | | <u>Ft</u> 4.0-6.0 | Apparent | Jan-Mar | <u>In</u> >60 | | Low | Moderate. |
| 2 Belhaven | D | Rare | | | 0-1.0 | Apparent | Dec-May | >60 | | High | High. |
| 3 Bohicket | D | Frequent | Very brief | Jan-Dec | +3-0 | Apparent | Jan-Dec | >60 | | High | High. |
| 4 Deloss | D | None | | | +1-1.0 | Apparent | Nov-Apr | >60 | | High | High. |
| 5A, 5B2 Dogue | c | None | | | 1.5-3.0 | Apparent | Jan-Mar | >60 | | High | High. |
| 6 Dragston | l C | None | | | 1.0-2.5 | Apparent | Nov-Apr | >60 | | Low | High. |
| 7A, 7B2 Emporia | с | None | | · · | 3.0-4.5 | Perched | Nov-Apr | >60 | | Moderate | High. |
| 8A, 8B Eunola | с | None | | | 1.5-2.5 | Apparent | Nov-Mar | >60 | | Low | High. |
| 9A, 9B2 Goldsboro | B | None | | | 2.0-3.0 | Apparent | Dec-Mar | >60 | i | Moderate | High. |
| 10A, 10B Kalmia | В | None | | | 4.0-6.0 | Apparent | Dec-Apr | >60 | | Moderate | Moderate. |
| 11 Kenansville | A | None | | | >6.0 | | | >60 | | Low | High. |
| 12 Kenansville | A | None | | | 4.0-6.0 | Apparent | Dec-Apr | >60 | | Low | High. |
| 13 Levy | D | Frequent | Very long | Jan-Dec | +2 - +1 | Apparent | Jan-Dec | >60 | | High | High. |
| 14 Lynchburg | B/D | None | ~ | | 0.5-1.5 | Apparent | Nov-Apr | >60 | | High | High. |
| 15B, 15D, 15E, 16A, 16B Nansemond | C | None | | | 1.5-2.5 | Apparent | Dec-Apr | >60 | | Moderate | High. |
| 17 Pactolus | с | None to rare | | | 1.5-2.5 | Apparent | Jan-Mar | >60 | | Low | High. |
| 18 Pungo | D | Rare | | | 0-1.0 | Apparent | Dec-May | >60 | | High | High. |
| 19 Rains | B/D | None | | | 0-1.0 | Apparent | Nov-Apr | >60 | | High | High. |
| 20A, 20B Rumford | A | None | | | >6.0 | | | >60 | | Low | High. |
| 21A, 21B State | В | None | | | 4.0-6.0 | Apparent | Dec-Jun | >60 | | Moderate | High. |
| 22A, 22B Suffolk | В | None | | | >6.0 | | | >60 | | Moderate | High. |
| 23A, 23B Tetotum | с | None | | | 1.5-2.5 | Apparent | Dec-Apr | >60 | | High | High. |

| | ! | | Flooding | | Hig | h water t | able | Be | drock | Risk of | corrosion |
|-----------------------------|-----------------------------|-----------------|-----------|------------------|---------|-------------------|--------------|------------|---------------|-------------------|-----------|
| Soil name and map symbol | Hydro- logic group | Frequency | Duration | Months | Depth | Kind | Months | Depth | Hard- ness | Uncoated steel | Concrete |
| | | | | | Ft | | | Tn | | | |
| 24 Tomotley | B/D | None | | | 0-1.0 | Apparent | Dec-Mar | >60 | | High | High. |
| 25 Torhunta | C | Frequent | Long | Jan-Apr | +.5-1.5 | Apparent | Nov-Apr | >60 | | High | High. |
| 26 *. Udorthents | | | | | | | | | | | |
| 27 *. Urban land | | | | | | | | | | | |
| 28 Wahee | D | None | | | 0.5-1.5 | Apparent | Dec-Mar | >60 | | High | High. |
| 29 Weston | D | None | | | 0-1.0 | Perched | Dec-Apr | >60 | | High | High. |

TABLE 15.--SOIL AND WATER FEATURES--Continued

* See description of the map unit for composition and behavior characteristics of the map unit.





Nonirrigated Capability Class-City of Suffolk, Virginia

USDA

Nonirrigated Capability Class

| Nonirri | igated Capability Class— | Summary by Map Unit — | - City of Suffolk, Virginia (| VA800) |
|-----------------|---|-----------------------|-------------------------------|----------------|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 1B | Alaga loamy sand, wet substratum, 2 to 8 percent slopes | 3 | 16.7 | 0.5% |
| 2 | Belhaven muck | 7 | 131.2 | 3.9% |
| 3 | Bohicket silty clay loam | 8 | 29.7 | 0.9% |
| 4 | Deloss mucky loam | 6 | 599.7 | 17.8% |
| 6 | Dragston fine sandy loam | 2 | 110.4 | 3.3% |
| 10B | Kalmia fine sandy loam, wet substratum, 2 to 6 percent slopes | 2 | 11.1 | 0.3% |
| 11 | Kenansville loamy sand, 0 to 4 percent slopes | 2 | 2.2 | 0.1% |
| 12 | Kenansville loamy sand, wet substratum, 0 to 4 percent slopes | 2 | 38.8 | 1.2% |
| 13 | Levy silty clay loam | 7 | 55.8 | 1.7% |
| 15D | Nansemond loamy fine sand, 6 to 15 percent slopes | 4 | 12.5 | 0.4% |
| 15E | Nansemond loamy fine sand, 15 to 30 percent slopes | 6 | 127.3 | 3.8% |
| 16A | Nansemond fine sandy loam, 0 to 2 percent slopes | 2 | 123.0 | 3.7% |
| 16B | Nansemond fine sandy loam, 2 to 6 percent slopes | 2 | 2.5 | 0.1% |
| 17 | Pactolus loamy fine sand | 3 | 23.5 | 0.7% |
| 19 | Rains fine sandy loam | 3 | 357.0 | 10.6% |
| 21A | State fine sandy loam, 0 to 2 percent slopes | 1 | 19.0 | 0.6% |
| 21B | State fine sandy loam, 2 to 6 percent slopes | 2 | 7.1 | 0.2% |
| 23A | Tetotum fine sandy loam, 0 to 2 percent slopes | 2 | 117.4 | 3.5% |
| 23B | Tetotum fine sandy loam, 2 to 6 percent slopes | 2 | 29.6 | 0.9% |
| 24 | Tomotley loam | 3 | 745.1 | 22.2% |
| 25 | Torhunta loam | 6 | 447.4 | 13.3% |
| 26 | Udorthents, loamy | | 192.8 | 5.7% |

| Nonirri | Nonirrigated Capability Class— Summary by Map Unit — City of Suffolk, Virginia (VA800) | | | | | | |
|---------------------------|--|--------|--------------|----------------|--|--|--|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI | | | |
| 28 | Wahee silt loam | 2 | 53.4 | 1.6% | | | |
| 29 | Weston fine sandy loam | 3 | 67.0 | 2.0% | | | |
| W | Water | | 42.7 | 1.3% | | | |
| Totals for Area of Intere | st | | 3,363.1 | 100.0% | | | |

Description

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher



Figures





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| | | PROJECT MANAGER | J. MURRAY, P.E. |
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| | ISSUE DATE DESCRIPTION | PROJECT NUMBER | 001743-279011-018 |

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Regional Landfill Conditional Rezoning Application GENERAL SOIL MAP SHEET FILENAME Attachment A.dwg FIGURE 1 SCALE AS SHOWN VIRGINIA

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NOTES:

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- 1. SOIL MAP COMPILED ON 1970 AERIAL PHOTOGRAPHY BY THE U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE AND COOPERATING AGENCIES. MAPS OBTAINED FROM THE CITY OF SUFFOLK VIRGINIA SOIL SURVEY, JUNE, 1981.
- 2. PROPERTY BOUNDARY SHOWN FOR 833 ACRES ON SOILS MAP IS APPROXIMATE. SPSA PROPERTY CONSISTS OF THREE PARCELS TAX MAP/LOTS 27*37*1, 27*37, AND 27*28A.

3. A TOTAL OF 440.34 AC PORTION OF LOT 27*28A OF AGRICULTURAL (A) ZONE IS PROPOSED TO BE REZONED TO HEAVY MANUFACTURING (M-2).

| TABLE 1 – DETAILED SOIL PROPERTIES ⁽¹⁾ | | | | | | | |
|---|--|---------|-----------------|--|--|---|------------------------------------|
| # | SOIL TYPE | ACREAGE | LAND CAPABILITY | WOODLAND MANAGEMENT AND PRODUCTIVITY | RECREATIONAL ⁽²⁾ DEVELOPMENT | BUILDING SITE ⁽³⁾ DEVELOPMENT | SANITARY FACILITIES ⁽⁴⁾ |
| 2 | BELHAVEN MUCK | 58.59 | 7 | 4w | SEVERE | SEVERE | SEVERE-POOR |
| 4 | DELOSS MUCKY LOAM | 322.81 | 6 | 3w | SEVERE | SEVERE | SEVERE-POOR |
| 6 | DRAGSTON FINE SANDY LOAM | 2.43 | 2 | 3w | MODERATE-SEVERE | SEVERE-MODERATE | SEVERE-POOR |
| 10B | KALMIA FINE SANDY LOAM WET SUBSTRATUM, 2-6% SLOPES | 0.52 | 2 | 20 | SLIGHT-MODERATE | SEVERE-MODERATE | SEVERE-GOOD |
| 13 | LEVY SILTY CLAY LOAM | 3.21 | 7 | 3w | SEVERE | SLIGHT-MODERATE | SEVERE-POOR |
| 17 | PACTOLUS LOAMY FINE SAND | 2.21 | 3 | 2w | MODERATE | SEVERE-MODERATE | SEVERE-FAIR |
| 19 | RAINS FINE SANDY LOAM | 5.76 | 3 | 2w | SEVERE | SEVERE | SEVERE-POOR |
| 23B | TETOTUM FINE SANDY LOAM, 2-6% SLOPES | 0.82 | 2 | Зw | MODERATE | SEVERE-MODERATE | SEVERE-FAIR |
| 24 | TOMOTLEY LOAM | 180.56 | 3 | 2w | SEVERE | SEVERE | SEVERE-POOR |
| 25 | TORHUNTA LOAM | 255.60 | 6 | Зw | SEVERE | SEVERE | SEVERE-POOR |
| 26 | UDORTHENTS, LOAMY | 0.43 | | | | | |

⁽¹⁾ INFORMATION REGARDING THE SUITABILITY RATING FOR CONSTRUCTION MATERIALS (TABLE 11), SOIL PHYSICAL AND CHEMICAL PROPERTIES (TABLE 12), AND SOIL AND WATER FEATURES (TABLE 15) CAN BE FOUND IN THE APPENDIX.
⁽²⁾ SOIL INFORMATION OBTAINED FROM COLUMNS PICNIC AREAS, PLAYGROUNDS, AND PATHS AND TRAILS OF TABLE 7 - RECREATIONAL DEVELOPMENT FOUND IN THE SOIL SURVEY.
⁽³⁾ SOIL INFORMATION OBTAINED FROM TABLE 9 - BUILDING SITE DEVELOPMENT OF THE SOIL SURVEY.
⁽⁴⁾ SOIL INFORMATION OBTAINED FROM TABLE 9 - BUILDING SITE DEVELOPMENT OF THE SOIL SURVEY.
⁽⁵⁾ SOIL INFORMATION FROM COLUMNS AREA SANITARY LANDFILL AND DAILY COVER FOR LANDFILL OF TABLE 10 - SANITARY FACILITIES OF THE SOIL SURVEY.

| | | | | PROJECT MANAGER | J. WORKAT, F.E. |
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| - | - | - | - | DRAWN BY | T. PREDDY, E.I. |
| | ISSUE | DATE | DESCRIPTION | PROJECT NUMBER | 001743-279011-018 |



Regional Landfill Conditional Rezoning Application

SUFFOLK

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|) <u>:</u> | | |
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| | PROPERTY LINE | N |
| | FACILITY BOUNDARY | |
| | INTERNAL PROPERTY LINE | |
| <u> </u> | PROPOSED AREA TO BE REZONED | |
| | WETLAND PRESERVATION AREA | |
| \times | WETLAND RESTORATION AREA | |
| 7/// | WETLAND ENHANCEMENT AREA | |
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| ISSUE DATE DESCRIPTION | PROJECT NUMBER | 001743-279011-018 |



Regional Landfill Conditional Rezoning Application

SUFFOLK



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NOTES:

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- 1. SOIL MAP COMPILED ON 1970 AERIAL PHOTOGRAPHY BY THE U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE AND COOPERATING AGENCIES. MAPS OBTAINED FROM THE CITY OF SUFFOLK VIRGINIA SOIL SURVEY, JUNE, 1981.
- 2. PROPERTY BOUNDARY SHOWN FOR 833 ACRES ON SOILS MAP IS APPROXIMATE. SPSA PROPERTY CONSISTS OF THREE PARCELS TAX MAP/LOTS 27*37*1, 27*37, AND 27*28A.
- 3. A TOTAL OF 440.34 AC PORTION OF LOT 27*28A OF ACRICULTURAL (A) ZONED IS PROPOSED TO BE REZONED TO HEAVY MANUFACTURING (M-2).
- 4. IMERVIOUS SURFACES SHOWN ARE COMPRISED OF PAVED RAADWAYS AT FACILITY ENTRANCE AND TRANSFER STATION AND PARKING AND STAGING AREAS FOR FACILITY OPERATIONS AND 30-WIDE GRAVEL ROADWAYS AROUND BOUNDARIES OF EXISTING AND PROPOSED LANDFILL CELLS.

LEGEND:



PROPERTY LINE FACILITY BOUNDARY INTERNAL PROPERTY LINE PROPOSED AREA TO BE REZONED WETLAND PRESERVATION AREA WETLAND RESTORATION AREA WETLAND ENHANCEMENT AREA IMPERVIOUS SURFACE AREA



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