

15. SOILS

- A. 1. Provide a description of each of the soils indicated on Map E utilizing the following format:**

Table 15.A.1 Soil Descriptions		
Soil Name	Lauderhill Muck, Depressional (Soil Type 3)	Dania Muck, Depressional (Soil Type 14)
Soil Description	Moderately deep, nearly level, very poorly drained soils in narrow drainage ways and broad open areas within sawgrass marches. The soil is ponded for 9 to 12 months in most years. Typically, the soil is muck to a depth of about 30 inches. Hard, porous, oolitic limestone bedrock is at a depth of about 30 inches.	Shallow, nearly level very poorly drained soils in poorly defined drainage ways and adjacent to deeper organic soils within sawgrass marches. The soil is ponded 9 to 12 months in most years. Typically, the surface layer is black muck about 15 inches thick. Soft, porous limestone bedrock is at a depth of about 15 inches.
Seasonal High Water Table Depth Duration	The soil depth ranges from +2 inches to 0 inches from the grade for the months from June to April.	The soil depth ranges from +2 inches to 0 inches from the grade for the months from June to April.
Permeability (Inches per Hour)	0 - 30 inches in depth: 6.0 to 20 30 - 34 inches in depth: 2.0 to 20	0 - 15 inches in depth: 6.0 - 20 15 - 19 inches in depth: 2.0 - 20
Degree & Kind of Limitations for Proposed Uses	Severe: subsidence, ponding, low strength	Severe: ponding, low strength
Degree & Kind of Limitations for Pond Embankments	Severe: excess humus, ponding	Severe: excess humus, ponding
Source: Globex Engineering & Development, Inc.		

- 2. Describe the potential for subsidence and any unique geologic features (such as sand dunes, bluffs, sinkholes, springs, steepheads, etc.) on the site. Discuss what aspects of the site plan will be used to compensate for or take advantage of these features.**

The Site was utilized as a construction & demolition (C&D) debris landfill and material reclamation facility (MRF) since 1987 and the operation ceased in 2000. Approximately 80 percent of the Site is covered with an average of 10 to 12 feet of C&D debris that was deposited during the landfilling activities at the Site. From a subsidence perspective, the C&D debris poses two issues: 1) potential subsidence due to the lack of in-place compaction of the debris, and 2) potential subsidence due to continued decomposition of the organic fraction of the debris.

To address these issues, the developer continues to investigate the benefits of constructing buildings on auger-cast pile foundations versus improving the debris from a geotechnical perspective, which may include deep dynamic compaction, the separation of the organic fraction of the debris, or other possibilities. The Site will be engineered with the appropriate structural design to account for possible settlement.

Methane gas may be present at the Property as a result of decomposition of the debris. No known methane gas surveys have been conducted. The developer plans to perform a gas survey to investigate methane generation at the Property prior to the start of construction. If concentrations of methane are confirmed, the appropriate steps will be taken to ensure proper management of the migration of the gas by utilizing passive collection and venting systems beneath buildings, habitable spaces and other areas as needed.

Both potential settlement concerns and methane gas management will be addressed during the project design, permitting and construction phase.

The subsurface geologic features, which include limerock and sandy sediments, lying below the surface debris are suitable for the proposed development. Features such as sand dunes, bluffs, sinkholes, and steepheads do not exist on-Site based on the available geologic information.

- B. Where a soil presents a limitation to the type of use proposed in the development, state how the limitation will be overcome. Specify construction methods that would be used for building, road and public lot foundations, and for lake or canal bank stabilization as relevant.**

See the above response above for a discussion of the means of overcoming potential subsidence and methane generation issues.

- C. What steps would be taken during site preparation and construction to prevent or control wind and water soil erosion? Include a description of proposed plans for clearing and grading as related to erosion control.**

To control soil erosion during site preparation due to wind, during site preparation the disturbed areas of the Site will be sprayed with water using water trucks. Keeping the soil surface moist will control dust and soil erosion. Contractors will be required to have water trucks On-Site to control dust.

To control soil erosion due to water, (erosion control devices) silt fences, temporary swales and hay bales as appropriate, will be installed in the immediate vicinity of the construction areas and other locations deemed necessary. Erosion control devices will prevent particles carried by water from entering waterways, storm water drains, drainage swales, and surface water detention areas. Contractors shall be responsible for maintaining appropriate erosion control devices.

Silt barriers/floating turbidity barriers will be used during project construction that may impact the adjacent surface water. Turbidity barriers will prevent turbidity in water in the vicinity of the earthwork location from propagating to other areas of the surface water pond.

Gravel will be placed at the entrance to the Site to clean mud from truck tires. Gravel will minimize the amount of mud and soil carried off-site by trucks. As road and parking lots are paved during the construction phase, road sweepers will be used to remove dirt and other material from paved areas to prevent debris and soil from reaching storm drains.

D. To what degree and in what location(s) will the development site be altered by fill material? If known, specify the source location and composition of the fill. Also identify the disposal location for any overburden or spoil.

The Project is approximately 496 acres in area. Approximately 398 acres of the Property has historically been used as a C&D debris landfill or MRF facilities, which currently has inconsistent grades as well as several large stockpiles of debris. To meet the required grades and elevations for construction of the development and to comply with zoning requirements, significant spreading and shaping of the debris will be required. Spreading of debris will be in only those areas that currently have in-place debris and are or were permitted to receive the debris. It is not anticipated that material will be hauled and disposed Off-Site.

Fill material required for the Development is expected to be generated from the lake excavation activities that are required to construct stormwater retention ponds on the Property. The material from the lake is expected to consist of limestone and sand.

Pervious areas will receive two feet of acceptable cover material in accordance with County and State requirements for closing the landfill. Buildings, parking lots and other impervious surfaces will function as the cover/cap system for other areas of the Property.