SHIP at Jakes Branch County Park Fact Sheet

Challenges of Ocean County Soils

Looking at existing communities within the Barnegat Bay watershed, nearly 88% of the soils may be characterized as sands and loamy sands. These sandy soils have nearly 50% pore space with rapid water infiltration rates ranging 6-20 inches per hour, equating to relatively efficient drainage.

However, with land development comes soil compaction, which reduces the water infiltration rate to near zero - making these soils almost as dense as concrete. When the soil becomes this dense, our lawns and athletic fields are forced to have shallow root systems. This is problematic because these landscapes are then unable to absorb and utilize water properly, making their growth unsustainable and ultimately preventing absorption of pollutants before they enter stormwater runoff.

Why Jakes Branch County Park?

Jakes Branch County Park in Beachwood, New Jersey has some of the most compacted soil in the region. Over the long term, practices that de-compact soil and sustain adequate soil organic matter content are perhaps the cheapest and one of the most effective water conservation practices for landscapes and farmland.

Healthy soils have the ability to accept, hold and release water and nutrients to plants, helping regulate water flow to our streams and the bay. The addition of organic material is a relatively simple and highly effective method to improve the long-term health of soil. The amount and type of organic material needed to optimize soil health and thereby improve soil function, is site-specific and dependent on a number of factors and soil properties.

What's Being Tested?

Soil Bulk Density -- Disturbed soils in Ocean County can be severely compacted (high soil bulk density) due to construction activities. Restoration treatments on trial turf plots will be compared for a reduction in soil bulk density (de-compaction). Additionally, restoration treatments will be compared to an untreated control soil.

Soil Organic Matter (SOM) Content -- Excluding the litter layer, soils in Ocean County are naturally low in SOM content. Disturbance during site development typically destroys the litter layer leaving behind soil that is low in SOM. Restoration treatments on trial turf plots will be compared for increases in SOM by depth. Additionally, restoration treatments on trial turf plots will be compared to an untreated control soil. Soil organic matter content will be determined by Walkley-Black method (Nelson and Sommers, 1996) on the composite of 5 subsamples per plot collected from the 0- to 300-mm depth zone of each plot (experimental unit). Laboratory analysis of samples will be conducted by trained specialists in the Rutgers Soil Testing Laboratory.

Soil Water Infiltration Rate -- Disturbed soils in Ocean County can be severely compacted (high soil bulk density) due to construction activities. Compaction can drastically reduce the ability of soil to infiltrate water from rain or irrigation. Restoration treatments on trial turf plots will be compared for increases in water infiltration rate. Additionally, the water infiltration rate of soil receiving restoration treatments will be compared to the water infiltration rate of untreated control soil.

Soil Cover -- Vegetative cover of soil is an indirect indicator of soil health/quality; poor soil health is typically characterized by low vegetative cover. Restoration treatments on trial turf plots will be compared for increases vegetative by turf and the persistence of this cover over time. Additionally, the vegetative cover of soil receiving restoration treatments will be compared to the vegetative cover of untreated control soil. Greater and persistent vegetative cover of soil will be indicator that soil health has been improved and maintained.