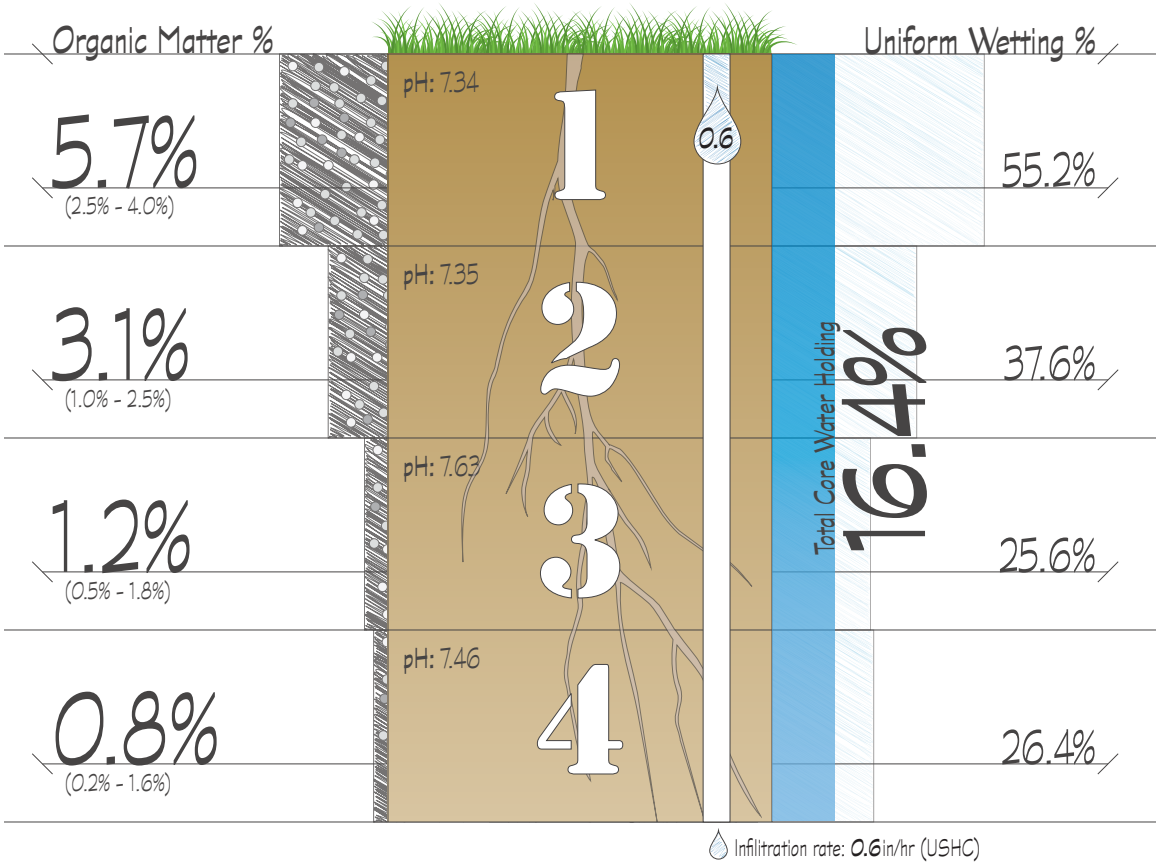
SOIL MECHANIX

FPG PHYSICAL PROPERTIES LABS

Sample Name: GRN#6 | Sample ID: E820-7 | Received: 5/8/2020

Soil Respiration: 2.00 | Soil Solution pH: 6.63 | Root Length: 4.00



Solids

Bulk Density: 1.45 g/cm^3 Particle Density 2.02 g/cm^3

Total Solids
71.6%

Porosity

Total Porosity
28.4%

19.6%
Capillary

8.8%
Air

Particle Distribution %

Depth	10 Gravel	18 Very Coarse	35 Coarse	60 Medium	80 Medium	100 Medium/Fine	140 Fine	270 Very Fine	S&C
1"✓	0.0	0.7	17.8	56.0	15.1	4.8	3.4	1.4	0.2
2"✓	0.0	2.0	20.9	53.2	14.7	3.5	3.2	1.5	0.2
3"x	0.0	2.5	22.7	51.9	12.3	3.3	2.5	3.8	0.3
4"✓	0.0	2.1	25.8	52.2	13.5	2.3	2.5	0.8	0.0

USGA Specifications									
	NMT 3%		NLT 60% Combined		NMT 20% Combined		NMT 5% Combined		
	NMT 10% Combined							NMT 10% Combined	

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Soil Respiration:

Soil Mechanix utilizes Solvita® Soil Low-Level CO_2 detector probes in accordance with a protocol developed to measure short-term soil respiration. The release of carbon from soil as CO_2 due to the actions of soil organisms is a dynamic feature of all soils and is particularly noticeable in soils managed biologically. This activity reflects the interplay of microbes with added and sequestered carbon.

Basal respiration measures CO_2 respiration using fresh, minimally disturbed soils.

Solvita Test	CO_2 ppmv	CO_2-C as mg/l	Soil Biological Fertility Class
5	30,000	200	High Biology Soil
4	10,000	75	Medium Biology Soil
3	3,000	30	Medium-Low Biology Soil
2	1,000	15	Low Biology Soil
1	500	< 5	Soil very low in microbes

Soil Solution pH:

The Soil Solution pH is measured after performing a water holding test with your oven dried soil sample. Soil Mechanix runs 50 ml of 7.0 pH distilled water through each 1" sample and measures pH of the soil solution. While this test does not precisely indicate the pH of the soil, it does demonstrate whether the 7.0 pH water changes and offers you a reference toward acidity or alkalinity.

Unsaturated Soil Hydraulic Conductivity:

Unsaturated soil hydraulic conductivity is the measure of how water flows through a soil profile when the soil is not saturated with water.

Bulk Density:

Bulk density is an indicator of soil compaction and health. Bulk density affects rooting depth and restrictions, infiltration and available water capacity, porosity, nutrient availability and soil microbe activity.

Soil Texture	Ideal Densities for Plant Growth (g/cm³)	Densities That Affect Root Growth (g/cm³)	Densities That Restrict Root Growth (g/cm³)
Sands, loamy sands	< 1.60	1.69	> 1.80
Sandy loams, loams	< 1.40	1.63	> 1.80
Sandy clay loam, clay loams	< 1.40	1.60	> 1.75
Silts, silt loams	< 1.40	1.60	> 1.75
Silt loams, silty clay loams	< 1.40	1.55	> 1.65
Sandy cays, silty clays, clay loams	< 1.10	1.49	> 1.58
Clays (> 45% clay)	< 1.10	1.39	> 1.47

Source: USDA United States Department of Agriculture

Particle Density:

Particle Density is the volumetric mass of the solid soil. It differs from bulk density because the volume used does not include pore spaces. Particle density depends on the chemical composition and crystal structure of solid mineral particles and is not affected by pore space.

Organic Matter %:

Organic Matter % is calculated by Loss on Ignition (LOI) testing. Turfgrass leaf blades are included in the LOI testing and will be a part of the Organic Matter percentage captured.

Total Core Water Holding %:

This is a measure of the water holding capacity of your soil sample. It is a very important agronomic characteristic of soil. Lower water holding capacities reach saturation sooner than soils with higher water holding capacities and are subject to leaching losses of nutrients and pesticides.

Uniform Wetting %:

This is a measure of a mass of water that is retained in a mass of disturbed, oven dried soil. For example, if water holding is 62%, this means the weight of the dry soil increased by 62% and released the rest of the testing water quantity used. The purpose of this test is to indicate if any 1" sections of the sample are the same, or higher, or lower in comparison with each other in order to see how uniform the soil is wetting.