STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

DWW SOLAR, II, LLC PETITION FOR DECLARATORY RULING THAT NO CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED FOR A 26.4 MEGAWATT AC SOLAR PHOTOVOLTAIC ELECTRIC GENERATING FACILITY IN SIMSBURY CONNECTICUT	)	PETITION NO. 1313
	)	SEPTEMBER 5, 2017

DWW SOLAR II, LLC'S RESPONSES TO THE DEPARTMENT OF AGRICULTURE'S INTERROGATORIES

The petitioner, DWW Solar II, LLC ("DWW") respectfully submits this response to the Department of Agriculture's First Set of Interrogatories in the above-referenced Petition. In response to these Interrogatories, DWW states as follows:

Q1: To what extent did the petitioner consider statewide and locally important farmland soils (estimated to comprise approximately 115 acres) in the petition?

A1: As set forth in greater detail below, the petitioner did not consider locally important farmland soils in the petition. According to Planning for Agriculture – a Guide for Connecticut Municipalities (http://www.ctplanningforagriculture.com/farm-preservation-soils.php), locally important farmland soils have been identified only in the towns of Ashford, Chaplin, Eastford, Lebanon and New Milford. To Petitioner's knowledge, no such soils have been identified in Simsbury.

With respect to Farmland Soil of Statewide Importance, such soils are present at the site. Petitioner was in the process of evaluating such soils when the General Assembly passed P.A. 17-218, which identified the General Assembly's concern as Prime Farmland, and did not mention either statewide or locally important farmland.

That having been said, the Petitioner's proposed plan of development takes agricultural considerations into account. Given the proposed development of this project, the Petitioner does not anticipate that the Project will have permanent negative effects on any of the soil in the project area.

Q2: Was a site specific or more detailed soil survey considered for this project to map current agricultural soils and their range of characteristics throughout the site and

if not, why was it not considered and performed? Was there a verification of the NRCS Soil Survey map of the upland soils?

A2: Farmland soils were walked and shallow soil profiles were observed as part of the investigation for wetland soil types on the subject properties. Profiles meeting criteria of Prime Farmland map units were observed along with observations of gravelly and stony surfaces outside of the range of characteristics of some of the mapped upland soil phases. There was no attempt to remap upland soil phases for the Siting Council filing. A Site Specific Soil Survey was not performed as the activity had no identifiable utility for the Project.

Q3: Given the importance of developing a meaningful restoration plan for the agricultural soils contained on this site, would the petitioner agree to conduct a site specific survey of agricultural soils, using a soil scientist qualified for conducting such survey?

A3: Qualified soil scientists have performed all of the soil evaluation efforts performed for the Project to date and the Petitioner will continue to employ qualified professionals as needed to execute the Project. As noted above, the Petitioner does not see the benefits of a Site Specific Soil Survey.

Q4: In addition to the process cited in the decommissioning plan, which seems to indicate an attempt to restore the site to previously existing conditions, was any mitigation considered for this project, including but not limited to purchasing development rights on an equivalent property or restoration of farmland in the area, to offset the loss of available agricultural land in the region?

A4: The Petitioner agreed to consider encumbering the subject properties and provide the Department of Agriculture with an easement or other suitable land right that would protect the land from future non-agricultural development. The Department declined Petitioner's offer of encumbrance of future development rights at the Project Site.

Q5: Were any easements secured to enable the petitioner to claim in Section 4 (page 13) that the project will result in the "preservation of 133 acres of forest, wetlands and open space"?

A5: The preservation of the 133 acres in question would occur as a result of the proposed development. The Petitioner plans to purchase the Project Site upon successfully securing permits for the Project, and would have the ability to preserve the 133 acres for the life of the Project and beyond if a conservation or agricultural easement were placed on the land.

Q6: In section 3.5 of the petition (page 9), the petitioner states: "The solar panels will be mounted on fixed metal framework or "racking". The racks will be arranged in rows facing due south and will be supported on pile foundations arranged in rows spaced approximately 13 feet apart to enable access by pickup truck or ATV." Please quantify, to the extent possible, (1) the number of rows of racking that will be placed on prime farmland soils, (2) the number of rows of racking that will be

placed on statewide or locally important farmland soils, (3) the number of racking posts that will be driven into prime farmland soils and their approximate depth, and (4) the number of racking posts being driven into statewide and locally important farmland soils and their approximate depth.

A6: (1) 180 rows of panels;

(2) 210 rows of panels;

(3) Approximately 4,900 posts/piles driven to 12 to 14 foot depth depending upon final geotechnical analysis; and

(4) Approximately 4,700 posts/piles driven to 12 to 14 foot depth depending upon final geotechnical analysis.

Q7: Please calculate and display the footprint and approximate location and acreage of all trenching, grading, equipment pad areas overlain on the soil map to better display and quantify soil disturbance.

A7: A map has been prepared as requested. It is entitled "Farmland Soils and Proposed Grading Limits," and it is attached to these responses. The approximate acreage of conduit trenching and equipment pads is 4.8 acres. The approximate acreage of re-grading is 31.3 acres.

Q8: Did the petitioner consider designing for any production agriculture on the site, in concert with the solar project (e.g., providing space and access for bee hives and/or grazing animals)?

A8: The petitioner proposes to manage the existing agricultural fields in a grass/legume mix or native warm season grasses or a combination of both cover types. This management is consistent with land placed in conservation reserve where the organic matter content, biodiversity of the soil, and soil structure recover from continuous tillage. There are opportunities to incorporate legumes and other flowering forbs in the mixes to enhance honey bee and other pollinator habitat. The Petitioner has not considered the incorporation of grazing animals or other active agriculture in the Project.

Q9: What, if any, fertilizers or pesticides are expected to be used during the life of the project, and for what reason(s)?

A9: Eight soil samples were submitted for laboratory analysis for soil properties including soil texture, pH, macro- and micro nutrients, cation exchange capacity, base saturation, and organic matter content. Recommendations for the application of fertilizer to promote the establishment of a vegetative cover were solicited. Based on the results, an initial application of lime at a rate of 2.5 tons per acre and 60 to 140 pounds of K_2O per acre would be needed to establish a grass legume cover on the site. Most samples came back with high levels of phosphorus and adequate nitrogen to establish grasses and legumes. If warm season grasses are planted, the K_2O addition would be reduced and on average 40 lbs of N per acre would be added to enhance establishment. No other fertilizer inputs

are anticipated during the life of the project unless there were a failure in vegetative cover. Applications of pesticides are not required to implement the Project.

Q10: Were more environmentally friendly alternatives explored for supporting the myriad panels to be installed at the site? Please explain how the developer arrived at the choices selected (it is somewhat unclear in the documentation provided).

A10: The Petitioner objects to this Interrogatory as it is vague and ambiguous. Notwithstanding the foregoing objection, the Petitioner states that the Project entails the development of a solar voltaic electricity generating facility of a certain size and scope. The panels proposed are an integral part of that Project and have been placed in locations to optimize a variety of conditions including the need for tree clearing, distance from neighboring properties, and efficiency of generation.

Q11: Please describe the process by which this site was selected and prioritized over other sites which may have had less of an impact to prime, statewide or locally important farmland.

A11: The process that led to the selection of this site is described in considerable detail in Section 3.3 of the Petition, and the Petitioner refers the Department to that portion of the Petition. More generally, the principle characteristics for an ideal site are: large size tract, no- or readily avoidable environmental constraints (e.g. wetlands, rare species, etc.), generally level topography, compatible land use regulation, proximity to a transmission or distribution voltage substation and the site in question must have a landowner that is willing to sell the site or enter into a long-term lease with a solar developer. Many sites were evaluated and discarded due to failure to meet some or all of these requirements.

Q12: Will topsoil, subsoil, and substratum soil material be stockpiled for reuse? Where will this be located and how will it be stabilized? What mechanisms are in place to assure these materials will stay on site?

A12: There is very little grade change proposed in the agricultural fields so there is no plan to wholesale strip and stockpile topsoil. Refer to the Farmland Soils and Proposed Grading Limits figure in Exhibit B of the Petition. This figure depicts the areas where grading will occur. In those areas topsoil will be removed and temporarily stockpiled on site. Topsoil would be reapplied after desired grades have been achieved in order to promote vegetative stabilization of the site. The only other excavation activity needed for construction would be the cable trenches which are generally aligned with the existing perimeter roads around the tilled fields. The contractor would be directed to segregate topsoil in areas of active agriculture. The topsoil would be replaced at the surface after the cables are installed.

Q13: Were any samples taken and georeferenced to determine existing soil physical and chemical properties to use as a baseline?

A13: Yes. Eight composite soil samples were collected from Ap horizons and the locations of the sample points were recorded using a handheld GPS unit. These topsoil samples were submitted for laboratory analysis of organic matter content, texture, pH, and standard

nutrient analysis at the UMass Soil Lab. A figure showing the locations of the sample points and copies of the lab results are attached.

Q14: Will there be a soil scientist on site during soil disturbance activities to assist in directing trenching and grading to correctly separate and replace soil horizons and stockpiling?

A14: A soil scientist may be present during construction of the facility as activities or conditions warrant. Prior to the start of construction, contractor personnel will be provided with training on all of the compliance measures, including topsoil preservation.

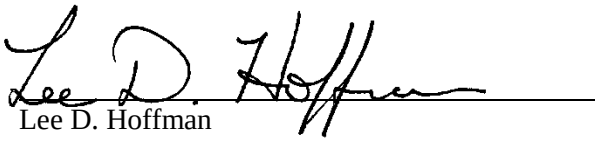
Q15: Is the petitioner willing to prepare and submit more detailed site development and restoration plans and if so, when can this be submitted?

A15: Yes, as discussed previously with the Department of Agriculture, the Petitioner is willing to prepare an Agricultural Protection Plan which would include details regarding avoiding impact to farmland soils during construction and operation of the facility, planting and vegetation maintenance procedures, and restoration procedures. This Plan would be submitted as part of the Development and Management Plan.

Q16: Is the petitioner willing to set aside separate bonding for soil restoration activities and if so, when will this be incorporated into the decommissioning plan?

A16: The Petitioner objects to this Interrogatory as it pre-supposes that soil restoration activities will be needed if the Project is constructed, which has not been proven. Petitioner further objects to this Interrogatory as it pre-supposes that bonding is the only methodology whereby soil restoration activities can be assured of completion. Notwithstanding the foregoing objection, the Petitioner states, as part of the D&M Plan process, the Petitioner would be willing to include the cost of any projected soil restoration that the Siting Council deems is required for this project as part of the decommissioning plan. The Petitioner would then be willing to fund such activities from the proceeds of the Project over time from Project revenues, much as it would be willing to fund other appropriate decommissioning costs.

Respectfully Submitted,
DWW Solar II, LLC

By: 

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lhoffman@pullcom.com
Its Attorney

CERTIFICATION

I hereby certify that on September 5, 2017, the foregoing was delivered by electronic mail and regular mail, postage prepaid, in accordance with § 16-50j-12 of the Regulations of Connecticut State Agencies, to all parties and intervenors of record, as follows:

Jesse A. Langer
Robert M. DeCrescenzo
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New Haven, CT 06510
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Bureau of Energy and Technology Policy
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Alan M. Kosloff
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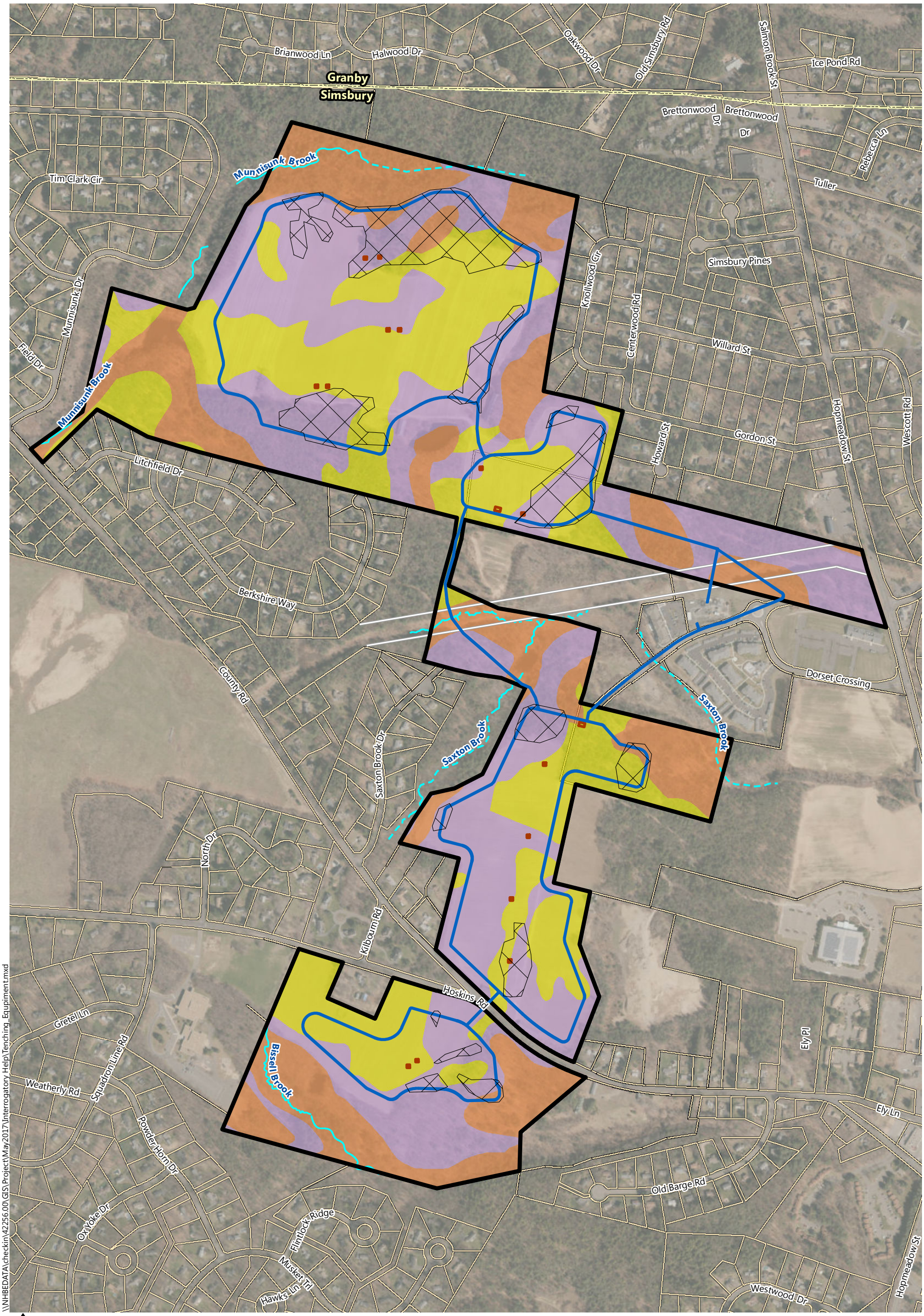
701 Hebron Avenue
P.O. Box 1530
Glastonbury, CT 06033

Lee D. Hoffman
Commissioner of the Superior Court

ATTACHMENT

SUPPLEMENT TO RESPONSE A7:

Farmland Soils and Proposed Grading Limits



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Tobacco Valley Solar | Simsbury, Connecticut

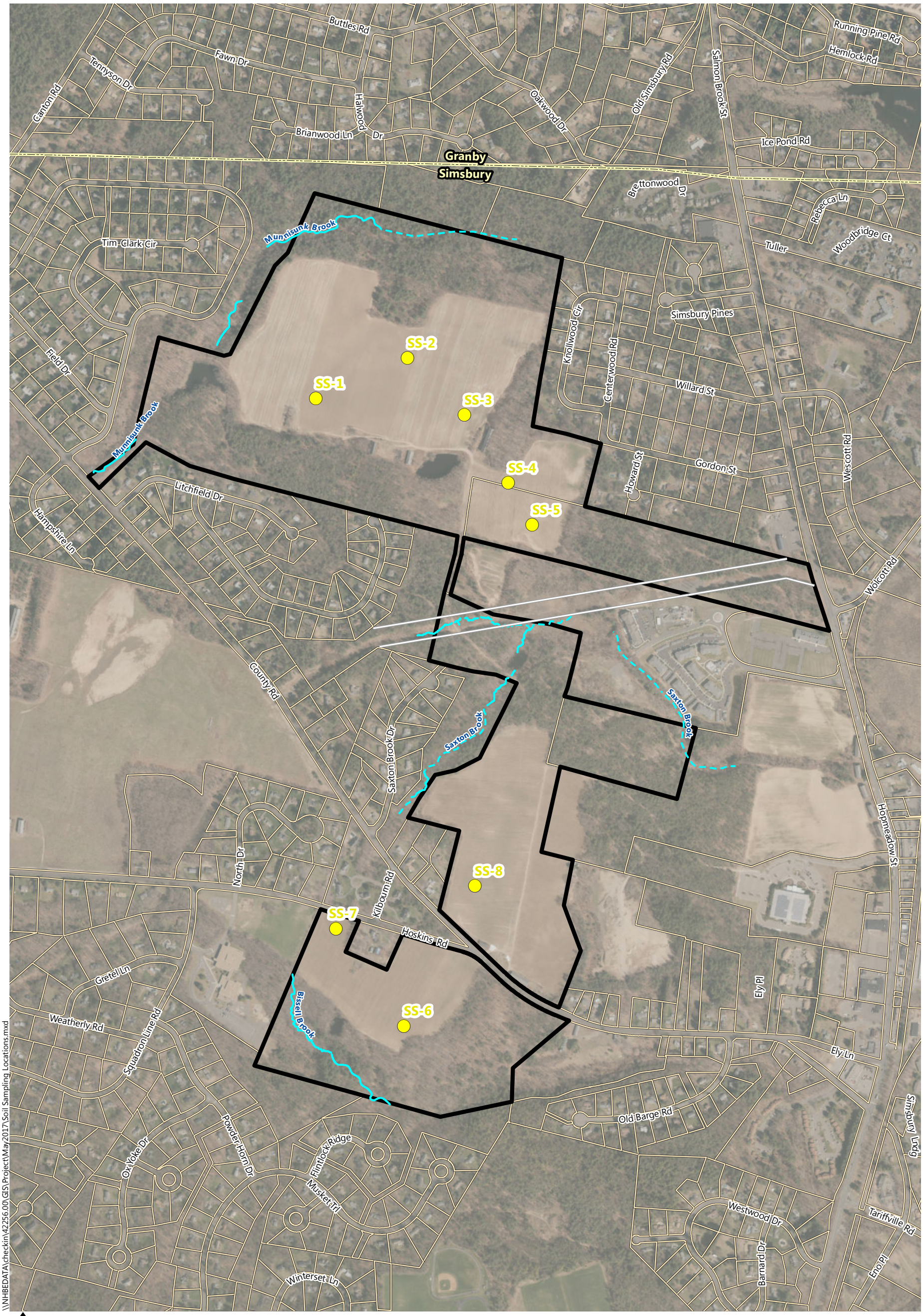
Farmland Soils and Proposed Grading Limits

Source: VHB, CTDEEP, ESRI, NRCS

ATTACHMENT

SUPPLEMENT TO RESPONSE A13:

Soil Sampling Locations



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Tobacco Valley Solar | Simsbury, Connecticut

Soil Sampling Locations

Source: VHB, CTDEEP, ESRI

ATTACHMENT

SUPPLEMENT TO RESPONSE A13:

Soil Sampling Lab Results

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Particle Size Analysis - Comprehensive

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:
Sample ID: SS 1

Order Number: 32149
Lab Number: X170804-101
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	59.9
Silt	0.002-0.05	29.8
Clay	<0.002	10.3

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	10.1
Coarse	0.5-1.0	23.4
Medium	0.25-0.5	16.8
Fine	0.10-0.25	7.6
Very Fine	0.05-0.10	2.0

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	18.2
Medium	0.005-0.02	10.0
Fine	0.002-0.005	1.6

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	96.5
1.00	#18	86.8
0.50	#35	64.2
0.25	#60	48.0
0.10	#140	40.7
0.053	#270	38.7
0.02	20 um	21.1
0.005	5 um	11.5
0.002	2 um	10.0

USDA Textural Class: coarse sandy loam

Gravel Content: (%) 3.5

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Soil Test Report

Prepared For:

Jeffrey Peterson
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1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 1

Order Number: 32074
Lab Number: S170803-106
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

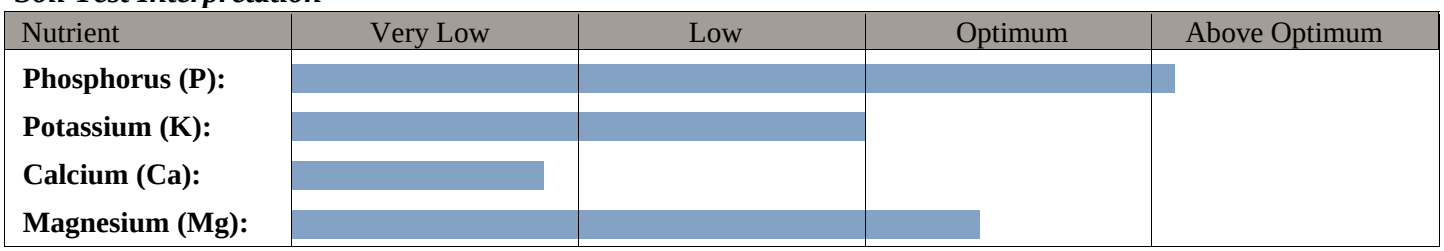
Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.3	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	16.4	4-14
Potassium (K)	100	100-160
Calcium (Ca)	444	1000-1500
Magnesium (Mg)	77	50-120
Sulfur (S)	5.3	>10
Micronutrients *		
Boron (B)	0.0	0.1-0.5
Manganese (Mn)	2.4	1.1-6.3
Zinc (Zn)	5.0	1.0-7.6
Copper (Cu)	1.1	0.3-0.6
Iron (Fe)	3.0	2.7-9.4
Aluminum (Al)	38	<75
Lead (Pb)	0.9	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	10.7	
Exch. Acidity, meq/100g	7.6	
Base Saturation, %		
Calcium Base Saturation	21	50-80
Magnesium Base Saturation	6	10-30
Potassium Base Saturation	2	2.0-7.0
Scoop Density, g/cc	1.28	
Optional tests		
Soil Organic Matter (LOI), %	2.5	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation



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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	0	0	60

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	0	60

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	0	0

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	0	0

Comments:

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General References:

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UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management

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Particle Size Analysis - Comprehensive

Prepared For:

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401-272-8100

Sample Information:
Sample ID: SS 2

Order Number: 32149
Lab Number: X170804-102
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	62.6
Silt	0.002-0.05	27.2
Clay	<0.002	10.2

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	9.6
Coarse	0.5-1.0	15.0
Medium	0.25-0.5	18.6
Fine	0.10-0.25	14.6
Very Fine	0.05-0.10	4.8

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	17.5
Medium	0.005-0.02	9.3
Fine	0.002-0.005	0.4

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	92.2
1.00	#18	83.4
0.50	#35	69.5
0.25	#60	52.4
0.10	#140	38.9
0.053	#270	34.5
0.02	20 um	18.3
0.005	5 um	9.8
0.002	2 um	9.4

USDA Textural Class: sandy loam

Gravel Content: (%) 7.8

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Soil Test Report

Prepared For:

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Sample Information:

Sample ID: SS 2

Order Number: 32074
Lab Number: S170803-107
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

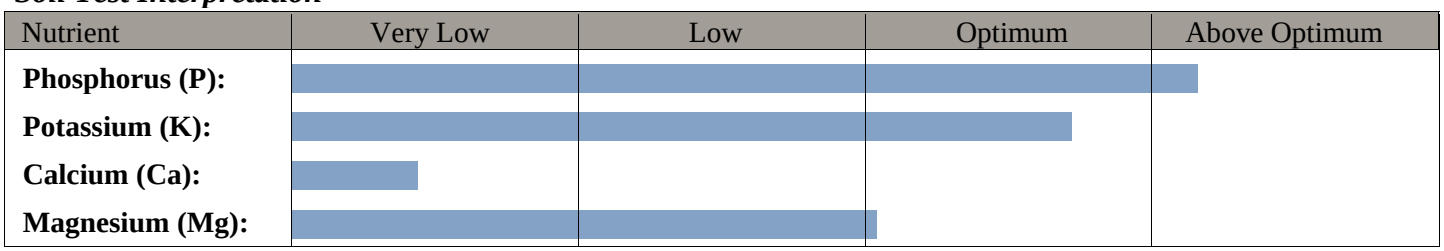
Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.0	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	18.2	4-14
Potassium (K)	137	100-160
Calcium (Ca)	212	1000-1500
Magnesium (Mg)	53	50-120
Sulfur (S)	5.6	>10
Micronutrients *		
Boron (B)	0.0	0.1-0.5
Manganese (Mn)	1.9	1.1-6.3
Zinc (Zn)	2.8	1.0-7.6
Copper (Cu)	0.9	0.3-0.6
Iron (Fe)	4.6	2.7-9.4
Aluminum (Al)	60	<75
Lead (Pb)	0.7	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	10.9	
Exch. Acidity, meq/100g	9.1	
Base Saturation, %		
Calcium Base Saturation	10	50-80
Magnesium Base Saturation	4	10-30
Potassium Base Saturation	3	2.0-7.0
Scoop Density, g/cc	1.26	
Optional tests		
Soil Organic Matter (LOI), %	2.5	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation



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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
7000	0	0	0

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
7000	40	0	0

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
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Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
7000	40	0	0

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
7000	40	0	0

Comments:

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Particle Size Analysis - Comprehensive

Prepared For:

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401-272-8100

Sample Information:

Sample ID: SS 3

Order Number: 32149
Lab Number: X170804-103
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	68.6
Silt	0.002-0.05	22.7
Clay	<0.002	8.7

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	5.2
Coarse	0.5-1.0	11.9
Medium	0.25-0.5	28.0
Fine	0.10-0.25	18.9
Very Fine	0.05-0.10	4.5

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	15.0
Medium	0.005-0.02	6.9
Fine	0.002-0.005	0.8

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	98.0
1.00	#18	92.9
0.50	#35	81.2
0.25	#60	53.7
0.10	#140	35.2
0.053	#270	30.8
0.02	20 um	16.1
0.005	5 um	9.4
0.002	2 um	8.6

USDA Textural Class: sandy loam

Gravel Content: (%) 2.0

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Soil Test Report

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 3

Order Number: 32074
Lab Number: S170803-108
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	6.7	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	19.5	4-14
Potassium (K)	81	100-160
Calcium (Ca)	408	1000-1500
Magnesium (Mg)	155	50-120
Sulfur (S)	5.7	>10
Micronutrients *		
Boron (B)	0.1	0.1-0.5
Manganese (Mn)	1.0	1.1-6.3
Zinc (Zn)	1.0	1.0-7.6
Copper (Cu)	0.8	0.3-0.6
Iron (Fe)	1.4	2.7-9.4
Aluminum (Al)	26	<75
Lead (Pb)	0.4	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	5.4	
Exch. Acidity, meq/100g	1.9	
Base Saturation, %		
Calcium Base Saturation	38	50-80
Magnesium Base Saturation	24	10-30
Potassium Base Saturation	4	2.0-7.0
Scoop Density, g/cc	1.36	
Optional tests		
Soil Organic Matter (LOI), %	1.5	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
0	0	0	80

Comments:

-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
0	40	0	100

Comments:

-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
0	40	0	0

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
0	40	0	0

Comments:

General References:

Interpreting Your Soil Test Results	http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results
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Particle Size Analysis - Comprehensive

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:
Sample ID: SS 4

Order Number: 32149
Lab Number: X170804-104
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	61.4
Silt	0.002-0.05	27.9
Clay	<0.002	10.7

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	3.2
Coarse	0.5-1.0	16.4
Medium	0.25-0.5	28.4
Fine	0.10-0.25	9.9
Very Fine	0.05-0.10	3.6

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	17.5
Medium	0.005-0.02	8.8
Fine	0.002-0.005	1.5

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	79.4
1.00	#18	76.9
0.50	#35	63.9
0.25	#60	41.3
0.10	#140	33.5
0.053	#270	30.7
0.02	20 um	16.7
0.005	5 um	9.7
0.002	2 um	8.5

USDA Textural Class: sandy loam

Gravel Content: (%) 20.6

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Soil Test Report

Prepared For:

Jeffrey Peterson
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1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 4

Order Number: 32074
Lab Number: S170803-109
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

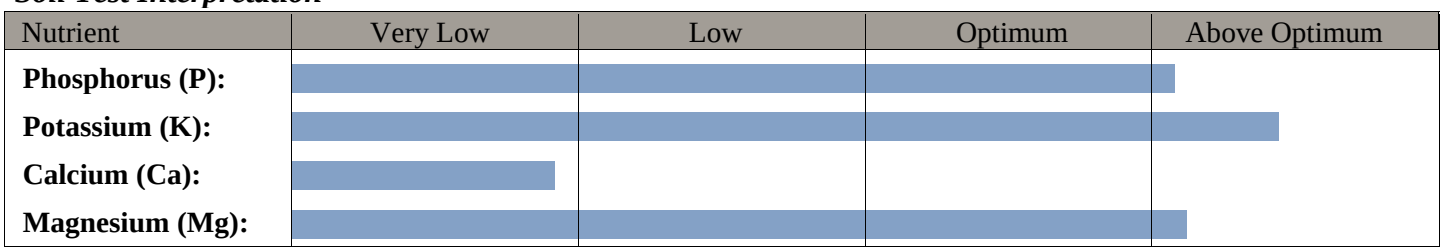
Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	6.1	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	15.8	4-14
Potassium (K)	172	100-160
Calcium (Ca)	470	1000-1500
Magnesium (Mg)	130	50-120
Sulfur (S)	5.7	>10
Micronutrients *		
Boron (B)	0.1	0.1-0.5
Manganese (Mn)	1.3	1.1-6.3
Zinc (Zn)	1.6	1.0-7.6
Copper (Cu)	0.9	0.3-0.6
Iron (Fe)	1.3	2.7-9.4
Aluminum (Al)	26	<75
Lead (Pb)	0.4	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	7.8	
Exch. Acidity, meq/100g	3.9	
Base Saturation, %		
Calcium Base Saturation	30	50-80
Magnesium Base Saturation	14	10-30
Potassium Base Saturation	6	2.0-7.0
Scoop Density, g/cc	1.28	
Optional tests		
Soil Organic Matter (LOI), %	2.5	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation



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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	0	0	0

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	40	0	0

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	40	0	0

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	40	0	0

Comments:

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Particle Size Analysis - Comprehensive

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 5

Order Number: 32149
Lab Number: X170804-105
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	59.5
Silt	0.002-0.05	29.9
Clay	<0.002	10.6

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	11.8
Coarse	0.5-1.0	18.6
Medium	0.25-0.5	18.0
Fine	0.10-0.25	8.6
Very Fine	0.05-0.10	2.5

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	18.4
Medium	0.005-0.02	10.8
Fine	0.002-0.005	0.7

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	85.7
1.00	#18	75.6
0.50	#35	59.6
0.25	#60	44.2
0.10	#140	36.8
0.053	#270	34.7
0.02	20 um	18.9
0.005	5 um	9.7
0.002	2 um	9.1

USDA Textural Class: coarse sandy loam

Gravel Content: (%) 14.3

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Soil Test Report

Prepared For:

Jeffrey Peterson
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1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 5

Order Number: 32074
Lab Number: S170803-110
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

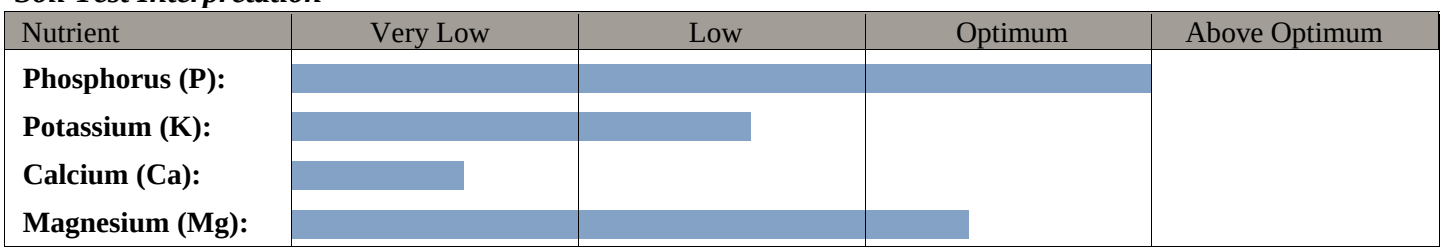
Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.5	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	14.2	4-14
Potassium (K)	80	100-160
Calcium (Ca)	296	1000-1500
Magnesium (Mg)	75	50-120
Sulfur (S)	4.0	>10
Micronutrients *		
Boron (B)	0.0	0.1-0.5
Manganese (Mn)	1.3	1.1-6.3
Zinc (Zn)	1.6	1.0-7.6
Copper (Cu)	0.6	0.3-0.6
Iron (Fe)	2.0	2.7-9.4
Aluminum (Al)	39	<75
Lead (Pb)	0.5	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	9.2	
Exch. Acidity, meq/100g	6.9	
Base Saturation, %		
Calcium Base Saturation	16	50-80
Magnesium Base Saturation	7	10-30
Potassium Base Saturation	2	2.0-7.0
Scoop Density, g/cc	1.39	
Optional tests		
Soil Organic Matter (LOI), %	2.2	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation



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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	0	0	80

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	0	100

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants.
Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-If planting into cool, wet soils, use a starter fertilizer containing 15-20 lbs P2O5 per acre.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	0	0

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	0	0

Comments:

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website: soiltest.umass.edu

Particle Size Analysis - Comprehensive

Sample Information:
Sample ID: SS 6

Order Number: 32149
Lab Number: X170804-106
Received: 8/4/2017
Reported: 8/11/2017

Prepared For:
Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	73.7
Silt	0.002-0.05	17.3
Clay	<0.002	9.0

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	7.5
Coarse	0.5-1.0	17.5
Medium	0.25-0.5	25.3
Fine	0.10-0.25	18.7
Very Fine	0.05-0.10	4.6

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	9.7
Medium	0.005-0.02	7.2
Fine	0.002-0.005	0.5

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	73.3
1.00	#18	67.8
0.50	#35	54.9
0.25	#60	36.4
0.10	#140	22.6
0.053	#270	19.3
0.02	20 um	12.2
0.005	5 um	6.9
0.002	2 um	6.6

USDA Textural Class: coarse sandy loam

Gravel Content: (%) 26.7

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Soil Test Report

Prepared For:

Jeffrey Peterson
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1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 6

Order Number: 32074
Lab Number: S170803-111
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

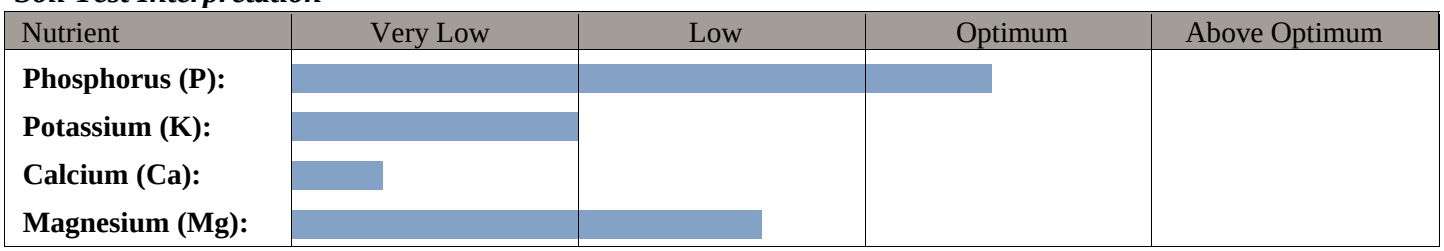
Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.1	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	8.6	4-14
Potassium (K)	50	100-160
Calcium (Ca)	162	1000-1500
Magnesium (Mg)	41	50-120
Sulfur (S)	3.8	>10
Micronutrients *		
Boron (B)	0.0	0.1-0.5
Manganese (Mn)	1.8	1.1-6.3
Zinc (Zn)	1.4	1.0-7.6
Copper (Cu)	0.6	0.3-0.6
Iron (Fe)	2.2	2.7-9.4
Aluminum (Al)	47	<75
Lead (Pb)	0.7	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	7.9	
Exch. Acidity, meq/100g	6.6	
Base Saturation, %		
Calcium Base Saturation	10	50-80
Magnesium Base Saturation	4	10-30
Potassium Base Saturation	2	2.0-7.0
Scoop Density, g/cc	1.38	
Optional tests		
Soil Organic Matter (LOI), %	3.8	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation



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website: soiltest.umass.edu

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	0	15	140

Comments:

-Your magnesium level is below optimum. Using limestone containing at least 10% calcium carbonate equivalence from magnesium sources is recommended.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants. Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-Apply half the recommended K2O at seeding, and the remainder after the second cut.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	15	180

Comments:

-Your magnesium level is below optimum. Using limestone containing at least 10% calcium carbonate equivalence from magnesium sources is recommended.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants. Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-Apply half the recommended K2O after the first cut, and the remainder after the second or third cut.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	15	60

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
5000	40	15	60

Comments:

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Particle Size Analysis - Comprehensive

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 7

Order Number: 32149
Lab Number: X170804-107
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	47.8
Silt	0.002-0.05	37.9
Clay	<0.002	14.3

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	8.6
Coarse	0.5-1.0	16.0
Medium	0.25-0.5	14.1
Fine	0.10-0.25	6.7
Very Fine	0.05-0.10	2.5

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	23.3
Medium	0.005-0.02	12.7
Fine	0.002-0.005	1.9

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	97.3
1.00	#18	89.0
0.50	#35	73.4
0.25	#60	59.7
0.10	#140	53.2
0.053	#270	50.8
0.02	20 um	28.2
0.005	5 um	15.8
0.002	2 um	13.9

USDA Textural Class: loam

Gravel Content: (%) 2.7

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Soil Test Report

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 7

Order Number: 32074
Lab Number: S170803-113
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

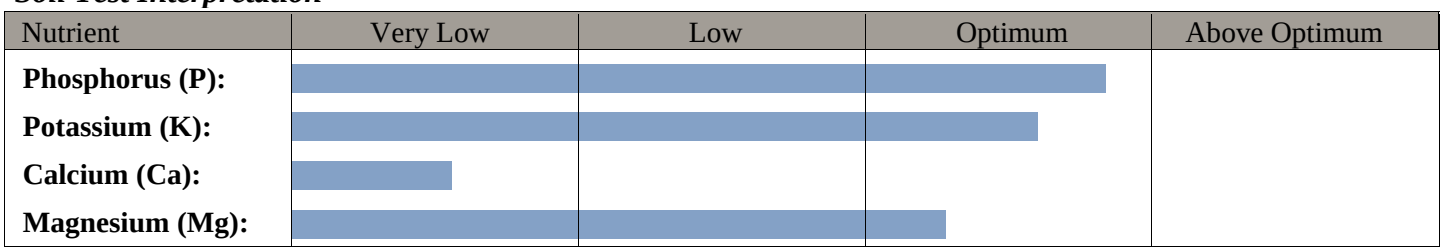
Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.1	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	12.4	4-14
Potassium (K)	131	100-160
Calcium (Ca)	286	1000-1500
Magnesium (Mg)	69	50-120
Sulfur (S)	6.9	>10
Micronutrients *		
Boron (B)	0.0	0.1-0.5
Manganese (Mn)	2.3	1.1-6.3
Zinc (Zn)	2.4	1.0-7.6
Copper (Cu)	0.7	0.3-0.6
Iron (Fe)	3.9	2.7-9.4
Aluminum (Al)	79	<75
Lead (Pb)	0.8	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	11.3	
Exch. Acidity, meq/100g	8.9	
Base Saturation, %		
Calcium Base Saturation	13	50-80
Magnesium Base Saturation	5	10-30
Potassium Base Saturation	3	2.0-7.0
Scoop Density, g/cc	1.14	
Optional tests		
Soil Organic Matter (LOI), %	3.3	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation



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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
6000	0	20	0

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants. Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
6000	40	20	0

Comments:

-Calcitic limestone is acceptable since soil magnesium levels are sufficient.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants. Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
6000	40	20	0

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
6000	40	20	0

Comments:

General References:

Interpreting Your Soil Test Results	http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results
For current information and order forms, please visit	http://soiltest.umass.edu/
UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management

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Particle Size Analysis - Comprehensive

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 8

Order Number: 32149
Lab Number: X170804-108
Received: 8/4/2017
Reported: 8/11/2017

USDA Size Fraction

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	81.3
Silt	0.002-0.05	13.3
Clay	<0.002	5.4

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	11.5
Coarse	0.5-1.0	30.5
Medium	0.25-0.5	27.7
Fine	0.10-0.25	9.7
Very Fine	0.05-0.10	1.8

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	7.7
Medium	0.005-0.02	5.0
Fine	0.002-0.005	0.6

Percent of Whole Sample Passing

Size (mm)	Sieve #	Whole Sample % of Sample Passing
2.00	#10	92.1
1.00	#18	81.5
0.50	#35	53.4
0.25	#60	27.9
0.10	#140	18.9
0.053	#270	17.2
0.02	20 um	10.2
0.005	5 um	5.6
0.002	2 um	5.0

USDA Textural Class: loamy coarse sand

Gravel Content: (%) 7.9

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Soil Test Report

Prepared For:

Jeffrey Peterson
VHB
1 Cedar Street, Suite 400
Providence, RI 02903

jpeterson@vhb.com
401-272-8100

Sample Information:

Sample ID: SS 8

Order Number: 32074
Lab Number: S170803-114
Area Sampled: 20 acres
Received: 8/3/2017
Reported: 8/10/2017

Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.7	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	7.9	4-14
Potassium (K)	36	100-160
Calcium (Ca)	132	1000-1500
Magnesium (Mg)	38	50-120
Sulfur (S)	4.0	>10
Micronutrients *		
Boron (B)	0.0	0.1-0.5
Manganese (Mn)	0.9	1.1-6.3
Zinc (Zn)	0.6	1.0-7.6
Copper (Cu)	0.4	0.3-0.6
Iron (Fe)	1.5	2.7-9.4
Aluminum (Al)	42	<75
Lead (Pb)	0.4	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	5.8	
Exch. Acidity, meq/100g	4.7	
Base Saturation, %		
Calcium Base Saturation	11	50-80
Magnesium Base Saturation	5	10-30
Potassium Base Saturation	2	2.0-7.0
Scoop Density, g/cc	1.55	
Optional tests		
Soil Organic Matter (LOI), %	1.2	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

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Recommendations for Grass/Clover or Trefoil; 20-60% legume-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	0	15	140

Comments:

-Your magnesium level is below optimum. Using limestone containing at least 10% calcium carbonate equivalence from magnesium sources is recommended.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants. Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-Apply half the recommended K2O at seeding, and the remainder after the second cut.

Recommendations for Grass/Clover or Trefoil; 20-60% legume-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	40	15	180

Comments:

-Your magnesium level is below optimum. Using limestone containing at least 10% calcium carbonate equivalence from magnesium sources is recommended.
-Alsike Clover is not recommended for seeding in Massachusetts due to adverse health issues for animals ingesting these plants. Birdsfoot Trefoil is not recommended in Massachusetts due to its aggressive growth characteristics in poorly drained soils.
-Apply half the recommended K2O after the first cut, and the remainder after the second or third cut.

Recommendations for Conservation Planting-Warm Season Grasses-Establishment

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	40	15	60

Comments:

Recommendations for Conservation Planting-Warm Season Grasses-Maintenance

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P2O5	Potassium, K2O
	lbs / acre		
3000	40	15	60

Comments:

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General References:

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For current information and order forms, please visit	http://soiltest.umass.edu/
UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management