

Nutrient Management Plan

Central Virginia Community College Lynchburg, Virginia

Prepared for
Central Virginia Community College
c/o: Ronald Parker
3506 Wards Road
Lynchburg, Virginia 24502

Prepared by
EEE Consulting, Inc.
8525 Bell Creek Road
Mechanicsville, Virginia 23116

May 2019

Prepared by: **Paul W. Leeger, QEP CNMP**
 Senior Environmental Scientist

Reviewed by: **Sara Rilveria, CLA**
 Senior Landscape Architect



EEE Consulting, Inc.

Environmental, Engineering and Educational Solutions

Nutrient Management Plan for the Central Virginia Community College

Prepared for:

Central Virginia Community College
C/O: Ron Parker
3506 Wards Road
Lynchburg, Virginia, 24502

Prepared By:

Paul W. Leeger/Certified Nutrient Management Planner
Certification No. 830
EEE-Consulting, Inc.
8525 Bell Creek Road
Mechanicsville, VA 23116

Location Information

Physical Address	<i>3506 Wards Road</i>
City State Zip	<i>3506 Wards Rd, Lynchburg, VA 24502</i>
Coordinates	<i>+37° 21' 31.61"</i>
NAD 83 Deg Min Sec	<i>- 79° 11' 05.21"</i>
VAHU6 Watershed Code	<i>JM10 – Blackwater Creek</i>
County	<i>Lynchburg</i>

Square Footage of Management Areas

Total	<i>20.09 acres (875,100 ft²)</i>
Area 1	<i>20.09 acres (875,100 ft²)</i>

Plan Start Date	<i>May 1, 2019</i>
Plan End Date	<i>May 1, 2022</i>


Planner Signature	
-------------------	--------------------------------------------------------------------------------------

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION AND SITE DESCRIPTION	1
1.1. Introduction	1
1.2. Site Description	1
1.3. Current and Future Turf Maintenance.....	2
2.0 SOIL SAMPLING AND ANALYSIS.....	2
3.0 NUTRIENT MANAGEMENT AREAS.....	3
3.1 Nutrient and Liming Applications	3
3.1.1. Nitrogen, Phosphorous and Potassium	3
3.1.2. Lime and pH	4
3.2 Problem Turfgrass Areas	4
3.3 Selection of Fertilizers	5
3.4 Pre and Post Emergent Herbicides.....	5
3.5 Precautions for Fertilizer Applications	5
4.0 ENVIRONMENTALLY SENSITIVE AREAS, STORMWATER MANAGEMENT FACILITIES, AND RECOMMENDED BUFFERS.....	5
5.0 OTHER TURF MANAGEMENT CONSIDERATIONS	6
6.0 RECORDKEEPING	7
7.0 REFERENCES	7

Tables

1. Soil Test Summaries
2. Nutrient Application Worksheet (NMA 1)

Figures

1. Project Location
2. Soil Sampling Areas
3. Nutrient Management Areas

Appendices

- A. Laboratory Soil Test Results April 2019

1.0 INTRODUCTION AND SITE DESCRIPTION

1.1. Introduction

This Nutrient Management Plan (NMP) is for Central Virginia Community College (CVCC) located in Lynchburg, Virginia at 3506 Wards Road (Figure 1).

The purpose of this NMP is to maintain and improve turf conditions and facilitate effective turf management while protecting water quality. This NMP addresses only the managed turfgrass areas at the campus. Management of other vegetated areas containing trees, flowering ornamentals, small shrubs and groundcovers is performed by the campus based on site-specific conditions including, but not limited to the type and status of vegetated areas, annual soil testing, and the occurrence of pests and weeds. This NMP is effective for three years (until May 1, 2022) or until major renovation or other changes to maintenance practices occur. This NMP should be used as a resource for planning the quantity and timing of turfgrass nutrient application based on sound agronomic practices.

1.2. Site Description

The 107-acre campus contains turfgrass in many areas within the campus grounds including around campus buildings, along roadways, and around and within parking lots. All turf areas have been seeded with a tall fescue blend (mix of fine leaved tall fescue and Kentucky bluegrass); and therefore, are categorized as cool season turf.

During the site visit in April 2019, most turf areas around campus generally appeared in good condition with exception to some areas of high traffic. The CVCC campus contains a large athletic field situated in the northwest corner of the campus. Campus staff indicated this field had low-use; thus, the field does not require more intensive management than other turf on the campus. None of the turf at the campus is irrigated.

Environmentally sensitive areas are also found at the CVCC campus. Two mapped streams, both unnamed tributaries to Burton Creek, are situated on the campus property. These streams are generally located in wooded areas, and one crosses Harvard Street where the Virginia Department of Transportation (VDOT) is maintaining the roadside turf. A dry detention pond and a bioretention facility were identified on the western portion of campus during the 2019 site visit. Section 4 addresses environmentally sensitive areas.

1.3. Current and Future Turf Maintenance

Current maintenance of turf at the CVCC campus consists of mowing only. The campus turf has not been actively fertilized in several years, and turf at the campus is mowed at a height of 4-inches by CVCC personnel.

Campus personnel have indicated the desire for increased management of turf in the future including application of fertilizers to improve turf conditions. However, they do not intend to intensively manage turf at the facility.

Campus staff are responsible for maintenance of turf including any mowing; herbicide, fertilizer, and lime application; as well as aeration and overseeding. It is the responsibility of the Plan Administrator to ensure this NMP is followed.

2.0 SOIL SAMPLING AND ANALYSIS

Using the NRCS Web Soil Survey application, EEE Consulting, Inc. (3e) personnel reviewed mapped soil data for the campus. Most of the soils at the campus are mapped as Cecil series, the remaining portions are mapped as Wilkes and Tallapoosa series. Although the natural soils have been modified by cut and fill activities, they still retain much of the mapped soil series characteristics and are classified as clay loams. Soils in problem areas were compacted with thin to no amounts of topsoil.

Areas of managed turfgrass were divided into three sampling areas based on topography, soil properties, and management intentions. Soil samples were collected from the turfgrass areas across the campus and submitted for laboratory analysis including pH, buffer pH, phosphorus, potassium, and other soil properties. Figure 2 shows the locations of the soil sampling areas as well as environmental sensitive areas, and Table 1 summarizes the laboratory results. Appendix A presents the soil laboratory data. No sampling was performed within wooded areas or landscaped areas.

Soil laboratory results were converted into nutrient management ratings based on the Virginia Nutrient Management Standards and Criteria (VNMS&C). Soil phosphorous concentrations rated Low- and potassium concentrations rated Medium and Medium-. Soil samples exhibited pH values ranging from 6.5 to 7.0. The pH target level for turfgrass is 6.2.

3.0 NUTRIENT MANAGEMENT AREAS

Based on the soil test results, current turf conditions, the intensity of use, overall visibility and aesthetic considerations, one Nutrient Management Area (NMA) at the campus has been established for this NMP. The single NMA will maintain and improve turf conditions, facilitate effective management and protect water quality. Figure 3 shows the nutrient management area. Table 2 presents a suggested application schedule for the nutrient management area discussed in greater detail in Section 3.1 below.

3.1 Nutrient and Liming Applications

3.1.1. Nitrogen, Phosphorous and Potassium

Nitrogen, phosphorous (P_2O_5) and potassium (K_2O) are the three macronutrients essential for healthy turf; and therefore, are the central focus of the NMP along with lime applications. Phosphorous and potassium recommendations found on Table 2 are based on the soil laboratory results, the VNMS&C, and the overall turf conditions as observed during the soil sampling site visit in April 2019. Nitrogen recommendations are based on turfgrass needs defined by VNMS&C, not soil test results which vary based on the type of turfgrass (cool vs. warm season) and level of management (standard vs. intensive).

The acceptable window for nitrogen application for cool season fescue turf at the campus is from March 9 until December 1. Although aggressive spring and summer nitrogen fertilization can result in lush, dark green foliage, this occurs at the expense of the turf root system. Turf with an inadequate root system will then struggle in the summer heat and moisture conditions. Additionally, too much nitrogen in spring and summer for cool season turf can result in leaching or runoff to nearby water bodies. For these reasons, only 0.5 pound of slow release nitrogen is recommended during April to May to provide a sustained growth response without a flush in shoot growth at the expense of the roots. The bulk of nitrogen should be applied in monthly increments from September through November.

Phosphorous and potassium recommendations found on Table 2 are based on the soil laboratory results, the VNMS&C, and overall turf conditions as observed during the soil sampling site visit in April 2019. This NMP uses the most restrictive application rate of phosphorous and potassium based on individual sample results where multiple sampling areas are part of the same NMA.

Phosphorous and potassium are less mobile than nitrogen and generally reside in soil for longer periods of time; therefore, the application timing of these two macronutrients is not as critical. Table 2 presents a suggested nutrient application schedule based on the turf needs and requirements set by VNMS&C. As indicated on the table, no more than 0.9

pounds of total nitrogen per 1000 ft² (using slow release forms) may be applied within a 30-day period per VNMS&C. The nutrient applicator may use their discretion with the exact ratio of nutrients applied per application provided the maximum rate of nitrogen per application and total annual rates of all three nutrients are not exceeded as detailed in Table 2. The nutrient applicator may also create a different schedule to suit their needs, provided the conditions are met on Table 2.

3.1.2. Lime and pH

Soil acidity is critical to plants as it affects the availability of nutrients in the soil and potential leaching of nutrients from the soil. Most turfgrasses prefer a slightly acidic soil pH of approximately 6.2 Standard Units (SU). Periodic lime applications are necessary for many Virginia soils to correct low pH, add buffering capacity, and provide secondary nutrients calcium and magnesium as well as some micronutrients. Liming rates provided by the laboratory are based on the soil pH and the pH buffer indices.

According to the laboratory results, no liming applications are needed for the first year of this NMP. These liming recommendations are only for the first year of the NMP. The soil should be tested for soil pH and Buffer pH in the late fall to winter of 2020 and 2021 to determine if additional liming is necessary for spring on 2021 and 2022, respectively, based on soil test results.

3.2 Problem Turfgrass Areas

Some turf areas have ineffective groundcover including turfgrass in poor condition. The poor turfgrass conditions are the result of poor soil quality, over-compaction, active erosion, steep slopes, shading, or poor soil moisture conditions. Areas where there is ineffective groundcover should be temporarily removed from active nutrient management until corrective measures can be applied to improve the turfgrass or groundcover conditions.

Corrective action options will vary by area but may include additional soil amendments (compost/topsoil) and lime, aeration or shallow tilling, and the use of mulch, turf mats and blankets. Alternative landscaping such as pavers, and other hardscape treatments may be the best alternative for some areas. If turfgrass is the desired groundcover, the soil should be retested for soil and buffer pH and adjusted accordingly with limestone as part of corrective action. Once turfgrass is re-established the areas may be included in NMA 1 for nutrient recommendations.

3.3 Selection of Fertilizers

Specific fertilizers and herbicides have not been selected as a part of this NMP to provide greater flexibility and cost savings. The nutrient applicator has the option to select either commonly used fertilizer blends already in stock or readily available, or they can use custom blends, a common practice in the commercial landscaping industry. Slow release nitrogen containing fertilizers are recommended. This NMP will require revision should the campus decide to use animal manures or Class B biosolids (not of exceptional quality).

3.4 Pre and Post Emergent Herbicides

Weed control is a necessary requirement for healthy turf and has been implemented in the past at the Campus. Herbicides with nitrogen included may be used in the spring provided the application of nitrogen follows the amount allowed by this NMP and the VNMS&C. However, additional straight application of herbicides without nitrogen additives may be required. The Virginia Cooperative Extension (VCE) Publication 430-533 (https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/430/430-532/430-532_pdf.pdf) presents a detailed discussion of pre and post emergent herbicides for cool season turf.

3.5 Precautions for Fertilizer Applications

General precautions for fertilizer application include:

- Avoid applying fertilizers on steep slopes 48-hours prior to a rain event.
- Do not apply fertilizers to frozen or snow-covered ground, nor should they ever be used as ice melt.
- Avoid/minimize application of fertilizers to impervious areas such as parking lots, roads, and sidewalks, and within 25 feet of environmentally sensitive areas and stormwater collection/management facilities.
- Remove any granular materials that land on impervious surfaces by sweeping and collecting, and either put the collected material back in the bag or spread it onto the turf.

4.0 ENVIRONMENTALLY SENSITIVE AREAS, STORMWATER MANAGEMENT FACILITIES, AND RECOMMENDED BUFFERS

Environmentally sensitive areas were identified on campus as shown on Figures 2 and 3:

- A dry detention basin located along the west side of the campus, south of Merritt Hall;
- A bioretention facility is located in the northeast portion of the campus;
- A stream located in the wooded central part of the CVCC campus flows north-northwest crossing US501 toward Burton Creek;

- A stream located east of the main CVCC campus crosses small sections of the campus in a wooded area and then flows north crossing Old Wards Road toward Burton Creek;
- Steep areas around the eastern parking lot are considered environmentally sensitive areas. These areas should not be fertilized due to the slopes being greater than 15% as defined in the VNMS&C.

A no-fertilizer/pesticide application buffer area of at least 25 feet and preferably 50 feet should be established around these sensitive areas. Where practicable, native vegetation may be an alternative to turf in the buffer areas. Turf in and around the detention basin and the bioretention facility should be mowed at a greater height.

The identification of sensitive natural resource areas such as wetlands and streams is based on the publicly available National Hydrologic Dataset and the U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory Maps. Field mapping of other wetlands and streams that may exist on the campus was outside the scope of this NMP.

5.0 OTHER TURF MANAGEMENT CONSIDERATIONS

Aeration - Extensive core cultivation/aeration in the late summer to early fall is recommended for the campus. Core aeration is very disruptive to surface smoothness, but it is the best way to relieve the physical effects of soil compaction and increase soil oxygen levels.

Grass Seed Type - Virginia Turfgrass Variety Recommendations: https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-66/SPES-66.pdf - should be referenced when selecting seed mix for over-seeding. The seed type should be suitable to regional environmental conditions.

Iron - Iron applications (particularly foliar applications) may periodically be used for enhanced greening as an alternative to nitrogen. These applications are most beneficial if applied in late spring through summer for cool season grasses and in late summer/fall applications for warm-season grasses. Since iron is a micronutrient, its application levels are very low. The color response is short-lived (typically two to three weeks) because the iron-induced color response in the leaves is removed by mowing.

Returning and Management of Grass Clippings - The recycling of grass clippings on turf should be encouraged as an effective means of recycling nitrogen, phosphorus, and potassium. Where aesthetics allows, all clippings from mowing events should be returned to the turf rather than discharging them onto sidewalks or streets. Clippings should not be blown onto impervious surfaces or surface waters, dumped down stormwater drains, or piled outside where rainwater will leach out the nutrients creating the potential for nutrient loss to the environment.

Spreader Equipment Calibration - Spreader equipment calibration is critical to NMP implementation. The fertilizer applicator should supply equipment calibration records to the campus facility manager on a routine basis.

6.0 RECORDKEEPING

Proper NMP implementation requires diligent record keeping of fertilizer, lime and herbicide applications, and turfgrass conditions. Important information to retain with this NMP includes soil tests reports; spreader settings; calibration results, dates of fertilizer application and rates applied; seeding or renovation; and unusual stresses caused by disease, drought, and pests. This information will also provide the background needed for future revisions of the NMP.

7.0 REFERENCES

Nutrient Management Training and Certification Regulations 4VAC50-85 (effective date November 23, 2014)

Virginia Nutrient Management Standards and Criteria (Revised July 2014):
<https://www.dcr.virginia.gov/document/standardsandcriteria.pdf>

Spring and Summer Lawn Management Considerations for Cool-Season Turfgrasses
430-532: https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/430/430-532/430-532_pdf.pdf

Virginia Cooperative Extension Publication - Virginia Turfgrass
Variety Recommendations: https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/spes/spes-66/SPES-66.pdf

United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS), Web Soil Survey:
<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

Tables

Table 1 - Soil Test Summaries

Site: Central Virginia Community College									
Lab: Waypoint Laboratories									
Sample Date: 04/17/2019									
Soil Sampling Area ID	Square Feet	Soil pH (SU)	Buffer pH (S.U.)	P (Mehlich I) (ppm)	P (H/M/L)	K (Mehlich I) (ppm)	K (H/M/L)	Soil description	Turf Species
CV-1	484,604	7.0	DNC	0	L-	68	M	Reddish Brown, Clay Loam	Cool season, Fescue Blend
CV-2	173,074	6.5	DNC	0	L-	74	M	Reddish Brown, Clay Loam	Cool season, Fescue Blend
CV-3	217,422	6.7	DNC	0	L-	50	M-	Reddish Brown, Clay Loam	Cool season, Fescue Blend

Notes: SU = Standard Units; ppm = parts per million; P and K ratings are from Virginia Nutrient Management Standards & Criteria.
DNC* = Buffer pH did not compute because the pH was above 6.2, according to Waypoint Analytical personnel.

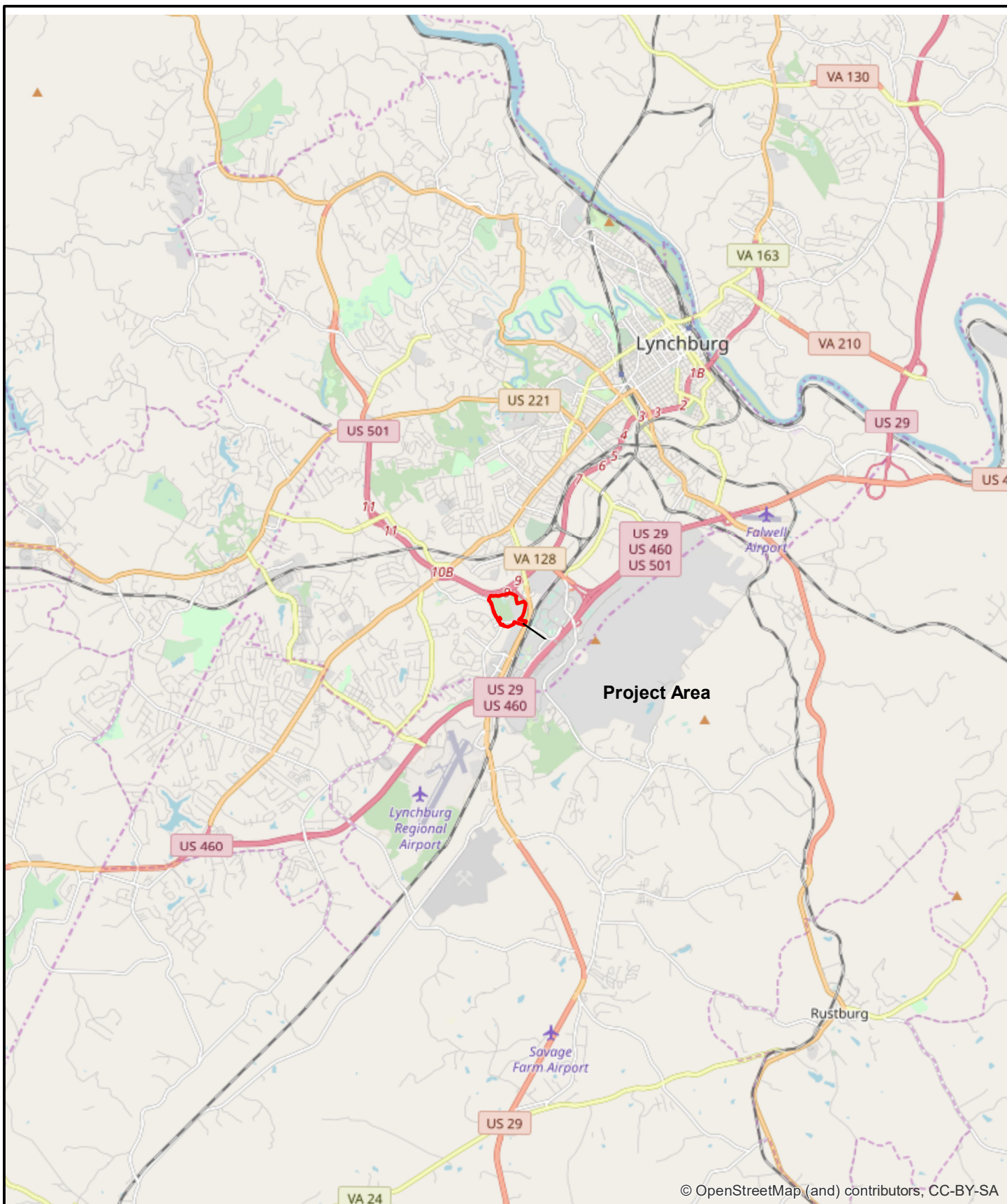
Table 2 – Nutrient Application Worksheet**Site: CVCC****Operator: VCCS****Begins: 5/1/2019****Expires: 5/1/2022****Nutrient Management Area: 1****Square Feet: 875,100****Landscape Plants: Cool Season Turf (Fescue Mix)**

Annual Nutrient Needs (lbs/1000 ft²)¹	Application Month/Day^{1,2}	Amendment Material Notes	% Slow Release N	Total N	Total P₂O₅ (lbs/1000 ft²)	Total K₂O (lbs/1000 ft²)	Lime Recommendation (lbs/1000 ft²)³
2.8-3.0-1.5	April	Lime					0
	April 1 - May 1	N - Fertilize	50% or greater	0.5	0	0	
	Sept 1	Aerate, Overseed & Fertilize	50% or greater	0.9	1.5	0.75	
	Oct 1	Fertilize	50% or greater	0.9	1.5	0.75	
	Nov 1	Fertilize	50% or greater	0.5	0	0	
	Totals:			2.8	3.0	1.5	

Notes:

1. Fertilizer recommendations are flexible as long as the following conditions are met: a) no more than 0.7 pounds of Water Soluble N per 1000 ft² is applied within a 30-day period; b) no more than 0.9 pounds of Total N (per 1000 ft²) may be applied within a 30-day period; and c) total annual fertilizer amounts for each nutrient should not exceed the Annual Nutrient Needs listed in column 1.
2. The month and day designations are a general guideline. Apply as close to the month as possible, using the day designation to determine the interval between applications.
3. According to the soil sample results, no lime applications are needed for the first year of this NMP. Liming for years 2 and 3 should be based on additional soil pH and Buffer pH testing.
4. Do not apply inorganic fertilizers on frozen or snow-covered ground, or on denuded areas. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass – covered areas. Do not use fertilizers as ice-melt.
5. Use a drop spreader for application of inorganic fertilizers on turf areas less than 10 feet wide or on slopes greater than 2%.
6. Apply pre and or post emergent herbicides as needed, but do not use herbicide containing fertilizer prior to March 9th, and conditions must be met in Note 1.

Figures



© OpenStreetMap (and) contributors, CC-BY-SA

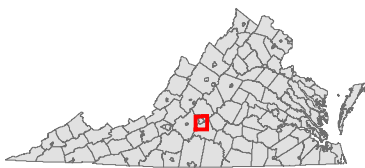


EEE Consulting, Inc.
Environmental, Engineering and Educational Solutions



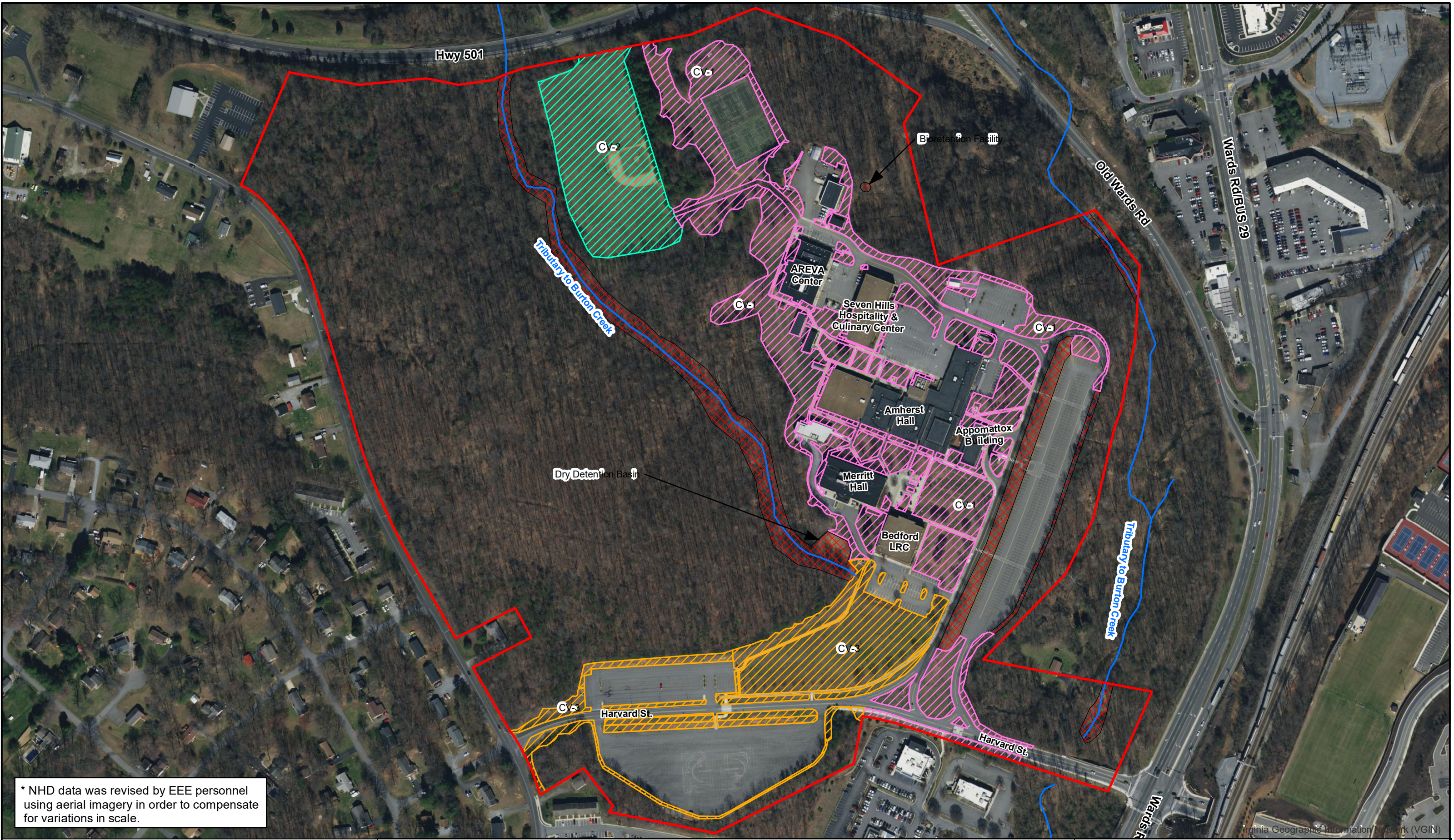
Prepared by KMM, 04-30-2019
Sources: 2000 Census TIGER Line Data, ESRI
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

Proj# 19-046







**FIGURE 1: MIDLOTHIAN CAMPUS
PROJECT LOCATION**
VCCS NMP

0 1.25 2.5 Miles
Lynchburg, VA



* NHD data was revised by EEE personnel using aerial imagery in order to compensate for variations in scale.

-  CVCC Boundary
-  National Wetlands Inventory (NWI)
-  Environmentally Sensitive Area
-  National Hydrography Dataset (NHD)

Soil Sampling Areas


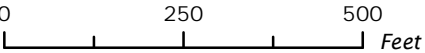
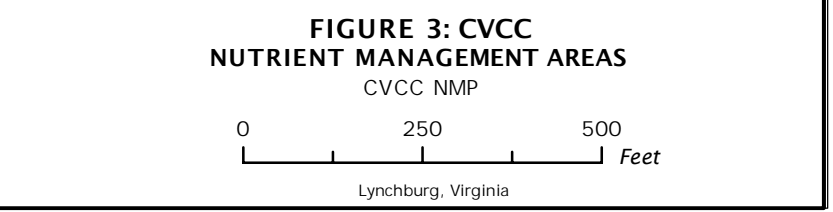
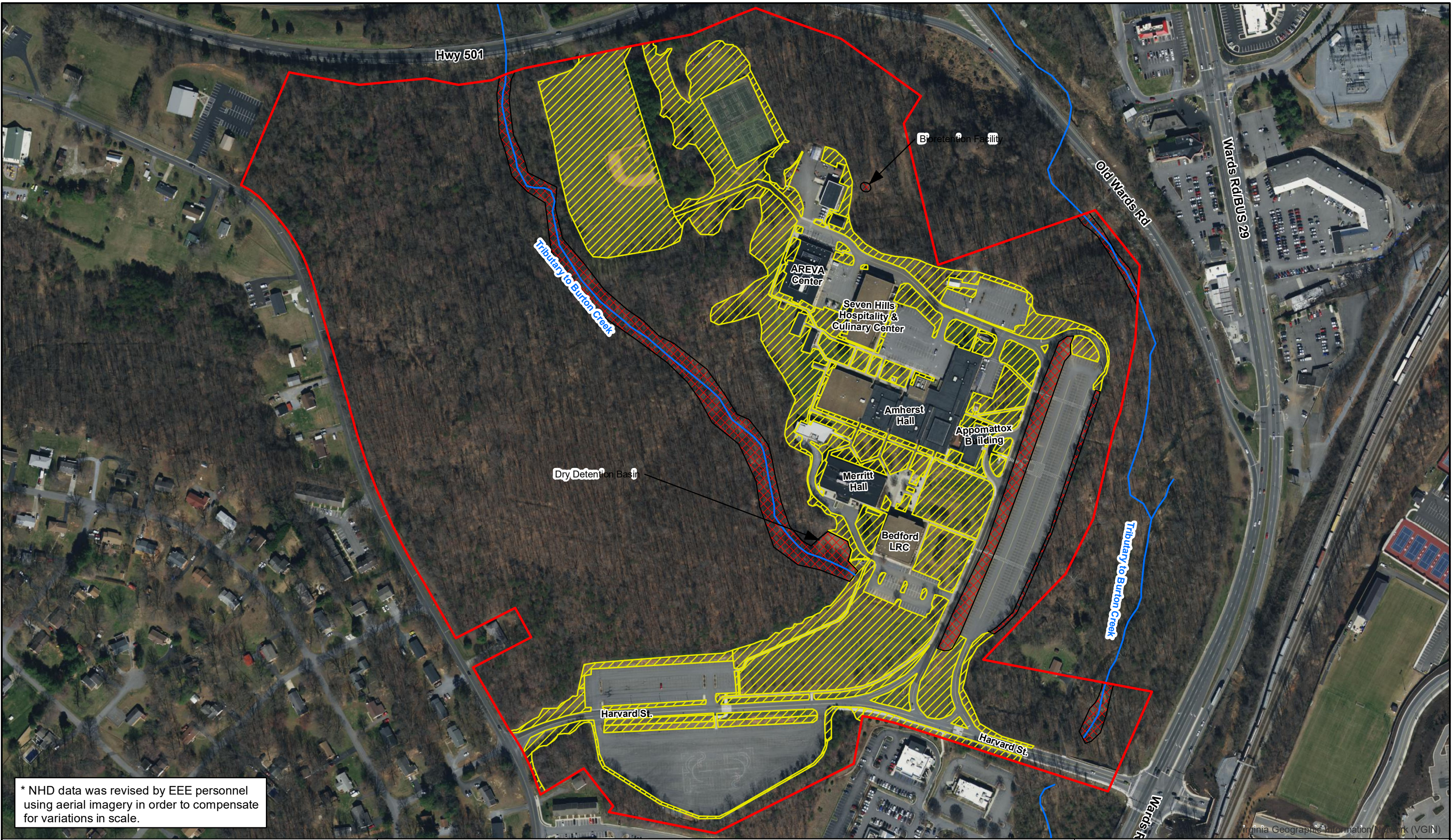
-  CV-1
-  CV-2
-  CV-3

FIGURE 2: CVCC SOIL SAMPLING AREAS
CVCC NMP



Lynchburg, Virginia



Appendix A

Laboratory Soil Test Results April 2019

SOIL ANALYSIS

Client : EEE Consulting Inc 201 Church Street Suite C Blacksburg VA 24060	Grower : CVCC PO:	Report No: 19-109-0608 Cust No: 78934 Date Printed: 04/23/2019 Date Received : Date Analysis : 04/22/2019 Page : 1 of 6
---------------------------------------------------------------------------------------	-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------

Lab Number : 04925

Field Id :

Sample Id : CV-1

Test	Results	SOIL TEST RATINGS					Calculated Cation Exchange Capacity
		Very Low	Low	Medium	Optimum	Very High	
Soil pH	7.0						9.3 meq/100g
Buffer pH							
Phosphorus (P)	2 ppm						Calculated Cation Saturation
Potassium (K)	96 ppm						%K 2.6
Calcium (Ca)	1572 ppm						%Ca 84.5
Magnesium (Mg)	140 ppm						%Mg 12.5
Sulfur (S)							%H 0.0
Boron (B)							Hmeq 0.0
Copper (Cu)							
Iron (Fe)							
Manganese (Mn)							
Zinc (Zn)							K : Mg Ratio
Sodium (Na)							0.17
Soluble Salts							Ca : Mg Ratio
Organic Matter	4.8 % ENR 133						6.76
Nitrate Nitrogen							

SOIL FERTILITY GUIDELINES

Crop : Lawn, Cool Season Low Input

Rec Units: LB/1000 SF

(lbs)	LIME (tons)	N	P ₂ O ₅	K ₂ O	Mg	S	B	Cu	Mn	Zn	Fe
0		1.5	5.0	3.0	0						
Crop :											
Rec Units:											

Comment :

Pauric McGroary

SOIL ANALYSIS

Client : EEE Consulting Inc 201 Church Street Suite C Blacksburg VA 24060	Grower : CVCC PO:	Report No: 19-109-0608 Cust No: 78934 Date Printed: 04/23/2019 Date Received : Date Analysis : 04/22/2019 Page : 2 of 6
---------------------------------------------------------------------------------------	-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------

Lab Number : 04925

Field Id :

Sample Id : CV-1

SUGGESTED FERTILIZATION PROGRAM							
First Application		Second Application		Third Application		Fourth Application	
#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer

Comments:

Lawn, Cool Season Low Input

• This low input lawn program is designed to achieve a minimum impact on the watershed environment and at the same time maintain a nice lawn. For this lawn program to be successful, keep soil pH between 6.0 and 6.5. At this pH range, the grass utilizes the fertilizer at the highest efficiency.

Apply lime based on the test result (if needed) at any time of the year. Lime is not water soluble, thus moves very slowly downward in the soil to raise the pH. For a new lawn, the best result is to broadcast all the recommended lime over the surface, incorporate it and mix 6 inches into the soil. If lime is not incorporated and mixed into the soil due to existing lawn, lime application should NOT exceed 50 pounds per 1000 sq. feet per application. Split the lime into multiple applications if more than 50 pounds are recommended and apply every 4 to 6 month until the recommended amount is completed.

The best time to apply fertilizer for cool season grasses (Bluegrass, Fescue, Ryegrass, Bentgrass) is in the Fall (mid-September to mid-October). Apply 1.0 pound per 1000 square feet of actual nitrogen and all the phosphorus and potassium recommended above at this time. The remaining optional 0.5 pounds of nitrogen can be applied in April if the color of the new growth is light.

Slow release nitrogen fertilizer such as sulfur coated urea is highly recommended.

Pauric McGroary

SOIL ANALYSIS

Client : EEE Consulting Inc 201 Church Street Suite C Blacksburg VA 24060	Grower : CVCC PO:	Report No: 19-109-0608 Cust No: 78934 Date Printed: 04/23/2019 Date Received : Date Analysis : 04/22/2019 Page : 3 of 6
---------------------------------------------------------------------------------------	-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------

Lab Number : 04927

Field Id :

Sample Id : CV-2

Test	Results	SOIL TEST RATINGS					Calculated Cation Exchange Capacity
		Very Low	Low	Medium	Optimum	Very High	
Soil pH	6.5						7.2 meq/100g
Buffer pH							
Phosphorus (P)	3 ppm						Calculated Cation Saturation
Potassium (K)	104 ppm						%K 3.7
Calcium (Ca)	1013 ppm						%Ca 70.3
Magnesium (Mg)	164 ppm						%Mg 19.0
Sulfur (S)							%H 6.9
Boron (B)							Hmeq 0.5
Copper (Cu)							
Iron (Fe)							
Manganese (Mn)							
Zinc (Zn)							K : Mg Ratio
Sodium (Na)							0.21
Soluble Salts							Ca : Mg Ratio
Organic Matter	4.8 % ENR 136						3.70
Nitrate Nitrogen							

SOIL FERTILITY GUIDELINES

Crop : Lawn, Cool Season Low Input

Rec Units: LB/1000 SF

(lbs)	LIME (tons)	N	P ₂ O ₅	K ₂ O	Mg	S	B	Cu	Mn	Zn	Fe
0		1.5	5.0	3.0	0						
Crop :											
Rec Units:											

Comment :

Pauric McGroary

SOIL ANALYSIS

Client : EEE Consulting Inc 201 Church Street Suite C Blacksburg VA 24060	Grower : CVCC PO:	Report No: 19-109-0608 Cust No: 78934 Date Printed: 04/23/2019 Date Received : Date Analysis : 04/22/2019 Page : 4 of 6
---------------------------------------------------------------------------------------	-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------

Lab Number : 04927

Field Id :

Sample Id : CV-2

SUGGESTED FERTILIZATION PROGRAM							
First Application		Second Application		Third Application		Fourth Application	
#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer

Comments:

Lawn, Cool Season Low Input

• This low input lawn program is designed to achieve a minimum impact on the watershed environment and at the same time maintain a nice lawn. For this lawn program to be successful, keep soil pH between 6.0 and 6.5. At this pH range, the grass utilizes the fertilizer at the highest efficiency.

Apply lime based on the test result (if needed) at any time of the year. Lime is not water soluble, thus moves very slowly downward in the soil to raise the pH. For a new lawn, the best result is to broadcast all the recommended lime over the surface, incorporate it and mix 6 inches into the soil. If lime is not incorporated and mixed into the soil due to existing lawn, lime application should NOT exceed 50 pounds per 1000 sq. feet per application. Split the lime into multiple applications if more than 50 pounds are recommended and apply every 4 to 6 month until the recommended amount is completed.

The best time to apply fertilizer for cool season grasses (Bluegrass, Fescue, Ryegrass, Bentgrass) is in the Fall (mid-September to mid-October). Apply 1.0 pound per 1000 square feet of actual nitrogen and all the phosphorus and potassium recommended above at this time. The remaining optional 0.5 pounds of nitrogen can be applied in April if the color of the new growth is light.

Slow release nitrogen fertilizer such as sulfur coated urea is highly recommended.

Pauric McGroary

SOIL ANALYSIS

Client : EEE Consulting Inc 201 Church Street Suite C Blacksburg VA 24060	Grower : CVCC PO:	Report No: 19-109-0608 Cust No: 78934 Date Printed: 04/23/2019 Date Received : Date Analysis : 04/22/2019 Page : 5 of 6
---------------------------------------------------------------------------------------	-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------

Lab Number : 04928

Field Id :

Sample Id : CV-3

Test	Results	SOIL TEST RATINGS					Calculated Cation Exchange Capacity
		Very Low	Low	Medium	Optimum	Very High	
Soil pH	6.7						8.4 meq/100g
Buffer pH							
Phosphorus (P)	2 ppm						Calculated Cation Saturation
Potassium (K)	71 ppm						%K 2.2
Calcium (Ca)	1340 ppm						%Ca 79.8
Magnesium (Mg)	129 ppm						%Mg 12.8
Sulfur (S)							%H 4.8
Boron (B)							Hmeq 0.4
Copper (Cu)							
Iron (Fe)							
Manganese (Mn)							
Zinc (Zn)							K : Mg Ratio
Sodium (Na)							0.18
Soluble Salts							Ca : Mg Ratio
Organic Matter	5.2 % ENR 142						6.23
Nitrate Nitrogen							

SOIL FERTILITY GUIDELINES

Crop : Lawn, Cool Season Low Input

Rec Units: LB/1000 SF

(lbs)	LIME (tons)	N	P ₂ O ₅	K ₂ O	Mg	S	B	Cu	Mn	Zn	Fe
0		1.5	5.0	3.0	0						
Crop :											
Rec Units:											

Comment :

Pauric McGroary

SOIL ANALYSIS

Client : EEE Consulting Inc 201 Church Street Suite C Blacksburg VA 24060	Grower : CVCC PO:	Report No: 19-109-0608 Cust No: 78934 Date Printed: 04/23/2019 Date Received : Date Analysis : 04/22/2019 Page : 6 of 6
---------------------------------------------------------------------------------------	-----------------------------	----------------------------------------------------------------------------------------------------------------------------------------

Lab Number : 04928

Field Id :

Sample Id : CV-3

SUGGESTED FERTILIZATION PROGRAM							
First Application		Second Application		Third Application		Fourth Application	
#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer	#/1000 Sq. Ft.	Fertilizer

Comments:

Lawn, Cool Season Low Input

• This low input lawn program is designed to achieve a minimum impact on the watershed environment and at the same time maintain a nice lawn. For this lawn program to be successful, keep soil pH between 6.0 and 6.5. At this pH range, the grass utilizes the fertilizer at the highest efficiency.

Apply lime based on the test result (if needed) at any time of the year. Lime is not water soluble, thus moves very slowly downward in the soil to raise the pH. For a new lawn, the best result is to broadcast all the recommended lime over the surface, incorporate it and mix 6 inches into the soil. If lime is not incorporated and mixed into the soil due to existing lawn, lime application should NOT exceed 50 pounds per 1000 sq. feet per application. Split the lime into multiple applications if more than 50 pounds are recommended and apply every 4 to 6 month until the recommended amount is completed.

The best time to apply fertilizer for cool season grasses (Bluegrass, Fescue, Ryegrass, Bentgrass) is in the Fall (mid-September to mid-October). Apply 1.0 pound per 1000 square feet of actual nitrogen and all the phosphorus and potassium recommended above at this time. The remaining optional 0.5 pounds of nitrogen can be applied in April if the color of the new growth is light.

Slow release nitrogen fertilizer such as sulfur coated urea is highly recommended.

Pauric McGroary