



OLD DOMINION UNIVERSITY

Nutrient Management Plan

Prepared For:

Old Dominion University

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Certification Code: 654



Acreage – 3 Fields, 7 Common Areas

@ 2 locations, 12 Soil Samples

(Breakdown on Page 7)

| | |
|---------------|-------|
| Total: | 19.65 |
|---------------|-------|

| | |
|-------------------|---|
| County: | Norfolk City – 16.65 Acres Suffolk City – 2 Acres Portsmouth City – 1 Acre |
| Watershed: | JL56 – 16.65 Acres – Elizabeth River, Hampton Roads, James River JL50 – 3 Acres – Streeter Creek, Hampton Roads, James River |

Plan Written: June 1, 2022

Plan Expires: June 1, 2025



 Planner Signature

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Sources:

Maps – Maps are produced using Google Earth or provided by client.

Photos/Logos – Obtained from client, clients website, or taken by planner.

Site information – Obtained from client or clients website.

Technical Information –

Agronomy Handbook – A&L Labs – 2001

Best Golf Course Management Practices – McCarty – 2001

Environmental Best Management Practices for Golf Courses – Virginia GCSAA – January 2012

Golf Course Management and Construction, Environmental Issues – Balogh, Walker, USGA – 1992

Soil Fertility and Fertilizers 6th Ed. – Havlin, Beaton, Tisdale, Nelson – 1999

Spectrum Analytic Agronomic Library – www.spectrumanalytic.com

Sports Turf Management in the Transition Zone – Goatley, Askew, Ervin, McCall, VSTMA, Etc. – 2008

Turf Management for Golf Courses 2nd Ed. – Beard, USGA – 2002

Turfgrass Soil Fertility and Chemical Problems – Carrow, Waddington, Rieke – 2001

Urban Nutrient Management Handbook – VA DCR, Virginia Tech, Virginia State Uni. – May 2011

Virginia Nutrient Management Standards and Criteria – Commonwealth of Virginia – July 2014

Disclaimer: *Statements and recommendations made within this document based on published research data and experience. Recommendations are based on the soil tests included in this document and not intended for use on any other facility. Products suggested are used in methods suggest by label guidelines when available, be sure to read label before using products as labels can change. Maximum rates are provided by Virginia Department of Conservation and Recreation Standards and Criteria and are not to be exceeded even when product label suggests otherwise. No guarantee or warranty is made, expressed or implied, concerning crop performance as a result of using the contents of this document.*

Definitions:

M = 1000 FT²

= Pounds of product

N = Nitrogen

P = Phosphorus

K = Potassium

NMP = Nutrient Management Plan

MS4 = Municipal Separate Storm Sewer System

Maps: *Maps created using Google Earth are to scale as shown in bottom left of each map. For all maps, unless otherwise indicated, North is oriented towards top of page. Flood maps created by Web Soil Survey.*

1. Narrative

1.1. Statement of Compliance

As a state-owned Land, ODU is required to have and follow a Nutrient Management plan. Thus, they agree to comply with all requirements set forth in the Nutrient Management Training and Certification Regulations, 4VAC50-85-10 et seq., and to follow recommendations for turf fertilization and management as described in the Virginia Nutrient Management Standards and Criteria, Revised July 2014. This includes implementing the Department of Conservation and Recreation's approved Nutrient Management Plan and maintaining fertilization records. All nutrient applications performed by ODU or other contractors shall comply with the provisions of this Nutrient Management Plan as of June 1, 2022. This plan is effective for three years (until June 1, 2025) or until major renovations or major changes to maintenance practices occur. The planner should be alerted if this occurs or if new soil tests are taken within the three-year period, a minor revision may be needed if tests show major differences. The process of updating this plan for a new three-year cycle should begin no later than 6 months prior to plan expiration.

1.2. Plan Overview

Old Dominion University, located in the City of Norfolk in the metropolitan Hampton Roads region of coastal Virginia, is a dynamic public research institution that serves its students and enriches the Commonwealth of Virginia, the nation and the world through rigorous academic programs, strategic partnerships, and active civic engagement.

Old Dominion University is located in Hampton Roads, one of the world's major seaports. Since the early seventeenth century, Hampton Roads has been the state's gateway to the rest of the world and the world's gateway to Virginia in commerce and industry, in recreation and culture, and in national security. Now a complex of seven major cities, it is a microcosm of the opportunities and challenges of contemporary urban America. It is also a major center for research and development and a home for extensive scientific and technological activities in marine science, aerospace, ship design and construction, advanced electronics, and nuclear physics.

The University takes its unique character from Hampton Roads as it provides leadership to the state and nation in teaching, research, and service. Thus, the University has a special mission for the Commonwealth in commerce, and in international affairs and cultures. It has a significant commitment in science, engineering, and technology, particularly in fields of major importance to the region. As a metropolitan institution, the University places particular emphasis upon urban issues, including education and health care, and upon fine and performing arts.

This plan covers seven areas of the Main ODU Campus that receive fertilizer, 3 sports fields and five lawn areas. Also covered are the lawn areas around two off campus sites, the VAMSC and the Tri-Cities Center.

1.3. Location

ODU's Main Campus is located in Norfolk, VA off Hampton Blvd.

Address: 5115 Hampton Boulevard, Norfolk, VA 23529

GPS Coordinates: 36.889880, -76.303402

Driving Directions

From Richmond

1. Stay on I-64 E for approximately 75 miles until you reach exit 276, VA-406/NAVAL BASE/TERMINAL BLVD
2. Once on the exit ramp, stay right onto I-564 as it splits. Once on I-564, stay right again, following the first exit for Terminal Blvd.
3. Continue straight through two traffic lights, and at the third light, turn left onto Hampton Blvd.
4. Follow Hampton Blvd. to 49th St. (approximately 3 miles)
5. From here, directions change based on the location of the event.



The Tri-Cities Center and VAMSC are located off RT 164 (Western Freeway) on College Drive. This location is on the Suffolk/Portsmouth Line.

Address: 1070 University Blvd, Portsmouth, VA 23703

GPS Coordinates: 36.869763, -76.417094

Driving Directions

From Norfolk/ODU campus

1. Take the Midtown Tunnel
2. Follow signs for 164-W to College Dr.
3. Turn right onto College Dr.
4. Turn right onto University Blvd.



Table 1

| Location/Acreage/Watershed Code Breakdown | | | | | | |
|---|---------------------------|-------|------------|-------|-----------------------------|--|
| Sample ID | Location | Acres | Irrigation | Grass | Watershed Code | |
| Main Campus – City of Norfolk | | | | | | |
| Campus Lawns | | | | | | |
| ODU 01 | Whitehurst | 1.1 | Y | Warm | JL56 16.65 Acres | |
| ODU 02 | Runte | 0.9 | Y | Warm | | |
| ODU 03 | Kaufman Mall | 5.3 | Y | Warm | | |
| ODU 04 | Williamsburg Lawn | 2.7 | Y | Cool | | |
| ODU 05 | Presidents Lawn - Central | 0.2 | Y | Warm | | |
| ODU 06 | Presidents Lawn - Side | 0.2 | Y | Warm | | |
| ODU 07 | Presidents Lawn - Seawall | 0.25 | Y | Warm | | |
| Athletic Fields | | | | | | |
| ODU 08 | Baseball Field | 2.1 | Y | Warm | | |
| ODU 09 | Soccer | 2.3 | Y | Warm | | |
| ODU 10 | Soccer Practice | 1.6 | Y | Warm | | |
| Off Campus | | | | | | |
| City of Suffolk | | | | | | |
| ODU 11 | VMASC | 2 | Y | Cool | JL50 3 Acres | |
| City of Portsmouth | | | | | | |
| ODU 12 | Tri-Cities Center | 1 | Y | Cool | | |
| | | | | | 19.65 Total | |

1.4. Nutrient Management Principals

Nutrient Management Plans focus on two primary objectives healthy plants and clean water.

There are four different types of elements essential for plant health. Non-mineral, Primary and Secondary elements are all considered Macronutrients. The fourth is Micronutrients. Non-mineral elements consist of carbon, hydrogen, and oxygen; these elements are obtained from air and water. The Primary nutrients are nitrogen, phosphorus, and potassium. Secondary elements are calcium, magnesium, and sulfur. Micronutrients are iron, manganese, boron, zinc copper, molybdenum, chlorine, cobalt, and nickel. These elements are obtained from the soil and must be supplemented with fertilizer, lime or other soil amendments when a soil test shows a deficiency. In high maintenance situations, some elements are spray applied and absorbed through the leaf tissue.

Nitrogen and phosphorus are the focus of a nutrient management plan, as these nutrients cause ecological problems. Lime is also important because having improper pH can make applied fertilizers unavailable to the plant and more likely to leach or runoff. While nitrogen and phosphorus are the focus, other nutrients are also discussed in the plan, these nutrients are beneficial to plant health, but do not cause water quality problems.

Soil tests are required to determine the current level of soil nutrients available to the plant so fertilizer can be applied at rates that ensure excess nutrients do not enter our waters. Basic soil tests provide data on phosphorus, potassium, magnesium, calcium and pH. Nitrogen cannot be tested for using a basic soil test as it is very volatile. Magnesium and calcium are included in basic soil tests so that proper liming materials can be chosen.

Soil test results are compared to a reference guide provided by DCR. These Standards and Criteria are based upon years of scientific research and the rates suggested are optimal for plant health within the intended usage. Low input areas, like home lawns, require some fertilizer to maintain plant vigor thus maintaining turf cover and preventing erosion. High use areas, like sports fields, require frequent fertilizer input to help maintain plant health and to aid in recovery from stress. Clean water is maintained by applying fertilizer in a responsible manner that ensures minimum movement away from the intended site.

The following information discusses the role of the nutrients in the plant. Highlighted information is specific to this plan.

Nitrogen (N) – This element is responsible for green color, shoot growth and density, root growth, carbohydrate reserves, recuperative potential, heat, cold, drought hardiness, wear tolerance, and disease susceptibility. Nitrogen has a very complex cycle and only certain forms are available to the plant. It leaches through the soil rapidly and does not accumulate thus you cannot soil test for N. Due to these factors, nitrogen management is a large part of nutrient management. Nitrogen management includes but is not limited to using slow release materials, timing the applications in accordance with plant growth, and making multiple applications so that the element is available when it is needed by the plant.

There are multiple rates used in this plan. See worksheets for specifics. Slow release products were used exclusively. Labels are included at end of plan. If making changes, please continue to use slow release fertilizers, or contact your planner for help determining the proper rates.

Phosphorus (P) – Phosphorus controls the establishment rate of newly seeded turf, plant maturation, root growth, and seed production. Like nitrogen, P also has a complex cycle. The major difference is that P readily attaches soil, it can be quantified by a soil test and only leaches when it completely saturates the soil. Phosphorus moves away from the application site when it is improperly applied to compacted soil or other impervious surfaces, when applied in excess, and since it attaches to the soil, with sediment rich runoff. Phosphorus management is also important to nutrient management. It should only be applied when called for by a soil test, to soils that are not compacted to prevent runoff and only applied to actively growing turf with sufficient turf cover/rooting to hold the soil in place.

Maximum P rates are outlined in application worksheets. Do not exceed this number.

Potassium (K) - Potassium is responsible for root growth, heat, cold, and drought hardiness, wear tolerance, and disease susceptibility. While the *Standards and Criteria* do regulate the application of K, but in some cases, K input may exceed recommended levels, as it does not have the same detrimental effects on the health of Virginia's waters as N and P. Potassium is considered the plant nutrient most responsible for turf quality. It helps plants respond to stresses like drought, extreme heat/cold, and insect/disease pressure. The plants increased ability to respond to stress in a positive manner can help reduce the need for increased N and P fertility and reseeding caused by stress. In addition to the benefits of K, it is difficult to limit the amount of K used as most modern slow release fertilizers contain both N and K while limiting or completely removing P. Nitrogen only products are not readily available in slow release form and custom blended fertilizers are expensive.

Potassium levels have been exceeded in most of areas of this plan. As discussed above, K helps the plant deal with stress. Sports fields and common areas are generally stressed be it from excessive use, compaction, improper pH, or lack of proper care due to budget and personnel restraints.

Lime - Liming is a critical management practice for maintaining soil pH at optimal levels for plant growth. Liming supplies the essential elements Calcium and/or Magnesium, reduces the solubility and potential toxicity of Aluminum and Manganese, and increases the availability of essential nutrients. Many soil elements change form because of chemical reactions in the soil due to pHs that are either too acidic or too basic. Plants may not be able to use elements in some of these forms making some elements essential to plant health unavailable. Most plants grow well in the pH range 5.8 to 6.5.

Buffer pH is used to provide an indication of the soil's total (active + reserve) acidity and ability to resist a change in pH. This buffer measurement is the major factor in determining the amount of lime to apply. The Buffer pH starts at 7 (no lime needed) and goes lower as the soil's total acidity increases and more lime is needed to raise the soil pH. As an example, a clay soil with a pH of 6.1 could have a buffer pH of 6.8 and need 1 ton/A of lime in order to maintain/increase that pH around 6.2. A sandy soil could have a much lower pH but have the same buffer pH thus, needing the same amount of lime to change the pH to 6.2. This is because sandy soils have a lower cation exchange capacity thus, less storage for reserve acid.

Attempting to change the pH in the deep rooting zone of an established turf is difficult at best. One method of getting lime somewhat deeper in established turf areas is to apply lime in

conjunction with aeration. Applying lime in the fall and winter months is recommended because the freeze/thaw cycle aids in mixing lime throughout the root zone.

Lime provides the essential nutrients Calcium and Magnesium. Calcium is the main component of plant cell walls while magnesium is the atom upon which chlorophyll is built. It is important that these elements be present in the soil not only to help regulate the soils acidity but to insure plant health. When a soils pH is acidic, these elements can be added with lime. Calcitic lime should be used when calcium is deficient, and magnesium is high. Dolomitic lime, which is more common, is used when the both are deficient or balanced. If pH does not need to be adjusted, calcium levels can be raised with gypsum and magnesium is raised with Epsom salts. The *Standards and Criteria* provide guidance on adjusting soil pH levels but do not include any recommendations for Ca or Mg, as they do not affect water quality.

Not all liming materials are the same, if the liming material chosen does not equate to 100% Calcium Carbonate Equivalent (CCE% should be listed on bag) see chart on page 65 to adjust the required amount of lime.

Lime is needed in several areas. See application worksheets for more info.

Sulfur (S) - Sulfur is responsible for the plants green color, shoot growth and density, root growth, carbohydrate reserves, and disease susceptibility. Elemental sulfur applications should be avoided unless you are attempting to acidify (lower pH) the soil and should be applied at no more than 5#/M and watered in due to the turf burn potential. Unless called for by a soil test, the occasional use of sulfur containing fertilizers and micro nutrient packages should be the only S input needed to supplement the soil S content. This element is not included in the *Standards and Criteria*.

Iron (Fe) – Iron contributes to the plants green color, shoot growth and density, root growth, carbohydrate reserves, heat, cold and drought hardiness and wear tolerance. Iron is often included in fertilizer and micronutrient blends because it produces a faster greening of turf than nitrogen. According to the *Standards and Criteria*, Fe applications can be occasionally substituted for N applications because it produces greening. This is a good strategy, but Fe apps cannot replace N. While Fe is used inside the plant, the greening created by Fe is superficial and caused by the iron rusting on the plants surface. Fe should be used as an N replacement only when the plant is healthy, and greening is desired without increased growth.

Micros – Other micronutrients are not mentioned by the *Standards and Criteria*. These elements are very important to plant growth, but regular input is not needed unless you are managing a sand-based soil with low nutrient holding capacity. Most soils contain all the necessary micros and they will be available for the plant if the proper pH is maintained.

Soil Sampling – DCR suggests soil testing every 3 years to properly monitor soil conditions. An accurate, representative sample is important to ensure optimal fertility. Please remember, a 1 lb soil sample can represent up to 20 acres, there are approximately 2 million lbs of soil per acre and the lab only uses about 1 gram of soil in the testing process.

1.5. Best Management Practices for Water Quality Protection

The following list comes from the *Urban Nutrient Management Handbook* page 8-12 and details steps that can reduce the impact of nutrient management practices on water quality. A PDF of the complete handbook can be found online through ext.vt.edu, on the CD provided with the plan or a printed copy can be obtained from DCR.

- Base fertilization practices on a soil test.
- Supplement the soil test with a plant tissue test when necessary.
- Aerate compacted soil to reduce runoff and aid phosphorus and lime in entering the soil.
- Minimize fertilizer rates on slopes and sandy soils. If using quickly available sources of nitrogen on deep, sandy soils or near shallow water tables, use no more than 0.25 to 0.50 pound of nitrogen per 1,000 square feet per application.
- Establish and maintain a buffer zone of reduced- to zero-input vegetation around bodies of water. In some cases, native vegetation might be appropriate, but whatever plant material is selected, it must persist indefinitely to serve as a functional buffer zone.
- Consider using iron as a supplement to nitrogen for greening response.
- Use at least 50 percent slowly available sources of nitrogen on soils subject to leaching.
- Time applications carefully. Do not apply fertilizer before a heavy rainfall.
- Irrigate lightly (0.10 to 0.25 inch) after each application of quick-release fertilizer so it is washed off the foliage and moved into the soil. (Wait to irrigate if foliar activity is desired)
- Avoid over irrigation.
- Return grass clippings to the turf to improve nutrient cycling and reduce the amount of fertilizer needed to produce healthy plants. Use a mulching mower whenever possible and consider that a mulching mower can even be used to manage fall leaves (Goatley 2006).
- When collected, compost grass clippings rather than disposing of them in landfills.
- Use a drop (gravity) spreader near bodies of water or impenetrable areas to lessen the chance of spreading material on these surfaces.
- Perhaps the most important best management practice toward improving water quality is to simply sweep or blow fertilizers and clippings off hardscape surfaces and back into the turf.

1.6. Application Equipment Calibration

An agronomically and environmentally sound fertilizer program can be negated by improperly calibrated equipment. It is important to calibrate your equipment prior to every application. Even moving from one location to another can knock your application equipment out of adjustment so once you have your equipment calibrated for a particular product write down the setting. Use that setting to check the calibration for every site and adjust if necessary. The next time you use that product, use your records as a starting point and not a final calibration as equipment can wear over time thus changing the calibration point. For more information on how to calibrate your equipment see the *Urban Nutrient Management Handbook* Chapter 10 (ext.vt.edu) or visit your equipment manufactures website. Please remember that the number on the bag is not sufficient, every spreader and every application is different, and that the bag number only serves as a calibration starting point.

1.7. Season of Fertilization

Per the Virginia Nutrient Management Standards and Criteria, Revised July 2014, fertilizers must be applied in between the following dates.

These are guidelines and averages. It may not always be appropriate to apply fertilizer toward the beginning or end of the allowed window. Please observe the following:

- Fertilizers should not be applied to frozen ground or to grass that is not actively growing. For warm season grasses please wait for green up to occur.
- For warm season grasses that are overseeded, follow the cool season application window. If overseeding is skipped, please revert to warm season window.

Data for frost date comes from the Southeast Regional Climate Center using 50% probability of frost at 32.5 degrees at the NORFOK WSO AIRPORT station.

| | Average Frost Dates | Cool Season Applications | Warm Season Applications |
|---------------|----------------------------|---------------------------------|---------------------------------|
| Spring | March 20 | February 6 | March 20 |
| Fall | November 19 | December 31 | October 19 |

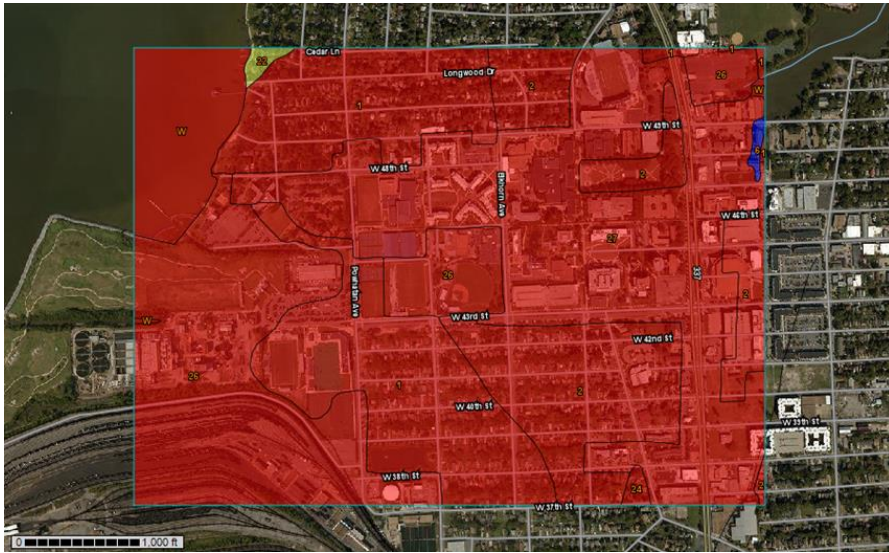
1.8. Environmentally Sensitive Areas

An environmentally sensitive area is any area which presents the danger of nutrients making their way into a body of water. In an urban setting such as this there are many factors that contribute to the sensitivity of the area. The entirety of the area should be considered sensitive. Below is a list of things to be aware of on this site.

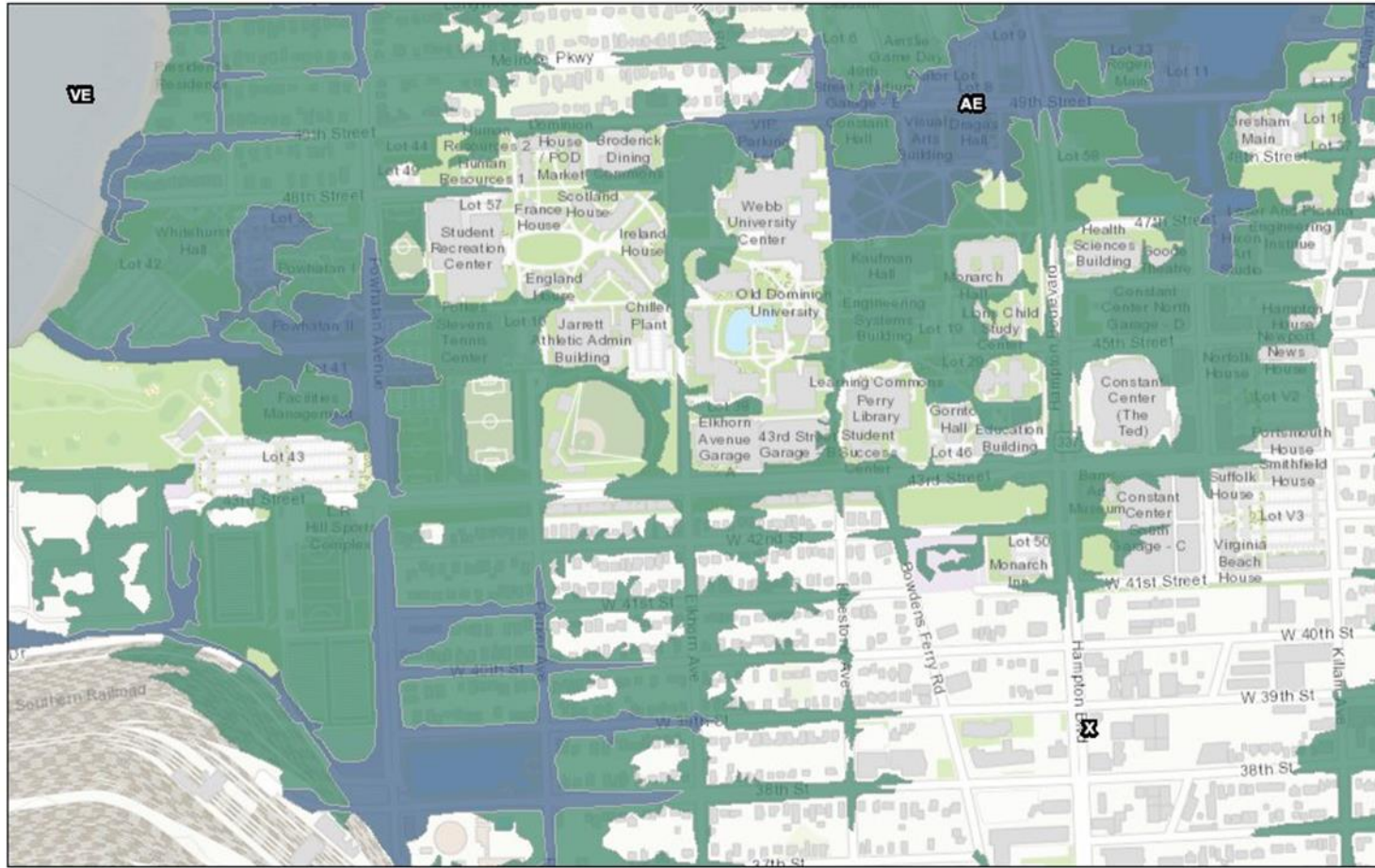
- There are many roads, sidewalks and storm drains throughout the areas. Caution should be taken so that fertilizer does not end up on impermeable surfaces such as concrete or pavement. If this does occur, fertilizer should be swept or blown back into the turf canopy. Any fertilizer that ends up on impermeable surface may end up in a storm drain or directly in a body of water. Any catch basins or grated storm drains should be covered during applications so that fertilizer is not thrown directly into the drain. A drop spreader, or at minimum a rotary spreader with a right side shut off, should be used in the many small areas to help minimize any over spreading.
- Fertilizer is not a remedy for poor performing turf due to compaction. Aeration should be a regular practice in areas of heavy traffic. Compacted soils can also act as an impermeable surface causing applied fertilizers to wash away with surface water instead of being held by soil particles in a properly aerated soil.
- According to Web Soil Survey data, flooding is not probable on the main ODU campus.
- While Web Soil Survey data shows no risk of flooding based on soil composition, the City of Norfolk’s GIS has several layers with relative data. Maps on page 15 and 16 show flood risk, wetlands and areas impacted by storm surge that exist on the ODU campus.
- There is some risk of “Very Frequent” flooding near the VAMSC/Tri-Cities site. This is an area of heavy development. The grade of the site has been changed and there are multiple retention ponds around the site. This construction may have alleviated any risk of flooding, but please refrain from making fertilizer applications prior to heavy storms.
- Do not use fertilizer as ice melt.
- Fertilizer shall not be applied to frozen or snow covered ground.

Flooding Frequency Class Designations – *Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.*

| | |
|--|---|
| | <i>"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.</i> |
| | <i>"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.</i> |
| | <i>"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.</i> |
| | <i>"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.</i> |
| | <i>"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.</i> |
| | <i>"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.</i> |

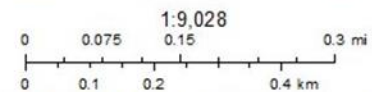


City of Norfolk



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- AE
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- AH
- VE



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

City of Norfolk GIS
Old Dominion University, City of Portsmouth, VITA, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA | City of Norfolk GIS Bureau |

2. Management Areas

2.1. Campus Lawns

2.1.1. Whitehurst Hall Lawn

Whitehurst Hall, overlooking the Elizabeth River, is home to 594 residents. It was constructed in 1983 and consists of two six-story towers. Located within Whitehurst are study lounges, laundry rooms, a convenience store, and a Legends Dining Center.

Location

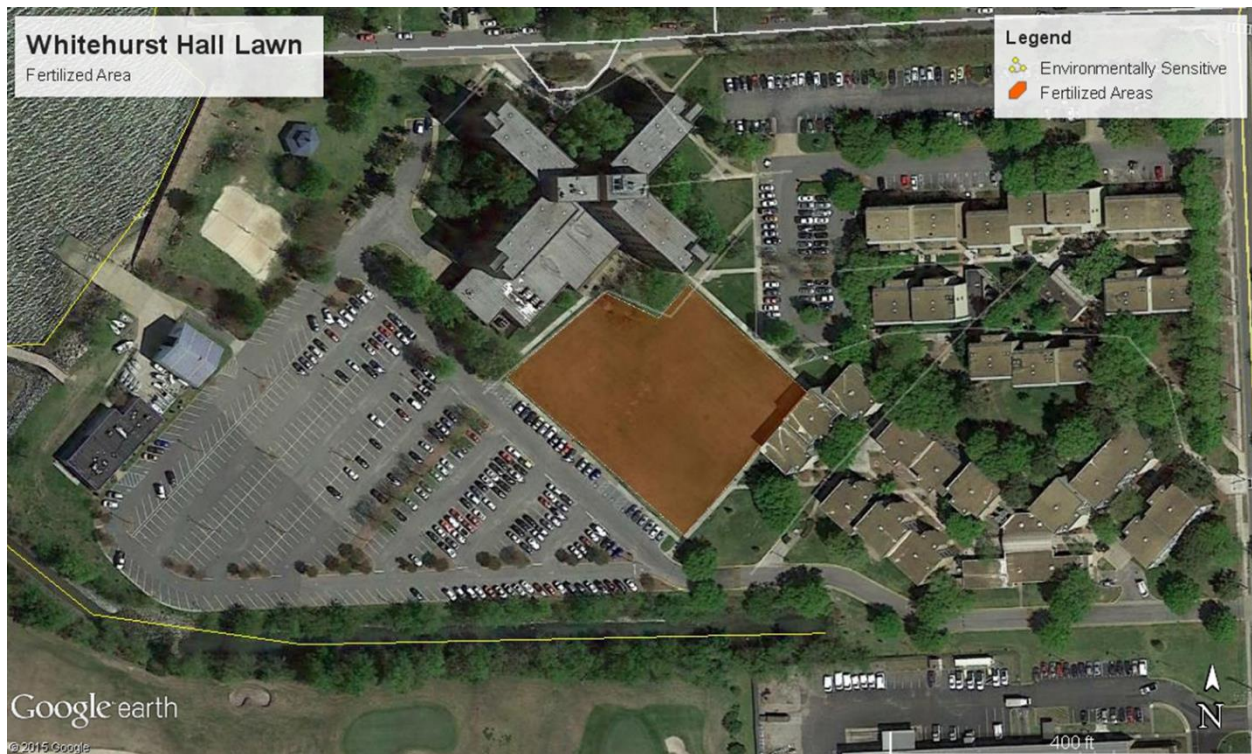
Address: 4701 Powhatan Ave.
Norfolk, VA 23508
GPS Coordinates: 36.885497, -76.314989

Area Managed

The warm season, irrigated turf quad to the front of the building is fertilized. It is approximately 1.1 Acres.

Environmentally Sensitive

- There is a creek to the south of the parking lot and the Elizabeth River is to the west.
- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.1.2. Runte Quad

Runte Quad is area of ODU's campus to the east of the Student Recreation Center. It is surrounded by the France, Scotland, Ireland, Virginia, and England Houses, which are all residence halls. The area is named after former ODU President Roseann Runte

Location

Address: 1444 46th St.
Norfolk, VA 23508
GPS Coordinates: 36.886003, -76.310059

Areas Managed

The central oval of the quad is fertilized and irrigated. It is approximately 0.9 acres of warm season turf.

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.1.3. Kaufman Mall

Kaufman Mall is a large, park like, green space located in the center of the academic portion of ODU's Campus. To the west of the lawn is the Webb Center, academic buildings are located to the North and South of the lawn and Hampton Blvd is to the East. This area has many beautiful willow oaks and crape myrtles.

Location

Address: 4701-4759 Hampton Blvd.
Norfolk, VA 23508
GPS Coordinates: 36.886605, -76.302869

Areas Managed

The warm season, irrigated lawn is approximately 5.3 acres and includes grassed areas in main quad and the grassed areas along Hampton Blvd.

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.1.4. Williamsburg Lawn

The grassy area between Koch Hall and Bolling Ave. along Hampton Blvd. is called the Williamsburg Lawn.

Location

Address: 5125-5215 Hampton Blvd.
Norfolk, VA 23508

GPS Coordinates: 36.889795, -76.303583

Areas Managed

The cool season grass area between the buildings and the road is fertilized. It is approximately 2.7 acres and is irrigated. The area is seeded with a fescue shade mix, which includes red fescue. Please be aware that fine fescues like creeping red do not tolerate high fertility. The fertilization program below is written for maximum input, but only 1-2 lbs of nitrogen per year may be needed.

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.1.5. Jacobson House - President's Residence

The Jacobson House at Old Dominion University provides an on-campus home for the university president, spouse, and family. The home serves as a vital center of social activity important to community engagement.

Location

Address: 5000 Woodbury Ave.
Norfolk, VA 23508
GPS Coordinates: 36.888068, -76.315142

Areas Managed

The warm season, irrigated lawn is approximately 0.65 acres. The lawn was sampled in 3 zones.

Yellow – Central/Front, 0.2 acres
Green – Side/Pool area, 0.2 acres
Orange – Seawall, 0.25 acres

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.2. Athletic Fields

2.2.1. Baseball

The Bud Metheny Baseball Complex is a stadium on the campus of Old Dominion University in Norfolk, Virginia, USA. It is primarily used for baseball and is the home field of the Old Dominion Monarchs baseball team. The Monarchs are members of Conference USA. The ballpark has seating for 2,500 spectators in three sections of raised aluminum bleachers. The stadium complex also includes locker rooms, a concession stand, offices, four batting cages, a picnic area, and a fully enclosed press box.

Location

Address: 1446 W 43rd St.
Norfolk, VA 23529

GPS Coordinates: 37.792521, -79.434839

Areas Managed

The baseball field is approximately 2.1 acres of warm season irrigated turf. The soil is a modified sand base.

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.2.2. Soccer

The Old Dominion Soccer Complex is a soccer-specific stadium located on the campus of ODU. The 4,000-seat stadium is home to the Old Dominion Monarchs and Lady Monarchs soccer teams. The Monarchs compete in Conference USA.

Location

Address: 4301-4321 Parker Ave.
Norfolk, VA 23508

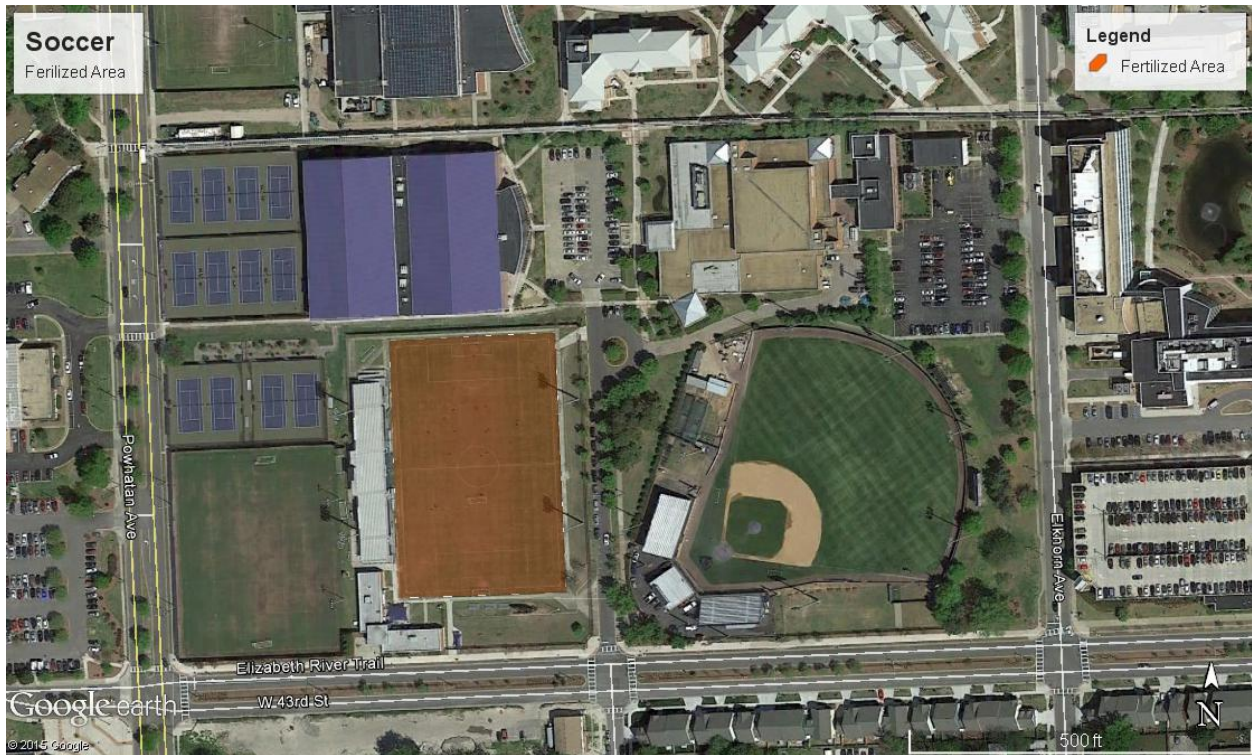
GPS Coordinates: 36.883369, -76.310307

Areas Managed

The soccer field is approximately 2.3 acres of warm season irrigated turf. The soil is a modified sand base.

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.2.3. Soccer Practice

The Old Dominion Soccer Complex is a soccer-specific stadium located on the campus of ODU. The 4,000-seat stadium is home to the Old Dominion Monarchs and Lady Monarchs soccer teams. The Monarchs compete in Conference USA. The practice field is located behind the stadium bleachers.

Location

Address: 4301-4321 Parker Ave.
Norfolk, VA 23508

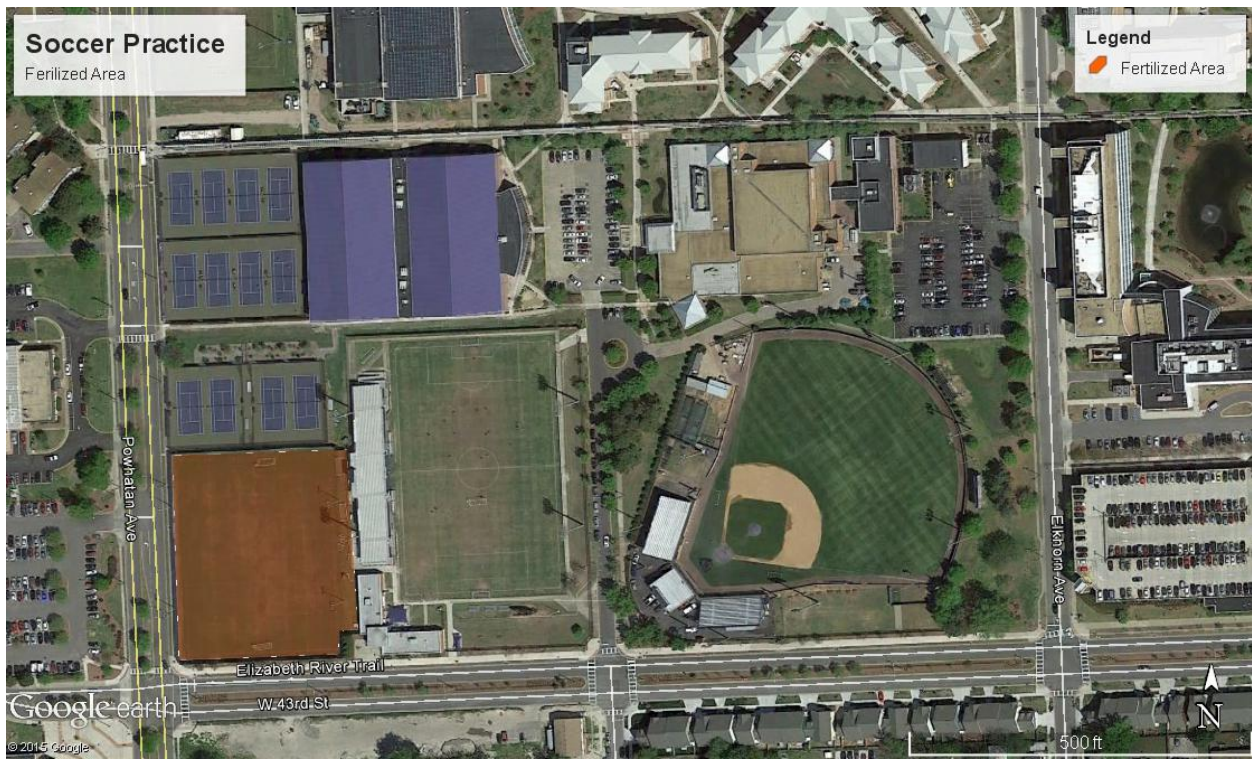
GPS Coordinates: 36.883369, -76.310307

Areas Managed

The soccer practice field is approximately 1.6 acres of warm season irrigated turf. The soil is a modified sand base.

Environmentally Sensitive

- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.3. Off Campus

2.3.1. VAMSC

The Virginia Modeling, Analysis and Simulation Center (VMASC) is a university-wide multidisciplinary research center that emphasizes modeling, simulation, and visualization (MS&V) research, development and education. Annually, the Center conducts approximately \$10M in funded research.

Location

Address: 1030 University Blvd.
Suffolk, VA 23435

GPS Coordinates: 36.869656, -76.418307

Areas Managed

The cool season irrigated turf around the building is approximately 2 acres.

Environmentally Sensitive

- There are numerous drainage ways and retention ponds located around this site.
- According to web soil survey, the land to the west of this property poses a risk of flooding. See section 0 for more information.
- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



2.3.2. Tri-Cities Center

Description

Old Dominion University's Higher Education Centers (HECs: ODU-Peninsula, ODU-Tri-Cities, ODU-Virginia Beach) serve as regional gateways to the University, providing accessible, high quality education in three convenient locations within greater Hampton Roads.

Location

Address: 1070 University Blvd.
Portsmouth, VA 23703
GPS Coordinates: 36.869407, -76.417100

Areas Managed

The cool season irrigated turf around the building is approximately 1 acre.

Environmentally Sensitive

- There are numerous drainage ways and retention ponds located around this site.
- According to web soil survey, the land to the west of this property poses a risk of flooding. See section 0 for more information.
- There are many roads, sidewalks and storm drains throughout the area. Be cautious when making fertilizer applications near these areas and always blow or sweep fertilizers and clippings off hardscape surfaces and back into the turf.



3. Soil Test Summaries

Discussion of soil test results and allowable nutrient inputs. Specific applications details can be found in Nutrient Application Worksheet.

Soil samples were taken by Robert Habel on 5/10/2022 and tested by Waypoint Analytical on 5/13/2022.

Soil tests are rated in terms of Very Low to Very High. To comply with Virginia Nutrient Management Standards and Criteria, Revised July 2014, no phosphorus may be applied if a soil test rates that element Very High. In economic terms, nutrients are not necessarily needed if they test above a medium rating; plant response is not guaranteed if soils already test above medium and therefore money can be saved by using a nitrogen only fertilizer. (See plant response chart page 51)

- A. There are multiple rates used in this plan. See worksheets for specifics.
- B. Soil samples were taken for each location. Some locations are grouped based on similar management. Limiting results will be used to make recommendations for these areas. This means the lowest input allowed was chosen for each group of results. Results will be discussed for each location/group individually.
- C. Plan is written for maximum nitrogen input. The grounds manager will decide if all applications are needed by monitoring turf conditions.
- D. Lime is needed in some areas please see lime chart and individual application sheets for more information.

| Soil Test Summary | | | | | | | | | | |
|---------------------------|----------------------|-------------------------------|-----------|-------------|------------|------------|-------------|------------|------------|----|
| Customer Name: | | Old Dominion University | | | | | | | | |
| Testing Lab: | | WayPoint Analytical | | | | | | | | |
| Sample Date: | | 5/10/2022 | | | | | | | | |
| Analysis Date: | | 5/13/2022 | | | | | | | | |
| Planner Name | | Five Oaks Agronomy Consulting | | | | | | | | |
| Certification Number | | 654 | | | | | | | | |
| Managed Area ID | Location | Soil pH | Buffer pH | Lab P (ppm) | VT P (ppm) | VT (H/M/L) | Lab K (ppm) | VT K (ppm) | VT (H/M/L) | |
| Campus Lawns | | | | | | | | | | |
| | Whitehurst | ODU 01 | 7.2 | | 268 | 119.5 | VH | 67 | 47.6 | M- |
| | Runte | ODU 02 | 7.4 | | 84 | 35.2 | H | 110 | 78.1 | M+ |
| | Kaufman Mall | ODU 03 | 6.1 | 6.79 | 228 | 101.2 | VH | 127 | 90.2 | H- |
| | Williamsburg Lawn | ODU 04 | 5.7 | 6.76 | 186 | 81.9 | VH | 108 | 76.7 | M+ |
| | Presidents - Central | ODU 05 | 6.3 | | 117 | 50.3 | H+ | 48 | 34.1 | M- |
| | Presidents - Side | ODU 06 | 6.6 | | 213 | 94.3 | VH | 82 | 58.2 | M |
| | Presidents - Seawall | ODU 07 | 6.2 | | 90 | 38.0 | H | 51 | 36.2 | M- |
| Athletic Fields | | | | | | | | | | |
| | Baseball Field | ODU 08 | 6.0 | 6.84 | 129 | 55.8 | VH | 80 | 56.8 | M |
| | Soccer | ODU 09 | 5.4 | 6.88 | 35 | 12.8 | M | 29 | 20.6 | L |
| | Soccer Practice | ODU 10 | 6 | 6.83 | 33 | 11.9 | M | 94 | 66.7 | M |
| Off Campus | | | | | | | | | | |
| City of Suffolk | | | | | | | | | | |
| | VAMSC | ODU 11 | 6.2 | | 48 | 18.7 | H- | 130 | 92.3 | H- |
| City of Portsmouth | | | | | | | | | | |
| | Tri-Cities Center | ODU 12 | 6.60 | | 43 | 16.4 | M+ | 156 | 110.8 | H |

3.1. Campus Lawns

| Soil Test Summary | | | | | | | | | |
|-------------------------|---------------|------------------------------------|----------------|-------------|--------------|--------------|-------------|-------------|--------------|
| Customer Name: | | Old Dominion University | | | | | | | |
| Testing Lab: | | WayPoint Analytical | | | | | | | |
| Sample Date: | | 5/10/2022 | | | | | | | |
| Analysis Date: | | 5/13/2022 | | | | | | | |
| Planner Name | | Five Oaks Agronomy Consulting, LLC | | | | | | | |
| Certification Number | | 654 | | | | | | | |
| Managed Area ID | | Soil pH | Buffer pH | Lab P (ppm) | VT P (ppm) | VT (H/M/L) | Lab K (ppm) | VT K (ppm) | VT (H/M/L) |
| Location | Soil Test ID# | | | | | | | | |
| Campus Lawns | | | | | | | | | |
| Whitehurst | ODU 01 | 7.2 | | 268 | 119.5 | VH | 67 | 47.6 | M- |
| Runte | ODU 02 | 7.4 | | 84 | 35.2 | H | 110 | 78.1 | M+ |
| Kaufman Mall | ODU 03 | 6.1 | 6.79 | 228 | 101.2 | VH | 127 | 90.2 | H- |
| Williamsburg Lawn | ODU 04 | 5.7 | 6.76 | 186 | 81.9 | VH | 108 | 76.7 | M+ |
| Presidents - Central | ODU 05 | 6.3 | | 117 | 50.3 | H+ | 48 | 34.1 | M- |
| Presidents - Side | ODU 06 | 6.6 | | 213 | 94.3 | VH | 82 | 58.2 | M |
| Presidents - Seawall | ODU 07 | 6.2 | | 90 | 38.0 | H | 51 | 36.2 | M- |
| Limiting results | | | N/A | | 119.5 | VH | | 90.2 | H- |
| Allowed Inputs | | Lime | See lime chart | | P | 0 #/M | | K | 1 #/M |

Whitehurst, Runte, Kaufman Mall and Presidents' Lawn are warm season fertilized common areas with similar soil sample results. Williamsburg Lawn is a cool season area and will have a separate application worksheet.

Soil tests limiting results show high (VH) levels of phosphorus and high (H-) levels of potassium. 0 #/M of phosphorus is allowed on all areas. Soil tests call for 1 #/M of potassium, but applications will be allowed to exceed this as potassium does not pose a threat to water quality and helps protect the plant from stresses.

Regulations allow for up to 4 #/M of nitrogen per year on warm season turf and 3.5 #/M on cool season turf. If using 100% water-soluble nitrogen 0.7 #/m may be applied every 30 days. If using slow-release materials, 1 #/M may be used every 30 days on warm season turf and 0.9 #/M may be used every 30 days on cool season turf. Do not exceed stated per year total.

Lime is needed on 2 of the 7 areas. If the liming material chosen does not equate to 100% CCE see chart on page 65 to adjust the required amount of lime. Attempt to apply at aeration. Apply no more than 50 #/M per 30-day period.

Kaufman & Williamsburg – The buffer pH is 6.76 and 6.79. 1 T/A of 100% Calcium Carbonate Equivalent (CCE) dolomitic limestone will be needed to adjust the soil pH to 6.2. This would be about 46 #/M.

3.2. Athletic Fields

3.2.1. Baseball

| Soil Test Summary | | | | | | | | | |
|------------------------|---------------|------------------------------------|--------------|-------------|------------|--------------|-------------|------------|----------------|
| Customer Name: | | Old Dominion University | | | | | | | |
| Testing Lab: | | WayPoint Analytical | | | | | | | |
| Sample Date: | | 5/10/2022 | | | | | | | |
| Analysis Date: | | 5/13/2022 | | | | | | | |
| Planner Name | | Five Oaks Agronomy Consulting, LLC | | | | | | | |
| Certification Number | | 654 | | | | | | | |
| Managed Area ID | | Soil pH | Buffer pH | Lab P (ppm) | VT P (ppm) | VT (H/M/L) | Lab K (ppm) | VT K (ppm) | VT (H/M/L) |
| Location | Soil Test ID# | | | | | | | | |
| Athletic Fields | | | | | | | | | |
| Baseball Field | ODU 08 | 6.0 | 6.84 | 129 | 55.8 | VH | 80 | 56.8 | M |
| Allowed Inputs | | Lime | 1 T/A | | P | 0 #/M | | K | 1.5 #/M |

This is a warm season, irrigated, modified sand-based field with drainage.

Soil tests results show high (VH) levels of phosphorus and medium (M) levels of potassium. 0 #/M of phosphorus is allowed. Soil tests call for 1.5 #/M of potassium, but applications will be allowed to exceed this as potassium does not pose a threat to water quality and helps protect the plant from stresses.

5 #/M nitrogen allowed per year on this irrigated warm season field with an additional 1 #/M allowed for overseeding.

- Water Soluble Nitrogen must be applied as two applications not to exceed 0.35 #/M each with a minimum of 15 days between applications. Alternatively, using a material that contains at least 15% slowly available nitrogen sources, split applications of 0.5 #/M may be applied with a minimum of 15 days between applications.
- For overseeded warm season turf, if using a minimum of 15% slow release N, a max of 1#/M N may be used. Applications of 0.5 #/M may be applied in spring and fall. If using less than 15% slow release N, a max of 0.7 #/M N may be used. Applications of 0.35 #/M may be applied in spring and fall.
- Do not exceed stated per year total.
- These applications must be made within this time frame.

The buffer pH is 6.84. 1 T/A of 100% Calcium Carbonate Equivalent (CCE) dolomitic limestone will be needed to adjust the soil pH to 6.2. This would be about 46 #/M. If the liming material chosen does not equate to 100% CCE see chart on page 65 to adjust the required amount of lime. Attempt to apply at aeration. Apply no more than 50 #/M per 30-day period.

3.2.2. Soccer

| Soil Test Summary | | | | | | | | | |
|------------------------|---------------|------------------------------------|----------------|-------------|------------|----------------|-------------|------------|----------------|
| Customer Name: | | Old Dominion University | | | | | | | |
| Testing Lab: | | WayPoint Analytical | | | | | | | |
| Sample Date: | | 5/10/2022 | | | | | | | |
| Analysis Date: | | 5/13/2022 | | | | | | | |
| Planner Name | | Five Oaks Agronomy Consulting, LLC | | | | | | | |
| Certification Number | | 654 | | | | | | | |
| Managed Area ID | | Soil pH | Buffer pH | Lab P (ppm) | VT P (ppm) | VT (H/M/L) | Lab K (ppm) | VT K (ppm) | VT (H/M/L) |
| Location | Soil Test ID# | | | | | | | | |
| Athletic Fields | | | | | | | | | |
| Soccer | ODU 09 | 5.4 | 6.88 | 35 | 12.8 | M | 29 | 20.6 | L |
| Allowed Inputs | | Lime | 0.5 T/A | | P | 1.5 #/M | | K | 2.5 #/M |

This is a warm season, irrigated, modified sand-based field with drainage.

Soil tests results show medium (M) levels of phosphorus and low (L) levels of potassium. 1.5 #/M of phosphorus are allowed. Soil tests call for 2.5 #/M of potassium, but more will be allowed as potassium does not pose a threat to water quality and helps protect the plant from stresses.

5 #/M nitrogen allowed per year on this irrigated warm season field with an additional 1 #/M allowed for overseeding.

- Water Soluble Nitrogen must be applied as two applications not to exceed 0.35 #/M each with a minimum of 15 days between applications. Alternatively, using a material that contains at least 15% slowly available nitrogen sources, split applications of 0.5 #/M may be applied with a minimum of 15 days between applications.
- For overseeded warm season turf, if using a minimum of 15% slow release N, a max of 1#/M N may be used. Applications of 0.5 #/M may be applied in spring and fall. If using less than 15% slow release N, a max of 0.7 #/M N may be used. Applications of 0.35 #/M may be applied in spring and fall.
- Do not exceed stated per year total.
- These applications must be made within this time frame.

The buffer pH is 6.88. 0.5 T/A of 100% Calcium Carbonate Equivalent (CCE) dolomitic limestone will be needed to adjust the soil pH to 6.2. This would be about 23 #/M. If the liming material chosen does not equate to 100% CCE see chart on page 65 to adjust the required amount of lime. Attempt to apply at aeration. Apply no more than 50 #/M per 30-day period.

3.2.3. Soccer Practice

| Soil Test Summary | | | | | | | | | |
|------------------------|---------------|------------------------------------|--------------|-------------|------------|----------------|-------------|------------|----------------|
| Customer Name: | | Old Dominion University | | | | | | | |
| Testing Lab: | | WayPoint Analytical | | | | | | | |
| Sample Date: | | 5/10/2022 | | | | | | | |
| Analysis Date: | | 5/13/2022 | | | | | | | |
| Planner Name | | Five Oaks Agronomy Consulting, LLC | | | | | | | |
| Certification Number | | 654 | | | | | | | |
| Managed Area ID | | Soil pH | Buffer pH | Lab P (ppm) | VT P (ppm) | VT (H/M/L) | Lab K (ppm) | VT K (ppm) | VT (H/M/L) |
| Location | Soil Test ID# | | | | | | | | |
| Athletic Fields | | | | | | | | | |
| Soccer Practice | ODU 10 | 6 | 6.83 | 33 | 11.9 | M | 94 | 66.7 | M |
| Allowed Inputs | | Lime | 1 T/A | | P | 1.5 #/M | | K | 1.5 #/M |

This is a warm season, irrigated, modified sand-based field with drainage.

Soil tests results show medium (M) levels of phosphorus and medium (M) levels of potassium. 1.5 #/M of phosphorus are allowed. Soil tests call for 1.5 #/M of potassium, but more will be allowed as potassium does not pose a threat to water quality and helps protect the plant from stresses.

5 #/M nitrogen allowed per year on this irrigated warm season field with an additional 1 #/M allowed for overseeding.

- Water Soluble Nitrogen must be applied as two applications not to exceed 0.35 #/M each with a minimum of 15 days between applications. Alternatively, using a material that contains at least 15% slowly available nitrogen sources, split applications of 0.5 #/M may be applied with a minimum of 15 days between applications.
- For overseeded warm season turf, if using a minimum of 15% slow release N, a max of 1#/M N may be used. Applications of 0.5 #/M may be applied in spring and fall. If using less than 15% slow release N, a max of 0.7 #/M N may be used. Applications of 0.35 #/M may be applied in spring and fall.
- Do not exceed stated per year total.
- These applications must be made within this time frame.

The buffer pH is 6.83. 1 T/A of 100% Calcium Carbonate Equivalent (CCE) dolomitic limestone will be needed to adjust the soil pH to 6.2. This would be about 46 #/M. If the liming material chosen does not equate to 100% CCE see chart on page 65 to adjust the required amount of lime. Attempt to apply at aeration. Apply no more than 50 #/M per 30-day period.

3.3. Off Campus

| Soil Test Summary | | | | | | | | | |
|---------------------------|---------------|------------------------------------|-----------|-------------|------------|--------------|-------------|------------|-----------------|
| Customer Name: | | Old Dominion University | | | | | | | |
| Testing Lab: | | WayPoint Analytical | | | | | | | |
| Sample Date: | | 5/10/2022 | | | | | | | |
| Analysis Date: | | 5/13/2022 | | | | | | | |
| Planner Name | | Five Oaks Agronomy Consulting, LLC | | | | | | | |
| Certification Number | | 654 | | | | | | | |
| Managed Area ID | | Soil pH | Buffer pH | Lab P (ppm) | VT P (ppm) | VT (H/M/L) | Lab K (ppm) | VT K (ppm) | VT (H/M/L) |
| Location | Soil Test ID# | | | | | | | | |
| Off Campus | | | | | | | | | |
| City of Suffolk | | | | | | | | | |
| VAMSC | ODU 11 | 6.2 | | 48 | 18.7 | H- | 130 | 92.3 | H- |
| City of Portsmouth | | | | | | | | | |
| Tri-Cities Center | ODU 12 | 6.60 | | 43 | 16.4 | M+ | 156 | 110.8 | H |
| Limiting Results | | | | | 18.7 | H- | | 110.8 | H |
| Allowed Inputs | | Lime | | | P | 1 #/M | | K | 0.75 #/M |

These locations are cool season fertilized common areas and treated alike.

Soil tests limiting results show high (H-) levels of phosphorus and high (H) levels of potassium. 1 #/M of phosphorus is allowed on all areas. Soil tests call for 0.75 #/M of potassium, but applications will be allowed to exceed this as potassium does not pose a threat to water quality and helps protect the plant from stresses.

Regulations allow for up to 3.5 lbs/M of nitrogen per year. If using 100% water-soluble nitrogen 0.7 lbs may be applied every 30 days. If using slow release materials, 0.9 lbs may be used every 30 days. Do not exceed stated per year total.

No lime is needed at this time.

4. Nutrient Application Worksheets

The following worksheets detail specific fertilizer applications using the previously discussed soil test information. All nutrient input level recommendations come from the Department of Conservation and Recreation's Nutrient Management Standards and Criteria, this document is part of the Code of Virginia and thus is law for those required to have a Nutrient Management Plan. While applications do not have to be followed specifically, it is important to note that per month nitrogen levels shall not be exceeded and per year phosphorus levels shall not be exceeded. In some cases, potassium input may exceed recommended levels, as it does not have the same detrimental effects on the health of Virginia's waters as nitrogen and phosphorus. Potassium is considered the plant nutrient most responsible for quality. It helps plants respond to stresses like drought, extreme heat/cold, and insect/disease pressure. The plants increased ability to respond to stress in a positive manner can help reduce the need for increased N and P fertility and reseeding caused by stress.

Specific fertilizers have been recommended. Fertilizer analyses are subject to change dependent on availability, suppliers chosen, etc. It is your responsibility to choose fertilizers and calculate appropriate rates that follow discussed regulations. Do not exceed stated monthly Total N or yearly total P. Please contact your planner if you need help adjusting a fertilizer application to meet the requirements of this plan. A spreadsheet to help calculate rates is available on provided flash drive.

All fertilizers suggested are granular, spray applications may be substituted. Labels for suggested fertilizers are located at the end of the document. Fertilizer analyses may be changed, but rates and slow release content must adhere to guidelines.

Making fertilizer applications without calibrating your equipment will lead to inaccurate applications. Application rates (# product/M) and amount of product needed per application (lb/app) are included in spreadsheet.

Please stay within dates indicated on spreadsheets.

Class B bio-solids and animal manures cannot be used without revising this plan to reflect the appropriate setbacks and environmental hazards. Class A bio-solids like Milorganite can be used without problem.

Potassium applications have been exceeded. Potassium helps protect the plant from stress and poses no threat to water quality.

Fertilizer labels of products chosen are located at end of document.

All applications are shown in #/M.

Lime Application Worksheet

| Lime Application Worksheet | | | | | | | | | | |
|----------------------------|-----------|-------|--------------|---------|-----------|----------|----------------------------|--------|-------------|-------|
| Location | Buffer pH | Acres | Total Needed | | | | App Date and Per app Rates | | | |
| | | | Ton/A | lb/1000 | Dolomitic | Calcitic | Sept '22 | | October '22 | |
| | | | | | | | 1000 | Total | 1000 | Total |
| Campus Lawns | | | | | | | | | | |
| Whitehurst | | 1.1 | | 46 | | | | | | |
| Runte | | 0.9 | | | | | | | | |
| Kaufman Mall | 6.79 | 5.7 | 1.00 | 69 | 11,421 | | 46 | 11,421 | | |
| Williamsburg Lawn | 6.76 | 2.7 | 1.00 | 69 | 5,410 | | 46 | 5,410 | | |
| Athletic Fields | | | | | | | | | | |
| Baseball | 6.84 | 2.1 | 1.00 | 46 | 4,208 | | 46 | 4,208 | | |
| Soccer | 6.88 | 2.3 | 0.50 | 23 | 2,304 | | 23 | 2,304 | | |
| Soccer Practice | 6.83 | 1.6 | 1.00 | 46 | 3,206 | | 46 | 3,206 | | |
| Off Campus | | | | | | | | | | |
| VMASC | | 2.0 | | | | | | | | |
| Tricities | | 1.0 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

4.1. Campus Lawns

4.1.1. Warm Season Lawns

| NUTRIENT APPLICATION WORK SHEET | | | | | | | | | | | | | |
|---------------------------------|---|--------------------|-----------------|-----------------------------|--|------------|--------------------------|---|--|--|--------------------|--------|------------------|
| Name: | ODU | | | Management Area: | Campus Lawns - Whitehurst, Runte, Kaufman Mall, Presidents Lawn(all) | | | | | | | | |
| Prepared: | 6/1/2022 | | | Area: (Acres) | 7.95 | Turf Type: | Warm Season General Turf | | | | | | |
| Expires: | 6/1/2025 | | | | | | | | | | | | |
| Total Yearly Nutrient Needs | Application Month/Day | Analysis N - P - K | Interval (days) | Fertilizer Description | Rate/M | lbs/app | % Slow Release N | Total/M N - P - K | | | Lime lbs/M | Gypsum | lbs/app lime/gyp |
| Nitrogen | No applications before March 20 | | | | | | | | | | | | |
| 4 | May | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 4.00 | 1385 | 32 | 1.00 - 0.00 - 0.12 | | | | | |
| Phosphorus | | | | | | | | | | | | | |
| 0 | June | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 4.00 | 1385 | 32 | 1.00 - 0.00 - 0.12 | | | | | |
| Potassium | | | | | | | | | | | | | |
| 1 | August | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 4.00 | 1385 | 32 | 1.00 - 0.00 - 0.12 | | | | | |
| | September | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 4.00 | 1385 | 32 | 1.00 - 0.00 - 0.12 | | | | | |
| | No applications after October 19 | | | | | | | | | | | | |
| | Lime | | | | | | | | | | | | |
| | Lime is needed on somer areas, see lime application chart | | | | | | | | | | | | |
| | | | | | | | | Total used: | | | 4.00 - 0.00 - 0.48 | | |
| | | | | | | | | Do not exceed yearly maximum allowed by Regulation (Except for K): | | | 4 - 0 - 1 | | |

Notes:

- Warm season general turf limiting results are VH in Phosphorus and H- Potassium.
- 4 #/M nitrogen allowed per year on this common cool season turf. If using 100% water-soluble nitrogen 0.7 #/M may be applied every 30 days. If using slow release materials, 1 #/M may be used every 30 days. Do not exceed stated per year total.

4.1.2. Cool Season Lawns

| NUTRIENT APPLICATION WORK SHEET | | | | | | | | | | | | | | |
|---------------------------------|--|--------------------|-----------------|-----------------------------|----------------------------------|------------|--------------------------|---|------|------|------------|----------------|----------|--|
| Name: | ODU | | | Management Area: | Campus Lawns - Williamsburg Lawn | | | | | | | | | |
| Prepared: | 6/1/2022 | | | Area: (Acres) | 2.7 | Turf Type: | Cool Season General Turf | | | | | | | |
| Expires: | 6/1/2025 | | | | | | | | | | | | | |
| Total Yearly Nutrient Needs | Application Month/Day | Analysis N - P - K | Interval (days) | Fertilizer Description | Rate/M | lbs/app | % Slow Release N | Total/M N - P - K | | | Lime lbs/M | Gypsum lbs/app | lime/gyp | |
| Nitrogen | No applications before February 6 | | | | | | | | | | | | | |
| 3.5 | March | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 3.60 | 423 | 32 | 0.90 | - | 0.00 | - | 0.11 | | |
| Phosphorus | | | | | | | | | | | | | | |
| 0 | November | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 3.60 | 423 | 32 | 0.90 | - | 0.00 | - | 0.11 | | |
| Potassium | | | | | | | | | | | | | | |
| 1 | No applications after December 31 | | | | | | | | | | | | | |
| | Lime | | | | | | | | | | | | | |
| | Lime is needed on some areas, see lime application chart | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | Total used: | 1.80 | - | 0.00 | - | 0.22 | |
| | | | | | | | | Do not exceed yearly maximum allowed by Regulation (Except for K): | 3.5 | - | 0 | - | 1 | |

Notes:

- Cool season general turf limiting results are VH in Phosphorus and H- Potassium.
- 3.5 #/M nitrogen allowed per year on this common cool season turf. If using 100% water-soluble nitrogen 0.7 #/M may be applied every 30 days. If using slow release materials, 0.9 #/M may be used every 30 days. Do not exceed stated per year total.

4.2. Athletic Fields

4.2.1. Baseball

| NUTRIENT APPLICATION WORK SHEET | | | | | | | | | |
|---------------------------------|--|-----------------------|--------------------|-----------------------------|---|---------|------------------|-----------------------------------|--|
| Name: | ODU | | | Management Area: | Baseball | | | | |
| Prepared: | 6/1/2022 | | | Area: (Acres) | 2.1 | | Turf Type: | Warm Season Irrigated Sports Turf | |
| Expires: | 6/1/2025 | | | | | | | | |
| Total Yearly Nutrient Needs | Application Month/Day | Analysis N - P - K | Interval (days) | Fertilizer Description | Rate/M | lbs/app | % Slow Release N | Total/M N - P - K | |
| Nitrogen | No applications before March 20 on warm season turf. If turf is overseeded, no applications before February 6. | | | | | | | | |
| 5 | March | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| Phosphorus | | | | | | | | | |
| 0 | March 20 - April 30 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| Potassium | | | | | | | | | |
| 1.5 | May 1 - May 15 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | June 1-15 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | June 16-30 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | July 1-15 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | July 16-31 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | August 1-15 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | August 16 -31 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | Sept 1 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | Sept 15 | 25 - 0 - 3 | 15 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | Oct-Nov | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 2.00 | 183 | 32 | 0.50 - 0.00 - 0.06 | |
| | No applications after October 19 on warm season turf. If turf is overseeded, no applications after December 31. | | | | | | | | |
| Lime | September '22 - 1 T/A Dolomitic Limestone needed | | | | | | | | |
| Overseeding | Make these applications only if turf has been overseeded. | | | | Total used: | | | 6.00 - 0.00 - 0.72 | |
| Add 1 #/M N | | | | | Do not exceed yearly maximum allowed by Regulation (Except for K): | | | 5 - 0 - 1.5 | |

Notes:

- Soil test results are VH in Phosphorus and M Potassium.
- Water Soluble Nitrogen must be applied as two applications not to exceed 0.35 #/M each with a minimum of 15 days between applications. Alternatively, using a material that contains at least 15% slowly available nitrogen sources, split applications of 0.5 #/M may be applied with a minimum of 15 days between applications.
- For overseeded warm season turf, if using a minimum of 15% slow release N, a max of 1#/M N may be used. Applications of 0.5 #/M may be applied in spring and fall. If using less than 15% slow release N, a max of 0.7 #/M N may be used. Applications of 0.35 #/M may be applied in spring and fall.

4.2.2. Soccer

| NUTRIENT APPLICATION WORK SHEET | | | | | | | | | | |
|---------------------------------|--|-----------------------|-----------------|---------------------------------|---|------------|-----------------------------------|----------------------|--|--|
| Name: | ODU | | | Management Area: | Soccer | | | | | |
| Prepared: | 6/1/2022 | | | Area: (Acres) | 2.3 | Turf Type: | Warm Season Irrigated Sports Turf | | | |
| Expires: | 6/1/2025 | | | | | | | | | |
| Total Yearly Nutrient Needs | Application Month/Day | Analysis N - P - K | Interval (days) | Fertilizer Description | Rate/M | lbs/app | % Slow Release N | Total/M N - P - K | | |
| Nitrogen | No applications before March 20 on warm season turf. If turf is overseeded, no applications before February 6. | | | | | | | | | |
| 5 | March | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 2.00 | 200 | 32 | 0.50 - 0.00 - 0.06 | | |
| Phosphorus | | | | | | | | | | |
| 1.5 | March 20 - April 30 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| Potassium | | | | | | | | | | |
| 2.5 | May 1 - May 15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | June 1-15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | June 16-30 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | July 1-15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | July 16-31 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | August 1-15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | August 16-31 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | Sept 1 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | Sept 15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 314 | 55 | 0.50 - 0.09 - 0.25 | | |
| | Oct-Nov | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 2.00 | 200 | 32 | 0.50 - 0.00 - 0.06 | | |
| | No applications after October 19 on warm season turf. If turf is overseeded, no applications after December 31. | | | | | | | | | |
| Lime | September '22 - 0.5 T/A Dolomitic Limestone needed | | | | | | | | | |
| Overseeding | Make these applications only if turf has been overseeded. | | | | Total used: | | | 6.00 - 0.90 - 2.62 | | |
| Add 1 #/M N | | | | | Do not exceed yearly maximum allowed by Regulation (Except for K): | | | 5 - 1.5 - 2.5 | | |

Notes:

- Soil test results are M in Phosphorus and L Potassium.
- Water Soluble Nitrogen must be applied as two applications not to exceed 0.35 #/M each with a minimum of 15 days between applications. Alternatively, using a material that contains at least 15% slowly available nitrogen sources, split applications of 0.5 #/M may be applied with a minimum of 15 days between applications.
- For overseeded warm season turf, if using a minimum of 15% slow release N, a max of 1#/M N may be used. Applications of 0.5 #/M may be applied in spring and fall. If using less than 15% slow release N, a max of 0.7 #/M N may be used. Applications of 0.35 #/M may be applied in spring and fall.

4.2.3. Soccer Practice

| NUTRIENT APPLICATION WORK SHEET | | | | | | | | | | |
|---------------------------------|--|-----------------------|-----------------|---------------------------------|---|------------|-----------------------------------|----------------------|--|--|
| Name: | ODU | | | Management Area: | Soccer Practice | | | | | |
| Prepared: | 6/1/2022 | | | Area: (Acres) | 1.6 | Turf Type: | Warm Season Irrigated Sports Turf | | | |
| Expires: | 6/1/2025 | | | | | | | | | |
| Total Yearly Nutrient Needs | Application Month/Day | Analysis N - P - K | Interval (days) | Fertilizer Description | Rate/M | lbs/app | % Slow Release N | Total/M N - P - K | | |
| Nitrogen | No applications before March 20 on warm season turf. If turf is overseeded, no applications before February 6. | | | | | | | | | |
| 5 | March | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 2.00 | 139 | 32 | 0.50 - 0.00 - 0.06 | | |
| Phosphorus | | | | | | | | | | |
| 1.5 | March 20 - April 30 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| Potassium | | | | | | | | | | |
| 1.5 | May 1 - May 15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | June 1-15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | June 16-30 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | July 1-15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | July 16-31 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | August 1-15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | August 16-31 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | Sept 1 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | Sept 15 | 16 - 3 - 8 | 15 | 16-3-8 50%XCU 20%Biosolids 2%FE | 3.13 | 218 | 55 | 0.50 - 0.09 - 0.25 | | |
| | Oct-Nov | 25 - 0 - 3 | 30 | southernLAWN 25-0-3 32% XRT | 2.00 | 139 | 32 | 0.50 - 0.00 - 0.06 | | |
| | No applications after October 19 on warm season turf. If turf is overseeded, no applications after December 31. | | | | | | | | | |
| Lime | September '22 - 1 T/A Dolomitic Limestone needed | | | | | | | | | |
| Overseeding | Make these applications only if turf has been overseeded. | | | | Total used: | | | 6.00 - 0.90 - 2.62 | | |
| Add 1 #/M N | | | | | Do not exceed yearly maximum allowed by Regulation (Except for K): | | | 5 - 1.5 - 1.5 | | |

Notes:

- Soil test results are M in Phosphorus and M Potassium.
- Water Soluble Nitrogen must be applied as two applications not to exceed 0.35 #/M each with a minimum of 15 days between applications. Alternatively, using a material that contains at least 15% slowly available nitrogen sources, split applications of 0.5 #/M may be applied with a minimum of 15 days between applications.
- For overseeded warm season turf, if using a minimum of 15% slow release N, a max of 1#/M N may be used. Applications of 0.5 #/M may be applied in spring and fall. If using less than 15% slow release N, a max of 0.7 #/M N may be used. Applications of 0.35 #/M may be applied in spring and fall.

4.3. Off Campus

| NUTRIENT APPLICATION WORK SHEET | | | | | | | | | | | | | | | | | |
|---------------------------------|--|--------------------|---|------------------|------------------------|------------------------------------|---|--------------------|-------------------|------|---|------------|--------|------------------|--|--|--|
| Name: | ODU | | | Management Area: | Off Campus Lawns | | | | | | | | | | | | |
| Prepared: | 6/1/2022 | | | Area: | 3 | Turf Type: | Cool Season General Turf | | | | | | | | | | |
| Expires: | 6/1/2025 | | | | | | | | | | | | | | | | |
| Total Yearly Nutrient Needs | Application Month/Day | Analysis N - P - K | | Interval (days) | Fertilizer Description | Rate/M | lbs/app | % Slow Release N | Total/M N - P - K | | | Lime lbs/M | Gypsum | lbs/app lime/gyp | | | |
| Nitrogen | No applications before February 6 | | | | | | | | | | | | | | | | |
| 3.5 | March | 16 | 3 | 8 | 30 | 16-3-8 50% XCU 20% Biosolids 2% FE | 5.63 | 736 | 55 | 0.90 | - | 0.17 | - | 0.45 | | | |
| Phosphorus | | | | | | | | | | | | | | | | | |
| 1 | May | 16 | 3 | 8 | 30 | 16-3-8 50% XCU 20% Biosolids 2% FE | 5.00 | 653 | 55 | 0.80 | - | 0.15 | - | 0.40 | | | |
| Potassium | | | | | | | | | | | | | | | | | |
| 0.75 | September | 16 | 3 | 8 | 30 | 16-3-8 50% XCU 20% Biosolids 2% FE | 5.63 | 736 | 55 | 0.90 | - | 0.17 | - | 0.45 | | | |
| | November | 16 | 3 | 8 | 30 | 16-3-8 50% XCU 20% Biosolids 2% FE | 5.63 | 736 | 55 | 0.90 | - | 0.17 | - | 0.45 | | | |
| | No applications after December 31 | | | | | | | | | | | | | | | | |
| | Lime | | | | | | | | | | | | | | | | |
| | No Lime Needed | | | | | | | | | | | | | | | | |
| | | | | | | | Total used: | 3.50 - 0.66 - 1.75 | | | | | | | | | |
| | | | | | | | Do not exceed yearly maximum allowed by Regulation (Except for K): | 3.5 - 1 - 0.75 | | | | | | | | | |

Notes:

- Cool season general turf limiting results are H- in Phosphorus and H Potassium.
- 3.5 #/M nitrogen allowed per year on this common cool season turf. If using 100% water-soluble nitrogen 0.7 #/M may be applied every 30 days. If using slow release materials, 0.9 #/M may be used every 30 days. Do not exceed stated per year total.

5. Fertilizer Application Records

| Fertilizer Application Records | | | | | | | | |
|--|--|--------------|------|-----------------------------|--------------------------|------|------------------------|----------------|
| Location Information | | | | Management Area information | | | | |
| Name: | Old Dominion University | | | Management Area ID: | Campus Lawns | | | |
| Address: | Douglas Alexander – Director, Environmental Health & Safety | | | Management Area Size: | 7.95 | | | |
| | 5115 Hampton Blvd, Norfolk, VA 23529 | | | Plant Species: | Warm Season General Turf | | | |
| Phone#: | 757-683-5817 | | | Notes: | | | | |
| Date | Applicator/Supervisor | Weather Info | | | Fertilizer Analysis | Rate | Amount Fertilizer Used | Equipment Used |
| | | Temp | Wind | Precip | | | | |
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| When was the last time your fertilizer equipment was calibrated??? For information on calibration, see Chapter 10 of the "Urban Nutrient Management Handbook". Available for download at http://pubs.ext.vt.edu/430/430-350/430-350.html | | | | | | | | |

Fertilizer Application Records

| Fertilizer Application Records | | | | | | | | |
|--------------------------------|--|--------------|------|--------|-----------------------------|--------------------------|------------------------|----------------|
| Location Information | | | | | Management Area information | | | |
| Name: | Old Dominion University | | | | Management Area ID: | Campus Lawns Cool | | |
| Address: | Douglas Alexander – Director, Environmental Health & Safety | | | | Management Area Size: | 2.7 | | |
| | 5115 Hampton Blvd, Norfolk, VA 23529 | | | | Plant Species: | Cool Season General Turf | | |
| Phone#: | 757-683-5817 | | | | Notes: | | | |
| Date | Applicator/Supervisor | Weather Info | | | Fertilizer Analysis | Rate | Amount Fertilizer Used | Equipment Used |
| | | Temp | Wind | Precip | | | | |
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When was the last time your fertilizer equipment was calibrated???

For information on calibration, see Chapter 10 of the "Urban Nutrient Management Handbook".
Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

Fertilizer Application Records

| Location Information | | | Management Area information | |
|----------------------|--|--|-----------------------------|------------------------|
| Name: | Old Dominion University | | Management Area ID: | Baseball |
| Address: | Douglas Alexander – Director, Environmental Health & Safety | | Management Area Size: | 2.1 |
| | 5115 Hampton Blvd, Norfolk, VA 23529 | | Plant Species: | Warm Season Irr Sports |
| Phone#: | 757-683-5817 | | Notes: | |

| Date | Applicator/Supervisor | Weather Info | | | Fertilizer Analysis | Rate | Amount Fertilizer Used | Equipment Used | |
|------|-----------------------|--------------|------|--------|---------------------|------|------------------------|----------------|--|
| | | Temp | Wind | Precip | | | | | |
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When was the last time your fertilizer equipment was calibrated???

For information on calibration, see Chapter 10 of the "Urban Nutrient Management Handbook".
Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

Fertilizer Application Records

| Location Information | | | | Management Area information | | | | |
|----------------------|--|--------------|------|-----------------------------|------------------------|------|------------------------|----------------|
| Name: | Old Dominion University | | | Management Area ID: | Soccer | | | |
| Address: | Douglas Alexander – Director, Environmental Health & Safety | | | Management Area Size: | 2.3 | | | |
| | 5115 Hampton Blvd, Norfolk, VA 23529 | | | Plant Species: | Warm Season Irr Sports | | | |
| Phone#: | 757-683-5817 | | | Notes: | | | | |
| Date | Applicator/Supervisor | Weather Info | | | Fertilizer Analysis | Rate | Amount Fertilizer Used | Equipment Used |
| | | Temp | Wind | Precip | | | | |
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When was the last time your fertilizer equipment was calibrated???
 For information on calibration, see Chapter 10 of the "Urban Nutrient Management Handbook".
 Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

Fertilizer Application Records

| Location Information | | | | | Management Area information | | | |
|---|--|--------------|------|--------|-----------------------------|------------------------|---------------------------|-------------------|
| Name: | Old Dominion University | | | | Management Area ID: | Soccer Practice | | |
| Address: | Douglas Alexander – Director, Environmental Health & Safety | | | | Management Area Size: | 1.6 | | |
| | 5115 Hampton Blvd, Norfolk, VA 23529 | | | | Plant Species: | Warm Season Irr Sports | | |
| Phone#: | 757-683-5817 | | | | Notes: | | | |
| Date | Applicator/Supervisor | Weather Info | | | Fertilizer Analysis | Rate | Amount Fertilizer Used | Equipment Used |
| | | Temp | Wind | Precip | | | | |
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| <p>When was the last time your fertilizer equipment was calibrated???</p> <p>For information on calibration, see Chapter 10 of the "Urban Nutrient Management Handbook".</p> <p>Available for download at http://pubs.ext.vt.edu/430/430-350/430-350.html</p> | | | | | | | | |

Fertilizer Application Records

| Location Information | | | | | Management Area information | | | | |
|----------------------|--|--------------|------|--------|-----------------------------|--------------------------|------------------------|----------------|--|
| Name: | Old Dominion University | | | | Management Area ID: | Off Campus | | | |
| Address: | Douglas Alexander – Director, Environmental Health & Safety | | | | Management Area Size: | 3 | | | |
| | 5115 Hampton Blvd, Norfolk, VA 23529 | | | | Plant Species: | Cool Season General Turf | | | |
| Phone#: | 757-683-5817 | | | | Notes: | | | | |
| Date | Applicator/Supervisor | Weather Info | | | Fertilizer Analysis | Rate | Amount Fertilizer Used | Equipment Used | |
| | | Temp | Wind | Precip | | | | | |
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When was the last time your fertilizer equipment was calibrated???

For information on calibration, see Chapter 10 of the "Urban Nutrient Management Handbook". Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

6. Reference Material

Nutrient Availability According to pH

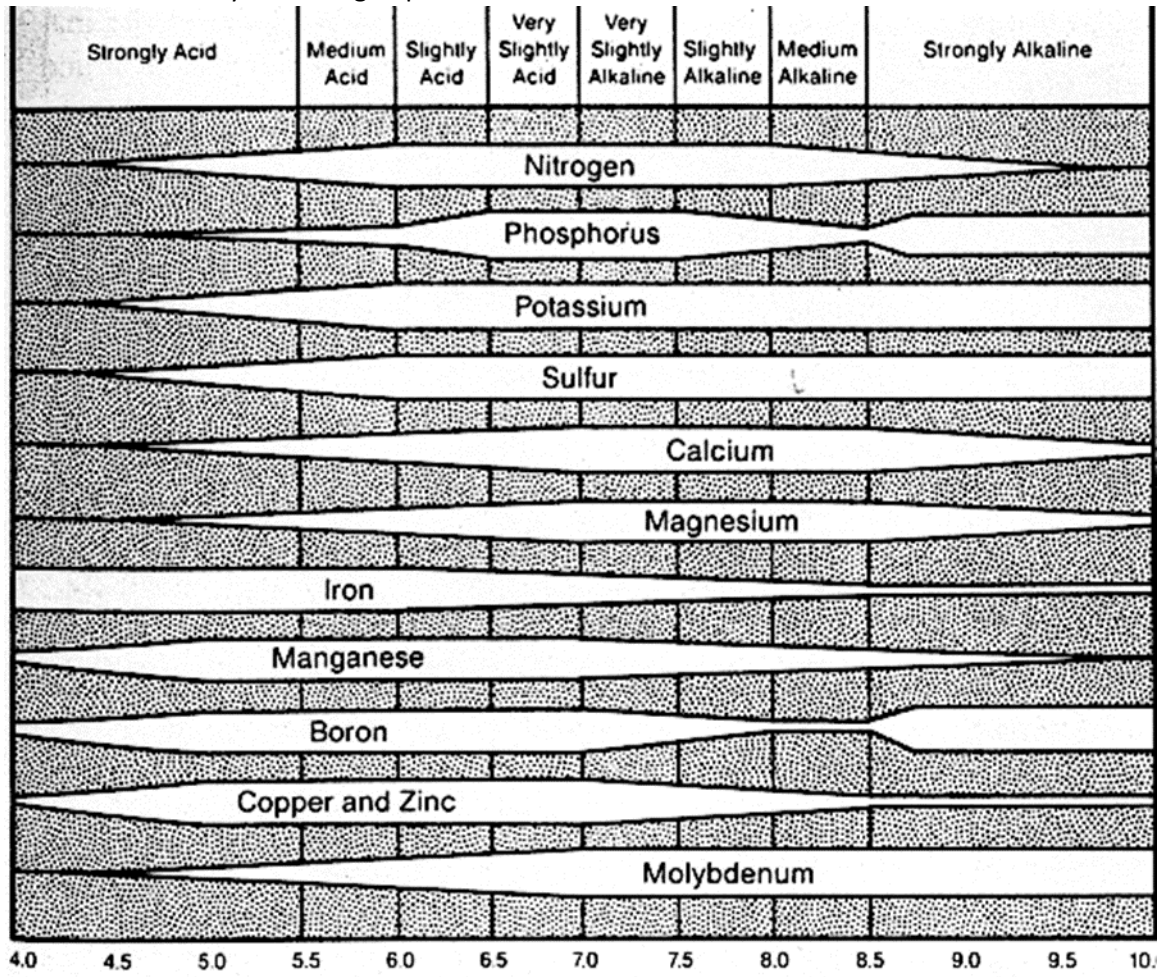


Figure 1: Nutrient Availability at pH

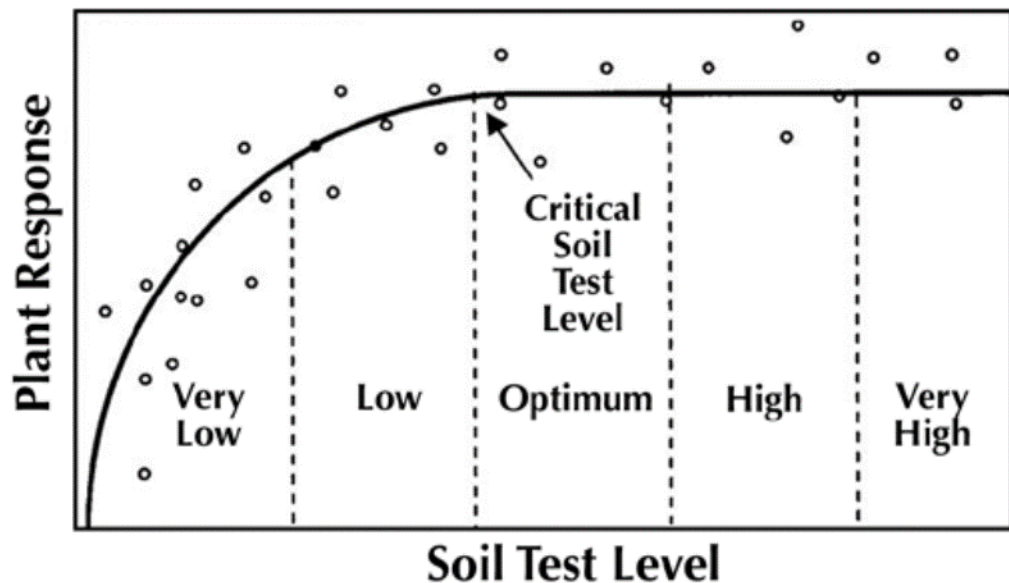


Figure 2: Plant Response Chart

Very low: A plant response is most likely if the indicated nutrient is applied. A large portion of the nutrient requirement must come from fertilization.

Low: A plant response is likely if the indicated nutrient is applied. A portion of the nutrient requirement must come from fertilization.

Medium: A plant response may or may not occur if the indicated nutrient is applied. A small portion of the nutrient requirement must come from fertilization.

High: Plant response is not expected. No additional fertilizer is needed.

Very high: Plant response is not expected. The soil can supply much more than the turf requires. Additional fertilizer should not be added to avoid nutritional problems and adverse environmental consequences.

Standards and Criteria

Section VI. Turfgrass Nutrient Recommendations for Home Lawns, Office Parks, Public Lands and Other Similar Residential/Commercial Grounds

Definitions

For the purposes of this section, the following definitions, as presented by the Association of American Plant Food Control Officials (AAPFCO), apply:

“Enhanced efficiency fertilizer” describes fertilizer products with characteristics that allow increased plant nutrient availability and reduce the potential of nutrient losses to the environment when compared to an appropriate reference product.

“Slow or controlled release fertilizer” means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference “rapidly available nutrient fertilizer” such as ammonium nitrate, urea, ammonium phosphate or potassium chloride. A slow or controlled release fertilizer must contain a minimum of 15 percent slowly available forms of nitrogen.

“Water soluble nitrogen”, “WSN”, or “readily available nitrogen” means: Water soluble nitrogen in either ammonical, urea, or nitrate form that does not have a controlled release, or slow response.

Recommended Season of Application For Nitrogen Fertilizers - Applies to all Turf

A nitrogen fertilization schedule weighted toward fall application is recommended and preferred for agronomic quality and persistence of cool season turfgrass; however, the acceptable window of applications is much wider than this for nutrient management. The nutrient management recommended application season for nitrogen fertilizers to cool season turfgrasses begins six weeks prior to the last spring average killing frost date and ends six weeks past the first fall average killing frost date (see Figures 6-1 & 6-2). Applications of nitrogen during the intervening late fall and winter period should be avoided due to higher potential leaching or runoff risk, but where necessary, apply no more than 0.5 pounds per 1,000 ft² of water soluble nitrogen within a 30-day period. Higher application rates may be used during this late fall and winter period by using materials containing slowly available sources of nitrogen, if the water soluble nitrogen contained in the fertilizer does not exceed the recommended maximum of 0.5 pounds per 1,000 ft² rate. Do not apply nitrogen or phosphorus fertilizers when the ground is frozen.

The acceptable nitrogen fertilizer application season for non-overseeded warm season turfgrass begins no earlier than the last spring average killing frost date and ends no later than one month prior to the first fall average killing frost date (see Figures 6-1 & 6-2).

Figure 6-1

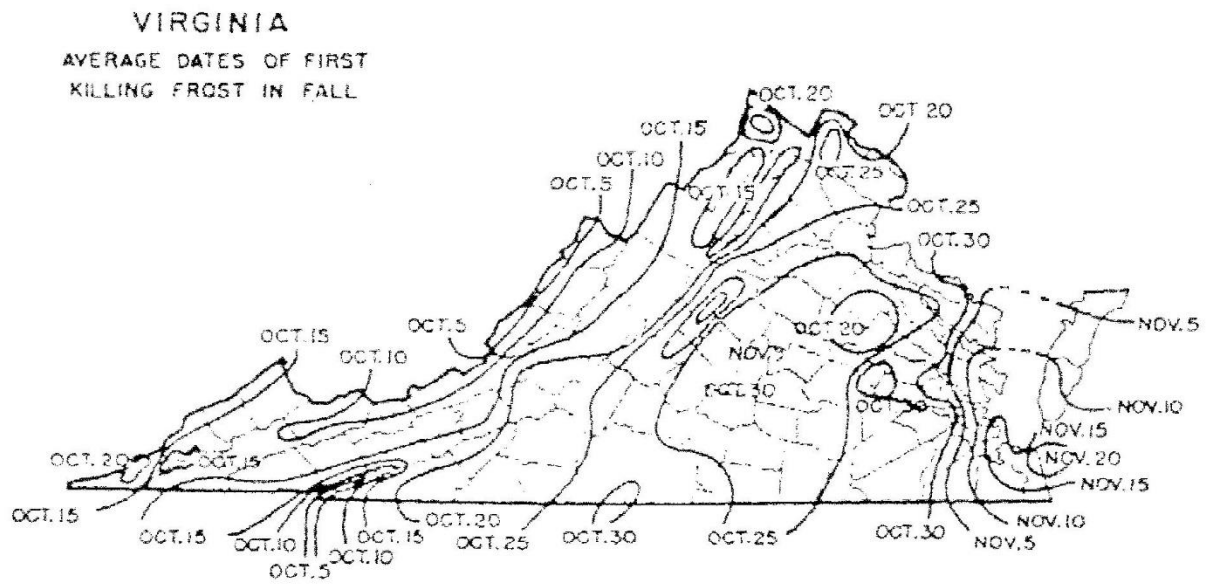
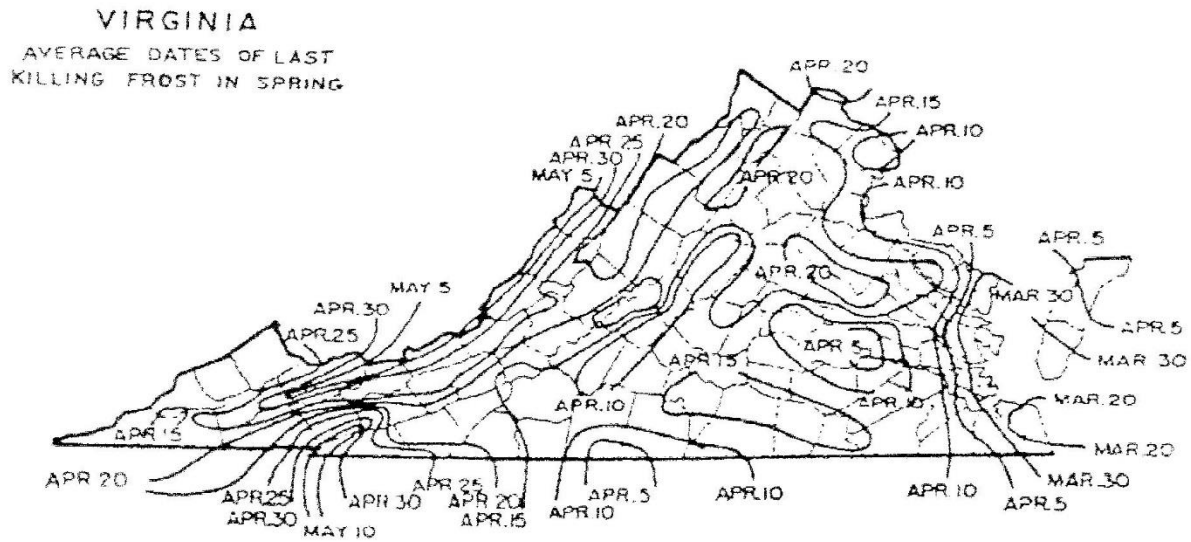


Figure 6-2



Per Application Rates

Do not apply more than 0.7 pounds of water soluble nitrogen per 1,000 ft² within a 30-day period. For cool season grasses, do not apply more than 0.9 pounds of total nitrogen per 1,000 ft² within a 30-day period. For warm season grasses, do not apply more than 1.0 pounds of total nitrogen per 1,000 ft² within a 30-day period. Lower per application rates of water soluble nitrogen sources or use of slowly available nitrogen sources should be utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

Annual Application Rates for Home Lawns and Commercial Turf

Up to 3.5 pounds per 1,000 ft² of nitrogen may be applied annually to cool season grass species or up to 4 pounds per 1,000 ft² may be applied annually to warm season grass species using 100 percent water soluble nitrogen sources. Lower rates of nitrogen application may be desirable on those mature stands of grasses that require less nitrogen for long-term quality. As a result, lower application rates will probably be more suited to the fine leaf fescues (hard fescue, chewing fescue, creeping red fescue, and sheep fescue) and non-overseeded zoysiagrass. Lower rates should also be used on less intensively managed areas.

Use of Slowly Available Forms of Nitrogen

For slow or controlled release fertilizer sources, or enhanced efficiency fertilizer sources, no more than 0.9 pounds of nitrogen per 1,000 ft² may be applied to cool season grasses within a 30-day period and no more than 1.0 pounds of nitrogen per 1,000 ft² may be applied to warm season grasses within a 30-day period.

Provided the fertilizer label guarantees that the product can be used in such a way that it will not release more than 0.7 pounds of nitrogen per 1,000 ft² in a 30-day period, no more than 2.5 pounds of nitrogen per 1,000 ft² may be applied in a single application. Additionally, total annual applications shall not exceed 80 percent of the annual nitrogen rates for cool or warm season grasses.

Phosphorus and Potassium Nutrient Needs (Established Turf)

Apply phosphorus (P₂O₅) and potassium (K₂O) fertilizers as indicated necessary by a soil test using the following guidelines:

| <u>Soil Test Level</u> | <u>Nutrient Needs (pounds per</u> | |
|------------------------|-----------------------------------|-----------------------|
| | <u>1,000 ft²)*</u> | |
| | <u>P₂O₅</u> | <u>K₂O</u> |
| L | 2-3 | 2-3 |
| M | 1-2 | 1-2 |
| H | 0.5-1 | 0.5-1 |
| VH | 0 | 0 |

* For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range. (For example the recommendation for a P₂O₅ soil test level of L- would be 3 pounds per 1,000 ft².)

Do not use high phosphorus ratio fertilizers such as 10-10-10 or 5-10-10, unless soil tests indicate phosphorus availability below the M+ level.

Recommendations for Establishment of Turf

These recommendations are for timely planted turfgrass, that is, the seed or vegetative material (sod, plugs, and /or sprigs), are planted at a time of the year when temperatures and moisture are adequate to maximize turfgrass establishment. These recommended establishment periods would be late summer to early fall for cool-season turfgrasses and late spring through mid-summer for warm-season turfgrasses.

Nitrogen Applications

At the time of establishment, apply no more than 0.9 pounds per 1,000 ft² of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft² of total nitrogen for warm season grasses, using a material containing slowly available forms of nitrogen, followed by one or two applications beginning 30 days after planting, not to exceed a total of 1.8 pounds per 1,000 ft² total for cool season grasses and 2.0 pounds per 1,000 ft² for warm season grasses for the establishment period. Applications of WSN cannot exceed more than 0.7 pounds per 1,000 ft² within a 30-day period.

Phosphorus and Potassium Recommendations for Establishment

| <u>Soil Test Level</u> | <u>Nutrient Needs (pounds per 1,000 ft²) *</u> | |
|------------------------|---|-----------------------|
| | <u>P₂O₅</u> | <u>K₂O</u> |
| L | 3-4 | 2-3 |
| M | 2-3 | 1-2 |
| H | 2-1 | 0.5-1 |
| VH | 0 | 0 |

* For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range.

Nutrient Recommendations for Golf Courses

Nitrogen Timing

The beginning and ending dates for application of nitrogen shall be determined using guidance and frost date maps contained in the Season of Application for Nitrogen section, Figures 6-1 and 6-2.

If the full rate or the highest rate of the recommendation range for a monthly application is applied in a single application, then the interval of application for nitrogen shall be at least 30 days to allow turf to utilize previous nitrogen applications. If several applications are to be made for the monthly nitrogen rate, then the timing of the applications shall be at approximately even intervals, with the rate per application to be evenly divided between each application with the total nitrogen applied not to exceed the maximum monthly rate. Use of Water Insoluble Nitrogen forms of Nitrogen is encouraged.

Nitrogen Rates

| | Grass Type | Maximum WSN Rate Per Application - pounds per 1,000 ft ² | Total Annual Nitrogen Rate - pounds per 1,000 ft ² ^a |
|---------------------------------|----------------------------------|---|--|
| Greens | | 0.7 ^(b) | 3-6 |
| Tees | | 0.7 ^(b) | 2-5 |
| Fairways | Cool Season | 0.7 ^(c) | 2-3 |
| | Warm Season | 0.7 ^(c) | 3-4 |
| Fairways – Intensive Management | Cool Season | 0.5 ^(d) | 3-4 |
| | Warm Season | 0.5 ^(d) | 3.5-4.5 |
| | Overseeding Warm Season Fairways | .5 | 1.25 |
| Roughs | | 0.7 ^(e) | 1-3 |

Fairways-Overseeding Warm Season Fairways

- For warm season grasses, up to 0.7 pounds of nitrogen per 1,000 ft² in a 30-day period may be applied in the Fall after perennial ryegrass overseeding is well established. An additional nitrogen application of 0.7 pounds per 1,000 ft² may be made in February-March to overseeded perennial ryegrass if growth and color indicate need. Applications using WSN may not exceed 0.7 pounds per 1,000 ft² within a 30-day period.
- Soluble nitrogen rates of 0.25 pounds per 1,000 ft² or less which may be a component of a pesticide or minor element application, may be applied any time during the application windows described in Recommended Season of Application for Nitrogen Fertilizers of this section, but must be considered with the total annual nitrogen application rate.

(a) Use higher rates for intensively used turf where accelerated growth and/or rapid recovery are required, use lower rates for maintenance of lesser used areas; do not exceed total annual nitrogen levels as stated above.

- (b) Greens and Tees – Per application timing must be a minimum of 30 days between applications. A rate of 0.9 pounds per 1,000 ft² of total nitrogen may be applied for cool season grasses or 1.0 pounds per 1,000 ft² of total nitrogen may be applied for warm season grasses using a material containing slowly available forms of nitrogen.
- (c) Fairways-Normal Management (Non-Irrigated or Irrigated) - Per Application timing must be a minimum of 30 days between applications. Total nitrogen application rates of 0.9 pounds per 1,000 ft² of total nitrogen may be applied for cool season grasses or 1.0 pound per 1,000 ft² of total nitrogen may be applied for warm season grasses using a material containing slowly available forms of nitrogen.
- (d) Fairways-Intensive Management (Irrigated)- Per Application timing must be a minimum of 15 days between applications. This option requires optimized timing of more frequent applications of nitrogen with lesser rates per application. Alternatively, a maximum application rate of 0.9 pounds per 1,000 ft² of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft² of total nitrogen for warm season grasses using a material containing slowly available forms of nitrogen may be applied with a minimum of 30 days between applications.
- (e) Foliar fertilizer may be applied to warm season grasses within 30 days prior to the first killing frost in the fall, at a rate not to exceed 0.1 pounds per 1,000 ft² of nitrogen per application. This application must be accounted for in the total annual nitrogen rate.

Phosphorus and Potassium Recommendations for Established Golf Courses

Apply phosphorus (P₂O₅) and potassium (K₂O) fertilizers as indicated by a soil test using the following guidelines:

| <u>Soil Test Level</u> | <u>Nutrient Needs (pounds per 1,000 ft²)*</u> | |
|------------------------|--|-----------------------|
| | <u>P₂O₅</u> | <u>K₂O</u> |
| L | 2-3 | 2-3 |
| M | 1-2 | 1-2 |
| H | 0.5-1 | 0.5-1 |
| VH | 0 | 0 |

- * For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range.
- For irrigated turf grown on Naturally Occurring and Modified Sand Based soils only, up to 0.5 pounds of P₂O₅ per 1,000 ft² may be applied, if needed, to aid in recovery of damaged turf during times of extreme use. No phosphorus applications shall be made when the soil phosphorus test level is above 65% saturation, based on the soil test phosphorus values and region as listed in Table 4-1 of Section IV.
- Avoid the general use of high phosphorus ratio fertilizers such as 10-10-10 or 5-10-10, unless soil tests indicate phosphorus availability below the M+ level.

Nitrogen Management on Athletic Fields - Cool Season Grasses

- This program is intended for those fields which are under heavy use.
- Nitrogen recommendations are based on the assumption that there is adequate soil moisture to promote good turf growth at the time of application. If no rainfall has occurred since the last application, further applications should be delayed until significant soil moisture is available.

| Cool Season Grasses | Maintenance Program ^a | |
|----------------------------|---|------------------------|
| | Normal | Intensive |
| When to Apply ^b | Pounds per 1,000 ft ² Nitrogen | |
| After August 15 | ----- | <u>0.5</u> |
| September | <u>0.7</u> | <u>0.7^c</u> |
| October | <u>0.7^c</u> | <u>0.7^c</u> |
| November | 0.5 | <u>0.7^c</u> |
| April 15 - May 15 | 0.5 | 0.5 |
| June 1 - June 15 | ---- | 0.5 |

Notes:

- Soluble nitrogen rates of 0.25 pounds per 1,000 ft² or less which may be a component of a pesticide or minor element application may be applied any time the turf is actively growing, but must be considered with the total annual nitrogen application rate.
 - WSN = water soluble nitrogen; WIN = water insoluble nitrogen
- (a) Intensive managed areas must be irrigated.
- (b) The beginning and ending dates for application of nitrogen shall be determined using guidance and frost date maps contained in the preceding Season of Application for Nitrogen section, using Figures 6-1 and 6-2.
- (c) Rates up to 0.9 pounds per 1,000 ft² of total nitrogen can be applied using a material containing slowly available forms of nitrogen, with a minimum of 30 days between applications.
- (d) Make this application only if turf use warrants additional nitrogen for sustaining desirable growth and /or color.

Nitrogen Management on Athletic Fields - Warm Season Grasses

The following comments apply to both Naturally Occurring or Modified Sand based Fields and Predominantly Silt/Clay Soil Fields:

- Annual nitrogen rates for warm season grasses shall not exceed **4 pounds** in areas which have the average first killing frost on or before October 20, and shall not exceed **5 pounds** in areas which have the average first killing frost after October 20 as shown in Figure 6-1. Nitrogen rates and timings for overseeding warm season grasses are not included in these rates.
- April 15 - May 15 applications should not be made until after complete green-up of turf.
- Nitrogen applications June through August should be coordinated with anticipated rainfall if irrigation is not available.
- Use the lower end of the ranges for non-irrigated fields and the higher end of the ranges should be used on fields with irrigation.

- Nitrogen rates towards the higher end of the ranges may be applied on heavily used fields to accelerate recovery, however per application and annual rates cannot be exceeded.

| Bermudagrass - Predominantly Silt/Clay Soil Fields ^a | | |
|--|---|--|
| When to Apply^b | Pounds per 1,000 ft² Nitrogen^e | First Fall Killing Frost Date^b |
| April 15 - May 15 | 0.5- 0.7 ^(c) | Before Oct. 20 |
| June | 0.7 | |
| July | 0.5 – 0.7 ^(d) | |
| August | 0.5 - 0.7 ^(d) | |
| Sept 1 - Sept 15 | 0.5 -0.7 ^(c) | After Oct. 20 |
| If overseeded with perennial ryegrass | | |
| Oct - Nov | 0.5 ^(e) | |
| Feb-Mar | 0.5 ^(e) | |

| Bermudagrass - Naturally Occurring or Modified Sand based Fields ^a | | |
|--|---|--|
| When to Apply^b | Pounds per 1,000 ft² Nitrogen | First Fall Killing Frost Date^b |
| April 15 - May 15 | 0.5 -0.7 ^(c) | Before Oct. 20 |
| June1 | 0.7 ^(c) | |
| July | 0.7 ^(c) | |
| August | 0.7 ^(c) | |
| Sept 1 - Sept 15 | 0.7 ^c | After Oct. 20 |
| If overseeded with perennial ryegrass | | |
| Oct - Nov | 0.5 ^(e) | |
| Feb - Mar | 0.5 ^(e) | |

The following notes apply to both of the Bermudagrass tables above:

- (a) In the Piedmont and the Ridge and Valley areas of Virginia, the existing native soil will normally be comprised predominantly of clay and/or silt and these soils have inherently lower water infiltration and percolation rates and greater nutrient holding capacity. However, most areas of the Coastal Plain have existing native soils that are predominantly sandy textured soils and other facilities throughout the state may choose to install modified soil root zones that are predominantly sand (>50%) in order to maximize drainage and reduce compaction tendency. If subsurface drain tile surrounded by sand and/or gravel has been installed under the playing surface of any of these fields, their nitrogen programs should be managed as predominantly sand-based systems to minimize nutrient leaching.
- (b) The beginning and ending dates for application of nitrogen shall be determined using guidance and frost date maps contained in the Season of Application for Nitrogen section, Figures 6-1 and 6-2.
- (c) WSN must be applied as two applications not to exceed 0.35 pounds per 1,000 ft² each with a minimum of 15 days between applications. Alternatively, using a material that contains slowly available nitrogen sources, split applications of 0.5 pounds per 1,000 ft² may be applied with a minimum of 15 days between applications.

- (d) If a material containing slowly available forms of nitrogen is used, rates up to 1.0 pounds of nitrogen per 1,000 ft² may be applied in a single application with a minimum of 30 days between applications.
- (e) For overseeded warm season grasses, an additional 0.7 pounds per 1,000ft² of WSN may be applied in the Fall after the perennial ryegrass overseeding is well established. The WSN must be applied as two applications not to exceed 0.35 pounds per 1,000 ft² of nitrogen each, with a minimum of 15 days between applications. Additional WSN application of 0.5 pounds per 1,000 ft² may be made in February-March to overseeded perennial ryegrass if growth and color indicate need. Alternatively, split applications of 0.5 pounds of nitrogen per 1,000 ft² each with a minimum of 15 days between applications may be applied using a material containing slowly available nitrogen sources.

Phosphorus and Potassium Recommendations Athletic Fields

Apply phosphorus (P₂O₅) and potassium (K₂O) fertilizers as indicated by a soil test using the following guidelines:

| <u>Soil Test Level</u> | <u>Nutrient Needs (pounds per 1,000 ft²)*</u> | |
|------------------------|--|-----------------------|
| | <u>P₂O₅</u> | <u>K₂O</u> |
| L | 2-3 | 2-3 |
| M | 1-2 | 1-2 |
| H | 0.5-1 | 0.5-1 |
| VH | 0 | 0 |

- * For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range.
- For irrigated turf grown on Naturally Occurring and Modified Sand Based soils only, up to 0.5 pounds of P₂O₅ per 1,000 ft² may be applied, if needed, to aid in recovery of damaged turf during times of extreme use. No phosphorus applications shall be made when the soil phosphorus test level is above 65% saturation, based on the soil test phosphorus values and region as listed in Table 4-1 of Section IV.
- Avoid the general use of high phosphorus ratio fertilizers such as 10-10-10 or 5-10-10, unless soil tests indicate phosphorus availability below the M+ level.

Establishment/Grow-In Recommendations for Golf Courses, Athletic Fields, and Sod Production

(These rates replace normal maintenance fertilizer applications that would have occurred during these time periods.)

Warm Season Grasses:

Predominantly Silt/Clay Soils

- ◆ Plant Date - late May -June for sprigs, plugs, sod, or seeding.
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - Up to 1.0 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied as one application or lesser amounts applied at regular intervals, through the first 4 weeks, not to exceed a total of 1.0 pounds of nitrogen per 1,000ft².
- ◆ Four weeks after planting - 0.25 pounds.of WSN per 1,000 ft² per week for the next 4 weeks.

Naturally Occurring or Modified Sand Based Soils

- ◆ Plant Date - late May -June for sprigs, plugs, sod, or seeding.
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - Up to 1.0 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied as one application or lesser amounts at regular intervals through the first 4 weeks, not to exceed a total of 1.0 pounds of nitrogen per 1,000 ft².
- ◆ Four weeks after planting - 0.25 pounds per1,000 ft² using a material containing slowly available forms of nitrogen per week for the next 4 weeks.

Cool Season Grasses:

Predominantly Silt/Clay Soils

- ◆ Plant Date - August - September (preferred)
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - up to 0.9 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied; 30 days after planting, apply up to 0.5 pounds of nitrogen per 1,000 ft² every week for the next 4 weeks.

Naturally Occurring or Modified Sand Based Soils

- ◆ Plant Date - August -September (preferred)
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - up to 0.9 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied.
- ◆ Apply up to 0.25 pounds of nitrogen per 1,000 ft² per week after germination is complete, for the next 8 weeks. If using a material that contains slowly available forms of nitrogen, up to 0.5 pounds of nitrogen per 1,000 ft² every two weeks may be applied after germination is complete for the next 8 weeks.

Sod Installations:

Site preparation should include a soil test, which can be done several months before the project begins in order to have time to get test results back. Phosphorus, potassium and lime applications should be based on soil test analysis to increase the likelihood of a successful installation. Shallow incorporation of material into the top 2 inches of the soil is preferred prior to sod installation, especially if lime is required.

No more than 0.7 pounds of nitrogen per 1,000 ft² of WSN may be applied before sod is installed. Alternatively, using a material with slowly available forms of nitrogen, 0.9 pounds of nitrogen per 1,000 ft² for cool season grasses or 1.0 pounds of nitrogen per 1,000 ft² for warm season grasses may be applied before sod is installed.

After installation apply adequate amounts of water to maintain sufficient soil moisture (i.e. to prevent visible wilt symptoms). Excessive water will limit initial root development. After roots begin to establish (as verified by lightly tugging on the sod pieces), shift irrigation strategy to a deep and infrequent program in order to encourage deep root growth. Apply approximately 1 inch of water per week (either by rainfall or irrigation), making sure that the water is being accepted by the soil profile without running off. This will insure thorough wetting of the soil profile.

After sod has completed rooting and is well established, initiate the normal nitrogen management program as described for the appropriate use shall be recommended.

Phosphorus and Potassium Recommendations for Establishment/Grow-In/Installation

| <u>Soil Test Level</u> | <u>Nutrient Needs (pounds per 1,000 ft²)*</u> | |
|------------------------|--|-----------------------|
| | <u>P₂O₅</u> | <u>K₂O</u> |
| L | 3-4 | 2-3 |
| M | 2-3 | 1-2 |
| H | 2-1 | 0.5-1 |
| VH | 0 | 0 |

* For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range.

Other Turf Management Considerations for Golf Courses, Athletic fields, and Home Lawns

Lime Recommendations

Lime should be recommended based on a soil test to maintain soil pH within an agronomic range for turfgrass.

For new seedings where lime is recommended, incorporate the lime into the topsoil for best results.

Returning Grass Clippings

Recycling of clippings on turf should be encouraged as an effective means of recycling nitrogen, phosphorus, and potassium. Proper mowing practices that ensure no more than 1/3 of the leaf blade is removed in any cutting event will enhance turf appearance and performance when clippings are returned. Return all leaf clippings from mowing events to the turf rather than discharging them onto sidewalks or streets. Rotary mulching mowers can further enhance clipping recycling by reducing the size of clippings being returned to the turfgrass canopy.

Management of Collected Clippings

If clippings are collected they should be disposed of properly. They may be composted or spread uniformly as a thin layer over other turf areas or areas where the nutrient content of the clippings can be recycled through actively growing plants. They 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.

Use of 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.

Impervious Surfaces

Do not apply fertilizers containing nitrogen or phosphorus to impervious surfaces (sidewalks, streets, etc.). 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 and /or using a leaf blower etc. to return the fertilizer back to the turfgrass canopy.

Table 3-1
Lime Recommendations for Virginia Crops (tons/acre)
 Lime Rates based on Va Tech Soil buffer pH

| Buffer pH | Target Soil pH | | | | | Acidity meq/100g |
|-----------|----------------|------|------|------|------|------------------|
| | 5.2 | 5.8 | 6.2 | 6.5 | 6.8 | |
| 6.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 |
| 6.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.06 |
| 6.38 | 0.00 | 0.00 | 0.25 | 0.25 | 0.50 | 0.12 |
| 6.36 | 0.00 | 0.00 | 0.25 | 0.25 | 0.75 | 0.24 |
| 6.34 | 0.00 | 0.00 | 0.25 | 0.50 | 0.75 | 0.36 |
| 6.32 | 0.00 | 0.00 | 0.50 | 0.50 | 0.75 | 0.48 |
| 6.30 | 0.00 | 0.00 | 0.50 | 0.75 | 1.00 | 0.59 |
| 6.28 | 0.00 | 0.25 | 0.75 | 0.75 | 1.00 | 0.71 |
| 6.26 | 0.00 | 0.25 | 0.75 | 1.00 | 1.25 | 0.83 |
| 6.24 | 0.00 | 0.25 | 0.75 | 1.00 | 1.25 | 0.95 |
| 6.22 | 0.00 | 0.50 | 1.00 | 1.00 | 1.50 | 1.07 |
| 6.20 | 0.00 | 0.50 | 1.00 | 1.25 | 1.50 | 1.19 |
| 6.18 | 0.00 | 0.75 | 1.25 | 1.25 | 1.75 | 1.30 |
| 6.16 | 0.00 | 0.75 | 1.25 | 1.50 | 1.75 | 1.42 |
| 6.14 | 0.25 | 0.75 | 1.50 | 1.50 | 2.00 | 1.54 |
| 6.12 | 0.25 | 1.00 | 1.50 | 1.75 | 2.00 | 1.66 |
| 6.10 | 0.50 | 1.00 | 1.50 | 1.75 | 2.25 | 1.78 |
| 6.08 | 0.50 | 1.25 | 1.75 | 2.00 | 2.25 | 1.90 |
| 6.06 | 0.50 | 1.25 | 1.75 | 2.00 | 2.25 | 2.02 |
| 6.04 | 0.75 | 1.25 | 2.00 | 2.00 | 2.50 | 2.13 |
| 6.02 | 0.75 | 1.50 | 2.00 | 2.25 | 2.50 | 2.25 |
| 6.00 | 1.00 | 1.50 | 2.00 | 2.25 | 2.75 | 2.37 |
| 5.95 | 1.00 | 1.75 | 2.25 | 2.50 | 3.00 | 2.67 |
| 5.90 | 1.25 | 2.00 | 2.50 | 3.00 | 3.25 | 2.96 |
| 5.85 | 1.50 | 2.25 | 2.75 | 3.25 | 3.50 | 3.26 |
| 5.80 | 1.75 | 2.50 | 3.25 | 3.50 | 3.75 | 3.56 |
| 5.75 | 2.00 | 2.75 | 3.50 | 3.75 | 4.25 | 3.85 |
| 5.70 | 2.25 | 3.00 | 3.75 | 4.00 | 4.50 | 4.15 |
| 5.65 | 2.50 | 3.25 | 4.00 | 4.25 | 4.75 | 4.45 |
| 5.60 | 2.75 | 3.50 | 4.25 | 4.50 | 5.00 | 4.74 |
| 5.55 | 3.00 | 3.75 | 4.50 | 4.75 | 5.25 | 5.04 |
| 5.50 | 3.25 | 4.00 | 4.75 | 5.25 | 5.50 | 5.34 |
| 5.40 | 3.75 | 4.50 | 5.25 | 5.75 | 6.25 | 5.93 |
| 5.30 | 4.25 | 5.00 | 5.75 | 6.25 | 6.75 | 6.52 |

Lime recommendations in the table above are based on the use of a liming material equivalent in neutralizing power to 100% CaCO₃. For application rates of liming material that is less than 100% neutralizing power of CaCO₃ (pure calcium carbonate) use the table in this section, Lime Rate Adjustment for CCE.

Lime Recommendations Using Other Testing Labs

For approved labs other than Virginia Tech, use the lime recommendations given by the lab. IF there are no recommendations with the soil analysis, use the table below for A&L Agricultural, Spectrum Analytical, and Brookside Laboratories.

Table 3-2
Lime Application Rate¹ (tons/acre) to achieve desired pH based on SMP Buffer Test

| Soil-Buffer pH | Target Soil pH | | | | |
|----------------|----------------|------|------|------|------|
| | 5.2 | 5.8 | 6.2 | 6.5 | 6.8 |
| 6.9 | 0 | 0.25 | 0.50 | 0.50 | 0.75 |
| 6.8 | 0.50 | 0.75 | 1.00 | 1.00 | 1.25 |
| 6.7 | 1.00 | 1.50 | 1.50 | 1.75 | 2.00 |
| 6.6 | 1.50 | 1.75 | 2.00 | 2.25 | 2.50 |
| 6.5 | 2.00 | 2.25 | 2.50 | 3.00 | 3.25 |
| 6.4 | 2.75 | 3.00 | 3.25 | 3.75 | 4.00 |
| 6.3 | 3.25 | 3.50 | 4.00 | 4.50 | 5.00 |

¹ Ag-ground lime of 90% plus total neutralizing power (TNP) or CaCO₃ equivalent., and fineness of 40% < 100 mesh, 50% < 60 mesh, 70% < 20 mesh and 95% < 8 mesh. Adjustments in the application rate should be made for liming materials with different particle sizes, or neutralizing value.

Waters Agricultural Laboratories uses the Adams and Evans single buffer method which uses a different table for recommendations than the Mehlich or the SMP tables supplied here. In the event you would have lab reports from Waters Lab, which do not have lime recommendations, contact the lab for recommendations based on their analysis procedure.

Lime Rate Adjustment for CCE

Using the lime application rate to achieve the desired target pH based on the soil test buffer pH, use the table below to adjust that rate based on the % CCE of the liming material to be applied.

Table 3-3
Lime Application Rate Adjustment Based on % CCE of Material

| T/ac* | % CCE of Your Liming Material | | | | | | | | | | |
|------------|-------------------------------|------|------|------|------|------|------|------|------|------|------|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| 0.5 | 1.00 | 0.75 | 0.75 | 0.75 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.25 | 0.25 |
| 1.0 | 2.00 | 1.75 | 1.50 | 1.25 | 1.00 | 1.00 | 1.00 | 0.75 | 0.75 | 0.75 | 0.75 |
| 1.5 | 3.00 | 2.50 | 2.25 | 2.00 | 1.75 | 1.50 | 1.25 | 1.25 | 1.25 | 1.00 | 1.00 |
| 2.0 | 4.00 | 3.25 | 2.75 | 2.50 | 2.25 | 2.00 | 1.75 | 1.75 | 1.50 | 1.50 | 1.25 |
| 2.5 | 5.00 | 4.25 | 3.50 | 3.25 | 2.75 | 2.50 | 2.25 | 2.00 | 2.00 | 1.75 | 1.75 |
| 3.0 | 6.00 | 5.00 | 4.25 | 3.75 | 3.25 | 3.00 | 2.75 | 2.50 | 2.25 | 2.25 | 2.00 |
| 3.5 | 7.00 | 5.75 | 5.00 | 4.50 | 4.00 | 3.50 | 3.25 | 3.00 | 2.75 | 2.50 | 2.25 |
| 4.0 | 8.00 | 6.75 | 5.75 | 5.00 | 4.50 | 4.00 | 3.75 | 3.25 | 3.00 | 2.75 | 2.75 |

* Lime recommendation to adjust pH as determined from soil test analysis.

Figure 3: CEC Chart

7. Fertilizer Labels

16-3-8 50%XCU 20%Biosolids
15%AS 2%Fe 0.2%B 0.5%Zn Mn Mg Cu

GUARANTEED ANALYSIS

Total Nitrogen (N) 16.00%
3.90% Urea Nitrogen*
3.2% Ammoniacal Nitrogen
0.80% Water Insoluble Nitrogen
8.10% Slowly Available Water Soluble Nitrogen

Available Phosphate (P₂O₅)3.00%
Soluble Potash (K₂O) 8.00%
Iron (Fe)..... 2.00%

Derived From: *8.00% slow release nitrogen derived from XCU

CONTAINS EXCEPTIONAL QUALITY BIOSOLIDS

THIS FERTILIZER IS INTENDED ONLY FOR NONAGRICULTURAL
USE ON (A) TURF DURING ITS FIRST GROWING SEASON (B) TURF BEING
RENOVATED OR REPAIRED (C) OR WHERE A SOIL TEST INDICATES A
PHOSPHOROUS DEFICIENCY

Net Weight 50 lbs (22.70 kg)

APPLY ONLY AS DIRECTED

MFG FOR LANDSCAPE SUPPLY, INC Roanoke, Va. 24016

By TIMAC USA, INC. Reading, Pa.



LANDSCAPE SUPPLY, INC.

southernLAWN 25-0-3 32% XRT

“Early Fall Maintenance”

Guaranteed Analysis

| | |
|--------------------------|-----|
| Total Nitrogen (N) | 25% |
| Urea Nitrogen | 17% |
| Coated Slow Release | 8% |
| Water Insoluble Nitrogen | 0% |
| Water Soluble Nitrogen | 0% |
| Ammoniacal Nitrogen | 0% |
| Available Potash (P205) | 0% |
| Soluble Potash (K20) | 3% |

Manufactured for:
Landscape Supply, Inc.
101 Madison Ave, NW
Roanoke, VA 24016

Net Weight: 50 lbs.

www.landscapesupplyva.com

8. Soil Test Results

See attached file.