Nutrient Management Plan
2025 – Part 2 – Schools

Prepared For:
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Certification Code: 654

Plan Information			
Acreage Total:	37.388	**Locations:**	7
Soil Samples:	13	**Breakdown:**	5 Fields 8 Common Areas

County/City:	City of Salem
Watershed:	RU09 – 32.568 A – Sawmill Hallow, Mason Creek, Upper Roanoke RU10 – 4.82 A – Mason Creek, Upper Roanoke

Plan Written:	September 1, 2025
Plan Expires:	September 1, 2028

Robert F. Habel
Planner Signature

The City of Salem is required to have and follow this Nutrient Management Plan according to the Rules and Regulations of the Code of Virginia. According to 9VAC25-890-40 MS4 General Permit, permittees are required under the "Turf and Landscape Management" section of the permit (GP Section II.B.6.c) to develop NMPs on "all lands owned or operated by the MS4 operator where nutrients are applied to a contiguous area greater than one acre." Thus, the City of Salem agrees 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 this Department of Conservation and Recreation reviewed Nutrient Management Plan and maintaining fertilization records. All nutrient applications to City of Salem properties, performed by City of Salem staff or other contractors, shall comply with the provisions of this Nutrient Management Plan as of **September 1, 2025**. This plan is affective for three years (until **September 1, 2028**) or until major renovations or major changes to maintenance 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.

This document is intended to inform all fertilizer applications to this property and is based on August 2025 soil tests.

Records should be kept and may be inspected by DCR.

It is important that this document be passed along when management changes.

Sources:

Maps – Maps are produced using Google Earth or provided by client.
Photos/Logos – Obtained from client, client's website, or taken by planner.
Site information – Obtained from client or client's 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, Mcall, 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 FT^2 # = Pounds of product N = Nitrogen P = Phosphorus K = Potassium
NMP = Nutrient Management Plan MS4 = Municipal Separate Storm Sewer System
SAN = Slowly Available Nitrogen WSN = Water Soluble Nitrogen

Table of Contents

1. Narrative

1.1. Plan Overview

Salem was founded in 1802, and the first charter was granted in 1806 to "The Town of Salem in the County of Botetourt." The present charter was granted by the General Assembly in 1968, upon petition of the now City of Salem, to reflect the necessary change since Salem has become a City. Situated in the Shenandoah Valley between the Allegheny and Blue Ridge Mountains on the Roanoke River, in Roanoke County, Salem possesses all the beauty and grandeur that nature can bestow.

This NMP is maintained by the Department of Street and General Maintenance's Beautification Division led by City Horticulturalist Laura Reilly. This Division improves the quality of life, encourages economic vitality, and instills civic pride in the City of Salem through visual and environmental improvement of city owned properties and rights-of-way.

They maintain and improve existing landscape plantings around public buildings, in the parks, and along roadways. They also manage the city's urban forest by providing services such as maintenance pruning, hazard removal, replacement planting, new tree installation, fertilization, and pest control.

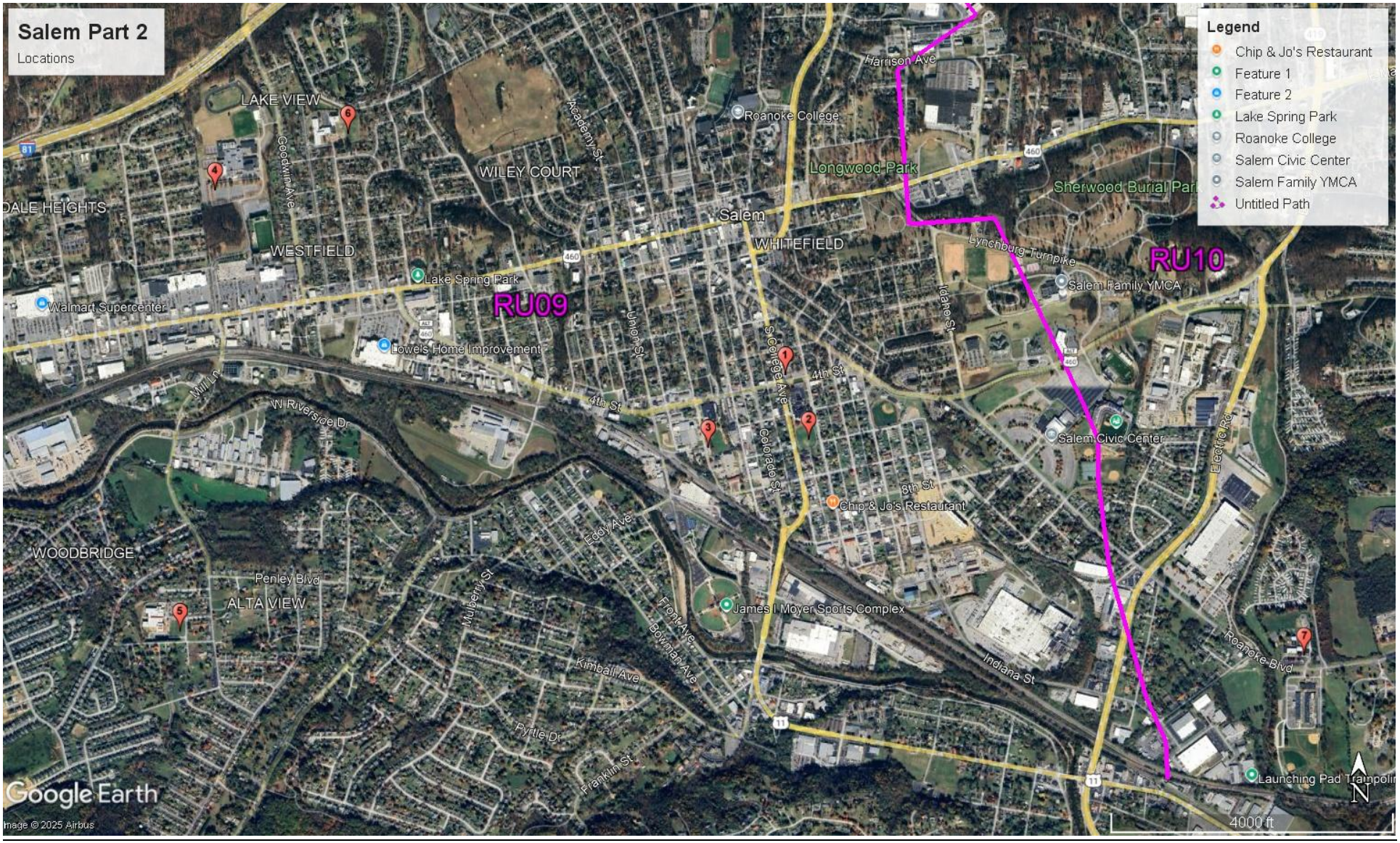
The 7 locations that will be covered in this plan cover 37.388 acres. This includes 5 fields and 8 common areas represented by 13 soil samples. Each location will be discussed separately. Fields at each location were grouped into a single soil test, as maintenance is the same across each field at each location. Soil tests are grouped together so that locations with like soil tests will receive the same applications. There will be 3 application schedules: High Input Sports Fields (6 apps), Low Input Sports Fields (4 apps), and General Turf.

1.2. Location

The Roanoke Valley is located in Southwest Virginia. The valley includes the following areas: Botetourt County, City of Roanoke, City of Salem, Craig County, Franklin County, Roanoke County, and Town of Vinton.

Roanoke County is located in the southernmost end of the Shenandoah Valley, between the Allegheny and Blue Ridge Mountains. The independent cities of Roanoke and Salem (incorporated as such in 1884 and 1968 respectively) are located within the boundaries of Roanoke County, but are not a part of the county. The City of Salem is approximately 14 sq miles and averages an elevation of 1,075.

Location/Acreage/Watershed Code Breakdown				
Location	**Acres**	**Irrigation**	**Grass**	**Watershed Code**
1. School Board	0.258		Cool	**RU09 32.568 Acres**
2. Andrew Lewis Middle				
a. Campus	4.02		Cool	
b. Field	1.85		Cool	
3. G.W. Carver Elem	2.71		Cool	
4. Salem High				
A. Campus	6.31		Cool	
B. Baseball Practice	2.77	Yes	Warm	
C. Track	2.5	Yes	Cool	
D. Bermuda Practice	2.69	Yes	Warm	
E. Stadium Grass Areas	1.31		Cool	
5. South Salem	3.76		Cool	
6. West Salem				
a. Campus	2.72		Cool	
b. Soccer	1.67		Cool	
7. East Salem	4.82		Cool	**RU10 4.82 Acres**
			Total	


Salem Part 2
Locations
Legend
Chip & Jo's Restaurant
Feature 1
Feature 2
Lake Spring Park
Roanoke College
Salem Civic Center
Salem Family YMCA
Untitled Path
RU09
RU10
LAKE VIEW
WILEY COURT
WESTFIELD
WHITEFIELD
Salem
Roanoke College
Longwood Park
Sherwood Burial Park
Harrison Ave
Academy St
Goodwin Ave
Lynchburg Turnpike
Salem Family YMCA
Idaho St
Lake Spring Park
Walmart Supercenter
Lowe's Home Improvement
Union St
S College Ave
41th St
N Riverside Dr
Salem Civic Center
Electric Rd
Colorado St
8th St
Chip & Jo's Restaurant
WOODBRIDGE
Penley Blvd
ALTA VIEW
Eddy Ave
Mulberry St
Front Ave
Bowman Ave
James I Moyer Sports Complex
Kimball Ave
Indiana St
Roanoke Blvd
Pyrtle Dr
Franklin St
Launching Pad Trampolin
Google Earth
Image © 2025 Airbus
4000 ft
N

1.3. Nutrient Management Principals

Nutrient Management Plans focus on two primary objectives healthy plants and clean water. The *Standards and Criteria* are based upon many 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 ensuring minimum movement away from the intended site.

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. All of 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.

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 N rates used in this plan due to the diversity of the areas being fertilized. Please see each section and nutrient application worksheets for specifics.

Slow release products were used exclusively in this 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 82 to adjust the required amount of lime.

Lime is needed in a couple areas. Details can be found in the Soil Test Summary discussion.

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 as long as 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.

1.4. 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.

1.5. 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.

1.6. 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, in warmer years, fertilizer could be applied earlier and in cooler years, fertilizer should be applied later.
- 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 Roanoke WSO Airport Station.

http://www.sercc.com/cgi-bin/sercc/cliMAIN.pl?va7285

	Average Frost Dates	Cool Season Applications	Warm Season Applications
Spring	April 11	February 28	April 11
Fall	October 21	December 2	September 21

Maps – *Maps showing fertilized areas and flood prone areas were provided by City of Salem, other satellite and topo 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. Additional Flood maps created by Web Soil Survey.*

Flooding Frequency Class Designations *– Several areas are indicated as flood prone by Web Soil Survey. 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.*

While the maps provided by City of Salem do indicate flood risk, Web Soil Survey Maps will be provided as well.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

	"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.
	"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.
	"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.
	"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.
	"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.
	"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.

2. Management Areas

2.1. School Board

The Salem School Administration offices and School Board meeting room are housed at this location.

Location

From Main Street (RT 11/460) head South on S. College Ave. The school administration offices are located 0.4 miles on the left at the corner of S. College and 4th Street.

Address: 510 S College Ave
Salem, VA 24153

GPS Coordinates: 37.287489, -80.052834

Areas Managed

There are approximately 0.258 acres of cool season, unirrigated turf areas that are fertilized. This area is general turf.

Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidentally spread on pavement and sidewalks.
- According to Web Soil Survey, there is a rare risk of flooding in this area. Do not apply fertilizer if heavy rains are expected.
- Do not apply fertilizer to frozen or snow covered ground.
- Fertilizer shall not be used as ice melt.


E 3rd St
E 4th St
S Colorado St
Tennessee St
Walnut St

2.2. Andrew Lewis Middle School

Description

Andrew Lewis High School is a former high school in Salem, Virginia, United States which was named after Andrew Lewis, an American pioneer, surveyor, and soldier from Virginia.

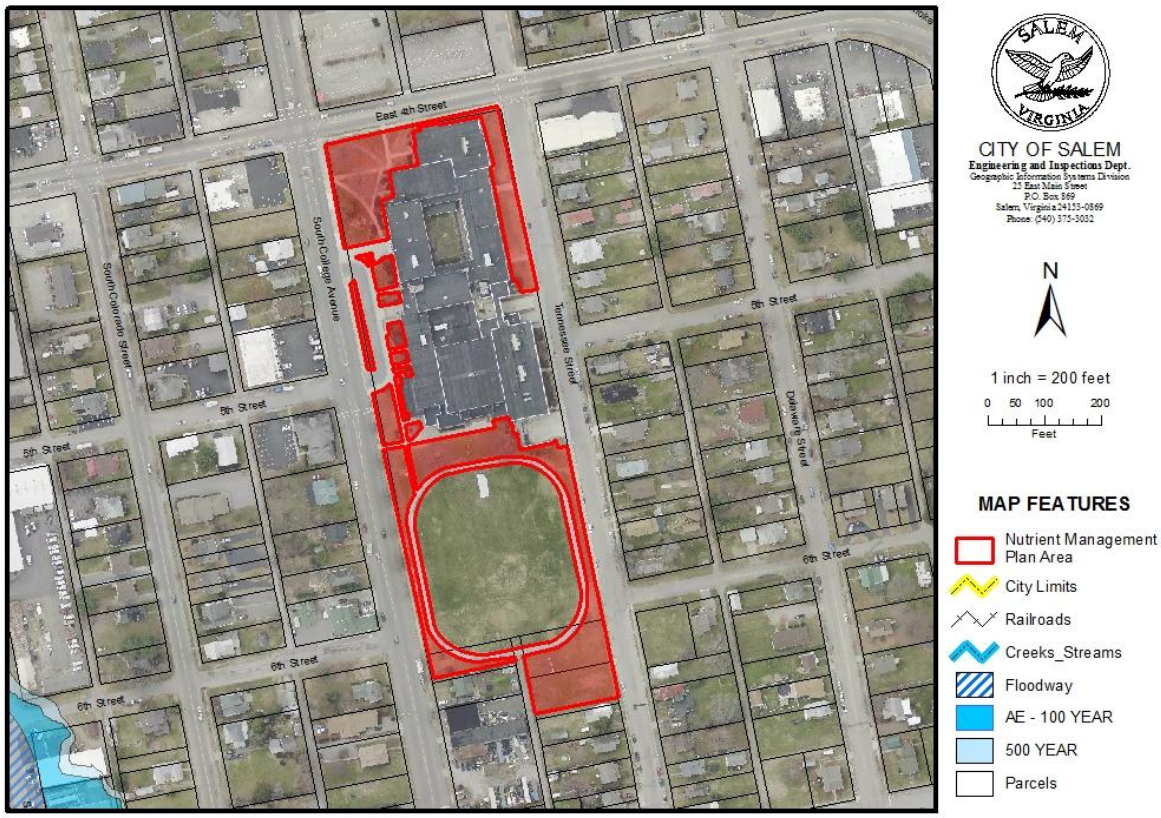
Location

From Main Street (RT 11/460) take S. College Street, school will be on left.

Address: 616 S College Ave
Salem, VA 24153
GPS Coordinates: 37.286130, -80.052094

Areas Managed

The cool season lawn around the school is fertilized, it is unirrigated and measures 4.02 acres.

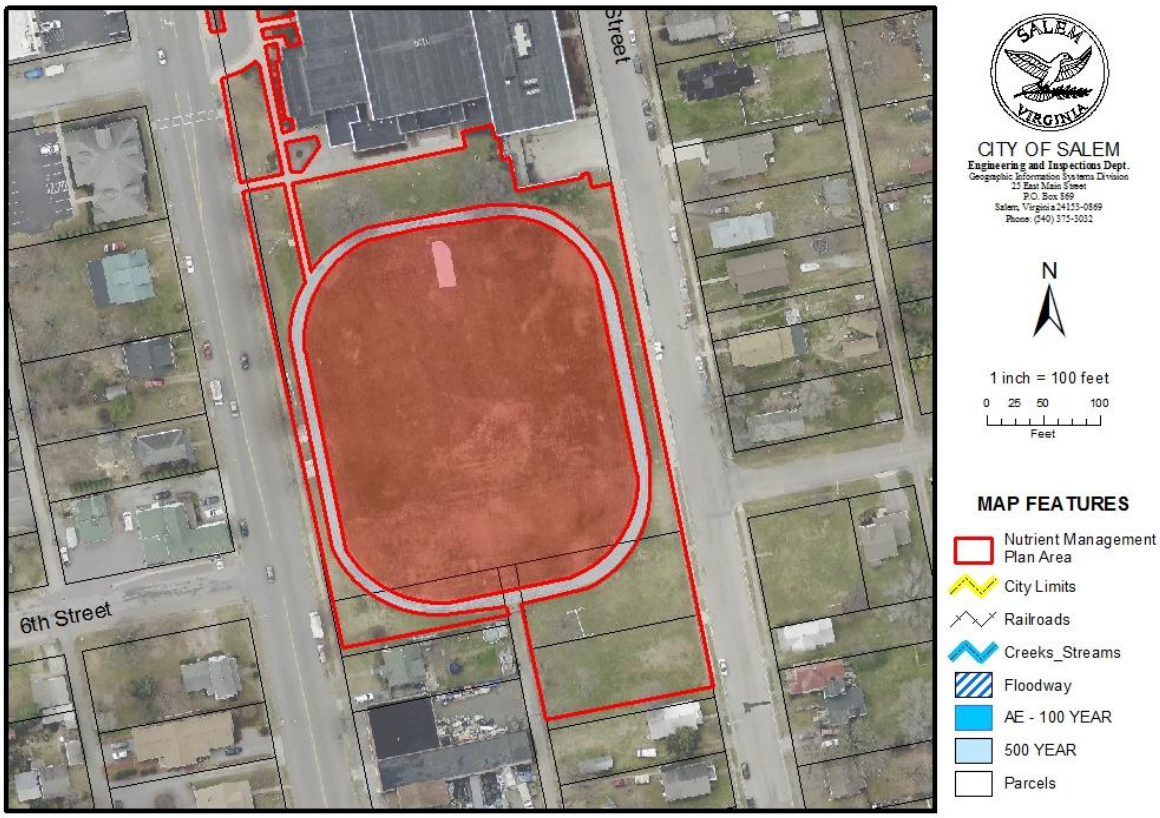


ANDREW LEWIS MIDDLE SCHOOL CAMPUS

ALMS616 AREA: 4.02 AC.

SEPTEMBER 2015

The cool season sports field behind the school inside the track is also fertilized. It is unirrigated and measures 1.85 acres.



Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidently spread on pavement and sidewalks.
- There is no flood risk in this area.

2.3. G.W. Carver Elementary School

Description

The Carver Elementary and High School was built in 1939 and named in honor of famous scientist, humanitarian, and artist, Dr. George Washington Carver. Dr. Carver was the director of the Agricultural Experiment Station at Tuskegee Institute in Tuskegee, Alabama, from 1896 until his death in 1943.

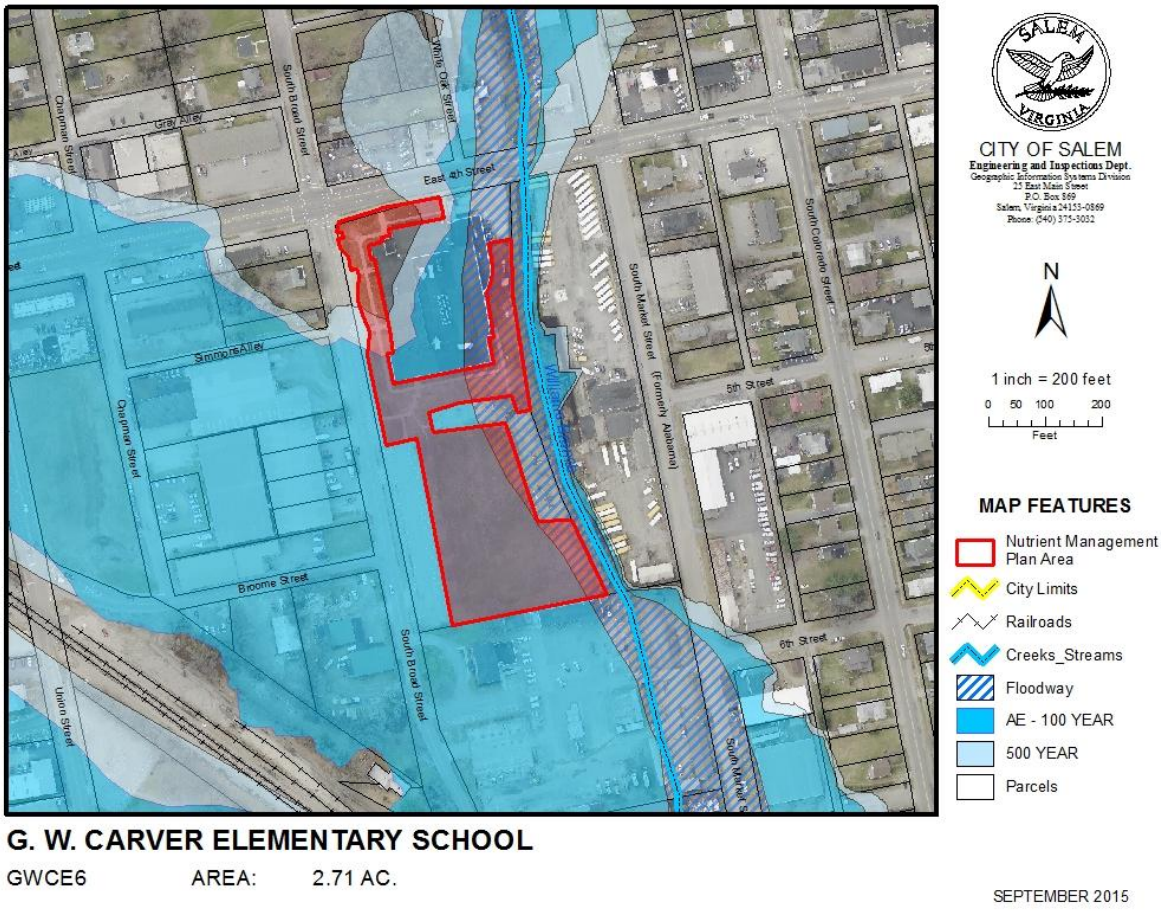
Location

From Main Street (RT 11/460) take S. College Street, turn right onto 4th Street. school will be on left.

Address:	707-899 Front Ave Salem, VA 24153
GPS Coordinates:	37.286096, -80.056149

Areas Managed

The cool season, unirrigated, turf around the school and the field behind the school are fertilized together. They are treated as general turf and total 2.71 acres.



G. W. CARVER ELEMENTARY SCHOOL

GWCE6 AREA: 2.71 AC.

SEPTEMBER 2015

Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidently spread on pavement and sidewalks.
- The Roanoke River is located to the south of the school and Snyder's Branch runs to the east of the school.
- According to Web Soil Survey, there is a rare and an occasional risk of flooding in this area. Please refrain from making fertilizer applications when heavy rains are expected.

2.4. Salem High School

Description

Salem High School is a public high school in Salem, Virginia. It is the sole high school for the City of Salem public school system.

There are 5 separate fertilized areas at the school, 2 common areas and 3 sports fields.

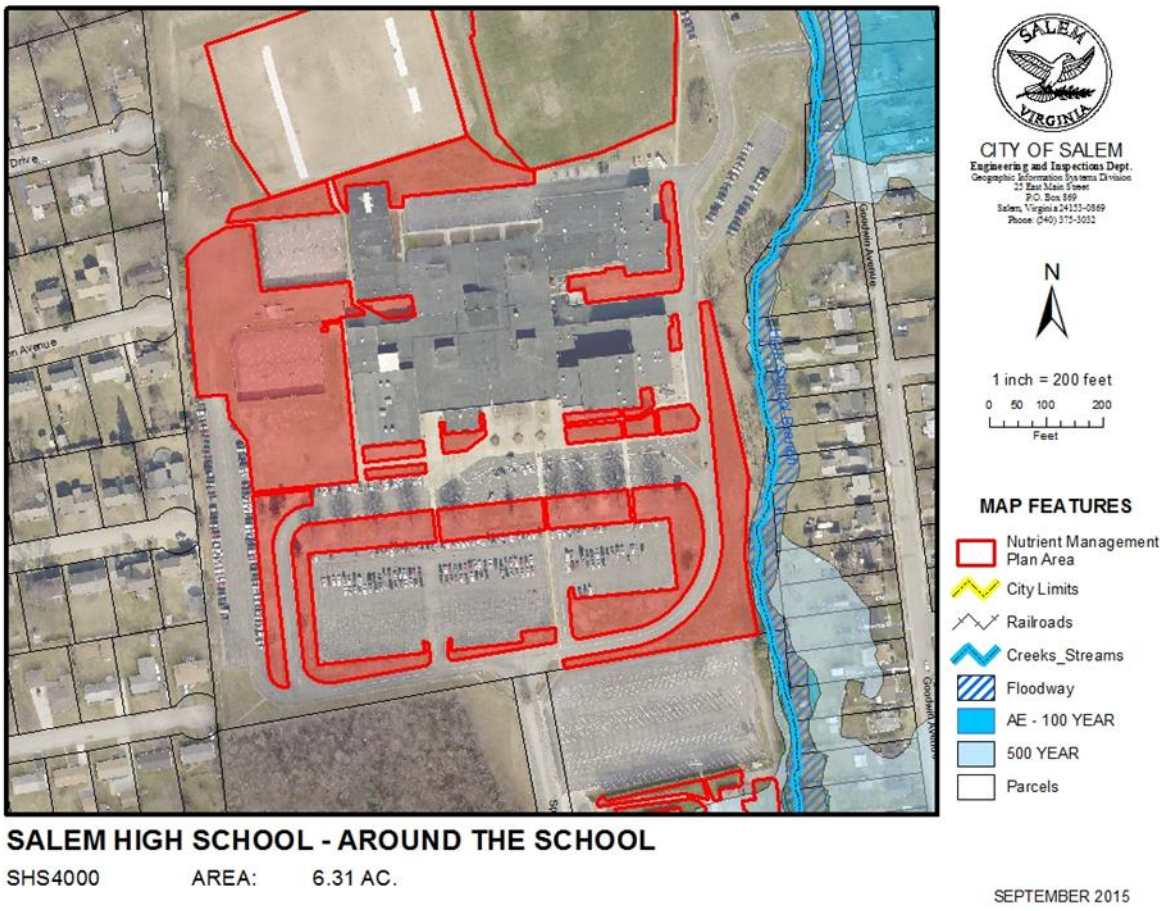
Location

From West Main Street (RT 11/460) turn onto Spartan Drive.

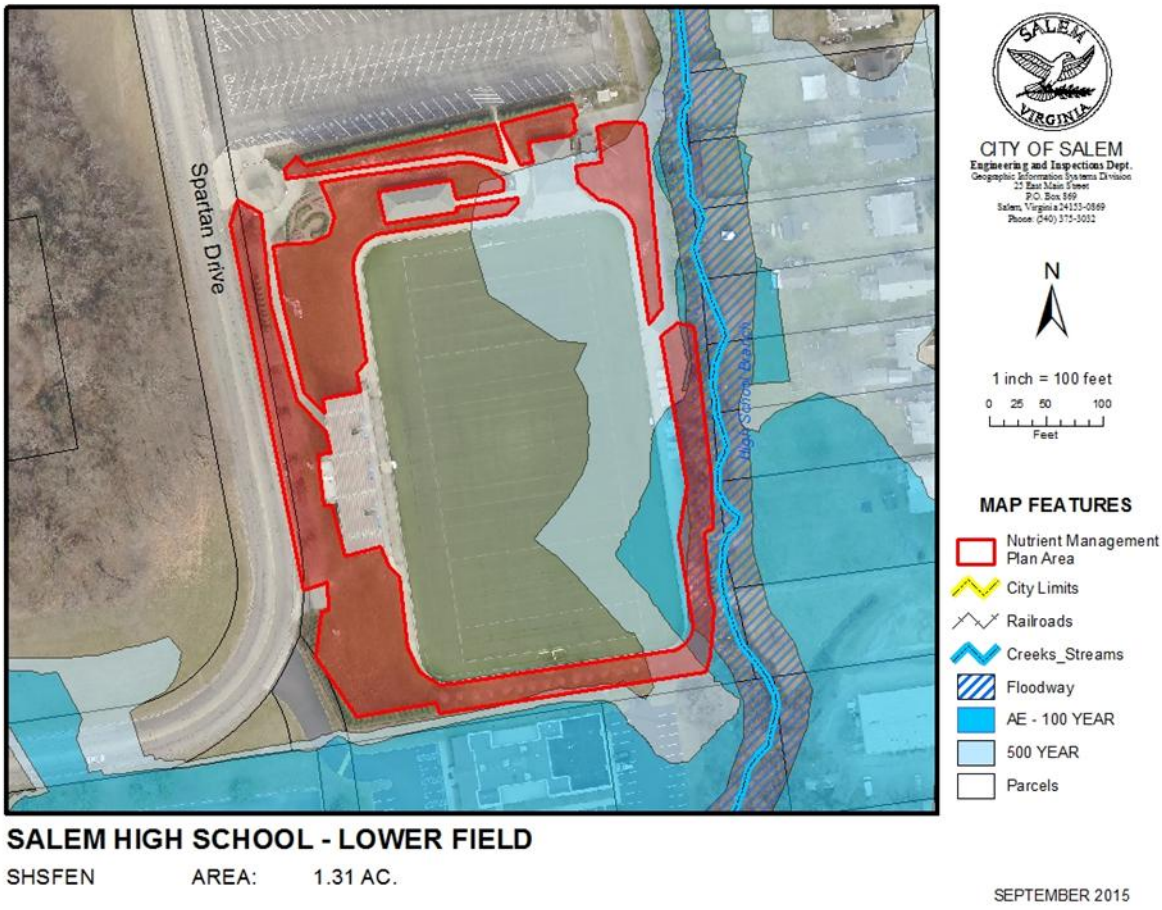
Address:	400 Spartan Dr. Salem, VA 24153
GPS Coordinates:	37.294805, -80.079421

Areas Managed

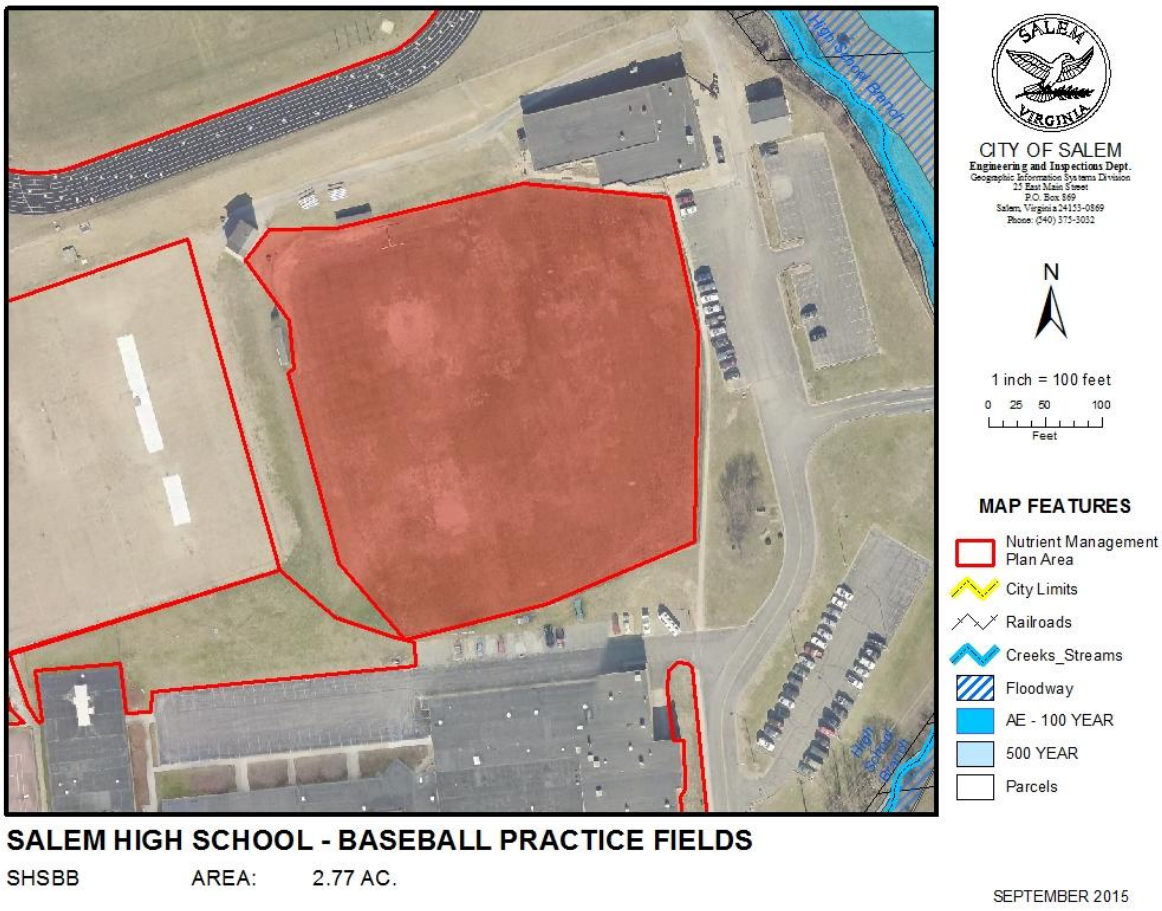
Campus Grounds – The cool season, unirrigated turf around the school is fertilized. It totals 6.31 acres.



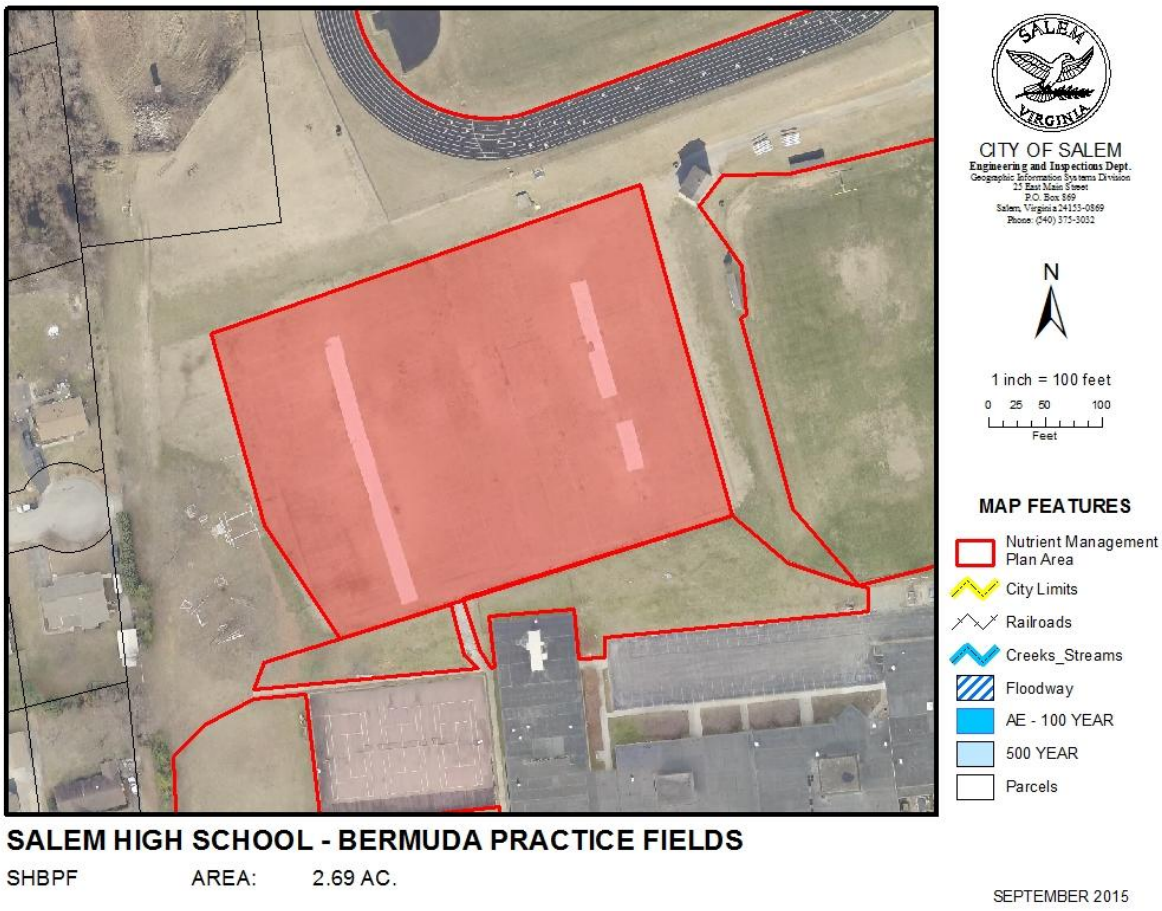
Spartan Field Common Areas – The playing surface of Spartan Field is synthetic turf. The common areas surround the field and stands are cool season, unirrigated and fertilized totaling 1.31 acres.



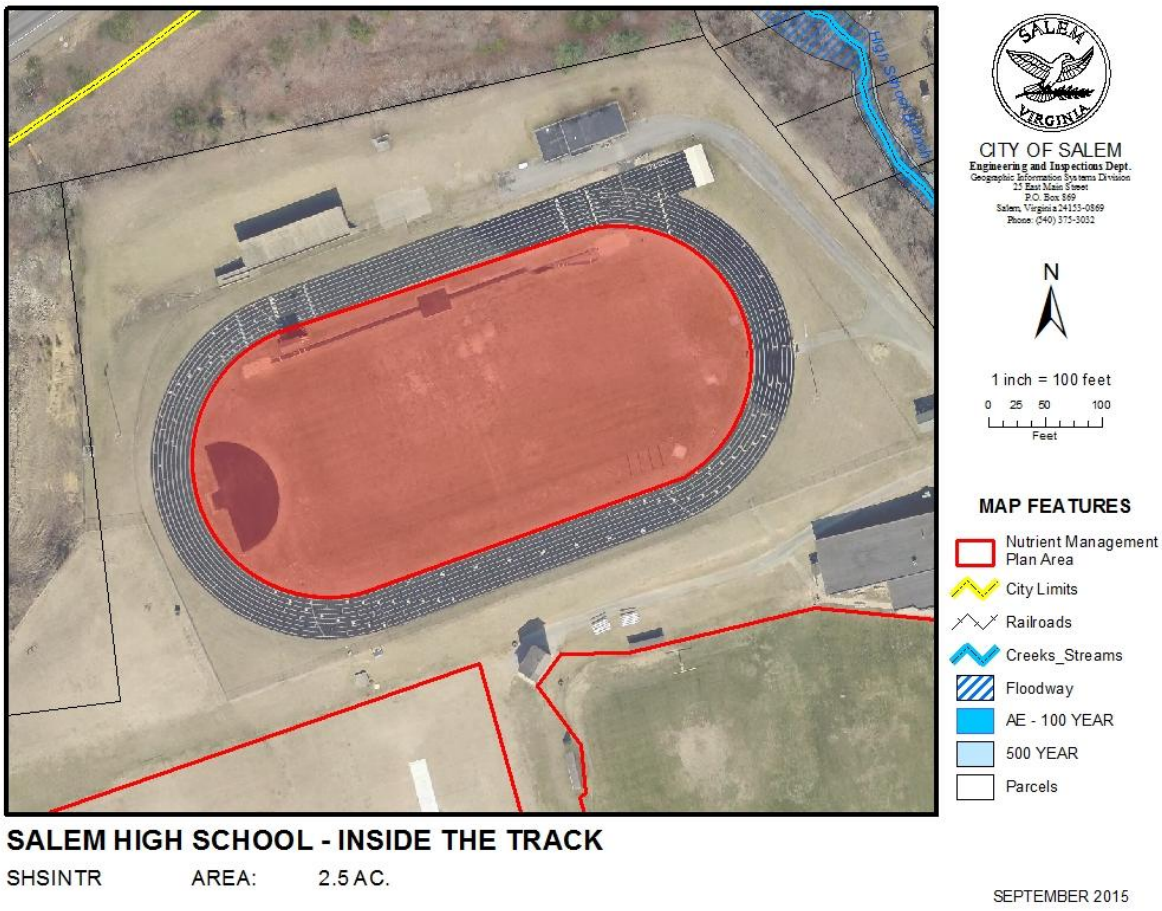
Baseball practice field – The warm season, irrigated turf is fertilized totaling 2.77 acres.



Bermuda practice field – The warm season, irrigated turf is fertilized totaling 2.69 acres.



Inside the track field – The cool season, unirrigated turf is fertilized totaling 2.5 acres.



Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidently spread on pavement and sidewalks.
- A creek is located to the East of the campus.
- According to Web Soil Survey, there is a rare risk of flooding in the area of Spartan field. Please refrain from making fertilizer applications when heavy rains are expected.

2.5. South Salem Elementary School

Description

South Salem Elementary is the newest school in Salem.

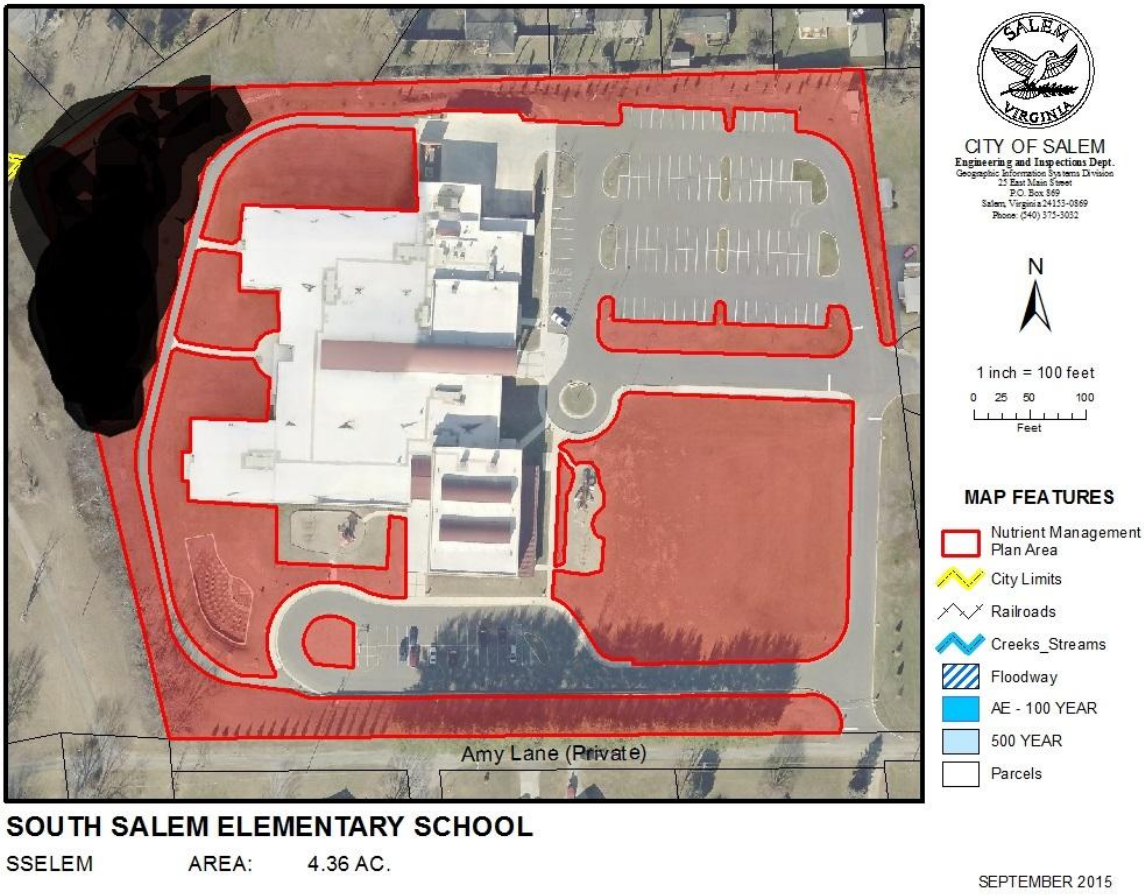
Location

From West Main Street (RT 11/460) head south on Mill Street (across from Spartan Drive). Head south about a mile, school will be on right.

Address: 1600 Carolyn Rd
Salem, VA 24153
GPS Coordinates: 37.278031, -80.081980

Areas Managed

The cool season turf areas around the school and the field in front of the school are fertilized together. They are unirrigated and total 3.76 acres. The area in black to the west side of the school is a rainwater retention pond, it is approximately 0.6 acres. This total has been removed from the acreage shown on map.



Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Also, there is a stormwater retention pond behind the school. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidently spread on pavement and sidewalks.
- According to Web Soil Survey, there is no risk of flooding in this area.

2.6. West Salem Elementary School

Description

West Salem Elementary School opened in September 1952. The school motto "West Salem Elementary School-Where Success Shines," continues to be a goal and dream for all students who attend.

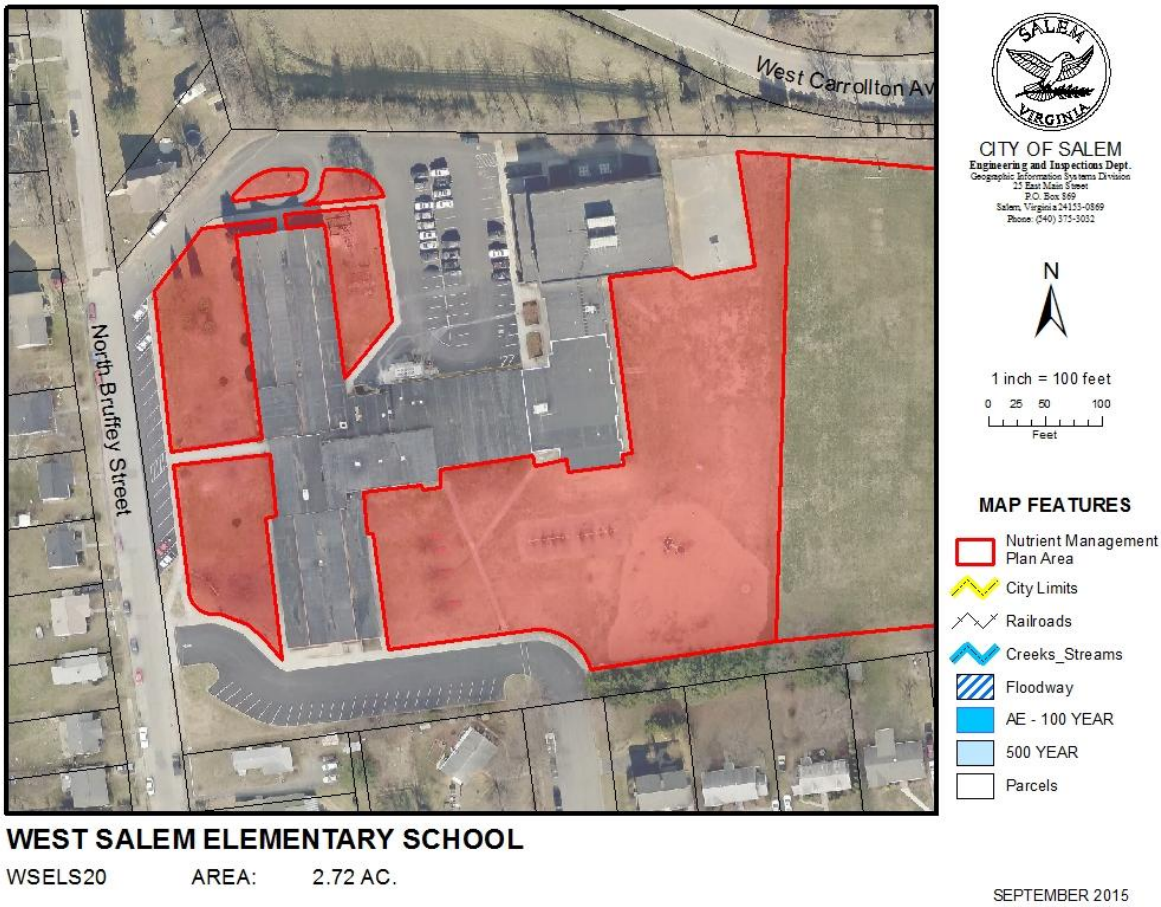
Location

From West Main Street (RT 11/460) turn onto Bruffey Street, school will be on left.

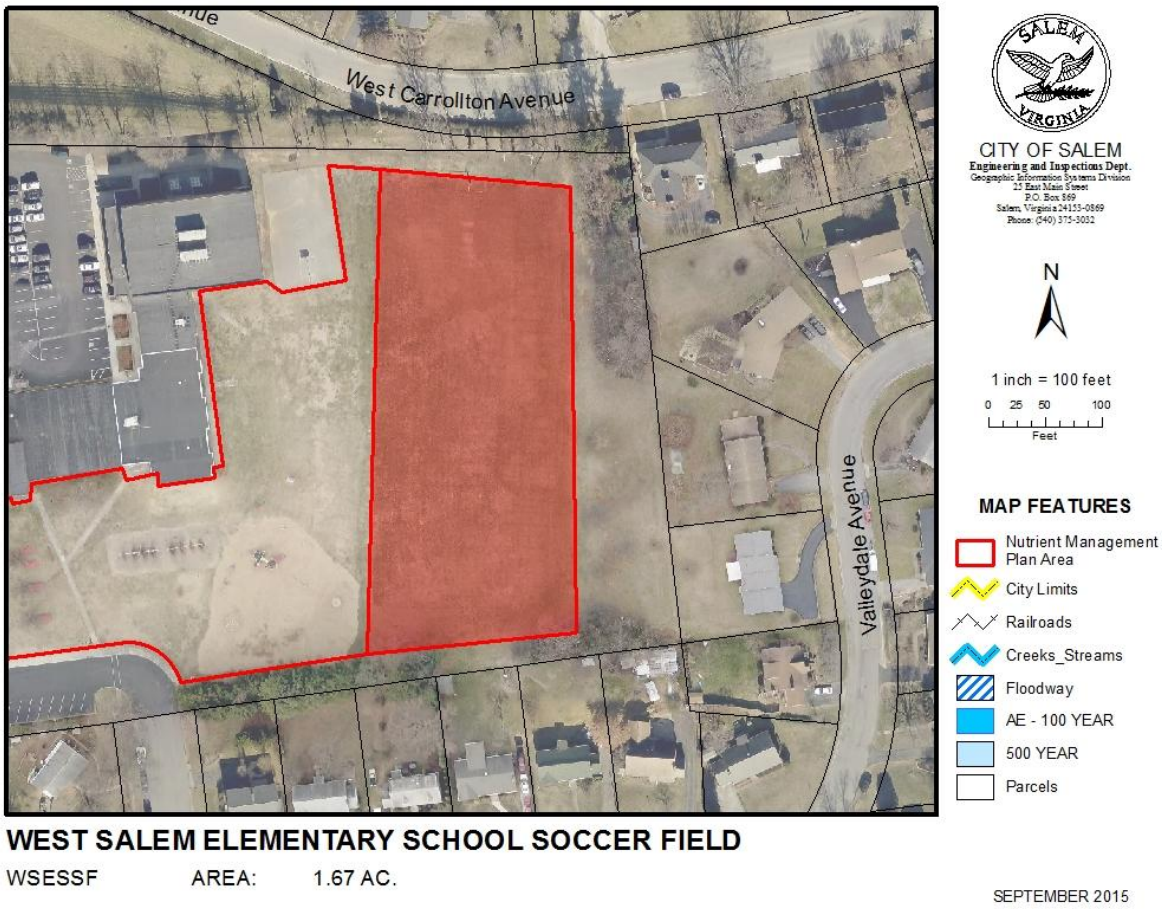
Address: 520 North Bruffey Street
Salem, VA 24153
GPS Coordinates: 37.296793, -80.075843

Areas Managed

The cool season, turf around the school is unirrigated and measures is 2.72 acres.



The cool season, field behind the school is unirrigated and measures is 1.67 acres.



Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidently spread on pavement and sidewalks.
- According to Web Soil Survey, there is no risk of flooding in this area.

2.7. East Salem Elementary School

Description

The mission of East Salem Elementary School is to create an atmosphere where children become competent learners, creative thinkers, and responsible, involved citizens. We will strive to create an appreciation of cultural diversity within our school through coordinated efforts involving students, families, staff, and community.

Location

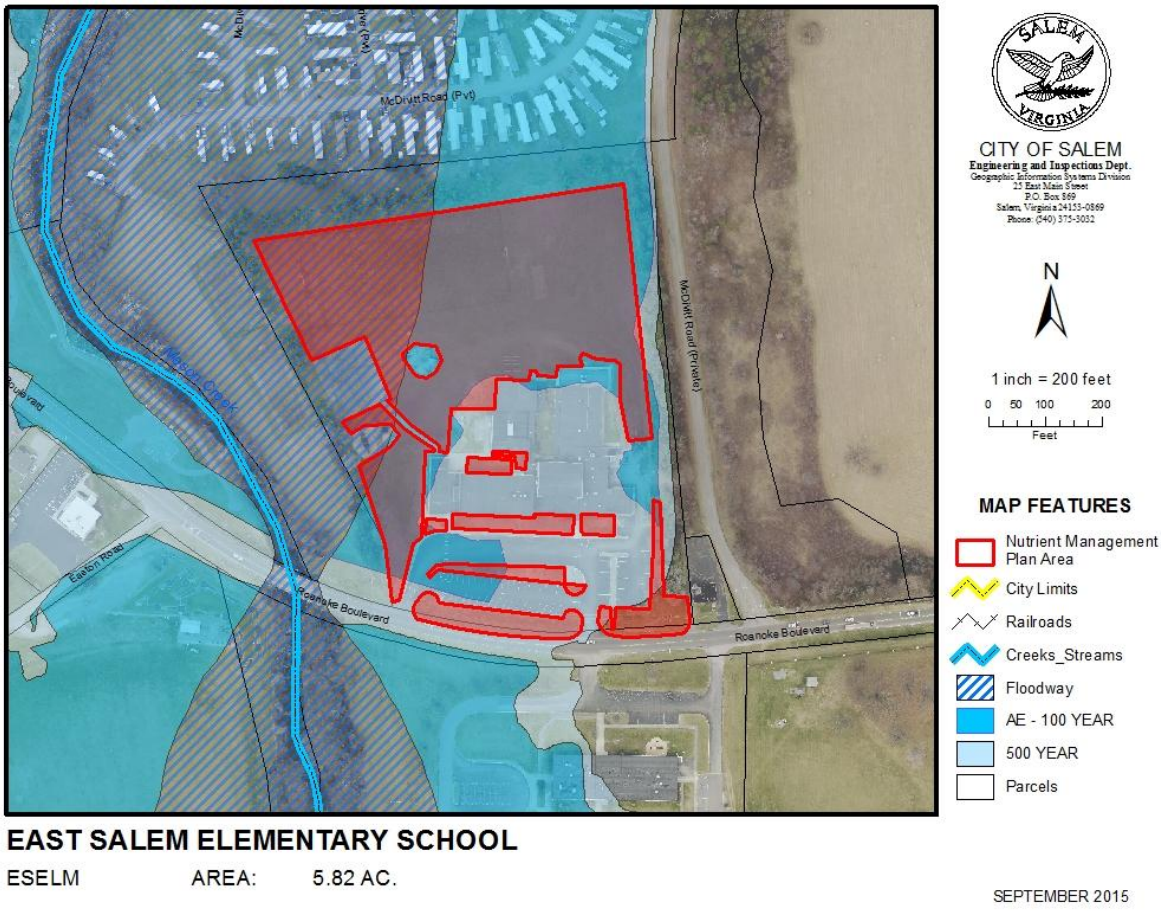
From Main Street (RT 11/460) head south on Electric Road (RT 419), turn left onto Roanoke Blvd. The school will be on the left.

Address:	1765 Roanoke Boulevard Salem, VA 24153
GPS Coordinates:	37.276332, -80.027863

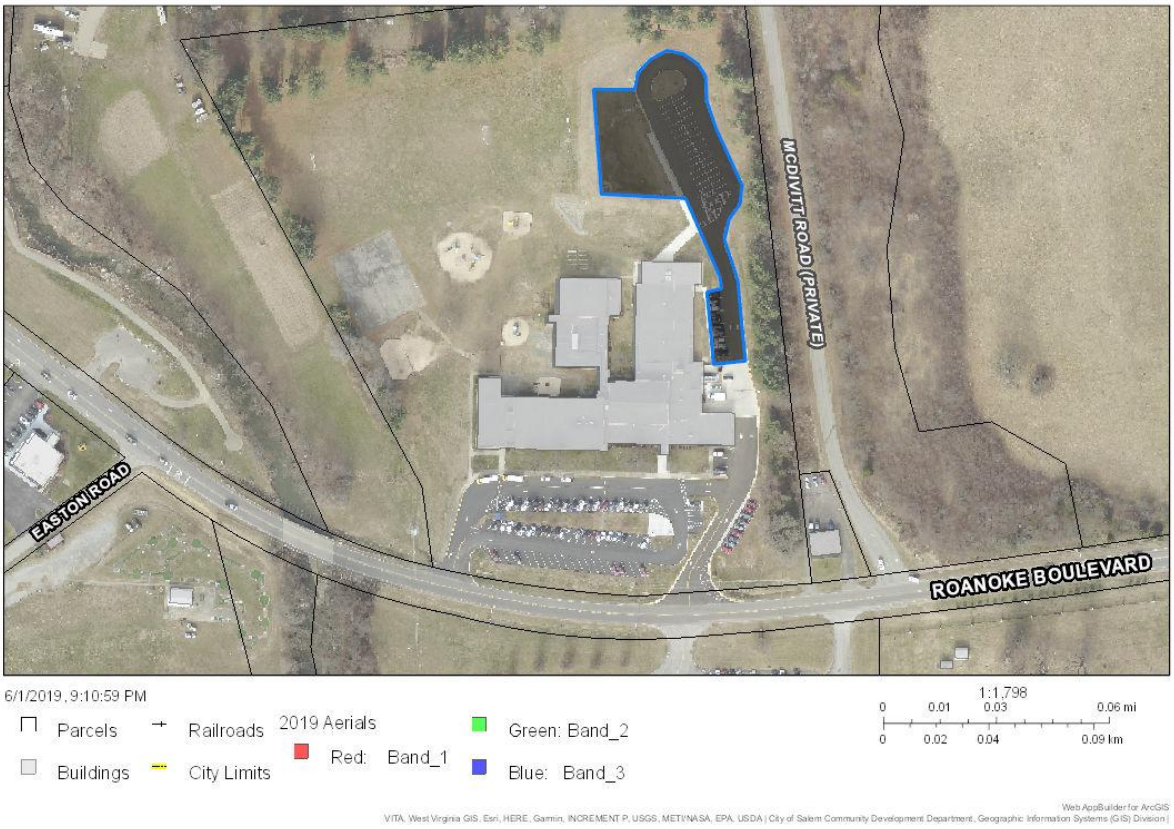
Areas Managed

There are approximately 4.82 acres of cool season, unirrigated turf areas that are fertilized. This includes the common areas around and the field behind the school.

The fertilized area has changed from what is shown in the map below. A bus drop off area and a stormwater retention pond were added to the northeast corner of the property. A second map is included showing the area of turf that has been removed.



City of Salem ArcGIS Web Map



Environmentally Sensitive –

- There are many roads, sidewalks and storm water drains throughout the area. Be cautious when making fertilizer applications near these areas and always clean up any fertilizers accidently spread on pavement and sidewalks.
- A stormwater retention area is located to the west of the bus drop off. This area should not be fertilized.
- Mason Creek is to the west of this site.
- According to Web Soil Survey, there is a rare and occasional risk of flooding in this area.


Medivitt Rd
Lemay Dr
39B
44A
Moon Creek
5E
Reavis Rd
8A
Abarta Dr
57A
Exton Rd
Roanoke
Roanoke Blvd
42A
38B
0
400 ft

3. Soil Test Summaries

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

School Board is being transferred from Part 3 to Part 2. Soil Sample was taken by Robert Habel on 3/13/2024 and tested by Waypoint Analytical on 3/21/24.

Part 2 Soil samples were taken by Robert Habel on 8/12/2025 and tested by Waypoint Analytical on 8/21/2025.

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 68)

A. There are multiple rates used in this plan. See worksheets for specifics.

B. Soil samples were taken for each location. Locations are grouped based on phosphorus need using a limiting result. This means the lowest input allowed was chosen for each group of results. Each location has a separate Application and Record sheet.

C. For cool season sports turf, application schedule and rates are based on DCR guidelines and must be followed as written. Large applications outside of these windows or more than these rates are not permitted.

D. For cool season sports turf, soluble nitrogen rates of 0.25 #/M N or less may be applied as a part of a pesticide or minor element application and can be applied any time the turf is actively growing within the frost dates but must be considered part of the total annual nitrogen.

E. Plan is written for maximum nitrogen input. The grounds manager will decide if all applications are needed by monitoring turf conditions.

F. Lime is needed in some areas, see application sheets for details.

Soil Test Summary									
Customer Name:	City of Salem								
Testing Lab:	Waypoint Analytical								
Sample Date:	3/13/2024								
Analysis Date:	3/21/2024								
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)
Soil Test ID#									
SP3 13	School Board	7.00		36	13.2	M	289	205.2	VH

Soil Test Summary

Customer Name:	City of Salem
Testing Lab:	Waypoint Analytical
Sample Date:	8/12/2025
Analysis Date:	8/21/2025
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)
Soil Test ID#									
SLM 01	Andrew Lewis Campus	6.70		47	18.3	H-	309	219.4	VH
SLM 02	Andrew Lewis Field	6.50		42	16.0	M+	309	219.4	VH
SLM 03	G.W. Carver Elem	6.80		35	12.8	M	253	179.6	VH
SLM 04	Salem High Campus	6.00	6.78	37	13.7	M	155	110.1	H
SLM 05	SH Baseball Practice	6.20		48	18.7	H-	208	147.7	H+
SLM 06	Salem High Track	5.90	6.77	38	14.1	M	185	131.4	H+
SLM 07	SH Bermuda Practice	6.10	6.81	40	15.1	M	107	76.0	M+
SLM 08	Salem High Stadium	6.60		33	11.9	M	204	144.8	H+
SLM 09	South Salem	6.20		19	5.4	L+	349	247.8	VH
SLM 10	West Salem Campus	6.10	6.74	23	7.3	M-	160	113.6	H
SLM 11	West Salem Soccer	6.50		14	3.2	L	329	233.6	VH
SLM 12	East Salem	5.10	6.56	19	5.4	L+	246	174.7	VH

3.1. General Turf

Regulations allow for up to 3.5 lbs/M of nitrogen per year. If using 100% water-soluble nitrogen .7 lbs may be applied every 30 days. If using slow release materials, .9 lbs may be used every 30 days. Do not exceed stated per year total.

High P Need

Soil tests limiting results were medium (M-) levels of phosphorus and very high (VH) levels of potassium. 2 #/M of phosphorus is allowed. Soil tests call for 0 #/M of potassium, but more can be applied as it does not pose a threat to water quality and helps protect the plant from stresses.

Low P Need

Soil tests limiting results were high (H-) levels of phosphorus and high (VH) levels of potassium. 1 #/M of phosphorus is allowed. Soil tests call for 0 #/M of potassium, but more can be applied as it 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 .7 lbs may be applied every 30 days. If using slow release materials, .9 lbs may be used every 30 days. Do not exceed stated per year total.

Lime is needed on the **East Salem Campus**. 2 Ton or 92 #/M of calcitic lime is required as calcium is more deficient than magnesium.

Lime is needed on the **West Salem Campus**. 1.5 Ton or 69 #/M of calcitic lime is required as calcium is more deficient than magnesium.

Lime is needed on the **Salem High Campus**. 1 Ton or 46 #/M of calcitic lime is required as calcium is more deficient than magnesium.

No more than 50 #/M per month. Spring and fall are the best time for lime application. Attempt to coordinate with aerification.

Soil Test Summary

Customer Name:	City of Salem
Testing Lab:	Waypoint Analytical
Sample Date:	8/12/2025
Analysis Date:	8/21/2025
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)
Soil Test ID#									
High P Need									
SLM 09	South Salem	6.20		19	5.4	L+	349	247.8	VH
SLM 10	West Salem Campus	6.10	6.74	23	7.3	M-	160	113.6	H
SLM 12	East Salem	5.10	6.56	19	5.4	L+	246	174.7	VH
Average Results					**7.3**	**M-**		**247.8**	**VH**
			Lime		**P**			**K**	
Allowed Inputs					**2 #/M**			**0 #/M**	
Low P Need									
SP3 13	School Board	7.00		36	13.2	M	289	205.2	VH
SLM 01	Andrew Lewis Campus	6.70		47	18.3	H-	309	219.4	VH
SLM 03	G.W. Carver Elem	6.80		35	12.8	M	253	179.6	VH
SLM 04	Salem High Campus	6.00	6.78	37	13.7	M	155	110.1	H
SLM 08	Salem High Stadium	6.60		33	11.9	M	204	144.8	H+
Average Results					**18.3**	**H-**		**205.20**	**VH**
			Lime		**P**			**K**	
Allowed Inputs					**1 #/M**			**0 #/M**	

3.2. Cool Season Irrigated

4.2 #/M nitrogen allowed per year on this irrigated cool season field. For September through November applications, 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. For applications made from April to August, the maximum application rate is 0.5 #/M every 30 days. Do not exceed stated per year total. These applications must be made within this time frame, see footnote D on page 24 for exceptions.

Soil test limiting results were medium (M-) levels of phosphorus and high (H+) levels of potassium. 1.5 #/M of phosphorus is allowed. Soil tests call for 0.5 #/M of potassium, but more can be applied as it does not pose a threat to water quality and helps to protect the plant from stress.

1 Ton or 46 #/M of calcitic lime is required as calcium is more deficient than magnesium. No more than 50 #/M per month. Spring and fall are the best time for lime application. Attempt to coordinate with aerification.

Soil Test Summary									
Customer Name:	City of Salem								
Testing Lab:	Waypoint Analytical								
Sample Date:	8/12/2025								
Analysis Date:	8/21/2025								
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)
Soil Test ID#									
SLM 06	Salem High Track	5.90	6.77	38	14.1	M	185	131.4	H+
			Lime		**P**			**K**	
Allowed Inputs			**1 T/A**		**1.5 #/M**			**0.5 #/M**	

3.3. Cool Season Unirrigated

2.8 #/M nitrogen allowed per year on this unirrigated cool season field. For September through October applications, 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. For applications made from November to May, the maximum application rat is 0.5 #/M every 30 days. Do not exceed stated per year total. These applications must be made within this time frame, see footnote D on page 20 for exceptions.

Low P Need

Soil test results were medium (M+) levels of phosphorus and high (VH) levels of potassium. 1 #/M of phosphorus is allowed. Soil tests call for 0 #/M of potassium, but more can be applied as it does not pose a threat to water quality and helps protect the plant from stresses.

High P Need

Soil tests results were low (L) levels of phosphorus and very high (VH) levels of potassium. 2.5 #/M of phosphorus is allowed. Soil tests call for 0 #/M of potassium, but more can be applied as it does not pose a threat to water quality and helps protect the plant from stresses.

Lime is not needed currently.

Soil Test Summary									
Customer Name:		City of Salem							
Testing Lab:		Waypoint Analytical							
Sample Date:		8/12/2025							
Analysis Date:		8/21/2025							
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)
Soil Test ID#									
Low P Need									
SLM 02	Andrew Lewis Field	6.50		42	16.0	M+	309	219.4	VH
			Lime		**P**			**K**	
Allowed Inputs					**1 #/M**			**0 #/M**	
High P Need									
SLM 11	West Salem Soccer	6.50		14	3.2	L	329	233.6	VH
			Lime		**P**			**K**	
Allowed Inputs					**2.5 #/M**			**0 #/M**	

3.4. Warm Season Irrigated

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

- Applications of nitrogen occurring outside of the summer months (Sep-May) must be split. Water-soluble nitrogen or products with less than 15% slowly available nitrogen must be applied with a per-application maximum of 0.35 #/M and a minimum of 15 days between applications. Products with 15% or greater slowly available nitrogen may be applied with a per-application maximum of 0.5 #/M and a minimum of 15 days between applications.
- Applications made during the summer months (Jun-Aug) have higher allowable application rates. Applications of water-soluble nitrogen or products with less than 15% slowly available nitrogen must be applied with a per-application max of 0.7 #/M and a minimum of 30 days between applications. Products with 15% or greater slowly available nitrogen may be applied with a per-application max of 1 #/M.
- Do not exceed stated per year total.
- These applications must be made within this time frame.

Soil test shows high (H-) levels of phosphorus and high (H+) levels of potassium. 1 #/M of phosphorus is allowed. Soil tests call for 0.5 #/M of potassium, but more can be applied as it does not pose a threat to water quality and helps to protect the plant from stress.

Lime is needed on the **Salem High Bermuda Practice Field**. 1 Ton or 46 #/M of calcitic lime is required as calcium is more deficient than magnesium. No more than 50 #/M per month. Spring and fall are the best time for lime application. Attempt to coordinate with aerification.

.

Soil Test Summary									
Customer Name:		City of Salem							
Testing Lab:		Waypoint Analytical							
Sample Date:		8/12/2025							
Analysis Date:		8/21/2025							
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)
Soil Test ID#									
SLM 05	SH Baseball Practice	6.20		48	18.7	H-	208	147.7	H+
SLM 07	SH Bermuda Practice	6.10	6.81	40	15.1	M	107	76.0	M+
Average Results					**18.7**	**H-**		**147.70**	**H+**
			Lime		**P**			**K**	
Allowed Inputs					**1 #/M**			**0.5 #/M**	

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.

4.1. School Board

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**School Board**						
Prepared:	**9/1/2025**			**Area:**	**0.258**		**Turf Type:**	**Cool Season General Turf Low P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	63	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	56	55	0.80 - 0.15 - 0.40			
Potassium											
0	August	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	63	55	0.90 - 0.17 - 0.45			
	November	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	63	55	0.90 - 0.17 - 0.45			
	No applications after December 2										
	Lime										
						Total used:		3.50 - 0.66 - 1.75			
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 1 - 0**			

Notes:

- Limiting results are H- in Phosphorus and VH 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. Andrew Lewis

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**Andrew Lewis Campus**						
Prepared:	**9/1/2025**			**Area:**	**4.02**		**Turf Type:**	**Cool Season General Turf Low P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	986	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	876	55	0.80 - 0.15 - 0.40			
Potassium											
0	August	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	986	55	0.90 - 0.17 - 0.45			
	November	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	986	55	0.90 - 0.17 - 0.45			
	No applications after December 2										
	Lime										
						Total used:		3.50 - 0.66 - 1.75			
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 1 - 0**			

Notes:

- Limiting results are H- in Phosphorus and VH 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.

NUTRIENT APPLICATION WORK SHEET														
Name:	**Salem - Part 2**			**Management Area:**			**Andrew Lewis - Field**							
Prepared:	**9/1/2025**			**Area (Acres):**		**1.85**	**Turf Type:**			**Unirrigated, Cool Season, Sports Turf**				
Expires:	**9/1/2028**													
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**	**Gypsum**	**lbs/app lime/gyp**	
											lbs/M			
	No applications before February 28													
Nitrogen	April 15 - May 15	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	2.78	224	70	0.50	-	0.14 - 0.28				
2.8														
Phosphorus	September	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	403	70	0.90	-	0.25 - 0.50				
1														
Potassium	October	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	403	70	0.90	-	0.25 - 0.50				
0														
	November	16 - 0 - 8	30	16-0-8 32% XRT SouthernLAWN	3.13	252	32	0.50	-	0.00 - 0.25				
	No applications after December 2													
	Lime													
						Total used:		2.8	-	0.64 - 1.53				
	Do not exceed yearly maximum allowed by Regulation: (Does not include K)							**2.8**	-	**1 - 0**				

Notes:

- Limiting results are M+ in Phosphorus and VH Potassium.
- 2.8 #/M nitrogen allowed per year on this unirrigated cool season field. For September through October applications, 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. For applications made from November to May, the maximum application rat is 0.5 #/M every 30 days. Do not exceed stated per year total. These applications must be made within this time frame, see footnote D on page 24 for exceptions.
- Application schedule and rates are based on DCR guidelines and must be followed as written. Large applications outside of these windows or more than these rates are not permitted.
- Soluble nitrogen rates of 0.25 #/M N or less may be applied as a part of a pesticide or minor element application and can be applied any time the turf is actively growing within the frost dates but must be considered part of the total annual nitrogen.

4.3. G.W. Carver

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**GW Carver**						
Prepared:	**9/1/2025**			**Area:**	**2.71**		**Turf Type:**	**Cool Season General Turf Low P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	665	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	590	55	0.80 - 0.15 - 0.40			
Potassium											
0	August	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	665	55	0.90 - 0.17 - 0.45			
	November	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	665	55	0.90 - 0.17 - 0.45			
	No applications after December 2										
	Lime										
						Total used:		3.50 - 0.66 - 1.75			
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 1 - 0**			

Notes:

- Limiting results are H- in Phosphorus and VH 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.

4.4. Salem High School

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**Salem High School - Campus**						
Prepared:	**9/1/2025**			**Area:**	**6.31**		**Turf Type:**	**Cool Season General Turf Low P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	1547	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	1374	55	0.80 - 0.15 - 0.40			
Potassium											
0	August	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	1547	55	0.90 - 0.17 - 0.45			
	November	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	1547	55	0.90 - 0.17 - 0.45			
	No applications after December 2										
	Lime										
	September '25 - 46 #/M Calcitic Lime								46		12,644
						Total used:		3.50 - 0.66 - 1.75			
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 1 - 0**			

Notes:

- Limiting results are H- in Phosphorus and VH 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.

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**Salem High School - Stadium**						
Prepared:	**9/1/2025**			**Area:**	**1.31**		**Turf Type:**	**Cool Season General Turf Low P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	321	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	285	55	0.80 - 0.15 - 0.40			
Potassium											
0	August	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	321	55	0.90 - 0.17 - 0.45			
	November	16 - 3 - 8	30	16-3-8 50% XCU 20% Biosolids 2% FE	5.63	321	55	0.90 - 0.17 - 0.45			
	No applications after December 2										
	Lime										
						Total used:		3.50 - 0.66 - 1.75			
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 1 - 0**			

Notes:

- Limiting results are H- in Phosphorus and VH 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.

NUTRIENT APPLICATION WORK SHEET														
Name:	**Salem - Part 2**			**Management Area:**			**Salem High School - Track**							
Prepared:	**9/1/2025**			**Area:**			**2.5**		**Turf Type:**		**Cool Season Irrigated Sports Turf**			
Expires:	**9/1/2028**													
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/M	**lbs/app lime/gyp**	
Nitrogen	**No applications before February 28**													
4.2	April 15 - May 15	16 - 3 - 8	30	16-3-8 50%XCU 20%Biosolids 2%FE	3.13	341	55	0.50	- 0.09	- 0.25				
Phosphorus														
1.5	June 1 -15	16 - 3 - 8	30	16-3-8 50%XCU 20%Biosolids 2%FE	3.13	341	55	0.50	- 0.09	- 0.25				
Potassium														
0.5	After August 15	16 - 3 - 8	30	16-3-8 50%XCU 20%Biosolids 2%FE	3.13	341	55	0.50	- 0.09	- 0.25				
	September	16 - 3 - 8	30	16-3-8 50%XCU 20%Biosolids 2%FE	5.63	613	55	0.90	- 0.17	- 0.45				
	October	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	3.60	392	32	0.90	- 0.00	- 0.11				
	November	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	3.60	392	32	0.90	- 0.00	- 0.11				
	No applications after December 2													
	Lime													
	September '25 - 46 #/M Calcitic Lime										46		5,009	
						Total used:		4.20	- 0.44	- 1.42				
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**4.2**	**- 1.5**	**- 0.5**				

Notes:

- Limiting results are M in Phosphorus and H+ Potassium.
- For September through November applications, 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. For applications made from April to August, the maximum application rat is 0.5 #/M every 30 days. Do not exceed stated per year total.
- Application schedule and rates are based on DCR guidelines and must be followed as written. Large applications outside of these windows or more than these rates are not permitted.
- Soluble nitrogen rates of 0.25 #/M N or less may be applied as a part of a pesticide or minor element application and can be applied any time the turf is actively growing within the frost dates but must be considered part of the total annual nitrogen.

NUTRIENT APPLICATION WORK SHEET									
Name:	**Salem - Part 2**			**Management Area:**	**Salem High School - Baseball Practice**				
Prepared:	**9/1/2025**			**Area:**	**2.77**		**Turf Type:**	**Warm Season Irrigated Sports Turf**	
Expires:	**9/1/2028**								
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 April 11 on warm season turf. If turf is overseeded, no applications before February 28.**								
4	March	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	335	70	0.50 - 0.14 - 0.28	
Phosphorus									
1	April 15 - April 30	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	335	70	0.50 - 0.14 - 0.28	
Potassium									
0.5	May 1 - May 15	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	241	32	0.50 - 0.00 - 0.06	
	June 1-15	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	335	70	0.50 - 0.14 - 0.28	
	June 16-30	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	241	32	0.50 - 0.00 - 0.06	
	July 1-15	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	335	70	0.50 - 0.14 - 0.28	
	July 16-31	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	241	32	0.50 - 0.00 - 0.06	
	August 1-15	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	335	70	0.50 - 0.14 - 0.28	
	August 16 -31	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	241	32	0.50 - 0.00 - 0.06	
	Oct-Nov	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	335	70	0.50 - 0.14 - 0.28	
	No applications after September 21 on warm season turf. If turf is overseeded, no applications after December 2.								
Lime									
Overseeding	Make these applications only if turf has been overseeded.				**Total used:**			5.00 - 0.84 - 1.92	
Add 1 #/M N				**Do not exceed yearly maximum allowed by Regulation (Except for K):**				**4 - 1 - 0.5**	

Notes:

- Limiting results are H- in Phosphorus and H+ Potassium.
- For September through November applications, 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. For applications made from April to August, the maximum application rat is 0.5 #/M every 30 days. Do not exceed stated per year total.
- Application schedule and rates are based on DCR guidelines and must be followed as written. Large applications outside of these windows or more than these rates are not permitted.
- Soluble nitrogen rates of 0.25 #/M N or less may be applied as a part of a pesticide or minor element application and can be applied any time the turf is actively growing within the frost dates but must be considered part of the total annual nitrogen.

NUTRIENT APPLICATION WORK SHEET									
Name:	**Salem - Part 2**			**Management Area:**	**Salem High School - Bermuda Practice**				
Prepared:	**9/1/2025**			**Area:**	**2.69**		**Turf Type:**	**Warm Season Irrigated Sports Turf**	
Expires:	**9/1/2028**								
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 April 11 on warm season turf. If turf is overseeded, no applications before February 28.**								
4	March	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	326	70	0.50 - 0.14 - 0.28	
Phosphorus									
1	April 15 - April 30	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	326	70	0.50 - 0.14 - 0.28	
Potassium									
0.5	May 1 - May 15	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	234	32	0.50 - 0.00 - 0.06	
	June 1-15	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	326	70	0.50 - 0.14 - 0.28	
	June 16-30	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	234	32	0.50 - 0.00 - 0.06	
	July 1-15	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	326	70	0.50 - 0.14 - 0.28	
	July 16-31	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	234	32	0.50 - 0.00 - 0.06	
	August 1-15	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	326	70	0.50 - 0.14 - 0.28	
	August 16 -31	25 - 0 - 3	30	southernLAWN 25-0-3 32% XRT	2.00	234	32	0.50 - 0.00 - 0.06	
	Oct-Nov	18 - 5 - 10	15	18-5-10 Nutriscape w/ Micros	2.78	326	70	0.50 - 0.14 - 0.28	
	No applications after September 21 on warm season turf. If turf is overseeded, no applications after December 2.								
Lime	September '25 - 46 #/M Calcitic Limestone - 5390 # Total								
Overseeding	Make these applications only if turf has been overseeded.				**Total used:**			5.00 - 0.84 - 1.92	
Add 1 #/M N				**Do not exceed yearly maximum allowed by Regulation (Except for K):**				**4 - 1 - 0.5**	

Notes:

- Limiting results are H- in Phosphorus and H+ 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.

4.5. South Salem

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**South Salem**						
Prepared:	**9/1/2025**			**Area:**	**3.76**		**Turf Type:**	**Cool Season General Turf High P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	819	70	0.90 - 0.25 - 0.50			
Phosphorus											
2	May	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	4.44	727	70	0.80 - 0.22 - 0.44			
Potassium											
0	August	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	819	70	0.90 - 0.25 - 0.50			
	November	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	819	70	0.90 - 0.25 - 0.50			
	No applications after December 2										
	Lime										
						Total used:		3.50 - 0.97 - 1.94			
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 2 - 0**			

Notes:

- Limiting results are M- in Phosphorus and VH 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.

4.6. West Salem

NUTRIENT APPLICATION WORK SHEET											
Name:	**Salem - Part 2**			**Management Area:**	**West Salem - Campus**						
Prepared:	**9/1/2025**			**Area:**	**2.72**		**Turf Type:**	**Cool Season General Turf Low P Input**			
Expires:	**9/1/2028**										
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**										
3.5	March	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	592	70	0.90 - 0.25 - 0.50			
Phosphorus											
2	May	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	4.44	526	70	0.80 - 0.22 - 0.44			
Potassium											
0	August	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	592	70	0.90 - 0.25 - 0.50			
	November	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	592	70	0.90 - 0.25 - 0.50			
	No applications after December 2										
	Lime										
	September '25 - 46 #/M Calcitic Lime								46		5,450
	October '25 - 23 #/M Calcitic Lime								23		2,725
						Total used:		3.50 - 0.97 - 1.94			8,175
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5 - 2 - 0**			

Notes:

- Limiting results are M- in Phosphorus and VH 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.

NUTRIENT APPLICATION WORK SHEET														
Name:	**Salem - Part 2**			**Management Area:**			**West Salem - Soccer**							
Prepared:	**9/1/2025**			**Area (Acres):**		**1.67**	**Turf Type:**		**Unirrigated, Cool Season, Sports Turf**					
Expires:	**9/1/2028**													
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**	**Gypsum**	**lbs/app lime/gyp**	
											lbs/M			
	No applications before February 28													
Nitrogen	April 15 - May 15	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	2.78	202	70	0.50	-	0.14 - 0.28				
2.8														
Phosphorus	September	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	364	70	0.90	-	0.25 - 0.50				
2.5														
Potassium	October	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	364	70	0.90	-	0.25 - 0.50				
0														
	November	16 - 0 - 8	30	16-0-8 32% XRT SouthernLAWN	3.13	228	32	0.50	-	0.00 - 0.25				
	No applications after December 2													
	Lime													
						Total used:		2.8	-	0.64 - 1.53				
	Do not exceed yearly maximum allowed by Regulation: (Does not include K)							**2.8**	-	**2.5 - 0**				

Notes:

- Limiting results are L in Phosphorus and VH Potassium.
- 2.8 #/M nitrogen allowed per year on this unirrigated cool season field. For September through October applications, 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. For applications made from November to May, the maximum application rat is 0.5 #/M every 30 days. Do not exceed stated per year total. These applications must be made within this time frame, see footnote D on page 24 for exceptions.
- Application schedule and rates are based on DCR guidelines and must be followed as written. Large applications outside of these windows or more than these rates are not permitted.
- Soluble nitrogen rates of 0.25 #/M N or less may be applied as a part of a pesticide or minor element application and can be applied any time the turf is actively growing within the frost dates but must be considered part of the total annual nitrogen.

4.7. East Salem

NUTRIENT APPLICATION WORK SHEET												
Name:	**Salem - Part 2**			**Management Area:**	**East Salem**							
Prepared:	**9/1/2025**			**Area:**	**4.82**		**Turf Type:**	**Cool Season General Turf High P Input**				
Expires:	**9/1/2028**											
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/M**	**lbs/app lime/gyp**
Nitrogen	**No applications before February 28**												
3.5	March	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	1050	70	0.90	- 0.25	- 0.50			
Phosphorus													
2	May	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	4.44	932	70	0.80	- 0.22	- 0.44			
Potassium													
0	August	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	1050	70	0.90	- 0.25	- 0.50			
	November	18 - 5 - 10	30	18-5-10 Nutriscape w/ Micros	5.00	1050	70	0.90	- 0.25	- 0.50			
	No applications after December 2												
	Lime												
	September '25 - 46 #/M Calcitic Lime										46		9,658
	October '25 - 46 #/M Calcitic Lime										46		9,658
						Total used:		3.50	- 0.97	- 1.94			19,316
				Do not exceed yearly maximum allowed by Regulation (Except for K):				**3.5**	**-** **2**	**-** **0**			

Notes:

- Limiting results are M- in Phosphorus and VH 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:	City of Salem				Management Area ID:		School Board	
Address:					Management Area Size:		0.258	
	114 North Broad Street • PO Box 869				Plant Species:		Mixed cool season	
	Salem, VA 24153				Notes:			
Phone#:	Office: (540)375-3028							
Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				
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:	City of Salem	Management Area ID:	Andrew Lewis – Campus
Address:		Management Area Size:	4.02
	114 North Broad Street • PO Box 869	Plant Species:	Mixed cool season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem				Management Area ID:		Andrew Lewis – Field	
Address:					Management Area Size:		1.85	
	114 North Broad Street • PO Box 869				Plant Species:		unirrigated cool season	
	Salem, VA 24153				Notes:			
Phone#:	Office: (540)375-3028							
Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				
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:	City of Salem	Management Area ID:	GW Carver
Address:		Management Area Size:	2.71
	114 North Broad Street • PO Box 869	Plant Species:	Mixed cool season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem	Management Area ID:	Salem High – Campus

Address:					Management Area Size:		6.31	
	114 North Broad Street • PO Box 869				Plant Species:		Cool Season	
	Salem, VA 24153				Notes:			
Phone#:	Office: (540)375-3028							
Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				
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:	City of Salem	Management Area ID:	Salem High – Stadium
Address:		Management Area Size:	1.31

	114 North Broad Street • PO Box 869	Plant Species:	Cool Season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem	Management Area ID:	Salem High – Track

Address:					Management Area Size:		2.5	
	114 North Broad Street • PO Box 869				Plant Species:		Irrigated Cool Season	
	Salem, VA 24153				Notes:			
Phone#:	Office: (540)375-3028							
Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				
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:	City of Salem	Management Area ID:	Salem High – Baseball
Address:		Management Area Size:	2.77
	114 North Broad Street • PO Box 869	Plant Species:	Irrigated Cool Season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem	Management Area ID:	Salem High – Bermuda Pra

Address:		Management Area Size:	2.69
	114 North Broad Street • PO Box 869	Plant Species:	Irrigated Warm Season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem	Management Area ID:	South Salem
Address:		Management Area Size:	3.76
	114 North Broad Street • PO Box 869	Plant Species:	Cool Season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem				Management Area ID:		West Salem - Campus	
Address:					Management Area Size:		2.72	
	114 North Broad Street • PO Box 869				Plant Species:		Cool Season	
	Salem, VA 24153				Notes:			
Phone#:	Office: (540)375-3028							

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem	Management Area ID:	West Salem - Soccer
Address:		Management Area Size:	1.67
	114 North Broad Street • PO Box 869	Plant Species:	Unirrigated Cool Season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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:	City of Salem	Management Area ID:	East Salem
Address:		Management Area Size:	4.82
	114 North Broad Street • PO Box 869	Plant Species:	Cool Season
	Salem, VA 24153	Notes:	
Phone#:	Office: (540)375-3028		

Date	Applicator/Supervisor	Weather Info			Fertilizer Analysis	Rate	Amount Fertilizer Used	Equipment Used
		Temp	Wind	Precip				

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

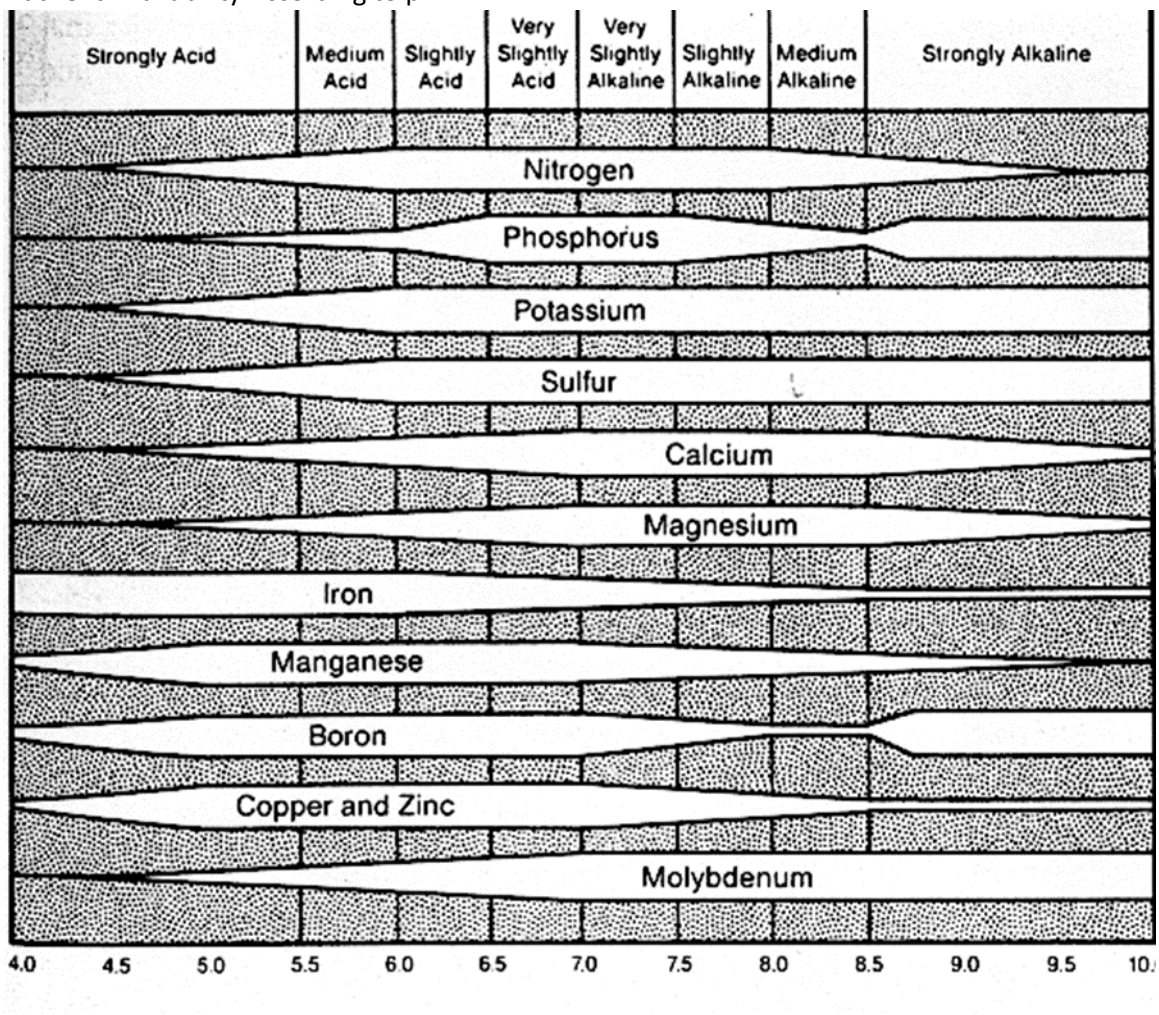


Figure 1: Nutrient Availability at pH

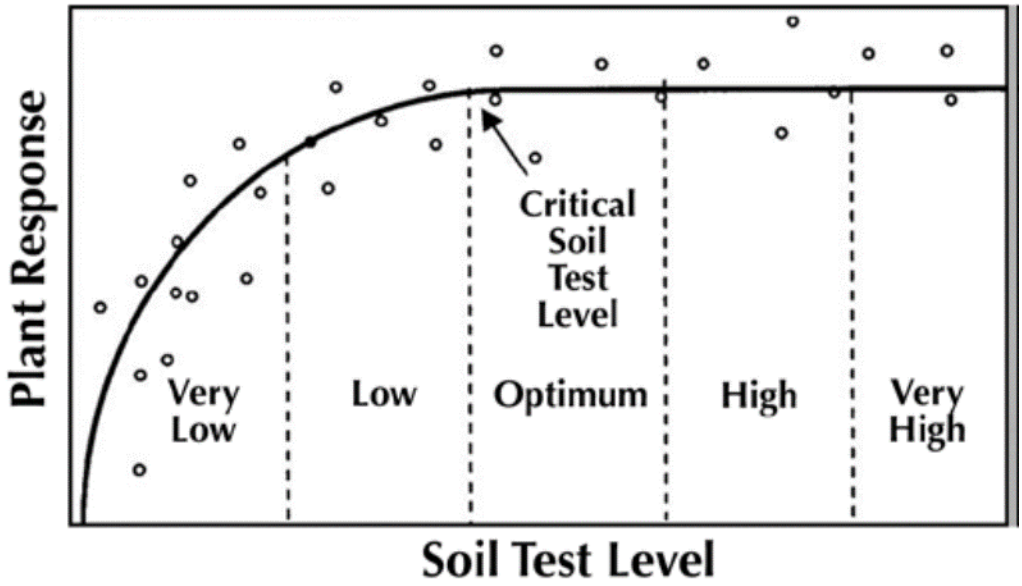


Figure 2: Plant Response Chart

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.

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 ft^2 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 ft^2 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

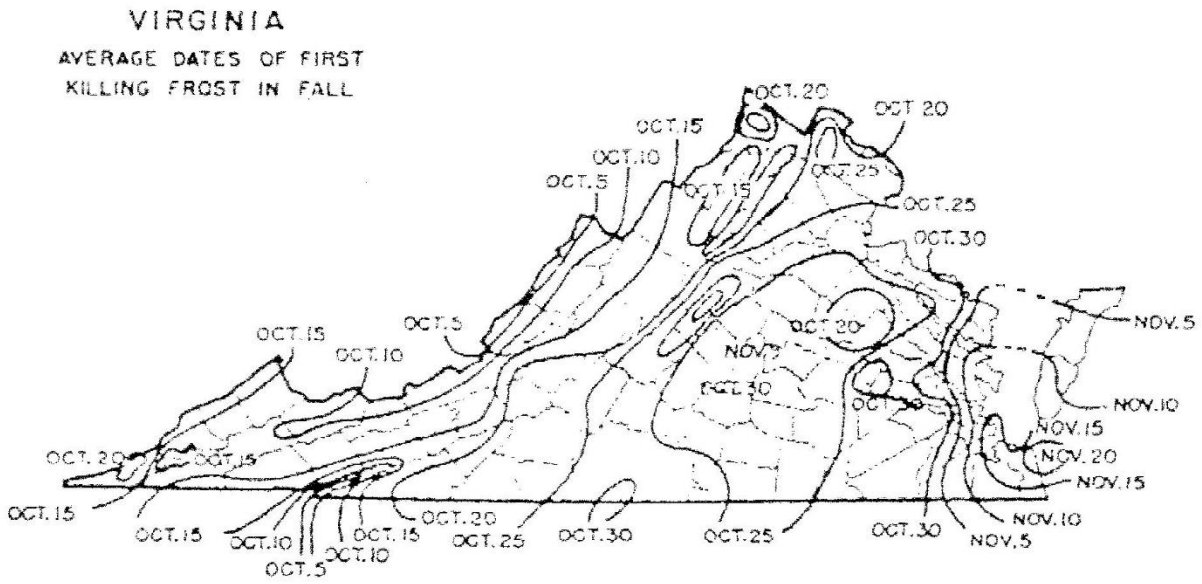
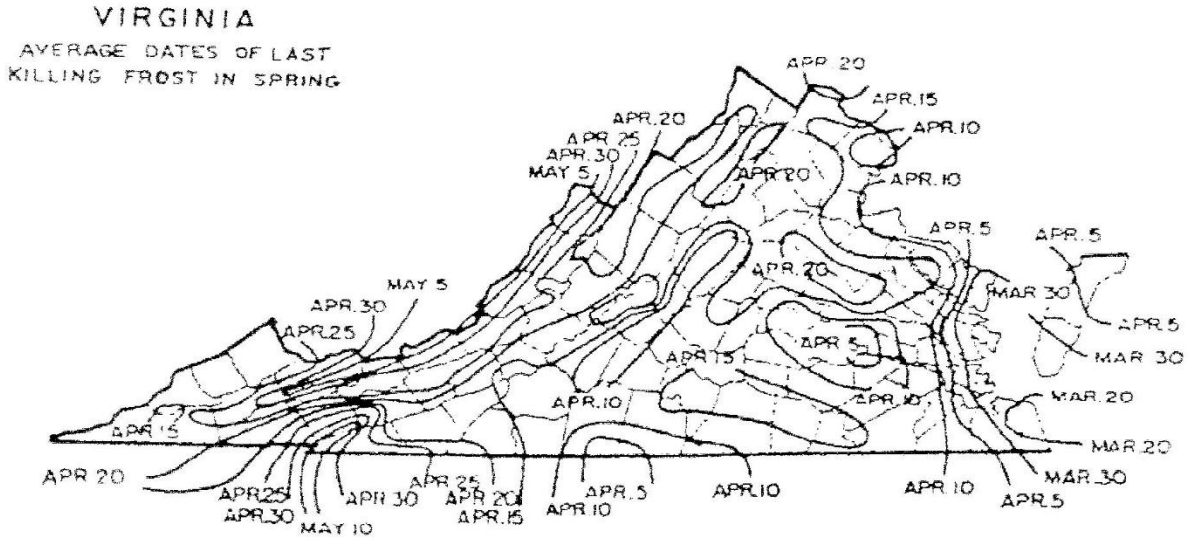


Figure 6-2



Per Application Rates

Do not apply more than 0.7 pounds of water soluble nitrogen per 1,000 ft^2 within a 30-day period. For cool season grasses, do not apply more than 0.9 pounds of total nitrogen per 1,000 ft^2 within a 30-day period. For warm season grasses, do not apply more than 1.0 pounds of total nitrogen per 1,000 ft^2 within a 30-day period. Lower per application rates of water soluble nitrogen sources or use of slowly available nitrogen sources should be ut ilized 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 ft^2 of nitrogen may be applied annually to cool season grass species or up to 4 pounds per 1,000 ft^2 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, chewings 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 ft^2 may; be applied to cool season grasses within a 30-day period and no more than 1.0 pounds of nitrogen per 1,000 ft^2 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 ft^2 in a 30-day period, no more than 2.5 pounds of nitrogen per 1,000 ft^2 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 (P_2O_5) and potassium (K_2O) fertilizers as indicated necessary by a soil test using the following guidelines:

Soil Test Level	Nutrient Needs (pounds per 1,000 ft^2)*	
	P_2O_5	K_2O
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 P_2O_5 soil test level of L- would be 3 pounds per 1,000 ft^2.)

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 ft^2 of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft^2 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 ft^2 total for cool season grasses and 2.0 pounds per 1,000 ft^2 for warm season grasses for the establishment period. Applications of WSN cannot exceed more than 0.7 pounds per 1,000 ft^2 within a 30-day period.

Phosphorus and Potassium Recommendations for Establishment

Soil Test Level	Nutrient Needs (pounds per 1,000 ft^2) *	
	P_2O_5	K_2O
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 ft^2 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 ft^2 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 ft^2 within a 30-day period.

- Soluble nitrogen rates of 0.25 pounds per 1,000 ft^2 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 ft^2 of total nitrogen may be applied for cool season grasses or 1.0 pounds per 1,000 ft^2 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 ft^2 of total nitrogen may be applied for cool season grasses or 1.0 pound per 1,000 ft^2 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 ft^2 of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft^2 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 ft^2 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 (P_2O_5) and potassium (K_2O) fertilizers as indicated by a soil test using the following guidelines:

Soil Test Level	Nutrient Needs (pounds per 1,000 ft^2)*	
	P_2O_5	K_2O
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 P_2O_5 per 1,000 ft^2 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	------	0.5
September	0.7	0.7[c]
October	0.7[c]	0.7[c]
November	0.5	0.7[c]
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 ft^2 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 ft^2 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 ft^2 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 ft^2 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 ft^2 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 ft^2 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 ft^2 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 1,000ft^2 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 ft^2 of nitrogen each, with a minimum of 15 days between applications. Additional WSN application of 0.5 pounds per 1,000 ft^2 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 ft^2 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 (P_2O_5) and potassium (K_2O) fertilizers as indicated by a soil test using the following guidelines:

Soil Test Level	Nutrient Needs (pounds per 1,000 ft^2)*	
	P_2O_5	K_2O
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 P_2O_5 per 1,000 ft^2 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 ft^2 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 1,000ft^2.
- Four weeks after planting - 0.25 pounds.of WSN per 1,000 ft^2 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 ft^2 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 ft^2.
- Four weeks after planting - 0.25 pounds per1,000 ft^2 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 ft^2 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 ft^2 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 ft^2 using a material containing slowly available forms of nitrogen may be applied.
- Apply up to 0.25 pounds of nitrogen per 1,000 ft^2 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 ft^2 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 ft^2 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 ft^2 for cool season grasses or 1.0 pounds of nitrogen per 1,000 ft^2 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

Soil Test Level	Nutrient Needs (pounds per 1,000 ft^2) *	
	P_2O_5	K_2O
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

	Target Soil pH					
Buffer pH	5.2	5.8.	6.2	6.5	6.8	Acidity meq/100g
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% $CaCO_3$. For application rates of liming material that is less than 100% neutralizing power of $CaCO_3$ (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 Rate[1] (tons/acre) to achieve desired pH based on SMP Buffer Test

	Target Soil pH				
Soil-Buffer 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 $CaCO_3$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.

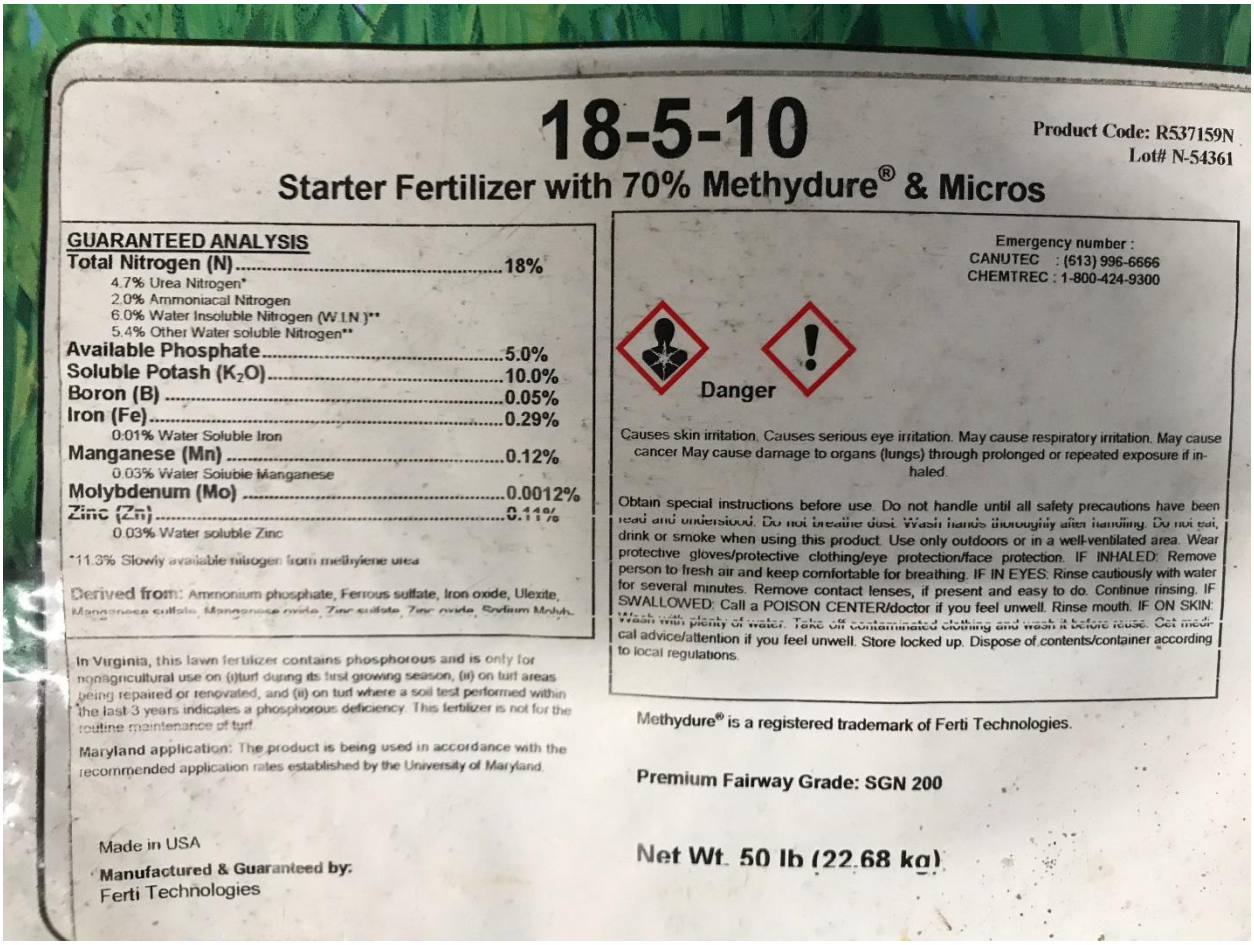
Table 3-3
Lime Application Rate Adjustment Based on % CCE of Material

	% CCE of Your Liming Material										
T/ac*	**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



18-5-10

Product Code: R537159N
Lot# N-54361

Starter Fertilizer with 70% Methydure® & Micros

GUARANTEED ANALYSIS

Total Nitrogen (N)	**18%**
4.7% Urea Nitrogen*	
2.0% Ammoniacal Nitrogen	
6.0% Water Insoluble Nitrogen (W.I.N.)**	
5.4% Other Water soluble Nitrogen**	
Available Phosphate	**5.0%**
Soluble Potash (K_2O)	**10.0%**
Boron (B)	**0.05%**
Iron (Fe)	**0.29%**
0.01% Water Soluble Iron	
Manganese (Mn)	**0.12%**
0.03% Water Soluble Manganese	
Molybdenum (Mo)	**0.0012%**
Zinc (Zn)	**0.11%**
0.03% Water soluble Zinc	

*11.3% Slowly available nitrogen from methylene urea

Derived from: Ammonium phosphate, Ferrous sulfate, Iron oxide, Ulexite, Manganese sulfate, Manganese oxide, Zinc sulfate, Zinc oxide, Sodium Molyb...

In Virginia, this lawn fertilizer contains phosphorous and is only for nonagricultural use on (i)turf during its first growing season, (ii) on turf areas being repaired or renovated, and (iii) on turf where a soil test performed within the last 3 years indicates a phosphorous deficiency. This fertilizer is not for the routine maintenance of turf.

Maryland application: The product is being used in accordance with the recommended application rates established by the University of Maryland.

Made in USA

Manufactured & Guaranteed by:
Ferti Technologies

Emergency number :
CANUTEC : (613) 996-6666
CHEMTREC : 1-800-424-9300

Danger

Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause cancer May cause damage to organs (lungs) through prolonged or repeated exposure if inhaled.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. Get medical advice/attention if you feel unwell. Store locked up. Dispose of contents/container according to local regulations.

Methydure® is a registered trademark of Ferti Technologies.

Premium Fairway Grade: SGN 200

Net Wt. 50 lb (22.68 kg)

LANDSCAPE SUPPLY, INC.

organicsPLUS

25-2-5 20% XRT 40% NB

Guaranteed Analysis

Total Nitrogen (N):	25%
Urea Nitrogen:	18.0%
XRT Controlled Nitrogen:	5.0%
Water Insoluble Nitrogen:	1.6%
Water Soluble Nitrogen:	0.4%
Ammoniacal Nitrogen:	0.0%
Available Phosphate (P205):	2%
Soluble Potash (K20):	5%

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

Net Weight: 50 lbs.

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 (P_2O_5) 3.00%

Soluble Potash (K_2O) 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.

8. Soil Test Results

See attached file.