GENERAL PERMIT FOR SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS
PERMIT NUMBER: VAR040053

Permit Year 3 Annual Report
Reporting Period: July 1, 2015 - June 30, 2016

City of Winchester, Virginia
Rouss City Hall
Public Services Department
15 North Cameron Street
Winchester, VA 22601

October 1, 2016

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Attachments

1.0 Background Information

(1) Name and State permit number of the program submitting the annual report; (2) The annual report permit year; (3) Modifications to any operator's department's roles and responsibilities; (4) Number of new MS4 outfalls and associated acreage by HUC added during the permit year; (5) Signed certification in accordance with 9 VAC25-870-370.

1. Name and State permit number of the program submitting the annual report:

City of Winchester, VA
Permit # VAR040053

2. The annual report permit year:

This serves as the Annual Report for permit Year 3 of the 2013-2018 Virginia MS4 General Permit. This Report covers the reporting period from July 1, 2015 – June 30, 2016.

3. Modifications to any operator's department's roles and responsibilities:

There have been no modifications to the roles and responsibilities of the various City departments responsible for implementation of the program during this reporting period. The City's Engineering Division, led by the City Engineer, is responsible for implementing the commitments in the MS4 Program Plan. The City's Department of Fire and Rescue, led by the Fire and Rescue Chief, is responsible for implementation of BMP 3.7: Hazardous Spill Response. The City's Public Works Division, led by the Refuse and Recycling Coordinator, is responsible for the implementation of BMP 3.8: Household Hazardous Waste Collection and BMP 3.9: Household Waste Reduction. The City's Public Works Division, led by the Public Works Division Manager, is responsible for implementation of BMP 5.5: City-Owned Stormwater Management Facility Maintenance and BMP 6.8: Street Sweeping.

4. Number of new MS4 outfalls and associated acreage by HUC added during the permit year:

No new outfalls were added to the City's inventory during the reporting period.

5. Signed certification in accordance with 9 VAC25-870-370

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Perry Eisenach, P.E.
Public Services Director

9/21/16
Date

For questions about the annual report submittal or Winchester's MS4 Program Plan, please contact:

Robert Brown, PE, Stormwater Engineer
15 N. Cameron Street
Winchester, VA 22601

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Robert.Brown@winchesterva.gov

2.0 Status of Permit Condition Compliance

The status of compliance with state permit conditions, an assessment of the appropriateness of the identified best management practices and progress towards achieving the identified measurable goals for each of the minimum control measures.

2.1. Assessment of BMP Appropriateness

The City of Winchester is confident that the BMPs we have chosen to implement under our 2013-2018 MS4 Program Plan are appropriate and meet the requirements of the MS4 General Permit. We will continue to monitor the status and appropriateness of each BMP as implementation continues.

2.2. Required MS4 Program Plan Updates

The MS4 General Permit identified a compliance schedule for the development and implementation of a number of new MS4 General Permit Requirements. There were no updates required this reporting period and the City is currently in compliance with the schedule included in Table 1 of the MS4 General Permit.

2.3. Measurable Goals Progress

I. Public Education and Outreach

BMP 1.1. City Stormwater Webpage: The City will maintain a web page dedicated to the City's stormwater management program. The MS4 Program Plan, MS4 Annual Reports and other information will be made available to the public through this website. Once a year in conjunction with development of the MS4 Annual Report, the City will insure the validity of all links to stormwater information included on the web page.

During this reporting period, the City continued to maintain a stormwater specific webpage found at: http://www.winchesterva.gov/engineering/stormwater. The City's webpage is the primary public education and outreach tool utilized for reaching the program's targeted audiences and providing for distribution of educational materials to convey the appropriate messages. Through this webpage, the City provided year-long public access to the EPA video series "After the Storm". The City also advertised the Stormwater Complaint Hotlines on this webpage and facilitated distribution (via direct download) of the Stormwater Complaint Hotline Flyer. There were approximately 425 page views on the City's Stormwater Webpage during this reporting period.

BMP 1.2. Social Media: The City will use its Facebook and Twitter accounts as necessary to distribute stormwater related information to its citizens in order to meet the annual requirement to reach 20% of its target audiences.

The City has 9,917 Facebook and 2,312 Twitter individual followers which facilitated distribution of stormwater related materials and messages during this reporting period.

BMP 1.3. Public Events: The City will participate in public events such as the Community Wellness Festival as necessary to distribute stormwater related information to its citizens in order to meet the annual requirement to reach 20% of its target audiences. Expected public events will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.

The City participated in the Wellness Festival on February 27th, 2016. During this event, the City made contact with approximately 150 children/adults and handed out "goody bags" each of which included 5 stormwater related pieces of information. Therefore approximately 750 stormwater-related informational materials were distributed to the general public including City residents at this event.

The City Engineer held a rain barrel workshop on March 12, 2016 in conjunction with the Parks and Recreation department. Registrants were shown how to construct the rain barrels and were given all the necessary supplies to make their own. The barrels were donated by a local manufacturer. There were 13 participants in this workshop.

The City inaugurated a new dual event in 2016 called Spring Greening and Green Neighborhood Expo. Spring Greening is a way to involve citizen volunteers in trash pickup along the City's streets and streams. Notices were sent to every property owner adjacent to a City stream inviting them to participate by cleaning up the section of stream running through their property and offering free bags and gloves as well as special trash pickup. In addition, volunteers were invited to meet at a city park and be directed to stretches of Town Run and Abrams Creek that run though city-owned property. The Green Neighborhood Expo followed the Spring Greening in the afternoon and was held in a city park. It offered an opportunity for local environmental groups and vendors to set up booths and distribute information to the public. The City's engineering department and arborist also gave public demonstrations. Approximately 150 adults and children attended the event. Five property owners notified us of their intent to participate and requested bags and gloves.

Moving forward, the City will continue its participation in the Community Wellness Festival and will explore ways to increase involvement in the annual Spring Greening/Green Neighborhood Expo. In addition the City will explore the possibility of creating new public events which target specific audiences such as contractors, dog owners, or residential car washers.

BMP 1.4 Publications (Print and Electronic): The City will use publications such as its Cit-E newsletter as necessary to distribute stormwater related information to its citizens in order to meet the annual requirement to reach 20% of its target audiences. Expected use of publications will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.

The City's webpage is the primary public education and outreach tool utilized for reaching the program's targeted audiences and providing for distribution of educational materials to convey the appropriate messages. Publications currently available for download from the City's Stormwater webpage during this reporting period included:

- *Stormwater Complaint Hotline Flyer*
- *EPA's "After the Storm" Video Series*
- *"Pick it Up, It's Your Doodie" Pet Waste Brochure*
- *"Please Do Not Feed the Waterfowl" Wildlife Waste Brochure*
- *"How to Make Your Own Rain Barrel" Presentation*
- *2014 - 2018 Municipal Separate Storm Sewer System (MS4) Program Plan*
- *2014 MS4 Permit Year 1 Annual Report*
- *2015 MS4 Permit Year 2 Annual Report*
- *After the Storm Brochure - English*
- *After the Storm Brochure - Spanish*
- *SepticSmart:Septic Tank Maintenance – English*
- *SepticSmart:Septic Tank Maintenance - Spanish*
- *Make Your Home the Solution to Stormwater Pollution Brochure*
- *Kids Stormwater Stickers*

In addition, the City's Engineering Department has compiled a spreadsheet with names and addresses of all of the licensed dog owners in the city and will use direct mail to send each of them a copy of the pet waste brochure in the next reporting period.

BMP 1.5. Watershed and Stormwater Educational Opportunities Program: The City will continue to implement its Watershed and Stormwater Opportunities Education Program directed at students in Winchester City Public Schools. The City will concentrate on delivery of this program to sixth grade students in a manner necessary to insure that high priority water quality issues are addressed to the target audiences.

The City continued the Watershed and Stormwater Educational Opportunities Program as part of the City's formal program of stormwater education at schools within the City. The City Engineer conducted the following school presentations regarding engineering and high priority water quality issues during the current reporting period:

- *August 21, 2015 – Winchester STARBASE Academy 5th graders – 24 students*
- *September 9, 2015 – John Handley High School 11th-12th graders – 30 students*
- *September 15, 2015 – Winchester STARBASE Academy 5th graders – 20 students*
- *November 13, 2015 – Daniel Morgan Middle School 6th graders – 120 students*
- *February 9, 2016 – Winchester STARBASE Academy 5th graders – 27 students*
- *April 11, 2016 – Quarles Elementary School 3rd graders – 15 students*
- *April 12, 2016 – Quarles Elementary School 3rd graders – 20 students*
- *April 13, 2016 – Quarles Elementary School 3rd graders – 18 students*
- *April 14, 2016 – Quarles Elementary School 3rd graders – 16 students*
- *April 15, 2016 – Quarles Elementary School 3rd graders – 15 students*
- *April 18, 2016 – Quarles Elementary School 3rd graders – 16 students*
- *April 19, 2016 – Orchard View Elementary School 3rd graders – 65 students*
- *April 26, 2016 – Winchester STARBASE Academy 5th graders – 20 students*

- *May 18, 2016 – Orchard View Elementary School 4th graders – 65 students*
- *June 29, 2016 – Market Street Learning Center Pre-K – 25 students*

BMP 1.6. Other Message Delivery: The City will utilize other types of message delivery as necessary such as "Clean Up After Your Dog" signage at the City's Dog Park to reach the target audiences identified in its Public Education and Outreach matrix. These types of message delivery will be identified as part of the intended MS4 Public Education and Outreach Program for the next reporting year in the applicable MS4 Annual Report.

The City continued to promote picking up pet wastes through the use of "Clean Up After Your Dog" signs placed at the Dog Park located in Jim Barnett Park. There are currently 200 dog owners who are registered to use the Dog Park.

The City's Public Works Division continued to promote its Adopt-A-Tree, Watch It Grow program on its web page and through distribution of its pamphlet. There were 17 Adopt-A-Tree plantings during this reporting period.

BMP 1.7. Educational Materials: The City will retain copies (electronic or hard copy) of educational materials utilized in delivery of its messages regarding high priority water quality issues to target audiences. As part of the stormwater education and outreach program review required prior to reapplication for coverage under the MS4 General Permit in FY2017/18, the City will review the appropriateness of the message contained in these educational materials.

The City continues to maintain current copies of all the educational materials utilized under its Public Education and Outreach program to include the publications listed under BMP 1.4 above.

Additional Reporting Requirements:

Provide a list of the education and outreach activities conducted during this reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience or audiences that were reached.

Table 1. Education and Outreach Activities conducted during this reporting period

High Priority WQ Issue	Activity Description	Estimated # of People Reached	Estimated % of Target Audience(s) Reached
HPWQI #1: Reduce the amount of sediments and nutrients in area stormwater discharges *Target Audience: 8,341 citizens*	Watershed and Stormwater Educational Opportunities Program at local schools	496	18%*
	Community Wellness Festival 2015	150	2%
	Rain Barrel Workshop	13	<1%
	Spring Greening/Green Neighborhood Expo	150	2%
	Social Media Campaign on Facebook and Twitter	12,229	15%**

HPWQI #2: Reduce bacteria levels in City of Winchester streams *Target Audience: 3,200 citizens*	Watershed and Stormwater Educational Opportunities Program at local schools	496	47%*
	Community Wellness Festival 2015	150	5%
	Spring Greening/Green Neighborhood Expo	150	5%
	Social Media Campaign on Facebook and Twitter	12,229	38%**
HPWQI #3: Reduce the number of Illicit Discharges *Target Audience: 8,175 citizens*	Watershed and Stormwater Educational Opportunities Program at local schools	496	18%
	Community Wellness Festival 2015	150	2%
	Spring Greening/Green Neighborhood Expo	150	2%
	Social Media Campaign on Facebook and Twitter	12,229	15%**

* These estimates assume that each student shared the ideas and information they received during the training with two other family members or friends who are part of the targeted audiences.

** These estimates conservatively assume that 10% of the City's individual followers on Facebook and Twitter are part of the targeted audiences and were reached by the City's Social Media Campaign.

Provide a list of the education and outreach activities that will be conducted during the next reporting period for each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached.

The City plans to continue with the following education and outreach activities during the next reporting cycle and expects to reach the same or even more members of the targeted audiences as were reached during this reporting period (which was well over the targeted 20%):

- *Watershed and Stormwater Educational Opportunities Program at local schools (To be scheduled)*
- *Community Wellness Festival 2017 (February 2017)*
- *Backyard Composting Classes (To be scheduled)*
- *Spring Greening/Green Neighborhood Expo 2017 (May 2017)*
- *Rain Barrel Workshop (Spring 2017)*
- *Social Media Campaign on Facebook and Twitter (Continuously throughout the year)*

II. Public Involvement and Participation

BMP 2.1. Public Announcements: The City will provide public notification of all public meetings and hearings in accordance with any applicable federal, state, and local public notice requirements.

The City has continued to comply with the applicable public notice requirements under the MS4

General Permit. Public meetings are advertised on the City's web page http://www.winchesterva.gov/government/public-meeting-and-business-procedures *and in the Winchester Star Newspaper, as required by Virginia Open Meetings Law.*

BMP 2.2. Public MS4 Program Information Access: The City will provide public access to the MS4 Program Plan and MS4 Annual Reports by placing copies of the updated MS4 Program Plan and MS4 Annual Report on the City's Stormwater Webpage (BMP 1.1). Copies of each year's annual report will be retained on-line for the length of the current General Permit.

The City of Winchester's current MS4 Program Plan and previous Annual Reports are available for download at: http://www.winchesterva.gov/engineering/stormwater. *This MS4 Annual Report and any revisions to the City's MS4 Program Plan will be placed on-line within 30 days of submission to DEQ.*

BMP 2.3. Stormwater Complaint Hotlines: The City will maintain its current stormwater complaint hotlines to encourage public reporting and involvement. The City promotes 540-662-4131 for reporting urgent issues such as illegal dumping and spills. The City promotes 540-542-1346 for reporting of less urgent issues such as maintenance issues and erosion and sediment control complaints.

During this reporting period, the City continued to advertise the Stormwater Complaint Hotlines on its stormwater webpage, processed calls placed to the Stormwater Complaint Hotlines, and facilitated distribution (via direct download) of the Stormwater Complaint Hotline Flyer.

BMP 2.4. Promotion of the Local Environmental Events: The City will annually promote a total of four events encouraging public participation and involvement including Household Hazardous Collection Days and Adopt-A-Stream. The City will promote these activities through use of its public education and outreach BMPs such as 1.1 City Stormwater Webpage, 1.4 Publications and 1.6 Other Message Delivery.

The local environmental events that the City promoted during this reporting period were:

- *Household Hazardous Waste Collection Days (see schedule under BMP 2.5)*
- *July 31st – Geese removal project from Wilkins Lake – via Facebook, Cit-E News*
- *September 24th – Abrams Creek Wetlands Tour – via Facebook, Parks and Rec activity guide*
- *October 19th – Leaf Collection – via Facebook, Cit-E News and City website*
- *November 15th – America Recycles Day – via Facebook and Cit-E News*
- *January 11th – Christmas Tree Pickup and Recycling – via Facebook and Cit-E News*
- *March 12th – Rain Barrel Workshop – via Facebook, Cit-E News and City website*
- *March 16th – Yard Waste Collection – via Facebook, Cit-E News and City website*
- *May 11th – Arbor Day Celebration – via Facebook, Cit-E News and City website*
- *June 4th – Spring Greening/Green Neighborhood Expo – via Facebook, Cit-E News and City website*

BMP 2.5. Promotion of the Household Hazardous Waste Collection Days: The City will continue to promote the joint Frederick County /Winchester Household Hazardous Waste Collection Days program. The City will promote the Household Hazardous Waste Collection Days as one of its

four local participation programs and will contribute to its implementation by providing pick-up and disposal of trash and debris collected by the participants.

The City continued to promote the Household Hazardous Waste Collection Days as one of its four local participation programs. These events were held on the first and third Wednesdays of each month from noon to 6 p.m. during the months of April through October. During the months of November, December, January, February and March, one event was held each month on the third Wednesday of the month.

BMP 2.6. Sponsorship of Adopt-A-Stream Program: The City will continue to promote Adopt-A-Stream program by sponsoring an annual stream clean-up day. In addition, the City will sponsor an Adopt-A-Stream Stream Clean-Up Day as one of its four local participation programs and will contribute to its implementation by providing pick-up and disposal of trash and debris collected by the participants.

During this reporting period, the City inaugurated the Spring Greening event which promoted stream cleanup along with its Adopt-A-Street program. The event was held on June 4th 2016 and 4 bags of trash were collected.

Additional Reporting Requirements:

Provide a web link to the MS4 Program Plan and annual report.

The City of Winchester's current MS4 Program Plan and previous Annual Reports are available for download at: http://www.winchesterva.gov/engineering/stormwater . *This MS4 Annual Report and any revisions to the City's MS4 Program Plan will be placed on-line within 30 days of submission to DEQ.*

Provide documentation of compliance with the public participation requirements of this section.

Documentation of the City's compliance with the public participation requirements contained in Section II.B.2 of the MS4 General Permit has been provided in the write-ups shown above under the Public Involvement and Participation section of this Annual Report and via the City's stormwater webpage.

III. Illicit Discharge Detection and Elimination

BMP 3.1. Storm Sewer Infrastructure and Outfall Mapping: The City will maintain a stormwater infrastructure layer as part of its overall GIS program. The General Public will be able to access the stormwater infrastructure layer using the City's interactive mapping program. The City will maintain an MS4 Outfall layer that identifies the location of the City's MS4 outfalls.

The City updates the storm sewer map on a continuous basis with the receipt of "as-built" development plans. A copy of the storm sewer map including outfalls, receiving waters and hydrologic unit codes is available by request at the City Engineer's office. A utilities map including storm sewer infrastructure mapping is available to the public on the following website: http://gis.winchesterva.gov/utilitiesmapping/

BMP 3.2. MS4 Operator Coordination: The City will provide written notification to downstream MS4 operators where it identifies that the City's MS4 infrastructure is physically connected. At this time, the only local MS4s are the Frederick County Schools MS4 and the Virginia Department of Transportation.

The City did not provide any new written notifications of physical interconnections with downstream MS4 operators as they are the same as in previous years (Frederick County Schools MS4 and the Virginia Department of Transportation).

BMP 3.3. Legal Authority - IDDE: The City will maintain legal authority prohibiting illicit discharges into the MS4 system. The legal authority will also identify those non-stormwater discharges allowed to be discharged into the MS4 system. This legal authority is established at Chapter 9, Section III of the Code of Winchester.

The City continues to maintain the legal authority to prohibit illicit discharges through the City's Water Protection Ordinance (Chapter 9 of the City Code). The City provides information on illicit discharges and links to Chapter 9 of the City Code on the following website: http://www.winchesterva.gov/engineering/stormwater.

BMP 3.4. IDDE Investigation and Follow-Up: The City will investigate and conduct follow-up on suspect discharges in accordance to procedures included in the Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition.

The City's Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition provides guidance for investigating complaints, determining the source of suspect discharges, and eliminating illicit discharges. Those investigations are summarized below under BMP 3.6.

BMP 3.5. MS4 Outfall Dry Weather Field Screening: The City will conduct dry weather screening on fifty (50) MS4 outfalls annually using procedures included in the Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition.

The City conducted dry weather screening inspections of 45 outfalls in the Town Run (OT 11-24, 43, 47-52, 62), Abrams Creek (OT 1-4, 33-43, 51-56), and Buffalo Lick Run (OT 6,7) watersheds. These outfalls are the only ones that have not been inspected during the last three years. No suspect discharges were found.

BMP 3.6. Illicit Discharge Tracking and Documentation: The City will track and document suspect and illicit discharges, as well as, City investigation, follow-up and enforcement actions in accordance to procedures included in the Illicit Discharge Detection and Elimination (IDDE) Standard Operating Procedures Manual, June 2014 edition.

During this reporting period, the City investigated five reports of illicit discharges. Three were closed without action, one was closed after a plumbing change was made by a property owner, and one remains open for monitoring.

Table 2. Illicit Discharge Tracking Summary

ID #	Date Opened	Description of Discharge	Actions Taken	Date Closed
IDR16-001	3/18/2016	Water resembling wash water was spotted on the sidewalk, coming from roof drain outlet of residence.	Code enforcement contacted owner. Owner had plumber switch washing maching discharge from storm sewer line to sanitary sewer.	3/28/2016
IDR16-002	3/18/2016	Mr. Souders has noticed foul smelling water coming from storm water outlet in curb at the side of the residence.	City personnel have noticed puddled water at the intersection during dry weather and staining in the gutter pan between the outlet and the intersection. Active flow has never been noted.	Remains open
IDR16-003	4/5/2016	Anonymous report of oil being dumped in or near alley.	City personnel inspected the alley several times immediately after report, but no signs of oil dumping were found.	4/5/2016
IDR16-004	3/23/2016	Code inspector noticed what he thought was a sewage leak in the back yard. Discolored oily substance seemed to be coming from a hole in the ground.	No sewer mains or laterals were found behind the house. Homeowner was told to check if an underground tank ever existed in the yard. They did not know of any old tanks. Contaminated water was not flowing off the property, so inspections department will handle the case.	3/24/2016
IDR16-005	5/11/2016	Report of homeowner dumping brush and yard waste in stream channel.	Stream channel is dry in this section. Three branches of less than 1/2" diam. and less than 3 feet long were found in channel behind house. No action taken.	5/11/2016

BMP 3.7. Hazardous Spill Response: The City, in cooperation with Frederick County, will provide emergency response to hazardous material spills and accidental chemical releases.

During this reporting period, there were 15 incidents reported by emergency response personnel. All of these incidents were minor in nature and were contained to the area of origin. None of these events resulted in a discharge to the City's MS4.

BMP 3.8. Household Hazardous Waste Collection: The City, in cooperation with Frederick County, will continue to provide household hazardous waste collection opportunities for its residents. The collection schedule will be promoted through use of the City's social media and Cit-E newsletter.

The City continued to promote the Household Hazardous Waste Collection Days as one of its four local participation programs. These events were held on the first and third Wednesdays of each month from noon to 6 p.m. during the months of April through October. During the months of November, December, January, February and March, one event was held each month on the

third Wednesday of the month. All collections take place at the landfill's citizens' convenience center.

BMP 3.9. Household Waste Reduction: The City will continue to provide weekly waste collection services for City residents. In addition, the City will continue to provide fall leaf collection services, yard waste collection services and bulky waste collection services to City residences. Schedules for these services will be placed on the City's Public Works web page regarding refuse and recycling (http://www.winchesterva.gov/public-works/refuse).

The City continued to provide weekly waste collection services for City residents. The following are statistics associated with the City's Household Waste Reduction Program during this permit cycle:

- Household waste collected – 6,534.05 tons
- Recycled materials (paper/cardboard, bottles/cans/plastic, scrap metal) collected – 2,067.20 tons
- Yard waste collected – 1026.32 tons
- Recycling bins distributed – 1,163

BMP 3.10. Elimination of Sanitary Sewage Seepage from Public Sewers: The City will continue, as part of its sanitary sewer utilities program, implementation of its inflow and infiltration program to replace or slipline sanitary sewers to prevent illicit discharge. The level of implementation of this BMP each year will be established by the City Council as part of annual budget approval.

As part of the City's ongoing inflow and infiltration program, the City replaced six sanitary sewer manholes during this reporting period.

Additional Reporting Requirements:

List any written notifications of physical interconnections given by the operator to other MS4s

The City did not provide any <u>new</u> written notifications of physical interconnections with downstream MS4 operators as they are the same as in previous years (Frederick County Schools MS4 and the Virginia Department of Transportation).

List the total number of outfalls screened during the reporting period, the screening results, and details of any follow-up actions necessitated by the screening results

The City screened 45 outfalls during this reporting period. The City's outfall screening results were provided under BMP 3.5 above.

Provide a summary of each investigation conducted by the operator of any suspected illicit discharge. The summary must include: (i) the date that the suspected discharge was observed, reported, or both; (ii) how the investigation was resolved, including any follow-up, and (iii) resolution of the investigation and the date the investigation was closed.

The City investigated five potential illicit discharge events during this reporting period. Details, including dates, of these investigations were provided under BMPs 3.5 and 3.6 above.

IV. Construction Site Stormwater Runoff Control

BMP 4.1. Legal Authority – E and SC: The City will maintain legal authority for implementation of a local erosion and sediment control program consistent with 9VAC25-840-10 et. seq. This legal authority is established at Chapter 9, Section II of the Code of Winchester.

The City continues to maintain the legal authority for implementation of a local erosion and sediment control program consistent with 9VAC25-840-10 through the City's Water Protection Ordinance (Chapter 9, Section II of the City Code). The City provides information on erosion sediment control and links to Chapter 9 of the City Code on the following website: http://www.winchesterva.gov/engineering/*. The City also provides access to a downloadable Land Disturbance Permit Package on the following website:* http://www.winchesterva.gov/engineering/permits*.*

BMP 4.2. Land Disturbing Activity Plan Review: The City will require submission of complete Land Disturbance Permit Applications and Virginia Stormwater Management Program Permit Packages for regulated land disturbance activities. The City will review the packages for compliance with Chapter 9, Section II of the City Code (Erosion Control) and Chapter 9, Section III of the City Code (Stormwater Management) by reviewing the checklists included in the permit application packages. Approval for land disturbance will not be given by the City until an application is approved.

The City continues to require permits for land disturbing activities including a VSMP authority permit through Chapter 9 of the City Code. The City provides access to a downloadable Land Disturbance Permit Package and Virginia Stormwater Management Program Permit Package on the following website: http://www.winchesterva.gov/engineering/permits*.*

BMP 4.3. VPDES Construction Activity Permit Coordination: The City will not authorize initiation of land disturbance activities until it receives evidence that the applicant has applied for and obtained coverage under the Virginia General Permit for Discharges of Stormwater from Construction Activities for construction activity, including a completed general permit registration statement as required under City Code Section 9-50.

The City continues to require evidence that the applicant has applied for and obtained coverage under the Virginia General Permit for Discharges of Stormwater from Construction Activities per Section 9-50(b)(4) of the City Code. During this reporting period, there were seven sites located within the City that were approved for coverage under the VPDES General Permit for the Discharge of Stormwater.

BMP 4.4. Land Disturbing Activity Inspections: The City will maintain a land disturbance inspection program that is consistent with the requirements of Section 9-39 of the City Code. In addition, as part of these inspections, the City will inspect sites for compliance with Section 9-58 of the City Code requiring implementation of a pollution prevention plan and Section 9-67 of the City Code requiring compliance with the approved stormwater management plan. The City will enforce these requirements as authorized and in accordance to Chapter 9 of the City Code.

The City continues to maintain an inspection program in accordance with Sections 9-39 and 9-67 of the City Code. The City's inspection program provides for inspection of land disturbing activities during construction to ensure compliance with:

- *Approved erosion and sediment control plans*
- *Approved stormwater management plans*
- *Development, updating, and implementation of pollution prevention plans*
- *Development and implementation of any additional control measures necessary to address TMDLs*

During this reporting period, there were a total of 624 inspections conducted across all construction sites located within the City.

BMP 4.5. Land Disturbing Activity Tracking and Recordkeeping: The City has an existing program to track land disturbance activities to provide the necessary information for routine inspections, as-built inspections, surveys, and determining which areas may be most likely to incur heavier than normal sediment loading. Plan approval records and inspections will be tracked and documented in the City's digital records system, SunGard.

During this reporting cycle, there were 29 Land Disturbance Permit Applications submitted, reviewed, and subsequent permits issued by the City.

Additional Reporting Requirements:

The operator shall track regulated land-disturbing activities and submit the following information in all annual reports: (1) Total number of regulated land-disturbing activities; (2) Total number of acres disturbed; (3) Total number of inspections conducted; and (4) A summary of the enforcement actions taken, including the total number and type of enforcement actions taken during the reporting period.

The following statistics apply to this reporting period:

Table 4. Regulated Land-Disturbing Activities

ITEM	TOTAL
Land Disturbing Permits Issued	29
Disturbed Acres	12.34
Inspections Conducted	624
Written Enforcement Actions Necessary	0

V. Post Construction Stormwater Management in New Development and Development on Prior Developed Lands

BMP 5.1. Legal Authority - SWM: The City will maintain the legal authority necessary to implement a VSMP that is consistent with 9VAC25-870-10 et. seq. This legal authority is established at Chapter 9, Section III of the City Code.

The City continues to maintain the legal authority for implementation of a local Virginia Stormwater Management Program (VSMP) consistent with 9VAC25-870-10 through the City's Water Protection Ordinance (Chapter 9, Article III of the City Code). Furthermore, the City provides a link to Chapter 9 of the City Code on the following website: http://www.winchesterva.gov/engineering/. *The City provides access to a downloadable Virginia Stormwater Management Program Permit Package on the following website:* http://www.winchesterva.gov/engineering/permits.

BMP 5.2. Private Stormwater Management Facility Inspections: The City will maintain a post development stormwater management facility inspection program in accordance with Section 9-67 of the City Code. Inspections on such facilities will be conducted at least once every five (5) years. Under required maintenance agreements executed by and between a private landowner (BMP 5.3), the City is provided with right-of-access to the private property on which a stormwater BMP is located, confers responsibility for construction and maintenance to the private landowner or property owners' association, and ensures that the City can undertake steps to maintain a facility should an inspection identify any deficiencies or problems. Maintenance agreements are recorded with the title to the property, providing the City with an enforceable legal instrument should a private landowner neglect to maintain a stormwater management facility constructed on his or her property. Inspection records will be kept on file with the City Engineer's Division.

The City continues to maintain a post development stormwater management facility inspection program in accordance with Section 9-67 of the City Code. The City has changed their inspection program from annual inspections by licensed private professionals; to inspections once every five years by City personnel, and annual self-inspections by owners. During this reporting period, forty-one self-inspections were reported

BMP 5.3. Maintenance Agreements: The City will require executed maintenance agreements for stormwater management facilities in accordance to Section 9-63 of the City Code. The agreement shall be recorded in the office of the Clerk of the Circuit Court for the City of Winchester. A copy of the City of Winchester Stormwater Facilities/BMP Maintenance Agreement is included in the Virginia Stormwater Management Program Permit Application.

The City continues to require the execution of maintenance agreements for private stormwater management facilities in accordance with Section 9-63 of the City Code. During this reporting period, there were eight maintenance agreements executed with the City and recorded in the office of the Clerk of the Circuit Court for the City of Winchester.

BMP 5.4. City-Owned Stormwater Management Facility Inspections: The City Division of Engineering will inspect stormwater management facilities owned/operated by the City annually using procedures identified in the Public Stormwater Management Facility Inspection Standard Operating Procedures Manual, June 2014 edition. Copies of the inspections will be kept on file with the City Engineer's Division.

The City continued with its program to inspect stormwater management facilities owned/operated by the City annually. During this reporting period, there were fourteen City owned/operated stormwater facilities that were inspected. Copies of the inspection reports are available in the City Engineer's office.

BMP 5.5. City-Owned Stormwater Management Facility Maintenance: The City Division of Public Works will conduct maintenance on City-Owned Stormwater Management Facilities as necessary and in response to Division of Engineering inspections.

Based on the results of the inspections of the fourteen City owned/operated stormwater management facilities, none of these facilities required maintenance or follow-up inspections.

BMP 5.6. Tracking and Documentation: The City will track and document permanent stormwater management facilities in the City's BMP spreadsheet maintained by the City Engineering Division.

An updated electronic database/spreadsheet of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4 is provided on a DVD under Attachment 1 to this Annual Report.

Additional Reporting Requirements:

The operator shall maintain an updated electronic database of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4. The operator shall submit an electronic database or spreadsheet of all stormwater management facilities brought online during each reporting year with the appropriate annual report.

An updated electronic database/spreadsheet of all known operator-owned and privately-owned stormwater management facilities that discharge into the MS4 is provided on a DVD under Attachment 1 to this Annual Report.

The operator shall annually track and report the total number of inspections completed and, when applicable, the number of enforcement actions taken to ensure long-term maintenance.

During this reporting period, there were 41 private stormwater management facility inspections performed and 14 City owned/operated stormwater facility inspections performed. Based on these inspections, there were no enforcement actions required to ensure long term maintenance of these facilities.

VI. Pollution Prevention/Good Housekeeping for Municipal Operations

BMP 6.1. Standard Operating Procedures: The City will develop and implement standard operating procedures and pollution prevention methods for its daily operational activities.

Standard Operating Procedures (SOPs) were developed and continue to be implemented. The Pollution Prevention/Good Housekeeping for Municipal Operations - Standard Operating Procedures 2013-2018 were developed during Permit Year 2 and were attached to the Year 2 report. This document outlines the SOPs and the roles and responsibilities of the City Divisions involved.

BMP 6.2. Stormwater Pollution Prevention Plans: The City will develop a stormwater pollution prevention plan (SWPPP) for the equipment and maintenance facility located at Jim Barnett Park.

In accordance with Section II.B.6.b(3) and Table 1 of the City's MS4 Permit, a SWPPP for the equipment and maintenance facility located at Jim Barnett Park will be developed and implemented by June 30, 2017.

BMP 6.3. Nutrient Management Plans: NMPs will be developed by a certified turf and landscape nutrient management planner in accordance with § 10.1-104.2 of the Code of Virginia. NMPs must be renewed every three years. Copies of the nutrient management plans will be incorporated by reference into the MS4 Program Plan upon approval.

In accordance with Section II.B.6.c(1)(b) and Table 1 of the City's MS4 Permit, NMPs for all applicable sites, as identified in the City's NMP Facility Evaluation, were developed during this reporting period by a certified turf and landscape nutrient management planner. Six different plans were developed for athletic fields maintained by the Parks and Recreation Department. The total acreage included equals 19.39 acres. These plans were implemented immediately following their development in April 2016. The NMPs can be found in Attachment 2.

BMP 6.4. Pollution Prevention Inspections: The City will conduct an annual pollution prevention inspection at the equipment and maintenance facility located at Jim Barnett Park.

This BMP will be implemented in conjunction with the development and implementation of the facility's SWPPP by June 30, 2017.

BMP 6.5. Staff Training: The City will conduct staff training in accordance with the training schedule and training modules included in the City of Winchester Stormwater Training Plan, June 2014 edition. The City will ensure necessary certifications identified in the training plan are maintained.

The City continued implementation of the City of Winchester Stormwater Training Plan dated June 2014. The following is a list of training events held during this reporting period:

- *Training Module #1 – Recognition and Reporting of Illicit Discharges*
  - *February 17, 2016 – 19 attendees*
  - *February 23, 2016 – 13 attendees*
  - *February 24, 2016 – 9 attendees*
- *Training Module #2 – Pollution Prevention for Road, Street and Parking Maintenance*
  - *February 17, 2016 – 13 attendees*
  - *February 24, 2016 – 9 attendees*
- *Training Module #3 – Pollution Prevention for Fleet and Public Works Facilities*
  - *February 17, 2016 – 19 attendees*
  - *February 23, 2016 – 13 attendees*
  - *February 24, 2016 – 9 attendees*
- *Training Module #4 – Minimizing Stormwater Pollution Practices for Parks and Rec Facilities*
  - *February 17, 2016 – 19 attendees*

BMP 6.6. Street Sweeping: The City will continue its street sweeping program and track the amount of litter and debris removed.

During this reporting period, the City swept approximately 4,052 lane miles of roadways within the City.

BMP 6.7. VPDES Industrial Stormwater Permit Compliance Coordination: As part of the MS4 Program, the City will confirm that the City Yards maintains a current Stormwater Pollution Prevention Plan (SWPPP) as required under the Virginia General Permit for Discharge of Stormwater from Industrial Activities.

The City Yards facility continues to maintain a current Stormwater Pollution Prevention Plan (SWPPP) dated June, 2014. The City also continued coverage under the Virginia General Permit for Discharge of Stormwater from Industrial Activities for this facility as evidenced by the letter from DEQ that is provided here in Attachment 3.

Additional Reporting Requirements:

Provide a summary report on the development and implementation of the daily operational procedures.

The City developed written Standard Operating Procedures (SOPs) for Daily Good Housekeeping and Pollution Prevention during Permit Year 2. The Pollution Prevention/Good Housekeeping for Municipal Operations - Standard Operating Procedures 2013-2018 were attached to the Year 2 report.

Provide a summary report on the development and implementation of the required SWPPPs.

In accordance with Section II.B.6.b(3) and Table 1 of the City's MS4 Permit, a SWPPP for the equipment and maintenance facility located at Jim Barnett Park will be developed and implemented by June 30, 2017.

Provide a summary report on the development and implementation of the turf and landscape nutrient management plans that includes:

(a) The total acreage of lands where turf and landscape nutrient management plans are required; and

(b) The acreage of lands upon which turf and landscape nutrient management plans have been implemented.

In accordance with Section II.B.6.c(1)(b) and Table 1 of the City's MS4 Permit, NMPs for all applicable sites, as identified in the City's NMP Facility Evaluation, were developed by a certified turf and landscape nutrient management planner as outlined under BMP 6.3 above.

Provide a summary report on the required training, including a list of training events, the training date, the number of employees attending training and the objective of the training.

The City continued implementation of the City of Winchester Stormwater Training Plan dated June 2014. The following is a list of training events held during this reporting period:

- *Training Module #1 – Recognition and Reporting of Illicit Discharges*
  - *February 17, 2016 – 19 attendees*
  - *February 23, 2016 – 13 attendees*
  - *February 24, 2016 – 9 attendees*
- *Training Module #2 – Pollution Prevention for Road, Street and Parking Maintenance*
  - *February 17, 2016 – 13 attendees*
  - *February 24, 2016 – 9 attendees*
- *Training Module #3 – Pollution Prevention for Fleet and Public Works Facilities*
  - *February 17, 2016 – 19 attendees*
  - *February 23, 2016 – 13 attendees*
  - *February 24, 2016 – 9 attendees*
- *Training Module #4 – Minimizing Stormwater Pollution Practices for Parks and Rec Facilities*
  - *February 17, 2016 – 19 attendees*

3.0 Results of Collected Data

Results of information collected and analyzed, including monitoring data, if any, during the reporting period.

During Year 3 of the Permit, the City of Winchester was not required to collect and analyze any formal monitoring data. Under the Abrams Creek and Lower Opequon Creek Combined Sediment and Bacteria TMDL Action Plan that was approved by DEQ during this reporting period, the City was required to develop a water quality monitoring program for POC reductions assessment by June 30, 2016. That plan is provided here in Attachment 4 and will be implemented beginning September 15, 2016.

4.0 Future Stormwater Activities

A summary of the stormwater activities the operator plans to undertake during the next reporting cycle.

During the next reporting period, the City plans to continue implementation of the 40 BMPs contained in its current 2014-2018 MS4 Program Plan. Additionally, in order to comply with the MS4 General Permit's compliance schedule (Table 1) and other permit requirements, the City plans to undertake the following activities as well:

- *Complete update of MS4 map to incorporate the expanded regulated area as a result of the 2010 U.S. Census.*
- *Implement Stormwater Pollution Prevention Plans (SWPPPs) on high priority facilities with a high potential for pollutant discharge. (Jim Barnett Park maintenance facility)*

5.0 Changes in BMPs and Measurable Goals

A change in any identified best management practices or measurable goals for any of the minimum control measures including steps to be taken to address any deficiencies.

5.1. Changes in BMPs/Program Elements

The City does not plan to make any changes to the BMPs/Program Elements listed in its 2014-2018 MS4 Program Plan at this time.

5.2. Changes in Measurable Goals

The City does not plan to make any changes to the measureable goals associated with the BMPs/Program Elements listed in its 2014-2018 MS4 Program Plan at this time.

6.0 Government Reliance for Permit Obligations

Notice that the operator is relying on another government entity to satisfy some of the State permit obligations (if applicable).

At this time, the City is not relying on any other government entity to satisfy any direct permit obligations.

7.0 Section II C Program Status

The approval status of any programs pursuant to Section II C (if appropriate), or the progress towards achieving full approval of these programs.

The City does operate a local Erosion and Sediment Control Program consistent with the requirements contained in Section 62.1-44-15:54 of the State Water Control Law and Section 9VAC25-840 of the Virginia Administrative Code. The City also operates a local Virginia Stormwater Management Program consistent with the requirements contained in Section 62.1-44.15:27 of the State Water Control Law and Section 9VAC25-870 of the Virginia Administrative Code. Both of these City programs have been found to be in compliance with their respective regulatory requirements by the appropriate oversight agencies in Virginia.

8.0 General Permit Section I Information

Information required for any applicable TMDL special condition contained in Section I.

The Abrams Creek and Lower Opequon Creek Combined Sediment and Bacteria TMDL Action Plan and the Chesapeake Bay TMDL Action Plan were both approved during this reporting period and can be found on the City's website at http://www.winchesterva.gov/engineering/stormwater*.*

Attachment 1. Electronic Database/Spreadsheet of City-Owned and Privately-Owned Stormwater Management Facilities

Project	TM Map #	Owner Name	c/o	Owner Address	Owner City	Owner State	Owner Zip Code	BMP Address	BMP ID	Type ID	HU Code ID	Acres Treated	Impervious Acres Treated	Constructed?	MA Signed by Owner
804 Amherst Street	171	Iris, LC		1440 Amherst Street	Winchester	VA	22601	804 Amherst Street	0001	Pervious Pavers (Concrete)	17	0.08		TRUE	28-Apr-10
804 Amherst Street	171	Iris, LC		1440 Amherst Street	Winchester	VA	22601	804 Amherst Street	0002	Grass Swale	17	0.04		TRUE	28-Apr-10
Aiken Strip Mall	310	Aikens Group		P.O. Box 2468	Winchester	VA	22604	2820-2836 Valley Avenue	0003	Detention Basin (Dry Pond)	16	6.00		TRUE	
All Points Warehouse	351	All Points Properties LLC		1682 East Guide Drive, Suite 201	Rockville	MD	20850	3082 Shawnee Drive	0004	Detention Basin (Dry Pond)	16	8.80		TRUE	
Allston Mews	351	Neil J. & Bobbie J. Keefe		20984 Kittanning Lane	Ashburn	VA	20147	500-552 Allston Circle, 500-520 Mews Lane	0005	Detention Basin (Dry Pond)	16	0.75		TRUE	
Allston Mews	351	Neil J. & Bobbie J. Keefe		20984 Kittanning Lane	Ashburn	VA	20147	500-552 Allston Circle, 500-520 Mews Lane	0006	Detention Basin (Dry Pond)	16	0.75		TRUE	
American Woodmark	351	American Woodmark		P.O. Box 1980	Winchester	VA	22604	3102 Shawnee Drive	0007	Detention Basin (Dry Pond)	16	2.60		TRUE	20-Sep-10
Amherst St. CVS	149	Summit Community Bank		100 W. Jubal Early Drive	Winchester	VA	22601	1721 Amherst Street	0008	Detention Basin (Dry Pond)	17	43.50		TRUE	07-Oct-05
The Corners I and II	270	Molden Real Estate Corporation		2400 Valley Avenue	Winchester	VA	22601	2310 Valor Drive	0009	Underground Detention	17	1.60		FALSE	05-Feb-07
Bank of Clarke County	291	Bank of Clarke County		P.O. Box 60	Winchester	VA	22604	2555 South Pleasant Valley Road	0010	Hydrodynamic Separator	17	1.12		TRUE	31-Oct-09
Saturn of Winchester	329	O'Malley LLC		3019 Valley Avenue	Winchester	VA	22601	3003-3019 Valley Avenue	0011	Detention Basin (Dry Pond)	16	3.80		TRUE	
Berryville Ave. CVS	176	SCP 2006-C23-208-LLC	CVS Corporation	1 CVS Dr.	Woonsocket	RI	2895	836-906 Berryville Avenue	0012	Underground Detention	17	1.10		TRUE	
BSW Investments	271	BSW Investments, LLC		401 Madison Forest Drive	Herndon	VA	20170	2264 Papermill Road	0013	Bioretention Basin	17	0.16		FALSE	31-Aug-09
Byrd Office Building	310	Byrd Enterprises, LLC		2913 Valley Avenue	Winchester	VA	22601	2909-2919 Valley Avenue	0014	Detention Basin (Dry Pond)	16	2.06		TRUE	
George Washington Autopark	173	Winchester Parking Authority		15 N. Cameron Street	Winchester	VA	22601	131 North Kent Street	0015	Filterra	17	0.20		TRUE	04-Apr-08
Castleman Subdivision	193	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	Mosby Street ROW	0016	Underground Detention	17	6.39		TRUE	
Cedar Creek Grade Office Complex	269	Dinapoli Properties, LLC		905 Cedar Creek Grade	Winchester	VA	22601	905 Cedar Creek Grade	0017	Filterra	17	0.36		TRUE	19-Feb-07
Cedar Creek Grade Office Complex	269	Treybul Co., LLC		817 Cedar Creek Grade, Suite 120	Winchester	VA	22601	817 Cedar Creek Grade	0018	Filterra	17	0.48		TRUE	19-Feb-07
Cedar Creek Grade Office Complex	269	Dinapoli Properties, LLC		905 Cedar Creek Grade	Winchester	VA	22601	905 Cedar Creek Grade	0019	Filterra	17	0.48		TRUE	19-Feb-07
Cedar Creek Grade Office Complex	269	Dinapoli Properties, LLC		905 Cedar Creek Grade	Winchester	VA	22601	905 Cedar Creek Grade	0020	Filterra	17	0.61		TRUE	19-Feb-07
Cedar Creek Grade Office Complex	269	Treybul Co., LLC		817 Cedar Creek Grade, Suite 120	Winchester	VA	22601	817 Cedar Creek Grade	0021	Filterra	17	0.78		TRUE	19-Feb-07
Centre at Winchester - Home Depot, Target	292	P D K Winchester LC	Dierman Realty Group	1313 Dolley Madison Boulevard, Suite 401	McLean	VA	22101	2320 Legge Boulevard	0022	Detention Basin (Dry Pond)	17	8.50		TRUE	
Southside Church of Christ	332	Southside Church of Christ		3136 Papermill Road	Winchester	VA	22601	3136 Papermill Road	0023	General Infiltration Practice	17	0.75		FALSE	26-Sep-13
Commercial Street Used Cars	133	Major Properties, LLC		150 Commercial Street	Winchester	VA	22601	154 Commercial Street	0024	Underground Detention	17	0.70		FALSE	
Cottages at Willow Lawn	230	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	1826 Tilghman Lane	0025	Detention Basin (Dry Pond)	17	40.60		TRUE	
Craun Property	213	Craun LLC		Box 3124594	Sioux Falls	SD	57186	220 East Pall Mall Street	0026	Filterra	17	0.00		FALSE	28-Oct-08
Dermatology Associates	150	Dermatology Properties, LC		1514 Amherst Street	Winchester	VA	22601	1514 Amherst Street	0027	Detention Basin (Dry Pond)	17	5.20		TRUE	
Drissi Plaza	252	Drissi Properties, LLC		12839 Tournament Drive	Reston	VA	20191	29-35 East Jubal Early Drive	0028	Underground Detention	17	2.10		TRUE	
Ft. Collier Rd. Food Lion	176	Kentland Foundation Inc.		P.O. Box 879	Berryville	VA	22611	699-723 Fort Collier Road	0029	Detention Basin (Dry Pond)	17	20.20		TRUE	
East Tevis Street Extension	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	201 East Tevis Street	0030	Enhanced Extended Detention Basin	17	23.06		FALSE	03-Oct-07
East Tevis Street Extension	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0031	Enhanced Extended Detention Basin	17	59.76		FALSE	03-Oct-07
Elite Settlements	212	D & E Lee LLC		486 Stonymeade Drive	Winchester	VA	22602	802 South Braddock Street	0032	Permeable Pavement (Concrete, Asphalt)	17	0.10		FALSE	09-Nov-07
FCPS Admin Annex	170	Frederick County Public Schools		1415 Amherst Street	Winchester	VA	22601	1415 Amherst Street	0033	Bioretention Basin	17	0.10		TRUE	07-Apr-08
FCPS Admin Annex	170	Frederick County Public Schools		1415 Amherst Street	Winchester	VA	22601	1415 Amherst Street	0034	General Infiltration Practice	17	0.10		TRUE	07-Apr-08
Featherbed Lane - Lot 3	252	Windewald Enterprises, LLC		1025 Winchester Avenue	Martinsburg	WV	25401	80 Featherbed Lane	0035	Filterra	17	0.38		FALSE	16-Apr-15
Featherbed Lane - Lot 3	252	Windewald Enterprises, LLC		1025 Winchester Avenue	Martinsburg	WV	25401	80 Featherbed Lane	0036	Filterra	17	0.38		FALSE	16-Apr-15
Featherbed Lane - Lot 3	252	Windewald Enterprises, LLC		1025 Winchester Avenue	Martinsburg	WV	25401	80 Featherbed Lane	0037	Bioretention Basin	17	0.38		FALSE	16-Apr-15
Fern Adams Building	193	Fern Adams Building, LLC		303 South Loudoun Street	Winchester	VA	22601	303 South Loudoun Street	0038	Underground Detention	17	0.47		TRUE	
Burke Center	271	Pine-Burke Realty, LLC		2224 Wilson Boulevard	Winchester	VA	22601	2-40 Weems Lane	0039	Detention Basin (Dry Pond)	17	7.10		TRUE	
Frederick Douglas School	291	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	100 West Tevis Street	0040	Detention Basin (Dry Pond)	16	78.90		TRUE	
Friendship Fire Hall	175	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	627 North Pleasant Valley Road	0041	Detention Basin (Dry Pond)	17	50.50		TRUE	
G&M Music	252	Carolin M. Schebish		13224 Springdale Estates Road	Clifton	VA	20124	1817 South Loudoun Street	0042	Bioretention Filter	17	0.15		FALSE	10-Jul-09
Trinity Express Lube	270	Grasso & Sons Development Corp.		2425 Valley Avenue	Winchester	VA	22601	2409-2433 Valley Avenue	0044	Detention Basin (Dry Pond)	17	0.81		TRUE	
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0046	Filterra	17	0.53		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0047	Filterra	17	0.51		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0048	Filterra	17	0.17		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0049	Filterra	17	0.16		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0050	Filterra	17	0.14		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0051	Filterra	17	0.49		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0052	Filterra	17	0.78		TRUE	25-Sep-12
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0053	Pervious Pavers (Concrete)	17	1.50		TRUE	25-Sep-12
Henkel-Harris	331	Henkel-Harris III, LLC		701 Fairmont Avenue	Winchester	VA	22601	2983 South Pleasant Valley Road	0054	Detention Basin (Dry Pond)	16	30.10		TRUE	
High End Automotive	330	SMD Properties, LLC		P.O. Box 8881	Reston	VA	20195	2970 Valley Avenue	0055	Detention Basin (Dry Pond)	16	0.55		TRUE	05-Mar-07
High End Automotive	330	SMD Properties, LLC		P.O. Box 8881	Reston	VA	20195	2970 Valley Avenue	0056	Bioretention Filter	16	0.55		TRUE	05-Mar-07
Hilton Garden Inn	253	Lucky 7 LP-LLP		P.O. Box 2468	Winchester	VA	22604	120 Wingate Drive	0057	Underground Detention	17	5.50		TRUE	19-Jan-09
Hirschberg Office Building	149	Neurosurgical Investment Properties		1818 Amherst Street	Winchester	VA	22601	1818 Amherst Street	0058	General Infiltration Practice	17	1.10		TRUE	
History and Tourism Center	234	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	1400 South Pleasant Valley Road	0059	Bioretention Basin	17	1.63		TRUE	
History and Tourism Center	234	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	1400 South Pleasant Valley Road	0060	Bioretention Basin	17	1.77		TRUE	
Orchard Hills Section 7A	229	Nancy Adams		1946 Cidermill Lane	Winchester	VA	22601	1946 Cidermill Lane	0061	General Infiltration Practice	17	1.20		TRUE	20-Mar-13
HN Funkhouser	272	KVC LLC		P.O. Box 2038	Winchester	VA	22604	2148-2150 South Loudoun Street	0062	Detention Basin (Dry Pond)	17	1.16		TRUE	01-Nov-07
HN Funkhouser	272	KVC LLC		P.O. Box 2038	Winchester	VA	22604	2148-2150 South Loudoun Street	0063	Grass Swale	17	0.56		TRUE	01-Nov-07
HN Funkhouser	272	KVC LLC		P.O. Box 2038	Winchester	VA	22604	2148-2150 South Loudoun Street	0064	Grass Swale	17	0.22		TRUE	01-Nov-07
HN Funkhouser	272	KVC LLC		P.O. Box 2038	Winchester	VA	22604	2148-2150 South Loudoun Street	0065	Grass Swale	17	1.53		TRUE	01-Nov-07
Hope Drive Site Plan	270	Dave Holliday Rentals, LLC		420 West Jubal Early Drive	Winchester	VA	22601	321 Hope Drive	0066	Detention Basin (Dry Pond)	16	2.69		TRUE	29-Oct-09
Hope Drive Subdivision	270	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	230 Hope Drive	0067	Detention Basin (Dry Pond)	17	66.00		TRUE	
Islamic Society of Winchester	195	Islamic Society of Winchester		601 Woodstock Lane	Winchester	VA	22601	601 Woodstock Lane	0068	Permeable Pavement (Concrete, Asphalt)	17	0.20		TRUE	01-Nov-08
Jenkins - Cooper	310	Jenkins Cooper, LLC		2258 Valley Avenue	Winchester	VA	22601	2944-2950 Valley Avenue	0069	Detention Basin (Dry Pond)	16	0.68		FALSE	
John Handley High School	212	Winchester Public School Board		12 N. Washington Street	Winchester	VA	22601	338 Handley Boulevard	0070	Underground Detention	17	0.00		TRUE	14-May-09
John Handley High School	211	Winchester Public School Board		12 N. Washington Street	Winchester	VA	22601	425 Handley Boulevard	0071	Underground Detention	17	4.83		TRUE	14-May-09
John Handley High School	212	Winchester Public School Board		12 N. Washington Street	Winchester	VA	22601	338 Handley Boulevard	0072	Underground Detention	17	0.24		TRUE	14-May-09
Jubal Early Plaza I - Lot 2	252	Craun LLC		Box 3124594	Sioux Falls	SD	57186	21-29 West Jubal Early Drive	0073	Detention Basin (Dry Pond)	17	4.22		TRUE	
Jubal Early Plaza II - Lot 9	252	Women's Center of Winchester		1820 Plaza Drive	Winchester	VA	22601	1820 West Plaza Drive	0074	Detention Basin (Dry Pond)	17	4.22		TRUE	
KSR LLC	193	The Townes at Kent HOA		126 N. Kent Street	Winchester	VA	22601	210 East Clifford Street	0075	Sand Filter	17	0.12		TRUE	
SU Sarah's Glen	254	Shenandoah University		1460 University Drive	Winchester	VA	22601	1460 University Drive	0076	Pervious Pavers (Concrete)	17	0.00		TRUE	
Limestone Court	290	White Properties of Winchester, Inc.		1520 Commerce Street	Winchester	VA	22601	2610 Hockman Avenue	0077	Detention Basin (Dry Pond)	17	0.00		TRUE	
Linden Drive Office Park	150	La Rose, LLC		1609 Van Couver Street	Winchester	VA	22601		0078	Detention Basin (Dry Pond)	17	2.13		TRUE	
Linden Heights Animal Hospital	150	Schmitt Properties		274 Linden Drive	Winchester	VA	22601	274 Linden Drive	0079	Enhanced Extended Detention Basin	17	1.34		TRUE	03-Oct-07
Linden Medical Center	150	Linden Westside Condominiums Assoc.	Cambridge Companies	2509 Valley Avenue	Winchester	VA	22601	172 Linden Drive	0080	Detention Basin (Dry Pond)	17	4.40		TRUE	

Lowes	272	Lowes Home Center Inc		P.O. Box 1111	North Wilkesboro	NC	28656	2200 South Pleasant Valley Road	0081	Detention Basin (Dry Pond)	17	13.50		TRUE	
Lowes	293	Lowes Home Center Inc		P.O. Box 1111	North Wilkesboro	NC	28656	2210 Legge Boulevard	0082	Detention Basin (Dry Pond)	17	19.70		TRUE	
Chuck E. Cheese's	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0215	Filterra	16	0.25		TRUE	14-Dec-12
Chuck E. Cheese's	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0216	Filterra	16	0.29		TRUE	14-Dec-12
SVEC South Winchester Substation	271	Shenandoah Valley Electric Cooperative		147 Dinkle Avenue	Mount Crawford	VA	22841	21 Shingleton Lane	0217	General Infiltration Practice	17	9.30		TRUE	13-Sep-13
Orchard Terrace	154	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	282 Green Streeet	0094	Detention Basin (Dry Pond)	18	6.40		TRUE	
Our Health - Phase II	173	North Cameron Properties, LLC		925 Meadow Court	Winchester	VA	22601	401 North Cameron Street	0095	Pervious Pavers (Concrete)	17	0.08		TRUE	31-Mar-10
Panera	291	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2605 South Pleasant Valley Road	0096	Filterra	16	0.12		TRUE	02-Apr-07
Panera	291	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2605 South Pleasant Valley Road	0097	Filterra	16	0.51		TRUE	02-Apr-07
Panera	291	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2605 South Pleasant Valley Road	0098	Filterra	16	0.34		TRUE	02-Apr-07
Panera	291	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2605 South Pleasant Valley Road	0099	Detention Basin (Dry Pond)	16	0.34		TRUE	02-Apr-07
Park Place	250	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	2024 Harvest Drive	0100	Detention Basin (Dry Pond)	17	33.10		TRUE	
Patriot Collision Center	351	Patriot Collision Center LLC		3066 Shawnee Drive	Winchester	VA	22601	3064-3068 Shawnee Drive	0101	Underground Detention	16	1.20		TRUE	
Rubbermaid Building Expansion	330	Rubbermaid Commercial Products		3124 Valley Avenue	Winchester	VA	22601	3124 Valley Avenue	0102	Detention Basin (Dry Pond)	16	0.00		TRUE	
Pine-Burke Apartments - Phase I	271	Pine-Burke Realty, LLC		2224 Wilson Boulevard	Winchester	VA	22601	2-14 Taft Avenue	0103	Underground Detention	17	0.47		TRUE	
JD Byrider	252	JSB Associates		1930 South Loudoun Street	Winchester	VA	22601	1930 South Loudoun Street	0104	Extended Detention Basin	17	1.41		TRUE	10-Sep-10
Popeye's	290	Christina Tseng		160 Lenz Lane	Stephens City	VA	22655	2659 Valley Avenue	0105	Underground Detention	16	0.93		TRUE	
Rolling Hills Park	289	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	702 Kennedy Drive	0107	Detention Basin (Dry Pond)	16	4.50		TRUE	
Rolling Hills Subdivision	289	Rolling Hills Estates HOA	Cambridge Companies	2509 Valley Avenue	Winchester	VA	22601	612 Lake Drive	0108	Detention Basin (Dry Pond)	16	54.70		TRUE	
Selma Medical	172	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	330 Amherst Street	0110	Detention Basin (Dry Pond)	17	7.50		TRUE	
Shawnee Drive Business Park	332	LHZ Properties, LLC		P.O. Box 1147	Huntersville	NC	28070	2900 Shawnee Drive	0111	Underground Detention	16	2.42		FALSE	06-Jan-09
Shawnee Fire Department	271	Shawnee Volunteer Fire Dept		2210 Valor Drive	Winchester	VA	22601	2210 Valor Drive	0112	Detention Basin (Dry Pond)	17	20.30		TRUE	
812 & 830 Amherst Street	171	812 Amherst Street Condo Association, Inc.		812 Amherst Street, Suite 101	Winchester	VA	22601	812 Amherst Street	0115	Pervious Pavers (Concrete)	17	0.14		TRUE	31-Aug-10
Sorrel Court	310	Sorrel Court HOA	Coventry Group	P.O. Box 2580	Winchester	VA	22604	2946 Sorrel Court	0116	Detention Basin (Dry Pond)	16	4.80		TRUE	
Spencer Square	310	Melco Inc		609 Cedar Creek Grade, Suite A	Winchester	VA	22601	2856 Spencer Square	0117	Detention Basin (Dry Pond)	16	1.50		TRUE	
118 St. James Place	213	John & Juanita Melling		5607 Hopkins Cemetery Road	Felton	DE	19943	118 East James Street	0226	Bioretention Basin	17	0.04		TRUE	02-Oct-14
Stonecrest Village	290	Stonecrest Village HOA	Coventry Group	P.O. Box 2580	Winchester	VA	22604	415 Russelcroft Road	0119	Detention Basin (Dry Pond)	16	87.00		TRUE	
Stutzman Body Shop	310	JACC, LLC		2700 Valley Ave.	Winchester	VA	22601	2725 Valley Avenue	0120	Underground Detention	16	1.10		TRUE	03-Jan-08
SU Student Center Addendum	254	Shenandoah University		1460 University Drive	Winchester	VA	22601	1460 University Drive	0121	Pervious Pavers (Concrete)	17	0.40		TRUE	26-May-08
Summerfield Apartments	249	Page-Brooke Developments		1573 Commerce Street	Winchester	VA	22601	900-975 Summerfield Lane	0122	Detention Basin (Dry Pond)	17	5.40		TRUE	
812 & 830 Amherst Street	171	Amherst Street Condo Association, Inc.		830 Amherst Street	Winchester	VA	22601	830 Amherst Street	0123	Pervious Pavers (Concrete)	17	0.24		TRUE	31-Aug-10
Sun Trust Bank	149	Amherst Associates II, LLC		1712 Amherst Street	Winchester	VA	22601	1738 Amherst Street	0125	Underground Detention	17	1.00		TRUE	
TGI Friday's & Glaize PVR	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0126	Hydrodynamic Separator	16	1.30		TRUE	02-Apr-07
TGI Friday's & Glaize PVR	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0127	Hydrodynamic Separator	16	1.23		TRUE	02-Apr-07
TGI Friday's & Glaize PVR	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0128	Extended Detention Basin	16	1.30		TRUE	02-Apr-07
TGI Friday's & Glaize PVR	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0129	Extended Detention Basin	16	1.23		TRUE	02-Apr-07
The Corners I and II	270	Biggs Corner Winchester, LLC		1625 Poe's Lane	Charlottesville	VA	22911	2270 Valor Drive	0130	Underground Detention	17	1.51		TRUE	05-Feb-07
Timberlake Office Building	214	Grove Hill, LLC		900 S. Pleasant Valley Road	Winchester	VA	22601	900 South Pleasant Valley Road	0131	Filterra	17	0.24		TRUE	09-Mar-07
Timberlake Office Building	214	Grove Hill, LLC		900 S. Pleasant Valley Road	Winchester	VA	22601	900 South Pleasant Valley Road	0132	Filterra	17	0.22		TRUE	09-Mar-07
Valley Ave. Food Lion	290	Kentland Foundation Inc.		P.O. Box 879	Berryville	VA	22611	2584-2606 Valley Avenue	0133	Detention Basin (Dry Pond)	17	20.70		TRUE	
Valley Mortgage	290	SEE Properties LP LLP		P.O. Box 2069	Danville	VA	24541	2654 Valley Avenue	0134	Detention Basin (Dry Pond)	16	58.00		TRUE	
Limestone Court	290	Limestone Court HOA	Joyce Mull	2658 Limestone Court	Winchester	VA	22601	2680 Limestone Court	0135	Detention Basin (Dry Pond)	17	18.30		TRUE	
Valor Drive Site Plan	270	Alejandro Orfila	Edwin P. Markowitz	P.O. Box 1182	Middleburg	VA	20118	2233-2265 Valor Drive	0136	Detention Basin (Dry Pond)	17	3.44		TRUE	
Valor View Shopping Center	270	PRO Properties, LLC		588 Stoney Mountain Drive	Strasburg	VA	22657	2301-2325 Valor Drive	0137	Underground Detention	17	1.36		TRUE	10-Apr-10
Valor View Shopping Center	270	PRO Properties, LLC		588 Stoney Mountain Drive	Strasburg	VA	22657	2301-2325 Valor Drive	0138	Bioretention Basin	17	0.59		TRUE	10-Apr-10
Walmart	292	Walmart Realty	Retention Pond Services	3317 Masonboro Loop Road	Wilmington	NC	28409	2350 South Pleasant Valley Road	0140	Detention Basin (Dry Pond)	17	19.40		TRUE	
Walnut Street Extension Subdivision	196	Don Packard Jr.		2400 Valley Avenue	Winchester	VA	22601	400 Walnut Drive	0141	Grass Swale	17	1.24		TRUE	
War Memorial Building	253	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	1001 East Cork Street	0142	Bioretention Basin	17	0.50		TRUE	
Westridge Section 1	269	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	2505 Goldenfield Lane	0143	Detention Basin (Dry Pond)	17	9.20		TRUE	
Westridge Section 2	289	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	2653 Windwood Drive	0144	Detention Basin (Dry Pond)	17	15.10		TRUE	
Whitacre Property	231	1726 Valley Avenue, LLC		9576 Magenta Street	Manassas	VA	20110	1726 Valley Avenue	0145	Filterra	17	0.33		FALSE	
Whittier Ponding Basin	171	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	841 Whittier Avenue	0146	Detention Basin (Dry Pond)	17	124.70		TRUE	
Winchester Medical Center	149	Winchester Medical Center		P.O. Box 3340	Winchester	VA	22604	1840 Amherst Street	0147	Retention Basin (Wet Pond)	17	57.00		TRUE	
Winchester Medical Center	149	Winchester Medical Center		P.O. Box 3340	Winchester	VA	22604	1840 Amherst Street	0148	Retention Basin (Wet Pond)	17	57.00		TRUE	
Winchester Medical Center	149	Winchester Medical Center		P.O. Box 3340	Winchester	VA	22604	1840 Amherst Street	0149	Retention Basin (Wet Pond)	17	57.00		TRUE	
Glaize Pleasant Valley Commercial	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0150	Filterra	16	0.21		FALSE	11-Jun-15
Glaize Pleasant Valley Commercial	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0151	Filterra	16	0.21		FALSE	11-Jun-15
Glaize Pleasant Valley Commercial	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0152	Filterra	16	0.13		FALSE	11-Jun-15
Glaize Pleasant Valley Commercial	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0153	Filterra	16	0.14		FALSE	11-Jun-15
Glaize Pleasant Valley Commercial	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0154	Filterra	16	0.26		FALSE	11-Jun-15
Glaize Pleasant Valley Commercial	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0155	Filterra	16	0.11		FALSE	11-Jun-15
Commonwealth Plaza - Phase 3	252	GWG Profit Sharing, TST Properties		104 Dutton Place	Winchester	VA	22601	2001-2027 South Loudoun Street	0160	Filterra	17	0.17		FALSE	07-Feb-11
FCPS Admin Building Addition	170	Frederick County Public Schools		1415 Amherst Street	Winchester	VA	22601	1415 Amherst Street	0161	Filterra	17	0.20		TRUE	07-Apr-08
Five Star Auto Spa	292	One Hanul LLC		555 Adams Drive	Winchester	VA	22601	555-565 Adams Drive	0162	Filterra	17	0.11		FALSE	03-Feb-11
Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0163	Grass Swale	17	0.21		TRUE	25-Sep-12

Harvest Drive Medical	230	Valley Proteins, Inc.		151 Valpro Drive	Winchester	VA	22603	501-519 Harvest Drive	0164	Grass Swale	17	3.09		TRUE	25-Sep-12
Medical Circle Imaging	171	Neurological Properties, LLC		125 Medical Circle, Suite A	Winchester	VA	22601	125 Medical Circle	0165	Filterra	17	0.00		TRUE	02-Dec-10
Medical Circle Imaging	171	Neurological Properties, LLC		125 Medical Circle, Suite A	Winchester	VA	22601	125 Medical Circle	0166	Filterra	17	0.00		TRUE	02-Dec-10
Medical Circle Imaging	171	Neurological Properties, LLC		125 Medical Circle, Suite A	Winchester	VA	22601	125 Medical Circle	0167	Underground Detention	17	0.00		TRUE	02-Dec-10
Omps Pet Crematory	150	Omps Funeral Home		1600 Amherst Street	Winchester	VA	22601	1600 Amherst Street	0168	Bioretention Filter	17	4.57		TRUE	16-Jun-11
Rubbermaid Storage Area	330	Rubbermaid Commercial Products		3124 Valley Avenue	Winchester	VA	22601	3124 Valley Avenue	0169	Grass Swale	16	0.49		TRUE	16-Dec-10
Rubbermaid Storage Area	330	Rubbermaid Commercial Products		3124 Valley Avenue	Winchester	VA	22601	3124 Valley Avenue	0170	Grass Swale	16	0.27		TRUE	16-Dec-10
Shawnee Drive Business Park	332	LHZ Properties, LLC		P.O. Box 1147	Huntersville	NC	28070	2900 Shawnee Drive	0171	Bioretention Filter	16	2.42		FALSE	06-Jan-09
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0172	Filterra	16	0.12		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0173	Filterra	16	0.46		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0174	Filterra	16	0.20		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0175	Filterra	16	0.45		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0176	Filterra	16	0.29		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0177	Filterra	16	0.39		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0178	Filterra	16	0.38		FALSE	10-Dec-07
South Valley Plaza	311	Dixie Distributing, LLC		2705 South Pleasant Valley Road	Winchester	VA	22601	2725 South Pleasant Valley Road	0179	Filterra	16	0.56		FALSE	10-Dec-07
Spanish United Pentecostal Church	175	Spanish United Pentecostal Church Trustees		672 Virginia Avenue	Winchester	VA	22601	672 Virginia Avenue	0180	Pervious Pavers (Concrete)	17	0.23		TRUE	22-Apr-11
Star Beauty School	213	Wright Renovations		124 Page Court	White Post	VA	22663	219 Millwood Avenue	0181	Bioretention Basin	17	0.37		FALSE	28-Sep-10
TGI Friday's & Glaize PVR	292	Glaize Developments		P.O. Box 888	Winchester	VA	22604	2600-2690 South Pleasant Valley Road	0182	Filterra	16	0.33		TRUE	02-Apr-07
City National Bank	231	City National Bank		1830 Valley Avenue	Winchester	VA	22601	1830 Valley Avenue	0183	Underground Detention	17	0.29		TRUE	07-Nov-12
City National Bank	231	City National Bank		1830 Valley Avenue	Winchester	VA	22601	1830 Valley Avenue	0184	Filterra	17	0.21		TRUE	07-Nov-12
City National Bank	231	City National Bank		1830 Valley Avenue	Winchester	VA	22601	1830 Valley Avenue	0185	Filterra	17	0.29		TRUE	07-Nov-12
Cedar Hill Apartments	270	Cornerstone, LP LLP		1025 Martinsburg Pike	Winchester	VA	22601	2250 Sofia Way	0186	Filterra	17	0.38		TRUE	11-Jun-14
Cedar Hill Apartments	270	Cornerstone, LP LLP		1025 Martinsburg Pike	Winchester	VA	22601	2250 Sofia Way	0187	Filterra	17	0.25		TRUE	11-Jun-14
Cedar Hill Apartments	270	Cornerstone, LP LLP		1025 Martinsburg Pike	Winchester	VA	22601	2250 Sofia Way	0188	Filterra	17	0.25		TRUE	11-Jun-14
Cedar Hill Apartments	270	Cornerstone, LP LLP		1025 Martinsburg Pike	Winchester	VA	22601	2250 Sofia Way	0189	Filterra	17	0.25		TRUE	11-Jun-14
Cedar Hill Apartments	270	Cornerstone, LP LLP		1025 Martinsburg Pike	Winchester	VA	22601	2250 Sofia Way	0190	Grass Swale	17	0.20		TRUE	11-Jun-14
Trinity Auto Center	270	Grasso & Sons Development Corp.		2425 Valley Avenue	Winchester	VA	22601	2409-2433 Valley Avenue	0218	Bioretention Basin	17	0.67		TRUE	14-Mar-12
Gateway Center	150	Gateway Medical Center, LLC		1025 Martinsburg Pike	Winchester	VA	22602	1705 Amherst Street	0219	Cartridge Filter	17	0.16		TRUE	02-Apr-14
Gateway Center	150	Gateway Medical Center, LLC		1025 Martinsburg Pike	Winchester	VA	22602	1705 Amherst Street	0220	Underground Detention	17	1.46		TRUE	02-Apr-14
Gateway Center	150	Gateway Medical Center, LLC		1025 Martinsburg Pike	Winchester	VA	22602	1705 Amherst Street	0221	Cartridge Filter	17	1.46		TRUE	02-Apr-14
Gateway Center	150	Gateway Medical Center, LLC		1025 Martinsburg Pike	Winchester	VA	22602	1705 Amherst Street	0222	Detention Basin (Dry Pond)	17	0.77		TRUE	02-Apr-14
Roberts Street Plaza Parking	231	1818 Robert, LC		1816 Roberts Street	Winchester	VA	22601	1811 Roberts Street	0191	Filterra	17	0.33		TRUE	06-Jan-14
Stone Ridge Development	193	Leicester Square COA	Skyline Community Management	P.O. Box 3496	Winchester	VA	22604	412 South Loudoun Street	0113	Pervious Pavers (Concrete)	17	0.18		TRUE	23-Jun-15
Major Properties	153	Major Properties, LLC		150 Commercial Street	Winchester	VA	22601	150 Commercial Street	0109	Pervious Pavers (Concrete)	17	0.72		TRUE	30-Jun-14
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0192	Filterra	17	0.12	0.12	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0193	Filterra	17	0.37	0.37	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0194	Filterra	17	0.12	0.12	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0195	Filterra	17	0.11	0.11	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0196	Filterra	17	0.21	0.21	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0197	Filterra	17	0.28	0.28	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0198	Filterra	17	0.08	0.27	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0199	Filterra	17	0.42	0.30	TRUE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	1523 South Pleasant Valley Road	0200	Filterra	17	0.27		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0201	Filterra	17	0.19		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0202	Filterra	17	0.51		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0203	Filterra	17	0.15		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0204	Filterra	17	0.65		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0205	Filterra	17	0.34		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0206	Filterra	17	1.07		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0207	Filterra	17	0.24		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0208	Filterra	17	0.24		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0209	Filterra	17	0.39		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0210	Filterra	17	0.35		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0211	Filterra	17	0.21		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0212	Filterra	17	0.52		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0213	Filterra	17	0.30		FALSE	14-Apr-15
Winchester Marketplace	253	JDC Winchester, LLC		1760 Reston Parkway, Suite 210	Reston	VA	20190	222 Spring Street	0214	Underground Detention	17	13.20		FALSE	14-Apr-15
Madison Center	270	NC Development LLC		P.O. Box 31	Winchester	VA	22604	320 Hope Drive	0083	Detention Basin (Dry Pond)	17	0.78		TRUE	07-Oct-09
Madison Center	270	NC Development LLC		P.O. Box 31	Winchester	VA	22604	320 Hope Drive	0084	Bioretention Filter	17	0.20		TRUE	07-Oct-09
Madison Center	270	NC Development LLC		P.O. Box 31	Winchester	VA	22604	320 Hope Drive	0085	Bioretention Filter	17	0.20		TRUE	07-Oct-09
Madison Center	270	NC Development LLC		P.O. Box 31	Winchester	VA	22604	320 Hope Drive	0086	Bioretention Filter	17	0.20		TRUE	07-Oct-09
Madison Center	270	NC Development LLC		P.O. Box 31	Winchester	VA	22604	320 Hope Drive	0087	Bioretention Filter	17	0.20		TRUE	07-Oct-09
Madison Center	270	NC Development LLC		P.O. Box 31	Winchester	VA	22604	320 Hope Drive	0088	Underground Detention	17	1.80		TRUE	07-Oct-09
Madison Place I	351	Madison Winds, LLC		P.O. Box 2071	Winchester	VA	22604	3018 Shawnee Drive	0089	Detention Basin (Dry Pond)	16	5.53		TRUE	
McDonald's - Berryville Ave.	176	James Edward Butcher, Trustee	Nerangis Restaurant Ventures	500 Pegasus Court	Winchester	VA	22602	1124 Berryvill Avenue	0090	Underground Detention	17	0.60		TRUE	
McKinley Office Building	176	Michael J. Bermel		10550 Marbury Road	Oakton	VA	22124	700 Fort Collier Road	0091	Detention Basin (Dry Pond)	17	3.20		TRUE	
Meddent Center	171	Meddent LLC		1002 Amherst Street	Winchester	VA	22601	1002 Amherst Street	0092	Bioretention Basin	17	0.40		FALSE	13-Aug-07
Morlyn Hills Subdivision	188	City of Winchester		15 N. Cameron Street	Winchester	VA	22601	1511 Stone House Court	0093	Constructed Wetlands	17	0.00		TRUE	
Northside Station	134	Pari Plaza LLC		7204 Hickory Street	Falls Church	VA	22043	823 North Loudoun Street	0139	General Infiltration Practice	18	1.60		TRUE	
118 St. James Place	213	Courtney Crawford & Brian Eichelberger		120 East James Street	Winchester	VA	22601	120 East James Street	0227	Bioretention Basin	17	0.04		TRUE	02-Oct-14
118 St. James Place	213	Andrew Hynes		122 East James Street	Winchester	VA	22601	122 East James Street	0228	Bioretention Basin	17	0.04		TRUE	02-Oct-14
118 St. James Place	213	Stephen & Beth Melling		124 East James Street	Winchester	VA	22601	124 East James Steet	0229	Bioretention Basin	17	0.15		TRUE	02-Oct-14
Stewart Street Properties	192	Kilmer & Associates, CPA, P.C.		120 South Stewart Street	Winchester	VA	22601	120 South Stewart Street	0230	Bioretention Filter	17	0.55		TRUE	17-Mar-15
WMC Cancer Center	149	Winchester Medical Center		P.O. Box 3340	Winchester	VA	22604	1840 Amherst Street	0231	Cartridge Filter	17	0.72		FALSE	31-Oct-14
New John Kerr Elementary School	169	Winchester Public School Board		12 N. Washington Street	Winchester	VA	22601	427 Meadowbranch Avenue	0232	Bioretention Basin	17	1.19		FALSE	06-Nov-14
New John Kerr Elementary School	169	Winchester Public School Board		12 N. Washington Street	Winchester	VA	22601	427 Meadowbranch Avenue	0233	Bioretention Basin	17	1.24		FALSE	06-Nov-14
New John Kerr Elementary School	169	Winchester Public School Board		12 N. Washington Street	Winchester	VA	22601	427 Meadowbranch Avenue	0234	Bioretention Basin	17	4.42		FALSE	06-Nov-14

Dixie Beverage	311	Shenandoah Valley Distributing Company		2705 South Pleasant Valley Road	Winchester	VA	22601	2705 South Pleasant Valley Road	0235	Bioretention Basin	16	0.45		FALSE	26-May-15
Dixie Beverage	311	Shenandoah Valley Distributing Company		2705 South Pleasant Valley Road	Winchester	VA	22601	2705 South Pleasant Valley Road	0236	Bioretention Basin	16	0.99		FALSE	26-May-15
Dixie Beverage	311	Shenandoah Valley Distributing Company		2705 South Pleasant Valley Road	Winchester	VA	22601	2705 South Pleasant Valley Road	0237	Bioretention Basin	16	0.63		FALSE	26-May-15
The Lofts at Jubal Square	251	Jubal Square, LLC		1821 Avon Street, Suite 200	Charlottesville	VA	22902	1900 Valley Avenue	0238	Retention Basin (Wet Pond)	17	6.89		FALSE	02-Jul-15
Storage Solutions	351	Storage Solutions of Winchester, LLC		1520 Commerce Street	Winchester	VA	22601	403 Battaile Drive	0240	Filterra	16	0.37	0.32	FALSE	05-May-16
Storage Solutions	351	Storage Solutions of Winchester, LLC		1520 Commerce Street	Winchester	VA	22601	403 Battaile Drive	0241	Filterra	16	0.26	0.24	FALSE	05-May-16
Storage Solutions	351	Storage Solutions of Winchester, LLC		1520 Commerce Street	Winchester	VA	22601	403 Battaile Drive	0242	Filterra	16	0.27	0.24	FALSE	05-May-16
Storage Solutions	351	Storage Solutions of Winchester, LLC		1520 Commerce Street	Winchester	VA	22601	403 Battaile Drive	0243	Filterra	16	2.34	1.68	FALSE	05-May-16
Storage Solutions	351	Storage Solutions of Winchester, LLC		1520 Commerce Street	Winchester	VA	22601	403 Battaile Drive	0239	Filterra	16	0.36	0.32	FALSE	05-May-16

Attachment 2. Nutrient Management Plans for City Owned Properties as Required Under BMP 6.3

Nutrient Management Plan

Friendship Park

Prepared For:

City of Winchester
Rouss City Hall, 15 N. Cameron Street
Winchester, Virginia 22601
540-667-1815

Prepared By:

Marjorie Howren, Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
804-200-6370

Certification Code: #844

Total Athletic Field Acreage: 1.2

The purpose of this Nutrient Management Plan is to ensure minimum movement of nitrogen and phosphorus from the specified area of application to surface and groundwaters where they can potentially have a detrimental effect on water quality as well as ensuring that plants have optimum soil nutrient availability for good productivity and quailty. By following this soil test based plan you are helping to protect local waters and the Chesapeake Bay.

If you have questions, please contact your plan writer, local Virginia Cooperative Extension Agent or the Department of Conservation and Recreation Nutrient Mangement Program.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Nutrient Management Plan for:
Friendship Park

Landowner Information	
Site Name	*Friendship Park*
Customer Name	*City of Winchester*
Mailing Address	*Rouss City Hall, 15 N. Cameron Street*
City State Zip	*Winchester, Virginia 22601*
Phone	*540-667-1815*

Planners Information	
Planner Name	*Marjorie Howren, Timmons Group*
Mailing Address	*1001 Boulders Parkway, Suite 300*
City State Zip	*Richmond, VA 23225*
Phone	*804-200-6370*
Fax	*804-560-1016*
Email	marjorie.howren@timmons.com
Certification Code	*#844*

Location Information	
Physical Address	*623 North Pleasant Valley Road*
City State Zip	*Winchester, Virginia 22601*
Coordinates	*39°11' 26.4" N*
	78°09' 02.6" W
VAHU6 Watershed Code	*PU17 Abrams Creek*

Acreage	
Friendship Field	*52,822 sq ft (1.2 acres)*

Plan Start Date	*4/15/16*
Plan End Date	*4/15/19*
Planner Signature	Marjorie Howren

Narrative

1. Site Description and Supporting Information

This nutrient management plan has been prepared by Timmons Group, on behalf of the City of Winchester. Friendship Park is located on North Pleasant Valley Road in Winchester, Virginia, within a residential development north of Bruce Street and south of Green Street (see Figure 1: Vicinity Map). The park has one soccer field and is relatively flat with gentle slopes on the northern and eastern sides of the soccer field. No wetlands were found to be present within the site limits during the March 24, 2016 site visit and no wetlands or streams were depicted within the site limits as shown on Figure 2: Environmental Inventory Map. There were no wells, subsurface tile drains, springs, sinkholes, rock outcrops, land with slopes steeper than 15%, or qualifying soil types observed onsite and therefore, no environmentally sensitive areas were identified onsite. However, it was noted that a stream channel flows northeast through the southern portion of the park into a wetland system located east of the soccer field. Special attention should be paid to this area when applying fertilizer to avoid product being broadcast onto the surrounding slope where nutrients could runoff.

Using aerial photography and through discussions with City of Winchester staff, a 1.2-acre area (52,822 sq ft) was identified as managed turf where fertilizer is applied. Managed turf on the soccer field (Friendship Field) is comprised of a cool season grass mixture.

This plan is effective for three years (until April 15, 2019) or until significant changes to maintenance practices occur. Should the City of Winchester decide to fertilize any locations within Friendship Park outside of this managed area, this nutrient management plan should be updated with recommendations for the additional area(s). Other significant changes would include: changing turf species in the athletic field, renovating the athletic field and the existing underlying soil, creation of an additional athletic field, expansion of the area to be included under this nutrient management plan, or other changes that could alter nutrient recommendations and timing.

One management area was determined for Friendship Park. Management Area 1 (Friendship Field) is shown on Figure 3: Nutrient Management Areas Map. Based on the City of Winchester, Virginia average first killing frost date of October 15th (Fall), the average last killing frost date of April 15th (Spring), and the cool season turf identified onsite, fertilizer applications on this management area should occur within the cool season application period of March 4th to December 26th. Nutrient application instructions are identified in the nutrient management worksheet of this plan.

Applications of inorganic fertilizers should not occur on frozen or snow-covered ground. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass-covered areas. Do not use fertilizers as ice melt. Nutrient applications should not be completed when significant runoff producing events are anticipated.

Every fertilizer application should be recorded in the record sheet provided. Any questions or concerns with fertilizer products or record keeping should be brought to the plan writer's attention.

Nutrient Management Worksheet

Property:	Friendship Park								
Prepared:	4/15/16						Species:	Cool Season	
Expires:	4/15/16								

Management Area	Application Month/Day	# of Apps	Application Interval	Fertilizer Product	% Slow Release N	NPK Value of Fertilizer Product	Total NPK lbs/1,000 square feet	Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate	Total Required lbs per area
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O		
Management Area 1: Friendship Field acreage = approximately 1.2	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**87**
	6/1 - 6/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**87**
	8/15 - 8/31	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**87**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	25%	28 - 10 - 4	0.90 - 0.32 - 0.13	3.2	**168**
						*Recommended Total Annual NPK Application	4.2 - 0.96 - 0.89		

Notes

The annual application of total nitrogen **should not exceed 4.5 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.

Comments

* Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass *

To reduce soil pH apply **2.5 pounds of elemental sulfur per 1000 sq ft.** Soil tests can be conducted annually to determine if additional sulfur or lime is needed to maintain the soil pH during years 2 and 3 of this nutrient management plan implementation.

Note: Do not apply more than 5 lbs per 1000 sq ft per application of elemental sulfur or more than 10 lbs of elemental sulfur per 1000 sq ft annually. Timing between applications should be minimum of 3 months. Warm temperature and moist soil are needed for sulfur to reduce soil pH.

Soil Test Summary

Customer Name:	City of Winchester - Friendship Park
Testing Lab:	Waypoint Analytical
Sample Date:	March 24, 2016
Planner Name	Marjorie Howren, Timmons Group
Certification Number	#844

Managed Area ID	AREA (sq ft)	Soil pH	Buffer pH	Lab Test P (ppm)	VT (H/M/L)	Lab Test K (ppm)	VT (H/M/L)	Species
Friendship Field	52,822	7.3	-	14	M	112	H	Tall Fescue/Kentucky Bluegrass mixture

Notes: H = High, M = Medium, and L = Low

Soil Test Reports

Soil samples were taken from the managed turfgrass at the soccer field at Friendship Park on March 24, 2016. Soil samples were analyzed by Waypoint Analytical (formerly A&L Eastern Laboratories). Standard soil test results provide values for pH, phosphorus, calcium, magnesium, potassium, cation exchange capacity, and organic matter. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the park, whichever occurs sooner.

A. Management Area 1 - 1.2 acres (Friendship Field)

The phosphorus level was Medium (M) for the athletic field. Applications of phosphorus are recommended, not to exceed 1.0 lb/1,000 sq ft annually. See additional notes on the nutrient application worksheet. The potassium level was High (H) for the athletic field. Applications of potassium are recommended, approximately 1.0 lb/1,000 sq ft annually. This potassium recommendation exceeds that derived from the soil analysis. However, potassium is not an environmentally regulated nutrient and application of surplus potassium will only increase strength and vigor of turfgrass roots. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximum nitrogen application rate for cool season grasses on intensively managed athletic fields is 4.5 lbs/1,000 sq ft (See the Nutrient Management Worksheet for additional detail).

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.

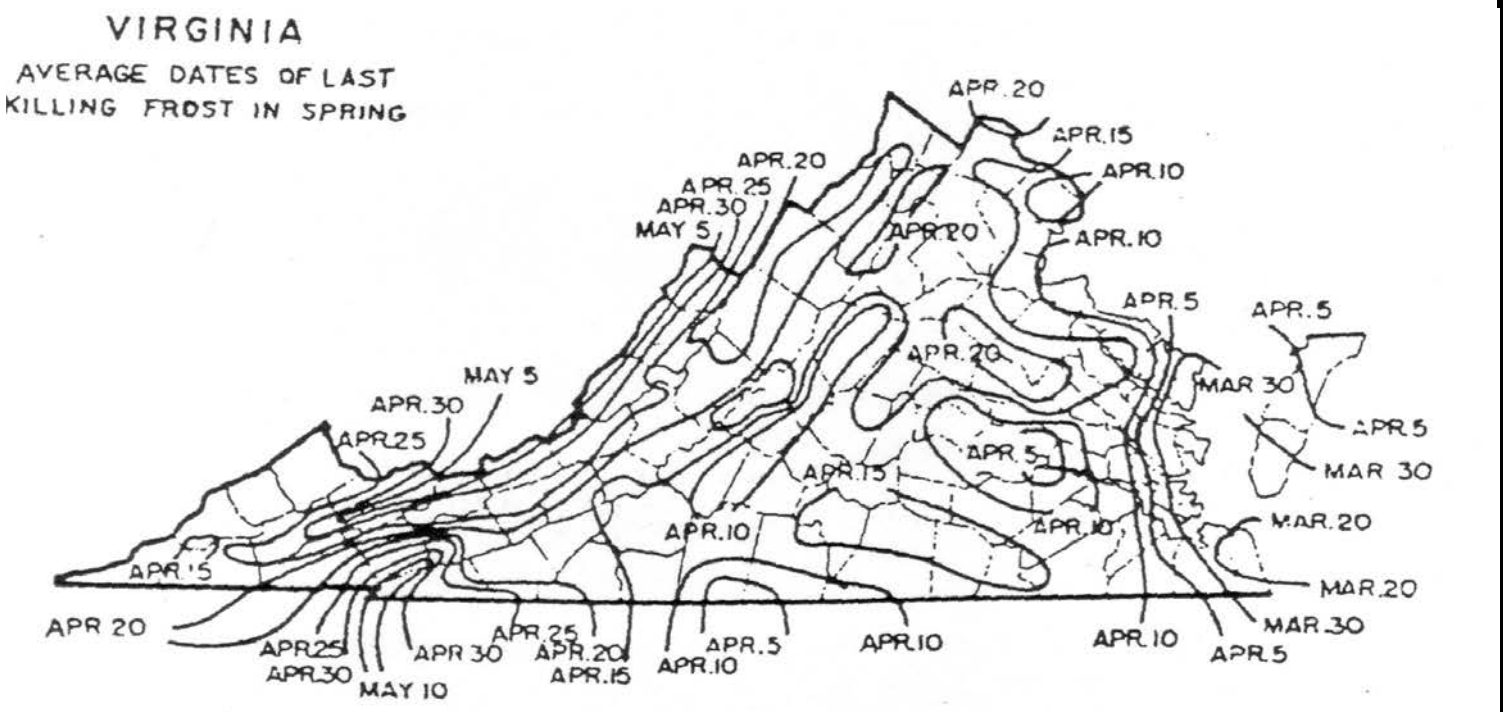
"Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such 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.

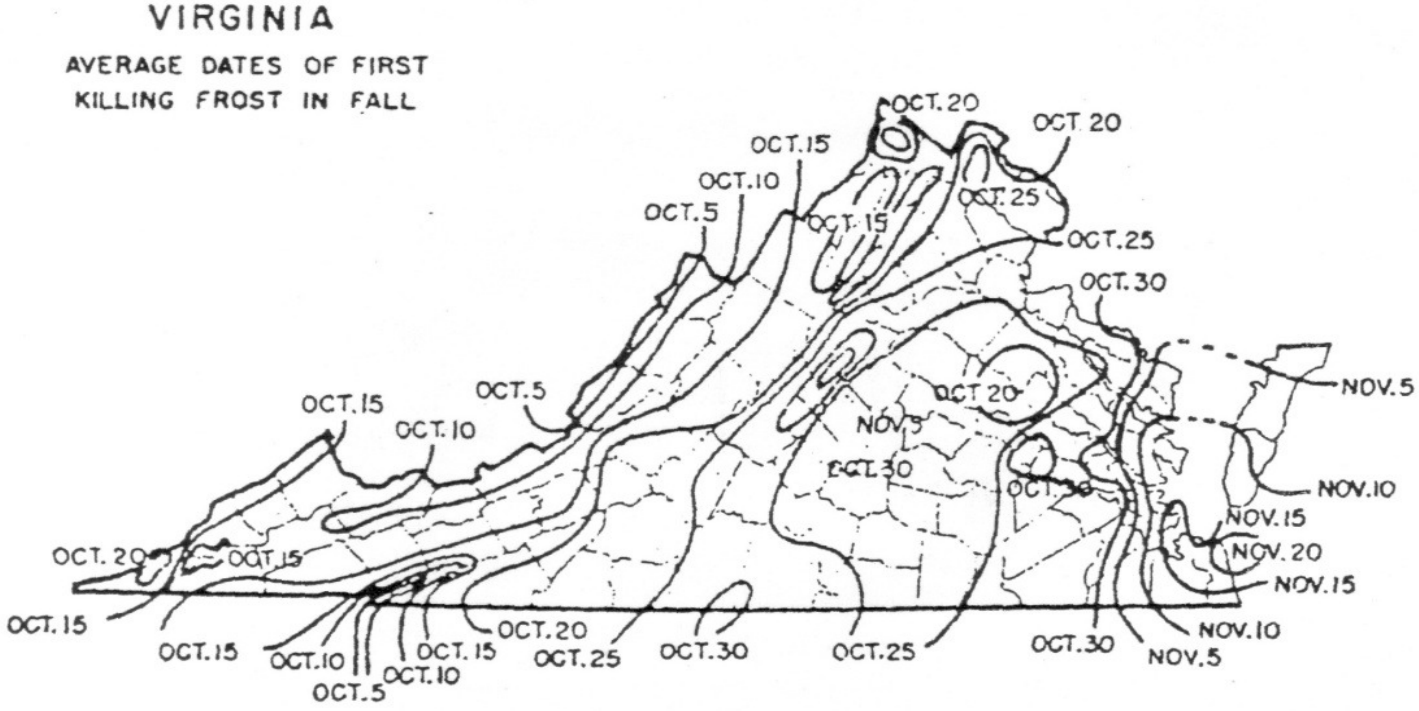
"Water soluble nitrogen", "WSN" and "readily available nitrogen" means: Water soluble nitrogen in either ammonical, urea, or nitrate form that does not have a controlled release, or slow response.

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 on next sheet). 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 on next sheet).


VIRGINIA
AVERAGE DATES OF LAST
KILLING FROST IN SPRING
APR.20
APR.15
APR.10
APR.20
APR.25
APR.30
MAY 5
APR.20
APR.10
APR.5
APR.5
APR.20
MAR 30
MAY 5
APR.30
APR.25
APR.5
MAR 30
APR.15
APR.10
APR.10
MAR.20
APR.15
MAR.20
APR 20
APR.25
APR 30
MAY 10
APR.25
APR.20
APR.15
APR.5
APR.10
APR.10
APR.5
MAR.30


VIRGINIA
AVERAGE DATES OF FIRST
KILLING FROST IN FALL
OCT.20
OCT.20
OCT.15
OCT.10
OCT.25
OCT.5
OCT.15
OCT.25
OCT.30
NOV.5
OCT.15
OCT.5
OCT.10
OCT.20
NOV.5
OCT.30
OCT.30
NOV.10
NOV.15
OCT.20
OCT.15
NOV.20
NOV.15
OCT.15
OCT.20
NOV.10
OCT.15
OCT.10
OCT.15
OCT.25
OCT.30
OCT.25
OCT.30
NOV.5
OCT.10
OCT.5

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 utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

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 (lbs /1000 $ft^{2)}$ *	
	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 (lbs /1000 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.

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.

Notes

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

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

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**	**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)]	

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

Reference Materials and Notes

Virginia Nutrient Management Standards and Criteria, Revised July 2014, Department of Conservation and Recreation, Division of Soil and Water Conservation

ESRI Aerial Photography

2016 Geospatial Data provided by Frederick County for floodplains, wetlands, and parcel boundaries

Fertilizer Application Records

Customer Information		Management Area Information	
Name:	City of Winchester - Friendship Park	Management Area ID:	Friendship Field
Address:	623 North Pleasant Valley Road	Management Area Size:	52,822 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Soccer field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

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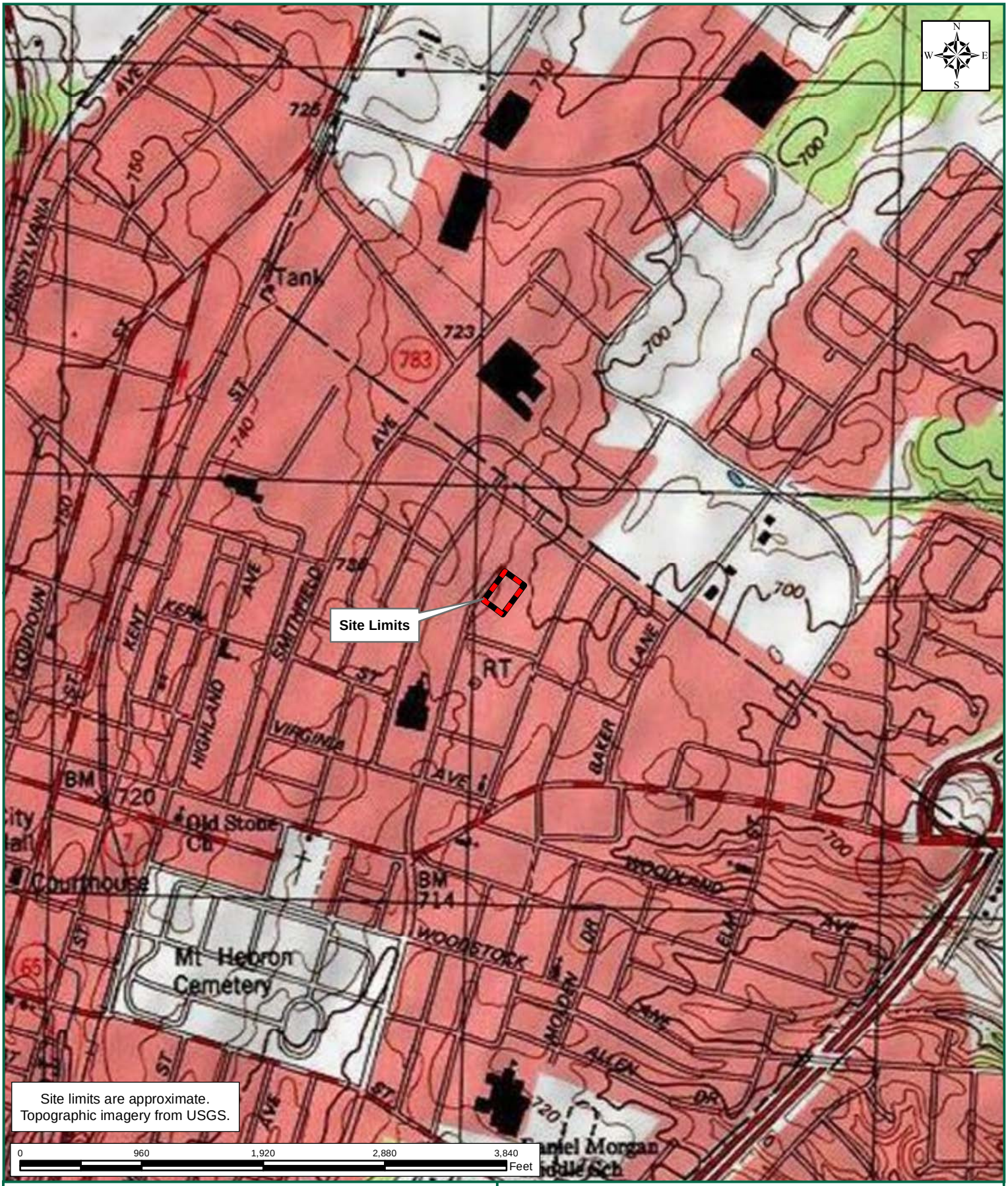

WINCHESTER NUTRIENT MANAGEMENT PLANS - FRIENDSHIP PARK
CITY OF WINCHESTER, VIRGINIA
FIGURE 1: VICINITY MAP

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP JOB NUMBER: *36284.007*
PROJECT STUDY LIMITS: *1.2 ACRES*
LATITUDE: *39° 11' 26.4" N*
LONGITUDE: *78° 09' 02.6" W*

U.S.G.S. QUADRANGLE(S): *WINCHESTER*
DATE(S): *2013*
WATERSHED(S): *CONOCOCHEAGUE-OPEQUON*
HYDROLOGIC UNIT CODE(S): *02070004*

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CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1648 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS

Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/11/2016

DRAWN BY B. NORRIS

DESIGNED BY B. NORRIS

CHECKED BY E. VIRTS

SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - FRIENDSHIP PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 2: ENVIRONMENTAL INVENTORY MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

Friendship Field

Legend

Project Study Limits - 1.2 Acres

Management Area 1 - 1.2 Acres

0 50 100 200 Feet

Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors

Path: Y:\804\36284.007-Winchester_NMPs\GIS\Common Shared Exhibits\Friendship Park\NMA.mxd

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Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/30/2016

DRAWN BY B. NORRIS

DESIGNED BY B. NORRIS

CHECKED BY E. VIRTS

SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - FRIENDSHIP PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 3: NUTRIENT MANAGEMENT AREAS MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

Nutrient Management Plan

Harvest Ridge Park

Prepared For:

City of Winchester
Rouss City Hall, 15 N. Cameron Street
Winchester, Virginia 22601
540-667-1815

Prepared By:

Marjorie Howren, Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
804-200-6370

Certification Code: #844

Total Athletic Field Acreage: 1.0

The purpose of this Nutrient Management Plan is to ensure minimum movement of nitrogen and phosphorus from the specified area of application to surface and groundwaters where they can potentially have a detrimental effect on water quality as well as ensuring that plants have optimum soil nutrient availability for good productivity and quailty. By following this soil test based plan you are helping to protect local waters and the Chesapeake Bay.

If you have questions, please contact your plan writer, local Virginia Cooperative Extension Agent or the Department of Conservation and Recreation Nutrient Mangement Program.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Nutrient Management Plan for:
Harvest Ridge Park

Landowner Information	
Site Name	*Harvest Ridge Park*
Customer Name	*City of Winchester*
Mailing Address	*Rouss City Hall, 15 N. Cameron Street*
City State Zip	*Winchester, Virginia 22601*
Phone	*540-667-1815*

Planners Information	
Planner Name	*Marjorie Howren, Timmons Group*
Mailing Address	*1001 Boulders Parkway, Suite 300*
City State Zip	*Richmond, VA 23225*
Phone	*804-200-6370*
Fax	*804-560-1016*
Email	*marjorie.howren@timmons.com*
Certification Code	*#844*

Location Information	
Physical Address	*805 Crestview Terrace*
City State Zip	*Winchester, Virginia 22601*
Coordinates	*39 ° 09' 32.5" N*
	78 ° 11' 33.1" W
VAHU6 Watershed Code	*PU17 Abrams Creek*

Acreage	
Harvest Ridge Field	*43,560 sq ft (1.0 acres)*

Plan Start Date	*4/15/16*
Plan End Date	*4/15/19*
Planner Signature	

Narrative

1. Site Description and Supporting Information

This nutrient management plan has been prepared by Timmons Group, on behalf of the City of Winchester. Harvest Ridge Park is located on Crestview Terrace in Winchester, Virginia, within a residential development between Stoneridge Road and Windwood Drive (see Figure 1: Vicinity Map). The park has one soccer field and is relatively flat except for a small area with steeper slopes of less than 15% along the southwest park border. No wetlands were found to be present within the nutrient management area (Area) during the March 24, 2016 site visit and no wetlands or streams were depicted within the site limits as shown on Figure 2: Environmental Inventory Map. There were no wells, subsurface tile drains, springs, sinkholes, rock outcrops, land with slopes steeper than 15%, or qualifying soil types observed within the Area and therefore, no environmentally sensitive areas were identified.

Using aerial photography and through discussions with City of Winchester staff, a 1.0-acre area (43,560 sq ft) was identified as turf where fertilizer could be applied, although this field has never been fertilized in the past. The turf on the soccer field (Harvest Ridge Field) at Harvest Ridge Park is comprised of a cool season grass.

This plan is effective for three years (until April 15, 2019) or until significant changes to maintenance practices occur. Should the City of Winchester decide to fertilize any locations within Harvest Ridge Park outside of these managed areas, this nutrient management plan should be updated with recommendations for the additional area(s). Other significant changes would include: changing turf species in the athletic fields, renovating an athletic field and the existing underlying soil, creation of an additional athletic field, expansion of the area to be included under this nutrient management plan, or other changes that could alter nutrient recommendations and timing.

One management area was determined for Harvest Ridge Park. Management Area 1 (Harvest Ridge Field) is shown on Figure 3: Nutrient Management Areas Map. Based on the City of Winchester, Virginia average first killing frost date of October 15th (Fall), the average last killing frost date of April 15th (Spring), and the cool season turf identified onsite, fertilizer applications on this management area should occur within the cool season application period of March 4th to December 26th. Nutrient application instructions are identified in the nutrient management worksheet of this plan.

Applications of inorganic fertilizers should not occur on frozen or snow-covered ground. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass-covered areas. Do not use fertilizers as ice melt. Nutrient applications should not be completed when significant runoff producing events are anticipated.

Every fertilizer application should be recorded in the record sheet provided. Any questions or concerns with fertilizer products or record keeping should be brought to the plan writer's attention.

Nutrient Management Worksheet

Property:	Harvest Ridge Park								
Prepared:	4/15/16						Species:	Cool Season	
Expires:	4/15/19								
Management Area	**Application Month/Day**	**# of Apps**	**Application Interval**	**Fertilizer Product**	**% Slow Release N**	**NPK Value of Fertilizer Product**	**Total NPK lbs/1,000 square feet**	**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs per area**
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O		
Management Area 1: Harvest Ridge Field acreage = approximately 1.0	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**73**
	6/1 - 6/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**73**
	8/15 - 8/31	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**73**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	25%	28 - 10 - 4	0.90 - 0.32 - 0.13	3.2	**140**
	*Recommended Total Annual NPK Application						4.2 - 0.96 - 0.89		
Notes	The annual application of total nitrogen **should not exceed 4.5 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.								
Lime/Sulfur Recommendations	* Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass * Use recommended sulfur coated urea fertilizer to reduce pH.								

Soil Test Summary

Customer Name:	City of Winchester - Harvest Ridge Park
Testing Lab:	Waypoint Analytical
Sample Date:	March 24, 2016
Planner Name	Marjorie Howren, Timmons Group
Certification Number	#844

Managed Area ID	AREA (sq ft)	Soil pH	Buffer pH	Lab Test P (ppm)	VT (H/M/L)	Lab Test K (ppm)	VT (H/M/L)	Species
Harvest Ridge Field	43,560	7.1	-	21	H-	147	VH	Tall Fescue

Notes: VH = Very High, H = High, M = Medium, and L = Low

Soil Test Reports

Soil samples were taken from the turfgrass at the athletic field at Harvest Ridge Park on March 24, 2016. Soil samples were analyzed by Waypoint Analytical (formerly A&L Eastern Laboratories). Standard soil test results provide values for pH, phosphorus, calcium, magnesium, potassium, cation exchange capacity, and organic matter. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the park, whichever occurs sooner.

A. Management Area 1 - 1.0 acre (Harvest Ridge Field)

The phosphorus level was High- (H-) for the athletic field. Applications of phosphorus are recommended, not to exceed 1.0 lb/1,000 sq ft annually. See additional notes on the nutrient application worksheet. The potassium level was Very High (VH) for the athletic field. Applications of potassium are recommended, at approximately 1.0 lb/1,000 sq ft annually. This potassium recommendation exceeds that derived from the soil analysis. However, potassium is not an environmentally regulated nutrient and application of surplus potassium will only increase strength and vigor of turfgrass roots. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximun nitrogen application rate for cool season grasses on intensively managed athletic fields is 4.5 lbs/1,000 sq ft (see the Nutrient Management Worksheet for additional detail).

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.

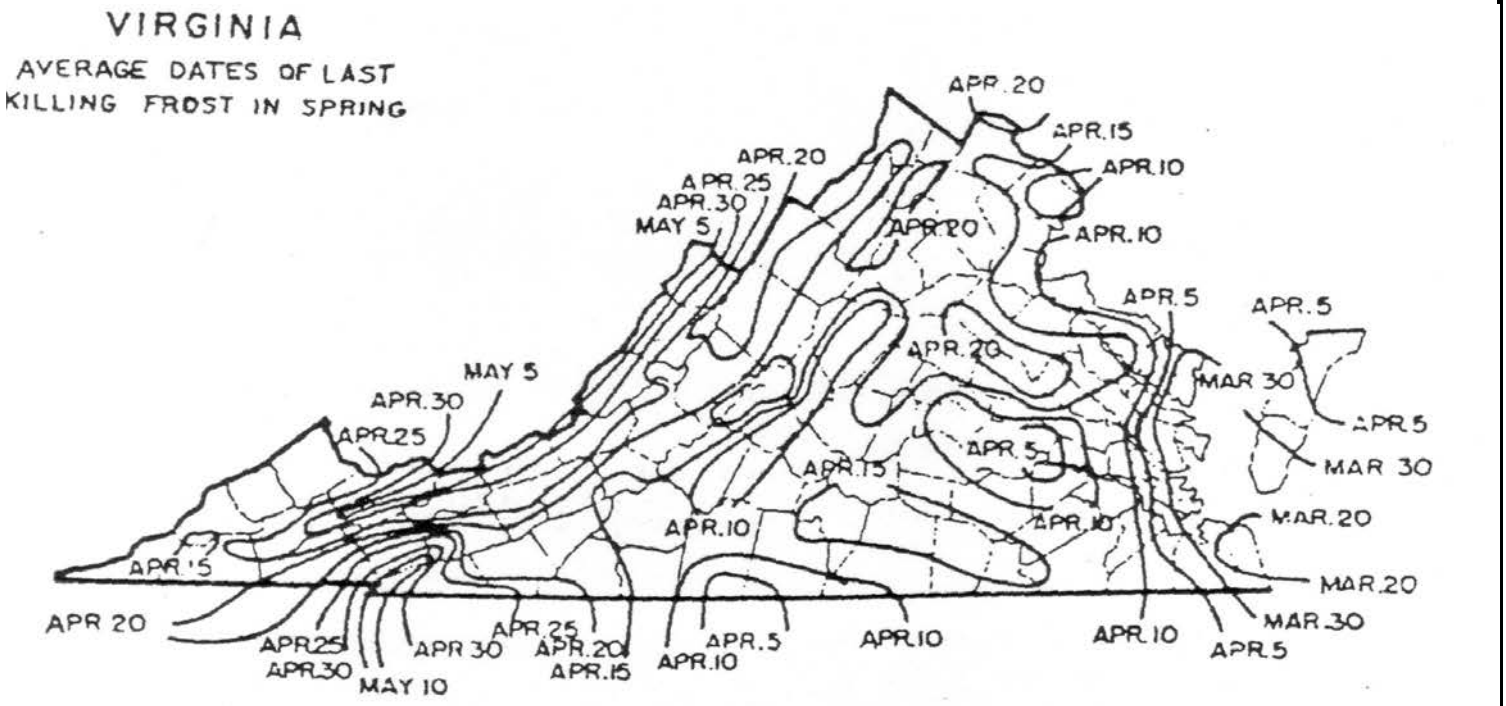
"Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such 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" and "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 on next sheet). 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 on next sheet).


VIRGINIA
AVERAGE DATES OF LAST
KILLING FROST IN SPRING
APR.20
APR.15
APR.10
APR.20
APR.25
APR.30
MAY 5
APR.20
APR.10
APR.5
APR.5
APR.20
MAR 30
MAY 5
APR.30
APR.25
APR.5
MAR 30
APR.15
APR.10
APR.10
MAR.20
APR.15
MAR.20
APR 20
APR.25
APR.30
APR 30
APR.25
APR.20
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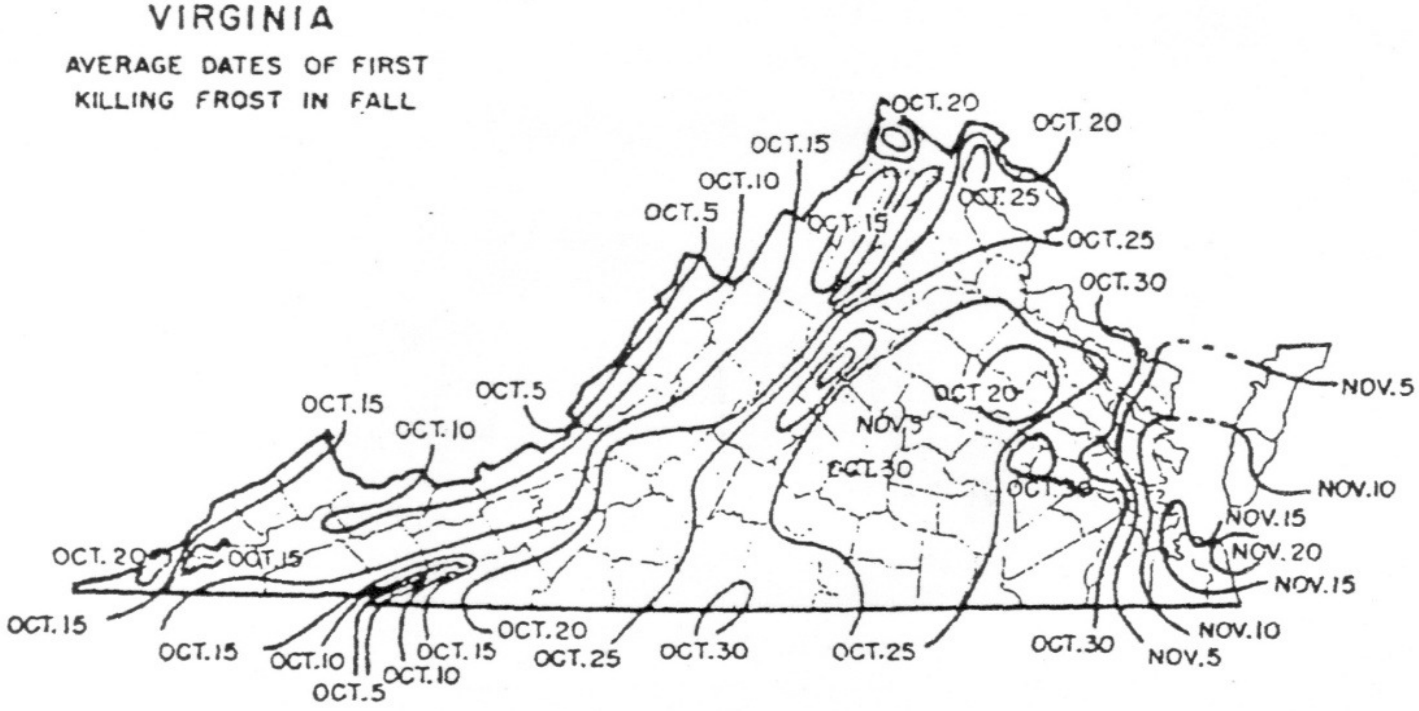
MAY 10
APR.10
APR.5
APR.10
APR.10
MAR.30
APR.5


VIRGINIA
AVERAGE DATES OF FIRST
KILLING FROST IN FALL
OCT.20
OCT.20
OCT.15
OCT.10
OCT.25
OCT.5
OCT.15
OCT.25
OCT.30
NOV.5
OCT.15
OCT.5
OCT.10
OCT.20
NOV.5
OCT.30
OCT.30
NOV.10
NOV.15
OCT.20
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NOV.20
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OCT.20
NOV.10
OCT.15
OCT.10
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OCT.25
OCT.30
OCT.25
OCT.30
NOV.5
OCT.10
OCT.5
OCT.10

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 utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

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 (lbs /1000 $ft^{2)}$ *	
	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 (lbs /1000 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.

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.

Notes

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

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

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**	**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)]	

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

Reference Materials and Notes

Virginia Nutrient Management Standards and Criteria, Revised July 2014, Department of Conservation and Recreation, Division of Soil and Water Conservation

ESRI Aerial Photography

2016 Geospatial Data provided by Frederick County for floodplains, wetlands, and parcel boundaries

Fertilizer Application Records

Customer Information		Management Area Information	
Name:	City of Winchester - Harvest Ridge Park	Management Area ID:	Harvest Ridge Field
Address:	805 Crestview Terrace	Management Area Size:	43,560 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue
		Notes:	Multi-purpose athletic field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

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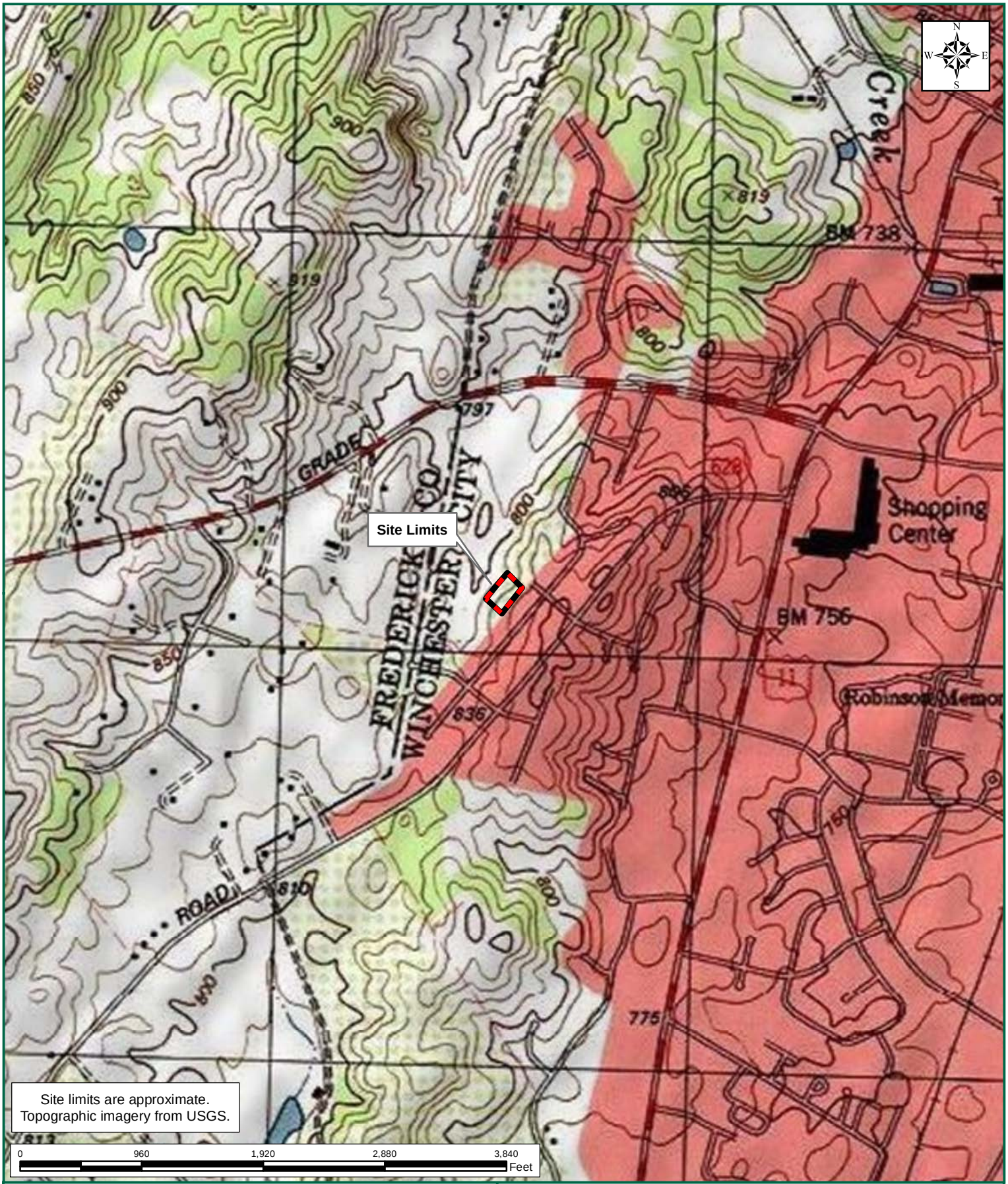

WINCHESTER NUTRIENT MANAGEMENT PLANS - HARVEST RIDGE PARK
CITY OF WINCHESTER, VIRGINIA
FIGURE 1: VICINITY MAP

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP JOB NUMBER: *36284.007*
PROJECT STUDY LIMITS: *1.0 ACRES*
LATITUDE: *39° 09' 32.5" N*
LONGITUDE: *78° 11' 33.1" W*

U.S.G.S. QUADRANGLE(S): *WINCHESTER*
DATE(S): *2013*
WATERSHED(S): *CONOCOCHEAGUE-OPEQUON*
HYDROLOGIC UNIT CODE(S): *02070004*

Harvest Ridge
Stoneridge Rd
2601
999
Crestview Ter
Goldenfield Ln
Windwood Dr
2301
883
Crestview Ter
Windwood Dr
799
2601
Crestview Ter
Middle Rd
695
Stoneridge Rd
Windwood Dr
Middle Rd
2601

N
W E
S

Legend

- Project Study Limits - 1.0 Acres
- NHD Streams
- National Wetland Inventory

0 50 100 200 Feet

Project Limits are approximate.
NWI from US Fish and Wildlife Service.
National Hydrography Dataset from USGS.
Aerial imagery from ESRI online.

Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors

Path: Y:\804\36284.007-Winchester_NMPs\GIS\Common Shared Exhibits\Harvest Ridge Park\EIM.mxd

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1648 www.timmons.com

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Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/10/2016
DRAWN BY B. NORRIS
DESIGNED BY B. NORRIS
CHECKED BY E. VIRTS
SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - HARVEST RIDGE PARK
CITY OF WINCHESTER, VIRGINIA

FIGURE 2: ENVIRONMENTAL INVENTORY MAP

JOB NUMBER 36284.007
SHEET NO. 1 OF 1

Path: Y:\804\36284.007-Winchester_NMPs\GIS\Common Shared Exhibits\Harvest Ridge Park\NMA.mxd

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Site Development | Residential | Infrastructure | Technology | Environmental

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TEL 804.200.6500 FAX 804.560.1648 www.timmons.com

DATE	REVISION DESCRIPTION

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CHECKED BY E. VIRTS

SCALE 1" = 100'

WINCHESTER NUTRIENT MANAGEMENT PLANS - HARVEST RIDGE PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 3: NUTRIENT MANAGEMENT AREAS MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

Nutrient Management Plan

Jim Barnett Park

Prepared For:

City of Winchester
Rouss City Hall, 15 N. Cameron Street
Winchester, Virginia 22601
540-667-1815

Prepared By:

Marjorie Howren, Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
804-200-6370

Certification Code: #844

Total Athletic Field Acreage: 13.1

The purpose of this Nutrient Management Plan is to ensure minimum movement of nitrogen and phosphorus from the specified area of application to surface and groundwaters where they can potentially have a detrimental effect on water quality as well as ensuring that plants have optimum soil nutrient availability for good productivity and quailty. By following this soil test based plan you are helping to protect local waters and the Chesapeake Bay.

If you have questions, please contact your plan writer, local Virginia Cooperative Extension Agent or the Department of Conservation and Recreation Nutrient Mangement Program.

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Jim Barnett Park

Landowner Information	
Site Name	*Jim Barnett Park*
Customer Name	*City of Winchester*
Mailing Address	*Rouss City Hall, 15 N. Cameron Street*
City State Zip	*Winchester, Virginia 22601*
Phone	*540-667-1815*

Planners Information	
Planner Name	*Marjorie Howren, Timmons Group*
Mailing Address	*1001 Boulders Parkway, Suite 300*
City State Zip	*Richmond, VA 23225*
Phone	*804-200-6370*
Fax	*804-560-1016*
Email	marjorie.howren@timmons.com
Certification Code	*#844*

Location Information	
Physical Address	*1001 East Cork Street*
City State Zip	*Winchester, Virginia 22601*
Coordinates	*39°10' 27.9" N*
	78°09' 06.2" W
VAHU6 Watershed Code	*PU17 Abrams Creek*

Acreage	
Total	*13.1 acres*
Bridgeforth - 103,215 sq ft (2.37 acres)	Preston - 124,045 sq ft (2.85 acres)
Henkel Harris - 48,948 sq ft (1.12 acres)	Rotary - 41,626 sq ft (0.96 acres)
Yost Infield - 15,681 sq ft (0.36 acres)	T-Ball - 15,552 sq ft (0.36 acres)
Yost Outfield - 25,954 sq ft (0.60 acres)	Eagles - 77,977 sq ft (1.79 acres)
Bodie Grim - 115,380 sq ft (2.65 acres)	

Plan Start Date	*4/15/16*
Plan End Date	*4/15/19*
Planner Signature	Marjorie Howren

Narrative

1. Site Description and Supporting Information

This nutrient management plan has been prepared by Timmons Group, on behalf of the City of Winchester. Jim Barnett Park is located on East Cork Street in Winchester, Virginia, east of South Pleasant Valley Road and west of Interstate I-81 (see Figure 1: Vicinity Map). The park has eight athletic fields for softball, baseball, and multi-purpose uses such as soccer and football. The site is relatively flat with a few areas gently sloping towards the central portion of the park. No wetlands were found to be present within the site limits during the March 24, 2016 site visit and no wetlands or streams were depicted within the site limits as shown on Figure 2: Environmental Inventory Map. There were no wells, subsurface tile drains, springs, sinkholes, rock outcrops, land with slopes steeper than 15%, or qualifying soil types observed onsite. Therefore, no environmentally sensitive areas were identified onsite. However, it was noted that a stream channel runs behind the northeast side of Eagles Field and therefore, special attention should be paid to this area when applying fertilizer to avoid product being broadcast onto the surrounding slope where nutrients could runoff.

Using aerial photography and through discussions with City of Winchester staff, a 13.1-acre area (568,378 sq ft) was identified as managed turf where fertilizer is applied. Managed turf on Bridgeforth Field, Preston Multi-Purpose Field, Henkel Harris Field, T-Ball Field, Eagles Field, and the infield of Yost Field is comprised of cool season grasses. Managed turf on Bodie Grim Field, Rotary Field, and the outfield of Yost Field is comprised of a warm season grass.

This plan is effective for three years (until April 15, 2019) or until significant changes to maintenance practices occur. Should the City of Winchester decide to fertilize any locations within Jim Barnett Park outside of these managed areas, this nutrient management plan should be updated with recommendations for the additional area(s). Other significant changes would include: changing turf species in the athletic fields, renovating an athletic field and the existing underlying soil, creation of an additional athletic field, expansion of the area to be included under this nutrient management plan, or other changes that could alter nutrient recommendations and timing.

Three management areas were determined for Jim Barnett Park. Management Area 1 (Bridgeforth, Yost Infield, Preston Multi-purpose, Henkel Harris, T-Ball, and Eagles fields), Management Area 2 (Bodie Grim and Rotary fields), and Management Area 3 (Yost Outfield) are shown on Figure 3: Nutrient Management Areas Map. Based on the City of Winchester, Virginia average first killing frost date of October 15th (Fall), the average last killing frost date of April 15th (Spring), and the cool season turf identified in Management Area 1, fertilizer applications on this management area should occur within the Cool Season Application Period of March 4th to December 26th. Based on those same killing frost dates and the warm season turf identified in Management Area 2 and Management Area 3, fertilizer applications on these management areas should occur within the warm season application period of April 15th to September 15th. Nutrient application instructions are identified in the nutrient management worksheet of this plan.

Applications of inorganic fertilizers should not occur on frozen or snow-covered ground. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass-covered areas. Do not use fertilizers as ice melt. Nutrient applications should not be completed when significant runoff producing events are anticipated.

Every fertilizer application should be recorded in the record sheet provided. Any questions or concerns with fertilizer products or record keeping should be brought to the plan writer's attention.

Nutrient Management Worksheet

Property:	**Jim Barnett Park (Bridgeforth, Yost Infield, Preston, Henkel Harris, T-Ball, and Eagles fields)**									
Prepared:	**4/15/16**						**Species:**	**Cool Season**		
Expires:	**4/15/19**									
Management Area	**Application Month/Day**	**# of Apps**	**Application Interval**	**Fertilizer Product**	**% Slow Release N**	**NPK Value of Fertilizer Product**	**Total NPK lbs/1,000 square feet**		**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs of fertilizer product in Management Area 1**
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O			
Management Area 1: Bridgeforth, Yost Infield, Preston, Henkel Harris, T-Ball, and Eagles fields acreage = approximately 8.85	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17		1.67	**644**
	6/1 - 6/15	1		SCU (30-0-10)	50%	30 - 0 - 10	0.50 - 0.00 - 0.17		1.67	**644**
	8/15 - 8/31	1		SCU (30-0-10)	50%	30 - 0 - 10	0.50 - 0.00 - 0.17		1.67	**644**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	50%	28 - 10 - 4	0.90 - 0.32 - 0.13		3.21	**1237**
						*Recommended Total Annual NPK Application	4.2 - 0.96 - 0.89			

Notes	*** See total required lbs per area for Management Area 1 broken down by individual field on Page 6: Individual Field Application Worksheet *** The annual application of total nitrogen **should not exceed 4.5 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.
Lime/Sulfur Recommendations	*Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass * Note: Do not apply more than 5 lbs per 1000 sq ft per application or more than 10 lbs of elemental sulfur per 1000 sq ft per year. Timing between applications should be minimum of 3 months. Warm temperature and moist soil are needed for sulfur to reduce soil pH. Preston: To reduce soil pH apply **2.5 pounds of elemental sulfur per 1000 sq ft**. Soil tests can be conducted annually to determine if additional sulfur or lime is needed to maintain the soil pH during years 2 and 3 of this nutrient management plan implementation. Yost Infield: To reduce soil pH apply **15 pounds of elemental sulfur per 1000 sq ft**. Soil tests can be conducted annually to determine if additional sulfur or lime is needed to maintain the soil pH during years 2 and 3 of this nutrient management plan implementation. Henkel Harris: Use recommended sulfur coated urea fertilizer to reduce pH. Eagles and T-Ball fields require no lime or sulfur at this time.

Nutrient Management Worksheet

Property:	**Jim Barnett Park (Bodie Grim, Rotary, and Yost Outfield)**								
Prepared:	**4/15/16**						**Species:**	**Warm Season**	
Expires:	**4/15/19**								
Management Area	**Application Month/Day**	**# of Apps**	**Application Interval**	**Fertilizer Product**	**% Slow Release N**	**NPK Value of Fertilizer Product**	**Total NPK lbs/1,000 square feet**	**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs of fertilizer product in Management Area 1**
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O		
Management Area 2: Bodie Grim and Rotary Fields square footage = approximately 3.6	4/15 - 5/15	2	> 15 days	SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.67	**263**
	6/1-6/30	1		costum blend SCU (28-10-4)	25%	28 - 10 - 4	0.50 - 0.18 - 0.07	1.79	**281**
	7/1-8/31	2	> 30 days	costum blend SCU (28-10-4)	25%	28 - 10 - 4	1.00 - 0.36 - 0.14	3.57	**560**
	*Recommended Total Annual NPK Application						3.5 - 0.89 - 0.69		
Management Area 3: Yost Outfield square footage = approximately 0.6	4/15 - 5/15	2	> 15 days	SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.67	**44**
	6/1-6/30	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.67	**44**
	7/1-8/31	2	> 30 days	SCU (30-0-10)	25%	30 - 0 - 10	1.00 - 0.00 - 0.33	3.33	**87**
	*Recommended Total Annual NPK Application						3.5 - 0.00 - 1.17		

Notes	*** See total required lbs per area for Management Area 2 broken down by individual field on Page 6: Individual Field Application Worksheet *** The annual application of total nitrogen **should not exceed 4.0 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.
Lime/Sulfur Recommendations	* Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass * Note: Do not apply more than 5 lbs of elemental suflur per 1000 sq ft per application or more than 10 lbs of elemental sulfur per 1000 sq ft per year. Timing between applications should be minimum of 3 months. Warm temperature and moist soil are needed for sulfur to reduce soil pH. Rotary:To reduce soil pH apply **2.5 pounds of elemental sulfur** per 1000 sq ft. Soil tests can be conducted annually to determine if additional sulfur or lime is needed to maintain the soil pH during years 2 and 3 of this nutrient management plan implementation. Yost Outfield: Use recommended sulfur coated urea fertilizer to reduce pH. Bodie Grim: Use recommended sulfur coated urea fertilizer to reduce pH.

Individual Field Application Worksheet

Property: Jim Barnett Park, Cool Season Turf			Application Dates of 4/15 - 8/31 (total of 3 applications)			Application Dates of 9/15 - 11/30 (total of 3 applications)	
Management Area	**Field**	**Acreage**	**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Per Application Rate**	**Total Required lbs of Fertilizer Product Required Per Application**		**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs of Fertilizer Product Required Per Application**
Management Area 1:	Bridgeforth	2.37	1.67	**172**		**3.21**	**331**
	Yost Infield	0.36	1.67	**26**		**3.21**	**50**
	Preston	2.85	1.67	**207**		**3.21**	**399**
	Henkel Harris	1.12	1.67	**81**		**3.21**	**157**
	T-Ball	0.36	1.67	**26**		**3.21**	**50**
	Eagles	1.79	1.67	**130**		**3.21**	**250**
Total required lbs of fertilizer product per application in Management Area 1:				644			1,237
Notes:	***See Nutrient Management Worksheet for Management Area 1 for fertilizer type and grade.**						

Property: Jim Barnett Park, Warm Season Turf			Application Dates of 4/15-5/15 (total of 2 applications)			Application Dates of 6/1-6/30 (total of 1 application)			Application Dates of 7/1-8/31 (total of 2 applications)	
Management Area	**Field**	**Acreage**	**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Per Application Rate**	**Total Required lbs of Fertilizer Product Required Per Application**		**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs of Fertilizer Product Required Per Application**		**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs of Fertilizer Product Required Per Application**
Management Area 2:	Bodie Grim	2.65	1.67	**193**		1.79	**207**		3.57	**411**
	Rotary	0.96	1.67	**70**		1.79	**75**		3.57	**149**
Total required lbs of fertilizer product per application in Management Area 2:				263			281			560
Notes:	***See Nutrient Management Worksheet for Management Area 2 for fertilizer type and grade.**									

Soil Test Summary

Customer Name:	City of Winchester - Jim Barnett Park
Testing Lab:	Waypoint Analytical
Sample Date:	March 24, 2016
Planner Name	Marjorie Howren, Timmons Group
Certification Number	#844

Managed Area ID	AREA (sq ft)	Soil pH	Buffer pH	Lab Test P (ppm)	VT (H/M/L)	Lab Test K (ppm)	VT (H/M/L)	Species
Bridgeforth Field	103,215	7.0	-	25	H-	89	H-	Tall Fescue/Kentucky Bluegrass mixture
Rotary Field	41,626	7.1	-	26	H-	88	H-	Bermudagrass
Yost Field - Infield	15,681	7.8	-	34	H	65	M	Tall Fescue/Kentucky Bluegrass mixture
Yost Field -Outfield	25,954	7.4	-	61	VH	102	H-	Bermudagrass
Bodie Grim Field	115,380	7.1	-	20	H-	97	H-	Bermudagrass
Preston Multi-Purpose Field	124,045	7.3	-	29	H	86	M+	Tall Fescue/Kentucky Bluegrass mixture
Henkel Harris Field	48,948	7.1	-	28	H	102	H-	Tall Fescue
T-Ball Field	15,552	7.0	-	18	H-	63	M	Tall Fescue
Eagles Field	77,977	6.5	-	18	H-	68	M	Tall Fescue

Notes: VH = Very High, H = High, M = Medium, and L = Low

Soil Test Reports

Soil samples were taken from the managed turfgrass at each of the athletic fields at Jim Barnett Park on March 24, 2016. Soil samples were analyzed by Waypoint Analytical (formerly A&L Eastern Laboratories). Standard soil test results provide values for pH, phosphorus, calcium, magnesium, potassium, cation exchange capacity, and organic matter. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the park, whichever occurs sooner.

A. Management Area 1 - 8.8 acres (Bridgeforth, Yost Infield, Preston, Henkel Harris, T-Ball, and Eagles fields)

Phosphorus levels ranged between High- (H-) and High (H) for all athletic fields. Applications of phosphorus are recommended, not to exceed 1.0 lb/1,000 sq ft annually. See additional notes on the nutrient application worksheet. Potassium levels ranged from Medium (M) to High- (H-) for all athletic fields. Applications of potassium are recommended, at approximately 1.0 lb/1,000 sq ft annually. This potassium recommendation exceeds that derived from the soil analysis. However, potassium is not an environmentally regulated nutrient and application of surplus potassium will only increase strength and vigor of turfgrass roots. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximum nitrogen application rate for cool season grasses on intensively managed athletic fields is 4.5 lbs/1,000 sq ft (see the Nutrient Management and Individual Field Application Worksheets for additional detail).

B. Management Area 2 - 3.24 acres (Bodie Grim and Rotary fields)

Phosphorus levels were High- (H-) for both athletic fields. Applications of phosphorus are recommended, not to exceed 1.0 lb/1,000 sq ft annually. See additional notes on the nutrient application worksheet. Potassium levels were High- (H-) for both athletic fields. Applications of potassium are recommended, at approximately 1.0 lb/1,000 sq ft annually. Nitrogen applications are recommended as 3.5 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximum nitrogen application rate for warm season grasses on intensively managed athletic fields is 4.0 lbs/1,000 sq ft (see the Nutrient Management and Individual Field Application Worksheets for additional detail).

C. Management Area 3 - 0.96 acres (Yost Outfield)

The phosphorus level was Very High (VH) for the athletic field. Applications of phosphorus are not recommended. See additional notes on the nutrient application worksheet. The potassium level was High- (H-) for the athletic field. Applications of potassium are recommended, at approximately 1.0 lb/1,000 sq ft annually. Nitrogen applications are recommended as 3.5 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximum nitrogen application rate for warm season grasses on intensively managed athletic fields is 4.0 lbs/1,000 sq ft (see the Nutrient Management Worksheet for additional detail).

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.

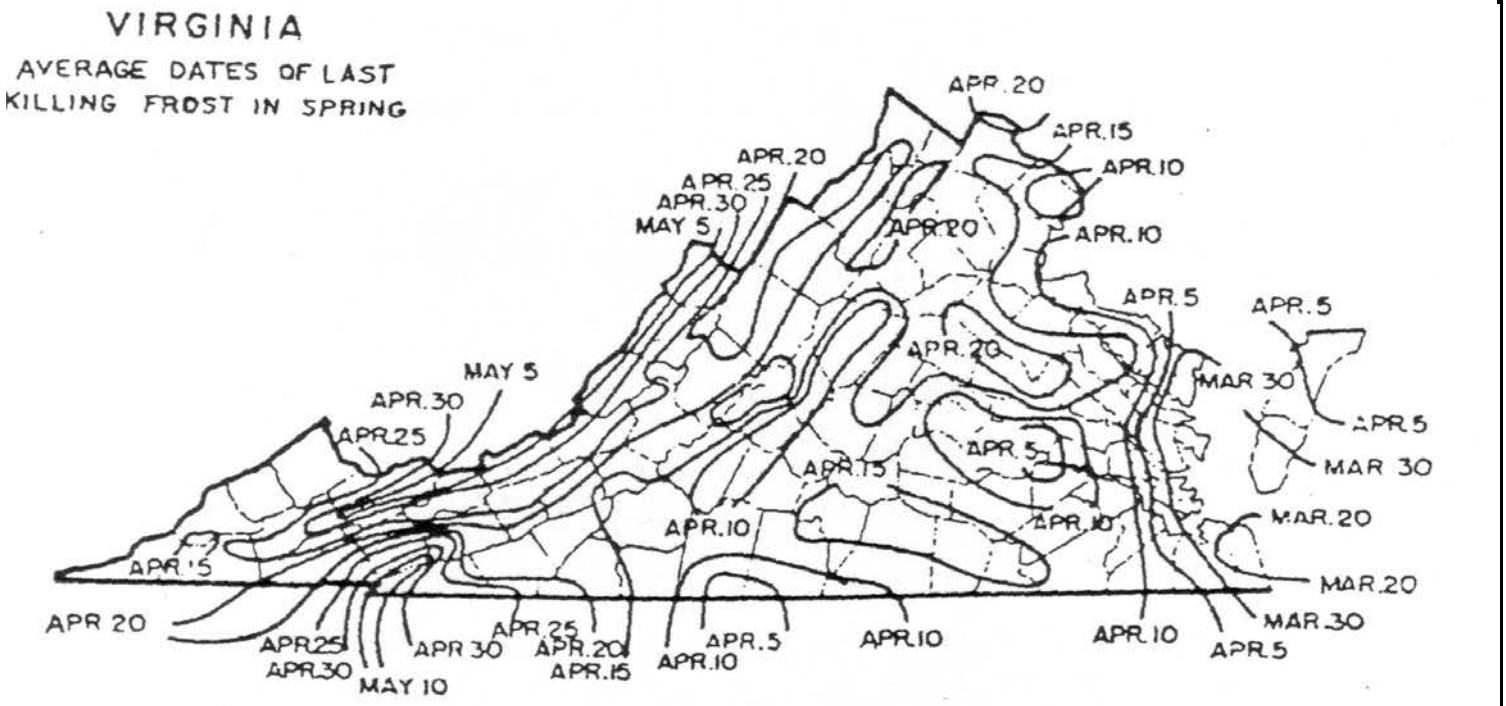
"Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such 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.

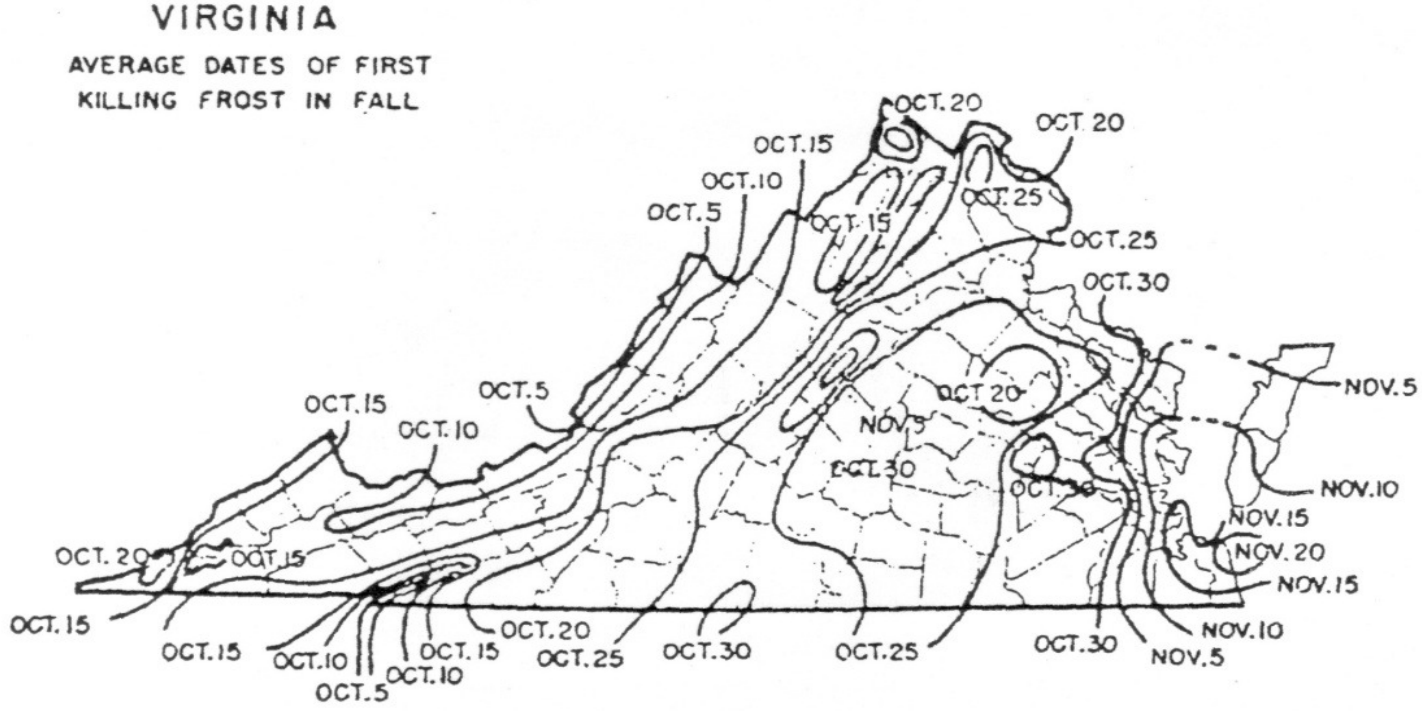
"Water soluble nitrogen", "WSN" and "readily available nitrogen" means: Water soluble nitrogen in either ammonical, urea, or nitrate form that does not have a controlled release, or slow response.

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 on next sheet). 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 on next sheet).


VIRGINIA
AVERAGE DATES OF LAST
KILLING FROST IN SPRING
APR.20
APR.15
APR.10
APR.20
APR.25
APR.30
MAY 5
APR.20
APR.10
APR.5
APR.5
APR.20
MAR 30
MAY 5
APR.30
APR.25
APR.5
MAR 30
APR.15
APR.10
APR.10
MAR.20
APR.15
MAR.20
APR 20
APR.25
APR.30
APR 30
APR.25
APR.20
APR.15
APR.5
APR.10
APR.10
APR.5
MAR.30
MAY 10


VIRGINIA
AVERAGE DATES OF FIRST
KILLING FROST IN FALL
OCT.20
OCT.20
OCT.15
OCT.10
OCT.25
OCT.5
OCT.15
OCT.25
OCT.30
NOV.5
OCT.15
OCT.5
OCT.20
NOV.5
OCT.10
OCT.30
NOV.10
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OCT.20
OCT.15
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OCT.20
NOV.10
OCT.15
OCT.10
OCT.25
OCT.30
OCT.25
OCT.30
NOV.5
OCT.15
OCT.10
OCT.5

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 utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

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 (lbs /1000 $ft^{2)}$ *	
	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 (lbs /1000 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.

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.

Notes

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

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

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**	**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)]	

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

Reference Materials and Notes

Virginia Nutrient Management Standards and Criteria, Revised July 2014, Department of Conservation and Recreation, Division of Soil and Water Conservation

ESRI Aerial Photography

2016 Geospatial Data provided by Frederick County for floodplains, wetlands, and parcel boundaries

Fertilizer Application Records

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Bridgeforth Field
Address:	1001 East Cork Street	Management Area Size:	103,215 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Baseball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Rotary Field
Address:	1001 East Cork Street	Management Area Size:	41,626 sq ft
	Winchester, Virginia 22601	Plant Species:	Bermudagrass
		Notes:	Softball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Yost Infield
Address:	1001 East Cork Street	Management Area Size:	15,681
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Softball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Yost Outfield
Address:	1001 East Cork Street	Management Area Size:	25,954 sq ft
	Winchester, Virginia 22601	Plant Species:	Bermudagrass
		Notes:	Softball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Preston Multi-Purpose Field
Address:	1001 East Cork Street	Management Area Size:	124,045 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Multi-purpose athletic field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Henkel Harris Field
Address:	1001 East Cork Street	Management Area Size:	48,948 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue
		Notes:	Softball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	T-Ball Field
Address:	1001 East Cork Street	Management Area Size:	15,552 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue
		Notes:	T-Ball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Eagles Field
Address:	1001 East Cork Street	Management Area Size:	77,977 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue
		Notes:	Softball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Jim Barnett Park	Management Area ID:	Bodie Grim Field
Address:	1001 East Cork Street	Management Area Size:	115,380 sq ft
	Winchester, Virginia 22601	Plant Species:	Bermudagrass
		Notes:	Baseball field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Path: Y:\804\36284.007-Winchester_NMPs\GIS\Common Shared Exhibits\Jim Barnett Park\VIC.mxd

WINCHESTER NUTRIENT MANAGEMENT PLANS - JIM BARNETT PARK
CITY OF WINCHESTER, VIRGINIA
FIGURE 1: VICINITY MAP

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP JOB NUMBER: *36284.007*
PROJECT STUDY LIMITS: *13.1 ACRES*
LATITUDE: *39° 10' 27.9" N*
LONGITUDE: *78° 09' 06.2" W*

U.S.G.S. QUADRANGLE(S): *WINCHESTER*
DATE(S): *2013*
WATERSHED(S): *CONOCOCHEAGUE-OPEQUON*
HYDROLOGIC UNIT CODE(S): *02070004*

Path: Y:\804\36284.007-Winchester_NMPs\GIS\Common Shared Exhibits\Jim Barnett Park\EIM.mxd

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1648 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS

Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/10/2016

DRAWN BY B. NORRIS

DESIGNED BY B. NORRIS

CHECKED BY E. VIRTS

SCALE 1" = 200'

TIMMONS GROUP

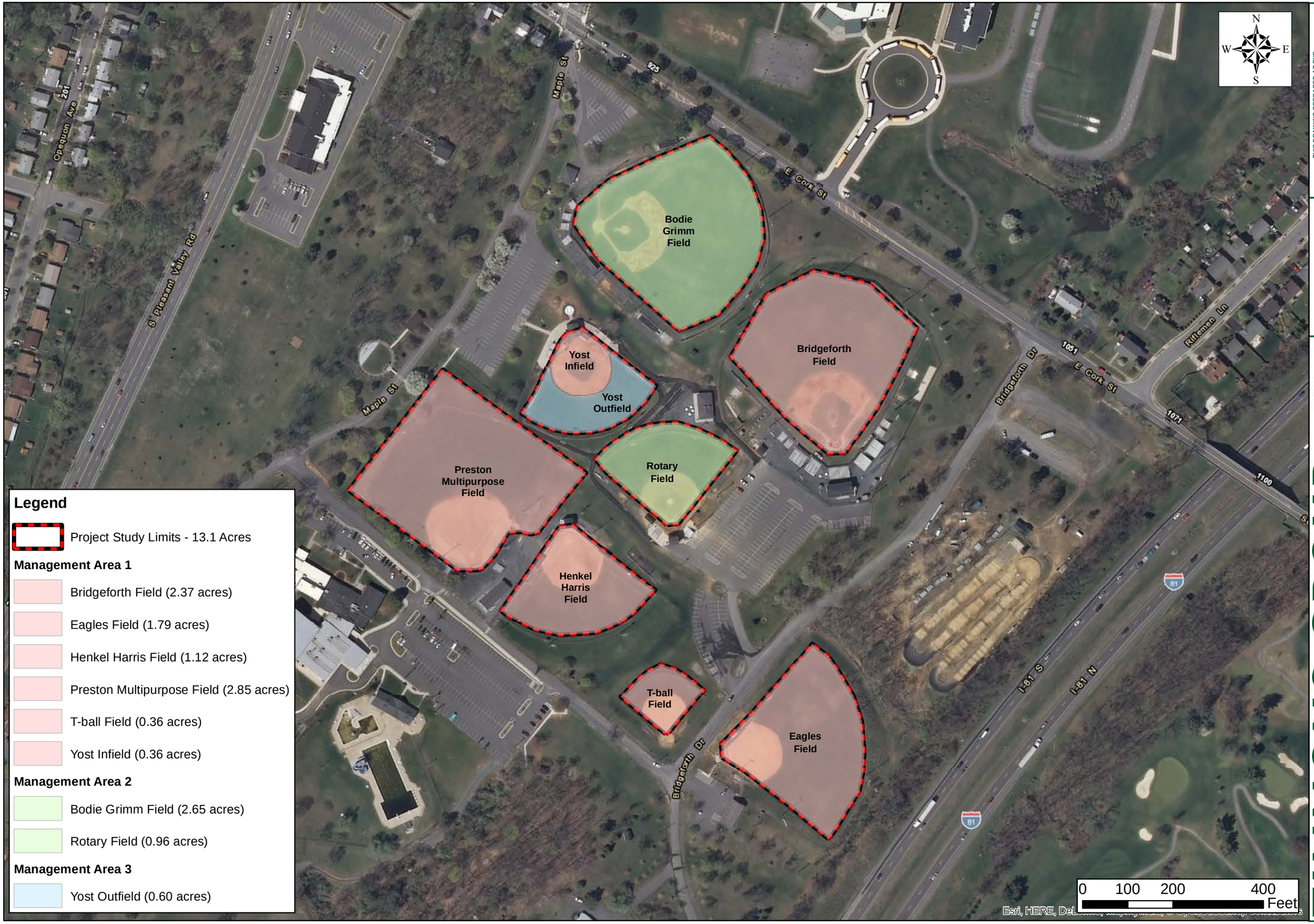
WINCHESTER NUTRIENT MANAGEMENT PLANS - JIM BARNETT PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 2: ENVIRONMENTAL INVENTORY MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1



Legend

Project Study Limits - 13.1 Acres

Management Area 1

- Bridgeforth Field (2.37 acres)
- Eagles Field (1.79 acres)
- Henkel Harris Field (1.12 acres)
- Preston Multipurpose Field (2.85 acres)
- T-ball Field (0.36 acres)
- Yost Infield (0.36 acres)

Management Area 2

- Bodie Grimm Field (2.65 acres)
- Rotary Field (0.96 acres)

Management Area 3

- Yost Outfield (0.60 acres)

Path: Y:\804\36284.007-Winchester_NMPs\GIS\Common Shared Exhibits\Jim Barnett Park\NMA.mxd

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YOUR VISION ACHIEVED THROUGH OURS

Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/30/2016
DRAWN BY B. NORRIS
DESIGNED BY B. NORRIS
CHECKED BY E. VIRTS
SCALE 1" = 200'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - JIM BARNETT PARK
CITY OF WINCHESTER, VIRGINIA

FIGURE 3: NUTRIENT MANAGEMENT AREAS MAP

JOB NUMBER 36284.007
SHEET NO. 1 OF 1

Nutrient Management Plan

Park Place Park

Prepared For:

City of Winchester
Rouss City Hall, 15 N. Cameron Street
Winchester, Virginia 22601
540-667-1815

Prepared By:

Marjorie Howren, Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
804-200-6370

Certification Code: #844

Total Athletic Field Acreage: 1.54

The purpose of this Nutrient Management Plan is to ensure minimum movement of nitrogen and phosphorus from the specified area of application to surface and groundwaters where they can potentially have a detrimental effect on water quality as well as ensuring that plants have optimum soil nutrient availability for good productivity and quailty. By following this soil test based plan you are helping to protect local waters and the Chesapeake Bay.

If you have questions, please contact your plan writer, local Virginia Cooperative Extension Agent or the Department of Conservation and Recreation Nutrient Mangement Program.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Nutrient Management Plan for:
Park Place Park

Landowner Information	
Site Name	*Park Place Park*
Customer Name	*City of Winchester*
Mailing Address	*Rouss City Hall, 15 N. Cameron Street*
City State Zip	*Winchester, Virginia 22601*
Phone	*540-667-1815*

Planners Information	
Planner Name	*Marjorie Howren, Timmons Group*
Mailing Address	*1001 Boulders Parkway, Suite 300*
City State Zip	*Richmond, VA 23225*
Phone	*804-200-6370*
Fax	*804-560-1016*
Email	*marjorie.howren@timmons.com*
Certification Code	*#844*

Location Information	
Physical Address	*2024 Harvest Drive*
City State Zip	*Winchester, Virginia 22601*
Coordinates	*39°09' 59.8" N*
	78°11' 20.8" W
VAHU6 Watershed Code	*PU17 Abrams Creek*

Acreage	
Park Place Field	*67,082 sq ft (1.54 acres)*

Plan Start Date	*4/15/16*
Plan End Date	*4/15/19*
Planner Signature	

Narrative

1. Site Description and Supporting Information

This Nutrient Management Plan has been prepared by Timmons Group, on behalf of the City of Winchester. Park Place Park is located on Harvest Drive in Winchester, Virginia, north of Cedar Creek Grade and west of Taylor Grace Court (see Figure 1: Vicinity Map). The park has one multi-purpose athletic field and a playground. The site is relatively flat with a gentle slope on the eastern side of the athletic field. No wetlands were found to be present within the site limits during the March 24, 2016 site visit and no wetlands or streams were depicted within the site limits as shown on Figure 2: Environmental Inventory Map. There were no wells, subsurface tile drains, springs, sinkholes, rock outcrops, land with slopes steeper than 15%, or qualifying soil types observed onsite. Therefore, no environmentally sensitive areas were identified.

It was noted that this field has not been fertilized in the past. Using aerial photography and through discussions with City of Winchester staff, a 1.54-acre area (67,082 sq ft) was identified as turf where fertilizer could be applied. The turf on the athletic field (Park Place Field) is comprised of a mixture of cool season grasses.

This plan is effective for three years (until April 15, 2019) or until significant changes to maintenance practices occur. Should the City of Winchester decide to fertilize any locations within Park Place Park outside of these managed areas, this nutrient management plan should be updated with recommendations for the additional area(s). Other significant changes would include: changing turf species in the athletic fields, renovating an athletic field and the existing underlying soil, creation of an additional athletic field, expansion of the area to be included under this nutrient management plan, or other changes that could alter nutrient recommendations and timing.

One management area was determined for Park Place Park. Management Area 1 (Park Place Field) is shown on Figure 3: Nutrient Management Areas Map. Based on the City of Winchester, Virginia average first killing frost date of October 15th (Fall), the average last killing frost date of April 15th (Spring), and the cool season turf identified onsite, fertilizer applications on this management area should occur within the cool season application period of March 4th to December 26th. Nutrient application instructions are identified in the nutrient management worksheet of this plan.

Applications of inorganic fertilizers should not occur on frozen or snow-covered ground. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass-covered areas. Do not use fertilizers as ice melt. Nutrient applications should not be completed when significant runoff producing events are anticipated.

Every fertilizer application should be recorded in the record sheet provided. Any questions or concerns with fertilizer products or record keeping should be brought to the plan writer's attention.

Nutrient Management Worksheet

Property:	Park Place Park								
Prepared:	4/15/16						Species:	Cool Season	
Expires:	4/15/19								

Management Area	Application Month/Day	# of Apps	Application Interval	Fertilizer Product	% Slow Release N	NPK Value of Fertilizer Product	Total NPK lbs/1,000 square feet	Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate	Total Required lbs per area
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O		
Management Area 1: Park Place Field acreage = approximately 1.54	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**112**
	6/1 - 6/15	1		SCU (16-25-12)	25%	16 - 25 - 12	0.50 - 0.78 - 0.38	3.1	**210**
	8/15 - 8/31	1		SCU (16-25-12)	25%	16 - 25 - 12	0.50 - 0.78 - 0.38	3.1	**210**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	25%	28 - 10 - 4	0.90 - 0.32 - 0.13	3.2	**216**
	*Recommended Total Annual NPK Application						4.2 - 2.53 - 1.30		

Notes	The annual application of total nitrogen **should not exceed 4.5 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.
Lime/Sulfur Recommendations	* Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass * This soil sampling area requires 25 lbs of agricultural lime (ground, pulverized, or pelletized) per 1000 sq ft. This lime application should take place in one application of 25 lbs per 1000 sq ft. Soil tests can be conducted annually to determine if additional sulfur or lime is needed to maintain the soil pH during years 2 and 3 of this nutrient management plan implementation.

Soil Test Summary

Customer Name:	City of Winchester - Park Place Park
Testing Lab:	Waypoint Analytical
Sample Date:	March 24, 2016
Planner Name	Marjorie Howren, Timmons Group
Certification Number	#844

Managed Area ID	AREA (sq ft)	Soil pH	Buffer pH	Lab Test P (ppm)	VT (H/M/L)	Lab Test K (ppm)	VT (H/M/L)	Species
Park Place Field	67,082	5.9	6.82	1	L-	78	M+	Tall Fescue/Kentucky Bluegrass mixture

Notes: H = High, M = Medium, and L = Low

Soil Test Reports

Soil samples were taken from the turfgrass at the Park Place Park athletic field on March 24, 2016. Soil samples were analyzed by Waypoint Analytical (formerly A&L Eastern Laboratories). Standard soil test results provide values for pH, phosphorus, calcium, magnesium, potassium, cation exchange capacity, and organic matter. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the park, whichever occurs sooner.

A. Management Area 1 - 1.5 acres (Park Place Field)

The phosphorus level was Low- (L-) for the athletic field. Applications of phosphorus are recommended, not to exceed 3.0 lbs/1,000 sq ft annually. See additional notes on the nutrient application worksheet. Potassium levels were Medium+ (M+) for the athletic field. Applications of potassium are recommended, around 1.3 lb/1,000 sq ft annually. This potassium recommendation exceeds that derived from the soil analysis. However, potassium is not an environmentally regulated nutrient and application of surplus potassium will only increase strength and vigor of turfgrass roots. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximun nitrogen application rate for cool season grasses on intensively managed athletic fields is 4.5 lbs/1,000 sq ft (see the Nutrient Management Worksheet for additional detail).

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.

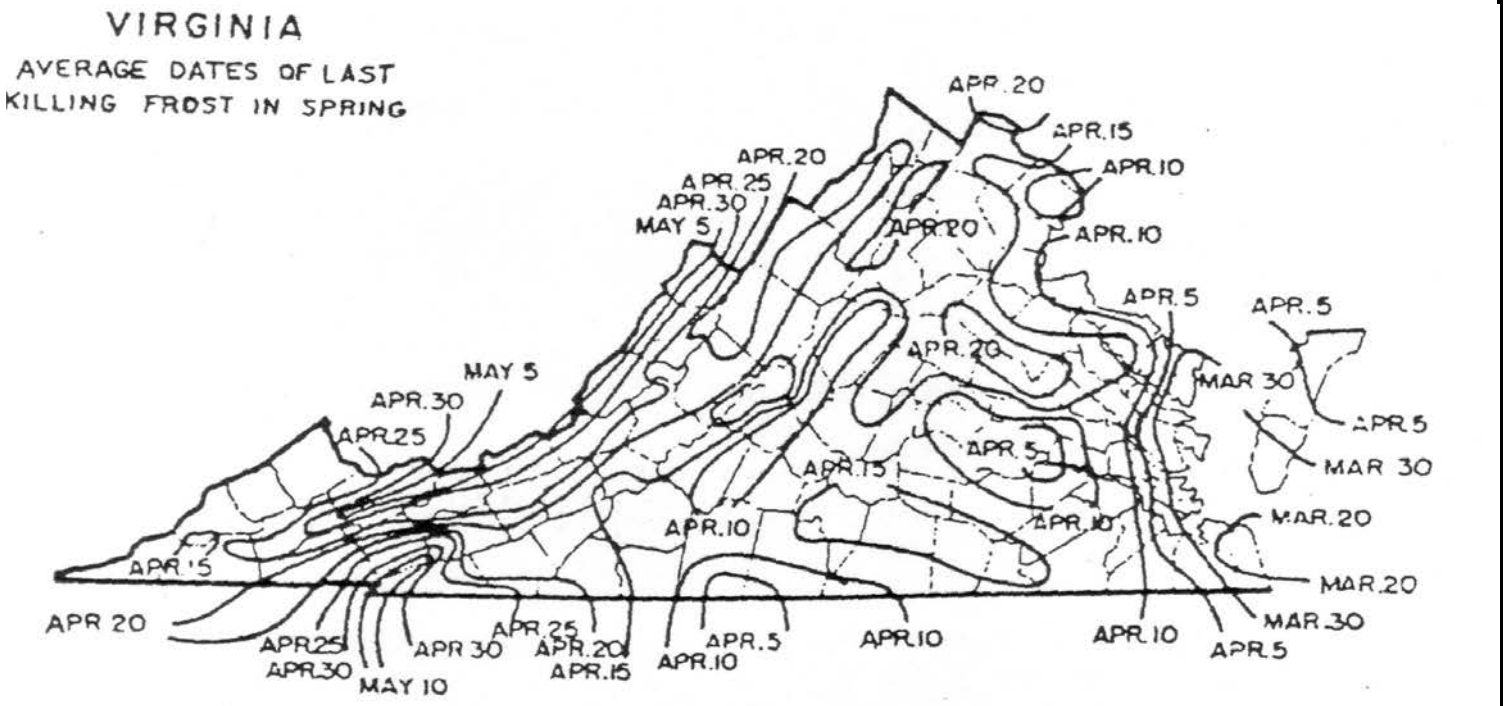
"Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such 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" and "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 on next sheet). 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 on next sheet).


VIRGINIA
AVERAGE DATES OF LAST
KILLING FROST IN SPRING
APR.20
APR.15
APR.10
APR.20
APR.25
APR.30
MAY 5
APR.20
APR.10
APR.5
APR.5
APR.20
MAR 30
MAY 5
APR.30
APR.25
APR.5
MAR 30
APR.15
APR.10
APR.10
MAR.20
APR.15
MAR.20
APR 20
APR.25
APR.30
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APR.25
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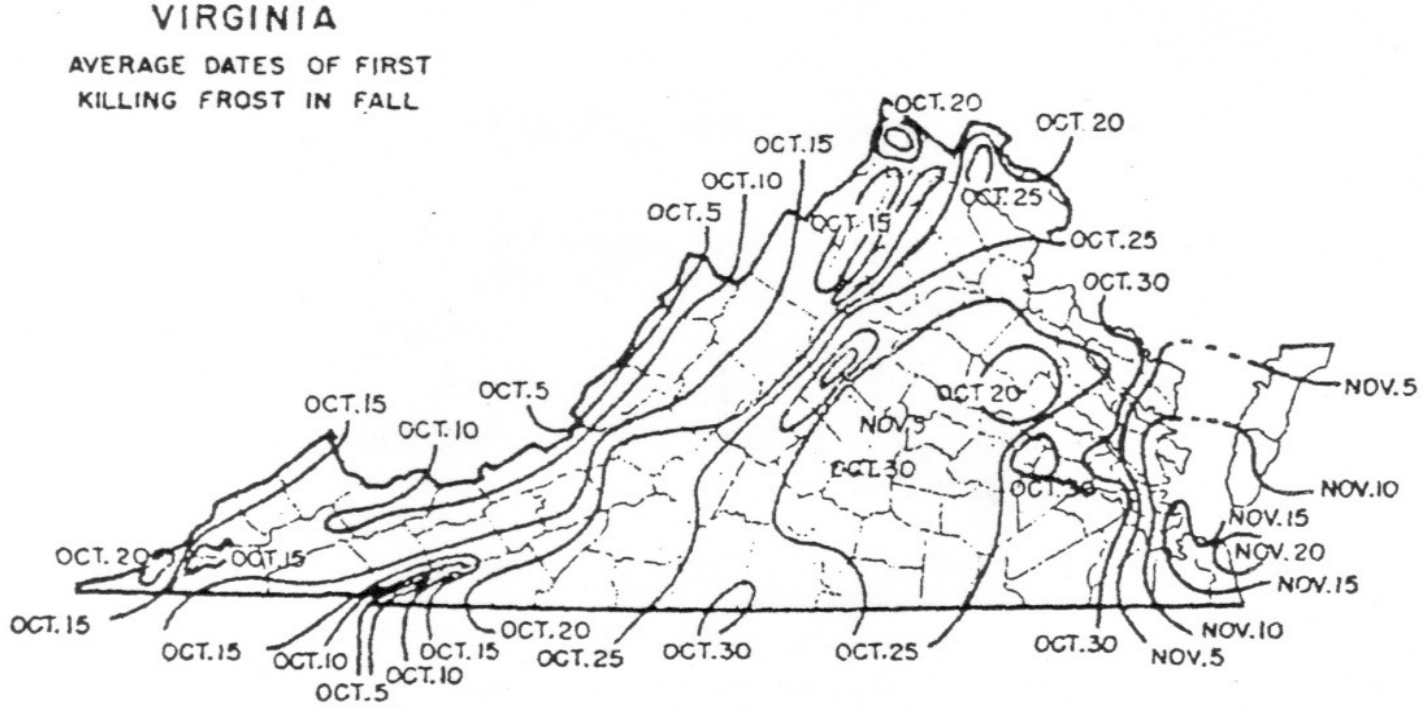
APR.15
APR.5
APR.10
APR.10
APR.5
MAR.30
MAY 10


VIRGINIA
AVERAGE DATES OF FIRST
KILLING FROST IN FALL
OCT.20
OCT.20
OCT.15
OCT.10
OCT.25
OCT.5
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OCT.25
OCT.30
NOV.5
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NOV.5
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OCT.10
OCT.5

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 utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

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 (lbs /1000 $ft^{2)}$ *	
	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 (lbs /1000 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.

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.

Notes

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

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

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**	**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)]	

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

Reference Materials and Notes

Virginia Nutrient Management Standards and Criteria, Revised July 2014, Department of Conservation and Recreation, Division of Soil and Water Conservation

ESRI Aerial Photography

2016 Geospatial Data provided by Frederick County for floodplains, wetlands, and parcel boundaries

Fertilizer Application Records

Customer Information		Management Area Information	
Name:	City of Winchester - Park Place Park	Management Area ID:	Park Place Field
Address:	2024 Harvest Drive	Management Area Size:	67,082 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Multi-purpose athletic field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

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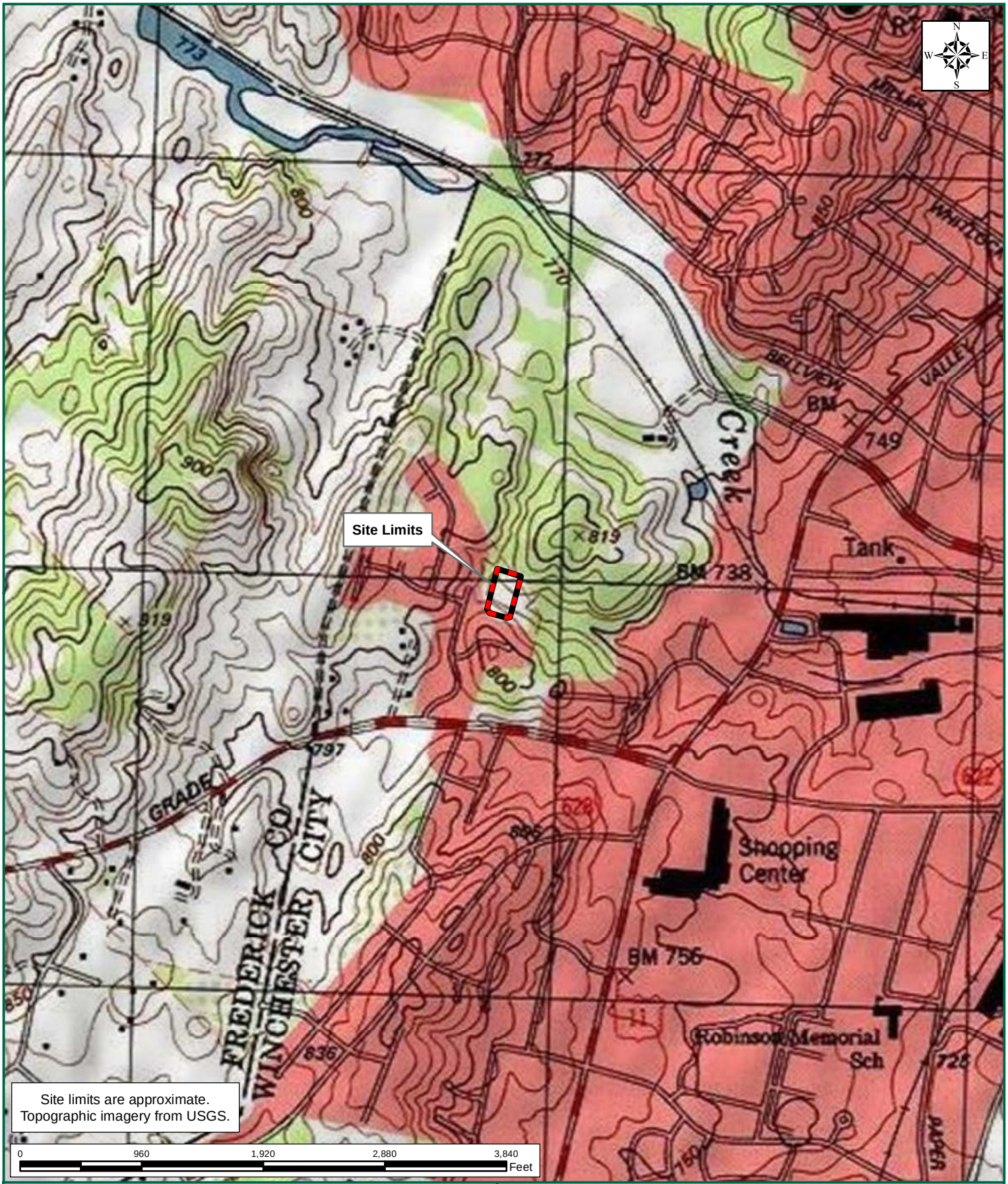

WINCHESTER NUTRIENT MANAGEMENT PLANS - PARK PLACE PARK
CITY OF WINCHESTER, VIRGINIA
FIGURE 1: VICINITY MAP

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP JOB NUMBER: *36284.007*
PROJECT STUDY LIMITS: *1.54 ACRES*
LATITUDE: *39° 09' 59.8" N*
LONGITUDE: *78° 11' 20.8" W*

U.S.G.S. QUADRANGLE(S): *WINCHESTER*
DATE(S): *2013*
WATERSHED(S): *CONOCOCHEAGUE-OPEQUON*
HYDROLOGIC UNIT CODE(S): *02070004*

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CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1648 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS

Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/10/2106

DRAWN BY B. NORRIS

DESIGNED BY B. NORRIS

CHECKED BY E. VIRTS

SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - PARK PLACE PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 2: ENVIRONMENTAL INVENTORY MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

Park Place Field

Legend

Project Study Limits - 1.54 Acres

Management Area 1 - 1.54 Acres

0 50 100 200 Feet

Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors

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DATE	REVISION DESCRIPTION

DATE 03/30/2106

DRAWN BY B. NORRIS

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SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - PARK PLACE PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 3: NUTRIENT MANAGEMENT AREAS MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

Nutrient Management Plan

Weaver Park

Prepared For:

City of Winchester
Rouss City Hall, 15 N. Cameron Street
Winchester, Virginia 22601
540-667-1815

Prepared By:

Marjorie Howren, Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
804-200-6370

Certification Code: #844

Total Athletic Field Acreage: 1.28

The purpose of this Nutrient Management Plan is to ensure minimum movement of nitrogen and phosphorus from the specified area of application to surface and groundwaters where they can potentially have a detrimental effect on water quality as well as ensuring that plants have optimum soil nutrient availability for good productivity and quailty. By following this soil test based plan you are helping to protect local waters and the Chesapeake Bay.

If you have questions, please contact your plan writer, local Virginia Cooperative Extension Agent or the Department of Conservation and Recreation Nutrient Mangement Program.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Nutrient Management Plan for:
Weaver Park

Landowner Information	
Park Name	*Weaver Park*
Customer Name	*City of Winchester*
Mailing Address	*Rouss City Hall, 15 N. Cameron Street*
City State Zip	*Winchester, Virginia 22601*
Phone	*540-667-1815*

Planners Information	
Planner Name	*Marjorie Howren, Timmons Group*
Mailing Address	*1001 Boulders Parkway, Suite 300*
City State Zip	*Richmond, VA 23225*
Phone	*804-200-6370*
Fax	*804-560-1016*
Email	*marjorie.howren@timmons.com*
Certification Code	*#844*

Location Information	
Physical Address	*167 Bruce Drive*
City State Zip	*Winchester, Virginia 22601*
Coordinates	*39°08' 58.9" N*
	78°10' 30.9" W
VAHU6 Watershed Code	*PU17 Abrams Creek*

Acreage	
Weaver Field	*55,756 sq ft (1.28 acres)*

Plan Start Date	*4/15/16*
Plan End Date	*4/15/19*
Planner Signature	Marjorie Howren

Narrative

1. Site Description and Supporting Information

This Nutrient Management Plan has been prepared by Timmons Group, on behalf of the City of Winchester. Weaver Park is located on Bruce Drive in Winchester, Virginia, east of South Pleasant Valley Road and west of Baldwin Street (see Figure 1: Vicinity Map). The park has one athletic field, a basketball court, and a gravel parking lot. The site is relatively flat with slopes less than 2%. No wetlands were found to be present within the site limits during the March 24, 2016 site visit and no wetlands or streams were depicted within the site limits as shown on Figure 2: Environmental Inventory Map. There were no wells, subsurface tile drains, springs, sinkholes, rock outcrops, land with slopes steeper than 15%, or qualifying soil types observed onsite. Therefore, no environmentally sensitive areas were identified within the nutrient management areas.

Using aerial photography and through discussions with City of Winchester staff, a 1.28-acre area (55,756 sq ft) was identified as managed turf where fertilizer is applied. Managed turf on the athletic field (Weaver Field) at Weaver Park is comprised of a cool season grass.

This plan is effective for three years (until April 15, 2019) or until significant changes to maintenance practices occur. Should the City of Winchester decide to fertilize any locations within Weaver Park outside of these managed areas, this Nutrient Management Plan should be updated with recommendations for the additional area(s). Other significant changes would include: changing turf species in the athletic fields, renovating an athletic field and the existing underlying soil, creation of an additional athletic field, expansion of the area to be included under this nutrient management plan, or other changes that could alter nutrient recommendations and timing.

One management area was determined for Weaver Park. Management Area 1 (Weaver Field) is shown on Figure 3: Nutrient Management Areas Map. Based on the Frederick County, Virginia average first killing frost date of October 15th (Fall), the average last killing frost date of April 15th (Spring), and the cool season turf identified onsite, fertilizer applications at management area 1 should occur within the cool season application period of March 4th to December 26th. Nutrient application instructions are identified in the nutrient management worksheet of this plan.

Applications of inorganic fertilizers should not occur on frozen or snow-covered ground. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass-covered areas. Do not use fertilizers as ice melt. Nutrient applications should not be completed when significant runoff producing events are anticipated.

Every fertilizer application should be recorded in the record sheet provided. Any questions or concerns with fertilizer products or record keeping should be brought to the plan writer's attention.

Nutrient Management Worksheet

Property:	Weaver Park								
Prepared:	4/15/16						Species:	Cool Season	
Expires:	4/15/19								
Management Area	**Application Month/Day**	**# of Apps**	**Application Interval**	**Fertilizer Product**	**% Slow Release N**	**NPK Value of Fertilizer Product**	**Total NPK lbs/1,000 square feet**	**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs per area**
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O		
Management Area 1: Weaver Field acreage = approximately 1.28	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**93**
	6/1 - 6/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**93**
	8/15 - 8/31	1		SCU (16-25-12)	25%	16 - 25 - 12	0.50 - 0.78 - 0.38	3.1	**174**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	25%	28 - 10 - 4	0.90 - 0.32 - 0.13	3.2	**179**
	*Recommended Total Annual NPK Application						4.2 - 1.75 - 1.09		
Notes	The annual application of total nitrogen **should not exceed 4.5 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.								
Lime Recommendations	* Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass * This soil sampling area requires 30 lbs of agricultural lime (ground, pulverized, or pelletized) per 1000 sq ft. This lime application should take place in one application of 30 lbs per 1000 sq ft. Soil tests can be conducted annually to determine if additional sulfur or lime is needed to maintain the soil pH during years 2 and 3 of this nutrient management plan implementation.								

Soil Test Summary

Customer Name:	City of Winchester - Weaver Park
Testing Lab:	Waypoint Analytical
Sample Date:	March 24, 2016
Planner Name	Marjorie Howren, Timmons Group
Certification Number	#844

Managed Area ID	AREA (sq ft)	Soil pH	Buffer pH	Lab Test P (ppm)	VT (H/M/L)	Lab Test K (ppm)	VT (H/M/L)	Species
Weaver Field	55,8756	5.9	6.79	9	M-	97	H-	Tall Fescue

Notes: H = High, M = Medium, and L = Low

Soil Test Reports

Soil samples were taken from the managed turfgrass at the Weaver Park athletic field on March 24, 2016. Soil samples were analyzed by Waypoint Analytical (formerly A&L Eastern Laboratories). Standard soil test results provide values for pH, phosphorus, calcium, magnesium, potassium, cation exchange capacity, and organic matter. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the park, whichever occurs sooner.

A. Management Area 1 - 1.28 acres (Weaver Field)

The phosphorus level was Medium- (M-) for the athletic field. Applications of phosphorus are recommended, not to exceed 2.0 lbs/1,000 sq ft annually. See additional notes on the nutrient application worksheet. The potassium level was High- (H-) for the athletic field. Applications of potassium are recommended, at approximately 1.0 lb/1,000 sq ft annually. This potassium recommendation exceeds that derived from the soil analysis. However, potassium is not an environmentally regulated nutrient and application of surplus potassium will only increase strength and vigor of turfgrass roots. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximum nitrogen application rate for cool season grasses on intensively managed athletic fields 4.5 lbs/1,000 sq ft (see the Nutrient Management Worksheet for additional detail).

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.

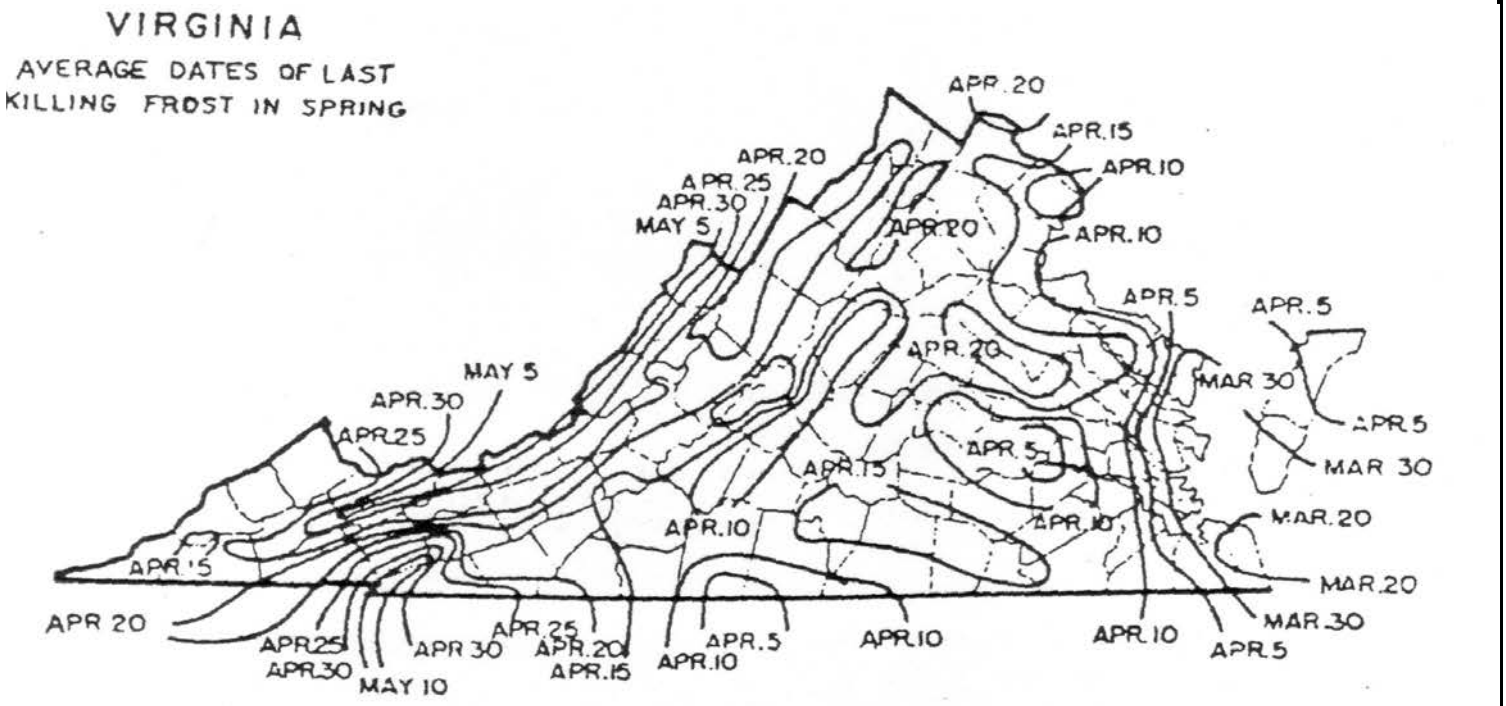
"Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such 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.

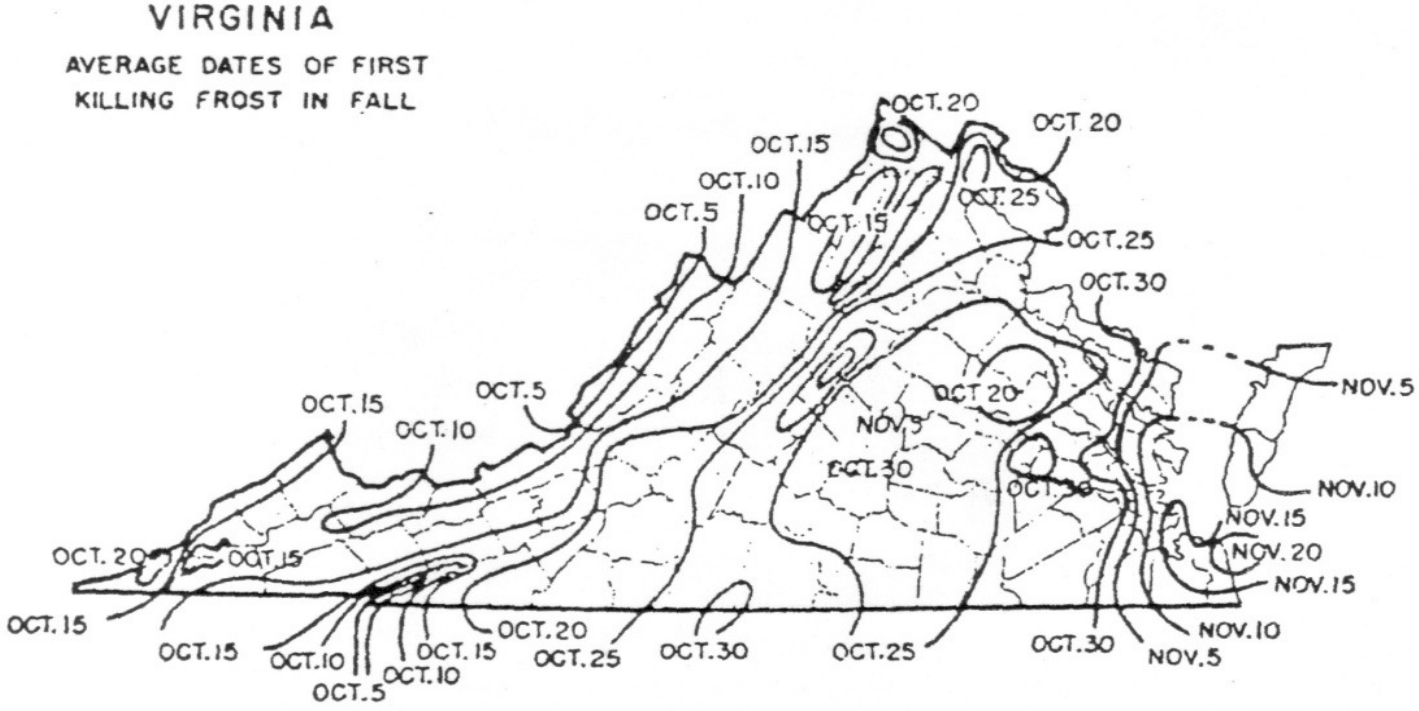
"Water soluble nitrogen", "WSN" and "readily available nitrogen" means: Water soluble nitrogen in either ammonical, urea, or nitrate form that does not have a controlled release, or slow response.

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 on next sheet). 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 on next sheet).





Weaver Park
4/15/2016

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 utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

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 (lbs /1000 $ft^{2)}$ *	
	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 (lbs /1000 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.

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.

Notes

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

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

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**	**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)]	

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

Reference Materials and Notes

Virginia Nutrient Management Standards and Criteria, Revised July 2014, Department of Conservation and Recreation, Division of Soil and Water Conservation

ESRI Aerial Photography

2016 Geospatial Data provided by Frederick County for floodplains, wetlands, and parcel boundaries

Fertilizer Application Records

Customer Information		Management Area Information	
Name:	City of Winchester - Weaver Park	Management Area ID:	Weaver Field
Address:	167 Bruce Drive	Management Area Size:	55,756 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue
		Notes:	Multi-purpose athletic field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

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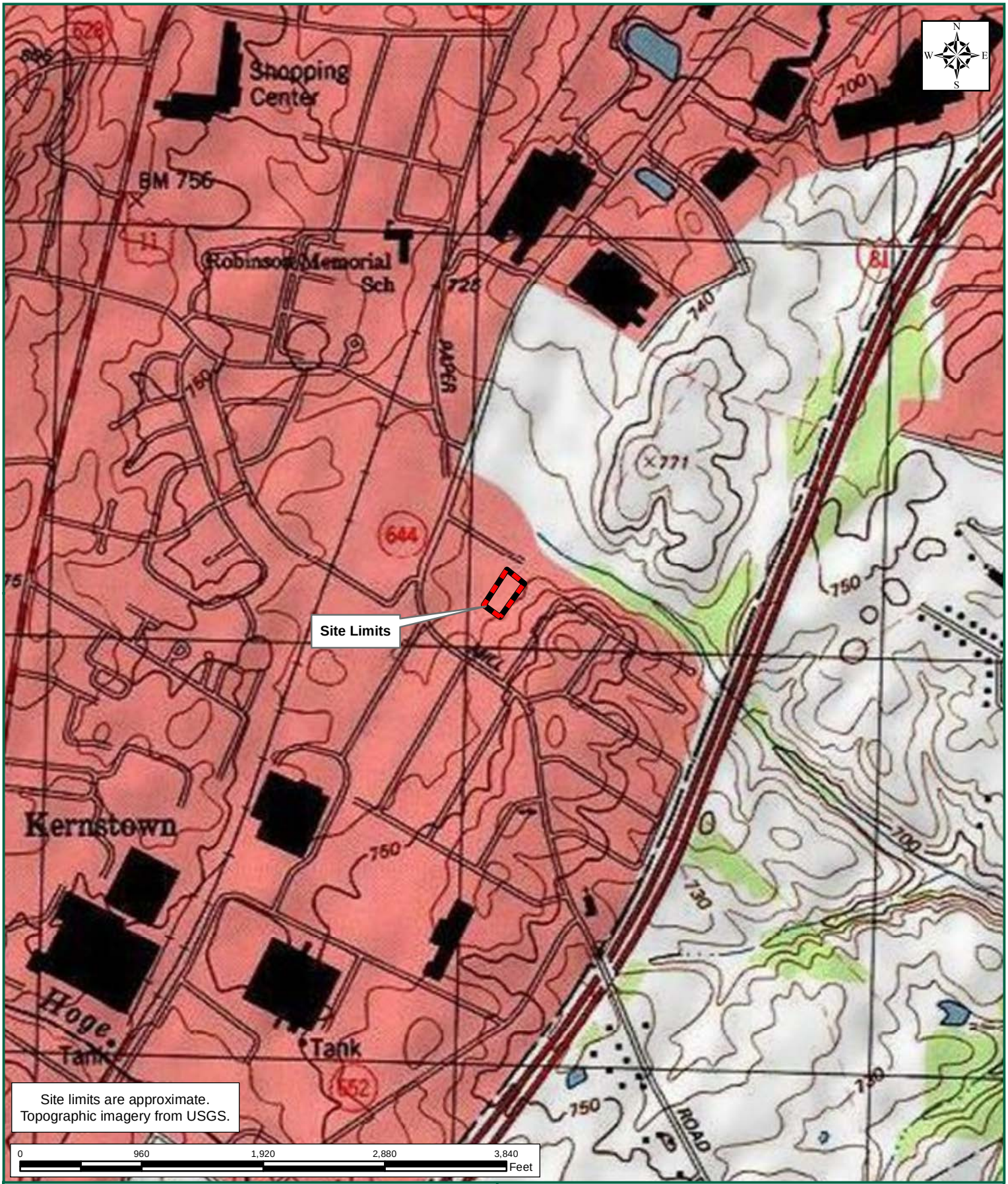

WINCHESTER NUTRIENT MANAGEMENT PLANS - WEAVER PARK
CITY OF WINCHESTER, VIRGINIA
FIGURE 1: VICINITY MAP

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP JOB NUMBER: *36284.007*
PROJECT STUDY LIMITS: *1.28 ACRES*
LATITUDE: *39° 08' 58.9" N*
LONGITUDE: *78° 10' 30.9" W*

U.S.G.S. QUADRANGLE(S): *WINCHESTER*
DATE(S): *2013*
WATERSHED(S): *CONOCOCHEAGUE-OPEQUON*
HYDROLOGIC UNIT CODE(S): *02070004*

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Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/10/2016

DRAWN BY B. NORRIS

DESIGNED BY B. NORRIS

CHECKED BY E. VIRTS

SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - WEAVER PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 2: ENVIRONMENTAL INVENTORY MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

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DATE	REVISION DESCRIPTION

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DRAWN BY B. NORRIS

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CHECKED BY E. VIRTS

SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - WEAVER PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 3: NUTRIENT MANAGEMENT AREAS MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

Nutrient Management Plan

Whittier Park

Prepared For:

City of Winchester
Rouss City Hall, 15 N. Cameron Street
Winchester, Virginia 22601
540-667-1815

Prepared By:

Marjorie Howren, Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
804-200-6370

Certification Code: #844

Total Athletic Field Acreage: 1.27

The purpose of this Nutrient Management Plan is to ensure minimum movement of nitrogen and phosphorus from the specified area of application to surface and groundwaters where they can potentially have a detrimental effect on water quality as well as ensuring that plants have optimum soil nutrient availability for good productivity and quailty. By following this soil test based plan you are helping to protect local waters and the Chesapeake Bay.

If you have questions, please contact your plan writer, local Virginia Cooperative Extension Agent or the Department of Conservation and Recreation Nutrient Mangement Program.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Nutrient Management Plan for:
Whittier Park

Landowner Information	
Site Name	*Whittier Park*
Customer Name	*City of Winchester*
Mailing Address	*Rouss City Hall, 15 N. Cameron Street*
City State Zip	*Winchester, Virginia 22601*
Phone	*540-667-1815*

Planners Information	
Planner Name	*Marjorie Howren, Timmons Group*
Mailing Address	*1001 Boulders Parkway, Suite 300*
City State Zip	*Richmond, VA 23225*
Phone	*804-200-6370*
Fax	*804-560-1016*
Email	marjorie.howren@timmons.com
Certification Code	*#844*

Location Information	
Physical Address	*900 Whittier Avenue*
City State Zip	*Winchester, Virginia 22601*
Coordinates	*39° 11' 30.2" N*
	78° 10' 39.8" W
VAHU6 Watershed Code	*PU17 Abrams Creek*

Acreage	
Total	*1.27 acres*
Whittier Field 1	*27,312 sq ft (0.63 acres)*
Whittier Field 2	*27,747 sq ft (0.64 acres)*

Plan Start Date	*4/15/16*
Plan End Date	*4/15/19*
Planner Signature	Marjorie Howren

Narrative

1. Site Description and Supporting Information

This Nutrient Management Plan has been prepared by Timmons Group, on behalf of the City of Winchester. Whittier Park is located on Whittier Avenue in Winchester, Virginia, within a residential development north of Whittier Avenue and south of Isaac Street (see Figure 1: Vicinity Map). The park has two soccer fields, a basketball court, and a playground. The site is relatively flat with slopes less than 2%. No wetlands were found to be present within the site limits during the March 24, 2016 site visit and no wetlands or streams were depicted within the site limits as shown on Figure 2: Environmental Inventory Map. There were no wells, subsurface tile drains, springs, sinkholes, rock outcrops, land with slopes steeper than 15%, or qualifying soil types observed onsite and therefore, no environmentally sensitive areas were identified within the nutrient management areas.

Using aerial photography and through discussions with City of Winchester staff, a 1.27-acre area (55,059 sq ft) was identified as managed turf where fertilizer is applied. Managed turf on both soccer fields (Whittier Field 1 and Whittier Field 2) at Whittier Park is comprised of a cool season grass mixture.

This plan is effective for three years (until April 15, 2019) or until significant changes to maintenance practices occur. Should the City of Winchester decide to fertilize any locations within Whittier Park outside of these managed areas, this nutrient management plan should be updated with recommendations for the additional area(s). Other significant changes would include: changing turf species in the athletic fields, renovating an athletic field and the existing underlying soil, creation of an additional athletic field, expansion of the area to be included under this nutrient management plan, or other changes that could alter nutrient recommendations and timing.

Two management areas were determined for Whittier Park. Management Area 1 (Whittier Field 1) and Management Area 2 (Whitter Field 2) are shown on Figure 3: Nutrient Management Areas Map. Based on the City of Winchester, Virginia average first killing frost date of October 15th (Fall), the average last killing frost date of April 15th (Spring), and the cool season turf identified on both athletic fields, fertilizer applications on these management areas should occur within the cool season application period of March 4th to December 26th. Nutrient application instructions are identified in the nutrient management worksheet of this plan.

Applications of inorganic fertilizers should not occur on frozen or snow-covered ground. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass-covered areas. Do not use fertilizers as ice melt. Nutrient applications should not be completed when significant runoff producing events are anticipated.

Every fertilizer application should be recorded in the record sheet provided. Any questions or concerns with fertilizer products or record keeping should be brought to the plan writer's attention.

Nutrient Management Worksheet

Property:	Whittier Park (Whittier Field 1 and Whittier Field 2)								
Prepared:	4/15/16					Species:	Cool Season		
Expires:	4/15/19								
Management Areas	**Application Month/Day**	**# of Apps**	**Application Interval**	**Fertilizer Product**	**% Slow Release N**	**NPK Value of Fertilizer Product**	**Total NPK lbs/1,000 square feet**	**Required lbs/1,000 ft^2 of Fertilizer Product to Meet Target Application Rate**	**Total Required lbs per area**
						N - P_2O_5 - K_2O	N - P_2O_5 - K_2O		
Management Area 1: Whittier Field 1 acreage = approx. 0.63	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**46**
	6/1 - 6/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**46**
	8/15 - 8/31	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**46**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	25%	28 - 10 - 4	0.90 - 0.32 - 0.13	3.2	**88**
	*Recommended Total Annual NPK Application						4.2 - 0.96 - 0.89		
Management Area 2: Whittier Field 2 acreage = approx. 0.64	4/15 - 5/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**46**
	6/1 - 6/15	1		SCU (30-0-10)	25%	30 - 0 - 10	0.50 - 0.00 - 0.17	1.7	**46**
	8/15 - 8/31	1		SCU (16-25-12)	25%	16 - 25 - 12	0.50 - 0.78 - 0.38	3.1	**87**
	9/15 - 11/30	3	> 30 days	custom blend SCU (28-10-4)	25%	28 - 10 - 4	0.90 - 0.32 - 0.13	3.2	**90**
	*Recommended Total Annual NPK Application						4.2 - 1.75 - 1.09		
Notes	The annual application of total nitrogen **should not exceed 4.5 lbs N per 1000 sq ft** (maximum for intensively managed cool season athletic fields). During the months of September, October, and November, total nitrogen should not exceed 0.9 lbs per 1000 sq ft of slow or controlled release fertilizer sources or 0.7 lbs per 1000 sq ft of water soluble nitrogen (WSN) per application, with a minimum of 30 days between applications. During the months of April, May, June, and August, total nitrogen should not exceed 0.5 lbs per 1000 sq ft per application, with a minimum of 30 days between applications. Applications should fall within the cool season application window identified in the narrative of this plan.								
Lime/Sulfur Recommendations	* Recommendations are targeted to bring soil pH to 6.2 for optimal growth of turfgrass * Whittier Field 1: Use recommended sulfur coated urea fertilizer to reduce pH. Whittier Field 2: Use recommended sulfur coated urea fertilizer to reduce pH.								

Soil Test Summary

Customer Name:	City of Winchester - Whittier Park
Testing Lab:	Waypoint Analytical
Sample Date:	March 24, 2016
Planner Name	Marjorie Howren, Timmons Group
Certification Number	#844

Managed Area ID	AREA (sq ft)	Soil pH	Buffer pH	Lab Test P (ppm)	VT (H/M/L)	Lab Test K (ppm)	VT (H/M/L)	Species
Whittier Field 1	27,312	7.2	-	16	M+	143	H+	Tall Fescue/Kentucky Bluegrass mixture
Whittier Field 2	27,747	7.2	-	9	M-	82	M+	Tall Fescue/Kentucky Bluegrass mixture

Notes: H = High, M = Medium, and L = Low

Soil Test Reports

Soil samples were taken from the managed turfgrass at each of the soccer fields at Whittier Park on March 24, 2016. Soil samples were analyzed by Waypoint Analytical (formerly A&L Eastern Laboratories). Standard soil test results provide values for pH, phosphorus, calcium, magnesium, potassium, cation exchange capacity, and organic matter. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the park, whichever occurs sooner.

A. Management Area 1 - 0.63 acres (Whittier Field 1)

The phosphorus level was Medium+ (M+) for this athletic field. Applications of phosphorus are recommended, not to exceed 1.0 lb/1,000 sq ft annually. See additional notes on the nutrient application worksheet. The potassium level was High+ (H+) for the athletic field. Applications of potassium are recommended, at approximately 1.0 lb/1,000 sq ft annually. This potassium recommendation exceeds that derived from the soil analysis. However, potassium is not an environmentally regulated nutrient and application of surplus potassium will only increase strength and vigor of turfgrass roots. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximun nitrogen application rate for cool season grasses on intensively managed athletic fields is 4.5 lbs/1,000 sq ft (see the Nutrient Management Worksheet for additional detail).

A. Management Area 2 - 0.64 acres (Whittier Field 2)

The phosphorus level was Medium- (M-) for this athletic field. Applications of phosphorus are recommended, not to exceed 2.0 lb/1,000 sq ft annually. See additional notes on the nutrient application worksheet. The potassium level was Medium+ (M+) for the athletic field. Applications of potassium are recommended, at approximately 1.0 lbs/1,000 sq ft annually. Nitrogen applications are recommended as 4.2 lbs/1,000 sq ft annually based on maximum nitrogen per application rates. The annual maximun nitrogen application rate for cool season grasses on intensively managed athletic fields is 4.5 lbs/1,000 sq ft (see the Nutrient Management Worksheet for additional detail).

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.

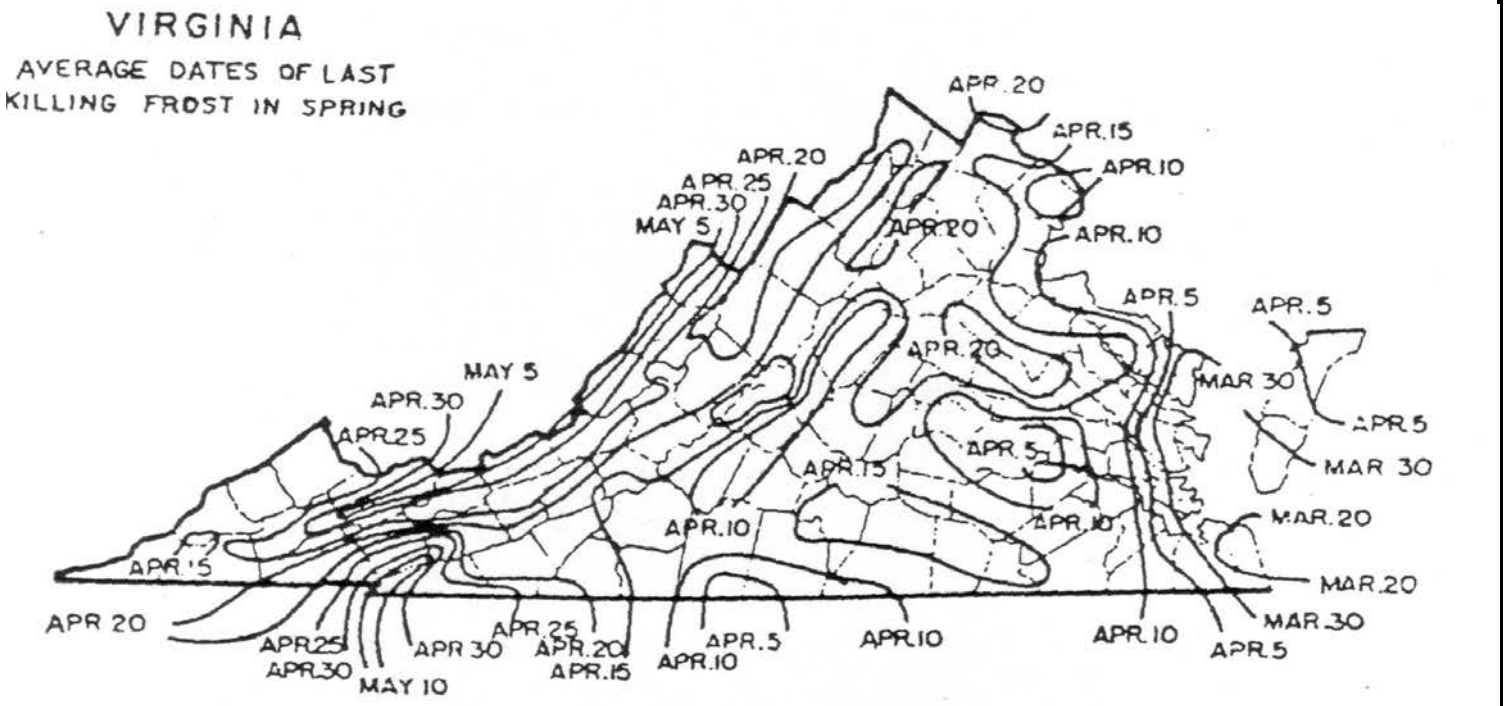
"Slow or controlled release fertilizer" means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference "rapidly available nutrient fertilizer" such 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.

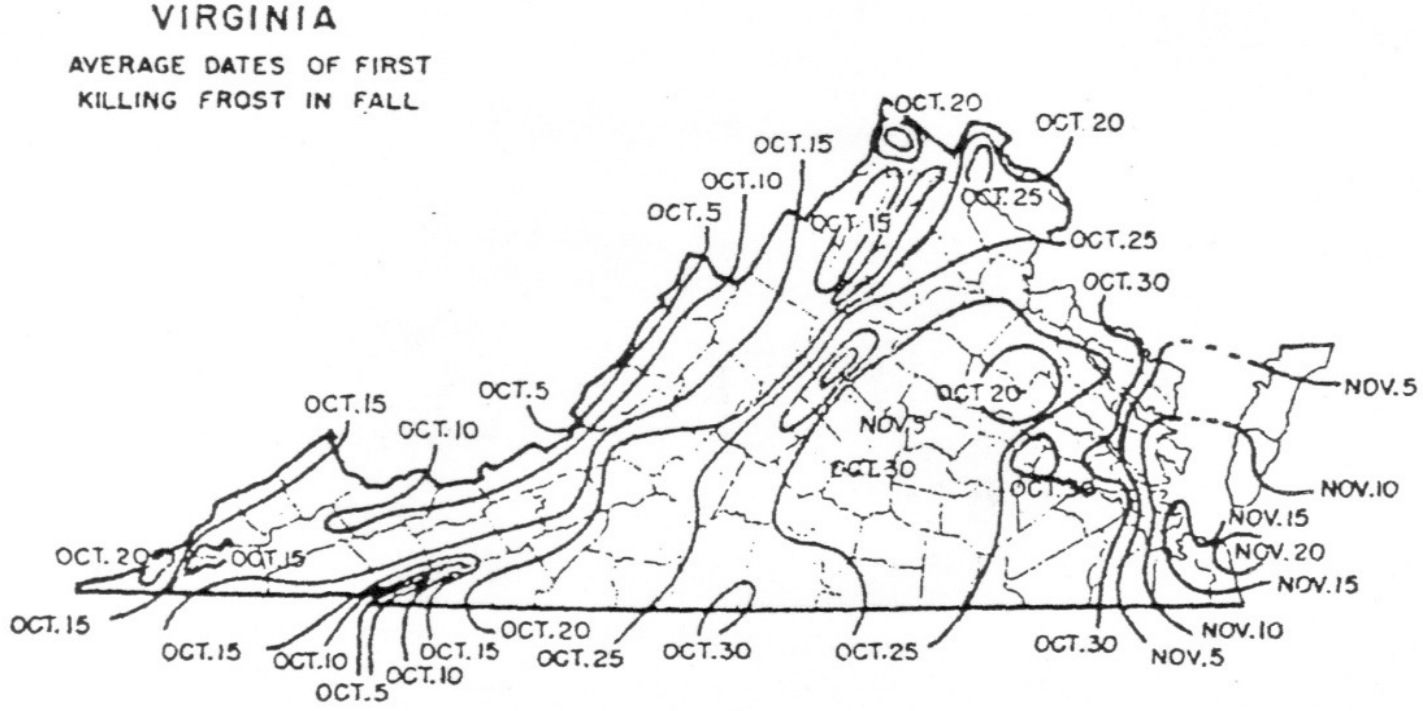
"Water soluble nitrogen", "WSN" and "readily available nitrogen" means: Water soluble nitrogen in either ammonical, urea, or nitrate form that does not have a controlled release, or slow response.

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 on next sheet). 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 on next sheet).





Whittier Park
4/15/2016

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 utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

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 (lbs /1000 $ft^{2)}$ *	
	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 (lbs /1000 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.

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.

Notes

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

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

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**	**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)]	

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

Reference Materials and Notes

Virginia Nutrient Management Standards and Criteria, Revised July 2014, Department of Conservation and Recreation, Division of Soil and Water Conservation

ESRI Aerial Photography

2016 Geospatial Data provided by the City of Winchester for floodplains, wetlands, and parcel boundaries

Fertilizer Application Records

Customer Information		Management Area Information	
Name:	City of Winchester - Whittier Park	Management Area ID:	Whittier Field 1
Address:	900 Whittier Avenue	Management Area Size:	27,312 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Soccer field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

Customer Information		Management Area Information	
Name:	City of Winchester - Whittier Park	Management Area ID:	Whittier Field 2
Address:	900 Whittier Avenue	Management Area Size:	27,747 sq ft
	Winchester, Virginia 22601	Plant Species:	Tall Fescue/Kentucky Bluegrass mixture
		Notes:	Soccer field
Phone #:	540-667-1815		

Date (M/D/Y)	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used	Application Equipment Used
		Temp	Wind Speed	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

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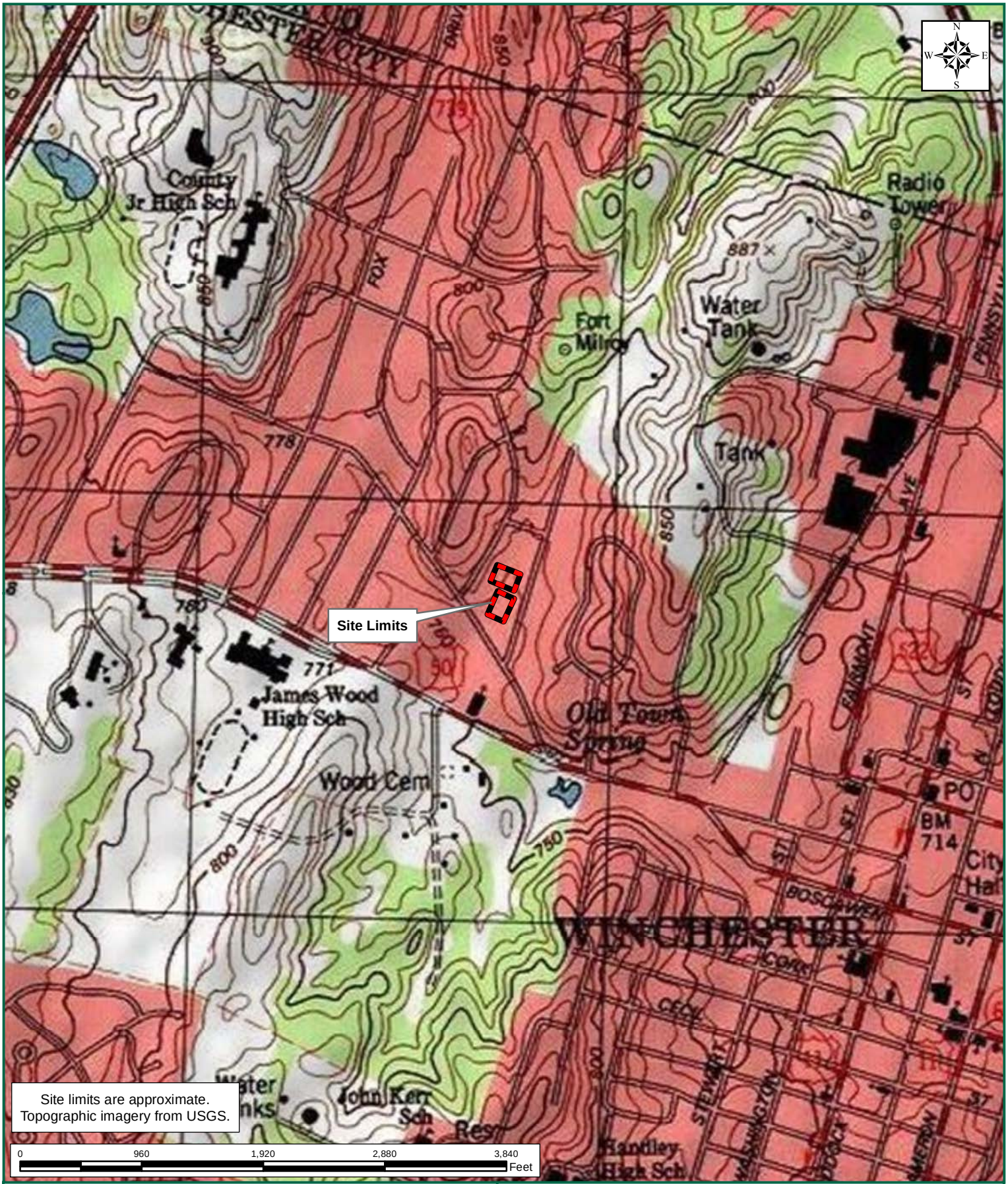

WINCHESTER NUTRIENT MANAGEMENT PLANS - WHITTIER PARK
CITY OF WINCHESTER, VIRGINIA
FIGURE 1: VICINITY MAP

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

TIMMONS GROUP JOB NUMBER: *36284.007*
PROJECT STUDY LIMITS: *1.27 ACRES*
LATITUDE: *39° 11' 30.2" N*
LONGITUDE: *78° 10' 39.8" W*

U.S.G.S. QUADRANGLE(S): *WINCHESTER*
DATE(S): *2013*
WATERSHED(S): *CONOCOCHEAGUE-OPEQUON*
HYDROLOGIC UNIT CODE(S): *02070004*

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CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1648 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS

Site Development | Residential | Infrastructure | Technology | Environmental

DATE	REVISION DESCRIPTION

DATE 03/10/2016

DRAWN BY B. NORRIS

DESIGNED BY B. NORRIS

CHECKED BY E. VIRTS

SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - WHITTIER PARK

CITY OF WINCHESTER, VIRGINIA

FIGURE 2: ENVIRONMENTAL INVENTORY MAP

JOB NUMBER 36284.007

SHEET NO. 1 OF 1

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DATE	REVISION DESCRIPTION

DATE 03/30/2016
DRAWN BY B. NORRIS
DESIGNED BY B. NORRIS
CHECKED BY E. VIRTS
SCALE 1" = 100'

TIMMONS GROUP

WINCHESTER NUTRIENT MANAGEMENT PLANS - WHITTIER PARK
CITY OF WINCHESTER, VIRGINIA

FIGURE 3: NUTRIENT MANAGEMENT AREAS MAP

JOB NUMBER 36284.007
SHEET NO. 1 OF 1

Attachment 3. Letter from DEQ Confirming City Yards Facility Coverage Under the Virginia General Permit for Discharge of Stormwater from Industrial Activities

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE
4411 Early Road, P.O. Box 3000, Harrisonburg, Virginia 22801
(540) 574-7800 Fax (540) 574-7878
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Amy Thatcher Owens
Regional Director

July 1, 2014

Perry Eisenach
City of Winchester, Virginia
15 North Cameron Street
Winchester, VA 22601

RE: Coverage under the VPDES Industrial Stormwater General Permit
Winchester Public Works Department City Yards, Registration No. VAR050822

Dear Mr. Eisenach:

We have reviewed your Registration Statement and have determined that stormwater discharges from the above facility are hereby covered under the referenced VPDES general permit. Your coverage under this permit is effective as of July 1, 2014. The enclosed copy of the general permit contains the applicable stormwater pollution prevention plan (SWPPP), sector specific requirements, monitoring requirements, and other conditions of coverage.

The general permit requires that you update your SWPPP within 90 days of your date of coverage under the permit to incorporate the SWPPP changes that the Department made for this permit reissuance. For this reissuance, all permit discharge monitoring is semi-annual (i.e., once per six months). Monitoring for your facility begins with the July 1, 2014 monitoring period.

Discharge Monitoring Reports (DMRs) for your monitoring type(s) and outfalls are included with the permit. Each DMR specifies the applicable monitoring parameters required by the permit. A DMR should be completed for each permitted outfall for each monitoring period. DMRs must be submitted to this office by January 10th and July 10th each year. The first DMR is due January 10, 2015 for the monitoring period of July 1, 2014 to December 31, 2014.

You are responsible for obtaining additional copies of the DMRs. (See the **e-DMR** note at the end of this letter). Note that Representative Outfall sampling and reporting is allowed for all monitoring types ***except*** Effluent Limitation Monitoring. See the permit Part I.A.2.f for details, and Part I.A.5 for instructions on submitting DMRs with representative outfalls.

Note that permittees with at least one industrial activity stormwater discharge through a regulated municipal separate storm sewer system (MS4) have to submit signed copies of DMRs to the MS4 operator at the same time as the reports are submitted to the Department. A spreadsheet listing the regulated MS4s and their addresses is on DEQ's web site at: http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/VSMPPermits/MS4Permits.aspx (at the bottom of the page).

The following discharge monitoring applies to your facility:

- Benchmark monitoring – Specific stormwater monitoring for your facility based on the industrial sectors that apply to your facility (see the enclosed DMR). Refer to the permit Part I.A.1.b for the benchmark monitoring requirements, and the sector specific sections for the benchmark monitoring applicable to your facility.

- Impaired Waters Monitoring – Waters With An Approved TMDL (other than PCBs or Chesapeake Bay) – Your facility has been identified as discharging the pollutant of concern to an impaired waterbody that has an approved Total Maximum Daily Load (TMDL) Wasteload Allocation. As such, you are required to modify your SWPPP to implement best management practices (BMPs) designed to meet the allocation in the TMDL (see the attached relevant pages from the TMDL and the attached TMDL Fact Sheet). The TMDL contains a specific wasteload allocation for your facility; therefore, you are required to monitor your stormwater discharges for the TMDL pollutant of concern (see the enclosed DMR). Refer to the permit Part I.A.1.c(3) for TMDL monitoring requirements, and permit Part I.B.7.a regarding TMDL requirements.

- Impaired Waters Monitoring – Chesapeake Bay TMDL – Special Monitoring For Facilities In The Chesapeake Bay Watershed – In response to EPA's Chesapeake Bay Total Maximum Daily Load (TMDL) (December 2010), all owners of facilities in the Chesapeake Bay watershed are required to monitor their stormwater discharges for total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP) to characterize the contributions from their facility's specific industrial sector for these parameters (see the enclosed DMR). After you are granted coverage under the permit, stormwater samples are to be collected during each of the first four monitoring periods (i.e., the first two years of permit coverage). Refer to the permit Part I.B.7.b for the specific Chesapeake Bay TMDL requirements. Also note that permit Part I.B.7.b(3) requires you to analyze the collected data and possibly develop a Chesapeake Bay TMDL Action Plan based on the results of the sampling. Please refer to the enclosed Errata Sheet for the correct equation to use for the Chesapeake Bay TMDL loading calculations.

Virginia's Phase I Chesapeake Bay Total Maximum Daily Load (TMDL) Watershed Implementation Plan (November 29, 2010), states that the wasteloads from any expansion of an existing permitted facility discharging stormwater in the Chesapeake Bay watershed cannot exceed the nutrient and sediment loadings that were discharged from the expanded portion of the land prior to the land being developed for the expanded industrial activity. For any industrial activity area expansions (i.e., construction activities, including clearing, grading and excavation activities) that commence on or after July 1, 2014 (the effective date of this permit), you must document in the SWPPP the information and calculations used to determine the nutrient and sediment loadings discharged from the expanded land area prior to the land being developed, and the measures and controls that were employed to meet the no net increase of stormwater nutrient and sediment load as a result of the expansion of the industrial activity. Any land disturbance that is not required to be permitted under the VPDES construction stormwater general permit regulation (9VAC25-880) is exempt from this requirement.

DEQ launched an electronic Discharge Monitoring Report (e-DMR) program that now allows you to submit your stormwater DMR data electronically. We hope that every permittee will sign up for e-DMR access when they receive their general permit coverage, but it is not mandatory at this time. Note that EPA is moving towards making electronic reporting a mandatory requirement nationwide, so this may become a requirement in the future. There are many benefits to both DEQ and the permittee when e-DMR is utilized for monitoring data submissions:

1) Fewer revisions of the data since the e-DMR program automatically flags omissions before the data is submitted;
2) Cost savings on postage, copying, and paper;
3) No concerns about using the most current DMR form – e-DMR refreshes the required parameters automatically when changes are needed;
4) Submittals can be made on a timelier basis;
5) e-DMR participants instantly receive a system-generated email notification/ documentation with the exact time and date of when the e-DMR was submitted; and
6) Electronic signatures from multiple people are allowed, and e-DMR can be accessed from multiple computer locations.

We ask that you apply for e-DMR participation now, although you may apply at any time. Our regional DMR administrator, Linda Ferguson-Davie (540-574-7806, linda.ferguson-davie@deq.virginia.gov) can assist you. The following website provides details, training videos and Frequently Asked Questions:
http://www.deq.virginia.gov/Programs/Water/PermittingCompliance/ElectronicDMRsubmissions.aspx

This general permit will expire on June 30, 2019. The permit requires that you submit a new registration statement at least 60 days prior to that date if you wish continued coverage under the general permit, unless permission for a later date has been granted by the Board. Permission cannot be granted to submit the registration statement after the expiration date of the permit.

If you have any questions, please contact Olive Critzer at olive.critzer@deq.virginia.gov or (540) 574-7877.

Sincerely,

Brandon D. Kiracofe

Brandon D. Kiracofe
Regional Water Permits & Compliance Manager

Attachment 4. City of Winchester Water Quality Monitoring Program

Water Quality Monitoring Program

City of Winchester, VA

Prepared:

June 30, 2016

Introduction & Objectives

The Water Quality Monitoring Program (WQMP) described in this document will help the City to meet the requirements contained in Section I.B.2.e of the City's Municipal Separate Storm Sewer System (MS4) permit and Item 9 in the City's DEQ approved Abrams Creek and Lower Opequon Creek Combined Sediment and Bacteria TMDL Action Plan. It is designed to assist with assessing the effectiveness of the City's Abrams Creek and Lower Opequon Creek Combined Sediment and Bacteria TMDL Action Plan.

Under the program, the City will collect water quality samples to be analyzed for the Pollutants of Concern (POCs), namely Total Suspended Solids (TSS) and Bacteria (E. coli), twice a year from four representative MS4 outfalls located within the drainage sheds of the impaired reaches of Abrams Creek and/or Lower Opequon Creek. The City will utilize this baseline water quality sampling data to address multiple objectives including: screen for potential sources of the POCs discharging into the City's MS4; target locations within the MS4 permit area for implementation of BMPs; educate the public on the potential water quality impacts of their actions and behavior within the MS4 drainage area; and ultimately to aid in assessing the overall effectiveness of the Action Plan in reducing the discharge of the POCs from the City's MS4.

After commencement of the WQMP and appropriate amounts of sampling data have been collected, the City will analyze the data to determine if any adjustments are necessary to the Action Plan with regards to the BMPs/management strategies for controlling POC loads. At the end of each MS4 permit reporting period, the City will also prepare brief annual WQ monitoring summary reports to be included with the City's MS4 Annual Report. The remainder of this document provides more details about the program.

Sampling Location/Outfall Selection

As described in the City's DEQ approved Abrams Creek and Lower Opequon Creek Combined Sediment and Bacteria TMDL Action Plan, the City is responsible for controlling the annual discharge loads of these POCs from their MS4 to levels consistent with the Waste Load Allocations (WLAs) assigned to the City in the applicable TMDLs. As such, under the City's WQMP, baseline water quality samples will be collected from representative MS4 outfalls located within the drainage sheds of the impaired reaches of Abrams Creek and/or Lower Opequon Creek. Some of the screening criterion used for selection of representative sampling locations/outfalls is as follows:

Representative MS4 outfalls – In order to estimate the concentrations of these POCs in point source discharges from the City's regulated MS4 as a whole, samples will be collected from selected representative MS4 outfalls whose drainage areas encompass the typical land uses found throughout the entire MS4 drainage shed.

Outfalls located within the impaired stream segments' drainage sheds – Because the focus of this WQMP is on controlling the annual POC discharges from the MS4 to levels consistent with the Waste Load Allocations (WLAs) assigned to the City in the applicable TMDLs, only MS4 outfalls that are located within the overlapping drainage sheds of the impaired stream segments will be sampled.

Accessibility & Safety – Selected sampling outfalls must be easily located (and re-located during subsequent sampling events), publically accessible or accessible on private property via appropriate

easements, and allow for the collection of water samples safely by two-person sampling teams during wet weather storm events.

Using the aforementioned screening criterion, the City chose the following four representative MS4 outfalls for initial sampling under the WQMP:

Sampling Location #1

Outfall ID:	OT-42
Description:	This outfall collects street drainage from a mixed use residential/commercial area along South Loudoun Street.
Receiving Water Body:	Abrams Creek

Sampling Location #2

Outfall ID:	OT-11
Description:	This outfall is a 12" pipe capturing runoff from Whittier and Linden Drive.
Receiving Water Body:	Town Run

Sampling Location #3

Outfall ID:	OT-34
Description:	This outfall captures a large area to the north along Cameron Street.
Receiving Water Body:	Town Run

Sampling Location #4

Outfall ID:	OT-54
Description:	This outfall captures a large, purely residential area along Handley Avenue.
Receiving Water Body:	Abrams Creek

Figure 1 shows the locations of all four sampling sites on an overall vicinity map while Figures 2-5 show specific location maps for each sampling site.

Sampling Parameters and Methods

The City was assigned aggregated Waste Load Allocations (WLAs) under the approved TMDL report entitled *Opequon Watershed TMDLs for Benthic Impairments: Abrams Creek and Lower Opequon Creek, Frederick and Clarke Counties, Virginia dated July 2003 and Revised October 2003*. Stream segments on Abrams Creek (Segment ID: VAV-B09R_ABR01A00) and the Lower Opequon Creek (Segment ID: VAV-B09R_OPE01A00) were both listed as impaired on Virginia's Section 303(d) Total Maximum Daily Load Priority List and Report due to water quality violations of the general standard (listed as a benthic impairment). Analyses of physical, chemical, biological, and observational data indicated that sediment was the most probable cause of the benthic impairments in both stream segments. TMDLs were therefore developed for sediment to address the benthic impairments in Abrams Creek and Lower Opequon Creek. The City of Winchester (VAR040053) and VDOT (VAR040032) MS4s were assigned aggregated WLAs in the Final TMDL report as follows:

- Abrams Creek TMDL Sediment WLA = 442.7 Metric Tons/Year or 975,985 lbs/year

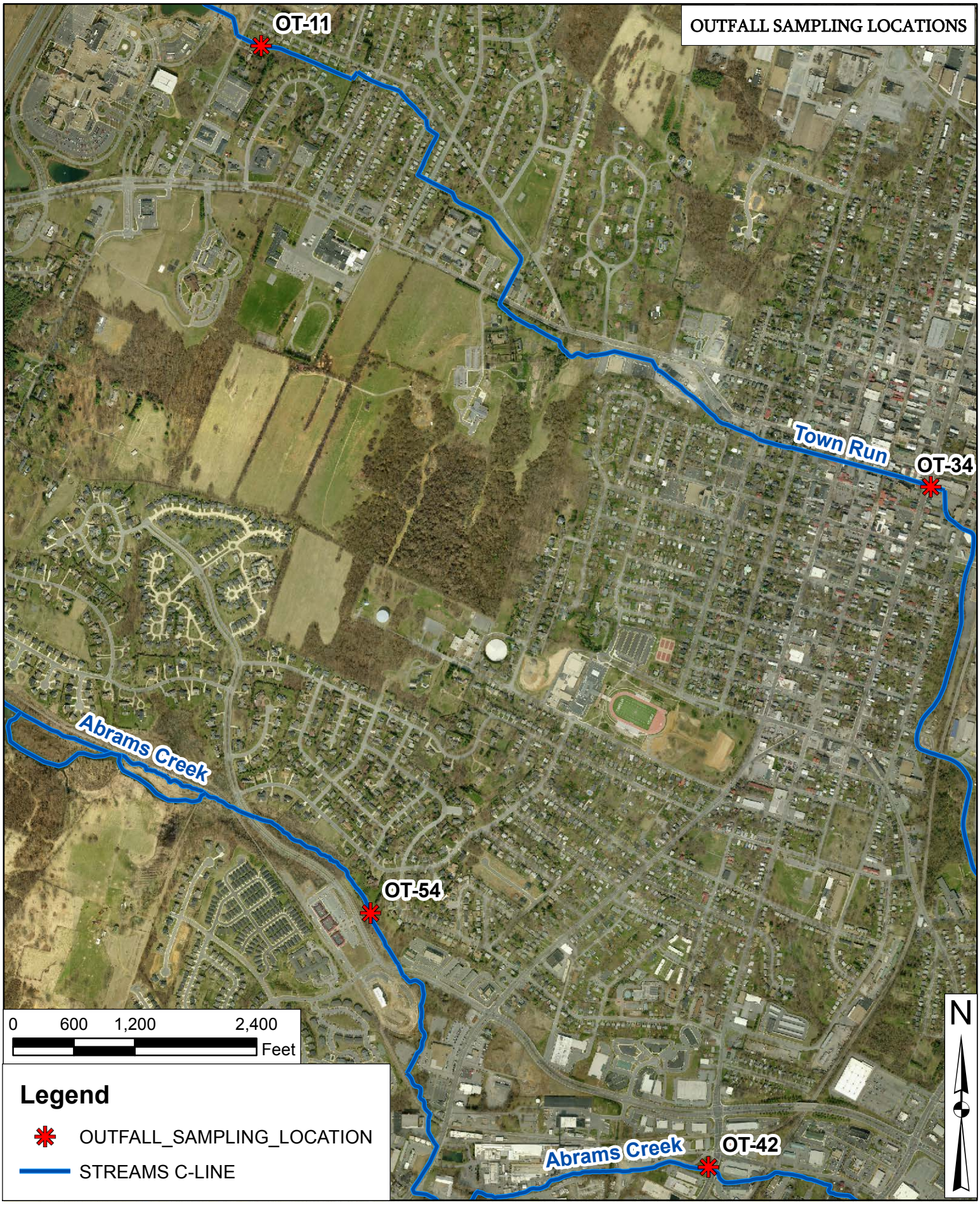

FIGURE 1: OUTFALL SAMPLING LOCATIONS

FIGURE 2: OUTFALL SAMPLING LOCATION 1

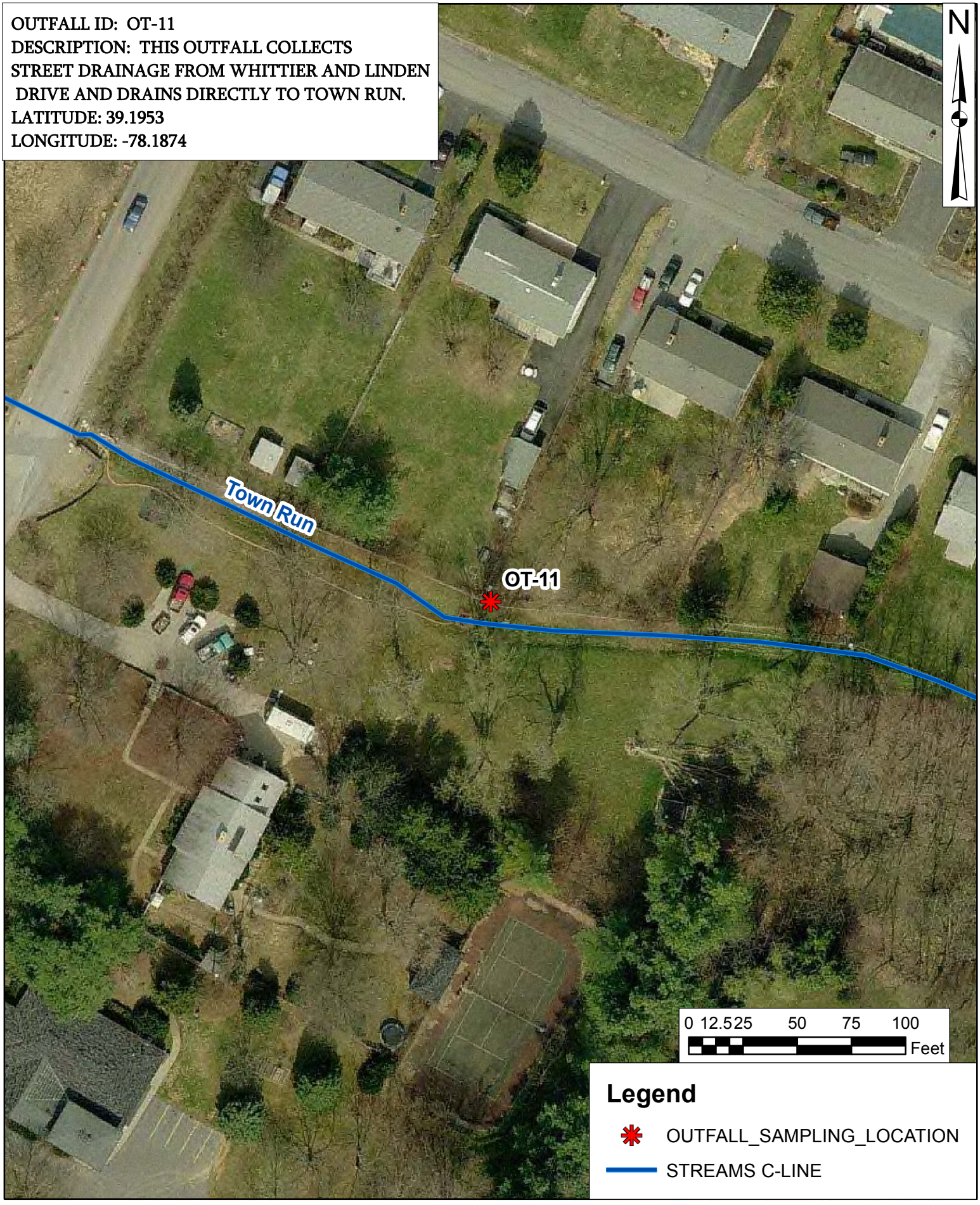

FIGURE 3: OUTFALL SAMPLING LOCATION 2

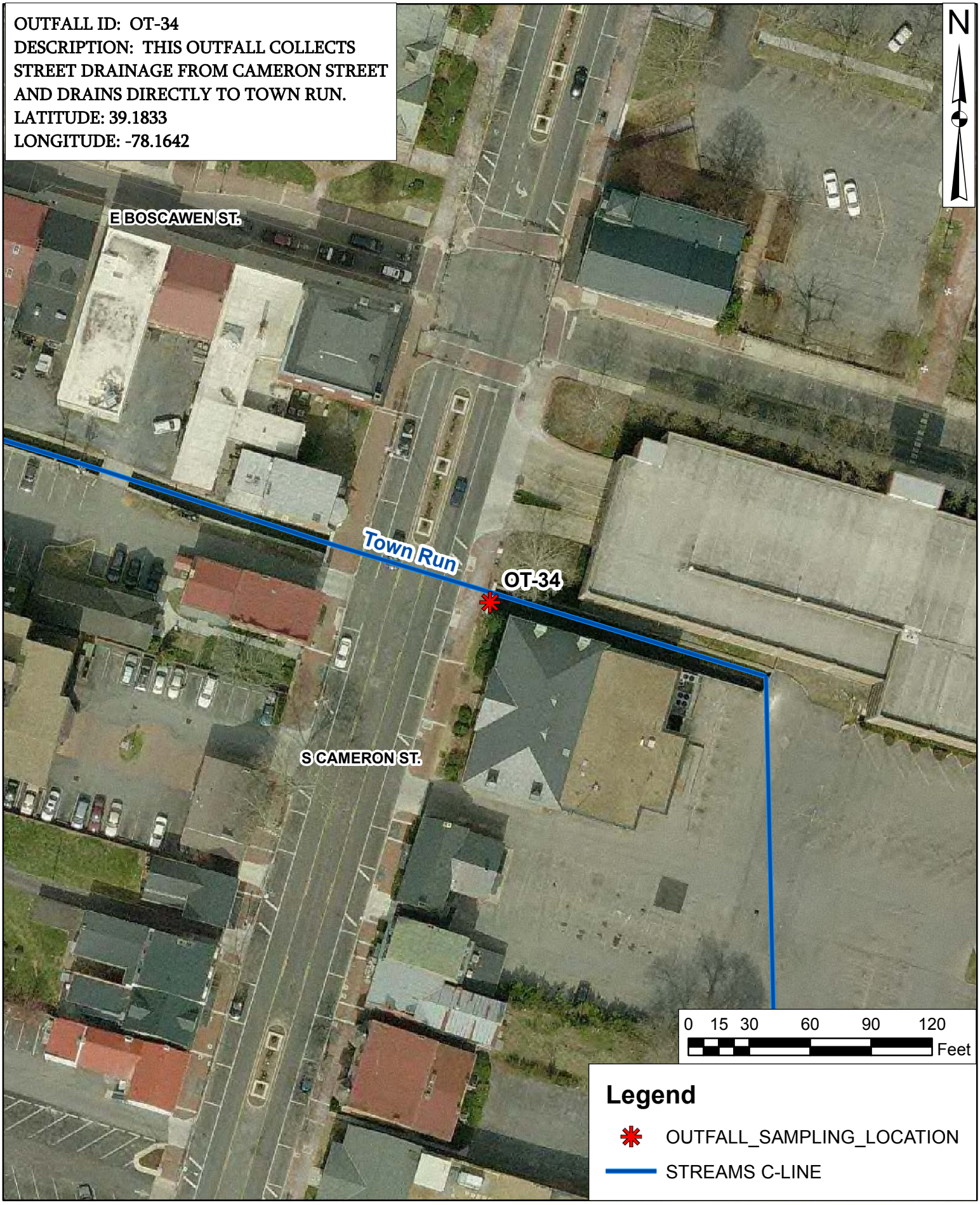

FIGURE 4: OUTFALL SAMPLING LOCATION 3

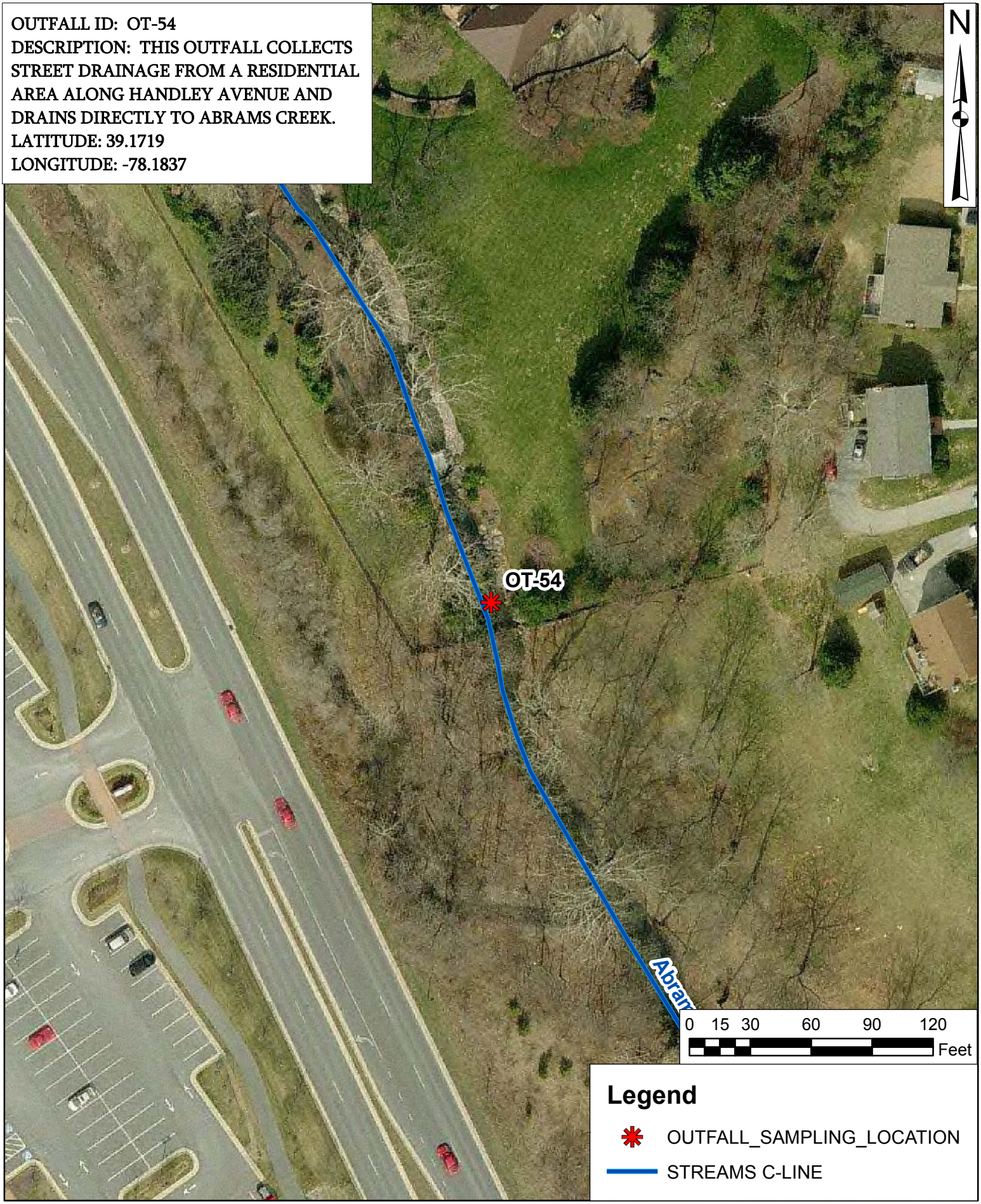

FIGURE 5: OUTFALL SAMPLING LOCATION 4

- Lower Opequon Creek Sediment WLA = 269.2 Metric Tons/Year or 593,484 lbs/year

The City was also assigned an aggregated WLA under the approved TMDL report entitled *Bacteria TMDLs for Abrams Creek and Upper and Lower Opequon Creek Located in Frederick and Clarke County, Virginia dated October 2003 and Revised January 2004*. Stream segments on Abrams Creek (Segment ID: VAV-B09R_ABR01A00), Upper Opequon Creek (Segment ID VAV-B08R_OPE01A00), and the Lower Opequon Creek (Segment ID: VAV-B09R_OPE01A00) were listed as impaired on Virginia's Section 303(d) Total Maximum Daily Load Priority List and Report due to water quality violations of the general standard for fecal coliform. In order to remedy the water quality impairment pertaining to fecal coliform, TMDLs were developed for the new water quality standards for bacteria, which state that the calendar-month geometric mean concentration of E. coli shall not exceed 126 cfu/100 mL, and that no single sample can exceed a concentration of 235 cfu/100mL. The City of Winchester (VAR040053) and VDOT (VAR040032) MS4s were assigned an aggregated WLA in the Final TMDL report as follows:

- Abrams Creek TMDL Bacteria WLA = $19.4x10^{12}$ cfu/year fecal coliform

Based on the need to address WLAs for both sediment and bacteria in the City's Local TMDL Action Plan, the City has chosen to test for TSS and E. coli concentrations at each of the four sampling locations under this WQMP. Testing for these two parameters should provide the City with the necessary baseline water quality data to satisfy the objectives of the WQMP as stated earlier.

After consulting several available references including the Virginia *Citizen Water Quality Monitoring Program Methods Manual* dated October 2007 and taking into consideration the available staff and resources to implement the WQMP, the City chose to utilize the following two protocols for measuring bacteria and sediment concentrations in the collected water samples:

- Bacteria – Coliscan Easygel
- Sediment – Residue-non-filterable (TSS) (Standard Method 2540 D-2011)

The Coliscan Easygel (Micrology Labs) method was selected because it is simple to use, cost effective in comparison to other methods, and provides results comparable to DEQ/State labs (according to James Beckley/DEQ as documented in a presentation entitled *Coliscan Easygel: A Useful Tool to Find Bacteria Sources, www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/ColiscanEG.pdf*). More detailed instructions for utilizing the Coliscan Easygel method (http://www.micrologylabs.com/files/coliscan_water_inst.pdf) and a Coliscan Easygel Color Guide developed by DEQ (http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityMonitoring/CitizenMonitoring/VADEQ_ColiscanID.pdf) can be found in Attachment 1 to this document.

Standard Method 2540 D-2011 for TSS was selected because it is a well-established and recognized method that has been accepted by EPA (per 40 CFR 136) and sample test results utilizing this method can be procured from a Virginia Environmental Laboratory Accreditation Program (VELAP) certified lab located in close proximity to the City of Winchester. Details of this method can be found at: https://www.standardmethods.org/store/ProductView.cfm?ProductID=446.

Storm Event Sampling Frequency, Timeframes, and Staffing

The City's MS4 is designed to collect stormwater runoff from developed areas within the City and safely convey it to various receiving waters during storm events. Typically the only time that MS4 outfalls have flows present is during rainfall events that are large enough to produce adequate runoff. As such, under this WQMP the City will be collecting water samples at the four selected sampling locations during two of these discrete "runoff producing storm events" each year. To account for potential seasonal variations in POC concentrations, one sampling event will take place between October and March, and a second sampling event will take place between April and September of each year.

The City's designated sampling team leader will be responsible for monitoring the weather to determine if conditions are appropriate for sampling during a given storm event. Appropriate conditions for the purposes of this WQMP means a runoff producing storm event resulting from precipitation greater than 0.25 inches in magnitude and that occurs at least 48 hours from the previous measureable (greater than 0.1 inch rainfall) precipitation event as documented by National Weather Service - Winchester Regional Observations found at http://w1.weather.gov/data/obhistory/KOKV.html. Sampling will also be limited to daylight hours during weekdays to accommodate City staff work schedules and for safety purposes.

Once it is determined that conditions are appropriate for sampling, the sampling team leader will mobilize the City's two sampling teams to ensure that they are on-site before the outfalls begin to flow. Each sampling team will be responsible for collecting samples at two separate outfall locations. All samples must be captured within the first hour of the storm event to ensure that the "first flush" of potential POCs is captured in the samples.

The City may employ a combination of City staff, volunteers, and/or consultants to staff the two sampling teams (a total of 4 people) required to implement the WQMP. Prior to initiating the sampling program, the City will provide for training of the sampling team members in the safe and proper collection of water samples. The City's designated sampling team leader will also ensure that all required sampling equipment is in proper working order, sample bottles are properly labeled, and that everything is available and ready to be utilized by the sampling teams.

Processing of Samples & Reporting

The City's designated sampling team leader will be responsible for processing the samples after they are collected by the sampling teams. Coliscan Easygel bacteria samples will be preserved, incubated, and the counted in accordance with the instructions contained in Attachment 1. The TSS samples will be properly handled and delivered to a VELAP certified lab in accordance with the lab's instructions and required chain-of-custody procedures.

The results of the water quality sample testing will documented by the City's designated sampling team leader (bacteria) and/or received directly from the lab (TSS), and entered into Microsoft Excel based Water Quality Sample Data Collection Forms specifically developed for this program. Copies of these forms have been provided in Attachment 2 to this WQMP. Once appropriate amounts of sampling data have been collected under the WQMP, the City will analyze the results to determine the next steps to take with their MS4 Permit Program and Local TMDL Action plans.

Attachment 1. Coliscan Easygel Sampling Instructions

Detection of Waterborne Coliforms and Fecal Coliforms with Coliscan® Easygel®

Introduction

The Coliscan Easygel medium is a patented formulation for water testing. It contains a sugar linked to a dye which, when acted on by the enzyme β-galactosidase (produced by coliforms including ***E. coli***), turns the colony a pink color. Similarly, there is a second sugar linked to a different dye which produces a blue-green color when acted on by the enzyme β-glucuronidase. Because E. coli produces both β-galactosidase and β-glucuronidase, ***E.coli*** colonies grow with a purple color (pink + blue). The combination of these two dyes makes possible the unique ability to use one test to differentiate and quantify coliforms and ***E. coli***. (Because ***E. coli*** is a member of the coliform group, add the number of purple colonies to the number of pink colonies when counting total coliforms.)

Instructions

1. Either collect your water sample in a sterile container and transport the water back to the test site, or take a measured water sample directly from the source and place directly into the bottle of Coliscan Easygel. Water samples kept longer than 1 hour prior to plating, or any Coliscan Easygel bottle that has had sample placed into it for transport longer than 10 minutes, should be kept on ice or in a refrigerator until plated.

2. Label the petri dishes with the appropriate sample information. A permanent marker or wax pencil will work.

3. Sterilely transfer water from the sample containers into the bottles of Coliscan Easygel (Consult the following table for rough guidelines for inoculum amount). Swirl the bottles to distribute the inoculum and then pour the medium/inoculum mixtures into the correctly labeled petri dishes. Place the lids back on to the petri dishes. Gently swirl the poured dish until the entire dish is covered with liquid (but be careful not to splash over the side or on the lid).

Inoculation of Coliscan Easygel

Water Sources	Inoculum Amount
Environmental:	
River, lake, pond, stream, ditch	1.0 to 5.0 mL
Drinking water:	
Well, municipal, bottled	5.0 mL

4. The dishes may be placed right-side-up directly into a level incubator or warm level spot in the room while still liquid. Solidification will occur in approximately 45 minutes.

5. Incubate at 35˚ C (95˚ F) for 24 hours, or at room temperature for 48 hours. (see Comments on incubation)

6. Inspect the dishes.
    a. Count all the purple colonies on the Coliscan dish (disregard any light blue, blue-green or white colonies), and report the results in terms of ***E. coli*** or Fecal Coliform per mL of water.
        Note: To report in terms of ***E. coli*** or Fecal Coliform per 100 mL of water, first find the number to multiply by:
            1. Divide 100 by the number of mL that you used for your sample.
            2. Multiply the count in your plate by the result obtained from #1.
                e.g. For a 3 mL sample, 100 / 3 = 33.3. So 4 ***E. coli*** colonies multiplied by 33.3 will be equal to 133.2 ***E. coli*** per 100 mL of water.
    b. Count all the pink and purple colonies on the Coliscan dish (disregard any light blue, blue-green or white colonies) and report the results in terms of coliforms per mL of water.

7. Do one of the following prior to disposal in normal trash:
    a. Place dishes and Coliscan bottles in a pressure cooker and cook at 15 lbs. for 15 minutes.(This is the best method.)
    b. Place dishes and Coliscan bottles in an oven-proof bag, seal it, and heat in an oven at 300º F for 45 minutes.
    c. Place dishes and Coliscan bottles in a large pan, cover with water and boil for 45 minutes.
    d. Place 5 mL (about 1 teaspoon) of straight bleach onto the surface of the medium of each plate. Allow to sit at least 5 minutes. Place in a water-tight bag and discard in trash.

Comments on Incubation

Micrology Laboratories, LLC. in-house studies indicate that **Coliscan** can effectively differentiate general coliforms from ***E. coli*** when incubated at either room temperatures or at elevated temperatures (such as 90-98˚ F). However, some further explanation may be helpful.

There is no one standard to define room temperature. Most would consider normal room temperature to vary from 68-74˚ F, but even within this range the growth of bacteria will be varied. Members of the bacterial family **Enterobacteriaceae** (which includes coliforms and ***E. coli****) are generally hardy growers that prefer higher than room temperatures, but which will grow at those temperatures. They tend to grow at a faster rate than most other bacterial types when conditions are favorable. It is therefore logical to try to place inoculated dishes in a "warm" place in a room for incubation if a controlled temperature incubator is not available. It is a very easy task to make an adequate incubator from a box with a 40-60 watt bulb in it to provide heat at an even rate. One can also use a heat tape such as is used to prevent the freezing of pipes in the winter as your heat source.

Our general instructions indicate that incubation times for coliforms (including ***E. coli***) are generally 24-48 hours at elevated temperatures (90-98˚ F) and 48 or more hours at room temperatures. At elevated temperatures, no counts should be made after 48 hours as any coliforms present will be quite evident by that time and if new colonies form after 48 hours they are most likely not coliforms, but some other type of slow growing organism that should not be included in your data. At room temperatures, the best procedure is to watch the plates by checking them at 10-12 hour intervals until you observe some pink or purple colonies starting to form and then allowing another 24-30 hours for the maturation of those colonies. Since the coliforms (including ***E. coli***) are generally the fastest growing organisms, these will be the first to grow and be counted. Colonies that may show up at a later time are likely to not be coliforms. As you can see, there are advantages to incubating your dishes at elevated temperatures. First, you can count the results earlier. At 95˚ F, it is often possible to do accurate counts at 18-20 hours of incubation. There is also less probability of variation from batch to batch when the incubation temperatures are kept at one uniform level. And a higher incubation temperature will tend to inhibit the growth of non-coliforms that may prefer lower temperatures.

****E.coli*** is the primary fecal coliform, however, ***Klebsiella*** is sometimes of fecal origin. Other general coliform genera include ***Enterobacter*** and ***Citrobacter.***

Interpretation of Results

This test method utilizes well established, widely accepted criteria for the recognition of coliforms and ***E. coli*** and proper application of the method will result in accurate results Therefore, if you suspect that your water is dangerously contaminated based on the results you get using Coliscan Easygel, you should contact your local health department and ask for their help in performing an official assessment of the water.

Non-fecal coliforms are widely distributed in nature, being found both as naturally occurring soil organisms, and in the intestines of warm-blooded animals and humans. Fecal coliforms are coliforms found naturally only in the intestines of warm-blooded animals and humans. Fecal coliform contamination is therefore the result of some form of fecal contamination. Sources may be either animal or human.

General Notes on Differentiating Coliforms and *E. coli*

Generally, water containing ***E. coli*** (the fecal contamination indicator organism) should not be used for drinking water unless it is sanitized in some manner. Contact your local health department for guidelines regarding ***E. coli*** and coliforms in recreational waters. Inform them if you suspect that contamination may be occurring from a specific source.

Colonies which have the blue-green color are not exhibiting any β-galactosidase activity (which is evidenced by the pink color). Because of this, they are not considered to be either coliforms or ***E. coli*** and therefore should be ignored when counting your coliform or ***E. coli*** colonies. Similarly, colonies which are white are exhibiting neither color-causing enzyme, and should also be ignored.

Colonies on the surface of the plate are exposed to the medium on only the underside of the colony. This causes these colonies to appear with much less of the indicator color. ***E. coli*** colonies may only have a slight purple tinge to them, and it may appear only in the center of the colony with the remainder of the colony being white. Similarly, coliforms on the surface may be light pink or white with a pink center.

Micrology Laboratories, LLC. PO Box 340 Goshen, Indiana 46527-0340 USA

Phone **574.533.3351** Fax **574.533.3370** E-mail **micrologylabs@juno.com**

Attachment 2. Water Quality Sample Data Collection Forms

Coliscan Easygel Data Form

Sample Site #:	Sample Date:	Sample Time:	Rain Past 48 Hours (Inches)[1]	Incubator Time In:	Incubator Temp In: [2]	Incubator Time Out:	Incubator Temp Out:	Sample Volume (ml) [3]	# *E. coli* Colonies (dark blue to royal purple) [4]	Total E. coli Count (CFU/100 ml) [5]	Comments:

Notes:

[1] See http://w1.weather.gov/data/obhistory/KOKV.html.

[2] Ideal incubation temperature is 37.5 C.

[3] Between 1.0 - 5.0 ml

[4] Colonies to be counted per Coliscan Easygel instructions provided in Attachment 1 to the WQMP

[5] To calculate the number of E. coli colonies: (# E. coli colonies/ml sample size) x 100

Total Suspended Solids Data Form

Sample Site #:	Sample Date:	Sample Time:	Rain Past 48 Hours (Inches) [1]	Sample Volume (ml) [2]	Measured TSS in (mg/L): [3]	Comments

Notes:

[1] See http://w1.weather.gov/data/obhistory/KOKV.html.

[2] As instructed by the Certified Lab per Standard Method 2540 D-2011

[3] As reported by the Certified Lab