



**COMMONWEALTH of VIRGINIA**  
DEPARTMENT OF CONSERVATION AND RECREATION

January 3, 2022

David Stroud  
Fort Monroe Authority  
20 Ingalls Road  
Fort Monroe VA 23651

Your nutrient management plan (NMP) dated 12/22/2021 located in the City of Hampton has been approved by the Virginia Department of Conservation and Recreation (DCR). The approved plan is for 46 acres. Only nutrient recommendations for applications to be made after the date of this letter are approved by this letter. Your NMP was written by a nutrient management planner certified by DCR.

This site has not been inspected by DCR and this approval is contingent upon site conditions being as stated in the NMP. Any revisions to this plan must be approved by DCR. Any change in personnel resulting in a change to the plan manager should be reported to the Certified Nutrient Management Planner who will then make DCR aware. Please note that this letter should be kept with the NMP and supporting documentation including nutrient application records. This plan expires on 12/22/2024. Please feel free to contact me with any questions or concerns regarding this approval.

Best regards,

A handwritten signature in cursive script that reads "Anita Tuttle".

Anita Tuttle  
Urban Nutrient Management Coordinator  
Division of Soil and Water Conservation  
600 East Main Street, 24<sup>th</sup> Floor  
Richmond VA 23219  
(804) 513-5958

# Nutrient Management Plan

Prepared For:

Fort Monroe Authority  
David Stroud  
20 Ingalls Rd.  
Fort Monroe, VA 23651  
757-251-2745  
dstroud@FortMonroe.org

Prepared By:

Angela C. Whitehead  
Soil Horizons, LLC  
2 Whittakers Mill Rd.  
Williamsburg, VA 23185  
804-892-6678  
soilmapper@yahoo.com  
Certification Code: # 386

Acreage: 46

County: City of Hampton  
Watershed: JL58

Plan Written: 12/22/21  
Plan Expires: 12/22/24

Planner Signature



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 groundwater 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 quality. 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 Management Program.



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The Fort Monroe Authority Department agrees to comply with all requirements set forth in the Nutrient Management Training and Certification Regulations, 4 VAC 50-85 et seq., and to follow recommendations for turf fertilization and management as described in the Virginia Nutrient Management Standards and Criteria, Revised July 2014. This includes implementing the Department of Conservation and Recreation's approved Nutrient Management Plan and maintaining fertilization records. All nutrient applications shall comply with the provisions of this Nutrient Management Plan upon receipt of the approved plan.

## **1. Site Description and Supporting Information**

Fort Monroe's current boundaries encompass approximately 565 acres, including 110 acres of submerged lands and 85 acres of wetlands. The namesake stone fort was begun in 1818 and presently there are approximately 150 buildings, sites, structures, and objects contributing to the Fort Monroe National Historic Landmark (NHL) District. Fort Monroe served as the headquarters for the US Army Training and Doctrine Command. In 2011, Fort Monroe was deactivated as an active military base. The Fort Monroe Authority (FMA) was created to preserve, protect, and manage Fort Monroe and Old Point Comfort after the base closure. Approximately half of Fort Monroe was designated a National Monument on November 1, 2011 and is to be managed by the National Park Service (NPS). In 2013, the US Army transferred a majority of the property to the Commonwealth of Virginia.

### ***A. Management Area Description***

Fort Monroe is located in Hampton, Virginia—at Old Point Comfort, the southern tip of the Virginia Peninsula. From Interstate 64 (exit 268) access to Fort Monroe is gained via E. Mellen Street or E. Mercury Boulevard. Fort Monroe is bound by the Chesapeake Bay to the east and Mill Creek/Hampton River to the west. Fort Monroe is located within the Hampton Roads/Hampton River watershed. (Site Map A)

Fort Monroe is divided into five usage zones: Historic Village, Inner Fort, North Gate, Wherry Quarter, and the Park and Recreation Area (Site Map B). A commercial lawncare company uniformly maintains 46 acres of predominately warm season turfgrass within the non-residential portions of the Historic Village (20 acres), Inner Fort (9.5 acres), North Gate (7.5 acres), and Wherry Quarter (9 acres). (Site Map C) Small areas of cool season turf are included in the management area acreage, typically occurring in shaded locations, but are managed to encourage warm season establishment and growth. The grounds are less intensively managed, receiving only one to two fertilization applications annually. Landscape beds are located throughout each zone. These landscape beds do not receive any additional nutrients aside from what is applied to the adjacent turf. The Fort Monroe grounds are less intensively managed, receiving only one annual fertilization application. Within the boundaries of Ft. Monroe, turf areas are maintained that do not receive fertilization or irrigation. The unfertilized portions of Ft. Monroe are not included in this plan. Additionally, areas owned by NPS and the Parks and Recreation zone are excluded from this plan.

Municipal water provides the primary source of irrigation water for turfgrass irrigated around Buildings 138, 83, 119, and Continental Park down to the fishing pier. All additional turgrass areas are non-irrigated.

# Site Map A–Location Map



Map data ©2017 Google 1000 ft

Site Map B-FMA Usage Zones

**Legend**

-  NPS OWNERSHIP FINAL
-  <all other values>

**Zone**

-  Historic Village
-  Inner Fort
-  North Gate
-  Parks and Recreation Area
-  Wherry Quarter



# Site Map C—Fertilizer Application Areas



**Legend**

-  Buildings with Irrigation
-  Areas of Nutrient Application



1 inch = 650 feet



### B. Fertilization Season

The recommended nutrient management 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. 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. Applications of inorganic nutrient sources, liquid manure, liquid sewage sludge, or liquid industrial waste are not to occur on frozen or snow-covered ground.

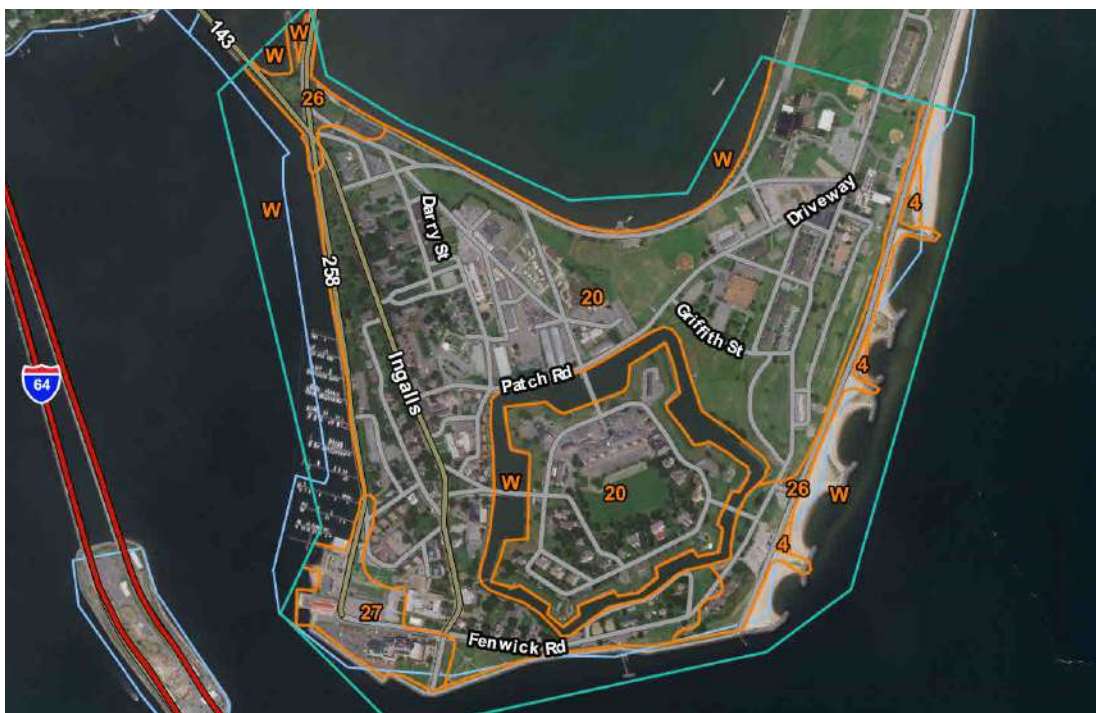
	Killing Frost Dates	Cool Season Applications	Warm Season Applications
<b>Spring</b>	April 4	February 21	April 4
<b>Fall</b>	November 6	December 18	October 9

### C. Environmentally Sensitive Sites

An environmentally sensitive site is any area which is particularly susceptible to nutrient loss to groundwater or surface water since it contains or drains to areas which contain sinkholes, or where at least 33% of the area in a specific management area contains one or any combination of the following features:

1. Soils with high potential for leaching based on soil texture or excessive drainage;
2. Shallow soils less than 41 inches deep likely to be located over fractured or limestone bedrock;
3. Subsurface tile drains;
4. Soils with high potential for subsurface lateral flow based on soil texture and poor drainage;
5. Floodplains as identified by soils prone to frequent flooding in county soil surveys; or
6. Lands with slopes greater than 15%

The majority of the grounds is mapped as Seabrook – Urban Land complex (20) or Urban Land (27). Soils of the Seabrook series are very deep and moderately well drained with rapidly permeable subsoils. They formed in materials weathered from sandy marine and fluvial sediments. Special attention should be given to the timing of fertilizer applications prior to heavy rainfall to avoid nutrient loss due to leaching.





## 2. Soil Test Summary and Results

Soil samples were taken from fertilized turf areas. Each composite sample consisted of several sub-samples from the upper four inches of soil. These sub-samples were taken in a random manner to minimize the variability that is present in the sampling area. Sub-samples were thoroughly mixed, breaking apart clumps and removing all foreign matter such as roots, stalks, rocks, etc.

Soil samples were analyzed by Waypoint Analytical. Standard soil test results provide values for pH, Calculated Cation Exchange Capacity, Phosphorous, Calcium, Magnesium, Potassium, Copper, Iron, Boron, Manganese, and Calculated Cation Saturation. The soil samples collected are valid for the life of this plan (three years) or upon a major renovation or redesign of the campus grounds, whichever occurs sooner.

### A. Fort Monroe Authority Turf, 46.0 acres

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Customer Name: **Fort Monroe Authority**  
 Testing Lab: **Waypoint Analytical**  
 Sample Date: **12/21/21**  
 Planner Name, Cert. #: **Angela C. Whitehead, #386**

Area	Soil pH	Buffer pH	Lab P (ppm)	VT P (ppm)	VT (H/M/L)	P <sub>2</sub> O <sub>5</sub> Needs (lbs/1000ft <sup>2</sup> )	Lab K (ppm)	VT K (ppm)	VT (H/M/L)	K <sub>2</sub> O Needs (lbs/1000ft <sup>2</sup> )
1 Wherry Qtr	6.8		36	13	M	1.5	60	43	M-	2
2 North Gate	7.0		71	29	H	0.75	79	56	M	1.5
3 Historic Village	5.8	6.79	99	42	H	0.75	42	30	L+	2
4 Inner Fort	5.6	6.83	38	14	M	1.5	67	48	M-	2

- Soil pH measured between 5.6 – 7.0. Additions of limestone are recommended at a rate of 45 lbs/1000ft<sup>2</sup> for Inner Fort and Historic Village turfgrass.
- Potassium levels measured between low+ to moderate levels. **Potash applications are recommended at a rate of 1.5 lbs/1000ft<sup>2</sup> annually.**
- Phosphorus levels measured in the moderate to high range. **Phosphorous applications are recommended at a rate of 0.75 lbs/1000ft<sup>2</sup> annually.**
- **Nitrogen applications may not exceed 3.5 lbs/1000ft<sup>2</sup> annually to all less intensively managed turf areas.**

### 3. Summary of Recommended Annual Nitrogen, Phosphorous, and Potassium Application

The following tables provide nutrient recommendations that allow managers flexibility in selecting fertilizer products that best fit their management program. Fertilizer products and/or analysis are not specified and doing so may constrain the manager. Monthly fertilization programs are included to demonstrate the frequency and timing of nutrient applications that comply with Virginia Nutrient Management Standards and Criteria, Revised July 2014. If Class B Biosolids or raw manure is applied, the plan must be revised to meet the conditions of the Virginia Department of Environmental Quality permit.

#### A. Fertilizer Recommendations Summary: Fort Monroe Authority Turf, 46.0 acres

Area	Annual Lime Needs (lbs/1000ft <sup>2</sup> )	Annual N Needs (lbs/1000ft <sup>2</sup> ) <sup>a</sup>	Max. Total N Rate per application (lbs/1000ft <sup>2</sup> ) <sup>b, c</sup>	Annual P <sub>2</sub> O <sub>5</sub> Needs (lbs/1000ft <sup>2</sup> )	Annual K <sub>2</sub> O Needs (lbs/1000ft <sup>2</sup> )
Fort Monroe fertilized turf	45 (Inner Fort and Historic Village)	3.5	0.70 (min. 30 days)	0.75	1.5

<sup>a</sup> Cool Season: Do not apply N between December 19 and February 20 or when the ground is frozen. Warm Season: Do not apply N between October 10 and April 3 or during periods of drought.

<sup>b</sup> 100% Water Soluble N (WSN) Fertilizer

<sup>c</sup> A maximum application rate of 0.9 lb/1000 ft<sup>2</sup> of total N (cool season) or 1.0 lb/1,000 ft<sup>2</sup> of total N (warm season) may be applied using slowly available forms of N with a minimum of 30 days between applications.

#### B. Recommended Monthly Fertilizer Application: Fort Monroe Authority Turf, 46.0 acres

Area	N <sup>a,b, c</sup> – P <sub>2</sub> O <sub>5</sub> – K <sub>2</sub> O (lbs/1000ft <sup>2</sup> ) 2021-2024									Annual Need <sup>d</sup>		
	Feb 21-Mar	April	May	June	July	August	Sept	Oct	Nov-Dec 18	N <sup>a,b</sup>	P	K
Fort Monroe fertilized turf			0.7 – 0.75 – 0.75				0.7 – 0.0 – 0.75		45 lime Inner Fort & Historic Village	1.4	0.75	1.5

<sup>a</sup> See Table 4A and Section 6 for N Rate Guidelines

<sup>b</sup> A maximum application rate of 0.9 lb/1000 ft<sup>2</sup> of total N (cool season) or 1.0 lb/1,000 ft<sup>2</sup> of total N (warm season) may be applied using slowly available forms of N with a minimum of 30 days between applications.

<sup>c</sup> **Do not apply more than 0.7 pounds of water soluble nitrogen per 1000 ft<sup>2</sup> within a 30 day period.**

<sup>d</sup> N and P<sub>2</sub>O<sub>5</sub> applications may not exceed the Annual Need. Additional K<sub>2</sub>O may be made annually to increase plant vigor and relieve traffic stress on damaged turf during times of extreme use.



## 5. Virginia Nutrient Management Standards and Criteria, Revised July 2014

### VI. Turfgrass Nutrient Recommendations

#### Definitions

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

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

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

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

#### Nitrogen Application Guidelines

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.*** 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<sup>2</sup> 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<sup>2</sup> 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.***

#### Per Application Rates

Do not apply more than 0.7 pounds of water soluble nitrogen per 1,000 ft<sup>2</sup> within a 30 day period. For cool season grasses, do not apply more than 0.9 pounds of total nitrogen per 1,000 ft<sup>2</sup> within a 30-day period. For warm season grasses, do not apply more than 1.0 pounds of total nitrogen per 1,000 ft<sup>2</sup> within a 30-day period. Lower per application rates of water soluble nitrogen sources or use of slowly available nitrogen sources should be utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

#### Annual Application Rates for Home Lawns and Commercial Turf

Up to 3.5 pounds per 1,000 ft<sup>2</sup> of nitrogen may be applied annually to cool season grass species or up to 4 pounds per 1,000 ft<sup>2</sup> may be applied annually to warm season grass species using 100 percent water soluble nitrogen sources. Lower rates of nitrogen application may be desirable on those mature stands of grasses that require less nitrogen for long-term quality. As a result, lower application rates will probably be more suited to the fine leaf fescues (hard fescue, chewings fescue, creeping red fescue, and sheep fescue) and non-overseeded zoysiagrass. Lower rates should also be used on less intensively managed areas.

For warm season grasses, up to 0.7 lb/1,000 ft<sup>2</sup> of nitrogen may be applied in the Fall after perennial ryegrass overseeding is well established. An additional N application of 0.5 lb/1,000ft<sup>2</sup> may be made in February-March to overseeded perennial ryegrass if growth and color indicate need. Applications using WSN may not exceed 0.7 lb/1,000ft<sup>2</sup> within a 30 day period.

### 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<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> in a 30-day period, no more than 2.5 pounds of nitrogen per 1,000 ft<sup>2</sup> 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.

### Nitrogen Timing

The beginning and ending dates for application of nitrogen shall be determined using guidance and frost date maps contained in the Season of Application for Nitrogen section, Figures 6-1 and 6-2 (pg 96).

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

### Phosphorus and Potassium Recommendations for Established Turf

Apply phosphorus (P<sub>2</sub>O<sub>5</sub>) and potassium (K<sub>2</sub>O) fertilizers as indicated by a soil test using the following guidelines:

Soil Test (VT) Rating	P <sub>2</sub> O <sub>5</sub> lb/1000 ft <sup>2</sup>	K <sub>2</sub> O lb/1000 ft <sup>2</sup>
L-	3	3
L	2.5	2.5
L+	2	2
M-	2	2
M	1.5	1.5
M+	1	1
H-	1	1
H	0.75	0.75
H+	0.5	0.5
VH	0	0

Avoid the general use of high phosphorus ratio fertilizers such as 10-10-10 or 5-10-10, unless soil tests indicate phosphorus availability below the M+ level.

### 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 Application for Establishment of Turf

At the time of establishment, apply no more than 0.9 pounds per 1,000 ft<sup>2</sup> of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft<sup>2</sup> 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<sup>2</sup> total for cool season grasses and 2.0 pounds per 1,000 ft<sup>2</sup> for warm season grasses for the establishment period. Applications of WSN cannot exceed more than 0.7 pounds per 1,000 ft<sup>2</sup> within a 30-day period.

### **Sod Installations:**

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

No more than 0.7 lb of WSN/1,000 ft<sup>2</sup> should be applied before sod is installed. Alternatively, using a slowly available forms of nitrogen, 0.9 lb N/1000 ft<sup>2</sup> for cool season grasses or 1 lb of N/1000 ft<sup>2</sup> for warm season grasses may be applied before sod installation.

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

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

### **Phosphorus and Potassium Recommendations for Establishment of Turf**

<b>Soil Test (VT) Rating</b>	<b>P<sub>2</sub>O<sub>5</sub> lb/1000 ft<sup>2</sup></b>	<b>K<sub>2</sub>O lb/1000 ft<sup>2</sup></b>
L-	4	3
L	3.5	2.5
L+	3	2
M-	3	2
M	2.5	1.5
M+	2	1
H-	2	1
H	1.5	0.75
H+	1	0.5
VH	0	0

### **Other Turf Management Considerations for State-owned Lands**

#### **Lime Recommendations**

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

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

#### **Returning Grass Clippings**

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

#### **Management of Collected Clippings**

If clippings are collected they should be disposed of properly. They may be composted or spread uniformly as a thin layer over other turf areas or areas where the nutrient content of the clippings can be recycled through actively growing plants. They should not be blown onto impervious surfaces or surface waters, dumped down stormwater drains, or piled outside where rainwater will leach out the nutrients creating the potential for nutrient loss to the environment.

### **Use of Iron**

Foliar iron supplements may be used to stimulate a greening effect on the turfgrass as an alternative to additional applications of nitrogen. These applications are most beneficial if applied in late spring through summer for cool season grasses and in late summer through fall for warm-season grasses.

### **Impervious Surfaces**

Do not apply fertilizers containing nitrogen or phosphorus to impervious surfaces (sidewalks, streets, etc.). DO NOT use urea as an ice melting substance in cold weather. Remove any granular materials that land on impervious surfaces by sweeping and collecting, and either put the collected material back in the bag, or spread it onto the turf and/or use a leaf blower etc., to return the fertilizer back to the turfgrass canopy.

### **Environmentally Sensitive Areas**

Avoid fertilizer applications within 15 feet of waterways. This setback is reduced to 10 feet if a drop spreader, rotary spreader with deflector or targeted spray liquid is used to apply the fertilizer. The use of fertilizers with slow release nitrogen is greatly encouraged, especially where there is any reason to suspect environmental concerns.

### **Recordkeeping requirements and reporting for the application of fertilizer (2VAC5-405-100)**

State-owned lands subject to this regulation shall maintain records of each application of fertilizer to non-agricultural land for at least three years following the application. These records shall be available for inspection. Each record shall contain the:

1. Name, mailing address of the application site;
2. Name of the person making or supervising the application;
3. Day, month, and year of application;
4. Weather conditions at the start of the application;
5. Acreage, area, square footage, or plants treated;
6. Analysis of fertilizer applied;
7. Amount of fertilizer used, by weight or volume; and
8. Type of application equipment used.

### **Spreader Calibration**

Spreaders and boom sprayers must be properly calibrated if they are to deliver fertilizers and pesticides to turf at correct rates. If calibration is done incorrectly, the product may be misapplied and either too much or too little of the product will reach the turf. Sprayers and spreaders should be calibrated at first use and every fourth application. Spreaders and sprayers be calibrated in several ways. Refer to the following publication for detailed instructions:

[www.turfgrass.ncsu.edu/Articles/admin/2008/Calibration\\_of\\_Turfgrass\\_Boom\\_Sprayers\\_and\\_Spreaders\\_\(AG-628\).pdf](http://www.turfgrass.ncsu.edu/Articles/admin/2008/Calibration_of_Turfgrass_Boom_Sprayers_and_Spreaders_(AG-628).pdf)

## 6. Soil Reports



Report Number: 21-354-0876

Account Number: 06736

Send To: SOIL HORIZONS  
2 Whitakers Mill  
WILLIAMSBURG VA 23185



"Every acre...Every year."™

7621 Whitepine Road, Richmond, VA 23237  
Main 804-743-9401 ° Fax 804-271-6446  
www.waypointanalytical.com

Grower: Ft Monroe Authority  
20 Ingalls Rd  
Ft Monroe VA 23651

### SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 12/20/2021

Date Of Analysis: 12/21/2021

Date Of Report: 12/21/2021

Sample ID Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
WQ	22651	2.2 L		83	36 M			60 L	88 L	1333 VH		6.8		0.2	7.8
NG	22652	3.2 M		99	71 H			79 L	118 L	1798 VH		7.0		0.0	10.2
HV	22653	3.0 M		100	99 H			42 VL	140 H	932 M		5.8	6.79	1.4	7.3
IF	22654	2.6 M		96	38 M			67 M	117 H	455 M		5.6	6.83	1.0	4.4

Sample ID Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO <sub>3</sub> N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
WQ	2.0	9.4	85.4		2.6										
NG	2.0	9.6	88.1		0.0										
HV	1.5	16.0	63.8		19.2										
IF	3.9	22.2	51.7		22.7										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: *Pauric Mc Groary*

Pauric Mc Groary Ph.D., CPAg