Major Stormwater Plan Form SW-002

Review Process

Contact Information

Currituck County
Planning and Community Development
153 Courthouse Road, Suite 110
Currituck, NC 27929

Phone: 252.232.3055
Fax: 252.232.3026

Website: http://www.co.currituck.nc.us/planning-community-development.cfm

Currituck County
Engineering Department
153 Courthouse Road, Suite 302
Currituck, NC 27929

Phone: 252.232.6035

General

Major stormwater plan approval is required for:

- Major subdivisions.
- Major site plans - development or expansion on a nonresidential, multi-family, or mixed use lot by 5,000 square feet or more of impervious coverage or resulting in 10% or more total impervious coverage.

Step 1: Application Submittal

The applicant must submit a complete application packet consisting of the following:

- Completed Currituck County Minor Stormwater Plan Form SW-002 (unless submitting a major subdivision or major site plan).
- Completed Rational Method Form SW-003 or NRCS Method Form SW-004.
- Stormwater management plan drawn to scale. The plan shall include the items listed in the major stormwater plan design standards checklist.
- Alternative stormwater runoff storage analysis and/or downstream drainage capacity analysis, if applicable.
- NCDENR permit applications, if applicable.
- Number of Copies Submitted:
  - 3 Copies of required plans
  - 3 Hard copies of ALL documents
  - 1 PDF digital copy (ex. Compact Disk – e-mail not acceptable) of all plans AND documents.

On receiving an application, staff shall determine whether the application is complete or incomplete. A complete application contains all the information and materials listed above, and is in sufficient detail to evaluate and determine whether it complies with appropriate review standards. An application for major stormwater plan must be submitted and approved prior altering an existing drainage system, performing any land disturbing activity or, before construction documents are approved.

Step 2: Staff Review and Action

Once an application is determined complete staff shall approve, approve subject to conditions or disapprove the application.

OFFICIAL USE ONLY:
Permit Number: _____
Date Filed: _____
Date Approved: _____

Major Stormwater Plan
Form SW-002

Contact Information

APPLICANT:
Name: Ken Haertel
Address: 755 Commerce Drive, Suite 800
Decatur, GA 30030
Telephone: 754-245-7992
E-Mail Address: kenh@thecontineogroup.com

PROPERTY OWNER:
Name: MIDGARD HARBINGER, NC, LLC
Address: 1146 Canton Street
Roswell, GA 30075
Telephone: 770-609-8276
E-Mail Address: mgarcia@reliant-mgmt.com

Property Information

Physical Street Address: 8659 Caratoke Highway, Harbinger NC
Parcel Identification Number(s): 9847-01-6858
FEMA Flood Zone Designation: X

Request

Project Description: Expansion of an existing self storage facility 10,000-sf climate-controlled structure)
Total land disturbance activity: 34,000 sf
Calculated volume of BMPs: 47,768-CF sf
Maximum lot coverage: 152,895 sf
Proposed lot coverage: 143,748 sf

TYPE OF REQUEST

- ☐ Major subdivision (10-year, 24-hour rate)
- ☑ Major site plan (5-year, 24-hour rate)

METHOD USED TO CALCULATE PEAK DISCHARGE

- ☑ Rational Method
- ☐ NRCS Method (TR-55 and TR-20)
- ☐ Simple volume calculation for small sites (less than 10 acres)
- ☐ Alternative stormwater runoff storage analysis
- ☐ Downstream drainage capacity analysis

I hereby authorize county officials to enter my property for purposes of determining compliance. All information submitted and required as part of this process shall become public record.

Property Owner(s)/Applicant

3/21/23
Date

The table below depicts the design standards of the major stormwater plan application. Please make sure to include all applicable listed items to ensure all appropriate standards are reviewed.

Major Stormwater Plan

Design Standards Checklist

Date Received: _____

Project Name: Midgard Harbinger - Self Storage Expansion

Applicant/Property Owner: Reliant Real Estate Management, LLC

	Minor Stormwater Plan Design Standards Checklist	
	General	
1	Property owner name and address.	
2	Site address and parcel identification number.	✔
3	North arrow and scale to be 1" = 100' or larger.	✔
	Site Features	
4	Scaled drawing showing existing and proposed site features: Property lines with dimensions, acreage, streets, easements, structures (dimensions and square footage), fences, bulkheads, septic area (active and repair), utilities, vehicular use areas, driveways, and sidewalks.	
5	Approximate location of all designated Areas of Environmental Concern (AEC) or other such areas which are environmentally sensitive on the property, such as Maritime Forest, CAMA, 404, or 401 wetlands as defined by the appropriate agency.	
6	Existing and proposed ground elevations shown in one foot intervals. All elevation changes within the past six months shall be shown on the plan.	
8	Limits of all proposed fill, including the toe of fill slope and purpose of fill.	
9	Square footage of all existing and proposed impervious areas (structures, sidewalks, walkways, vehicular use areas regardless of surface material), including a description of surface materials.	✔
10	Existing and proposed drainage patterns, including direction of flow.	✔
11	Location, capacity, design plans (detention, retention, infiltration), and design discharge of existing and proposed stormwater management features.	✔
12	Elevation of the seasonal high water level as determined by a licensed soil scientist.	✔
13	Plant selection.	✔
	Permits and Other Documentation	
14	NCDENR stormwater permit application (if 10,000sf or more of built upon area).	✔
15	NCDENR erosion and sedimentation control permit application (if one acre or more of land disturbance).	✔
16	NCDENR coastal area management act permit application, if applicable.	
17	Stormwater management narrative with supporting calculations.	✔
18	Rational Method Form SW-003 or NRCS Method Form SW-004	✔
19	Alternative stormwater runoff storage analysis and/or downstream drainage capacity analysis, if applicable	✔
20	Design spreadsheets for all BMPs (*Appendix F – Currituck County Stormwater Manual*).	✔
21	Detailed maintenance plan for all proposed BMPs.	✔

Certificate		
22	The major stormwater plan shall contain the following certificate: I, SYLVIE GERMANA, owner/agent hereby certify the information included on this and attached pages is true and correct to the best of my knowledge. On the plan entitled Midgard Point Harbor - Self Storage Expansion, stormwater drainage improvements shall be installed according to these plans and specifications and approved by Currituck County. Yearly inspections are required as part of the stormwater plan. The owner is responsible for all maintenance required. Currituck County assumes no responsibility for the design, maintenance, or performance of the stormwater improvements. Date: 2/21/2023 Owner/Agent: Sylvie Germana	✔

Major Stormwater Plan Submittal Checklist

Staff will use the following checklist to determine the completeness of your application. Please make sure all of the listed items are included. Staff shall not process an application for further review until it is determined to be complete.

Major Stormwater Plan Form SW-002

Submittal Checklist

Date Received: _____

Project Name: Midgard Harbinger - Self Storage Expansion

Applicant/Property Owner: Reliant Real Estate Management, LLC

Major Stormwater Plan Form SW-002 Submittal Checklist		
1	Completed Major Stormwater Plan Form SW-002	✔
2	Completed Rational Method Form SW-003 or NRCS Method Form SW-004	✔
3	Stormwater plan	✔
4	NCDENR permit applications, if applicable	✔
5	3 copies of plans	✔
6	3 hard copies of ALL documents	✔
7	**1 PDF digital copy of all plans AND documents (ex. Compact Disk – e-mail not acceptable)**	✔

Comments

CONTINEO GROUP

February 19, 2023

Contineo Group
Ken Haertel
755 Commerce Drive, Suite 800
Decatur, GA 30030
kenh@thecontineogroup.com
678-481-1498

Hydrology Analysis
Project Address: 8659 Caratoke Highway
Project Name: Midgard Harbinger, NC – Self Storage Expansion
Original Submission Date: February 19, 2023

Dear Currituck County,

This letter summarizes our calculations comparing the pre-developed 2-year 24-hour storm event versus the 5-year 24-hour storm event for the post developed condition. The disturbed acreage is 0.80 acres. Therefore, we utilized the Rational Method, Form SW-003.

Contents

1.0 Existing Conditions Analysis

The existing site consists of one parcel serving as a self-storage facility. See Exhibit 1 below for an illustration of the existing conditions:

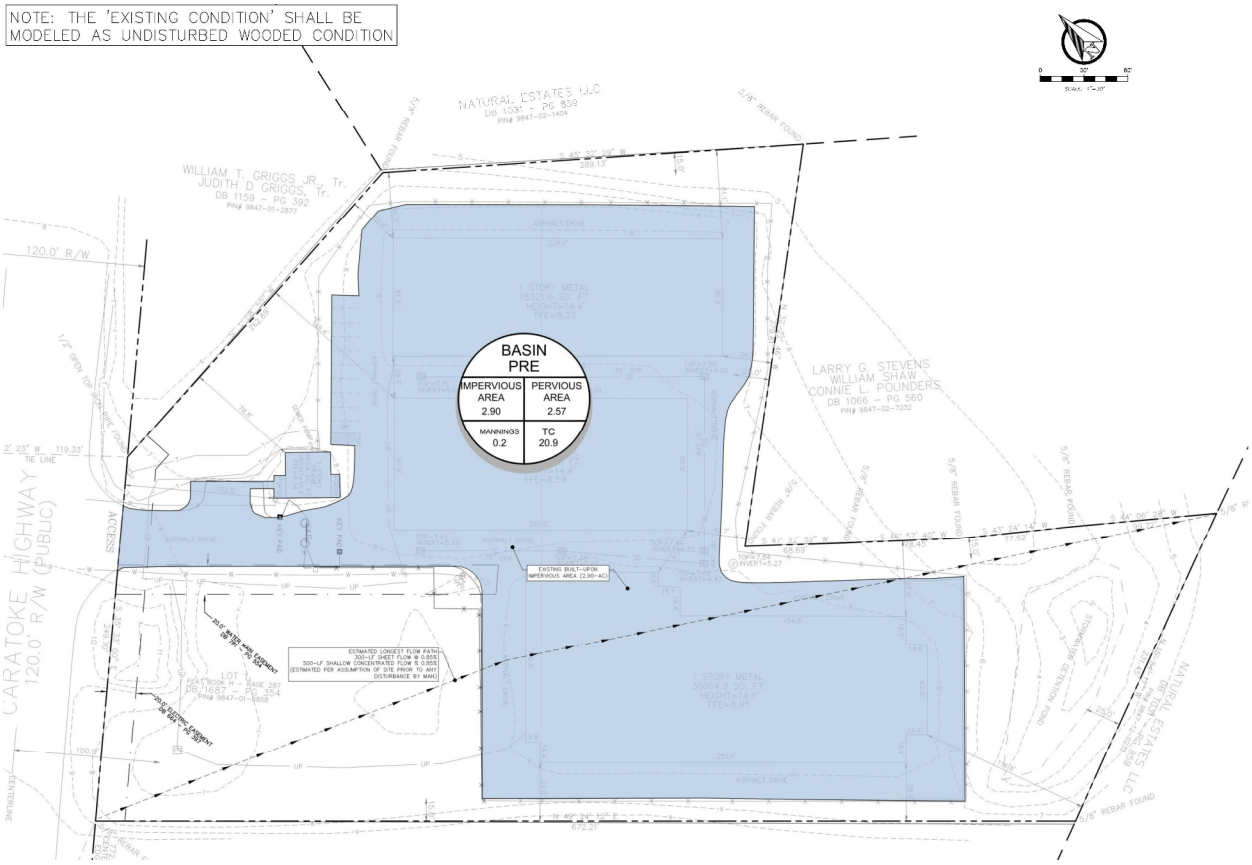


Exhibit 01: Map of Existing Conditions

The 5.4 acre corresponds with Stormwater Permit number SW7030808, issued in September, 2003. The site appears to drain from Cataroke Highway, towards the north property. See Table 01 below, which summarizes the land conditions and acreages for the basin:

	Existing Built-Upon Area	Existing Pervious Area	Manning's n Value	Time of Concentration
Basin 01	2.90-ac	2.5-ac	0.2 (assumed for wooded condition)	47.34 minutes

Table 01: Existing Conditions Land Use Breakdown

Using the data in Table 01, the Time of Concentration and Pre-developed Peak Flow were calculated. See the equations below for the mathematics performed:

1.1 Sheet Flow

$$T_{c1} = \frac{0.42\ (nL)^{0.8}}{P^{0.5} S^{0.4}}$$

$$T_{c1} = \frac{0.42\ (0.20\ x\ 300)^{0.8}}{5^{0.5}\ x\ 0.0085^{0.4}} = \frac{0.42\ x\ 26.455}{2.23\ x\ 0.148} = \frac{11.111}{0.330} = 33.66\ min$$

1.2 Shallow Concentrated Flow

$$T_{c2} = \frac{L}{V}$$

$$T_{c2} = \frac{500}{972\ x\ S^{0.53}} = \frac{500}{972\ x\ 0.079} = \frac{500}{76.88} = 6.50\ min$$

1.3 Channel Flow

- No channel flow observed for the existing condition.

$$\boldsymbol{Total\ T_c = 40.16\ minutes}$$

1.4 Rational Method Calculations

$$Q = C\ x\ i\ x\ A$$

$$Q = 0.2\ x\ 0.156\ x\ 5.4 = \mathbf{0.168\ CFS}$$

2.0 Proposed Conditions Analysis

The proposed project involves expanding the amount of built-upon area within Basin 01 by 0.40 acres. The built-upon area within Basin 01 consists of asphalt pavement and 2 building pads. See Exhibit 02 below for a map of the proposed conditions:

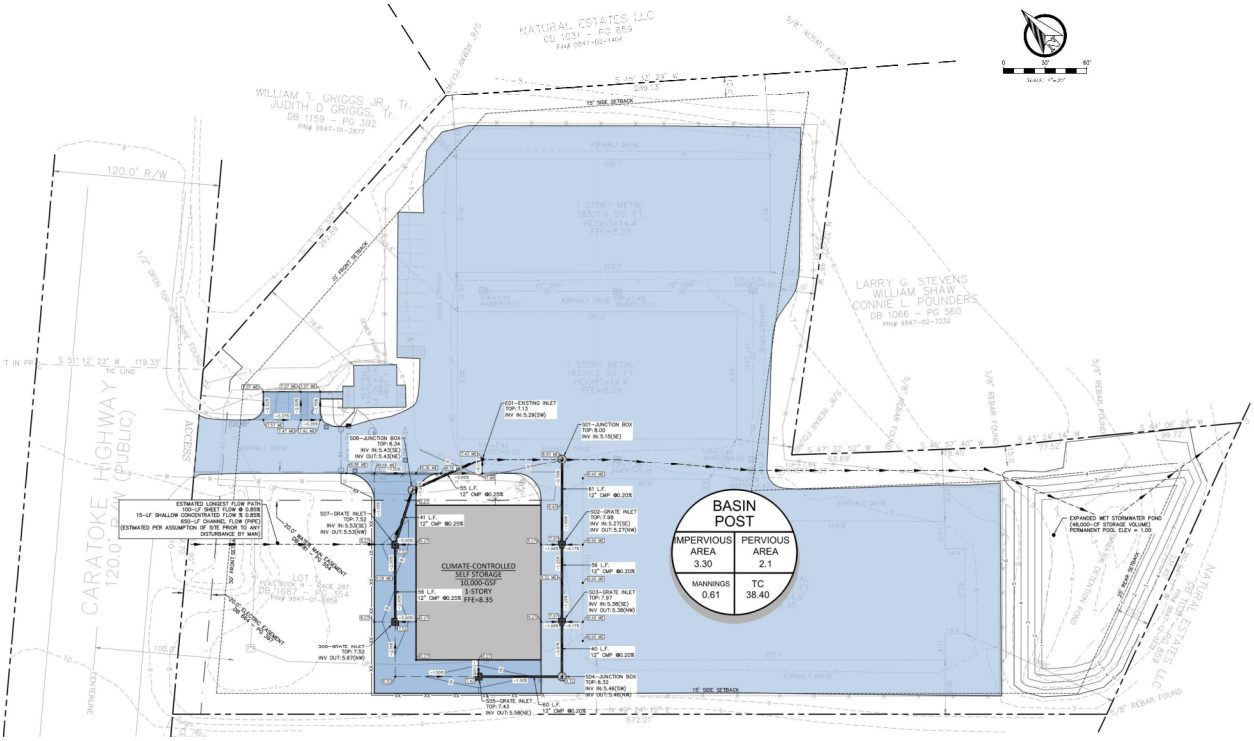


Exhibit 02: Map of Proposed Conditions

See Table 02 for a breakdown of the land use, Time of Concentration, and Manning's n-values for each basin:

	Existing Built-Upon Area	Proposed Pervious Area	Proposed Built-Upon Area	Manning's n Value	Time of Concentration
Basin 01	2.90-ac	2.10-ac	0.40-ac	0.61	38.40 minutes

Table 02: Proposed Conditions Land Use Breakdown

Using the data in Table 02, the Time of Concentration and Post-developed Peak Flow were calculated. See the equations below for the mathematics performed:

2.1 Sheet Flow

$$T_{c1} = \frac{0.42\ (nL)^{0.8}}{P^{0.5} S^{0.4}}$$

$$T_{c1} = \frac{0.42\ (0.61\ x\ 100)^{0.8}}{5^{0.5}\ x\ 0.0085^{0.4}} = \frac{0.42\ x\ 26.807}{2.236\ x\ 0.148} = \frac{11.258}{0.330} = 34.11\ min$$

2.2 Shallow Concentrated Flow

$$T_{c2} = \frac{L}{V}$$

$$T_{c2} = \frac{15}{1302\ x\ S^{0.53}} = \frac{15}{1302\ x\ 0.079} = \frac{15}{102.85} = 0.145\ min$$

2.3 Channel Flow

$$Hydraulic\ Radius = R = \frac{A}{W_p} = \frac{0.785}{1.37} = 0.5$$

$$Channel\ Velocity = V = 1.49\ x\ \frac{R^{0.67}\ x\ S^{0.5}}{n} = \frac{0.628\ x\ 0.050}{0.012} = 2.61\ CFS$$

$$T_{c3} = \frac{L}{60\ x\ V} = \frac{650}{156.6} = 4.15\ min$$

$$\boldsymbol{Total\ T_c = 38.40\ minutes}$$

2.4 Rational Method Calculations

$$Q = C\ x\ i\ x\ A$$

$$Q = 0.61\ x\ 0.201\ x\ 5.4 = \boldsymbol{0.662\ CFS}$$

3.0 Storage Volume Calculations

3.1 Pre-Developed Wooded Condition Curve Number

The Hydrologic Soil Type for the subject property is A/D per soil mapping provided by the U.S.D.A. Due to the high water table, the typically type A soil is considered highly impervious (Type D). Using this, the anticipated Curve Number is 84, per table 2-6.

3.2 Runoff Depth

$$Runoff\ Depth = Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}$$

$$Q = \frac{(5 - 0.2\ x\ 1.9)^2}{(5 + 0.8\ x\ 1.9)} = \frac{21.33}{6.52} = 3.27\ inches$$

3.2 Runoff Volume

$$Runoff\ Volume = V_r = \frac{Q}{12}\ x\ A$$

$$V_r = \frac{3.27}{12}\ x\ 5.4 = 1.47\ Acre - feet$$

3.3 Required Storage Volume

$$Required\ Storage\ Volume = V_s = 1613.33\ x\ V_r\ x\ \left(1 - \frac{Q_{2-pre}}{Q_{5-post}}\right)$$

$$V_s = 1613.33\ x\ 1.47\ x\ \left(1 - \frac{0.168}{0.662}\right) = 2{,}371\ x\ 0.746$$
$$= 1{,}769.2\ Cubic\ Yards = \mathbf{47{,}768\ Cubic\ Feet}$$

To meet the required minimum storage requirements, we propose expanding the existing pond to a total of **48,000 cubic feet**. See the volume analysis for the proposed pond on sheet C300. Therefore, the proposed pond on-site should be more than sufficient to manage run-off on-site.

Sincerely,

Ken Haertel
678-481-1498
kenh@tcg.engineer

Ron Crump, P.E.
404-556-7721
ronc@thecontineogroup.com

Appendix

Stormwater BMP Inspection Checklist
Wet Detention Basin

Development Name: _____

Address: _____

Inspector Name: _____

Signature: _____ Date: _____

BMP Feature	Potential Problem	Maintenance Needed	✓
The entire BMP	Trash or debris is present	Remove trash/debris.	☐
The perimeter of the BMP	Exposed soil and/or gullies are present	Regrade soil if necessary to remove gully, then plant ground cover and water until established. Provide lime and one-time fertilizer application.	☐
	Vegetation is less than 4 inches or greater than 8 inches	Mow vegetation to height of approximately 6 inches.	☐
The inlet device (pipe or swale)	Sediment accumulation exceeds 6 inches	Search for the sediment source and correct problem if possible. Remove accumulated sediment and dispose of it in a location where it will not impact the BMP.	☐
	Pipe has become full with sediment and/or debris	Unclog the affected area and remove sediment and/or debris off-site.	☐
	Any portion of the pipe is crushed or damaged	Make any necessary repairs or replace if the damage is too large for repair.	☐
	Erosive gullies have formed	Regrade swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems.	☐
	Stone verge is clogged or covered in sediment	Remove sediment and clogged stone and replace with clean stone.	☐
	The flow splitter device is clogged	Unclog the conveyance and dispose of any sediment off-site.	☐
	The flow splitter is damaged	Make any necessary repairs or replace if damage is too large to repair.	☐
	Turf reinforcement is damaged or riprap is rolling downhill	Study the site to see if a larger bypass channel is needed (enlarge if necessary). After this, replace the erosion control material.	☐
	The level lip is cracked, settled, undercut, eroded, or otherwise damaged	Repair or replace the level lip.	☐
	There is erosion around the end of the level spreader that shows stormwater has bypassed it	Regrade the soil to create a berm that is higher than the level lip, and then plant a ground cover and water until established. Provide lime and a one-time fertilizer application.	☐
The pretreatment area or forebay (if applicable)	Sediment has accumulated to a depth greater than the original design sediment storage depth	Search for the sediment source and correct problem if possible. Remove accumulated sediment and dispose of it in a location where it will not impact the BMP.	☐
	Erosive gullies have formed and/or flow is bypassing pretreatment area	Regrade if necessary to smooth over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems.	☐

	Weeds are present	Remove weeds, preferably by hand. If an herbicide is used, wipe it on plants rather than spraying.	☐
The main treatment area	Sediment has accumulated to a depth greater than the original design sediment storage depth	Search for the sediment source and correct problem if possible. Remove accumulated sediment and dispose of it in a location where it will not impact the BMP.	☐
	Algal growth covers over 50% of the area	Consult a professional to remove and control algal growth.	☐
	Cattails, phragmites, and other invasive plants cover 50% of the area	Remove plants by wiping them with an herbicide (do not spray).	☐
	Plants are dead, diseased, or dying	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace the plants. Provide a one-time fertilizer application to establish the plants if soil tests indicate it is necessary.	☐
	Weeds are present	Remove weeds, preferably by hand. If an herbicide is used, wipe it on plants rather than spraying.	☐
	Plants need regular pruning to maintain optimal plant health	Prune according to best professional practices.	☐
The embankment (if applicable)	Shrubs have started to grow on the embankment	Remove shrubs immediately.	☐
	Evidence of beaver or muskrat activity is present	Use traps to remove muskrats and consult a professional to remove beavers.	☐
	Trees have started to grow on the embankment	Consult a dam safety specialist to remove trees.	☐
The outlet device (pipe or swale)	Pipe has become full with sediment and/or debris	Unclog the affected area and remove sediment and/or debris off-site.	☐
	Any portion of the pipe is crushed or damaged	Make any necessary repairs or replace if the damage is too large for repair.	☐
	Erosive gullies have formed	Regrade swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems.	☐
	Grass is too short or too long	Maintain grass to height of approximately 3 - 6 inches.	☐
	Sediment is building up on the filter strip	Remove the sediment and restablize the soil with vegetation if necessary. Provide lime and one-time fertilizer application.	☐
	Plants are desiccated	Provide additional irrigation and fertilizer as needed	☐
	Plants are dead, diseased, or dying	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace the plants. Provide a one-time fertilizer application to establish the plants if soil tests indicate it is necessary.	☐
	Nuisance vegetation is choking out desirable species	Remove vegetation by hand if possible. If herbicide is used, do not allow it to get into receiving waters.	☐
The receiving water	Erosion or other signs of damage have occurred at the outlet	Consult a professional.	☐

Comments

_____

_____

_____

Stormwater BMP Inspection Checklist – Wet Detention Basin
Page 2 of 2

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P. E. Director
Division of Water Quality
Coleen H. Sullins, Deputy Director
Division of Water Quality

DIVISION OF WATER QUALITY
September 29, 2003

Area Storage, Inc.
Attn: Mr. Bill Burnette
613 Baldwin Ave
Norfolk, VA 23517

Subject: Stormwater Permit No. SW7030808
Area Storage Annex
Powells Point, NC
High Density Stormwater Project
Currituck County

Dear Mr. Burnette:

The Washington Regional Office received your request for a permit modification for the subject project on August 7, 2003. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7030808 dated September 29, 2003 to Area Storage, Inc.

This permit replaces SW7020615 and shall be effective from the date of issuance until September 29, 2013 and shall be subject to the conditions and limitations as specified therein. Please pay special attention to the Operation and Maintenance requirements in this permit. Failure to establish an adequate system for operation and maintenance of the stormwater management system will result in future compliance problems.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, P.O. Drawer 27447, Raleigh, NC 27611-7447. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact Bill Moore at (252) 946-6481, extension 264.

Sincerely,

Jim Mulligan
Water Quality Regional Supervisor
Washington Regional Office

cc: Bissell Professional Group
Currituck County Planning/Inspections
Washington Regional Office
Central Files

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

STATE STORMWATER MANAGEMENT PERMIT

HIGH DENSITY DEVELOPMENT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

Area Storage, Inc.
Currituck County

FOR THE

construction, operation and maintenance of stormwater management systems in compliance with the provisions of 15A NCAC 2H.1000 (hereafter referred to as the *"stormwater rules"*) and the approved stormwater management plans and specifications and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit for an infiltration basin and a wet detention pond to serve the Area Storage Annex located near Powells Point, NC.

This permit replaces SW7020615, and shall be effective from the date of issuance until September 29, 2013, and shall be subject to the following specified conditions and limitations:

I. DESIGN STANDARDS

1. This permit is effective only with respect to the nature and volume of stormwater described in the application and other supporting data.

2. This stormwater system has been approved for the management of stormwater runoff as described on page 4 of this permit, the Project Data Sheet.

3. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of the permit.

DIVISION OF WATER QUALITY
PROJECT DATA

Project Name:	Area Storage Annex
Permit Number:	SW7030808
Location:	Currituck County
Applicant:	Area Storage, Inc.
Mailing Address:	613 Baldwin Ave Norfolk, VA 23517
Application Date:	8/07/2003
Receiving Stream:	UT-Currituck Sound
Stream Classification:	SC
Total Site Area:	4.47 acres
Total Impervious Surfaces Allowed (Phase 1 & 2):	2.90 acres
Pond/Basin Depth:	3.0 ft - wet pond 1.5 ft - infiltration basin
Required Surface Area (SA/DA):	9449 sf - wet pond N/A - infiltration basin
Provided Surface Area:	16,525 sf - wet pond 6308 sf - infiltration basin
Required Storage Volume:	9100 cf - wet pond 1409 cf - infiltration basin
Provided Storage Volume:	18,796 cf - wet pond 3293 cf - infiltration basin
Controlling Orifice:	overflow elevation set at 8.0

4. No homeowner/lot owner/developer shall be allowed to fill in, alter, or pipe any vegetative practices (such as swales) shown on the approved plans as part of the stormwater management system without submitting a revision to the permit and receiving approval from the Division.

5. The following items will require a modification to the permit:
   a. Any revision to the approved plans, regardless of size
   b. Project name change
   c. Change of ownership
   d. Redesign or addition to the approved amount of built-upon area
   e. Further subdivision of the project area.

   In addition, the Director may determine that other revisions to the project should require a modification to the permit.

6. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.

II. **SCHEDULE OF COMPLIANCE**

1. The permittee will comply with the following schedule for construction and maintenance of the stormwater management system.

   a. The stormwater management system shall be constructed in its entirety, vegetated and operational for its intended use prior to the construction of any built-upon surfaces except roads.

   b. During construction, erosion shall be kept to a minimum and any eroded areas of the system will be repaired immediately.

2. The facilities must be properly maintained and operated at all times. The approved Operation and Maintenance Plan must be followed in its entirety and maintenance must occur at the scheduled intervals.

3. The permittee shall at all times provide the operation and maintenance necessary to assure the permitted stormwater system functions at optimum efficiency including, but not limited to:

a. Semi-annual scheduled inspections (every 6 months)
b. Sediment removal
c. Mowing and revegetation of side slopes
d. Immediate repair of eroded areas
e. Maintenance of side slopes in accordance with approved plans and specifications
f. Debris removal and unclogging of outlet structure, orifice device and catch basins and piping.

4. Records of maintenance activities must be kept and made available upon request to authorized personnel of DWQ. The records will indicate the date, activity, name of person performing the work and what actions were taken.

5. This permit shall become voidable unless the facilities are constructed in accordance with the conditions of this permit, the approved plans and specifications, and other supporting data.

6. Upon completion of construction and prior to operation of this permitted facility, a certification must be received from an appropriate designer for the system installed certifying that the permitted facility has been installed in accordance with this permit, the approved plans and specifications, and other supporting documentation. Mail the Certification to the Washington Regional Office, 943 Washington Square Mall, Washington, North Carolina, 27889, attention Division of Water Quality.

7. A copy of the approved plans and specifications shall be maintained on file by the Permittee for a minimum of five years from the date of the completion of construction.

III. GENERAL CONDITIONS

1. This permit is not transferable. In the event there is a desire for the facilities to change ownership, or there is a name change of the Permittee, a formal permit request must be submitted to the Division of Water Quality accompanied by an application fee, documentation from the parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits and may or may not be approved.

2. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to enforcement action by the Division of Water Quality, in accordance with North Carolina General Statute 143-215.6(a) to 143-215.6(c).

3. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state, and federal) which have jurisdiction.

4. In the event that the facilities fail to perform satisfactorily, including the creation of nuisance conditions, the Permittee shall take immediate corrective action, including those as may be required by this Division, such as the construction of additional or replacement stormwater management systems.

5. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance or termination does not stay any permit condition.

Permit issued this the 29 th day of September, 2003.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

for Alan W. Klimek, P.E., Director
Division of Water Quality
By Authority of the Environmental Management Commission

Permit Number SW7030808

Area Storage Annex
Infiltration Basin and
Wet Detention Pond System
Stormwater Permit No. SW7030808

Designer's Certification

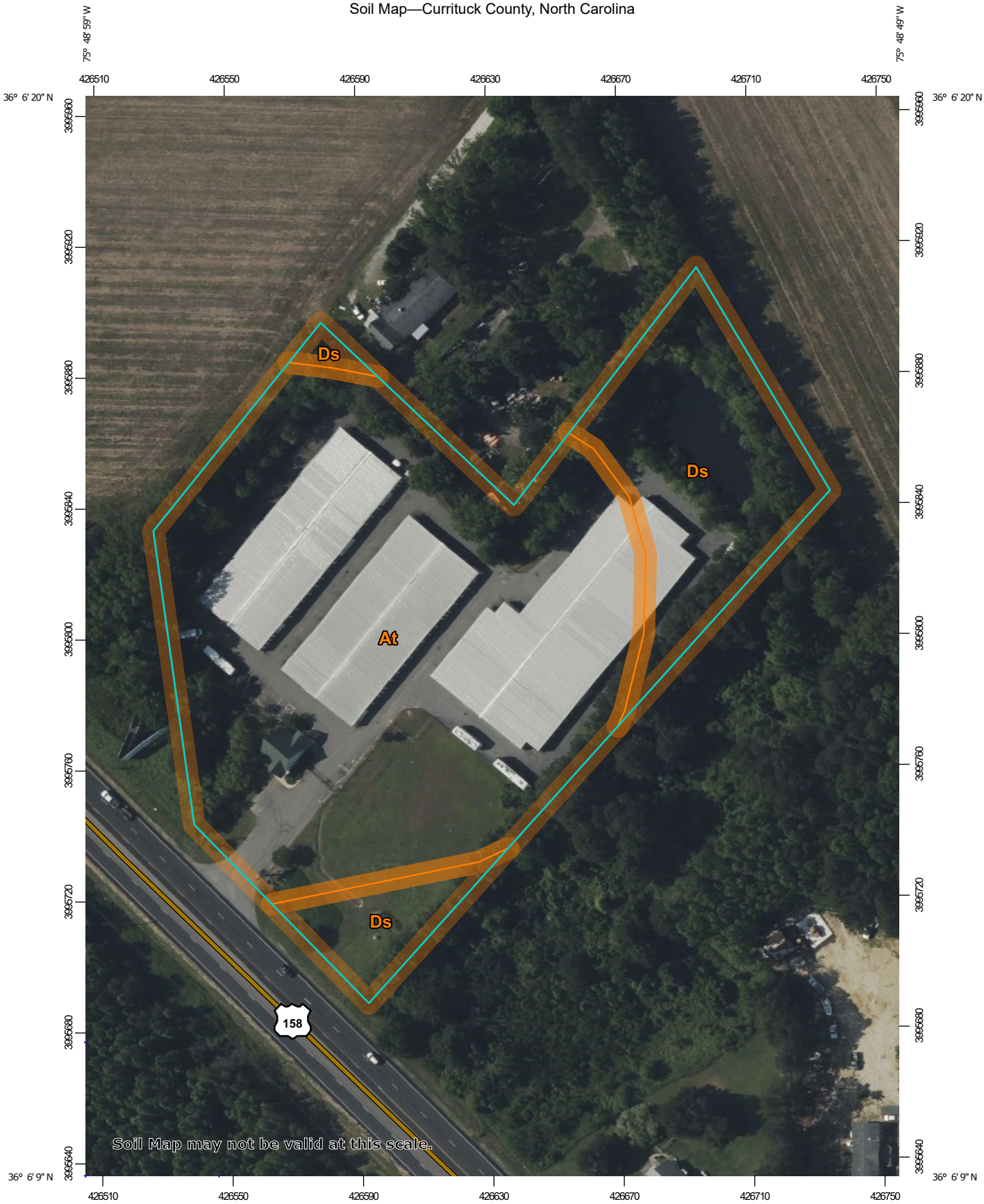
I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically/weekly/full time) the construction of the project, _____ _____ (Project) for _____ (Project Owner) hereby state that to the best of my abilities, due care and diligence was used in the observation of the project construction such that the construction was observed to be built within substantial compliance and intent of the approved plans and specifications.

Signature _____

Registration Number _____

Date _____

Soil Map—Currituck County, North Carolina



Map Scale: 1:1,610 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
Survey Area Data: Version 22, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
At	Augusta fine sandy loam	4.5	74.2%
Ds	Dragston loamy fine sand	1.6	25.8%
Totals for Area of Interest		**6.0**	**100.0%**

Currituck County, North Carolina

Ds—Dragston loamy fine sand

Map Unit Setting

National map unit symbol: 3rnm
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dragston, drained, and similar soils: 45 percent
Dragston, undrained, and similar soils: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dragston, Drained

Setting

Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 10 inches: loamy fine sand
Bt - 10 to 42 inches: sandy loam
2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Description of Dragston, Undrained

Setting

Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 10 inches: loamy fine sand
Bt - 10 to 42 inches: sandy loam
2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Portsmouth, undrained

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Nimmo, undrained

Percent of map unit: 2 percent
Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Currituck County, North Carolina
Survey Area Data: Version 22, Sep 8, 2022

Currituck County, North Carolina

At—Augusta fine sandy loam

Map Unit Setting

National map unit symbol: 3rn8
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Augusta, drained, and similar soils: 80 percent
Augusta, undrained, and similar soils: 10 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Augusta, Drained

Setting

Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

Ap - 0 to 5 inches: fine sandy loam
Bt - 5 to 23 inches: loam
BCg - 23 to 31 inches: sandy loam
Cg - 31 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Hydric soil rating: No

Description of Augusta, Undrained

Setting

Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 5 inches: fine sandy loam
Bt - 5 to 23 inches: loam
BCg - 23 to 31 inches: sandy loam
Cg - 31 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Tomotley, undrained

Percent of map unit: 5 percent
Landform: Depressions on stream terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Currituck County, North Carolina
Survey Area Data: Version 22, Sep 8, 2022

Rational Method Peak Flow
Form SW-003

Project Information

Project Location: 8659 Caratoke Highway, Point Harbor NC

Parcel Identification Number(s): 9847-01-6858

Drainage area: 5.4 ac

Average Slope: 0.50 %

Maximum Slope Length: 800 ft

Calculations

*The Rational Method may only be used where development will impact less than 10 acres

Time of Concentration (Tc) (Use additional sheets if necessary)			
	Pre-	**Post-**	
Sheet Flow			
Manning's roughness, n (Table 2-4)	0.2	0.85	
2-year, 24-hour Rainfall, P	4.0	~~6.0~~ 5	in
Slope, S	0.85%	0.85%	ft/ft
Length of Sheet Flow, L (<=300 feet)	300	100	ft
Total Time for Sheet Flow	33.66	34.11	**min**
Shallow Concentrated Flow			
Surface Paved (P) or Unpaved (U)	Unpaved	Paved	
Length of flow, L	500	15	ft
Slope, S	0.85%	0.85%	ft/ft
Average Velocity, V (Table 2-3)	67.9	102.85	ft/min
Total Time for Shallow Concentrated Flow	6.50	0.15	**min**
Channel Flow			
Pipe (P) or Channel (C)	-	P	
If pipe: Diameter, D	-	15	in
If channel: Bottom Width, w	-	-	ft
If channel: side slope 1 (___:1)	-	-	
If channel: side slope 2 (___:1)	-	-	
Cross sectional flow area, A	-	-	sq ft
Wetted perimeter, Wp	-	0.78	ft
Hydraulic radius, R = A/Wp	-	0.5	ft

5-year 24-hour Rainfall equals 5 inches per Table 2.7

Time of Concentration (Tc) (Use additional sheets if necessary)			
	Pre-	**Post-**	
Channel slope, S	-	0.25%	ft/ft
Manning's roughness, n (Table 2-4)	-	0.012	
Channel velocity	-	2.61	ft/sec
Length of Flow, L	-	650	ft/sec
Total Time for Channel Flow	-	4.15	**min**
Total Time of Concentration, Tc	40.16	38.40	**min**

Pre-development Conditions			
Land Use Description	C	Area (acres)	C*A
Woods	0.2	5.4	1.08
Total			

Intensity for 2-year, 24-hour storm (Table 2-5) 0.156 in/hr

Pre-development peak flow, Q = CiA 0.168 cfs

Post-development Conditions			
Land Use Description	C	Area (acres)	C*A
Commercial	0.85	3.3	2.805
Open Space	0.25	2.1	0.525
Totals		5.4	3.33

Area-weighted C: 0.61

5-year 24-hour storm

Intensity for ~~10~~ year, 24-hour storm (Table 2-5) 0.201 in/hr

Post-development peak flow, Q = CiA 0.662 cfs

Minimum Storage Volume Required – Refer to *Section 2.4.4* for Volume Calculations		
Storage Volume, V_s	47,768	ft^3

Applicant

Date

DEMLR USE ONLY		
Date Received	Fee Paid	Permit Number
Applicable Rules: ☐ Coastal SW – 1995 ☐ Coastal SW – 2008 ☐ Ph II - Post Construction *(select all that apply)* ☐ Non-Coastal SW- HQW/ORW Waters ☐ Universal Stormwater Management Plan ☐ Other WQ Mgmt Plan: _____		

State of North Carolina
Department of Environment and Natural Resources
Division of Energy, Mineral and Land Resources

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

This form may be photocopied for use as an original

I. GENERAL INFORMATION

1. Project Name (subdivision, facility, or establishment name - should be consistent with project name on plans, specifications, letters, operation and maintenance agreements, etc.):

   Midgard Harbinger - Self Storage Expansion

2. Location of Project (street address):

   8659 Caratoke Highway

   City:Harbinger County:Currituck Zip:27964

3. Directions to project (from nearest major intersection):

   Beginning at the intersection of NC-158 and NC-12, head west on NC-158, head east for 6.5 miles to reach 8659 Caratoke Highway, which will be on your right as you proceed north along NC-158

4. Latitude:36° 06′ 12.26″ N Longitude:75° 48′ 57.59″ W of the main entrance to the project.

II. PERMIT INFORMATION:

1.a. Specify whether project is (check one): ☐ New ☒ Modification ☐ Renewal w/ Modification†

†*Renewals with modifications also requires SWU-102 – Renewal Application Form*

b. If this application is being submitted as the result of a **modification** to an existing permit, list the existing permit numberSW7030808 , its issue date (if known)September 2003 , and the status of construction: ☐ Not Started ☐ Partially Completed* ☒ Completed* **provide a designer's certification*

2. Specify the type of project (check one):
   ☐ Low Density ☒ High Density ☐ Drains to an Offsite Stormwater System ☐ Other

3. If this application is being submitted as the result of a **previously returned application** or a **letter from DEMLR requesting a state stormwater management permit application**, list the stormwater project number, if assigned, n/a and the previous name of the project, if different than currently proposed, n/a.

4.a. Additional Project Requirements (check applicable blanks; information on required state permits can be obtained by contacting the Customer Service Center at 1-877-623-6748):

   ☐ CAMA Major ☒ Sedimentation/Erosion Control: 0.80 ac of Disturbed Area
   ☐ NPDES Industrial Stormwater ☐ 404/401 Permit: Proposed Impacts _____

b. If any of these permits have already been acquired please provide the Project Name, Project/Permit Number, issue date and the type of each permit:n/a

   n/a

5. Is the project located within 5 miles of a public airport? ☒ No ☐ Yes
   If yes, see S.L. 2012-200, Part VI: http://portal.ncdenr.org/web/lr/rules-and-regulations

III. CONTACT INFORMATION

1. a. Print Applicant / Signing Official's name and title (specifically the developer, property owner, lessee, designated government official, individual, etc. who owns the project):

Applicant/Organization: SYLVIE GERMANA

Signing Official & Title:

b. Contact information for person listed in item 1a above:

Street Address: 755 COMMERCE DR STE 800

City: DECATUR State: GA Zip: 30030

Mailing Address (*if applicable*):

City: State: Zip:

Phone: (754) 245-7992 Fax: ( )

Email: sylvieg@thecontineogroup.com

c. Please check the appropriate box. The applicant listed above is:

☒ ~~The property owner~~ (Skip to Contact Information, item 3a) APPLICANT/AGENT

☐ Lessee* (Attach a copy of the lease agreement and complete Contact Information, item 2a and 2b below)

☐ Purchaser* (Attach a copy of the pending sales agreement and complete Contact Information, item 2a and 2b below)

☐ Developer* (Complete Contact Information, item 2a and 2b below.)

2. a. Print Property Owner's name and title below, if you are the lessee, purchaser or developer. (This is the person who owns the property that the project is located on):

Property Owner/Organization: MIDGARD HARBINGER LLC

Signing Official & Title: Matt Garcia - Director of Development

b. Contact information for person listed in item 2a above:

Street Address: 1146 Canton Street

City: ROSWELL State: GA Zip: 30075

Mailing Address (*if applicable*):

City: State: Zip:

Phone: (770) 609-8276 Fax: ( )

Email:

3. a. (Optional) Print the name and title of another contact such as the project's construction supervisor or other person who can answer questions about the project:

Other Contact Person/Organization: Contineo Group, LLC (Civil Engineer)

Signing Official & Title: Ken Haertel - Project Manager

b. Contact information for person listed in item 3a above:

Mailing Address: 755 Commerce Drive, Suite 800

City: Decatur State: GA Zip: 30030

Phone: (678) 481-1498 Fax: ( )

Email: kenh@thecontineogrouplcom

4. Local jurisdiction for building permits: Currituck County

Point of Contact: Dylan Lloyd / Donna Voliva Phone #: ( )

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.

   The existing site is treated by one wet pond. For the expansion, we propose to expand the existing pond.

2. a. **If claiming vested rights**, identify the supporting documents provided and the date they were approved:
   - ☐ Approval of a Site Specific Development Plan or PUD — Approval Date: _____
   - ☐ Valid Building Permit — Issued Date: _____
   - ☐ Other: _____ — Date: _____

   b. **If claiming vested rights**, identify the regulation(s) the project has been designed in accordance with:
   - ☐ Coastal SW – 1995
   - ☐ Ph II – Post Construction

3. Stormwater runoff from this project drains to the Pasquotank River basin.

4. Total Property Area: 5.4 acres

5. Total Coastal Wetlands Area: 0 acres

6. Total Surface Water Area: 0 acres

7. Total Property Area (4) – Total Coastal Wetlands Area (5) – Total Surface Water Area (6) = Total Project Area+: 5.4 acres

   + *Total project area shall be calculated to exclude the following: the normal pool of impounded structures, the area between the banks of streams and rivers, the area below the Normal High Water (NHW) line or Mean High Water (MHW) line, and coastal wetlands landward from the NHW (or MHW) line. The resultant project area is used to calculate overall percent built upon area (BUA). Non-coastal wetlands landward of the NHW (or MHW) line may be included in the total project area.*

8. Project percent of impervious area: (Total Impervious Area / Total Project Area) X 100 = 61 %

9. How many drainage areas does the project have? 2 *(For high density, count 1 for each proposed engineered stormwater BMP. For low density and other projects, use 1 for the whole property area)*

10. Complete the following information for each drainage area identified in Project Information item 9. If there are more than four drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below.

Basin Information	Drainage Area 1	Drainage Area 2	Drainage Area __	Drainage Area __
Receiving Stream Name	Currituck Sound			
Stream Class *	SC			
Stream Index Number *	30-1			
Total Drainage Area (sf)	5.4			
On-site Drainage Area (sf)	5.4			
Off-site Drainage Area (sf)	0			
Proposed Impervious Area** (sf)	3.3			
% Impervious Area** (total)	61%			

Impervious** Surface Area	Drainage Area 1	Drainage Area 2	Drainage Area __	Drainage Area __
On-site Buildings/Lots (sf)	0.23			
On-site Streets (sf)	0.17			
On-site Parking (sf)	0			
On-site Sidewalks (sf)	0			
Other on-site (sf)	0			
Future (sf)	0			
Off-site (sf)	0			
Existing BUA*** (sf)	2.90			
Total (sf):	3.30			

* *Stream Class and Index Number can be determined at: http://portal.ncdenr.org/web/wq/ps/csu/classifications*

** *Impervious area is defined as the built upon area including, but not limited to, buildings, roads, parking areas, sidewalks, gravel areas, etc.*

*** *Report only that amount of existing BUA that will remain after development. Do not report any existing BUA that is to be removed and which will be replaced by new BUA.*

11. How was the off-site impervious area listed above determined? Provide documentation. n/a

Projects in Union County: *Contact DEMLR Central Office staff to check if the project is located within a Threatened & Endangered Species watershed that may be subject to more stringent stormwater requirements as per 15A NCAC 02B .0600.*

V. SUPPLEMENT AND O&M FORMS

The applicable state stormwater management permit supplement and operation and maintenance (O&M) forms must be submitted for each BMP specified for this project. The latest versions of the forms can be downloaded from http://portal.ncdenr.org/web/wq/ws/su/bmp-manual.

VI. SUBMITTAL REQUIREMENTS

Only complete application packages will be accepted and reviewed by the Division of Energy, Mineral and Land Resources (DEMLR). A complete package includes all of the items listed below. A detailed application instruction sheet and BMP checklists are available from http://portal.ncdenr.org/web/wq/ws/su/statesw/forms_docs**. The complete application package should be submitted to the appropriate DEMLR Office.** (The appropriate office may be found by locating project on the interactive online map at http://portal.ncdenr.org/web/wq/ws/su/maps.)

Please **indicate that the following required information have been provided by initialing** in the space provided for each item. All original documents MUST be signed and initialed in **blue ink**. **Download the latest versions for each submitted application package** from http://portal.ncdenr.org/web/wq/ws/su/statesw/forms_docs.

		Initials
1.	*Original and one copy* of the Stormwater Management Permit Application Form.	KH
2.	*Original and one copy* of the signed and notarized Deed Restrictions & Protective Covenants Form. *(if required as per Part VII below)*	N/A
3.	*Original* of the applicable Supplement Form(s) (sealed, signed and dated) **and** O&M agreement(s) for each BMP.	KH
4.	Permit application processing fee of $505 *payable to NCDENR.* (For an Express review, refer to http://www.envhelp.org/pages/onestopexpress.html for information on the Express program and the associated fees. Contact the appropriate regional office Express Permit Coordinator for additional information and to schedule the required application meeting.)	KH
5.	A detailed narrative (one to two pages) describing the stormwater treatment/management	for
6.	A USGS map identifying the site location. If the receiving stream is reported as class SA or the receiving stream drains to class SA waters within ½ mile of the site boundary, include the ½ mile radius on the map.	KH
7.	Sealed, signed and dated calculations (one copy).	KH
8.	Two sets of plans folded to 8.5" x 14" (sealed, signed, & dated), including:	KH

a. Development/Project name.
b. Engineer and firm.
c. Location map with named streets and NCSR numbers.
d. Legend.
e. North arrow.
f. Scale.
g. Revision number and dates.
h. Identify all surface waters on the plans by delineating the normal pool elevation of impounded structures, the banks of streams and rivers, the MHW or NHW line of tidal waters, and any coastal wetlands landward of the MHW or NHW lines.
   - Delineate the vegetated buffer landward from the normal pool elevation of impounded structures, the banks of streams or rivers, and the MHW (or NHW) of tidal waters.
i. Dimensioned property/project boundary with bearings & distances.
j. Site Layout with all BUA identified and dimensioned.
k. Existing contours, proposed contours, spot elevations, finished floor elevations.
l. Details of roads, drainage features, collection systems, and stormwater control measures.
m. Wetlands delineated, or a note on the plans that none exist. (Must be delineated by a qualified person. Provide documentation of qualifications and identify the person who made the determination on the plans.
n. Existing drainage (including off-site), drainage easements, pipe sizes, runoff calculations.
o. Drainage areas delineated (included in the main set of plans, not as a separate document).

p. Vegetated buffers (where required).

9. Copy of any applicable soils report with the associated SHWT elevations (Please identify elevations in addition to depths) as well as a map of the boring locations with the existing elevations and boring logs. Include an 8.5"x11" copy of the NRCS County Soils map with the project area clearly delineated. For projects with infiltration BMPs, the report should also include the soil type, expected infiltration rate, and the method of determining the infiltration rate. (**Infiltration Devices submitted to WiRO:** *Schedule a site visit for DEMLR to verify the SHWT prior to submittal, (910) 796-7378.)* KH
10. A copy of the most current property deed. Deed book: 1687 Page No: 354 KH
11. For corporations and limited liability corporations (LLC): Provide documentation from the NC Secretary of State or other official documentation, which supports the titles and positions held by the persons listed in Contact Information, item 1a, 2a, and/or 3a per 15A NCAC 2H.1003(e). The corporation or LLC must be listed as an active corporation in good standing with the NC Secretary of State, otherwise the application will be returned. http://www.secretary.state.nc.us/Corporations/CSearch.aspx N/A

VII. DEED RESTRICTIONS AND PROTECTIVE COVENANTS

For all subdivisions, outparcels, and future development, the appropriate property restrictions and protective covenants are required to be recorded prior to the sale of any lot. If lot sizes vary significantly or the proposed BUA allocations vary, a table listing each lot number, lot size, and the allowable built-upon area must be provided as an attachment to the completed and notarized deed restriction form. The appropriate deed restrictions and protective covenants forms can be downloaded from http://portal.ncdenr.org/web/lr/state-stormwater-forms_docs. Download the latest versions for each submittal.

In the instances where the applicant is different than the property owner, it is the responsibility of the property owner to sign the deed restrictions and protective covenants form while the applicant is responsible for ensuring that the deed restrictions are recorded.

By the notarized signature(s) below, the permit holder(s) certify that the recorded property restrictions and protective covenants for this project, if required, shall include all the items required in the permit and listed on the forms available on the website, that the covenants will be binding on all parties and persons claiming under them, that they will run with the land, that the required covenants cannot be changed or deleted without concurrence from the NC DEMLR, and that they will be recorded prior to the sale of any lot.

VIII. CONSULTANT INFORMATION AND AUTHORIZATION

Applicant: Complete this section if you wish to designate authority to another individual and/or firm (such as a consulting engineer and/or firm) so that they may provide information on your behalf for this project (such as addressing requests for additional information).

Consulting Engineer: Ron Crump, P.E.

Consulting Firm: Contineo Group, LLC

Mailing Address: 755 Commerce Drive, Suite 800

City: Decatur State: GA Zip: 30030

Phone: (404) 556-7721 Fax: ( )

Email: ronc@thecontineogroup.com

IX. PROPERTY OWNER AUTHORIZATION *(if Contact Information, item 2 has been filled out, complete this section)*

I, *(print or type name of person listed in Contact Information, item 2a)* MATT GARCIA, certify that I own the property identified in this permit application, and thus give permission to *(print or type name of person listed in Contact Information, item 1a)* SYLVIE GERMANA with *(print or type name of organization listed in Contact Information, item 1a)* SYLVIE GERMANA to develop the project as currently proposed. A copy of the lease agreement or pending property sales contract has been provided with the submittal, which indicates the party responsible for the operation and maintenance of the stormwater system.

As the legal property owner I acknowledge, understand, and agree by my signature below, that if my designated agent (entity listed in Contact Information, item 1) dissolves their company and/or cancels or defaults on their lease agreement, or pending sale, responsibility for compliance with the DEMLR Stormwater permit reverts back to me, the property owner. As the property owner, it is my responsibility to notify DEMLR immediately and submit a completed Name/Ownership Change Form within 30 days; otherwise I will be operating a stormwater treatment facility without a valid permit. I understand that the operation of a stormwater treatment facility without a valid permit is a violation of NC General Statue 143-215.1 and may result in appropriate enforcement action including the assessment of civil penalties of up to $25,000 per day, pursuant to NCGS 143-215.6.

Signature:_____ Date:_____

I, _____, a Notary Public for the State of _____, County of _____, do hereby certify that _____ personally appeared before me this ___ day of _____, _____, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal, _____

SEAL

My commission expires_____

X. APPLICANT'S CERTIFICATION

I, *(print or type name of person listed in Contact Information, item 1a)* SYLVIE GERMANA, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans, that the required deed restrictions and protective covenants will be recorded, and that the proposed project complies with the requirements of the applicable stormwater rules under 15A NCAC 2H .1000 and any other applicable state stormwater requirements.

Signature:_____ Date: 2/21/2023

I, Erica N. Bruce, a Notary Public for the State of Georgia, County of Cherokee, do hereby certify that Sylvie Germana personally appeared before me this 21 day of February, 2023, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal, _____

ERICA N BRUCE NOTARY PUBLIC Cherokee County, Georgia My Commission Expires 04-30-2025

SEAL

My commission expires 04/30/2025

Rational Method Peak Flow
Form SW-003

Project Information

Project Location: 8659 Caratoke Highway, Point Harbor NC

Parcel Identification Number(s): 9847-01-6858

Drainage area: 5.4 ac

Average Slope: 0.50 %

Maximum Slope Length: 800 ft

Calculations

*The Rational Method may only be used where development will impact less than 10 acres

Time of Concentration (Tc) (Use additional sheets if necessary)			
	Pre-	**Post-**	
Sheet Flow			
Manning's roughness, n (Table 2-4)	0.2	0.85	
2-year, 24-hour Rainfall, P	4.0	~~6.0~~ 5	in
Slope, S	0.85%	0.85%	ft/ft
Length of Sheet Flow, L (<=300 feet)	300	100	ft
Total Time for Sheet Flow	33.66	34.11	**min**
Shallow Concentrated Flow			
Surface Paved (P) or Unpaved (U)	Unpaved	Paved	
Length of flow, L	500	15	ft
Slope, S	0.85%	0.85%	ft/ft
Average Velocity, V (Table 2-3)	67.9	102.85	ft/min
Total Time for Shallow Concentrated Flow	6.50	0.15	**min**
Channel Flow			
Pipe (P) or Channel (C)	-	P	
If pipe: Diameter, D	-	15	in
If channel: Bottom Width, w	-	-	ft
If channel: side slope 1 (___:1)	-	-	
If channel: side slope 2 (___:1)	-	-	
Cross sectional flow area, A	-	-	sq ft
Wetted perimeter, Wp	-	0.78	ft
Hydraulic radius, R = A/Wp	-	0.5	ft

5-year 24-hour Rainfall equals 5 inches per Table 2.7

Time of Concentration (Tc) (Use additional sheets if necessary)			
	Pre-	**Post-**	
Channel slope, S	-	0.25%	ft/ft
Manning's roughness, n (Table 2-4)	-	0.012	
Channel velocity	-	2.61	ft/sec
Length of Flow, L	-	650	ft/sec
Total Time for Channel Flow	-	4.15	**min**
Total Time of Concentration, Tc	40.16	38.40	**min**

Pre-development Conditions			
Land Use Description	C	Area (acres)	C*A
Woods	0.2	5.4	1.08
Total			

Intensity for 2-year, 24-hour storm (Table 2-5) 0.156 in/hr

Pre-development peak flow, Q = CiA 0.168 cfs

Post-development Conditions			
Land Use Description	C	Area (acres)	C*A
Commercial	0.85	3.3	2.805
Open Space	0.25	2.1	0.525
Totals		5.4	3.33

Area-weighted C: 0.61

5-year 24-hour storm

Intensity for ~~10~~ 5 year, 24-hour storm (Table 2-5) 0.201 in/hr

Post-development peak flow, Q = CiA 0.662 cfs

Minimum Storage Volume Required – Refer to *Section 2.4.4* for Volume Calculations		
Storage Volume, V_s	47,768	ft^3

Sylvie Germana
Applicant

02/21/2023
Date