Public Services
Engineering
212 Operations Center Drive
Wilmington, NC 28412
910 341-7807
910 341-5881 fax
wilmingtonnc.gov
Dial 711 TTY/Voice

July 28, 2020

Mr. Thomas Walsh, V.P. Facilities & Support Services
New Hanover Regional Medical Center
P.O. Box 9000
Wilmington, NC 28402

Subject: Stormwater Management Permit No. 2017052R1
NHRMC Expansion Plan
High Density Development

Dear Mr. Thomas:

The City of Wilmington Engineering Division has received a request for a revision to the Stormwater Management Permit for NHRMC Expansion Plan. Having reviewed the application and all supporting materials, the City of Wilmington has determined that the proposed revision meets the requirements of the City of Wilmington's Comprehensive Stormwater Ordinance.

The revisions include:

- NHRMC is adding a parking deck with a pedestrian bridge across South 17th Street, connecting to the hospital site. This addition includes removal of a portion of the existing parking area which will be replaced with the parking deck.
- The existing permeable pavement is reduced in size.
- No changes to the wet detention basin were required.
- See approved plans dated 7/27/20.

Please be aware all terms and conditions of the permit Issued on December 13, 2017 remain in full force and effect. Any additional changes to the approved plans must be approved by this office prior to construction. The issuance of the plan revision does not preclude the permittee from complying with all other applicable statutes, rules, regulations or ordinances which may have jurisdiction over the proposed activity and obtaining a permit or approval prior to construction.

The revised stamped, approved stormwater management drawings will be released for construction by the Wilmington Planning Division under separate cover. Please replace any old plan sheets from the approved set with the new, revised sheet. An electronic copy of the approved drawing set, permit, application and supplementary documents will be maintained by the Wilmington Engineering Division. If you have any questions, or need additional information, please contact Richard Christensen at (910) 341-7813 or richard.christensen@wilmingtonnc.gov

Sincerely,

Richard Christensen

for Sterling Cheatham, City Manager
City of Wilmington

cc: T. Jason Clark, PE, Norris & Tunstall Consulting Engineers, P.C.
Patrick O'Mahoney, Associate Planner, City of Wilmington

CITY OF WILMINGTON NORTH CAROLINA

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STORMWATER MANAGEMENT PERMIT APPLICATION FORM

(Form SWP 2.3)

NT #19135
(Rev. to 16148)

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.):
   NHRMC Employee Parking Deck with Pedestrian Bridge

2. Location of Project (street address):
   2026 S. 16th Street

   City: Wilmington County: New Hanover Zip: 28401

II. PERMIT INFORMATION

1. Specify the type of project (check one): ☐ Low Density ☑ High Density
   ☐ Offsite Stormwater System ☐ Drainage Plan ☐ Redevelopment ☐ Other
   If the project drains to an Offsite System, list the Stormwater Permit Number(s):
   City of Wilmington: _____ State – NCDEQ/DEMLR: _____

2. Is the project currently covered (whole or in part) by an existing City or State (NCDEQ/DEMLR) Stormwater Permit? ◯ Yes ◉ No
   If yes, list all applicable Stormwater Permit Numbers:
   City of Wilmington: 2017052 (12-13-17) State – NCDEQ/DEMLR: _____

3. Additional Project Permit Requirements (check all applicable):
   ☐ CAMA Major ☑ Sedimentation/Erosion Control ☐ 404/401 Permit

III. CONTACT INFORMATION

1. Print Applicant / Signing Official's name and title (the developer, property owner, lessee, designated government official, individual, etc. who owns the project):
   Applicant / Organization: New Hanover Regional Medical Center
   Signing Official & Title: Thomas Walsh / Vice President Facilities & Support Services

a. Contact information for Applicant / Signing Official:

Address: P.O. Box 9000

City: Wilmington State: NC Zip: 28402

Phone: 910-343-2788 Email: thomas.walsh@nhrmc.org

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

- (•) The property owner/Purchaser (Skip to item 3)
- ( ) Lessee (Attach a copy of the lease agreement and complete items 2 and 2a below)
- ( ) Developer (Complete items 2 and 2a below.)

2. Print Property Owner's name and title (if different from the applicant).

Property Owner / Organization: _____

Signing Official & Title: _____

a. Contact information for Property Owner:

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Email: _____

3. (Optional) Other Contact name and title (such as a construction supervisor) who would like to be copied on all correspondence:

Other Contact Person / Organization: New Hanover Regional Medical Center

Signing Official & Title: Kenneth Williamson, Project Manager, Construction Services

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

Street Address: P.O. Box 9000

City: Wilmington State: NC Zip: 28402

Phone: 910-667-5412 Email: kenneth.williamson@nhrmc.org

4. Agent Authorization: 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: T. Jason Clark, P.E.

Consulting Firm: Norris & Tunstall Consulting Engineers, P.C.

a. Contact information for consultant listed above:

Mailing Address: 2602 Iron Gate Drive, Suite 102

City: Wilmington State: NC Zip: 28412

Phone: 910-343-9653 Email: jclark@ntengineers.com

& anorris@ntengineers.com

NT #19135
(Rev. 04-07-2020)

IV. PROJECT INFORMATION

1. Total Property Area: 220257 square feet
2. Total Coastal Wetlands Area: 0 square feet
3. Total Surface Water Area: 0 square feet
4. Total Property Area (1) – Total Coastal Wetlands Area (2) – Total Surface Water Area (3) = Total Project Area: 220257 square feet.
5. Existing Impervious Surface within Project Area: 97293 square feet
6. Existing Impervious Surface to be Removed/Demolished: 73824 square feet
7. Existing Impervious Surface to Remain: 23469 square feet
8. Total Onsite (within property boundary) Newly Constructed Impervious Surface (in square feet):

Buildings/Lots	49250
Impervious Pavement	20483
Pervious Pavement (total area / adjusted area w credit applied)	0 /
Impervious Sidewalks	1378
Pervious Sidewalks (total area / adjusted area w credit applied)	0 /
Other (Describe)	0
Future Development	5710
Total Onsite Newly Constructed Impervious Surface	76821

9. Total Onsite Impervious Surface
(Existing Impervious Surface to remain + Onsite Newly Constructed Impervious Surface) 100290 square feet
10. Net Change in Onsite Impervious Surface (+ for net increase, - for net decrease) +2997 square feet
11. Project percent of impervious area: (Total Onsite Impervious Surface / Total Project Area) x100 = 45.5 %
12. Total Offsite Newly Constructed Impervious Area (*in square feet*):

Impervious Pavement	888
Pervious Pavement (total area / adjusted area w credit applied)	0 / 0
Impervious Sidewalks	96
Pervious Sidewalks (total area / adjusted area w credit applied)	0 / 0
Other (Describe)	0
Total Offsite Newly Constructed Impervious Surface	984

NT #19135
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13. Complete the following information for each Stormwater SCM drainage area. Low Density and Drainage Plan projects (with no permeable pavements) may omit this section and skip to Section V.

Basin Information	Type of SCM SCM # SW Pond	Type of SCM SCM # PC-1	Type of SCM SCM # PC-2
Receiving Stream Name	Greenfield Lake	Greenfield Lake	Greenfield Lake
Receiving Stream Index Number	18-76-1	18-76-1	18-76-1
Stream Classification	C; Sw	C; Sw	C; Sw
Total Drainage Area (sf)	155253	1620	4172
On-Site Drainage Area (sf)	152253	1620	4172
Off-Site Drainage Area (sf)	3000	0	0
Buildings/Lots (sf)	49250	0	0
Impervious Pavement (sf)	20483	108	196
Pervious Pavement (total / adjusted) (sf)	5488 / 0	1512 / 0	3976 / 0
Impervious Sidewalks (sf)	1378	0	0
Pervious Sidewalks (total / adjusted) (sf)	0 / 0	0 / 0	0 / 0
Other (sf)	0	0	0
Future Development (sf)	5710	0	0
Existing Impervious to remain (sf)	23469	0	0
Offsite (sf)	0	0	0
Total Impervious Area (sf)	100290	108	196
Percent Impervious Area (%)	64.6%	6.7%	4.7%

Basin Information	Type of SCM SCM #	Type of SCM SCM #	Type of SCM SCM #
Receiving Stream Name			
Receiving Stream Index Number			
Stream Classification			
Total Drainage Area (sf)			
On-Site Drainage Area (sf)			
Off-Site Drainage Area (sf)			
Buildings/Lots (sf)			
Impervious Pavement (sf)			
Pervious Pavement (total / adjusted) (sf)	/	/	/
Impervious Sidewalks (sf)			
Pervious Sidewalks (total / adjusted) (sf)	/	/	/
Other (sf)			
Future Development (sf)			
Existing Impervious to remain (sf)			
Offsite (sf)			
Total Impervious Area (sf)			
Percent Impervious Area (%)			

V. SUBMITTAL REQUIREMENTS

Only complete application packages will be accepted and reviewed by the City. A complete package includes all of the items listed below. Copies of forms, deed restrictions, checklists as well as detailed instructions on how to complete this application form may be downloaded from the City of Wilmington Plan Review website below:

https://www.wilmingtonnc.gov/departments/engineering/plan-review/stormwater-permits

The complete application package should be submitted to the following address:

City of Wilmington – Engineering
Plan Review Section
212 Operations Center Dr.
Wilmington, NC 28412

Please indicate that the following required information have been provided by initialing in the space provided for each item.

	Initials
1. One completed Stormwater Management Permit Application Form.	JPC | ASR
2. One completed Supplement Form for each SCM proposed (signed, sealed and dated).	JPC | ASR
3. One completed Operation & Maintenance agreement for each type of SCM.	N/A
4. Proposed Deed Restrictions and Restrictive Covenants (for all subdivisions)	N/A
5. Appropriate stormwater permit review fee.	JPC | ASR
6. Minimum requirements identified on the Engineering Plan Review Checklist have been addressed.	JPC | ASR
7. One set of calculations (sealed. signed and dated).	JPC | ASR
8. A detailed narrative (one to two pages) describing the stormwater treatment/management system for the project.	JPC | ASR
9. 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.	JPC | ASR
10. A copy of the soils report, if applicable. Must meet NCDEQ SCM Manual and MDC requirements for the type of SCM proposed. The report must include boring logs and a map of boring locations.	JPC | ASR
11. One full set of plans folded to 8.5" x 14".	JPC | ASR
12. A map delineating and labeling the drainage area for each SCM proposed.	JPC | ASR
13. A map delineating and labeling the drainage area for each inlet and conveyance proposed.	JPC | ASR
14. A digital copy of the entire submittal package (can be submitted via flash drive, CD, email, dropbox or other file sharing system).	JPC | ASR

CITY OF WILMINGTON ENGINEERING

VI. PROPERTY OWNER AUTHORIZATION (If Section III(2) has been filled out, complete this section)

I, _____, certify that I own the property identified in this permit application, and thus give permission to _____ with _____ 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 _____dissolves their company and/or cancels or defaults on their lease agreement, or pending sale, responsibility for compliance with the City of Wilmington Stormwater Permit reverts back to me, the property owner. As the property owner, it is my responsibility to notify the City of Wilmington 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 the City of Wilmington Municipal Code of Ordinances and may result in appropriate enforcement including the assessment of civil penalties.

Signature: _____Date:_____

SEAL

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,

_____

My commission expires: _____

VII. APPLICANT'S CERTIFICATION

I, Thomas Walsh, VP Facilities & Support Services 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 rules under the City's Comprehensive Stormwater Ordinance.

Signature: _____Date: 03-05-20

SEAL

AMY S. NORRIS NOTARY PUBLIC NEW HANOVER CO., NC

I, Amy S. Norris, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that Thomas Walsh personally appeared before me this 5th day of March, 2020 and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Amy S. Norris

My commission expires: 05-06-24

SUPPLEMENT-EZ COVER PAGE

FORMS LOADED

NT #19135

PROJECT INFORMATION		
1	Project Name	NHRMC Employee Parking Deck with
2	Project Area (ac)	5.05
3	Coastal Wetland Area (ac)	0
4	Surface Water Area (ac)	0
5	Is this project High or Low Density?	High
6	Does this project use an off-site SCM?	No

COMPLIANCE WITH 02H .1003(4)		
7	Width of vegetated setbacks provided (feet)	N/A
8	Will the vegetated setback remain vegetated?	N/A
9	Is BUA other that as listed in .1003(4)(c-d) out of the setback?	N/A
10	Is streambank stabilization proposed on this project?	No

NUMBER AND TYPE OF SCMs:		
11	Infiltration System	0
12	Bioretention Cell	0
13	Wet Pond	1
14	Stormwater Wetland	0
15	Permeable Pavement	2
16	Sand Filter	0
17	Rainwater Harvesting (RWH)	0
18	Green Roof	0
19	Level Spreader-Filter Strip (LS-FS)	0
20	Disconnected Impervious Surface (DIS)	0
21	Treatment Swale	0
22	Dry Pond	0
23	StormFilter	0
24	Silva Cell	0
25	Bayfilter	0
26	Filterra	0

FORMS LOADED

DESIGNER CERTIFICATION		
27	Name and Title:	T. Jason Clark, P.E.
28	Organization:	Norris & Tunstall Consulting Engineers, P.C.
29	Street address:	2602 Iron Gate Drive, Suite 102
30	City, State, Zip:	Wilmington, NC 28412
31	Phone number(s):	910-343-9653
32	Email:	jclark@ntengineers.com

Certification Statement:
I certify, under penalty of law that this Supplement-EZ form and all supporting information were prepared under my direction or supervision; that the information provided in the form is, to the best of my knowledge and belief, true, accurate, and complete; and that the engineering plans, specifications, operation and maintenance agreements and other supporting information are consistent with the information provided here.

Designer

Seal

Signature of Designer

3-14-20

Date

DRAINAGE AREAS

NT #19135
(Rev. 04-07-2020)

1	Is this a high density project?	Yes
2	If so, number of drainage areas/SCMs	3
3	Is all/part of this project subject to previous rule versions?	No

FORMS LOADED

DRAINAGE AREA INFORMATION		Entire Site	1	2	3
4	Type of SCM	N/A	Wet Pond	Permeable Pvmt	Permeable Pvt
5	Total BUA in project (sq ft)	100290 sf	100290 sf	108 sf	196 sf
6	New BUA on subdivided lots (subject to permitting) (sq ft)				
7	New BUA outside of subdivided lots (subject to permitting) (sf)	100290 sf	100290 sf	0 sf	0 sf
8	Offsite - total area (sq ft)	984 sf	0 sf	0 sf	0 sf
9	Offsite BUA (sq ft)	984 sf	0 sf	0 sf	0 sf
10	Breakdown of new BUA outside subdivided lots:				
	- Parking (sq ft)	20483 sf	20483 sf	0 sf	0 sf
	- Sidewalk (sq ft)	1378 sf	1378 sf	0 sf	0 sf
	- Roof (sq ft)	49250 sf	49250 sf	0 sf	0 sf
	- Roadway (sq ft)			0 sf	0 sf
	- Future (sq ft)	5710 sf	5710 sf	0 sf	0 sf
	- Other, please specify in the comment box below (sq ft)				
11	New infiltrating permeable pavement on subdivided lots (sq ft)	0 sf	0 sf	0 sf	0 sf
12	New infiltrating permeable pavement outside of subdivided lots (sq ft)	5488 sf		1512 sf	3976 sf
13	Exisitng BUA that will remain (not subject to permitting) (sq ft)	0 sf			
14	Existing BUA that is already permitted (sq ft)	23469 sf	23469 sf	108 sf	196 sf
15	Existing BUA that will be removed (sq ft)	73824 sf	73824 sf	0 sf	0 sf
16	Percent BUA	46%	65%	5%	7%
17	Design storm (inches)	2 in	2 in	2 in	2 in
18	Design volume of SCM (cu ft)	N/A	12252 cf	22 cf	48 cf
19	Calculation method for design volume	Simple	Simple	Simple	Simple

ADDITIONAL INFORMATION	
20	Please use this space to provide any additional information about the drainage area(s):

* Also accounted for in pond desgin.

WET POND

1	Drainage area number	1
2	Design volume of SCM (cu ft)	12252 cf
GENERAL MDC FROM 02H .1050		
3	Is the SCM sized to treat the SW from all surfaces at build-out?	Yes
4	Is the SCM located away from contaminated soils?	Yes
5	What are the side slopes of the SCM (H:V)?	3:1, 6:1
6	Does the SCM have retaining walls, gabion walls or other engineered side slopes?	Yes
7	Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	Yes
8	Is there an overflow or bypass for inflow volume in excess of the design volume?	Yes
9	What is the method for dewatering the SCM for maintenance?	Pump (preferred)
10	If applicable, will the SCM be cleaned out after construction?	Yes
11	Does the maintenance access comply with General MDC (8)?	Yes
12	Does the drainage easement comply with General MDC (9)?	Yes
13	If the SCM is on a single family lot, does (will?) the plat comply with General MDC (10)?	N/A
14	Is there an O&M Agreement that complies with General MDC (11)?	Yes
15	Is there an O&M Plan that complies with General MDC (12)?	Yes
16	Does the SCM follow the device specific MDC?	Yes
17	Was the SCM designed by an NC licensed professional?	Yes
WET POND MDC FROM 02H .1053		
18	Method used	SA/DA
19	Has a stage/storage table been provided in the calculations?	Yes
20	Elevation of the excavated main pool depth (bottom of sediment removal) (fmsl)	1.85
21	Elevation of the main pool bottom-(top of sediment removal) (fmsl)	4.85
22	Elevation of the bottom of the vegetated shelf (fmsl)	10.85
23	Elevation of the permanent pool (fmsl)	10.85
24	Elevation of the top of the vegetated shelf (fmsl)	11.85
25	Elevation of the temporary pool (fmsl)	13.05
26	Surface area of the main permanent pool (square feet)	6002
27	Volume of the main permanent pool (cubic feet)	25772 cf
28	Average depth of the main pool (feet)	4.30 ft
29	Average depth equation used	
30	If using equation 3, main pool perimeter (feet)	
31	If using equation 3, width of submerged veg. shelf (feet)	
32	Volume of the forebay (cubic feet)	4008 cf
33	Is this 15-20% of the volume in the main pool?	Yes
34	Clean-out depth for forebay (inches)	6 in
35	Design volume of SCM (cu ft)	12252 cf
36	Is the outlet an orifice or a weir?	Orifice
37	If orifice, orifice diameter (inches)	2 in
38	If weir, weir height (inches)	N/A
39	If weir, weir length (inches)	N/A
40	Drawdown time for the temporary pool (days)	2.6
41	Are the inlet(s) and outlet located in a manner that avoids short-circuiting?	Yes
42	Are berms or baffles provided to improve the flow path?	Yes
43	Depth of forebay at entrance (inches)	8 in
44	Depth of forebay at exit (inches)	7 in
45	Does water flow out of the forebay in a non-erosive manner?	Yes
46	Width of the vegetated shelf (feet)	6 ft
47	Slope of vegetated shelf (H:V)	6:1
48	Does the orifice drawdown from below the top surface of the permanent pool?	Yes
49	Does the pond minimize impacts to the receiving channel from the 1-yr, 24-hr storm?	Yes
50	Are fountains proposed? (If Y, please provide documentation that MDC(9) is met.)	No
51	Is a trash rack or other device provided to protect the outlet system?	Yes
52	Are the dam and embankment planted in non-clumping turf grass?	Yes
53	Species of turf that will be used on the dam and embankment	Bermuda
54	Has a planting plan been provided for the vegetated shelf?	Yes

- Existing Pond
- Existing Pond

ADDITIONAL INFORMATION		
55	Please use this space to provide any additional information about the wet pond(s):	

This pond is existing & is to remain as constructed in the previous permit.
Note: Elevations changed only due to datum change of the survey.

PERMEABLE PAVEMENT

1	Drainage area number	2	3
2	Design volume of SCM (cu ft)	22.3 ~~22~~ cf	~~46~~ cf 48.13
3	Area of permeable pavement to be installed (square feet)	1512 sf	3976 sf
4	Area of screened roof runoff that is directed to pavement (square feet)	0 sf	0 sf
5	Area of additional built-upon area runoff that is directed to pavement (square feet)	108 sf	196 sf
6	Area of incidental, unavoidable runoff from adjacent stable pervious areas (square feet)	0 sf	0 sf
GENERAL MDC FROM 02H .1050			
7	Is the SCM sized to treat the SW from all surfaces at build-out?	~~Yes~~	~~Yes~~
8	Is the SCM located away from contaminated soils?	~~Yes~~	~~Yes~~
5	What are the side slopes of the SCM (H:V)?	1:1	1:1
6	Does the SCM have retaining walls, gabion walls or other engineered side slopes?	No	No
7	Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	~~Yes~~	~~Yes~~
8	Is there an overflow or bypass for inflow volume in excess of the design volume?	~~Yes~~	~~Yes~~
9	What is the method for dewatering the SCM for maintenance?	~~Pump (preferred)~~	~~Pump (preferred)~~
10	If applicable, will the SCM be cleaned out after construction?	N/A	N/A
11	Does the maintenance access comply with General MDC (8)?	~~Yes~~	~~Yes~~
12	Does the drainage easement comply with General MDC (9)?	~~Yes~~	~~Yes~~
13	If the SCM is on a single family lot, does (will?) the plat comply with General MDC (10)?	N/A	N/A
14	Is there an O&M Agreement that complies with General MDC (11)?	~~Yes~~	~~Yes~~
15	Is there an O&M Plan that complies with General MDC (12)?	~~Yes~~	~~Yes~~
16	Does the SCM follow the device specific MDC?	~~Yes~~	~~Yes~~
17	Was the SCM designed by an NC licensed professional?	~~Yes~~	~~Yes~~
PERMEABLE PAVEMENT MDC FROM 02H .1055			
18	Is this a detention or infiltration permeable pavement system?	Infiltration	Infiltration
19	Proposed slope of the subgrade surface (%)	<2 %	<2 %
20	Are terraces or baffles provided?	~~No~~	~~No~~
21	SHWT elevation (fmsl)	14.85	14.85
22	Storage elevation of the design rainfall depth (fmsl)	19.04	18.23
23	Will toxic pollutants be stored or handled on or near the permeable pavement?	No	No
24	Does the proposed pavement surface comply with .1055(6)?	Yes	Yes
25	Will runoff from pervious surfaces be directed away from the pavement?	Yes	Yes
26	Maximum adjacent area directed to a single point onto the permeable pavement (sq ft)		
27	Is at least one observation well per terrace been provided at the low point(s)?	Yes	Yes
28	Have edge restraints been provided?	Yes	Yes
29	Will the subgrade be graded when dry?	Yes	Yes
30	Will the permeable pavement be protected from sediment during construction?	Yes	Yes
31	Will an in-situ permeability test be conducted after site stabilization?	Yes	Yes
For Infiltrating Pavement Systems			
32	Was the soil investigated in the footprint and at the elevation of the subgrade?	Yes	Yes
33	Soil infiltration rate (in/hr)	14 in/hr	14 in/hr
34	Is a detailed hydrogeologic study attached if the separation is between 1 and 2 feet?	No	No
35	Is additional media being added to the soil profile?	No	No
36	Proposed slope of the subgrade surface (%)	<2%	<2%
37	Top of the subgrade (bottom of the aggregate) (fmsl)	19	18.2
38	Dewatering time (hours)	1.13 ~~1~~ hrs	~~1~~ hrs 1.11
For Detention Pavement Systems			
39	Drawdown time (hours)	NA	NA
Aggregate			
40	Aggregate depth (in)	6 in	6 in
41	Aggregate porosity (n)	40%	40%
42	Size of aggregate to be used in the subbase	#57	#57
43	Will the aggregate be washed?	Yes	Yes

ADDITIONAL INFORMATION	
44	Please use this space to provide any additional information about the permeable pavement system(s):
	PC-1 & PC-2 are existing from the previous permit. Only the elevations have been revised due to new datum of the survey.

→ Both are existing from previous permit

- Existing

Permit Number: _____
(to be provided by City of Wilmington)
SCM Drainage Basin #: SW Pond #1

Wet Detention Basin Operation and Maintenance Agreement NT #19135 (Rev. to 16148)

I will keep a maintenance record on this SCM. This maintenance record will be kept in a log in a known set location. Any deficient SCM elements noted in the inspection will be corrected, repaired or replaced **immediately**. These deficiencies can affect the integrity of structures, safety of the public, and the pollutant removal efficiency of the SCM.

The wet detention basin system is defined as the wet detention basin, pretreatment including forebays and the vegetated filter if one is provided.

This system (*check one*):
☐ **does** ☑ **does not** **incorporate a vegetated filter at the outlet.**

Important maintenance procedures:

- Immediately after the wet detention basin is established, the plants on the vegetated shelf and perimeter of the basin should be watered twice weekly if needed, until the plants become established (commonly six weeks).
- No portion of the wet detention pond should be fertilized after the first initial fertilization that is required to establish the plants on the vegetated shelf.
- Stable groundcover should be maintained in the drainage area to reduce the sediment load to the wet detention basin.
- If the basin must be drained for an emergency or to perform maintenance, the flushing of sediment through the emergency drain should be minimized to the maximum extent practical.
- Once a year, a dam safety expert should inspect the embankment.

After the wet detention pond is established, it should be inspected **once a month and within 24 hours after every storm event greater than 1.5 inches**. Records of operation and maintenance should be kept in a known set location and must be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

SCM element:	Potential problem:	How to remediate the problem:
The entire SCM	Trash/debris is present.	Remove the trash/debris.
The perimeter of the SCM	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary, to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
	Vegetation is too short or too long.	Maintain vegetation at a height of approximately six inches.

Permit Number: _____
(to be provided by City of Wilmington)
SCM Drainage Basin #: _____

SCM element:	Potential problem:	How to remediate the problem:
The inlet device:	The pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged.	Replace the pipe.
	Erosion is occurring in the swale.	Regrade the swale if necessary, to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and replace with clean stone.
The forebay	Sediment has accumulated to a depth greater than the original design depth for sediment storage.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the SCM.
	Erosion has occurred.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.
The vegetated shelf	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if a soil test indicates it is necessary.
The main treatment area	Sediment has accumulated to a depth greater than the original design sediment storage depth.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the SCM.

Permit Number: _____
(to be provided by City of Wilmington)
SCM Drainage Basin #: _____

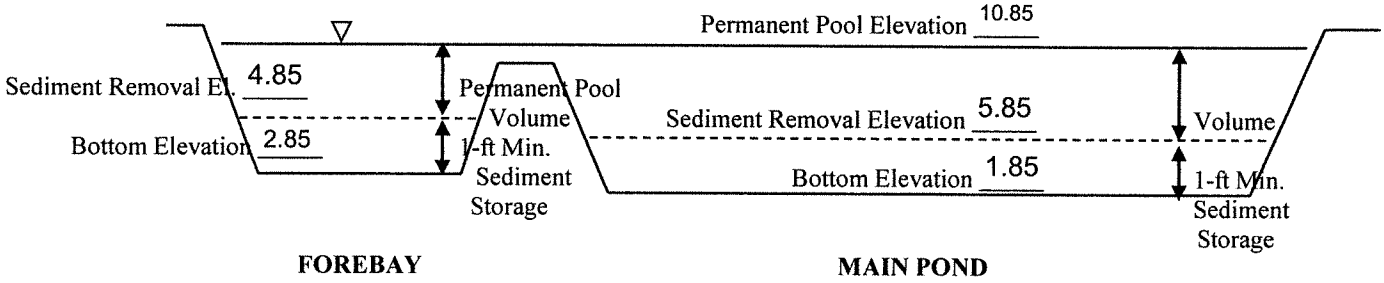
SCM element:	Potential problem:	How I will remediate the problem:
The main treatment area (continued)	Algal growth covers over 25% of the area.	Consult a professional to remove and control the algal growth.
	Cattails, phragmites or other invasive plants cover 50% of the basin surface.	Remove the plants by wiping them with pesticide (do not spray).
The embankment	Shrubs have started to grow on the embankment.	Remove shrubs immediately.
	Evidence of muskrat or beaver activity is present.	Use traps to remove muskrats and consult a professional to remove beavers.
	A tree has started to grow on the embankment.	Consult a dam safety specialist to remove the tree.
	An annual inspection by an appropriate professional shows that the embankment needs repair. (if applicable)	Make all needed repairs.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the local NC Department of Environment and Natural Resources regional Office.

The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.

When the permanent pool depth reads 5 feet in the main pond, the sediment shall be removed.

When the permanent pool depth reads 6 feet in the forebay, the sediment shall be removed.

BASIN DIAGRAM
(fill in the blanks)



Permit Number: _____
(to be provided by City of Wilmington)

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify the City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name: NHRMC Employee Parking Deck with Pedestrian Bridge

SCM drainage basin number: Stormwater Pond #1

Print name: Thomas Walsh

Title: Vice President Facilities & Support Services / NHRMC

Address: P.O. Box 9000 Wilmington, NC 28402

Phone: 910-343-2788

Signature: _____

Date: 03-05-20

Note: The legally responsible party should not be a homeowners' association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, Amy S. Norris, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that Thomas Walsh personally appeared before me this 5th day of March, 2020, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal,

AMY S. NORRIS NOTARY PUBLIC NEW HANOVER CO., NC

Amy S. Norris

SEAL

My commission expires 05-06-24

Permit Number: _____
(to be provided by City of Wilmington)
SCM Drainage Basin #: PC-1

Permeable Pavement Operation and Maintenance Agreement

NT # 19135
(Rev. to 16148)

I will keep a maintenance record on this SCM. This maintenance record will be kept in a log in a known set location. Any deficient SCM elements noted in the inspection will be corrected, repaired or replaced **immediately**. These deficiencies can affect the integrity of structures, safety of the public, and the pollutant removal efficiency of the SCM(s).

Important maintenance procedures:
At all times, the permeable pavement shall be kept free of:

- Debris and particulate matter through frequent blowing that removes such debris, particularly during the fall and spring.
- Piles of soil, sand, mulch, building materials or other materials that could deposit particulates on the permeable pavement.
- Piles of snow and ice.
- Chemicals of all kinds, including deicers.

The permeable pavement will be inspected **once a quarter**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

SCM element:	Potential problem:	How to remediate the problem:
The entire SCM	Trash/debris is present.	Remove the trash/debris.
The perimeter of the permeable pavement	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary, to remove the gully, then plant ground cover and water until established.
	A vegetated area drains toward the pavement.	Regrade the area so that it drains away from the pavement, then plant ground cover and water until established.
The inlet device	The pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged.	Replace the pipe.
	Erosion is occurring in the swale.	Regrade the swale if necessary, to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and replace with clean stone.

SCM element:	Potential problem:	How to remediate the problem:
The surface of the permeable pavement	Trash/debris present.	Remove the trash/debris.
	Weeds.	Do not pull the weeds (may pull out media as well). Spray them with a systemic herbicide such as glyphosate and then return within the week to remove them by hand. (Another option is to pour boiling water on them or steam them.)
	Sediment.	Vacuum sweep the pavement.
	Rutting, cracking or slumping or damaged structure.	Consult an appropriate professional.
Observation well	Water present more than five days after a storm event.	Clean out clogged underdrain pipes. Consult an appropriate professional for clogged soil subgrade.
Educational sign	Missing or is damaged.	Replace the sign.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged.	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Department of Environment and Natural Resources Regional Office.

Permit Number: _____
(to be provided by City of Wilmington)

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify the City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name: NHRMC Employee Deck with Pedestrian Bridge

SCM drainage basin number: PC-1

Print name: Thomas Walsh

Title: Vice President Facilities & Support Services / NHRMC

Address: P.O. Box 9000 Wilmington, NC 28402

Phone: 910-343-2788

Signature: _____

Date: 03-05-20

Note: The legally responsible party should not be a homeowners' association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, Amy S. Norris, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that Thomas Walsh personally appeared before me this 5th day of March, 2020, and acknowledge the due execution of the forgoing filter strip, riparian buffer, and/or level spreader maintenance requirements.

Witness my hand and official seal,

AMY S. NORRIS NOTARY PUBLIC NEW HANOVER CO., NC

Amy S. Norris

SEAL

My commission expires 05-06-24

Permit Number: _____
(to be provided by City of Wilmington)
SCM Drainage Basin #: PC-2

Permeable Pavement Operation and Maintenance Agreement

NT #19135 (Rev. to 16148)

I will keep a maintenance record on this SCM. This maintenance record will be kept in a log in a known set location. Any deficient SCM elements noted in the inspection will be corrected, repaired or replaced **immediately**. These deficiencies can affect the integrity of structures, safety of the public, and the pollutant removal efficiency of the SCM(s).

Important maintenance procedures:
At all times, the permeable pavement shall be kept free of:

- Debris and particulate matter through frequent blowing that removes such debris, particularly during the fall and spring.
- Piles of soil, sand, mulch, building materials or other materials that could deposit particulates on the permeable pavement.
- Piles of snow and ice.
- Chemicals of all kinds, including deicers.

The permeable pavement will be inspected **once a quarter**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

SCM element:	Potential problem:	How to remediate the problem:
The entire SCM	Trash/debris is present.	Remove the trash/debris.
The perimeter of the permeable pavement	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary, to remove the gully, then plant ground cover and water until established.
	A vegetated area drains toward the pavement.	Regrade the area so that it drains away from the pavement, then plant ground cover and water until established.
The inlet device	The pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged.	Replace the pipe.
	Erosion is occurring in the swale.	Regrade the swale if necessary, to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and replace with clean stone.

SCM element:	Potential problem:	How to remediate the problem:
The surface of the permeable pavement	Trash/debris present.	Remove the trash/debris.
	Weeds.	Do not pull the weeds (may pull out media as well). Spray them with a systemic herbicide such as glyphosate and then return within the week to remove them by hand. (Another option is to pour boiling water on them or steam them.)
	Sediment.	Vacuum sweep the pavement.
	Rutting, cracking or slumping or damaged structure.	Consult an appropriate professional.
Observation well	Water present more than five days after a storm event.	Clean out clogged underdrain pipes. Consult an appropriate professional for clogged soil subgrade.
Educational sign	Missing or is damaged.	Replace the sign.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged.	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Department of Environment and Natural Resources Regional Office.

Permit Number: _____
(to be provided by City of Wilmington)

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify the City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name: NHRMC Employee Deck with Pedestrian Bridge

SCM drainage basin number: PC-2

Print name: Thomas Walsh

Title: Vice President Facilities & Support Services / NHRMC

Address: P.O. Box 9000 Wilmington, NC 28402

Phone: 910-343-2788

Signature: _____

Date: 03-05-20

Note: The legally responsible party should not be a homeowners' association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, Amy S. Norris, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that Thomas Walsh personally appeared before me this 5th day of March, 2020, and acknowledge the due execution of the forgoing filter strip, riparian buffer, and/or level spreader maintenance requirements.

Witness my hand and official seal,

AMY S. NORRIS NOTARY PUBLIC NEW HANOVER CO., NC

Amy S. Norris

SEAL

My commission expires 05-06-24