



COMPREHENSIVE STORMWATER MANAGEMENT PERMIT

HIGH DENSITY DEVELOPMENT

SECTION 1 – APPROVAL

Having reviewed the application and all supporting materials, the City of Wilmington has determined that the application is complete and the proposed development meets the requirements of the City of Wilmington's Comprehensive Stormwater Ordinance.

PERMIT HOLDER: **Echo Farms, LLC**
PROJECT: **Woodlands at Echo Farms - Tract 3C**
ADDRESS: **4114 Echo Farms Boulevard**
PERMIT #: **2018029R1**
DATE: **March 26, 2021**

Therefore, the above referenced site is hereby approved and subject to all conditions set forth in Section 2 of this approval and all applicable provisions of the City of Wilmington Comprehensive Stormwater Management Ordinance.

This permit shall be effective from the date of issuance until March 26, 2031 and shall be subject to the following specified conditions and limitations:

Section 2 - CONDITIONS

1. This approval is valid only for the stormwater management system as proposed on the approved stormwater management plans dated March 25, 2021.
2. The project will be limited to the amount and type of built-upon area indicated in Section IV of the Stormwater Management Application Form submitted as part of the approved stormwater permit application package, and per the approved plans.
3. This permit shall become void unless the facilities are constructed in accordance with the approved stormwater management plans, specifications and supporting documentation, including information provided in the application and supplements.
4. The runoff from all built-upon area within any permitted drainage area must be directed into the permitted stormwater control system for that drainage area.



Public Services

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

5. The permittee shall submit a revised stormwater management application packet to the City of Wilmington and shall have received approval prior to construction, for any modification to the approved plans, including, but not limited to, those listed below:
 - a. Any revision to any item shown on the approved plans, including the stormwater management measures, built-upon area, details, etc.
 - b. Redesign or addition to the approved amount of built-upon area or to the drainage area.
 - c. Further subdivision, acquisition, lease or sale of any part of the project area.
 - d. Filling in, altering, or piping of any vegetative conveyance shown on the approved plan.
 - e. Construction of any permitted future areas shown on the approved plans.
6. A copy of the approved plans and specifications shall be maintained on file by the Permittee.
7. During construction, erosion shall be kept to a minimum and any eroded areas of the system will be repaired immediately.
8. If the stormwater system was used as an Erosion Control device, it must be restored to design condition prior to operation as a stormwater treatment device, and prior to issuance of any certificate of occupancy for the project.
9. All areas must be maintained in a permanently stabilized condition. If vegetated, permanent seeding requirements must follow the guidelines established in the North Carolina Erosion and Sediment Control Planning and Design Manual unless an alternative is specified and approved by the City of Wilmington.
10. All applicable operation & maintenance agreements and easements pertaining to each stormwater treatment system shall be referenced on the final plat and recorded with the Register of Deeds upon final plat approval. If no plat is recorded for the site the operation and maintenance agreements and easements shall be recorded with the Register of Deeds so as to appear in the chain of title of all subsequent purchasers under generally accepted searching standards.
11. 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 surface unless prior approval is obtained. City Staff must be notified of any deviation prior to construction of the built-upon surface. Any deviation request shall include justification and must propose an alternative timeline or construction sequence. Notification shall not constitute approval. Any alternative timeline approved by City staff shall become an enforceable component of this permit.



12. The permittee shall at all times provide the operation and maintenance necessary to assure the permitted stormwater system functions at optimum efficiency. The approved Operation and Maintenance Agreement must be followed in its entirety and maintenance must occur at the scheduled intervals including, but not limited to:
 - a. Scheduled inspections (interval noted on the agreement).
 - b. Sediment removal.
 - c. Mowing and revegetation of slopes and the vegetated areas.
 - d. Maintenance of landscape plants, including those within the landscape buffer and on the vegetated shelf.
 - e. Immediate repair of eroded areas, especially slopes.
 - f. Debris removal and unclogging of outlet structure, orifice device, flow spreader, catch basins and/or piping.
 - g. Access to the outlet structure must be available at all times.
13. Records of inspection, maintenance and repair for the permitted stormwater system must be kept by the permittee for at least 5 years from the date of record and made available upon request to authorized personnel of the City of Wilmington. The records will indicate the date, activity, name of person performing the work and what actions were taken.
14. Upon completion of construction, before a Certificate of Occupancy shall be granted, and prior to operation or intended use of this permitted facility, the applicant shall submit to the City of Wilmington as-built plans for all stormwater management facilities. The plans shall show the final design specifications and the field location, type, depth, invert and planted vegetation of all measures, controls and devices, as-installed. A certification shall be submitted, along with all supporting documentation that specifies, under seal that the as-built stormwater measures, controls and devices are in compliance with the approved stormwater management plans. A final inspection by City of Wilmington personnel will be required prior to issuance of a certificate of occupancy or operation of the permitted facility.
15. This permit is not transferable except after application and approval by the City of Wilmington. In the event of a change of ownership, name change or change of address the permittee must submit a completed Name/Ownership Change form to the City of Wilmington at least 30 days prior to the change. It shall be signed by all applicable parties, and be accompanied by all required supporting documentation. Submittal of a complete application shall not be construed as an approved application. The application will be reviewed on its own merits by the City of Wilmington and may or may not be approved. The project must be in compliance with the terms of this permit in order for the transfer request to be considered. The permittee is responsible for compliance with all permit conditions until such time as the City of Wilmington approves the transfer request. Neither the sale of the project nor the conveyance of common area to a third party should be considered as an approved transfer of the permit.
16. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to enforcement action by the City of Wilmington, in accordance with Sections 18-52 and 18-53 and any other applicable section of the Land Development Code.



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17. The City of Wilmington 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 City of Wilmington for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the City of Wilmington that the changes have been made.
18. 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) having jurisdiction.
19. 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 the City of Wilmington, such as the construction of additional or replacement stormwater management systems.
20. The permittee grants City of Wilmington Staff permission to enter the property during normal business hours for the purpose of inspecting all components of the permitted stormwater management facility.
21. The permit issued shall continue in force and effect until revoked or terminated by the City of Wilmington. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and re-issuance or termination does not stay any permit condition.
22. The approved stormwater management plans and all documentation submitted as part of the approved stormwater management permit application package for this project are incorporated by reference and are enforceable parts of the permit.
23. The permittee shall submit a renewal request with all required forms and documentation at least 180 days prior to the expiration date of this permit.
24. If any one or more of the conditions of this permit is found to be unenforceable or otherwise invalidated, all remaining conditions shall remain in full effect.

Stormwater Management Permit issued this the 26th day of March, 2021.

Richard Christensen

for Sterling Cheatham, City Manager
City of Wilmington



Public Services
 Engineering
 212 Operations Center Dr
 Wilmington, NC 28412
 910 341-7807
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STORMWATER MANAGEMENT PERMIT APPLICATION FORM
 (Form SWP 2.3)

N&T #20166

I. GENERAL INFORMATION

- Project Name (subdivision, facility, or establishment name - should be consistent with project name on plans, specifications, letters, operation and maintenance agreements, etc.):
Woodlands at Echo Farms - Tract 3C
- Location of Project (street address):
4114 Echo Farms Boulevard
 City: Wilmington County: New Hanover Zip: 28412

II. PERMIT INFORMATION

- 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: _____
- 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: 2018029 (07-12-18) State – NCDEQ/DEMLR: _____
- Additional Project Permit Requirements (check all applicable):
 CAMA Major Sedimentation/Erosion Control 404/401 Permit

III. CONTACT INFORMATION

- Print Applicant / Signing Official's name and title (the developer, property owner, lessee, designated government official, individual, etc. who owns the project):
 Applicant / Organization: Echo Farms, LLC
 Signing Official & Title: Joseph S. Taylor, Manager

a. Contact information for Applicant / Signing Official:

Address: c/o Matrix Development Group, CN 4000, Forsgate Dr.

City: Cranbury State: NJ Zip: 08512

Phone: 732-521-2900 Email: jtaylor@matrixcompanies.com

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: Cape Fear Commercial, LLC

Signing Official & Title: Mike Brown, Senior Vice President

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

Street Address: 1051 Military Cutoff Road, Suite 200

City: Wilmington State: NC Zip: 28405

Phone: 910-622-4657 (Cell) Email: mike@capefearcommercial.com

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

IV. PROJECT INFORMATION

1. Total Property Area: 509216 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: 509216 square feet.
5. Existing Impervious Surface within Project Area: 11595 square feet
6. Existing Impervious Surface to be Removed/Demolished: 11045 square feet
7. Existing Impervious Surface to Remain: 550 square feet
8. Total Onsite (within property boundary) Newly Constructed Impervious Surface (in square feet):

Buildings/Lots	73059
Impervious Pavement	44432
Pervious Pavement (total area / adjusted area w credit applied)	2400 / 2400
Impervious Sidewalks	20777
Pervious Sidewalks (total area / adjusted area w credit applied)	0 / 0
Other (Describe) Driveways	22911
Future Development	22569
Total Onsite Newly Constructed Impervious Surface	186148

9. Total Onsite Impervious Surface
(Existing Impervious Surface to remain + Onsite Newly Constructed Impervious Surface) 186698 square feet
10. Net Change in Onsite Impervious Surface (+ for net increase, - for net decrease) 175103 square feet
11. Project percent of impervious area: (Total Onsite Impervious Surface / Total Project Area) x100 = 36.7 %
12. Total Offsite Newly Constructed Impervious Area (in square feet):

Impervious Pavement	0
Pervious Pavement (total area / adjusted area w credit applied)	0 / 0
Impervious Sidewalks	2888
Pervious Sidewalks (total area / adjusted area w credit applied)	0 / 0
Other (Describe) Driveways	2000
Total Offsite Newly Constructed Impervious Surface	4888

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 #	Type of SCM SCM #	Type of SCM SCM #
Receiving Stream Name	Barnards Creek	Barnards Creek	
Receiving Stream Index Number	18-80	18-80	
Stream Classification	C; Sw	C; Sw	
Total Drainage Area (sf)	207013	164014	
On-Site Drainage Area (sf)	207013	162976	
Off-Site Drainage Area (sf)	0	1038	
Buildings/Lots (sf)	48123	24936	
Impervious Pavement (sf)	18955	22619	
Pervious Pavement (total / adjusted) (sf)	0 / 0	2400 / 2400	/
Impervious Sidewalks (sf)	9076	10973	
Pervious Sidewalks (total / adjusted) (sf)	0 / 0	0 / 0	/
Other (sf) Driveways	12661	10250	
Future Development (sf)	17407	5162	
Existing Impervious to remain (sf)	0	0	
Offsite (sf)	0	0	
Total Impervious Area (sf)	106222	76340	
Percent Impervious Area (%)	51.3%	46.5%	

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.

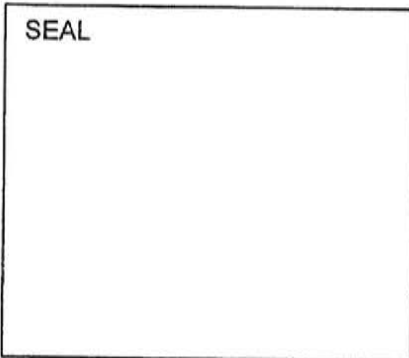
- | | Initials |
|--|----------------|
| 1. One completed Stormwater Management Permit Application Form. | <u>JPC/ASN</u> |
| 2. One completed Supplement Form for each SCM proposed (signed, sealed and dated). | <u>JPC/ASN</u> |
| 3. One completed Operation & Maintenance agreement for each <u>type</u> of SCM. | <u>JPC/ASN</u> |
| 4. Proposed Deed Restrictions and Restrictive Covenants (for all subdivisions) | <u>N/A</u> |
| 5. Appropriate stormwater permit review fee. \$400.00 - see next pg. | <u>JPC/ASN</u> |
| 6. Minimum requirements identified on the Engineering Plan Review Checklist have been addressed. | <u>JPC/ASN</u> |
| 7. One set of calculations (sealed, signed and dated). | <u>JPC/ASN</u> |
| 8. A detailed narrative (one to two pages) describing the stormwater treatment/management system for the project. | <u>JPC/ASN</u> |
| 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 1/2 mile of the site boundary, include the 1/2 mile radius on the map. | <u>JPC/ASN</u> |
| 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. | <u>N/A</u> |
| 11. One full set of plans <u>folded to 8.5" x 14"</u> . | <u>JPC/ASN</u> |
| 12. A map delineating and labeling the drainage area for each SCM proposed. | <u>JPC/ASN</u> |
| 13. A map delineating and labeling the drainage area for each inlet and conveyance proposed. | <u>JPC/ASN</u> |
| 14. A digital copy of the entire submittal package (can be submitted via flash drive, CD, email, dropbox or other file sharing system). | <u>JPC/ASN</u> |

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: _____



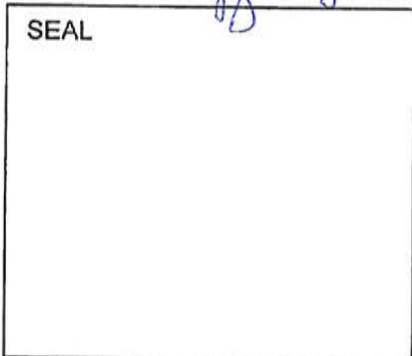
I, _____, a Notary Public for the State of _____, County of _____, do hereby certify that _____ personally appeared before me this day of _____, _____, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

My commission expires: _____

VII. APPLICANT'S CERTIFICATION

I, Joseph S. Taylor 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: *Joseph S. Taylor* Date: 1/4/21



I, MAUREEN ANN PETRIGNANI, a Notary Public for the State of NEW JERSEY, County of MORMOUTH, do hereby certify that JOSEPH S. TAYLOR personally appeared before me this day of JANUARY 4, 2021, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Maureen Ann Petrigani
My commission expires: _____

MAUREEN ANN PETRIGNANI
Notary Public of New Jersey
ID# 2045907
My Commission Expires June 8, 2023

SUPPLEMENT-EZ COVER PAGE

FORMS LOADED

NT #20166

PROJECT INFORMATION		
1	Project Name	Woodlands at Echo Farms - Tract 3C
2	Project Area (ac)	11.69
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 than as listed in .1003(4)(c-d) out of the setback?	Yes
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	2
14	Stormwater Wetland	0
15	Permeable Pavement	0
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



[Handwritten Signature]

 Signature of Designer

1-5-21

 Date

DRAINAGE AREAS

NT #20166
(Rev. 02-25-21)

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

FORMS LOADED

On-Site 3C-1 3C-2

DRAINAGE AREA INFORMATION		Entire Site	1	2
4	Type of SCM	N/A	Wet Pond	Wet Pond
5	Total BUA in project (sq ft)	186698 sf	106222 sf	76340 sf
6	New BUA on subdivided lots (subject to permitting) (sq ft)	0 SF	N/A	N/A
	New BUA outside of subdivided lots (subject to permitting) (sf)	186698 sf	106222 sf	76340 sf
8	Offsite - total area (sq ft)	1038 sf	0 SF	1038 sf
9	Offsite BUA (sq ft)	0 SF	0 SF	0 SF
10	Breakdown of new BUA outside subdivided lots:			
	- Parking (sq ft)	0 SF	0 SF	0 SF
	- Sidewalk (sq ft)	20777 sf	9076 sf	10973 sf
	- Roof (sq ft)	73059 sf	48123 sf	24936 sf
	- Roadway (sq ft)	* 46832 sf	18955 sf	25019 sf
	- Future (sq ft)	22569 sf	17407 sf	5162 sf
	- Other, please specify in the comment box below (sq ft)	22911 sf	12661 sf	10250 sf
	<i>Drive Ways</i>			
11	New infiltrating permeable pavement on subdivided lots (sq ft)	0 SF	0 SF	0 SF
12	New infiltrating permeable pavement outside of subdivided lots (sq ft)	0 SF	0 SF	0 SF
13	Existing BUA that will remain (not subject to permitting) (sq ft)	550 sf	0 SF	0 SF
14	Existing BUA that is already permitted (sq ft)	0 SF	0 SF	0 SF
15	Existing BUA that will be removed (sq ft)	11045 sf	0 SF	0 SF
16	Percent BUA	36.7 37%	51.3 51%	47% 46.5
17	Design storm (inches)	1.5 in	1.5 in	1.5 in
18	Design volume of SCM (cu ft)	0 CF	15562 cf	12633 cf
19	Calculation method for design volume	N/A	Simple	Simple

ADDITIONAL INFORMATION	
20	Please use this space to provide any additional information about the drainage area(s):
*Roadway total 46,832 SF includes 2,400 SF of pervious concrete (Not designed for credit).	

WET POND

#1 #2

1	Drainage area number	3C-1	3C-2
2	Design volume of SCM (cu ft)	15562 cf	12633 cf
GENERAL MDC FROM 02H .1050			
3	Is the SCM sized to treat the SW from all surfaces at build-out?	Yes	Yes
4	Is the SCM located away from contaminated soils?	Yes	Yes
5	What are the side slopes of the SCM (H:V)?	3:1, 6:1	3:1, 6:1
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?	Yes	Yes
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
WET POND MDC FROM 02H .1053			
18	Method used	SA/DA	SA/DA
19	Has a stage/storage table been provided in the calculations?	Yes	Yes
20	Elevation of the excavated main pool depth (bottom of sediment removal) (fmsl)	-1.00	4.00
21	Elevation of the main pool bottom-(top of sediment removal) (fmsl)	4.00	7.00
22	Elevation of the bottom of the vegetated shelf (fmsl)	7.50	11.50
23	Elevation of the permanent pool (fmsl)	8.50	12.00
24	Elevation of the top of the vegetated shelf (fmsl)	8.50	12.50
25	Elevation of the temporary pool (fmsl)	9.75	13.30
26	Surface area of the main permanent pool (square feet)	9795 SF	7235 SF
27	Volume of the main permanent pool (cubic feet)	28448 cf	21418 cf
28	Average depth of the main pool (feet)	3.90 ft	3.80 ft
29	Average depth equation used	Equation 3	Equation 3
30	If using equation 3, main pool perimeter (feet)	360.0 ft	400.0 ft
31	If using equation 3, width of submerged veg. shelf (feet)	6.0 ft	3.0 ft
32	Volume of the forebay (cubic feet)	4728 cf	3528 cf
33	Is this 15-20% of the volume in the main pool?	Yes	Yes
34	Clean-out depth for forebay (inches)	78 in	72 in
35	Design volume of SCM (cu ft)	15562 cf	12633 cf
36	Is the outlet an orifice or a weir?	Orifice	Orifice
37	If orifice, orifice diameter (inches)	2 in	2 in
38	If weir, weir height (inches)	N/A	N/A
39	If weir, weir length (inches)	N/A	N/A
40	Drawdown time for the temporary pool (days)	2.63	2.1
41	Are the inlet(s) and outlet located in a manner that avoids short-circuiting?	Yes	Yes
42	Are berms or baffles provided to improve the flow path?	No	No
43	Depth of forebay at entrance (inches)	90 in	84 in
44	Depth of forebay at exit (inches)	78 in	72 in
45	Does water flow out of the forebay in a non-erosive manner?	Yes	Yes
46	Width of the vegetated shelf (feet)	6 ft	6 ft
47	Slope of vegetated shelf (H:V)	6:1	6:1
48	Does the orifice drawdown from below the top surface of the permanent pool?	Yes	Yes
49	Does the pond minimize impacts to the receiving channel from the 1-yr, 24-hr storm?	Yes	Yes
50	Are fountains proposed? (If Y, please provide documentation that MDC(9) is met.)	No	No
51	Is a trash rack or other device provided to protect the outlet system?	Yes	Yes
52	Are the dam and embankment planted in non-clumping turf grass?	Yes	Yes
53	Species of turf that will be used on the dam and embankment	Bermuda Grass	Bermuda Grass
54	Has a planting plan been provided for the vegetated shelf?	Yes	Yes

Pond 3C-1 uses 3.5'
Pond 3C-2 uses 3.5'

ADDITIONAL INFORMATION
Please use this space to provide any additional information about the wet pond(s):
This modification slightly increases the total drainage area. Total BUA to each pond remains UNCHANGED.

Wet Detention Basin Operation and Maintenance Agreement NT #20166

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 #: Pond 3C-1

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 #: Pond 3C-1

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.

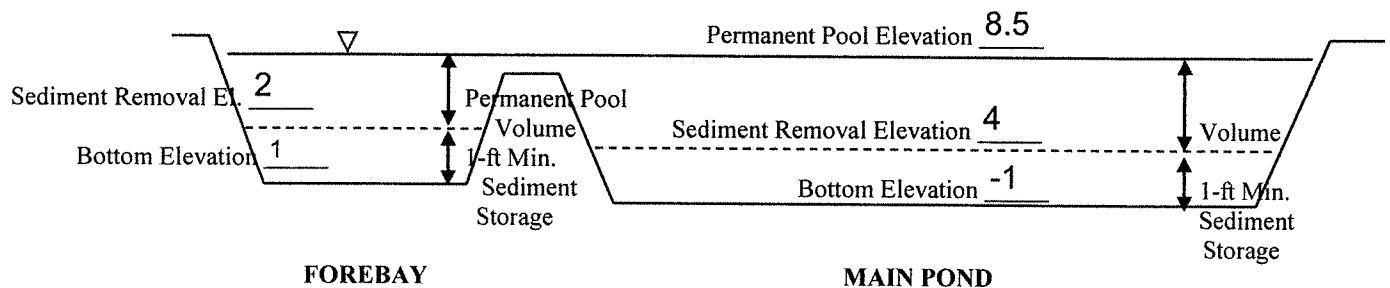
The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.

When the permanent pool depth reads 4.5 feet in the main pond, the sediment shall be removed.

When the permanent pool depth reads 6.5 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: Woodlands at Echo Farms - Tract 3C
SCM drainage basin number: Pond 3C-1

Print name: Joseph S. Taylor
Title: Manager of Echo Farms, LLC
Address: c/o Matrix Development Group, CN 4000, Forsgate Dr., Cranbury, NJ 08512
Phone: 732-521-2900
Signature: [Handwritten Signature]
Date: 1/4/21

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, MAUREEN ANN PETRIGNANI, a Notary Public for the State of NEW JERSEY, County of MORRIS, do hereby certify that JOSEPH S. TAYLOR personally appeared before me this 4th day of JANUARY, 2021, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal,

[Handwritten Signature: Maureen Ann Petrucci]

SEAL

MAUREEN ANN PETRIGNANI
Notary Public of New Jersey
ID# 2045907
My Commission Expires June 8, 2023

My commission expires _____

Wet Detention Basin Operation and Maintenance Agreement NT #20166

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 #: Pond 3C-2

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 #: Pond 3C-2

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.

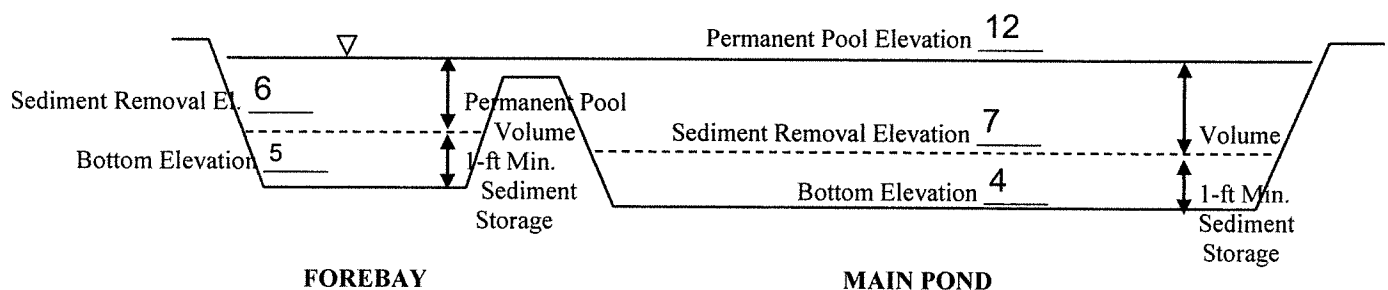
The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.

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: Woodlands at Echo Farms - Tract 3C
SCM drainage basin number: Pond 3C-2

Print name: Joseph S. Taylor
Title: Manager of Echo Farms, LLC
Address: c/o Matrix Development Group, CN 4000, Forsgate Dr., Cranbury, NJ 08512
Phone: 732-521-2900
Signature: [Handwritten Signature]
Date: 1/4/21

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, MAUREEN ANN PETRIGNANI, a Notary Public for the State of NEW JERSEY, County of MONMOUTH, do hereby certify that JOSEPH S. TAYLOR personally appeared before me this 4th day of JANUARY, 2021, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal,

Maureen Ann Petrigani

SEAL

MAUREEN ANN PETRIGNANI
Notary Public of New Jersey
ID# 2045907
My Commission Expires June 8, 2023

My commission expires _____