CITY OF WILMINGTON
NORTH CAROLINA

Public Services
Engineering
414 Chestnut St, Suite 200
Wilmington, NC 28401
910 341-7807
910 341-5881 fax
wilmingtonnc.gov
Dial 711 TTY/Voice

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: **O'Reilly Automotive Stores, Inc.**
PROJECT: **O'Reilly Auto Parts Market St**
ADDRESS: **4014 Market St**
PERMIT #: **2013011**

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 August 9, 2023 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 August 6, 2013.

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.

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.

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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. 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.

11. 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.

12. 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.

13. 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.

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14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. 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.

21. 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.

22. 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.

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23. 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 9th day of August, 2013

for Sterling Cheatham, City Manager
City of Wilmington

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Unless otherwise noted

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STORMWATER MANAGEMENT PERMIT APPLICATION FORM
(Form SWP 2.2)

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.):

   O'Reilly Auto Parts - 4014 Market Street

2. Location of Project (street address):

   4014 Market Street

   City: Wilmington County: New Hanover Zip: 28401

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

   Site is located in the southeastern quadrant of the intersection of Market Street (US Hwy 17)

   and Westig Drive

II. PERMIT INFORMATION

1. Specify the type of project (check one): ☐ Low Density ☒ High Density
   ☐ Drains to an Offsite Stormwater System ☐ Drainage Plan ☐ Other
   If the project drains to an Offsite System, list the Stormwater Permit Number(s):

   City of Wilmington: _____ State – NCDENR/DWQ: _____

2. Is the project currently covered (whole or in part) by an existing City or State (NCDENR/DWQ) Stormwater Permit? ☐ Yes ☒ No
   If yes, list all applicable Stormwater Permit Numbers:

   City of Wilmington: _____ State – NCDENR/DWQ: _____

3. Additional Project Permit Requirements (check all applicable):
   ☐ CAMA Major ☒ Sedimentation/Erosion Control
   ☐ NPDES Industrial Stormwater ☐ 404/401 Permit: Proposed Impacts: _____
   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:

   _____

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III. CONTACT INFORMATION

1. 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: O'Reilly Automotive Stores, Inc.

   Signing Official & Title: Steve Peterie, Director of Construction Design

   a. Contact information for Applicant / Signing Official:

   Street Address: 233 S Patterson

   City: Springfield State: MO Zip: 65802

   Phone: (417) 874-7147 Fax: (417) 874-7229 Email: SPeterie@oreillyauto.com

   Mailing Address (if different than physical address): _____

   City: _____ State: _____ Zip: _____

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

   - [x] The property owner (Skip to item 3)
   - [ ] Lessee* (Attach a copy of the lease agreement and complete items 2 and 2a below)
   - [ ] Purchaser* (Attach a copy of the pending sales agreement and complete items 2 and 2a below)
   - [ ] Developer* (Complete items 2 and 2a below.)

2. 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 on.)

   Property Owner / Organization: O'Reilly Automotive Stores, Inc.

   Signing Official & Title: Steve Peterie, Director of Construction Design

   a. Contact information for Property Owner:

   Street Address: 233 S Patterson

   City: Springfield State: MO Zip: 65802

   Phone: (417) 874-7147 Fax: (417) 874-7229 Email: SPeterie@oreillyauto.com

   Mailing Address (if different than physical address): _____

   City: _____ State: _____ Zip: _____

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

   Other Contact Person / Organization: _____

   Signing Official & Title: _____

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

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Mailing Address (if different than physical address): _____

City: _____ State: _____ Zip: _____

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.
   Stormwater runoff will be captured on-site and piped into an stormwater wetland located in the rear portion of the site. An underground infiltration system will also be used to treat runoff from the building and rear parking area prior to entering the wetland.
2. Total Property Area: ~~52,235~~ 51,302 square feet
3. Total Coastal Wetlands Area: _____ square feet
4. Total Surface Water Area: _____ square feet
5. Total Property Area (2) – Total Coastal Wetlands Area (3) – Total Surface Water Area (4) = Total Project Area: 51,302 square feet.
6. Existing Impervious Surface within Property Area: 19,449 square feet
7. Existing Impervious Surface to be Removed/Demolished: 19,449 square feet
8. Existing Impervious Surface to Remain: 0 square feet
9. Total Onsite (within property boundary) Newly Constructed Impervious Surface (*in square feet*):

Buildings/Lots	7,210
Impervious Pavement	22,101
Pervious Pavement (adj. total, with % credit applied)	
Impervious Sidewalks	739
Pervious Sidewalks (adj. total, with % credit applied)	
Other (describe) Dumpster pad	280
Future Development	
Total Onsite Newly Constructed Impervious Surface	30,330

10. Total Onsite Impervious Surface
    (Existing Impervious Surface to remain + Onsite Newly Constructed Impervious Surface) = 30,330 square feet
11. Project percent of impervious area: (Total Onsite Impervious Surface / Total Project Area) x100 = 59 %

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12. Total Offsite Newly Constructed Impervious Area (improvements made outside of property boundary, *in square feet*):

Impervious Pavement	
Pervious Pavement (adj. total, with % credit applied)	
Impervious Sidewalks	
Pervious Sidewalks (adj. total, with % credit applied)	35
Other (describe) Difference b/w existing and proposed driveway	299
Total Offsite Newly Constructed Impervious Surface	334

13. Total Newly Constructed Impervious Surface
(Total Onsite + Offsite Newly Constructed Impervious Surface) = 30664 square feet

14. Complete the following information for each Stormwater BMP drainage area. If there are more than three drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below. Low Density projects may omit this section and skip to Section V.

Basin Information	Stormwater Wetland BMP # 1	Infiltration Trench BMP #	(Type of BMP) BMP #
Receiving Stream Name	Smith Creek	Smith Creek	
Receiving Stream Index Number			
Stream Classification	C;Sw	C;Sw	
Total Drainage Area (sf)	35082	13277	0
On-Site Drainage Area (sf)	24331	13277	
Off-Site Drainage Area (sf)	10751		
Total Impervious Area (sf)	25855	12142	0
Buildings/Lots (sf)		7210	
Impervious Pavement (sf)	14703	4898	
Pervious Pavement, % credit (sf)			
Impervious Sidewalks (sf)	705	34	
Pervious Sidewalks, % credit (sf)			
Other (sf)	280		
Future Development (sf)			
Existing Impervious to remain (sf)			
Offsite (sf)	10167		
Percent Impervious Area (%)	37.4	91.5	

15. How was the off-site impervious area listed above determined? Provide documentation:
All offsite impervious was based on survey information, combined with GIS data in coordination with Croaker, Inc.'s site plans.

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will run with the land, that the required covenants cannot be changed or deleted without concurrence from the City of Wilmington, 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: Gareth Avant, PE

Consulting Firm: **McKim & Creed, PA**

Mailing Address: 1730 Varsity Drive, Suite 500

City: Raleigh State: NC Zip: 27606

Phone: (919) 233-8091 Fax: (919) 233-8031

Email: gavant@mckimcreed.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*) Steve Peterie, 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*)_____ with (*print or type name of organization listed in Contact Information, item 1b*) _____ 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 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.

CITY OF WILMINGTON ENGINEERING

Signature: _____ Date: 8/22/12

I, Elizabeth A Dugger, a Notary Public for the State of Missouri, County of Greene, do hereby certify that Steve Peterie personally appeared before me this 22nd day of August, 2012, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

_____

SEAL

ELIZABETH A. DUGGER
Notary Public, State of Missouri
Christian County
Commission #10398753
My Commission Expires June 25, 2014

My commission expires: 6/25/14

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X. APPLICANT'S CERTIFICATION

I, *(print or type name of person listed in Contact Information, item 2)*, Steve Peterie 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.

Signature: _____ Date: 8/22/12

I, Elizabeth A. Dugger, a Notary Public for the State of Missouri, County of Greene, do hereby certify that Steve Peterie personally appeared before me this 22nd day of August, 2012, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

_____

SEAL

ELIZABETH A. DUGGER
Notary Public, State of Missouri
Christian County
Commission #10398753
My Commission Expires June 25, 2014

My commission expires: 6/25/14

Permit No._____
(to be provided by DWQ)

STORMWATER MANAGEMENT PERMIT APPLICATION FORM
401 CERTIFICATION APPLICATION FORM

INFILTRATION TRENCH SUPPLEMENT

This form must be filled out, printed and submitted.
The Required Items Checklist (Part III) must be printed, filled out and submitted along with all of the required information.

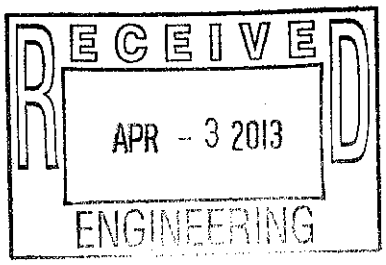
I. PROJECT INFORMATION

Project name	O'Reilly Auto Parts - Wilmington, NC - 4014 Market St
Contact person	Gareth Avant
Phone number	919.233.8091
Date	2-Apr-13
Drainage area number	2

II. DESIGN INFORMATION

Site Characteristics

Drainage area	13,277.00	ft^2	
Impervious area	12,142.00	ft^2	
Percent impervious	91.5%	%	
Design rainfall depth	1.50	in	



Peak Flow Calculations

1-yr, 24-hr rainfall depth	3.81	in	
1-yr, 24-hr intensity	0.16	in/hr	
Pre-development 1-yr, 24-hr discharge	0.36	ft^3/sec	
Post-development 1-yr, 24-hr discharge	1.24	ft^3/sec	
Pre/Post 1-yr, 24-hr peak flow control	0.88	ft^3/sec	

Storage Volume: Non-SA Waters

Minimum volume required	1,449.00	ft^3	
Volume provided	1,796.00	ft^3	OK for non-SR waters

Storage Volume: SA Waters

1.5" runoff volume		ft^3	
Pre-development 1-yr, 24-hr runoff volume		ft^3	
Post-development 1-yr, 24-hr runoff volume		ft^3	
Minimum volume required		ft^3	
Volume provided		ft^3	

Soils Report Summary

Soil type	Sand		
Infiltration rate	5.60	in/hr	
SHWT elevation	35.75	fmsl	

Trench Design Parameters

Drawdown time		days	
Perforated pipe diameter	N/A	in	
Perforated pipe length	N/A	ft	
Number of laterals	N/A		
Stone type (if used)	N/A		
Stone void ratio	N/A		
Stone is free of fines?	N/A	(Y or N)	OK

Permit No._____
(to be provided by DWQ)

Trench Elevations			
Bottom elevation	37.75	fmsl	OK
Storage/overflow elevation	38.35	fmsl	
Top elevation	38.50	fmsl	
Trench Dimensions			
Length (long dimension)	82.20	ft	
Width (short dimension)	44.60	ft	
Height (depth)	0.75	ft	OK
Additional Information			
Maximum volume to each inlet into the trench?	2.00	ac-in	OK
Length of vegetative filter for overflow	N/A	ft	OK
Number of observation wells	5		OK
Distance to structure	N/A	ft	OK
Distance from surface waters	100.00	ft	OK
Distance from water supply well(s)	100.00	ft	OK
Separation from impervious soil layer	N/A	ft	OK
Depth of naturally occuring soil above SHWT	2.00	ft	OK
Bottom covered with 4-in of clean sand?	Y	(Y or N)	OK
Proposed drainage easement provided?	Y	(Y or N)	OK
Capures all runoff at ultimate build-out?	Y	(Y or N)	OK
Bypass provided for larger storms?	Y	(Y or N)	OK
Trench wrapped with geotextile fabric?	Y	(Y or N)	OK
Pretreatment device provided	Y		Trashguard as well as inlets with extended sump to capture sedime

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

Infiltration Trench Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP 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 removal efficiency of the BMP.

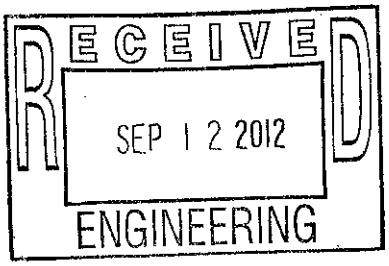
Important maintenance procedures:

- The drainage area of the infiltration trench will be carefully managed to reduce the sediment load to the sand filter.
- The water level in the monitoring wells will be recorded once a month and after every storm event greater than 1.5 inches if in a Coastal County.

The infiltration trench will be inspected **once a quarter and within 24 hours after every storm event greater than 1.5 inches.** 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.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The grass filter strip or other pretreatment area	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.
	Sediment has accumulated to a depth of greater than six inches.	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 BMP.
The flow diversion structure (if applicable)	The structure is clogged.	Unclog the conveyance and dispose of any sediment off-site.
	The structure is damaged.	Make any necessary repairs or replace if damage is too large for repair.



BMP element:	Potential problem:	How I will remediate the problem:
The trench	Water is ponding on the surface for more than 24 hours after a storm.	Remove the accumulated sediment from the infiltration system and dispose in a location that will not impact a stream or the BMP.
	The depth in the trench is reduced to 75% of the original design depth.	Remove the accumulated sediment from the infiltration system and dispose in a location that will not impact a stream or the BMP.
	Grass or other plants are growing on the surface of the trench.	Remove the plants, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.
The observation well(s)	The water table is within one foot of the bottom of the system for a period of three consecutive months.	Contact the DWQ Stormwater Unit immediately at 919-733-5083.
	The outflow pipe is clogged.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	The outflow pipe is damaged.	Repair or replace the pipe.
The emergency overflow berm	Erosion or other signs of damage have occurred at the outlet.	The emergency overflow berm will be repaired or replaced if beyond repair.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.

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 City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name:O'ReillyAuto Parts Store - 4014 Market St

BMP drainage basin number:1

Print name:Jeremy Bass

Title:Project Administrator

Address:233 South Patterson, Springfield MO 65802

Phone:417-862-7333

Signature:

Date: 8/22/12

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, Elizabeth A. Dugger, a Notary Public for the State of Missouri, County of Greene, do hereby certify that Jeremy Bass personally appeared before me this 22nd day of August, 2012, and acknowledge the due execution of the forgoing infiltration trench maintenance requirements. Witness my hand and official seal,

ELIZABETH A. DUGGER
Notary Public, State of Missouri
Christian County
Commission #10398753
My Commission Expires June 25, 2014

SEAL

My commission expires 6/25/14

NCDENR

DIVISION OF WATER QUALITY DWQ

STORMWATER MANAGEMENT PERMIT APPLICATION FORM
401 CERTIFICATION APPLICATION FORM

WETLAND SUPPLEMENT

This form must be filled out, printed and submitted.
The Required Items Checklist (Part III) must be printed, filled out and submitted along with all the required information.

I. PROJECT INFORMATION

Project name	O'Reilly Auto Parts - Wilmington, NC - 4014 Market Street
Contact name	Gareth Avant
Phone number	919.233.8091
Date	April 2, 2013
Drainage area number	1

II. DESIGN INFORMATION

Site Characteristics

Drainage area	35,082.00	ft^2	
Impervious area	25,855.00	ft^2	
Percent impervious	73.7%	%	
Design rainfall depth	1.50	inch	

Peak Flow Calculations

1-yr, 24-hr rainfall depth	3.81	in	
1-yr, 24-hr intensity	0.16	in/hr	
Pre-development 1-yr, 24-hr runoff	0.36	ft^3/sec	
Post-development 1-yr, 24-hr runoff	1.56	ft^3/sec	
Pre/Post 1-yr, 24-hr peak control	1.20	ft^3/sec	

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Storage Volume: Non-SA Waters

Minimum required volume	3,128.00	ft^3	
Volume provided (temporary pool volume)	3,320.50	ft^3	OK

Storage Volume: SA Waters Parameters

1.5" runoff volume		ft^3	
Pre-development 1-yr, 24-hr runoff volume		ft^3	
Post-development 1-yr, 24-hr runoff volume		ft^3	
Minimum volume required		ft^3	
Volume provided		ft^3	

Outlet Design

Depth of temporary pool/ponding depth (D_{Plants})	12.00	in	OK
Drawdown time	2.50	days	OK
Diameter of orifice	1.00	in	OK
Coefficient of discharge (C_D) used in orifice diameter calculation	0.60	(unitless)	
Driving head (H_o) used in the orifice diameter calculation	0.33	ft	Provide calculations to support this driving head.

Surface Areas of Wetland Zones

Surface Area of Entire Wetland	3,874.00	ft²	OK
Shallow Land	1,497.00	ft²	OK
The shallow land percentage is:	39%	%	
Shallow Water	1,523.00	ft²	OK
The shallow water percentage is:	39%	%	
Deep Pool			
Forebay portion of deep pool (pretreatment)	411.00	ft²	OK
The forebay surface area percentage is:	11%	%	
Non-forebay portion of deep pool	443.00	ft²	OK
The non-forebay deep pool surface area percentage is:	11%	%	
Total of wetland zone areas	3,874.00	ft²	OK
Add or subtract the following area from the zones	0.00	ft²	

Topographic Zone Elevations

Temporary Pool Elevation (TPE)			
Shallow Land (top)	37.50	ft amsl	
Permanent Pool Elevation (PPE)			
Shallow Water/Deep Pool (top)	36.50	ft amsl	
Shallow Water bottom	36.00	ft amsl	
Most shallow point of deep pool's bottom	35.00	ft amsl	
Deepest point of deep pool's bottom	34.00	ft amsl	
Design must meet one of the following two options:			
This design meets Option #1, Top of PPE is within 6" of SHWT, If yes:	Y	(Y or N)	
SHWT (Seasonally High Water Table)	35.75	ft amsl	OK
This design meets Option #2, Wetland has liner with permeability < 0.01 in/hr, If yes:		(Y or N)	
Depth of topsoil above impermeable liner		in	

Topographic Zone Depths

Temporary Pool			
Shallow Land	12.00	in	OK
Permanent Pool			
Shallow Water	6.00	in	OK
Deep Pool (shallowest)	18.00	in	OK
Deep Pool (deepest)	30.00	in	OK

Planting Plan

Are cattails included in the planting plan?	N	(Y or N)		OK
Number of Plants recommended in Shallow Water Area:				
Herbaceous (4⁺ cubic-inch container)	400			
Number of Plants recommended in Shallow Land Area:				
Herbaceous (4⁺ cubic-inch container), **OR**	400			
Shrubs (1 gallon or larger), **OR**	64			
Trees (3 gallon or larger) **and** Herbaceous (4+ cubic-inch)	8		**and**	320
Number of Plants provided in Shallow Water Area:				
Herbaceous (4⁺ cubic-inch container)	400			OK
Number of Plants provided in Shallow Land Area:				
Herbaceous (4⁺ cubic-inch container)	407			OK
Shrubs (1 gallon or larger)	0			More required if not planting herb. and/or trees.
Trees (3 gallon or larger) **and**	0			More required if not planting herb. and/or shrubs.
Grass-like Herbaceous (4+ cubic-inch)	0			More recommended if planting trees.

Additional Information

Can the design volume be contained?	Y	(Y or N)	OK
Does project drain to SA waters? If yes,	N	(Y or N)	Excess volume must pass through filter.
What is the length of the vegetated filter?	30.00	ft	
Are calculations for supporting the design volume provided in the application?	Y	(Y or N)	OK
Is BMP sized to handle all runoff from ultimate build-out?	Y	(Y or N)	OK
Is the BMP located in a recorded drainage easement with a recorded access easement to a public Right of Way (ROW)?	Y	(Y or N)	OK
The length to width ratio is:	1.52	:1	OK
Approximate wetland length	84.00	ft	
Approximate wetland width	55.10	ft	
Approximate surface area using length and width provided	4,628.40	ft^2	This approx. surface area is within this number of square feet of the entire wetland surface area reported above:
Will the wetland be stabilized within 14 days of construction?	Y	(Y or N)	OK

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

BMP Drainage Basin #:_____

Stormwater Wetland Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP 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 removal efficiency of the BMP.

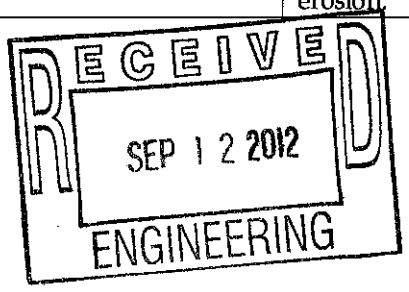
Important maintenance procedures:

- Immediately following construction of the stormwater wetland, bi-weekly inspections will be conducted and wetland plants will be watered bi-weekly until vegetation becomes established (commonly six weeks).
- No portion of the stormwater wetland will be fertilized after the first initial fertilization that is required to establish the wetland plants.
- Stable groundcover will be maintained in the drainage area to reduce the sediment load to the wetland.
- Once a year, a dam safety expert should inspect the embankment.

After the stormwater wetland is established, I will inspect it **monthly and within 24 hours after every storm event greater than 1.5 inches.** 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.

BMP element:	Potential problem:	How I will remediate the problem:
Entire BMP	Trash/debris is present.	Remove the trash/debris.
Perimeter of wetland	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 an appropriate height.
Inlet device: pipe or swale	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment offsite.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	Erosion is occurring in the swale (if applicable).	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.



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

BMP element:	Potential problem:	How I will remediate the problem:
Forebay	Sediment has accumulated in the forebay to a depth that inhibits the forebay from functioning well.	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 BMP.
	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 a pesticide is used, wipe it on the plants rather than spraying.
	Shallow land remains flooded more than 5 days after a storm event.	Unclog the outlet device immediately.
	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 necessary.
	Sediment has accumulated and reduced the depth to 75% of the original design depth of the deep pools.	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 BMP.
Embankment	A tree has started to grow on the embankment.	Consult a dam safety specialist to remove the tree.
	An annual inspection by appropriate professional shows that the embankment needs repair.	Make all needed repairs.
	Evidence of muskrat or beaver activity is present.	Consult a professional to remove muskrats or beavers.
Wetland Vegetation	Algal growth covers over 50% of the deep pool and shallow water areas.	Consult a professional to remove and control the algal growth.
	Cattails or other invasive plants cover >25% of the deep pool and shallow water areas (a mono-culture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) – consult a professional.
	The plant community and coverage is significantly (>25%) different from approved landscape plan.	Restore plant vegetation to approved condition. If landscape plan needs to be adjusted to specify vegetation more appropriate for site conditions, contact City Stormwater or Engineering Staff.
	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices.
	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 necessary.

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

BMP element:	Potential problem:	How I will remediate the problem:
Micropool	Sediment has accumulated and reduced the depth to 75% of the original design 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 BMP.
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.
Receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.

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: O'Reilly Auto Parts Store - 4014 Market St

BMP drainage basin number: 1

Print name: Jeremy Bass

Title: Project Administrator

Address: 233 South Patterson, Springfield MO 65802

Phone: 417-862-2333

Signature: _____

Date: 8/22/12

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, Elizabeth A. Dugger, a Notary Public for the State of Missouri, County of Greene, do hereby certify that Jeremy Bass personally appeared before me this 22nd day of August, 2012, and acknowledge the due execution of the forgoing stormwater wetland maintenance requirements. Witness my hand and official seal,

_____

ELIZABETH A. DUGGER
Notary Public, State of Missouri
Christian County
Commission #10398753
My Commission Expires June 25, 2014

SEAL

My commission expires 6/25/14