Nothing Compares
NORTH CAROLINA

Managing Stormwater Runoff

NPDES Stormwater Program Compliance

Andy McDaniel, P.E.

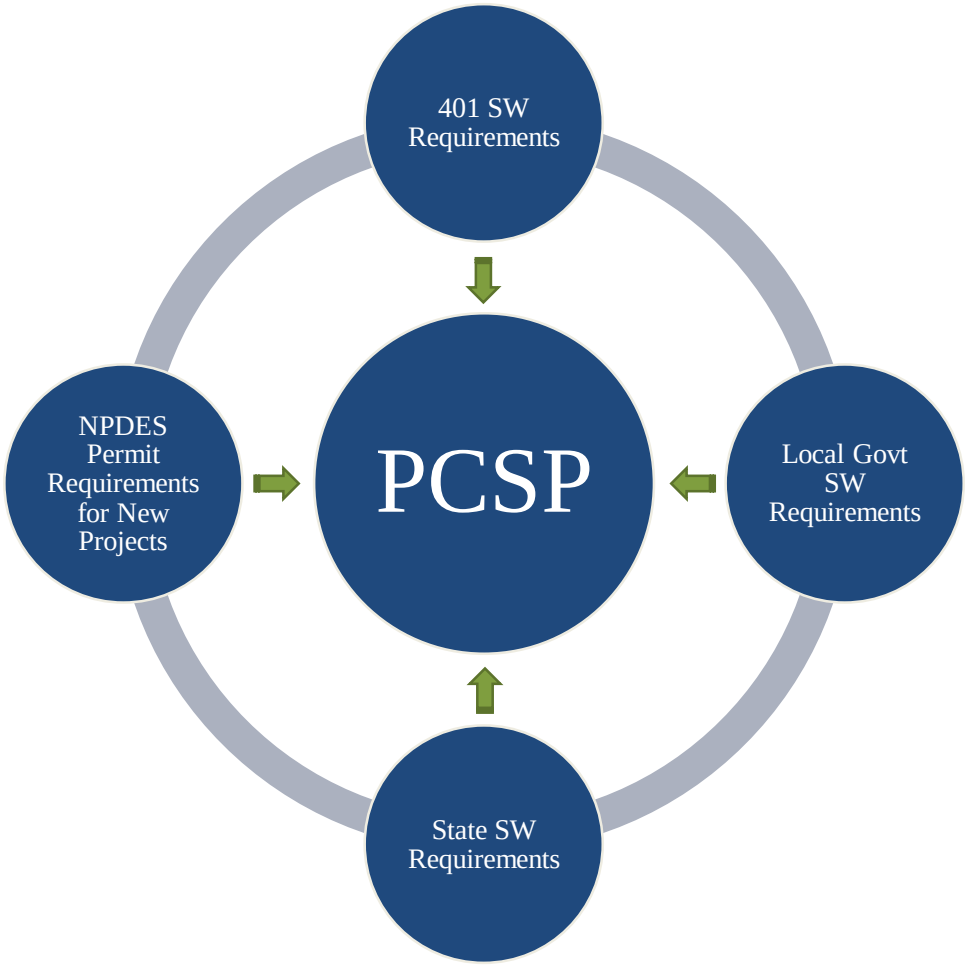
If you remember only one thing from this presentation…

Compliance with NCDOT's

Post-Construction Stormwater Program (PCSP) =

Compliance with Stormwater Regulations

Post-Construction Stormwater Program is a One Stop Compliance Shop

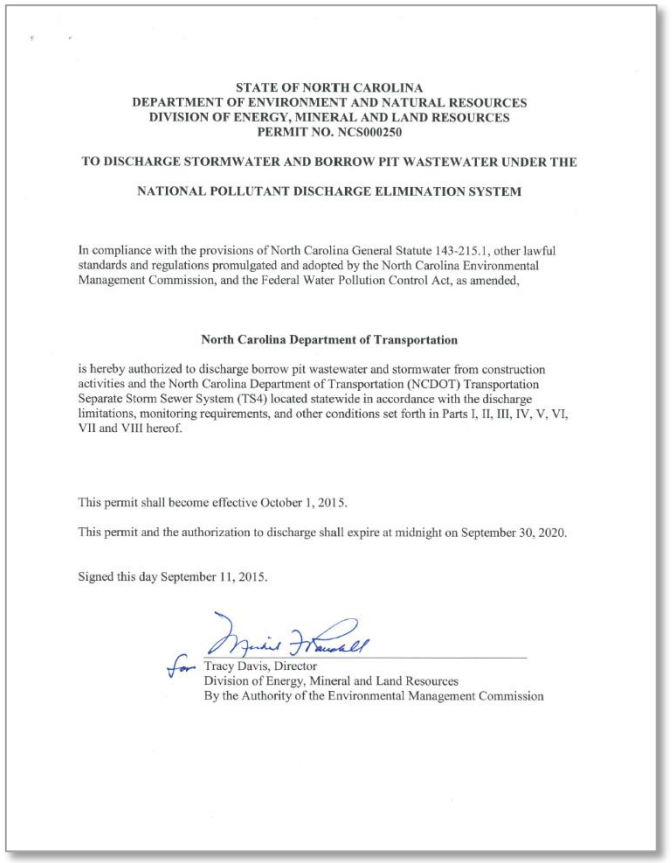


Clean Water Act, Section 402: National Pollutant Discharge Elimination System Permitting Program

Delegation

NCDOT's NPDES Stormwater Permit

- First issued in 1998
- Permit renewed every 5 years
- Current permit 2015 - 2020



STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENERGY, MINERAL AND LAND RESOURCES
PERMIT NO. NCS000250

TO DISCHARGE STORMWATER AND BORROW PIT WASTEWATER UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

North Carolina Department of Transportation

is hereby authorized to discharge borrow pit wastewater and stormwater from construction activities and the North Carolina Department of Transportation (NCDOT) Transportation Separate Storm Sewer System (TS4) located statewide in accordance with the discharge limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, IV, V, VI, VII and VIII hereof.

This permit shall become effective October 1, 2015.

This permit and the authorization to discharge shall expire at midnight on September 30, 2020.

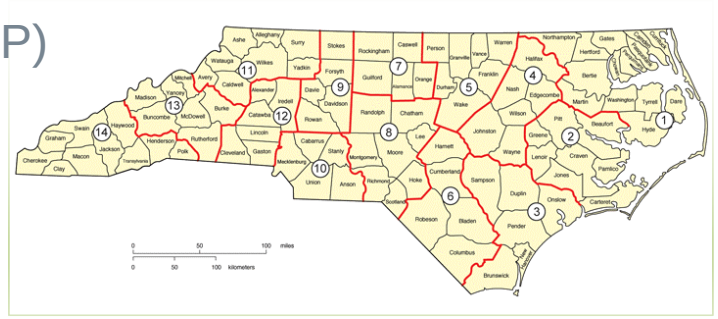
Signed this day September 11, 2015.

for Tracy Davis, Director
Division of Energy, Mineral and Land Resources
By the Authority of the Environmental Management Commission

NPDES Permit Authorizes Stormwater Discharges From…

NCDOT's NPDES Statewide Programs

- Post-Construction Stormwater Program (PCSP)
- BMP Toolbox Program
- BMP Inspection & Maintenance Program
- BMP Retrofit Program
- Construction/Borrow Pit and Waste Pile Program
- Public Education and Involvement Program
- Internal Education Program
- Illicit Discharge Detection and Elimination Program
- Industrial Activities Program
- Research Program
- Stormwater Outfall Inventory Program
- Total Maximum Daily Load Program
- Vegetation Management Program



Focus of Today's Presentation

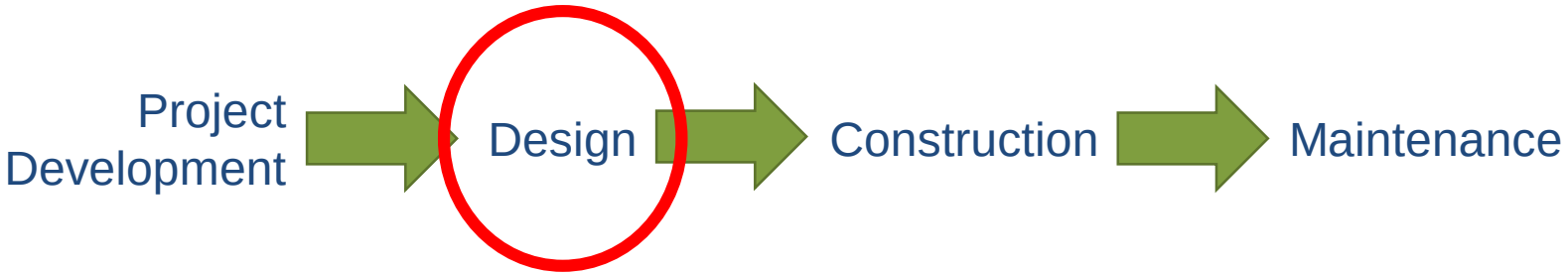
- PCSP
- BMP Toolbox
- Stormwater Management Plans

Simplified Project Workflow

Q: What does Post-Construction mean ?

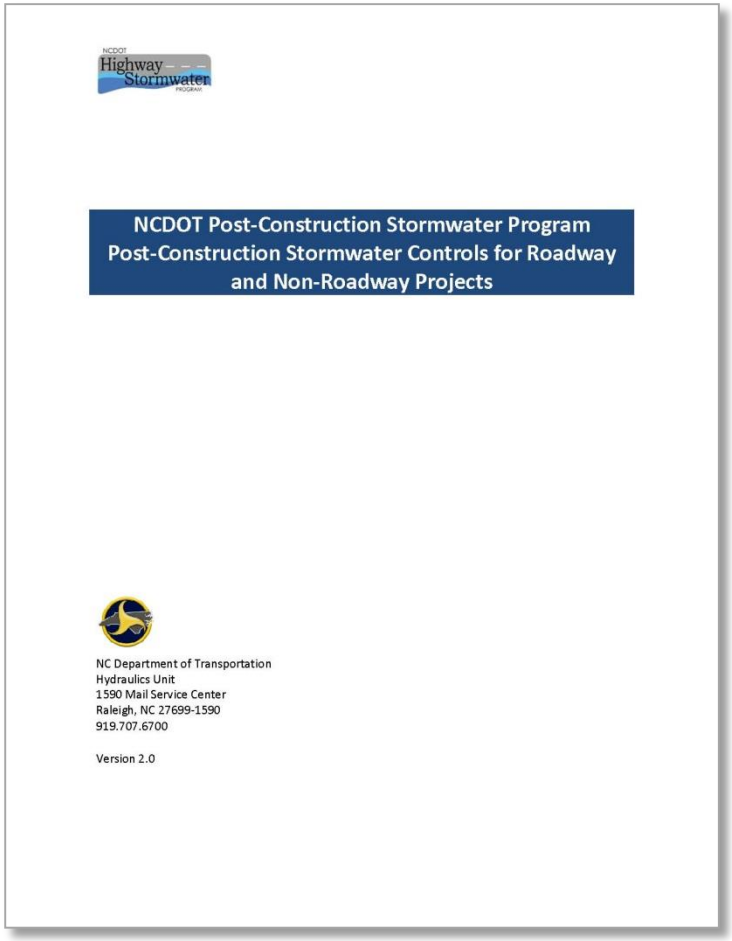
PCSP Applies to Design Phase

A: It means permanent stormwater controls which remain in place after construction



Post-Construction Stormwater Program (PCSP)

- Updated PCSP and BMP Toolbox approved in September 29, 2014

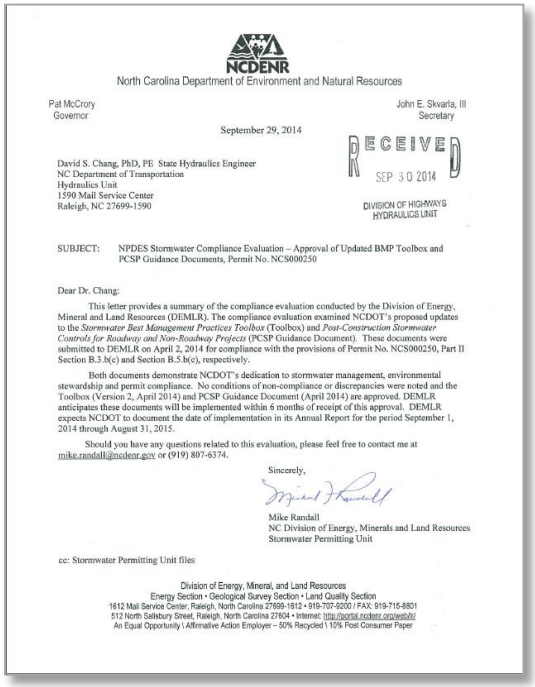


NCDOT Highway Stormwater Program

NCDOT Post-Construction Stormwater Program
Post-Construction Stormwater Controls for Roadway and Non-Roadway Projects

NC Department of Transportation
Hydraulics Unit
1590 Mail Service Center
Raleigh, NC 27699-1590
919.707.6700

Version 2.0



NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

September 29, 2014

RECEIVED
SEP 30 2014
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

David S. Chang, PhD, PE State Hydraulics Engineer
NC Department of Transportation
Hydraulics Unit
1590 Mail Service Center
Raleigh, NC 27699-1590

SUBJECT: NPDES Stormwater Compliance Evaluation – Approval of Updated BMP Toolbox and PCSP Guidance Documents, Permit No. NCS000250

Dear Dr. Chang:

This letter provides a summary of the compliance evaluation conducted by the Division of Energy, Mineral and Land Resources (DEMLR). The compliance evaluation examined NCDOT's proposed updates to the *Stormwater Best Management Practices Toolbox* (Toolbox) and *Post-Construction Stormwater Controls for Roadway and Non-Roadway Projects* (PCSP Guidance Document). These documents were submitted to DEMLR on April 2, 2014 for compliance with the provisions of Permit No. NCS000250, Part II Section B.3.b(e) and Section B.5.b(c), respectively.

Both documents demonstrate NCDOT's dedication to stormwater management, environmental stewardship and permit compliance. No conditions of non-compliance or discrepancies were noted and the Toolbox (Version 2, April 2014) and PCSP Guidance Document (April 2014) are approved. DEMLR anticipates these documents will be implemented within 6 months of receipt of this approval. DEMLR expects NCDOT to document the date of implementation in its Annual Report for the period September 1, 2014 through August 31, 2015.

Should you have any questions related to this evaluation, please feel free to contact me at mike.randall@ncdenr.gov or (919) 807-6374.

Sincerely,

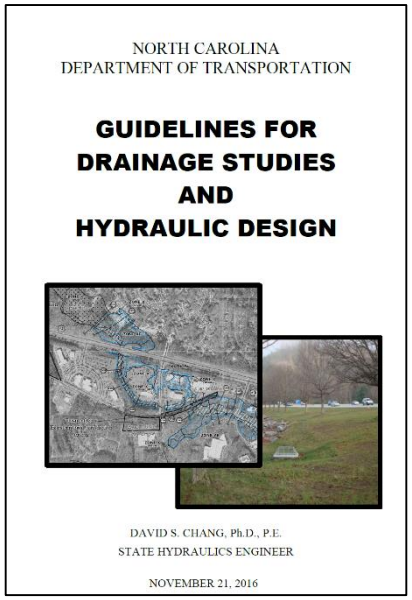
Mike Randall
NC Division of Energy, Minerals and Land Resources
Stormwater Permitting Unit

cc: Stormwater Permitting Unit files

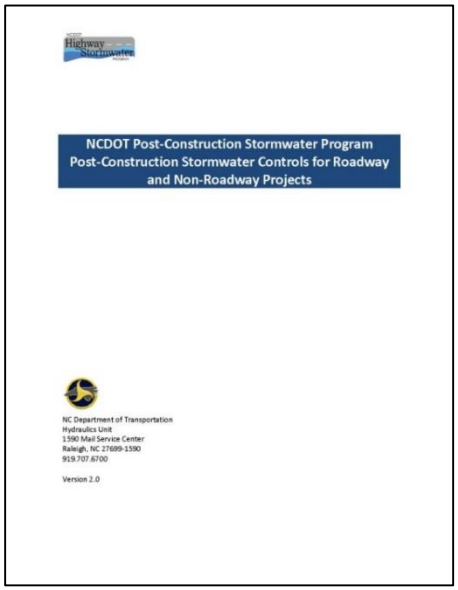
Division of Energy, Mineral, and Land Resources
Energy Section • Geological Survey Section • Land Quality Section
1612 Mail Service Center, Raleigh, North Carolina 27699-1612 • 919-707-9200 / FAX: 919-715-8801
512 North Salisbury Street, Raleigh, North Carolina 27604 • Internet: http://portal.ncdenr.org/web/lr/
An Equal Opportunity \ Affirmative Action Employer – 50% Recycled \ 10% Post Consumer Paper

Post-Construction Stormwater Program (PCSP)

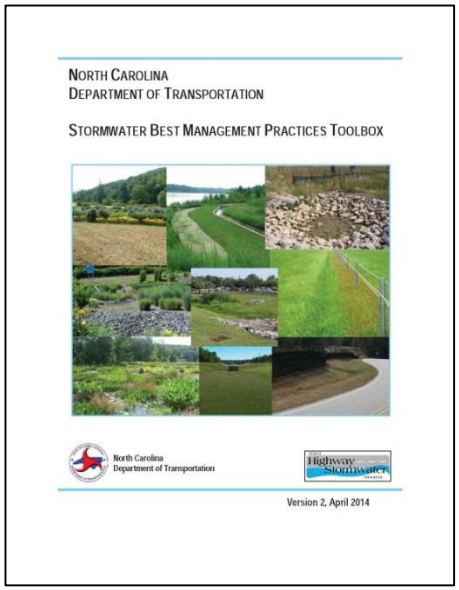
Drainage Guidelines



PCSP



BMP Toolbox



Stormwater Management Plan

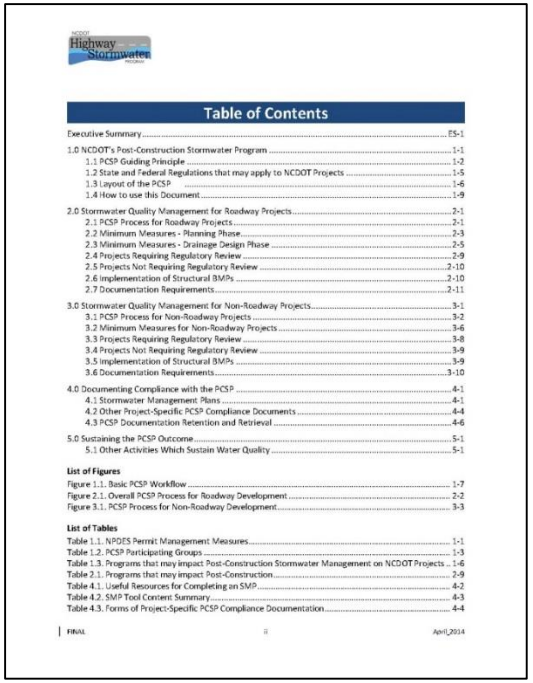
PCSP Applies to New Built-Upon Area…

Roadway Projects

Non-roadway Projects

PCSP Document Table of Contents

1. NCDOT's Post-Construction Program
2. Stormwater Quality Management for Roadway Projects
3. Stormwater Quality Management for Non-Roadway Projects
4. Documenting Compliance with the PCSP
5. Sustaining the PCSP Outcome



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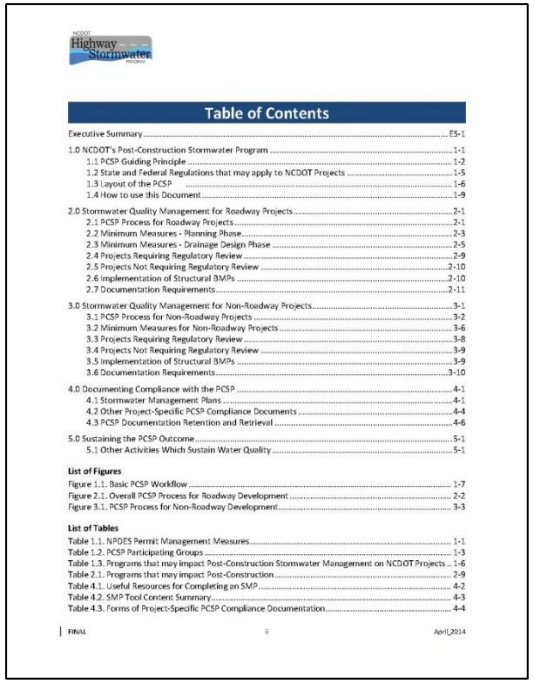
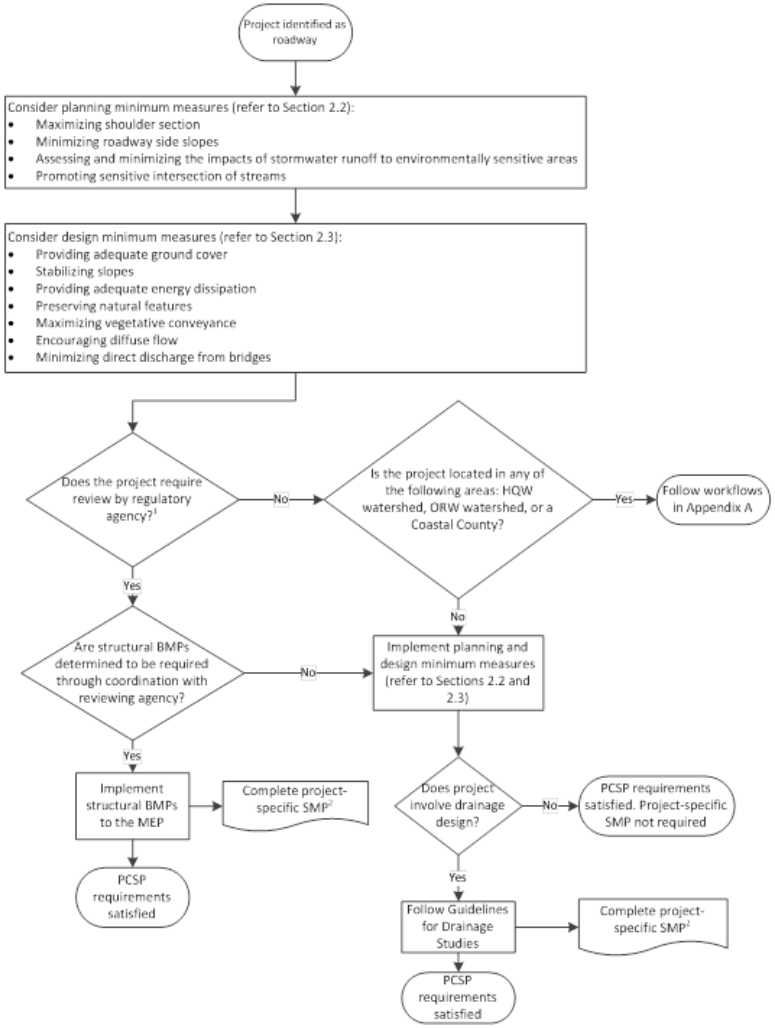


Table of Contents

Figure 2.1 – Roadway Project Workflow

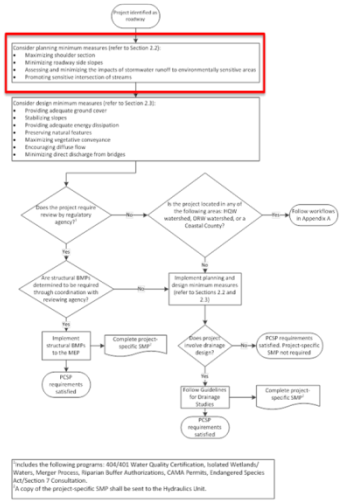


[1]Includes the following programs: 404/401 Water Quality Certification, Isolated Wetlands/ Waters, Merger Process, Riparian Buffer Authorizations, CAMA Permits, Endangered Species Act/Section 7 Consultation.
[2]A copy of the project-specific SMP shall be sent to the Hydraulics Unit.

Figure 2.1 – Planning Minimum Measures

Consider planning minimum measures (refer to Section 2.2):

- Maximizing shoulder section
- Minimizing roadway side slopes
- Assessing and minimizing the impacts of stormwater runoff to environmentally sensitive areas
- Promoting sensitive intersection of streams



Roadway – Planning Minimum Measures

Assessing and Minimizing the Impacts of Stormwater Runoff to Environmentally Sensitive Areas

Definition:
Selecting alignments or design options that minimize impacts to sensitive streams.

Merger concurrence point 2/3

When evaluating various alternative corridors (new locations) or design options (widening and other improvements), consider the alternative or option that avoids high quality or otherwise environmentally-sensitive areas. These areas include habitat for protected, threatened, and endangered species, sensitive streams, and jurisdictional wetlands. If total avoidance of an environmentally-sensitive area is not feasible, the alternative or design options considered should be ones that minimize impacts.

Key Considerations

- Many factors are considered when selecting the preferred alternative for either the roadway corridor or improvement design option. The final selection must fulfill the purpose and need of the roadway project and balance potential impacts on the human and natural environment.
- Environmentally-sensitive streams include nutrient sensitive waters, outstanding resource waters, high quality waters, jurisdictional wetlands, waters with an existing impairment, and all waters in Coastal Area Management Act (CAMA) counties.

Figure 2.1 – Design Minimum Measures

Consider design minimum measures (refer to Section 2.3):

- Providing adequate ground cover
- Stabilizing slopes
- Providing adequate energy dissipation
- Preserving natural features
- Maximizing vegetative conveyance
- Encouraging diffuse flow
- Minimizing direct discharge from bridges

Roadway – Design Minimum Measures

Maximizing Vegetative Conveyance

Definition:
Selecting swales and filter strips for stormwater conveyance wherever possible.

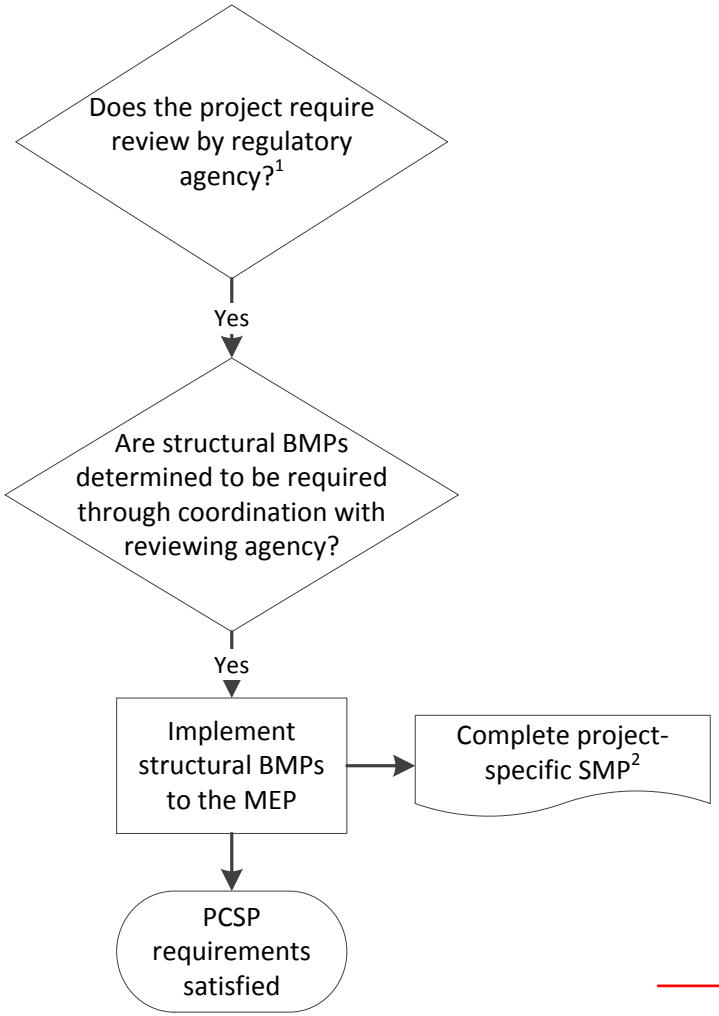
Merger concurrence points 4B/4C

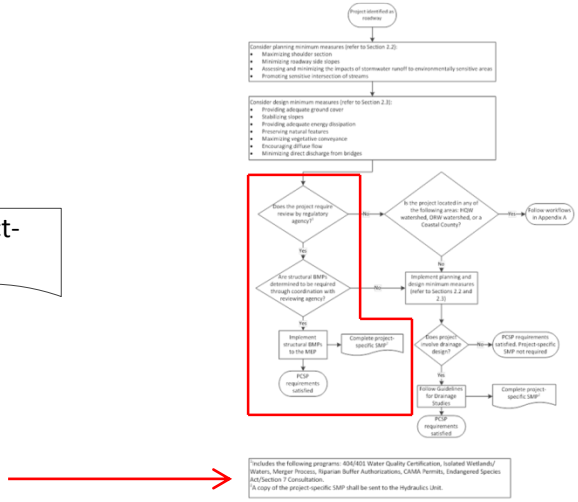
Incorporating vegetation into the drainage system reduces flow velocity while also promoting sedimentation, filtration, and infiltration. Maximizing vegetative conveyance is a minimum measure where vegetated features are preferentially selected for runoff conveyance to take advantage of these passive stormwater treatment benefits. Examples of maximizing vegetative conveyance include selecting a swale over pipe conveyance and selecting vegetated options for channel linings where appropriate.

Key Considerations:

- When pipe structures are necessary to collect runoff from the roadway (such as in curb and gutter sections), every effort should be made to direct runoff from the pipe outlet to vegetated areas. Proper energy dissipation and transitions should be implemented.
- To the extent possible, the designer should maintain the predevelopment drainage areas and flow patterns to support greater use of vegetative conveyance. Consolidating drainage areas may preclude vegetative conveyance due to the increased discharges and velocities.
- Evaluate vegetated options for channel linings before considering "hardened" lining types.

Figure 2.1 – Beyond Minimum Measures (1)





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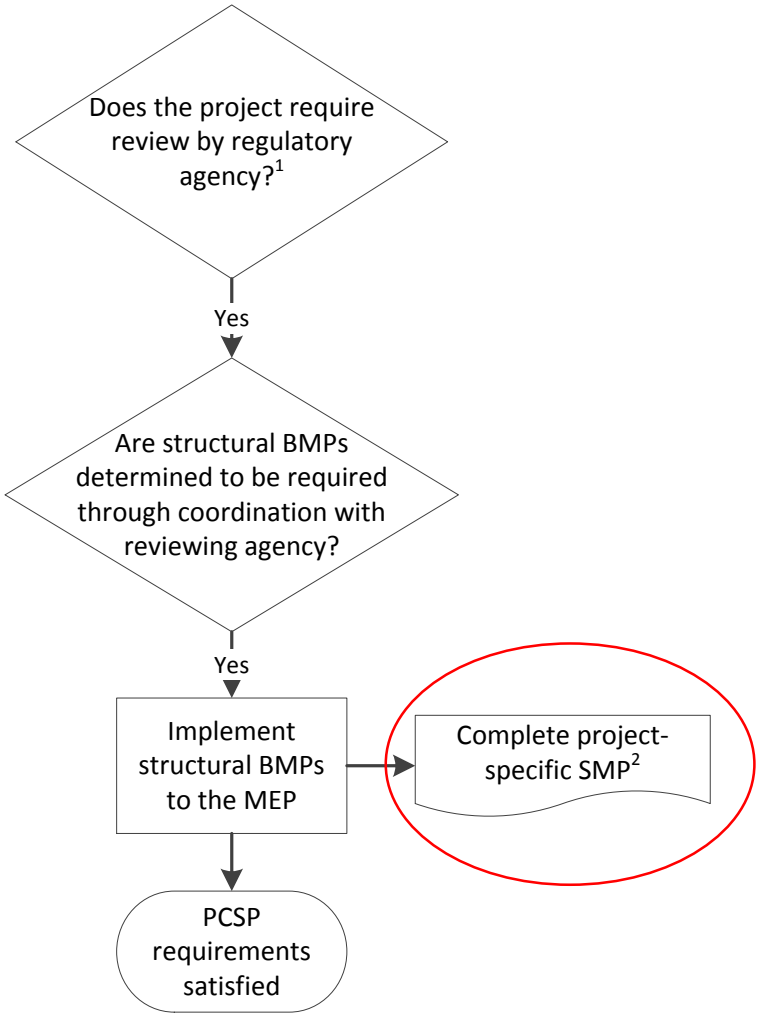
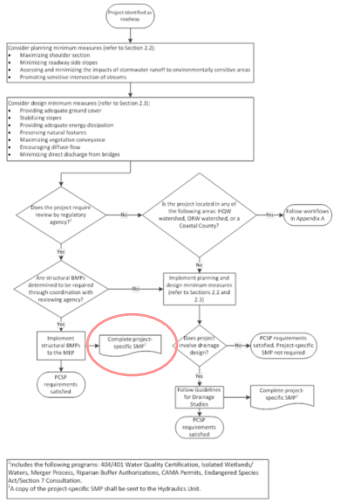
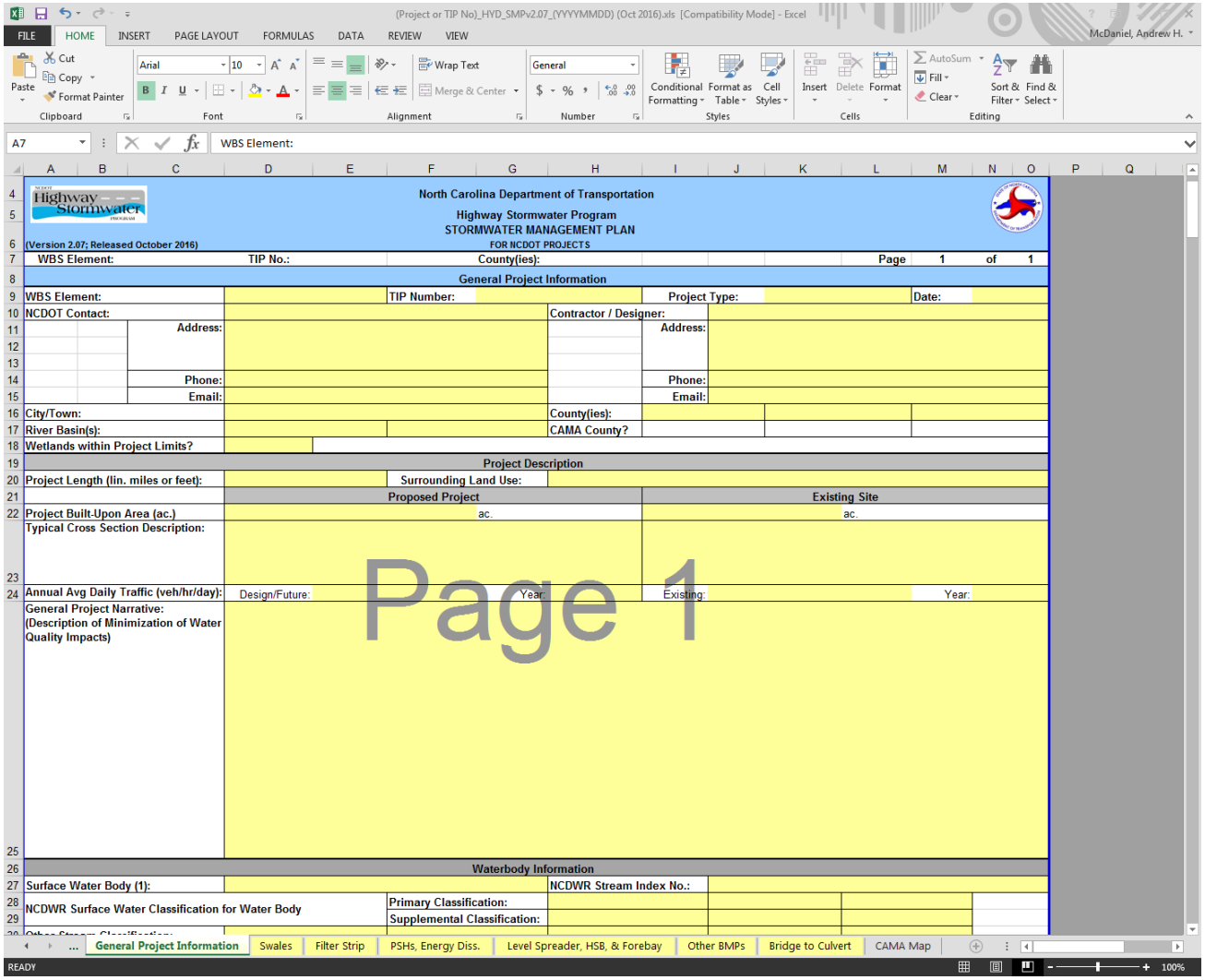




Stormwater Management Plan (SMP)



North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS
(Version 2.07; Released October 2016)

WBS Element: | TIP No.: | County(ies): | Page 1 of 1

General Project Information

WBS Element:		TIP Number:		Project Type:	Date:
NCDOT Contact:			Contractor / Designer:		
	Address:			Address:	
	Phone:			Phone:	
	Email:			Email:	
City/Town:			County(ies):		
River Basin(s):			CAMA County?		
Wetlands within Project Limits?					

Project Description

Project Length (lin. miles or feet):		Surrounding Land Use:	
	Proposed Project		Existing Site
Project Built-Upon Area (ac.)	ac.		ac.
Typical Cross Section Description:			
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: Year:		Existing: Year:
General Project Narrative: (Description of Minimization of Water Quality Impacts)			

Waterbody Information

Surface Water Body (1):		NCDWR Stream Index No.:	
NCDWR Surface Water Classification for Water Body	Primary Classification:		
	Supplemental Classification:		

Page 1

General Project Information | Swales | Filter Strip | PSHs, Energy Diss. | Level Spreader, HSB, & Forebay | Other BMPs | Bridge to Culvert | CAMA Map

Figure 2.1 – Beyond Minimum Measures (2)

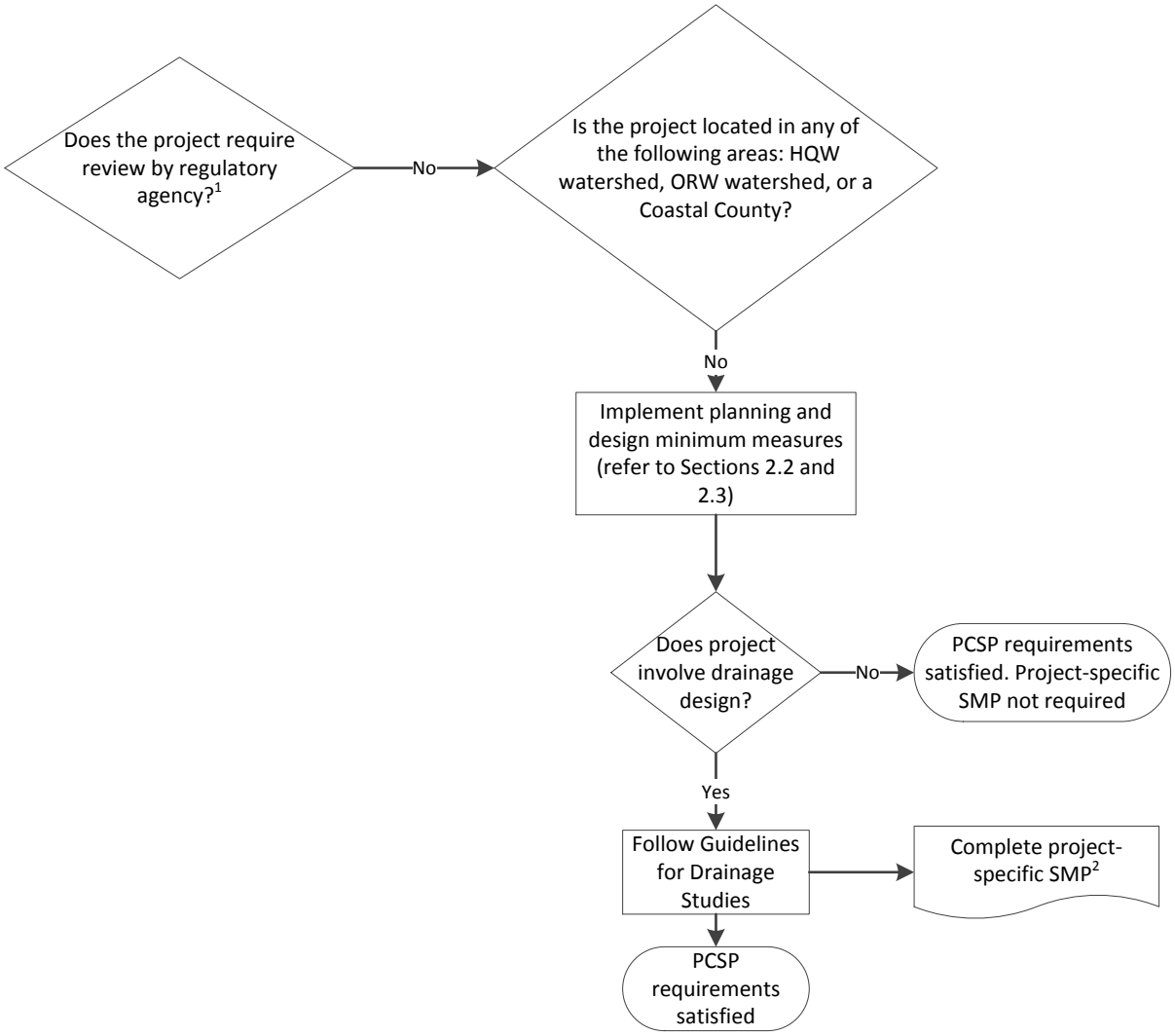
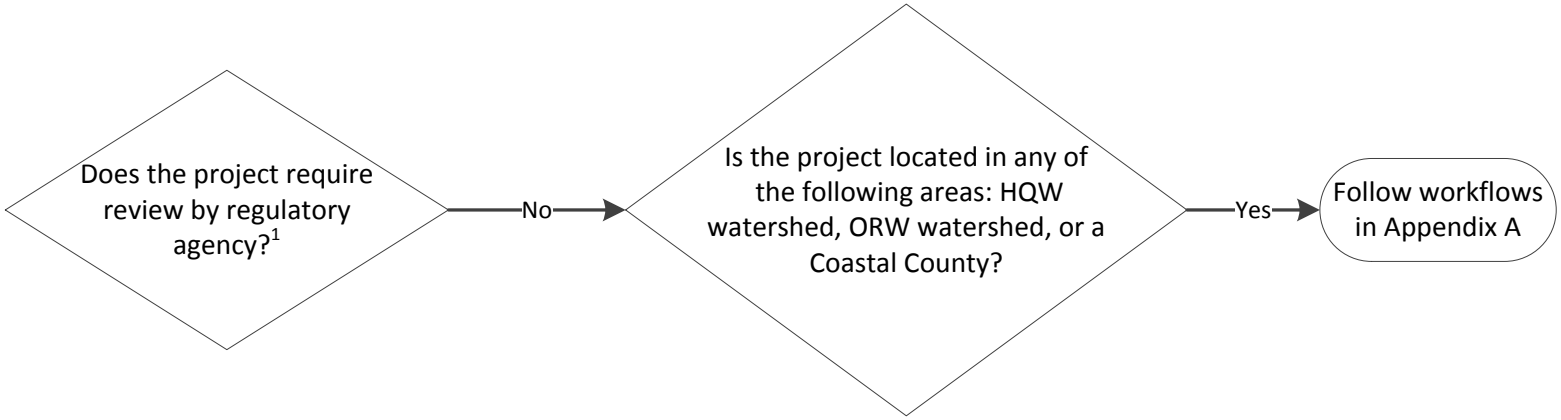
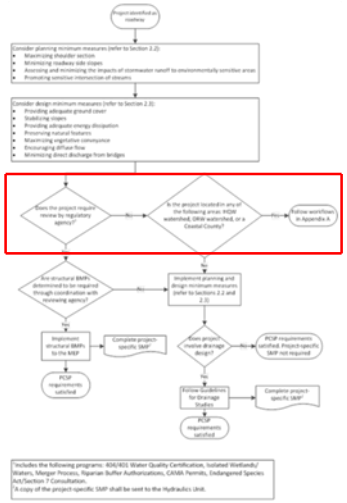
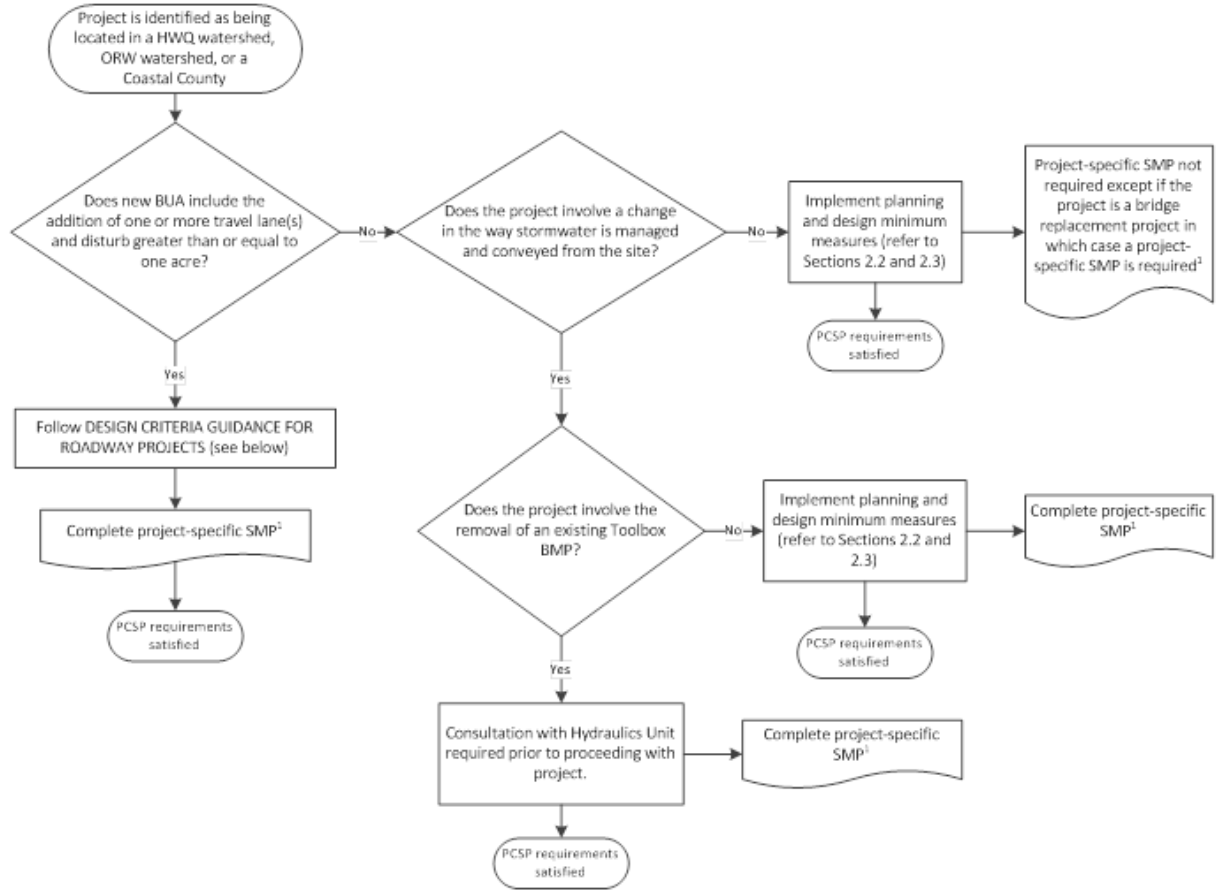


Figure 2.1 – Beyond Minimum Measures (3)





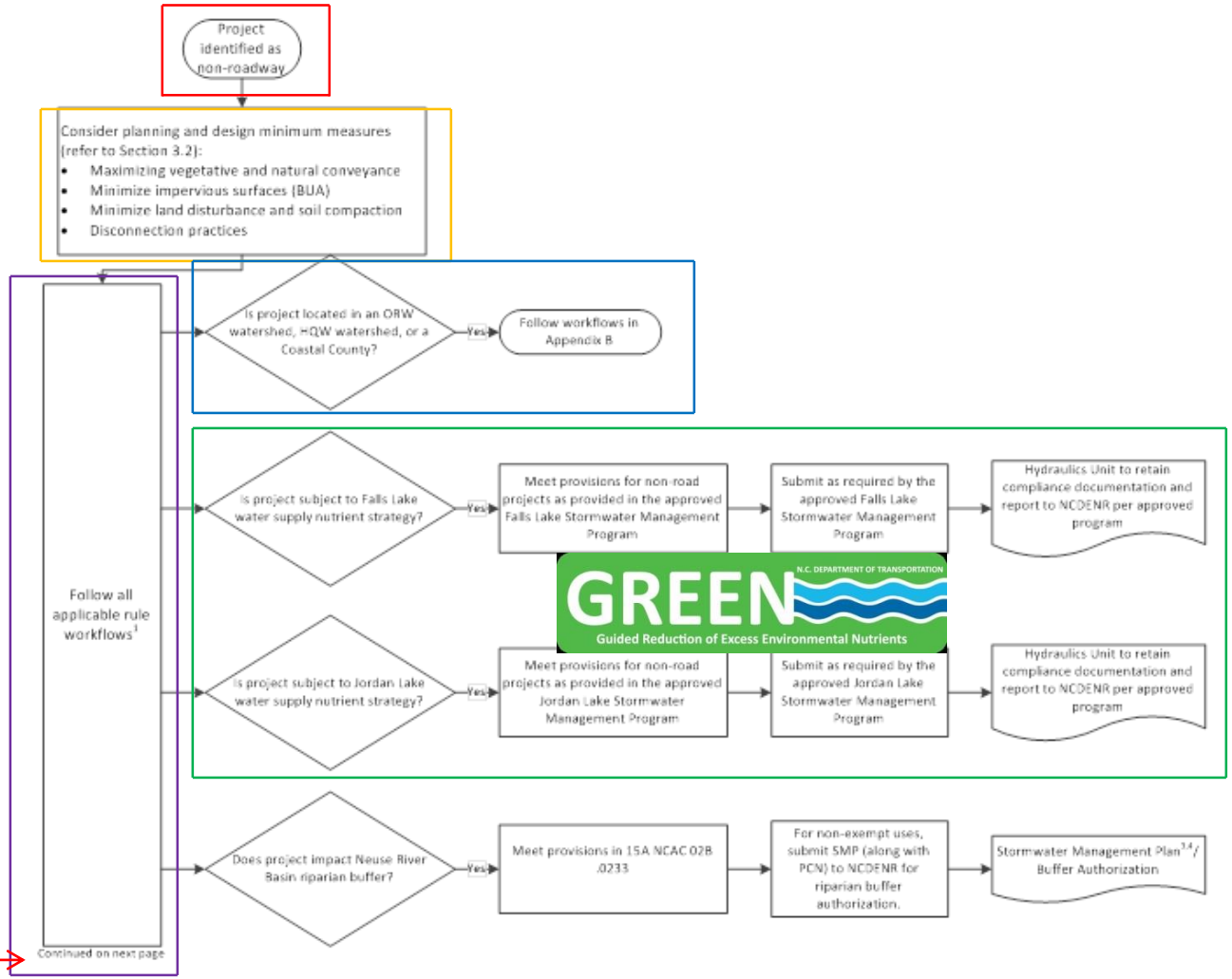
Appendix A – Guidelines for Roadway Projects in ORW Watersheds, HQW Watersheds, and Coastal Counties



[1]A copy of the project-specific SMP shall be sent to the Hydraulics Unit.

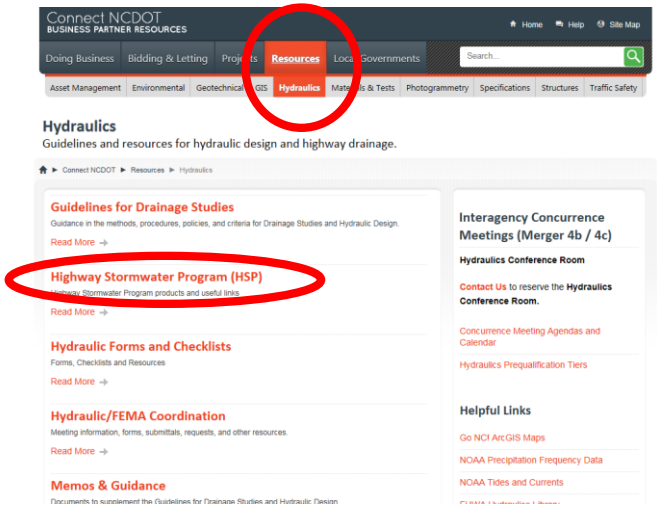
Non-Roadway Projects

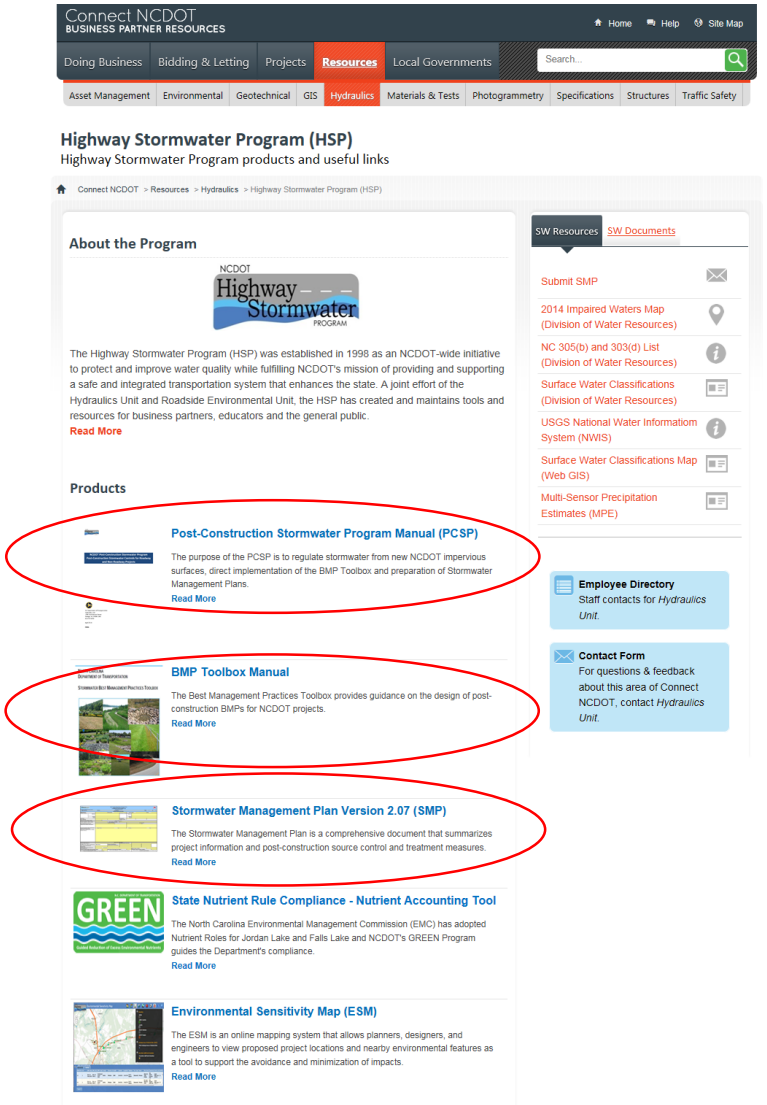
Figure 3.1 – Non-Roadway Workflow



Refer to Figure 3.1 in Section 3 for full workflow

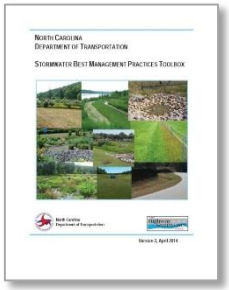
Highway Stormwater Program Connect Site



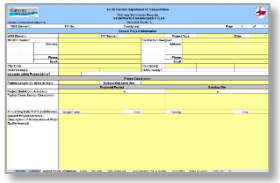


In Review…

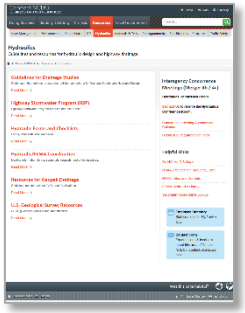
The PCSP contains all the information you need to know to comply with stormwater management regulations



The BMP Toolbox is the design guidance manual that should be used for stormwater control measures on NCDOT projects



A project specific Stormwater Management Plan (SMP) is required and is your proof of compliance with the PCSP



The Hydraulics Unit Connect site is the repository for the latest versions of these documents

Questions?

Andy McDaniel, PE
Hydraulics Unit
919.707.6737
ahmcdaniel@ncdot.gov