2012

N C D O T

Erosion and Sedimentation Control Program

Annual Report

NCDOT
EROSION AND SEDIMENTATION CONTROL PROGRAM
2012 ANNUAL REPORT

NCDOT EROSION AND SEDIMENTATION CONTROL PROGRAM

In 1991 the NC Sedimentation Control Commission reviewed the NC Department of Transportation's efforts to comply with the Sedimentation Pollution Control Act of 1973 and the subsequent 1974 NCDOT Delegated Erosion and Sedimentation Agreement.

Based on the review, the 1974 agreement was updated. The revised agreement was submitted to, and approved by the Sedimentation Control Commission on February 25, 1991 and functions as the core of the current NCDOT program.

Within NCDOT, the Roadside Environmental Unit (REU) monitors the delegated authorities. This includes design, review, monitoring and training for all aspects of the Erosion and Sedimentation Control Program. Improvements in technology and research have in turn improved design standards and techniques for erosion and sedimentation control.

The attached annual report outlines and highlights the work implemented and accomplished in 2011. It is important to note that this is an overview of the NCDOT Erosion and Sedimentation Control Program and provides a summarization of the programs overall content.

Pipe Installation: I-485 Charlotte Outer Loop

INSIDE THE REPORT

PROGRAM OVERVIEW

During fiscal year 2010/2011 NCDOT remained committed to minimizing impacts to the environment while providing safe and efficient transportation venues. The Department's efforts are evident in many areas; design, research, certification and overall environmental stewardship.

The Executive Summary (page two) provides an overview of the program for the past four years.

NCDOT Certification Effort as of July 1, 2011

The following represents the number of personnel certified by N.C. State in the Department's Environmental Certification Initiative.

- Level I: 2483
- Level II: 6176
- Level III: 1552

NCDOT EXECUTIVE SUMMARY

	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2011
Design & Review				
Contract Construction				
Total Field Inspections Attended	111	72	77	144
Total Clearing and Grubbing Plans Prepared/Reviewed	138	125	96	125
Total Intermediate/Final Plans Prepared/Reviewed	140	128	100	128
Percent Clearing and Grubbing of Final Plans	98%	98%	96%	98%
Maintenance/Force Account Projects				
Total Bridge Maintenance Plans Prepared	85	172	135	218
Total Maintenance Plans Prepared	287	165	258	255
Total Maintenance/Bridge Plans Reviewed	372	265	361	391
Percent Reviewed	76%	79%	92%	83%
**Additional Delegated Programs				
Total General Services Plans Prepared/Reviewed	3	2	2	3
Total NC Turnpike Authority Plans Prepared/Reviewed	3	3	10	1
Total NC Rail Division Plans Prepared/Reviewed	0	0	5	20
Disturbed Acreage				
*Contract Construction (acres)	4211	4500	4250	4500
*Maintenance/Force Account (acres)	1015	583	950	1050
Monitoring				
Contract Construction (TIP, NCTA, Rail, Bridge Management)				
Inspections Accomplished	2545	2557	3883	2996
ICAs Issued	7	18	14	8
Number of Projects Receiving ICAs	6	9	12	5
Projects Receiving Sequential ICAs	1	4	0	2
Maintenance/Force Account Projects (SR, Major Maint, Bridge Maint.)				
Inspections Accomplished	3548	2589	2328	2959
ICAs Issued	4	2	5	4
Number of Projects Receiving ICAs	2	2	5	4
Projects Receiving Sequential ICAs	1	0	0	0
**General Services Projects				
Inspections Accomplished	34	47	46	20
ICAs Issued	0	0	0	0
Total NOVs Received	0	0	2	0
Certification (Number Certified as of 7/1/2011)				
Level I: Erosion & Sediment Control/Storm water Inspector/Installer	1367	1696	2012	2483
Level II: Erosion & Sediment Control/Storm Water Site Management	2649	3356	4260	6176
Level III: Design of Erosion and Sediment Control Plans	885	1032	1197	1552

*estimated

** The Departments General Services Section is responsible for the construction of NCDOT office facilities. NCDOT was granted erosion and sedimentation plan approval and monitoring authority for these projects.

DESIGN

NCDOT implements the requirements for sediment basin design as outlined in the "Erosion and Sedimentation Control Design Manual." Further efforts have been placed on reducing the amount of time an erodible surface is exposed by utilizing more rolled erosion control products to minimize subsequent repair seeding operations.

The Department is using the Revised Universal Soil Loss Equation to model soil loss from secondary road and small bridge construction projects. RUSLE2 models the detachment of soil particles during rain events.

Revisions to erosion and sediment control plans are documented by field forces and reviewed by the department's REU staff to ensure that proper design techniques are being utilized. Certification efforts are addressing the changes in plan design to both NCDOT personnel as well as private engineering firms.

Overall, the Design effort continues to minimize impacts and find the balance between erosion control and sediment capture.

Design: *Erosion and Sediment Control Devices on NC 88 in Jefferson, NC*

INSPECTION

Teamwork : *NCDOT relies on a series of inspectors and engineers to ensure compliance with the Delegated Agreement.*

NCDOT relies on a combined effort to review and inspect projects to ensure compliance with the Sedimentation Pollution Control Act of 1973.

The REU reviews projects on a routine basis to evaluate project performance and overall compliance with the mandates set forth by the Delegation Agreement with Land Quality.

The Field Operations Section of the REU utilizes 14 certified engineers and technicians to review and monitor the progress of the Department's Erosion and Sedimentation Control program. The success of the program is dependent on the hundreds of DOT engineers, technicians, contract personnel and consultants that routinely review and make the necessary corrective actions across the state on the Department's projects.

When problems are identified, the Field Operations staff will issue an Immediate Corrective Action (ICA) which initiates a series of protocols created to ensure the corrections are made in a timely manner.

CERTIFICATION

The Biological & Agricultural Engineering and Soil Science Departments at N.C. State University are partnering with NCDOT to offer an Erosion and Sediment Control/Storm water Certification Program. The certification program provides the required personnel training to ensure compliance with erosion and sediment control/storm water provisions on NCDOT projects.

NCDOT requires all contractors and consultants to have a certified supervisor and foreman to oversee operations on NCDOT projects to ensure compliance with the Sedimentation Pollution Control Act as well as other environmental regulations.

Certification must be renewed every three years.

CERTIFICATION LEVELS

- **Level I:** Erosion & Sediment Control/ Storm water Inspector /Installer
- **Level II:** Erosion & Sediment Control/ Storm water Site Management.
- **Level III**: Design of Erosion and Sediment Control Plans

Web Link:
http://www.bae.ncsu.edu/workshops/dot/index.html

EFFICIENCY

RESEARCH: The Department in 2012 continued research projects with Rich McLaughlin, PhD., that analyzed soil loss modeling and basin size requirements. Research also continues on hydraulically applied erosion control products to determine their benefit and use.

NEW TECHNOLOGIES: The knowledge gained from research and monitoring has resulted in the Department utilizing devices such as fiber check dams with the addition of polyacrylamides. The combination of these two technologies has shown positive results in the improvement of sediment basin efficiency. Increased efficiency of sediment basins along with a reduction in the exposure time of erodible areas has improved the Departments ability to protect water resources and environmentally sensitive areas.

2012 ANNUAL REVIEW

Based on a random selection by DENR Land Quality Section, 16 projects were chosen for review. Projects are reviewed jointly by NCDOT and Land Quality staff to determine the overall program performance.

The following is a list of the projects that were selected for the 2012 Annual

EASTERN REVIEW:

- R-2583 US-158 FROM THE MURFRESSBORO BYPASS TO US-13 WEST OF WINTON.
- SR 1157 GUINEY TOWN ROAD - JONES COUNTY
- U-4007B WESTERN PARKWAY FROM 1300' SOUTH OF COUNTRY CLUB RD TO WESTERN BLVD IN JACKSONVILLE.
- SR 1911 DUPLIN COUNTY
- B-4588 BRIDGE OVER STONEY CREEK AND APPROACHES ON SR-1670
- R-5185 US-401 FROM NC-210 TO NORTH OF SR-1436 (MATTHEWS RD) IN LILLINGTON
- R-2814B US-401 (ROLESVILLE BYPASS) FROM SR-2225 TO NC-96.
- R-2417AA US-421 & NC-87 (SANFORD BYPASS) FROM WEST OF SR-1400 TO WEST OF US-1/15/501.

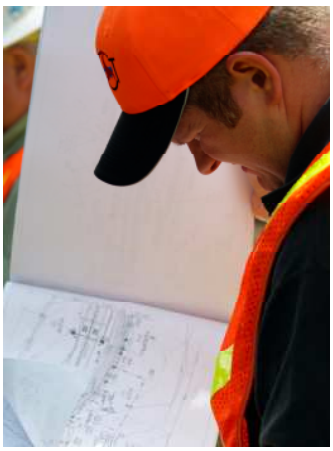
WESTERN REVIEW:

- R-2611 SR-1008 (W MARKET ST) FROM SR-2007 (BUNKER HILL RD) AT COLFAX TO NC-68 IN GREENSBORO
- U-3812 NC-88 FROM NC-194 TO US-221 BUS IN JEFFERSON.
- SR 1123 LAUREL CREEK ROAD— WATAUGA COUNTY
- R-2408B NC-28 FROM SR-1323 TO SOUTH OF SR-1378.
- R-4748 NEW ROUTE FROM SR-1660 (SILER RD) TO SR-1662 (WILEY BROWN RD) SOUTH OF US-441 IN FRANKLIN.
- R-2233AB US-221 FROM SOUTH OF FLOYD'S CREEK TO NORTH OF US-74 BYPASS.
- SR 1644 WILLIS ROAD— CLEVELAND COUNTY
- R-2248E I-485 (CHARLOTTE OUTER LOOP) FROM WEST OF NC-115 TO WEST OF I-85

NPDES INSPECTION

NPDES: *The further reduction in turbidity at Stormwater Discharge Points was a primary focus in 2010-2011.*

The Department is working to insure that current practices and procedures will be ready to comply with the new NPDES Stormwater General Permit NCG010000. Revisions in contract special provisions and turbidity reduction techniques will be further implemented across all NCDOT projects in 2011-2012.



Stormwater Inspections: *Inspectors continue to focus on stabilization efforts.*

STABILIZATION

Hydraulic Applied Stabilization: *NCDOT continues to evaluate Hydraulic Erosion Control Products.*

The Department continues to evaluate products and techniques that will help stabilize erodible slopes that will be disturbed at a later date. Reduction in soil loss from these areas will aid in reducing turbidity levels at Stormwater Discharge outlets located throughout construction projects.

Projects are transitioning to meet NCG01 Permit requirements for stabilization.

CALIBRATION

Calibration meetings with regulatory agencies is critical to find compromises to conflicting regulations.

NCDOT staff is holding monthly meetings on environmentally sensitive DOT projects with regulatory agencies to review the projects and discuss the next stages of construction. The process helps in communication and understanding.

DESIGN REVIEW

Design Review: *Revisions in the Erosion and Sedimentation Control Plans are often made to meet transitional grading operations.*

The Department's Roadside Environmental Unit's Soil and Water Section reviews projects on a periodic basis to evaluate design issues and discuss with project personnel on ways to improve contract special provisions.

Design Issue: *Transitional Erosion Control Devices are modified in the field to facilitate transitions between clearing and grubbing phase and final phase erosion control plans. NCDOT is looking at revising specifications to improve the current process.*

TRANSITIONAL PHASE OF GRADING

The Department is working with the Association of General Contractors and DENR, Land Quality Section to address concerns over transition from Clearing and Grubbing Phase of Erosion and Sedimentation Control to Final Phase Erosion and Sedimentation Control. Efforts to resolve the issue has identified the need for improved contract specifications and directives to all parties involved that improves the process necessary to ensure that grading operations remain in compliance with environmental regulations.

Design Build Construction: NCDOT continues to use Design Build Construction as a means to construct projects that have been accelerated to meet the needs of the State.

FUTURE CHALLENGES

With tighter regulations on effluent discharge by the EPA, to varying requirements set forth by the Department of Water Quality, NCDOT faces new challenges in 2011-2012.

Further improvements to our design methods will evolve as our knowledge of the use of new technologies expand.

New products will continue to be tested and monitored to see if they prove to be a value to the Department.

NCDOT is committed to meeting these challenges and providing the level of service the citizens of North Carolina have grown to expect.