



HYDRAULICS UNIT

NCDOT Technical Services Division



The Hydraulics Unit provides technical expertise, guidance, design and quality assurance to manage stormwater, riverine and coastal impacts in and around roadways for the protection of the public, the environment and NCDOT assets.

CONVENIENT. The unit is a one-stop shop for hydrologic and hydraulic studies, technical and legal expertise, and assistance managing stormwater, riverine and coastal aspects of transportation projects.

RESPONSIVE. The unit ensures projects comply with federal laws regulating floodplain development and stormwater discharge and

provides rapid, low-cost response for emergency pipe repairs.

KNOWLEDGEABLE. The unit is heavily engaged in research and development of new and improved methods, tools and guidance for managing water. The unit maintains a database of historical hydraulic reports and guidelines for drainage studies.

Contact

Email hydraulics_notify@ncdot.gov or contact staff directly using our employee directory at connect.ncdot.gov/resources/hydro/pages/

Find guidelines and resources for hydraulic design and highway drainage on the Hydraulics Connect site.

connect.ncdot.gov/resources/hydro/pages/



Stay up to date on Hydraulics Unit policies, procedures, innovations, updates and advertisements by signing up for our newsletter.

forms.office.com/g/VeXDGD6Pjp

Services

- Bridge and culvert recommendations
- Coastal modeling
- Contracted hydraulic services management
- Design and construction consultation
- Drainage investigation and studies
- Emergency design, scoping and review
- Encroachment/Subdivision review
- Expert testimony
- Flood warning tools
- Floodplain encroachment assistance
- Hydraulic project support
- Hydroplaning analysis
- Permitting assistance
- Project planning and scoping
- Quality control and assurance
- Resiliency studies
- Research assistance
- Risk assessment modeling
- Riverine modeling
- Scour response support
- Stormwater consultation and design
- Training



PROJECT EXAMPLES



EMERGENCY RESPONSE

The Hydraulics Unit investigates storm-related washouts, rock slides, sink holes and roadway failures and recommends pipe or bridge replacement(s) and remediation. Our staff prepare hydraulic and hydrology reports required by the Federal Emergency Management Agency (FEMA) and the Federal Highway Administration (FHWA) for eligible reimbursement.



PROJECT DESIGN

The Hydraulics Unit provides hydrological and hydraulic design for State Transportation Improvement (STIP) and Division Design Construct (DDC) projects such as the U-6223, N.C. Highway 42 extension in Johnston County.



RESOLVING CHALLENGING PERMITTING ISSUES

Hydraulics Unit staff provided expertise, crafted permit language and assisted with stream monitoring to keep the Interstate 26 widening project on schedule and mitigate right of way and construction concerns.



STORMWATER RETROFIT

Through the Highway Stormwater Program, the Hydraulics Unit can design and construct stormwater retrofits for sites in and around the right of way that experience nuisance flooding such as this intersection of N.C. 12 and Dogwood Trail in Southern Shores.



GUIDANCE FOR DRAINAGE STUDIES, HYDRAULIC TOOL DEVELOPMENT AND FLOOD WARNING SYSTEMS

The Hydraulics Unit continuously develops and supports guidance, tools and templates to aid in drainage studies and project delivery. Examples include the new Hydroplaning Assessment Tool, Outfall Analysis Tool, 2D modeling guidance, inundation maps and FIMAN-T.

