



Surface Water Identification and Training Course (SWITC)

Tuesday, November 14 – Friday November 17, 2023

Class Location:

Reedy Creek Nature Center classroom
2986 Rocky River Road
Charlotte, NC 28215

Registration Fee:

\$870 per person, NC Association of Environmental Professionals (NCAEP) member
\$895 per person, non-NCAEP member

Conducted by:

John R. Dorney, Jennifer Burdette, Nikki Thomson, and David Penrose
Axiom Environmental, Natural Resource Consultants, Sage Ecological Services, Inc., and Penrose
Environmental, respectively

**Through the NC Association of Environmental Professionals in coordination with the
NC Division of Water Resources**

Introduction: This 4-day lecture and field course will focus on the standard North Carolina methodology (V. 4.11, Sept. 1, 2010) that is used statewide by the Division of Water Resources and many local governments for identifying intermittent and perennial streams and their origins. Environmental consultants, federal and state agency personnel, and local government staff members who deal with regulatory programs related to streams are encouraged to attend. For more information on the stream identification methodology, see the Division website at <https://www.deq.nc.gov/about/divisions/water-resources/permitting/401-buffer-permitting/application-forms-help-documents#:~:text=Stream%20Determinations,one%20of%20our%20Regional%20Offices>. During the course we will visit streams in varying conditions in three of the Level IV Piedmont ecoregions (Southern Outer Piedmont, Slate Belt, and Triassic basins) all in or near Charlotte.

This course is offered in coordination with the NC Division of Water Resources and follows the same curriculum as the course taught by DWR instructors. The course will include a written and field test. Staff within DFR, DWR, or local delegated programs who take the course and pass the written and field tests will be certified to make definitive determinations of stream origins subject to the buffer rules. Individuals other than those authorized for certification who take the course and pass the written and field tests will receive a "Certificate of Training" that can be used with delegated or designated local governments. Though the method is specific to North Carolina, this course will also be useful for professionals who work in other states such as Tennessee, Georgia, or Virginia. In the past, continuing education credits have been requested and approved for Foresters (SAF), Engineers (NCBELS), Landscape Architects (NCBOLA), Erosion & Sediment Control (CPESC), and Storm Water Quality (CPSWQ). In addition, others can be sought upon request. Applicants who are interested in continuing education credits must notify us by email so appropriate arrangements can be made.

Instructors:

John R. Dorney: Senior Environmental Scientist, Moffatt & Nichol and retired from NC Division of Water Quality, Wetlands and Stormwater Branch. Mr. Dorney worked with the Division of Water Quality for over 29 years, was actively involved in the development of the Riparian Buffer Protection Rules and the NC Stream Identification Method and has taught courses in the method for more than 15 years. He is an expert in wetland and stream functional assessment, isolated wetlands as well as wetland and stream permitting.

Jennifer Burdette: Senior Environmental Scientist, Natural Resource Consultants. Ms. Burdette has over 30 years of experience in surface water and wetland regulation. She has worked primarily as an environmental consultant but also worked with the US Army Corps of Engineers and as the 401 & Buffer Coordinator for the NC Division of Water Resources (DWR). Ms. Burdette taught the NC Stream Identification Method with DWR for four years. She is an expert in stream identification, assessment, wetland delineation, and Clean Water Act Section 404/401 and riparian buffer permitting.

Nikki Thomson: Senior Environmental Scientist, Sage Ecological Services, Inc. Ms. Thomson has more than 24 years of experience in natural resource identification, environmental regulation and permitting. She has worked primarily as an environmental consultant in the transportation industry but has also worked as an NC Department of Transportation (NCDOT) Project Coordinator for the NC Division of Water Resources (DWR). Ms. Thomson is an expert in stream and wetland identification, delineation, assessment, Clean Water Act Section 404/401, and riparian buffer permitting.

David Penrose: Director and Senior Environmental Scientist, Penrose Environmental. Retired from NC State University, Water Quality Group and previously employed by the NC Division of Water Quality. Mr. Penrose also helped develop the NC methods for stream identification and assessment. He has previously taught the Stream Identification class plus other classes on aquatic insect ecology through NC State University. Mr. Penrose is past President of the Society for Freshwater Science (formerly the North American Benthological Society), an international scientific organization whose purpose is to promote further understanding of freshwater ecosystems.

Logistics: The lecture portion of the course will be conducted at the Reedy Creek Nature Center classroom located at 2986 Rocky River Road, Charlotte, NC. Lunch on Wednesday and Friday will be on your own. For the field trips on Thursday, lunch will be provided at a local restaurant. Tuesday lunch will be provided in class on a make-your-own sandwich basis with various meats, cheeses, and hummus provided. All field trips will depart from the Reedy Creek Nature Center parking lot unless otherwise announced in class. Field trips are conducted in all weather conditions except unsafe weather. If field trips cannot be conducted due to weather, the class or a portion thereof will be rescheduled. Knee boots or hiking boots will be adequate for the field trips.

The registration fee includes a paper copy of the SWITC manual, field trip transportation and drinking water, Tuesday and Thursday lunches, maps of field sites, soil augers, nets, and sorting pans to be used during class. You may bring your own auger and macrobenthos sampling gear if you prefer. Liability waivers must be signed upon your arrival to class.

Registration: Class enrollment is set at a minimum of 25 registrants and a maximum of 30 registrants. Please register on or before November 6, 2023, with the NC Association of Environmental Professionals at <http://www.ncaep.org/event-5363592>. Registration fees must be received by NCAEP no later than November 6, 2023. Cancellations prior to November 6 will receive a full refund. Cancellations after November 6 will receive a refund of the registration fee less a \$100 administrative fee. Paid registrations may be transferred to another individual upon written request. No refunds will be given after the start of the class.

Tentative Course Agenda

Tuesday – November 14. Reedy Creek Park Nature Center. Personal vehicles to field sites.

8:30 – 9:00	Check in
9:00 – 9:10	Welcome and Introductions (<i>John Dorney</i>)
9:10 – 9:30	SWITC Course; Background, Objectives and Overview (<i>John Dorney</i>)
9:30 – 10:00	Stream Networks and Hydrological Functions (<i>Dave Penrose</i>)
10:00 – 11:00	Geomorphology and the NC Stream ID Method (<i>John</i>)
11:00 – 12:00	Role of Aquatic Biology in Stream ID (<i>Dave</i>)
12:00 – 12:30	Lunch provided at the facility
12:30 – 1:00	Stream Maps (<i>John</i>)
1:00 – 2:15	Methodology for ID of Intermittent and Perennial Streams (<i>John</i>)

- 2:15 – 5:00 Field Site – Reedy Creek Park Stream Sites (in own cars)
- 5:00 – 6:30 Dinner (on own)
- 6:30 – 8:00 Procedure for Field ID of Macroinvertebrates (*Dave*) in TBD.

Wednesday – November 15. Reedy Creek Park Nature Center Personal vehicles to field sites.

- 8:00 – 8:30 Headwater Streams (*Dave*)
- 8:30 – 8:45 Riparian Zones: Definitions and Functions (*John*)
- 8:45 – 9:30 Overview of NC Buffer Rules (*Nikki/Jennifer*)
- 9:40 – 9:45 Break
- 9:45 – 10:05 Forestry and the Buffer Rules (*Nikki/Jennifer*)
- 10:05- 10:30 Stormwater Management and the Buffer Rules (*John*)
- 10:30 – 10:45 Break
- 10:45 – 11:15 Urban Streams (*John*)
- 11:15- 11:45 Buffer Documentation and Permitting (*John*)
- 11:45 – 12:00 Compliance & Enforcement of the Buffer Rules (*John*)
- 12:00 – 1:00 Lunch (on own)
- 1:00 – 4:45 Field sites – Urban Stream Sites in and around Charlotte
- 5:00 – 6:00 Dinner (on own) (proceeded or followed by optional beer summit at local brewpub including optional review session)

Thursday – November 16. Start at 8:00. Personal vehicles for field trips.

- 8:00 – 9:00 Travel to field sites in Pee Dee National Wildlife Refuge
- 9:30 – 12:00 Field sites – Triassic Field sites in Pee Dee National Wildlife Refuge
- 12:00 – 1:15 Lunch in field on way to next stop (provided)
- 1:15 – 5:00 Field sites – Cane Creek Park, Waxhaw; Slate Belt streams
- 5:00 – 6:00 Dinner (on own)
- 6:00 - ? Study for test!

Friday – November 17. Start at Mint Hill Veteran’s Memorial Park, entrance off of I-485 and Mint Hill Road, Mint Hill (maps and address provided). Personal vehicles to field sites.

- 8:00 – 8:15 Review any final questions

8:15 – 9:45 Written test
9:45 – 11:0 Field test – urban
11:40 – 12:30 Travel to rural test sites and field lunch on own between field sites.
12:30 – 2:00 Field test – rural