

Morgan and Little Creeks Local Watershed Planning Initiative



Meeting Announcement & Summary

Thursday, May 8, 2003 meeting held at the Totten Center

Next meeting:

Wednesday, July 16, 2003

2:00-4:00 pm

Totten Center, NC Botanical Gardens

Directions to the Totten Center:

From I-40: Take exit 273 from the West, 273-B from the East. Turn right onto Highway 54 W, go 2.4 miles; turn left at the traffic light onto Finley Golf Course Road. Go 0.6 mile and curve right onto Old Mason Farm Road. Go 0.7 mile, see North Carolina Botanical Garden sign on left; turn left into parking lot.

From the 15-501 and 54 Bypass (Fordham Blvd.): Look for the brown landscaped wall on the south side of Fordham Blvd., 0.6 mile west of the Hwy 54 overpass. Turn onto Old Mason Farm Road at the east end of the wall. See North Carolina Botanical Garden wooden sign on immediate right and turn right into parking lot.

Maps can be found at the following URL:

<http://www.unc.edu/depts/ncbg/info.htm#Directions>

July 16th Meeting Agenda

- ▶ Welcome and introductions
- ▶ Review and approval of May minutes
- ▶ Report on Preliminary Assessment Results
- ▶ Present Field and Modeling Results
- ▶ Plans for next meeting

Team members present at 5/8/03 meeting:

Shari Bryant, NC Wildlife Resources Commission
Patricia D'Arconte, Town of Chapel Hill
Ed Holland, Orange Water and Sewer Authority
Tina Moon, Orange County Environment & Resource Conservation Dept.
Sharon Myers, UNC-Chapel Hill
Doug Nicholas, Triangle Land Conservancy
Kat Oury, NC Cooperative Extension Service
Jonathan Parkinson, Friends of Bolin Creek
Philip Prete, Town of Carrboro
Johnny Randall, NC Botanical Gardens/Morgan Creek Valley Alliance
Hollie Rennell, Orange County Erosion Control
John-Ann Shearer, US Fish and Wildlife Service

Team Members Not Present:

Brent Bogue, Natural Resources Conservation Service
Richard Whisnant, UNC-Chapel Hill School of Government

Guests Present:

Misty Franklin, NC Botanical Gardens/Morgan Creek Valley Alliance
Alan Johnson, NC Botanical Gardens
Brian McRae, NC Wildlife Resources Commission
Perry Sugg, Orange County Planning Dept.
Ed Harrison, Chapel Hill Town Council

Support Staff Present:

Deborah Amaral, Cape Fear River Assembly
Sarah Bruce, Cape Fear River Assembly
Jason Doll, Tetra Tech, Inc.
Bonnie Duncan, N.C. Wetlands Restoration Program

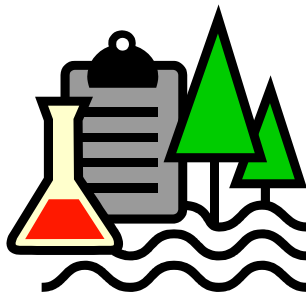
Summary of the 5/8/03 Meeting

Meeting Agenda / Stakeholder Introductions

Deborah Amaral of the Cape Fear River Assembly opened the meeting and reviewed the agenda items. Participants then introduced themselves and stated which organization they represented. Minutes of the April meeting were approved.

Update on Preliminary Findings

Jason Doll of TetraTech gave a presentation wrapping up the Preliminary Findings Report Results. The purpose of this phase is to describe current watershed conditions while also identifying areas of high resource value and those that are at risk for future degradation. The findings of this report will also direct efforts for detailed assessment (the next phase) and identify indicators to quantify success of recommended management efforts. A draft report is in preparation and will be placed on the CFRA website within 2 months.



Findings showed that riparian buffers are disturbed in various locations of the watershed and that there is a high percentage of imperviousness in the developed areas of the watershed. Stakeholder ratings generally showed good conditions in headwaters with worse sites being located downstream. Some good and bad sites were very close together, which can be explained by the location of a dam, an outfall, or a tributary meeting a larger mainstem. Biological data also show water quality and aquatic habitat worsening in downstream areas. There were questions about the sampling locations in the water quality severity index slide. Jason has noted that the Morgan–White Cross and Morgan Control monitoring sites actually reflect two different data sets from the same site: Morgan Creek at Hwy 54. Morgan–White Cross reflects an analysis of NC DWQ ambient monitoring program data for that site, and Morgan Control reflects

Chapel Hill Stormwater Program data. In any future analysis of data at that site, these two data sets will be combined.

Water quality was scoped based on NC water quality criteria. The number of exceedances of fecal coliform, lead, zinc, ammonia, dissolved oxygen (DO), and turbidity were measured. Monitoring points were assigned a score based on the percentage of exceedances, and again showed increasing degradation further downstream.

Habitat ratings are based on the 1997 study conducted by Triangle Land Conservancy (Haven Wiley, UNC Wildlife Biologist) using 1988 aerial photography with developed areas updated by spatial analysis of building permits. Developed and undeveloped areas were rated by type of forest cover and its habitat suitability (connectedness, vegetation diversity, documented species occurrences of Rare, Threatened and Endangered species as well as other sensitive species). One area that was rated medium (the best rating in the watershed) is now Southern Village. Areas that were already protected do not appear on this slide, for example the forests at University Lake. Hunts Reserve remains a conservation opportunity but surrounding land uses are currently pressuring this area.

Preliminary conclusions:

- Biological impairment in Little and Bolin Creeks is likely a function of habitat degradation.
- Low DO levels and chronic toxicity are parameters of concern in Booker Creek.
- NPS nutrient pollution contributors from study area to New Hope Arm not large enough to significantly effect the eutrophication dynamics of Jordan Lake; however, this finding should not be removed from context or be used to justify a do-nothing scenario. Nutrient management is still VERY important for this watershed, and especially around University Lake because of long term development impacts.
- Phosphorous loading to University Lake is important.
- Spatial patterns are important with regard to existing degradation and existing development.
- Vulnerability of areas targeted for future growth is a key issue. Development pressure is

strong.

The Orange County Master Land Use Plan was shown, which indicates areas targeted for future growth in 10- and 20-year transition zones, as well as other areas of public interest such as the rural buffer.

A photo was shown of the Headwaters of Bolin Creek at Hogan Farms, a low-density residential development. The photo shows that a great deal of land disturbance is taking place in this area.

Review of Plan Goals, Objectives, Indicators, and Assessment Tools

Overall project goals:

- Identify areas where watershed functions have been degraded and restore those functional losses.
- Identify areas with high resource value and prioritize efforts to preserve those areas.
- Identify areas at risk for future degradation and identify appropriate measures to prevent functional losses.

Important watershed functions include drinking water supply, aquatic habitat, terrestrial habitat, flood attenuation, and adequate base flow.

Specific project objectives:

Specific objectives related to our watershed functions and overall plan goals include: **to address and prevent eutrophication** in University Lake and the Morgan Creek arm of Jordan Lake. To address this objective, the assessment will include identification of subwatersheds with the greatest potential, under projected scenarios, to deliver nutrients; and development and evaluation of management strategies to reduce or prevent nutrient loading. Eutrophication will be assessed with a “simplified watershed loading model” using the indicators of phosphorous and nitrogen loads and build-out potential at the parcel level. SPARROW equations, a set of commonly accepted predictors of nutrient fate and transport, will also be used. OWASA is also doing a study on nutrient management in University Lake.

Another objective is to **restore and protect riparian wetlands**. To accomplish this objective, the assessment will include identification of sub-watersheds and stream segments where riparian wetlands have been lost or degraded due to disruption or disconnection from stream channel, and to prioritize these areas for restoration. Indicators include amount of wetland losses and intact wetlands. Assessment

tools include GIS analysis of the spatial extent of hydric soils and classified wetlands. It was noted that the National Wetlands Inventory usually undercounts wetlands because it neglects wetlands that are forested swamps. Another assessment tool will be the detailed analysis of aerial photography in conjunction with hydric soils and field reconnaissance. (Hydric soils are characterized by their capacity to sustain wetland vegetation at sufficiently frequent inundations and saturations.)



Another objective is to **restore and protect floodplain hydrology**. The assessment will include identification of sub-watersheds and stream segments where flood attenuation capacity has been lost due to modification or disconnection from the stream channel, and will prioritize these areas for restoration. Assessment indicators include flood potential and reduced baseflow.

To **improve and protect terrestrial wildlife habitat** is another objective. Assessment objectives include identification of study area locations with highest quality wildlife habitat and prioritize these for restoration; and to identify portions of the study area with riparian buffer disturbance/degradation and prioritize these for restoration. Assessment tools include Triangle Land Conservancy characterizations and NC GAP data on distributions of vertebrate species and natural land cover types.

Another objective is to **address and prevent stream erosion/instability and associated sediment loading**. Assessment objectives to accomplish this watershed objective include identification of sub-watershed and stream segments that exhibit erosion and instability under existing conditions and prioritize these for restoration, and to develop and evaluate management strategies to reduce or prevent degradation in the future. Rosgen (1996) defined a stable stream as one that “effectively transports the sediment load supplied by its watershed while maintaining its dimension, pattern, and profile over time, such that it does not aggrade or degrade.” Degradation *per se* occurs when a stream is chewing down its banks, and aggradation occurs when water slows and sediment drops out, causing the stream to become wider and flatter. Assessment tools include the Bank Erosion Hazard Index (BEHI) score,

Stream Visual Assessment Protocol (SVAP), and modeling of stream power and critical velocity. Stream power can be thought of as the stream's ability to move material. Stream power and velocity measures are more suitable for typical meandering alluvial streams with pool-riffle sequences than for step-pool streams, both of which are present in the study area.

Instability risk assessment is a preliminary measure of erodability and buffer infringement. It characterizes some reaches more adequately than others, especially where outfalls or dams disrupt natural conditions. Stream reconnaissance sites are beginning to be evaluated to identify areas at risk. This map showed a composite of all the information that has been compiled thus far. Fifty-three sites have been listed as potential sites to evaluate in detail, and Buck Branch is to be added. Modeling is already underway for some reaches.

Another plan objective is to **improve and protect instream water quality conditions**. Assessment objectives include identification of sub-watersheds with the greatest potential to deliver pathogens, development and evaluation of management strategies to reduce loads, identification of causes of low DO levels recorded in some stream segments, and development of management strategies to alleviate these low DO levels. Indicators include toxicity, pathogens, and DO levels. Tools used to assess instream water quality are: statistical modeling to identify potential fecal coliform sources (correlation and regressions tree [CART] analysis), a water quality monitoring plan to examine conditions where and when data were previously unavailable, and GIS analyses to identify potential stressor sources (e.g., traffic counts relative to metals data).

Proposed Monitoring Plan

Goals:

- Monitor pollutant loading where no previous monitoring has been conducted.
- Monitor storm event data where periodic sampling has generated information during base flow.
- Begin collecting data to establish reference conditions in the most pristine or undisturbed portions of the study area.

Elements:

There are 19 monitoring sites, 13 of which are designated for storm event monitoring, and 10 of which are designated for monthly monitoring. Standard physical/chemical parameters, nutrients, and fecal coliform are to be monitored at all sites. Metals will be monitored at 11 select sites. Parameters of interest include cadmium, copper, lead and zinc. Storm monitoring sites were selected to complement UNC/Chapel Hill sites, whose monitoring is ongoing.



Pritchard's Mill has been identified as a relatively pristine creek that will be used as an indicator of reference conditions. Between four and six months of data will go into the monitoring plan, which is not quite ideal, but in order to synchronize with other projects our assessment has had to accelerate its time frame. Monitoring will continue through DWQ, and useful data still depend on the ability to get good storm flow measurements. Especially important to capture is the "first flush" samples, which contain the most contaminants from the initial wash of runoff.

A stakeholder asked if local citizens could assist in collecting monitoring samples. Bonnie explained that DWQ requires that sample collectors be certified, and that sampling protocols be used at State certified laboratories to develop monitoring results. Since the State is paying for the assessment, all collected samples as part of this assessment must be processed by State certified laboratories so that DWQ could use the data and information for other planning/monitoring assessment efforts. A Team member commented that there is a need to collect additional data for Upper Bolin Creek in the Hogan Farms area and Homestead Road.

**Next meeting: Wednesday, July 16, 2003
2 to 4 pm Totten Center**