Lick Creek Watershed Restoration Plan
Summary of Stakeholder Meeting #4
October 24, 2007

Introductions & Agenda

The Stakeholders guiding the Lick Creek Watershed Restoration Plan met at 3:00 P.M. on Wednesday, October 24 in the East Durham Regional Branch Library on Lick Creek Road (at NC Highway 98).

Meeting attendees:

Name	Project Partner or Stakeholder	Organization	Contact Information
Bev Norwood	Stakeholder	Triangle Greenways Council	Ndesign@bellsouth.net / 743-3399
Jennifer Brooks	Stakeholder	Durham SWCD	560-0558
Chris Outlaw	Partner	Durham Stormwater Services	chris.outlaw@durhamnc.gov
Jeff Kilpatrick	Stakeholder	Watershed resident	596-8716 / gwannyK@hotmail.com
Heather Boyette	Stakeholder	NC Div. of Water Quality-Planning	Heather.boyette@ncmail.net
Bill Patrick	Stakeholder	Watershed Resident	596-1692 / 475-4131 (cell)
Jack Adcock	Stakeholder	Rhein Brightleaf	834-2766 / jadcock@rheiinnc.com
Richard Broadwell	Stakeholder	Triangle Land Conservancy	rbroadwell@tlc-nc.org
Shari Bryant	Stakeholder	NC Wildlife Resources Comm.	Bryants5@earthlink.net
Michi Vojta	Stakeholder	NC Ecosystem Enhancement Prog.	michi.vojta@ncmail.net / 715-5590
Jim Fyfe	Stakeholder	Watershed resident	jandbfyfe@touchnc.net / 596-4338
Frank Thomas	Stakeholder	Home Builders Assoc. of DOC	frank@hbadoc.com / 493-8899
Chris Dreps	Partner	UNRBA	dreps@tjcog.org
Dan Line	Partner	NCSU Water Quality Group	Dan_line@ncsu.edu

The meeting agenda included:

3:00 Welcome and Introductions

3:05 Announcements

3:15 Lick Creek Watershed Restoration Priorities

4:00 Lick Creek Water Quality Monitoring Findings (Dan Line, NCSU)

4:40 Discussion

5:00 Adjourn

Announcements

Chris Dreps announced that the next meeting will be held on December 5 from 3-5 p.m. at the East Durham Regional Branch Library. We will hear about progress on monitoring and field findings, discuss the critical lands protection analysis, and decide upon a draft list of management strategies. Anne Kitchell from Center for Watershed Protection may attend to discuss the Home Depot Foundation Grant (below).

The Home Depot Foundation has provided a grant of over $30,000 to the Center for Watershed Protection and the UNRBA for tree planting projects in Lick and Little Lick Creek. The money will need to be spent on buffer planting projects. Stakeholders expressed interest (particularly Bill Patrick), and Bev Norwood suggested attempting to place buffer replanting projects in the headwater streams. More details to come...

A technical team will begin work on the critical lands protection analysis to recommend lands where protection efforts would be most beneficial for water quality. The analysis will be based upon the Upper Neuse Clean Water Initiative Conservation Plan (see http://www.ctnc.org/7fallslake.htm). Stakeholders who have volunteered to work on this technical team are Greg Schuster (Durham County), Paul Clark (NC Division of Water Quality), Richard Broadwell (Triangle Land Conservancy), Bev Norwood (Representing Triangle Greenways Council).

Lick Creek Restoration Project Priorities

The UNRBA, Partners, and Stakeholders have finished developing the Lick Creek Major and Volunteer Restoration Project Priorities. These priorities, and the prioritization process, are described in a technical memorandum entitled, "Lick Creek Watershed Restoration Priorities" (available for download at http://www.unrba.org/lick/downloads.htm). The projects assessed are limited to stream repair, stormwater retrofit, buffer restoration/replanting, and wetland restoration.

The restoration projects address Lick Creek Goals 1 (develop a hypothesis about causes of biological impairment and recommend approaches to addressing impairment status) and 3 (develop strategies for reducing, and maintaining at levels meeting water quality standards, the pollutants...). These goals are also described on the project website, www.unrba.org

Overall, the Project Partners identified 27 potential restoration projects covering almost 2 linear miles of potential stream repair or buffer restoration and about 20 to 25 acres of area that could be treated by stormwater management. These projects are detailed in the appendices to the restoration priorities memorandum.

Chris Dreps described the 13 potential major restoration projects, which are opportunities that would require engineering design, construction by a contractor, large buffer plantings, and long-term maintenance and/or project management by local governments.

During discussion, Jack Adcock recommended that we discuss these projects with NC DOT. Chris acknowledged that NC DOT is a potential funding source for any of these projects which would address problems associated with highway runoff.

Chris then described the 14 potential volunteer restoration projects, which are projects that could be handled by some volunteers with guidance from local government or cooperative extension agents. There are many such opportunities, most of which are impacted buffers where replanting is needed.

The conclusions are that these projects have relatively minor benefits watershed-wide (for example, as measured at the downstream-most monitoring station or by pollutant loads into Falls Lake). However, many of the projects are located in groups and could have positive

localized effects on water quality. These projects also have potential to raise community awareness of the importance of protecting Lick Creek's water quality.
Next steps:
- Determine the level of interest of various funders in these projects
- Explore best management practices for outreach and education and onsite wastewater management

Lick Creek Monitoring (Dan Line, NCSU Water Quality Group)

Dan Line presented the initial findings of monitoring at six monitoring sites on Lick Creek and its major tributaries (for more details, see the 10-24-07 power point presentation and the monitoring plan at www.unrba.org/downloads).

Although there has been little rain this summer and data are few, the data do provide guidance to our watershed management efforts. For example, the Lick Creek station near NC 98 and Falls Lake shows high levels of E coli, and some nitrogen forms. Average concentrations of some pollutants are elevated in subwatersheds #1 (Lick Creek headwaters), #4 , #5 (Martin Creek), and #7 (Rocky Branch Creek). Note that Rocky Branch Creek (subwatershed 7) data were not analyzed in this way because Durham City are collecting these data and Dan Line did not have data in time for the full analysis.

Average concentrations are taken from "grab" samples once per month at locations on the creek (map is available in sources linked above) and are only part of the picture. In order to understand the amount of a given pollutant, it is necessary to have both concentrations (eg, how much pollutant, say sediment, is in a gallon of stream water?) and discharge data (eg, how many gallons of water are flowing past this point?). Multiplied together, these estimate "pollutant load":

Pollutant per gallon x gallons = total pollutant amount

This total pollutant amount is usually expressed for a period of time, such as 200 pounds of sediment per month.

Dan Line discussed the relative loads from each of the subwatersheds. Dan also presented a chart providing "cumulative instantaneous export" of the pollutants for each monitoring site. These data lead to questions about Martin Creek (subwatershed 5), the Lick Creek headwaters in subwatersheds 1 and 2. Note that Rocky Branch Creek (subwatershed 7) data were not analyzed in this way because Durham City are collecting these data and Dan Line did not have data in time for the full analysis.

Finally, Dan discussed storm event sampling. The vast majority (Dan estimates over 80%) of the water flow and pollutants passing through a stream comes during storm events. So it is critical to understand what is happening during storms in Lick Creek. NCSU is conducting storm event sampling at two locations (main stem and subwatershed 4). There will be two samples at each location.

NC State University and Durham will continue collecting monthly samples in these 6 locations, and we will receive periodic updates about monitoring findings. There remains over 1 year of water quality sampling on Lick Creek.

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Discussion

Chris Dreps led a discussion assessing the relative need of restoration efforts in the Lick Creek subwatersheds. To this point in the planning process, we have been provided with several sources of information about each subwatershed:

- Monitoring data

- Fieldwork findings

- GIS analysis (land use analysis, future ("build-out") land use analysis)

- Watershed Treatment Model

The information can be summarized to begin prioritizing subwatersheds for their relative need and potential for restoration. The following table summarizes information the Stakeholders have been presented so far about each subwatershed.

Subwatershed Indicators of Restoration Potential and Future Management Needs

Basic Watershed Information				Water Quality Monitoring Indicators				Watershed Treatment Model			Fieldwork Indicators	Future Management Need Indicators	
Sub-watershed	Acres	Sq. Miles	Percent (%) Impervious Cover[1]	E. Coli	Nitro gen	Total Phos.	Sedim ent (TSS)	TN	TP	Sedim ent (TSS)	Concentrations of Potential Restoration Projects	Buildout Percent (%) Impervious Cover[1]	Increase in Impervious Cover (Acres)
1	1079	1.69	10.7	✓			✓	✓	✓	✓	✓	36.3	276
2	1310	2.05	14.3							✓	✓	39.3	327
3	757	1.18	12.4					✓	✓	✓	✓	29.8	132
4	698	1.09	2.8	✓					✓	✓		30.3	192
5	1600	2.50	3.0		✓		✓					30.1	433
6	1501	2.35	4.2								✓	19.8	234
7	1551	2.42	4.8	✓	✓	✓	✓			✓		25.7	324
8	1294	2.02	3.2	N/A	N/A	N/A	N/A					22.3	247
9	1959	3.06	4.0	N/A	N/A	N/A	N/A					6.3	45
10	1430	2.23	5.4	N/A	N/A	N/A	N/A					11.6	88
11	881	1.38	3.7	N/A	N/A	N/A	N/A					8.3	41
Total	14,060	22.0	5.9									22.6	2339

Although there is still much information to be gathered, this analysis provides several important pieces of information.

- Subwatersheds 1, 2, and 3 are all over 10% impervious cover, so comprehensive restoration strategies addressing many locations and practices will likely be needed to address any water quality problems.

- Water quality monitoring initially indicates potential water quality problems in Subwatersheds 1, 4, 5, and 7. Further monitoring and investigation are needed to verify the findings and investigate sources.

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- The Watershed Treatment Model predicted problems in Subwatersheds 1, 2, 3, 4, and 7.

- Fieldwork found the greatest concentrations of opportunities for traditional watershed restoration (stream, buffer, wetland, and stormwater retrofit) in Subwatersheds 1, 2, 3, and 6.

- Based on impervious cover predictions alone, we should expect significant future degradation of water quality throughout the watershed, particularly in subwatersheds 1-7, where development densities will more than triple.

Chris Dreps will continue to update subwatershed indicators for use in prioritizing management strategies.

Next Meeting

The next meeting has been scheduled for Wednesday, December 5 at 3 p.m. in the East Durham Regional Branch Library on Lick Creek Road.