Lick Creek Watershed Restoration Plan

Stakeholder Meeting 7

January 16, 2008

East Durham Regional Branch Library

Agenda

3:00 Welcome and Introductions

3:05 Housekeeping and Announcements*

3:20 Critical Lands Protection Analysis (Chris Dreps)

3:50 Subwatershed Analysis (Heather Saunders)

4:00 Small Groups: Management Strategies

5:00 Adjourn

* Decision Item

Housekeeping

Next meeting:
March???
East Durham Regional Branch Library

Announcements

Lick Creek Critical Lands Protection Analysis

Critical Lands Protection Analysis

GOAL 4: *Mitigate future changes to watershed hydrology and water quality.*

GOAL 3: *Develop strategies for reducing, and maintaining at levels meeting water quality standards, the pollutants identified in Goal 2.*

Critical Lands Protection Analysis

Thank you for providing guidance!

- Richard Broadwell (Triangle Land Conservancy)
- Bev Norwood (Triangle Greenways Council)
- Greg Schuster (Durham County Real Estate and Open Space)

Critical Lands Protection Analysis

Guidance Criteria

- Base analysis on Upper Neuse Clean Water Initiative (UNCWI) Conservation Plan

Critical Lands Protection Analysis

Guidance Criteria (continued)

- Assess UNCWI Parcels to see if they meet any of several criteria:
  - Natural Heritage Areas
  - Significant sized tracts
  - Trails corridors
  - Wildlife corridors
  - Adjacency to publicly-owned lands
  - Farmlands
  - Site's development potential (based on zoning)
  - Restoration recommendations (from LC fieldwork)

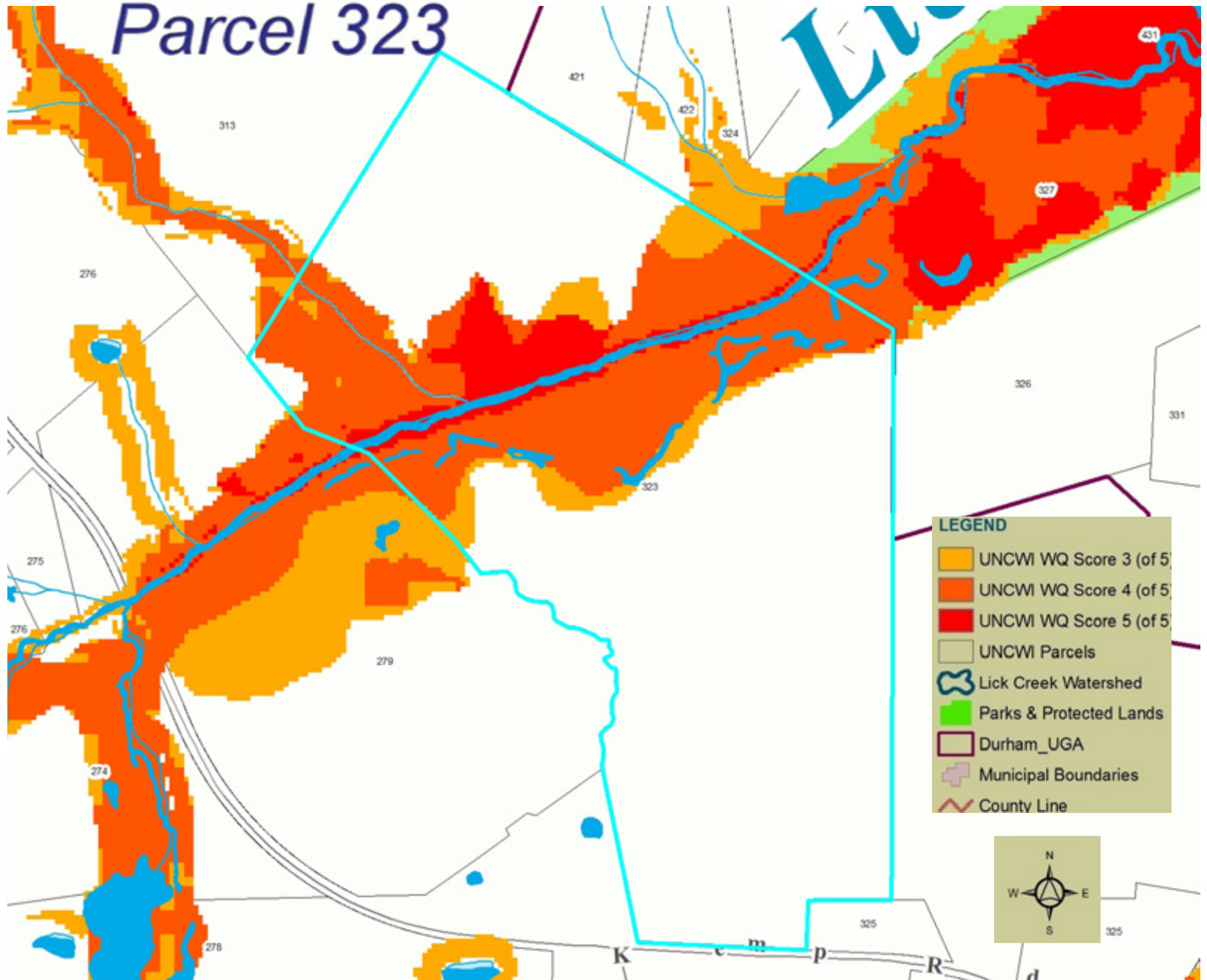# Lick Creek Critical Lands Analysis: UNCWI High-Scoring Parcels
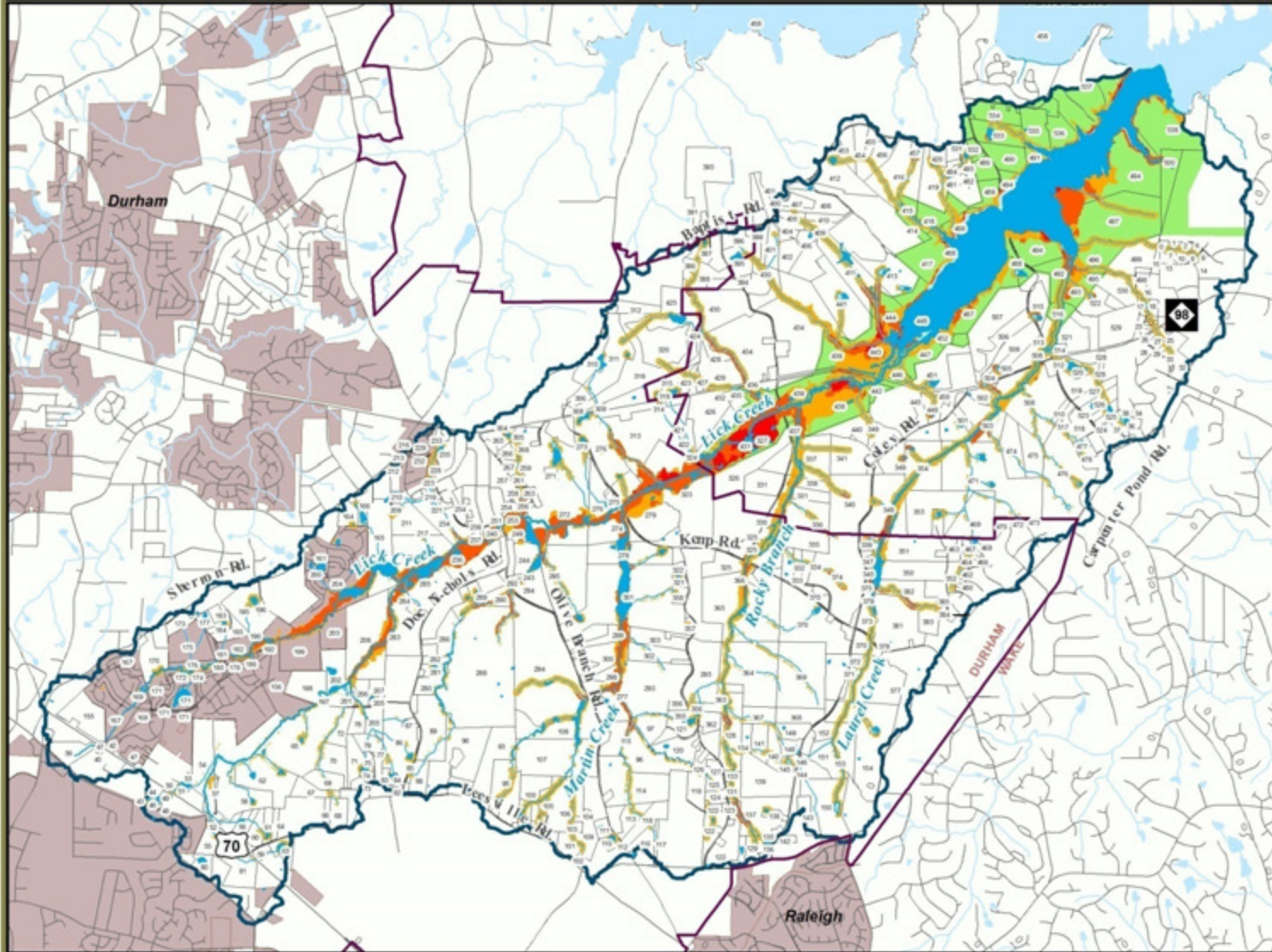
LEGEND

- UNCWI WQ Score 3 (of 5)
- UNCWI WQ Score 4 (of 5)
- UNCWI WQ Score 5 (of 5)
- UNCWI Parcels
- Lick Creek Watershed
- Parks & Protected Lands
- Durham_UGA
- Municipal Boundaries
- County Line

Upper Neuse River Basin Association
Triangle J Council of Governments
Geographic Information Systems
1/7/08

Parcel 323

LEGEND

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Natural Heritage Areas
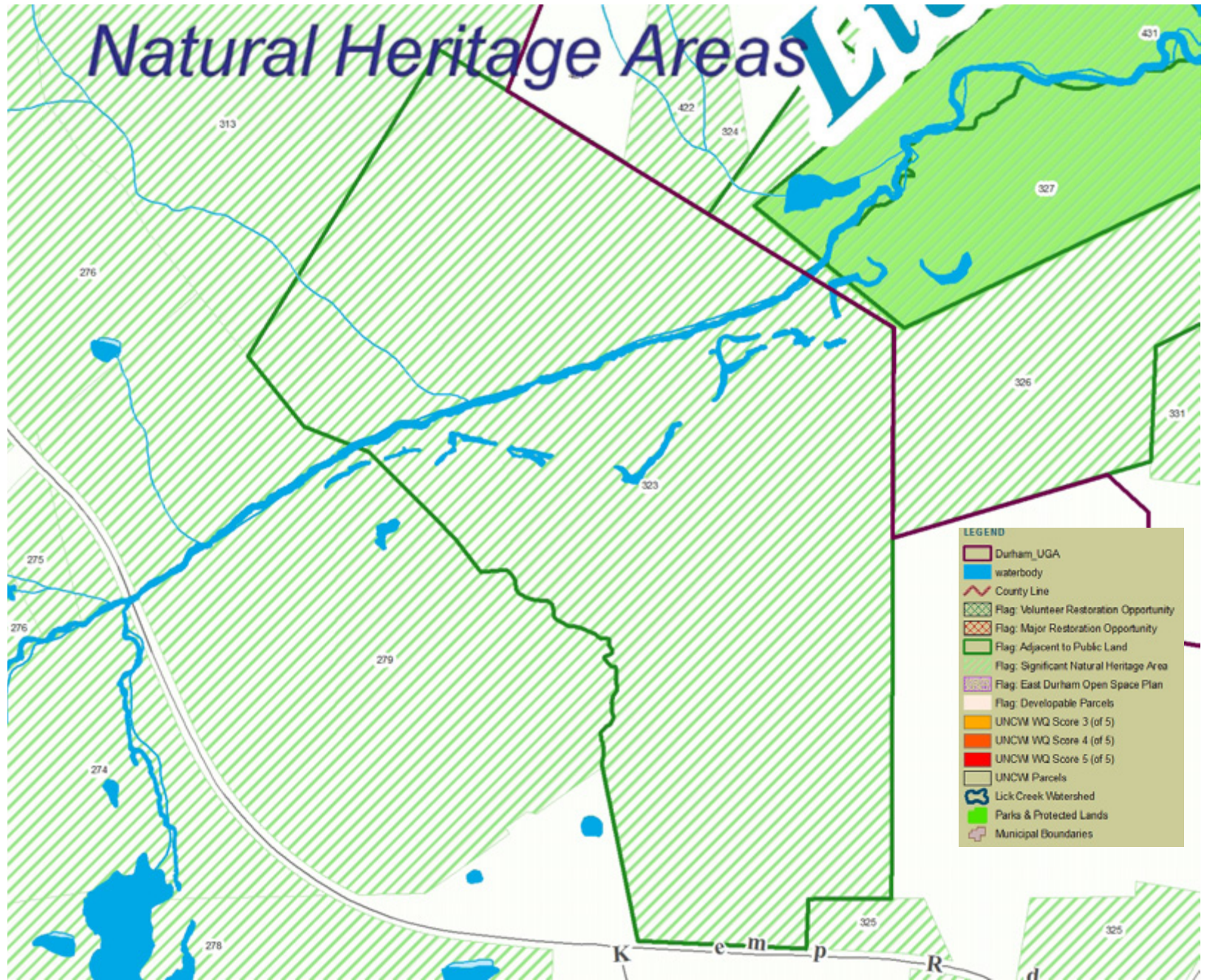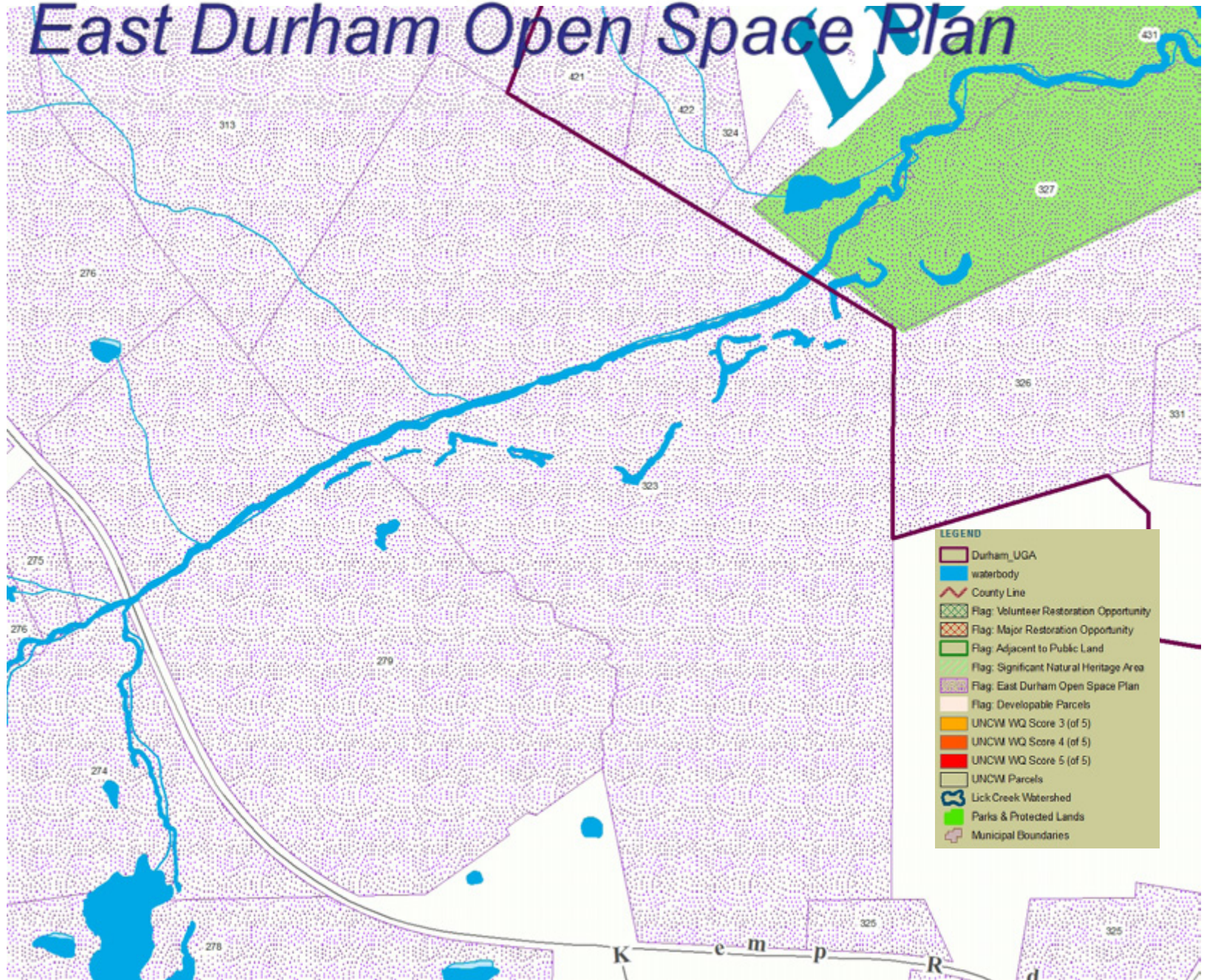
313

422

324

431

327

276

326

331

323

LEGEND

Durham_UGA

waterbody

County Line

Flag: Volunteer Restoration Opportunity

Flag: Major Restoration Opportunity

Flag: Adjacent to Public Land

Flag: Significant Natural Heritage Area

Flag: East Durham Open Space Plan

Flag: Developable Parcels

UNCW WQ Score 3 (of 5)

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UNCW Parcels

Lick Creek Watershed

Parks & Protected Lands

Municipal Boundaries

275

276

279

274

278

325

325

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East Durham Open Space Plan

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Developable Parcels

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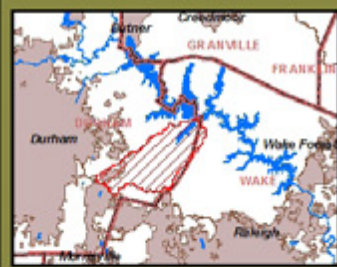
Lick Creek Critical Lands Analysis: Final Map with All Flags
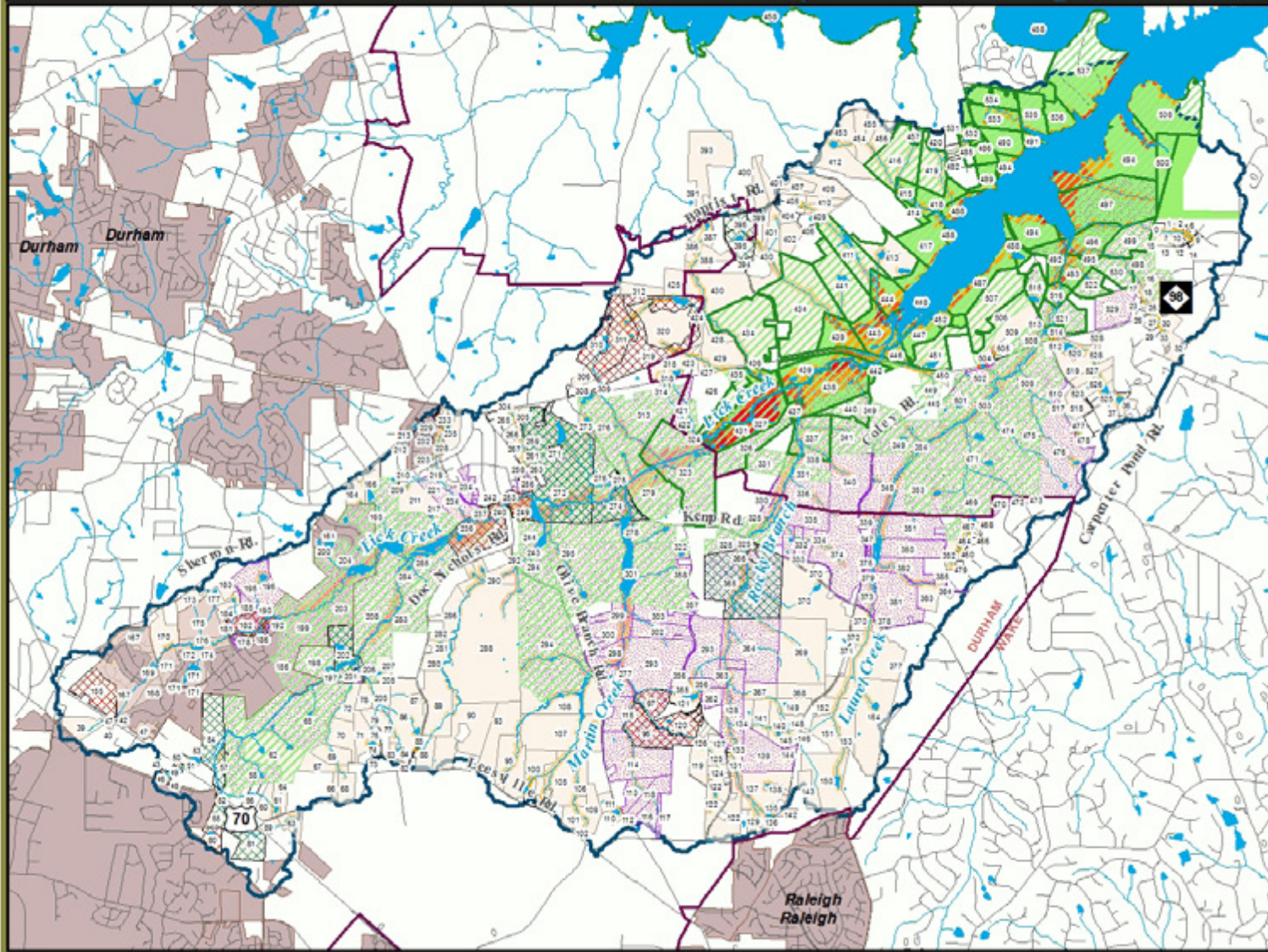
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Upper Neuse River Basin Association
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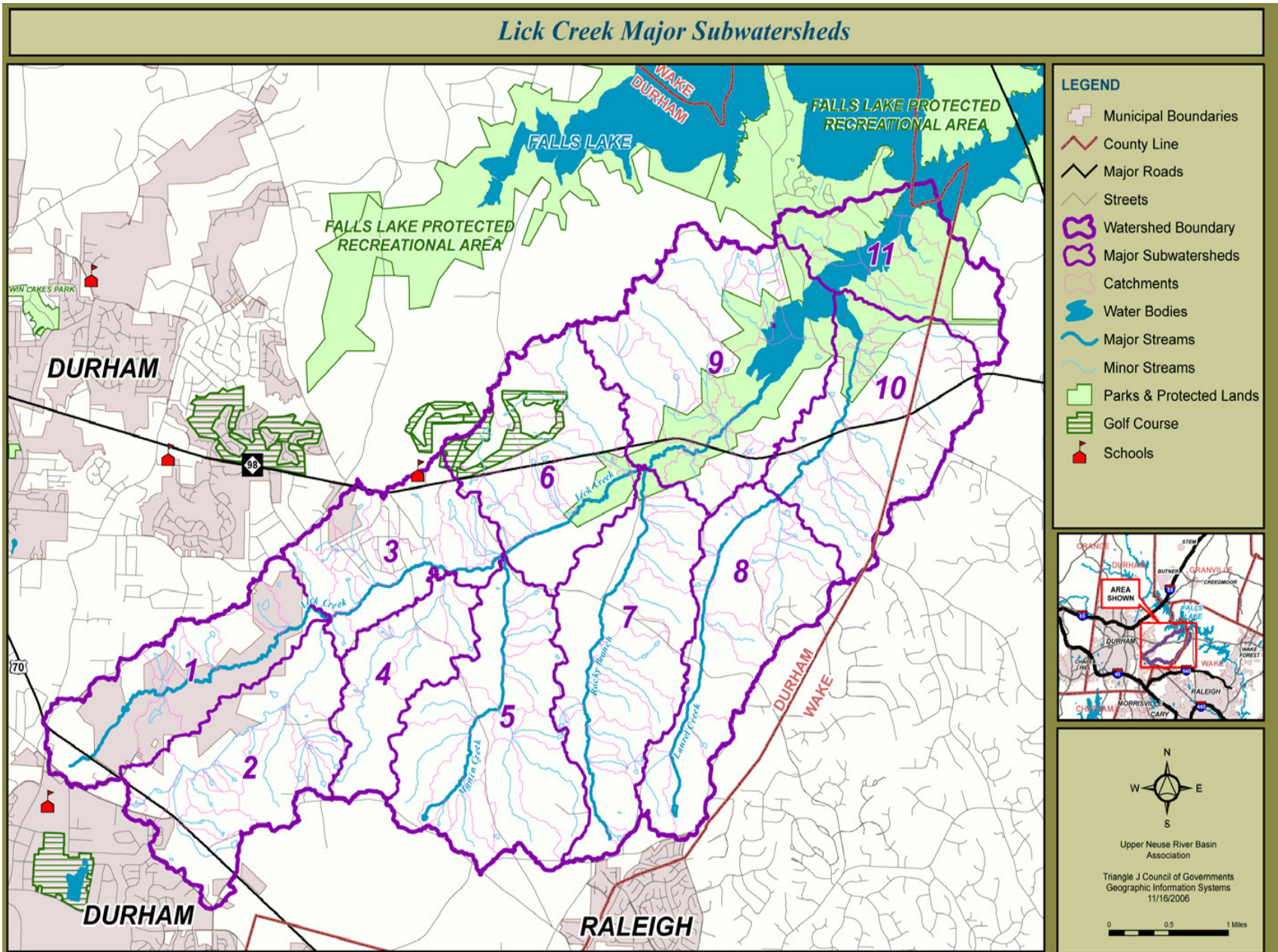Geographic Information Systems
12/31/07

Critical Lands Protection Analysis

Next steps…

- Finalize analysis
- Write memorandum
- Post memorandum and map to website

Lick Creek Subwatershed Analysis

Lick Creek Subwatershed Analysis


Lick Creek Major Subwatersheds

Subwatershed Data Gathering

- ## What do data tell us?
  - Projected increases in impervious surface
  - Projected land use changes
  - Projected pollutant loading
  - Current water quality (SW's 1-7 but not SW 3)…DUGA
  - Current bioclassification (SW's 2,3, 6 and 7)

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	Nitrogen	Total Phos.	Sediment (TSS)	TN	TP	Sediment (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

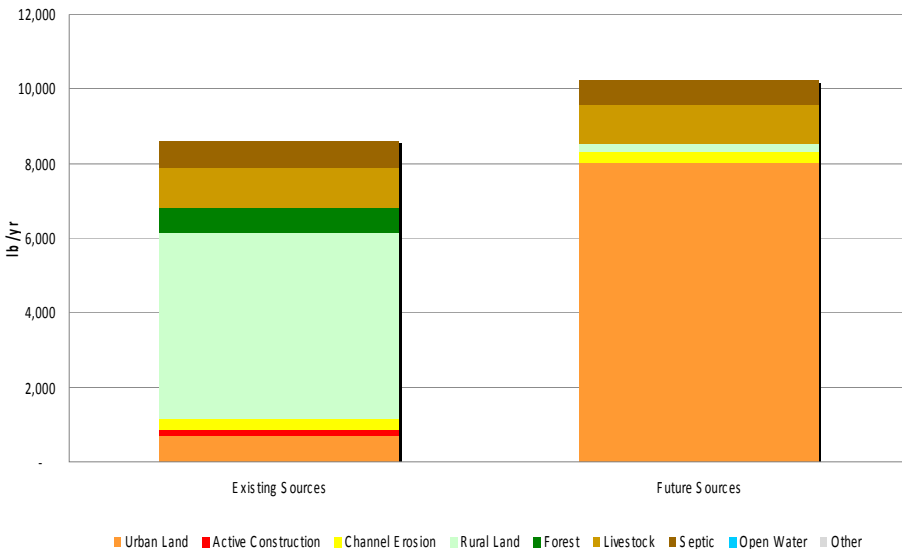# Projected Changes in Impervious Surface

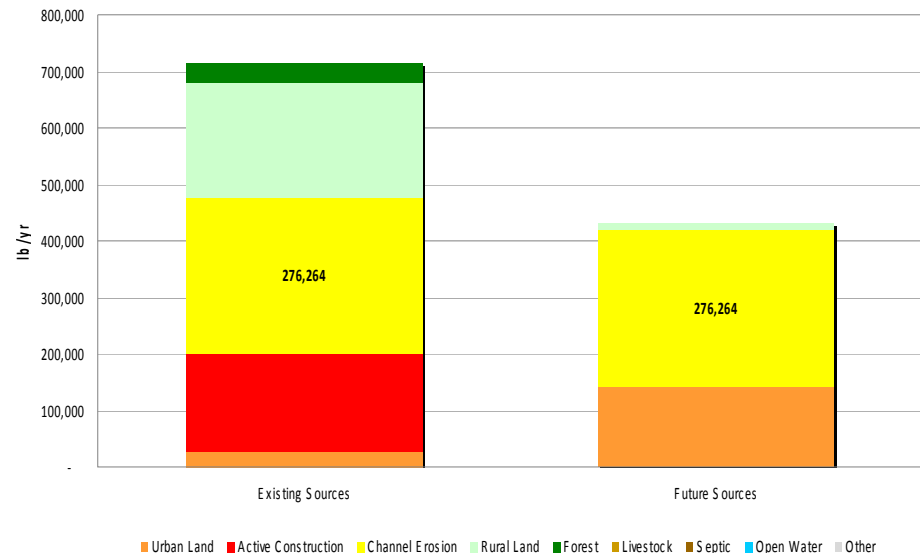Projected Changes in Impervious Surface
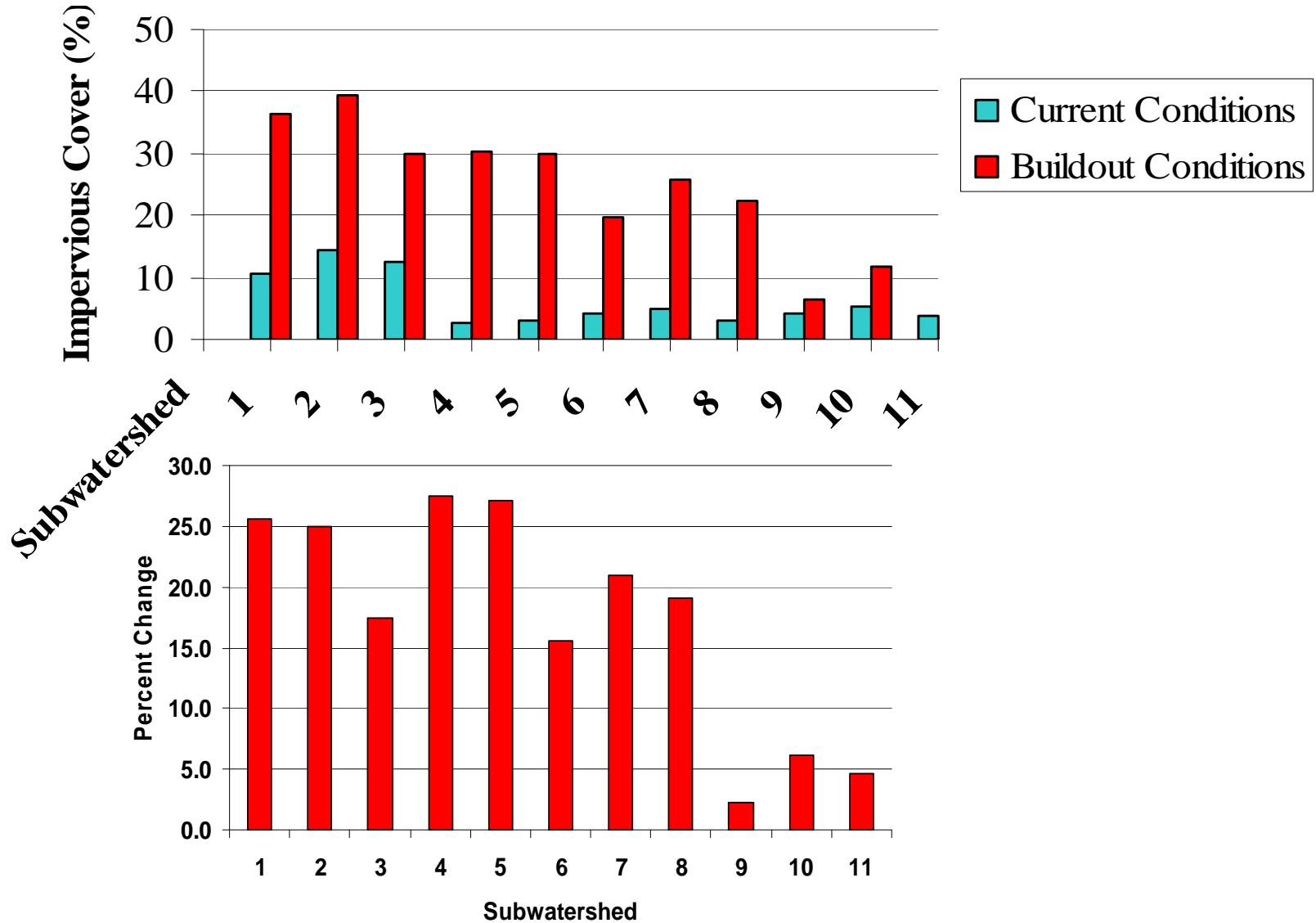
Projected TN/TSS Pollutant Loading

- Increase in TN
  - Loss of buffer? Increased IP?
- Reduction in TSS
  - At a loss of farmland
- Also note that stream erosion <u>does not</u> change for TSS.
  - Where does it go? Falls Lake?
  - Effect on aquatic habitat

Water Quality (Review)

WS (% imp.)	Samples	Biotic Rating	EC	TKN	No$_x$*	NH$_4$	TP	TSS*
	#		mpn	-------------- mg/L -------------				
1 (10.7%)	4	---	151	0.61	0.05	0.03	**0.11**	**26.8**
2 (14.3%)	6	Fair	153	0.37	0.07	0.05	0.07	5.0
3 (12.4%)	---	Poor	---	---	---	---	---	---
4 (2.8%)	5	---	202	**0.56**	0.06	0.07	0.06	7.4
5 (3.0%)	5	---	161	0.39	**0.08**	0.04	0.05	**11.9**
6 (4.2%)	4	Poor**	**209**	**0.56**	**0.08**	**0.12**	0.07	5.1
7 (4.8%)	28	Poor	2805	0.83	0.12	0.26	0.14	166

*For High Quality Waters, NO$_2$ should be < 10.0 mg/L, and Total Coliform Count per 100 mL should be < 200 org for all freshwater classifications (*NCDWQ Water Quality Standards for Freshwater Classifications*for High Quality Waters*).

**This reach has dropped from a classification of Fair in 2004 and 2005.

Take Home Messages

- Use subwatershed data as a tool when developing WS management strategies

- Lick Creek is, <u>at the moment</u>, relatively undeveloped

- Significant increases in impervious surface expected for SW's 1-7 (between 15 and 27.5%)

- Current water quality already poor in some subwatersheds

- Bioclassifications are "Poor" for 80% of sites monitored

- Reduction in total TSS loading at a loss of all farmland.

- In-stream erosion (TSS loading) does not change.

- Increase in TN (Ramifications for Falls Lake)

Our Role? Our Opportunity!

- Some subwatersheds already impacted…<u>restoration</u>?

- Others okay/low buildout…<u>preservation/prevention</u>?

- Combination of strategies in some subwatersheds?
  - Watershed Management Plan rather than Watershed Restoration Plan?

- By what process do we choose strategies? Can use SW data as guide.

- We have an <u>opportunity</u> to be innovative!
  - Relatively rural watershed expected to see significant changes = opportunity to trail-blaze and do things differently…and better!!!!

Small Group Activity

Next Steps

- Homework—identifying management strategies

Adjourn