The Development of Riparian Stream Buffers in Greensboro, NC

Why our stream banks have "grown up"?

Presented by:

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City of Greensboro Stormwater Management Division

GREENSBORO

WATER Resources

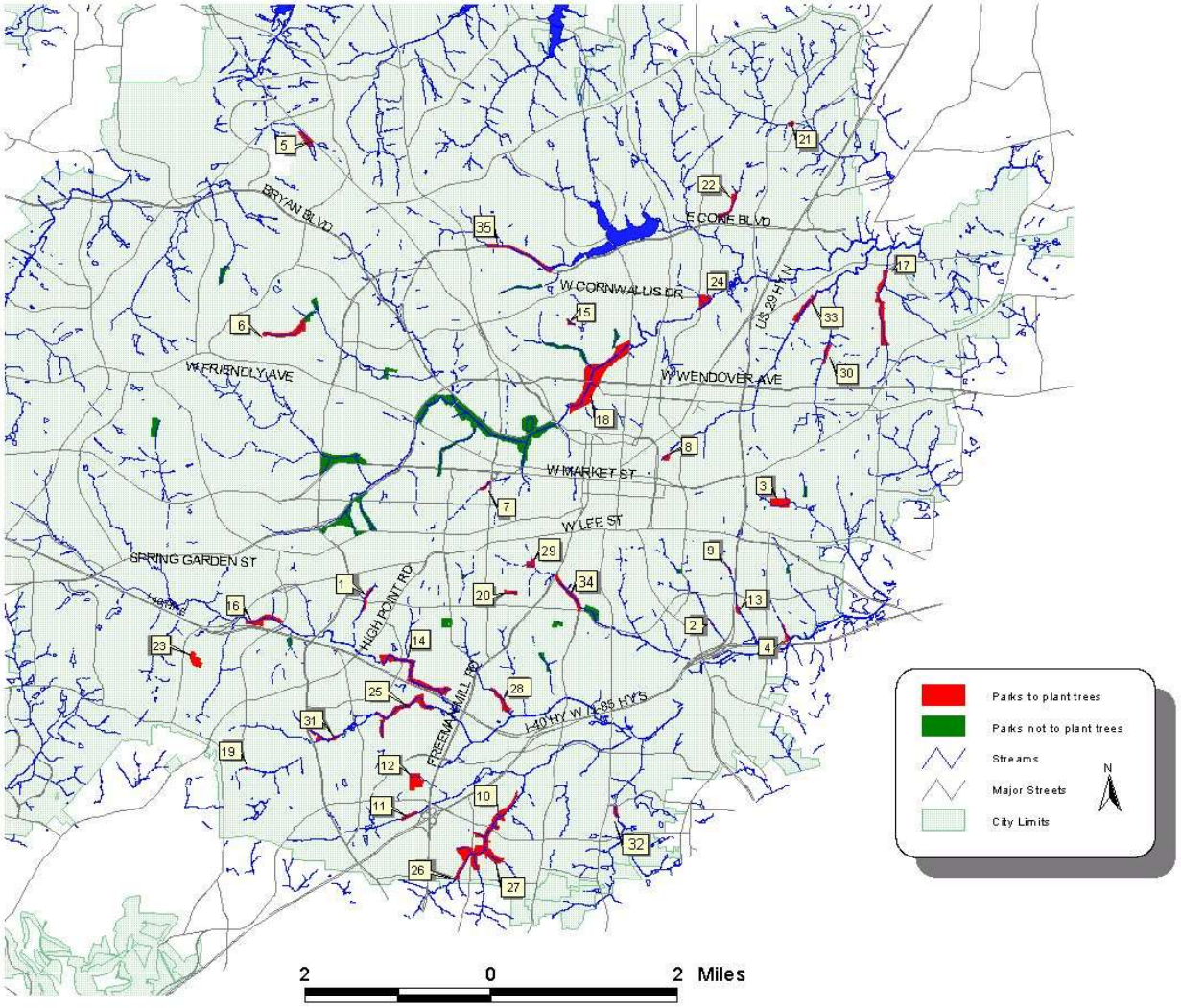
City of Greensboro

Background

- 1994 – Due to intensive City maintenance program, the Audubon Society requested several "No Mow" zones throughout City.
- 1999 - City staff and community stakeholder group developed a formal plan to develop and implement a vegetation maintenance and management strategy for all publicly owned and maintained stream segments.
- 2001-2003 - Restored riparian vegetation by planting 18,000 trees along approximately 11 linear miles of stream throughout the City.

Areas to be Reforested

Attachment 1: Greensboro's Stream Corridor Reforestation Project



Park #	Park Name	Approximate Distance
1	ARDMORE	967 (feet)
2	BENBOW	141
3	BINGHAM	623
4	BLUFORD	868
5	BRITISH WOODS	1745
6	BROWN BARK	1728
7	COLLEGE	679
8	CUMBERLAND	488
9	EAST SIDE DR	95
10	GREENHAVEN	1252
11	GREENTREE	925
12	HAMPTON	701
13	HANNAFORD	467
14	HILLSDALE	4435
15	HOOD	267
16	HUNTER HILLS	2265
17	KINGS FOREST	2913
18	LATHAM	5059
19	MERRYWEATHER	344
20	MORRIS FARLOW	560
21	MURCHIE STREET	281
22	O' HENRY OAKS	1904
23	RANDOM WOODS	79
24	REVOLUTION	1247
25	ROLLING ROADS	4893
26	SHANNON HILLS	2511
27	SHANNON WOODS	6110
28	SPRING VALLEY	1629
29	STEELMAN	401
30	TEXTILE DRIVE	839
31	TWIN LAKES	1510
32	WOODLEA LAKES	620
33	WOODMERE	2237
34	RANDLEMAN RD	1970
35	CONE BLVD	2966
	TOTAL	57759 (feet)

WATER Resources
City of Greensboro

Stakeholder group created guidelines to:

- **Protect, preserve and improve water quality conditions.**
  - ✓ Decrease erosion and sediment/nutrient loads.
  - ✓ Promote education & awareness of local stream ecology.
  - ✓ Improve aquatic habitat and diversity.
- **Maintain consistency when dealing with community concerns.**
- **Complement existing efforts in:**
  - ✓ Watershed master planning.
  - ✓ Recent ordinance changes (buffers required for new development, Randleman rules, tree preservation, etc).
  - ✓ Formal stream restoration projects (EEP, DOT, etc).

Desired Outcomes Included:

- **Buffers utilize a two-zoned approach.**
  - ✓ Zone 1 - up to a 50’ riparian buffer (each side of creek).
  - ✓ Zone 2 - existing vegetation (usually turf grasses).
- **Access points for:**
  - ✓ Utility lines
  - ✓ Recreational activity
  - ✓ Periodic visual access
- **Planting of trees/shrubs/flowers, etc.**
  - ✓ to accelerate the natural “volunteer” growth.
  - ✓ contracted maintenance to maintain plantings.
- **Buffer variations**

Buffer variations:

- In areas where public safety is of concern.
- In and around play grounds/athletic fields.
- Periodic access for recreation or visual observation.
- Buffer width may vary, depending on site limitations (no more than 25% reduction in available open space).
- Periodic access for utilities/easement maintenance.
- Around road crossings and foot bridges.

Why Create Stream Buffers?

1. Streams have been degraded.

- Most streams in Greensboro on 303(d) list for bacteria, sediment, or non-point source urban runoff.

Why Create Stream Buffers?

2. Stream's natural ability to function has been limited.

- Intensive maintenance practices and "old-school" ideas about the purpose of urban streams.

Why Create Stream Buffers?

3. Streams are a valuable community resource and should be protected.

- But don't eat the fish - yet!

How We Created Stream Buffers?

1. By changing the way our community's streams were regarded.
   - Educational/Informational Campaign. Local streams were commonly regarded as drainage ditches.
2. By changing maintenance practices to more environmentally friendly methods.
   - Alternative maintenance efforts - less heavy equipment and more hand crews along our stream banks.
3. By helping restore our streams natural ability to function.
   - Planting trees along streams.
   - Implementing vegetative buffers.

When We Implemented?

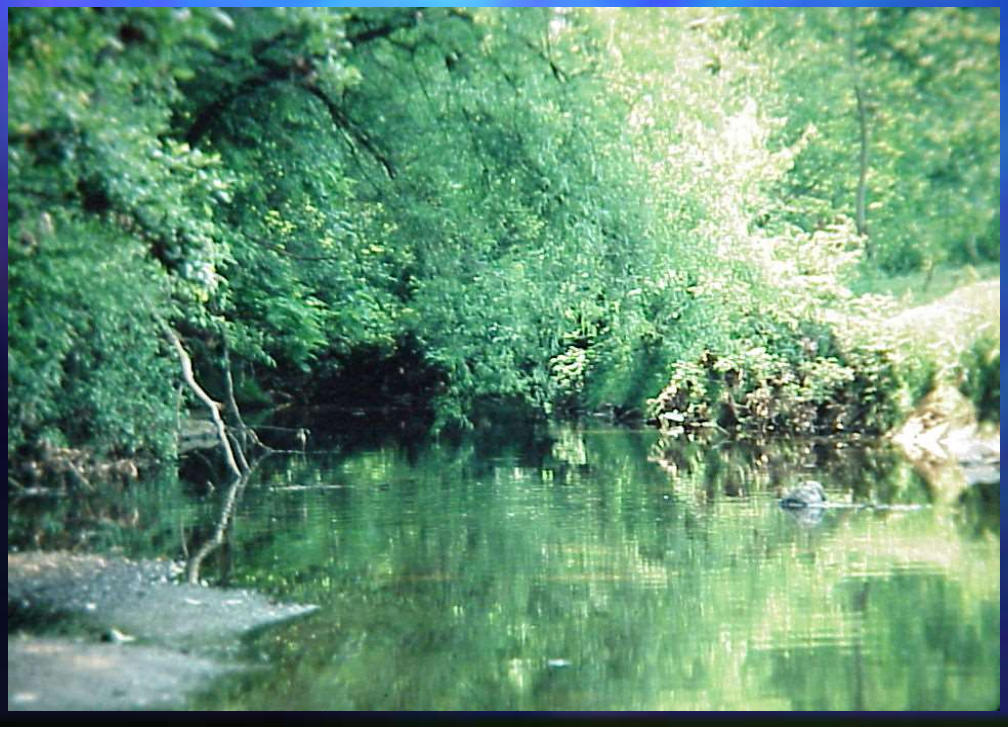
Fall 1999 to Spring 2001

- Initiated the public education campaign.
- Initiated a committee to address citizen concerns.
- Stopped mowing streams and began planting trees along streams (contracted).
- Maintenance crew established (contracted).

When We Implemented?

Spring 2001 to Summer 2003

- Continued public education campaign.
- Up to a 50’ buffer established.
- Maintenance crew continued efforts.
- Finished planting trees along streams.



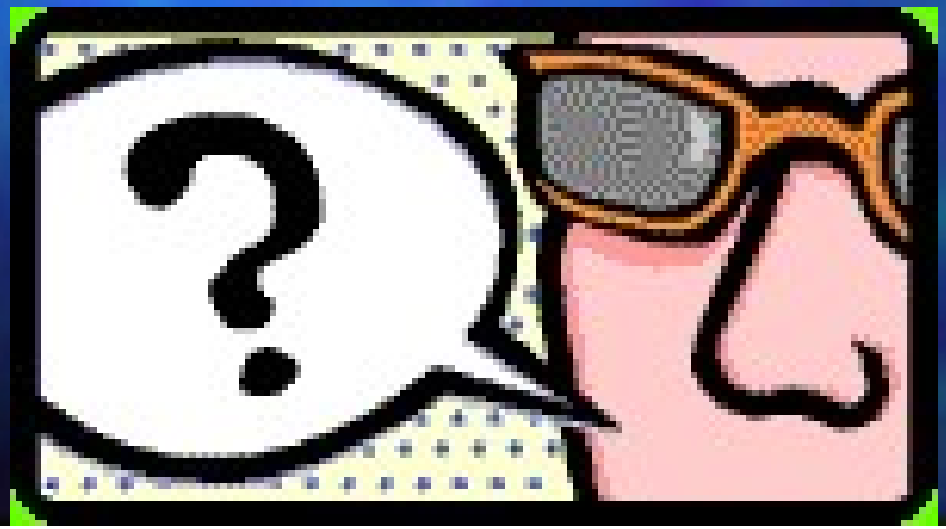
Sample Species:

- ✓Red, Sugar Maple
- ✓River Birch
- ✓Green Ash
- ✓Water, Willow, White, Red, Overcup, Swamp Chesnut Oaks
- ✓Bald Cypress
- ✓Numerous Shrubs

Unique Challenges for Urban Stream Buffers

Public Perceptions

- **Aesthetics**
  - ✓ **Creek needs "cleaning"**
  - ✓ **Brushy**
  - ✓ **Unkempt**
  - ✓ **Trashy**



Unique Challenges for Urban Stream Buffers

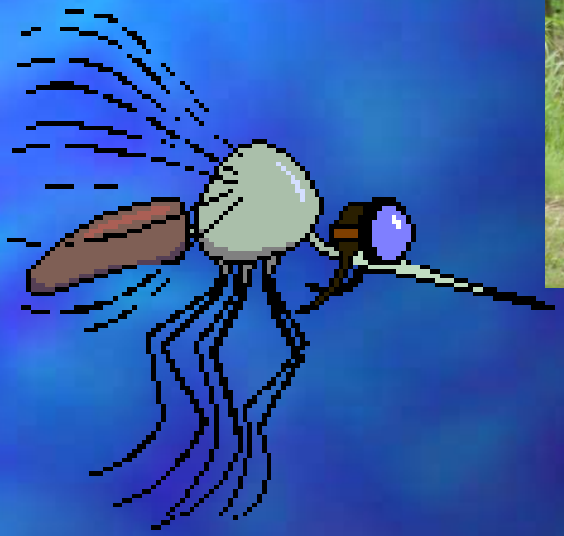
Public Perceptions

- **Safety & Security**
  - ✓ **Visibility**
  - ✓ **Encroachment on private property**

Unique Challenges for Urban Stream Buffers

Public Perceptions

- **Safety & Security**
  - ✓ Rats
  - ✓ Snakes
  - ✓ Mosquitos



Unique Challenges for Urban Stream Buffers

Public Perceptions

- Increased Flooding
- Reduction of Service

Unique Challenges for Urban Stream Buffers

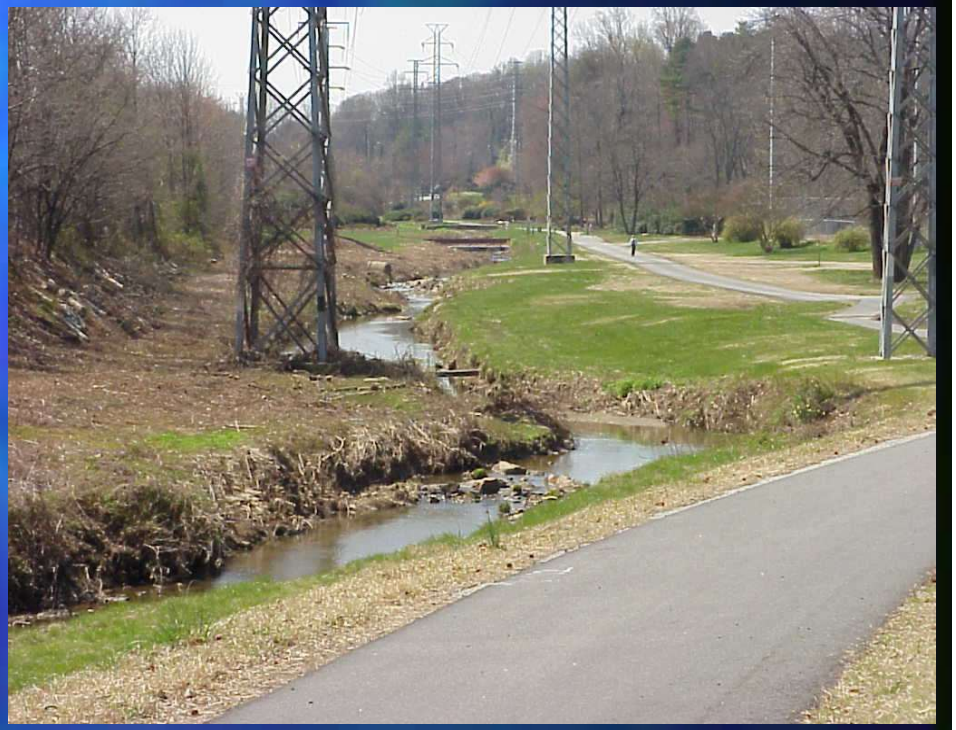
Public Perceptions

- Loss of Open Space
- Elimination of "official" practice fields

Unique Challenges for Urban Stream Buffers

Other urban issues

- Utilities
  - ✓ Duke Power
  - ✓ Sanitary Sewer
  - ✓ Gas, phone, cable, etc.
- Roads & Visibility
- Greenways/Walkways
- Recreational equipment
- Historic trees
- Various neighborhood issues
  - ✓ Neighborhood master plans
  - ✓ Residents favorite spot
  - ✓ Residents favorite tree



How we handled public concern initially…

- **Education, Education, Education!!!**
  - ✓ Phone consultations & site visits.
  - ✓ Neighborhood meetings.
  - ✓ TV, radio, brochures, signs, newsletters, editorials in newspapers, website, etc.
  - ✓ Assistance & support from environmental community

How we've continued to handle public concern…

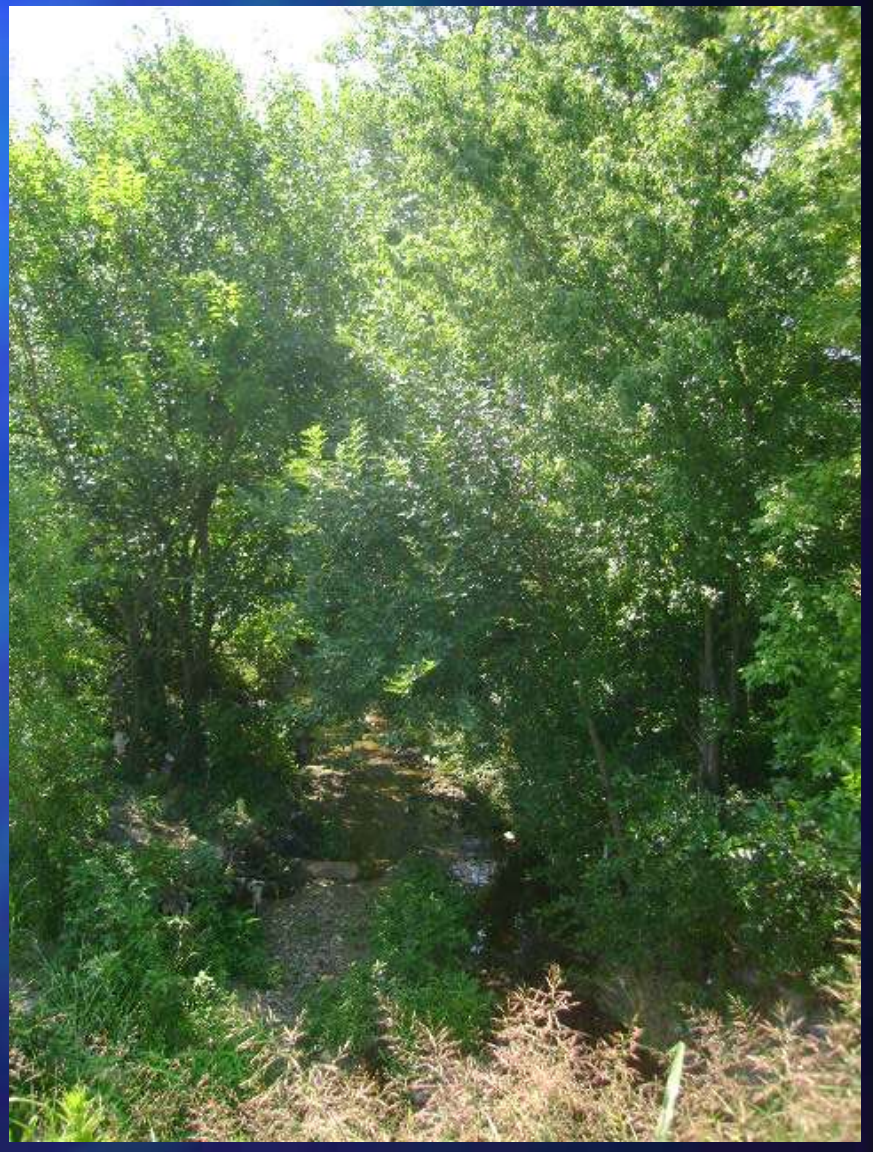
Education, Maintenance, and more Education!!!

- ✓ Ongoing maintenance of buffers, i.e. invasive species management and pruning.
- ✓ Ongoing and targeted education (website, neighborhood meetings, City managers office and City Council, etc).

One day, folks may accept (or tolerate) urban stream buffers.

Where we are today

- Continued maintenance contract for treating invasive species – vines and woody stems
- Pruning of lower limbs to reduce the "ladder" effect, as well as improve line-of-site and visibility within the buffer. This also addresses aesthetic and safety concerns.



Where we are today

What we're trying to accomplish:

- Improved water quality
- Increased diversity of aquatic life
- Decreased erosion, sediment and nutrient loads

What we're trying to accomplish:

- Create diverse recreation areas
- Filter air and noise pollution
- Improve diversity of wildlife habitat
- Renewed sense of appreciation for natural resources within our community

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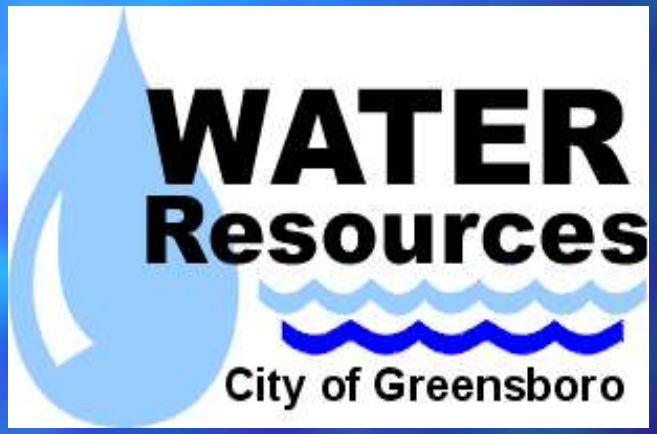

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