Local planning and implementation for watershed protection: The Soque Partnership in Habersham County
Watershed Location

- 160 square miles
- Tributary to Chattahoochee River
- Beneficial uses
Background

- 303(d) listed streams
  - fecal coliform
  - biological (sediment)
- 319(h) grants
  - assessment
  - protection plan
  - implementation
Soque Partnership
Objectives

- Perform a comprehensive baseline watershed assessment
- Characterize non-point source (NPS) pollution inputs in the watershed
  - bacteria
  - sediment
  - stormwater
- Build consensus about water protection practices
- Develop a watershed protection plan
- Implement the plan
- Document water quality improvement
We in the Soque are not alone...

  - 72,305 stream miles do not meet state water quality standards for pathogens
  - 29% of all impairment

- Georgia EPD 305(b)/303(d) list (2010)
  - 4,320 stream miles 303(d) listed for pathogens
  - 55% of all impairment

- Sediment / biological impairment
Fecal coliform

Indicator of pathogen presence – cheap and easy

- Sources
  - stormwater (urban) runoff
  - leaking/broken sewer lines
  - domestic pets
  - livestock
  - failing septic systems
  - illegal connections
    - straight pipes
    - combined sewers
    - downspouts
  - wildlife

- Implications
  - human health (primary contact recreation)
  - environment (aquatic life)
Success with bacteria

- Identification of bacterial “hot spots”
  - consistently high levels over time
- Prioritization of corrective action locations
  - based on data and accessibility
- Implementation of management/protection measures
  - e.g. best management practices
- Documentation of water quality improvements
  - routine monitoring
- Attainment of water quality standards
  - fecal coliform
Hot spot ID

- *E. coli* as indicator
- Quarterly samples at 75 locations
- Collected by subwatershed
- Minimize spatial and temporal variation
Farm projects

- 16 farm conservation plans:
  - 765.1 acres under contract;
  - 46,442 linear feet of exclusion and cross fencing;
  - 111,756 square feet of HUA;
  - seven stream crossings;
  - six water wells;
  - Approximately 549 animals (predominantly beef cattle) have been excluded from surface waters.
To delist for bacteria...

- Sixteen grab samples are required, specifically:
  - four samples collected within a 30 day period;
  - over four calendar quarters;
  - to calculate four geometric means;
  - that meet WQ standards
Sampling to delist

- To minimize potential bias, all samples were:
  - collected at the same location;
  - on the same day of the week;
  - at approximately the same time of day;
  - regardless of weather conditions

- Samples were transported to the city of Clarkesville WWTP for fecal coliform analysis
  - certified laboratory analysts
Sediment
Stormwater management

- Raingardens = infiltration
- Rainwater harvesting
- Site design
Rain Garden Construction
The Clarkesville Greenway
Model of Better Stormwater Management

Some models exist
Some we have to build from scratch.
Purpose of Community Garden

• Way to expand use and enjoyment of the Greenway

• Tool for teaching sustainability

• To preserve Habersham County’s agricultural heritage

• Demonstration project for native plants, water conservation, soil building and soil conservation.

• Place to teach organic gardening / farming principles

• Way to increase the availability of local organic food

• Great Activity for meeting people and creating community
Learning to Grow

3 more ways

In a greenhouse from seed to plant

On a streambank to hold soil in place

On barren soil - reclamation and rebuilding
Assessment - building watershed science

Protection begins with understanding the problem

Landcover for subwatersheds of the Soque River

<table>
<thead>
<tr>
<th>Sub-watershed</th>
<th>Area Square miles</th>
<th>% Forest</th>
<th>% Agriculture</th>
<th>% Urban</th>
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<tr>
<td>Headwaters</td>
<td>17.3</td>
<td>90.9</td>
<td>5.4</td>
<td>3.1</td>
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<td>Raper Creek</td>
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<td>91.2</td>
<td>4.2</td>
<td>3.7</td>
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<td>82.9</td>
<td>5.9</td>
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<tr>
<td>Deep Creek</td>
<td>30.2</td>
<td>57.5</td>
<td>23.6</td>
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<td>59.7</td>
<td>23.7</td>
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<tr>
<td>Hazel Creek</td>
<td>31.9</td>
<td>46.8</td>
<td>24.5</td>
<td>16.3</td>
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<tr>
<td>Yellowbank Creek</td>
<td>6.7</td>
<td>48.3</td>
<td>28.9</td>
<td>7.9</td>
</tr>
<tr>
<td><strong>Total Watershed</strong></td>
<td><strong>159.8</strong></td>
<td><strong>64.3</strong></td>
<td><strong>18.3</strong></td>
<td><strong>9.6</strong></td>
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</tbody>
</table>
Educational activities

- 6th Grade Water Field Days (2) have been held, hosting a total of more than 500 students;
- Middle School Water Quality Summer Camps (2) (1 week long) have been held with 22 students attending;
- Brochures have been developed and distributed on:
  - Raingardens
  - Rainbarrels
  - Cattle exclusion projects

*Public meeting November 18, 2010 – Courthouse @ 7:00 p.m.
6th Grade Field Day

- 280 students
- 12 stations
Summer Day Camp 7th-8th Grade
Southeast Watershed Forum

Model Water Quality Projects and Codes that Encourage them

What are your challenges?

What are your successes?

Stormwater problem in downtown Cornelia

Stormwater problem in downtown Cornelia
Building Land Based Economies

Locally Grown Market
Northeast GA Locally Grown

http://northeastgeorgia.locallygrown.net/market

All Products

Search by all or part of product name:  

[Search]

**edit 10 Grain Bread 1/2 Loaf**
Grower: Brookside Farms Homemade
Price: edit $2.75 (Market Surcharge: edit $0.0) (edit 9 oz.)
Available (Exact): edit 1
Add Nutritional Info

Good to the last slice. Helen GA Nora Mill products (their special blend 10 grain cereal and coarse stone ground
... more

[Add to cart: 1]

**edit 10 Grain Full Size Loaf**
Grower: Brookside Farms Homemade
Price: edit $5.5 (Market Surcharge: edit $0.0) (edit 1 lb. 3 oz.)
Available (Exact): edit 4
Add Nutritional Info

Good to the last slice. Helen GA Nora Mill products (their special blend 10 grain cereal and coarse stone ground
... more

[Add to cart: 1]

**edit 10 Grain Rolls**
Grower: Brookside Farms Homemade
Price: edit $6.75 (Market Surcharge: edit $0.0) (edit 11 oz)
Available (Exact): edit 1
Add Nutritional Info

Same recipe as the 10 grain half loaf bread. Helen GA Nora Mill products (their special blend 10 grain cereal ...
... more

[Add to cart: 1]
These Projects Share One Thing

- **Community Garden**
- **Rain Gardens**
- **Local Food Market**
- **Greenhouse**
  - propagation of organic starts, rain garden and streamside plants
- **Streambank planting**
- **Site stabilization of school sites**
Conclusions

- Local involvement
- Data
- Funding
- Watershed approach
- Process
  - ID causes
  - Prioritize
  - Implement
  - Monitor
Questions

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