Headwaters - North Fork French Broad River near Chapel Falls

Presentation Overview

1.Headwaters

2.Characterization of the Transylvania County river valley

- Zone One, low impact
- Zone Two, high impact
- Zone Three, channelized zone

3.Possible best management practices, BMP’s, for each zone to improve water quality.

4.Summary

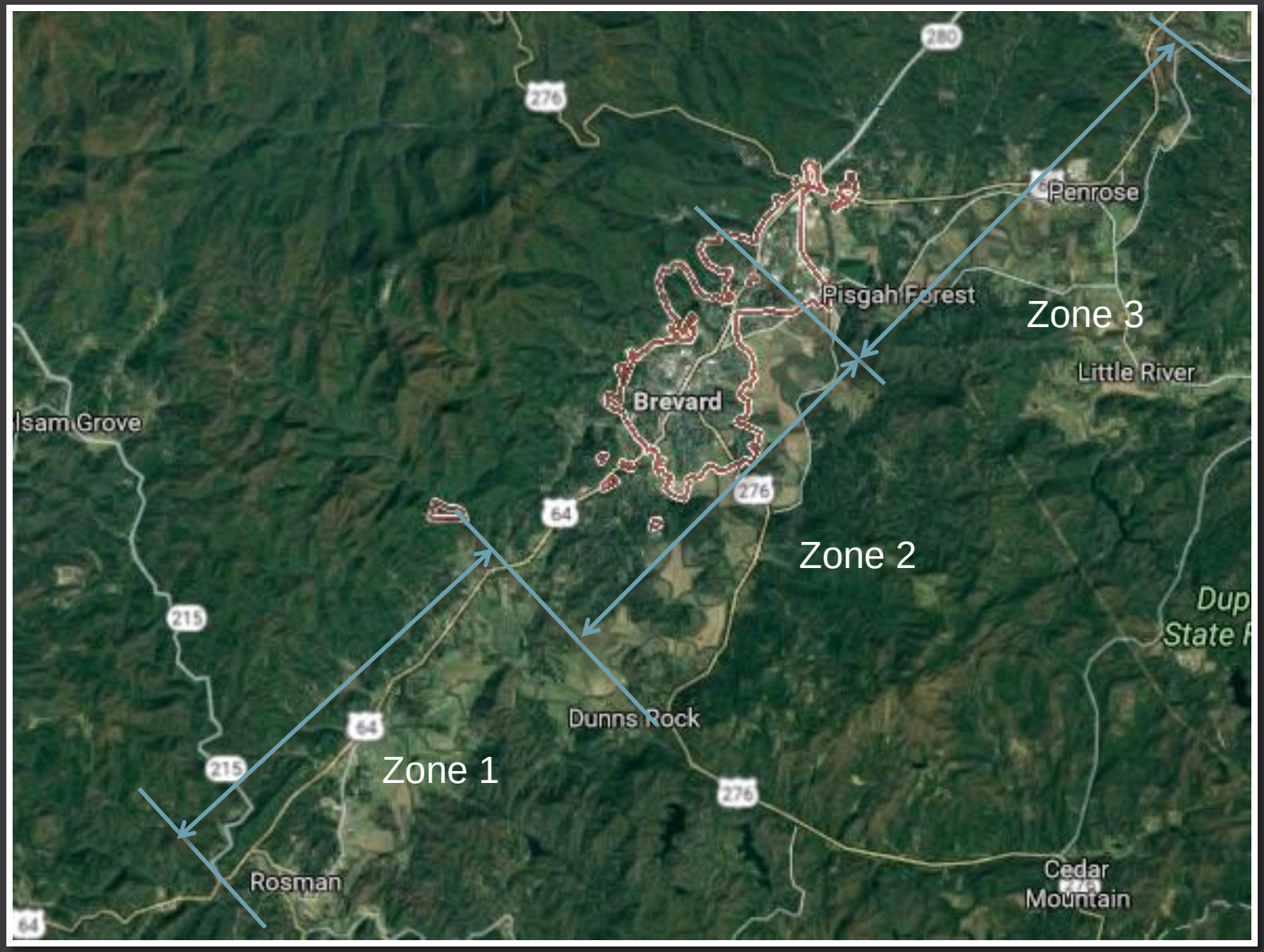
The French Broad River in Transylvania Co. is defined by the zones that it flows through :

- **The Headwaters**

    1) **Near wilderness**
    2) **Logging**
    3) **Homesteads**
    4) **Residential and Vacation (2nd) homes**

- **The River Valley**

    1) **Large Industries – Gone (2002)**
    2) **Traditional Farms – from early times**
    3) **Corporate farms**
    4) **Sod Farms**
    5) **City of Brevard**
    6) **Green Industry – Plant Nurseries**


Zone 3
Zone 2
Zone 1
Penrose
Pisgah Forest
Brevard
Little River
Dunns Rock
Rosman
Cedar Mountain
276
280
64
215

Water Quality in Zone One @ Rosman
Data from the Asheville office, NC DEQ

•~ 50% of the river bank has some riparian buffer but most is less than 50 ft. wide with no grass strips.

•Dissolved oxygen: excellent, 8.5 to > 11 mg/l

•Temperature – excellent, 50 to 70 degrees F

•Nitrogen and Phosphorus – < 0.3 N, < 0.1 P mg/l

•Turbidity – low, < 10 NTU

•Fecal Coliform Bacteria - < low, < 100 CFU/ 100 ml

Headwaters Water Quality

Mile 0.0 French Broad River @ Headwaters Outfitters


DEQ SAMPLE POINT
FLOW DIRECTION
64
178
215
1132
1133
Rosman
Rosman Waste Water Treatment
Davidson River

Rosman at East Fork

Rosman, just before the East Fork enters the river

Rosman downstream from East Fork

Just north of Rosman in farming area

Hannah Ford Rd. Bridge

Hannah Ford Rd. Bridge

Hannah Ford Rd. Bridge - Looking North

At Patterson Creek and Hannah Ford Road

Green Rd. Bridge

Green Rd. Bridge Looking Upstream

Island Ford River Access

Island Ford River Access, Crops too close to river bank

Island Ford Rd. Bridge, End of Zone 1

Zone Two, characterized by:

- Higher banks due to the passage of the river through deeper and higher alluvial terraces
- Intensive farming practices
- Sewage and storm water - City of Brevard
- Septic tanks
- Even less riparian buffer

City of Brevard

•NC DEQ – Fecal Coliform Bacteria in river:
consistantly >400 CFU/100 ml

•Wastewater treatment plant releasing:

- 30 mg/l BOD
- 30 mg/l Suspended Solids
- 10 – 20 mg/l Ammonia Nitrogen
- Dissolved Oxygen 5 – 6 mg/l
- ***Fecal Coligorm = or > 400 CFU/100 ml***
- Plant is designed for 2.5 MGD
- Current hydraulic load – 1.0 to 1.5 MGD
- Higher sewage flow during wet weather
- Sewage collection system is fractured causing contamination of storm water

•The river in Zone two is not safe for recreation in most of its reach


Barklays Rd. Bridge
French Broad River
276

Barkleys Rd. Bridge, Zone 2

No sedimentation rules in North Carolina apply to agriculture.

Stop Erosion From Ruining Your Property

The Problem: Seeing your yard wash away, bit by bit, with every downpour.

On a small scale--erosion is unsightly, unsafe and will reduce the value of your property, significantly.

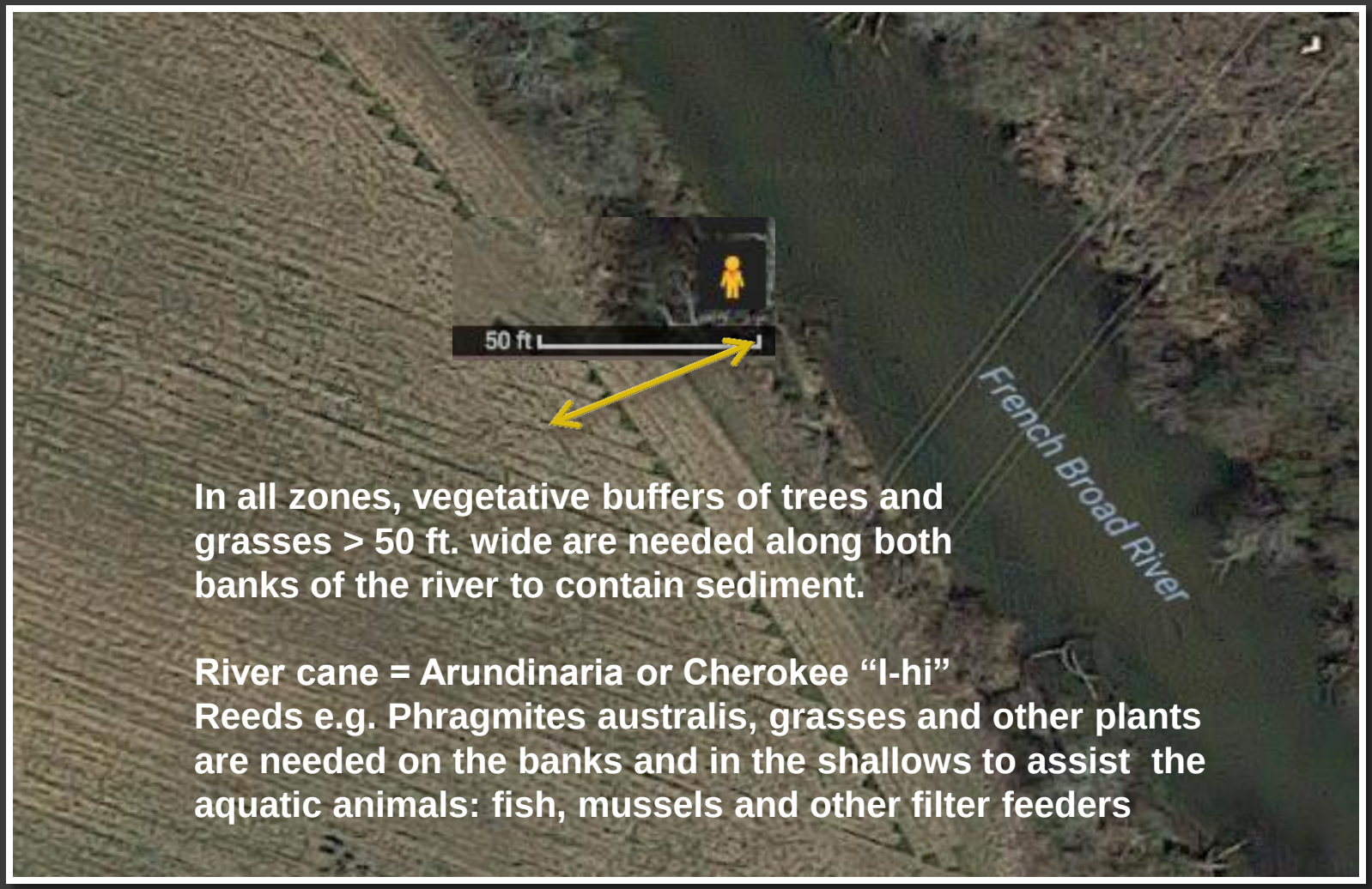
On a large scale--erosion causes serious environmental problems that could result in downstream neighbors or government officials bringing a lawsuit or other action against property owners who do nothing to stop erosion. Preventing sediment from reaching our North Carolina waterways is an excellent way to protect water quality.

If not corrected--erosion can expand to a major wash-out, with costs of repair increasing proportionally.

Fortunately--there is an efficient, cost-effective and proven way to stop erosion.

The Solution: Turfgrass Sod Stops Erosion Immediately

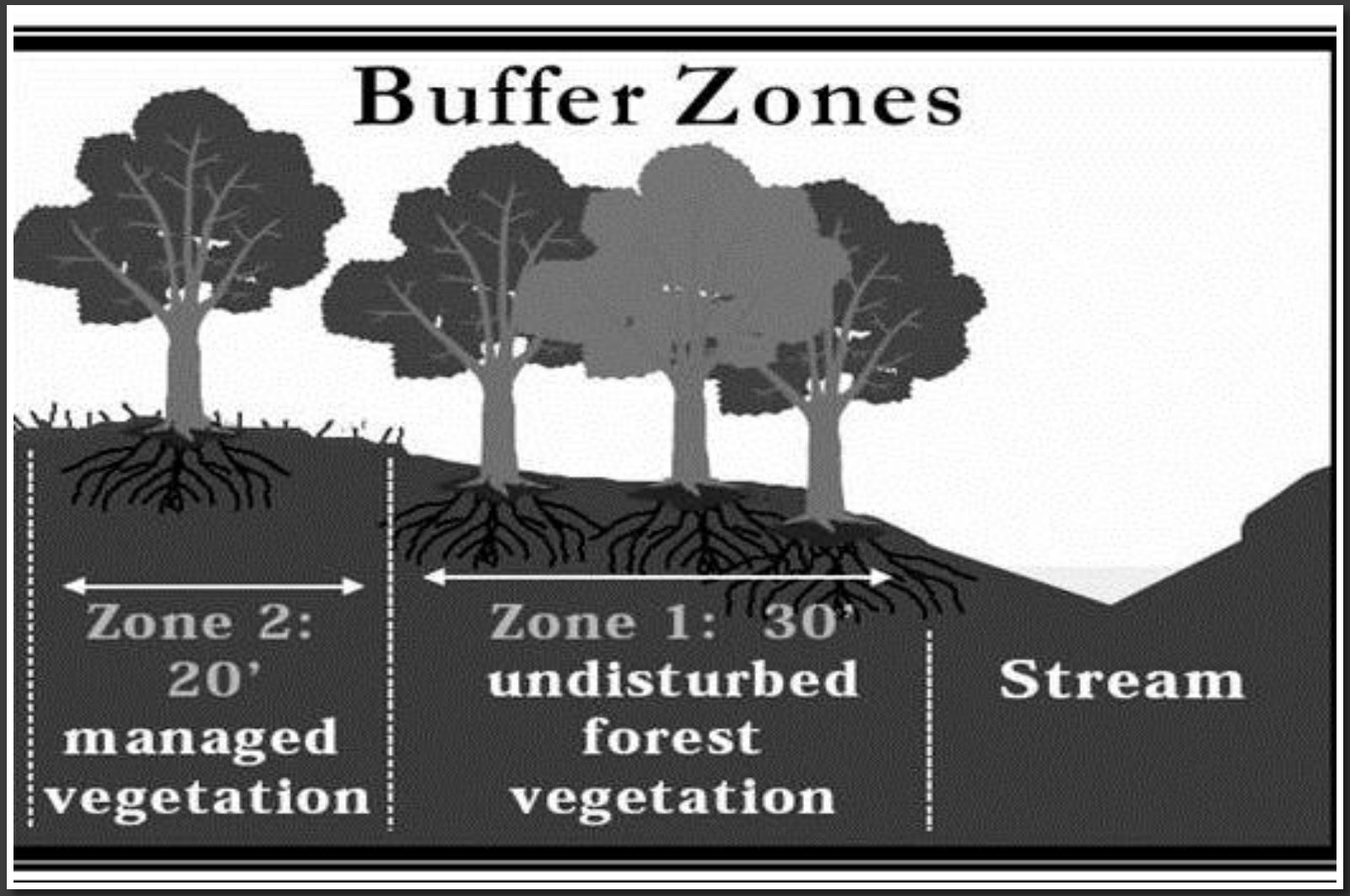
TURFGRASS PRODUCERS INTERNATIONAL



Turf Grass Sod Farm Across the River from Hap Simpson Park

Grass Buffer Width	Plot	% Sediment Reduction
14 ft	1	71
14 ft	2	68
28 ft	1	90
28 ft	2	86

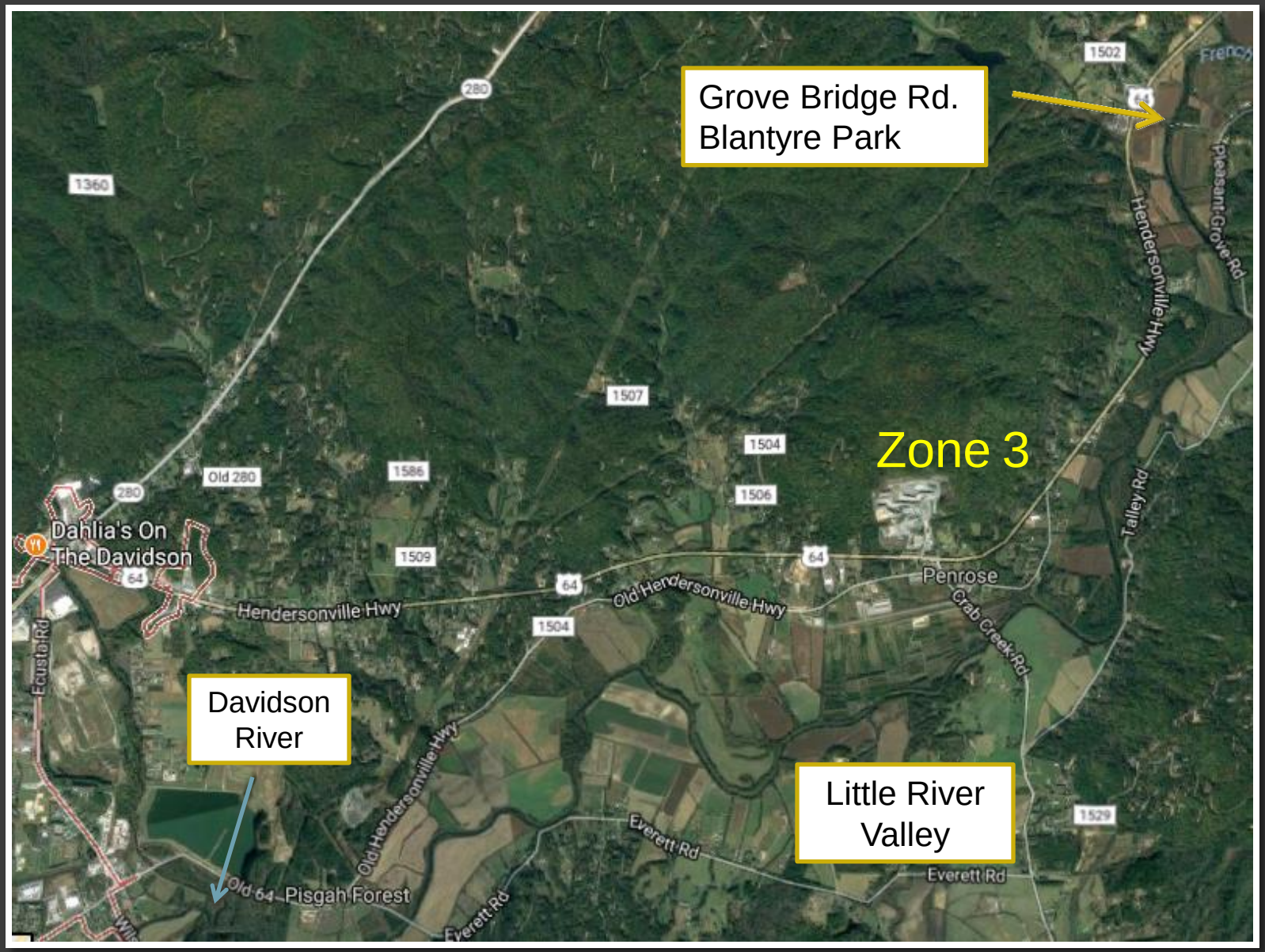
Sediment reduction by grass riparian buffers on a Piedmont site.
NCSU - http://www.soil.ncsu.edu/publications/BMPs/buffers.html



Existing buffer rules do not apply to the French Broad Watershed.

Brevard fined by DEQ for raw sewage overflows since 2012.

Feedlot with no BMP’s,


Grove Bridge Rd.
Blantyre Park
Zone 3
Davidson River
Little River Valley
1502
280
1360
1507
1504
1506
1586
Old 280
1509
64
Dahlia's On The Davidson
Hendersonville Hwy
Old Hendersonville Hwy
Penrose
Crab Creek Rd
Talley Rd
Pleasant Grove Rd
Ecusta Rd
Old 64
Pisgah Forest
Everett Rd
1529

Zone Three, characterized by:

- Channelization of the river starting at Brevard by the U.S. Army Corps of Engineers – late 19th century, 26 miles to "Big Buck Shoals"

- Ag. pollution from the Little River Valley and other farm land adjacent to the river

- Lower elevation flooding at Crab Creek and further down stream

- Dead trees and log jams

- What chemicals and microorganisms are there in sediments in the river bed?

A channelized river runs deeper and faster. Typically the river bed is scoured down to bed rock and a new flood plain will form down stream.

To assist in maintaining the channel, rock groins and wing dams were installed along the banks by the engineers.

The Little River, Hog Town and Penrose where it intersects with the French Broad River

Deep Channel in Center of River: Channelization effects,
even 130 years after construction.

Wholesale nursery on the river at Penrose

Penrose river access, boat ramp and dock

Log Jam and Flooding, Zone Three

July 25, 2012, Carolina Public Press

Log jam being cleared near Little River Campground, 2013

As the river rounds Jeter Mtn. it changes character, low banks.

Broad flood plain all the way to Henderson County

Floodplain at Blantyre and the NC DEQ water sample point.

French Broad River, Transylvania County

NC DEQ Ashville, Water Quality Data

2015	Dissolved Oxygen mg/l	Temp. Degrees F	Nutrients P & TKN mg/l	Turbidity NTU	Fecal Coliform CFU/100ml
Rosman	8.5 - 11	50 - 70	N < 0.3 P < 0.1	< 10	43 - 140
Brevard					> 400
Blantyre	7.2 - 11.6	51 - 73	No Data	< 12	48 - 410

There are no rules or tests required for sedimentation of rivers originating from agricultural operations.

Riparian Buffer Protection Program

SUMMARY

- The headwaters, forks and the river in Zone One appear to have reasonably good water quality.
- Sedimentation has occurred in the forks and all the zones of the river in the county.
- The water quality in at least some stretches of Zone Two does not meet state and federal requirements for recreational water. Enough water quality data does not exist to determine the full extent of pollution.
- Sewage and storm water from Brevard is the most intense source of pollution impacting the river, especially persons in and on the river.

Initial Needs

- Water quality data for the river is required at several additional locations across the county
- County participation with the U.S. Corps of Engineers in studying the river, the effects of channelization, its banks and its flooding pattern and frequency
- A sewerage system rehabilitation plan for the City of Brevard that includes storm water and sewage collection, flow equalization and infiltration systems and treatment systems
- A county plan for acquiring the land and/or right of ways for installing riparian buffers where needed along the river
- Reeds and grasses on the banks and shallows of the river