

Preventing “Watershed Sprawl” at Mount Island Lake

Presented by Michael S. Tomczyk
ENVS – 664-660 – 23 Sept. 2008

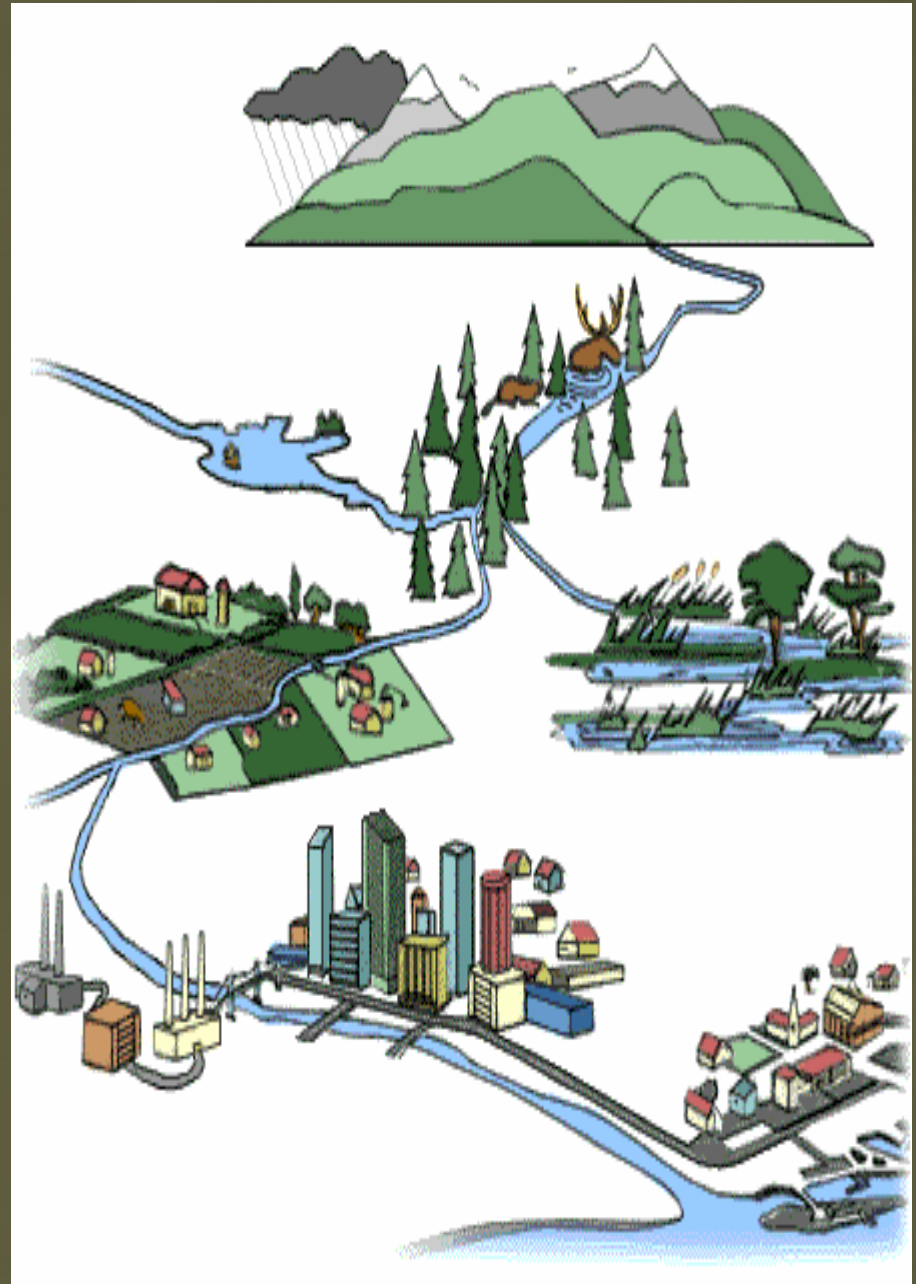


Water, water...not everywhere...

- **Water is NOT unlimited**
- **Water shortages are looming in the U.S./world**
- **Droughts are pressuring water availability**
- **“Watershed sprawl” exacerbates the water problem**
- **Mountain Island Lake, NC tackled the problem successfully**
- **Lake Falls, NC is struggling with the problem**

**Water is a
LIMITED
resource.**

**It needs to be
renewed,
sustained and
conserved**



Water and SPRAWL

World water resources are being pressured by “sprawl” which in this context means land is being developed faster than available water supplies can accommodate the increasing land use

Three states use a quarter of U.S. water

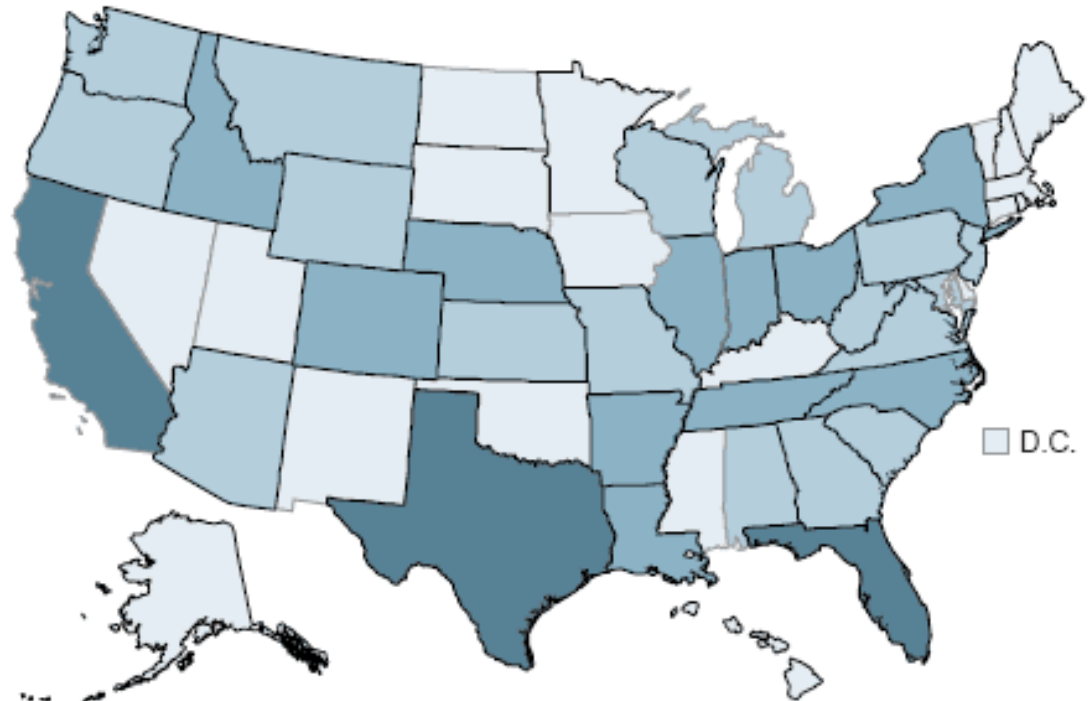
Florida, California and Texas lead the country in water usage. The government projects that at least 36 states will face water shortages within five years.

Estimated water withdrawals, in million gallons per day in 2000

0 to 5,000 5,001 to 10,000 10,001 to 20,000 20,001 to 52,000



 Likely to experience water shortage before 2013*



* Colorado and South Carolina are statewide. All other states are regional or local.

SOURCE(S): U.S. Geological Survey; Government Accountability Office

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Examples

Barcelona, Spain had to import a tanker of drinking water (5 million gallons) May 2008

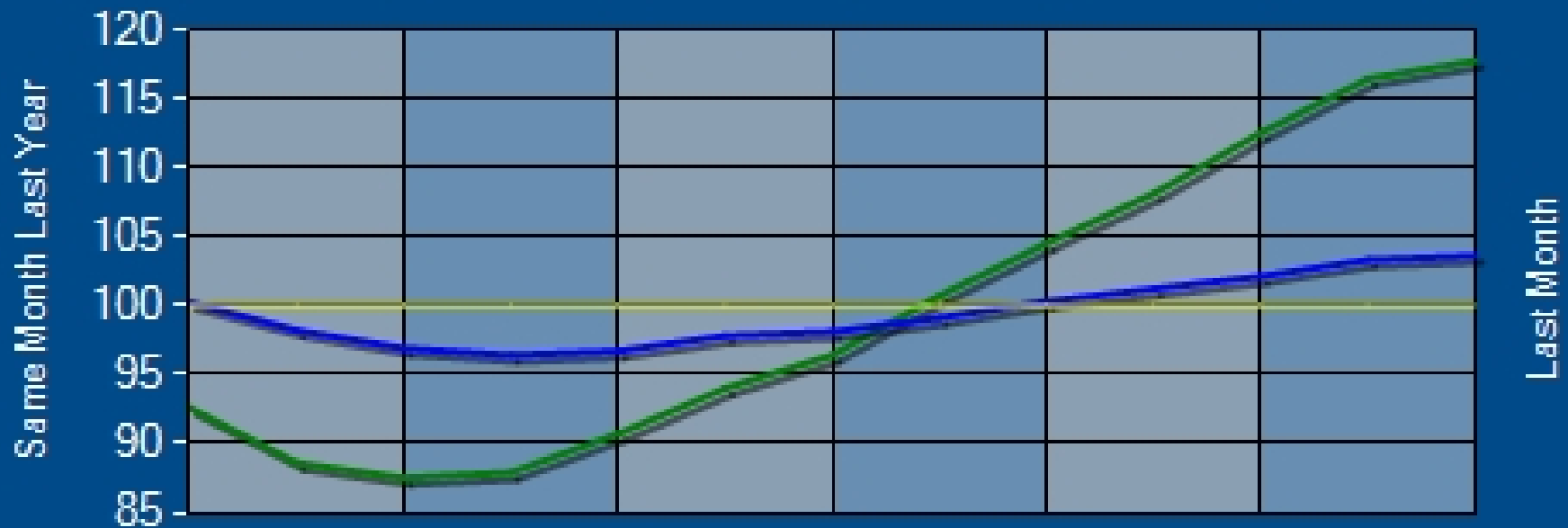
There is a 50% probability that Lake Mead (the largest manmade reservoir in the U.S. will run dry by 2021 if usage is not reduced

Atlanta's lakes are drying up – as are many lakes in the Southeastern U.S.



Drought is a factor, but “sprawl” is a major contributor to water use, pollution/purity etc.
(you can find your city's drought score at drought.score.com)

Most Recent 13 Months of Drought Measures



North Carolina – DROUGHT SCORE = 117.7 (23 Sep 08)

— North Carolina — United States — Norm

FACTOID...Impervious Surfaces

Urban and suburban development divert rainwater needed to recharge underground aquifers, lakes and streams.

“Impervious surfaces” such as asphalt and concrete roads, streets, building sites, parking lots, etc. can divert over 40 million gallons of water – especially stormwater – away from underground aquifers.

These surfaces hasten washoff of fertilizers and other pollutants that would otherwise be absorbed and filtered through soil, clay, etc.

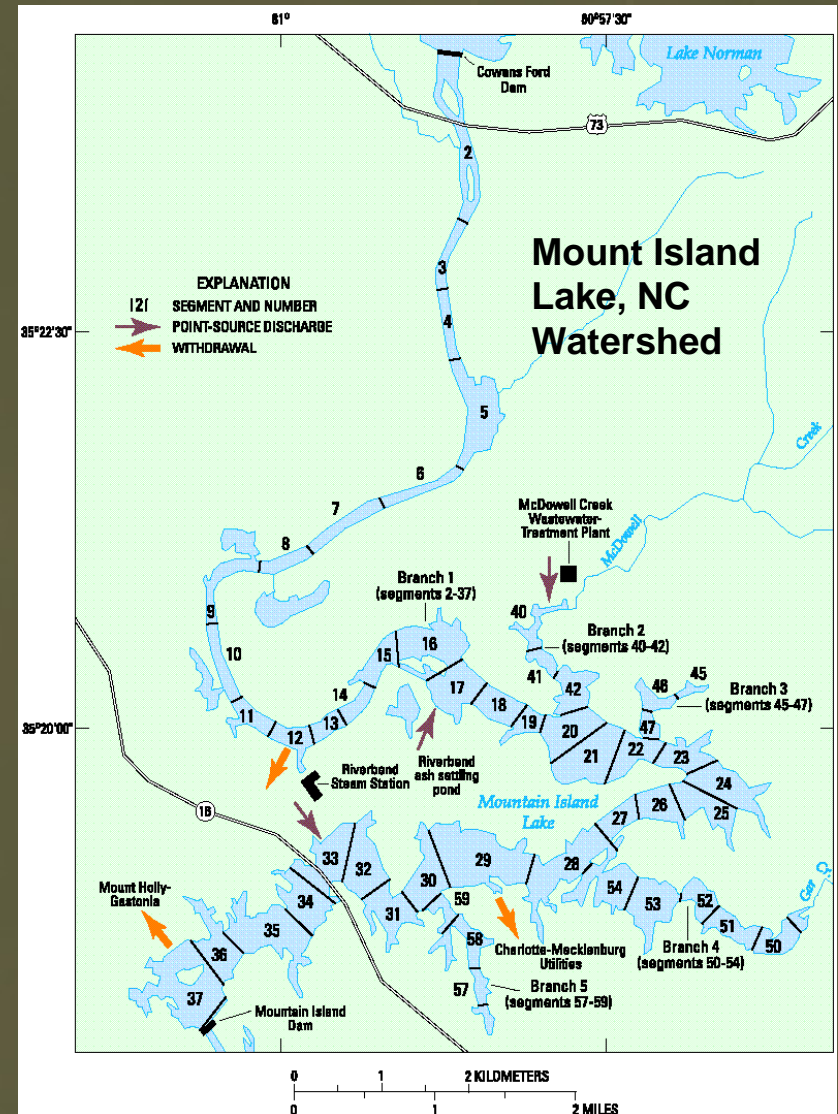
“WATERSHED SPRAWL”

Watershed Sprawl – is the “uncontrolled development of shorelines and adjacent areas affecting lakes and reservoirs, rivers and streams.” – *M. Tomczyk*

Watershed sprawl pressures a major water source in many ways:

- *Pollution (toxins, bacteria)*
- *Contamination (fertilizers and pesticides from lawn runoff)*
- *Diminishing groundwater*
- *Overuse of drinking water*

A subtle type of watershed sprawl can occur along streams and rivers that feed lakes, not just on lake shorelines.



“WATERSHED SPRAWL” - NC

North Carolina ranked NINTH in the nation for the number of major facilities in violation of their clean water permits

A Toxic Release Inventory reported discharges of more than 7 BILLION pounds of toxins into the environment in 2000, with more than 260 million pounds going directly into NC waterways

In Summer 2006 a clean water attorney said, “North Carolina is developing land at the FIFTH fastest rate in the nation and our water quality is suffering because of it.”



Mountain Island Lake, NC

20 Miles from Charlotte, NC

3,200 acre Lake

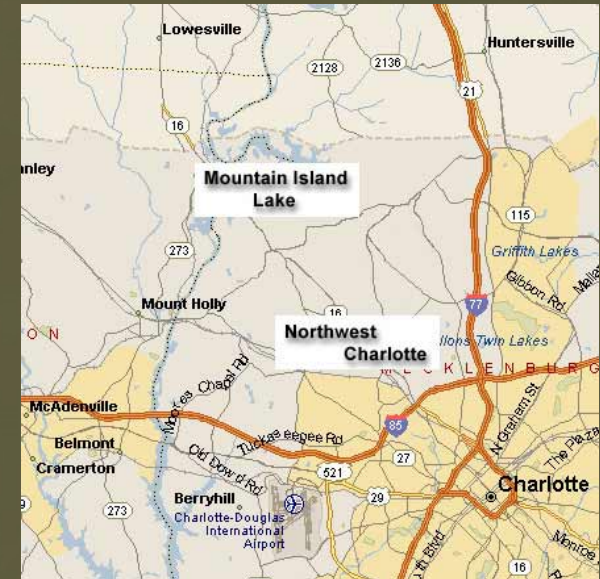
60 miles of shoreline

Supplies water to 725,000 people

72% located in Charlotte and Mecklenburg Counties, and in the towns of Gastonia and Mount Holly in Gaston County

Created 1924 - Duke Power dammed the Catawba River

Known for pristine appearance and clear water



Mountain Island Lake

Continued

*Sprawl on neighboring
Lake Norman, also fed
by the Catawba River*



In the mid-1990s, the entire region was threatened by “watershed sprawl” as developers scrambled to develop waterfront properties near Charlotte, NC.

Several lakes had already succumbed to high levels of sediment and contamination from fecal coliform bacteria which made the water unfit for drinking and/or expensive to treat

A 3 county coalition was formed to combat this threat by preserving and protecting waterfront property.

Mountain Island Lake

Continued

The actions taken to save Mount Island Lake provide a veritable “how to menu” of strategies for preserving and protecting land from “watershed sprawl” – 6,000 acres of watershed land (74%) is protected (goal=80%)

- **Mid-1990s – Charlotte-Mecklenburg Utilities purchased more than 2,700 acres, funded by a \$20M Bond**
- **1996 – Co. Board of Commissioners extended conservation policies to creeks as well as lakes**
- **Surface Water Improvement and Management (S.W.I.M.) Program – fishable/swimmable surface waters**
- **Fecal coliform reduced 70% by regulating sewer discharges, and erosion control esp. at constr. Sites**
- **1997 – Foundation for Carolinas created the Mountain Island Initiative**
- **1997 – State of NC – NC Clean Water Mgmt. Trust Fund – first grant was \$6 million to protect western shore of MIL**
- **1999 – Charlotte-Mecklenburg Counties passed a \$220 million “land banking” bond to preserve open space, parks, greenways, schools, etc. \$15 million was directed to MIL watershed**
- **Landowners incentivized through payments and water discounts to conserve and not sell to developers**
- **21 of 127 stream miles (areas bordering streams) protected**
- **Since 1999, more than \$31M spent to preserve 4,000 acres of lakefront and \$9M in Gaston and Lincoln Counties**
- **Laws passed to control land use and regulate point sources of pollution**
- **100 ft. setbacks for new construction**

Falls Lake, NC

12,000 acre lake near
Raleigh, NC (*state capital*)

Part of the Neuse River
Basin

Surrounded by 25,000
acres of public land –
however, the Basin is
overdeveloped & feeds
pollution into the lake
through tributaries

**2008 – Falls Lake was
listed on the “impaired
waters” list (under 303d
of the Clean Water Act)**



In 2007-08 the lake dropped 8 feet below normal due to drought conditions – reaching a 10 billion gallon deficit by Feb. 08 – the water has returned to levels barely adequate to supply water

May 2008 – Large fish kill, thousands of fish died from “unexplained cause” (thought to come from accumulated fertilizers and pet waste flushed from lawns, sediment from construction sites, sewage overflow, etc.)

Falls Lake, NC



Federal/state initiatives cleaned up the downstream Neuse estuary but did NOT preserve upstream portions feeding Falls Lake

Low investment in land conservation (in 2005 the city of Raleigh pledged \$10,000 and began working with land trusts to buy land or easements)

As of April 2008 the Conservation Trust for NC managed \$2M in contracts to protect the upper Neuse River Basin and 8 other water supply reservoirs

BACKROOM DEALS – TWO EXAMPLES

2005 – Permit granted to Butner, NC to increase discharge of nitrogen pollutants into Falls Lake – the deal was cancelled after litigation by a consortium of organizations

2008 – Falls Lake was on the short list of locations for a new Homeland Security research facility designed to test diseases that are potentially lethal to humans

The Struggle Continues...

Standing up to developers, especially when pristine watersheds and shorelines are involved, is very difficult.

The coalition at Mountain Island Lake continues to face pressure from developers and is constantly needing to come up with creative solutions to reach their goal of 80% preservation – they have used both financial and non-financial incentives with great success.

The Falls Lake conservators, which includes the state capital and conservation trusts, has had less success – the strategic approach overlooked the effects of pollution on the entire watershed, and delayed action enabled over-development. The combination of drought and stormwater runoff, pollution from residential and industrial developments, and related factors has contaminated this water source, raised treatment costs and brought Falls Lake to the brink of “impairment” – which could soon be the state capital’s primary source of drinking water.

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