Homeland Security: Threats to the Sustainability, Safety and Security of North Carolina's Food and Water

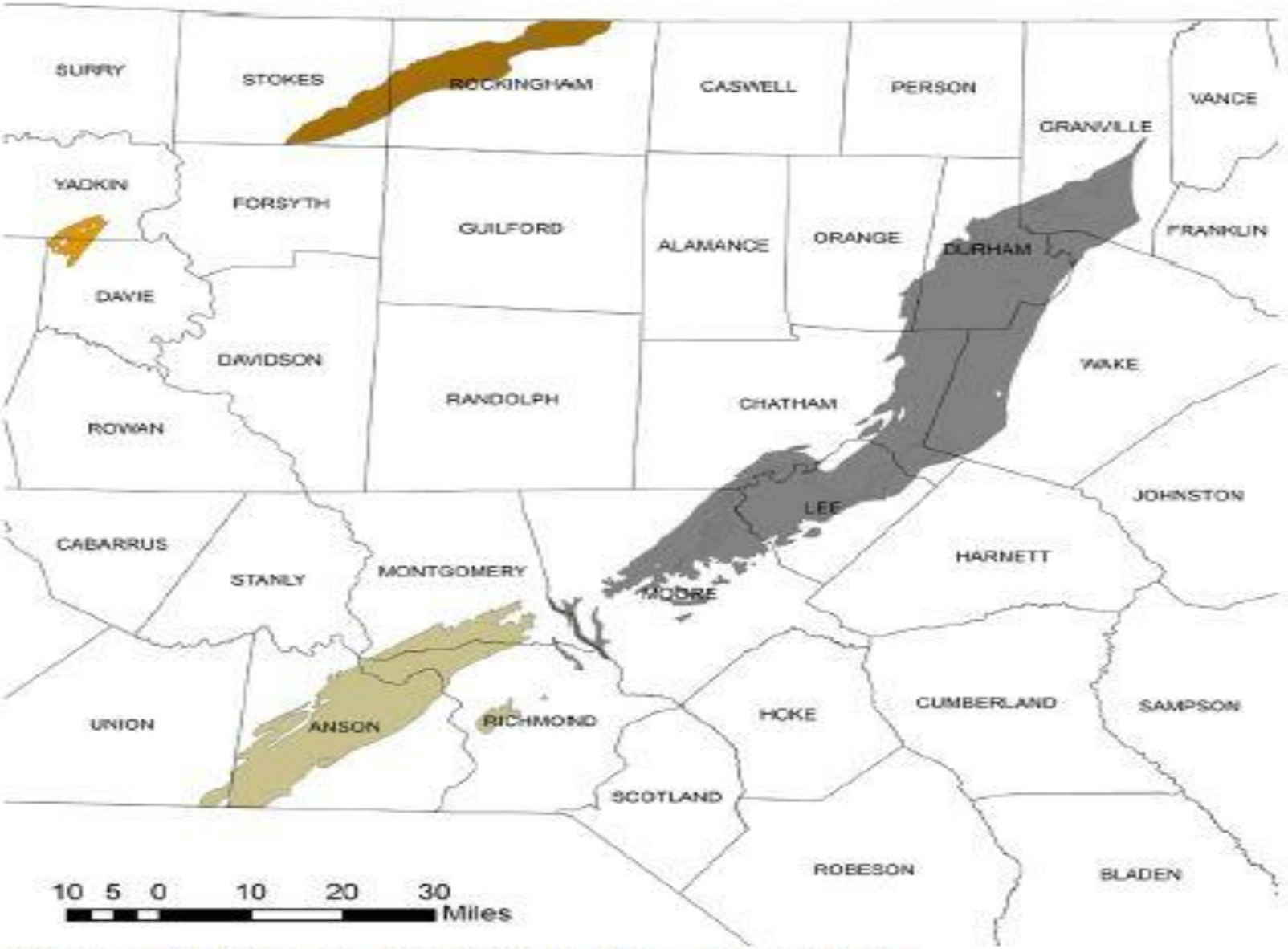
Wendy Shi
Stanback Intern
Blue Ridge Environmental Defense League
Nicholas School of the Environment
Duke University

Outline

* **Hydraulic Fracturing**
* **Perchloroethylene (PERC)**
* **Prions**
* **Our Water Resources**

Hydraulic Fracturing

* Hydraulic fracturing is a technique used for exploiting natural gas from shale rock by shooting highly pressurized fluid consisting of water, sand and chemicals into the rock.
* Currently in North Carolina, shale gas deposits are found in these counties: Anson, Richmond, Montgomery, Moore, Lee, Chatham, Orange, Wake, Durham, Granville, Davie, Yadkin, Stokes and Rockingham.



Map of Triassic Basin Shales, based on NC Geologic Service publication an

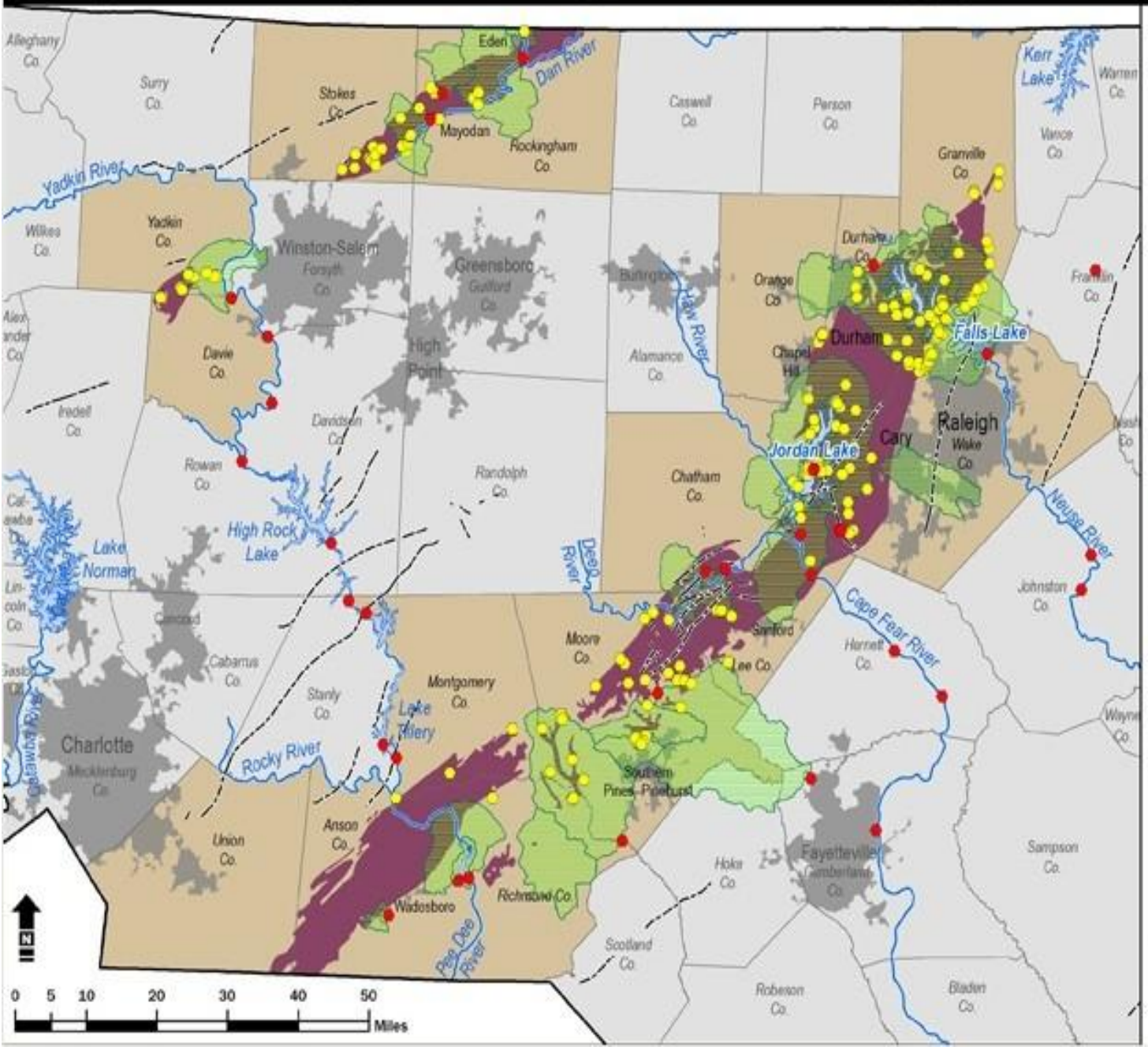
Major Geologic Belt

- Dan River Basin
- Davie Basin
- Durham-Sanford Subbasins

Hydraulic Fracturing

* **Environmental and Social Impacts Include:**
* Water use. 3-5 million gallons of fresh water are permanently contaminated every time a well is fracked.
* Water quality. Methane, heavy metals and other contaminants may seep into groundwater, or be discharged to surface water.
* Air pollution.
* Noise pollution.
* The potential for earthquakes.

Hydrofracking Could Impact Water Supply for 2.4 Million People



Major Public Water Supplies	
Triassic Basin	Downstream*
Raleigh	Winston-Salem
Durham	Fayetteville
Cary	Wilmington
Sanford	Lexington
Apex	Greenville
Robeson County	Rocky Mount
Davie County	Wilson
Plus 35 more	*Plus 15 more*

Legend

- Public Water Supply (Groundwater)
- Public Water Supply (Surface Water)
- Public Water Supply Watershed
- Fault Line
- Triassic Basins
- County with Triassic Basin

Last updated: May 30, 2012
Data Sources: NCGS; USGS; NC DEH; NC DWQ
*=Not all downstream sources shown on map

Southern Environmental Law Center

Hydraulic Fracturing

* **Recommendations:**
* Recent legislative initiatives have attempted to fast-track exploration and development activities.
* North Carolina communities must be educated and organized to stop hydraulic fracturing from occurring in North Carolina. Additionally, the public and advocacy organizations should push for standards which protect North Carolina's water resources.

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* **Hydraulic Fracturing**
* **Perchloroethylene**
* **Prion**
* **Water Resource**

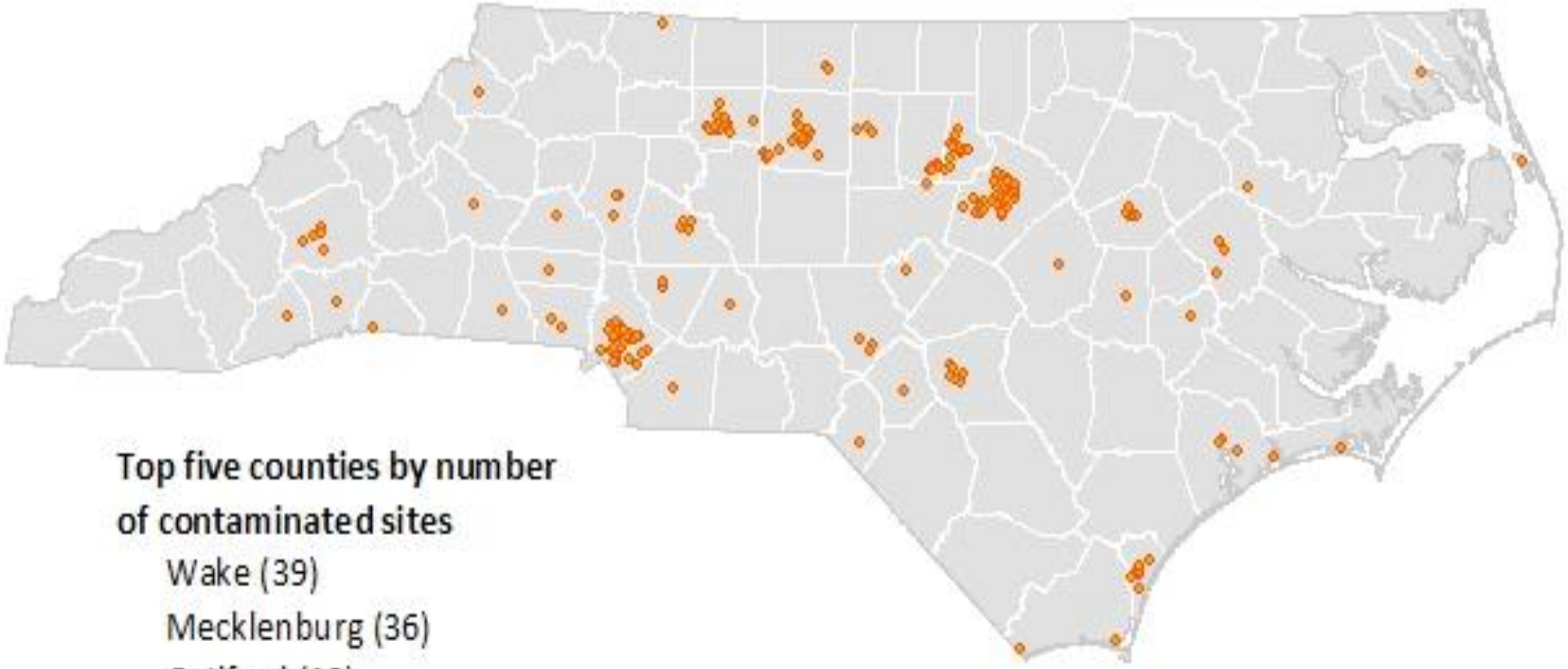
Perchloroethylene

* Perchloroethylene (PERC) is a manufactured chemical used as the primary solvent for dry cleaning of fabrics. 95,000 tons of PERC is used annually by 35,000 dry cleaners throughout the United States and Canada. It is estimated that 1,500 sites are contaminated by dry cleaning in North Carolina. Moreover, PERC continues to be used by over 400 drycleaners in North Carolina.

Perchloroethylene

* **Environmental and Health Impacts:**
* Most of the PERC escapes into the outdoor air through open windows, vents, and air-conditioning systems. It can remain in the atmosphere for several weeks, and then break down into toxic chemicals.
* PERC can seep through the ground at the end of the cleaning process, and contaminate surface water, groundwater; both sources of drinking water.
* Exposure to high concentrations of PERC can cause dizziness, headaches, sleepiness, nausea, confusion, difficulty in speaking and walking, unconsciousness, and even death.

Contaminated Dry Cleaning Sites in NC



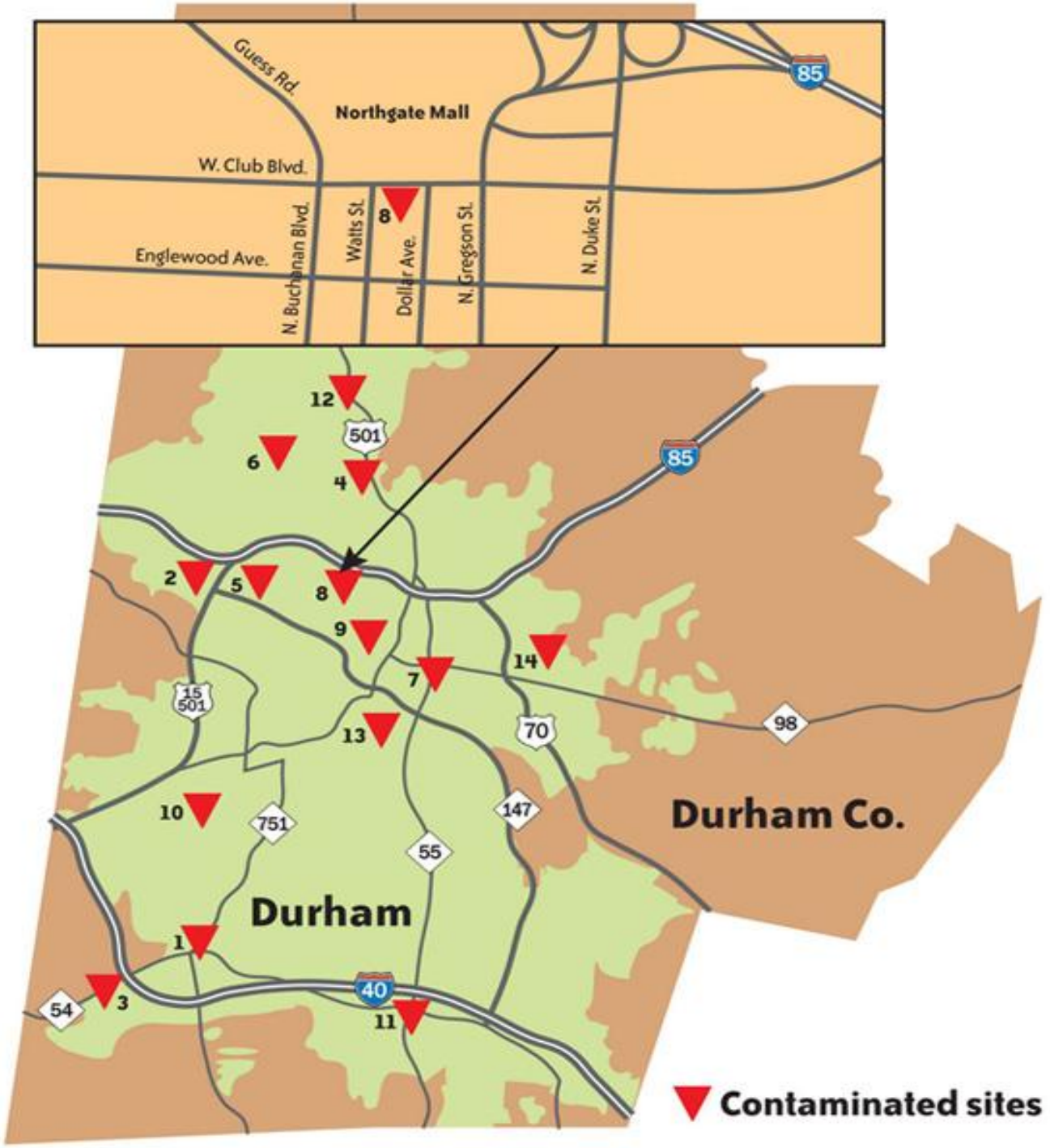
Top five counties by number of contaminated sites

- Wake (39)
- Mecklenburg (36)
- Guilford (19)
- Durham (13)
- Forsyth (13)

Map represents 206 contaminated dry cleaning sites accepted into the Dry-Cleaning Solvent Clean Up Act (DSCA) program as of November, 2008, out of an estimated 1,500 contaminated dry cleaning sites across the state.

Perchloroethylene

* **PERC in North Carolina:**
* There are approximate 1,500 dry cleaning contamination sites in North Carolina, and about 200 have released PERC contamination at various levels into soil, groundwater, and surface waters. The amount has exceeded North Carolina's water quality standards.
* For example, in Durham, there are 13 PERC contaminated dry cleaning sites. The levels of PERC found in the groundwater at 12 sites are above Division of Water Quality 2L groundwater standards. The highest PERC level in groundwater was recorded at former BB&T site, and highest amount of soil contamination was found at W.P. Ballard site.


Guess Rd.
Northgate Mall
W. Club Blvd.
Englewood Ave.
N. Buchanan Blvd.
Watts St.
Dollar Ave.
N. Gregson St.
N. Duke St.
85
8
12
501
6
4
85
2
5
8
9
14
7
15
501
70
98
13
10
751
147
55
Durham Co.
Durham
1
54
3
40
11
Contaminated sites

Perchloroethylene

* **Dry Cleaning Solvent Clean Up Act:**
* PERC is a serious problem, and it is important to identify responsible parties. The Dry Cleaning Solvent Clean Up Act, (DSCA) program was created in 1997 to mitigate widespread contamination from contaminated dry cleaning sites. However, under DSCA program PERC contamination can be minimized but not eliminated. DSCA only sets a lower limit for contaminants and still compromises groundwater quality. No compensation is available to affected residents and property owners, and there are no incentives for dry cleaners to switch to cleaner and safer alternatives.

Perchloroethylene

* **Recommendations:**
* Current clean-up measures are not enough, and we call on decision makers to require the phase out of PERC immediately. California is phasing out the use of PERC with tax incentives for drycleaners to switch to safer alternatives. North Carolina should realize the urgency of banning the PERC and develop similar incentives. The overall goal of our PERC campaign is to end the use of this toxic dry-cleaning solvent, and protect public health and the environment.

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Prion

* Each year in the United States, food-borne diseases cause an estimated 48 million illnesses, 128,000 hospitalizations, 3,000 deaths and over 1,000 outbreaks. Among all kinds of food-borne diseases, prion disease is among the most serious and has deadly results.
* Prions are proteins. They are smaller than a virus, and abnormally folded, which enables them to be undetectable by the immune system. Once infected, a single particle may develop into trillions of prions. Infectious prions interact with brain tissue and eventually cause complete disruption of the brain and even death.

Prion

* **Health Impacts**
* Prion diseases include Creuzfeldt-Jakob (CJD), kuru, deer, ostrich, elk, sheep, goat, moose, mice, cat, nyala, and oryx diseases. Among them, CJD, also called mad-cow disease, is the most serious disease with prions transmitted from cow brains to humans. Up to now, the health impacts caused by prions are untreatable and death is inevitable.
* It is virtually impossible to remove prions from contaminated surfaces.
* Moreover, prions have the feature of migrating, mutating and multiplying easily and quickly. More seriously, when prions move from one host to another, they can adapt to different characteristics of hosts and increase the number of susceptible hosts.

Prion

* **Prions in North Carolina**
* There have been approximatly 350 deaths related to CJD in the U.S. since 2009. The N.C. Department of Health and Human Services reported 13 CJD related deaths in 2010, and 17 confirmed cases of CJD since 2011.
* Currently, According to Jon Risgaard, the supervisor at the Land Application Unit, North Carolina does not require that waste and sludge to be tested for the presence of prions prior to removal from the wastewater treatment plants.
* Dr. David T. Marshall, State Veterinarian in N.C. Dept. of Agriculture and Consumer Services, claimed that testing waste material for prions lack scientific and economic justification based on risk versus reward.

Prion

* **Recommendations**
* Prions are ubiquitous and can spread easily and quickly once they get into the food chain. They are likely present in composted sewage sludge sold and some organic bio-solids sold by retail stores. However, current North Carolina health and environmental regulations for prions are not enough. We must demand that deadly prions be regulated based on proven safety. Immediate actions are needed to prevent prions from entering wastewater treatment systems through sewers and septic systems. Continued research and development of adequate testing methods is vital.

Our Water Resources

* In North Carolina, we get about half of our drinking water from groundwater wells, the other half we get from surface waters – such as rivers and reservoirs.
* As North Carolina's population increases, so does our need for reliable sources of drinking water.

Water Resource

* **Drought:**
* The state suffered from periods of significant drought during much of the last 15 years – 1998-2002, 2007-2008.
* Drought has heightened awareness of the need to protect existing drinking water supplies.

Next Steps

It is essential that North Carolina's precious resources be protected; emerging threats to our water quality and food safety must be identified and prevented. Stand up for your community's right to clean water and safe food! Work with your local government to put ordinances and health regulations in place.

BREDL can help!

Contact us at: (336) 982-2691 or bredl@skybest.com

www.bredl.org