

Radiological Contaminants in Wake County Well Water

GLUE Committee Meeting February 13, 2017

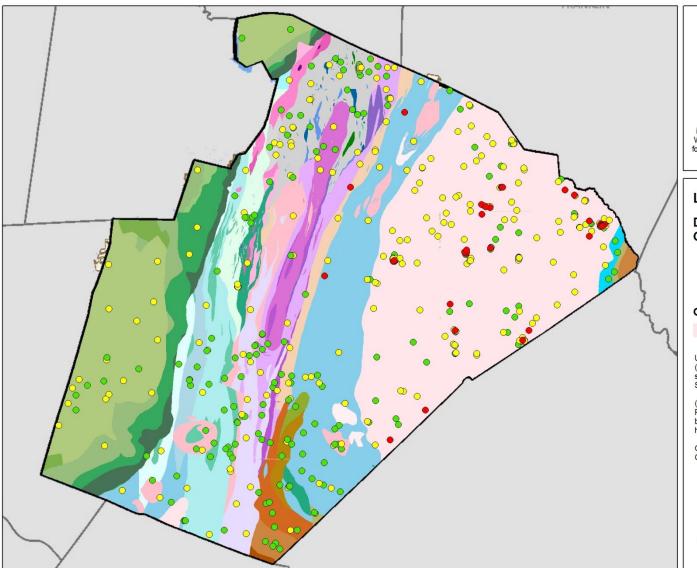


Outline

- Background on radiological contaminants in Wake County
 - Occurrence
 - Testing recommendations
 - Treatment options
- Recent experience in one neighborhood
- 3. Programmatic recommendations



Uranium in Wake County Well Water



Uranium Test Results <u>from</u> Private Drinking Water Wells in Wake County

Information depectied hereon is for reference purposes only and is derived from best available sources. Wake County assumes no responsibility for errors arising from misuse of this map.



Legend

Dissolved Uranium Concentration (mg/L)

- < 0.001
- 0.001 0.029
- >0.029

Geologic Units

Rolesville Granite

Uranium Data Sources:

(1) State Laboratory for Public Health - 393 Uranium samples collected by Wake County Environmental Services from private wells 2010-2014.

(2) USGS National Uranium Resource Evaluation Program - 86 Uranium samples collected and analyzed by USGS in 1976. Data accessed at http://mrdata.usgs.gov/nure/water/ on August 26, 2016.

Geological mapping data provided by North Carolina Geological Survey.



2.5 5 10 Mile

Radiological Contaminants in Wake County Well Water

Contaminant	Relevant Standard	Potential Health Effects	Source	
Uranium	30 µg/L (Federal MCL)	Increased risk of cancer	Naturally occurring, especially in	
Radium 226 & 228	5 pCi/L (Federal MCL)	from ingestion		
Radon (in water)	No Federal MCL or state groundwater standard	Increased risk of lung cancer from inhalation; Increased risk of stomach cancer from ingestion	"younger" granitic rocks	

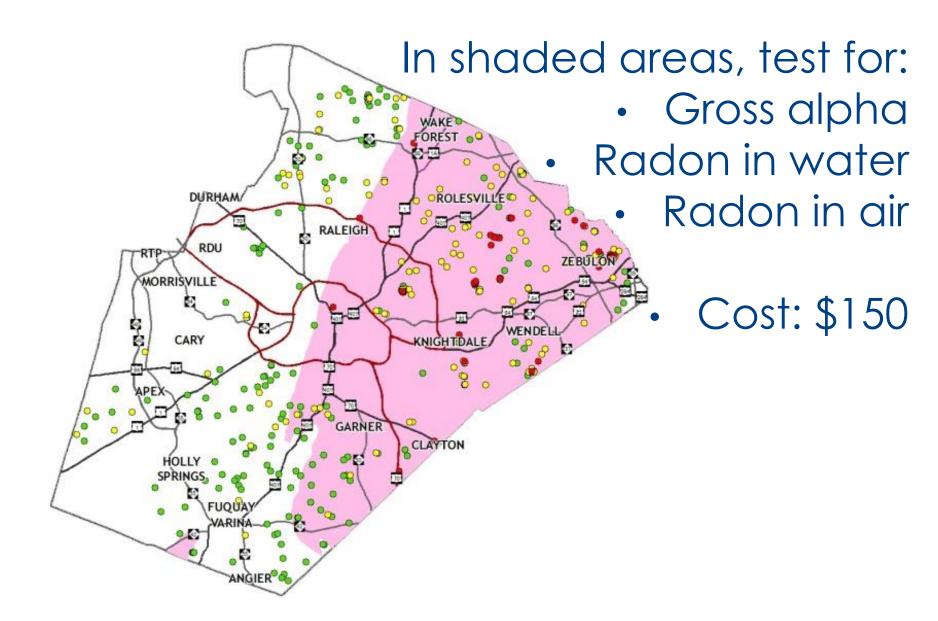


Relative Frequency of Well Water Quality Problems

Contaminant	Number of Tests	Percentage Exceeding Federal Standards
Uranium	393	9.9%
Pesticides - Bond Street Investigation	211	4.3%
TCE	410	1.0%
Nitrate	4,736	0.7%



Testing Recommendations



Treatment Options

- Uranium
 - Point of Use: Reverse Osmosis
 - Point of Entry: Anion Exchange
- Radium
 - Point of Use: Reverse Osmosis
 - Point of Entry: Cation Exchange
- Radon (in water)
 - Point of Use: Exhaust fan
 - Point of Entry: GAC filter or aeration system

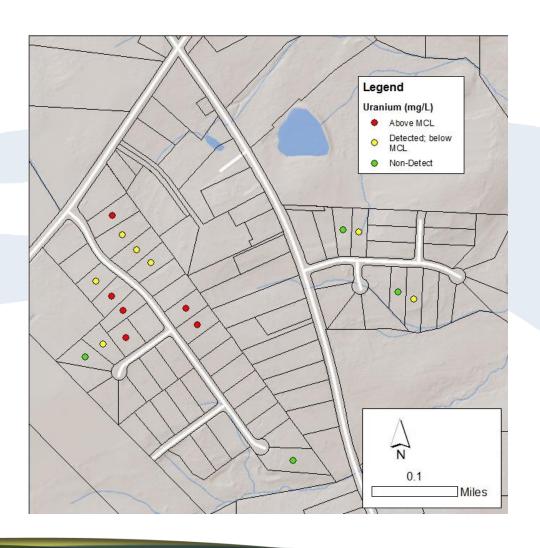


Recent Experience with Radiological Testing



2012-2014 Uranium Testing

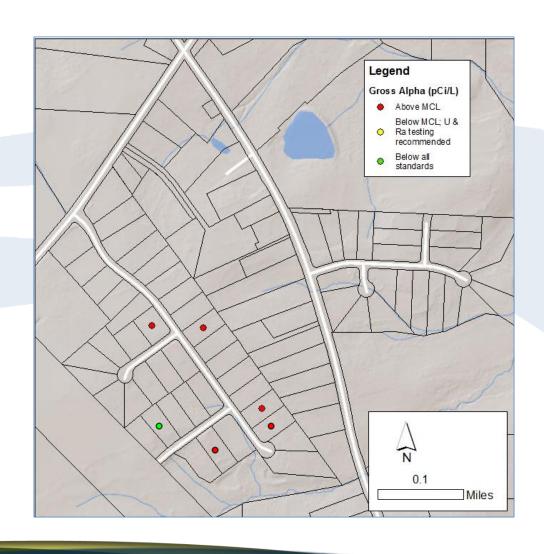
- 17 wells tested for Uranium at time of construction
 - 7 above MCL
 - Highest concentration:65x MCL





2016 Gross Alpha & Radon Testing

- 6 wells tested for gross alpha
 - 5 above MCL
 - Up to 90x MCL
- 5 wells tested for radon
 - All above 10,000 pCi/L





Program Development Recommendations

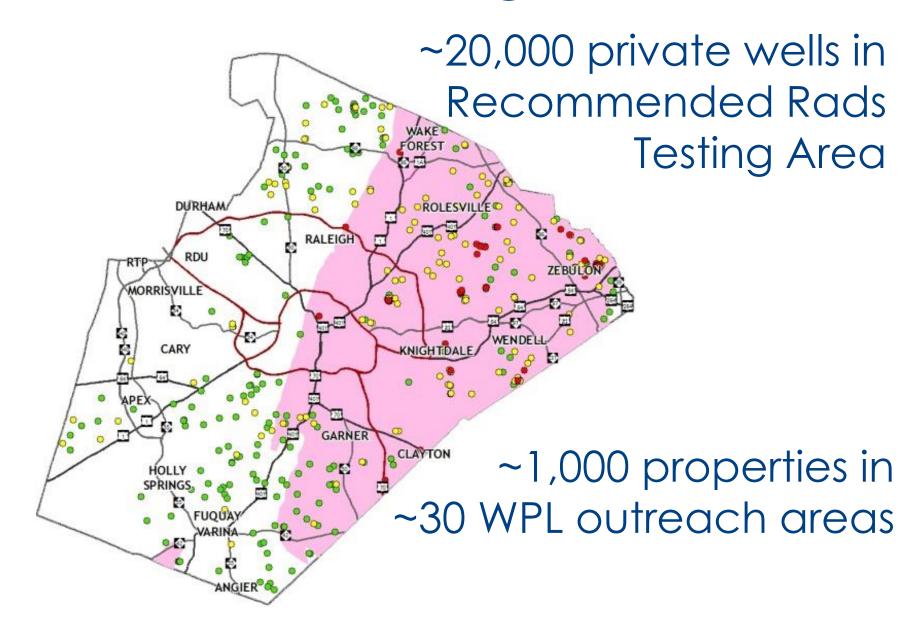
Risk-based prioritization of WPL outreach by prevalence and severity of contaminants in private wells

Consider radiological test requirements during upcoming rule revision process

Improve communication of test results to buyers of new homes



Outreach for Radiologicals



Summary

- Radiological contaminants are:
 - relatively common in Wake County
 - treatable
- Well program is increasing emphasis on radiological contaminants through:
 - Passive outreach
 - Targeted outreach
 - Rule revision process



Discussion

