

# Update on Radiological Contaminants in Wake County Wells

**Evan O. Kane, P.G.**

**Manager, Groundwater Protection & Wells**

**Wake County Department of Environmental Services**



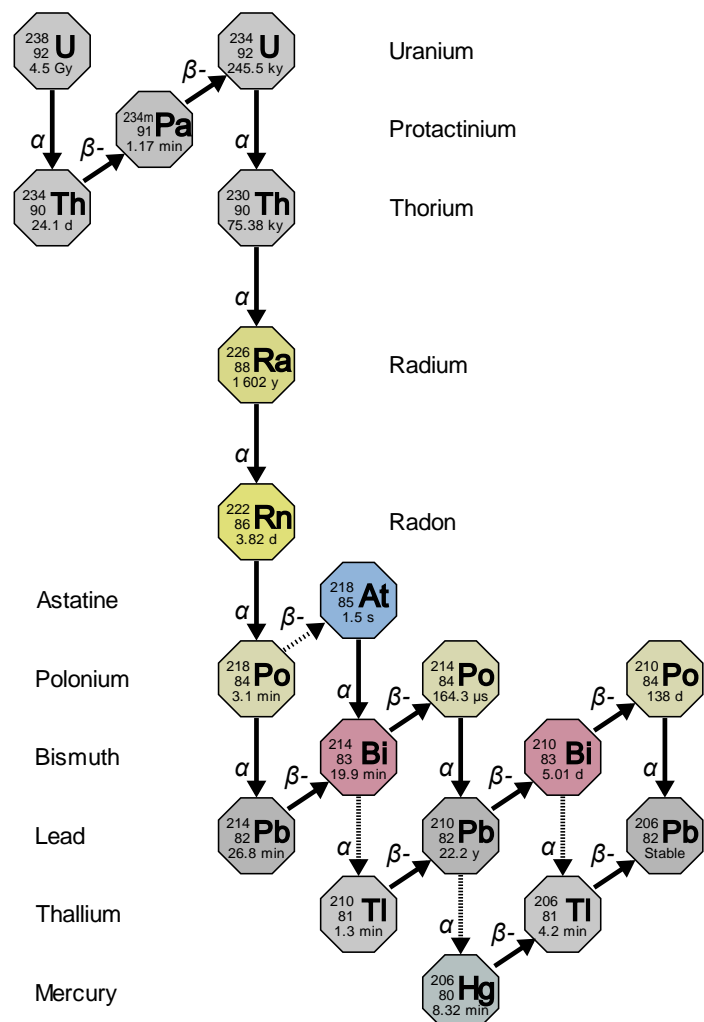
@wakegov    

wakegov.com

# Well Water Quality Problems - 2016

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

# Not Limited to Uranium

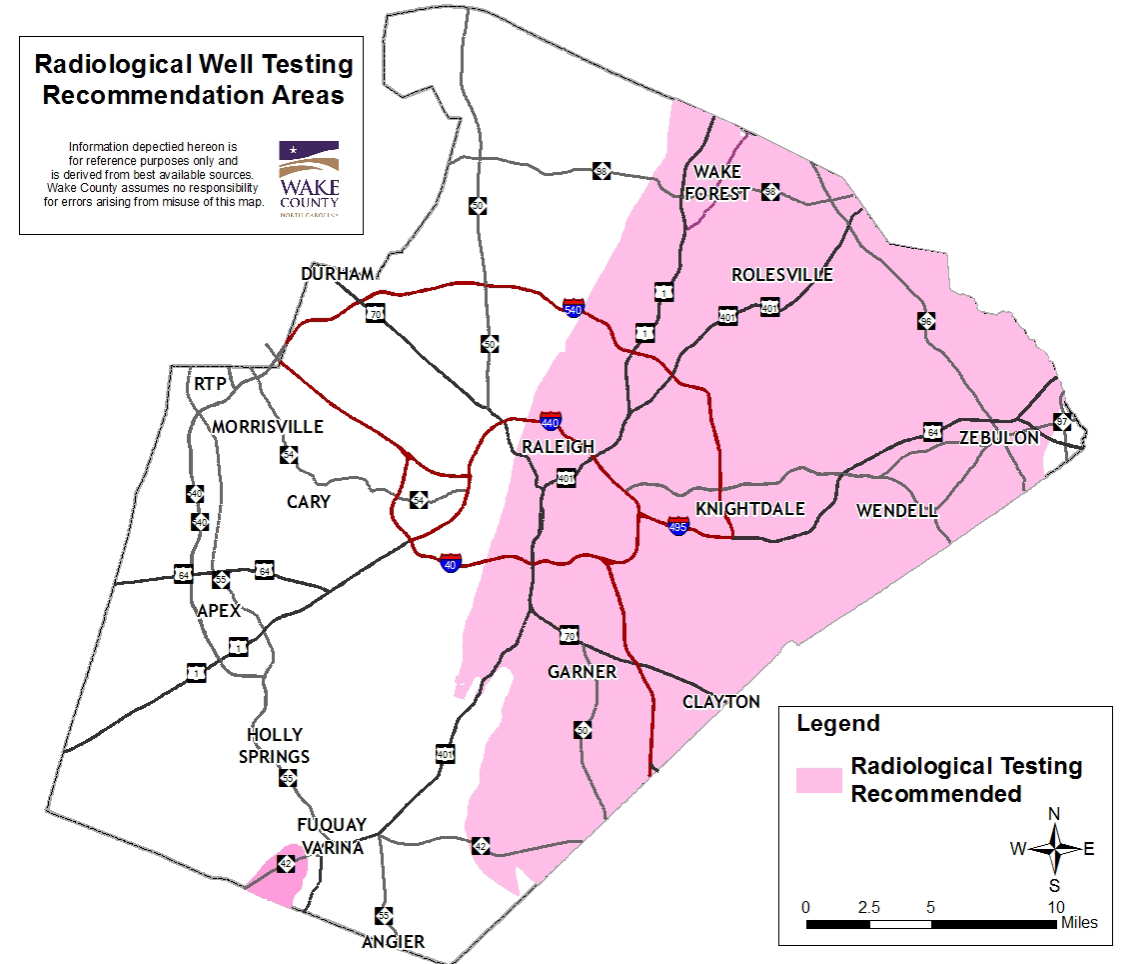


Contaminant	Relevant Standard	Potential Health Effects
Uranium	30 µg/L (Federal MCL)	Kidney toxicity, increased risk of cancer from ingestion
Radium 226 & 228	5 pCi/L (Federal MCL)	Increased risk of cancer from ingestion
Radon (in water)	10,000 pCi/L (NC RPS Recommendation)	Increased risk of lung cancer from inhalation; Increased risk of stomach cancer from ingestion

Image By User:Tosaka - File:Decay chain(4n+2, Uranium series).PNG, CC BY 3.0, <https://commons.wikimedia.org/w/index.php?curid=33293646>

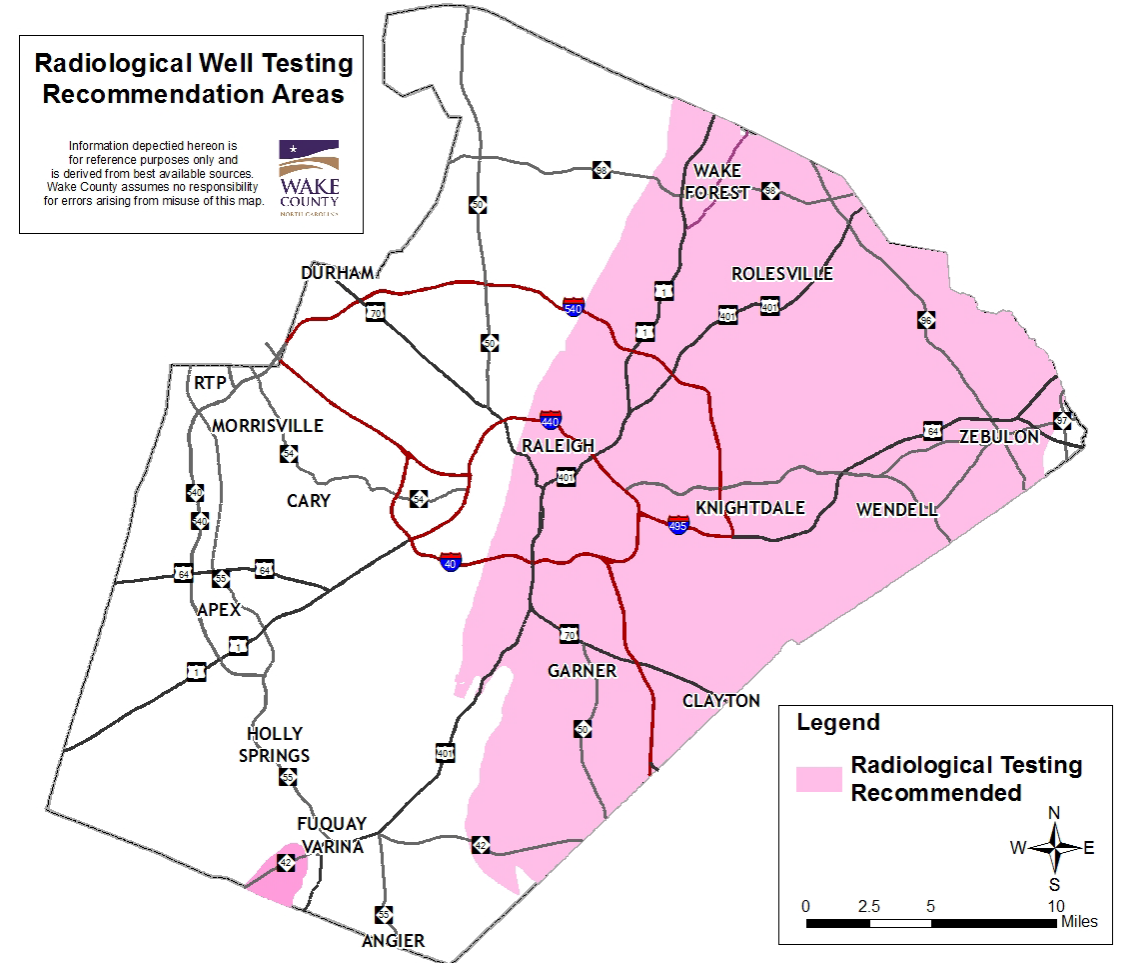
# Environmental Services Response

- Prioritized Radiological Contaminants as #1 for Targeted Outreach Program
- Delineated recommended testing area
- Developed complete, cost-effective testing package:
  - Gross Alpha & Gross Beta Activity
  - Radon in Water
  - Indoor Air Radon test
- Identified treatment options
- Published test recommendations on website



# Environmental Services Response

- Printing test recommendations on new well permits
- Revising testing rule for new wells
- Obtained expanded funding for contract lab in FY19 budget
- Educational presentations
- Networking with more experienced states, treatment contractors

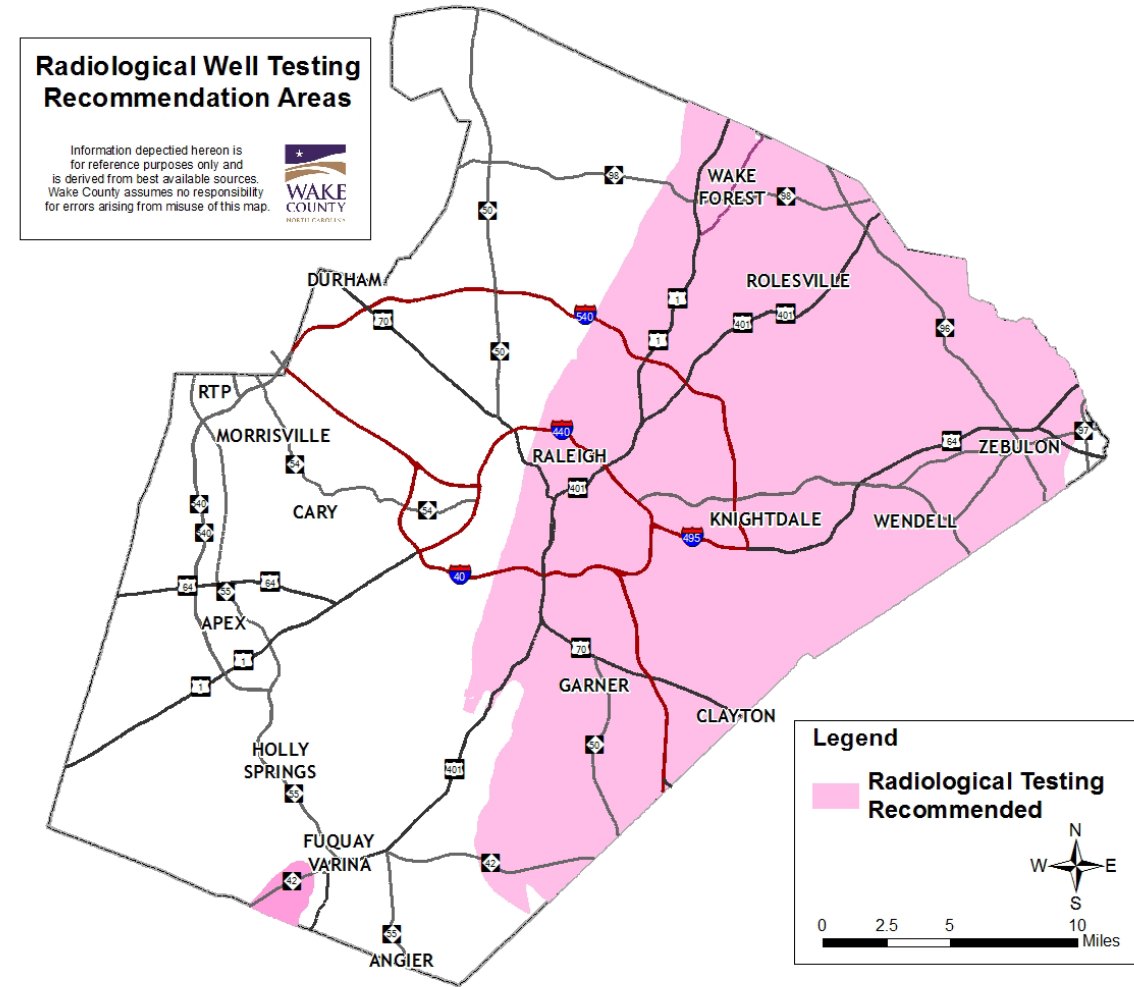


# Well Water Quality Problems - 2018

<b>Contaminant</b>	<b>Number of Initial Tests</b>	<b>Percent Exceeding Standard or Goal</b>
<b>Gross Alpha</b>	213	<b>19%</b>
<b>Radon in Water</b>	169	<b>31%</b>
<b>TCE</b>	806	<b>0%</b>
<b>Nitrate</b>	5062	<b>1%</b>
<b>Dieldrin</b>	610	<b>3%</b>

# Estimated Extent of Unsafe Water

- 20,000 existing wells in Rads Recommendation Area
- 20-30% exceedance rate = 4,000-6,000 households may have unhealthy levels of radiological contaminants in well water
- Already encountering sick individuals



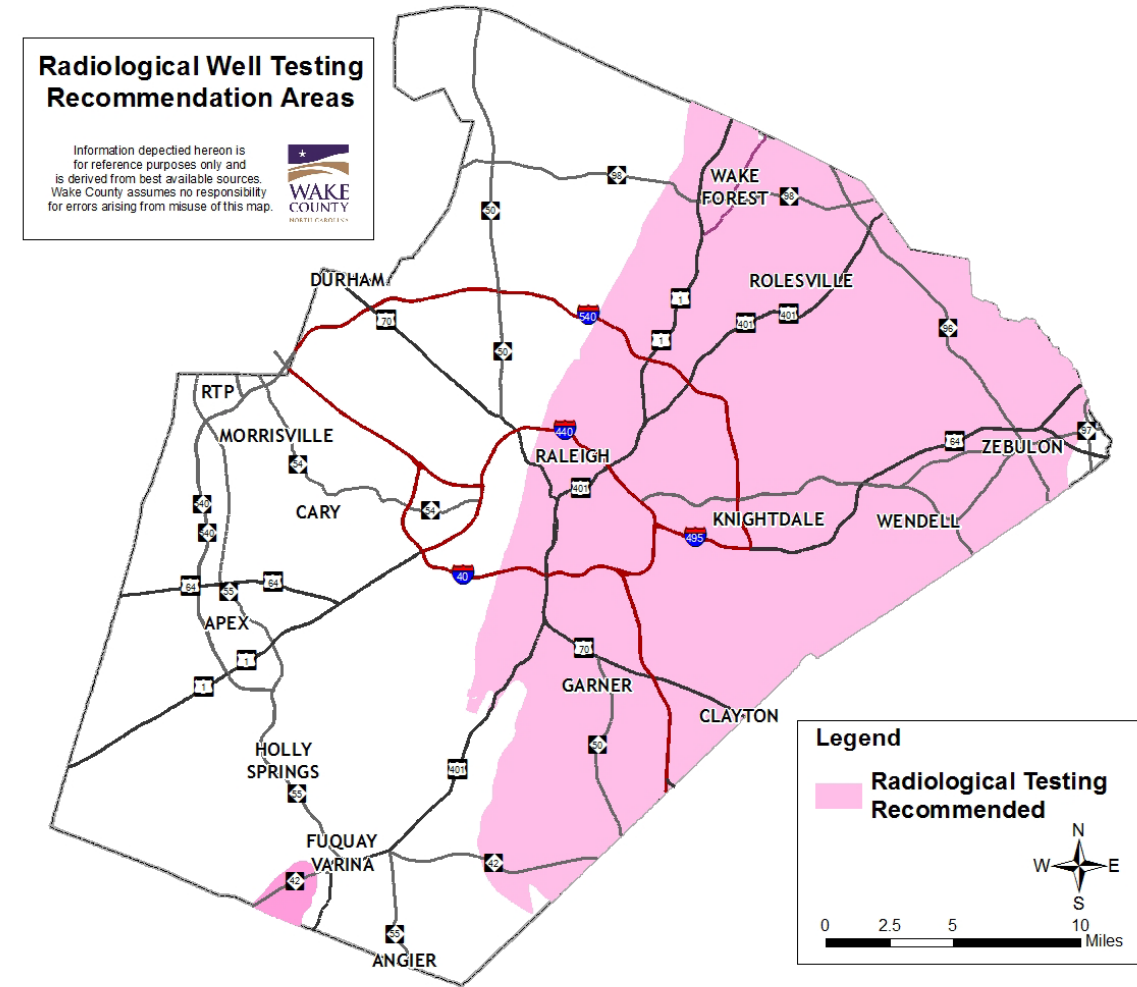
# Approach to Outreach

## Targeted Outreach

- Try to test ~1,000 properties around ~30 known contaminated wells
- ~10 years to test around all known contaminated wells

## General Outreach

- Web presence & printed materials
- Outreach to contractors & health professionals
  - Will lead to new discoveries of contaminated wells



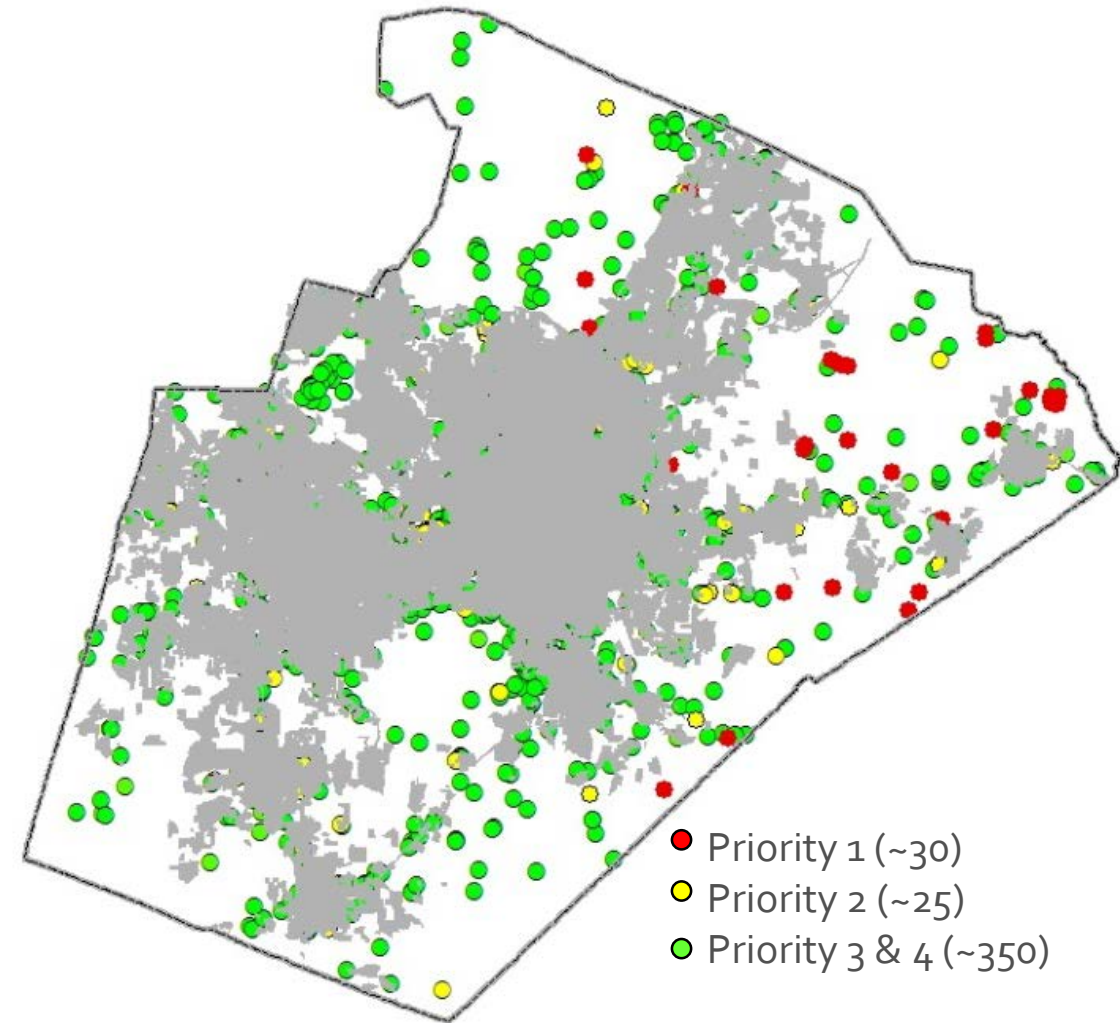


# Service Delivery Options

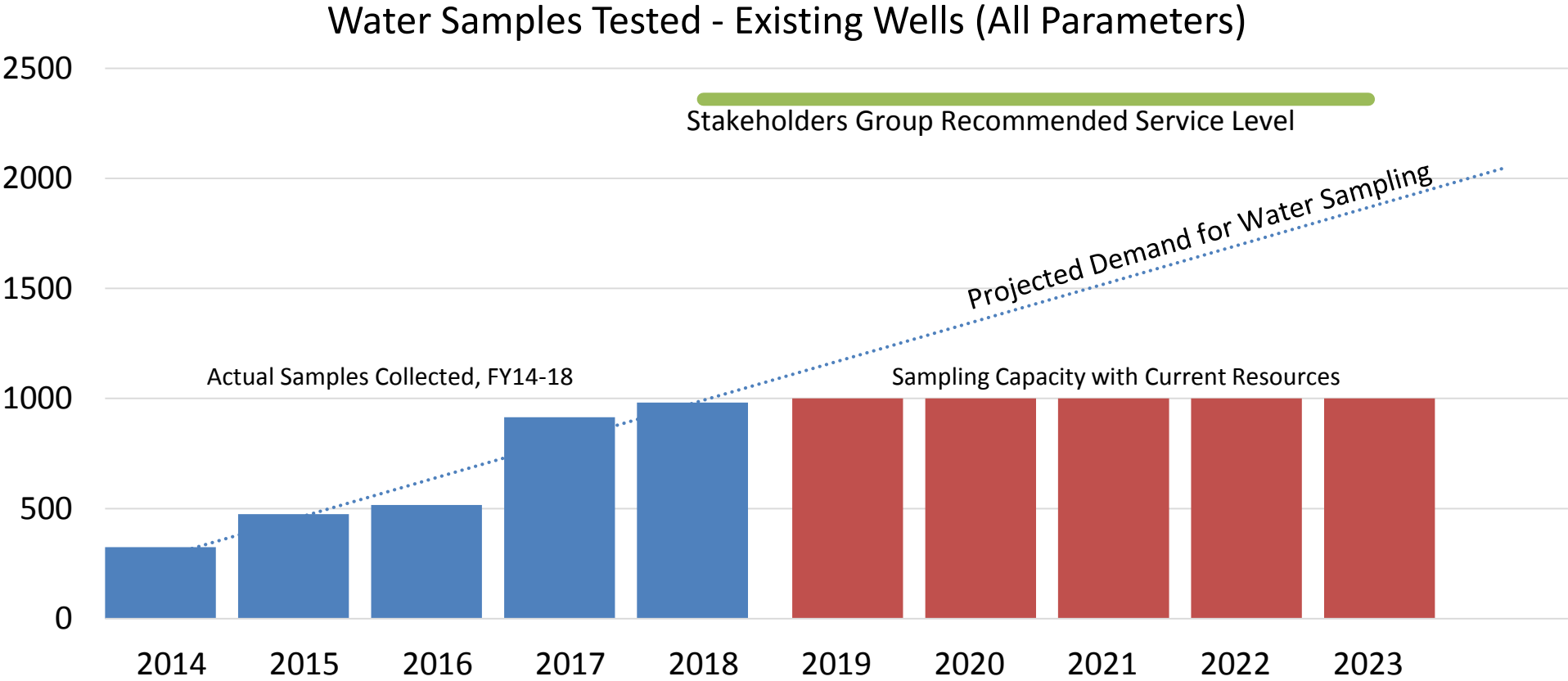
- Continue status quo for education, testing, technical assistance  
→ ~10 years continued exposure for many residents; not recommended
- Additional resources for education, testing, technical assistance  
→ Shorten exposure time; stakeholder group recommendation
- Educate more broadly but let private sector handle testing  
→ Extensive need for unbiased third party technical assistance remains; not recommended

# Stakeholder Group Recommendation

- Increase outreach service level
  - Test around highest-priority sites in <5 years
  - Add 2 FTEs for education & outreach, sample collection, & technical assistance
  - Add 1 FTE to in-house lab
  - Increase contract lab budget



# Background Demand for Water Tests Increasing



# Next Steps

- Continue outreach, testing, and technical assistance
- Build awareness among home professionals and health community
  - Home builders
  - Home inspectors
  - Water treatment professionals
  - Medical community
- Revise business plan
  - Outcome: reduce number of people drinking contaminated water
  - Evaluate risks and options to reach outcome
  - Plan for appropriate level of resources, organizational options
- Prepare expansion budget request for 4 additional staff and expanded lab contract

# Discussion