

# Emerging contaminants in Ground Water

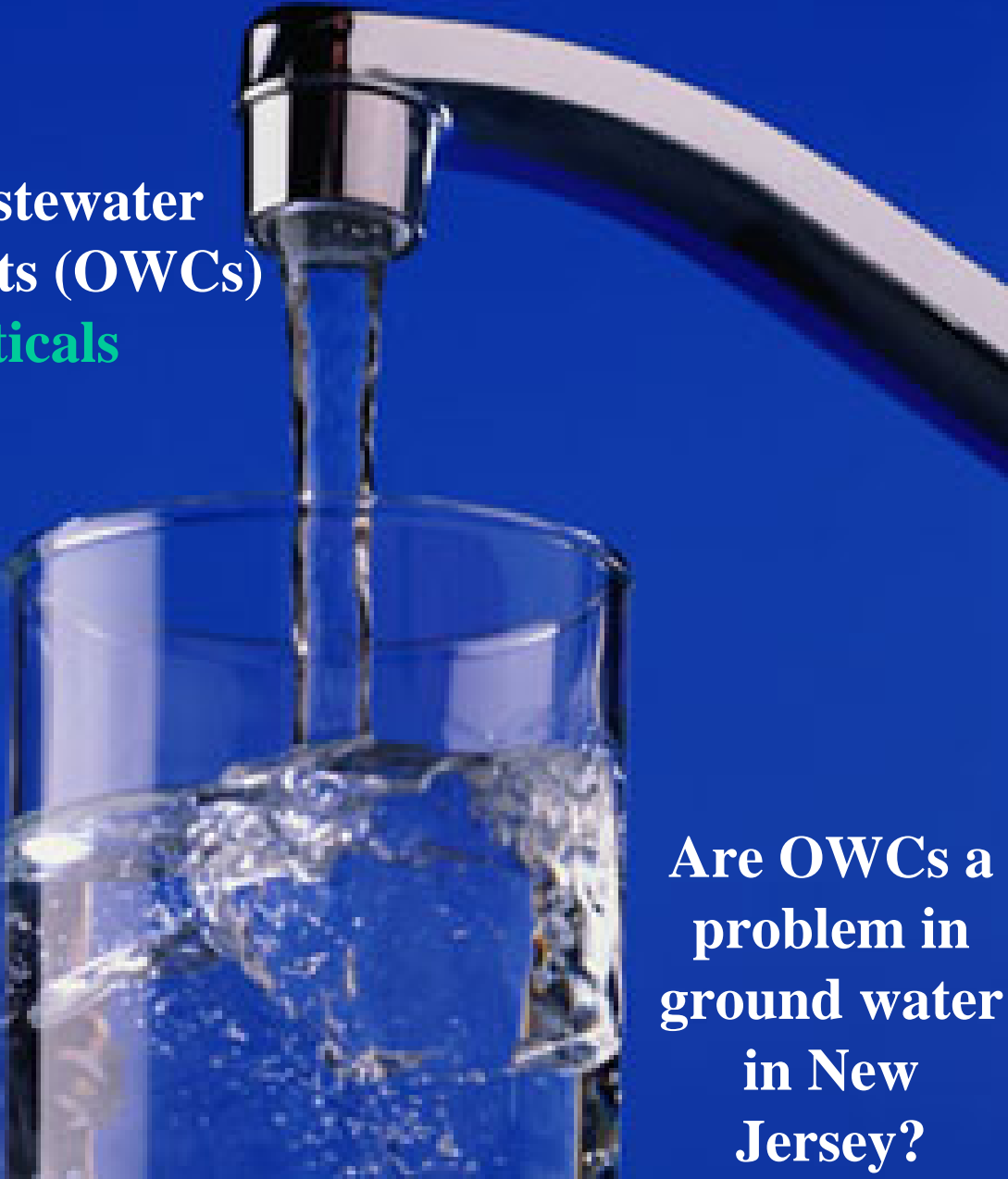
Michael Serfes NJDEP/NJGS

## Organic Wastewater Contaminants (OWCs)

- Pharmaceuticals
- Hormones
- Detergents
- Other stuff

Presented at:  
NJWMCC Meeting

January 23, 2008

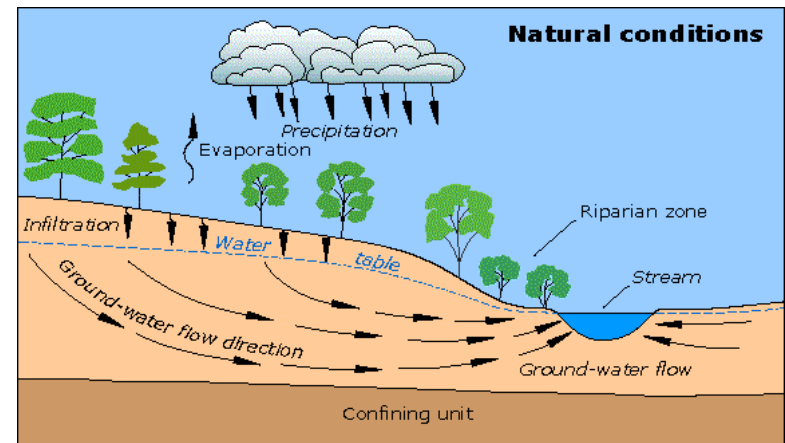


Are OWCs a  
problem in  
ground water  
in New  
Jersey?

# Organic Wastewater Contaminants

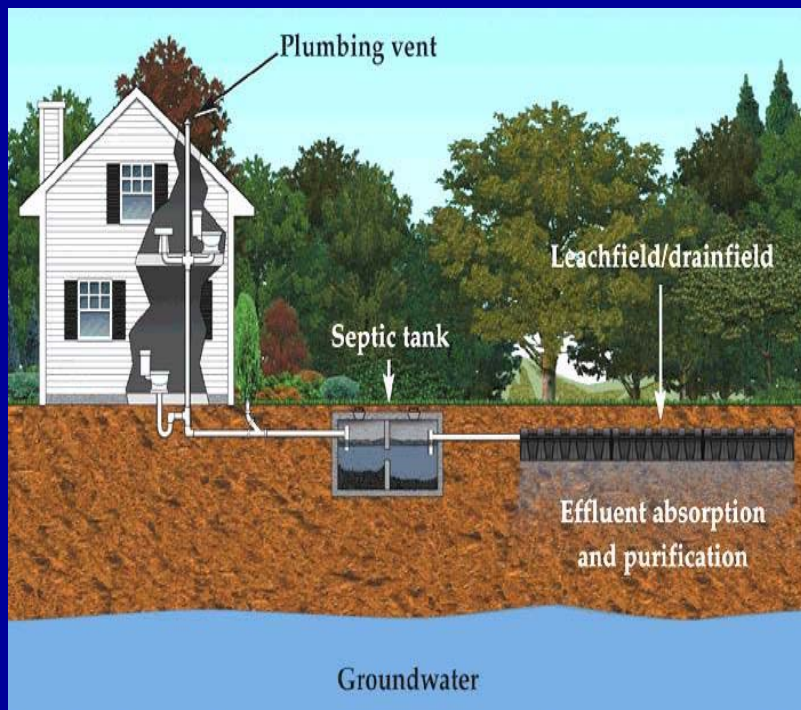
extensively used chemicals that can end up in wastewater...they go down the drain

- Pharmaceuticals (human and animal prescription and nonprescription medical drugs)
- Hormones etc.
  - Estrogens, testosterone, Steroids
- Other Wastewater Compounds:
  - Detergents and metabolites
  - Plasticizers, antioxidants, fire retardants, PAHs
  - Insecticides and repellents, disinfectants and antimicrobial, fragrances, flavors etc. etc.
  - other



# Sources of OWCs to Ground Water

## Septics and cesspools



## Wastewater infiltration lagoons



[www.derry.nh.us/dpw/sewer/activeprojects.html](http://www.derry.nh.us/dpw/sewer/activeprojects.html)

## Wastewater reuse



[www.toro.com/irrigation/golf/index.html](http://www.toro.com/irrigation/golf/index.html)

# NJ GW Studies - OWCs

1. Zoltan Szabo, USGS, 2003, NJ Coastal Plain and Northern NJ, sampled septic tank liquids and sludge. Found some OWCs in ppb range. Caffeine, fragrances, detergent metabolites and steroids account for most of total measured concentrations.
  - Down gradient well points: OWCs in 0.1 ppb range or ~ 1/3 tank liquid. Fragrances, detergent metabolites caffeine, and plasticizers/ flame retardants accounted for nearly all of total measured concentrations.
2. 2005 NJDEP and USGS submitted a proposal to USEPA to evaluate OWCs at and downgradient from nursing home septics...not funded.
3. Other work? Adjacent States... NY, PA, DE

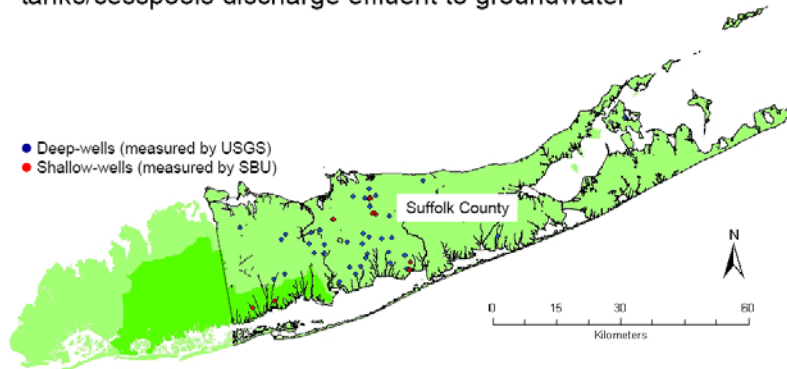


# New York

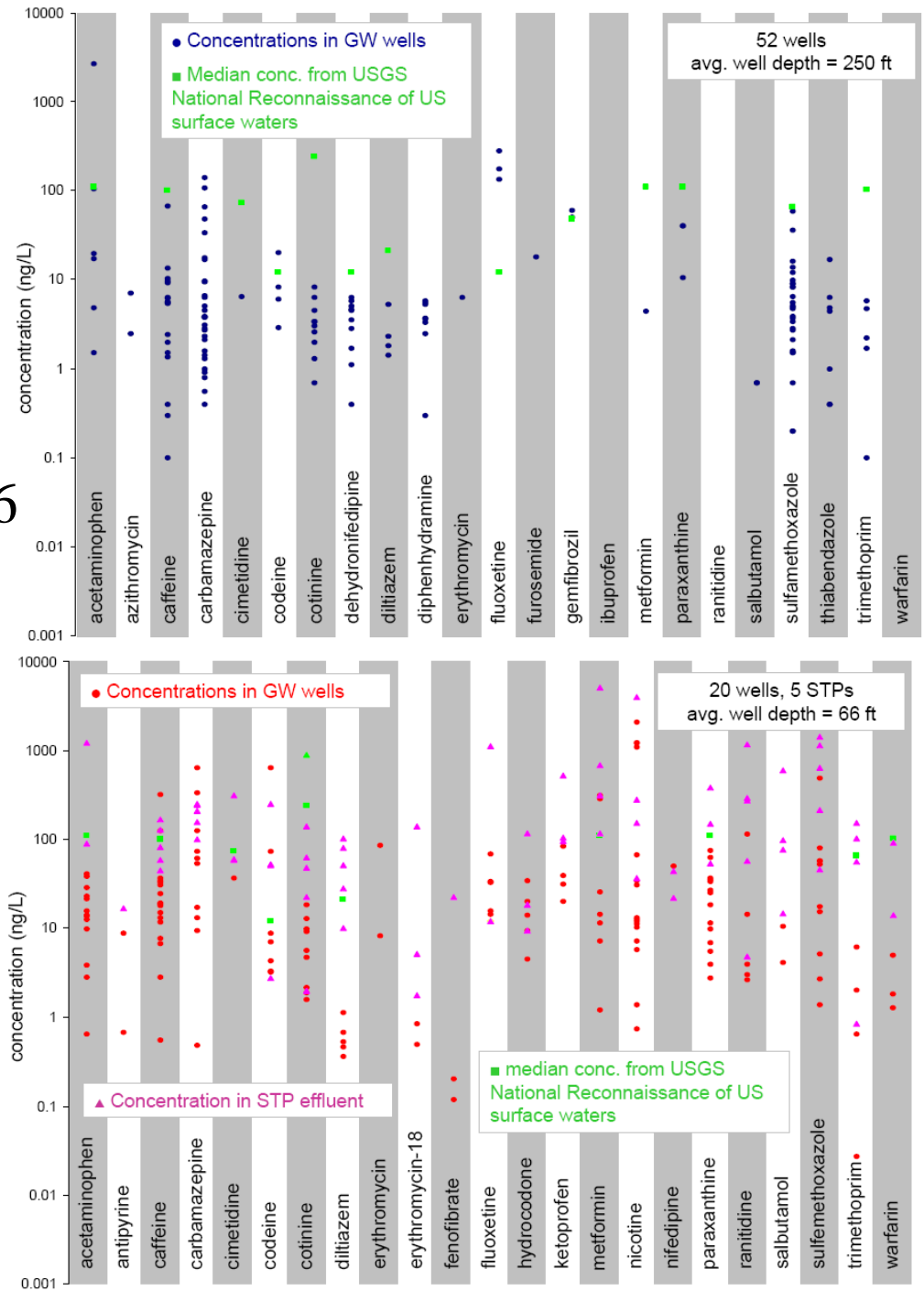
## Stoney Brook University and USGS – Suffolk County Long Island study

Mark J. Benotti and others, ~ 2006

- Largest population with a sole-source aquifer in the US
- Many municipal and private STPs, as well as all domestic septic tanks/cesspools discharge effluent to groundwater

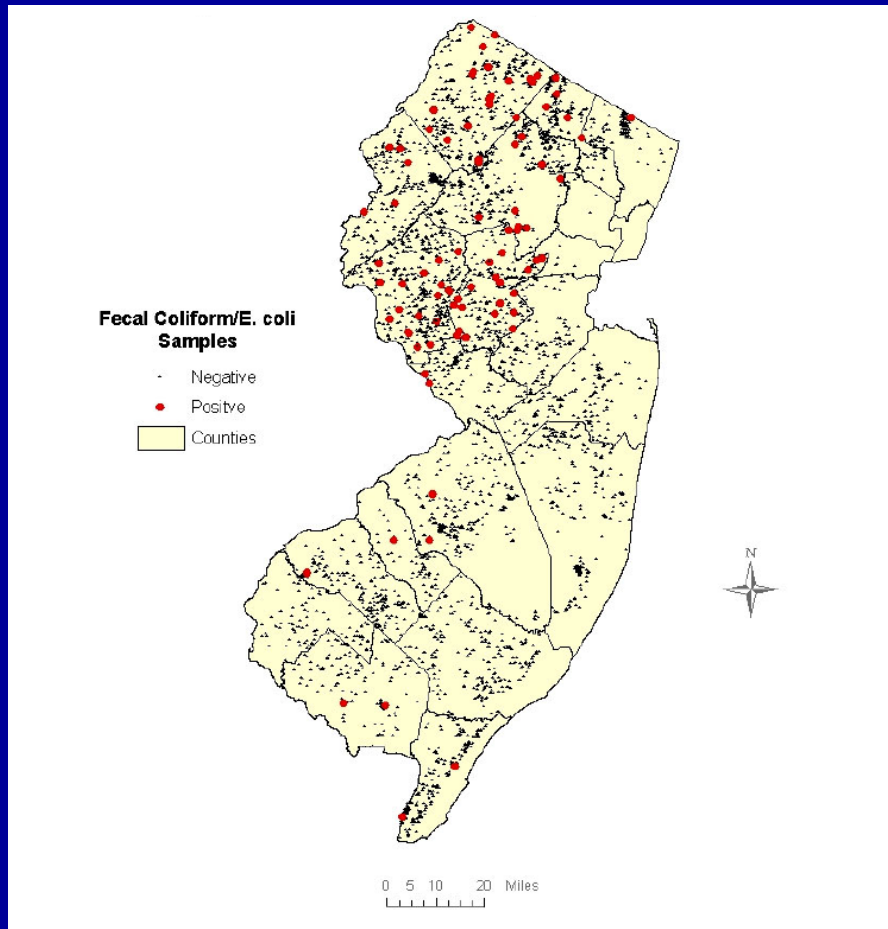


Unconsolidated glacial and other



# What should NJDEP do?

## Early planning phase proposals



Private well testing act data

Use NJGS manpower and equipment and USGS laboratory to perform:

- **A reconnaissance study** to evaluate occurrence and concentration of OWCs in ground water in New Jersey?
  - Target Nursing homes?
  - Residential septics?
- **Intensive investigations** at several sites in various geologic settings in New Jersey and extrapolate findings to evaluate concentration, fate and transport
  - Facilities like Ancora Psychiatric Hospital?

# What do you think we should do?

1. Find internal/external funding and perform:
  - Some sort of reconnaissance and/or intensive study to evaluate occurrence and concentration of OWCs in ground water in New Jersey?
2. Assume that OWCs are in ground water in New Jersey and just use studies from other states etc. to draw conclusions about New Jersey's situation?
3. Do both 1. and 2?
4. What's a couple of parts per trillion exposure among friends. People taking or using the stuff are already being exposed to a billion times the concentrations found in ground water anyway?

“Forget about it!”