USGS groundwatershed delineation effort

Nassau County Subwatershed Advisory Workgroup meeting
April 20, 11 am to 1 pm, Long Island Regional Planning Council

Paul Misut and **Chris Schubert**, USGS New York Water Science Center

NEW YORK STATE | Department of Environmental Conservation

USGS

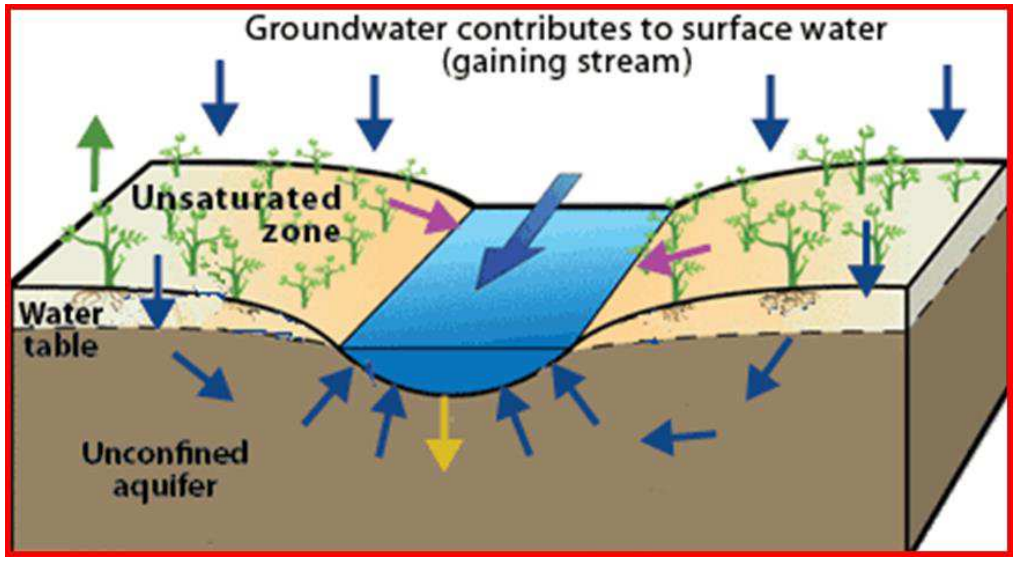
Project description

- Objectives
  - Delineate recharge areas that contribute groundwater to Long Island surface waters
  - Depict zones of groundwater times of travel
  - Publicly disseminate model/tools
  - Identify potential future applications

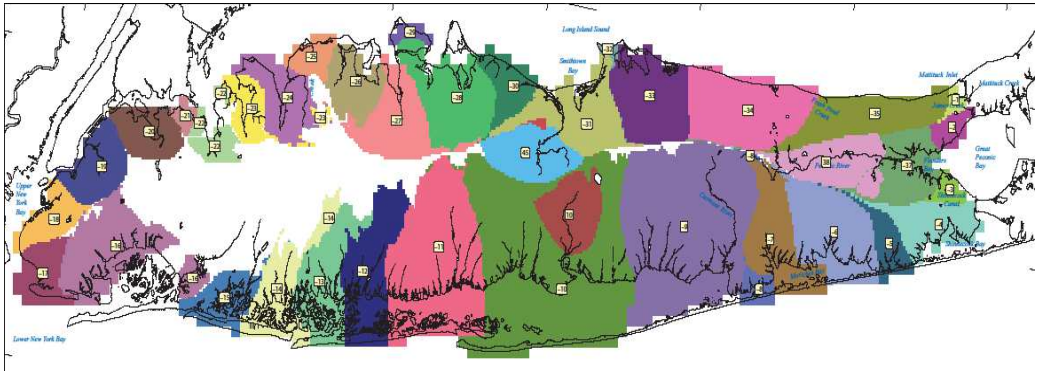
Conduct for ~1,000 streams, ponds, and estuary segments island-wide

Relation of groundwater to surface water on Long Island

- Groundwater sustains freshwater flows to streams and estuaries
- The natural source of this water is ultimately recharge from precipitation to the water table
- Groundwater flows slowly in the subsurface, so its role is often unseen (and overlooked)

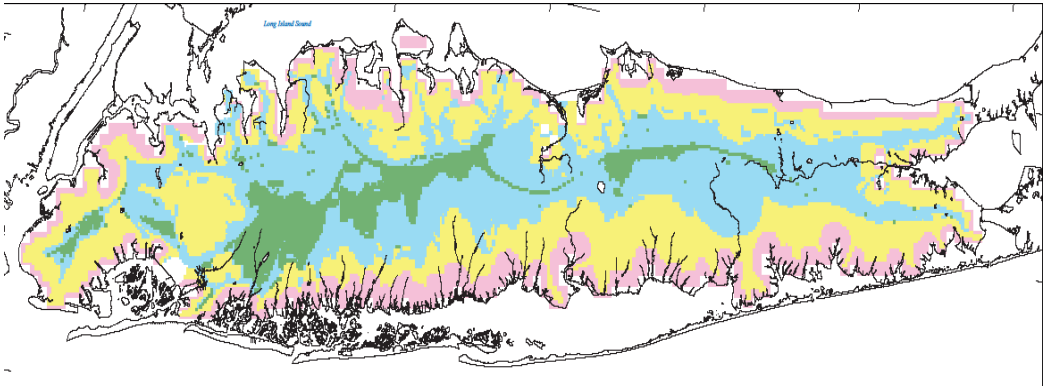


Recently published groundwatersheds and traveltimes for Long Island (main body)



EXPLANATION

-11 **Area contributing groundwater and index—** Index numbers are listed in table 1; negative values indicate an area contributing groundwater that discharges to a saline water body, and positive values, to a freshwater body



EXPLANATION

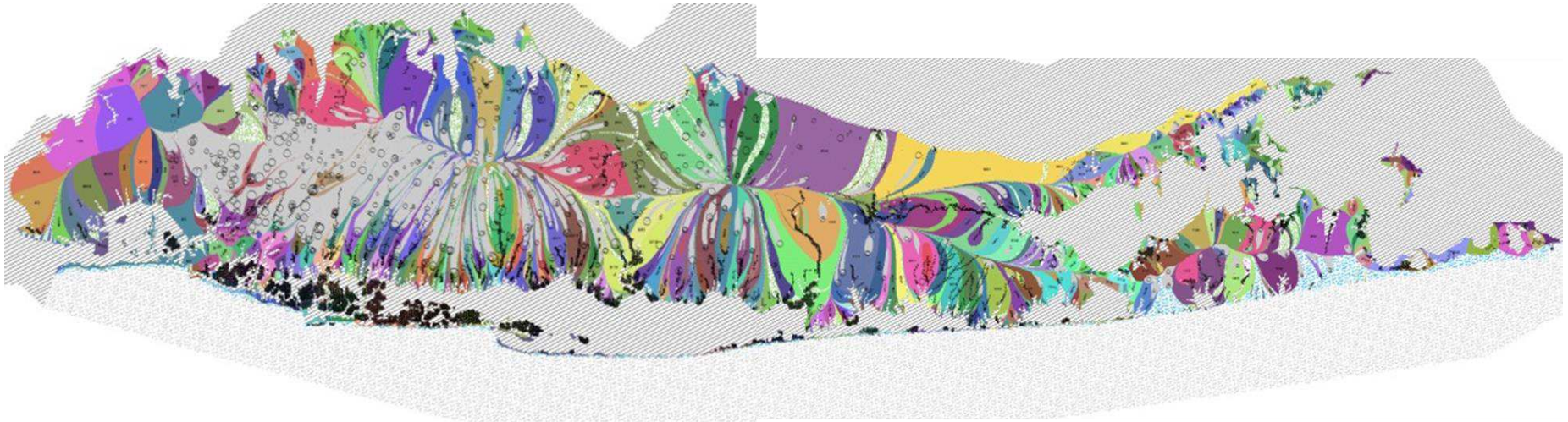
Travel time, in years

- Greater than 1,000
- Less than or equal to 1,000 and greater than 100
- Less than or equal to 100 and greater than 10
- Less than or equal to 10

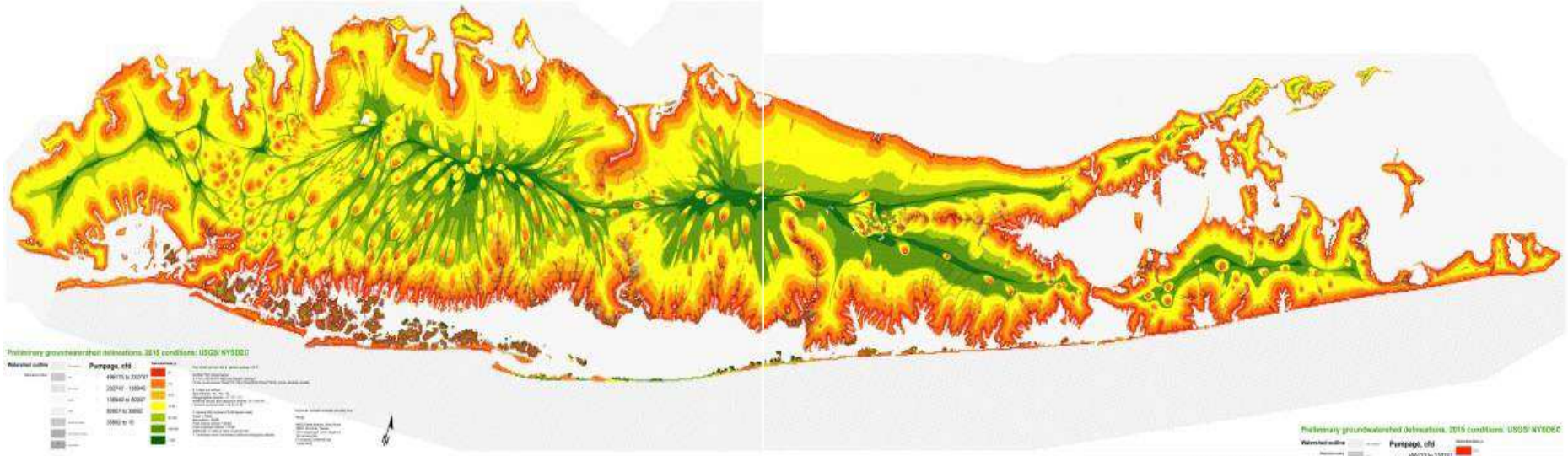
NEW YORK STATE | Department of Environmental Conservation

USGS

New groundwatersheds and traveltimes for Long Island (four county area) under development



Preliminary Information-Subject to Revision



NEW YORK STATE | Department of Environmental Conservation

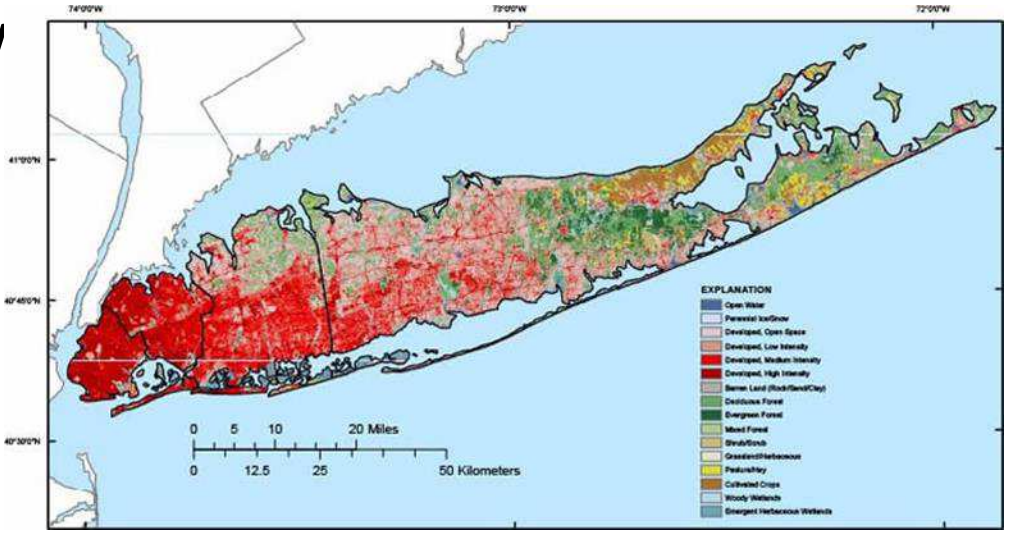
USGS

Anticipated schedule for project milestones

- Mid 2017: presentation of delineations, accompanied by first draft of final report
- Early 2018: dissemination of final report and model data release; training session for model/tool usage

How information might be used by LINAP

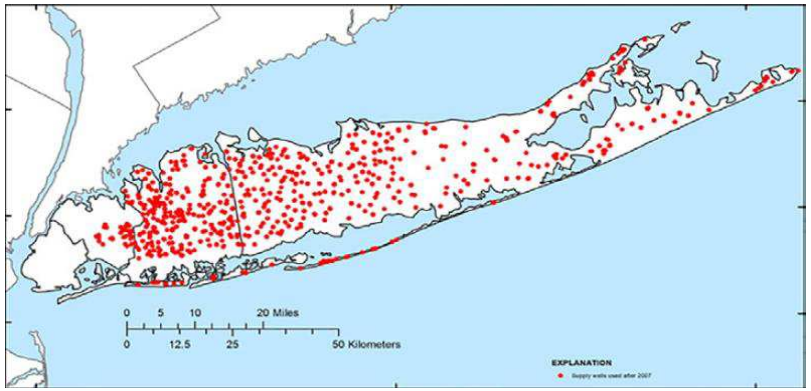
- Overlay results on current (or past) land use and identify sensitive or vulnerable recharge areas
- Assess which surface waters are at risk from recharge areas with excessive nitrogen input
- Understand mechanisms of freshwater outflow
- Evaluate feasibility of nitrogen control actions

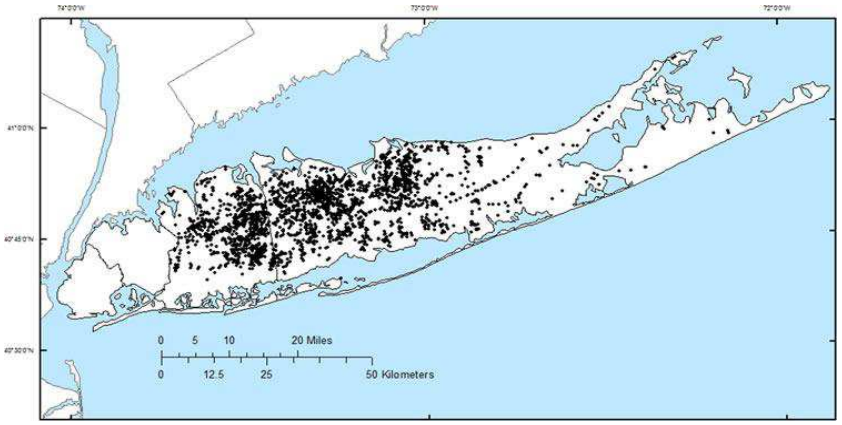


NEW YORK STATE Department of Environmental Conservation

USGS

How information might be used by others





- Public Supply wells
  - Also have contributing areas
  - Areas not within groundwatersheds are likely well contributing areas
  - Operation of wells affects groundwatershed areas
- Recharge Basins
  - Groundwater recharge rates are not spatially uniform
  - Operation of recharge basins affects groundwatershed areas

NEW YORK STATE | Department of Environmental Conservation

USGS

For more information

U.S. Geological Survey
N.Y. Water Science Center
(631) 736-0783, -4283 fax
http://ny.water.usgs.gov

- Paul Misut
  pemisut@usgs.gov
- Chris Schubert
  schubert@usgs.gov

NEW YORK STATE | Department of Environmental Conservation

USGS