



# Willand Pond

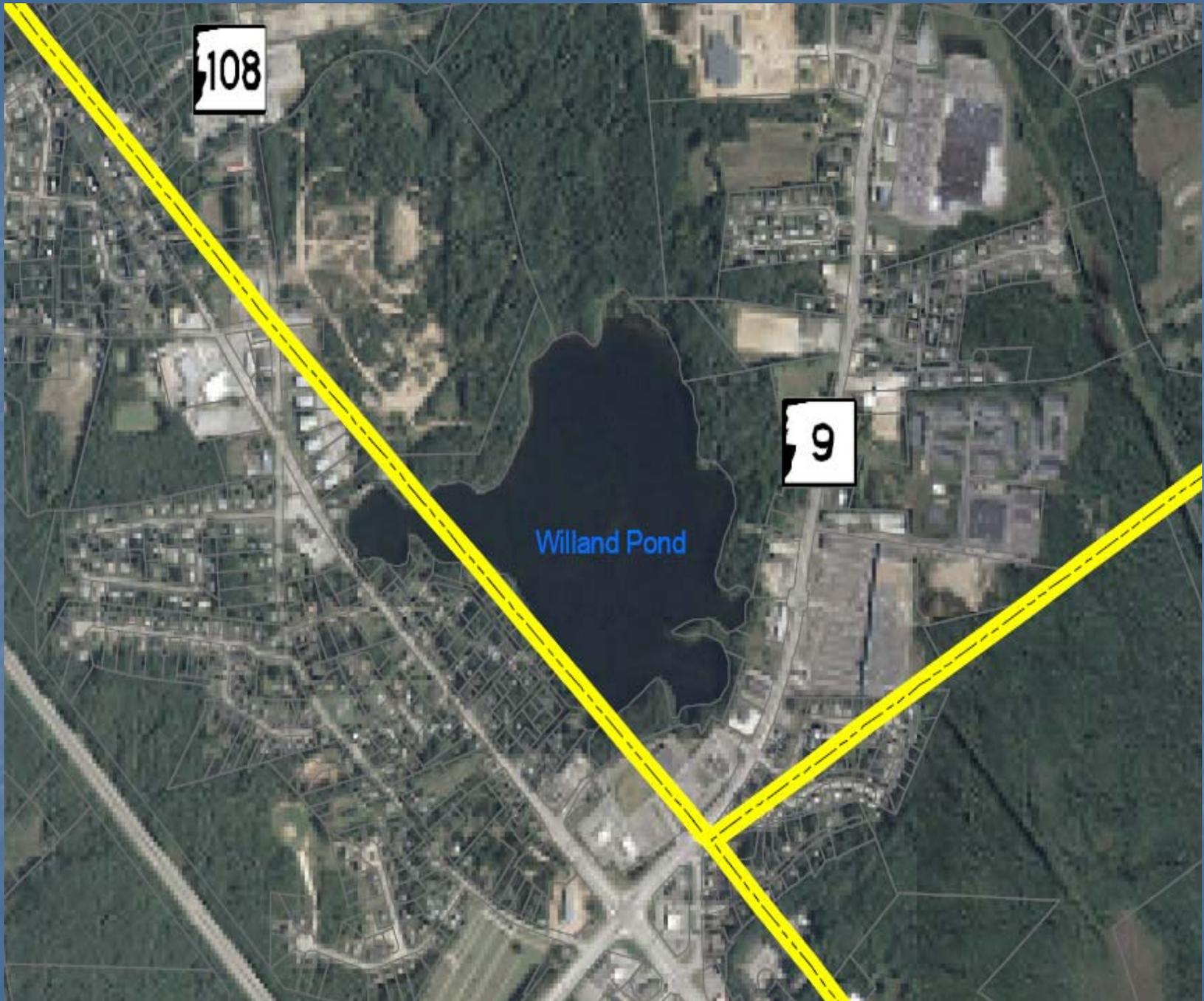
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# Special Thanks To:

- Dover Town Planner, Chris Parker
- Somersworth Director of Development Services, Craig Wheeler
- Somersworth Town Planner, Dave Sharples
- Dover residents who took part in our surveys
- Dr. James Haney and Dr. Alan Baker
- Shane Bradt, Amanda Murby, Paul Carrier, Jacquie Colburn, Darlene Forst, Rob Roberston, and Mark Gallagher.

# Advisory

We are finishing a class project on the projection of Willand Pond. We are providing the towns of Dover and Somersworth with a preliminary management direction. This talk will state areas that need to be further explored and possible actions that may need to be taken.

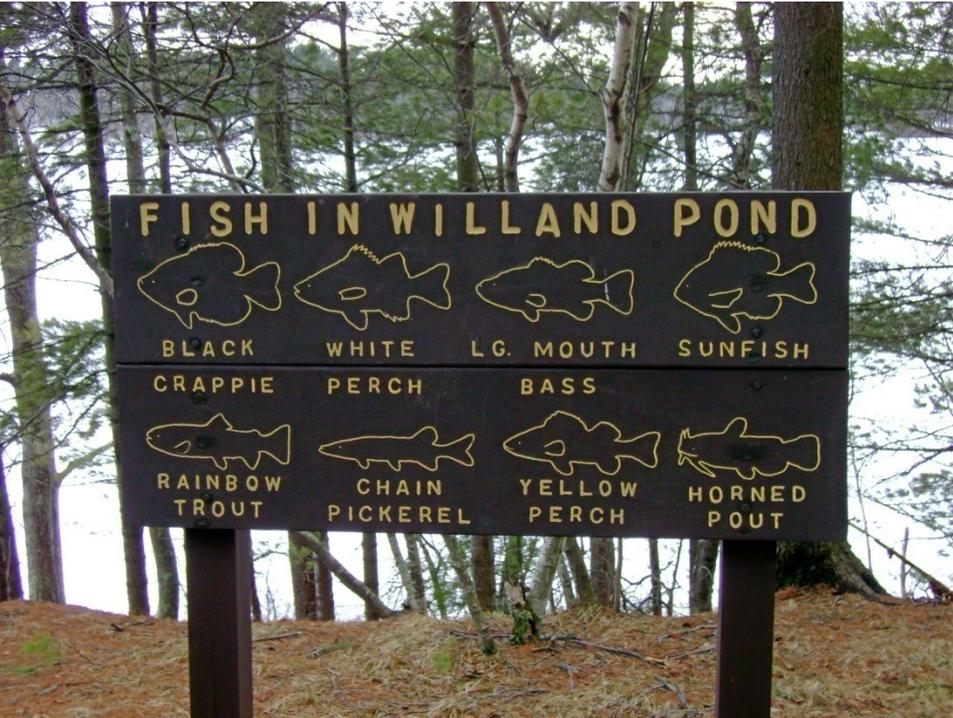
Thank you.

# Willand Pond

- Towns of Somersworth and Dover, NH
- Strafford County
- Surrounded by commercial development, residential homes, forest, and wetlands
- Fishing, boating, walking, skating, swimming, canoeing/kayaking, birding & wildlife watching
- Kettle Lake
- Recent concerns about algal blooms and the cause

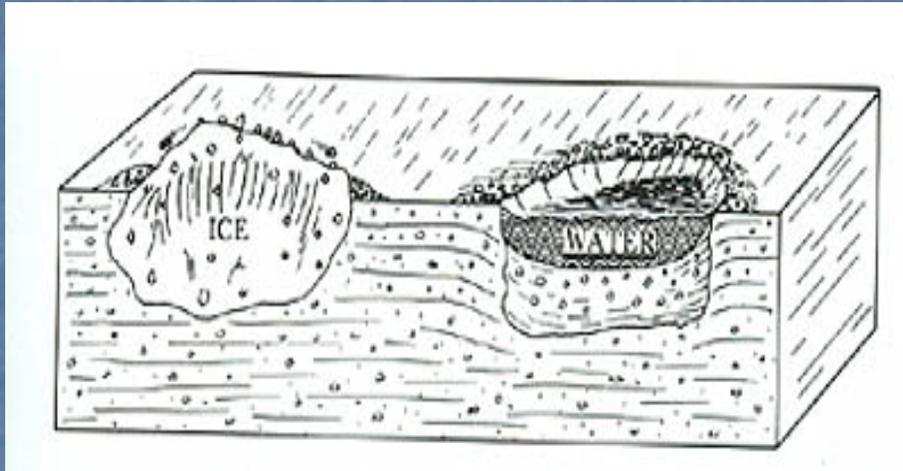


Lake: WILLAND POND		Lake Area (ha):	34.80
Town: SOMERSWORTH		Maximum depth (m):	11.2
County: Strafford		Mean depth (m):	4.7
River Basin: Coastal		Volume (m <sup>3</sup> ):	1627000
Latitude: 43°14' N		Relative depth:	1.7
Longitude: 70°53' W		Shore configuration:	1.29
Elevation (ft): 182		Areal water load (m/yr):	1.56
Shore length (m): 2700		Flushing rate (yr <sup>-1</sup> ):	0.30
Watershed area (ha): 116.5		P retention coeff.:	0.84
% watershed ponded: 0.0		Lake type:	natural





# What is a Kettle Lake?

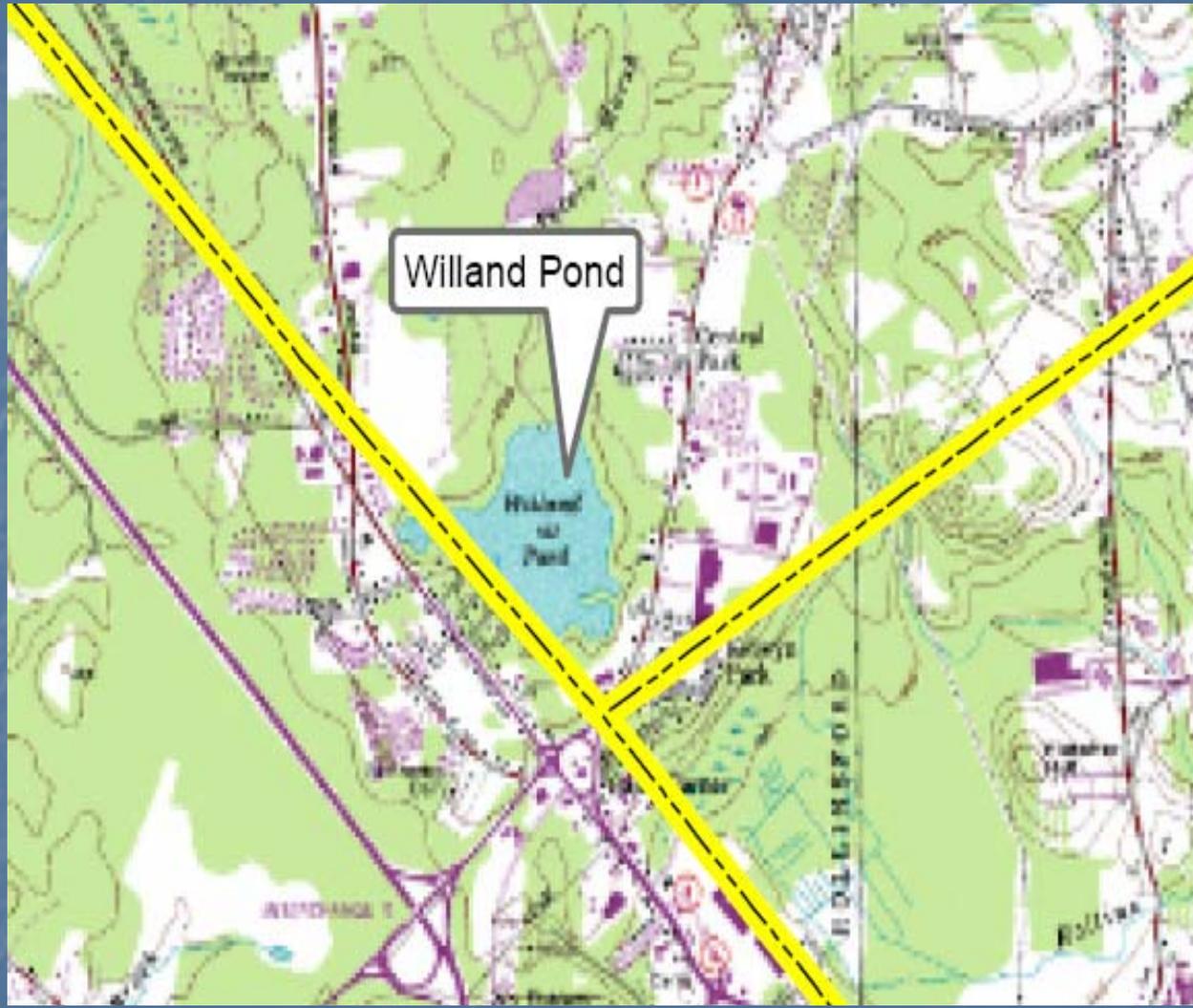


- A lake is not an isolate body of water, it is part of a larger ecosystem.
- Found in glaciated regions
- Deposits of meltwater and ice within debris from retreating glacier
- Hundreds of years for ice to melt
- Morphometry determined by ice and the overburden of debris
- Irregular in shape, size, slope and flushing
- Generally shallow depth



# What does this mean for Willand?

- Little drainage
- Inflow from precipitation, runoff, and ground water
- Water was previously removed from the lake as a drinking source
- More liable to flood



# More Incoming Water May Mean More Phosphorous

- Elemental components of a lake include carbon, nitrogen, hydrogen, oxygen, sulfur, and phosphorus (P)
- Phosphorus is a basic element.
- P is a key element in all known forms of life with a primary role in biological metabolism.
- Total P can be from less than 1 microgram/L to 200 mg/L – average levels for fresh water are less than 10 micrograms/L

# Where Is Phosphorus From?

- Internal loading – exchange between sediments and the overlying water
- External loading – added in from external sources (such as human sources)
  - Atmospheric precipitation
  - Ground water
  - Land Runoff
- Increases productivity of the lake



# Eutrophication by Phosphorus

- Lakes are often limited by P and can have C and N in excess amounts
  - 1P : 7N : 40C
- Eutrophy – signifies nutrient rich waters and increase biotas
- More phytoplankton and is common in areas with an increase in the supply of nutrients due to humans.
- P becomes recycled and is taken up by algae, cyanobacteria, bacteria, and larger aquatic plants.
- Average cyanobacteria and algae abundance has been positively associated with total and average P concentrations.
- Algae thrive in water that is over 20 microgramsP/L