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Connecticut's Aquifers

The technical definition of the word "**aquifer**" is: any geologic formation capable of yielding significant quantities of water to wells. By that definition, the entire state is an aquifer, as water can be withdrawn from the earth anywhere in Connecticut. Some formations may yield hundreds of gallons per minute; others only a few gallons per minute. All are significant sources. Most wells in Connecticut are drilled into bedrock simply because that is the predominant geologic feature in our state and because most of us have built our homes in the thin glacial till soils on uplands and must drill deep into bedrock for our water supply.

There are two basic aquifer types in Connecticut, those found in **unconsolidated sediments** and those in **bedrock**. These aquifer formations are summarized below. More detailed information can be found in Water Resources bulletins for each river basin, prepared by the U.S. Geological Survey. The bulletins can be purchased from the DEP store (Please call for information (860)424-3540).

Unconsolidated Sediments

Hydrogeologic Unit	Physical Characteristics and Distribution	Water-bearing Properties	Background Quality of Ground Water	Susceptibility to Contamination
Stratified drift (coarse)	Fine to coarse sand with some silt and gravel; deposits well sorted and	Most productive aquifers in State; especially	Low dissolved-solids concentration. Generally	Highly susceptible because of high hydraulic conductivity,

	stratified. Occur in streams valleys and lowlands. Commonly inter-bedded with finer layers. Overlie till and bedrock.	where thick, coarse grained, and hydraulically connected to large streams or lakes. Provide large yields for public-supply and industrial uses.	moderately hard, especially where constituent fragments or underlying bedrock consist of carbonate rocks. Local high concentrations of iron and manganese.	proximity of water table to land surface, extensive cones of depression in heavily pumped areas, use of abandoned sand and gravel pits as dumps, and because of location in larger valleys, many of which are urbanized and industrialized.
Stratified drift (fine)	Predominantly clay, silt, and very fine sand; deposits well sorted. Occur in streams valleys and lowlands. Commonly interbedded with coarser layers. Overlie till and bedrock.	Poor aquifers, particularly where very fine grained and not interbedded with coarse layers.	Same as coarse-grained stratified drift.	Less susceptible than coarse-grained stratified drift because of its lower hydraulic conductivity.
Till	Heterogeneous mixture of unstratified materials ranging in size from clay to boulders; generally compact; commonly	Poor aquifers, especially where hydraulic conductivity is low and saturated section is thin. Can	Low dissolved-solids concentration. Generally soft to moderately hard. Local high concentration of iron and	Less susceptible than stratified drift because of its low hydraulic conductivity, but dug wells are subject to contamination from local sources.

	called "hardpan." Overlies bedrock in most of the State.	provide small supplies to dug wells of larger diameter.	manganese.	

Bedrock

Hydrogeologic Unit	Physical Characteristics and Distribution	Water-bearing Properties	Background Quality of Ground Water	Susceptibility to Contamination
Sedimentary (and associated igneous) rocks	Sedimentary aquifers are fine-to-coarse-grained bedded rocks (shale, sandstone, siltstone, and conglomerate); joints well defined. Underlie most of central Connecticut. Associated igneous rocks are basalt and diabase (trap rock) flows separated by sedimentary rocks, joints well defined. Form ridges in central Connecticut.	Yields adequate supplies for domestic and small-scale municipal and industrial purposes from openings along bedding planes and joints.	Moderate dissolved-solids concentration, generally moderately hard to hard. High dissolved sulfate, chloride, and sodium concentrations locally. Significant chemical quality differences, both areally and with depth.	Contaminants can enter along joints and bedding surfaces, especially where covering of till or other unconsolidated deposits is thin. Sedimentary rocks in lowlands susceptible because of urban and industrial land uses.

Carbonate rocks	Calcium and magnesium carbonate (limestone, dolostone and marble). Underlie a few valleys in western part of State.	Provide adequate supplies for domestic and small-scale municipal and industrial purposes.	Moderate dissolved solids concentration, generally hard; most supplies require softening. Commonly alkaline and low in iron and manganese.	Susceptible where intensively and deeply weathered, as in parts of southwestern Connecticut and where covering of till or other unconsolidated materials is thin. Solution channels facilitating movement of contaminants are rare.
Crystalline (noncarbonate) rocks	Predominantly metamorphic rocks (schist and gneiss.) highly folded, numerous joints. Underlie most of eastern and western Connecticut; overlain by thin till in most places.	Yield adequate supplies for domestic use to drilled wells, from opening joints.	Low dissolved-solids concentration, soft to moderately hard, locally hard, local high, concentrations of iron and manganese.	Contaminants can enter along joints and other fractures, especially where covering of till or other unconsolidated deposits are thin.

The above description of aquifers was taken from a publication on our state's geologic features prepared by the Connecticut office of the U.S. Geological Survey.

Surficial Aquifer Potential Map of Connecticut

A new Surficial Aquifer Potential Map of Connecticut has been prepared by the

Connecticut Geological Survey for statewide resource protection, water management, non-point source pollution prevention, and land use planning. The map identifies areas with greater potential for ground water supply based upon the texture and thickness of surficial aquifer deposits. (See Surficial Aquifer Potential Map.)

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