



COMMENTARY

Would legislation make it 'virtually impossible' to site a landfill in New Hampshire?

| MURIEL S. ROBINETTE

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📷 When Casella Waste Management proposed building a new landfill in Dalton on land abutting Forest Lake State Park, some residents raised concerns that pollutants from the landfill could contaminate the lake. (Amanda Gokee | New Hampshire Bulletin)

The vast majority of land in New Hampshire is hydrogeologically suitable for landfill siting because it lies over the type of soils that transmit groundwater slowly toward our nearby lakes and rivers.

[House Bill 1454](#) is a problem only for developers who attempt to site a landfill in sand and gravel formations that transmit groundwater very quickly toward nearby surface water bodies. The bill was vetoed by Gov. Chris Sununu last month, but proponents are hoping there will be broad enough support to override the veto when the full House and Senate reconvene.

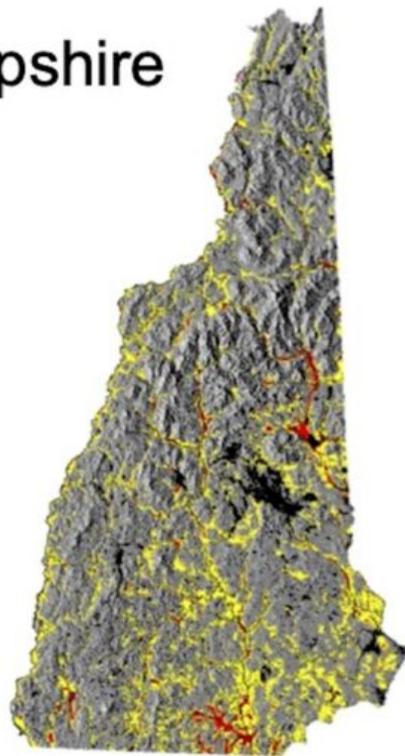
New Hampshire's surface geology was created about 15,000 years ago, when the continental glacier covered the entire state with upward of a mile thickness of ice. The glacier laid down a layer of glacial till, through which groundwater typically flows very slowly due to its composition of silt and clay materials. When the glaciers melted, sand and gravels called glacial stratified deposits were laid down locally in some areas. These deposits were mapped in New Hampshire by the United States Geological Society (USGS, Report 95-4100, 1995) because they are valued resources due to their ability to store groundwater and transmit it rapidly for water supply.

Aquifers in New Hampshire

Only 14% of the state is covered by stratified drift aquifers.

 **Transmissivity less than or equal to 2,000 ft²/day**

 **Transmissivity greater than 2,000 ft²/day**



 All of the areas on the map that are not highlighted in yellow or red are areas where the soil may be suitable for landfill siting due to slower groundwater flow rates. (Source: Assessment of Water Level Trends in Bedrock Wells in NH," by Brandon Kernan, PG, NH Dept. of Environmental Services, available online at https://campus.plymouth.edu/cfe/wp-content/uploads/sites/127/2011/03/Kernen_Friday-Groundwater_water-level-trend.pdf)

Why are these two common glacially derived deposits of interest with respect to HB 1454? Because they represent the two very different typical kinds of subsurface materials that are encountered in potential landfill sites. The glacial stratified deposits with rapid groundwater

flow rates would require much larger setbacks to protect surface water from rapidly transmitted contamination, while the glacial till, generally characterized by much slower groundwater flow rates, would require much smaller setbacks.

HB 1454 establishes a *five-year* setback, based on the maximum measured speed of groundwater flow at the site, and allows operators to receive up to three years of “credit” (that is, site at least two years away from a lake or river) if they add additional engineering or other controls not required by regulation.

So, if HB 1454 was signed by the governor and became law, would that take “too much area” of the state out of consideration for new landfill sites, thus “very likely making it virtually impossible” to site another New Hampshire landfill in the future? The answer to this question is simple: no.

New Hampshire encompasses approximately 5.75 million acres, and according to the USGS mapping of stratified drift deposits, only 14 percent of New Hampshire’s area contains these rapid groundwater flow deposits. This leaves approximately 4.95 million acres in New Hampshire generally characterized by glacial till deposits that typically slowly transmit groundwater.

Setbacks from surface water due to HB 1454’s formula in large areas of the state (areas of glacial till) might be as short as a few hundred feet, hardly a burdensome setback. The accompanying map, prepared in 2011 by geologist Brandon Kernen (administrator of the Drinking Water and Groundwater Bureau at the New Hampshire Department of Environmental Services), shows in yellow and red the 14 percent of New Hampshire that *may* be unsuitable for landfilling because of the rapid groundwater flow in the stratified drift aquifers.

If a proposed developer of a landfill finds that a potential site has rapid groundwater flow speeds on the order of several feet per day (sand/gravel), then by looking a few miles away in any direction, he or she may find a more appropriate site where the groundwater flow is at speeds of several feet per *year*. All that HB 1454 does is to steer applicants away from the 14 percent of the state and toward the other 86 percent.

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Muriel Robinette’s scientific career has spanned four decades from coast to coast in the United States, including time spent in academia, government, and private consulting. She now practices part time as a senior consultant at CALEX Environmental, LLC, an environmental and compliance consulting company in Colebrook. Muriel’s consulting specialty is in forensic hydrogeology, which she practices in many states around the U.S. She is a licensed geologist in several states and currently services on the N.H. Professional Geology Licensing Board.

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