

## **New Hampshire's Great Bay Development Plays Key Role in Pollution of**

**BY AMY QUINTON**

<http://nhpr.org/post/development-plays-key-role-pollution-great-bay-estuary>

This week NHPR's Amy Quinton has been taking [an in-depth look at the New Hampshire's Great Bay](#).

The estuary is one of the state's natural treasures.

But it's in trouble.

Yesterday, Amy told us about [the role wastewater treatment plants have played in polluting the bay](#) and how they now face tougher clean water standards.

But the majority of pollution in the estuary comes from so-called non point sources, such as stormwater runoff.

And much of that comes from development. Amy Quinton has more.

We head out on a boat from Chapman's Landing in Stratham, New Hampshire and go down the Squamscott River into the Great Bay.

Conservation advocates are along with me, including Daryl Burtnett, New Hampshire's Director for the Nature Conservancy.

From the boat it doesn't look like there's much development along the water's edge, just a few houses here and there, nothing like you'd see around Lake Winnepesaukee.

Burtnett says in a sense, the Great Bay is fortunate. I-95 was built far enough away from the Bay that development didn't take over here.

"You wouldn't even know this was here when you're on 95 and that was a blessing for quite a long time that so many folks, it was just off their radar...the people who lived right here knew it was a special place, but most of the rest of the world didn't."

But Great Bay's watershed is much larger than the towns that abut it.

Streams, brooks, and rivers that pass through 52 towns in both New Hampshire and Maine flow into the bay.

The watershed stretches as far north as Wakefield and as far west as Candia.

Paving parking lots, building roads and buildings, in any of those towns, exacerbates problems in the estuary because rainwater can't soak into the ground.

So when it rains, any pollutants or sediments are carried into the rivers and then into the estuary.

James Houle with UNH's stormwater center says impervious surfaces increase not only the volume but also the force of the water.

"That's what increases flooding and it increases erosion and it upsets that natural cycle and natural lag"

To give you an idea of the kind of impact stormwater can have in a developed area: when the spring floods hit the southern part of the state a few years ago, the Great Bay estuary became a freshwater system.

And every year for the past 20, about 1500 acres of impervious surface has been added to the Great Bay watershed.

Burnett says in order to improve the Great Bay's health, that kind of development needs to stop.

"All the impacts of that development miles and miles upstream, all the communities that are part of this watershed system, it matters how they develop, what are the septic systems like, how much are we fertilizing lawns, fields, agriculture, golf courses, that all matters."

Fertilizer runoff increases the nitrogen content of the Bay.

James Houle says so do failed septic systems. And about 60 percent of the population in the watershed uses a septic system.

"What we call failure of septic systems is when it starts to backup into your basement, but from a hydrologic standpoint that's way past failure, failure is when those soils lose their ability to filter and convey water down into the groundwater."

Individual homeowners can easily prevent much of the pollution from runoff by leaving plants, shrubs and trees near shorelines undisturbed.

As we cruise into Crommet Creek in Durham, The Nature Conservancy's Daryl Burnett points to an example.

"There's a house back there, we're looking through the trees, probably a couple of hundred feet of natural woodland trees, undisturbed groundcover, fringing green right along the edge of the marsh and then marsh grass itself, you can see a real progression of habitat there."

Those marsh grasses help sponge up nutrients coming off the land.

Phil Trowbridge, a coastal scientist with the Piscataqua Region Estuaries Partnership, or PREP, says newer technologies can also help prevent storm water runoff in urban areas.

"There are retrofit options where you are able to treat the stormwater after you've collected it, or replace the impervious pavement with what's called pervious pavement which is a hard top surface that allows the water to infiltrate through."

Trowbridge says those kinds of solutions to stormwater runoff can be some of the most expensive.

But many municipalities may be forced to make those changes if nutrient pollution in the Bay doesn't improve.

As part of UNH's stormwater center, James Houle promotes those technologies as part of the solution.

But he says, ultimately, it's not the best.

"We combat the notion that you can have your cake and eat it too, you can develop and then you can manage the negative consequences from development, that's just sort of a fairy tale, conservation is still the best way, the most efficient and the most cost effective way at protecting and managing this."

Last year's State of the Estuaries report by PREP outlined 12 environmental indicators to determine the health of the estuary.

Of all of them, only one was positive: land conservation. (boat noise) "We've done 5502 acres, and 94 transactions..."

That's Dea Brickner Wood, coordinator for the Great Bay Resource Protection Partnership.

Since 1994, the partnership, which includes more than nine environmental and conservation organizations, has worked at preserving the Great Bay's land and its habitat.

"A lot of the families' land have started to be divided up overtime and we really felt like in the last 10 to 15 years, this was one of our last chances to start putting together contiguous blocks of land which is so significant for habitat."

The land provides habitat for more than 160 bird fish, and plant species...some of them endangered. Daryl Burnett with the Nature Conservancy credits the partnership for helping prevent the Bay's deterioration.

"If we hadn't been doing this kind of conservation at this scale for a decade or so, it's really likely that the Bay would be in much worse shape than its in right now. It's one of the ingredients that's really going to help us have hope for the Bay in the future."

One more source of nitrogen which is often overlooked comes from air pollution. It comes from car exhaust pipes and industry and power plant smokestacks, some from as far away as the Midwest. It's called atmospheric deposition, and by some estimates, it accounts for almost half of all the non point sources of pollution in the Bay.

But Daryl Burnett says it's distracting to argue how much pollution comes from where and who is to blame. "In some ways it's an unsolvable argument, what we talk about here are natural systems that have been unnaturally disrupted by our behaviors, and nature isn't rocket science, it's much much more complicated."



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