



The Nelson A. Rockefeller Center at Dartmouth College

The Center for Public Policy and the Social Sciences

Policy Research Shop

SHORELAND DEVELOPMENT AND THE IMPLICATIONS FOR WATER QUALITY ON VERMONT LAKESHORES

A Case Study Analysis of New Hampshire and Maine

Presented to Vermont Senators
Diane Snelling and Robert Hartwell

PRS Policy Brief 1314-12
June 10, 2014

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This report was written by undergraduate students at Dartmouth College under the direction of professors in the Rockefeller Center. The Policy Research Shop is supported by a grant from the Fund for the Improvement of Postsecondary Education (FIPSE). The PRS reports were developed under FIPSE grant P116B100070 from the U.S. Department of Education. However, the contents of the PRS reports do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal Government.



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EXECUTIVE SUMMARY

Shoreland development along lakes and ponds in Vermont is responsible for considerable impacts to aquatic habitats. These impacts include physical erosion, nutrient loading, and damages to near-shore shallow water environments. Before this year Vermont has not had an official policy managing shoreland development specifically. During the 2013 and 2014 Vermont Legislative sessions, bills H.526 and S. 224, both addressing shoreland development, passed the House and Senate, respectively. These bills have passed both the house and senate and are currently awaiting the Governor's signature. This study seeks to understand how effective Senator Snelling's Shoreland Protection Bill will be for Vermont lakes. In order to make this evaluation, case studies will be drawn from New Hampshire and Maine with the intent of identifying the elements of shoreland development policy that make it effective at decreasing phosphorus levels. This data will then be used to generate an understanding of how Senator Snelling's new legislation will impact water quality in Vermont.

1. BACKGROUND

The shallow water habitat surrounding lakeshores is very important for the health of lake systems as a whole- it serves as the habitat for most of the diversity of microorganisms and aquatic plants and as the breeding ground for fish and amphibians. Shoreland development has powerful impacts on the function of these regions. To start, shoreland development removes vegetated surfaces. The removal of vegetation increases sunlight exposure, thus increasing temperature, and decreases the detritus inputs that form microhabitats. Together, such changes significantly alter the characteristics of the shallow water habitat. Also, impervious surfaces make the affected land area less capable of absorbing meltwater and stormwater, increasing runoff and the inputs of the nutrients and sediment that this water carries with it. Sediment increases the turbidity of the water, thus decreasing the habitable depth of the water column to plants and animals. Nutrient loading from fertilizers and sewage effluents causes algal blooms, which have economic, environmental, and public health implications.¹

The original sources of these nutrients and sediment along shorelands are usually nonpoint source, those which enter waterways from diffuse entry points in small quantities. While the individual contribution is almost insignificant from non-point source pollution, the cumulative effect is quite strong. For this reason, unless properly monitored, the collective action problem for these inputs continues to become exacerbated, and there is no incentive for any individual actor to address it. Shoreland development policy seeks to address the issues presented by these inputs downstream of their original entry point, by regulating the mechanisms by which they actually enter waterways in excessive quantities.²

Currently, Act 250, Vermont's Land Use and Development Law, is the primary legislation regulating land development. This includes all shoreland areas and by



extension serves as the only legislation managing stormwater runoff entering lakes in Vermont. Unfortunately, Act 250 regulations do not sufficiently protect water quality. To start, Act 250 is fairly vague: its standard for maintaining water quality is to prevent “unreasonable burden,” yet the legislation does not define what is meant by “unreasonable.” This kind of ambiguous language allows for the continuous of development that decreases water quality. Also, Act 250 only impacts a limited scope of private development projects: those which occur on more than ten acres of contiguous plots of land and any types of agricultural development are exempt from the permitting process. Act 250’s jurisdictional power does lie in the regulation of municipal and state development. These lands, regardless of size, must comply to the standards set by Act 250, which could have a significant positive impact on much of the shoreland development in Vermont, as much of this is owned by states or local municipalities. Ultimately, much of the privately owned non-commercial development on Vermont lakeshores goes unregulated under Act 250.

Recent Vermont legislation has sought to add additional stipulations to development that augment the regulatory authority of Act 250. In particular, the Shoreland Protection Bill (H.526) introduced by the committee on Fish, Wildlife, and Water Resources details statewide policies regarding land management practices on all waterfront properties, with the goal of reducing nutrient runoff and erosion and protecting shallow water habitat. Stipulations include a permitting process evaluating further development of property, and the preservation of vegetation on shoreland property within 250 feet of the shore.

The Shoreland Protection Bill passed the Vermont House in 2013 and the bill was recently passed in early February 2014 in the Senate as introduced by Senator Snelling, with additions that focused on permitting guidelines, exemptions, and fees. The Bill has now gone to conference committee with an effective date of July 1, 2014 upon being signed into law by the Governor.

2. NEW HAMPSHIRE

The Shoreland Water Quality Protection Act (also known as the Comprehensive Shoreland Protection Act) was established in 1991. It set up a minimum standard for subdivisions, use and development of shoreland adjacent to the state’s public water bodies. Nothing was done to this initial act for more than decade, but on July 1, 2005, Senate Bill 83 was passed. Senate Bill 83 “established a commission to study the effectiveness of the comprehensive shoreland protection act.” This commission had 24 members and created a final report where 17 recommendations were made. 16 of the recommendations were enacted into law either April 1, 2008 or July 1, 2008. The changes that were made in 2008 include, but are not limited to: “limitations on impervious surfaces, revised vegetation maintenance requirements and the establishment of a permit requirement for many, but not all, construction, excavation and filling activities within protected shoreland.” More changes were also made in 2011, but those



were mostly namesake changes; so, the most recent changes to New Hampshire's shoreland development law were in 2008.³

2.1 Characteristics of Current New Hampshire Legislation

The specific shoreland protected in the law is 250 feet from the “reference line of protected waterbodies.” A reference line is “the point from which setbacks are determined and its location varies depending on the type of waterbody.” Although it seems like 250 feet is a fairly arbitrary number, and to some extent it is, many state laws agree that protecting the shoreland within 250 feet of the shore is the most important to the health of the water bodies. The specific water bodies that are protected under SWQPA are, “all lakes, ponds and impoundments greater than 10 acres, all fourth order and greater streams and rivers, all designated rivers and river segments under RSA 483...and all water subject to the ebb and flow of the tide.” So, the majority of major water bodies in New Hampshire are covered under the wall. The specific activities that require shoreline permits are, “new construction or construction that modifies the footprint of existing impervious surfaces, using mechanized equipment to either excavate, remove or form a cavity within the ground and filling any areas with rock, soil, gravel or sand.” Other areas do not require a permit always, but may on occasion. These include: “activities that propose no greater than 1,500 square feet of total impact area, or which no more than 900 square feet is new impervious surface.” A specific wetland impact permit is necessary for shoreland along wetlands. In these areas, when any new construction takes place, the permit mandates that the landowner must also, “replenish beach sand, or within wetlands, tidal areas of the 100 foot tidal buffer zone and sand dunes.” As should be clear, the only activities that require permits are new construction or construction to existing structures. So, any development that already existed before 2008 does not require and permit and thus does not need to follow the new policy in place.⁴

2.2 Interview: Darlene Forst

We spoke with Darlene Forst, the head of the NHDES Shoreland Program. Ms. Forst helped us to understand the New Hampshire law and explained that the new Vermont policy is quite similar to the New Hampshire policy. Mostly, Forst focused on the permitting system that is in place in New Hampshire. As stated above, permits are necessary for new construction but not for buffer and planting standards. The state of New Hampshire issues permits, but towns can also have more stringent ordinances and thus can issue their own permits. Every permit is valid for five years and failure to adhere can result in fines for the property owner.⁵

Up until recently, shoreland development permits were monitored via personal complaints, from neighbors or other residents. Forst noted that trusting these residential complaints seemed necessary—because no other monitoring system was in place—but dangerous because neighbors could have ulterior motives and it could result in a



residential feud. For this reason, an aggressive inspection program is in place to prevent against false.⁶

Within the past few years, NHDES set up a monitoring system themselves. Three or four years into the five-year permits, the NHDES will randomly select permits to inspect. Because this is a newly instated program, Forst does not know have effective this monitoring program will be because it was recently instated, but she thinks it will be extremely effective. According to Forst, just the threat of being selected for an inspection will motivate people to follow their permits.⁷

2.3 Recommendations for Vermont

From conversations with Forst and a close reading of the law, it seems like the Vermont Law pretty closely mimics New Hampshire law. Forst said that although it is important to have a stringent state law, many towns with water property tend to instate ordinances that are much more specific to their location and significantly more stringent than the state law. So, although it is important for the Shoreland Development Bill to be instated in Vermont, it is also important that Vermont legislators work closely with town officials so that the laws can be more rigorous in the areas where it is most important. Also, many Vermont localities already have their own ordinances, so the Shoreland Development Bill may be less effective than anticipated if the towns that would be most impacted from the legislation already have their own, more stringent, ordinances.

Also, it seems that the permitting process has been the most tumultuous in New Hampshire since they updated their legislation in 2008. Without a monitoring system in place, it is very difficult to ensure that the permits are being followed. Forst seems hopeful that their random selection process will be incredibly effective and that is something that the Vermont legislators should consider doing as well—sooner rather than later.

3. MAINE

The state of Maine has had a long and storied history of shoreline protection on its lakes. Not only are its citizens ranked very highly in terms of their propensity for conservation (only behind Vermont), but Maine's municipalities have taken the lead on outlining and enforcing environmental protections. However, a lack of consistency in severity of certain municipal shoreline regulations, along with increasing developmental pressure, forced the state legislature to act in 1971. After two environmental impact studies the legislature concluded that stringent regulation of land-use activities around lake shorelines was necessary to preserve the water quality of Maine lakes. Ultimately, the legislature passed the Mandatory Shoreland Zoning Law of 1971. Since that time, the law has been strengthened and amended in response to environmental, corporate and citizen feedback. Newer additions, such as citizen planning officials and code enforcement officers have all shaped the relatively old zoning law. However, the clear consensus



among the community is that the legislation has been an unequivocal success. Maine's law is recognized as a national model of efficient, balanced environmental regulation. So much so, that states such as New Hampshire and now Vermont have adopted a large number of its specific provisions.⁸

3.1 Characteristics of Current Maine Legislation

The major provisions of the Maine legislation operate very similar to the Vermont legislation. This Act establishes a statewide shore-land protection zone within 250 feet of Maine's rivers, wetlands, lakes and ocean. All structures must be set back 100 feet from the lake and cannot exceed 35 feet in height. There is a vegetative requirement and only 20 percent of the lot can be impervious. The vegetation requirement follows a "Diameter at Breast Height" point system for determining the amount of vegetation within a 25 foot by 50 foot section. Within this plot there has to be a minimum five saplings and vegetation under three feet cannot be cut. Both New Hampshire and now Vermont have adopted the grid system. There also several restrictions on redevelopment of an existing property: shoreland owners can expand their home, but not more than 30 percent; the addition must not encroach towards the lake, but be built on the side or back of the existing structure. Finally, all site workers and construction contractors must be state certified to work within 250 feet of any surface water shore.⁹

While the original Mandatory Shoreland Zoning Law was passed in 1971, during the last four decades, there have been a couple important changes to the law. First, the set back distance was increased from 75 to 100 feet. Second, the vegetative requirements were fortified. Finally, there were more stringent rules created for municipalities to enforce and adjudicate any violations to the law itself. In general, the law itself has become more stringent over time because of the increased developmental pressure around Maine's lakes.

The major difference between the Maine legislation and the Vermont legislation is that compliance and enforcement is done through municipalities rather than through the state. The legislation establishes a model ordinance that can be directly adopted by localities, or they can choose to prepare their own rules for shoreline protection. However, this local ordinance is required to be either as restrictive as or more restrictive than the state's model ordinance. 75 to 80 percent of towns adopt the state's model ordinance verbatim, other towns make minor changes that Maine Department of Environmental Protection (MDEP) must approve. The MDEP must also provide assistance to town officials and the public in the form of workshops, publications and staff time. While there is an extensive list of publications on the MDEP website, the most important guide is the *Maine Shoreland Zoning Handbook for Shoreland Owners*. This guide walks homeowners through a step-by-step process to come into compliance with the model ordinance for shoreline development. Furthermore, Maine has allocated three Shoreland Zoning Staff to assist municipalities with any questions they might have.¹⁰



Municipalities must import Local Code Enforcement Officers (CEOs) who administer and enforce the shoreland act. MDEP assists municipalities with shoreland zoning by providing technical assistance and training on shoreland zoning rules. The MDEP Shoreland Zoning Program offers an “on-call” toll free system to provide shoreland zoning assistance. The CEO has the following duties: enforcing the local shoreland zoning ordinance, collecting fees for permits, conducting on-site inspections to ensure compliance, keeping records of all shoreland related transactions and submitting a summary of all shoreland activity to the MDEP. Each municipality must also have a planning board to make decisions about completely new development and a board of appeals to a board of appeals to adjudicate CEO and planning board decisions when settling zoning boundary disputes.¹¹

3.2 Pros and Cons of Maine Legislation

The Maine legislation is considered by many to be a model in environmental conservation. However, the focus on municipal enforcement creates significant benefits and issues for the community. The Maine law has several important benefits, but the biggest is that the law has been continued to be revised for 44 years. While the initial legislation may not have been perfect, feedback from municipalities, state officials and developers have also continued fine-tune the legislation. Furthermore, the law is relatively simple and easy to comply with. Very few disputes arise between property owners and municipal enforcement officers because the legislation is very specific about all of the important regulations and exceptions that must be followed. Moreover, the legislation is focused on municipal accountability, which allows adjudication of these interests to better take into account prior history as well as other local interests. Finally, the law is incredibly low cost to the state. While the MDEP has to produce educational materials and dedicate some staff to coordinating and checking in on various municipalities, that cost is significantly less than the Vermont legislation will be, where all the compliance and accountability is run the be state bureaucracy.

Even though there are major benefits to a municipal-centric model of enforcement, there is also significant downside risk. First, the state is giving up significant control to the localities, which makes it incredibly tough to oversee their work. While there are reporting requirements in the legislation, it is difficult to know from those reports whether or not decisions are being made fairly and accurately. Second, with the loss of control comes the loss of consistent decision making. Each municipality is being led by a different CEO and planning board and monitored by a distinct appeals board. Thus, the outcomes of decisions are likely to be wide-ranging depending on those who fill these leadership roles. A state-based adjudication system like Vermont or New Hampshire would lead to the same individuals making permit decisions across the entire state. Finally, it is difficult to make cross-municipal decisions for larger developments that encompass more than one region of the State. If a central agency were making the call on new developments, there would be fewer cross-border clashes between two municipal districts.



3.3 Recommendations for Vermont

There are very important lessons to learn from the Maine Shoreland Protection legislation that can be translated to Vermont. First and foremost, the Maine legislation is very specific about several key exemptions that are not specified in the Vermont legislation. It is important that the ANR make rules when allowing permits for development in these following areas:¹²

- Protecting Public Access and Scenic Views: A town may use its shoreland zoning authority to protect outstanding public values within the shoreland area. For example, a town could conserve a special overlook or viewshed through appropriate zoning controls.
- Optional Wetland Zoning: A community may reduce shoreland zoning from 250 feet to 75 feet adjacent to lower value freshwater wetlands, provided that it establishes a 75-foot zone to protect the outlet streams of all freshwater wetlands.
- Residential Exception: Ordinarily, the state Guidelines prohibit building in the resource protection district. However, the Act allows municipalities to amend their ordinances to permit the construction of a single-family residence in a resource protection district, under certain conditions. This special exception can only apply to buildable, grandfathered lots where there are no other reasonable building sites outside the district.
- Small Accessory Structures: On a non-conforming lot of record on which only a residential structure exists, and it is not feasible to meet the required setback, a simple accessory structure is allowed, with certain restrictions. This provision was added to give nearly all landowners an opportunity to have a shed for storage.
- Pre-Certification for Site-Work Contractors: Qualified professions who do construction work for developments are given expedited permits for immediate needs such as the stabilization of banks.

There is also a large amount of benchmarking potential from the Maine legislation. Due to the fact that it has segregated implementation to its municipal locations, best practices will be easy to discern from the municipalities that are succeeding. Furthermore, the MDEP can serve as a useful resource when trying to understand how to navigate the relationship between a state agency and municipalities with functionally equivalent regulations. Moreover, Maine has a large amount of experience trying to incentivize and penalize municipalities who are noncompliant. Since this may become a major concern with the implementation of the Vermont legislation, it is important to utilize best practices with Maine that would otherwise be uncharted territory for regulators.

Maine also has a great list of educational resources that can be successfully co-opted by the ANR to inform the public and municipal government about the new regulations. Similarly, Maine's educational campaigns have proved to be quite successful in terms of increasing the number of successful permit applications. Following a similar approach in



Vermont is certainly a viable option. Finally, Maine's structure of regulation, by giving major leeway to municipalities, highlights an important point about implementing regulation that has a major effect on a concentrated interest. It is important to provide significant flexibility to homeowners so that they can compensate for additional developments that are noncompliant with alternatives. Regulators in Vermont need to be able to provide this flexibility in the form of several options to homeowners, especially since the ruling is coming from the state government, rather than a local one. Maine can avoid these problems since they defer to the individual municipalities who understand the nuances of new developments in their specific areas. Vermont needs to allow for additional flexibility in order to avoid major public opposition to the new legislation.

4. VERMONT

One of the most important factors when determining the effectiveness of legislation is by understanding the public's reaction to its proposal. In this case, the Lake Shoreland Protection Commission conducted a set of town hall meetings in municipalities that were likely to be significantly affected by the legislation. Public comments, along with comments in interviews from regulators like Trey Martin, are important to determining possible setbacks in the law's implementation. This section of the report summarizes important findings from our analysis of public comments during the Lake Shoreland Protection Commission's six town hall meetings along with important information gleaned from interviews with regulators and other stakeholders.

4.1 Information from Public Comments

Nearly 1000 Vermont residents attended one of the six town hall meetings put on by the Lake Shoreland Protection Commission, which led to the filing of over 300 public comments. Public comments relevant to recommendations to improve the legislation were grouped into several distinct categories: alternative water quality issues, enforcement from the ANR, impact on municipal regulations, invasive species control and increasing development of shorelines prior to implementation. We will explore each of these issues in turn.¹³

Alternative Water Quality Issues:

A large section of the comments (approximately 60) were devoted to pointing out the fact that development of lake shorelands only had a minor impact on water quality and that other factors contributed significantly more towards worsening phosphorus levels in the lakes. These comments believed that significant legislation was required to address some of these important issues, which included pesticide spraying, strip clearing under power lines, agriculture related issues (cows, irrigation ditches, runoff from crops), road construction, stormwater runoff from ridgeline wind development, pollution into other areas of the watershed (rivers, streams and brooks) and sewage spills from treatment plans and septic systems near lakes.¹⁴



Enforcement from the ANR:

Numerous comments (approximately 30) were devoted to questioning the ability of the ANR to enforce and administer the program. Currently, all of the shoreline protection enforcement is done by municipalities, which means that the ANR will be taking on significantly new enforcement responsibilities. These questions covered several important aspects of the ANR's enforcement capacity: First, nearly 15 comments were dedicated to the fact that the ANR lacks an ability to enforce current legislation. If the ANR cannot improve water quality through the other mechanisms and channels of regulation it controls, what is to say their enforcement in this situation will be any less inept and unproductive. Second, several comments wanted to see more detail on the methods of enforcement and penalties associated with noncompliance. Third, the final fraction of the comments discussed the additional costs caused by the new legislation for the state. Specifically, individual comments were concerned by the notion that the ANR will have to hire a number of additional personnel to process permit applications and inspect new developments.¹⁵

Impact of Municipal Regulation:

Another section of comments were directed towards the interaction between municipal regulations of shorelands and the new legislation that would transfer that power to the states. There were several distinct questions related to that relationship. First, there were several questions around how municipalities with their own regulations will be able to maintain them after the new legislation is passed. There were also questions about enforcement and whether or not discretion over penalties will be given to municipalities. Finally, there were questions over the nature of municipal laws being functionally equivalent to the state law.¹⁶

Invasive Species Control:

Invasive species are often considered a major violation of the stable ecosystem in any area, but it becomes significantly worse in lakeshore areas. The 20 or so public comments related to invasive species were mostly focused on the fact that the general assembly is not focused enough on preventing the introduction of invasive species into Vermont. Residents also wanted to know what the effect of shoreline regulation is on invasive species.¹⁷

Increasing Development of Shorelines Prior to Implementation:

The final group of comments involved the timeframe between the passage of the bill and the implementation phase. Many individuals were worried that there will be heavy



development of the shorelands before the implementation of the legislation will take place, as homeowners and development will likely take advantage of the lack of enforcement potential. Other citizens were worried that this timeframe will end up being very long, which will exacerbate the development spree to encompass larger projects. Finally, other questions related to understanding more about educational measures taken by the ANR to educate the public and municipalities about the new regulations and the steps they can take to comply independently.¹⁸

4.2 Interview: Trey Martin

We spoke to Trey Martin, who is a regulator in the ANR, but also works for the Committee on Fish, Wildlife and Water resources as well as the Committee on Lakeshore Protection. Thus, his background touched on all aspects of the law's creation, which gave us some interesting and relevant insight into potential improvements in the law. A large part of our conversation focused on understanding the permitting process of the new legislation and how it differed from Act 250. An important theme of that conversation was that the implementation of the specific state standards requires flexibility on the part of regulators. While the 20-40-20 rule is well established as an effective standard based on alternative case studies in states like Maine and New Hampshire, homeowners cannot always abide by those rules. Each development is distinct so it is important to provide leeway to homeowners when making additions to their property.¹⁹

A second theme of the interview was related to the interaction of the municipal government regulations and the new state regulations. Martin made it clear that any municipality that wanted to keep their own regulations must prove to the ANR that their regulatory code is functionally equivalent to the new legislation. However, the ANR had not yet come to a consensus on exactly what framework will be utilized to adjudicate applications based on the functionally equivalent standard.²⁰

The final theme of the interview focused on major issues associated with nuances in the regulatory pattern. Often time legislation only passes due to political compromise, which often causes inefficient laws. In this case, agriculture developments will get exemptions from application to the permit process. Moreover, lots that intersect a town highway are treated differently depending on if they are on the lake-side of the property of the town-side, even though both areas should be treated the same way.²¹

4.3 Recommendations for Vermont

The public comments and Trey Martin interview point to several important recommendations for regulators when implementing the Vermont Shoreland Protection legislation. First, a key point made in both areas was the need for flexibility. While the tenants of the regulation are quite rigid, the circumstances under which they are implemented are often more nuanced. Flexibility through allowing developers to compensate by planting other vegetation for clearing a larger portion of their land is an



ideal way of increasing compliance and lowering regulatory costs while maintaining good outcomes for water quality. Second, transparency and consistency of penalties for noncompliance must be a priority. Homeowners are very worried with a lack of detail in the legislation on adjudication of permits so making those clear early on in the implementation process is important. Third, Vermont needs a plan to target non-compliant municipal regulations. Only 10-20 towns have functionally equivalent shoreland protection legislation. Thus, the vast majority of towns with existing legislation on the books are current non-compliant. Transitioning them into compliance or overriding their rules with state regulators is very difficult, so the ANR should set up a strategic vision for how to manage those relationships. Fourth and finally, alternatives to shoreline development should be explored. The public sees several major areas for improvement, including managing invasive species. Often times solving those alternative issues that contribute to water quality degradation can be far more effective than attempting to perfect regulation on shoreland protection. While this most recent legislation has the potential to go a long way to preserving Vermont lakes, it is only one piece in a complicated ecosystem.

5. CONCLUSION

Overall, there are several lessons to be learned from each state that can be adapted to the regulatory process in the Vermont Shoreline Act. In New Hampshire, they have figured out an effective way to lower costs of enforcement while still maintaining a high compliance rate. In Maine, they have created a more flexible, adaptable regulatory framework that can give important best practices to manage the state's relationship with local municipalities. And in Vermont, the public anticipates and expects more legislation on root causes of water quality contamination. All of these lessons should be applied during the implementation process and if adapted by the ANR, should prove to make Vermont lakes cleaner in the long run.



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