STORMWATER MANAGEMENT: IMPERVIOUS SURFACE REDUCTION

LOCATIONS:

- Coastal Communities
- Freshwater
- Shorelands
- Storm Surge Impacted Areas
- Tidal Waters
- Surface Waters
- Flood Zones
- Inland Communities
- Groundwater Resources
- Projected Sea-Level Rise Impacted Areas
- Entire Community
- Coastal Zone Designated Communities
- Coastal Watershed Communities
- Locally Designated Areas and Districts

REGULATION OPTIONS:

1. Development Requirements
2. Impervious Surface Reduction*

* Denotes current section

COMMUNITY GOAL REGULATIONS:

- Open Space Protection
- Flood Protection
- Drinking Water Protection
- Environmental Protection
- Tidal Waters
- Surface Waters
- Stormwater Management
- Water Quality Protection
- Infrastructure Protection
- Economic Development
- Recreation Options
- Transportation Enhancement
- Historic and Cultural Preservation
- Community Design & Aesthetics
- Community Equity

WHY ADOPT THESE REGULATIONS?

- Increase protection of water resources.
- Reduce flood potential across the entire community.
- Improve aesthetics and development design by maintaining open spaces.
- Improved legal justification for existing regulations that limit development on individual sites.

BACKGROUND & PURPOSE

The management of stormwater runoff – rain and snowmelt flowing off impervious surfaces such as rooftops, roads, parking lots, and compacted soils - is increasingly an issue for municipalities in New Hampshire. Stormwater is the cause of most water pollution, with around 90 percent of surface water pollution in New Hampshire comes from, in some part, stormwater runoff. Increased flooding from storm surge and stronger, more frequent storm events associated with climate change and sea level rise will result in increased stormwater runoff. Additional impacts of impervious surfaces related to climate change include reduction in flood storage capacity of floodplains, decreased ability for inland migration of coastal wetlands, reduction in recharge of groundwater sources, increase opportunity for property damage, and increased sources of urban heat impacts.

As little as 10 percent impervious cover in a watershed can result in water quality degradation (Center for Watershed Protection). Within the Piscataqua Region Watershed only nine of the 52 municipalities (including 10 municipalities in Maine) have impervious coverage of less than 10 percent (Piscataqua Region Estuaries Partnership, 2020).

Stormwater impacts can be dealt with through treatment, by reducing the sources of stormwater, or by preventing the source of stormwater altogether. These regulations focus on the reduction and prevention of stormwater by reducing or eliminating impervious surfaces. There are several benefits to communities when reducing impervious surfaces beyond prevention stormwater runoff. These benefits include increased open spaces, enhanced drinking water protection, reduced infrastructure maintenance cost, and improved community aesthetics.

REGULATION LANGUAGE

The following regulation language is recommended to be incorporated into existing zoning districts as a part of the general requirements and standards for those districts. Definitions are recommended to be incorporated either within the general zoning definition section.

General Definitions Section.
Lot, Coverage: Areas of a lot that include buildings, parking areas, vehicular drives, pavement and any other man-made structures and surfaces that are impervious to water. All surfaces deemed to be impervious surface shall be used when calculating lot coverage area.[1]

Impervious Surface: A modified surface, that cannot effectively absorb or infiltrate water, including, but not limited to, structures, roofs, decks, patios, paved asphalt, concrete driveways, paved gravel or crushed stone driveways, parking areas, and walkways, unless designed to absorb or infiltrate water.[2]

District Impervious Surface Coverage Limits
Purpose: The purpose of limiting impervious surface coverage is to provide reasonable protection local natural resources from degradation and prevent adverse impacts from stormwater runoff to adjacent and downstream land, property, facilities, and infrastructure. Additionally, limitations help to ensure adequate space for water and wastewater infrastructure, encourage open spaces, maintain community characteristics and to minimize climate change and sea level rise impacts.

Residential District (without sewer)[3]
Lots Less than 2 Acres -Maximum Lot Coverage 30%
Lots Greater than 2 Acres – Maximum Lot Coverage: 20%

MODEL LANGUAGE

NOTES AND EXPLANATIONS

1. Definitions are intended to be located either within general zoning definition section or within zoning section describing dimensional requirements of lots within existing zoning districts.

2. The definition of impervious surface should be reviewed with existing definitions, often within groundwater ordinances. Within specific regulations the definition of impervious surface may be more specific if worded such that the definition applies only to the standards within that specific regulation.

   Lot coverage limits are the limits for the entire lot. All limitations for development and uses within setbacks, wetland districts, aquifer districts, village districts, etc. will still apply.

3. Lot coverage limits should be evaluated based on location and zoning, existing density, and risk tolerance for flooding.

   Municipalities may choose to vary lot coverage limits for smaller lots by conducting analysis of existing lot

Residential District (with sewer)
Lots Less than 0.25 Acres – Maximum Lot Coverage 50%
Lots Less than 1 Acres - Maximum Lot Coverage 30-50%
Lots Greater than 1 Acres – Maximum Lot Coverage: 30%

Commercial or Mixed -Use District[4]

Maximum Lot Coverage – 50% for existing lots of record as of {date of adoption} and 40% for lots of record created subsequently.

impervious coverage versus lot size. The intent would be to understand the number lots that may become non-conforming under the proposed standard.

To assess risk, municipalities can use the the Coastal Flood Risk Summary: Part 2 Guidance for Using Scientific Projections , Step 1 as guidance. For mapping assistance, the New Hampshire Sea-Level Rise, Storm Surge, and Groundwater Rise Mapper (Sea-Level Rise Mapper) is available to provide easy access to future coastal inundation scenarios. (New Hampshire GRANIT) ACCESS THE MAPPER: www.tinyurl.com/slrmapper

4. Lot coverage limits on impervious surface do not specifically limit the ability to develop a site, but instead encourage the use of Low Impact Development (LID) techniques, including green roofs, pervious asphalt, and bio retention swales.
Many of these LID techniques are required as part of municipal stormwater management requirements for commercial and multifamily developments. See Stormwater Management: Development Requirements for additional options for stormwater management requirements at the site-specific level.

WHERE DO THESE REGULATIONS GO?

The regulation language offered in this model is intended to be in addition to the Southeast Watershed Alliance (SWA) Post Construction Stormwater Management Standards . Most municipalities that have adopted the SWA model language have included them within site plan and subdivision regulations, however, the model language can also be located within zoning ordinances. The additional language offered in this model can be inserted into either site plan/subdivision regulations or zoning ordinances.

HOW TO ADOPT THESE REGULATIONS:

Amendments to zoning ordinances require a majority vote at town meeting or by city/town council depending on the municipal form of government.

Additional information about the process of adopting regulations is available in the Process for Adopting Regulations section of this Guide.

SUGGESTED SUPPLEMENTARY INFORMATION AND RESOURCES TO COMPLEMENT THESE REGULATIONS:

Recommendation	Type	Details
Zoning Map with base zoning districts	Maps/GIS Data	Find in local Zoning Ordinance.
Parcel Map	Maps/GIS Data	Find via Municipal Tax Maps.
Sea Level Rise Scenarios	Maps/GIS Data	Reference NH Sea-Level Rise, Storm Surge, and Groundwater Rise Mapper.
Impervious Surface Coverage Map	Maps/GIS Data	Access via GRANIT or Regional Planning Commissions
Water Resource and Wetland Map	Maps/GIS Data	Access via GRANIT, Regional Planning Commissions, or Conservation Commission, Master Plan, or Natural Resource Inventory.
Water Infrastructure Availability Map	Maps/GIS Data	Find via Public Works Department, Regional Planning Commissions, or Water/Sewer Commission.
Zoning Administrator	Personnel	Interprets and administers the regulation.
Building Inspector/Code Enforcement Officer	Personnel	Reviews building permits for compliance and enforces regulations.
Conservation Commission	Volunteers	Advises the Planning Board on the location of areas particularly sensitive to the impacts of impervious surfaces such as waterways, wetlands, aquifers, and wildlife habitats.
Planning Board	Volunteers	Approves/denies applications and ensures that the land use applications before them meet municipal regulations.

HOW DOES THIS RELATE TO OTHER TOPICS?

Stormwater can be treated, reduced, or prevented altogether in several ways. These regulations focus on reduction and prevention of stormwater. Additional approaches for treating and reducing stormwater include:

- Increasing the development design criteria to improve treatment. See Stormwater: Development Standards for suggested language.
- Increasing natural vegetative buffers to wetlands and surface water to help treat stormwater prior to it entering waterways. See the Drinking Water Protection: Surface Buffer Model and Shoreland Protection Model for suggested language.
- Preventing development near waterways and wetlands through conservation easements or deed restrictions.
- Reduce impervious surfaces through changes to requirements to roadways and parking lot design requirements.

WHO HAS ADOPTED THESE REGULATIONS?

Most municipalities in southeastern New Hampshire have limits to the extend any given lot can be developed, but can be improved to better define why. Development limitations can be in the form of lot size, structure setbacks, or dimensional requirements – including impervious surface coverage limitations. These development limits serve many purposes, including maintaining open space, rural characteristics, adequate space for wells and septic systems, etc. When amending or adopting impervious surface coverage limitations it is important to acknowledge the reasons for those limitations to 1) foster support for enacting the regulation, 2) assist residents and landowners in understanding the purpose for the regulation and, 3) to provide justification should the regulation be legally challenged.

ADDITIONAL RESOURCES AND REFERENCES

- New Hampshire Coastal Flood Risk Summary Part 1: Science (2019). University of New Hampshire in partnership with the NH Coastal Flood Risk Science and Technical Advisory Panel and the NH Department of Environmental Services.

- New Hampshire Coastal Flood Risk Summary Part 2: Guidance for Using Scientific Projections (2020). University of New Hampshire in partnership with the NH Coastal Flood Risk Science and Technical Advisory Panel and the NH Department of Environmental Services.

FUTURE INFORMATION NEEDS:

The impacts of climate change with respect to stormwater in New Hampshire have not been extensively researched beyond studies accessing vulnerable areas from increases in flooding due to increased precipitation, storm surge and sea-level rise. Better understand of the impacts of groundwater rise and salt-water intrusion are needed at the local and regional level to provide detailed recommendations for site specific design parameters. Additionally, further analysis is needed to understand how future development patterns may alter stormwater impacts when coupled with climate change.