Purpose of the Guide

To provide guidance to improve land use decisions with respect to flooding and flood damage

Created for:
- Elected officials
- Planning and zoning board members
- Planners
- Development professionals

Funded in part with Federal Hazard Mitigation Grant Program (HMGP) funds provided by the Federal Emergency Management Agency (FEMA) and administered by the New York State Emergency Management Office (SEMO)
Guide Topics

- Flooding causes and the relationship to development
- Government agencies and regulations associated with flood control and flood hazard mitigation
- Comprehensive and watershed planning
- Stormwater management
- Successful floodplain management tools
- Local ordinances
- Site plan review tools
- Stormwater management design
Chapter 1. Introduction

- The Basics of Flooding
- Regional Cost of a Local Flood
- Government Framework
- Public Outreach and Involvement

April 2007 Nor’easter.
Everyone Pays, Flooded or Not!

2007 April Nor’easter Costs
Westchester County

Damage to homes:
- Inaccessible: 5
- Minor damage: 1,141
- Major damage: 1,106
- Destroyed: 209

Approximately $27 million dollars in response costs and damages was applied for in Westchester County through FEMA’s Public Assistance program for county, municipal governments, school districts, fire districts, private and non-for-profits.

Flooding Costs over $650 million per year in New York State

Source: FEMA Policy Claim Data from 1999 through 2003

Flooding is the most common disaster in New York State. Since 1954, there have been 80 Presidential Declarations in New York State:

- 59 Major Disasters, including:
  - 35 named flooding events
  - 8 hurricanes and tropical storms
  - 2 attacks on World Trade Center (1993 & 2001)
  - 1 Earthquake

- 19 Emergencies, including:
  - 11 Snow
  - 2 Love Canal
  - 1 West Nile Virus Vector Control
  - 1 Ice Storm (2008)

- 2 Fire Management Assistance
  - West Point complex (1999)
  - Sunrise Fires, Long Island (1995)

FEMA estimates that the National Flood Insurance Program (NFIP) building standards and floodplain management measures reduce flood losses by $1 billion per year.

FINMA, 2002

During a 30-year mortgage, a house located in 100-yr floodplain has a 26% chance of being impacted by a 100-year flood.

That same house has a 1-2% chance of catching fire and is 27 times more likely to experience a flood than having a fire.

Each $1 spent on mitigation saves society an average of $4, with positive benefit-cost ratios for mitigation activities related to wind (e.g. coastal storm, hurricane, tornado, severe storm), flooding, and earthquakes. In addition to socioeconomic benefits, the federal treasury can redirect an average of $3.65 for each dollar spent on mitigation, as a function of disaster relief costs and tax losses avoided.

~Multihazard Mitigation Council, 2005
Governmental Framework

Federal

Local

State

County
The Role of Westchester County

- Planning
- Health Department
- Emergency Services
- Information Technology
- Public Works
- Environmental Facilities
Municipal Tax Parcel Viewer

You are searching: White Plains. Change

- Search by owner’s name
- Enter Address or Print Key or SBL

1. Search by Address or Print Key or SBL. For example, 125.68-5-6 or 255 MAIN ST
2. Check the ‘Search by owner’s name’ box to search owner. For example, school or village. Note: some municipalities don’t have ownership data or the data is not complete.
3. Zoom in to the last level to see parcel’s address and print key, or annotations (for some municipalities only).

Important Note and Search Tips:
- All search will be strictly constrained in the selected municipality.
- About address search, for better result, please select the address from the AutoComplete dropdown list ONLY. Or use street type, such as street or st, avenue or ave, lane or ln for address search.
- DO NOT include stats, city or ZIP in the address search.

Additional Data
- Note: Data in the list below WILL AFFECT the application’s overall performance when it’s on. Please only add it to map when needed. Make sure CLEAR it if not needed any more.
  - Floodplains
  - Zoning Maps
  - NYS Registered Wetlands
  - Land Use

Legend for Selected Layer (Show/Add)
The Role of Municipal Government

- Adoption and enforcement of Local Laws
- Implementation of the National Flood Insurance Program (NFIP)
- Building and Zoning Code Administration
- Local Emergency Management
Public Involvement

- Public hearings are part of municipalities permit process
- Stormwater and floodplain management are often left as a condition of approval
- Removes the issues from the public and local board review
Chapter 2. Long Range Planning and Floodplain Management

- Comprehensive Plans
- Watershed Plans
- Drainage Districts
- Stormwater Management Plans
- Local Waterfront Revitalization Plans
- Capital Improvement Plans
- No Adverse Impact (NAI) Floodplain Management
- Multi-Hazard and Flood Hazard Mitigation Plans
Comprehensive Plans

- The plan should include:
  - Current land use
  - Identification of impervious surfaces
  - Open space inventory
  - Identification of flood hazard and flood prone areas using FIRM maps and other data.

- Specific goals and objectives should be identified that spell out vision for natural resource management

- If development in flood prone areas is a problem, goals can be developed to address this

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**Comprehensive Plan Vision Statement and Goals for Natural Resources**

Yorktown’s natural resources are integral to the long-term health, safety, and well-being of not only Yorktown but also neighboring towns and the region. The Town should expand efforts to preserve open space and natural resources throughout Yorktown. The ecological integrity of Yorktown’s natural resources, including groundwater, streams and wetlands, trees and woodlands, steep slopes, and areas rich in bio-diversity, must be maintained and protected, even as new development occurs.

7.2 GOALS

Goal 7-A: Protect the health, safety, and welfare of Yorktown residents by conserving natural resources to the greatest extent possible, including woodlands, water resources, wetlands, threatened and endangered species, and habitat areas for plants and wildlife.

Goal 7-B: In particular, protect and maintain the supply and quality of groundwater and surface water resources, including underground aquifers, the New Croton Reservoir, and the streams that feed the reservoir.

Goal 7-C: Promote sustainable development patterns, which consume less open space and result in less automobile-dependent land uses.

Goal 7-D: Ensure that permitted land uses and development intensities are suitable with respect to groundwater and surface water resources.

Goal 7-E: Limit development on steep slopes and reduce the potential for soil erosion.

Goal 7-F: Protect the health, safety, and welfare of Yorktown residents by reducing the potential of new development to impact downstream flooding.

~Town of Yorktown Draft Comprehensive Plan~
Chapter 3. Local Codes to Address Flooding

- Flood Damage Prevention
- Wetlands, Streams and Watercourses
- Steep Slopes and Erosion Control
- Subdivision Regulations
- Stormwater and Erosion Control Ordinance
- Environmental Quality Review (SEQR)
- Trees
Flood Damage Prevention

- NYSDEC Model Law
  - Designed to comply with the floodplain management requirements of the National Flood Insurance Program

- City of Utica
  - Flood insurance required

City of Utica, NY
CHAPTER 2-29, ZONING

This electronic version is provided for informational purposes only. For the official version please contact the municipality.

Sec. 2-29-255. Uses and/or structures rendered nonconforming by the adoption.

[Ord. No. 313, § 8-501, 12-7-1994]

Following the adoption of these provisions, any use or structure which is situated within the boundaries of the land conservation district and which does not conform to the permitted uses specified in subsection 2-29-252(a) herein, shall be a nonconforming use or structure, regardless of its conformance to the district in which it is located without consideration of these provisions. Therefore:

1. Existing nonconforming uses and/or structures shall not be expanded.

2. Substantial improvements of nonconforming uses and/or structures will be not be allowed, irrespective of the cause for the need of the substantial improvements.

3. Uses and/or structures which continue to operate and/or exist within the boundaries of the one-hundred-year flood plain after nonconformance has been established will be required to obtain flood hazard insurance from the federal insurance administration. The city will simultaneously request a submission to rate on the structure to the Federal Emergency Management Agency. In the event the owners of structures or operations subject to this requirement fail to obtain such insurance within a reasonable period of time, the city shall secure such insurance and place the annual insurance premium costs as a lien against the title to the land and/or structure within the tax records of the city,
Wetlands, Streams and Watercourses

- Wetlands clean stormwater by trapping sediment, removing nutrients and detoxifying chemicals
- Help control flooding by storing and then slowly releasing stormwater runoff

Key Elements of Wetland and Watercourse Protection Ordinance:

Regulated Buffers or Setbacks:
- At least 100 ft. horizontally from and paralleling the outermost boundary of a wetland or point of mean high water for watercourse.
- Regulated Buffers for Steep Slopes: Additional distance should be added to buffer to account for steep slopes.
- Ideal Recommendation are for 15-17% slope add 20 feet to buffer; 18-20% add 30 feet; 21-23% add 50 feet; 24-25% add 60 feet. (Center for Watershed Protection)

Mitigation Requirements: Mitigation plans for wetland/watercourse impacts are part of the permit process and are required before commencement of activity.

No Minimum Size of Regulated Wetlands: All wetland regulations should consider all land that exhibits characteristics of a wetland to be recognized as a wetland. Many municipalities in Westchester do not have a minimum size. New York State regulated wetlands are defined as being at least 12.4 acres in area; municipalities have the power to regulate smaller areas of land.

Replacement Ratios for Mitigation: The required amount of restoration of wetland after disturbance:
- 1.5 acres of wetlands need to be restored/created for each 1.0 acre of wetland that is impacted.

Wetland and Watercourse Buffer Zone Prohibitions and Restrictions: Establishes the prohibitive and restricted activities in the buffer areas. Work conducted in a prohibitive or regulated activity zone should be limited and only permitted if the impact of the proposed activity upon the public’s health, safety and welfare, flora and fauna, water quality, and additional wetland functions is minimized or can be mitigated.

Mitigation sequencing: (a no net loss objective) is essential for an effective wetlands ordinance, requiring that wetland permit applicants need to:
1. Demonstrate that wetland impacts cannot be entirely avoided
2. Demonstrate that unavoidable impacts have been minimized, and
3. Compensate for any remaining impacts.

Center for Watershed Protection
Steep slopes development can result in accelerated runoff.

**Key Elements of a Steep Slopes Ordinance:**

**Steep Slope Definition:**
- Those areas with an average slope equal to or greater than 15%, as measured in accordance with the slope measurement criteria, with minimum 500 sq ft.

**Steep Slope Restrictions:**
- Land that includes a slope equal to or greater than 15% that has a request to be developed and/or regraded or stripped of vegetation will require a permit. The percentage of land that can be possibly developed should vary depending on the steepness of the land.

**Ideal Recommendations:**
- Sloped land slope = 15% requires permit;
- Sloped area from 15%-20% not more than 25% of the area may be disturbed;
- Sloped area slope = 20%, no more than 10% of that area may be disturbed;
- Sloped area slope = 25% may not be disturbed.

**Cut and Fill of Steep Slopes:**
- Cut and Fill provisions should be included for all steep slope activity. Cut and fill slopes does not exceed a slope of one vertical to three horizontal except where retaining walls, structural stabilization, or other methods acceptable to the Town Engineer are used.

**Mitigation Measure:**
- Proper completion of the proposed activity in accordance with the approved plans. The restoration of the area to its natural condition as far as practicable and protection of adjoining property owners from damage resulting from steep slope disturbances.

**Permit Requirements:**
- Permits should be required when developing, regrading or stripping land slope is equal to or greater than 15% slope.
Subdivision Regulations

- Deducting lot area within floodplain hazard areas for residential development
- Requiring flood and stormwater easements for watercourses, lakes, ponds and wetlands
- Empowering the planning board to apply flood mitigation requirements in areas known to flood and possibly outside special flood hazard areas
- Establishing design guidelines to address flooding and stormwater
- Requiring planning board review for compliance with the flood damage prevention ordinance

City of New Rochelle, NY
CHAPTER A361: LAND DEVELOPMENT


A. Lot width, depth, shape and orientation and the building setback lines shall be appropriate for the location of the subdivision for the type of development and for the use contemplated.

B. Lot sizes and area shall conform to the requirements of the Zoning Ordinance. Editor's Note: See Ch. 331, Zoning.

C. Width and depth of properties reserved or laid out for commercial and industrial purposes shall be adequate to comply with the off-street parking and loading requirements contained in the Zoning Ordinance.

D. Corner lots shall have sufficient width to provide an adequate boarding site within all the yard requirements.

E. All lots in a subdivision shall have frontage with adequate access to a public street.

F. Double frontage lots shall be avoided. Reverse frontage lots shall be provided where necessary for protection of residential properties from through traffic and adverse nonresidential uses, for separation of through and local traffic and to overcome difficulties of topography or other specific conditions. Screen planting and a fence or wall shall be provided along the rear property line within a reserved strip 10 feet or more in width, across which there shall be no right of access.

G. Side lot lines shall be substantially at right angles or radial to street lines.

H. On land subject to flooding no lots shall be platted for residential or any other use where danger to life or property or an aggravation of the flood hazard may result. Such land should be set aside for such uses as shall not be endangered by periodic or occasional inundation.
Stormwater and Erosion Control

- All Westchester municipalities were required to adopt the NYSDEC model stormwater erosion and control ordinance as part of their MS4 permit compliance
- ENFORCEMENT
Environmental Quality Review (SEQR)

- **Require Coordinated Review:**
  - The SEQR process can provide for a coordinated review that leads to better solutions for mitigating flooding and flood damage

- **Expand Type I List:**
  - A municipality can expand the statewide Type I list by including any Unlisted action as Type I in its own SEQR procedures under 617.14
Trees

A tree ordinance should address:

- Cutting or removal of trees on public and private land
- Mitigation of tree loss by planting trees to offset the negative effects of tree clearing
Chapter 4. Zoning Code

- Zoning Districts
- Overlay Zones
- Dimensional Requirements
- Driveways, Parking Lots and Sidewalks
Zoning Districts & Overlay Zones

- Floodplain Management District, Town of Union
- Land Conservation District, City of Utica
- Conservation Zone, Town of Ithaca
- Floodplain District, Village of Oxford
- Environmental Protection Overlay Districts, Town of Owasco
- Flood Hazard Overlay District, Village of Cobleskill
- Environmental Protection Overlay Zone, Town of New Castle

Land Conservation District (Sec. 2-29-251 — Sec. 2-29-257)
Sec. 2-29-251 Purpose and establishment.
(a) Purposes. The land conservation district is established for the following purposes:
(1) To protect the public health, safety and welfare.
(2) To minimize public and private property damage.
(3) To minimize public expenditure for costly flood control projects.
(4) To minimize the need for rescue and relief efforts at public expense.
(5) To protect the ecosystem of the floodplain.
(6) To preserve and protect artifacts of archeological significance.
(7) To minimize prolonged interruption of business and governmental services.
(8) To put potential home buyers, property owners, and tenants on notice that a particular piece of property is in a flood-prone area.
(9) To protect the public and private water supply from contamination.

~City of Utica, NY

Utica, 1950s Branch River Bridge
Dimensional Requirements

- Minimizing the amount of impervious surfaces
- Allow flexibility in design to protect environmentally sensitive areas
- Minimum requirements can be set to promote the most efficient flexible site

Ideal Setbacks
1/2 acre residential lot
- front yard should be 20 feet or less
- rear yard should be 25 feet or greater
- side yard should be 8 feet or less
- street frontage should be 80 feet or less.

~Center for Watershed Protection
Driveways, Parking Lots and Sidewalks

- Minimize the length driveway
- Pervious Paving
- Parking Structure Incentives
- Landscape Requirements

CHAPTER 125. ZONING
§ 125-115. Compact cars.
A. For office, manufacturing, warehousing, multifamily and other uses with similar long-term parking characteristics and in those cases where at least 25 off-street parking spaces are required, the Planning Board, as part of its site plan review, may approve the designation of not more than one-third (1/3) of the spaces as compact car parking spaces, subject to the following conditions:
   (1) Compact car parking spaces shall be conveniently located for both vehicular and pedestrian access. Such spaces shall be located in groups of not fewer than five contiguous spaces and shall be identified by appropriate signage.
   (2) Prior to Planning Board approval, the applicant shall submit a plan for full-size parking spaces in compliance with the requirements of the Town Code. This plan must receive Planning Board approval.
   (3) If the compact car spaces create a serious problem, the Building Inspector may require the construction of all or part of the original full-size spaces on the land reserved for this purpose.
B. This authorization shall not be construed as allowing additional parking on a property; rather, it is for the purpose of making more environmentally sensitive use of the land.

~Town of Bedford, New York
Chapter 5. Improving Site Plan and Subdivision Review

- Avoidance as a First Measure
- Site Plan and Subdivision Standards
- Design Guidelines
- Better Site Design
- Low Impact Development
- Site Plan Review Procedure
Avoidance as a First Measure
Site Plan and Subdivision Standards

- Incorporate flood standards into ordinance
- Ensure flooding issues are considered during the design process
- Local board review the proposal for compliance with the local flood management ordinance
Design Guidelines

- Typically less stringent or prescriptive
- Design guidelines typically have examples of what types of development or best management practices the municipality prefers

Design Guidelines
§ 190-39. Special permitted uses and site plan approval.

D. Standards applicable to all special permitted uses. All special permitted uses require site plan review and a public hearing; however, the public hearing may be waived at the option of the Planning Board if all the following standards and conditions have been satisfied:
1. Necessary provisions have been made to assure that all surface runoff to adjacent properties does not exceed levels in existence prior to construction.
2. In addition, when making a determination concerning a special use within a floodplain area, the Planning Board shall consider the following factors:
   (a) The danger of life and property due to increased flood velocities caused by encroachments.
   (b) The danger that materials may be swept onto other lands to the injury of others.
   (c) The susceptibility of the proposed facility and its contents to flood damages and the effect of the damages on the individual owners.
   (d) The importance of the services provided by the proposed facility to the community.
   (e) The availability of alternative locations, not subject to flooding damages, for the proposed use.
   (f) The compatibility of the proposed use with existing and anticipated development.
   (g) The safety of access to the property in times of flood for ordinary and emergency vehicles.
   (h) The expected height, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.
   (i) The cost of providing governmental services during and after the flood conditions, including maintenance and repair of public utilities and facilities such as sewer, electric and water systems, and streets and bridges.

~Town of Highland, NY
Better Site Design

- Natural drainage patterns guide layout
- Only building envelopes are graded
- Character of site preserved
- No storm drain system required
- Impervious cover reduced
- Provides open space for community

Conventional Design

- Site is mass graded
- Natural drainage patterns destroyed
- Existing tree cover removed
- Character of site destroyed

Source: Georgia Stormwater Manual
Low Impact Development

- **Construction site practices:**
  - Minimize land disturbance
  - Preserve natural areas (wetlands, streams, lakes, steep slopes, floodplains, vegetated riparian buffers, large forested tracts)
  - Avoid compacting heavy soils
  - Erosion prevention and sediment control

- **Design considerations:**
  - Narrow roads
  - Shorter driveways
  - Mixed-use parking
  - Reduced building footprint

- **Stormwater management practices:**
  - Bioretention/infiltration – rain gardens
  - Vegetated swales
  - Sub-surface gravel wetlands
  - Permeable pavement
  - Cisterns and rain barrels
Appendices

GLOSSARY

- Buildable Area
- Districts
- SEQR
- Drainage
- Site Plan Review
- Flood Control
- Subdivision
- Other

CONTACTS

FUNDING RESOURCES

WEB RESOURCES

STORMWATER MANAGEMENT PLANS

REPORTS AND RESOURCES
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