

# Buildout Analysis: *Wolfeboro and Brookfield, NH*



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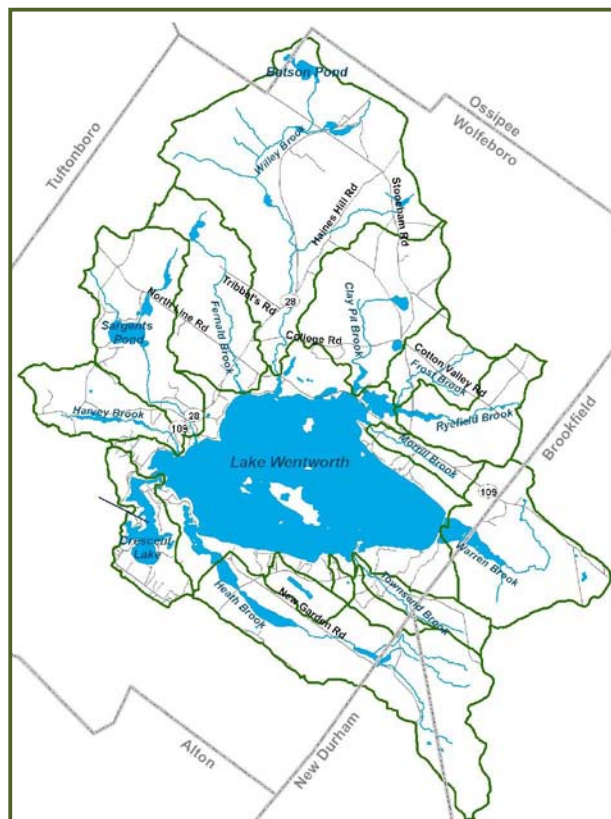
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## Introduction

FB Environmental (FBE) performed a buildout analysis for the Lake Wentworth/Crescent Lake watershed within the towns of Wolfeboro and Brookfield, New Hampshire. The watersheds of Lake Wentworth and Crescent Lake are part of the larger Lake Winnepesaukee watershed. The watersheds of Lake Wentworth and Crescent Lake lie principally within Wolfeboro, with smaller portions in Brookfield and New Durham. The water that collects in the Lake Wentworth basin flows into the two lakes by way of numerous streams and through underground seepage. The buildout analysis results provide estimates of the number of potential lots and the number of new units the watershed towns may see developed at some point in the future. Full 'Buildout' refers to the time and circumstances whereby, based on a set of restrictions (e.g. environmental constraints and current zoning), no more building growth may occur, or the point at which lots have been subdivided to the minimum size allowed and there is no more 'developable' land.

Performing a buildout analysis shows a locality what land is available for development, how much development can occur and at what densities. Localities can use the analysis as a snapshot, worse-case scenario tool for planning. The buildout analysis is also a valuable tool to help model potential impacts from future development on water and other natural resources. The Geographic Information System (GIS) based buildout analyses for the Lake Wentworth watershed were conducted using ESRI ArcGIS 9.3 and CommunityViz.

### *What is CommunityViz?*

CommunityViz is a GIS-based decision-support tool designed to help planners and resource managers visualize, analyze, and communicate about important land-use decisions. While there are many components to CommunityViz, for the purposes of this study two tools were utilized: The 'Buildout Wizard' was used to calculate the development capacity of the watershed land (numerically and spatially), and the 'Time Scope Analysis' tool was used to visualize how development might occur over time.

Using these tools, this study explores several basic questions about the future of the Lake Wentworth watershed:

- How much 'developable land' is there in the watershed?
- How much new development can theoretically occur in the watershed, based on current zoning and other constraints? (*Buildout Analysis*)
- At its current growth rate, how will the watershed's appearance potentially change over time? (*Time Scope Analysis*)

## Methodology

The Lake Wentworth and Crescent Lake buildout analysis was performed following these general steps:

- 1) Collect information on existing conditions in the watershed: existing buildings, zoning, and growth rates for the two towns with the largest land area (Wolfeboro and Brookfield).
- 2) Collect GIS data and development constraints layers.
- 3) Based on constraints layers, determine where development may occur.
- 4) Analyze watershed buildout potential using Buildout Wizard.
- 5) Determine how development might occur over time using the Time scope Analysis tool.
- 6) Present results in tables and maps.

## Existing Conditions

### Existing Buildings

The location and number of existing buildings in the Lake Wentworth watershed was determined using high resolution digital orthophotographs produced from aerial photos collected in Southern New Hampshire in the spring of 2010. The data was accessed through a web mapping system (WMS) layer housed by New Hampshire's Statewide Geographic Information System Clearinghouse, NH GRANIT. Using these images, a new GIS layer for the watershed was created, with a point representing each existing building in Wolfeboro (2,230 buildings) and Brookfield (86 buildings).

### Zoning

Crucial to a buildout analysis is the feasibility of modeling zoning requirements. Certain zoning requirements are too site-specific to be able to incorporate into the analysis. With that in mind, this analysis made use of the following caveats in the determination of buildout zoning restrictions:

- Future lots will be made the smallest size allowable for the zoning district, taking into account minimum lot size and minimum buildable area.
- Potential unit types are not specified.
- Road and shoreland frontage requirements are not specified.

Zoning information utilized in the Lake Wentworth and Crescent Lake buildout analysis is shown below in Table 1. This information represents restrictions that apply only in the sections of each town that fall within the watershed boundary. In addition to the zoning restrictions listed below, each watershed town also follows the minimum Shoreland Zoning restrictions required in New Hampshire (see 'Development Constraints' below).

**Table 1: Wolfeboro and Brookfield Zoning Restrictions**

<u>Zone</u>	<u>Building Setbacks</u>	<u>Road Setbacks</u>	<u>Min. Lot Size</u>	<u>Lot Coverage</u>	<u>Right-of-Ways</u>	<u>Building Size Restrictions</u>
<b>BROOKFIELD</b>						
Residential-Agricultural	side - 40 ft, rear - 40 ft	50 ft	2 ac	NA	50 ft	NA
<b>WOLFEBORO</b>						
Shorefront Residential	side - 17.5 ft, rear - 25 ft	30 ft	1 ac	30%	30 ft	Max. Height – 35 ft
Village Residential	side - 10 ft, rear - 10 ft	20 ft	0.5 ac	30%	20 ft	Max. Height – 35 ft
Residential	side - 20 ft, rear - 25 ft	30 ft	1 ac	30%	30 ft	Max. Height – 35 ft
General Residential	side - 25 ft, rear - 25 ft	30 ft	2 ac	30%	30 ft	Max. Height – 35 ft
Rural Residential	side - 25 ft, rear - 25 ft	30 ft	3 ac	20%	30 ft	Max. Height – 35 ft
Residential - Agricultural	side - 25 ft, rear - 25 ft	30 ft	5 ac	NA	30 ft	Max. Height – 35 ft
Commercial - Central Business	side - 10 ft, rear - 10 ft	30 ft	0.5 ac	100%	30 ft	Max. Height – 35 ft
Commercial - Pine Hill Road	side - 10 ft, rear - 10 ft	30 ft	0.5 ac	70%	30 ft	Max. Height – 35 ft
Commercial - C2	side - 10 ft, rear - 10 ft	30 ft	0.5 ac	70%	30 ft	Max. Height – 35 ft
Municipal Watershed	side – 10 ft, rear – 10 ft	30 ft	5 ac	NA	30 ft	Max. Height – 35 ft

**Population Growth Rates**

The towns within the Lake Wentworth watershed have experienced steady population growth over the last several decades (though increases in dwelling units have been more modest). Over the last two decades, from 1990 to 2010, Brookfield’s overall growth has been 37.5%. From 2000-2010, Brookfield experienced an overall growth rate of 17.9%, the fourth highest within Carroll County over the last decade. Brookfield’s estimated annual growth rate over the last decade was 1.8%. Wolfeboro’s growth

over the last two decades was not as pronounced as Brookfield's, but still significant. From 1990 to 2010, the US Census reports that Wolfeboro's overall growth was 30.4%, while the growth rate from 2000 to 2010 was only 3.1%. Therefore, Wolfeboro's estimated annual growth rate over the last decade was 0.3% based on this data (NHOEP, 2011-[www.nh.gov/oep/programs/DataCenter/2010Census/index.htm](http://www.nh.gov/oep/programs/DataCenter/2010Census/index.htm) - "Population of NH Towns and Counties 1960-2010" excel spreadsheet.) The Town of Wolfeboro indicates that the most recent census data was low based on town population data (Wolfeboro, 2007) and an internal review of other data (Rob Houseman, personal communication)<sup>1</sup>. The Town's Master Plan indicates that over the past 25 years Wolfeboro has exceeded the growth rates in the State of New Hampshire and the Lakes region, and since 1990 has exceeded the growth rate of Carroll County. This growth has been in the form of second homes and has resulted in an increasing percentage of retirement age (55-65+) seasonal residents. In fact, the seasonal population is more than double the year-round population. A review of the last 30 years showed a compounded annual growth rate of 2.3%. Therefore, the Town suggests using a rate of 2% per year for long-range planning purposes (Wolfeboro, 2007).

The region's unique character and desirability as a residential and recreational destination is likely to continue to attract a retirement-oriented population which will result in the steady growth of new development in Brookfield and Wolfeboro well into the future. Consequently, both communities should carefully consider the effects of current municipal land use regulations on local water resources. The annual growth estimates presented above (1.8% for Brookfield and 2% for Wolfeboro) were used in the Time Scope Analysis (p. 10).

### ***Development Constraints***

Constraints to development in a buildout analysis are those areas that are considered undevelopable, or areas where no future buildings may be built. To determine where development may occur in the watershed, buildout calculations deduct land due to physical constraints to development including environmental restrictions (e.g. soils, slopes, wetlands), zoning restrictions (e.g. shoreland zoning, street ROWs and building setbacks), and practical design considerations (e.g. lot layout inefficiencies). Existing buildings may also reduce the available capacity for new development.

Below is a list of GIS data used to model development constraints in the Lake Wentworth/Crescent Lake watersheds:

#### **1) Conservation Land**

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<sup>1</sup>The 2010 census data indicates that the population was under represented-specifically with regard to the vacant category (36% of Wolfeboro's housing stock was classified as vacant). The census does not reflect seasonal population which is a significant number in the watershed, and indicates a population of 6,269 people. The town estimates a population of around 7,939, an undercount of 1,670 people, or approximately 27% of the population.

- 2) Steep slopes (>25%)
- 3) NWI wetlands
- 4) Existing buildings
- 5) Hydric soils
- 6) Highly erodible soils
- 7) Unbuildable parcels (*parcels with an existing building and less than double the minimum lot size (i.e. lots that cannot be subdivided)*)
- 8) Shoreland zoning:
  1. *Current Resource Protection restrictions in Brookfield and Wolfeboro –*
    - a. Brookfield Only: No structure or part thereof shall be placed within 75 feet of any pond, lake, stream, brook, watercourse, marsh, or seasonally wet area.
    - b. Wolfeboro Only: 100 year floodplain as designated on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or Flood Hazard Boundary Maps. The 100 year floodplain was not accessible for Brookfield because the new FEMA 100 year floodplain for the town is currently in the public review process and unavailable to the public.
    - c. Wolfeboro Only: No building within the Shorefront Residential Zone shall be closer than 50 feet to the shoreline.
    - d. Wolfeboro Only: No new building activity, including but not limited to structures, roads and parking areas, shall be permitted within 50 feet of any poorly drained soil, nor shall such building activity be permitted within 75 feet of any very poorly drained soil.

There are a number of proposed additions to Resource Protection Restrictions in Wolfeboro that were not included in the buildout analysis. These include changes to the Wetlands Conservation Overlay District, development of a Steep Slope ordinance, and rezoning of the Center Street area to be more protective of water quality. If approved, these ordinances will be more protective of water quality in the watershed and may increase the amount of non-buildable land slightly to protect streams, lakes, sensitive wetlands and steep slopes. A description of these proposed changes are included in the Wolfeboro Municipal Ordinance Review (FBE, 2012a).

### ***Buildout Assumptions***

To determine how many units can be built on the available buildable land in the watershed, various density and other design factors are considered, based on the zoning requirements for each town. Below is a list of assumptions used in the Lake Wentworth buildout analysis, based on zoning requirements in Wolfeboro and Brookfield. These assumptions are an important component of the



model because it allows the model to predict whether development can occur on a given lot given the types of standards for development in a given town. For example, zoning districts with large minimum lot sizes (e.g. 5 acres, Residential/Agricultural) will result in less development in the future compared to a zoning district with smaller minimum lot sizes (e.g. 1 acre, Residential).

- **Building setbacks** were estimated based on the average front and rear setbacks specified in each town's zoning ordinances (Table 1). Setbacks are measured from building center points in Community Viz. To account for this, building footprints need to be estimated to avoid building overlap. The dimensions of the minimum building footprint were estimated to be 30 feet x 30 feet. This number was then divided by two (15 feet), which was added to the average front/rear setback for each zone to estimate the "Minimum Separation Distance" used in Community Viz (Lingeman & Bradt, 2008).
- **Minimum lot size requirements** used were based on requirements for each zone, as specified in Table 1.
- **Street ROWs** used were based on requirements for each zone, as specified in Table 1. A 15 foot building footprint factor was then added to each in CommunityViz.
- **Efficiency factors** adjust density values to account for common density losses. They are entered as a percentage where 100% means complete efficiency (no density lost), and 0% means no buildings will be estimated for that land use. In the Lake Wentworth buildout, an 80% EF was used, based on recommendations in the CommunityViz manual (Placeways, LLC, 2007).