Land Use Inventory and Buildout Analysis of Downtown & Waterfront Area *Burlington, Vermont*

Prepared By: Milone & MacBroom, Inc.

EXECUTIVE SUMMARY

INTRODUCTION

The City of Burlington contracted with Milone & MacBroom, Inc. to complete a land use inventory and buildout analysis of its Downtown and Waterfront Study Area as an initial step in a larger planning process, funded by the U.S. Department of housing and Urban Development's Sustainable Communities Challenge Grant. This initial phase consisted of four tasks: updating the City's existing Geographic Information System (GIS) building footprint data; calculating an effective density for the study area through floor area ratios; performing a buildout analysis; and creating an inventory of all parcels within the study area using the American Planning Association's Land Based Classification Standards (LBCS). The results of these four tasks are summarized below. Detailed GIS data, tables and maps were provided to the City Planning Department.

BUILDING FOOTPRINT UPDATE

The Vermont Center for Geographic Information's 2004 orthophotos provided the basis for digitizing building footprints missing from the City's existing building footprints GIS layer. (Links to the orthophotos are available in the resources section of this summary.) In addition to the orthophotos, site plans and permitting information provided by the City Planning Department were used to incorporate buildings constructed after 2004. Above- and under-ground parking structures were included in the building footprints layer, upon request by the City Planning Department. The building footprints were field verified in April 2011.

The *Building Footprint Update Map* shows the updated building footprint layer.

EFFECTIVE FLOOR AREA RATIO

As part of the existing conditions inventory, an effective Floor Area Ratio (FAR) was calculated for each parcel. Because of discrepancies between the Assessor's data and actual parcel area, all parcels within the study area were recalculated to determine area. Building data came from the revised building footprint layer, Assessor's data and field observations as to the number of stories. The effective FAR provides another way of comparing current density to what is allowed under current zoning regulations.

The results are shown in the *Existing Development Density Map*.

BUILDOUT ANALYSIS

The buildout analysis of the Downtown and Waterfront study area relied on the latest Assessor's and zoning data, provided by the City Planning Department. Parcels were grouped by zoning sub-districts, and each was analyzed under a 100% buildout scenario, regardless of existing buildings or vacancy. In addition, current zoning regulations offer bonus densities under certain conditions, so where applicable, an additional set of buildout figures was calculated assuming 100% buildout under the bonus densities allowed in each sub-zone.

It is important to remember that the buildout analysis did not factor in parking requirements, or site-level analysis. Therefore, the buildout results represent only an approximation of what may be built under the current regulatory scheme. A complete buildout of the Downtown and Waterfront, as presented by this analysis, is neither necessarily possible, nor expected.

The results of the buildout analysis for mixed-use and non-residential zoning sub-districts are presented in square feet of development. It is impossible to assume a certain split between commercial and residential development in mixed-use areas because that is normally determined by the market, and this is purely a zoning and land use analysis. Nevertheless, the mixed-use buildout results indicate the potential for further mixed-use development.

The results for residential zoning sub-districts are given in number of dwelling units, rather than square footage of development.

The following table summarizes the results of the buildout analysis by each zoning sub-district. The analysis revealed the potential for an additional 18.2 million square feet of mixed-use, commercial development, and an additional 525 residential units in residential zones.

The buildout analysis results are shown in the *Buildout Potential under Current Zoning Map*. The net results of the Buildout compared to existing development are available in the *Net Development Potential Map.*

Burlington Downtown and Waterfront Buildout Analysis Results

Zoning Sub-District	Zoning District	Existing Mixed-Use Buildings (sq ft)	Total Mixed-Use Buildout (sq ft)	Net Mixed-Use Buildout (sq ft)	Existing Residential (units)	Total Residential Buildout (units)	Net Residential Buildout (units)
Bank College East	Downtown Waterfront	205,908	231,789	25,881	0	N/A	N/A
Bank College West	Downtown Waterfront	675	220,217	219,542	0	N/A	N/A
Battery Street Transition	Battery Street Transition	372,593	711,749	339,156	38	N/A	N/A
Buel North	Downtown Transition	509,396	1,836,489	1,327,093	148	N/A	N/A
Buel South	Downtown Transition	1,014,955	3,429,220	2,414,265	120	N/A	N/A
College South	Downtown Waterfront	211,168	551,379	340,211	0	N/A	N/A
Downtown	Downtown	4,869,690	12,805,203	7,935,513	672	N/A	N/A
Light Manufacturing	Enterprise	186,588	2,543,637	2,357,049	0	N/A	N/A
Main	Downtown Transition	210,115	804,403	594,288	84	N/A	N/A
Pearl Bank East	Downtown Waterfront	49,667	852,055	802,388	0	N/A	N/A
Pearl North East	Downtown Waterfront	9,500	460,690	451,190	31	N/A	N/A
Public Trust - Lakeshore	Downtown Waterfront - Public Trust	252,138	1,609,202	1,357,064	0	N/A	N/A
Recreation Greenspace	RCO	32,680	N/A	N/A	0	N/A	N/A
Recreation Open Space	RCO	22,323	N/A	N/A	0	N/A	N/A
Residential - High Density	Residential - High Density	N/A	N/A	N/A	1,195	1,712	517
Residential - Medium Density	Residential - Medium Density	N/A	N/A	N/A	68	83	15
Waterfront Residential - Medium Density	Waterfront Residential - Medium Density	N/A	N/A	N/A	42	35	-7
TOTAL:		**7,947,396**	**26,056,033**	**18,163,640**	**1,305***	**1,830**	**525**

*Only the existing residential units within residential zones, in order to compare with the potential within those zones. There is a total of 2,398 existing residential units within the entire study area.

LAND BASED CLASSIFICATION STANDARDS

All parcels within the Downtown and Waterfront study area were field surveyed and coded in accordance with the five dimensions of the Land Based Classification Standards (LBCS) model, during April 18-20, 2011. The results of the LBCS field survey represent an accurate point-in-time inventory of existing uses; however, they are only valid for that one point in time, as uses may change. Wherever possible in the field, primary data was used to categorize the uses within each dimension; however, Assessor's data and the Downtown Business Inventory (furnished by the City Planning Department) were used as supplements as needed. In addition, the number of housing units was determined in the field. When the number of units could not be determined, the number of units in the Assessor's data was recorded. Finally, residential outbuildings were not classified.

The five dimensions of the LBCS include site development, structure, activity, function and ownership, and are described in the sidebar. Within each dimension are several "top-level" categories which are further broken down into sub-categories and four-digit codes. Results of the top-level coding for each dimension are presented in the series of *Top Level Land Based Classification Standards Maps*.

LBCS Dimensions

Activity refers to the actual use of land based on its observable characteristics. It describes what actually takes place in physical or observable terms (e.g., farming, shopping, manufacturing, vehicular movement, etc.). An office activity, for example, refers only to the physical activity on the premises, which could apply equally to a law firm, a nonprofit institution, a court house, a corporate office, or any other office use. Similarly, residential uses in single-family dwellings, multi-family structures, manufactured houses, or any other type of building, would all be classified as residential activity.

Function refers to the economic function or type of establishment using the land. Every land use can be characterized by the type of establishment it serves. Land-use terms, such as agricultural, commercial, industrial, relate to enterprises. The type of economic function served by the land use gets classified in this dimension; it is independent of actual activity on the land. Establishments can have a variety of activities on their premises, yet serve a single function. For example, two parcels are said to be in the same functional category if they belong to the same establishment, even if one is an office building and the other is a factory.

Structure refers to the type of structure or building on the land. Land-use terms embody a structural or building characteristic, which suggests the utility of the space (in a building) or land (when there is no building). Land-use terms, such as single-family house, office building, warehouse, hospital building, or highway, also describe structural characteristic. Although many activities and functions are closely associated with certain structures, it is not always so. Many buildings are often adapted for uses other than its original use. For instance, a single-family residential structure may be used as an office.

Site development character refers to the overall physical development character of the land. It describes "what is on the land" in general physical terms. For most land uses, it is simply expressed in terms of whether the site is developed or not. But not all sites without observable development can be treated as undeveloped. Land uses, such as parks and open spaces, which often have a complex mix of activities, functions, and structures on them, need categories independent of other dimensions. This dimension uses categories that describe the overall site development characteristics.

Ownership refers to the relationship between the use and its land rights. Since the function of most land uses is either public or private and not both, distinguishing ownership characteristics seems obvious. However, relying solely on the functional character may obscure such uses as private parks, public theaters, private stadiums, private prisons, and mixed public and private ownership. Moreover, easements and similar legal devices also limit or constrain land-use activities and functions. This dimension allows classifying such ownership characteristics more accurately.

Source: American Planning Association

It is important to note that the dominant land use only is depicted in the top-level mapping. Additional existing uses are not represented, but are recorded in the GIS and Excel spreadsheet data provided to the City Planning Department.

Given the parameters of the LBCS model, some assumptions were made in coding the data. For example, public and/or commercial parking lots were recorded as a "personal service" within the function dimension because none of the existing transportation-related categories applied. The number of residential units is captured within the structure dimension; however, is limited to 99. There may be some multi-family buildings with more than 99 units. Transient residential units are coded in the Activity dimension. These include hotel rooms, shelter spaces, Ronald McDonald House spaces and other types of transient residential units. Note that these transient residential uses were removed from the residential buildout analysis as they are unique uses.

DISCLAIMER

This project is funded by a Municipal Planning Grant, awarded by the Vermont Department of Economic, Housing and Community Development.

RESOURCES

City of Burlington Assessor's Property Database: http://www.ci.burlington.vt.us/assessor/search/

Land Based Classification Standards information: http://www.planning.org/lbcs/

Vermont Center for Geographic Information 2004 orthophotos:

http://www.vcgi.org/dataware/image_library/moreinfo.cfm?catalog_id=8&DatasetGroup_id=5&Dataset_id=24&Dataset_name=VTORTHO_0_16M_PAN_2004

http://www.vcgi.org/dataware/image_library/moreinfo.cfm?catalog_id=8&DatasetGroup_id=7&Dataset_id=18&Dataset_name=VTORTHO_0_16M_CLR_2004

MAPS

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3. Buildout Potential Under Current Zoning
4. Net Development Potential Buildout – Existing Development
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6. Function Dimension – Top Level Land Based Classification Standards (LBCS)
7. Structure Dimension - Top Level Land Based Classification Standards (LBCS)
8. Site Dimension - Top Level Land Based Classification Standards (LBCS)
9. Ownership Dimension - Top Level Land Based Classification Standards (LBCS)

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Spruce Ct
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Marble Ave
Howard St

N

0 500 1,000 Feet

City of Burlington Vermont

Downtown & Waterfront Masterplan

Building Footprint Update

Source:
City of Burlington Planning and Zoning Department.
Vermont Center for Geographic Information.
Building Footprints - Compiled by MMI as of April 2011.

Milone & MacBroom

June 21, 2011

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City of Burlington Vermont

Downtown & Waterfront Masterplan

Existing Development Density

Effective Floor Area Ratio (FAR)

- < 1.0
- 1.0 - 2.5
- 2.5 - 5.0
- 5.0 - 7.5

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June 21, 2011

Source:
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Vermont Center for Geographic Information.
Effective FAR - Compiled by MMI as of April 2011.

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Buildout Potential Under Current Zoning

Potential Residential Dwelling Units (DUs)

- 1 - 5 DUs
- 6 - 10 DUs
- 11 - 20 DUs
- 21 - 30 DUs
- 31 - 40 DUs
- 41 - 50 DUs
- 51 - 60 DUs

Potential Mixed Use Development (SQF)

- 1,000- 20,000 sqf
- 20,001 - 50,000 sqf
- 50,001 - 100,000 sqf
- 100,001 - 250,000 sqf
- 250,001 - 1,200,000 sqf

Recreation / Greenspace

Source:
City of Burlington Planning and Zoning Department.
Vermont Center for Geographic Information.
Buildout - Compiled by MMI as of April 2011.

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Net Development Potential
Buildout - Existing Development

Net Residential Dwelling Units (DUs)

- -12 - 0 DUs
- 0 - 10 DUs
- 10 - 20 DUs
- 20 - 30 DUs
- 30- 40 DUs
- 40 - 50 DUs

Recreation / Greenspace

Net Mixed Use Development (SQF)

- -167,630 - 0 sqf
- 0 - 50,000 sqf
- 50,001 - 100,000 sqf
- 100,001 - 250,000 sqf
- 250,001 - 500,000 sqf
- 500,000 - 1,145,000 sqf

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Activity Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Activity Description
1000	Residential activities
2000	Shopping, business, or trade activities
3000	Industrial, manufacturing, and waste-related activities
4000	Social, institutional, or infrastructure-related activities
5000	Travel or movement activities
6000	Mass assembly of people
7000	Leisure activities
8000	Natural resources-related activites
9000	No human activity or unclassifiable activity

Source:
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Downtown & Waterfront Master Plan

Function Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Function Description
1000	Residence or accommodation functions
2000	General sales or services
3000	Manufacturing and wholesale trade
4000	Transportation, communication, information, and utilities
5000	Arts, entertainment, and recreation
6000	Education, public admin., health care, and other inst.
7000	Construction-related business
8000	Mining and extraction establishment
9000	Agriculture, forestry, fishing and hunting
9900	Unclassifiable

Source:
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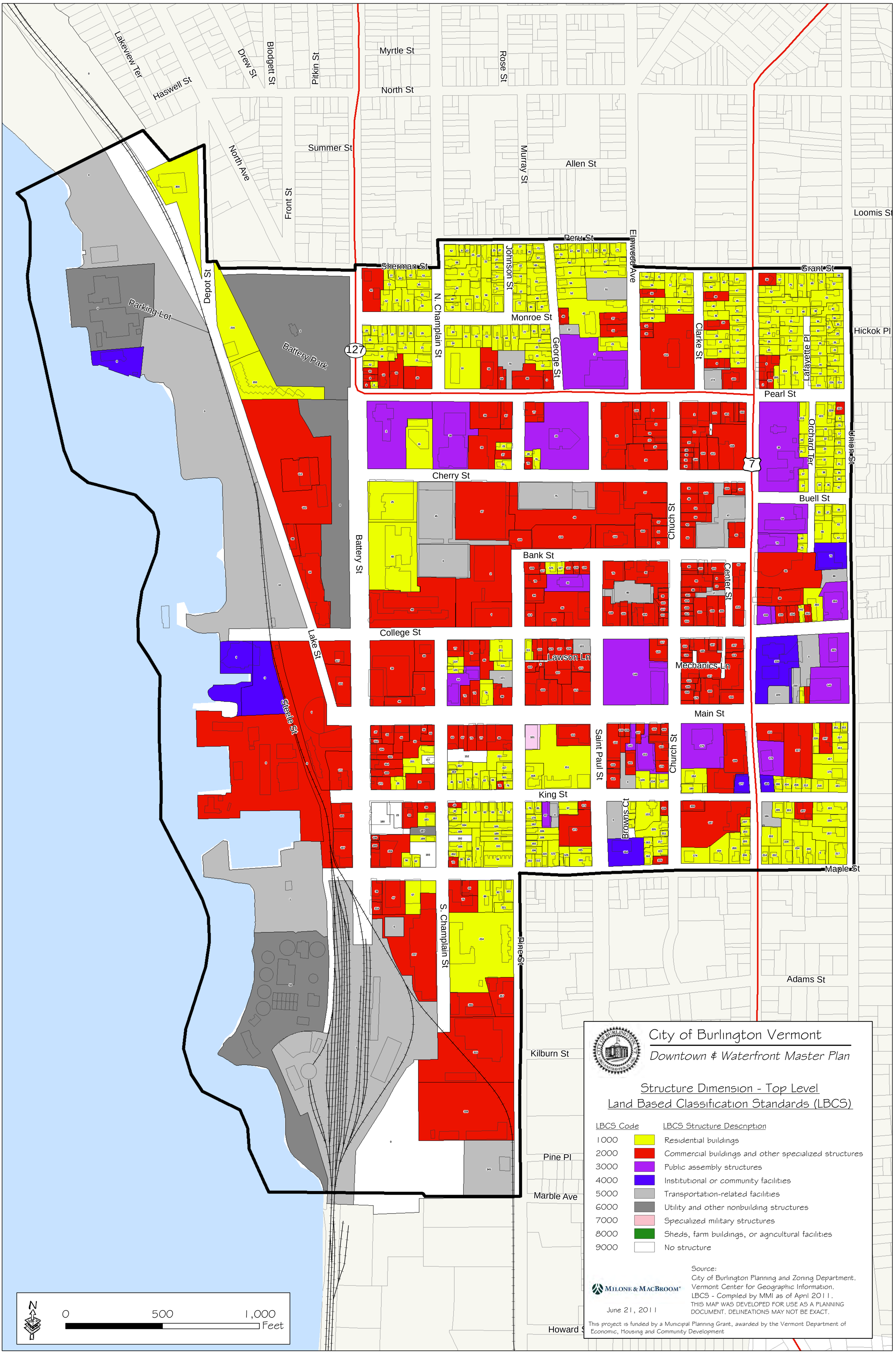

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Structure Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Structure Description
1000	Residential buildings
2000	Commercial buildings and other specialized structures
3000	Public assembly structures
4000	Institutional or community facilities
5000	Transportation-related facilities
6000	Utility and other nonbuilding structures
7000	Specialized military structures
8000	Sheds, farm buildings, or agricultural facilities
9000	No structure

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Downtown & Waterfront Master Plan

Site Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Site Description
1000	Site in natural state
2000	Developing site
3000	Developed site -- crops, grazing, forestry, etc.
4000	Developed site -- no buildings and no structures
5000	Developed site -- nonbuilding structures
6000	Developed site -- with buildings
7000	Developed site -- with parks
8000	Not applicable to this dimension
9000	Unclassifiable site development character

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Downtown & Waterfront Master Plan

Ownership Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Ownership Description
1000	No constraints--private ownership
4000	Public restrictions--local, state, and federal ownership
6000	Nonprofit ownership restrictions

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N

0 500 1,000 Feet

City of Burlington Vermont

Downtown & Waterfront Masterplan

Building Footprint Update

MILONE & MACBROOM®

June 21, 2011

Source:
City of Burlington Planning and Zoning Department.
Vermont Center for Geographic Information.
Building Footprints - Compiled by MMI as of April 2011.

THIS MAP WAS DEVELOPED FOR USE AS A PLANNING DOCUMENT. DELINEATIONS MAY NOT BE EXACT.

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Buildout Potential Under Current Zoning

Potential Residential Dwelling Units (DUs)

- 1 - 5 DUs
- 6 - 10 DUs
- 11 - 20 DUs
- 21 - 30 DUs
- 31 - 40 DUs
- 41 - 50 DUs
- 51 - 60 DUs

Potential Mixed Use Development (SQF)

- 1,000- 20,000 sqf
- 20,001 - 50,000 sqf
- 50,001 - 100,000 sqf
- 100,001 - 250,000 sqf
- 250,001 - 1,200,000 sqf

Recreation / Greenspace

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N

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Haswell St
North St
Summer St
North Ave
Front St
Murray St
Allen St
Loomis St
Peru St
Elmwood Ave
Sherman St
Johnson St
Monroe St
N. Champlain St
George St
Clarke St
Grant St
Lafayette Pl
Pearl St
Hickok Pl
Depot St
Parking Lot
Battery Park
127
Union St
Orchard Ter
Buell St
Cherry St
Battery St
Chuch St
Bank St
Center St
College St
Lawson Ln
Mechanics Ln
Main St
Lake St
Steele St
Saint Paul St
Church St
King St
Browns Ct
Maple St
S. Champlain St
Pine St
Adams St

Lakeview Ter
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Pine Pl
Marble Ave
Howard St

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Downtown & Waterfront Masterplan

Existing Development Density

Effective Floor Area Ratio (FAR)

- < 1.0
- 1.0 - 2.5
- 2.5 - 5.0
- 5.0 - 7.5

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Function Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Function Description
1000	Residence or accommodation functions
2000	General sales or services
3000	Manufacturing and wholesale trade
4000	Transportation, communication, information, and utilities
5000	Arts, entertainment, and recreation
6000	Education, public admin., health care, and other inst.
7000	Construction-related business
8000	Mining and extraction establishment
9000	Agriculture, forestry, fishing and hunting
9900	Unclassifiable

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City of Burlington Vermont

Downtown & Waterfront Master Plan

Net Development Potential
Buildout - Existing Development

Net Residential Dwelling Units (DUs)

- -12 - 0 DUs
- 0 - 10 DUs
- 10 - 20 DUs
- 20 - 30 DUs
- 30- 40 DUs
- 40 - 50 DUs

Net Mixed Use Development (SQF)

- -167,630 - 0 sqf
- 0 - 50,000 sqf
- 50,001 - 100,000 sqf
- 100,001 - 250,000 sqf
- 250,001 - 500,000 sqf
- 500,000 - 1,145,000 sqf

Recreation / Greenspace

0 500 1,000 Feet

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Ownership Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Ownership Description
1000	No constraints--private ownership
4000	Public restrictions--local, state, and federal ownership
6000	Nonprofit ownership restrictions

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Site Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Site Description
1000	Site in natural state
2000	Developing site
3000	Developed site -- crops, grazing, forestry, etc.
4000	Developed site -- no buildings and no structures
5000	Developed site -- nonbuilding structures
6000	Developed site -- with buildings
7000	Developed site -- with parks
8000	Not applicable to this dimension
9000	Unclassifiable site development character

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Structure Dimension - Top Level
Land Based Classification Standards (LBCS)

LBCS Code	LBCS Structure Description
1000	Residential buildings
2000	Commercial buildings and other specialized structures
3000	Public assembly structures
4000	Institutional or community facilities
5000	Transportation-related facilities
6000	Utility and other nonbuilding structures
7000	Specialized military structures
8000	Sheds, farm buildings, or agricultural facilities
9000	No structure

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