

Bethel Zoning Buildout Analysis

A general explanation of the process

A build-out analysis is an exercise designed to estimate the amount of development that can possibly occur if all developable land in a Town, Village, or County is built according to that municipality's current land use regulations. The buildout analysis applies current land use regulations, considers environmental constraints that would limit development in certain areas, and calculates the total residential density allowed at full buildout of the municipality. It does not predict when this would occur, at what rate it would occur, or where it would occur first. It only predicts the possible end result. The general process followed to calculate full buildout conditions is:

1. Identify areas that already have residential development and therefore would not allow new development
2. Identify properties subject to conservation easements, or are owned by government entities not likely to allow development
3. Identify areas in the town having environmental constraints that would not support new residential development
4. Calculate the amount of new residential development allowed by the current land use regulations in the remaining undeveloped areas of the Town.

These steps are outlined in greater detail on the following pages. A geographic information system (GIS) software program is used to conduct the analysis. In essence, the analysis calculates the total land base of the town, subtracts all lands having environmental constraints and completely built areas, and then applies the various development rules to calculate the number of allowable new residences. For purposes of this analysis, the buildout assumes that all new development would be single-family homes. Note that the results of all of these calculations are only estimates. The GIS layers used are not exact replicas of what is actually found in the real world, only representations of what is there. The processing of the data also introduces a certain amount of error, and can increase the inaccuracy of the data layers. The only way to get an accurate count of allowed residential uses on a particular property is to do an on-site survey of existing conditions.

The buildout starts with the Tax Parcel data obtained from the local Real Property Tax Department. Other GIS layers are also used, such as roads, water features, wetlands, soils, and topography. Extra information is added to the parcel data throughout the process.

The first step is to identify the existing uses for each parcel. Existing residential uses are identified by using the Property Class code found in the table accompanying the GIS parcel layer. Generally, any property with a property class code in the 200 range is a residential use. Some commercial uses, such as mobile home parks and apartment buildings are also essentially residential uses, and considered as such for purposes of the Buildout calculations. These are shown on the Existing Residential Use map using a

small green dot randomly placed on the parcel. The dot does not indicate the exact location of the building on the property; it only indicates there is a residential building on it.

The Zoning layer determines the allowed density in each district. A column in the attribute table carries the minimum lot size for each zoning district. The “fully built” parcels are identified by using the Property Class code found in the table accompanying the GIS parcel layer, calculating the total area of the parcel, and comparing it with the minimum lot size required in the district where the parcel is located. For example, an existing residence on a 1.75 acre parcel in a district with a 1 acre minimum lot size is designated as fully built because it cannot be subdivided into two new conforming lots. Further inspection using the Aerial Photographs helps to identify more parcels that are developed in a way that would not allow further subdivision. Houses placed in the middle of a large lot would be one example. Some intensively developed non-residential uses can also be removed. There may be parcels in the municipality with conservation easements on them. They are also removed from the calculations. State owned lands, cemeteries, and churches are also usually removed after inspection of the aerial photos. What is left after subtracting the fully built parcels is a layer showing the buildable parcels in the municipality; those that can potentially be further subdivided and/or built upon.

The next step is to identify any environmental features that would prevent development. Two categories of constraints are usually identified. Absolute constraints, such as open water and streams, wetlands and flood plains are considered major environmental constraints. Other areas such as the land within 100 feet of the water and wetland features, and slopes over 15% are included in a second constraints layer. These constraint layers are merged into new layers, and used as a sort of “cookie-cutter”, removing these constraints from the already identified buildable parcels.

The result of all of these operations is a layer showing the developable area within the buildable parcels found in the municipality. This is the layer the final computations are made on. The formula used is:

$$((\text{Remaining developable area} \times 0.85) / \text{Minimum Lot Size}) - \text{Any Existing Residential Uses}$$

The 0.85 multiplication factor is used to allow room for new roads, and any other infrastructure needs. The Zoning Density will vary according to the district each parcel is located in. Parcels that span districts are split along the district boundary into separate parcels. This final calculation gives the potential buildout for the entire municipality based on current zoning regulations.

Specific Steps:

The specific steps, as they were applied to Bethel, are outlined here. The graphics following some of the steps show the results of that operation on an area along Route 17B near the hamlet of Bethel. The full size maps show the results for the entire town.

1. Assemble town and parcel boundaries, and edit them so they are coincident. Join the latest assessment information to the parcel boundaries, which includes ownership information, and property class.
2. Clean up the parcel layer by identifying missing information, and updating by comparing it with aerial photos where possible.
3. Add a field to the parcel layer that identifies existing residential uses for each parcel.

(Map 1: showing **Existing Residences** as small green dots)



4. Assemble zoning district boundaries and edit them so they coincide with the parcels to the extent possible.
5. Add minimum lot sizes/density requirements to the zoning layer.

(Map 2: showing **Zoning Districts**. See the full map for minimum lot sizes/allowed density)



6. Union the parcel layer and the zoning district layer. Unioning is a GIS process that combines two layers together, resulting in a new layer that has all of the properties of the two original layers.

7. Identify fully built parcels by comparing existing building status with each parcel's zoning requirements.
 - A. Parcels with existing residences that cannot be further subdivided
 - B. Commercial/Public uses that are not likely to be developed
 - C. Properties with conservation easements that restrict further development
 - D. Properties owned by government agencies that are not likely to be developed

(Map 3: showing **Fully Built Parcels**)



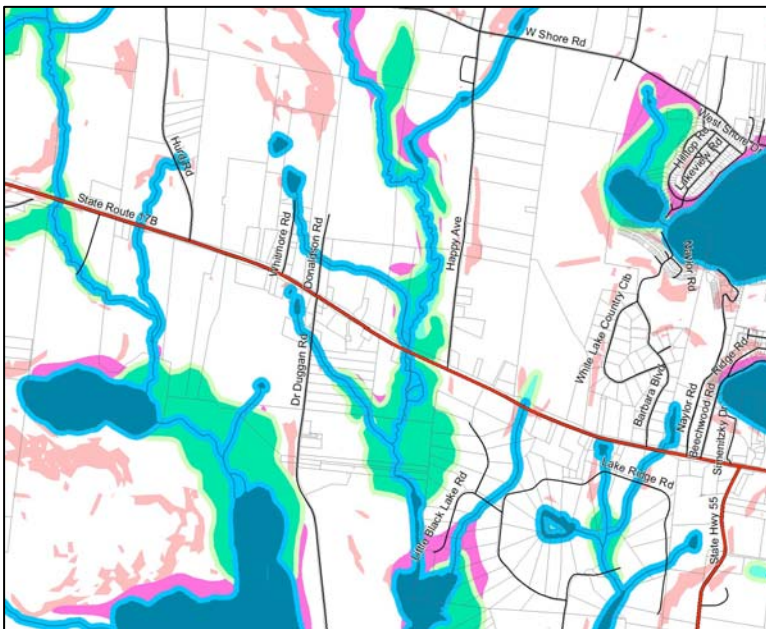
8. Identify buildable parcels remaining, essentially, the opposite of the fully built parcel map.

(Map 4: showing remaining **Buildable Parcels**)



9. Assemble and clip all of the environmental constraint layers to the town's border.
 - A. Water and streams
 - B. 100 foot buffer of water and streams
 - C. Wetlands (DEC and Federal)
 - D. 100 foot buffer of wetlands
 - E. Flood Hazards
 - F. Steep Slopes

(Map 5: showing **Environmental Constraints**. Blues are water, and water buffers. Greens are wetlands and wetland buffers. Purple is Flood Hazard. Red is steep slopes.)



10. Merge all of the constraints into a single “cookie-cutter layer.”

11. Remove the constraints layer from the Buildable Parcel layer to produce a Buildable Area layer

(Map 7: showing remaining **Buildable Area** within the buildable parcels, in green)



12. Perform the buildout calculations on the Buildable Area layer

(Map 8: showing the total **Potential New Residences** at full buildout. Each small red dot represents one potential new residential use.)



The following table shows the results of the buildout calculations for the entire town, and the results for each zoning district in the town.

Bethel Buildout Results

Using the Proposed Minimum Lot Size Requirements

Zoning District	AD	AG	AGR	C-17B	CS	FC	G-17B	H-17B	PA	R-17B	RD	RD-R	RS	SR	Total
Existing Residences	3	671	60	85	142	325	53	43	9	18	354	39	552	1,242	3,596
Potential New Residences (No environmental constraints considered)	0	4,870	102	472	96	2,677	114	0	19	74	2,621	113	2,633	1,430	15,221
Potential New Residences (Water, Wetlands, and Flood Hazards constraints considered)	0	4,349	90	440	87	2,307	97	0	18	70	2,359	90	2,390	1,421	13,718
Potential New Residences (Water, Wetland, 100 ft buffers of Water and Wetlands, and Flood Hazard constraints considered)	0	3,937	89	408	83	2,141	85	0	16	64	2,217	81	2,218	1,411	12,750
Potential New Residences (All environmental constraints considered, including Slopes over 15%)	0	3,212	81	356	82	1,858	83	0	15	53	1,969	78	1,978	1,388	11,153

Zoning District Codes used in the table above:

AD	Airport Development	AG	Agricultural	AGR	Agricultural Residential
C-17B	Highway Commercial	CS	Community Settlement	FC	Forest Conservation
G-17B	Gateway Commercial	H-17B	Hamlet Commercial	PA	Performing Arts Center
R-17B	Rural Gateway	RD	Rural Development	RD-R	Rural Development Residential
RS	Residential Settlement	SR	Smallwood Residential		