

TOWN OF HOLLIS, NEW HAMPSHIRE

BUILDOUT ANALYSIS



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Prepared by the

NASHUA REGIONAL PLANNING COMMISSION

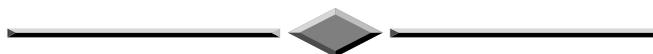


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I. INTRODUCTION

This Buildout Analysis is an update and refinement of the original Buildout Analysis developed in 1996 by the Hollis Long Range Planning Committee with the assistance of the Nashua Regional Planning Commission. A buildout analysis is an effort to estimate what level of residential development may occur in the Town in the future. "Buildout" is a theoretical condition and exists when all available land suitable for residential construction has been developed. The analysis determines: (1) an estimate of the maximum number of housing units that will result when all of the available developable land is consumed; (2) an estimate of the maximum population of the Town; (3) an estimate of the year of ultimate buildout; and (4) an estimate of the population in 5 year increments and at buildout. This study does not consider the re-use of property, but rather new uses of currently undeveloped sites.

The four estimates noted above are determined in the following manner:

- Constraints to development relating to the Hollis Zoning Ordinance and Subdivision Regulations, such as wetlands, steep slopes and floodplains, and development restrictions relating to parcel ownership or conservation efforts are mapped using Geographic Information System software (GIS).
- The net developable area is determined by subtracting the number of acres of constrained land from the total acreage for each undeveloped residential parcel.
- The net developable area is divided by the average density of recent Hollis subdivisions to determine the number of housing units that can be developed on the net developable area.
- A maximum population estimate is determined by multiplying the projected number of housing units by the average household size and adding this to the current population.
- The year of ultimate buildout is estimated using the average annual housing unit growth rate from 1990 - 2000.
- The population in 5 year increments and at buildout is estimated using the average annual housing unit growth rate from 1990 - 2000 and the average household size in 2000.

II. GOAL OF THE BUILDOUT ANALYSIS

The primary goal of this analysis is to provide the Town and the public with information needed to make informed choices regarding the future growth of Hollis. Issues related to future growth include the fiscal impacts or costs of new development to existing public services, public safety and health, the protection of natural resources, and the preservation of open space and farmland. The results can provide base data for the Town Facilities Space Needs Study and/or Capital Improvements Plan, among others.

III. METHODOLOGY

A. Constraints Mapping

This Buildout utilizes a Geographic Information System software (GIS) which increases the efficiency of producing the final map set and results. A GIS is computerized mapping software that incorporates a relational database management system that holds information about geographic features. The Nashua Regional Planning Commission has been continually improving and updating the GIS database for its member communities for twelve years. For Hollis, the following relevant data layers are available, among others:

Table 1. GIS Data Layers and Sources

Data Layer	Source	Description
Floodplains	FIRM	Depicts Zone A floodplains
Parcels	NRPC/Hollis	Includes parcels boundaries, attributes
Landuse	NRPC/Hollis	Land use types by parcel
Water	UNH Granit	Based on USGS Digital Line Graph
Roads	UNH Granit	Based on USGS Digital Line Graph
Soils	USDA SCS soil maps	Includes soil types, attributes
Town Boundary	UNH Granit	Based on USGS Digital Line Graph
Zoning	NRPC/Hollis	Depicts all zoning districts

Note: FIRM = Flood Insurance Rate Map; UNH = University of New Hampshire; USDA SCS = US Dept. of Agriculture, Soil Conservation Service.

Constraints mapping involves determining the *net developable area* of undeveloped residential land in Hollis. Net developable area is that undeveloped area of Hollis which could conceivably accommodate new housing units. The constraints mapping considers whether a parcel will be developed as: 1) a Hollis Open Space Planned Development (HOSPD); 2) a conventional subdivision of less than five lots; or 3) as a single housing unit on a lot of less than four (4) acres. Subdivisions creating five (5) or fewer lots are exempt from the HOSPD requirement. Given the two acre zoning, this means that parcels of 12 acres or larger will likely be developed as a HOSPD. The Zoning Ordinance requires that the density of dwelling units in a HOSPD are no greater than one dwelling unit per 2 acres of gross parcel area, exclusive of road area, jurisdictional wetlands, surface waters, flood plains, and areas with unaltered slopes of greater than 25%. For conventional subdivisions, the density of dwelling units is less restrictive, and are no greater than one dwelling unit per 2 acres of gross parcel area, exclusive only of road area, jurisdictional wetlands and surface waters.

Therefore, for the purposes of the Buildout Analysis, the net developable area of a HOSPD is that section of a parcel that is not constrained by the following features (see detailed description in Section B):

- Conservation Easements
- Issues of ownership that limit development
- Wetlands
- Slopes (>25%)
- Flood Plains

Similarly, the net developable area of a conventional subdivision is that section of a parcel that is not constrained by the following features:

- Conservation Easements
- Issues of ownership that limit development
- Wetlands

In addition, lots of less than four acres cannot be subdivided and it is assumed that they will develop with one housing unit each. Road area is not used in the constraints mapping due to the difficulty in determining the final design of each developed parcel.

B. Data Sources for Constraints Mapping

Conservation Easements

Conservation easements have been placed on various parcels in the Town of Hollis for the purpose of conserving the parcel, or section of a parcel, in perpetuity. Conservation easements are also found on those sections of Hollis Open Space Planned Developments that are preserved as part of the subdivision approval. Conservation Easement data is determined from the tax maps and/or the Hollis Conservation Commission. The study assumes that the total acreage of the easements will remain constant in the future.

Issues of Ownership

Certain parcels within the Town, such as the Beaverbrook Association and Nissitissit River Land Trust lands, are assumed to be relatively free of development pressure because of the conservation goals of the owners. These private conservation lands are considered to be undevelopable for the purposes of this study. Ownership data is sourced from the Town of Hollis' Appraisal Office, the NH Conservation and Public Lands Database developed by the Society for the Protection of NH Forests (as updated by NRPC) and by an examination of recently developed Hollis Open Space Planned Developments which include large areas of protected open space. The study assumes that ownership constraints will remain constant in the future.

Wetlands

A soil's drainage class is based upon how quickly water moves through the soil. The classes are sourced from the US Dept. of Agriculture, Soil Conservation Service, and include the excessively drained, well-drained, moderately well drained, poorly drained, and very poorly drained classes. The last two classes, very poorly and poorly drained soils, correspond to the definition of hydric A and hydric B soils which are considered wetland soils and are used to defined the extent of wetlands for the purposes of this study. Wetlands are protected from development by the Wetlands Overlay District of the Hollis Zoning Ordinance and cannot be used to contribute towards the buildable area of a lot. There is a mandatory 100-foot buffer that must be preserved around said wetlands. However, this buffer can contribute towards the density calculation, therefore, the 100 foot buffer is not considered a development constraint for the purposes of this study.

Steep Slopes

Steep slopes are sourced from the soil classifications developed by the US Dept. of Agriculture, Soil Conservation Service. The location of house lots within a HOSPD is generally away from areas of steep slopes. Steep slopes (>25%, slope class "E") cannot contribute towards the density calculation for a HOSPD and are considered a development constraint within such development. The only soil type in Hollis exhibiting a 25% or greater slope is CmE, or Canton stony fine sandy loam, 25 to 35% slopes.

Flood Plains

Floodplains are delineated on the Flood Insurance Rate Map (FIRM) developed by the US Federal Emergency Management Agency. Areas of special flood hazard are designated on the FIRM as zones A, AO, AH, A1-30, AE, A99, VO, or V1-30, VE or V. These zones cannot contribute towards the density calculation for a HOSPD and are considered a development constraint within such development. The only zones found within Hollis are zones A and AE.

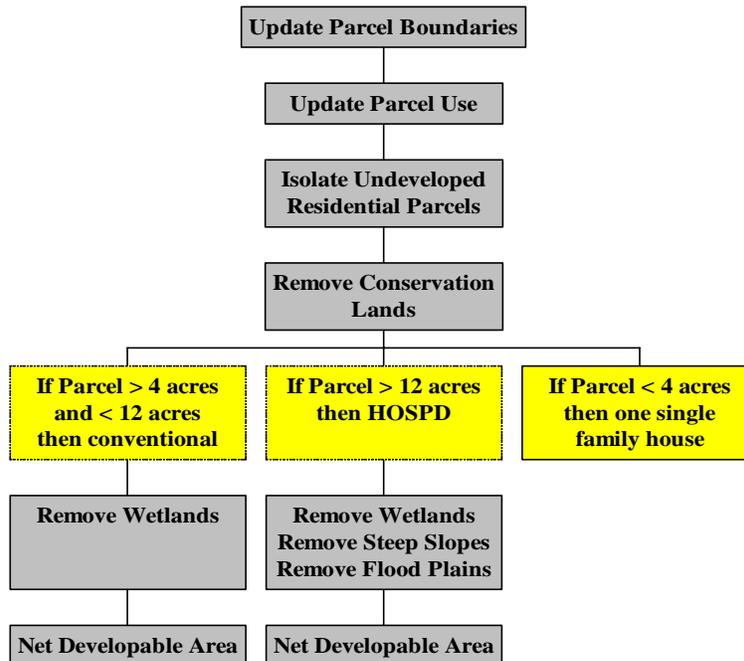
The development constraints considered above are those available within the NRPC GIS and do not represent the full range of possible restrictions or resources that may be found in the field. For

example, rare and endangered species may be present in Hollis but are not considered because this data is not available. Each of the features were mapped at a scale of 1:24,000.

C. Steps to Determine Net Developable Area

Figure 1 illustrates the steps taken to determine the net developable area remaining in Hollis in 2001. The first two steps involve updating the GIS parcel coverage to incorporate new subdivisions and developed lots since the parcel coverage was last updated in 1998. This step was completed in September 2001 by NRPC GIS staff. The remaining steps involve identifying the development constraints on each undeveloped residential parcel.

Figure 1. Methodology



IV. COMPARISON WITH 1996 BUILDOUT ANALYSIS

There are three major differences between this study and the 1996 study. The first is the recent availability of GIS *parcel* mapping. This allows for more accurate constraints mapping because issues such as parcel ownership, lot size, and conservation easements can be taken into account. Essentially, the analysis can consider the development constraints on *each parcel* rather than on the Town as a whole.

The second difference is that the 1996 analysis provided three options, the first assuming highly restrictive development constraints (a lower net developable area at buildout) through to the third assuming low development constraints (a higher net developable area at buildout). The options were used to demonstrate how the buildout would change if certain development controls were adopted. Some of these development controls, such as the Wetlands Overlay Protection Zone, have been adopted since 1996. This update of the buildout analysis, however, does not provide options but simply applies the most current Zoning Ordinance and Subdivision Regulations to each undeveloped parcel in question in order to determine net developable area.

The third major difference is that this study does not consider highly permeable soils to be a development constraint. Highly permeable soils have severe limitations for the location of septic systems. However, highly permeable soils *can* contribute towards the density calculation and are not considered a development constraint unlike, say, wetlands. Assuming that highly permeable soils are a development constraint would result in an under-estimation of the Town's net developable area. Areas of highly permeable soils are scattered throughout the Town and, in many cases, lots can be designed so that septic systems can be located on other, more appropriate, soils. However, the average density of recently approved HOSPD and conventional subdivisions is considered in this buildout study in order to estimate the net effect of highly permeable soils and other development constraints (see Section V).

V. AVERAGE DENSITY

As discussed above, the buildout determines the net developable area of each undeveloped parcel of greater than 4 acres in Hollis. Due to potential soil constraints and other design issues such as area of roadway, it is unlikely that this net developable area will be subdivided at the maximum permitted density. However, it is impossible to determine the soil and road area constraints for each undeveloped parcel without a site-specific survey. Therefore, the average density of recently approved HOSPD and conventional subdivisions is considered instead. The average density is calculated by dividing the net developable area of recently approved HOSPD and conventional subdivisions by the number of approved lots. Table 2 shows the average density for recently approved HOSPD subdivisions and Table 3 lists the average density for recently approved conventional subdivisions.

Table 2. Average Densities of Recently Approved HOSPD Subdivisions

HOSPD Name	Location	Approval Date	Net Buildable Area (acres)*	Number of Lots Approved	Density (acres per unit)
Ben Hogan Estates	Pine Hill Rd	1993	32.2	9	3.6
Woodland Park	Farley Rd	1995	61.3	25	2.5
JMR Construction	Rocky Pond Rd	1997	19.6	8	2.4
J/J Construction	Pine Hill Rd	1998	23.8	9	2.7
Skyview I	Silver Lake Rd	1999	78.2	23	3.4
AMP Properties	Cummings Ln	1999	48.4	9	5.4
Skyview II	Silver Lake Rd	2000	56.0	16	3.5
Crystalbrook Est.	Hayden Rd	2000	52.4	12	4.4
Average:					3.5

Source: Town of Hollis Planning Department.

*Net Buildable Area = gross parcel area - area of wetlands, steep slopes and floodplains.

Table 3. Average Densities of Recently Approved Conventional Subdivisions

Subdivision Name	Location	Approval Date	Net Buildable Area (acres)	Number of Lots Approved	Density (acres per unit)
Adamyk Homes	Nartoff Rd	1999	8.2	4	2.0
Surwell	Nartoff Rd	1999	23.9	6	3.9
Lisko	Farley Rd	1999	5.4	2	2.7
Carpenter	Laurel Hill Rd	1999	12.3	3	4.1
Morgan Ryan	Wright Rd	2000	8.9	3	3.0
Rivercrest	Broad St	2000	24.8	5	5.0
Menard	Procter Hill Rd	2001	9.7	2	4.8
Reed Building	Pine Hill Rd	2001	8.4	2	4.2
Mills	Daniels Way	2001	22.1	3	7.4
Average:					3.6

Source: Town of Hollis Planning Department.

*Net Buildable Area = gross parcel area – area of wetlands.

As the tables show, the average density of recently approved HOSPD subdivisions is 1 unit per 3.5 acres and the average density of recently approved conventional subdivisions is 1 unit per 3.6 acres. This is a 57% and 56% lower density, respectively, than could be permitted if these subdivisions would have been developed at the highest permitted density of 1 unit per 2 acres.

VI. RESULTS

A. Net Developable Area and Potential House Lots

Figure 2 shows the undeveloped residential parcels, the estimated location of wetlands and the conservation lands in the Town of Hollis. The following is a summary of the results of the constraints mapping.

- There are a total of 290 undeveloped parcels of less than four acres, excluding wetlands. Therefore 290 housing units can be developed on these parcels. The location of these parcels can be seen on Figure 3. In addition, two Housing for Older Persons developments were recently approved and are under construction. These developments will add a total of 107 two-bedroom units to the Town's housing stock by 2004. Therefore a total of 397 housing units may be constructed on existing approved parcels.
- There are a total of 1,216 acres of undeveloped land with a parcel area of between four and twelve acres, excluding wetlands. These parcels may develop as conventional subdivisions with two acre lots. However, the average density for recently approved conventional subdivisions is 1 unit per 3.6 acres. Therefore, 337 housing units may be developed on these parcels. The location of these parcels can be seen on Figure 3.
- There are a total of 5,598 acres of undeveloped land with a parcel area of greater than twelve acres, excluding wetlands. These parcels can develop as Hollis Open Space Planned Developments. Of this area, 15 acres have slopes of greater than 15% and 98 acres are in the floodplain. Therefore, the net buildable area is 5,485 acres. The average density for recently approved HOSPD subdivisions is 1 unit per 3.5 acres. Therefore, 1,567 housing units may be developed on these parcels. The location of these parcels, along with the areas of steep slopes and floodplains can be seen on Figure 4.
- The total number of additional housing units that can be developed in the Town of Hollis at buildout is estimated at 2,301.

Figure 3: Undeveloped Parcels of Less Than Twelve (12) Acres

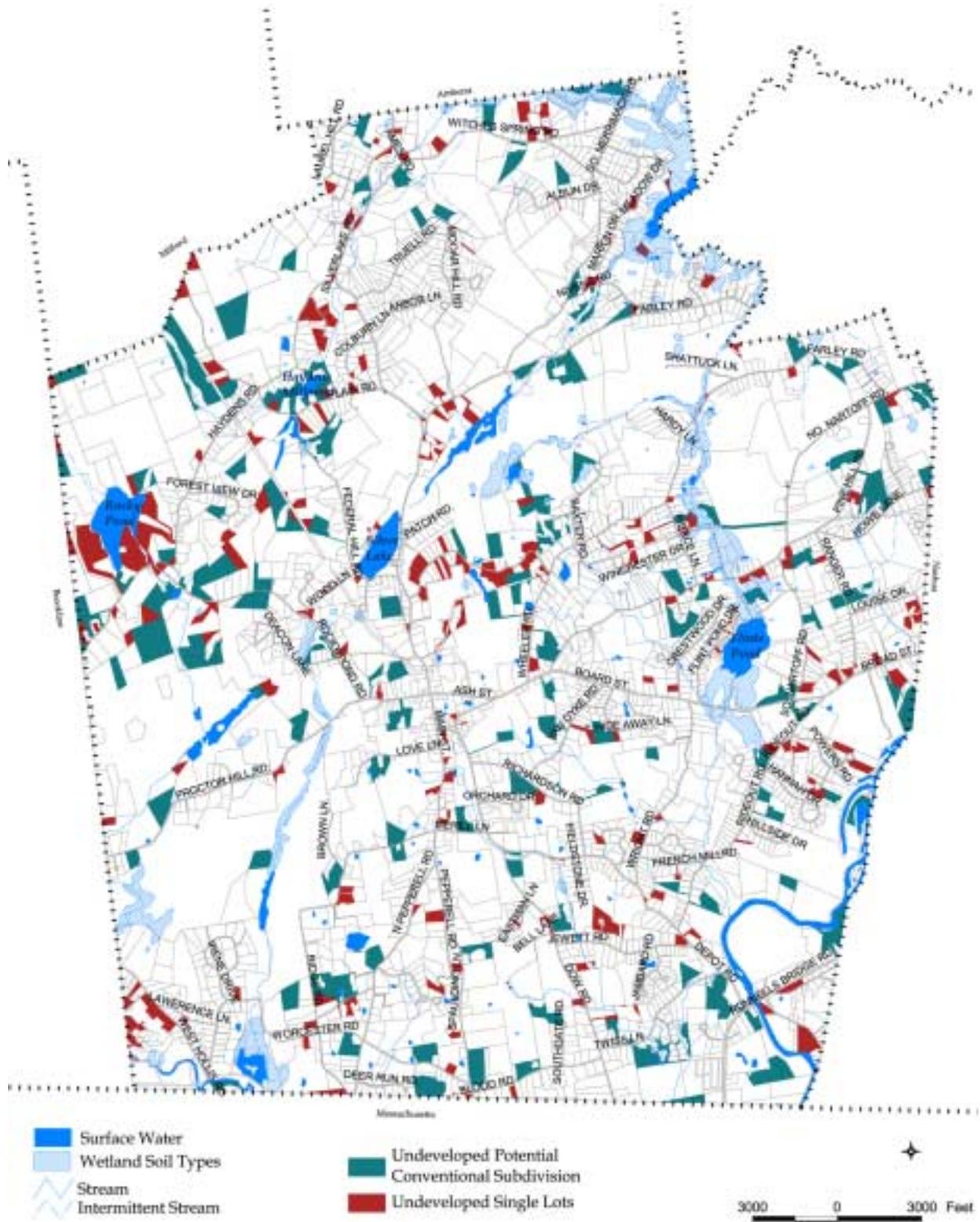
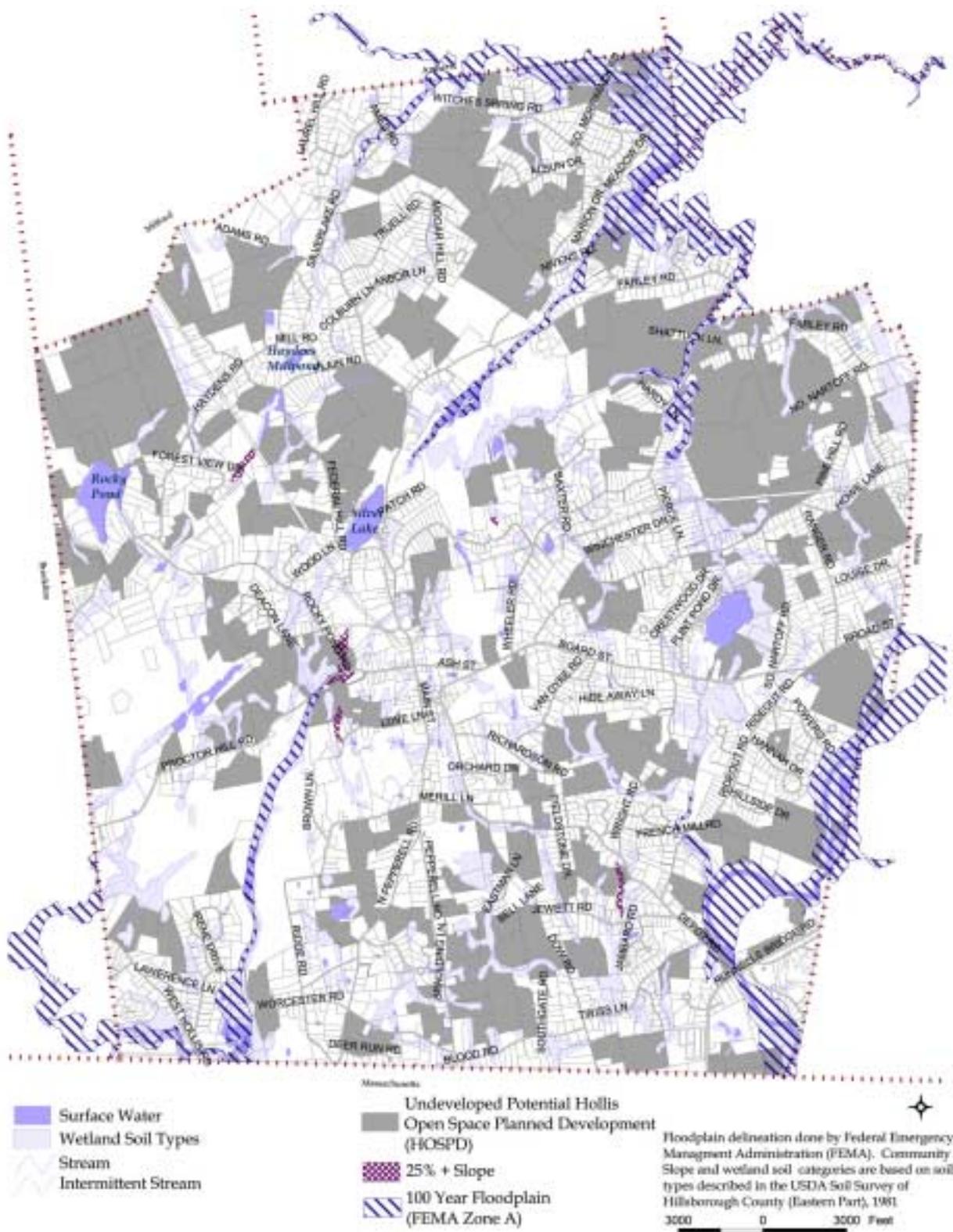


Figure 4: Undeveloped Parcels >12 acres with Steep Slopes and Floodplains



B. Estimated Population at Buildout

The population of the Town of Hollis in 2000 was 7,015 and the number of housing units was 2,491 (see Table 2)¹. Constraints mapping estimates that the Town can accommodate 2,301 additional housing units, for a total of 4,792 housing units at buildout. To determine the estimated population at buildout, the number of additional housing units that can be accommodated is multiplied by the average household size and then added to the existing 2000 population. The average household size is determined by dividing the 2000 population (7,015) by the number of housing units (2,491). This results in an average household size in Hollis of 2.82 persons per household. This study assumes that the average household size will remain constant. Therefore, the estimated population at buildout will be **13,503** (2.82 persons per household x 2,301 additional housing units + 7,015 existing population).

C. Housing Unit and Population Growth

Housing unit growth in Hollis has taken place at an average annual growth rate of 2.189% between 1990 and 2000.² This study assumes that this average annual growth rate will remain constant. Applying this growth rate to existing housing units allows for a projection of the number of housing units and population over time. The Town of Hollis is estimated to build out in **2031** with a population of **13,503** (see Table 4). The population estimates using this methodology differ somewhat from the population projections published by the NH Office of State Planning in 1997. The OSP local projections are based on a community's historical share of its respective county's growth and the basic trends in shares of county population change were established using 1970, 1980 and 1990 population totals. By contrast, this buildout study bases projections on actual housing unit growth from 1990 to 2000.³

The OSP projections for Hollis have generally been higher than the actual population that results. For example, in 1997 the OSP projection estimated a population of 7,374 for 2000, whereas the actual population turned out to be 7,015. The OSP encourages communities to use their projections as a point of departure for users to establish their own projections and/or for evaluating other projection efforts. This buildout study is one such point of departure and estimates that Hollis' population will grow at a slower rate than projected by OSP.

Table 4. Housing Unit and Population Projection 2001 – Buildout

Year	Projected Housing Units at Buildout	Buildout Population Projection	OSP Population Projection
2000	2,491	7,015	7,374
2005	2,776	7,818	8,535
2010	3,093	8,713	9,299
2015	3,447	9,711	10,696
2020	3,841	10,822	11,940
2025	4,280	12,061	-
2030	4,770	13,441	-
2031	4,792	13,503	-

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¹ Source: US Census 2000.

² Derived by NRPC from US Census data.

³ Source: NH Office of State Planning, **Municipal Population Projections, 2000 To 2020**.