

**Final Report of the 2010-11 Londonderry Open
Space Task Force**

Adopted July 7, 2011

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Prepared by

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Introduction.....	1
Chapter 1: Open Space Inventory and Status, as of December 2010.....	3
Chapter 2: Stewardship.....	13
Chapter 3: Land Characteristics and Liabilities.....	17
Chapter 4: Land Protection Methods.....	19
Chapter 5: Identification of Priority Natural Resources.....	25
Chapter 6: Summary of Natural Resource Indicators.....	41
Chapter 7: Public Opinion Survey.....	49
Chapter 8: Strengths, Weakness, Opportunities and Threats.....	51
Chapter 9: Public Meeting Comments.....	57
Chapter 10: Financial Plan.....	61
Chapter 11: Conservation Transactions.....	65
Chapter 12: Conclusions and Recommendations.....	67

Appendix 1: Task Force Charge

Appendix 2: Protected Land Summary

Appendix 3: Properties Eligible for Inclusion in a Historic Properties Protection District, Londonderry, NH

Appendix 4: Stewardship Expenses

Appendix 5: Environmental Baseline Study Committee Water Quality Results

Appendix 6: Summary of Delphi Process

Appendix 7: Public Opinion survey instrument and marketing approaches

Appendix 8: Meeting minutes

Introduction

This plan updates and expands upon work completed in 2001 and 2006 by the Open Space Task Force. The Task Force at that time drafted an Open Space Plan for Londonderry that defined a green infrastructure and developed a list of prioritized residentially zoned land to preserve from development. The plan also provided a cursory look at funding needs to support full implementation. It did not address the management of protected properties, nor did it detail the process of plan implementation. In addition, previous plans did not assess the contribution of open spaces that were at least temporarily protected by regulation or statute. This plan addresses these shortcomings of the previous plans by:

- Addressing the current status of open space management (“stewardship”) and making recommendations for its improvement.
- Including a summary of plan implementation to include the decision process, timelines, and recommendations for improvement.
- Assessing the financial feasibility of full plan implementation.
- Considering lands temporarily protected by regulation or statute and giving greater weight to such protection in its recommendations.

Regionally, four of the six abutting communities including Auburn, Derry, Windham and Litchfield used Londonderry’s model to collect data and draft Open Space Plans of their own. This plan incorporates some ideas from the plans of those neighboring communities.

This plan represents the second revision of Londonderry’s original 2001 Open Space Plan. These plans guided preservation efforts that permanently protected roughly 2,000 acres of land. In fact, all purchases involving town dollars, as well as land protected by outside agencies, were identified in the previous plans as priority areas for protection.

In 2010, it was time to begin the recommended 5-year update of the 2006 plan. In addition, the Town Council urged a review of open space funding. The funding plan depends in large part on ‘how much is enough?’ that is, when and with how much protection will open space protection goals be achieved? While answering that question with hard numbers on the ground is challenging, describing the overall goal is not. The Task Force conducted its work based on these assumptions:

- Open space provides natural services such as clean and abundant water, recreation, and scenic views to Londonderry residents in the same way that the town’s built infrastructure and staff provides services such as public safety and education.
- The town’s residents desire these natural services and must trade off limited tax dollars among both built and natural services to maximize their quality of life.
- The preservation of natural services *over the long term* requires an integrated, buffered network of open space that protects key natural resources from being compromised by nearby development.

In May, 2010, the Londonderry Town Council approved the Committee Charge and initiated the Londonderry 2010 Open Space Task Force. Appendix 1 contains the complete Task Force Charge. This report represents the findings of the work conducted to satisfy the charge.

Chapter 1: Open Space Inventory and Status, as of December 2010

Current Open Spaces

At the end of 2010 Londonderry had 4,047 acres of permanently protected open spaces in either Town (or other management entity) ownership or easements (see Table 1.1 and Figure 1.1). Given 26,945 acres in Town, this represents 15% of the total area. Other areas may be considered ‘partially protected’ including utility corridors, town schools/recreation areas and the town’s Conservation Overlay District. Together, these account for 4,205 acres or an additional 15.6% of the total land area. Map 1.1 illustrates the geography of protected open spaces.

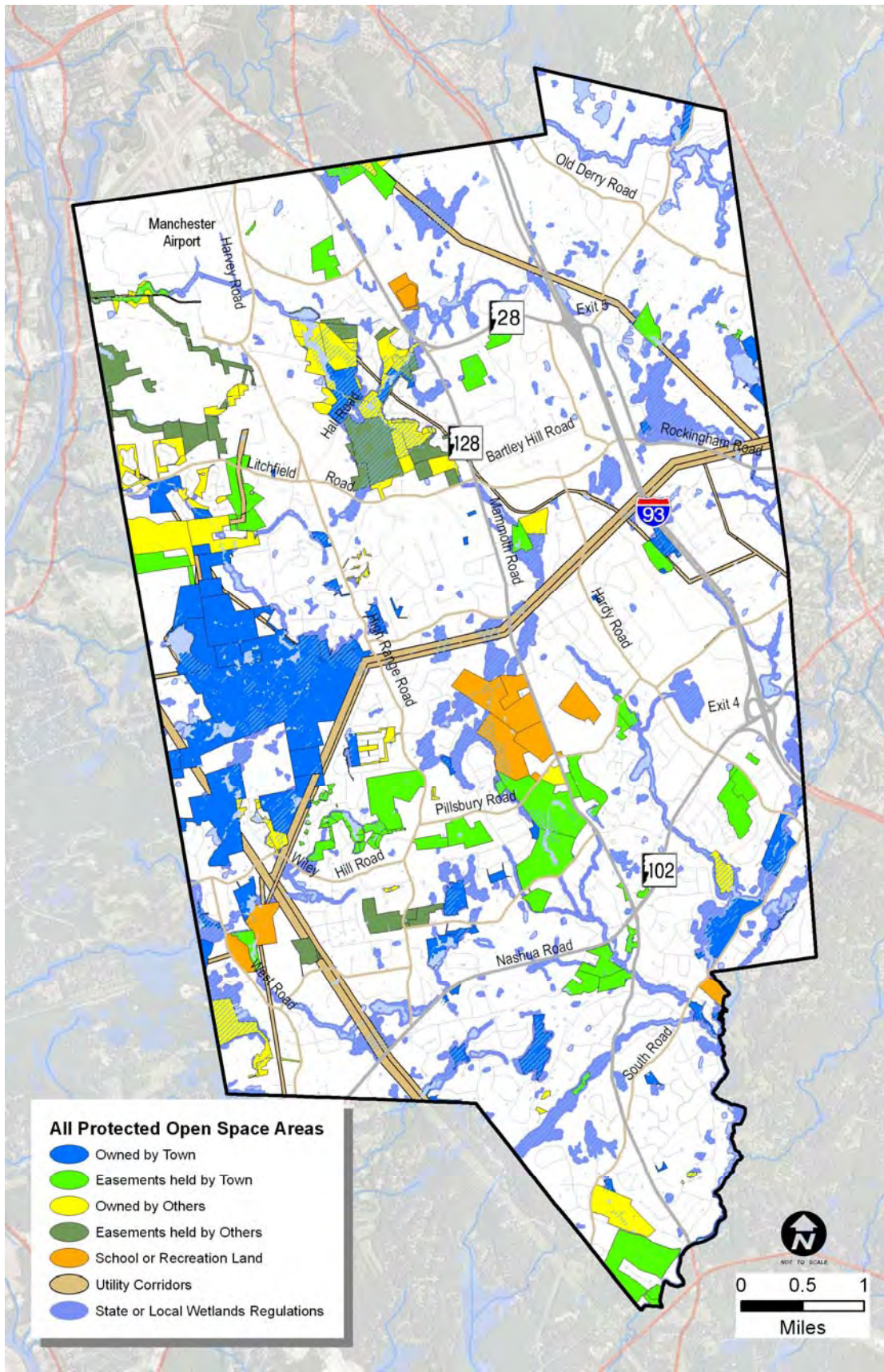
Uses within partially protected areas are dictated by public policy and therefore, these areas may or may not remain in their present state in perpetuity. As an example, buffer distances are adopted by the Town Council and requirements for dredge and fill permits are established by NH DES. Rules may or may not be amended by future legislative decisions. Similarly, the conditional use permits for buffer disturbance may be granted by the Londonderry Planning Board to allow future developments within partially protected areas. Notwithstanding, the rules apply for development activity from this point forward and represent the best protections at the present time.

Table 1.1: Current Open Spaces, by Protection Type

	Category	Acres	% of Town	% of Conserved Land	Comment
Permanently Protected	Owned by Town	1,693	6.3%	42%	Does not include municipal buildings and grounds, but does include recreational and school playing fields and historic district parcels held by the town
	Easements held by Town	1,104	4.1%	27%	Only includes easements held for conservation purposes, not drainage, access, etc.
	Owned by Others	770	2.9%	19%	Does not include acreage on the Bockes-Ingersoll forest, which is counted as a town-held conservation easement
	Easements held by Others	480	1.8%	11%	Only includes easements held for conservation purposes, not drainage, access, etc.
	Subtotal	4,047	15.0%	100%	
Partially Protected	Utility Corridors	781	2.9%	19%	Includes natural gas and electric
	State or Local Wetlands Regulations	3,029	11.2%	72%	Protected by statute and Londonderry Conservation Overlay District, subject to exceptions
	School or recreation land	395	1.5%	9%	Includes all school properties and Nelson Road and West Road fields
	Subtotal	4,205	15.6%	100%	

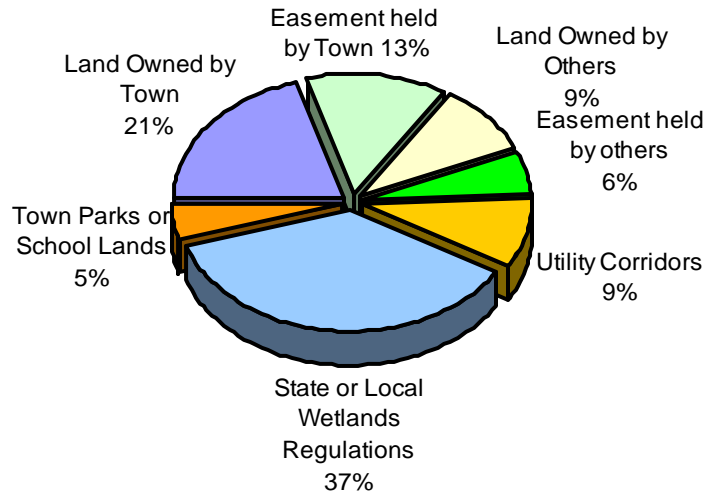
Source: Londonderry GIS; interpretation from Conservation Commission records

Map 1.1: Permanently and Partially Protected Open Space in Londonderry



Source: Londonderry GIS; interpretation from Conservation Commission records

Figure 1.1: Permanently and Partially Protected Open Space in Londonderry, by Type

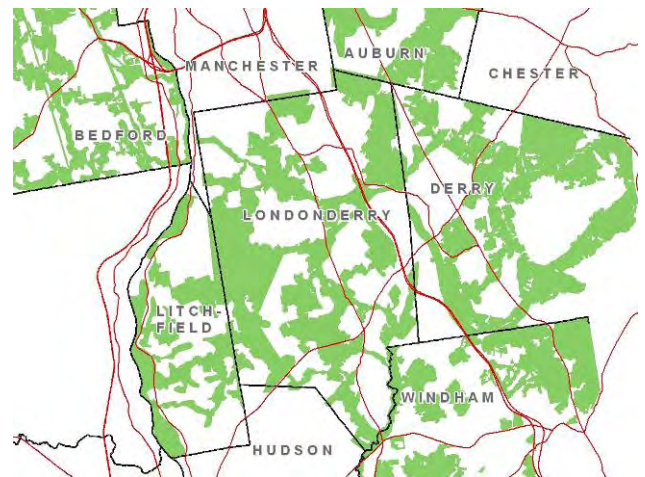


Source: Londonderry GIS; interpretation from Conservation Commission records

Green Infrastructure

The green infrastructure identified in the 2006 plan and updated during this process represents a single, unbroken boundary that includes both public and private lands and captures the best natural resource features for Londonderry, respective of existing and anticipated growth. Similar mapping efforts were conducted by other towns in the region, including Auburn, Bedford, Derry, Litchfield and Windham (see Map 1.2). Town-wide, the 2006 green infrastructure accounts for 11,552 acres or 42.8% of the town. Presently, 3,647 acres (31.6%) of this infrastructure is permanently protected and 2,801 (24.2%) is partially protected. The un-protected 5,104 acres (44.2% of the green infrastructure) is in private hands. Thus the town has protected, in some fashion, well over half of the green infrastructure identified in the 2006 plan.

Map 1.2: Regional Green Infrastructure



The green infrastructure includes portions of parcels that are both built and undeveloped and may contain a variety of uses. Existing buildings and areas directly around them were purposely avoided when the infrastructure boundary was delineated.

Sources of Open Space and Open Space Funding

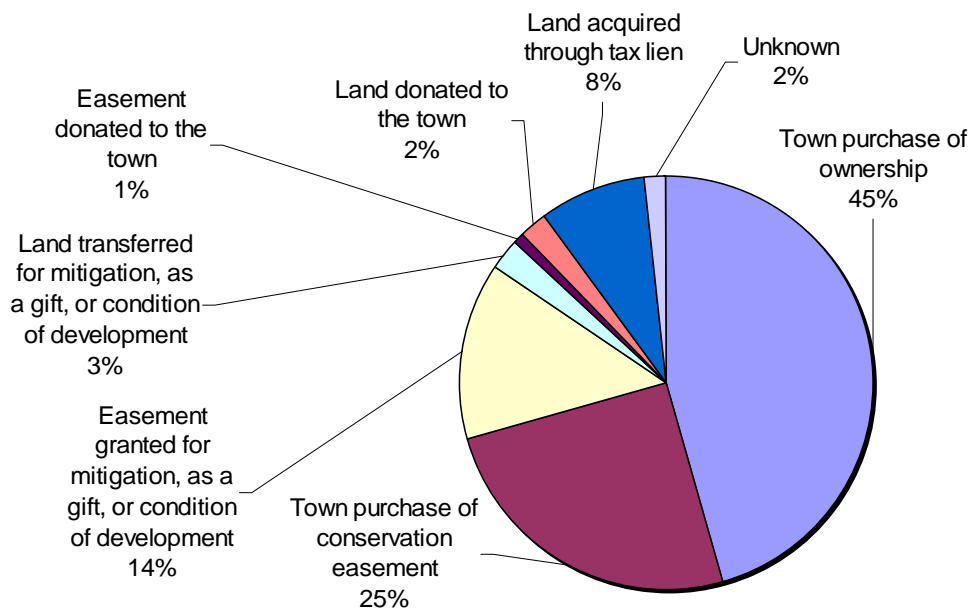
The 2,797 acres of permanent open space owned or managed by the Town (Cons. Land owned by the Town or Easements held by the Town) was acquired/protected by one of several means, as defined in Table 1.2 and Figure 1.2. The largest contributor was purchase of ownership (1,277 acres; 46%), followed by purchase of conservation easement (699 acres, 25%) and easements granted for mitigation, as a gift or condition of development (385 acres, 14%).

Table 1.2: Town-Owned Land and Easements, by Source of Acquisition

Source of Acquisition	Acres	# Parcels	% of Total	Comment
Town purchase of ownership	1,277	31	46%	Does not include school athletic fields
Town purchase of conservation easement	699	20	25%	
Land transferred for mitigation, as a gift, or condition of development	74	9	3%	
Easement granted for mitigation, as a gift, or condition of development	385	84	14%	
Gift of land donated to the town	19	9	1%	
Gift of easement donated to the town	64	1	2%	
Land acquired through tax lien	230	24	8%	
Unknown	49	6	2%	
Total	2,797	184	100%	

Source: Londonderry GIS; interpretation from Conservation Commission records

Figure 1.2: Percent of Town-Owned Land and Easements, by Source of Acquisition (does not include open space protected by non-town entities or by regulations)



A total of \$15,266,694 has been utilized to acquire or protect open space land in Londonderry since the purchase of the first Musquash lot in 1978. This includes \$10,625,605 in direct town payments, which was matched by another \$4,641,089 coming from other sources (See Table 1.3). Of the other sources, \$756,000 came from other Londonderry payments through school and recreation appropriations, \$2,532,368 came from matching state or federal grant money, \$265,000 came from penalties/donations and roughly \$1,087,721 came from bargain sales. The latter represents an estimate and is best described as 'cost avoidance' given that sellers reduced the selling price of land to below its fair market value, as determined by appraisals.

This money accounts for the protection of 1,976 acres of land. Another 821 acres has been preserved at no direct cost to the town through land or easements obtained as development mitigation or conditions, gifts or tax liens. Map 1.3 and Figure 1.4 describe where money has been utilized. Appendix 2 provides a thorough accounting by property.

Figure 1.4 is illustrative of the changes in the competitiveness of matching grant funds for open space protection. Through the late '90s to early 2000's, the Town was able to secure up to 50% matching funds through programs such as the NH Land and Community Heritage Investment Program (LCHIP) and the U.S. Department of Agriculture's Farm and Ranchland Protection Program. As funding for this program has declined and competition from other communities increased, the Town has had to assume a higher share of total project costs. The table is also indicative of changes in land value from the 1980s to present. Higher prices paid in the later years are representative of land values that have increased as Londonderry has become an increasingly desirable place to live in and do business.

Table 1.3: Source of Conservation Spending

Total	Town Dollars	Other Londonderry Dollars	State or Federal Grants	Bargain Sales	Penalties/Donations
\$15,266,694	\$10,625,605	\$756,000	\$2,532,368	\$1,087,721	\$265,000

Map 1.3: Location of Conservation Areas, by name

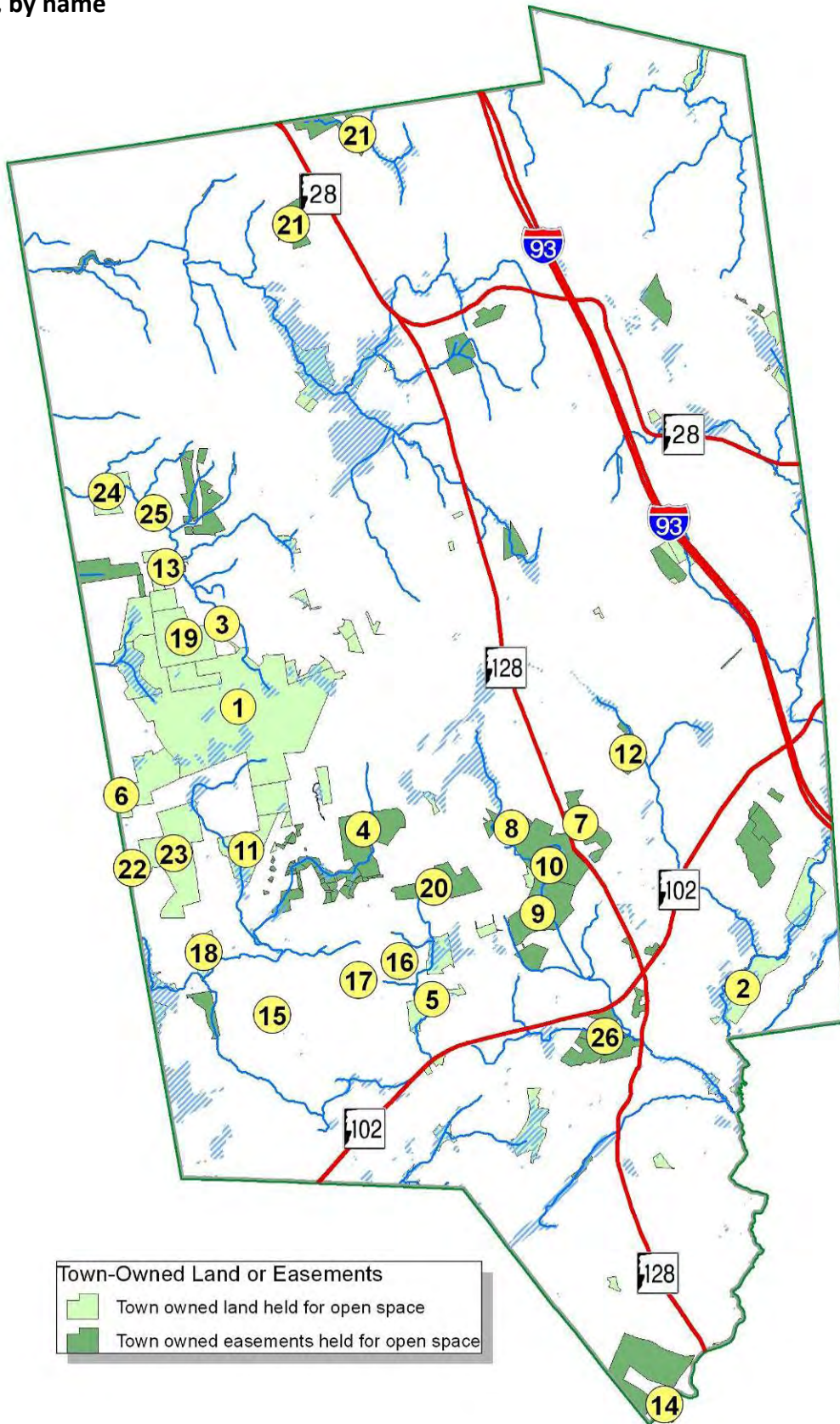
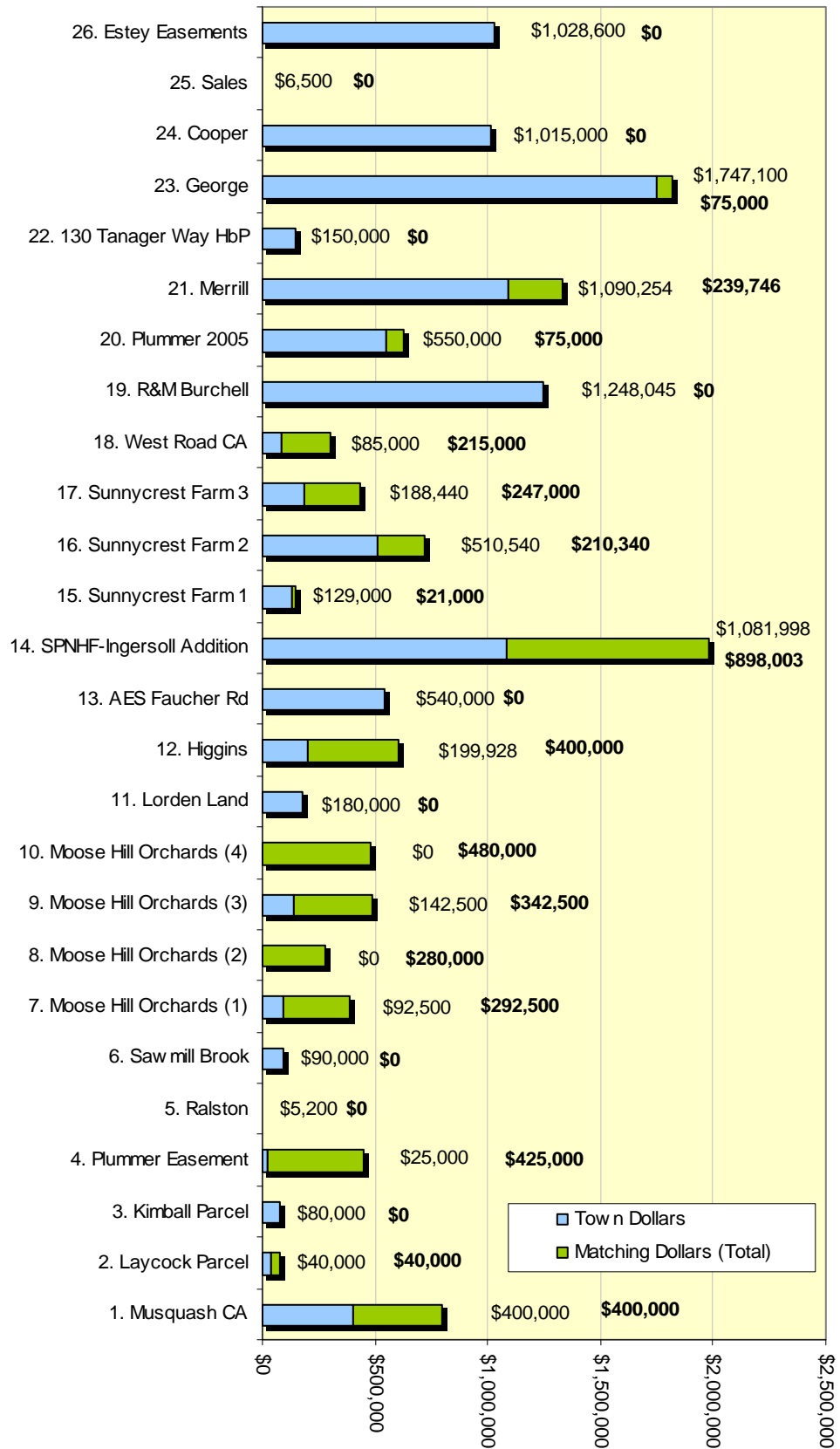


Figure 1.3: Conservation Spending by Property



The sources of protection funds include: open space bonds, land use change tax receipts, general fund appropriations, and cash penalties, in the amounts shown below, which represents revenues dedicated to open space for the years 1997-2009 (see Table 1.4). Presently, \$1,827,752.44 remains in the account as a cash balance.

The largest share of these revenues (60.2%) originated with 5 open space bonds approved by taxpayers at Town Meetings between 2001 and 2005. Appropriations were made in \$1,000,000 increments with the exception of 2002, when \$4,000,000 was approved. Warrant articles for additional bonding authority have not passed since the last appropriation. The second largest source was the \$2,900,000 bonded by the Town Council to “buy down” the size of the Nevins development, which also included a small conservation easement on an abandoned apple orchard. Land Use Change Taxes account for a further 17.6% of the revenue. These revenues appear when large (10+ acres) tracts of land are removed from current use taxation status to support developed uses. The developments at Sugarplum Lane and Jacks Bridge Road (Harvey Industries and Penske Trucking) were large contributors to that fund. The town does not control the timing of the Land Use Change Tax receipts, since they depend entirely on the decisions of developers and property buyers.

Table 1.4: Open Space Revenues, 1997-2009

Source	Dollars	% of Total
Bond Proceeds	\$8,000,000	60.2%
Land Use Taxes	\$2,332,660	17.6%
General Fund Revenues (to be reimbursed by Cons Com)	\$1,134,822	8.5%
Grants	\$ 836,257	6.3%
Warrant Articles - Taxpayer funds	\$ 600,000	4.5%
Donations - Kluber Lubrication	\$ 190,000	1.4%
Interest	\$ 135,339	1.0%
Transfer from General Fund - PO	\$ 50,000	0.4%
Voided Check	\$ 3,811	0.0%
Total Revenues	\$13,282,888	

Source: Town of Londonderry Finance Department. Open Space Analysis – Summary.
Activity from October 1997 through February 2009

Table 1.5: Open Space Bonds

FY 02-03	\$1,000,000
FY 03-04	\$4,000,000
FY 04-05	\$1,000,000
FY 05-06	\$1,000,000
FY 06-07	\$1,000,000
FY 07-08	NA
FY 08-09	NA
FY 09-10	NA

In summary, the town has 8,252 acres of open space, of which it owns 1,693 acres, holds easements on 1,104 acres, and benefits from 5,455 acres protected by others. To accomplish this, the town has expended a total of \$10,625,605 of direct town funds over a period of 23 years.

Historic Properties

In addition to open space for natural services, the Town has protected 19.9 acres of permanent historic resource properties including the Town Common and Town Forest, Morrison House Museum (owned by the Londonderry Historical Society on Pillsbury Road), the Grange #44 facility (owned by the Grange #44) and the property at 2 Litchfield Road that houses Nutfield Publishing. These sites preserve the local heritage of Londonderry.

In 2006, the Town initiated a Historic Properties Preservation Task Force (HPPTF) process to identify and develop a prioritized list of historic buildings and cultural resources that should be protected from demolition or development in order to preserve the Town's history and cultural character. The Task Force first defined the terms 'historic structure' and 'historic property' and then reviewed a list of qualifying structures to gauge their historic relevance. The original list of over 200 parcels of land was culled down to 138 homes/sites/structures and 85 barns that met the definitions. Each of these properties are currently in private hands. Recommendations from the report included legislative policy recommendations, local zoning changes, creating a resource information/clearinghouse and regular updates to the report.

A map displaying the location of the eligible properties can be found in Appendix 3. Continuing protection of these resources undoubtedly contributes to the overall appeal of Londonderry as a community and many are enhanced by the surrounding open spaces abutting these structures.

IV. Benefits Provided

Using categories established by the 2006 Open Space Plan, these open spaces have protected the following natural resources: Agricultural Soils, Unfragmented forest blocks, Water resources, Scenic views, Historic sites and Green infrastructure (see Table 1.6). Many open spaces are counted in more than one category, because they provide more than one benefit. Also note that the 2006 Open Space Plan did not have categories for historic/cultural lands or for athletic fields.

Table 1.6: Benefits Protected

Category	Acres in Town	Acres Permanently Protected	Acres Partially Protected	Comment
Agricultural soils	6,648	721	623	Includes prime agricultural soils and soils of statewide or local agricultural significance
Unfragmented forest blocks	14,582	3,381	3,118	Includes unfragmented forest blocks greater than 50 acres.
Water resources	20,097	3,837	4,460	Includes wetlands, wellhead protection areas, source water protection areas, aquifers, streams and 250' buffers along water resources
Scenic views	4,575	1,149	1,163	Apple orchards, active farms, views to ridges/hilltops
Schools/Athletic fields	395	395	0	Nelson, West, and all school facilities
Historic sites	224	6	7	
Green Infrastructure	11,552	3,647	2,801	
"10 to 10" Goal	N/A	N/A	N/A	Permits access to 10+ acres of open space to all residents within a 10-minute walking radius

Chapter 2: Stewardship

Permanent Open Space Stewardship

The town is responsible for managing the 1,693 acres of open space that it owns and for monitoring and enforcing the conservation easements that it holds on 1,104 acres. This responsibility is shared among:

- The Conservation Commission assisted by Londonderry Trailways and other volunteer organizations, for town-owned conservation lands and for town-held conservation easements.
- The Heritage Commission, assisted by the Londonderry Historical Society, for the Town Common and the Historic District.
- The Recreation Department for Nelson and West Road fields.
- The Londonderry School District, for school athletic fields and forested school property.
- Rockingham County Conservation District (RCCD), who provides contractual monitoring of the Sunnycrest, Ingersoll and Merrill parcels

While each of these organizations is diligent in pursuing its responsibilities, the town lacks a body in which to coordinate a broader open space policy on a continuing basis, other than the Town Council.

For the purposes of the Task Force Report, land stewardship may be defined as the active management of properties for which the Town is responsible, including (1) monitoring, reporting and enforcement of easement provisions and uses, (2) providing proper documentation and awareness of town holdings, and (3) where possible, providing appropriate access to public land for recreational activities. Stewardship may also entail activities to enhance natural resource protection including clean up projects, wetland restoration and/or forest management projects, as necessary.

Stewardship of easements involves first developing a baseline analysis to document existing conditions. The Conservation Commission has utilized UNH students to develop the mandated baseline analyses. The LCC has obtained baselines for 24 properties, with 9 having received follow-up monitoring since then. Since 1998, the LCC has spent \$18,726 in stewardship costs including \$9,659 in management costs for signs, gates, etc and \$9,067 for other contracted services. The full costs in both dollars and volunteer time associated with monitoring each easement are detailed in Appendix 4.

The Conservation Commission maintains a Forest Management Plan for its two largest holdings, the 1,200-acre Musquash Conservation Area, and the 62-acre Laycock Conservation area paralleling Beaver Brook up stream of Kendall Pond. These plans identify various forest compartments on each property and prescribe treatments to enhance their value for habitat, recreation, water protection, and timber production. The plan also lays out a schedule for refreshing boundary markings/blazes and for maintaining and constructing roads needed to access the property.

The Commission maintains files on each conservation easement it holds. These files contain narrative descriptions, maps, plans, and the actual easement deed for each property. More sensitive sites are

monitored on an annual basis, including those sites funded by state or federal agencies requiring a copy of each year's monitoring report. In some cases the Commission retains conservation professionals to conduct and document these monitoring visits. In most cases individual commissioners divide up the properties to be visited and conduct the visits. Each easement provides that the land must remain in its natural state, with no commercial, residential, or industrial uses, other than forestry and/or agriculture, where appropriate. Beyond those use limitations, the land owner is free to manage the property in accordance with best management practices. Most easements allow for public access, except on fields during the growing season and on forest land during timber operations.



Londonderry Trailways has taken the lead in maintaining, mapping, improving, and adding to the network of hiking trails in the Musquash and Laycock ("Kendall Pond") Conservation Areas. The Musquash Trail network now totals 14 miles of trails, 10 bridges built to protect trail crossings over wet areas, and trail signage, which is now being expanded to roughly 40 trail intersections. Various Eagle Scout projects, under the auspices of the Conservation Commission, have contributed signage, trail clearing, inventories, and historical research.

There is also roughly 11 miles in the Town Center area (Moose Hill and Schools properties), and 1 mile in the Kendall Pond Conservation Area.

Including the Musquash Conservation Area, these represent the areas most developed for passive recreation. Excepting trails in and among the school fields, all were developed and are being maintained by volunteers. The Town is fortunate to have 4 access points to the Musquash Conservation Area with multiple parking spaces. Similarly, Kendall Pond and the Town Center area have parking facilities.

Trailways has worked with the Town's GIS staff to map the known and managed trails in the town properties and to develop recreational maps. Funding for mapping and general improvements has been assembled from numerous sources including NH Fish and Game grants, committee budgets and private donations. All Trailways labor is volunteer, with minimal financial support for materials from the Conservation Commission budget.

Littering regularly occurs on some conservation land, particularly Bockes/Ingersoll, parcels along South Road and the Kendall Pond Conservation Area. These properties require cleanup days to remove rubbish that is illegally dumped on the sites. When it remains, the trash is unsightly and lends the appearance of unmanaged open spaces.

Many open spaces in Londonderry, both public and private, are threatened by invasive species, especially on open spaces that border residential properties. This is a major stewardship and management concern for town-owned properties. The Conservation Commission has received a grant to mitigate invasives at the headwaters of the Nesenkeag Brook, but a more comprehensive threat assessment should be undertaken.

Heritage Properties Stewardship

The Heritage Commission is also a Historic District Commission, and it governs five pieces of property that are designated a Historic District (by vote of Town Meeting): the Town Common, the Town Wood Lot or Town Forest (the parcel directly south and west of the Town Common), the Morrison House Museum (owned by the Londonderry Historical Society on Pillsbury Road), the Grange #44 facility (owned by the Grange #44) and the property at 2 Litchfield Road that houses Nutfield Publishing (owned by Crowell’s Corner Properties, LLC). Outside of the Historic District, it oversees the Town Pound on Mammoth Road. The Town Common and the Town Woodlot or Town Forest is owned by the Town of Londonderry. Changes within the Historic District must be approved by the Heritage Commission according to Town of Londonderry Zoning Ordinance, Section 2.6.4. Also, the Heritage Commission is responsible for implementation of the recommendations from the Historic Properties Preservation Task Force, which includes periodically updating Londonderry’s prioritized list of historic structures and properties that should be protected from demolition or development to preserve the Town’s history and cultural character.

Recreation Properties Stewardship

The Town maintains roughly 77 acres in two areas for recreation purposes, including Nelson Road/Londonderry Athletic Fields Association (LAFA)Complex and West Road Fields.

Nelson Road

This is a multipurpose area utilized by Town residents.

Complex	Facilities
Nelson Road	Softball field – illuminated Playground 4 Tennis courts (2 illuminated) 2 illuminated Basketball courts Skateboard park
LAFA Complex	10 baseball / softball fields (3 illuminated)
West Road	7 Soccer / Multi purpose Fields

1. The playground was constructed by the MOMS group and is maintained by the MOMS group in conjunction with the recreation maintenance worker. Improvements to the area are typically funded and completed by the group. The area is open for use to all, especially toddlers. Inspections and monitoring of safety concerns is the responsibility of the recreation maintenance worker.
2. The basketball courts, tennis courts and the skateboard park are open on a drop in basis and are maintained and monitored by the recreation maintenance worker.
3. The softball field is maintained and monitored by the recreation maintenance worker. Use of the field is scheduled through the director of recreation. During the week days the field is used

by the adult softball leagues in Town. Saturdays during the spring are dedicated to the youth softball league (LAFA). When the LAFA group is not using the field on Saturdays and on Sundays people can reserve use of the field for family gatherings and neighborhood games. During the workday companies may also reserve the ball field.

The area on the West side on Sargent Road is the home to LAFA. The Town has given the LAFA group a long term lease to area. The LAFA group is in control of their area and they are responsible for all maintenance, repair and improvements. It is estimated that the LAFA group over many years has invested close to a million dollars to improve and maintain the area.

The Recreation Department provides a part time worker to help LAFA with garbage control.

West Road Continental Park

This area is the home of youth soccer in Londonderry, providing space for youth lacrosse and is also used by Town residents for youth parties and pick up games. The Recreation Department is responsible for up keep and maintenance. The youth soccer groups are very supportive and have invested approximately \$250,000.00 to support and improve the area and fields.

It should also be noted that the SAU and the Recreation Department are reciprocal in their support of each other. The SAU provides man power to the Recreation Department especially during the busy summer months.

For areas other than Musquash, Kendall Pond or the Town Center, the recreational potential may exist but is untapped. No recreation plans or trail guides have been established for these smaller areas, in particular the Bockes/Ingersoll forest is perhaps the greatest untapped resource.

Private Stewardship Responsibilities: No-cut Zones

In addition to the town easements and other owned land, there remain scattered areas of dedicated open space in private ownership through deed restrictions or no-cut zones. Stewardship of these properties is the responsibility of the individual property owners. There have been no organized outreach efforts to communicate with landowners, beyond the conditions in their property deeds. Since 2005, the Conservation Commission has required that Conservation Overlay District (COD) boundary markers be placed along the edge of protected areas in order to reinforce the protected status. These areas have been added to the town's GIS inventory. Other restrictions continue to be discovered as town staff researches older subdivisions.

Chapter 3: Land Characteristics and Liabilities

This chapter provides information on the physical geography, natural resources and the built infrastructure of Londonderry in an effort to see how the built and natural environments affect each other.

Watersheds

The Town of Londonderry can be divided into 10 watersheds, as defined in the 1991 Water Resources Management Plan. These include:

Area Num	Waterbody	Acres (Londonderry)
1	Cohas Brook	2,562.9
2	Little Cohas Brook	5,765.7
3	Watts Brook	3,177.0
4	Colby Brook	548.2
5	Nesenkeag Brook	3,881.4
6	Chase Brook	976.1
7	South Mammoth Road	4,522.4
8	Kendall Pond	2,232.3
9	Beaver Brook North	2,880.5
10	Beaver Brook South	399.0

A measure of the relative health of a watershed is the amount of impervious surface.

Impervious surfaces such as roads, buildings and compacted earth, prevent the infiltration of rainwater into the ground and accelerate the movement of sediment and pollutants. This has the effect of increasing storm runoff events and concentrating potential pollutants as they are carried from paved surfaces into water channels. A review of Londonderry's watersheds was conducted for this report using GIS data derived from a 2010 flyover. Impervious features included: buildings, roads, sidewalks, parking lots, driveways, and airport features. These add up to a total of 2,762 acres or 10.3% of the town (see Table 2.1). By watershed, percent of impervious cover ranges from 0.7% (Colby Brook) to 15.3% (Little Cohas Brook) (see Map 2.1). Four (4) watersheds have impervious levels greater than 10%: Beaver Brook North (10.4%), Chase Brook (12.2%), Kendall Pond (14.4%) and Little Cohas Brook (15.3%). At this level, streams may be impacted and may require mitigation efforts.

Map 2.1: Londonderry Watersheds

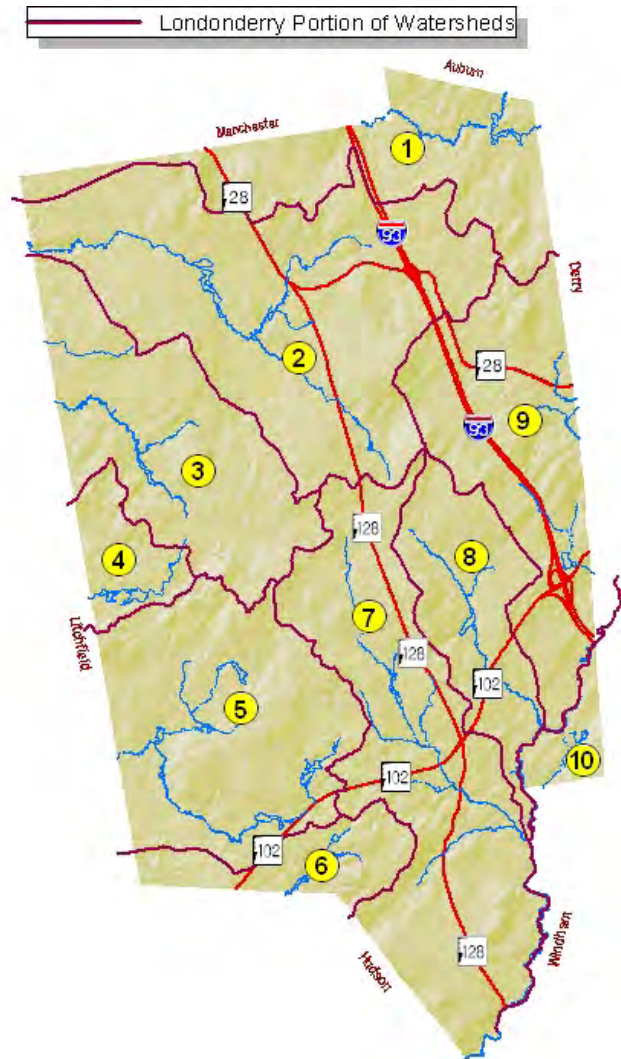
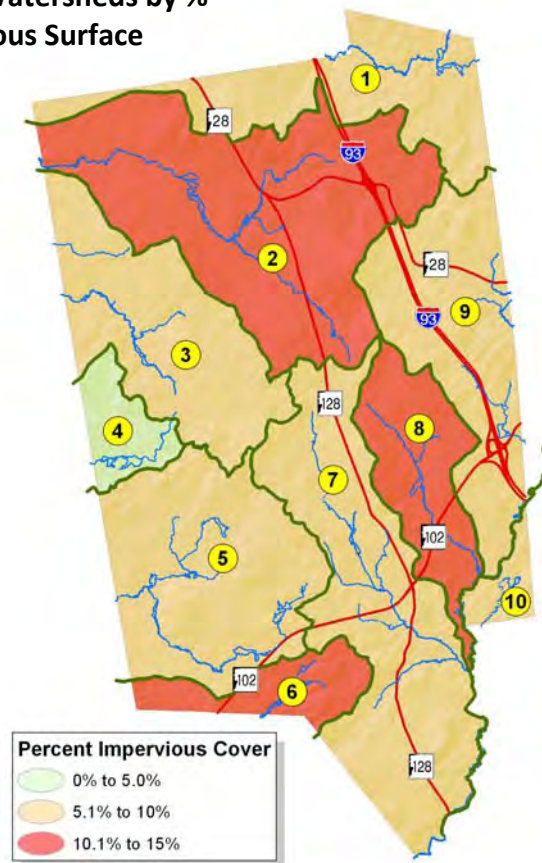


Table 2.2: Quantity of Impervious Surface in Londonderry Watersheds

Area Num	Waterbody	Total Watershed Acres	Pervious Acres	Impervious Acres	Pervious Percent	Impervious Percent
1	Cohas Brook	2,562.9	2,335.3	227.7	91.1%	8.9%
2	Little Cohas Brook	5,765.7	4,884.1	881.7	84.7%	15.3%
3	Watts Brook	3,177.0	2,962.1	214.9	93.2%	6.8%
4	Colby Brook	548.2	544.1	4.1	99.3%	0.7%
5	Nesenkeag Brook	3,881.4	3,655.1	226.3	94.2%	5.8%
6	Chase Brook	976.1	857.1	119.0	87.8%	12.2%
7	South Mammoth Road	4,522.4	4,085.6	436.9	90.3%	9.7%
8	Kendall Pond	2,232.3	1,909.9	322.4	85.6%	14.4%
9	Beaver Brook North	2,880.5	2,581.0	299.5	89.6%	10.4%
10	Beaver Brook South	399.0	368.9	30.1	92.5%	7.5%
		26,945.6	24,183.2	2,762.5	89.7%	10.3%

Map 2.2: Watersheds by % of Impervious Surface



Londonderry’s Environmental Baseline Study Committee (EBSC) gathered data during the period 2002 to 2003 on the quality of the town’s surface waters and on many domestic wells . Water quality testing demonstrated that the only toxic pollutant found in the town’s water was arsenic, present in 35% of the wells tested, but not in surface waters. Two possible sources for the arsenic are naturally occurring minerals in the town’s bedrock and the aging of septic systems, which tend to liberate chemically bound arsenic by creating organic acids. The EBSC data is presented in Appendix 5. the EBSC did not assess sediment or nutrient loads such as nitrogen or phosphorous.

Potential Groundwater Hazards

An inventory of hazardous waste generators and other potential contamination sources is maintained by the NH Department of Environmental Services (NH DES). This inventory draws data from two principal sources, the US EPA Resource Conservation and Recovery Act (RCRA) hazardous waste generators list and NH DES Site Remediation and Groundwater Hazard Inventory which identifies potential hazards including chemical tanks, superfund sites, known contamination sites, spills/responses, landfills and other known hazards. This information was summarized in the Londonderry Hazard Mitigation Plan (2010) by the Southern NH Planning Commission (SNHPC) which has included 248 records, including 26 Above Ground Storage Tanks, 134 hazardous waste generators, 86 underground storage tanks and 2 solid waste facilities. Additionally, there are 4 federally identified superfund sites in Londonderry, 3 of which have been mitigated. Mitigated sites include the Auburn Road Landfill, Tinkham Garage, and Town Garage/Radio Beacon. The final site is described as Lamont Labs at 6 East Perimeter Road. While each of these sites are known and are currently being monitored through federal regulation, they represent a potential chemical liability which must be reviewed.

Map 2.3: Potential Groundwater Hazards



Feature	# of Records
Hazardous Waste Generators	134
Above Ground Storage Tanks	26
Underground Storage Tanks	86
Solid Waste Facilities	2

The spatial distribution of these sites in Londonderry principally follows the major transportation corridors, NH Route 102, NH Rte 28 and the industrial parks surrounding the Manchester-Boston Regional Airport (map 2.3). There are no identified potential contamination hazards located on permanent open space properties.

Chapter 4: Land Protection Methods

The Town of Londonderry has used a variety of methods to preserve open spaces for the natural services open space provides. These include fee ownership by the town or another conservation entity, conservation easement held by the town or another conservation entity and deed restrictions granted by an owner when property is transferred. Temporary protection types include state and local regulation, dedicated interest by a specialized owner and the unusual physical characteristics of a site that make it undevelopable. A description of the application of each protection type, arranged by degree of protection, follows. Table 4.1 provides a simple comparison of Easement and Fee Ownership strategies.

Conservation Easement

A conservation easement separates the rights in a property into two distinct “bundles”: the owner normally retains the right to use the property for forestry, agriculture, non-commercial outdoor recreation and habitat management. The easement holder gets the development rights to the property, meaning the ability to erect commercial or residential structures, according to conditions spelled out in the easement language.

When the town purchases an easement, the property remains on the tax roles at Current Use levels. In essence, the Town benefits from the natural services the property provides without having to manage it. Conservation easements are particularly well suited to land in active agriculture, since the town lacks the agricultural expertise and labor to manage the land well. In addition, purchasing an easement is less expensive than purchasing the property outright. In Londonderry, the town insists on public pedestrian access to the forested portions of land on which it purchases easements. This is a way for the town to get all the benefits of public ownership, without the burdens of management and lost tax revenue. In Londonderry the Mack, Sunnycrest, and Merrill orchards are protected by conservation easements, as is the land surrounding the Estey sawmill. Conservation easements are also well suited to families with a long association with their land, who wish to see it protected, but remain under family management, as is the case with Londonderry’s orchardists.

Federal and state law have granted a special exception to the common law prohibition against “perpetuities” for conservation easements. It is one of the very few legal interests that is permitted to last forever. The only way for an easement to end is if its conservation purposes are no longer served, or all or part of the easement is condemned in a government taking for a clear public purpose.

For purposes of establishing a market cost for purchase of an easement, an appraisal will determine the value of the property before and after the encumbrance of a conservation easement. The value of the easement is typically the difference between these two figures. Appraisals need to be done with care by a certified appraiser who is familiar with conservation easements, with local real estate conditions, and with the particular type of land use in question. Purchase of an easement is a market transaction and valued by negotiation between buyer and seller.

Fee Ownership

In a fee purchase, the conservation entity buys the entire bundle of rights referred to above, but chooses not to use the development rights. Conservation entities owning land are free to also grant conservation easements on their land, thus creating a “belt and suspenders” approach, with two layers of protection. The state Attorney General supervises non-profit conservation entities such as the Forest Society or The Nature Conservancy to ensure their actions are consistent with their conservation missions. The Forest Society holds the Bockes/Ingersoll Forest in south Londonderry and the town holds an easement on the property. Federal, state, and local governments and their agencies can all own and manage conservation lands. There is some protection from a government entity “changing its mind,” because the entity uses funds earmarked for conservation. Nonetheless, government can amend its own decisions.

Government Regulations

Individual property rights are not absolute. In fact, there is a public interest in private land. When a government can demonstrate a “rational nexus” between its regulation of private land and the public good, and when that public good is significant in relation to the restrictions placed on the landowner, government is justified in forcing landowners to use their land in a way that does not harm the public good. At the federal level, the EPA limits the use of hazardous substances. At the state level, regulations limit waterfront development, disturbance of wetlands, and the siting and design of septic systems. In Londonderry the town limits development near certain streams and important wetlands. The effect of such regulations is to provide temporary protection to the natural services they provide; however, nothing prevents a government agency or legislature from changing the rules to make the more lenient and thus to compromise the open space protection they provide.

Deed Restrictions

A property owner may place restrictions on property he conveys. A government entity can require a developer to place such restrictions on property when it is transferred to its ultimate owner, as is the case in a residential subdivision. A typical restriction might be a “no-cut” zone to preserve a woodline or edge of wetland. These restrictions provide **rather weak protection** because they are a contract only between the person imposing the restriction and the person buying the property. Few people or entities have the legal “standing” to enforce the restriction. Thus the Planning Board often imposes its restrictions on the site or subdivision plan, so at least the Town Code Enforcement Officer has standing to enforce the restrictions.

Specialized Owners

Some owners have little incentive to develop a property beyond a very specialized use. Thus, their land is effectively, if temporarily protected as open space. Examples in Londonderry include our gas and electric utility lines. Other examples include the Londonderry Rod & Gun Club. Unfortunately,

economics could dictate that these special uses are no longer feasible and the land would lose its temporary protection.

Unusual Physical Characteristics

Some land is quite undevelopable by its very nature. Examples include wetlands, very steep slopes, and back land with no economically feasible access. In each of these cases the situation could change as new engineering solutions become available or development on neighboring parcels changes the situation. For example, the 600 acres owned by Woodmont, LLC contains significant wetlands that have been protected both by regulation and by lack of development around them. These wetlands may lose some of their value and function as a result of surrounding development

Table 4.1: Comparison of Conservation Easement and Fee Ownership protection strategies.

	CONSERVATION EASEMENT	FEE OWNERSHIP
Tax Consequences	Property remains in private hands and on the tax rolls. Property owner pays taxes on the land at the current use rate.	Property is owned by the town and removed from the tax rolls. Does not contribute directly to the tax base.
Acquisition Cost	Property is protected at a cost less than full market value, typically equal to the difference between the assessment at highest and best use and assessment at existing use, i.e before and after the encumbrance of the easement.	Property is acquired at full market cost.
Management	Landowners make their own property management decisions according to uses permitted by documented terms and restrictions. Town responsibilities may be limited to monitoring and reporting on owners' compliance with easement conditions. Town resources could be committed for permitted enhancements on the property such as trail building and/or bridges.	Town assumes full responsibility for maintenance and stewardship of the property. Town resources could be committed for any property enhancements.
Degree of Control	Public control is exerted by barring certain uses and/or construction on the property. Private, permitted uses continue to take place, such as agriculture, logging, hunting, etc as determined by the property owner's decisions. Easement restrictions are permanent.	Town assumes control of the property and may apply uses according to public demands. Specific uses may be flexible however should be consistent with the intent for which property was purchased.
Length of Protection	Property is protected in perpetuity. Easements are tied to the land and bind present and future owners to the stated terms and restrictions.	Where grant or matching money have been applied to the purchase of properties, funding conditions may require protection in perpetuity. Otherwise, the length of protection may be variable as public priorities shift.
Access	Access conditions are determined by the easement language and may vary according to the purpose and intent of each property. Agricultural easements may limit access during growing or harvesting seasons for example while other easements may permit unlimited access.	Property is public and typically open access. Limitations on hours of use may be placed by Council decisions.

Chapter 5: Identification of Priority Natural Resources

The Task Force used a service-based approach to arrive at its recommendations. This is a human-centered approach to conservation, which assumes that nature exists for human benefit. However, in protecting open spaces for humans, plants and animals inevitably benefit as well. The task force did include plant and animal habitat in its deliberations, acknowledging that this is important to many of the town's residents.

In recommending land to be protected—the green infrastructure--the Task Force attempted to answer these fundamental questions:

- What natural services does the town desire?
- What natural resources provide these services?
- Where are these natural resources located within the town?
- Can these resources be protected over the long term, and how can this be done?

The Task Force began a multi-step process to answer these questions and identify a parcel based list of properties to be protected, as follows

Step 1: Identify High Value Natural Resource Areas

Using the town's geographic information system (GIS) the Task Force members reviewed numerous maps showing the type and location of the town's natural resources and examined the ability of these resources to provide the natural services desired by town residents. A list of natural resource features selected by the GIS Manager, based on their availability and appropriateness were mapped and reviewed. These features were selected to represent the core natural services identified in the Task Force Charge from the Town Council. Some changes were made to the original natural services list, according to discussion and further review by task force members, as follows:

- After discussion, members decided that Air Quality was a service that could not be addressed by local conservation efforts. Air quality was removed from discussion.
- Londonderry has very few areas of steep slopes and issues associated with erosion. Soil stabilization on steep slopes was removed from consideration as a natural service.
- Historic resources in an appropriate setting were deemed important to the rural character of Londonderry and were thus added for consideration.
- Given the importance of agricultural land to Londonderry's identity, preserving local agricultural land was added as a natural service
- Given the rarity of large forest blocks in the immediate region, and the large open areas currently in Londonderry, large contiguous forest blocks were identified as a natural service.

A final list of natural services and the underlying natural resources providing those services are described in Table 5.1 below. Weights were then assigned to each service through a "Delphi" process during which individual Task Force members suggested a weighting scheme for each natural resource,

compared their proposals to the group average, discussed differences and finally revised their schemes as necessary. After the second iteration of this process the members had reached near consensus. Appendix 6 presents an extended summary of the Delphi process. The Delphi score columns in Table 5.1 illustrate the relative weight, on a percentage basis, placed on each of the resources. A ‘natural resource score’ was calculated for every square feet of Londonderry. This represents the sum of all Delphi scores where resources exist and/or overlap. Areas of highest natural

Table 5.1: Natural services: Task Force priority ranking and contributing geography

Natural Service	Delphi Score (Round 1)	Delphi Score (Round 2)	Contributing Geography (see Chapter 6: Summary of Natural Resource Indicators)
Drinking Water Quality and Quantity	20.5	22.9	<ul style="list-style-type: none"> ▪ Public water supply Wellhead Protection Areas (WHPA’s) ▪ 250’ buffer around named streams and/or wetlands ▪ 100’ buffer around unnamed streams and/or wetlands ▪ Aquifer transmissivity <2,000 gpd ▪ Aquifer transmissivity > 2,000 gpd
Flood Storage	5.0	4.5	<ul style="list-style-type: none"> ▪ 100-year floodplain ▪ 500-year floodplain
Preserving local agricultural land	13.5	13.7	<ul style="list-style-type: none"> ▪ USDA Soils data: <ul style="list-style-type: none"> ▪ Prime farmland soils ▪ farm soils of statewide importance ▪ locally important farmland soils ▪ Unprotected parcels currently in agricultural uses
Keep natural views in their present form	10.4	9.6	<ul style="list-style-type: none"> ▪ Identified scenic views
Support outdoor Recreation in a natural setting	10.0	12.5	<ul style="list-style-type: none"> ▪ Contiguous forest blocks
Plant and animal habitat and connections between habitat patches	11.7	11.8	<ul style="list-style-type: none"> ▪ NH WAP Habitat condition data: <ul style="list-style-type: none"> ▪ Highest rated habitat in NH (NH WAP) ▪ Highest ranked habitat in biological region ▪ Supporting landscapes
Preserving large, contiguous forest blocks	10.8	13.3	<ul style="list-style-type: none"> ▪ Unfragmented forest areas > 100 acres in size
Maintaining historic structures in their appropriate context	5.2	5.1	<ul style="list-style-type: none"> ▪ 300’ buffer around identified historically significant structures
Preserve habitat for endangered species	7.2	6.5	<ul style="list-style-type: none"> ▪ NH Natural Heritage Inventory of rare or endangered species
Community Goals (bonus)			
Providing at least 10 acres of open space within a ten-minute walk for each Londonderry resident	N/A	11.5	<ul style="list-style-type: none"> ▪ Identification of access deficits
Providing connections between large open space areas throughout town	N/A	14.4	<ul style="list-style-type: none"> ▪ Gravity model connection areas

resource score represent the presence of the most desirable natural services. The same list of natural services was presented during the public opinion survey, with people being asked to rank them in order or priority. In addition, Task Force members identified two “bonus” factors, related to the lands geography rather than its inherent resources, that were added to total resource scores to foster broad community objectives including providing access to 10 acres of open space within a 10-minute walk to all residents and providing for connections between large open space areas in town. The results of the public opinion survey were very close to the consensus reached by the Task Force members, suggesting that a true representation of Londonderry’s priorities had been attained.

The corresponding geography of each natural service was mapped and tabulated. Once the priority weighting had been established, the individual layers were combined together and GIS tools were used to identify intersections of features (places where more than one desired feature co-occurred on the same piece of ground) to derive a total resource score for every square foot of Londonderry. Chapter 6 presents a summary of each datalayer utilized. Map 5.1 is graduated by the total Delphi score to illustrate the areas of exceptional natural resource value. These highlight the highest value natural resources based on the weighted valuation of Londonderry’s needs and represent the areas that contribute the most to preserving nature’s values and benefits to Londonderry. Delphi scores were tabulated for this project only and serve no other purpose than to compare one area of land against another.

Conservation biologists advise that between 25% and 50% of any given land area should be protected to sustain its natural systems over the long term. The Task Force began by examining the top 30% of Londonderry *in terms of its resource scores* (not land area) in the hope that the town could maximize its natural services from a minimized land area.

Map 5.2 displays the top scoring (top 30%) of resource values. The highest scoring resource areas are found in proximity to water and agricultural resources, which correlate to the top scoring features in the Delphi ranking and may be described as those areas in western Londonderry along the Litchfield line, Pettengill Road, Woodmont Orchards, Moose Hill Orchards, Old Derry Road and Beaver Brook. This area accounts for 63% of the total natural resource scores in Londonderry and includes 7,067 acres or 26% of Londonderry. Within that top scoring resource area, 4,214 acres (60% of the total) is already under some form of protection; 2,853 acres (40% of the total) remains available for either development or protection. From a natural resource perspective, the top 26% of Londonderry’s land accounts for 63% of the total resource score in Londonderry; 70% of that total resource score is located on protected land and 30% is located on unprotected land and is available for development.

These data demonstrate that “not all land is created equal” and a good open space plan can maximize both natural services and development opportunities. It is also worth noting that the town has at least temporarily secured 70% of its key open spaces, in terms of resource value and 60% of it in terms of acreage.

Map 5.1: Total Natural Resource (Delphi) Score by Percentile

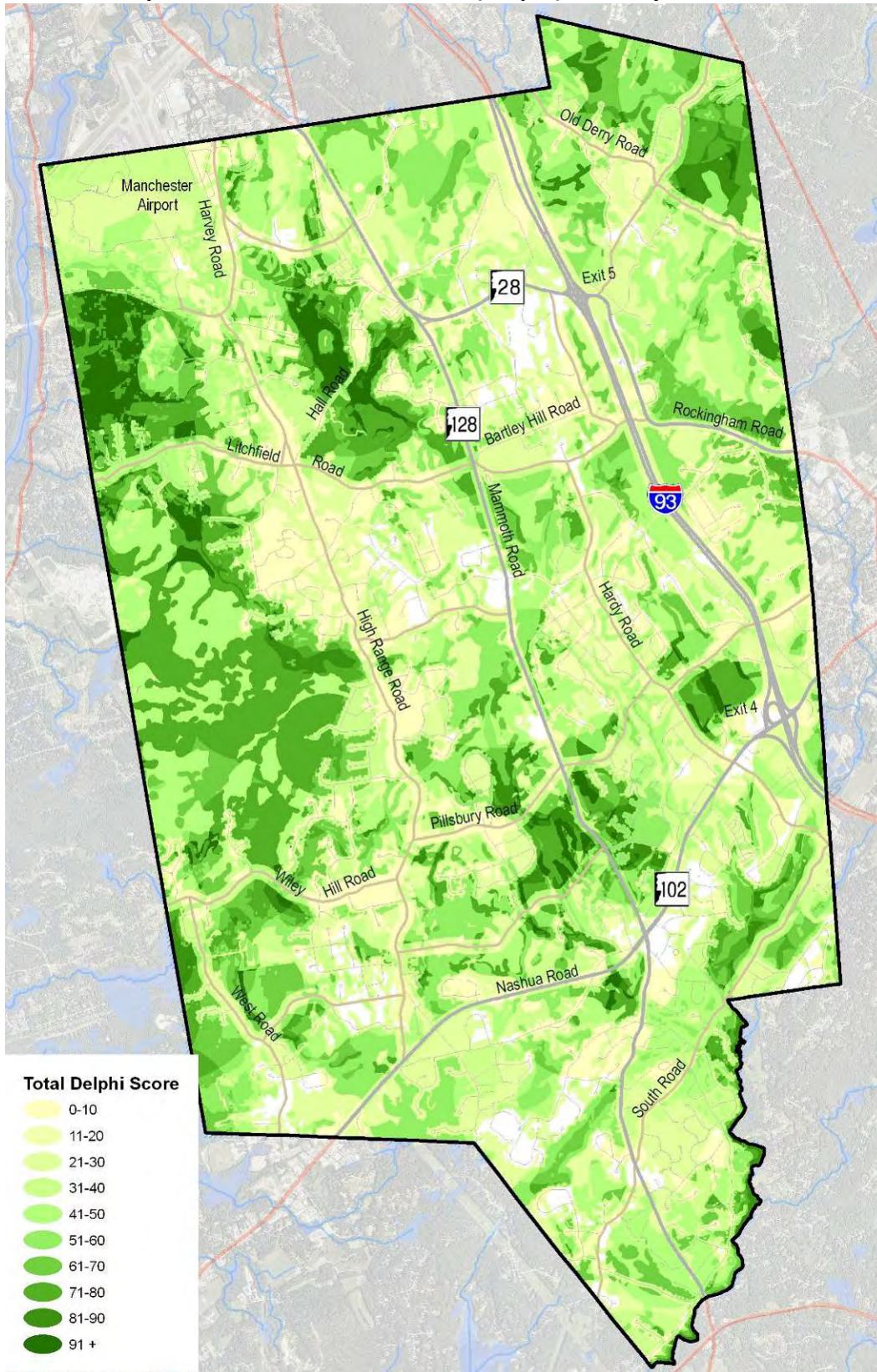


Table 5.2: Protected and unprotected shares of the top Scoring Resource Areas

Acres			Natural Resource Score (thousands)		
Top Scoring Natural Resource Areas	Top Scoring (Protected)	Top Scoring (Not Protected)	Top Scoring Natural Resource Areas	Top Scoring (Protected)	Top Scoring (Not Protected)
7,067	4,214	2,853	585,887	410,946	174,941
	(60%)	(40%)		(70%)	(30%)

Map 5.2: Unprotected, Top Resource Areas

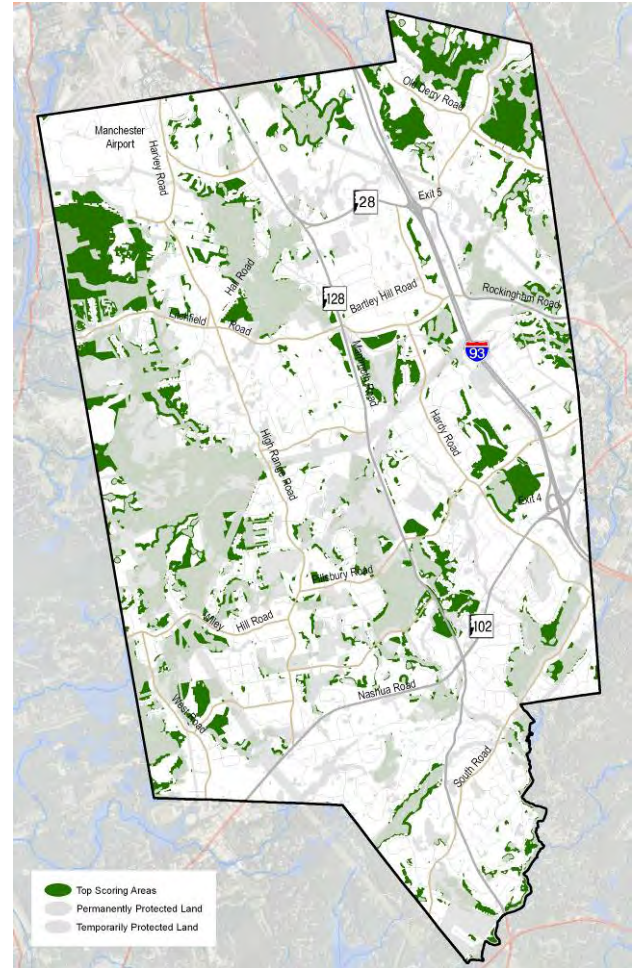
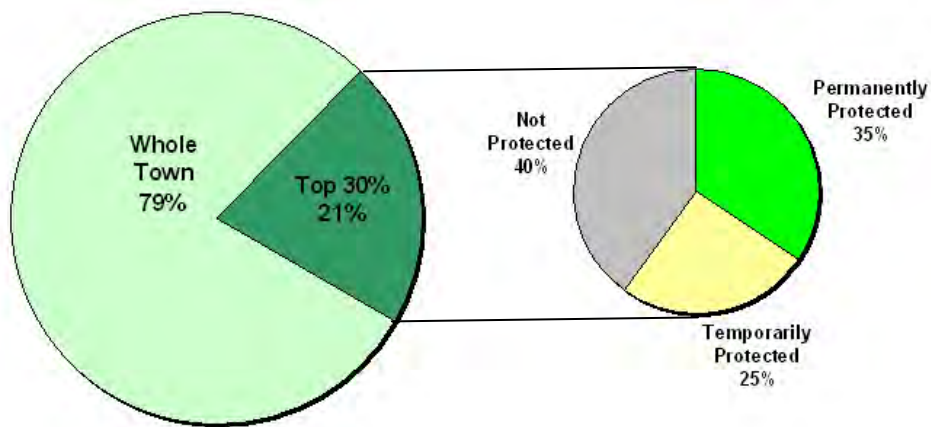


Table 5.3: Type of Protection for Top Scoring Resource Areas

Acres			Natural Resource Score (thousands)		
Top Scoring, Protected Resources	Under Permanent Protection	Under Temporary Protection	Top Scoring, Protected Resources	Under Permanent Protection	Under Temporary Protection
4,214	2,439	1,775	410,946	242,240	168,706
	(58%)	(42%)		(59%)	(41%)

Figure 5.1: Status of Top Scoring Resource Areas



Step 2: Defining the Green Infrastructure

Having identified the location of the key resource areas, the GIS Manager then drew a continuous, uninterrupted bound around these resource areas, which became the green infrastructure. The total area of the green infrastructure is 12,032 acres or 44% of the town. It consists of the top scoring resource areas, buffers around these areas to ensure their long term functioning, and narrow connecting corridors to allow the flow of water, plants and animals among the larger open spaces.

Step 3: Identifying Priority Parcels within the Green Infrastructure

Following the identification of the green infrastructure, the Londonderry parcels were overlaid to identify the intersection of resources with property boundaries. A selection set of parcels containing unprotected high scoring resources was created. This set was defined as those parcels greater than 8 acres and either vacant or significantly vacant. The Task Force assumed that parcels less than 8 acres in size were unlikely to add significant resource value and/or were unlikely to be further developed. Nonetheless, owners of these parcels could be encourage to keep their open spaces open and to follow best management practices. Exceptions to this assumption regarding small parcels may occur based on detailed information regarding a particular parcel. Use status was identified by the GIS Manager. This selection set included 210 parcels greater than 8 acres (6,556 acres total), which were assigned a possible protection strategy. Protection strategies included:

- ❑ **Monitor/Negotiate** during site plan phase to achieve resource protection. This was a strategy for parcels with known development plans including Woodmont Orchards, Mill Pond, Stonehenge Estates or parcels with economic development potential to improve the town's tax base including parcels in and around Pettengill Road.
- ❑ **Low Cost:** Protection by regulation, such as state wetland regulations and/or the town's Conservation Overlay District and/or Establishment of a management agreement that would ensure the land was managed in a way compatible with maintaining the green infrastructure.
- ❑ **High or Medium Cost:** Purchase by the town to be held as town-owned conservation land or Purchase of a conservation easement by the town over part or all of the property.

For each parcel identified, summary data is available that describes the intersection of resources that lie within each parcel. The selected parcels all lie either in whole or in part within the identified green infrastructure. Assigned strategies are displayed in Map 5.3 and Table 5.3

Step 4: Ordering the Priority Parcels

Task Force members felt strongly that in addition to cost type, parcels should be ordered in terms of importance. To this end, the Town developed and applied a threat value matrix that attempted to rank parcels in terms of threat of development. Parcels were assigned a value of 'High Threat', 'Moderate Threat' or 'Low Threat' based on an equation that used the following measures of merit:

- Total resource score

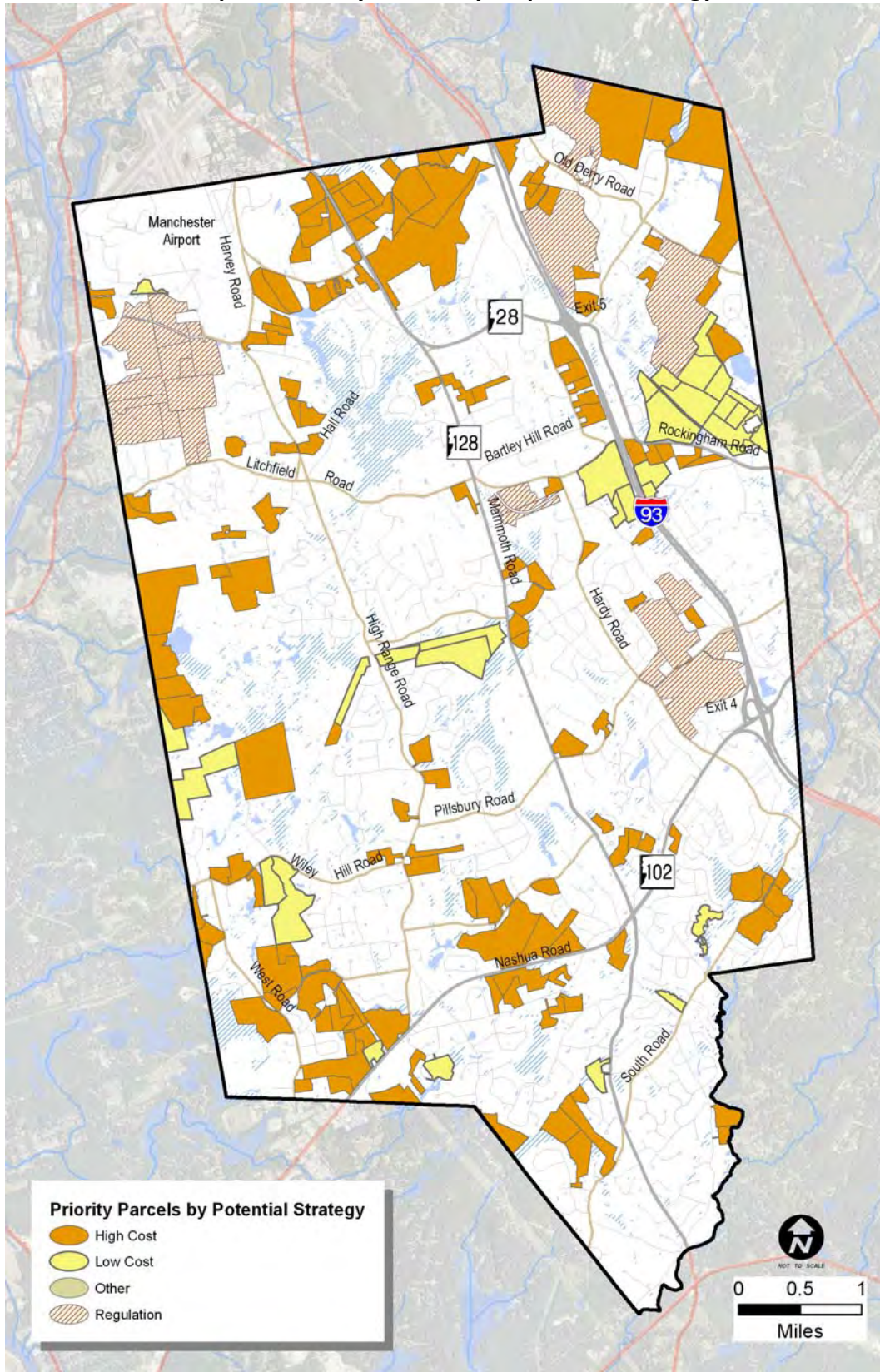
- Resource score per acre
- Degree of Access
- Development Potential (amount of upland suitable for development)

In this way, natural resource scores were taken into consideration with the development potential of properties so that those parcels at highest risk of conversion, and thus highest risk of fragmenting the green infrastructure, could be identified. Parcels identified as 'High Threat' generally have the highest resource values and favorable development conditions while 'Low Threat' parcels either have relatively lower resource values, conditions unfavorable to development, or both. These may be the areas most needing public dollars to preserve. Map 5.4 depicts the threat ratings.

A summary of all identified parcels is presented in Table 5.4. A total of 6,556 acres in 210 parcels is included in the list. Of the total, 3,919 acres (152 parcels) are High cost, 979 acres (32 parcels) are Low cost and 1,658 acres (26 parcels) are considered to be managed by site/subdivision processes. The successful preservation of this selection set will enable Londonderry to preserve the highest value natural resources for perpetuity. If all parcels or parts of parcels lying within the green infrastructure were protected, the total permanently conserved area of Londonderry would increase from 4,047 acres (15% of Londonderry) to 10,603 acres (39%).

Given that conservation protections are placed upon willing sellers or developers, this plan makes no presumption that all properties will be preserved, and each potential open space action must be evaluated against the facts on the ground at the time of the proposed action.

Map 5.3: Priority Parcels by Acquisition Strategy



Map 5.4: Priority Parcels by Threat Rating

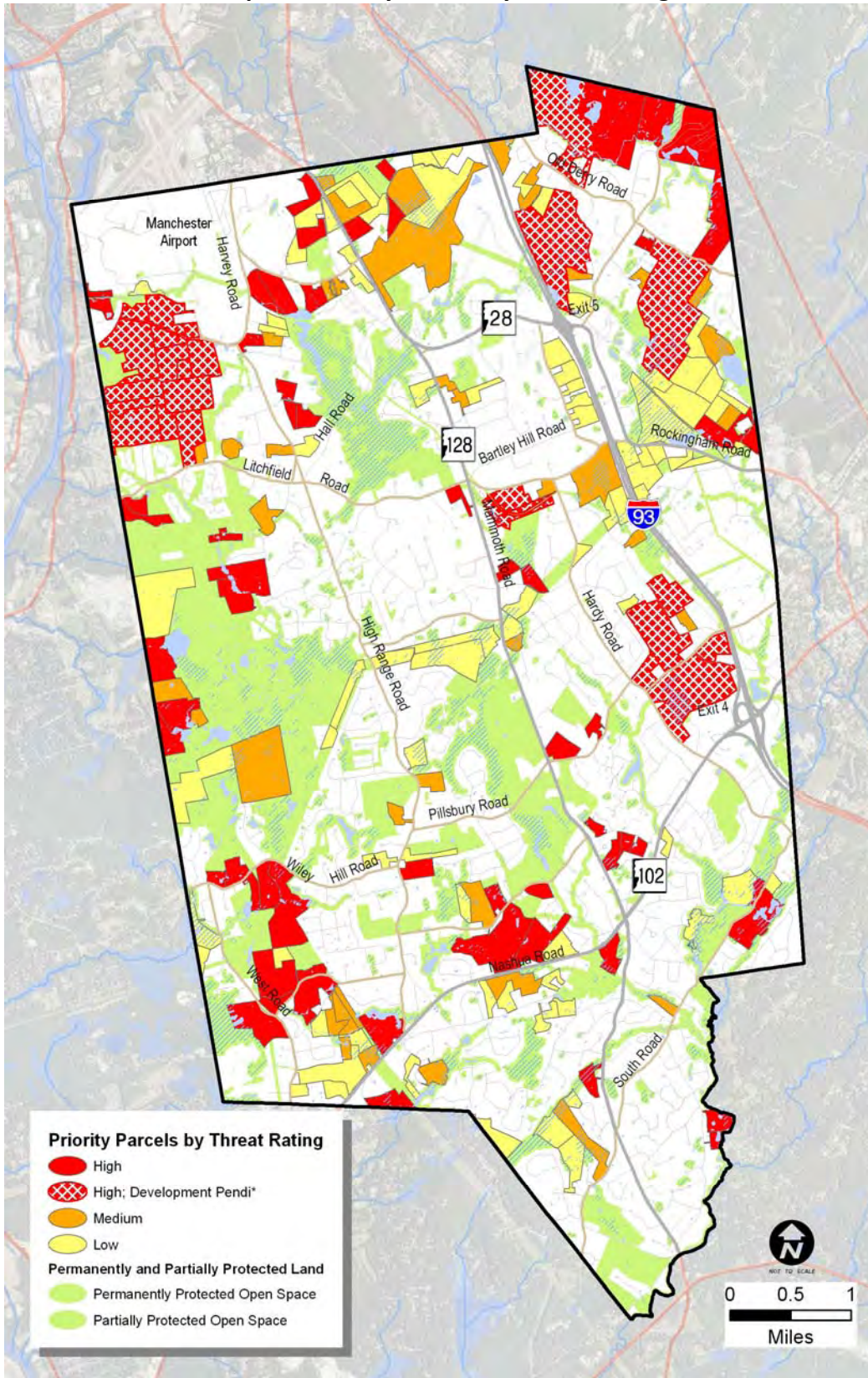


Table 5.4: Priority Parcels for protection, by proposed strategy

Records in the following table have been sorted by threat rating, protection strategy, and then by total resource score. The implication is that parcels with the highest natural resource score, and at more need of protection, will rise to the top of this list.

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
018 033 0	126 AUBURN RD	199.0	High	High Cost	\$2,177,916	22201	117
018 032 0	80REAR OLD DERRY RD	182.6	High	High Cost	\$388,078	20904	125
011 054 0	46-62 KIMBALL RD	85.3	High	High Cost	\$721,100	10790	126
018 036 0	109 AUBURN RD	58.3	High	High Cost	\$258,333	10671	189
001 083 0	76 CHASE RD	22.0	High	High Cost	\$158,160	7113	325
011 040 0	24 WATTS RD	11.5	High	High Cost	\$84,459	6352	567
011 047 0	49C REAR ROLLING RIDGE RD	47.5	High	High Cost	\$6,180	6116	138
005 040 0	54A ELWOOD RD	80.0	High	High Cost	\$153,455	6019	89
005 040 0	54A ELWOOD RD	80.0	High	High Cost	\$153,455	6019	507
005 039 0	35 ELWOOD RD	47.7	High	High Cost	\$8,728	5154	108
003 130 0	135 NASHUA RD	24.0	High	High Cost	\$644,536	5030	219
008 013 0	HIGH RANGE RD	49.0	High	High Cost	\$5,443	4964	117
002 043 0	39 WEST RD	56.0	High	High Cost	\$324,400	4000	64
006 059 1	21 CROSS RD	56.0	High	High Cost	\$7,429	3998	79
014 010 0	33 GRENIER FIELD RD	33.0	High	High Cost	\$7,638	3846	116
014 011 0	5 WEBSTER RD	31.0	High	High Cost	\$4,885	3815	139
005 057 0	91 WILEY HILL RD	13.0	High	High Cost	\$95,330	3415	239
006 076 3	16 PEABODY RW	16.1	High	High Cost	\$2,254	3395	201
011 049 1	56A REAR KIMBALL RD	10.0	High	High Cost	\$44,000	3189	328
006 084 0	57 ADAMS RD	150.0	High	High Cost	\$13,130	3180	28
006 076 0	24 PEABODY RW	11.0	High	High Cost	\$96,130	3046	316
002 044 0	72 ELWOOD RD	17.5	High	High Cost	\$2,889	2907	202
001 083 1	64 CHASE RD	13.0	High	High Cost	\$148,900	2860	329
028 015 0	6 PETTENGILL RD	14.2	High	High Cost	\$104,700	2790	189
007 111 0	140 SOUTH RD	24.4	High	High Cost	\$205,100	2682	114
002 022 0	274 NASHUA RD	54.3	High	High Cost	\$5,866	2663	55
011 002 0	191 LITCHFIELD RD	21.8	High	High Cost	\$101,215	2336	107
004 057 0	116 SOUTH RD	40.1	High	High Cost	\$371,200	2329	58
002 029 0	11 AVERY RD	29.5	High	High Cost	\$101,833	2243	83
015 001 0	17 GRENIER FIELD RD	18.3	High	High Cost	\$1,346	2127	106
006 022 0	9 PEABODY RW	11.4	High	High Cost	\$164,000	2029	231
006 075 0	28 PEABODY RW	9.7	High	High Cost	\$100,309	1847	199
028 014 10	2REAR PERIMETER RD	8.1	High	High Cost	\$55,000	1837	228
011 003 0	189 LITCHFIELD RD	13.9	High	High Cost	\$102,513	1715	123
012 020 0	7 LITCHFIELD RD	14.0	High	High Cost	\$286,300	1682	128
012 052 0	368 MAMMOTH RD	13.0	High	High Cost	\$200,400	1644	127

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
009 049 0	114 PILLSBURY RD	28.0	High	High Cost	\$7,159	1621	62
006 081 0	41 ADAMS RD	13.5	High	High Cost	\$103,740	1608	119
014 019 0	8084 HARVEY RD	12.0	High	High Cost	\$845,700	1569	124
007 114 0	137 SOUTH RD	12.8	High	High Cost	\$57,500	1440	174
017 031 0	34 PAGE RD	14.9	High	High Cost	\$85,296	1440	91
016 042 4	10 SHERIDAN DR	8.1	High	High Cost	\$131,500	1436	165
017 013 0	603 MAMMOTH RD	23.5	High	High Cost	\$891,800	1329	54
014 029 11	5 AVIATION PARK DR	13.7	High	High Cost	\$1,316	1287	95
012 048 0	17 BANCROFT RD	17.7	High	High Cost	\$155,100	1223	71
005 012 1	106 WILEY HILL RD	12.0	High	High Cost	\$195,500	1178	98
005 014 0	90 WILEY HILL RD	15.0	High	High Cost	\$2,291	1112	53
017 034 0	65 PAGE RD	8.8	High	High Cost	\$170,800	1064	110
006 109 0	80 HIGH RANGE RD	24.3	High	High Cost	\$101,375	1045	44
017 024 0	302 ROCKINGHAM RD	18.0	High	High Cost	\$443,900	1025	56
017 010 0	587 MAMMOTH RD	2.1	High	High Cost	\$104,108	1001	44
014 029 14	14 AVIATION PARK DR	16.9	High	High Cost	\$2,224	977	58
009 056 4	94 PILLSBURY RD	11.8	High	High Cost	\$144,800	975	85
006 094 0	68 ADAMS RD	17.0	High	High Cost	\$102,406	963	58
014 029 16	6 AVIATION PARK DR	10.7	High	High Cost	\$1,606	679	66
005 052 0	63 WILEY HILL RD	83.0	High	Low Cost	\$275,300	8696	97
005 055 0	81 WILEY HILL RD	28.0	High	Low Cost	\$227,400	5502	168
013 111 0	7 BREWSTER RD	51.9	High	Low Cost	\$271,500	4721	108
008 015 0	HIGH RANGE RD	25.0	High	Low Cost	\$65,800	4554	159
013 110 0	1 BREWSTER RD	14.6	High	Low Cost	\$142,200	3002	210
003 038 0	93 MAMMOTH RD	16.5	High	Low Cost	\$155,900	1839	100
018 013 0	140 OLD DERRY RD	168.2	High; Dev. Pending	Regulation	\$2,353,500	17467	99
014 035 0	68REAR LITCHFIELD RD	73.0	High; Dev. Pending	Regulation	\$278,500	13190	176
014 045 0	51 PETTENGILL RD	80.0	High; Dev. Pending	Regulation	\$181,600	11447	142
014 049 0	4 PETTENGILL RD	94.8	High; Dev. Pending	Regulation	\$77,631	10336	109
016 038 0	17 OLD DERRY RD	236.7	High; Dev. Pending	Regulation	\$33,131	10146	41
010 041 0	15 PILLSBURY RD	162.0	High; Dev. Pending	Regulation	\$400,318	9752	60
014 039 0	162 LITCHFIELD RD	47.3	High; Dev. Pending	Regulation	\$206,200	7773	158

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
028 017 4	30 INDUSTRIAL DR	42.9	High; Dev. Pending	Regulation	\$1,484,800	6814	159
014 047 0	20A NO WENTWORTH AV	67.4	High; Dev. Pending	Regulation	\$252,800	6511	97
014 038 0	68REAR HARVEY RD	24.0	High; Dev. Pending	Regulation	\$2,437	6376	274
014 045 2	63 PETTENGILL RD	41.1	High; Dev. Pending	Regulation	\$691,100	6213	147
014 036 0	68REAR HARVEY RD	23.4	High; Dev. Pending	Regulation	\$49,100	5227	211
016 009 0	13 WILSON RD	206.5	High; Dev. Pending	Regulation	\$85,597	3826	19
028 017 0	65 PETTENGILL RD	21.4	High; Dev. Pending	Regulation	\$371,300	3749	179
010 042 0	36 PILLSBURY RD	97.0	High; Dev. Pending	Regulation	\$125,233	3454	36
012 131 0	113 HARDY RD	25.5	High; Dev. Pending	Regulation	\$4,419	1779	124
012 131 0	113 HARDY RD	25.5	High; Dev. Pending	Regulation	\$4,419	1779	221
010 041 2	7 PILLSBURY RD	25.2	High; Dev. Pending	Regulation	\$10,706	1675	65
010 015 0	44 PILLSBURY RD	24.0	High; Dev. Pending	Regulation	\$4,405	1673	75
012 120 0	30 STONEHENGE RD	39.5	High; Dev. Pending	Regulation	\$102,750	1257	142
012 120 0	30 STONEHENGE RD	39.5	High; Dev. Pending	Regulation	\$102,750	1257	45
028 018 3	36 INDUSTRIAL DR	8.3	High; Dev. Pending	Regulation	\$395,800	1001	120
028 017 2	28 PETTENGILL RD	21.7	High; Dev. Pending	Regulation	\$199,400	902	53

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
010 023 0	34 HOVEY RD	38.0	High; Dev. Pending	Regulation	\$5,101	653	16
014 046 0	61 PETTENGILL RD	16.0	High; Dev. Pending	Regulation	\$44,800	323	28
008 021 0	HIGH RANGE RD	139.0	Medium	High Cost	\$11,806	6748	48
017 045 0	280 ROCKINGHAM RD	215.4	Medium	High Cost	\$20,958	3508	16
008 012 0	MUSQUASH MEADOW RD	33.8	Medium	High Cost	\$62,575	2893	96
002 048A 0	7 DAN HILL RD	15.8	Medium	High Cost	\$83,797	2467	154
002 004 0	5 DAN HILL RD	13.7	Medium	High Cost	\$88,735	2238	108
018 010 0	49REAR OLD DERRY RD	18.0	Medium	High Cost	\$2,616	2167	99
017 035 0	62 PAGE RD	54.0	Medium	High Cost	\$4,532	1701	32
008 010 0	ROLLING RIDGE RD	10.0	Medium	High Cost	\$678	1659	176
016 099 0	29A REAR PARTRIDGE LN	33.5	Medium	High Cost	\$1,929	1606	49
016 036 0	15 OLD DERRY RD	15.9	Medium	High Cost	\$97,103	1429	91
014 044 36	42 WENTWORTH AV	13.7	Medium	High Cost	\$650,800	1359	99
006 092 0	74 ADAMS RD	32.0	Medium	High Cost	\$104,908	1221	33
001 026 0	24 GRIFFIN RD	48.0	Medium	High Cost	\$100,883	1211	27
002 027 1	314 NASHUA RD	9.3	Medium	High Cost	\$41,500	1135	117
011 033 0	18 KIMBALL RD	26.3	Medium	High Cost	\$112,874	952	36
003 132B 0	197 NASHUA RD	33.0	Medium	High Cost	\$488,400	868	23
002 004A 0	3 DAN HILL RD	7.6	Medium	High Cost	\$51,900	844	79
016 012 0	5 WILSON RD	9.4	Medium	High Cost	\$125,200	839	84
017 022 0	310 ROCKINGHAM RD	12.7	Medium	High Cost	\$1,090	816	31
015 116 0	474 MAMMOTH RD	8.8	Medium	High Cost	\$134,600	805	92
018 035 0	12 GERRY LN	14.0	Medium	High Cost	\$111,991	760	60
009 028 0	328 MAMMOTH RD	11.0	Medium	High Cost	\$132,400	730	84
013 002 0	82 HOVEY RD	9.2	Medium	High Cost	\$134,700	723	75
009 086 0	128 HIGH RANGE RD	18.4	Medium	High Cost	\$3,601	668	36
011 100 0	15 HARVEY RD	10.0	Medium	High Cost	\$236,600	610	50
015 215 1		16.2	Medium	High Cost	\$564,900	596	41
006 002 1	119 HIGH RANGE RD	12.1	Medium	High Cost	\$1,326	581	46
010 038 2	16 HOVEY RD	9.7	Medium	High Cost	\$162,300	559	59
015 116 1	1A WESTMINSTER DR	9.0	Medium	High Cost	\$154,200	538	57
012 121 2	119 HARDY RD	10.1	Medium	High Cost	\$3,401	512	53
016 051 0	19 WOODS AV	9.5	Medium	High Cost	\$140,000	495	54
018 018 0	125 OLD DERRY RD	8.4	Medium	High Cost	\$151,900	479	54
017 020 0	334 ROCKINGHAM RD	8.3	Medium	High Cost	\$166	412	47
014 019 1	3 KENNISTON WY	10.6	Medium	High Cost	\$231,200	407	40
013 020 0	58 STONEHENGE RD	91.0	Medium	Low Cost	\$6,930	2170	28
003 069 0	67 SOUTH RD	10.0	Medium	Low Cost	\$120,200	1783	171

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
013 113 0	17REAR BREWSTER RD	7.0	Medium	Low Cost	\$29,000	1318	91
002 029B 19A	19 BURBANK RD	0.0	Medium	Low Cost	\$0	1252	56
002 025 0	296 NASHUA RD	15.1	Medium	Low Cost	\$451	660	49
014 039 1	158 LITCHFIELD RD	9.3	Medium	Regulation	\$129,000	1658	170
011 046 0	17REAR FAUCHER RD	113.6	Low	High Cost	\$785,584	13902	122
007 113 0	139REAR SOUTH RD	38.0	Low	High Cost	\$198,500	6071	155
005 007 0	101REAR WEST RD	10.0	Low	High Cost	\$120,300	4613	460
005 008 0	103 WEST RD	8.0	Low	High Cost	\$51,000	3523	201
017 038 0	74 PAGE RD	91.5	Low	High Cost	\$138,039	2607	29
005 009 26	105REAR ALAN CR	3.5	Low	High Cost	\$31,800	1667	147
008 023B 0	46 HIGH RANGE RD	8.0	Low	High Cost	\$25,700	1166	122
002 050 0	22REAR PRISCILLA LN	4.5	Low	High Cost	\$37,000	1165	81
002 046 0	17 DAN HILL RD	15.4	Low	High Cost	\$1,050	1130	77
007 129 0	77 NASHUA RD	9.3	Low	High Cost	\$466,500	712	79
009 083 1	14 BANCROFT RD	22.8	Low	High Cost	\$1,211	693	31
003 040 0	101REAR MAMMOTH RD	30.0	Low	High Cost	\$2,696	653	20
010 142 0	7REAR GORDON DR	9.3	Low	High Cost	\$163,500	641	78
013 065 0	47 ROCKINGHAM RD	12.5	Low	High Cost	\$119,700	641	60
005 072 0	68REAR ELWOOD RD	14.0	Low	High Cost	\$5,057	638	53
006 053 0	22 YOUNG RD	21.0	Low	High Cost	\$191,400	627	26
009 004 0	140A HIGH RANGE RD	18.5	Low	High Cost	\$99,000	603	32
001 018 0	6 GRIFFIN AV	37.2	Low	High Cost	\$196,452	598	17
017 038 2	44 JACK'S BRIDGE RD	13.0	Low	High Cost	\$136,600	597	43
017 032 0	43 PAGE RD	13.3	Low	High Cost	\$1,615	587	36
002 027 0	304 NASHUA RD	58.1	Low	High Cost	\$1,068,900	579	10
002 029B 8	14 BURBANK RD	12.7	Low	High Cost	\$70,500	564	44
013 053 0	75 ROCKINGHAM RD	13.7	Low	High Cost	\$1,902	532	33
015 108 0	477 MAMMOTH RD	15.0	Low	High Cost	\$95,783	494	29
017 011 0	595 MAMMOTH RD	41.3	Low	High Cost	\$1,669	489	23
013 070A 0	27 ROCKINGHAM RD	5.5	Low	High Cost	\$116,200	479	52
006 106 0	86 HIGH RANGE RD	24.0	Low	High Cost	\$96,174	448	30
017 009 0	590 MAMMOTH RD	11.5	Low	High Cost	\$93,974	448	39
016 003 0	62 PERKINS RD	22.9	Low	High Cost	\$99,869	446	18
018 009 0	15 GERRY LN	16.0	Low	High Cost	\$109,706	423	27
018 008 0	REAR GERRY LN	9.0	Low	High Cost	\$70,100	388	42
009 025 0	332 MAMMOTH RD	15.2	Low	High Cost	\$145,700	373	25
003 153 0	58 OLD NASHUA RD	11.8	Low	High Cost	\$94,712	362	30
003 184 0	45 BOYD RD	28.0	Low	High Cost	\$3,723	355	12
003 039 7	16 LANTERN LN	8.4	Low	High Cost	\$134,800	351	42
013 024 4	26 PERKINS RD	18.1	Low	High Cost	\$3,739	345	18
003 162 0	1 GREELEY RD	10.0	Low	High Cost	\$1,574	344	28
015 043 0	37 NOYES RD	14.3	Low	High Cost	\$95,185	341	24
005 028 0	8 WILEY HILL RD	16.0	Low	High Cost	\$112,401	336	21

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
014 017 0	88A HARVEY RD	20.5	Low	High Cost	\$112,902	332	37
003 160 0	12 OLD NASHUA RD	13.6	Low	High Cost	\$1,928	330	30
013 024 1	32 PERKINS RD	12.1	Low	High Cost	\$96,045	323	27
003 165 1	11 GREELEY RD	9.2	Low	High Cost	\$134,600	314	33
015 233 0	6 PAGE RD	12.2	Low	High Cost	\$94,152	299	24
003 155 0	48 OLD NASHUA RD	18.0	Low	High Cost	\$103,257	287	19
016 001 0	48 PERKINS RD	16.7	Low	High Cost	\$95,461	276	15
016 009 2	11 AUBURN RD	16.0	Low	High Cost	\$124,198	272	14
014 013 4	7 PLANEVIEW DR	9.4	Low	High Cost	\$188,900	270	29
013 025 12	38 PERKINS RD	8.8	Low	High Cost	\$132,800	269	29
007 109 0	152 SOUTH RD	8.8	Low	High Cost	\$196,700	264	32
017 021 0	326 ROCKINGHAM RD	43.5	Low	High Cost	\$2,982	264	11
002 027A 1	6 WEST RD	7.8	Low	High Cost	\$188,200	239	29
006 113 1	62REAR ADAMS RD	13.0	Low	High Cost	\$980	236	16
013 060 0	61 ROCKINGHAM RD	10.0	Low	High Cost	\$237,200	213	21
017 041 0	48 JACK'S BRIDGE RD	13.0	Low	High Cost	\$35,900	204	13
013 054 1	71 ROCKINGHAM RD	9.0	Low	High Cost	\$326,200	189	20
002 035 0	318 NASHUA RD	15.1	Low	High Cost	\$1,313,200	175	12
017 005 6	6 KITTY HAWK LNDG	15.6	Low	High Cost	\$827,600	154	10
012 141 0	82 HARDY RD	7.4	Low	High Cost	\$50,700	135	17
017 025 0	295 ROCKINGHAM RD	7.8	Low	High Cost	\$699,000	126	15
011 102 0	16 HARVEY RD	15.0	Low	High Cost	\$159,526	110	7
003 163 0	5 GREELEY RD	7.8	Low	High Cost	\$183,400	93	12
017 023 0	310REAR ROCKINGHAM RD	10.0	Low	High Cost	\$971	43	2
013 061 0	48 ROCKINGHAM RD	84.0	Low	Low Cost	\$30,200	3606	46
008 006A 0	227REAR HIGH RANGE RD	22.0	Low	Low Cost	\$51,900	3391	140
007 030 0	12 TWIN ISLES RD	19.1	Low	Low Cost	\$123,900	3254	149
008 017 0	WILEY HILL RD	56.0	Low	Low Cost	\$104,300	2734	32
013 046 0	REAR MELODY LN	13.0	Low	Low Cost	\$41,600	1797	128
013 105A 0	20REAR ROCKINGHAM RD	9.4	Low	Low Cost	\$43,500	1725	190
009 008A 0	204 HIGH RANGE RD	25.8	Low	Low Cost	\$36,200	1300	55
028 021 25	39 S.PERIMETER RD	10.6	Low	Low Cost	\$439,800	1257	119
013 012 0	106 HOVEY RD	3.0	Low	Low Cost	\$23,700	1091	93
009 012 62	20 DAVIS DR	68.0	Low	Low Cost	\$387,500	1014	14
013 128 0	REAR MELODY LN	18.0	Low	Low Cost	\$49,900	855	50
009 012A 0	20REAR MAMMOTH RD	40.0	Low	Low Cost	\$163,000	721	17
016 100 0	104REAR BREWSTER RD	33.5	Low	Low Cost	\$3,984	663	28
013 112 0	23REAR BREWSTER RD	11.0	Low	Low Cost	\$756	599	56
013 114 0	29REAR BREWSTER RD	32.0	Low	Low Cost	\$72,900	587	38

LINK_ID	Location	Deed Acres	Threat Rating	Protection Strategy	Assessment	Total Resource Score	Resource Score per Acre
013 103 0	22REAR ROCKINGHAM RD	53.6	Low	Low Cost	\$145,800	506	9
013 123 0	37 BREWSTER RD	25.0	Low	Low Cost	\$315,900	462	19
013 056 0	71 ROCKINGHAM RD	36.0	Low	Low Cost	\$79,400	403	14
013 013 0	106 HOVEY RD	21.2	Low	Low Cost	\$55,200	232	10
013 057 0	71 ROCKINGHAM RD	12.0	Low	Low Cost	\$39,900	186	16
016 098 0	104 BREWSTER RD	43.9	Low	Low Cost	\$245,400	181	4

Chapter 6: Summary of Natural Resource Indicators

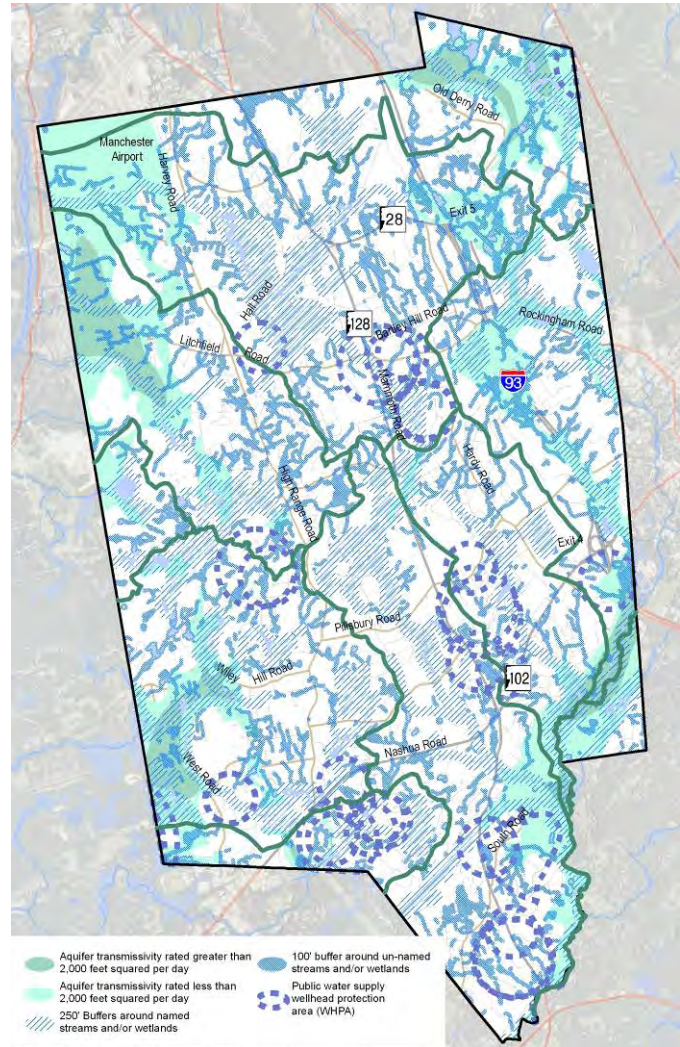
The following provides an overview of the information reviewed to meet natural resource goals in Londonderry. This information was indexed by 'natural resource score' and used to inform the local green infrastructure layer, high value natural resource areas and parcel selection processes described in Chapter 5.

Goal: Drinking Water Quality and Quantity Metric: Undeveloped Streamside Buffers

Riparian and shoreline buffer zones are important for both water quality and wildlife habitat reasons. Maintaining a buffer of **undisturbed, natural vegetative cover** for a distance of 100' for named wetlands/streams and 50' for un-named wetlands over ½ acres and streams is required by Londonderry Zoning for new developments. These are considered critical protection areas for maintenance of in-stream water quality. This analysis takes into effect an additional 100' buffer for named features and 50' buffer for un-named features to provide protection above and beyond the minimum regulations. This is still less than the 300-foot buffer recommended by many biologists.

Metric (2): High-yield & Low Yield Aquifers

Certain areas of Londonderry contain enormous reservoirs of highly accessible water (High-yield aquifers; dark blue) as yet undeveloped for human uses, and thus may represent some of the best water supply resources into the future. Low yield aquifers are shown in light blue, and serve as primary recharge to the groundwater. Both mapped areas represent the best locations for natural aquifer recharge given soil and bedrock types. Aquifer formations also support special natural communities, such as pitch pine barrens and wetlands complexes. The flat, sandy soils are also easily developed. It is recommended that as much of these areas as possible be preserved in a natural state.



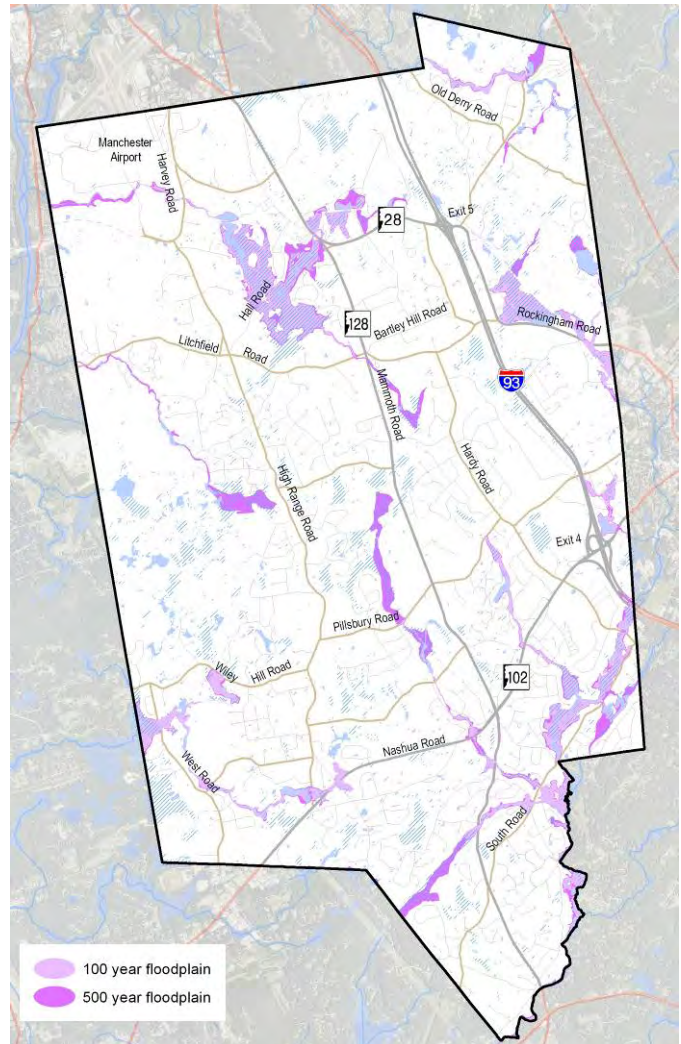
Metric (3): NHDES Public Water Supplies & Drinking Water Protection

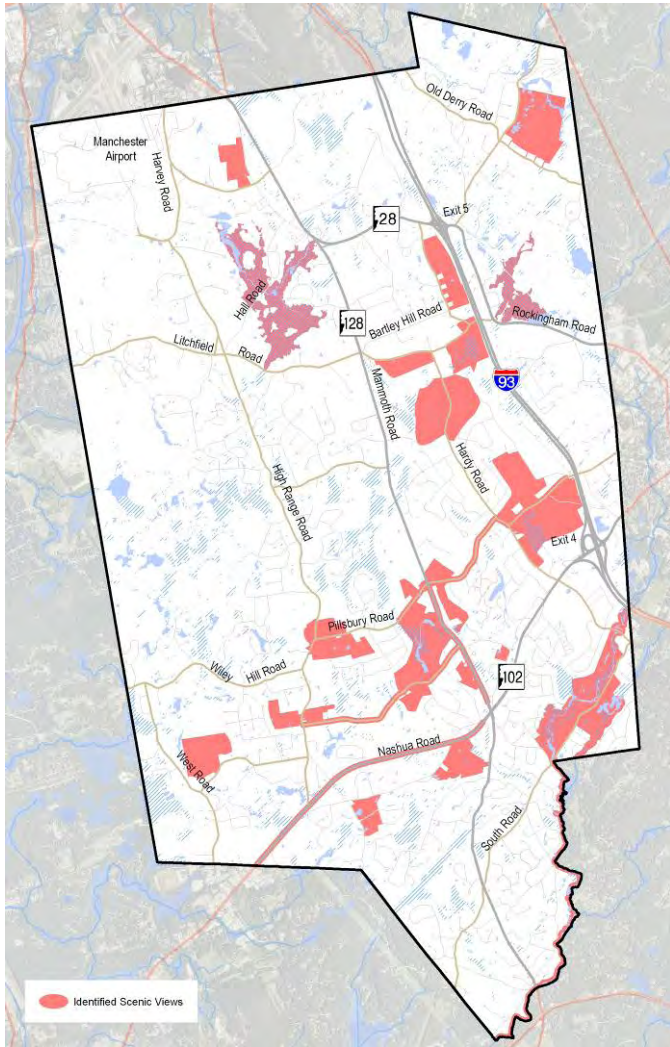
NH DES has defined drinking water protection zones around all community water supplies, shown in dashed lines in the map. These indicate areas that provide principle protection of existing wells and should be left in as natural a state as possible. This map does *not* show the thousands of private wells in Londonderry.

Goal: Flood Storage

Metric: 100-year and 500-year floodplains

Floodplain areas are mapped by the US FEMA and represent the areas in town that will have a 1% (100-year) or 0.2% (500-year) chance of flooding in any given year. These represent known areas where future building and impervious surface should be discouraged. Given topography and hydrography, these are the natural sinks where water accumulates; development in these areas will only force water to other areas currently outside the floodplains.





**Goal: Keeping Natural Views in their Present Form
Metric: Identified Scenic Views**

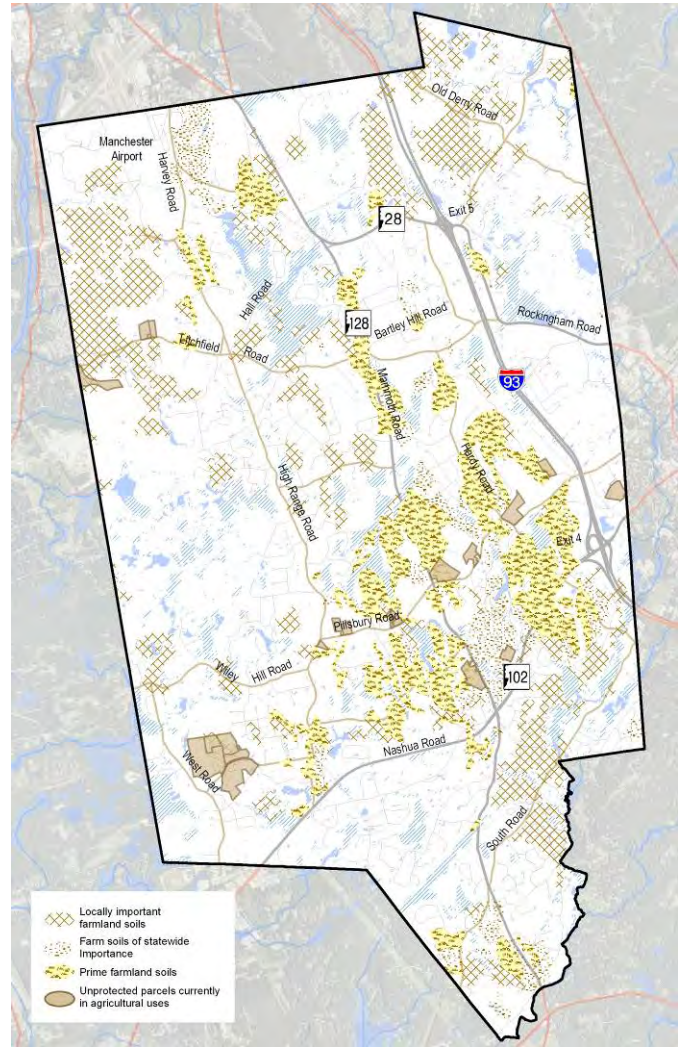
During the 2005 Open Space Task Force development, members were asked to identify areas of Londonderry that were considered ‘scenic’ in their opinion. The input they provided was mapped and became the scenic views layer. Further, opinions expressed in the public opinion survey were reviewed and mapped per written descriptions. Features on this map represent areas that are the most attractive and representative of Londonderry.

Goal: Preserving Local Agricultural Land
Metric: Prime, State and Local Important Agricultural Soils

Soils in Londonderry have been mapped by the USDA Natural Resources Conservation Service (NRCS). The soil conditions that are the best for farming include loamy mixtures of well drained, fine and medium textured grains deposited by flowing water. Three classifications provide an index for the best soils for agriculture, according to defined conditions: Prime Agricultural Soils represent the best soils for all crops; Soils of Statewide Importance represent the best soils for the crops grown in New Hampshire; and Soils of Local Importance represent the best soils for the types of crops grown in southern NH.

Metric (2): Land in Agricultural Uses

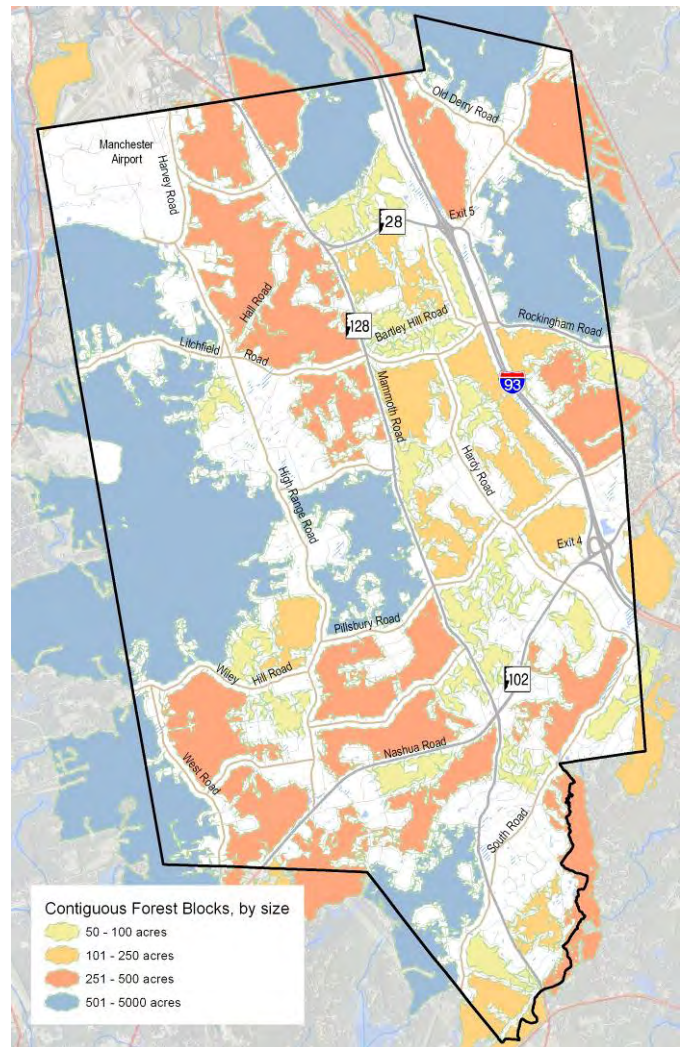
Many commercial farming operations continue to operate in Londonderry. While the conservation commission has been active purchasing easements on the largest apple orchards, there remain many other areas that are equally as valuable. These contribute to community character, scenic views and often take place on the best natural soils. In Londonderry, this includes a large apple orchard, several small horse farms, a former vineyard and a maple sugar operation. It is in the best interest of community character and soil stability to keep these in active agricultural uses.



Goal: Support Outdoor Recreation in a Natural Setting/Preserving Large, Contiguous Forest Blocks

Metric: Unfragmented Forest Areas

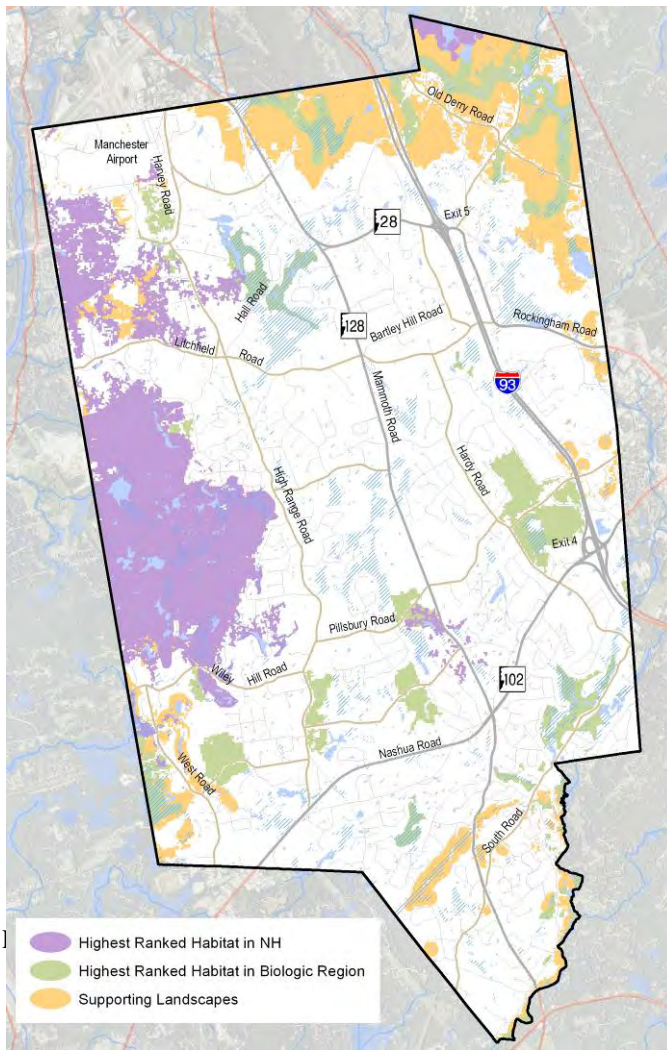
Plant and animal habitat and connections between habitat patches are supported by larger forested areas. These are defined as areas outside of fragmenting features including roads, structures or pavement areas. Large, intact forest blocks are necessary for some species that will only inhabit the interior of forested areas because they require a significant surrounding buffer of protection. These same areas can also feature recreational trail networks (e.g. the Musquash Conservation Area) and support the "10 to 10" ideal where all residents are within a ten minute walk of ten acres or more of conserved land. Forest blocks are valued as expanses that are not compromised by impervious surfaces and thus contribute to natural resource benefits including streamside protection, forestry, wildlife habitat, species diversity and



water filtration.

Metric (2): NH WAP Habitat Condition Data

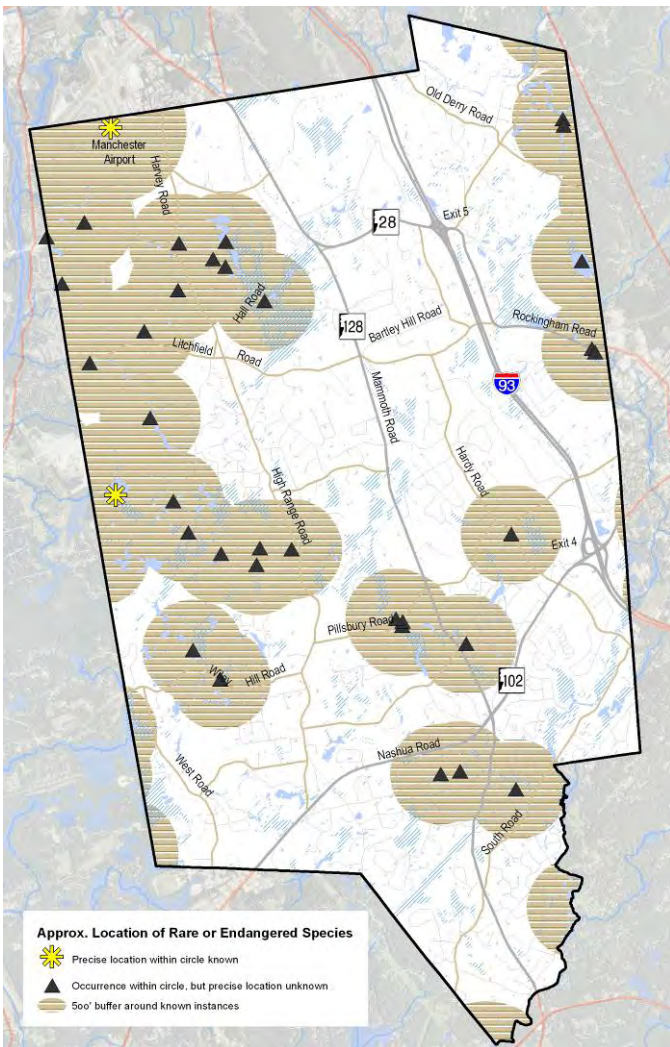
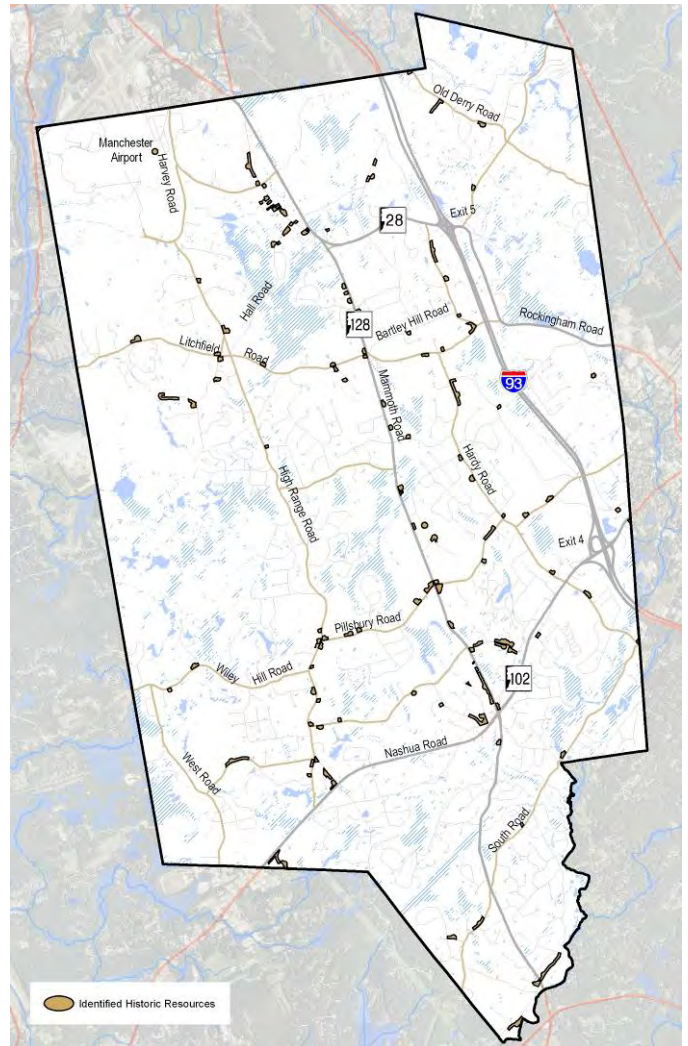
The NH Fish and Game Department has developed a Wildlife Action Plan (WAP) that defines habitat areas throughout the state. Three categories depict the highest rated habitat areas, including: Tier 1 (highest rank in NH); Tier 2 (Highest Ranked Habitat in the Biological Region); and Tier 3 (Supporting Landscapes). Tier 1 and 2 may be thought of as "core areas" in the vocabulary of conservation biology. Tier 3 habitat is selected to serve as supporting landscapes, or buffers that help ensure the quality and function of the cores. All areas contain attributes indicative of the best plant and animal habitat conditions for NH wildlife.



Goal: Maintaining historic structures in their appropriate context

Metric: Historic Properties Inventory Data

The Londonderry Heritage Commission maintains an inventory of structures of historic significance. These are structures 100 years or greater in age, significant examples of a historical period or style and whose structure retained 75% of it's original external features. Historic sites are included in the same list. Once identified, the properties were converted to a mapped area that included a 50' buffer around the building and 50' setback from the property frontage to allow for retaining visual appeal.



Goal: Preserve Habitat for Endangered Species:
Metric: NH Natural Heritage Bureau Data

The location of rare, threatened or endangered species and exemplary natural communities are maintained by the NH Natural Heritage Bureau. This data contains an unknown spatial shift of the actual location to facilitate local planning while meeting confidentiality guidelines of the NH Native Plant Protection Act (NH RSA 217:A-4) and therefore the data represents generalized conditions. Given the uncertainty and the need to preserve habitat for rare or endangered species, the whole 500' buffer was considered for this analysis.

Bonus Goal: Providing Connections between large open space areas throughout town
Metric: Gravity Model Connection Areas

A gravity model was developed for the 2005 Open Space Plan that highlighted the areas closest to the largest existing conservation areas. A very broad depiction of the strongest connection potential was drafted. The result was a depiction of areas that might provide a natural framework to connect large conservation areas together, similar to the “hubs and spokes” concept implemented by the Londonderry Conservation Commission. Parcels within this zone should be protected in order to promote expanding existing conservation resources.

Chapter 7: Public Opinion Survey

In order to involve the greatest number of residents in deliberations, the Task Force implemented a web based survey regarding the open space program. Questions for the survey were developed by Town staff, with review and input from the Task Force. The intent was to collect feedback regarding general awareness of the program and current open space opportunities, level of support for the program in general, level of support for expansion, level of support for committing resources toward protection, and finally identify future areas for protection. The questions were structured to collect a broad range of opinions, both pro and con, and provide guidance regarding all aspects of the program. A technical summary of the survey instrument and marketing approaches is provided in Appendix 6.

Responses from some of the key questions follow:

Have you visited town conservation or recreation areas? If so, how often?

- Some areas such as the Ingersoll/Bockes Forest receive very low use and are not well known.
- Musquash Conservation Area, Moose Hill Orchard easements, and various recreational fields are more highly visited and are widely known.

Are there other places you use for outdoor recreation?

- Town Center/ Schools (school trails/gas line, fields, Presbyterian Church)
- Nelson Field
- Backyard/Own Neighborhood
- Woodmont Orchards
- Rail Trails (Derry/Windham, Derry Bike Loop, Albuquerque Ave bike trail)

Please rank the following conservation goals in the order most important to you.

- Similar to views of Task Force members
- Water quantity and quality is most important

How important is it that the Town commit resources (financial, regulatory or otherwise) towards the following goals?

- Preserving adequate drinking water quality/quantity is again the top priority. 74% rated it “very important” and 15% rated it “somewhat important.”
- “Preserving land to store storm water and prevent flooding” rated high.
- Aside from historic structures, a super majority of respondents rated all categories “somewhat” or “very” important.
- Preserving land to maintain historic structures in their appropriate context had the lowest rating.

Please rate the goals and approaches you think the Town should pursue over the next five years to preserve nature’s values and benefits in Londonderry

- Overwhelming support for conservation goals with the exception of adding staff
- Top goals appear to be to limit development on sensitive natural habitats, develop trails/access, promote locations & uses.

- Tends to be more agreement with furthering educational and enhancement activities as opposed to purchasing conservation areas.
- By a 2-1 margin, respondents disagreed with stopping conservation purchases.
- Over 50% of respondents disagreed or somewhat disagreed with adding staff to maintain and monitor conservation properties or easements.

Is enough being done to maintain conservation lands in Londonderry?

- Respondents were roughly even split: 34% Yes, 29% No, 37% Don't Know

Are you willing to pay more in taxes to support future conservation purchases?

- 42% Yes, 39% No, 18.1% Don't Know

Are you willing to pay more in taxes to support increased stewardship of existing conservation land?

- 35% Yes, 43% No, 22% Don't Know

Currently, the Town spends 2.7% of it's budget on conservation. What percentage would you be willing to see it spend?

- More than 2.7% got the highest number of write-ins but average of write-ins was 2.7%.

Chapter 8: Strengths, Opportunities, Weaknesses and Threats (SWOT)

Task Force members conducted a Strengths, Weaknesses, Opportunities and Threats (SWOT) brainstorm analysis regarding Londonderry's open space program. This type of analysis is used to identify areas that a program should focus attention through an understanding of the core values, skills and markets that may be tapped into. It also provides an objective overview of the current status of the open space program. Comments from the members follow:

Strengths:

Geography:

- Londonderry is located at the center of NH's 'Golden Triangle' of Nashua, Manchester and Portsmouth. This is a key population, transportation and economic region for the state, with competing demands for available land.
- The Londonderry landscape includes healthy forests, high functioning wetlands and rich agricultural lands. The town is fortunate to retain numerous active agricultural activities including apple orchards, horse farms and small row crop/greenhouse operations. Though much of the town is built out, there remain significant areas of unprotected open spaces of high natural resource value.
- Past efforts have been successful in placing 15% (4,047 acres) of the Town in permanent conservation protection and an additional 15% (4,205) of the Town in partial conservation protection (utility easements, zoning district and town/school lands). There is widespread consensus that this open feel of Londonderry contributes to a distinct community character.
- Londonderry features one of the largest protected areas in the region, the Musquash Conservation Area, which provides over 1,200 acres of contiguous forest. The area has been well managed for recreational use by the Conservation Commission and Londonderry Trailways who have established over 13 miles of mapped trails and continue to expand the boundaries. The active use of this area and others (Moose Hill easement, Kendall Pond Conservation Area, Bockes-Ingersoll Forest, etc) for outdoor recreation is considered to be high and growing. New trails in the Town Center area have recently been mapped and promoted through the use of funding provided by the Conservation Commission and private sponsors.
- Londonderry has retained a large number of historically significant structures. These properties have been documented, inventoried and mapped.

Community Support:

- Community support and appreciation of the Town's open space areas are perceived to be very high. The Town is respected as an effective land steward.
- The Town has active volunteers who manage trails and work with Scouting groups and others to continually improve them.
- Roughly 25% of the Town's permanent conservation land is in easements; the Town has fostered positive relationships with landowners to keep agricultural operations running.

Strengths (continued)

Town Resources:

- The Town maintains a professional staff with quick access to conservation records and analysis of natural conditions. The Town manages a Geographic Information System (GIS) with extensive natural resource information to aid in interpreting landscapes and communicating complex ideas. The Town has an exceptional set of staff and volunteers who manage natural resources on a limited budget.
- The Town offers an curbside recycling program and offers collection days for household hazardous waste and electronics to ensure these products are disposed of properly.
- Voters and previous Town Councils have historically been supportive of open space efforts, **approving \$8 million in open space bonds.**

Land Use Protections:

- The Planning Board has adopted good zoning ordinances that protect natural resources through the **Conservation Overlay District** and the Conservation Subdivision ordinance specifically. The Design Review Committee (DRC) members pay close attention to wetlands impacts and have been successful in securing appropriate mitigations for negative impacts.
- The Town has a Demolition Delay Committee that requires a review prior to the demolition of structures 75 years and older with the intent of determining their historical worth and possible means of preservation.

Weaknesses

Geography:

- As stated above, Londonderry is located at the center of NH's 'Golden Triangle' of Nashua, Manchester and Portsmouth. It is located 40 miles from Boston and is in the path of the I-93 widening project. This location will usher in competing demands for residential and non-residential development of currently vacant lands, potentially threatening key natural resource areas. This demand for the land has driven raw land prices to new highs.
- As development continues in Londonderry, **forest blocks have become increasingly fragmented.** The same trend is occurring throughout all of Southern NH and is expected to continue. Presently, the Musquash Conservation Area and land in the north of Londonderry north of Old Derry Road constitute the largest forest blocks and have reasonable protection. Many of the other, smaller blocks are threatened by either approved or proposed developments including Woodmont Commons, Pettengill Road, Stonehenge Estates and Mill Pond to name a few.
- Roughly 20% of properties in Londonderry receive public water from supplies outside of town control. Residents are dependant upon protections placed by Nashua, Merrimack and Manchester/Auburn for the quality of their drinking water. The remaining residents are dependant upon wells tapping into aquifers that extend well beyond Londonderry's borders.

Weaknesses (continued)

- Despite being among the largest towns in the state (42 square miles), Londonderry has very few open water bodies. The largest pond, Scobie Pond is very shallow and has poor access. Few opportunities exist for water recreation or developing local drinking water supplies.
- Londonderry contains a number of documented rare, threatened and endangered species and habitats. Endangered species include Blanding's Turtle, Eastern Hognose Snake, Spotted Turtle, Wood Turtle, New England Cottontail (rabbit), Banded sunfish, and other vertebrate species. Exemplary natural communities include and Swamp white oak floodplain forest, medium level fen system, and sand plain marsh system. The precise location of these species is not made available to the general public, which potentially hinders direct efforts to preserve them.
- Londonderry supports a goal of establishing ten of acres of open space within a ten-minute walk of all residents. There are pockets of town where this goal is not met including the Seasons Lane, Old Derry Road, Rossini Road and Sparkawk Drive/Moulton Drive/Chase Road neighborhoods.

Economy:

- Budgets are increasingly stressed during this recessionary period. This has especially hurt Londonderry, given the town's dependence on matching grants to fund projects. As grant funds at the federal level become more scarce, competition for them increases. When this is coupled with the Town's decreased ability to raise matching contributions, those grants are no longer a reliable funding mechanism.
- After four years of bond measures passing, the town has since seen four years of bond measures being defeated. No bond measures were presented on the last two Town Meeting ballots.
- Economic pressures on landowners are intense given the competing demands for large parcels. Farmers in the area, despite their active operations, are generally considered to be 'land rich and cash poor,' allowing for the threat that the best farm soils could be lost to development.
- The overwhelming majority of historic resources are private homes which require maintenance by the landowner. The Town has few opportunities to assist and therefore preservation is largely dependant upon willing homeowners.

Community Opposition:

- There exists a core of focused opposition to Londonderry's open space program and continual funding. This opposition is driven by a perceived lack of transparency over conservation spending and generalized opposition to dedicating limited town funds to open space.

Stewardship:

- Stewardship or management of existing conservation areas has been ongoing but inconsistent. A clear management plan exists for some properties (Musquash,

Weaknesses (continued)

Sunnycrest, Moose Hill, Merrill) but not others, which has become a rallying point for opposition. The Town has budgeted less than \$5,000 annually for stewardship and other conservation commission spending. Mandatory stewardship activities have been contracted out to the Rockingham County Conservation District; other activities have been carried out by volunteers or college students. There is no paid staff in place to coordinate town-wide activities.

External Influences:

Global warming, acid rain and other non-point source pollution are risks that threaten quality of life for Londonderry. These are external influences that can only be marginally addressed by local preservation activities but still impact the town nonetheless and may require adaptive approaches. An example would be reviewing strategies for preserving floodplain areas to meet an apparent increase in flood events.

Opportunities

Geography:

The task force final products make clear that many good opportunities remain to acquire and preserve key natural resources.

Community Support:

- Londonderry has a strong group of engaged and active volunteers ready to take action to support conservation activities. Volunteers include organizations such as the Conservation Commission, Londonderry Trailways, ALERT, Scout troops, Beautify Londonderry, the Solid Waste Advisory Committee and those who participate on trail cleanup days.
- Londonderry is currently going through a period of growth and change with new development types appearing that potentially alter the nature of community. It is believed that these pending changes present opportunities to communicate further awareness of the importance of open space to maintaining community character and quality of life.
- Outside of Londonderry there are active conservation and recreation groups who have been successful in obtaining funds for recreation and/or open space development projects including the Windham-Salem-Derry Rails to Trails project and Hudson's Benson's Committee. These groups present opportunities for cooperation and exchange of ideas to assist with Londonderry's own efforts to convert the existing RR ROW to a rails-to-trails recreation path.

External Influences:

- The Town has opportunities to work with NH DOT and developers to mitigate forest fragmentation and wetland impacts through involvement on such projects as I-93

Opportunities (continued)

widening, Woodmont Commons and applications of the conservation subdivision ordinance at the planning board level.

- Grant options from federal sources continue to be available to the town.
- During the current recessionary period, property values are relatively depressed. This may present opportunities to purchase land at bargain prices.

Communication:

- There is growing awareness that the highest and best use of some properties may be as open space to mitigate negative impacts of development and/or avoid perpetual costs to a community. The town should promote this message in appropriate avenues.
- Awareness of routine flooding in Londonderry has increased awareness of the impacts of development on downstream areas. This may provide an opportunity to communicate the value of open space as flood mitigation.
- Recycling programs and household hazardous waste days provide opportunities for safe and appropriate disposal of waste. These programs can be further promoted to achieve a higher participation rate.
- The Town lacks a comprehensive stewardship plan for all conservation holdings. Given that 15% of the town is conserved under permanent protection, the need is great for a town-wide plan. This should include educational efforts for landowners with smaller easements on their properties (e.g. no cut zones and deed restrictions), so that they understand their purpose and adhere to their limitations.

Threats

Geography:

- As stated previously, pending development is both a strength, weakness, opportunity and a threat. As development and demand for buildable land increases, the potential for clashes with open space needs grows.
- Low property values during the recessionary period are providing potential land bargains for developers seeking to acquire land for future projects that may compete with open space goals.
- The widening of I-93 is a threat to natural resource goals in as much as it drives further development into Londonderry.

External Influences:

- Potential non-point pollution threats from acid rain, road salt, chemical spills on I-93 and airport de-icing chemicals could impact Londonderry residents, particularly those on private water supplies who face the risk of contaminated aquifers.
- With it's proximity to the Manchester-Boston Regional Airport and I-93, Londonderry has tracts of land under the control of governmental uses. These uses do not

Threats (Continued)

necessarily require planning board approval and may be developed in ways contrary to local open space goals.

- Invasive species continue to be a threat to natural plant and animal communities.

Economic/Development Priorities:

- At the state and local levels of government, there is currently a pendulum shift going on that favors an emphasis on encouraging development to foster a growing tax base. This is at odds with conservation goals. There is a fear that protective efforts may be perceived as 'anti-business' and will face a negative public outcry.
- Similar to the fear is the realization that 15% of Londonderry is protected in a 'partial' way, for instance by zoning ordinances that may be changed by future Town Councils. There is a threat of watering down protections afforded by the Conservation Overlay District or amending the town zoning ordinances to permit higher density development.
- Tight budgets at the local level and continued downshifting of state obligations have meant fewer dollars for non-essential projects. Given the polarization of town politics, and the ethos of freezing or cutting public spending, public support for open space projects may be fading. Similarly, the aforementioned downshifting is causing calls for the reallocation of money originally intended for open space purposes back to the town's general fund to be used instead for non-conservation town obligations.

Changing Community Expectations:

- Londonderry is a suburban bedroom community with kids growing up in neighborhoods with few walkable connections and parents who express fears of leaving kids alone to explore outside their immediate surroundings for any length of time. This causes separation from natural, outdoor experiences. There is fear that this is creating a disconnect from the natural systems and that the next generation will have less of a respect for open space than the present one.

Chapter 9: Public Meeting Comments

**Londonderry Open Space Task Force
OPEN MEETING
Tuesday, May 25, 2011**

Present: Mike Speltz, Chair and Conservation Commission Representative; Dana Coons, Vice Chair and Planning Board Alternate Representative; Lynn Wiles, Secretary and Planning Board Representative; Art Rugg, Heritage Commission Representative; Marty Srugis, Solid Waste Advisory Committee Representative; John Curran, Budget Committee Representative; Lisa Whittemore, Budget Committee Alternate Representative; Bob Saur, Londonderry Trailways Representative; Tim McKenney, At-Large Representative; and Stella Tremblay, Legislative Representative

Also present: John Vogl, GIS Manager; and Jaye Trottier, Administrative Assistant

Absent: Bill Manning, Recreation Commission Representative; George Herrmann, School Board Representative; and Jeff Locke, At-Large Representative

M. Speltz called the meeting to order at 7:04 PM. He presented to the audience a slide show about the Open Space Plan, the goals set for the Open Space Task Force by the Town Council and the work accomplished so far by the Task Force (see attached). Part of the charge from the Council included an open meeting for the public to obtain as much input as possible about open space and to answer any questions they may have. The Council additionally asked for public comment on the proposed purchase of a conservation easement that would protect 22 acres on map 17, lot 10. When the issue came before the Town Council for their approval at their May 16 meeting, some questions about the permanence and overall value of conservation easements arose and the matter was continued to the June 6 meeting so Town Counsel could advise. Following the presentation, M. Speltz asked for comments and/or questions from the public.

Deb Lievens, 105 Gilcreast Road, spoke about the benefits of purchasing a conservation easement as opposed to purchasing a property outright, stating that it is a method of preservation across the country. Since the owner must still manage the property under the terms of the easement, there is less of a draw on volunteers and/or town staff who need only monitor the property, usually in the form of an annual site visit). Over the many years that Londonderry has utilized easements, it has been her experience that there have rarely been any issues and those that have occurred have typically been abutters dumping yard waste onto the property. The Conservation Commission, she said, works with the property owners to resolve any issues. If results of the Open Space survey show there is currently very little support for adding staff to help manage Town owned land, then easements are the more economically practical choice.

Elizabeth Lignon (?), 491 Mammoth Road, asked if there was a website illustrating which properties allow public access. M. Speltz said some information is available on the Town website but that no comprehensive site currently exists. Development of a central location for such information, he added,

may very well be a future recommendation of the Task Force. She commended the Task Force for their presentation, including the fact that it answered many of her questions about Open Space.

Ken Merrill, Orchard Manager of Merrill Farm, offered to answer any questions about the aforementioned easement proposed for map and lot 17-10. He explained that there are currently 35 acres of the Merrill Farm under conservation easement. The proposed easement would create another 22 acres of preserved land abutting conserved lot 17-6 to the south and would complement that current easement. Although none of 17-10 is currently farmed, K. Merrill said that up to half of it could be, perhaps for peaches. Either way, the purchase would add to the scenic vista of the farm. By allowing more public access under the terms of the easement, he explained, the orchard has become very popular and visited not only by those from other New England States but from as far away as Florida, Michigan, and California. Many comments have been received about the worthwhile aspects of preserving the farm and the viewshed. Conserving farms in Londonderry, he said, has contributed greatly to tourism, which in turn has had a positive impact on businesses in town and the potential for further economic development.

L. Whittemore inquired as to the specifics of the Council meeting that caused the easement discussion to be continued to June 6. K. Merrill replied that after talking to his own attorney as well as the conservation specialist from the Rockingham County Conservation District who oversees management of the 100+ easements they hold, he learned that the concerns raised were not entirely accurate. Once an easement is in place, it takes priority over any lien or use. Any subsequent owner or any subsequent use must abide by the terms of the easement, which are almost impossible to condemn because of both State and Federal laws ensuring their authority. When a government agency takes a property for failure to pay taxes for example, if that agency wants to sell the property based on its highest and best use, that highest and best use will be exactly what the easement deed states it is.

L. Whittemore asked if the public would have access to the new easement. K. Merrill said the terms of the easement as negotiated with the Conservation Commission allows for public access. There are roughly five to nine acres that could be used for farmland and the property features Merrill's hill, which is the highest point in north Londonderry and offers a tremendous view that is largely unknown to the public. A surviving portion of the old stagecoach road that connected Manchester to Lowell can also be found on the lot. A. Rugg said conservation of that land would also help preserve part of Londonderry's agricultural heritage. A trail could be developed as well, which B. Saur said could tie in as a side trip for Londonderry Trailway's proposal for a rail trail that would follow the old Boston and Maine railroad line. Two wetlands on the lot will help preserve water quality, particularly since one flows into the Little Cohas Brook. M. Speltz also noted a vernal pool on the property that provides an important habitat that is quickly disappearing. All of these separate features make the land valuable according to the criteria put in place by the Task Force.

Tom Freda, 30 Buckingham Road, asked questions regarding the amount of land currently protected since he was not in attendance for the earlier presentation. M. Speltz explained the 15% of land that is permanently protected and the additional 15% that is partially protected. An additional 5,000 +/- acres has been identified by the Task Force as being worthy of conservation, although they have yet to prioritize them or identify strategies to protect them. T. Freda then asked if the "10 to 10 ideal,"

where every resident in town would have access to at least 10 acres of land within a 10-minute walk, is still a goal of the Task Force. According to the Open Space survey results, M. Speltz explained, there was not a significant amount of support for the goal. T. Freda stated his preference to make purchases that add onto existing conservation land, rather than creating “scattered” pockets of preserved land across town, which he did not think would be fiscally achievable. He also stated his preference to buy land outright rather than purchasing an easement, as he is not convinced that easements cannot be threatened by condemnation. He expressed concern that residents are not aware of what they can and cannot do on different pieces of conservation land, especially since it can vary. He asked if there was any utilization data for the various conservations lands. M. Speltz replied that in terms of recreational use, the Open Space survey did provide some information about what people use in town and how often they visit those areas.

Resident Bob Merrill suggested having the Open Space Task Force meet with the Conservation Commission and the Town Council to sponsor a meeting where a professional could explain the aspects of permanent conservation easements. He said he supported the work of the OSTF as well as the Conservation Commission and thanked them for all their efforts.

Kimberly Hamilton, 16 Hemlock Street, a long-time member of Londonderry Trailways, expressed her interest in furthering the connections between animal habitats by purchasing land or easements that will add onto existing conservation land. She added, however, that she would also like to see the “scattered” pockets mentioned earlier because they provide access to nature that is removed from the more popular areas like the Musquash Conservation Area and provide more privacy.

L. Whittemore asked audience members and the viewing audience to become more vocal about the OSTF’s work to provide as much input as possible before the Task Force makes their final recommendations. When an upswing occurs in the economy, she said, there will be a significant amount of pent up demand for development that will bring with it many challenges to the community about making conservation-minded decisions. M. Speltz urged people to contact staff with any comments or questions. M. Srugis expressed his disappointment that those who voice opposition to acquiring open space did not attend the meeting. He said one of the things the Task Force needs to understand in order to determine “how much conservation land is enough,” is to understand why bond measures failed in recent years at Town Meeting. Beyond the obvious explanation of the economic downturn, he said the Task Force has not received any real input as to why support has waned for conservation of open space.

The meeting adjourned at 8:30 PM. The next regular meeting of the OSTF will take place on June 2, 2011 at 7PM at the Cable Access Center.

Respectfully submitted,

Jaye Trottier
Secretary

Chapter 10: Financial Plan

Financing open space protection for natural services differs from the funding of many other town services due to the unpredictability of the timing of both income and expense:

- The town depends on willing sellers whose timing is not controlled by the town, which means the timing requirements for funding cannot be accurately predicted.
- The chief sources of income--grants, land use change tax, and town bonding authorization--are all difficult to predict: grants are competitive; the amount of land use change tax in a given year can vary by two orders of magnitude; and the outcome of town votes can only be known after the fact.
- Federal and state funding for grant programs is subject to change with each budget cycle.
- Grants require matching funds and favor those projects that have matching funds in hand, thus requiring the town to raise funds even before a project opportunity may arise.

In contrast, funding for items such as police, fire, and education are largely determined by staff head counts, the size of the population served, and the predictable depreciation of physical assets, such as buildings, fire engines, etc.

The 2006 Open Space Plan met this challenge by recommending a consistent level of funding based on annual bond authorizations of \$1 million per year and counting on grant and land use change tax receipts to average out over time. In theory this meant that, at the end of a typical bond term, e.g., 10 years, the town would be carrying the bond servicing costs of \$10 million. Then, as the earliest bond was paid off, it would be replaced by a new bond, until such time as the open space goals were achieved.

Recent Town Meetings have demonstrated that the 60% majority required by the Town Charter to authorize this level of bonding was simply not there.

Task Force members take the position that funding should continue at a level consistent with current commitments. Presently (2011), the Town is paying \$678,550 annually to pay the principle and interest on four bonds issued for conservation purchases between 2002 and 2006. This commitment equates to 2.7% of the annual town budget. As payments progress, principle and interest payments are reduced and the relative share of the town budget decreases. Given the apparent comfort level with the current level of commitment of 2.7% reflected in the public opinion survey, and the expressed desire of residents not to increase spending, the Task Force believes the Town should adopt a 'level of effort' approach to open space funding, where new bonds are issued as old bonds are paid off and the annual burden of bond payments remains as a fixed percentage of the town's annual budget.

Figure 9.1 (below) illustrates the existing obligations and proposed level funding through 2027 (the last scheduled payment of current bonds). In the year 2013, existing obligations drop by \$167,614 as the first 10-year bond is paid off. Further, in 2015, payments drop \$309,404 annually as an additional 10-year bond is paid off. These two years provide an opportunity to float two new \$1,000,000 bonds

while maintaining the same level of commitment in future years as today. Over time, the next opportunities to float a \$1,000,000 bond appear in 2020 and 2022. Level funding will support a \$3,000,000 bond in 2024, providing a total of \$7,000,000 in funding into the next decade (see figure 9.2). This analysis is based on the following assumptions: (1) bond payments are kept below \$900,000, (2) bonds are issued with 4% interest on 10-year bonds and (3) all dollars represent current year (2011) dollars. Note that the chart is denominated in fixed, current year dollars; it does not reflect inflation of either town revenue or acquisition expense. However, if the 2.7% guideline of total town spending is followed, this will account for inflation.

Figure 9.1: Level Open Space Funding through 2027

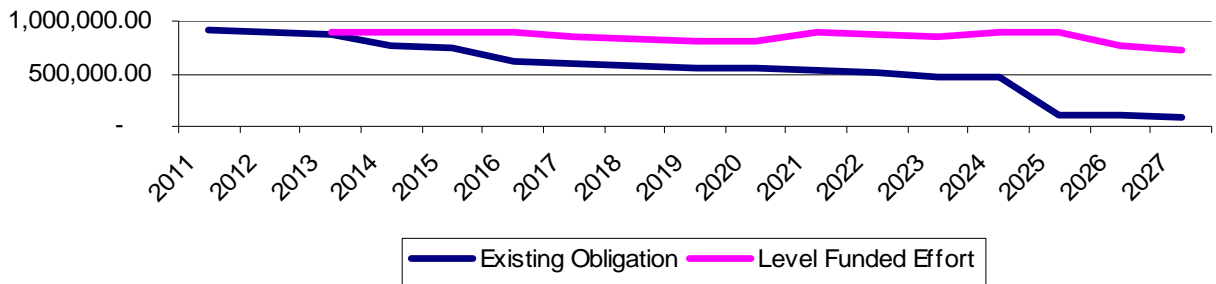
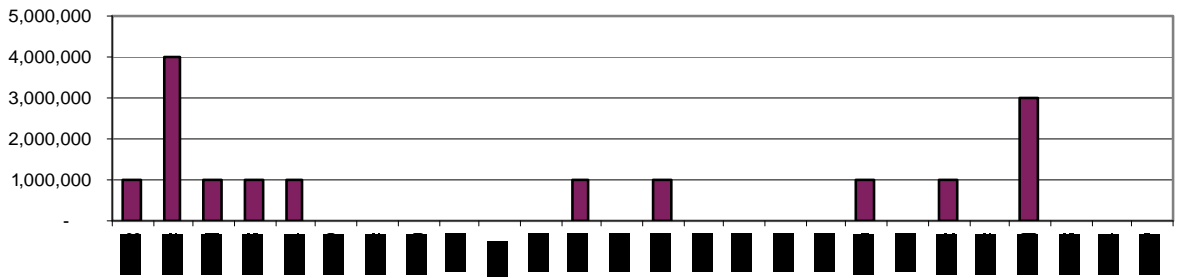


Figure 9.2: Bond Funding Available under a \$900,000 Level of Effort



Based on past experience, the town has been able to obtain about 25% of its open space funding from a combination of grants, donations and bargain sales. Over the very long term the land use change tax has provided an average annual yield of about \$216,000 as shown in Table 10.1. Thus the estimated income for the period 2012-2027 might be:

New bonding authority:	\$ 7,000,000
Land Use Change Tax	\$ 3,240,000
Subtotal	\$10,240,000
Donations, bargain saeles, grants @25%	\$ 2,560,000
Total estimated funding, 2012-2027	\$12,800,000

This total funding compares to the \$15,266,694 expended during the 12-year period 1997-2009. (This sum would be greater in inflation-adjusted dollars).

The total assessed valuation of the parcels to be protected by purchase or easement is \$36,912,632. While it appears the projected funding is thus roughly \$24 million shy of the requirement to complete the open space plan, the following considerations mitigate this shortfall:

- \$8 million of the requirement is for smaller parcels between 8 and 20 acres in size; these parcels may not all be as critical to the green infrastructure through town ownership or easement as their assessed valuation would suggest.
- The funding requirement is based on the assessed valuation of each parcel, however parts of some parcels do not fall within the green infrastructure; the town may be able to negotiate a purchase over only a part of the parcel
- The funding plan extends over the next 15 years and assumes the completion of the protection effort in that time frame; depending on the future economy the town may have additional time and thus funding to complete the effort.
- In the past other agencies have executed conservation projects in Londonderry, especially the NH Department of Transportation as mitigation for various highway construction projects. It is likely that, within the next 15 years that will be the case again.
- It will undoubtedly happen that some of the land identified for protection will be developed as owners pursue what they believe to be their best interests. The sale of the Woodmont orchard is a case in point. This will have the effect of reducing the financing requirement.

Thus the roughly \$13 million provided by the funding plan seems adequate to the remaining task at an acceptable level of risk.

Table 10.1, Land Use Change Tax Receipts

	Full + Tru Value at Time of Change in Use	Land Use Change Tax
1998	\$ 623,200	\$62,320
1999	\$ 3,241,770	\$324,177
2000	\$ 3,463,132	\$346,313
2001	\$ 484,030	\$48,403
2002	\$ 4,273,390	\$427,339
2003	\$ 1,530,000	\$153,000
2004	\$ 435,000	\$43,500
2005	\$ 167,000	\$16,700
2006	\$ 5,168,256	\$516,825
2007	\$ 2,500,000	\$250,000
2008	\$ 1,921,700	\$192,170
Average		\$216,432
Standard Deviation		\$170,504

Chapter 11: Conservation Transactions

Conservation transactions are governed by NH state statute. The state empowers towns to create Conservation Commissions and gives the Commission the authority to purchase land or interests, such as conservation easements or trail rights of way, in land. The statute also empowers towns to create non-lapsing conservation funds for the purpose of acquiring interests in land. **The Commission is required to hold a public hearing on the proposed expenditure of conservation funds.** After receiving input from the public, the Commission votes on whether to recommend to the Town Council to expend funds from the conservation fund. While the Council is not required to hold a public hearing before voting on the Commission's recommendation, past Councils have always accepted public input before taking their vote.

In addition the Town Council has the power to purchase land or interests in land for any town purpose. In this case the Conservation Commission would not necessarily be involved. An example of this process was the purchase of a small easement on the Nevins development in order to reduce the size and scope of that development.

Both the Town Council and the Conservation Commission have the authority to enter into non-public executive session in order to discuss the potential purchase of real estate. The purpose of this general exception to New Hampshire's statute on open meetings is to protect the town from having to disclose its negotiating position and to protect from having to share its negotiations with other potential bidders for the property under consideration. However, **neither the Council nor the Commission can obligate funds to a purchase in executive session; this can only be done in a public session and, in the case of the Commission, after a public hearing.**

In evaluating a conservation project, the Commission relies on the Open Space Plan. If the proposed parcel is not included in the green infrastructure identified in the Open Space Plan, it will not be considered for conservation, absent compelling new information about the parcel. Next a Commission representative will make an on-the-ground visit to the property to confirm its conservation value and the absence of hazardous waste on the property. If the conservation value is confirmed the Commission negotiates a purchase price with the owner, based on an appraisal to determine a fair market value. If the asking price is deemed too expensive for the conservation value obtained or exceeds the appraised value, the owner's offer is declined or the offer is re-negotiated. Once a purchase price is agreed and the Town Council approves the purchase, the town's attorney confirms the land has good title, and reviews the terms of the deed.

Some Town Councilors have expressed a desire to be informed of a pending conservation transaction earlier in the process than at the time of their vote. While the Town Council is represented on the Conservation Commission by a Councilor appointed for that purpose, the Council representative does not always have an opportunity to brief the full Council, if the Council does not enter an executive session. One of the Council's 2011 goals is to define in more detail the role of the Council in the Conservation Transaction process.

Chapter 12: Conclusions/Recommendations:

The Conclusions and Recommendations which follow reflect Task Force discussions; a review of current environmental and economic condition in Londonderry; input from individual task force members; the public opinion survey; the analysis of strengths, weaknesses, opportunities and threats, and the advice of the town's Planning, Assessing, and Financial staff. The Conclusions are broad judgments about the town's open spaces and open space program that invite improvement. The Recommendations are specific actions the town can take, or at least investigate, to make those improvements. Each recommendation includes the town board or department that would implement the recommendations, with the lead agency listed first.

Conclusion 1, Continuing to protect open spaces

Londonderry has made tremendous progress in ensuring that it will enjoy nature's value and benefits over the long term: 60% of the key acreage and 68% of the key resource values have either permanent or at least temporary protection. Preserving the high priority parcels identified in this report and working with willing landowners of smaller parcels with the **goal of permanently protecting 39%** of Londonderry, will tie this somewhat fragmented set of open spaces into a secure, resilient, and connected green infrastructure that will be able to withstand future disturbances and will be able to co-exist with Londonderry built infrastructure.

Recommendations:

- ❑ Use the outreach and education program described in Conclusion 4 to interest landowners with small parcels or partial parcels in the green infrastructure in participating in the good stewardship of their land. Develop a formal Partners in Conservation program with these landowners to support and assist them in stewarding their land.
- ❑ Acquire, from willing sellers, fee ownership or conservation easements on the priority parcels identified in this report. Create a competitive market by inviting offers from all these landowners. Equal weight should be given to adding to existing areas and opening new areas for public preservation and enjoyment. Purchases should be prioritized by these measures of merit:
 - Total resource value of the parcel
 - Dollar cost per resource value
 - Resource value per acre
- ❑ *Party responsible: Cons. Comm. / Town Council* *Timeline: Ongoing*
- ❑ Refine procedures for open space property transactions to provide for earlier and closer involvement of the Town Council in the process.
Party responsible: Town Council / Town Manager/Cons. Comm. *Timeline: Short Term*

Conclusion 2, Developing a comprehensive stewardship plan for all town-owned land

The School District, Recreation Department, Heritage Commission and Conservation Commission are each responsible for the stewardship and management of a portion of the town's open spaces and for town held easements. However, many smaller properties do not have written stewardship plans and there is no integrated, comprehensive, town-wide stewardship plan, much less a method of funding, that could exploit the synergy from the various categories of town owned land and town held easements.

Recommendations:

- ❑ Review all town owned properties and develop a comprehensive **stewardship plan** for each one to define what services the town desires from each property individually and as an integrated network of open spaces, and identify concrete recommendations to enhance natural resource protection and maintain and/or expand recreational opportunities. This plan should include direct costs and responsible parties. Parcels currently slated for sale or development should be examined first.
Party responsible: Cons. Comm. / Town Council *Timeline: Short Term*

- ❑ Integrate the town-wide trails plan discussed under Conclusion 5 into the broader town-wide stewardship plan discussed immediately above. The goal is to provide for connectivity between conservation areas and points of interest in Londonderry and to inform priorities for developing trails in recreation areas.
Party responsible: Trailways / Cons. Comm. *Timeline: Short Term*

- ❑ Teach volunteer residents how to monitor conservation easements and serve as land stewards; name a volunteer coordinator.
Party responsible: Cons. Comm. *Timeline: Ongoing*

- ❑ Work with Beautify Londonderry to organize cleanup events to clean open space properties of debris from illegal dumping.
Party Responsible: Solid Waste Advisory Committee *Timeline: Short Term*

Conclusion 3, Protection of water resources.

Rapid development, sprawl, flooding due to increasing storm intensity, and increased impervious surface have made the protection and control of the town's water resources, both in quality and quantity, the town's most pressing open space task.

Recommendations:

- ❑ Update the 1990 Water Resources Management Plan that will inventory water resources and provide an analysis of future needs, threats and possible protection measures.

Party responsible: Planning Board / Cons. Comm.

Timeline: Mid Term

- ❑ As necessary, revise land use regulations to ensure that no additional development occurs in the 500-year floodplains and that new development does not add to cumulative downstream flooding during periods of extended precipitation.

Party responsible: Planning Board/Cons. Comm.

Timeline: Mid Term

- ❑ Resume routine monitoring of the town's surface and ground waters, following the protocol of the Environmental Baseline Study Committee; add testing for nitrogen, phosphorus, biological oxygen demand, pH and sediment load.

Party responsible: EBSC/Public Health Officer/Cons. Comm.

Timeline: Mid Term

- ❑ Include in the education/outreach program recommended above a strong component that educates residents about vegetated buffers to surface waters.

Party responsible: Cons. Comm.

Timeline: Short Term

- ❑ Investigate approaches to a "no net increase" policy that uses newer technology and redevelopment to reduce existing impervious surface and limit its increase as new impervious surface is added.

Party responsible: Planning Board

Timeline: Mid Term

Conclusion 4, Education/Outreach.

Many, if not most, of the town's residents are unaware of the services provided by the town's open spaces, how open space benefits them individually, how to take advantage of the open space, and how and why open space is acquired and protected.

Recommendations

- ❑ Initiate a comprehensive outreach and education effort regarding the open space program in order to publicize/promote existing properties and ongoing efforts, describe protection methods and processes and educate the public in regards to open space efforts in general. Specific education topics should include:
 - 'What you can do and where' in terms of outdoor recreation, to include hunting, fishing, hiking, skiing, snowmobiling, nature study, etc.
 - History of the open space program and planning efforts
 - Description of locally important natural resources/green infrastructure
 - Types of protection, specifically conservation easements and outright ownership and the legal, financial and taxation implications of each
 - How the town stewards its open spaces and easement holdings
 - Overview of the process of acquiring properties
 - Locations and significance of historic and cultural features

Educational outlets may include programming on LCTV resources, Participation in Old Home Days/Election day events, speakers at Lions Club/American Legion and other fraternal groups and elementary and high school classes.

Party responsible: Cons. Comm./Recreation Dept./Heritage Comm. Timeline: Short Term

- ❑ Use social media tools and the school system to inform residents and students and carry out informal, organized events such as bike rides or hikes, cross country skiing, field days, trail work days, etc. and use the tools to inform residents of the recreational opportunities in Town.

Party responsible: Trailways/ Recreation Comm. Timeline: Short Term

- ❑ Review mapping of no-cut zones and develop materials to present to property owners to inform them of the existence of these areas and educate them on the obligations within these areas.

Party responsible: Cons. Comm. / Planning Board Timeline: Mid Term

Conclusion 5, Recreation on town owned land

While the town has made great strides in exploiting the recreational potential of the land that it owns, more can be done to maximize the recreational benefits residents get from their investment in open space.

Recommendations:

- ❑ Continue to work with partners to expand recreational potential on existing open space areas and provide opportunities for a diverse range of activities throughout town.

*Party responsible: Town Council / Recreation Comm. / Timeline: Ongoing
Cons. Comm / Trailways*

- ❑ Partner with neighboring communities and the Society for the Protection of NH Forests (SPNHF) to maintain and improve the recreational trails through the Bockes/Ingersoll Forest.

Party responsible: Cons. Comm. / Trailways Timeline: Short Term

- ❑ Consider a local hockey program and using the West Road Fields as potential outdoor hockey rinks.

Party responsible: Recreation Comm. Timeline: Mid Term

- ❑ Partner with private outfitters/educators/clubs to provide training opportunities on town properties that have an outdoor recreation and/or theme.

Party responsible: Trailways /ALERT/ Recreation Comm. Timeline: Mid Term

- ❑ Support cold weather sports with trail maintenance, clearing and grooming, including cross-country skiing, snowshoeing and/or ice skating in appropriate places, to encourage year round use of the open space areas.
Party responsible: Recreation Dept. Timeline: Ongoing
- ❑ Support and promote the efforts of Londonderry Trailways to improve the Rail Trail and connect it to a regional trail network.
Party responsible: Planning Dept./Town Council / Trailways Timeline: Short Term
- ❑ Work with Trailways to improve and expand their town-wide trail plan to include all open spaces in Londonderry with public access.
Party responsible: Planning Dept./Town Council / Trailways Timeline: Mid Term

Conclusion 6, Land Use regulations/policies

The most cost effective way for the town to protect the benefits provided the town’s open spaces is through land use regulations and policies that establish a rationale nexus between the use limitations and the public benefit derived from such limitations Londonderry is a leader in crafting these types of regulations and policies, but more can be done.

Recommendations:

- ❑ Investigate a Transfer of Development Rights (TDR) ordinance that will use regulatory means to preserve sensitive areas while allowing higher densities in other receiving zones.
Party responsible: Planning Board Timeline: Mid Term
- ❑ Continue the Design Review Committee (DRC) process during site plan and subdivision review; seek ways to enhance it by making Committee member comments more accessible to the general public; provide for Committee representation during Planning Board consideration of projects with difficult policy choices that are identified in DRC comments.
Party responsible: Planning Board Timeline: Short Term
- ❑ Continue to support/encourage eligible applicants to use flexible tools included in the Planned Unit Development and Conservation Subdivision Ordinances for large development projects in order to best preserve natural resources.
Party responsible: Planning Board / Staff Timeline: Short Term
- ❑ Create an aquifer protection zone as an overlay district
Party responsible: Planning Board / Staff Timeline: Short Term

- ❑ Pursue controls on impervious surfaces as recommended under Conclusion 2, above.
- ❑ Keep in place current protective regulations including the Conservation, Route 102 and Route 28 Overlay Districts, as well as appropriate sections of the site and subdivision regulations. Consider enhancing these ordinances and regulations to support the other recommendations of this report.

Party responsible: Planning Board

Timeline: Short Term

Conclusion 7, Funding

Residents are generally comfortable with the current level of effort in support of open space protection, which amount to 2.7% of the town budget and a general desire to continue to protect open space. There is significant resistance to adding to that level of burden on the taxpayers. Based on reasonable assumptions about the time until Londonderry reaches buildout (~20 years), the current assessed value of the priority parcels, expected non-town funding, continuation of the land use change tax receipts, and maintaining a 2.7% level of effort, the protection of the green infrastructure appears to be financially feasible.

Recommendations:

- ❑ Implement the financial plan based on a consistent level of effort of 2.7% of the town budget, as described in this report, to fund protection of the priority parcels identified in this report as properties become available from a willing seller
- ❑ Create a dedicated source of funding for stewardship activities by allocating the first increment of funding from the Land Use Change Tax to a non-lapsing stewardship fund for any purpose permitted by statute. The amount of this allocation should be determined by the requirements identified in the comprehensive stewardship plan recommended under conclusion 2. The remainder of the Land Use Change Tax should continue to be allocated to the Conservation Fund as a self-regulating counter balance against development and to supplement the recommended bond funding, thereby hastening the implementation and reducing the cost of the Open Space Plan.

Party responsible: Cons. Comm.

Timeline: Ongoing

- ❑ Create a budget line within the Community Development Department budget that will fund the outreach and education efforts described in Conclusion 4.

Party Responsible: Town Council

Timeline: Short Term