2004–2005 Natural Resources Inventory
Town of Temple, New Hampshire

Prepared by the
Temple Conservation Commission

With the assistance of
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1.0. Background

The 1963 New Hampshire law establishing conservation commissions, RSA 36-A, mandates that each commission "shall keep an index of all open space and natural, aesthetic or ecological areas … with the plan of obtaining information pertinent to proper utilization of such areas." In fall 2000, the Temple Conservation Commission (TCC) considered how it might produce such an index, also known as a Natural Resources Inventory (NRI). Two TCC members attended an NRI workshop sponsored by the Southwest Region Planning Commission (SWRPC) in early 2001. At that time, only three of the 36 towns belonging to the SWRPC had completed NRIs.

In fall 2003, the TCC sent a request to the University of New Hampshire (UNH) and Antioch New England Graduate School for skilled student help in producing an NRI for Temple. The request described a medium-level NRI that would draw mainly on existing data, photos, and maps. It would include some field work on wildlife and farmlands and involve citizen participation from the TCC, town boards, and other volunteers. The project would culminate in a draft report designed for periodic updates and expansion as well as public presentations. The goals were (a) to produce a document that could serve as a basis for land-use planning, Conservation Plan development, and specific land-protection work; and (b) to provide information for Temple residents about their natural environment.

In December 2003, the TCC contracted with Alex A. Gonyaw, a professional environmental consultant and Antioch graduate student, to produce an NRI for Temple. He was to complete the project in the first half of 2004 as part of the practicum requirement for his master's degree.

The description called for identifying Temple natural resources in the following categories:

- *Water*—ponds, streams, wetlands, shorelands, aquifers, watersheds, sources of contamination
- *Open space*—forests, farmlands, unfragmented lands, conservation lands, recreation lands
- *Flora, fauna, habitat*—plant and animal species, rare species, wildlife corridors, deeryards, food sources
- *Geological and topographical features*—bedrock, soils, elevations, slopes, south-facing slopes
- *Cultural sites*—historical, scenic, special community interest

The TCC met with Alex three times, and one TCC member acted as his field supervisor and liaison to the TCC. Alex completed a draft of the NRI at the end of June 2004. After editing by TCC members, this first edition of the NRI was approved by the TCC on August 22, 2005.

The TCC wishes to thank Alex Gonyaw for his good work and volunteer service to our community.

2.0. Overview

This NRI gives a broad picture of Temple's physical environment and its botanical, animal, and human inhabitants. The inventory begins with a brief description of the town's geography and climate, demographics, and human settlement patterns and history. The main body is divided into two parts, terrestrial and aquatic resources, which describe the plants, animals, and natural features that form the essential living character of Temple. The final part of the inventory returns to the human interaction with, and impact on, the physical place.

What do the data collected in this NRI suggest? Section 10.0, Implications of the Data, lists three major planning and conservation challenges. All three involve protecting the town's sources of water. Temple has a relatively small area of wetlands, smaller even than is indicated in the Master Plan. The capacity of Temple's aquifers to supply water for an expanding population is limited. Only one large tract of land is a permanently protected wildlife corridor. The Master Plan section on future land use already calls for consideration of an Aquifer Protection District ordinance and a Shoreland Protection District ordinance. The data in this NRI indicate that a Wetlands Buffer ordinance should also be considered. And preserving additional large tracts of land will be important for protecting water resources as well as for preserving wildlife habitat.

This NRI is meant to be used in conjunction with the Temple Master Plan. The Master Plan section on natural resources contains some information not in this NRI, particularly regarding birds and other wildlife, while the NRI adds significant data that are intended to become part of the Master Plan.

As a "living" document, the NRI offers opportunities for ongoing contributions by residents, professional consultants, and town officials as well as by the TCC. Areas that the TCC would like to expand in the near future include

- Collection of fieldwork data on farmland, animal species, wildlife corridors, and unfragmented lands
- Compilation of co-occurring resources on composite maps to show several data fields—work that can greatly assist in identifying sensitive resource areas
- More accurate mapping of wetlands

The TCC looks forward to using this NRI as a foundation for developing a Conservation Plan for the town. The plan will include a description of land-protection priorities, resource-protection goals, and recommended actions. The UNH Cooperative Extension recommends incorporating the NRI and the Conservation Plan in the town's Master Plan.

Temple Conservation Commission
August 22, 2005

3.0. Introduction

3.1. What Is a Natural Resources Inventory?

A Natural Resources Inventory (NRI) lists, categorizes, and describes the resources occurring within a given area, generally a watershed, town, or city. In its simplest form, an NRI is a compilation of existing data on natural resources (UNH, 2001). For this NRI, data were modified by field efforts in areas where the existing data were limited, unavailable, or outdated.

NRIs generally consist of maps, data, and descriptive narratives that attempt to paint a landscape picture of a locality such as a watershed, town, or parcel. Maps may include a variety of forms, including aerial photos, USGS topographic maps, and bedrock geology maps. An NRI provides a broad and relatively complete view of a locality's natural resources, pattern of land use, and the ways in which the various aspects fit together to form its unique character. An NRI also attempts to identify trends in the use of land and other natural resources to help support informed decisions about development.

Data used in completing this NRI were drawn from a number of sources, including personal accounts, published species records, government and private studies, field efforts, and Internet resources. Geographic information systems (GIS) were used extensively in the preparation of this report. Data layers were obtained from GRANIT, the State of New Hampshire GIS clearinghouse, as well as from the Southwest Region Planning Commission. Additional data, such as deer wintering areas, were obtained from a variety of sources, including Temple residents, the U.S. Department of Agriculture Natural Resources Conservation Service, and nonprofit groups such as the New Hampshire Chapter of The Nature Conservancy.

The narrative in each of the following sections describes, in as much detail as is available, the current state of knowledge about Temple's natural resources.

3.2. Why Is a Natural Resources Inventory Important?

Since 1960, New Hampshire has led the Northeast in population growth rate, a trend that is expected to continue well into the next two decades. More than 60% of New Hampshire's population growth occurred in Hillsborough and Rockingham counties, according to the New Hampshire Office of Energy and Planning (OEP). In 2004, the OEP projected a 28% increase in New Hampshire's population from 2005 to 2025, with over half of the state's population projected to be living in Hillsborough and Rockingham counties during this period. More recently, the U.S. Census Bureau projected a 33% increase in New Hampshire's population from 2000 to 2030. At the municipal level, the OEP has projected Temple's population growth from 2005 to 2025 at 24%.

Such population growth increases pressure on natural resources, not only by displacing wildlife and fragmenting habitat, but also by compromising "direct use" resources such as groundwater and air quality. Having access to useful data in an NRI gives community planners an opportunity to minimize negative impacts of current decisions about developing land and using natural resources as well as an opportunity to maintain options for the future.

4.0. Town of Temple Description

4.1. Geography and Climate

The Town of Temple (Figure 1) is located in extreme southern New Hampshire on the eastern slope of Temple Mountain at N 42° 48' and W 71° 51'. Comprising 14,241 acres (22.3 square miles), Temple is similar in area to surrounding communities. Elevation above mean sea level ranges from 800 feet to 2,198 feet. This range in elevation may have implications from a land-use perspective owing to differences in vegetation, soils, and wildlife populations between the elevation extremes. Median temperatures range from 20°F in January to 69°F in July. The annual average precipitation is 37.2 inches.

4.2. Present Land Use

Temple is a small “bedroom” community with primarily single-family housing and little agricultural or commercial-industrial use of land. Currently, a single commercial dairy and several smaller agricultural enterprises operate in Temple, and small-scale grazing of stock animals is apparent in numerous locations. Hardwood forests are quickly replacing the farmland historically used for orchards, grazing, and hay production. Demand for housing in the next few decades will result in some impact on the forests and remaining unforested land.

From 1990 to 2000, Temple added 103 residents, increasing population by 8.6% to 1,297. At the end of 2004, the population was 1,417. This represents a density of 64 people per square mile, which places Temple in the “exurban” land class (36–144 people per square mile). In 2000, the median age was 36, with 30% of the population under age 18 and 8% age 65 and older (U.S. Census 2000). As of April 1, 2000, Temple had 464 total housing units, a density of 21 units per square mile. Building permits issued for new houses totaled 14 in 2000, 14 in 2001, 21 in 2002, 11 in 2003, and 20 in 2004; 5 building permits were issued for new houses in the first 6 months of 2005.

5.0. Town History

5.1. Settlement

The town was originally known as Peterborough Slip when it was first granted town status in 1750. The Town of Temple was incorporated in 1768 and named in honor of New Hampshire Lieutenant Governor John Temple, who served under Governor John Wentworth. The town was settled in a pioneering fashion, with families assuming homesteads and clearing land for agriculture.

5.2. Agriculture, Forestry, and Industry

The current state of Temple's natural environment is due mainly to its pre-Civil War agricultural heritage. Prior to the large-scale decline of New England agriculture in the latter half of the 19th century, Temple was almost entirely deforested, with pastureland extending onto the slopes of Temple Mountain. Businesses and agricultural operations were generally multigenerational, operating on original homesteads. Forestry first took place in an effort to clear land. Small-scale harvesting followed and continues to the present. Following the decline of livestock operations, orchards were planted in abundance. The remains of those orchards can still be seen growing along roadsides and in the understory of today's maturing hardwood forest.

5.3. Residential Development and Future Land Use

Unlike many of its neighboring communities, Temple did not experience a shift to industrial and associated commercial activities following the regional decline of agriculture; the town's elevation is too high for creating the large water flows required by 19th-century industry. Current land-use pressures in Temple appear to focus on slowly expanding residential development, which is fragmenting the forests and former pastureland. Future land use is likely to continue focusing on residential development unless an expanding population base creates pressure for more commercial and industrial development.

6.0. Natural Resources Inventory Methods

6.1. Data Sources

Data compiled for use in this NRI were taken from a variety of printed and electronic sources. Because government documents are often subjected to an administrative review process, agency publications were relied upon heavily. Electronic resources included documents and GIS data layers. Survey data on plants were collected from a variety of nonprofit and government agencies in addition to survey work done by residents of Temple.

6.2. Data Quality

Data used in this NRI are presumed to be reasonably accurate. Certain data, particularly vegetation and wildlife data, should be interpreted with some degree of caution. Such data are often collected on small spatial scales at single points in time. Moreover, because they are often collected at wildlife refuges or state forests, they may not be representative of an entire parcel of land. Thus, although a species may be listed as present in Temple, it may be unique to a particular location and not common to the entire town. Given these caveats, the data do show presence or absence of species within a boundary and provide valuable information about species diversity and the extent of the species pool.

Similarly, other data collected on large spatial scales, such as maps showing the extent of stratified drift aquifers, should be interpreted as having somewhat blurred boundaries in reality. Small-scale surveys conducted to determine these boundaries were extrapolated over a much wider area, so some degree of error should be expected.

6.3. Data Verification

Field checking was the primary method of data verification, done primarily in an effort to assess the accuracy of the National Wetlands Inventory GIS layer. Small, isolated wetlands, especially those under tree cover, may be missed during interpretation of aerial photographs. Additional data collected in the field were used to supplement data where verification appeared necessary.

7.0. Terrestrial Resources

7.1. Vegetation

Vegetation studies conducted within the bounds of Temple have focused primarily on conservation land, although smaller scale field efforts have been conducted on a small number of private lands. Various surveyors—including private citizens whose efforts were coordinated by Temple resident Linda Bollinger, nonprofit groups, and government agencies— have identified a total of 244 plant species (Table 1). This number does not include all of the plant species within Temple, particularly rare species, fungi, lichens, and many mosses.

In Table 1, plants are categorized by type—tree, shrub, or forb/herb/vine—representing the vertical structure of the forest. The species wetland indicator status, a graduated assignment from "water-liking" to "water-disliking," predicts the conditions in which the plant is likely to occur. For instance, a plant that is designated as a "facultative" wetland species is more likely to be found in soils that are periodically saturated than in a well-drained upland site. Similarly, a plant that is an "obligate" wetland species is only very rarely found in dry conditions. Following are the formal definitions of wetland indicator categories from the U.S. Army Corps of Engineers Wetlands Delineation Manual (1987):

- *Obligate Wetland* (OBL) group includes plants that almost always occur in wetlands (99% of the time).
- *Facultative Wetland* (FACW) group includes plants that usually occur in wetlands (67%–99% of the time).
- *Facultative* (FAC) group includes plants that are just as likely to occur in wetland or nonwetland areas (34%–66% chance of occurring in wetlands or nonwetlands).
- *Facultative Upland* (FACU) group includes plants that occasionally occur in wetlands (1%–33% of the time).
- *Upland* (UPL) group includes plants that almost always occur in uplands (99% of the time).

Plants in Table 1 are also categorized by whether they are native or introduced to the region. Introduction takes place either intentionally (for instance, through farming or gardening activities) or accidentally (such as through passive transport with other goods). Of the 240 known plant species, 22 (9.3%) have been introduced to the vegetation community of Temple (Table 2).

7.1.1. Woody Plants

Trees probably represent the most complete subgroup in the vegetation section; 41 tree species were observed in the various surveys. Birch, maple, oak, and ash species dominate the forest. This is typical of the area and is due in part to the age and land-use history of the forest. A shift toward coniferous forests tends to occur at the highest altitudes, a function of mean annual temperatures, soil conditions, and a variety of other factors related to forest condition. Surveys have recorded an additional 51 shrub species, which form the understory of the forest and the dominant layer in recently cut forests. These species are especially important as nesting sites for migratory and resident birds as well as for forage for deer and moose.

7.1.2. Nonwoody Plants

Nonwoody plants include grasses, herbs, forbs, vines, and a variety of nonvascular plants, such as mosses. In total, 14 graminoids (grasslike plants) were observed in surveys. Many of these plants are typical wetland species, such as sedges and rushes, that are likely to be affected disproportionately by compromised wetland integrity. The remaining 124 species make up the other categories. The diverse group of nonwoody plants is undoubtedly much larger than shown, as many species occur in a very limited range or in relatively inaccessible habitats.

7.1.3. Rare or Unique Communities

Wetland habitat constitutes 526 acres—only 4% of the land area in Temple—making this habitat relatively rare (Figure 2, National Wetlands Inventory map of Temple). Much of this habitat occurs along or in riparian (streamside) zones and low-lying areas. In addition, vernal pools that hold ponded water during some portion of the year are fairly common in Temple. These pools are often breeding sites for amphibians that use the surrounding woodlands as habitat during the drier portions of the year. It should be reiterated that the National Wetlands Inventory might not include very small or heavily obscured wetlands owing to the use of aerial-photo interpretation. However, despite relatively minor drawbacks, the National Wetlands Inventory gathers a large proportion of the data on the nation’s wetlands and can be assumed to be reasonably accurate for the purposes of this initial, larger scale survey of Temple. No additional rare or unique communities have been reported for Temple (NHNHB, 2004).

Of the known plant species in Temple, 58 (24%) are likely to occur in wetland habitat, being either facultative wetland or obligate wetland species in this region. Approximately 4% of the land area of Temple is thus likely to maintain nearly 25% of the plant species pool. In addition to plant species diversity, Temple’s wetlands are likely to house a complementary, diverse assemblage of invertebrate and vertebrate animal species. From the standpoint of species protection, existing wetlands in Temple represent an excellent opportunity to maintain species diversity while sacrificing little in the way of opportunity cost for development.

7.1.4. Threatened or Endangered Species

No federal- or state-listed threatened or endangered species were found in the known surveys of Temple (NHNHB, 2004). This does not mean that these species are not present but most likely reflects the low natural abundance and restricted distribution of the rare species as well as the limited spatial extent of current survey data. Care should be taken to minimize the risk of loss of rare, threatened, or endangered species by identifying critical habitats for listed species. Of the 28 state-listed plant species for New Hampshire that have been given threatened or endangered designations, 16 (57%) were likely to be found in wetlands. Thus, protection and maintenance of wetland areas in Temple are likely to result in some protection of any currently undiscovered threatened or endangered species.

7.2. Wildlife

Very little information specific to wildlife was available from verifiable sources. The New Hampshire Department of Fish and Game maintains records of winter deeryards. These are areas where young growth of eastern hemlock and balsam fir allow for winter browse by white-tailed deer and occasional moose. In total, 1,112 of Temple's 14,241 acres (8%) are utilized as winter browsing yards (Figure 3). Anecdotal information about the presence of various species of wildlife, especially birds, is available in the Temple Master Plan.

The United States Geologic Survey (USGS) has conducted studies on the distribution of butterfly species in the entire United States. Although town-level data were unavailable, countywide data from USGS sources were used to obtain a general idea of what species may be found in and around Temple (Table 3). In total, 81 species from five butterfly families have been recorded for Hillsborough County. Given the relatively low level of urbanization, it is likely that a fairly large subset of this list occurs in the vicinity of Temple.

Given the forested nature of Temple's wildlife habitat, it is likely that a "typical" assemblage of mammals, amphibians, reptiles, and birds could be found if surveys were performed. This section of the NRI has many data gaps, and baseline studies of species abundance and distribution would benefit the overall quality of information on which resource-management decisions will be based.

7.3. Soils

Data on soils in Temple come from the 1985 county soil survey prepared by the USDA Natural Resources Conservation Service (Table 4) as well as from GIS layers supplied by the Southwest Region Planning Commission (SWRPC), Keene, New Hampshire. Geologic and descriptive soil information applies to the western portion of the county.

Forest soils in New Hampshire are categorized by drainage class, soil type, and ability to support varied tree species. A "soil unit" is a map delineation representing an area of the landscape that is dominated by one or more kinds of soils; soil units are named according to taxonomic classification of soils. Following is a description of forest soil types found in New Hampshire, with Temple-specific data gathered from the GIS database (Table 5). A total of 661 individual soil units were identified and classified in Temple from a total of 14,664 acres of soil units; percentages in the following forest soil group descriptions use these totals. Figure 4 shows the distribution of types of forest soil units in Temple.

- *Forest Soil Group IA:* 289 soil units (44% of total soil units), 5,067 acres (35% of total soil acreage).
  Soils belonging to this group consist of the deeper, loamy-textured, moderately well-, and well-drained soils. Generally, these soils are more fertile than others and have the most favorable moisture relationships. Forest successional trends on these soils are toward stands of shade-tolerant hardwoods, usually beech and sugar maple. Hardwood competition is severe on these soils. Softwood regeneration is usually dependent upon persistent hardwood control efforts. On this soil type, sugar maple is favored by selection-cutting methods, white ash and yellow birch are favored by group and strip cutting, white ash is favored by shelterwood cutting, and white birch is favored by clear-cutting.

- *Forest Soil Group IB:* 135 soil units (20%), 4,193 acres (29%).
  Soils assigned to Group IB are generally sandy or loamy over sandy textures and slightly less fertile than soils in Group IA. Soil moisture is adequate for good tree growth but may not be quite as abundant as in Group IA soils. Forest successional trends on these soils are toward shade-tolerant hardwoods, predominantly beech. Hardwood competition is moderate to severe on these soils. Successful softwood regeneration is dependent upon hardwood control. On Group IB soils, white birch is favored by clear-cutting, yellow birch is favored by group and strip cutting, hemlock and red spruce are favored by selection cutting, and white pine is favored by shelterwood cutting.
- *Forest Soil Group IC:* 61 soil units (9%), 722 acres (5%).
  The soils of this group are outwash sands and gravels. Soil drainage is excessively drained to moderately well-drained. Soil moisture is adequate for good softwood growth but is limited for hardwoods. Forest successional trends on these coarse-textured, somewhat droughty and less fertile soils are toward stands of shade-tolerant softwoods, especially red spruce and balsam fir. Balsam fir is a persistent component of stands on this soil type, but is shorter lived than red spruce. Hardwood competition is moderate to slight on these soils. Owing to less hardwood competition, these soils are ideally suited for softwood production; white pine can be maintained and reproduced with modest levels of management. Because these soils are highly responsive to softwood production, they are ideally suited for forest management. On these soils, white pine is favored by group and strip cutting or shelterwood cutting, red spruce and balsam fir are favored by selection cutting or shelterwood cutting, and hemlock is favored by selection cutting.
- *Forest Soil Group IIA:* 40 soil units (6%), 3,626 acres (25%).
  The soils in this group have physical limitations that make forest management more difficult and costly. Limitations include steep slopes, bedrock outcrops, erosive textures, surface boulders, or extreme rockiness. Usually, productivity of these soils is not greatly affected by their physical limitations. However, management activities such as tree planting, thinning, and harvesting are more difficult and more costly. Temple has a relatively small number of large tracts of this soil type, predominantly on its western half.
- *Forest Soil Group IIB:* 80 soil units (12%), 726 acres (5%).
  Soils assigned to this group are poorly drained. The seasonal high-water table is generally within 12 inches of the surface. Productivity on these poorly drained soils is generally lower than on soils of other groups. Forest successional trends are toward shade-tolerant softwoods, such as spruce and fir. Owing to abundant natural reproduction, stands on these soils are generally desirable for production of spruce and fir, especially to produce pulpwood. However, because of poor soil drainage, forest management is somewhat limited. Severe windthrow hazard limits partial cutting, frost action threatens survival of planted seedlings, and harvesting is generally restricted to periods when the ground is frozen. On this soil type, spruce and fir are favored by clear-cutting (to release existing advanced regeneration), red spruce is favored by shelterwood cutting, hemlock is favored by selection cutting or shelterwood cutting, and red maple may be favored by stump-sprout culture.
- *NC (Not Classified):* 56 soil units (8%), 331 acres (2%).
  These soils are unsuitable for timber harvest due to steepness, rockiness, erodibility, wetness, or highly variable conditions within the soil unit.

Table 5 also includes various other soils from the GIS data. Temple has 79 soil units of prime farmland (12% of total soil units) making up 531 acres of soil (4% of total soil acreage). The U.S. Department of Agriculture defines prime farmland as highly productive land or unique soils and climates where table fruits, grapes, nuts, vegetables, flowers, and other specialty crops are grown. Temple's prime farmland is located predominantly in low-lying areas subject to development due to proximity to roads and convenient services. (See Figure 5.)

Hydric soils include 125 separate soil units (19% of total soil units) and make up a relatively small percentage of total soil acreage (7%, or 988 acres). This distribution of hydric soils reflects the fact that a large number of small wetland areas are scattered throughout Temple. It should be noted that although a soil may be hydric, the soil unit does not necessarily meet the criteria for wetland as defined by the U.S. Army Corps of Engineers. Care should be taken when any development activity is undertaken to ensure that small, isolated wetlands are protected and that their capacity to improve biological diversity and the quality of surface water and groundwater is maintained. (See Figure 6.)

Soils from which sand deposits may potentially be extracted include 262 soil units (40% of total soil units), or 5,397 acres (37% of total soil acreage). Soils with the potential to produce gravel are substantially less common, including only 81 soil units (12%) and 856 acres (6%).

7.4. Surficial Geology

During the last glacial event, 14,000 years ago, the Laurentide Ice Sheet covered New England and other portions of the United States as well as the majority of Canada. This vast ice sheet, often a mile thick, scraped and smoothed the land surface, picking up and transporting huge quantities of material, including clays, silt, sand, gravel, rocks, and boulders. During the glacial melt, this material was deposited by gravity or running water. Gravity deposits, simply dropped in place, were "unsorted," meaning that they were a mixture of various particle sizes ranging from very large boulders to fine clay, now called glacial till. This blanket of glacial till, which varies in thickness from a few inches to hundreds of feet, forms the majority of material on the landscape. In Temple, the glacial-till blanket averages 20 feet thick in upland areas (NRCS, 1985). These glacial tills tend to have limited water yield due to the relatively poor transmissivity of the material. Thicker glacial till is present in low-lying areas, whereas steeper slopes tend either to be bare (such as the hill slope north of Spofford Gap) or to have a very thin covering.

In contrast to gravity deposits, materials deposited by running water typically consist of sand and gravel carried into low-lying areas. These deposits formed the stratified drift aquifers (layered sand and gravel) now used for large water withdrawals and productive domestic wells. Stratified drift aquifers have been surveyed statewide by the USGS using drilling and data extrapolation methods (Medalie and Moore, 1995). The USGS report indicates that Temple has 3.3 square miles—14.7% of its land area—of stratified drift aquifers (Figure 7). Aquifer thickness is generally less than 100 feet and does not appear to be able to support large water withdrawals due to tranmissivities of less than 2,000 square feet per day. This information has important implications for Temple's drinking water. Preservation of the town's drinking water supply, and drinking water quality, should be a priority in discussions about managing the town's future growth.

Gravel deposits exist at four locations in Temple. Data were gathered from the NRCS soil survey and digitized onto a GIS layer (Figure 7). These gravel sources are generally located within the boundaries of stratified drift aquifers where gravel and sand near the soil's surface have been exposed by weathering.

7.5. Bedrock Geology

The soils in the western part of Hillsborough County are underlain by metamorphic and igneous rock. The bedrock, which is from the Devonian period, is 365–400 million years old (NRCS, 1985). Metamorphic rock consists of Littleton Formation coarse-grained gray mica schist. Igneous Kinsman Quartz Monzonite intruded through the Littleton Formation schist, creating heterogeneity in the topography of the land and its weathering rate. This weather-resistant igneous formation can be seen in the stone walls built of rocks gathered by settlers and in the boulders dotting the fields and forests of Temple. Scattered throughout the Kinsman Quartz Monzonite are crystals of white feldspar.

8.0. Aquatic Resources

8.1. Fish and Wildlife

Verifiable data are lacking on fish and aquatic wildlife; no studies were found describing the aquatic biological resources in Temple. Further research is necessary to determine the species that use aquatic systems in Temple.

8.2. Surface Waters

8.2.1. Streams

Using GIS mapping techniques, 22 miles of stream were identified within Temple (Figure 2). This equates to a stream density of nearly one mile of stream per square mile of land area. The 22-mile number includes both seasonal and permanent streams that are displayed on a 1:24,000 USGS topographic map. It does not include washes, small rivulets, or streams that may flow only during the heaviest of hydrologic events. These streams generally run from east to west, down gradient toward the Souhegan River mainstem or toward the Senator Tobey Reservoir in the southeast portion of the town. The majority of wetland area in Temple lies along (or in close proximity to) the stream corridors. Given the interchange of water between these systems, it seems likely that wetland systems in Temple may mitigate water quality degradation. Care should be taken to understand the relationship between the impact of land-use activities on wetlands, surface water and groundwater quality parameters, and any planned development in Temple.

8.2.2. Lakes and Ponds

In total, 236 acres of pond and lake area in Temple make up 1.7% of the total surface area (Figure 8). The largest lake area, at 122.6 acres, is the Senator Tobey Reservoir for drinking water. The smallest pond areas identified on GIS data layers were 0.3 acre. The 27 bodies of water that have some degree of nonvegetated open water include four that exceed the 10-acre minimum for “great pond” designation by the state. The remaining 23 bodies of water are each smaller than 8 acres and make up less than 25% of the total lake surface area in Temple.

9.0. Land Use

Land use in Temple is undergoing a slow progression from abandoned farmland and relatively young forest to a more densely residential community. In order to assess the current state of land use in Temple, a survey was conducted to determine the use of each parcel. TCC members and other Temple residents surveyed each tax map parcel and assigned proportions to one or more land-use categories. For example, on a given property, 30% might be used for grazing, 40% for residential purposes, and 30% for established forest. Different people assigned values to different parcels, so some measure of error is involved; data quality and individual perceptions of proportions influenced the accuracy of the data. Given the large scale of the survey, the data give a general picture of land use in Temple, not a scientifically detailed description. Obtaining more accurate data will entail a much greater effort. The data have been summarized in Table 6. A total of 232 parcels were surveyed; the most common land use was established hardwood forest, with 195 parcels being so classified at least partially. The next most common land use was residential (153 parcels averaging 22% in residential use). The third most common land use was hay field (63 parcels averaging 55% hay-field coverage). The acreage estimates made in these surveys were not considered sufficiently accurate and complete for inclusion. These important data will be verified and added in the next edition of this NRI.

9.1. Residential

Residential land use in Temple is shifting toward a higher density residential community. During the last 30 years, approximately 1,200 acres of agricultural and forested land have been developed, generally being broken up into lots smaller than 15 acres (Figure 9). From 1970 to 2001, the number of housing units increased 339%, from 137 to 465 (SRD, 2003). During the last decade (1990–2000), the number of housing units increased 8% as residential development slowed.

9.2. Agricultural

Only a small amount of agricultural land use exists in Temple. Aside from the single remaining dairy operation, several small specialty farms, and small-scale activities for local residential use (such as haying, small plots of row crops, or livestock kept for personal use), agricultural activities have been virtually abandoned in Temple. This has left many fields and orchards to begin the process of secondary succession and reversion to forest land.

9.3. Commercial

Very little commercial activity currently exists in Temple. A few small businesses are scattered throughout the town and next to the common in the historic and geographic center of Temple.

9.4. Forestry

Forestry in Temple exists primarily as small-scale timber harvests on private property. Currently, data are unavailable for yields (by species or total yield) specific to the town. Countywide data are available in Frieswyk and Widmann (2000).

9.5. Undeveloped Land

For the purposes of this NRI, undeveloped land is defined as parcels exceeding 15 acres in size. At the present time, there are 131 such parcels averaging 67.4 acres in size. Large sections of contiguous land in private ownership exist in the northern, western, and southern portions of Temple (Figure 10). Sections of land most likely to undergo the development process, owing to the proximity to general services (such as convenient road access), topography, and neighboring land use, include the white parcels in Figure 10 that are near the geographic center of Temple and south toward New Ipswich.

10.0. Implications of the Data

This first edition of Temple's NRI highlights several important challenges to conservation within the town:

- Temple includes large uplands and mountainous areas, but its wetlands are significantly more limited—both in number and in aggregate size—than is typical for southwestern New Hampshire. When Temple's permanently preserved natural areas are mapped against the wetlands, the lack of protection for these sensitive areas is immediately obvious.
- Several areas within the town include soils favorable to supporting stratified drift aquifers. However, no sites within the town have been identified by the New Hampshire DES as adequate to support a municipal water well. Protecting the aquifers within the town will be crucial to assuring an adequate supply of drinking water into the future.
- Although 1,252 acres in the northwest corner of Temple along the Wapack Range are preserved, there are no other large tracts of permanently protected land within the town. In order to preserve the town's limited wetlands and aquifers as well as to provide land for wildlife habitat (particularly corridors) and for passive recreation, additional carefully selected natural areas need to be placed under permanent protection.

11.0. References

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Figure 1. Map of Temple showing topographic features, roadways, and parcels.

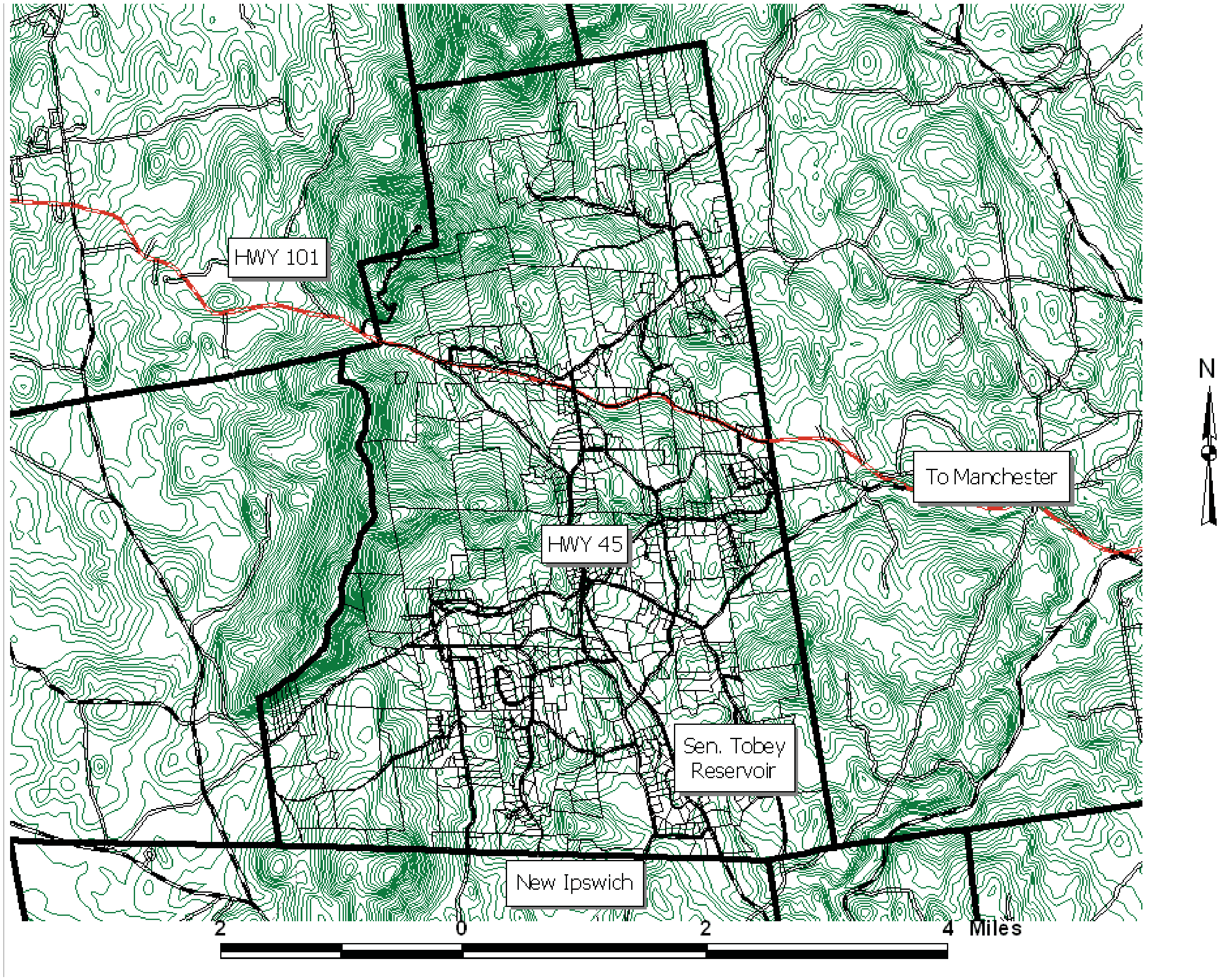


Figure 2. National Wetlands Inventory map of Temple. Blue indicates stream corridors. Red indicates wetlands habitat identified on the NWI database.

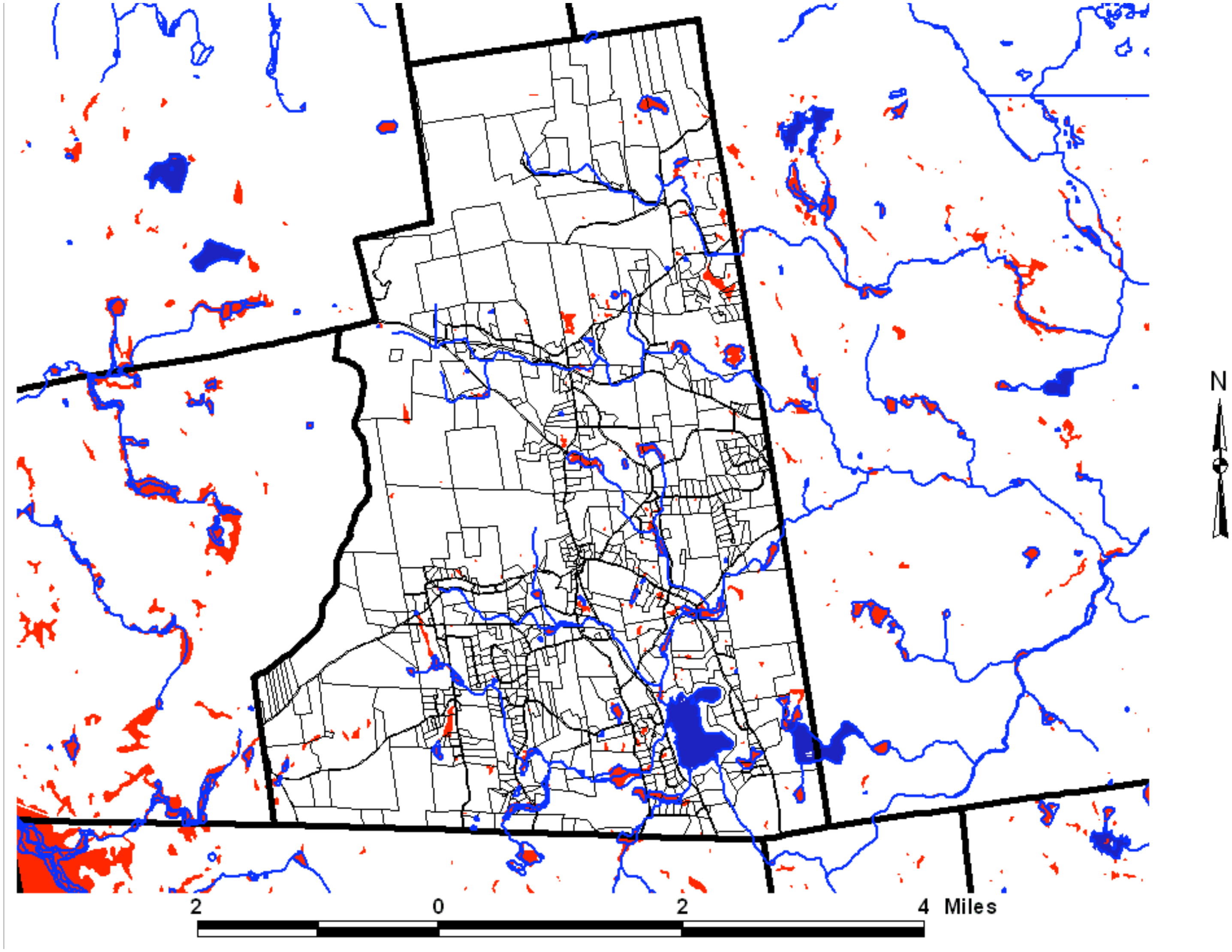


Figure 3. Winter deeryards and conservation areas.

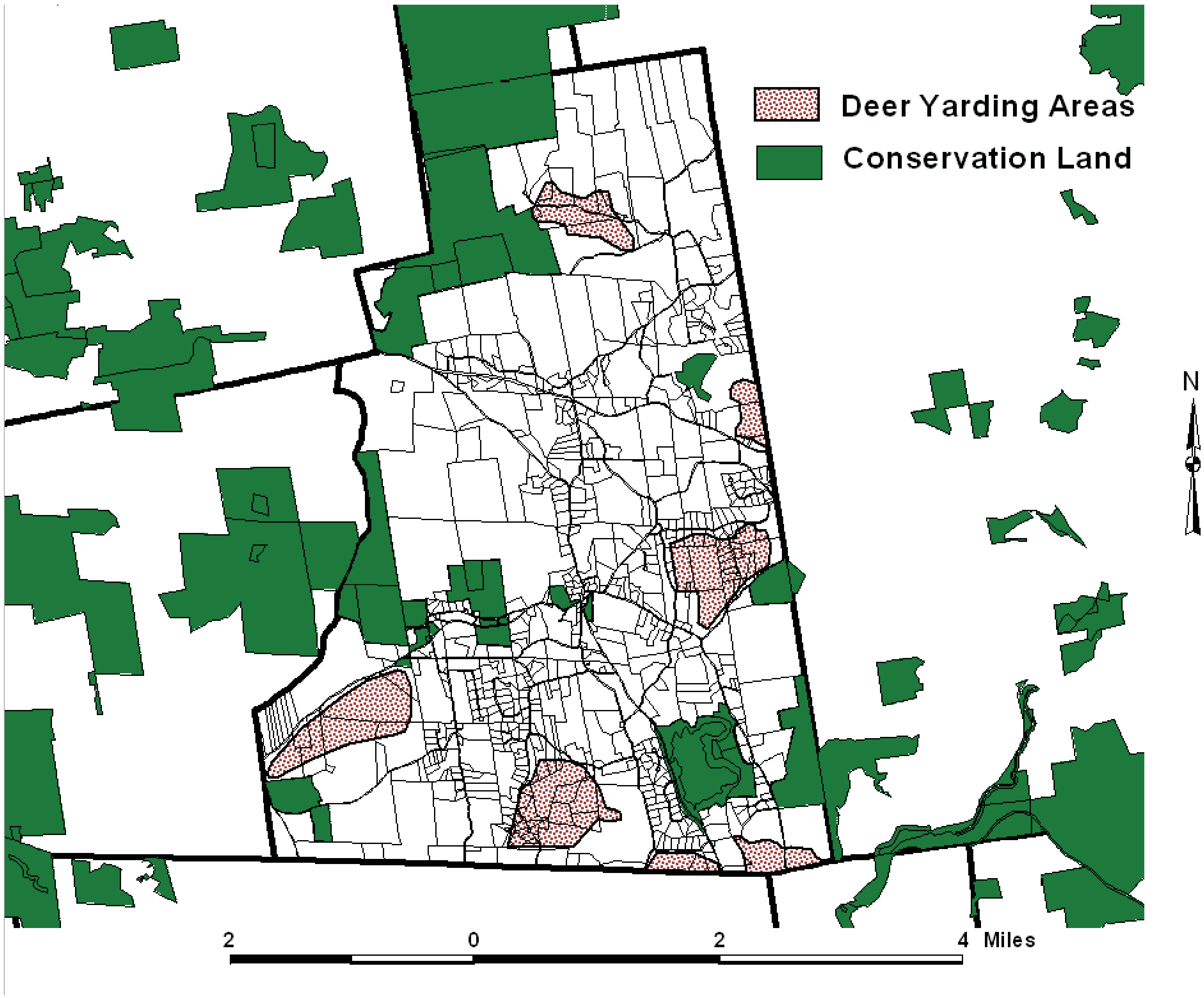


Figure 4. Forest soils and conservation land in Temple.

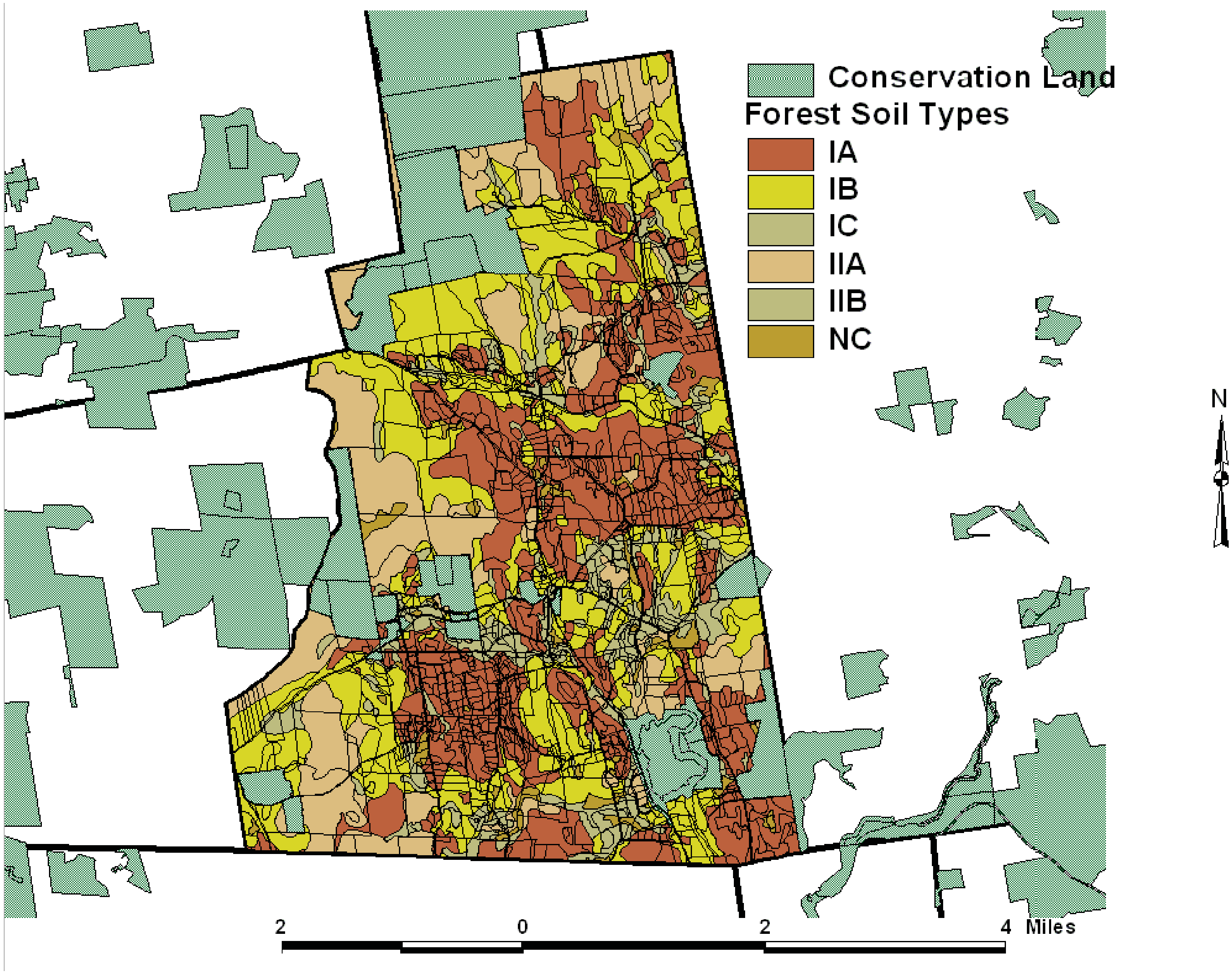


Figure 5. Prime farmland and conservation land in Temple.

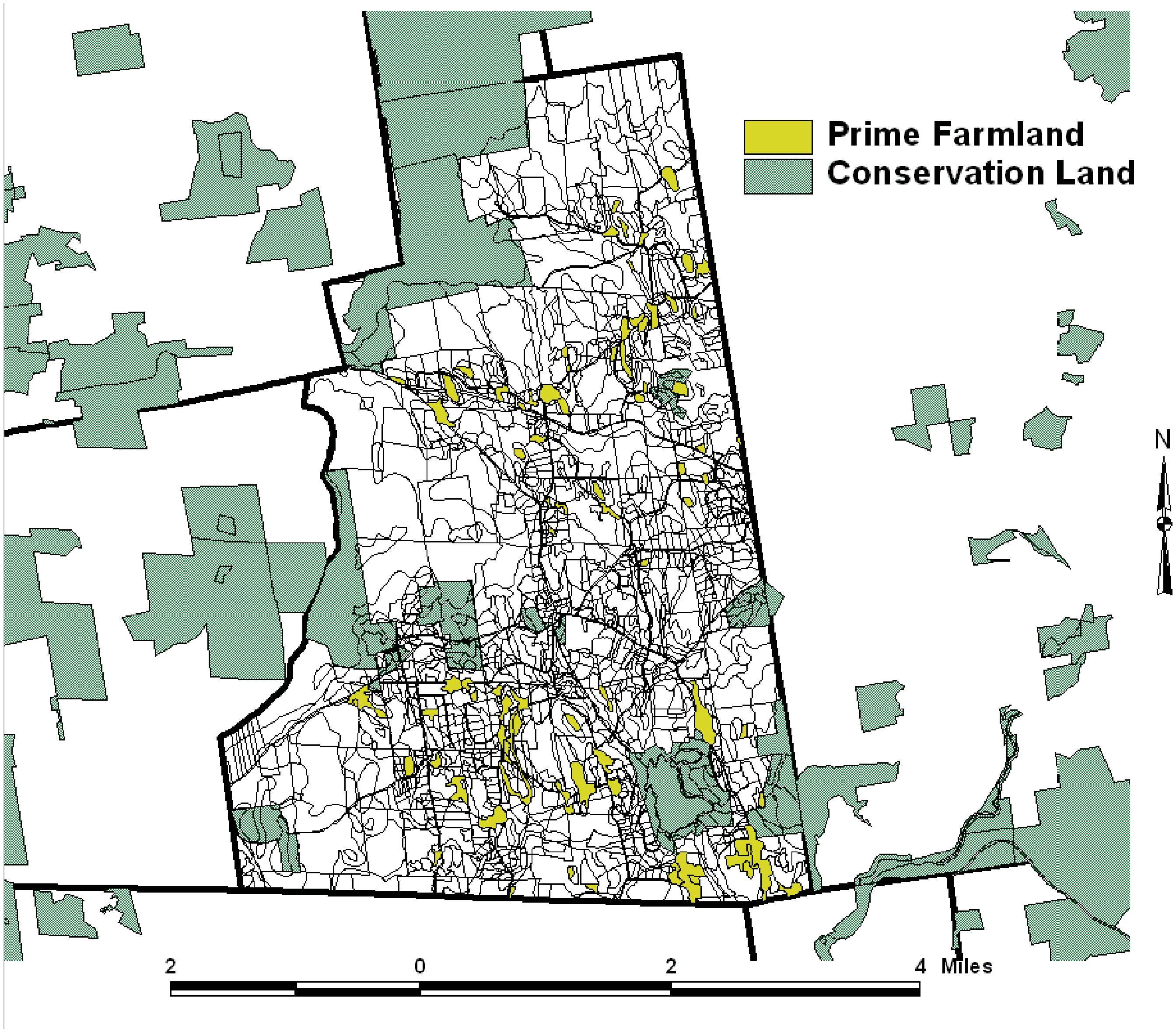


Figure 6. Hydric soils and conservation land in Temple.

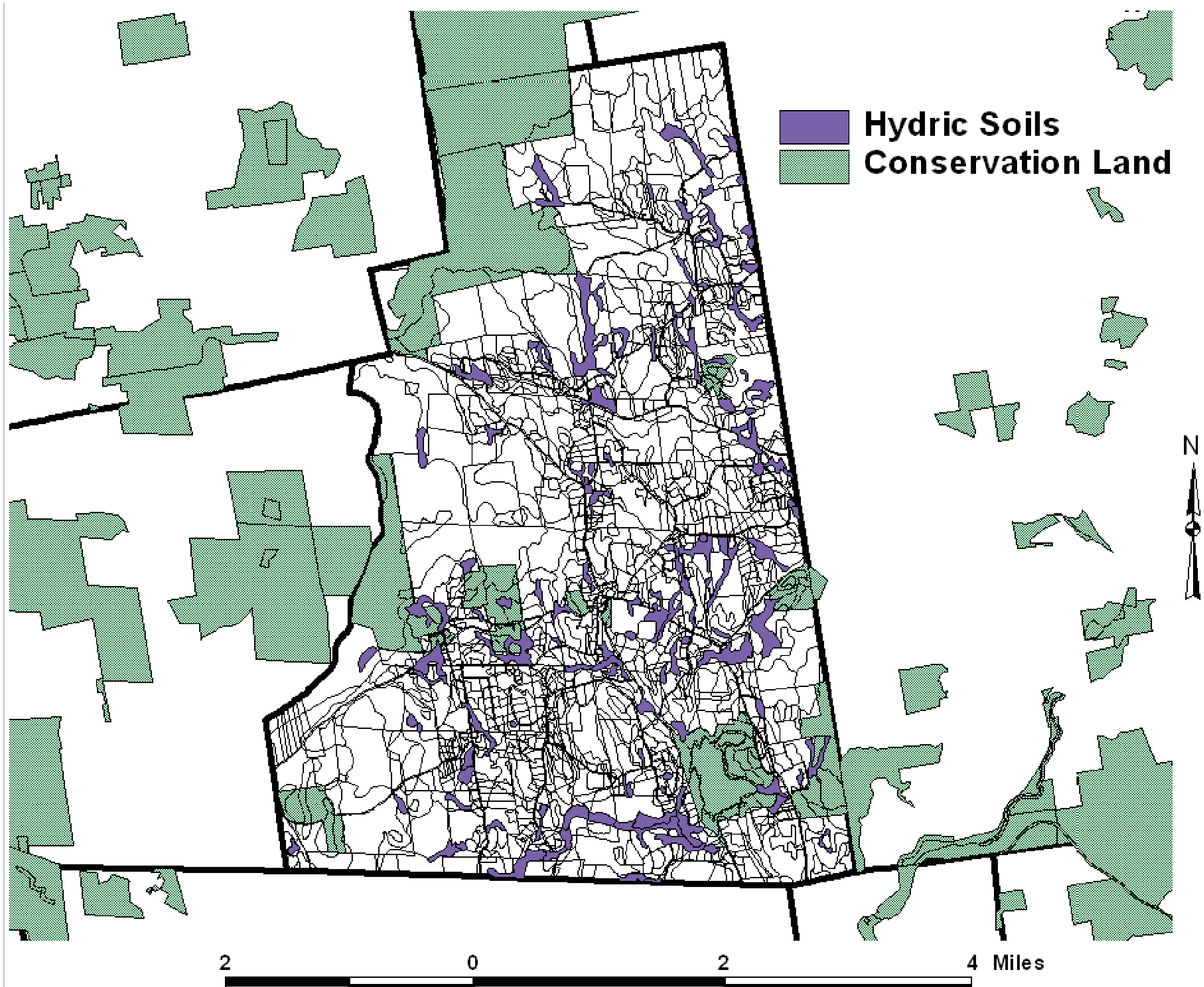


Figure 7. Approximate extent of stratified drift aquifers in Temple and location of gravel pits found in NRCS County Soil Survey. *Adapted from Medalie and Moore (1995).*

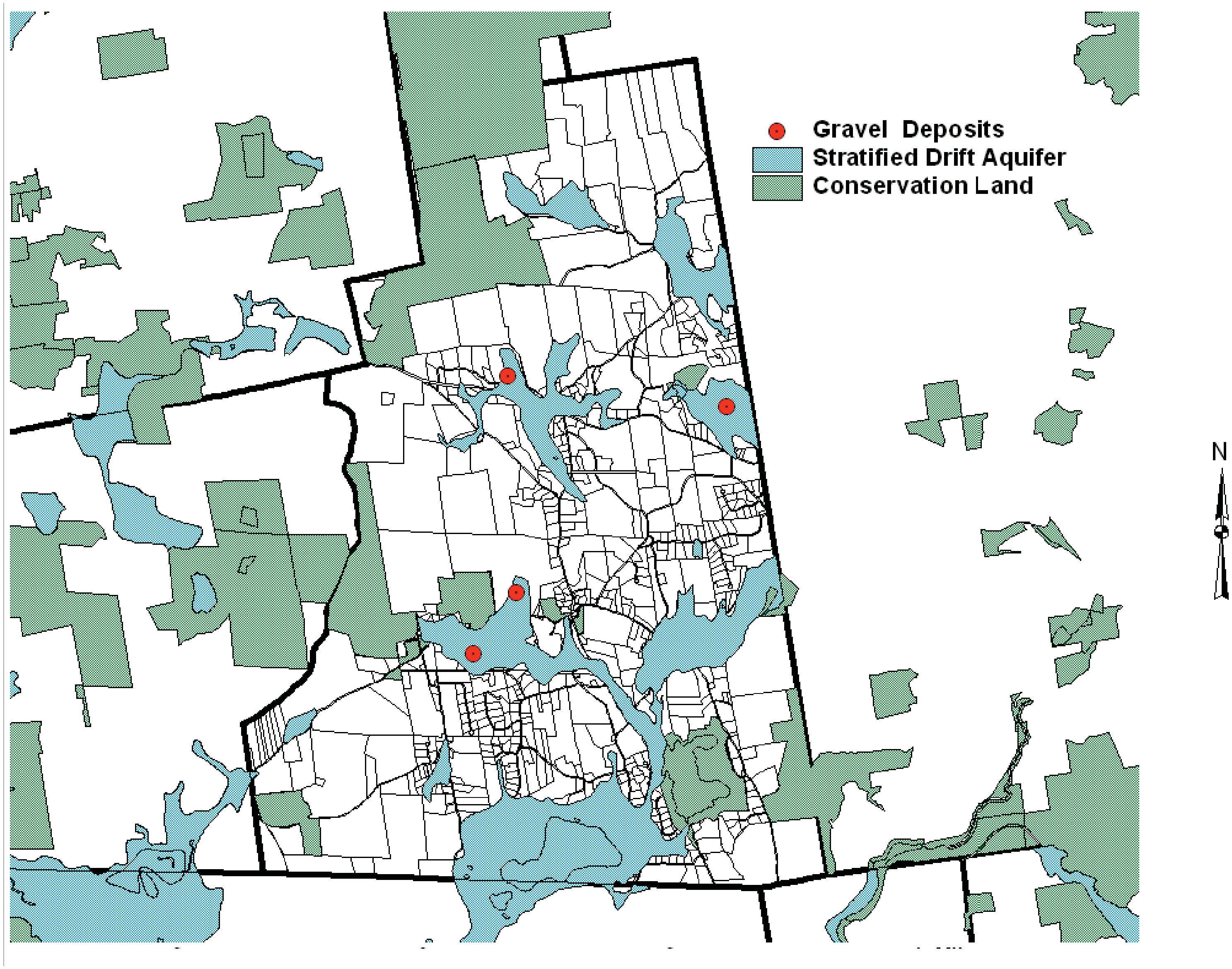
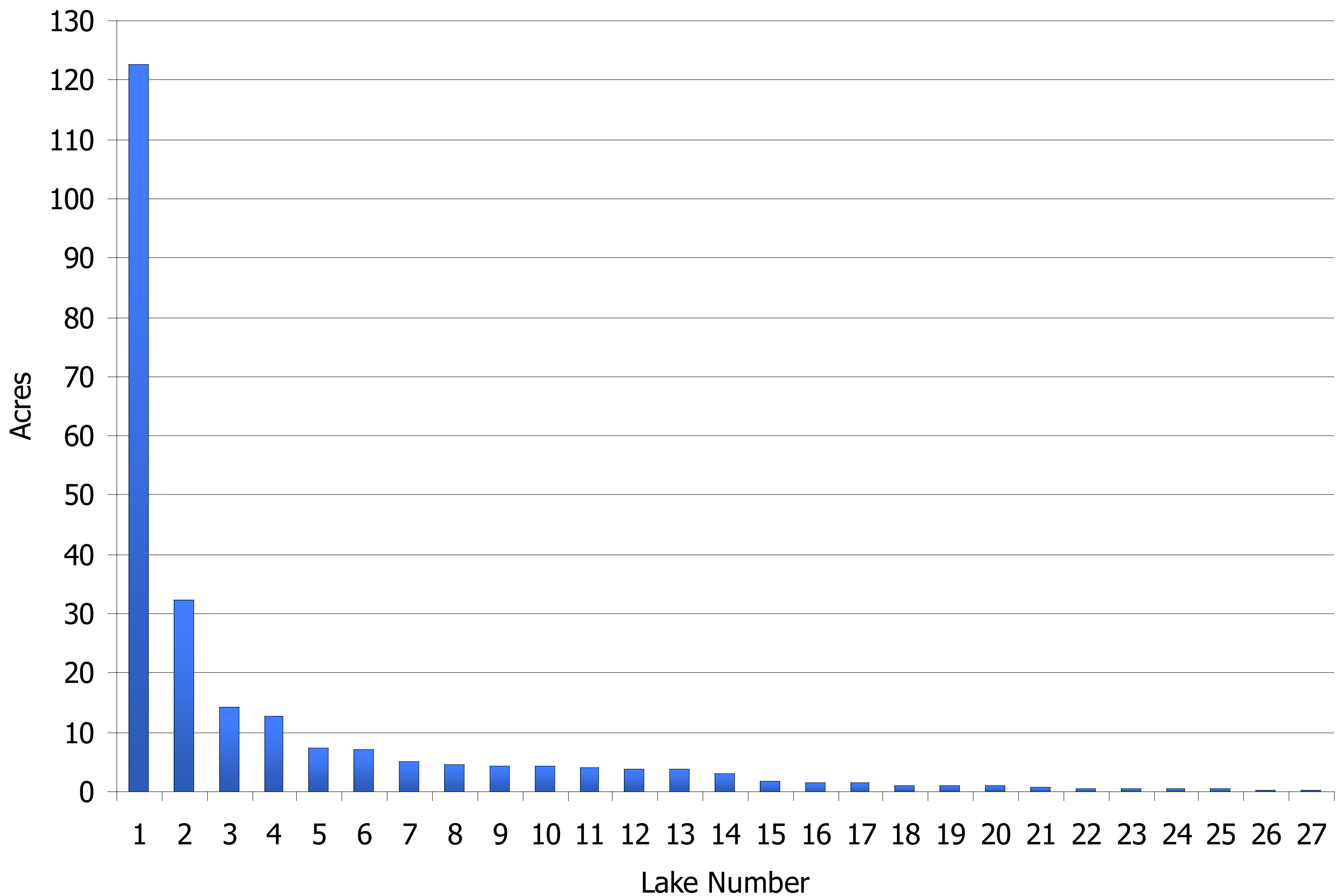


Figure 8. Size range of bodies of water in Temple.



Largest body of water is Senator Tobey Reservoir. Second largest is the portion of Batchelder Pond that crosses the Temple border in the southeast corner of the town. The remaining bodies of water lack official names.

Figure 9. Residential development, conservation land, and town-owned land.

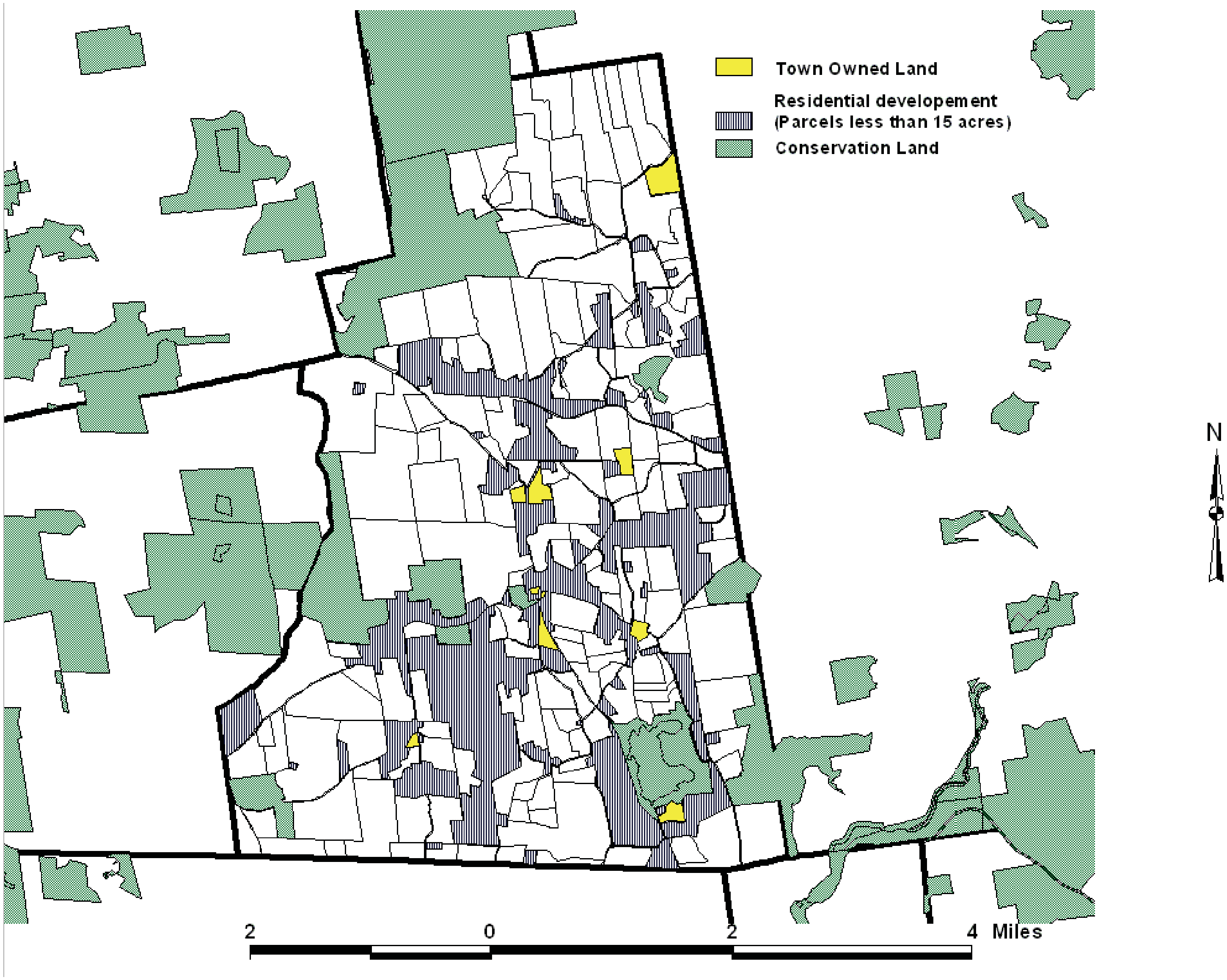


Figure 10. Land-use patterns in Temple.

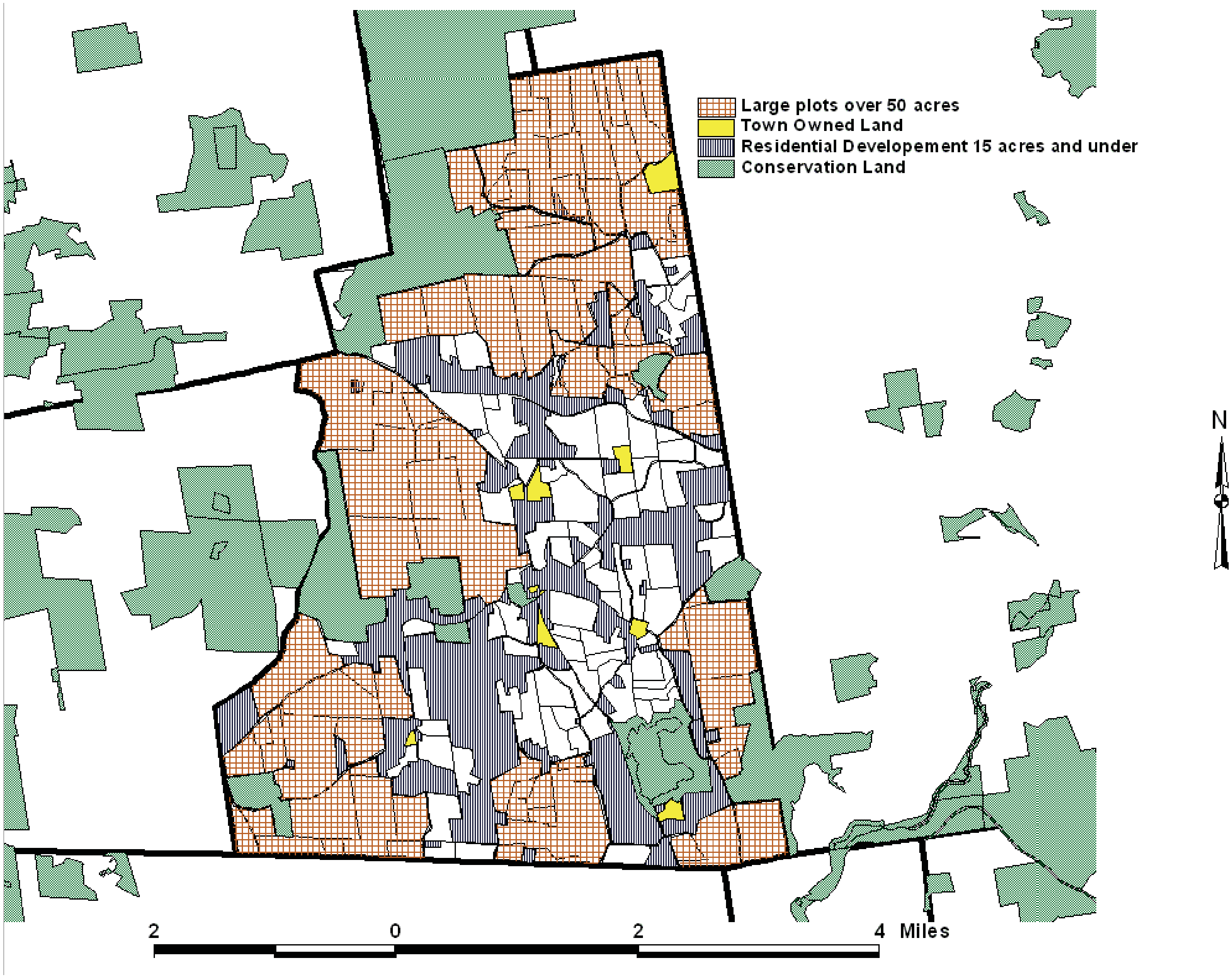


Table 1. Plant Species Observed During Surveys Conducted on Public and Private Lands in Temple, 1999–2000

TREE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Abies balsamea	balsam fir	Native	FAC, FACW / FAC
Acer pensylvanicum	striped maple	Native	FACU-, FACU / FACU
Acer rubrum	red maple	Native	FAC / FAC
Acer saccharum	sugar maple	Native	UPL, FACU / FACU-
Alnus rugosa	speckled alder	Native	FAC, OBL / FACW+
Betula alleghaniensis	yellow birch	Native	FACU+, FAC / FAC
Betula lenta	sweet birch	Native	FACU / FACU
Betula papyrifera	paper birch	Native	FACU, FACU+ / FACU
Betula papyrifera var. *cordifolia*	heartleaf paper birch	Native	
Betula populifolia	gray birch	Native	FAC / FAC
Castanea dentata	American chestnut	Native	
Cornus alternifolia	alternate-leaf dogwood	Native	
Fagus grandifolia	American beech	Native	FACU / FACU
Fraxinus americana	white ash	Native	FACU / FACU
Fraxinus nigra	black ash	Native	FACW, FACW+ / FACW
Fraxinus pennsylvanica	green Ash	Native	FAC, FACW / FACW
Hamamelis virginiana	American witch-hazel	Native	FACU, FAC- / FAC-
Ilex verticillata	common winterberry	Native	FACW, OBL / FACW+
Juniperus communis	common juniper	Native	
Juniperus virginiana	eastern red cedar	Native	FACU-, FACU / FACU
Kalmia latifolia	mountain laurel	Native	FACU-, FACU / FACU
Larix laricina	American larch	Native	FACW / FACW
Lindera benzoin	northern spicebush	Native	FACW-, FACW / FACW-
Ostrya virginiana	eastern hop hornbeam	Native	FACU-, FACU+ / FACU-
Picea mariana	black spruce	Native	FACW-, FACW / FACW-
Picea rubens	red spruce	Native	FACU / FACU
Pinus strobus	eastern white pine	Native	FACU / FACU
Populus grandidentata	bigtooth aspen	Native	FACU-, FACU / FACU-

TREE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Populus tremuloides	quaking aspen	Native	
Prunus pensylvanica	fire cherry	Native	FACU-, FAC- / FACU-
Prunus serotina	black cherry	Native	FACU / FACU
Prunus virginiana	common chokecherry	Native	FACU-, FAC / FACU
Quercus alba	white oak	Native	FACU-, FACU+ / FACU-
Quercus prinus	chestnut oak	Native	UPL, FACU- / UPL
Quercus rubra	northern red oak	Native	FACU-, FACU+ / FACU-
Quercus velutina	black oak	Native	
Sassafras albidum	sassafras	Native	FACU-, FACU / FACU-
Sorbus americana	American mountain ash	Native	FACU, FAC+ / FACU
Tilia americana	American basswood	Native	FACU / FACU
Tsuga canadensis	eastern hemlock	Native	FACU / FACU
Ulmus americana	American elm	Native	FAC, FACW / FACW-

SHRUB

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Amelanchier spp.	serviceberries	Native	Various
Berberis vulgaris	European barberry	Introduced	UPL, FACU / FACU
Chamaedaphne calyculata	leatherleaf	Native	FACW, OBL / OBL
Chimaphila umbellata	pipsissewa	Native	
Cornus canadensis	Canada bunchberry	Native	FACU, FAC / FAC-
Corylus cornuta	beaked hazelnut	Native	UPL, FACU / FACU-
Diervilla lonicera	northern bush honeysuckle	Native	
Epigaea repens	trailing arbutus	Native	
Euonymus alata	winged burning bush	Introduced	
Eupatorium maculatum	spotted joe-pye weed	Native	
Gaultheria hispidula	creeping snowberry	Native	FACW / FACW

SHRUB

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Gaultheria procumbens	teaberry	Native	FACU / FACU
Gaylussacia baccata	black huckleberry	Native	FACU / FACU
Huperzia lucidula	shining clubmoss	Native	
Kalmia angustifolia	sheep laurel	Native	FAC / FAC
Lonicera canadensis	Canadian fly honeysuckle	Native	FACU / FACU
Lycopodium spp.	clubmoss	Native	Various
Lycopodium annotinum	stiff clubmoss	Native	FACU, FAC / FAC
Lycopodium clavatum	running pine	Native	UPL, FAC / FAC
Lycopodium complanatum	trailing clubmoss	Native	UPL, FAC / FACU-
Lycopodium obscurum	tree clubmoss	Native	FACU-, FACU / FACU
Lycopodium sempervirens	pink clubmoss	Native	
Lyonia ligustrina	maleberry	Native	FACW / FACW
Myrica gale	sweetgale	Native	OBL / OBL
Nemopanthus mucronatus	catberry	Native	OBL / OBL
Pyrola elliptica	shinleaf wintergreen	Native	
Pyrus arbutifolia	red chokecherry	Native	
Pyrus melanocarpa	black chokecherry	Native	
Ribes glandulosum	skunk currant	Native	FACU, FACW / FACW
Rhus hirta	staghorn sumac	Native	
Rosa spp.	roses	Native	Various
Rubus allegheniensis	Allegheny blackberry	Native	UPL, FACW / FACU-
Rubus flagellaris	northern dewberry	Native	UPL, FACU- / UPL
Rubus hispidus	bristly blackberry	Native	FACW / FACW
Rubus idaeus	red raspberry	Native	UPL, FAC / FAC-
Salix discolor	pussy willow	Native	FACW / FACW
Sambucus.canadensis	common elder	Native	UPL, FACW / FACW-
Sambucus racemosa	red elder	Native	FACU, FACU+ / FACU
Spiraea alba	white meadowsweet	Native	FACW, FACW+ / FACW+
Spiraea tomentosa	steeplebush	Native	FACW / FACW
Taxus canadensis	Canada yew	Native	FACU, FAC / FAC
Vaccinium angustifolium	lowbush blueberry	Native	FACU-, FACU / FACU-

SHRUB

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Vaccinium corymbosum	highbush blueberry	Native	FACW-, FACW / FACW-
Vaccinium myrtilloides	velvetleaf blueberry	Native	FACU, FACW- / FAC
Vaccinium pallidum	Blue Ridge blueberry	Native	
Vaccinium vacillans	early lowbush blueberry	Native	
Viburnum spp.	viburnums	Native	Various
Viburnum acerifolium	mapleleaf viburnum	Native	UPL, FACU / UPL*
Viburnum alnifolium	hobblebush	Native	
Viburnum lentago	nannyberry	Native	FACU, FAC+ / FAC
Viburnum recognitum	northern arrowwood	Native	FACW-, FACW / FACW-

GRAMINOID

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Carex debilis	white-edge sedge	Native	FAC, OBL / FAC
Carex folliculata	northern long sedge	Native	
Carex gynandra	nodding sedge	Native	
Carex intumescens	bladder sedge	Native	FACW, OBLFACW+
Carex lurida	shallow sedge	Native	FACW+, OBL / OBL
Carex novae-angliae	New England sedge	Native	FACU / FACU*
Carex trisperma	three-seed sedge	Native	OBL / OBL
Deschampsia flexuosa	wavy hairgrass	Native	
Dulichium arundinaceum	three-way sedge	Native	OBL / OBL
Eleocharis spp.	spikerush	Native	Various
Glyceria canadensis	Canada manna grass	Native	OBL / OBL
Juncus effusus	soft rush	Native	FACW+, OBL / FACW+
Leersia spp.	cutgrasses	Native	Various
Scirpus atrocinctus	black-girdle bulrush	Native	FACW+, OBL / FACW+

FORB / HERB / VINE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Abutilon theophrasti	velvetleaf	Introduced	UPL, FACU- / UPL
Achillea millefolium	common yarrow	Nat. & Intro.	FACU / FACU
Amphicarpaea bracteata	American hogpeanut	Native	FACU, FACW / FAC
Aquilegia spp.	columbines	Native	Various
Aralia hispida	bristly sarsaparilla	Native	
Aralia nudicaulis	wild sarsaparilla	Native	FACU, FAC / FACU
Arisaema triphyllum	jack-in-the-pulpit	Native	FAC, FACW / FACW-
Asclepias spp.	milkweeds	Native	Various
Aster acuminatus	whorled aster	Native	
Athyrium filix-femina	lady fern	Native	FAC, FAC+ / FAC
Brassica rapa	field mustard	Introduced	
Calla palustris	water arum	Native	OBL / OBL
Celastrus scandens	American bittersweet	Native	UPL, FACU / FACU-
Celastrus orbiculatus	Oriental bittersweet	Introduced	UPL / UPL*
Chamerion angustifolium	fireweed	Native	
Chelone glabra	white turtlehead	Native	OBL / OBL
Chenopodium album	lambsquarters	Introduced	FACU, FAC / FACU+
Cichorium intybus	chickory	Introduced	
Circaea alpina	small enchanter’s nightshade	Native	FAC, FACW / FACW
Circaea lutetiana	broadleaf enchanter’s nightshade	Native	FACU / FACU
Cirsium spp.	thistles	Nat. & Intro.	Various
Clematis spp.	leatherflowers	Native	Various
Clintonia borealis	bluebead	Native	FACU, FAC+ / FAC
Coptis groenlandica	goldthread	Native	
Corallorrhiza maculata	spotted coralroot	Native	UPL, FAC- / FACU
Corallorrhiza trifida	yellow coralroot	Native	FAC, FACW / FACW
Coronilla varia	purple crown vetch	Introduced	
Corydalis sempervirens	pale corydalis	Native	
Cypripedium acaule	pink lady's slipper	Native	FACU, FACW / FACU

FORB / HERB / VINE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Dalibarda repens	robin-run-away	Native	FACU-, FACW+ / FAC
Dennstaedtia punctilobula	hay-scented fern	Native	
Desmodium nudiflorum	naked-flower tick trefoil	Native	
Drosera rotundifolia	roundleaf sundew	Native	OBL / OBL
Dryopteris carthusiana	spinulose woodfern	Native	
Dryopteris intermedia	intermediate woodfern	Native	FACU, FAC / FACU
Dryopteris marginalis	marginal woodfern	Native	FACU-, FACU / FACU-
Epifagus virginiana	beechdrops	Native	
Epipactis helleborine	broadleaf helleborine	Introduced	
Equisetum fluviatile	water horsetail	Native	OBL / OBL
Equisetum hyemale	rough horsetail	Native	FAC+, FACW / FACW
Eupatorium perfoliatum	common boneset	Native	FACW+, OBL / FACW+
Fragaria virginiana	Virginia strawberry	Native	UPL, FAC / FACU
Galium palustre	common marsh bedstraw	Native	OBL / OBL
Goodyera pubescens	downy rattlesnake plantain	Native	UPL, FAC / FACU-
Goodyera repens	lesser rattlesnake plaintain	Native	UPL, FACW / FACU+
Gymnocarpium dryopteris	oak fern	Native	UPL, FAC / UPL
Hepatica nobilis var. *acuta*	sharp-lobed hepatica	Native	
Hydrocotyle americana	American marsh pennywort	Native	OBL / OBL
Hypericum canadense	Canadian Saint-John's-wort	Native	FACW / FACW
Hypericum mutilum	slender Saint-John's-wort	Native	FACW, FACW+ / FACW
Hypericum perforatum	common Saint-John's-wort	Introduced	
Impatiens capensis	jewelweed	Native	FACW, FACW+ / FACW
Iris versicolor	harlequin blueflag	Native	OBL / OBL
Juncus spp.	rushes	Native	Various
Lactuca biennis	tall blue lettuce	Native	FACU, FAC+ / FACU
Leontodon autumnalis	fall dandelion	Introduced	
Lonicera spp.	honeysuckles	Native	Various
Lycopus americanus	American bugleweed	Native	OBL / OBL
Lycopus spp.	bugleweeds	Native	Various
Lycopus uniflorus	Northern bugleweed	Native	OBL / OBL
Lysimachia terrestris	swamp loosestrife	Native	OBL / OBL
Macleaya cordata	plume poppy	Introduced	

FORB / HERB / VINE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Maianthemum canadense	wild lily-of-the-valley	Native	FACU, FAC / FAC-
Medeola virginiana	Indian cucumber	Native	
Melampyrum lineare	narrowleaf cowwheat	Native	FACU, FAC / FACU
Mentha spicata	spearmint	Introduced	FACW, OBL / FACW+
Mentha spp.	mints	Nat. & Intro.	Various
Mitchella repens	partridgeberry	Native	FACU, FAC / FACU
Monotropa hypopithys	pinesap	Native	
Monotropa uniflora	Indian pipe	Native	UPL, FACU / FACU-
Onoclea sensibilis	sensitive fern	Native	FACW / FACW
Osmunda cinnamomea	cinnamon fern	Native	FACW, FACW+ / FACW
Osmunda claytoniana	interrupted fern	Native	FAC, FAC+ / FAC
Osmunda regalis	royal fern	Native	OBL / OBL
Oxalis montana	mountain wood sorrel	Native	UPL, FAC- / FAC-
Packera aurea	golden ragwort	Native	
Parthenocissus quinquefolia	Virginia creeper	Native	FACU, FAC / FACU
Parthenocissus vitacea	woodbine	Native	FACU, FACW- / FACU
Phegopteris connectilis	long beech fern	Native	
Pilea pumila	clearweed	Native	FAC, FACW / FACW
Polygonatum pubescens	hairy Solomon's seal	Native	
Polygonum cilinode	fringed black bindweed	Native	
Polygonum sagittatum	arrowleaf tearthumb	Native	OBL / OBL
Polygonum scandens	climbing false buckwheat	Native	FACU, FACW / FAC
Polygonum spp.	smartweeds	Native	Various
Polypodium virginianum	rock polypody	Native	
Polypodium vulgare	common polypody	Native	
Polystichum acrostichoides	Christmas fern	Native	UPL, FAC / FACU-
Polytrichum spp.	haircap mosses	Native	
Potentilla norvegica	Norwegian cinquefoil	Native	FACU, FAC / FACU
Potentilla simplex	common cinquefoil	Native	UPL, FACU / FACU-
Prenanthes spp.	rattlesnake roots	Native	Various
Prunella vulgaris	common self-heal	Native	FACU, FACW / FACU+
Pteridium aquilinum	bracken fern	Native	FACU, FAC- / FACU
Ranunculus spp.	buttercups	Native	Various

FORB / HERB / VINE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Rhus radicans	climbing poison ivy	Native	
Rubus pubescens	dwarf blackberry	Native	FAC, FACW+ / FACW
Rumex acetosella	common sheep sorrel	Introduced	UPL, FACW / UPL
Sagittaria latifolia	broadleaf arrowhead	Native	OBL / OBL
Sedum telephium subsp. *purpureum*	witch's moneybags	Native	
Sicyos angulatus	one-seed burr cucumber	Native	FACU, FACW- / FACU
Silene latifolia	bladder campion	Introduced	
Smilacina racemosa	feather false Solomon's seal	Native	FACU-, FAC / FACU-
Smilax rotundifolia	common greenbrier	Native	FAC / FAC
Solidago bicolor	white goldenrod	Native	
Solidago graminifolia	lanceleaf goldenrod	Native	
Solidago rugosa	wrinkleleaf goldenrod	Native	FAC, FAC+ / FAC
Solidago spp.	goldenrods	Native	Various
Sphagnum spp.	sphagnum mosses	Native	
Spiranthes spp.	ladies' tresses	Native	Various
Streptopus lanceolatus	twisted stalk	Native	
Streptopus roseus var. *perspectus*	rosy twisted stalk	Native	FACU, FAC / FAC-
Symphyotrichum patens	late purple aster	Native	
Symphyotrichum spp.	asters	Native	
Taraxacum spp.	dandelions	Introduced	Various
Thalictrum polygamum	tall meadow rue	Native	
Thelypteris noveboracensis	New York fern	Native	FAC, FAC+ / FAC
Thelypteris simulata	Massachusetts fern	Native	FACW / FACW
Tiarella cordifolia	heartleaf foamflower	Native	FAC- / FAC-
Toxicodendron spp.	poison ivies / oaks / sumacs	Native	Various
Triadenum virginicum	marsh Saint-John's-wort	Native	OBL / OBL
Trientalis borealis	starflower	Native	FAC, FAC+ / FAC
Trifolium pratense	red clover	Introduced	FACU-, FAC / FACU-
Trifolium repens	white clover	Introduced	FACU-, FAC / FACU-
Trillium erectum	purple trillium	Native	UPL, FACU / FACU-
Trillium spp.	trilliums	Native	Various

FORB / HERB / VINE

Scientific Name	Common Name	U.S. Nativity	National / Regional Wetland Indicator Category
Trillium undulatum	painted trillium	Native	FACU-, FACU / FACU*
Typha latifolia	broadleaf cattail	Native	OBL / OBL
Uvularia sessilifolia	wild oats	Native	FACU-, FAC+ / FACU-
Veratrum viride	green false hellebore	Native	FACU, OBL / FACW+
Verbascum thapsus	common mullein	Introduced	
Veronica spp.	speedwells	Native	Various
Viola spp.	violets	Native	Various
Vitis spp.	wild grapes	Native	Various

Table 2. Confirmed Introduced Plant Species in Temple

Scientific Name	Common Name	Regional Wetland Indicator Category
Shrub		
Berberis vulgaris	European barberry	FACU
Euonymus alata	winged burning bush	
Forb/Herb/Vine		
Abutilon theophrasti	velvetleaf	UPL
Achillea millefolium	common yarrow	FACU
Brassica rapa	field mustard	
Celastrus orbiculatus	Oriental bittersweet	UPL*
Chenopodium album	lambsquarters	FACU+
Cichorium intybus	chickory	
Cirsium spp.	thistles	Various
Coronilla varia	purple crown vetch	
Epipactis helleborine	broadleaf helleborine	
Hypericum perforatum	common Saint-John's-wort	
Leontodon autumnalis	fall dandelion	
Macleaya cordata	plume poppy	
Mentha spicata	spearmint	FACW+
Mentha spp.	mints	Various
Rumex acetosella	common sheep sorrel	Upland
Silene latifolia	bladder campion	
Taraxacum spp.	dandelions	Various
Trifolium pratense	red clover	FACU-
Trifolium repens	white clover	FACU-
Verbascum thapsus	common mullein	

Table 3. Butterfly Species in Hillsborough County Identified in USGS Surveys

Scientific Name	Common Name
Family PAPILIONIDAE	SWALLOWTAILS
Subfamily Papilioninae	Swallowtails
Papilio canadensis	Canadian Tiger Swallowtail
Papilio glaucus	Eastern Tiger Swallowtail
Papilio troilus	Spicebush Swallowtail
Family PIERIDAE	WHITES AND SULPHURS
Subfamily Pierinae	Whites
Pieris oleracea	Mustard White
Pieris rapae	Cabbage White
Subfamily Coliadinae	Sulphurs
Colias eurytheme	Orange Sulphur
Colias philodice	Clouded Sulphur
Family LYCAENIDAE	GOSSAMER WINGS
Subfamily Miletinae	Harvesters
Feniseca tarquinius	Harvester
Subfamily Lycaeninae	Coppers
Lycaena epixanthe	Bog Copper
Lycaena phlaeas	American Copper
Subfamily Theclinae	Hairstreaks
Callophrys [incisalia] augustinus	Brown Elfin
Callophrys [incisalia] niphon	Eastern Pine Elfin
Callophrys [incisalia] polios	Hoary Elfin
Satyrium acadica	Acadian Hairstreak
Satyrium calanus	Banded Hairstreak
Satyrium edwardsii	Edwards' Hairstreak
Satyrium liparops	Striped Hairstreak
Satyrium titus	Coral Hairstreak
Strymon melinus	Gray Hairstreak
Subfamily Polyommatinae	Blues
Celastrina ladon	Spring Azure
Celastrina neglecta	Summer Azure

Scientific Name	Common Name
Everes comyntas	Eastern Tailed-Blue
Glaucopsyche lygdamus	Silvery Blue
Family NYMPHALIDAE	BRUSHFOOTS
Subfamily Heliconiinae	Heliconians and Fritillaries
Boloria selene	Silver-Bordered Fritillary
Euptoieta claudia	Variegated Fritillary
Speyeria aphrodite	Aphrodite Fritillary
Speyeria atlantis	Atlantis Fritillary
Speyeria cybele	Great Spangled Fritillary
Speyeria idalia	Regal Fritillary
Subfamily Nymphalinae	True Brushfoots
Chlosyne harrisii	Harris' Checkerspot
Junonia coenia	Common Buckeye
Nymphalis antiopa	Mourning Cloak
Nymphalis [Aglais] milberti	Milbert's Tortoiseshell
Nymphalis vau-album	Compton Tortoiseshell
Phyciodes tharos	Pearl Crescent
Polygonia comma	Eastern Comma
Polygonia faunus	Green Comma
Vanessa atalanta	Red Admiral
Vanessa cardui	Painted Lady
Vanessa virginiensis	American Lady
Subfamily Limenitidinae	Admirals and Relatives
Limenitis archippus	Viceroy
Limenitis arthemis	Red-Spotted Admiral
Limenitis arthemis arthemis	White Admiral
Limenitis arthemis astyanax (incl. *arizonensis*)	Red-Spotted Purple
Subfamily Satyrinae	Satyrs
Cercyonis pegala	Common Wood Nymph
Coenonympha tullia	Common Ringlet
Enodia anthedon	Northern Pearly Eye
Megisto cymela	Little Wood Satyr
Satyrodes eurydice	Eyed Brown

Scientific Name	Common Name
Subfamily Danainae	Monarchs
Danaus plexippus	Monarch
Family HESPERIIDAE	SKIPPERS
Subfamily Pyrginae	Spread Wings
Achalarus lyciades	Hoary Edge
Epargyreus clarus (incl. *huachuca*)	Silver-Spotted Skipper
Erynnis baptisiae	Wild Indigo Duskywing
Erynnis brizo	Sleepy Duskywing
Erynnis horatius	Horace's Duskywing
Erynnis icelus	Dreamy Duskywing
Erynnis juvenalis	Juvenal's Duskywing
Erynnis lucilius	Columbine Duskywing
Erynnis martialis	Mottled Duskywing
Pholisora catullus	Common Sootywing
Subfamily Hesperiinae	Grass Skippers
Amblyscirtes hegon (=*samoset*)	Pepper-and-Salt Skipper
Amblyscirtes vialis	Common Roadside Skipper
Anatrytone logan (=*delaware*)	Delaware Skipper
Ancyloxypha numitor	Common Least Skipper
Atrytonopsis hianna (incl. *loammi*)	Dusted Skipper
Carterocephalus palaemon	Arctic Skipper
Euphyes bimacula	Two-Spotted Skipper
Euphyes conspicua	Black Dash
Euphyes vestris (=*ruricola*)	Dun Skipper
Hesperia leonardus (incl. *pawnee*)	Leonard's Skipper
Hesperia metea	Cobweb Skipper
Hesperia sassacus	Indian Skipper
Poanes hobomok	Hobomok Skipper
Poanes massasoit	Mulberry Wing
Polites mystic	Long Dash
Polites peckius (=*coras*)	Peck's Skipper
Polites themistocles	Tawny-Edged Skipper
Pompeius verna	Little Glassywing

Scientific Name	Common Name
Thymelicus lineola	European Skipper
Wallengrenia egeremet	Northern Broken-Dash

Table 4. Soil Units Found in Temple

Soil Unit Name	County Soil Survey Map Nr	Total Acreage	Proportion of Total Soil Acreage	Slope Class or Ponded	Prime Farm-land	Hydric Soil	Forest Group	Sands	Gravels
SEARSPORT MUCK	15	12.2	0.09%		No	1	NC	Yes	No
ONDAWA FINE SANDY LOAM	101	4.4	0.03%		No	0	IA	Yes	No
PODUNK FINE SANDY LOAM	104	39.5	0.28%		No	0	IA	Yes	Yes
RUMNEY LOAM	105	63.5	0.45%		No	1	IIB	Yes	No
BOROHEMISTS	197	126.2	0.89%	PONDED	No	1	NC	No	No
GREENWOOD MUCKY PEAT	295	2.5	0.02%		No	1	NC	No	No
PITS	298	5.7	0.04%	GRAVEL	No	0	NC	No	No
UDORTHENTS	299	9.0	0.06%	SMOOTHED	No	0	NC	No	No
CHOCORUA MUCKY PEAT	395	76.2	0.54%		No	1	NC	Yes	No
ROCK OUTCROP	399	54.3	0.38%		No	0	NC	No	No
OSSIPEE PEAT	495	3.9	0.03%		No	1	NC	No	No
PEACHAM STONY MUCK	549	40.6	0.29%		No	1	NC	No	No
MONADNOCK FINE SANDY LOAM	142B	129.1	0.91%	3%–8% SLOPES	Yes	0	IB	Yes	No
MONADNOCK FINE SANDY LOAM	142C	176.3	1.25%	8%–15% SLOPES	No	0	IB	Yes	No
MONADNOCK STONY FINE SANDY LOAM	143B	551.6	3.90%	3%–8% SLOPES	No	0	IB	Yes	No
MONADNOCK STONY FINE SANDY LOAM	143C	1974.8	13.95%	8%–15% SLOPES	No	0	IB	Yes	No
MONADNOCK STONY FINE SANDY LOAM	143D	1258.8	8.89%	15%–35% SLOPES	No	0	IB	Yes	No
TUNBRIDGE-LYMAN-MONADNOCK	160B	2.9	0.02%	3%–8% SLOPES	No	0	IB	No	No

Soil Unit Name	County Soil Survey Map Nr	Total Acreage	Proportion of Total Soil Acreage	Slope Class or Ponded	Prime Farm-land	Hydric Soil	Forest Group	Sands	Gravels
COMPLEX STONY									
TUNBRIDGE-LYMAN-MONADNOCK COMPLEX STONY	160C	68.3	0.48%	8%–15% SLOPES	No	0	IB	No	No
TUNBRIDGE-LYMAN-MONADNOCK COMPLEX STONY	160D	0.2	0.00%	15%–25% SLOPES	No	0	IB	0	No
LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX	161C	918.5	6.49%	3%–15% SLOPES	No	0	IIA	0	No
LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX	161D	2653.6	18.75%	15%–35% SLOPES	No	0	IIA	No	No
NAUMBURG FINE SANDY LOAM	214A	73.2	0.52%	0%–3 SLOPES	No	1	IIB	Yes	No
NAUMBURG FINE SANDY LOAM	214B	40.0	0.28%	3%–8 SLOPES	No	1	IIB	Yes	No
COLTON LOAMY SAND	22A	95.3	0.67%	0%–3% SLOPES	No	0	IC	Yes	Yes
COLTON LOAMY SAND	22B	111.2	0.79%	3%–8% SLOPES	No	0	IC	Yes	Yes
COLTON LOAMY SAND	22C	335.0	2.37%	8%–15% SLOPES	No	0	IC	Yes	Yes
COLTON LOAMY SAND	22E	53.6	0.38%	15%–50% SLOPES	No	0	IIA	Yes	Yes
LYME LOAM	246B	90.5	0.64%	0%–5% SLOPES	No	1	IIB	No	No
LYME STONY LOAM	247B	346.3	2.45%	0%–5% SLOPES	No	1	IIB	No	No
ADAMS LOAMY SAND	36A	2.5	0.02%	0%–3% SLOPES	No	0	IC	Yes	No
ADAMS LOAMY SAND	36B	22.7	0.16%	3%–8% SLOPES	No	0	IC	Yes	No
ADAMS LOAMY SAND	36C	36.1	0.25%	8%–15% SLOPES	No	0	IC	Yes	No
ADAMS LOAMY SAND	36E	16.8	0.12%	15%–50% SLOPES	No	0	IIA	Yes	No
SKERRY FINE SANDY LOAM	558B	46.6	0.33%	3%–8% SLOPES	Yes	0	IA	Yes	Yes
SKERRY STONY FINE SANDY LOAM	559B	115.1	0.81%	0%–8% SLOPES	No	0	IA	Yes	Yes

Soil Unit Name	County Soil Survey Map Nr	Total Acreage	Proportion of Total Soil Acreage	Slope Class or Ponded	Prime Farm-land	Hydric Soil	Forest Group	Sands	Gravels
SKERRY STONY FINE SANDY LOAM	559C	59.7	0.42%	8%–15% SLOPES	No	0	IA	Yes	Yes
CROGHAN LOAMY FINE SAND	613A	55.7	0.39%	0%–3% SLOPES	No	0	IC	Yes	No
CROGHAN LOAMY FINE SAND	613B	47.2	0.33%	3%–8% SLOPES	No	0	IC	Yes	No
PILLSBURY LOAM	646B	15.9	0.11%	0%–5% SLOPES	No	1	IIB	No	No
PILLSBURY STONY LOAM	647B	96.5	0.68%	0%–5% SLOPES	No	1	IIB	No	No
MARLOW LOAM	76B	259.2	1.83%	3%–8% SLOPES	Yes	0	IA	No	No
MARLOW LOAM	76C	421.2	2.98%	8%–15% SLOPES	No	0	IA	No	No
MARLOW LOAM	76D	172.4	1.22%	15%–25% SLOPES	No	0	IA	No	No
MARLOW STONY LOAM	77B	195.9	1.38%	3%–8% SLOPES	No	0	IA	No	No
MARLOW STONY LOAM	77C	985.3	6.96%	8%–15% SLOPES	No	0	IA	No	No
MARLOW STONY LOAM	77D	1619.2	11.44%	15%–35% SLOPES	No	0	IA	No	No
PERU LOAM	78B	96.2	0.68%	3%–8% SLOPES	Yes	0	IA	No	No
PERU STONY LOAM	79B	476.9	3.37%	0%–8% SLOPES	No	0	IA	No	No
PERU STONY LOAM	79C	98.4	0.70%	8%–15% SLOPES	No	0	IA	No	No

Table 5. Soil-Unit Types Found in Temple, NRCS County Soil Survey

	Soil Units	% of Total Soil Units	Total Soil Acreage	% of Total Soil Acreage
All soil parcels	661	100	14,664	100
Forest groups				
IA	289	44	5,067	35
IB	135	20	4,193	29
IC	61	9	722	5
IIA	40	6	3,626	25
IIB	80	12	726	5
NC	56	8	331	2
Prime farmland	79	12	531	4
Hydric soil	125	19	988	7
Sand	262	40	5,397	37
Gravels	81	12	856	6

Table 6. Distribution of Land-Use Parcels in Temple

	Grazing	Orchard	Abandoned Orchard	Hay Field	Abandoned Hay Field	Row Crops	Established Forest	Forest Cut in Last 5 Years	Stone Meadow	Residential	Gravel Pit	Commercial Use
Number of parcels	6	2	6	63	13	1	195	2	3	153	2	1
Average % of parcel	42	55	43	55	58	10	75	88	30	22	35	10
Minimum % of parcel	20	10	10	10	10	10	10	75	20	5	10	10
Maximum % of parcel	80	100	100	100	100	10	100	100	50	100	60	10