

Borough of Franklin Lakes Environmental Resource Inventory

Section I ~ Executive Summary

1.1 Introduction ~

The Environmental Resource Inventory (ERI) for the Borough of Franklin Lakes (the Borough) presented herein is a comprehensive compilation of text, maps and geographic information system (GIS) data that fully describe the Borough's key environmental resources. As well as presenting factual information concerning these resources, this ERI also provides information and guidance pursuant to the protection, preservation and conservation of these resources. The primary objective of this document is the accurate presentation of resource spatial and statistical information in a framework that assists the Borough in future planning decisions. In this context, the ERI is intended to serve as a foundation for the Borough's Master Plan and provide critical data used in the crafting of resource conservation measures and the development related ordinances. In addition to providing information on the Borough's sensitive natural resources, this ERI also includes an interactive GIS interface to improve the ease of its use in the assessment of environmental resource protection initiatives, planning and development related impact analysis. The ERI also provides several recommendations to further the environmental goals of the community. This fully digital format is intended to increase the ease of periodically updating the document and its supporting maps, thus enabling the Borough's elected officials, along with the Planning Board, Zoning Board, Environmental Commission, and other Committees, to facilitate environmentally sound planning, zoning and development related decision making.

This ERI updates the environmental inventory prepared for the Borough in October 1974 by Dr. Richard Graham and Dr. Stephen Posten at the Ramapo College, Environmental Studies Program. The current environmental inventory will build upon this earlier work and evaluate present conditions.

1.2 Plan Components ~

The document is divided into the following four sections:

- **Section I** ~ Provides a summary of the planning and environmental resources findings for the Borough. This summary is based upon the various detailed narratives and mapping provided within Section III of this ERI report. In addition, this section includes an outline of potential recommendations to better manage these environmental resources, which the Borough can consider implementing. Recommendations contain regulatory and non-regulatory goals, objectives, and strategies to preserve, enhance, maintain and restore the Borough's environmental and cultural resources.
- **Section II** ~ Provides a Resource Planning and Protection Overview, which describes state, county and Borough planning initiatives and regulations, current

zoning, land development, open space planning and resource protection ordinances and regulations.

- **Section III** ~ Provides the detailed environmental inventory consisting of GIS maps, data, narratives, illustrations and diagrams locating and describing the Borough's natural and cultural resources.
- **Section IV** ~ Provides a bibliography of data sources incorporated and referenced in the ERI.

1.3 Plan Methodology ~

Digital mapping information in a GIS compliant format was obtained primarily from the New Jersey Department of Environmental Protection (NJDEP) GIS Data Web Site. However, other GIS data sources were utilized including public domain sources, Borough sources, and the Bergen County Planning Department. In addition, mapping, data, and planning information and initiatives were incorporated into this report from a variety of government offices and the full list is provided in the reference section, and the main reports include:

- Borough of Franklin Lakes, Open Space Plan, 2002
- Borough of Franklin Lakes, Master Plan, 1991, updated in 2004
- Borough of Franklin Lakes, Environmental Resource Inventory, 1974
- Bergen County Planning Office – Master Plan, 1962-75 updates, website information
- NJ Department of Community Affairs (DCA) 2007 State Plan
- NJDEP – GIS Database, 2002 and updates
- NJDEP – Landscape Project Data, Updates 2008
- NJDEP – Wildlife Action Plan, January 2008
- Highlands Council – Highlands Regional Master Plan, July, 2008

Analyses were completed of various GIS digital overlay mapping and other relevant data in order to evaluate current conditions, to highlight the changes in the community, and to highlight the vulnerability of environmental resources within the Borough.

1.4 Inventory Findings ~

The Borough of Franklin Lakes contains many valuable environmental and cultural resources including historic homes and businesses, public water supply wells, streams, lakes and ponds, recreational areas, wildlife habitats, forest, wetlands, floodplains and scenic roadways. A comprehensive understanding of the Borough's environmental resources will facilitate a more informed decision making process regarding planning activities, environmental impact analyses, open space acquisition and preservation efforts, and other activities which may have an impact on those resources. The information contained within this ERI is intended to educate, guide and benefit those interested in the long-term protection, management and preservation of the resources of the Borough, including the Mayor and Borough Council, Planning Board, Zoning Board,

Environmental Commission, Shade Tree Commission, other Borough Committees, residents and prospective land developers.

This ERI should be considered both a tool and a reference for the Borough to draw upon in any land development approval and/or planning process. Its use should therefore be promoted, and made available to residents and anyone seeking to develop lands within the Borough. In addition, this is not meant to be a static document. Periodic revisions of this ERI will be necessary to ensure that the information contained herein is accurate, current and reflective of ongoing changes in land use and development within the Borough.

The Borough's current planning documents, summarized in Section II, contain examples of the local efforts taken to date to protect the Borough's environmental resources. Examples include preservation of open space, parklands and lakes, creating greenway connections, developing a community forest plan, promoting cluster developments, preserving steep slopes, and identifying historic landmarks in the community. However, residential and commercial development pressures continue to be placed on the Borough, and new challenges will arise related to potential redevelopment and infill development projects. Because the Borough's resources will continue to be subject to the development impacts and demands, it is important to evaluate the effectiveness and comprehensiveness of the Borough's resource protection regulations and initiatives. The following provides an overview of the findings, existing constraints, vulnerabilities, and management recommendations included in the Borough ERI, with emphasis placed on the efficacy of existing resource protection measures:

1.5 Planning, Development, and Environmental Resource Findings ~

This section provides a summary of the environmental resources of the Borough. These resources are subsequently mapped and discussed as noted below in more detail in Sections II and primarily in Section III of the ERI.

- **Local Population** ~ According to the US Census and the Bergen County Department of Planning, the recorded population of the Borough was 10,422 people in 2000. In 2007, the Borough's estimated population was 11,576 people, within 3,322 households. From 1990 to 2000 the Borough's population grew by 5.6% and the housing stock grew by 8.8% (that of the County increased by 7.1%). Based on an area of 10 square miles, the Borough's population density in 2007 was 1,102.5 per square mile. The Borough experienced tremendous growth during between 1950 and 1970 with recorded population increases of 60-128%. With much of the Borough already developed, growth stabilized, and the population increased by only 16-11% from the 1980s to 2007. (Section 3.1)
- **Climate** ~ The climate of the Borough is categorized as continental. Annual precipitation averages 45-46 inches, winter temperatures average 28-32 degrees Fahrenheit (°F), and summer temperatures average 69-73 °F. Climate is

becoming an important component of an Environmental Resources Inventory, because temperature and precipitation ranges affects all living organisms, as well as vegetative growth and habitat composition. The New Jersey State Climatologist, Dr. David A. Robinson, Rutgers University, explained in 2005 that there is growing evidence that our global climate is changing as a result of human activities, and these changes may impact local and regional ecosystems and society. Changes in our State's climate are likely to impact natural flora and fauna, human health and safety, agricultural productivity, fresh-water resources, tourism, transportation, and business and commerce. (NJ Climate Report Card, 2005). (Section 3.3)

- **Greenhouse Gas Emissions** ~ The NJDEP Office of Science and Technology published a report on greenhouse gas emissions in January 2008. Greenhouse Gases (GHGs) are various atmospheric gases that slow the rate at which heat radiates into space, and are linked to the warming of the atmosphere. GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide, chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs) and other halogenated gases. The NJDEP reports that CO₂ emissions are increasing primarily from fossil fuel use, with land-use changes providing other significant contributions. Approximately 90% of New Jersey's GHG emissions are produced by the burning of fossil fuels, mainly natural gas, gasoline, diesel fuel/heating oil, and other petroleum-derived products. (Section 2.3 and 3.3)

- **Air Quality** ~ The Clean Air Act requires the USEPA to set National Ambient Air Quality Standards for six common air pollutants, including particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. Of the six pollutants, particle pollution and ground-level ozone are the most widespread health threats. The 2005 New Jersey Air Quality Report identifies overall significantly improved air quality concentrations for carbon monoxide, lead, nitrogen dioxide, ozone, particulates and sulfur dioxide. However, the annual ozone levels in New Jersey remains above the federal health standard, and Bergen County has been designated by the USEPA as a non-attainment area for ground-level ozone. (Section 3.4)

- **State Plan** ~ The NJ Department of Community Affairs (DCA), since 1992, has worked with local communities and counties to update the State Plan every few years. The State Plan provides guidance to local officials as well as developers where future growth and development is appropriate. The primary goal of the State Plan is to promote the efficient use of natural resources, energy and transportation by encouraging the development or re-development of existing urban areas. The Borough of Franklin Lakes in its entirety is identified by the 2007 State Plan as a Metropolitan Urban Planning Area (PA1) where future growth should be directed. In addition, even though the vast majority of the Borough is serviced by septic systems, the State Plan identifies the entire Borough as within a potential sewer service area, where sewers could support growth. Borough officials have requested that the community be reclassified as a Planning

Area 2 or 3 (suburban or fringe area), and Bergen County has been working with the DCA to carefully consider these recommendations. (Section 2.7, 2.8, 3.5)

- **Land Use** ~ Based on the 2002 NJDEP Land Use Land Cover (LULC) dataset (the most recent validated digital dataset), the Borough has a total acreage of 6,304 acres. The largest land use within the Borough is developed urban lands and highway corridors, which cover 4,268 acres and comprise 67.7% of the community. Forests are the second most dominant land type with 1,230.9 acres (19.53%). Wetlands are the third dominant land type with 464.3 acres (7.37%). Water bodies (lakes, ponds, streams) include 286.8 acres (4.55%). Agricultural lands include 20.6 acres (0.33%) and 33.3 acres were identified as barren lands in 2002 (0.53%), which often refers to land undergoing development. (Section 3.6)
- **Development Patterns** ~ Although the State Plan identifies the Borough as a Metropolitan area (PA1), the majority of the development includes single family residential neighborhoods, with a limited shopping centers and commercial offices similar to suburban areas PA2 or PA3). Residential infill and the redevelopment of lots with large homes are occurring within the Borough. The height and footprint of many of these new homes appears larger than the existing neighborhood housing stock. Larger homes can increase the impervious cover of the lot, increase stormwater runoff, reduce the available land for septic systems or replacement septic systems, and reduce the buffers between neighboring residents. (Section 2.4, 2.5, and 3.7)
- **Steep Slopes** ~ The Borough is framed by steep ridges with slopes greater than 15% along the northwest and southern boundaries, which includes approximately 11% of the community. Much of these steeply sloping areas provide beautiful scenic views and provide wildlife habitats to state endangered species. Some housing development has occurred on these ridges, in turn compromising some of these attributes. (Section 3.8 and 3.9)
- **Scenic Resources** – Preserving scenic resources was identified as a goal in the 1999 Historic Inventory Report prepared for the Borough. Ensuring that these scenes can be enjoyed in years to come is important to many community members. In 2008, members of the Environmental Commission assisted in a visual assessment of the Borough in order to identify areas that contribute to the scenic and aesthetic quality of the Borough. These areas included scenic vistas from high ridges, vistas of lakes, ponds, wetlands and forested areas. (Section 3.8).
- **Geological Resources** ~ The New Jersey Geologic Society (NJGS) describes the Borough as being located within the Piedmont Province, which extends from the northeast through central New Jersey. The Piedmont Province includes sandstone, shale, and conglomerates, which provide the foundation of the broad lowlands. Within the Borough, basalt forms the intermittent ridges of the Piedmont Province.

- The Orange Mountain Basalt underlies 45% of the community and the Preakness Basalt underlies 9%. The Feltville Formation is a coarse grain sandstone, siltstone and mudstone, which underlies 33% of the community, and the siltstone and shale of the Passaic Formation, underlies 14% of the community. (Section 3.10)
- **Aquifers** ~ Aquifer characteristics vary depending upon the geologic formations that occur in the Borough. The Brunswick aquifer is generally a reliable source of water for most domestic and industrial uses and it underlies 47% of the community and is the source for the wells for the United Water Company - New Jersey. The remaining 53% of the community is underlain by the basalt aquifer which is a poor aquifer, with limited porosity or permeability. Groundwater in the basalt aquifer must be transmitted through relatively limited, tight fractures and joints. (Section 3.10, 3.11)
 - **Public Water Supplies** ~ The residents and businesses in the Borough rely primarily on groundwater supplies for their drinking water. In 2008, the local Department of Health reported that 1,271 homes within the Borough rely on private well supplies, or approximately 37% of the homes. In addition, the United Water Company reported that in 2008, approximately 2,165 homes in the Borough are serviced by the public community wells, or approximately 63% of the Borough residents. The United Water New Jersey website reports that in the summer months the public well supplies may be supplemented by water from their Haworth Plant. (Section 3.11)
 - **Wellhead Protection Areas** – Wellhead protection areas (WHPA) are designated by the NJDEP within the Borough to protect public wells and water supplies and their surrounding landscapes from potential pollutants. These wellhead areas identify three public community wells and three non-public community wells within the Borough, including the United Water wells. The NJDEP provides mapping of these wellhead areas to provide local planning officials the necessary information to safeguard water supplies from certain industrial/commercial activities which could impact vital water supplies. (Section 3.11)
 - **Groundwater Quality** ~ In 2002 the NJDEP initiated the Private Well Testing Act requiring well testing when a property is being sold. From 2002 to 2007 approximately 1,258 private wells were tested in Bergen County. Based on these results, 8.7% of the private wells (50 wells) in Bergen County exhibited elevated arsenic levels, which occurs naturally based on the local geology. Approximately 1.5% (19 wells) in Bergen County exhibited elevated levels of fecal coliform or pathogens. (Section 3.11)
 - **Groundwater Recharge** ~ The New Jersey Geologic Society (NJGS) utilizes the SSURGO soil data provided by the Natural Resource Conservation Service (NRCS) and modeling to estimate the volume of water that will infiltrate into the

soil below the root layer. This information can help estimate the potential recharge into the deeper groundwater aquifers, but much of this groundwater seeps or discharges into streams springs, and wetlands servicing as the baseflow for these resources. Shallow groundwater recharge values greater than 16 inches per year were identified for 12% of the Borough; recharge values of 11-15 inches per year were identified for 59% of the Borough. The NRCS does not provide recharge rates for soils that were previously disturbed by development; therefore, recharge rates for 16% of the Borough are considered to be 0 inches per year for the unclassified, disturbed soils. Given that these recharge rates are based on general soils data, more accurate recharge data can be obtained by conducting site specific soil testing especially in previously developed areas and areas with soils mapped as unclassified and/or disturbed. (Section 3.12)

- **Soil Septic Suitability** ~ The wastewater management needs of Borough residents are primarily served by individual on-site wastewater (septic) systems. However, as per the NJDEP (N.J.A.C. 7:9A), the native soils, owing to prevailing slopes, shallow bedrock and/or shallow water tables, have various limitations affecting their use for the construction of septic systems. The NRCS SSURGO soil classifications data designates conditions under approximately 50% of the community as most severe for septic suitability; 11% of the community is designated by the NRCS as severe for septic suitability; and 20% of the community is designated as less severe for septic suitability. Thus, for most of the Borough, the native soils have limited capacity to adequately renovate wastewater. Under such conditions, the NJDEP mandates that septic systems be constructed using imported soils that meet specific content and performance characteristics. Such soil replacement septic systems enables the soil-challenged areas of the Borough to meet State, County and local septic system design and operation requirements (Section 2.10, 3.13, and 3.14)

- **Wastewater Services** ~ The NJDEP adopted new rules for Water Quality Management Plans (WQMP) (N.J.A.C. 7:15) that require each community to adopt a Wastewater Management Plan in 2009. As noted above, the residents of the Borough primarily rely on individual on-lot septic systems. Wastewater sewer services are provided to the Urban Farm Shopping center, the Colonial Road Senior Housing Center, the Mill Pond Apartment complex, and the Medco commercial offices. The Borough is currently developing a detailed Wastewater Management Plan. (Section 2.10, 3.14)

- **Soil Erodibility** ~ The NRCS utilizes six different variables under the Universal Soil Loss Equation (USLE) method to predict soil erodibility including: Rainfall and Runoff Erosivity, Soil Erodibility Factor, Slope Length, Slope Steepness, Cover Management, and Erosion Control. The NRCS designates Highly Erodible soils covering 41% of the Borough; Potentially Highly Erodible Soils are found throughout 29% of the Borough; Not Highly Erodible and undefined soils are found in 21% of the Borough, primarily along the low lying floodplains. Erosion can be minimized by enforcing the local ordinance that restricts development and

- disturbances on steep slopes greater than 15%, maintaining vegetative cover, and by restricting development in riparian areas. (Section 3.15)
- **Known Contaminated Sites** ~ The NJDEP GIS 2005 database identifies Known Contaminated Sites (KCS) located within the Borough. The list of Known Contaminated Sites includes those properties where contamination of soil or ground water has been identified by the NJDEP. Some of these sites were identified by the NJDEP as having a release with groundwater contamination. Investigation, monitoring and/ or long term remediation or cleanup activities are in various stages. Because this NJDEP database is out of date by four years, the list of sites and mapping was not included in this report, but the data was provided to Borough officials. The NJDEP list Known Contaminated Sites is available for review on their website. (Section 3.17)
 - **Watersheds** ~ The streams and tributaries within the Borough flow to three separate subwatershed areas including the Crystal Lake/Pond Brook subwatershed, Molly Ann Brook and the Hohokus Brook subwatershed. The streams and tributaries located in the Crystal Lake/Pond Brook subwatershed and Molly Ann Brook watershed are classified by the NJDEP as freshwater, non-trout streams (FW2/NT). The Hohokus Brook drains to the Passaic River, and the upper segment is classified by the NJDEP as freshwater, non-trout streams, and the lower segments have a saline/ estuary characteristic and are classified as (FW2/NT-SE2). (Section 3.19)
 - **Streams** ~ There are over twenty streams, lakes and ponds within the Borough. The LULC data estimates that waterbodies in the Borough account for approximately 287 acres. The community and various neighborhood lake associations value these streams, lakes and ponds as significant land marks and important aesthetic features within the community. These water bodies offer recreational opportunities for swimming, fishing, boating, and skating, as well as wildlife habitats for fish, turtles, raptors and migratory water fowl. These water features offer aesthetic scenic view sheds easily observed from local roadways and hiking paths. The preservation of their water quality, aquatic habitats, recreational uses and aesthetic qualities are important to the homeowner associations and local officials. (Section 3.19 and 3.20)
 - **Surface Water Quality** ~ Analytical data for the waterbodies within the Borough is limited, but some biological and chemical data is available. The NJDEP monitors aquatic biology, and the NJDEP AMNET biological data from 1994-2004 indicate that the Hohokus Brook is moderately impaired at Old Mill Road. The AMNET biological data assesses the populations and diversity of macroinvertebrates that live in the stream, which includes insects, crustaceans, and mollusks. The source of this impairment has not been identified. The Hohokus Brook was also identified as routinely having elevated levels of pathogens in the water, which impacts swimming or wading in the stream. The source of these pathogens could be from failing septic systems, geese and/or deer

populations, and pet waste. Some septic systems in this watershed may have been constructed within the floodplain, and may encounter a shallow water table.

Chemical water quality monitoring was conducted for Pond Brook and Hohokus Brook during the 1974 ERI. Most of the data indicated good water quality, and concentrations were within the state standards for nutrients and dissolved oxygen. Limited sampling of Hohokus Brook did indicate elevated levels of fecal coliform including: downstream of Parsons Pond, upstream of Tannery Pond, and upstream of DeYoes Pond. The Hohokus Brook is currently designated by the NJDEP as impaired with fecal coliform (pathogen) levels routinely elevated above the state standards. (Section 3.20)

- **Impervious Cover** ~ The USEPA and the NJDEP support studies published by the Center for Watershed Management (CWM) that have established general thresholds for measuring the overall ecological status of streams. These studies suggest that once impervious cover exceeds 10% of the watershed, water quality impairments become evident, and at 25% - 30% impervious cover, the stream's ecological functions become degraded. These impacts are directly linked to the increase in pollutant loading, rate of stormwater runoff, and changes in peak volumes and base flows that occur as a result of an increase in impervious cover. Approximately 90% of the Borough has impervious coverages ranging from 0-20%. Developed areas with impervious cover ranging from 20-40% account for 5% of the community, and the commercial areas with impervious cover greater than 40% account for less than 5% of the community. (Section 3.18)

- **Floodplains** ~ Floodplains play an integral role in the hydrologic cycle of a region, primarily serving to temporarily store floodwaters during intense precipitation events, but more importantly to attenuate, reduce and slowly release runoff back into the associated streams, wetlands and forested wetland areas. Two important functions of floodplains include the groundwater recharge and water quality improvement. The Federal Emergency Management Agency (FEMA) established two standard flood zones commonly referred to as the 100-year and 500-year flood zone. The 100-year flood zone is also known as the Flood Hazard Area, and is characterized with a flooding probability of 1% each year. The vast majority of the Borough (87%) lies outside of the federally designated FEMA flood zones. Approximately 613 acres or 9.7% of the Borough is located within the FEMA 100-Year Flood Hazard Area. The roadways and neighborhoods within the downstream portions of Hohokus Brook encompass the majority of these flood zones and may be more susceptible to flooding events. Roadways and development are also located within the 100-Year flood zones along Vitale's Pond and Clark Pond. (Sections 2.12 and 3.21)

- **Stream Buffers and Riparian Zones** ~ Under the 2007 amendments to the New Jersey Flood Hazard Area Control Rules (N.J.A.C. 7:13) the streams designated as Freshwater 2-Non-Trout (FW2-NT) received a protective riparian zone of 50 feet. Riparian zones play a critical role in maintaining the quality and ecological

integrity of streams. Buffers provide protection against floods, help to ameliorate the effects of prolonged droughts, and provide important habitat for rare, threatened, endangered species in the State. This riparian zone is protected from being disturbed by future developments or tree clearing. Previously, this protective riparian zone was only 25 feet. This 50 foot stream buffer was mandated to protect the integrity of the water resources and restrict further encroachments, disturbances or vegetative clearing. This buffer extends perpendicular from each side of the stream, typically measured from the top of bank. This protective buffer is applicable to the all streams and tributaries in the Borough. Additionally, those streams with documented threatened and endangered species have a minimum 150 foot riparian zone and those listed as Category I as per N.J.A.C. 7:9B have a 300 foot riparian zone (Sections 2.11 and 2.12)

- **Open Space Preservation** ~ The Borough has preserved over 374 acres of open space, including the recently acquired the Haledon Reservoir and surrounding lands. This accounts for 5.9% of the Borough. The Borough has implemented many improvements for the active recreational use of parklands and has created pedestrian pathways that were recommended in the 2002 Open Space Plan to meet the needs of the community. (Section 3.22)
- **Prime Agricultural Soils/Soils of Statewide Importance** ~ Only 20 acres of farmland remains in the Borough, but this farm is not underlain by soils designated by the USDA-NRCS as prime agricultural soils. The State Department of Agriculture, the NJDEP Green Acres Program, and many Counties have adopted preservation policies that encourage the continued farming practices on lands with prime agricultural soils or soils of statewide importance. (Section 3.22)
- **Wetlands** ~ Approximately 464 acres or 7.3% of the land in the Borough are categorized as wetlands. The vast majority (92.7%) of the Borough wetlands is described as deciduous wooded wetlands, and are further categorized as “riparian” or located alongside rivers, streams and lakes. These resources are protected by State regulations as defined by Wetland Protection Act and Rules (N.J.S.A 13:9B and N.J.A.C. 7:7A). Development or disturbances are restricted within the wetlands and a 50 foot transition area, or protective buffer. For wetlands where threatened or endangered species are documented, this protective transition buffer can be increased to 150 feet. (Section 2.9, 3.23, and 3.25)
- **Vernal pool habitats** ~ Vernal pool habitats are defined by the New Jersey wetland rules as ephemeral wetlands that are characterized by confined hydrologic pools or basins and ecological function. Vernal pools provide critical breeding habitat for specific frog and salamander species listed by NJDEP, and certified vernal pool habitats are protected from disturbance by the wetland rules. One vernal pool habitat has been identified in the Borough, but many more vernal pools are likely present in the forested riparian zones and floodplains, but have

- not yet been formally identified. Future development should ensure that forests and floodplains are properly assessed to ensure that these critical breeding pools are not disturbed. (Section 2.9 and 3.23)
- **Forest Habitats** ~ There are approximately 1230.9 acres of forest remaining within the Borough or 19.53% of the land use. The majority of the forested land consists of deciduous forests, and these habitats are located primarily within the riparian zones and along steep sloped areas, and within preserved open space. Fragmentation of forests can degrade wildlife habitats causing declines in the population of sensitive species. A Community Forest Plan was created in 2008 that primarily focuses on the stewardship for tree hazards in parklands, and shade tree initiatives, such as planting street trees. The 1974 ERI included a detailed inventory of the flora and fauna on several parcels, including the dominant forest type and wildlife habitats on these parcels. This data should be referenced and incorporated for any proposed forest inventory. (Section 3.26)
 - **Threatened and Endangered Species** ~ The NJDEP has reported that rare, threatened and endangered species are present in the Borough, and include the bobcat, barred owl, red-shoulder hawk, timber rattlesnake, and marbled salamander. Species of priority concern for conservation are also documented by NJDEP and include the eastern box turtle, Folwer's toad, gray catbird, and Tiger Spiketail. The critical habitats for these rare species include forest areas and forested wetlands. The Coopers hawk and wood turtle were recently documented by environmental consultants at the Haledon Reservoir, and this documentation should be submitted to the NJDEP to ensure that the data is officially mapped and incorporated within the NJDEP Landscape Project database. (Section 3.23)
 - **Environmentally Sensitive Areas** ~ A composite of various environmental GIS data layers was completed for the Borough. This analysis identified parcels where future development may be constrained by the presence of environmentally sensitive resources, regulations and policies that protect these sensitive resources. The constraints may include areas including the 100 year flood hazard zones, wetlands, riparian zones, open space, steep slopes, wellhead protection areas, and wildlife habitat for threatened or endangered species. Resources located within these areas are especially vulnerable to land disturbance and development activities, as well as impacts from nonpoint source pollutants including hydrocarbons, eroded soil, fertilizers, pesticides, heavy metals, and road salts. (Section 3.27)

1.6 Resource Management Recommendations ~

This section includes an outline of potential recommendations to better manage the environmental resources, which the Borough can consider implementing. This summary of recommendations is based upon the detailed descriptions and mapping of the Borough's environmental resources provided within Section III of this ERI report.

Quality of life issues continue to be a major reason why families and businesses choose to locate in specific communities. Access to schools, businesses, transportation hubs, clean water, parks and open space are desirable community assets. Based on the above findings, the management recommendations included in the ERI are intended to assist the Borough in sustaining a good quality of life and achieving the following resource protection goals:

- Provide the opportunity for economic success and sustainability, while protecting the resources vital to the quality of life of the residents of the Borough of Franklin Lakes and the habitat needs of flora, fauna and wildlife.
- Protect to the fullest extent practical well head areas and areas of significant groundwater recharge in order to ensure ample, clean potable drinking water.
- Protect historical sensitive features and landmarks from disturbance, degradation and development.
- Implement measures that decrease the opportunity for the generation and release of point and non-point source pollutants.
- Maintain, restore or improve as needed, the quality of streams, ground water, air, soil, rural character and overall quality of life.
- Preserve, protect and maintain large, intact areas of native vegetation from future fragmentation and reduction.
- Protect both regionally and locally important species of concern by protecting habitat, maintaining corridors of movement and connections among habitat, and by maintaining significant ecological processes in protected areas.
- Establish and implement best-management practices for the protection of native species and their essential habitat.

To bring these various goals to fruition will require the implementation of both long-term and short-term resource management measures and practices. These recommendations are designed to support existing environmental protection efforts, and to build upon existing zoning and land development regulations for the Borough. These recommendations contain regulatory and non-regulatory goals, objectives, and strategies to preserve, enhance, maintain and restore the Borough's environmental and cultural resources

- **Land Use Ordinances** – The Borough provides land use ordinances and zoning that affect where and how residential and commercial development can occur. Additional development ordinances, such as measures to minimize clear cutting of forested areas, to protect natural vistas, to protect historic landmarks could also be considered. The Borough can also evaluate the existing setback requirements, height restrictions, impervious cover limitations, and Floor Area Ratios (FAR) to ensure that infill projects or re-development projects continue to provide adequate land and buffers to protect septic system functions, groundwater recharge, groundwater quality, reduce stormwater runoff, and protect local wildlife habitats and neighborhood sensitive features. (Section 2.10 and 3.7)

- **Wellhead Protection Areas** –The NJDEP provides mapping of Wellhead Protection Areas (WHPA) to identify vital water supplies. Future development or growth near these wellhead protection areas should be carefully evaluated to ensure that the water quality and groundwater recharge of these community wells are not degraded. The protection of designated wellhead areas can be supported by the adoption of a local ordinance that restricts certain high risk land uses, such as gasoline stations from impacting these wells. The Highlands RMP recommends the adoption of wellhead protection ordinances and several communities in New Jersey have adopted such an ordinance. Several communities in New Jersey have adopted such an ordinance and the Borough should also consider adopting a wellhead protection ordinance. (Section 3.11)

- **Ground Water Quality** - Homeowners should be encouraged to periodically test wells and understand their water quality to safeguard their family's health. Various treatment systems that can be installed to address commonly detected contaminants such as elevated levels of iron or arsenic. Annual testing for nitrates and pathogens and possibly volatile organic compounds (VOCs) should also be considered. Given the reliance of the majority of the Borough on groundwater for drinking water, well head zones should be protected from impairment, including actions that could contaminate or degrade the quality of the groundwater. (Section 2.10 and 3.14)

- **Groundwater Recharge** - The Borough could work with the NJDEP and the United Water New Jersey to better assess current ground water recharge conditions and determine whether existing groundwater and stormwater protections are adequate, or whether additional zoning measures are needed to protect public wells, such as limiting impervious coverage or floor area ratios within wellhead protection areas. (Section 3.12)

- **Septic Management** – The majority of the Borough relies on on-site septic systems and pathogens have been detected in local streams. Onsite septic systems need to be properly constructed and maintained, and septic tanks should be pumped out routinely (at least once very three years). The NJDEP adopted new Water Quality Management Plan (WQMP) Rules in July 2008 that require municipalities to adopt Septic Management Plans and require mandatory septic maintenance programs, possibly via an ordinance. Therefore to protect surface water and groundwater supplies, the Borough should develop educational programs that promote the routine pump out septic system tanks on a three year cycle, and provide guidance to homeowners in the proper maintenance and inspection of septic systems. Guidance for septic systems and wells can be disseminated through brochures, at community events, and via sponsored educational programs. Some New Jersey communities within the Highlands and the Pinelands are adopting septic management programs that require a license, a limited fee, and proof that the septic tank is pumped out every three years. (Section 2.10 and 3.14)

- **Surface Water Resources** – Twenty streams, lakes and ponds are present in the Borough, and valued by the residents. In 2006, the Borough acquired the Haledon Reservoir. The water quality of the Borough’s streams and open waters are best protected through the implementation and strict adherence to the requirements for stormwater management detailed in the State’s stormwater management regulations and in the Borough’s Municipal Stormwater Management Plan (MSWMP) and Ordinance. The acquisition and protection of stream corridors, riparian zones or wetlands in the form of preserved open space or through conservation easements could also be considered. (Section 3.18, 3.19, and 3.20)
 - The Haledon Reservoir Advisory Committee outlined measures to remove debris from the wooded areas, improve safety concerns and pedestrian access.
 - Dams are present on each of these lakes, and are required by the NJDEP Dam Safety rules to be inspected and maintained New Jersey Dam Safety Standards. The Environmental Commission initiated an inventory of these dams (N.J.A.C. 7:20) (<http://www.state.nj.us/dep/nhr/engineering/damsafety/standard.pdf>)
 - The NJDEP has reported that Hohokus Brook and Pond Brook are impaired by pathogens (fecal coliforms) and the community should work to assess sources of these impairments and reduce these loadings.
 - The Borough has participated with the Geese Peace organization to obtain training techniques to humanly reduce Canada geese populations and lessen the impact the geese have on water resources and parklands. This will help to address some of the pathogen impacts.
 - Lake or pond management educational programs could also be sponsored in the community. Through education, preservation and improved management of riparian zones, improvements can be realized for stream quality, and the biological integrity of stream ecosystems, including adjacent riparian zones and wetlands.

- **Stormwater Management** - In 2004, the NJDEP Stormwater rules required municipalities to adopt a stormwater management plan and a variety of ordinances that address: stormwater controls for new developments, pet waste, litter and dumping controls, yard waste, wildlife feeding, and illicit connections. In addition, the community must ensure appropriate stormwater maintenance, record and monitor stormwater outfalls, and provide public education on stormwater pollution issues. The Borough has submitted annual reports to the NJDEP documenting their compliance with these various measures. (Section 2.11, 3.19, and 3.20)
 - The Borough could consider modifying the Stormwater Plan and Ordinance to address more strict controls for *redevelopment* projects. The current ordinance addresses new development, and many redevelopment

- projects will be exempt from implementing significant stormwater management controls.
- The Borough could consider reducing fertilizer applications on parkland in order to reduce the potential for runoff impacts to local surface waters.
 - If the Borough identifies impacts to streams and water quality from existing development, these areas and stormwater infrastructure can be included on a Municipal Stormwater Mitigation List. Developing a Stormwater Mitigation List is a voluntary action, but this Mitigation List can identify opportunities to improve stormwater management and water quality that can include: stormwater management upgrades, catch basin retrofits and new installations, improved recharge, peak flow mitigation, pollutant reduction, and stream bank restoration (N.J.A.C. 7:8-5.1). New development projects or redevelopment projects could assist in addressing these potential stormwater BMP upgrades or retrofit opportunities, as conditions of approving a variance or waiver of complying within the stormwater regulations and ordinance.
 - Where feasible, stormwater BMPs that encourage groundwater recharge and minimize the volume of stormwater runoff should be promoted, including the use of on-site systems such as rain gardens and roof-top runoff connections to drywells. (Section 2.11)
- **Open Space Preservation** – The Borough has preserved 374 acres of land and open waters. Inventories of the natural flora and fauna were conducted on certain parcels in 1974 and are proposed to be updated in the Community Forest Plan. Critical habitat for threatened and endangered species are present on some of these parcels, and understanding this information can lead to improve stewardship, improved management of these resources and improved habitat for these rare species. (Section 3.22)
 - The information presented in the map of Environmentally Sensitive Lands or constrained land, can help to identify and prioritize additional land acquisition for the purpose of preserving and/or protecting wildlife habitats, significant environmental and scenic resources, water and water quality. Parcels designated as sensitive to disturbance or development should be prioritized and set aside for passive recreation and habitat preservation. Attention should also be given to parcels located within or adjacent to the more developed sectors of the Borough to serve the local residents. These open space acquisitions could be used to meet both the passive and active recreation demands of the community.
 - Prior to 1950, the history of the Borough included a vibrant farming community. Today only 20 acres of farmland remain. Preserving the remaining farmlands would serve to preserve this history and protect ground water recharge for the public wells.
 - Based on the NJDEP Green Acres data from November 2008, 28 of the 70 communities in Bergen County provide an open space tax program.

- **Greenway Plan** - Within the Borough nearly 1200 acres of undeveloped forest and wetlands remain. Much of these lands are located within the regulated riparian zone for the streams and along the ridges and steep slopes. The Borough could consider formally adopting a Greenway Plan that encourages additional connection and linkage of open space and parklands throughout the Borough. Conservation easements should continue to be acquired including areas along stream riparian zones, the 100-year flood plain, wetland, and wetland transition areas, state open waters, steep slopes, and other significant natural and environmental features. The Greenway Plan could provide additional public access via passive hiking trails where appropriate. (Section 1.7 and 3.22)

- **Pedestrian Paths and Bikeways** - The Borough recognizes the importance of pedestrian paths and bikeways for both recreational and alternative transportation uses. Increased emphasis could be placed on making the existing and future commercial areas more accessible by safe pedestrian paths. In addition, bicycle racks could be provided in shopping areas, library and all recreational areas. When applications for future development projects are submitted to the Borough for review, provide recommendations that the connection of safe pedestrian paths and bikeways be incorporated into the plans. (Section 2.3, 2.5, and 3.22)

- **Easement Documentation** - The Borough has created a digital database of some of the existing conservation easements. Additional efforts should continue in order to develop and implement a comprehensive plan to identify and catalog the location of each conservation easement within the Borough. Efforts should be taken to incorporate an inventory of existing easements into GIS mapping. In the upcoming years, the Borough could perform baseline inspections of these conservation easements and routine inspections in the years to come, to ensure these areas are not illegally altered or encroached upon. (Section 3.22)

- **Community Forest Plans** - The 1974 ERI included a detailed inventory of the flora and fauna on several parcels, including the dominant forest type and wildlife habitats on these parcels. Critical habitat for threatened and endangered species are present on some of these parcels, and understanding this information can lead to improve stewardship, improved management of these resources and improved habitat for these rare species. The data from the 1974 ERI should be referenced and incorporated into any future Community Forestry Plan or forest inventory. (Section 3.23 and 3.26)

- **Environmentally Sensitive Areas** ~ A composite of various environmental GIS data layers was completed for the Borough identifying parcels where future development may be constrained by the presence of environmentally sensitive resources and regulations and policies that protect these sensitive resources. The constraints may include areas including the 100-year flood hazard zones, wetlands, riparian zones, open space, steep slopes, wellhead protection areas, and wildlife habitat for threatened or endangered species. Resources located within these areas are especially vulnerable to land disturbance and development

- activities. The Borough can consider land use regulations that will limit development or require the implementation of additional safe guards when development activities are proposed in areas identified as environmentally sensitive or constrained lands. (Section 1.7, 2.5 and 3.27)
- **Protection of Scenic Views**– Preserving scenic resources was identified as a goal in the 1999 Historic Inventory Report prepared for the Borough. These areas included scenic vistas from high ridges, vistas of lakes, ponds, wetlands and forested areas. Preserving scenic views can include restrictions on: cell towers, water towers, utility lines, billboards, and building heights within these areas. The preservation of scenic views can also include encouraging conservation easements or the acquisition of lands. In order to support the preservation of local scenic views, the community can also sponsor activities such as community walks, and photograph contests, and encourage voluntary protection measures. (Section 2.5, 3.8)
 - **Historic Preservation** - The Borough should continue to preserve historic and cultural resources, and consider the creation of a historic district area to be consistent with the guidelines provided by the New Jersey Historic Preservation Office. The Borough should create an inventory and photo documentation of each historic property that is eligible to be registered on the State Historic Registry. This inventory/survey should be periodically updated to reflect the changes that have occurred within the Borough. If a historic district is adopted, the Borough can consider ordinances to ensure that future development will not be threatened or disturb the integrity of the historic landmarks or district. (Section 3.28)
 - **Increase Recycling Efforts** - The NJ State League of Municipalities (NJSLOM) reports that New Jersey achieved a 45% recycling rate for municipal solid waste (MSW) in 1995; and 61% recycling rate for total solid waste (TSW) in 1997. However, recycling rates in New Jersey have declined, and in 2003 New Jersey recycled 33% of MSW and 52% of TSW. State funding for municipalities may become available for recycling enhancement programs that include: purchase of recycling containers, maintenance of a municipal drop-off center, management of a municipal compost site, household hazardous waste events, costs related to education and outreach for the municipal recycling program, or for the enhancement/enforcement of the local recycling ordinance. Section 1.7 and 2.3)
 - The Borough could continue to sponsor community cleanup days, which were well supported by the community.
 - Members of the EC are reviewing the Borough's waste and recycling program and ordinances to ensure that the solid waste recycling ordinance conforms to the new regulations regarding electronic waste recycling that go into effect on July 1, 2009. The Borough officials are reviewing the current recycling program and evaluating measures to increase the efficiency of the program, expand the recycling services that

are offered, increase the participation, and increase the volume of materials recycled.

- Increasing recycling efforts at the municipal offices and local schools could be evaluated.
 - Requiring redevelopment or infill projects to follow LEED certification guidance, would also compel the recycling of demolition materials from these projects, reducing the solid waste that would go to a landfill.
- **Future Development and Redevelopment** – Future appropriate development and redevelopment should be implemented in a manner that is sensitive to 1) the historic nature of the community, 2) mindful of the important water supply wells and wellhead protection areas, 3) sensitive to the various waterways and environmental constraints within the Borough, 4) sensitive to critical wildlife habitats, and 5) mindful of a community desire to protect and maintain these resources into the future. Policies and ordinances should be created to ensure future redevelopment occurs in an appropriate manner. (Section 1.7, 2.3, and 3.27)
 - **Green Building and Development** – In 2008, that state of New Jersey amended the Municipal Land Use Law (MLUL) to authorize a local planning board to include in its Master Plan a green buildings and environmental sustainability plan element (MLUL 40:55D-28 (15)). Green building construction practices were also inserted into the State Uniform Construction Code Act (UCC). Green buildings are designed to minimize the negative impact of buildings on the environment and their occupants and may consider five broad areas including: sustainable site planning; safeguarding water and water efficiency; energy efficiency and renewable energy; conservation of materials and resources; and indoor environmental quality. The concept of green development incorporates environmental concerns early in the site design process, and addresses environmental issues holistically to integrated systems, such as stormwater measures and landscaping designs. The amendment to the MLUL encourages towns to adopt plans and ordinances that encourage and facilitate green building projects. (Section 1.7 and 2.3)
 - **Energy Planning** – Energy planning is not addressed in this ERI, but the Borough could join several New Jersey communities that are undertaking efforts to audit their energy uses for municipal buildings, fire stations, schools, senior centers and libraries. Communities are identifying measures such as switching to energy efficient fluorescent lights, and improving winterizing windows and doors. Some communities are incorporating solar energy projects into public buildings; evaluating the use of renewable energy providers; and incorporating biodiesel for municipal diesel vehicles. The Borough could consider similar efforts to reduce its carbon footprint, be more energy efficient and realize cost savings.

An energy audit of all facilities owned and operated by a municipality will reveal annual energy use and costs associated with particular buildings and facilities,

costs of suggested improvements, potential energy and cost savings, and the length of time that will be needed to recoup improvement costs. Recommendations in an audit can range from improved energy data management, to appropriate energy-saving technologies, to structural improvements and system retrofits, to behavior change strategies for energy conservation. (Section 1.7, 2.3, and 3.3)

Funding for conducting an energy audit is available through The New Jersey Board of Public Utilities, Office of Clean Energy (BPU) Municipal/Local Government Energy Audit Program. <http://www.njcleanenergy.com/commercial-industrial/programs/local-government-energy-audit/local-government-energy-audit>

- **A Municipal Carbon Footprint** ~ The NJDEP Office of Science and Technology January 2008 report on greenhouse gas emissions reports that CO2 emissions are increasing primarily from fossil fuel use, and land-use changes provide other significant contributions. Completing a Municipal Carbon Footprint provides an inventory of the GHG emissions from potential sources such as municipal facilities, fleet, and operations. The Carbon Footprint measures the amount of greenhouse gas (GHG) emissions produced by local government operations in a given year. Data from the energy audit can assist in the creation of the Carbon Footprint and policies can then be evaluated to reduce the municipal greenhouse gas emissions. The footprint will also enable a municipality to track its progress and determine if new policies are having an impact. (Section 1.7, 2.3 and 3.3)

- **Highlands Region** ~ The Borough is located outside of the Highlands Region, and the Highland rules and regulations do not apply directly to the Borough. However, planning policies within the July 2008 Highland Regional Master Plan could be considered for adoption for the Borough, such as the wellhead protection ordinance. (Section 2.8)
 - The Highlands Water Protection and Planning Act (Highlands Act, HWPPA N.J.S.A. 13:20-1 et seq.) was signed into law in August 2004 to preserve open space and protect the state's greatest diversity of natural resources including the vital drinking water resources in this region.
 - The Highlands Act and Regulations created the Highlands Water Protection and Planning Council (the Highlands Council), and established two distinct development zones, the Highlands Preservation Area and the Highlands Planning Area. It also required the Highland Council to develop the Highland Regional Master Plan (RMP) for the entire region, which was adopted in July 2008. Development in the Highlands Region is subject to these rules, with regional standards to be implemented through the Highlands Regional Master Plan (RMP). The RMP contains various planning and development policies that the Borough could also consider.

- **Keep the Public Involved** - It is important to cultivate a sense of community identity and pride, so residents know why their community is special. Educate the community through news articles, special hikes, and workshops to energize their interest and input on local planning issues and some of the recommendations outlined in this report. Increasing the understanding of your community resources will promote more responsible use and preservation. (Section 1.7 and 2.3)