SECTION 7

Summary of Mitigation to Address Secondary and Cumulative Impacts

As described in Section 6, the Town of Cary is taking a progressive approach to protecting the environment. The Town has developed many programs to pursue the goals of service provision and environmental protection. This section summarizes the possible and potential SCI to natural resources and the mitigation programs in place to address them, as shown in Table 7-1 following the discussion below.

7.1 Topography and Floodplains

Clearing and grading of undeveloped lands will change a site's topography. The Town reviews erosion and sediment control plans to minimize grading in area of steeps slopes. The angle for graded slopes and fills is not permitted to be greater than the angle which can be retained by vegetative cover.

The current Town floodplain ordinance does not permit residential structures within FEMA-regulated floodplains. Commercial structures must be constructed outside the floodway, but base floor elevations must be 2 feet above the floodplain. Commercial development in the floodplain is discouraged by requiring a Special Use Permit, and the Town issues these permits rarely. Floodplains of smaller streams not under FEMA's jurisdiction are protected by the stream buffer ordinance. No structures can be placed within the 30-foot wide Zone 1 undisturbed stream buffer. Only small structures such as sheds are permitted within the 20-foot wide Zone 2 buffer. For new development, residential lots must be platted outside riparian buffers and floodplains.

In areas outside the Town's jurisdiction but within the Planning Area, floodplains are also protected. A Wake County ordinance prohibits development, including fill, in the floodplain. The County regulates streams outside FEMA's jurisdiction by prohibiting development in flood hazard soils and through buffer requirements. Thus, impacts to floodplains will be limited.

The floodplain maps within the Planning Area and County are being updated; these updated maps are likely to include rises in floodplain elevations in some areas such that more areas will be designated as floodplain and protected from development.

Impacts to wetlands will be minimized by stream buffers, floodplain protection, and other development controls. While some wetland loss still occurs with permitting, overall SCI to wetlands in the Planning Area will be minimized by limiting or prohibiting construction and fill according to the LDO's floodplain and stream buffer regulations. By preserving floodplains, their water storage capacity, habitat, filtration, and infiltration functions will also be preserved.

7.2 Soils

Soil loss will be minimized during development through the implementation of the Town's erosion and sediment control program. Contractor education will also limit impacts on soils (Clear Water Contractor). Development of lands will result in higher levels of imperviousness, but as shown through small area land use plans, good land use planning practices can accommodate future populations while limiting impacts associated with increased imperviousness.

7.3 Land Use

As outlined in Sections 4 and 5, a loss of agricultural and forested land will result as development occurs within the Planning Area, and open space areas may become more fragmented. The Town's Land Use Plan, PRCR Master Plan, Open Space Plan, and Transportation Plan establish the framework for preserving open space through planning;the LDO implements the plans through development regulations.

The Town's OSP prioritized areas for preservation based in part on ecological significance of the land, mitigating for land use changes by focusing development in appropriate areas. The Town has used its PRCR Master Plan to plan the location of open space and greenways. Development fees, bond funds, and general funds are used to purchase important open space areas (GreenPlay, 2012). In addition, the Town negotiates preservation of identified open space areas during the development process. Developing park lands and greenways will also limit the impacts to open space.

The LDO requires protected stream buffers and floodplains, open space in subdivisions, and landscape buffers between different land uses. These programs help protect open space and limit impacts to forested and agricultural land. The riparian buffer and floodplain corridors will be largely protected through implementation of the LDO, which will provide habitat corridors and help limit impacts to habitat fragmentation. The Town allows cluster development and provides incentives for the protection of open space in the southwest area through the conservation residential overlay district, enabling a developer to achieve the number of housing units that would be allowed within a conventional subdivision, but developing less land area. This enables the Town to protect higher amounts of open space and direct development away from important environmental resources.

7.4 Wetlands

Impacts to wetlands will be minimized by stream buffers, floodplain development limitations, and other development controls as well as state and federal regulations. As described in Section 4, the majority of wetlands are located in riparian areas. While some wetland loss will still occur with permitting, overall SCI to wetlands in the Planning Area will be minimized by limiting or prohibiting construction and fill according to the LDO's floodplain and stream buffer regulations. While the Town does not have a wetlands permitting program, it requires that all permits, certifications, and authorizations issued by the USACE and NCDWR be obtained before it will allow a site to be developed. This minimizes impacts to wetlands within the Planning Area. By protecting the wetlands, their habitat functions and associated species and genetic diversity functions are also protected.

As outlined in Section 5, increased pollutant loading that occurs with development can result in a decrease in a wetland's ability to filter pollutants. A wetland's ability to attenuate flow may also be compromised by increased stormwater runoff or stream channel entrenchment. The Town currently has a stormwater program in place that is designed to control nitrogen loading. BMPs installed to reduce nitrogen loading also address other pollutants.

7.5 Prime or Unique Agricultural Land

As development pressures increase in the area, agricultural land will likely be lost, and remaining prime farmlands may be developed. The Town and Wake County have programs in place to help minimize these impacts. The Town's Land Use Plan also directs highest-density development to areas along major roads and in closest proximity to RTP and the City of Raleigh. Lowest-density development is planned for areas in proximity to Jordan Lake and in the Middle Creek area, where lower-density development is currently in place. These land use planning practices may minimize pressures for conversion of agricultural land to other land use types.

The Wake Soil and Water Conservation District works cooperatively with landowners to encourage farmland preservation and protection, as discussed in Appendix B. This voluntary program was established in 1998 and includes efforts to provide farmers with proper estate planning and protect farms through the purchase of development rights. The latter program has received limited funding, but has been successful in its limited applications. In addition, the County provides tax relief to qualifying farm owners to help offset tax burdens as property values rise in the County.

7.6 Public Lands and Scenic, Recreational, and State Natural Areas

The Town has developed a PRCR Master Plan that depicts existing and proposed open space and greenways within the Planning Area Miles of greenway have been added within the Town over the last decade and plans for more are in place, including plans to obtain funding (GreenPlay, 2012). With the continued implementation of this Master Plan, scenic areas, open space, and parks will be a high priority for the Town and will provide mitigation for losses of open space as the Town grows. These planned greenways and additions to the park system will offer recreational opportunities and wildlife habitat. The ATT will be expanded to provide a larger link between Durham and Wake Counties. Lands adjacent to Umstead State Park and Lake Crabtree are also planned for preservation, protecting large areas of scenic and recreational areas.

The Town does not have explicit ordinances to protect the SNHAs. However, as development occurs in these areas, protection can be negotiated.

7.7 Areas of Archaeological or Historical Value

Historical areas may be impacted directly by future projects, but indirect impacts are unlikely. It is likely that more cultural and historical areas within the Planning Area will be protected over time due to implementation of the Historic Preservation Master Plan (Town

of Cary, 2010). A goal of the plan is to preserve historical landscapes that reflect the Town's rural heritage. It is likely that few SCI will occur to cultural and historical resources.

Increased traffic vibration and reduced air quality (through acid rain) could impact historic structures. However, the Town is developing alternative modes of transportation and increasing the interconnections of sidewalks, trails, and bike lanes to promote alternatives to vehicle use, which will help reduce the source of these impacts. The Town's tree protection ordinance also helps address air quality issues, because trees filter air.

7.8 Air Quality

To address the impacts of growth on air quality, the Town is actively pursuing alternative modes of transportation. Increasing the interconnections of sidewalks, greenways, trails, and bike lanes will reduce the needs for vehicular use. For example, a trail will connect the Town to RTP, encouraging transportation alternatives for commuting. As growth occurs, such efforts to reduce vehicular use will limit air pollution increases. A tree ordinance is also in place to protect trees during construction, which also improves air quality, because trees are natural air filters.

In addition, Wake County appointed a sustainability task force that has identified several strategies and performance measures for air quality goals (Wake County, 2011). Several regional planning efforts aim to reduce VMT and appropriately size roads according to air quality modeling analyses (TJCOG, 2013 and 2014).

A regional light rail system is planned for the Triangle area (Wake County, 2012). The EIS prepared for this project indicate that parking areas to serve the light rail system will not impact levels of carbon monoxide. The EIS also indicate that the light rail system will result in lower levels of vehicle pollutant emissions (USDOT, 2002).

In 2013, North Carolina had its lowest ozone levels since air monitoring began in the early 1970s. The declining ozone levels coincided with lower emissions from the state's power plants. The state's coal-fired power plants have reduced their NOx emissions, a primary industrial contributor to ozone pollution, by more than 80 percent since the General Assembly enacted the Clean Smokestacks Act in 2002 (NCDENR, 2013a).

State legislation to decrease NOx emissions from power plants has significantly reduced ozone pollution, as discussed above and in Section 6. Additionally, the Town's actions and regional efforts will limit SCI to air quality.

7.9 Noise Levels

Efforts to improve air quality by promoting alternative forms of transportation will also limit SCI associated with noise levels in the Planning Area. As more quiet, alternative forms of transportation, such as bike lanes and greenways, and increased interconnections of sidewalks and greenways promote more pedestrian activities, vehicular traffic noise levels are likely to be reduced. In addition, landscape buffers and tree protection around different development types are required in the LDO. These buffers help reduce noise.

7.10 Water Resources

7.10.1 Surface Water

As growth occurs, impacts to water resources are and will be minimized by existing stream buffer regulations, the Town's NPDES Phase II stormwater program, and nitrogen stormwater regulations that comply with the Jordan Lake Rules, the Neuse River basin NSW rules, WSW management efforts, and requirements related to erosion and sediment control and open space preservation. The greatest water quality and quantity protection will be achieved by preserving stream buffers and installing stormwater control measures during development. Stream buffers will limit changes in stream channel morphology, erosion, and other habitat degradation. Stormwater controls will limit sediment loading and hydrology changes. The Town requires that stormwater volume be controlled for the 1-year, 24-hour storm to maintain the natural hydrograph and protect the channel morphology. The Town annually hosts several workshops, including one related to LID, for citizens as well as contractors and developers. Without these regulations and programs, SCI to water resources would be more pronounced.

It should also be noted that as redevelopment occurs, the Town has opportunities to require stormwater controls and riparian buffer restoration to the maximum extent practicable. While the stormwater controls and riparian buffers may not be as extensive as those required for new development due to site constraints, they provide an opportunity to improve water quality and aquatic habitat. These practices may help improve water quality on 303(d) listed streams and in NSWs and WSWs.

All waters within the Planning Area are classified as NSW in response to excessive growth of vegetation. Current strategies to limit nutrient loading will help protect water quality.

Some watersheds are subject to additional regulations designed to limit development impacts to water resources. Surface water impacts will be limited in the Swift Creek watershed, due to its designation as a WSW and the Swift Creek Land Management Plan. This watershed has development density limits as well as BMP mandates to protect water quality. The Jordan Lake watershed is also subject to WSW rules to limit impervious surfaces and development densities, in addition to stream buffers, as well as the Jordan Lake Rules limiting nutrient loading for both nitrogen and phosphorus from new and existing development.

In addition to the Town ordinances and policies described in Section 6, the Town will also look for opportunities to improve water quality. For example, the Town has worked with state agencies to identify areas for stream restoration and other strategies and pursue funding through the EEP Section 319 program and other funding sources. The Town also actively participates in the development of any TMDLs where activities in the Town may be impacting water quality.

The construction of sewer lines, water lines, and roads may also impact water quality, particularly where they cross streams. There are sediment impacts from construction, although the use of proper erosion and sediment controls helps minimize such impacts. In general, these impacts are direct impacts, but there is also a cumulative direct impact from

previous crossings and other future crossings. The Town will review the cumulative direct impact in future EAs and EISs.

The Town also has a progressive reclaimed water program that reduces the water supply withdrawal from Jordan Lake during dry weather periods and reduces the nutrient loading to streams that receive the treated wastewater effluent. Thus, the use of reclaimed water minimizes impacts to natural flow regimes. From the water supply source, less water is needed during dry months with a reclaimed water system.

Wake County also implements stormwater management programs, WSW protection programs, and riparian buffer and open space preservation programs in areas outside the Town's jurisdiction. These programs are described in Appendix E.

The Wake County Watershed Management Plan recommended that the County develop an in-stream monitoring program. Implementing such a program at the County level is more efficient than at the Town level. Wake County is performing targeted in-stream monitoring

7.10.2 Groundwater

As growth occurs, impacts to groundwater resources will be mitigated by stormwater programs. These programs can be used to limit the amount of impervious surface in developments, reducing the impacts to groundwater recharge rates. Stormwater programs will also address potential impacts to groundwater quality through improper disposal of wastes. Positive impacts will occur as fewer residents rely on groundwater as a public water supply source. Also, a number of septic tank/ground absorption systems serving residences may be eliminated, reducing the public health risk of groundwater contamination from leaking or failing septic tanks.

7.11 Forest Resources

As outlined in Sections 4 and 5, loss of forested land will result as development occurs within the Planning Area, and open space areas may become more fragmented. The Town has several programs in place to help minimize these impacts. Its Growth Management Plan sets the foundation for preserving open space through open space planning, land use planning, and development ordinances.

The Town of Cary's OSHRP prioritized areas for preservation based in part on ecological significance of the land, mitigating for land use changes by focusing development in appropriate areas. The Town has used bond programs and general funds appropriated to purchase important open space areas. In addition, the Town negotiates preservation of identified open space areas during the development process. Plans for the acquired open space are identified in the PRCR Master Plan. The Plan also identifies current and proposed greenways (GreenPlay, 2012).

The LDO requires protected stream buffers and floodplains, open space in subdivisions, and landscape buffers between different land uses. These programs help protect open space and limit impacts to forested and agricultural land. The riparian buffer and floodplain corridors will be largely protected through implementation of the LDO, which will provide habitat corridors and help limit impacts to habitat fragmentation.

The Town's Land Use Planning policies also protect forest land. The majority of forest land within the Planning Area is located in the western portion, within the Jordan Lake watershed. Impacts to forested lands will be lower in the Jordan Lake watershed because of WSW regulations and the Jordan Rules, limiting the amount of built-upon area and the presence of 200-foot buffers along many of the streams. The existing Land Use Plan only includes low-density residential development in this watershed, protecting some forest resources, wildlife habitat, and the Town's drinking water supply. In addition, the Town has a tree protection ordinance.

7.12 Shellfish or Fish and their Habitats

Fishery impacts will be limited in the Planning Area by the Town's current mitigation measures and regulations. As discussed below, water quality and quantity impacts will be limited by stream buffers, floodplain protection, BMPs, and open space preservation. Protecting the habitats of aquatic communities will, in turn, protect the aquatic species themselves.

The construction of sewer lines, water lines, and roads, particularly where they cross streams, may impact water quality and the aquatic habitat of rare mussels. Sediment impacts from construction will occur, although the use of proper erosion and sediment controls will help minimize such impacts. In addition, where culverts are used for road crossings and not buried to sufficient depths, a natural substrate will no longer exist to provide aquatic habitat. In general, these impacts are direct impacts, but there is also a cumulative direct impact from previous crossings and other future crossings. The Town will review the cumulative direct impact in future EAs and EISs. For future infrastructure projects that may impact rare species, the Town will work with USFWS to determine whether surveys are needed to evaluate potential impacts.

In summary, SCI to fisheries will be limited because of protection measures already in place.

7.13 Wildlife and Natural Vegetation

The mitigation measures to protect wildlife resources include protecting habitat with riparian buffers, protecting open spaces, and limiting habitat degradation through control of erosion, sediment, and stormwater runoff. Wildlife habitat may become more fragmented, but the Town's riparian buffer and floodplain protection programs in the LDO will help maintain wildlife corridors. As described in the LDO, the Town plans wider corridors (in Kit Creek, Panther Branch, Morris Branch, and Nancy Branch) and in its Conservation District Overlays, as well as in some areas that it negotiates during the development process.

Impacts to federally listed species known to be present in Wake County and near Jordan Lake are not likely to occur. Impacts to the bald eagle population are likely. Lake Crabtree and nearby Jordan Lake are within a park and USACE-managed land, respectively, and should not be impacted by surrounding development. The Northern long-eared bat is proposed for federal listing; this species is not known to occur within the Planning Area and impacts are not likely. Michaux's sumac is listed as federally endangered and has been located elsewhere in Wake County. Since no occurrences of Michaux's sumac have been recorded in the Planning Area, it is unlikely that this species would be impacted by SCI within the Planning Area.

Protected and rare freshwater mussel species are known to occur and/or have been recorded downstream of the Planning Area and have the potential to be impacted by upstream development although riparian buffers, stormwater controls, open space protection, and other measures are in place to mitigate the potential for impacts. Regulations currently in place will limit impacts to freshwater mussel species within the Planning Area. The established 100-foot stream buffers will help to protect stream channel stability, limit sediment loading, and maintain water temperature. The Town's current stormwater ordinance requires that the peak flow for the 1-year, 24-hour storm be maintained and that larger storm event hydrographs be only minimally impacted. Any development which disturbs 12,000 square feet of land or more must have an approved erosion and sediment control plan. As redevelopment occurs, the Town will take the opportunity to require stormwater retrofits and riparian buffer restoration to the maximum extent practicable.

In the Swift Creek watershed, the rare mussel species are located downstream of Lakes Benson and Wheeler. These impoundments will also help alleviate the impacts of increased stormwater runoff and pollutant loading to the rare mussels. The Swift Creek watershed is classified by the state as SAESH. Wake County and local governments with jurisdiction in the watershed developed a land management plan to protect the Lake Wheeler drinking water supply. The components of this plan will also limit impacts to aquatic species.

The Town's current and planned stormwater programs, riparian buffer ordinance, and erosion and sediment control ordinance will help protect these species. In addition, Middle Creek and Camp Branch have fairly wide FEMA floodplain boundaries within the Town's jurisdiction. Since the Town does not allow development in the FEMA floodplains, impacts to the species will be minimized.

In addition to the Town ordinances and policies described in Section 6, the Town will also look for opportunities to improve aquatic habitat. For example, the Town will work with agencies to identify areas for stream restoration and other strategies and pursue funding through the EEP Section 319 program and other programs.

State-designated protected areas such as some state-owned SNHAs (Umstead Park, Hemlock Bluffs) and the Swift Creek watershed afford additional protection of wildlife habitats and vegetative communities. Many SNHAs also provide habitat to state-listed plant species.

Many of the SNHAs within the Planning Area are privately owned and not permanently protected. The Town will work with the NCNHP and NCWRC to identify SNHAs and other important habitat areas and make efforts during the development process to negotiate their protection.

7.14 Introduction of Toxic Substances

The Town has programs to prevent toxic releases and to treat them when they do occur. The Town also has an active stormwater education program that provides the public with valuable knowledge to increase awareness of the impacts of toxins reaching the stormwater system. The education program encourages the public to limit the use of common toxins such as lawn pesticides and herbicides to help prevent the problem. The Town's stormwater

program also promotes the use of BMPs and LID, which also reduce some of the toxic substance impacts.

TABLE 7-1
Potential Impacts to be Addressed by Permitting and Mitigation Programs

Environmental Resource	Potential for SCI	Types of SCIs	Mitigation Programs
Topography and Floodplains	LI	Some floodplain loss from commercial development, although floodway protected	Open Space Preservation and Land Use Plans often preserve additional corridors along required riparian buffers
		Isolation of floodplain from stream by channel entrenchment; loss of nutrient exchange capabilities	LDO
			Floodplain Protection – No residential development or fill in floodplain; commercial development in floodplain must obtain Special Use Permit, which limits development in floodplain
			Erosion and Sediment Control Program
			Stormwater Programs and Impervious Surface Limitations
			Sanitary Sewer Installation – deters installation of sewer lines in riparian buffers
Soils	PI	Soil erosion and compaction from new development	Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan
			Open Space Preservation
			Land Use Plans and LDO – direct density to designated activity and employment centers to limit areas of disturbance
			Riparian Buffers and Floodplain Protection
			Water Supply Watershed Protection Regulations – runoff controls and impervious surface restrictions reduce erosion potential
			Erosion and Sediment Control Program
			Stormwater Programs and Impervious Surface Limitations
Land Use	PI	Conversion of agricultural and forested land uses to mainly residential land uses	Open space preservation
			Land use planning recommends greater densities in designated walkable mixed-use activity centers
			LDO
			Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan
			Riparian Buffers and Floodplain Protection – restricts development in riparian buffer zones and prohibits nearly all floodplain encroachment
			Water Supply Watershed Protection Regulations – development density regulations
			Stormwater Programs and Impervious Surface Limitations – land management plans for certain watersheds

TABLE 7-1
Potential Impacts to be Addressed by Permitting and Mitigation Programs

Environmental Resource	Potential for SCI	Types of SCIs	Mitigation Programs
Wetlands	LI	Loss through development; subsequent loss of habitat and habitat fragmentation, reduced flow attenuation and genetic diversity Loss of wetland function through pollutant loading	Wetland Protection through CWA Section 404 and Section 401 Open space preservation LDO requires natural open space Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan Riparian Buffers and Floodplain Protection WSW Protection Regulations Erosion and Sediment Control Program Stormwater Programs and Impervious Surface Limitations reduce pollutant loads and limit stormwater impacts to wetlands
Prime or Unique Agricultural Land	PI	Possibility of conversion to other uses	Open Space Preservation Land use planning and LDO direct density to designated employment and activity centers Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan – protects working farms Wake County Voluntary Agricultural Districts Wake County Tax Incentive Programs Farmland Protection Policy Act
Public Lands and Scenic, Recreational Areas, and State Natural Areas	LI	Possibility of conversion of adjacent land uses	Open Space Preservation Land Use Plans LDO Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan
Areas of Archaeological or Historical Value	LI	Possibility of conversion of adjacent land uses Structural damage due to acid rain and vibrations	Historic Preservation Master Plan Land Use Plans LDO and open space preservation Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan

TABLE 7-1
Potential Impacts to be Addressed by Permitting and Mitigation Programs

Environmental Resource	Potential for SCI	Types of SCIs	Mitigation Programs
Air Quality	PI	Reduction in air quality due to increased vehicular traffic Reduction in air quality benefits of trees Negative impacts to human health (such as asthma); acid rain; reduced visibility	Wake County Sustainability Task Force Comprehensive Transportation Plan Transportation elements of bicycle lanes, greenways, and alternative methods such as light rail and alternative fuel vehicles Transit C-Tran service – mass transit for Cary and surrounding areas Electric vehicle used by Town of Cary LDO connectivity requirement and open space preservation Land Use Plans – recommend denser development near employment and activity centers Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan Riparian Buffers Protection Tree Protection Ordinance
Noise Levels	PI	Increase in overall noise level in Planning Area Negative impacts to human health	Comprehensive Transportation Plan Open Space Preservation Land Use Plans LDO connectivity requirement Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan Riparian Buffers Protection – development buffers Tree Protection Ordinance

TABLE 7-1
Potential Impacts to be Addressed by Permitting and Mitigation Programs

Environmental Resource	Potential for SCI	Types of SCIs	Mitigation Programs
Surface Water Resources	PI	Water quality degradation; increase in stormwater runoff Alteration of natural hydrograph (e.g., magnitude, timing, frequency, duration, rate of change); lower and more frequent low-flow conditions; alteration of channel morphology	Coordination with agencies to identify restoration projects and funding to improve water quality in 303(d) listed streams Land Use Plans and open space preservation LDO Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan Riparian Buffers and Floodplain Protection - no residential development or fill in floodplain WSW Protection Regulations – Watershed Protection Overlay District establishes additional stringent regulations Erosion and Sediment Control Program Stormwater Programs and Impervious Surface Limitations Sanitary Sewer Installation and Road Construction – stream crossings with directional borings and crossings with bridges or buried culverts Water Conservation and Water Reuse Programs
Groundwater Resources	LI	Reduction in use for drinking water; potential to become contaminated Groundwater inflow provides base flow in streams, which supports life during droughts	Open space preservation Land Use Planning and LDO direct density to designated employment and activity centers Riparian Buffers and Floodplain Protection – allow for natural infiltration Stormwater Programs and Impervious Surface Limitations, including promotion of low impact development Sanitary Sewer Installation - failing septic systems taken offline as infrastructure developed Water Conservation and Water Reuse Programs

TABLE 7-1

Potential Impacts to be Addressed by Permitting and Mitigation Programs

Environmental Resource	Potential for SCI	Types of SCIs	Mitigation Programs
Forest Resources	PI	Possibility of conversion to other uses	Open Space Preservation
		Reduction in air quality; increase in near-surface air temperature; habitat fragmentation	Land Use Planning and LDO - direct density to designated employment and activity centers
			Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan - protect important habitat areas and examine connectivity
			Riparian Buffers and Floodplain Protection
			Water Supply Watershed Protection Regulations – development densities
Shellfish or Fish and their Habitats	PI	Possible aquatic habitat degradation	Wetland Protection through CWA Section 404 and Section 401
		Disruption of food chain; reduction in aquatic insect number and diversity through loss of riffle habitat; dispersal distance to suitable habitat; reduction in potential for long-term population sustainability	Endangered Species Act
			Open Space Preservation
			Land Use Planning and LDO – Conservation Residential District Overlays in southwest area
			Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan - protect important habitat areas and examine connectivity
			Riparian Buffers and Floodplain Protection
			WSW Protection Regulations – Watershed Protection Overlay District establishes additional stringent regulations
			Erosion and Sediment Control – plan review and pre-construction process; plan required at 12,000 square feet. Stream Protection Plan.
			Stormwater Programs and Impervious Surface Limitations - impervious surface limited to 12-36%, or stormwater controls required; NPDES Phase II requires runoff volume to be controlled; outfall velocity requirements
			Sanitary Sewer Installation – stream crossings with directional borings

TABLE 7-1

Potential Impacts to be Addressed by Permitting and Mitigation Programs

Environmental Resource	Potential for SCI	Types of SCIs	Mitigation Programs
Wildlife and Natural Vegetation	PI	Reduction in available habitat	Endangered Species Act
		Habitat fragmentation; reduction in genetic diversity; reduction of pollution-intolerant species; increased dispersal distance to suitable habitat; reduction in potential for long-term population sustainability	Open Space Preservation
			Land use planning and LDO - encourage tree and urban forest preservation; direct density to designated employment and activity centers
			Parks, Recreation, and Cultural Resources Master Plan and Open Space Plan - protect important habitat areas and examine connectivity
			Riparian Buffers and Floodplain Protection - – Habitat protection and maintenance of habitat corridors
			Erosion and Sediment Control
			Stormwater Programs and Impervious Surface Limitations
			Tree Ordinance
Introduction of Toxic Substances	LI	Increase in likelihood of contamination	Land use planning and LDO – controls use and likely exposure
		Negative impacts to human health	Stormwater Programs and Impervious Surface Limitations – education programs
			Sanitary Sewer Installation – design standards to limit spills

PI = Potential Impact (major relevance in SEPA documents and permitting applications)
LI = Limited Impact (minor relevance in SEPA documents and permitting applications)

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