Appendix F

1 TERRESTRIAL ECOLOGY

1.1 VEGETATION SETTING

The subject site is 41.55 acres in size and formerly contained the Hazeltine facility. The Hazeltine facility occupied the central-southeast section of the site. Aerial photographs show that the site at one time included a large building; however, it has since been removed. A large concrete slab still exists at the location of the building, as well as another concrete slab, reputed to be the location of a Quonset hut. Successional growth/pioneer and landscape species are located around the perimeter of the concrete slabs. Paved parking areas exist south and north of the old building site, with the latter being the largest. An excavated depression immediately to the west served as a recharge basin for the facility. An asphalt road provides access from County Road (CR) 58 (Old Country Road) on the south. There is a cleared area adjacent to CR 58 that is both partially paved and bare earth, with limited pioneer plant species. A dirt trail runs along the eastern property line; other dirt trials are found throughout the site. All are apparently kept clear and were created by the use of ATVs on the site. A small portion of the southwest corner of the site is cleared, apparently at the time of construction of the facility immediately to the west. In addition, there is a small recharge area (approximately 30' by 80') northeast of the paved parking field.

In general, the site can be divided into three (3) habitat types: "Pitch Pine – Oak Forest", "Successional Old Field", and "Paving – Hard Structures." The latter two habitats are a direct result of human activities on the site. **Table 1**, below, provides a breakdown of the quantities and percentages for each. **Figure 1** is an illustration of the approximate locations of the various habitats on site. The locations and quantities are based on field inspections and aerial photograph interpretation.

TABLE 1
SITE QUANTITIES

	Acres	Percent
Paving - Hard Structures	4.10	9.87%
Successional Old Field	3.01	7.24%
Pitch Pine - Oak Forest	34.44	82.89%
Total Site	41.55	100.00%

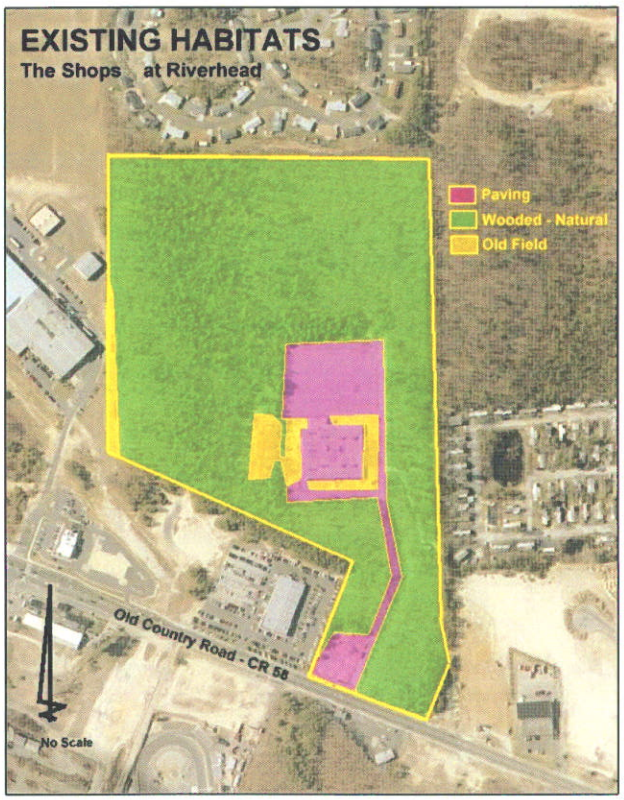

FIGURE 1 (right)
EXISTING HABITATS

Each of these habitats will be discussed in detail below. In addition, the New York State Department of Environmental Conservation (NYSDEC) New York Natural Heritage Program's (NYNHP) publication "Ecological Communities of New York State" (Reschke, et. al., 2002) provides detailed discussion of various ecological communities found within New York State. The document also provides information on the ranking, i.e., rarity, both globally and within New York. This document has been used and references are provided on how it relates to the site in the preparation of this section of the DEIS.

Pitch Pine -- Oak Forest

The Pitch Pine -- Oak Forest occupies the largest area of the site, at approximately 34.44 acres or 82.89% of the site. The following is a definition of the closest ecological community to this habitat as described by NYNHP:

> **"Pitch pine-oak forest:** a mixed forest that typically occurs on well-drained, sandy soils of glacial outwash plains or moraines; it also occurs on thin, rocky soils of ridge tops.
> The dominant trees are pitch pine (*Pinus rigida*) mixed with one or more of the following oaks: scarlet oak (*Quercus coccinea*), white oak (*Q. alba*), red oak (*Q. rubra*), or black oak (*Q. velutina*). The relative proportions of pines and oaks are quite variable within this community type. At one extreme are stands in which the pines are widely spaced amidst the oaks, in which case the pines are often emergent above the canopy of oak trees. At the other extreme are stands in which the pines form a nearly pure stand with only a few widely spaced oak trees.
> The shrublayer is well-developed with scattered clumps of scrub oak (*Quercus ilicifolia*) and a nearly continuous cover of low heath shrubs such as blueberries (*Vaccinium pallidum, V. angustifolium*) and black huckleberry (*Gaylussacia baccata*).
> The herbaceous layer is relatively sparse; characteristic species are bracken fern (*Pteridium aquilinum*), wintergreen (*Gaultheria procumbens*), and Pennsylvania sedge (*Carex pensylvanica*).
> Characteristic birds include rufous-sided towhee (*Pipilo erythrophthalmus*), common yellowthroat (*Geothlypis trichas*), field sparrow (*Spizella pusilla*), prairie warbler (*Dendroica discolor*), pine warbler (*Dendroica pinus*), blue jay (*Cyanocitta cristata*), and whip-poor-will (*Caprimulgus vociferus*)".

The Pitch Pine – Oak Forest community is found within New York State in at least two potential regional variants: the typical coastal variant on Long Island and the inland variant of upstate New York. It is ranked "apparently secure" and "demonstrably secure" globally and as "apparently secure" in the State by NYNHP.

The Pitch Pine – Oak Forest community is one of several communities commonly referred to as "pine barrens." These communities include, but are not limited to: Dwarf Pine Plains (or Barrens), Pitch Pine-Scrub Oak Barrens, Pitch Pine-Oak-Heath Woodlands, Pitch Pine-Oak Forest, as well as various freshwater wetlands communities. However, the subject site is not within the designated Central Pine Barrens Zone, as defined by Article 57 of the New York State Environmental Conservation Law (NYS ECL). Pine Barrens habitats occur in dry areas where a high degree of disturbance (i.e.: forest fires) and nutrient poor soils exist. These habitats are characterized by pitch pine, oaks and other vegetation which are tolerant of dry, acidic conditions. The designated Central Pine Barrens of Long Island are located to the south and west of the subject site.

The pine barrens communities identified above are subject to periodic fires and appear to

be successional stages maintained by the fires. Fire "sets back" the vegetation to an earlier successional phase. Pitch pine and scrub oak are fire tolerant and are generally the first species to recover after a fire. Individual pitch pines can withstand heat levels that destroy other species of trees. The heat of the fire also aids in the opening of the pitch pine cones to release seeds. Therefore, pine barrens communities with high fire frequency, such as Pine-Oak-Heath Woodland, are typically dominated by pitch pine and scrub oak. These two species also require full exposure to sunlight and cannot tolerate extensive shade. As the period between fires becomes longer less fire tolerant trees, such as oaks, become dominant and few pine seedlings reach maturity, resulting in a Pitch Pine-Oak Forest habitat. Furthermore, given sufficient time and lack of forest fires, the large canopies of the oaks (75 to 100 feet) will overshadow the smaller canopies of the pitch pines (50 to 75 feet) and out-compete them for sunlight, resulting in a pure stand of oaks. Scrub oak have an extremely low canopy (3 to 9 feet) and are usually the first out-competed by the developing forest canopy. Fertile soils and the absence of drought also favor dominance by the large oaks.

In general, the Pitch Pine-Oak Forest has the lowest fire frequency of the pine barrens communities. In the absence of fire, oaks would be expected to dominate and few, if any, pitch pines would exist in the canopy. Understory species would be limited to those that are able to withstand shade conditions or that require more moisture. The conditions on the site reflect this. There is almost no scrub oak found in the understory, except on the edges of past clearing. The understory on the site is thin, with few understory species present because of the forest canopy. The understory on site includes oak seedlings, huckleberry and blueberry, as well as herbaceous species such as bracken fern, wintergreen, trailing arbutus, Pennsylvania sedge and mosses. This type of habitat is common for the undeveloped sites in the area. Most of this habitat is found in isolated patches surrounded by development. This condition will promote fire suppression and result in the areas becoming oak-dominant habitats, given sufficient time. The photograph at right illustrates the Pitch Pine – Oak Forest on site. On site, the highest concentration of pitch pines is on the eastern half of the property.

Pitch Pine – Oak Forest

Successional Old Field

The "Successional Old Field" habitat on site represents 3.01 acres or 7.24% of the site. The following is a definition of this habitat as described by NYNHP:

> **"Successional Old Field:** a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned.
> Characteristic herbs include goldenrods (*Solidago altissima, S. nemoralis, S. rugosa, S. juncea, S. canadensis,* and *Euthamia graminifolia*), bluegrasses (*Poa pratensis, P. compressa*), timothy (*Phleum pratense*), quackgrass (*Agropyron repens*), smooth brome (*Bromus inermis*), sweet vernal grass (*Anthoxanthum odoratum*), orchard grass (*Dactylis glomerata*), common chickweed (*Cerastium arvense*), common evening primrose (*Oenothera biennis*), oldfield cinquefoil (*Potentilla simplex*), calico aster (*Aster lateriflorus*), New England aster (*Aster novae-angliae*), wild strawberry (*Fragaria virginiana*), Queen-Anne'slace (*Daucus corota*), ragweed (*Ambrosia artemisiifolia*), hawkweeds (*Hieracium* spp.), dandelion (*Taraxacum officinale*), and ox-tongue (*Picris hieracioides*).
> Shrubs may be present, but collectively they have less than 50% cover in the community. Characteristic shrubs include gray dogwood (*Cornus foemina* ssp. *racemosa*), silky dogwood (*Cornus amomum*), arrowwood (*Viburnum recognitum*), raspberries (*Rubus* spp.), sumac (*Rhus typhina, R. glabra*), and eastern red cedar (*Juniperus virginiana*).
> A characteristic bird is the field sparrow (*Spizella pusilla*). This is a relatively short-lived community that succeeds to a shrubland, woodland, or forest community."

This ecological community is distributed throughout New York State. It is ranked "apparently secure" both globally and in the State by NYNHP.

Succession is the process by which an area that has been cleared or otherwise disturbed reverts to the original vegetative habitat. Successional old field, shrubland and hardwood forest habitats are stages in the process of succession. The first species to colonize a cleared area are generally herbaceous weeds and other plants with wide seed dispersal. These early successional species are replaced first by woody shrubs, then by saplings of tree species that seed in from adjacent wooded habitat or landscaped areas. As time progresses, the trees dominate in both abundance and height, and light penetration is reduced. The tree and shrub species that first colonized the area are then replaced by more shade tolerant species. The resulting forest generally resembles the original forest, although there may be significant differences in species composition, particularly if non-native species have been introduced in the surrounding area.

The Successional Old Field located on site is somewhat different from the NYNHP description above. Like the description, the area is a result of development of the parcel. However, most of the Successional Old Field is found in the area surrounding the concrete pads that represent the original structure locations. These areas were apparently originally landscaped, as evidenced by a number of ornamental landscape species such as yews *(Taxus spp.)* and junipers *(Juniperus spp.)*. In addition to the landscape plants that have naturalized themselves, this area is also colonized with various pioneer plants. Numerous herbaceous species as well as several shrubs and small trees, such as bayberry (*Myrica pensylvanica*), multiflora rose *(Rosa multiflora)* and black locust (*Robinia pseudoacacia*), are found in this area.

Another large area of Successional Old Field is found to the west of the old building site. This area was excavated and used as a recharge basin for the site. The recharge basin is located in a shallow swale that extends from CR 58 north to the residential community located north of the site. Because of the clearing and excavation, herbaceous pioneer species have colonized the area; including pitch pine seedlings. Poor sandy soils have

limited rapid colonization of this area, with some of the side slopes of the basin being still unvegetated even after a significant period of time. The bottom of the basin contains several facultative wetland plants (FACW). FACW plants are those that usually occur in wetlands but occasionally are found in non-wetlands; these would include, but are not limited to, highbush blueberry *(Vaccinium corymbosum)* and sedges *(Carex spp.)*. However, the recharge basin also contains facultative (FAC – equally likely to occur in wetland and non-wetland species) and facultative upland (FACU – usually occur in non-wetlands but occasionally found in wetlands) plants, as well as the majority of species are strictly upland plants. The mix of species found in this section of the site suggests that the recharge basin has accumulated silts and fine material in the bottom of the basin that retains moisture for extended periods of time, allowing the wetlands plant species a competitive edge. Because of the limited FACW species and the lack of obligate wetland plants (OBL – occurring almost always in wetlands) it is apparent that the recharge basin does not contain open water or moisture for any extended periods of time. A review of groundwater information shows that this area is not an expression of groundwater. The NYSDEC Freshwater Wetland Maps (Riverhead quadrangle) does not show any designated wetlands on the site. The nearest NYSDEC freshwater wetland is approximately 1,200 feet south of CR 58 and designated as "R-38." This area is small in size (0.18 acres, 0.42% of the site) and does not constitute an appreciable or unique habitat. In addition, the small recharge area northeast of the parking field has been included in the Pitch Pine-Oak Forest because of its small size and vegetation type.

There is also a small area of Successional Old Field located along the western property line. This area was apparently cleared at the time of construction of the facility to the west of the site. It has since been colonized by grasses and various herbaceous plant species and portions have been mowed periodically by the owner of the adjoining property.

The photographs below illustrate the Successional Old Field habitats on site. The left photograph shows a portion of the concrete pad where the building was located. The photograph to the right shows the recharge basin.

Concrete Pad – Successional Old Field

Successional Old Field – Existing Recharge Basin

Paving - Hard Structures

The "Paving – Hard Structures" habitat on site represents 4.10 acres or 9.87% of the site. The following is the closest definition of this habitat as described by NYNHP:

> **"Paved road/path:** a road or pathway that is paved with asphalt, concrete, brick, stone, etc. There may be sparse vegetation rooted in cracks in the paved surface".

These ecological communities are distributed throughout New York State. They are ranked by NYNHP as being both global and State "secure".

As described by the NYNHP definition this habitat on site is colonized by pioneer plant species growing within the cracks and breaks in the asphalt paving.

Table 2 presents a list of vegetation observed or expected on site given the habitats present. The list is based in part on information contained within a Revised Draft Environmental Impact Statement (DEIS) for Riverhead Marguee Plaza prepared by Nelson, Pope & Voorhis, LLC (NPV), dated September 2002; the DEIS was prepared for another project on this site. The list of plant species found in that document was based upon field investigations conducted by NPV in the spring of 2002. . Cramer Consulting Group (CCG) conducted field investigations in January and February of 2007. As such, some species were not evident during the winter months. Therefore, in order to provide the most comprehensive list of potential and observed species that are or could be on site, species from both CCG and NPV observations are provided in **Table 2**. Care was taken to identify any species that might be unusual for the area. This list is also not meant to be all-inclusive.

TABLE 2
PLANT SPECIES LIST

Observed	Common Name	Scientific Name
Trees		
	Norway maple	*Acer platanoides*
	tree-of-heaven	*Alianthus altissima*
	Hercules' club	*Aralia elata*
	devil's club	*Aralia spinosa*
	gray birch	*Betula populifolia*
	white birch	*Betula papyrifolia*
***	northern catalpa	*Catalpa bignonioides*
	hawthorne	*Craetagus spp.*
*	American beech	*Fagus gradifolia*
	honey locust	*Gleditsia triacanthus*
***	eastern red cedar	*Juniperus virginiana*
	magnolia	*Magnolia spp.*
*	mulberry	*Morus alba*
***	pitch pine	*Pinus rigida*
	white pine	*Pinus strobus*
	eastern cottonwood	*Populus deltoides*

TABLE 2
PLANT SPECIES LIST

Observed	Common Name	Scientific Name
***	bigtooth aspen	*Populus grandidenta.*
***	black cherry	*Prunus serotina*
	choke cherry	*Prunus virginiana*
***	white oak	*Quercus alba*
***	scarlet oak	*Quercus coccinea*
***	scrub (bear) oak	*Quercus ilicifolia*
***	mossycup (bur) oak	*Quercus macrocarpa*
	blackjack oak	*Quercus marilandia*
***	chestnut oak	*Quercus prinus*
***	northern red oak	*Quercus rubra*
	post oak	*Quercus stellata*
***	black oak	*Quercus velutina*
***	black locust	*Robinia psuedo-acacia*
	Buckthorn	*Rhamnus.spp.*
	Sassafras	*Sassafras albiduin*
Shrubs and Vines		
**	chokeberry	*Aronia spp.*
	American bittersweet	*Celastrus scandens [p]*
***	sweetfern	*Comptonia peregrina*
	silverberry	*Elaeagnus commutata*
	autumn olive	*Elaeagnus umbellata*
	winged spindle tree	*Euonymus alata*
***	black huckleberry	*Gaylussica baccata*
	golden heather	*Hudsonia ericoides*
	beach heather	*Hudsonia tomentosa*
	bush clover	*Lespedeza spp.*
***	honeysuckle	*Lonicera spp.*
	stagger-bush	*Lyonia mariana*
	bayberry	*Myrica pensylvanica* [p]
***	Virginia creeper	*Parthenocissus quinquefolia*
***	multiflora rose	*Rosa:multiflora*
	pasture rose	*Rosa spp.*
	buckthorn	*Rhamnus spp.*
	pinkster bloom	*Rhododendron nudiflorum[p]*
	winged sumac	*Rhus copallina*
	smooth sumac	*Rhus glabra*
***	stag horn sumac	*Rhus typhina*
	currant	*Ribes lacustre*
***	brambles	*Rubus spp.*
	common dewberry	*Rubus flagellaris*
	greenbrier	*Smilax rotundifolia*
	carrion flower	*Smilax herbacea*
	nightshade	*Solanum dulcamara*

TABLE 2
PLANT SPECIES LIST

Observed	Common Name	Scientific Name
	common nightshade	*Solanum nigrum*
	meadowsweet	*Spiraea corymbosa*
***	poison-ivy	*Toxicodendron radicans*
***	low bush blueberry	*Vaccinium angustifolium*
**	high-bush blueberry	*Vaccinium pallidum*
	Grape	*Vitis spp.*
Herbs and Groundcovers		
**	Yarrow	*Achillia millefoliilm*
	Redtop	*Agrostis gigantea*
	Garlic mustard	*Alliaria petiolata*
**	wild onion	*Allium stellatum*
	big bluestem grass	*Andropogon gerardii*
*	little bluestem grass	*Andropogon scoparius*
**	Broomsedge	*Andropogon virginicus*
	Pigweed	*Amaranthus spp.*
***	Ragweed	*Ambrosia artemisiifolia*
	Dogbane	*Apocynum maculosa*
	Cress	*Arabis spp.*
*	Bearberry	*Arctostaphylos uva-ursi*
***	Mugwort	*Artemisia vulgaris*
***	common milkweed	*Asclepias syrica*
***	Milkweed	*Asclepias spp*
**	Asters	*Aster spp*
	wood aster	*Aster divaricatus*
	stiff-leaved aster	*Aster linariifolius*
	wild indigo	*Baptisia tinctoria*
	yellow rocket	*Barbarea vulgaris*
	false nettle	*Boehmaria cylindrica*
	Mustard	*Brassica spp.*
***	Pennsylvania sedge	*Carex pensylvania*
**	Knapweed	*Centurea spp.*
	common lamb's quarters	*Chenopodium album*
**	spotted wintergreen	*Chimaphila maculata [p]*
**	stripped pipsissewa	*Chimaphila umbellate[p]*
**	Chicory	*Cichorium intybus*
	enchanter's nightshade	*Circacea quadrisulcata*
	Thistle	*Cirsium spp*
	crown vetch	*Coronilla varia*
**	Sedge	*Cyperrus spp.*
	Ladyslipper	*Cypripedium spp*
	Broom	*Cytisus scoparius*
	orchard grass	*Dactylis glomerata*

TABLE 2
PLANT SPECIES LIST

Observed	Common Name	Scientific Name
**	poverty grass	*Danthonia spicata*
**	Queen Anne's lace	*Daucus carota*
	deptford pink	*Dianthus armeria*
**	trailing arbutus	*Epigaea repens [p]*
	cypress spurge.	*Euphorbia cyparissias*
*	common strawberry	*Fragaria virginiana*
	Wintergreen	*Gaultheria procurnbens [p]*
	Avens	*Geum spp*
	ground ivy	*Glechoma hederaceae*
	woodland sunflower	*Helianthus divaricatus*
*	Hawkweed	*Hieracium spp*
	orange grass	*Hypericum gentianoides*
	common St. Johnswort	*Hypericum perforatum*
	Pinweed	*Lechea villosa*
	peppergrass	*Lepidium virginicum*
	round-headed bush clover	*Lespedeza capitata*
	hairy bush clover	*Lespedeza hirta*
	trailing bush clover	*Lespedeza procumbens*
*	blue toadflax	*Linaria canadensis*
	butter-n-eggs	*Linaria vulgaris*
	rye grass	*Lolium spp*
	wild lupine	*Lupinnus perenis*
	white campion	*Lychnis alba*
	club moss	*Lycopodium spp. [p]*
	whorled loosestrife	*Lysimachia quadrifolia*
	evening primrose	*Oenethera biennis*
	sweet cicely	*Osmorhiza claytoni*
**	panic grass	*Panicum spp*
	timothy	*Phleum pratense*
	poke weed	*Phytolacca americana*
**	plantain	*Plantago spp*
	bluegrass	*Poa spp*
	jointweed	*Polygonelza articulata*
	Soloman's seal	*Polygonatum biflorum*
	Milkwort	*Polygala nuttallii*
**	hair cap moss	*Polytrichium spp*
	gall-of-the-earth	*Prenathus spp*
	cinquefoils	*Potentilla spp*
**	bracken fern	*Pteridium aquilinum*
	common buttercup	*Ranunculus acris*
	hooked buttercup	*Ranunculus recurvatus*
	black-eyed Susan	*Rudbeckia hirta*
***	sheep sorrel	*Rumex acetosella*

TABLE 2
PLANT SPECIES LIST

Observed	Common Name	Scientific Name
**	Dock	*Rumex crispus*
	Bouncing bet	*Saponaria officinalis*
**	Rush	*Sciripus spp.*
***	goldenrod	*Solidago spp*
	Indian grass	*Sorghastrum nutans*
	false Soloman's seal	*Smilacina racemosa*
***	common dandelion	*Taraxacum officinale*
	goat's-rue	*Tephrosia virginiana*
***	clover	*Trifolium spp*
*	hop clover	*Trifolium agrarium*
*	rabbit-foot clover	*Trifolium arvense*
***	common mullein	*Verbascum thapsus*
	cow vetch	*Vicia cracca*
	spring vetch	*Vida satvia*
	periwinkle	*Vinca minor*
	sweet violet	*Viola blanda*
	cocklebur	*Xanthium chinense*

* Species identified on-site by Nelson, Pope & Voorhis (NPV) staff.
** Species identified on-site by Cramer Consulting Group (CCG) staff.
*** Species identified on-site by both NPV and CCG staffs.
[p] NYS exploitably vulnerable protected plant

The plant species found or expected to be on the site are all common species and are prevalent in the area. Three species were identified on site that are protected under 6 NYCRR Part 193.3(e) as exploitably vulnerable native plants. Exploitably vulnerable native plants are species that are likely to become threatened in the near future throughout all, or a significant portion, of their ranges within the state if causal factors continue unchecked. The three present species are spotted wintergreen (*Chimaphila maculate),* stripped pipsissewa (*Chimaphila umbellate)*, and trailing arbutus (*Epigaea repens).* In order to control the "causal factors," 6 NYCRR Part 193.3(f) states that *"it is a violation for any person, anywhere in the state, to pick, pluck, sever, remove, damage by the application of herbicides or defoliants, or carry away, without the consent of the owner, any protected plant. Each protected plant so picked, plucked, severed, removed, damaged or carried away shall constitute a separate violation."* No endangered, threatened, or rare plant species, as defined under 6 NYCRR Part 193.3(b, c & d) were found on site.

From a regional standpoint, high-density residential development (Foxwood Village) has recently occurred to the north and northeast of the site. These residential developments now occupy approximately one-half of what was a large (approximately 130 acre) Pitch Pine - Oak Forest community. The remaining balance of this wooded community includes the subject site and an undeveloped wooded parcel, about one-half the size of the subject site. The undeveloped parcel is to the east and extends to Mill Road. Furthermore, previous commercial/industrial development to the west and south, as well as other existing high-density residential and

commercial developments to the east, has left the subject site and the smaller undeveloped parcel to the east as an isolated wooded area surrounded by development. Northwest of the subject site is an old farm field in the early stages of succession; other small lots in various stages of successional growth are found within the immediate area of the site.

1.2 WILDLIFE SETTING

The abundance and diversity of wildlife on site is determined by available habitat on and adjacent to a site. As previously mentioned, the following habitats are found on site: Pitch Pine – Oak Forest, Successional Old Fields and Paving – Hard Surfaces. Similar habitats are found surrounding the site.

The woodland habitat, Pitch Pine – Oak Forest, found on site and within the general area of the site is expected to provide habitat for a number of wildlife species. The woodland area provides the greatest habitat potential on this site because of its vegetation diversity. Although the early successional and landscaped areas on site may provide some wildlife habitat, these areas are small in size and would not form any appreciable habitat and/or contain species unique to the area or site. In addition, paving and large concrete pads also occupy the site. As discussed above in the Vegetation Setting portion of this document, these areas provide little in the way of wildlife value. Most wildlife species would utilize this area only on a transient basis to access more productive and favorable habitats surrounding the paved areas.

The species present on site are likely to be relatively common suburban, forest-edge species, with limited potential for sensitive forest interior species. Forest interior species are very secretive animals and cannot withstand human interaction or presence. These species require large areas of undisturbed natural vegetation. Considering the intensity of commercial development surrounding CR 58, as well as the residential development and the fragmentized natural habitat surrounding the site, these sensitive, rarer species are not likely to occur.

High-density residential development has recently occurred to the north and northeast of the site. These developments and previous commercial/industrial development to the west and south, as well as other existing high-density residential developments to the east, have left the subject site, for the most part, as an isolated wooded area surrounded by development. The only other wooded area is a small parcel, about one-half the size of the subject site, to the east and extends to Mill Road. In addition, numerous old fields in various stages of succession are found within the immediate area of the site. Due to the mobility and home range size of many wildlife species, the wildlife will be expected to use the subject site and the adjoining habitat areas as a whole. The more human-tolerant species of wildlife will use the adjoining developed sites and the subject site.

For discussion purposes, the wildlife found on site has been divided into their respective groupings: Birds, Mammals and Reptiles/Amphibians. The following is a discussion of the species that are expected to be common to the site based on the existing habitats on-site and in the immediate surrounding areas. These discussions are also based on the findings of several field inspections by Cramer Consulting Group (CCG) during the winter of 2006 – 2007. Furthermore, the Revised Draft Environmental Impact Statement (DEIS) for Riverhead Marguee

Plaza prepared by Nelson, Pope & Voorhis, LLC (NPV), dated September 2002 (prepared for another project on this site) was also consulted. Where appropriate, observations within that DEIS are contained herein.

Birds

Bird species are the most common and abundant of the wildlife species found and expected to be found on the site. Birds that prefer a mix of woodland, edge and urban habitats are the most likely to be present on the property because of the existing habitat on and surrounding the site. Species that are considered forest interior species, that is those that are secretive, not tolerant of human activity, and require large undisturbed natural habitats, will not be present on site. Generally, these species are also the species that are protected by the New York State Department of Environmental Conservation (NYSDEC) under 6 NYCRR Part 182 since human activity has reduced and limited potential habitat for them.

Table 3 is a list of the bird species observed or expected on site given the habitats both present and in the immediate area of the site. The list is based on field investigations conducted by CCG during the winter of 2006-2007 and by NPV during the spring of 2002. This list is not meant to be all-inclusive, but provides a detailed representation of what was or may be found on site.

TABLE 3
BIRD SPECIES LIST

Observed	Common Name	Scientific Name
	cedar waxwing	*Bombycilla cedrorum*
	red-tailed hawk	*Buteo jamaicensis*
	whip-poor-will	*Caprimulgus vociferous*
	northern cardinal	*Cardinalis cardinalis*
	American goldfinch	*Carduelis tristis*
	house finch	*Carpodacus mexicanus*
	purple finch	*Carpodacus purpureus*
	chimney swift	*Chaetura pelagica*
*	common flicker	*Colaptus auratus*
	common bobwhite	*Colinus virginianus*
	rock dove	*Columba livia*
	eastern wood-peewee	*Contopus virens*
***	American crow	*Corvus brachyrhynchos*
***	blue jay	*Cyanocitta cristatta*
	black-throated blue warbler	*Dendroica caerulescens*
	yellow-rumped warbler	*Dendroica coronata*
	prairie warbler	*Dendroica discolor*
	chestnut-sided warbler	*Dendroica pensylvanica*
	pine warbler	*Dendroica pinus*
***	gray catbird	*Dumetella carolinensis*
	least flycatcher	*Empidonax minimus*
	American kestrel	*Falco sparverius*

TABLE 3
BIRD SPECIES LIST

Observed	Common Name	Scientific Name
*	barn swallow	*Hirundo rustica*
	northern oriole	*Icterus galbula*
	red-bellied woodpecker	*Melanerpes carolinus*
	red-headed woodpecker	*Melanerpes erythrocephalus*
	song sparrow	*Melospiza melodia*
	northern mockingbird	*Mimus polyglottos*
	black-and-white warbler	*Mniotilta varia*
	brown-headed cowbird	*Molothrus ater*
	great-crested flycatcher	*Myiarchus crinitus*
	common screech owl	*Outus asio*
**	black capped chickadee	*Parus atricapillus*
	tufted titmouse	*Parus bicolor*
	house sparrow	*Passer domesticus*
	fox sparrow	*Passerella iliaca*
	indigo bunting	*Passerina cyanes*
	ring-necked pheasant	*Phasianus colchicus*
	rose-breasted grosbeak	*Pheucticus ludovicianus*
**	downy woodpecker	*Picoides pubescens*
	hairy woodpecker	*Picoides villosus*
*	rufous-sided towhee	*Pipilo erythrophthalmus*
	purple martin	*Progne subis*
***	common grackle	*Quiscalus quiscula*
	ruby-crowned kinglet	*Regulus calendula*
	American redstart	*Setophaga ruticilla*
	white-breasted nuthatch	*Sitta carolinensis*
	yellow-bellied sapsucker	*Sphyrapicus varius*
	chipping sparrow	*Spizella passerina*
	field sparrow	*Spizella pusilla*
***	European starling	*Sturnus vulgaris*
	Carolina wren	*Thryothorus ludovicianus*
	brown thrasher	*Toxostoma rufum*
	house wren	*Troglodytes aedon*
***	American robin	*Turdus migratorius*
	eastern kingbird	*Tyrannus tyrannus*
	blue-winged warbler	*Vermivora pinus*
	red-eyed vireo	*Vireo olivaceus*
***	mourning dove	*Zenaida macroura*
	white-throated sparrow	*Zonotrichia albicollis*
	white-crowned sparrow	*Zonotrichia leucophrys*

* Species identified on-site by Nelson, Pope & Voorhis (NPV) staff.
** Species identified on-site by Cramer Consulting Group (CCG) staff.
*** Species identified on-site by both NPV and CCG staffs.

Additional information regarding these species and others is found within the **Wildlife**

Appendix at the end of this document. The appendix presents a computer-generated list of all bird species expected on site given the habitat available on and surrounding the site. This list is provided as a supplement to the above site specific list and the biological needs of each species.

While few were observed, seed-eating birds, including grosbeaks, finches, and sparrows, are expected to be relatively common on site. The most common sparrow that breeds on Long Island is the song sparrow; the introduced house sparrow is also abundant. Both species are found in forest openings, suburban areas and overgrown field habitats and are expected on site and in the surrounding areas. The house sparrow is an introduced old world species that often nests on buildings and is considered a pest. The related fox sparrow and white-throated sparrow are common winter visitors on Long Island and are expected during the colder months.

Many sparrows are generally not tolerant of human activity, with the exception of the chipping sparrow, which is found to be abundant around man-made structures, and the white-crowned sparrow, which is often found in suburban areas and parks. The field sparrow prefers grassland habitats and may occasionally utilize the site and surrounding areas, although more suitable habitat exists in the vicinity.

The American goldfinch, house finch and purple finch are the most likely finches to utilize the property; however, the house finch prefers suburban and edge habitats and the purple finch is more likely to utilize coniferous forests. The American goldfinch prefers a diet of thistle and dandelions and may utilize the successional and landscaped portions of the site. The northern cardinal, as well as the related rufous-sided towhee and rose-breasted grosbeak, prefers woodlands with a dense understory and/or hedgerows; given the sparse understory these species would not be expected to be prevalent on site. Similarly, the American redstart is found in red maple-hardwood swamps and in upland deciduous woods and is therefore generally not expected. The indigo bunting prefers open landscapes with dense cover for nesting and tall trees for song perches and may occasionally utilize the site. Of these species, only the rufous-sided towhee was observed by NPV on site.

A variety of larger birds, including the thrashers and orioles, is commonly found in suburban, successional habitats and woodlands. Corvids, which are common on Long Island and include the American crow and blue jay, were observed on site. The northern mockingbird, brown thrasher, and gray catbird are thrasher species that are generally expected to utilize the site and surrounding areas, as this group generally prefers more open habitats. The American robin and the European starling both have similar habitat requirements as the thrashers. These species are common in fields and suburban areas, feed on insects and fruits, and are expected on site. With the exception of the brown thrasher, all of these species were directly observed on site by either CCG or NPV.

Birds from the oriole and blackbird family also feed on a mix of insects, seeds, fruit and aquatic fauna. The grackle was observed on site and the brown-headed cowbird might be expected. These birds generally prefer open woodlands and field habitats and are

probably common throughout the area as they are relatively tolerant of development. The cowbird is a nest parasite which lays eggs in the nests of other birds.

The northern oriole generally prefers to nest in taller trees in open areas and may be expected on the site.

While included in the above list, the eastern meadowlark typically breeds in open areas with bare ground. Similarly, the horned lark and killdeer prefer open areas with short grass. The killdeer will also nest on the flat roofs of buildings. These three species may use the site on occasion; however, there is a very small area of suitable habitat found here.

Two doves are found on Long Island; these include the mourning dove and the introduced rock dove, also known as the domestic pigeon. Both are common in suburban areas, parks, cultivated fields and along roadsides. The mourning dove typically nests in overgrown areas and tangled vines, while the rock dove prefers to nest on buildings and other structures. Both dove species are likely to breed on site and in the local area and the mourning dove was observed on-site.

A few smaller insect feeding birds are found in overgrown areas, including the wrens, titmice, and nuthatches. The house wren and Carolina wren are the only wrens expected on site. The house wren is commonly found in suburban areas and edge habitats, as well as in forest understory where it feeds on insects, while the Carolina wren breeds in woodlands, thickets, brushy hollows, swamps, and along stream beds. Both of these wrens are listed as probable breeders within the census block. Titmice and nuthatches, which might be found on site, include the tufted titmouse and white-breasted nuthatch; the black-capped chickadee was observed on site; all of these are year-round residents on Long Island. The nuthatch and titmouse typically breed in woodlands and are expected to forage on site. Similar birds which may also utilize the site outside of the breeding season are kinglets, which are winter visitors on Long Island and are found in both forested and open habitats.

The cedar waxwing also occasionally feeds on flying insects, but is more commonly associated with open woodlands, orchards, and suburban areas where its diet consists primarily of fruit. This species might be present on site during summer months.

A common Long Island swallow is the barn swallow which adjusts well to human activity. The barn swallow nests on barns and other buildings, but may use natural nest sites as well. It will nest in cavities of trees, but is also a common resident in nesting boxes and bird houses. The barn swallow was observed on site.

The woodland habitat and the open habitat on site and in the vicinity may provide habitat for game birds such as the ring-necked pheasant and the northern bobwhite. The ring-necked pheasant and bobwhite may be present as both prefer open areas with cover. These birds are year-round residents on Long Island.

The nocturnal whip-poor-will feeds on moths and other insects and prefers dry woods with adjacent fields. This species is likely to breed on site and may forage in the area. The chimney swift also feeds on flying insects and is found in a variety of habitats. Although it originally nested in cliffs and tree cavities, this species now is most commonly found nesting on buildings and other structures. It may also forage on and in the vicinity of the site.

Warblers also feed on a variety of insects and most warbler species are found in woodlands. Warblers that prefer woodland habitats include the black-and-white warbler, black-throated blue warbler, pine warbler, prairie warbler, yellow warbler, and the yellow-rumped warbler. All of these warblers are expected to utilize the site and most are relatively intolerant of human development. However, the black-throated blue warbler can adapt to suburbs and the yellow-rumped warbler may be found in yards. The blue-winged warbler primarily utilizes abandoned and overgrown fields and may be expected to a limited degree, although more suitable habitat exists in the vicinity. The chestnut-sided warbler prefers first growth woods with some open brush and is also generally expected on site.

The site and surrounding area is suitable for use by raptor and owl species, most of which nest or roost in forested areas, preying primarily on small mammals in adjacent field and scrub habitats. The eastern screech owl is the most common owl on Long Island. The screech owl might nest on site as it is relatively tolerant of humans.

Most raptors nest in high areas away from humans and, thus, while raptors may roost on the property, most are unlikely to breed on site but may breed within the overall area. Raptors prey primarily on small mammals, which are likely to be abundant in the area. Although none were observed on site, the American kestrel, the red-tailed hawk, sharp-shinned hawk, and the broad-winged hawk may also occasionally utilize the site and surrounding areas. The most common raptors on Long Island are the red-tailed hawk and the American kestrel as they are relatively tolerant of human activity. The red-tailed hawk might be present as it is found in a variety of habitats and is expected to be abundant in the area. The American kestrel may be found where suitable nest cavities in trees, buildings, or nest boxes exist and sufficient non-forested foraging areas are present.

Woodpecker species, including the common flicker, red-bellied woodpecker, hairy woodpecker and downy woodpecker, are common in the mature wooded portions of Long Island and are likely found on site. Only the common flicker and the downy woodpecker were observed on site. The hairy woodpecker is more secretive and avoids human activity, but might be present. These species prefer mature woodlands where insects are abundant in both large mature trees and decaying trees. The red-bellied woodpecker prefers northern hardwoods, lowland hardwoods, oak and pine. Many suitable trees are present on site for nesting and feeding by woodpecker species.

Mammals

Table 4 contains a list of the mammal species that are expected to occur on site because of existing conditions in the area or immediately surrounding it. This list is not meant to be all-inclusive but was prepared as part of several field inspections to provide a detailed representation of what was or may be found on site.

TABLE 4
MAMMAL SPECIES LIST

Observed	Common Name	Scientific Name
	short-tailed shrew	*Blarina breuicauda*
	Virginia opossum	*Didelphis virginiana*
	hoary bat	*Lasiurus borealis*
	meadow vole	*Microtus pennsylvanicus*
	pine vole	*Microtus pinetorum*
	house mouse	*Mus musculus*
	Keen's bat	*Myotis keenii*
	little-brown bat	*Myotis lucifugus*
***	white-tailed deer	*Odocoileus virginianus*
	white-footed mouse	*Peromyscus leucopus*
**	raccoon	*Procyon lotor*
	Norway rat	*Rattus norvegicus*
	black rat	*Rattus rattus*
	eastern mole	*Scalopus aquaticus*
**	eastern gray squirrel	*Sciurus carolinensis*
	masked shrew	*Sorex cinereus*
	eastern cottontail	*Sylvilagus floridanus*
	eastern chipmunk	*Tamis striatus*
**	red fox	*Vulpes vulpes*

* Species identified on-site by Nelson, Pope & Voorhis (NPV) staff.
** Species identified on-site by Cramer Consulting Group (CCG) staff.
*** Species identified on-site by both NPV and CCG staff.

Additional information regarding these species and others is found within the **Wildlife Appendix** at the end of this document. The appendix presents a computer-generated list of all bird species expected on site given the habitat available on and surrounding the site. This list is provided as a supplement to the above site specific list and the biological needs of each species.

Small rodents and insectivores such as mice, shrews and voles are the most abundant mammals expected on site, but a number of larger mammals may be present where suitable habitat is available.

The masked shrew may be the most common mammal on Long Island. Although it is rarely seen, this small insectivore has been identified in almost every type of habitat on Long Island. It will utilize any site with sufficient ground cover, including woods, fields, bogs and both marine and freshwater marshes. Shrews feed on insects and other small invertebrates and are probably numerous throughout undeveloped portions of the site.

Eastern moles are insectivores and are found on Long Island. This mole is found in a variety of upland habitats, including woodlands, fields and suburban lawns throughout the Island. Moles dig tunnels which are also used by mice and shrews. The species is probably most common in the rich soils of deciduous woodlands along the north shore; it is also found in pine barrens, dunes and salt marsh borders, but seems to avoid fresh water swamps and marshes.

Several rodents are found on Long Island. Mice are typically omnivorous, feeding on grasses, herbs, roots, tubers and, occasionally, small invertebrates. The white-footed mouse is abundant in a wide variety of habitats including wetlands, dry fields, woods and occasionally in buildings. It is one of the most common mammals on the Island. The house mouse, black rat, and Norway rat are introduced European species which prefer to be near human structures and are considered pests. These species are likely to be present on, as well as in, the vicinity of the site.

Of the larger rodents, the eastern gray squirrel and chipmunk are common on Long Island and the woodchuck is present in some areas. Gray squirrels were abundant on site and are quite tolerant of humans, using both woodland and open habitats as long as large, nut bearing trees are present for foraging and nesting. On Long Island, they are most common in the oak woodlands of the north shore, but they are also present in pine barrens where they feed on pine seeds. The species may become a pest and individuals are often found in the attics of older buildings. The chipmunk prefers forest and edge habitats with thick understory vegetation where it feeds on a variety of plant material, but it will utilize suburban areas with sufficient cover. Their home range is relatively small and the chipmunk will utilize narrow treed buffer areas. The eastern gray squirrel was abundant on site and several squirrels and their nests were observed.

The woodchuck, or ground hog, has a scattered distribution throughout central Suffolk County. It is found in a variety of habitats including fields, meadows, brushy areas and woods. Limited habitat for this species is found on site.

Bats typically prefer areas near water where there are abundant insects for feeding and, thus, the site does not offer optimal habitat. On Long Island, these species generally roost in colonies in the attics of buildings, although some species will occasionally roost in trees. The most common summer bats are the little brown bat and the Keen's bat; these species are tolerant of humans and may be present on site at times.

The eastern cottontail is the most common rabbit on Long Island. The cottontails occupy a variety of habitats including both dry and swampy woods, fields, bogs, dunes and shrublands. It is tolerant of humans and utilizes suburban lawns and gardens extensively if food is available.

The opossum is the only marsupial on Long Island and makes use of a variety of habitats including brushy areas, woods and farmland, as well as suburban areas with cover. It is abundant on Long Island and is often killed on roadways where it feeds on carrion, as

well as fruits and small animals.

The white-tailed deer, the largest mammal on Long Island, is found throughout Long Island and is extremely abatable. Over the years, as human activity has become more prevalent in this species' range, it has become more tolerant of human activities. It has adapted to the suburban setting that has created an artificial "edge habitat," with wooded areas separating ornamental plantings and lawns. Deer will utilize these areas where sufficient cover is provided in the suburban setting. This, coupled with the decline in the number of large predators, has resulted in an increase in the deer populations in many areas. This has lead to deer being considered as a nuisance species by many homeowners. Numerous tracks and droppings were observed on the site.

Long Island carnivores include red fox and raccoon. The red fox is found throughout Suffolk County in a variety of habitats with limited human development and often hunts in freshwater and marine wetlands. The fox historically preferred diverse habitats consisting of intermixed cropland, rolling farmland, brush, pastures, mixed hardwood stands and edges of open areas that provide suitable hunting grounds. However, much of this habitat on Long Island has been suburbanized. Like the white-tailed deer, the fox may be adapting to the suburban setting. Prey species of the fox include small mammals, particularly mice and rabbits, birds, and insects. Many of these species do well with the suburban landscaping. Like the deer, if dense understory of the wooded areas between the landscaping and lawns exist to provide suitable cover, coupled with the increase in prey species, fox will utilize an area. Fox also feed on berries, carrion and, occasionally, aquatic organisms. The site does provide natural habitat for the fox and an active den was observed.

The raccoon is common throughout Long Island but prefers brushy wooded habitats near water. The raccoon is tolerant of humans and may become a pest, foraging in trash cans, gardens and agricultural fields. They will occasionally cause damage by denning in attics and other structures. Tracks were observed on the site.

Amphibians and Reptiles

Although no reptiles or amphibians were observed on the property, the site may support a limited number of terrestrial species. **Table 5** contains a list of the reptile and amphibian species that are expected to occur on site because of existing conditions in the area. This list is not meant to be all-inclusive, but was prepared as part of several field inspections to provide a detailed representation of what was or may be found on site.

TABLE 5
REPTILE & AMPHIBIAN SPECIES LIST

Observed	Common Name	*Scientific Name*
	Fowler's toad	*Bufo woodhousei fowleri*
	eastern hognose snake	*Heterodon platyrhinos*
	eastern milk snake	*Lampropettis d. triangulum*
	red-backed salamander	*Plethodon cinerus cinerus*

eastern spadefoot toad	*Scaphiopus holbrooki*
eastern box turtle	*Terrepene carolina*
eastern garter snake	*Thamnophis sirtalis*

* Species identified on-site by Nelson, Pope & Voorhis (NPV) staff.
** Species identified on-site by Cramer Consulting Group (CCG) staff.
*** Species identified on-site by both NPV and CCG staff.

For the most part, reptile & amphibian species are considered less mobile than bird and mammal species; therefore, if suitable habitat is not on the site they would not be expected. Additional information regarding these species and others is found within the **Wildlife Appendix** at the end of this document. The appendix presents a computer-generated list of all bird species expected on site given the habitat available on and surrounding the site. This list is provided as a supplement to the above site specific list and the biological needs of each species.

Two toads are common on Long Island in the upland habitats. The spadefoot toad occurs in woods, shrublands and fields with dry, sandy loam soils, and breeds in temporary pools. The Fowler's toad prefers sandy areas near marshes, irrigation ditches and temporary pools. These species are the most likely amphibians to be present on the site. Salamanders (except as discussed below) and frogs would not be expected on the property as they typically require either moist woodland habitat or permanent pools. It is not expected that the recharge basin on site provides suitable aquatic habitat for most species of frogs and salamanders.

Several species of reptiles might potentially be found on the property, including the eastern garter snake, eastern hognose snake, and eastern milk snake. All of these species are terrestrial species found in a variety of habitats. The garter snake is relatively tolerant of human activity, but prefers moist soils and would be most likely to be present near the recharge basin to the north. The hognose snake prefers dryer soils while the milk snake is found in soils of varying moisture content. These snakes are all colubrid snakes, which means they feed on whole animals such as worms, insects or small amphibians. The larger milk snake and hognose snakes will also take small rodents and birds.

Most salamander species require both undisturbed moist woods for foraging and standing water for breeding. The red-backed salamander is the most common salamander on Long Island and is highly terrestrial. It prefers a dry woodland habitat with plenty of leaf litter and fallen logs in which to forage for insects, and generally lays its eggs in clumps on damp logs or moss. It is the only salamander expected on the site.

The only turtle species common to terrestrial habitats on Long Island is the eastern box turtle which requires very little water. The species is found in a variety of habitats but prefers moist woodlands. The species feeds primarily on slugs, earthworms, wild strawberries and mushrooms.

Rare and Endangered Species Potential

No rare, threatened or endangered plants were observed on site during field inspections by CCG or NPV. As part of this review, the NYNHP was contacted to determine if the NYNHP had any records of any rare or state-listed animals or plants, significant natural communities, or other significant habitats in their database(s) for this site or in the immediate vicinity. Attached as the "**NYNHP Appendix**" is a copy of their response letter, dated January 10, 2007. The NYNHP report identified one potential plant species, one potential amphibian species, and one ecological community in the vicinity of the site.

The plant, the long-beaked beakrush *(Rhynchospora scirpoides)*, is an exploitably vulnerable native plant species in New York State (6 NYCRR Part 193.3e). Exploitably vulnerable native plants are defined as those native New York State plants likely to become threatened in the near future throughout all or a significant portion of their ranges within the state if causal factors continue unchecked.

This plant is found in moist to wet sands or peats of banks of streams and ditches, pond and lakeshores, depressions in savannas, marshes, often in moist to wet disturbed areas. It is an obligate wetland species (OBL), which is defined as a plant that occurs almost always under natural conditions in wetlands. There are no wetlands on site; therefore, the plant will not be present on the property. The NYNHP also provided a description and a map of the plant's location. The description states that the plant is located in the mucky shoreline of a pond ¼ mile southwest of the intersection of NYS Route 25 and Kroemer Avenue. The map shows the pond location to be approximately ¼ mile northwest of the intersection. It is assumed that the description is incorrect as the location would put the plant in the middle of a trailer park. The map location does contain a disturbed pond, the suitable habitat. The map location is approximately ½ mile southwest of the subject site.

The rare ecological community is a freshwater wetland identified as the coastal plain pond shore. The following is a definition of the closest ecological community to this habitat as described by NYNHP:

> **"Coastal plain pond:** the aquatic community of the permanently flooded portion of a coastal plain pond with seasonally, and annually fluctuating water levels.
> These are shallow, groundwater-fed ponds that occur in kettle-holes or shallow depressions in the outwash plains south of the terminal moraines of Long Island, and New England. A series of coastal plain ponds are often hydrologically connected, either by groundwater, or sometimes by surface flow in a small coastal plain stream. Water is typically acidic, darkly stained, and has low transparency. The substrate is typically sand to muck.
> Aquatic vegetation may be abundant; characteristic plants include water-shield (*Brasenia schreberi*), white water-lily (*Nymphaea odorata*), bayonet-rush (*Juncus militaris*), spikerush (*Eleocharis robbinsii*), bladderworts (*Utricularia purpurea, U. fibrosa*), water milfoil (*Myriophyllum humile*), naiad (*Najas flexilis*), waterweed (*Elodea* spp.), pondweed (*Potamogeton oakesianus*), pipewort (Eriocaulon aquaticum), brownfruited rush (Juncus pelocarpus), golden-pert (Gratiola aurea), and a peat moss (*Sphagnum macrophyllum*).
> Characteristic fishes include chain pickerel (*Esox niger*), banded sunfish (*Enneacanthus obesus*), and eastern mudminnow (*Umbra pygmaea*). Coastal plain ponds are breeding ponds for tiger salamander (*Ambystoma tigrinum*). Other characteristic fauna may include painted turtle (*Chrysemys picta*), wood duck (*Aix sponsa*), and muskrat (*Ondatra zibethicus*). More data on this community are needed".

It is ranked "vulnerable" and "apparently secure" globally and as "imperiled" in the State by NYNHP. This community is described and mapped by the NYNHP as the same location as the long-beaked beakrush *(Rhynchospora scirpoides)* described above and is approximately ½ mile southwest of the subject site. No freshwater wetland of any type is found on the site.

The final species listed in the NYNHP letter is the tiger salamander *(Ambystoma tigrinum)*. The tiger salamander is an endangered species as identified under 6 NYCRR Part 182.6(a)(4)(i) and was identified in 1998 in the series of ponds west of Kroemer Avenue (discussed in conjunction with the above two rare species). Endangered species are any species which meet one of the following criteria: (1) are native species in imminent danger of extirpation or extinction in New York; or (2) are species listed as endangered by the United States Department of the Interior in the 'Code of Federal Regulations' (50 CFR part 17 [see section 182.1a(1) of this Part]). This species is classified as both having typically 6 to 20 occurrences, few remaining individuals, limited acreage, or miles of stream or other factor of its biology making it especially vulnerably to very vulnerable in New York. Globally, the tiger salamander is listed as demonstrably secure, although it may be rare in parts of its range, especially at the periphery. It should be noted that federally, the species has "partial status", meaning the species is listed in parts of its range and not in others, or one or more subspecies or varieties is listed while the others are not.

The tiger salamander is a mole salamander and spends most of its adult life underground within moist woodlands, except during the breeding season in late winter and early spring. Breeding occurs primarily in vernal ponds and/or in ponds that have no fish that may prey on the eggs and the young salamanders. Migrations to the breeding pond are prompted by the first warm rains and adults remain in the ponds for only a few weeks before returning underground. The eggs hatch after three to four weeks and the larvae remain in the pond until early summer before metamorphosis to the adult stage. Although most adults remain in close proximity to the breeding pond, some individuals may migrate a significant distance following metamorphosis from the larval stage. The NYSDEC typically requires that 50 percent of woodland vegetation be retained within 1,000 feet of a tiger salamander breeding pond. As the site is more than 1,000 feet from the documented breeding pond, no clearing restrictions would be required. Additionally, CR 58 and the surrounding intensive developments provide sufficient barriers for the species in terms of migrating to the site from the documented breeding pond.

There is a small pond located approximately 200 feet east of the subject site (see Figure 1). This pond is located within a trailer park and apparently receives stormwater runoff from the surrounding road network of that development. It should be noted that this pond has not been documented as a tiger salamander breeding pond. Inspection of the pond in March of 2007 did not identify any egg masses. Considering the separation from the documented breeding ponds, which are approximately 2,400 feet away, and the intensity of the surrounding development, there will be no impact to the documented habitat of the tiger salamanders from the proposed project.

2.1 VEGETATION IMPACTS

A total of 63.7 acres of natural vegetation (Pitch Pine-Oak Forest and Successional Old Field) will be removed from the site to allow for the development. This represents a loss of approximately 98.0% of the existing natural vegetation on the site. The impacts of the proposed project should be assessed in relation to a direct change in habitat, fragmentation and an increase in human activity. The proposed development plan would require clearing the vast majority of the site, leaving only a narrow wooded buffer along the site's north property line. Table 6, below, provides a breakdown of the approximate areas of the habitats that will remain, or be created, on site after the construction of the project. Figure 2 is a graphic representation of this information.

TABLE 6
PROPOSED SITE QUANTITIES

	Acres	Percent	Change in Acres	Percent of Change
Landscaping	4.31	10.31%	4.31	100.0%
Paving - Hard Structures	36.49	87.82%	32.39	88.8%
Old Field - Successional	0.00	0.00%	-3.01	-100.0%
Pitch Pine - Oak Forest	0.75	1.81%	-33.65	-97.8%
Total Site	41.55	100.00%	0.00	0.00%

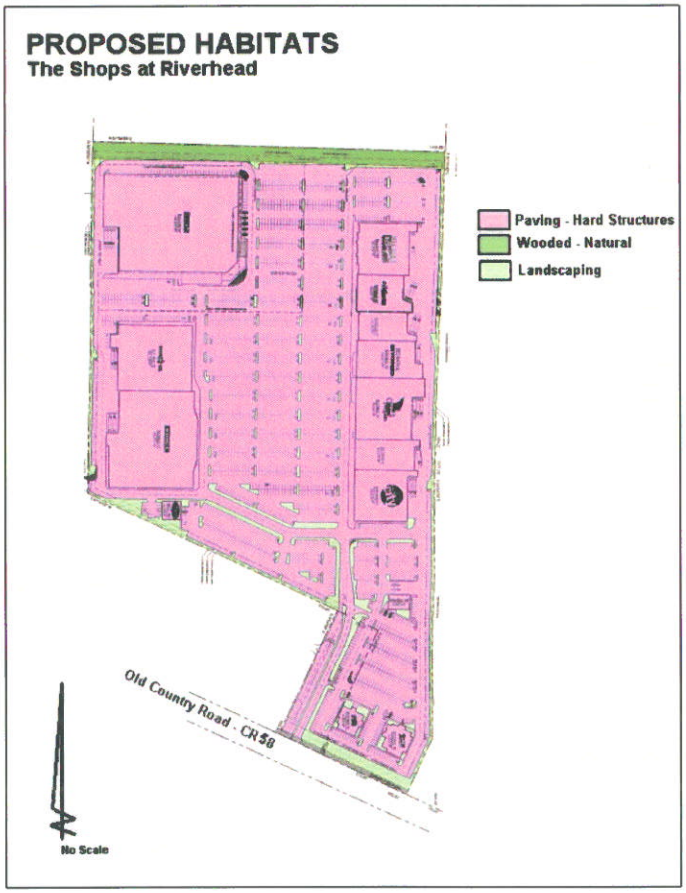

FIGURE 2 (right)
PROPOSED HABITATS

The quantities and figures presented above are based on the conceptual site plan prepared by E.S. Kalogeras, P.E., of Riverhead, New York, for "The Shops at Riverhead," dated January 3, 2007. No quantities are shown on that plan so for the purposes of this analysis the quantities have been scaled and computed. The quantities may ultimately differ somewhat in the final plans but, for the purposes of impact analysis to the habitats, the above are considered sufficient. Furthermore, no information was provided as to the ultimate grading of the site or to the need and height of the retaining walls. Considering the proposed layout and the existing topography on site retaining walls may be necessary. The assumption has been made that these walls will be of a sufficient height to limit the need for extensive grading and thereby preserve the existing vegetation behind them. To allow for construction, the areas immediately adjacent to and surrounding the retaining walls have been included as landscaping and/or restored, depending on their location in relationship to the future uses. If these walls are not sufficiently high, additional regrading will be necessary and more of the existing vegetation ("Pitch Pine-Oak Forest") will be lost. These additional regraded areas, if necessary, would represent an increase in "Landscaping", depending on their locations in relationship to the future uses.

After the construction of the project, only 0.75 acres of the Pitch Pine-Oak Forest will remain on site. This will be located in a narrow buffer strip along the north property line and represents 1.81% of the site (see discussion above). The Pitch Pine-Oak Forest is the largest habitat on site and the project would remove 33.65 acres or 97.8% of that habitat. This remnant of the Pitch Pine–Oak Forest that will remain will not offer the same wildlife habitat as previously existed. Undeveloped woodland similar to what was found on the project site is located in the immediate vicinity.

All of the Successional Old Field habitat will be removed from the site with the construction of the project.

Approximately 4.31 acres or 10.37% of the site will be replanted with landscape species and turf. The plantings are proposed within the landscaped islands in the parking areas and adjacent to the proposed structures. This type of habitat is not currently found on site. This habitat can be further defined under two of the NYNHP ecological communities: "Flower/Herb Garden" and "Mowed Lawn with Trees". The following are the definitions of these communities as described by NYNHP:

> **"Flower/Herb Garden:** residential, commercial, or horticultural land cultivated for the production of ornamental herbs and shrubs. This community includes gardens cultivated for the production of culinary herbs.
> Characteristic birds include American robin (*Turdus migratorius*) and mourning dove (*Zenaida macroura*).
>
> **"Mowed Lawn with Trees:** residential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and forbs, and it is shaded by at least 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing.

> Characteristic animals include gray squirrel (*Sciurus carolinensis*), American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*), and mockingbird (*Mimus polyglottos*).

The types and density of plant material used during the landscaping of the project would increase the desirability of these new habitats to the wildlife species listed in the above descriptions, as well as other species. However, the limited and fragmented landscaped areas proposed will not benefit the majority of the wildlife species. Both of these ecological communities are distributed throughout New York State. They are ranked by NYNHP as being both global and State "secure".

The proposed project will result in 36.49 acres or 87.82% of the site being in Paving - Hard Structures. This represents an increase of 32.39 acres or 88.8% over the existing paving. As discussed in the setting section, the Paving - Hard Structures on site currently consist of asphalt roadways and parking fields, as well as concrete pads where the buildings were previously located. The proposed project will include similar conditions, as well as the proposed retail buildings. These buildings will create a different habitat then is currently found on site. The following is a definition of the closest ecological community to this habitat as described by NYNHP:

> **"Urban structure exterior:** the exterior surfaces of metal, wood, or concrete structures (such as commercial buildings, apartment buildings, houses, bridges) or any structural surface composed of inorganic materials (glass, plastics, etc.) in an urban or densely populated suburban area. These sites may be sparsely vegetated with lichens, mosses, and terrestrial algae; occasionally vascular plants may grow in cracks. Nooks and crannies may provide nesting habitat for birds and insects, and roosting sites for bats. Characteristic birds include common nighthawk (*Chordeiles minor*) on rooftops, American robin (*Turdus migratorius*) on porches or under shelter, and exotic birds such as rock dove (*Columba livia*) and house sparrow (*Passer domesticus*)".

This ecological community is distributed throughout New York State. It is ranked by NYNHP as being both global and State "secure".

In conclusion, approximately 1.81% of the site will remain in Pitch Pine-Oak Forest and an additional 10.37% will be established in landscaping. The balance, 87.82%, will be in paving and buildings. Considering the surrounding area, this represents the loss of approximately one-half of the remaining Pitch Pine - Oak Forest community. As noted in the Setting section of this document, the Pitch Pine – Oak Forest community is ranked "apparently secure" and "demonstrably secure" globally and as "apparently secure" in New York State by NYNHP. Furthermore, while all of the relatively small Successional Old Field community will be eliminated on site, there are large similar communities in the immediate area. In addition, this community is ranked as "apparently secure" both globally and in the State by NYNHP. As such, the loss of the existing ecological communities as a result of the proposed project is not anticipated to have a significant impact on the regional ecology.

2.2 WILDLIFE IMPACTS

The change in the habitat types found on site will have a direct impact on the wildlife species. As discussed in the wildlife setting section of this document, most of the wildlife expected to be found on site are those species that are tolerant of human activity because of the relatively small size of the existing habitats and the intensity of the surrounding land uses. However, the significant shift in the types of habitats that the project will result in will have an impact on the types and density of the species that will use the site after construction.

The proposed project will remove the majority of the woodland found on site. Species that require any type of wooded habitat will be limited to the northern edge of the property. This narrow buffer, in conjunction with the treed areas surrounding the residential development adjacent to the site to the north, will provide some habitat potential of certain species. It is expected that species that require cover for nesting and larger ranges for foraging will be the most impacted. Therefore, the wildlife expected to use this area of the site are likely to be relatively common suburban, human tolerant species. There will be limited potential for forest and edge species and no potential for sensitive forest interior species, which were not expected even under the existing conditions. The habitats found on the project site are expected to provide suitable habitat for a limited variety of wildlife. The proposed project will favor those species that prefer heavily developed suburban and urban habitats and those that are extremely tolerant of human activity. While the species that will ultimately occupy the site will be tolerant of human activity, all species, including the tolerant ones, will be directly impacted by the proposed clearing, direct change in habitat and resultant increase in human activity, especially during construction.

In determining impacts upon the existing wildlife populations, it is assumed that equilibrium in population size is established for each species as determined by availability of resources in the habitat. Thus, the removal of habitat will cause a direct impact on the abundance and diversity of wildlife using the site. Although the assumption that species are at equilibrium is an oversimplification, and population sizes of many species are controlled below the carrying capacity by other factors, it does provide a worst-case scenario in determining the impact of habitat loss.

In the short term, lands adjacent to the subject property will experience an increase in the abundance of wildlife populations due to displacement of individuals by the construction phase of the proposed project. Ultimately, competition between the displaced species and the species already utilizing the resources of the surrounding lands should result in a net decrease in population size for most species. The effect on the density and diversity of both local and regional populations should be minimal, as the area represents only a small portion of similar habitats available in the vicinity. However, there will be a reduction in the total population of the various animal species on a whole because of the loss of habitat from the proposed project.

The Wildlife Setting section of this document (Section 1.2) provides a discussion of the wildlife species observed or expected to be associated with the subject site. In addition, the **Wildlife Appendix** provides the results of the search of a computer database developed by CCG. . The database is used to establish baseline information of species associated with various habitats in

the Long Island/Southern New York region, as well as relevant information concerning abundance, habits, and seasonal fluctuations. The results presented in the appendix list those species that could utilize habitats similar to those that exist on site.

The computer-generated table in the appendix contains a column labeled "Adapt" that stands for "Species Adaptability". The "Species Adaptability" as indicated in the table refers to whether an individual species may potentially benefit from (+) a habitat change from natural to a developed setting; or be adversely impacted (-); or remain constant (=) as a result of this change. This appendix is included to provide the reader with the benefit of the literature search that was done in the preparation of the Wildlife Database. The assigned values are general indicators of the response of each species to alteration of its natural habitat by human activity. These values used in conjunction with the "Mitigation" and "Comment" columns in the appendix table will provide the reader with insight into how each listed species will react to the proposed changes on site. The following is a site specific discussion of the potential impacts to the individual species expected to be presently occupying the site, considering the existing habitats and the proposed changes.

Birds:

Literature suggests that many avian species are able to utilize both urban and suburban environments. Birds such as the crow, dove, blue jay, American robin, northern mockingbird, brown thrasher, gray catbird, cedar waxwing, grackle, northern oriole, and the brown-headed cowbird will be temporarily affected by development of the property. These birds usually adjust relatively well to human activity and while a few may occasionally utilize the remaining habitat on site, individuals will likely be displaced. Species such as the starling, robin, rock dove, cedar waxwing, catbird, brown headed cowbird, and mocking bird may remain relatively stable following the construction phase of the project providing suitable nesting areas are available.

Some smaller birds that also typically adjust well to development include the finches, towhees, juncos and sparrows. These seed-eating species are generally found in wooded edge habitats and buffer zones and, thus, populations are likely to be limited to the edges of the site where potential habitat will remain on adjoining properties or in the buffer under proposed conditions. Species from these groups expected on site include the house sparrow, song sparrow, house finch, cardinal, and rose-breasted grosbeak. The purple finch would likely decline in number on site following construction. The northern junco is expected on site and the fox sparrow, white-throated sparrow and white-crowned sparrow may be present as winter visitors. Populations of the majority of these species are likely to decrease following construction, particularly those that are found primarily in forested habitats. However, mitigation measures such as planting to increase diversity and vegetative cover will help these species to a limited extent. Species which should not be impacted, although their numbers will be reduced, include the introduced house finch, a pest which prefers to nest on buildings, as well as the chipping sparrow, goldfinch, and cardinal, which prefer open edge habitats. No significant regional impacts are expected to these species due to the presence of suitable habitat elsewhere in the vicinity.

Other smaller, insect feeding birds such as the black-capped chickadee, tufted titmouse,

and white-breasted nuthatch are also fairly tolerant of development as long as large trees with plenty of food sources remain. Numbers of these species are expected to decline due to loss of habitat, but some individuals may continue to utilize the wooded buffer along the northern property line. The ruby-crowned kinglet and golden-crowned kinglet, which are winter visitors, are not generally tolerant of human activity and are likely to be impacted by the proposed development. The house wren is very tolerant of development and no significant impacts to this species are expected. The Carolina wren may also remain on site, if present, as the site will contain a limited portion of suitable habitat following construction.

If present, the common nighthawk, a special concern species, is typically a ground nester, although it will nest on roofs, and is unlikely to continue utilizing the parcel. The barn swallow may increase in numbers following development, as suitable nesting habitat for the species would increase. However, as humans typically destroy nest sites attached to structures, nest success of this species would likely decline. The purple martin prefers wetland areas where insects are abundant and would be expected to relocate into more preferred habitat. The indigo bunting prefers areas with thick cover and would also likely abandon the site if present.

The vireos are also relatively sensitive to development and will suffer local impacts from the proposed project. Of the woodland thrushes and creepers, the wood thrush, hermit thrush, and the veery are expected to utilize the site, as well as the brown creeper. While the wood thrush, hermit thrush and brown creeper are relatively tolerant of human activity, they will be impacted as minimal woodland will remain and the degree of human activity will be relatively intense. If present, the veery would not be expected to continue to use the site following development as it typically avoids human activity. The whip-poor-will is nocturnal and prefers open woods with adjacent fields, thus, if present, they will not remain. The eastern bluebird is unlikely to utilize the site following development.

The eastern wood peewee is more vulnerable to development, but is occasionally found in suburban habitats. Numbers of this species are expected to decline on site, although regional populations should not be significantly impacted. The great-crested flycatcher might also be present, although they prefer large areas of open space and would generally be expected to find more suitable habitat in the vicinity. Regional impacts to these species should be minimal given the habitat available in the local area.

Although woodpeckers can adjust well to some types of development as long as wooded buffers remain, it is critical that both large, mature trees and smaller trees are present for feeding and nesting. Populations of these species may decline on site following clearing and the increase of human activity. The site and surrounding woodlands contain suitable habitat for many woodpecker species. Included in this group are common flickers, downy woodpeckers, hairy woodpeckers, red headed woodpeckers and the yellow-bellied sapsucker, all of which are residents on Long Island. No significant regional impacts to these species are expected as there is adequate habitat elsewhere in the vicinity.

Several species of birds associated with old field and/or agricultural habitats will also not use the site following development. The bobwhite and the ring-necked pheasant are generally intolerant of human development and activity and will not utilize the site following development.

Other species of birds which prefer a mix of woodland and field habitat include owls and raptors. Any raptors nesting on site would be expected to be displaced. These species generally roost or nest in forested areas, hunting for rodents and other prey in adjacent open areas. The red-tailed hawk and American kestrel are the most likely species to be present. Both are fairly tolerant of human activity; however, they would abandon the site and move to adjacent areas if present. As long as suitable nest sites remain in nearby areas, impacts to these species should not be significant. The eastern screech owl is likely present on site and within the overall area. While most owls are relatively tolerant of development and human activity, any that are present would be expected to abandon the site due to the loss of habitat and intensity of human activity.

Mammals

The mammals found on the site will also be impacted by the proposed clearing, habitat loss and increase in human activity. As with the avian species, intolerant species are expected to relocate to other areas and local populations are expected to reach a slightly lower equilibrium population density.

The short-tailed shrew is commonly found in open woodlands and field habitats but can live in a variety of habitats and will use several different food sources. Although limited numbers may potentially utilize the landscaped areas and buffer, the number of individuals is certain to decrease at the site. The masked shrew spends most of its time underground in tunnels and runways. It also likes to burrow beneath leaf litter, fallen branches, logs, and stumps. It is present in most habitats, but prefers mixed deciduous woods and red maple swamps. It is likely that local populations of these two shrews will be impacted, but regional population change should not be significant.

The eastern mole is commonly found in woodlands and field habitats with sandy or light loamy soils. They are also common in lawns and landscaped areas when their preferred habitat is destroyed or not available. The species has been known to utilize landscaped and revegetated areas; however, those revegetated areas proposed on the project site are not expected to provide suitable habitat. As such, impacts to individuals currently utilizing the project site are expected.

The white-footed mouse prefers forest edge habitat and does not adjust well to development. Unlike other small mammals, it does not usually move into nearby residential areas when pushed out of its preferred habitat. The population within the proposed development area will be directly impacted, but suitable habitat will remain within the overall parcel and in the vicinity. Thus, local declines may be expected but regional populations should remain stable. The house mouse and Norway rat are introduced pests found in or near humans in field habitats, with the Norway rat and black rat also found in urban settings near moist areas. They will eat almost anything and

usually cause problems for homeowners. Populations may increase slightly subsequent to development.

The eastern gray squirrel prefers hardwood forests with large, nut-producing trees. Squirrels usually adjust quite easily to urban areas where larger trees remain for feeding and nesting, and are expected to use the landscaped areas and remaining buffers. Relocated squirrels have been known to cause extensive damage to houses by gnawing holes in roofs and eaves to gain access to shelter. Maintaining the buffer areas will help to reduce the impacts to this species; local populations will likely be reduced. The eastern chipmunk prefers forest edge habitat with thick understory vegetation. They have a small home range of about 1/3 acre. Chipmunks feed on nuts, seeds, fruits, vegetables, and some small insects and animals. Chipmunks can adjust fairly well to fragmentation of the natural areas. However, given the minimal habitat that will remain following development, populations are likely to relocate.

Several bats were listed as potentially present. Due to the absence of caves on Long Island, these species generally roost in colonies in the attics of buildings, although some species will occasionally roost in trees. Development of the site may have localized impacts on these species although more preferred habitat is found elsewhere in the immediate vicinity.

The eastern cottontail seems to do well in both suburban and natural habitat, which may be due in part to its variable home range, which varies from 1/2 acre up to 40 acres depending on conditions. It also has a large number of food sources that are available in almost any setting. If present, local populations will decrease and it is expected that this species would relocate to a more preferred habitat in the general area.

Development of the existing forest habitat will also have slight impacts on raccoon and opossum populations. Both species prefer wooded areas with brush and hollow logs to den in. The opossum has a home range of about 1/2 mile. The raccoon has a variable home range of about one to two miles. These species are some of the most common nuisance animals to homeowners. If all of the natural habitat is removed, these species may invade under buildings, attics and chimneys in search of places to den. No suitable habitat will remain within the development portion, and only marginal habitat will exist in the buffer. Raccoon and opossum also forage for food in neighborhood garbage cans. Neither is social and the two species are often involved in fights with family pets. Clearing of the site may push some individuals into the surrounding natural area, but no significant regional impact is expected given their tolerance of humans and the remaining open space within the overall parcel and in the general area.

As contained in the ecological setting section, the red fox may inhabit suburban areas and the tracks and den of one was identified on site. Development of the site will remove all available habitat; therefore, the fox will be displaced to other, more suitable habitat off-site.

The site is also utilized by the white-tailed deer. Deer are not expected on site following

construction, although they should remain in the local area, as suitable habitat exists. The white-tailed deer has home range sizes of up to 3 square miles. Local impacts on deer populations are not expected to be significant; however, available habitat will be further reduced.

Amphibians and Reptiles

As was discussed in the setting section of this document, the incidence of reptile and amphibians on the site is expected to be low in both density and diversity. Although most of the herptile species which are found in dry woodlands adjust well to suburban areas, they are often less mobile than avian and mammal species and likely to suffer direct elimination during construction. Any individuals that are destroyed are not likely to be replaced from populations in natural areas remaining in the vicinity of the site, as very limited habitat will remain. Species found primarily in wetland habitats are not likely to be impacted by the proposed project, as they are not expected on site.

Terrestrial amphibians which may be present include only the toads. Frogs and salamanders are not likely to be present due to the absence of standing water. The eastern spadefoot toad and the Fowler's toad are also found in dry forested areas with sandy or loose soils. These species are aquatic breeders but travel long distances from the breeding site during the year. These species would not be expected to recolonize the site following development.

Several species of reptiles were identified as potentially present on site. The eastern garter snake, eastern hognose snake, and the eastern milk snake may be present. Of these species, the eastern garter snake is the most tolerant of urbanization and would be expected in the landscaped, buffer and revegetated areas; however, even this species would be expected to suffer temporary impacts due to direct loss during construction. Populations will partially recover after completion of the project, but local impacts to snake species would be expected.

The only terrestrial turtle species possibly on site is the eastern box turtle. It is essentially a terrestrial species and requires very little water to ensure its survival. Like the snakes, this species is likely to suffer direct losses during construction and local impacts are expected. Regional impacts should be minimal, as habitat will remain in the surrounding area.

Rare Species/Habitat Potential

Of the species listed as being likely on the site, the whip-poor-will, eastern box turtle, eastern spadefoot toad and eastern hognose snake are listed as special concern species. These species will be impacted by habitat loss, with no substantial mitigation available under the current project plans. Although there is documented concern about their welfare in New York State, these special concern species receive no additional legal protection under Environmental Conservation Law Section 11- 0535. Discussions above indicate the anticipated change in habitat needs and potential impacts to these species.

No threatened or endangered species were observed on site. The New York Natural

Heritage Program documented the presence of the eastern tiger salamander, an endangered species, as well as a rare ecological community and a rare vascular plant in the vicinity of the site. As discussed in the setting section, all are associated with a habitat not found on the project site and are a significant distance from it; therefore, no impacts are expected.

WILDLIFE APPENDIX

The species list found in the Wildlife section in the main text of this document takes into account the unique features of the site and lists the more probable species, as well as those observed. The following discussion provides a more general view of wildlife species that may be in the area based on the generalized habitat that makes up the subject site and the immediate area surrounding the site. It must be noted that the species listed in this appendix are not necessarily species that will be found on the site, or even common. This list of species is based on available literature for the entire Long Island/Southern New York region and takes into account the habitats on, as well as surrounding, the site. It also recognizes that wildlife species are mobile and while they may not be considered as common on a given site, because of the existing habitat found there, they transit or occasionally use the site because of surrounding habitats where they may be more common.

In order to provide a comprehensive listing of potential wildlife species for this appendix a computer-database program was used. In general, the database was prepared using available literature and provides a detailed list of species that could be conceivably found in the Long Island/Southern New York region given various habitats. The database is for use with a personal computer (PC) and was developed and refined by Cramer Consulting Group (the predecessor of this model was developed by Cramer, Voorhis & Associates, Inc.). This new model reformats the original for clarity, corrects several errors and "bugs", and updates the various references. There are many similarities between both models. However, the most significant difference is the present model utilizes the Microsoft Access® database program as opposed to the Lotus 1-2-3 spreadsheet program. This new format allows the ability to undertake various queries and analysis of the data that was not possible with the old database.

The database contains the various wildlife species that are documented as being found in the Long Island/Southern New York region and provides their "life habits characteristics" (see below) for various habitats. Other information is also included for each wildlife species. This information includes the protection status as assigned by the New York State Department of Environmental Conservation (NYSDEC) under 6 NYCRR Part 182, adaptability to human influences, mitigation measures that may be possible to reduce impacts to the species, general comments with regard to the species (special needs, preferences, etc.), and the references used for the information.

For the subject site and the surrounding areas the following database fields were chosen. These represent the common habitats on the site and in the surrounding area.

HABITAT TYPES

- Pine Oak For: Pitch Pine-Oak Forest.
- Wooded Edge: The transition between open and forested habitats.
- Abandoned Fld: Field habitat in an early successional phase – mostly herbaceous vegetation.
- Overgrown Fld: Field habitat in a later successional phase – herbaceous and woody vegetation.
- 1st Growth Wd: Late successional phase of field habitat – mostly woody vegetation.

It should be noted that there are no habitat fields contained within the database for "paved – hard structures." However, species that will use this type of habitat are noted in the "Comment" column.

The three tables in this appendix, BIRD, MAMMAL, and REPTILE & AMPHIBIAN SPECIES, represent the database run for the species that are expected in the five habitats listed above. The first two columns provide the individual specie's common and scientific names.

The third column in the tables, "Protection", provides the protection status as assigned by the NYSDEC under 6 NYCRR Part 182. The following are the definitions of the protection statuses.

SPECIE PROTECTION STATUS

- Endangered: species which meet one of the following criteria:
  (1) are native species in imminent danger of extirpation or extinction in New York; or
  (2) are species listed as endangered by the United States Department of the Interior in the 'Code of Federal Regulations' (50 CFR part 17 [see section 182.1a(1) of this Part]).
- Threatened: species which meet one of the following criteria
  (1) are native species likely to become an endangered species within the foreseeable future in New York; or
  (2) are species listed as threatened by the United States Department of the Interior in the Code of Federal Regulations (50 CFR part 17 (see section 182.1(a)(1) of this Part)).
- Special Concern: are species of fish and wildlife found by the department to be at risk of becoming either endangered or threatened in New York. Species of special concern do not qualify as either endangered or threatened, as defined in Part 182.2(g) and 182.2(h), at this time and are not subject to the provisions of Part 182. Species of special concern are listed in Part 182.6(c) for informational purposes only.
- None: No NYSDEC under 6 NYCRR Part 182

The fourth column in the tables, "Adapt", provides the individual species ability to adapt to human activities. The value assigned to each species is general and subjective based on the habitats of the particular species. The "Mitigation" and "Comments" columns provide additional information in assessing the species ability to adapt and the possible severity of potential impacts. In addition, the type and intensity of proposed activity, the amount and type of remaining habitat, as well as the surrounding habitat after the action, should also be considered in assessing the individual wildlife species ability to adapt. The following are the values used in the database and their definition.

SPECIE ADAPTABILITY

\+ Species that will benefit from human activities, such as those species that nest in buildings or favor suburban settings, as well as being extremely tolerant of human activity.

= Species that are tolerant of, or unaffected by, human activity and those that will use a suburban setting.

\- Species that avoid humans, are secretive, or require large undisturbed habitats to nest or forage.

The fifth through the ninth columns are the five database habitats that were run for the site and the surrounding areas (discussed above). Under each of the habitat columns are provided the "Life Habits" for the individual wildlife specie. The Life Habits provides information on the species' characteristics in the particular habitat(s). Each of the life habits is divided into 3 sub-categories, separated by slashes (/). The first sub-category is the *frequency* of the species in the habitat(s); the second is the *activity* of the species in the habitat(s); and the third is the *duration* of time the species can be expected to be found in the habitat(s). The following are the symbols used and their meaning.

WILDLIFE SPECIES LIFE HABIT CHARACTERISTICS
(Frequency/Activity/Duration)

Frequency	/	Activity	/	Duration
A : Abundant		N : Nests		R : Resident
N : Not Expected		F : Forages		1-12 : Months of the Year
C : Common		R : Rests		
R : Rare		H : Hunts		

The eleventh and twelfth columns represent additional information about the individual wildlife with regard to "Mitigation" and "Comments." The mitigation column provides mitigation measures that may be possible to reduce potential impacts to the species, such as the installation of feeding stations, increasing certain types of habitat, etc. The comment column provides more information on the particular wildlife specie, such as special needs, preferences, or frequency in the Long Island/Southern New York region, etc.

Again, it must be stressed that the species listed in the following tables' appendix are not necessarily species that will be found on the site, or even common. The wildlife specie lists contained within the main body of the document are those species that are considered to be common on the subject site based on field inspections and the existing habitat on and immediately surrounding the site. These appendix lists of species have been based on available literature for similar habitats in the entire Long Island/Southern New York region. It also recognizes that wildlife species are mobile and while they may not be considered as common on a given site, because of the existing habitat found there, they transit or occasionally use the site because of surrounding habitats where they may be more common.

Following the wildlife species tables is a list of references that was used to develop the Access® database for the wildlife species that could be found in all the habitats in the entire Long Island/Southern New York region.

BIRD SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
sharp-shinned hawk	Accipeter striatus	none	-	R / N,H / 4-9	N / N,F / 4-9	N / N,F / 4-9	N / N,F / 4-9	N / N,F / 4-9		avoids humans; nests in heavily forested areas	4 16
Cooper's hawk	Accipiter cooperii	special concern	-	N / N,H / 4-9	N / N,H / 4-9	N / N,H / 4-9	N / N,H / 4-9	N / N,H / 4-9		no atlas sightings (non-breeder) on LI; needs extensive woodland	4 17
red-winged blackbird	Agelaivs phoeniceus	none	=		C / N,F / 3-10	C / N,F / 3-10	C / N,F / 3-10			needs water	4 6
grasshopper sparrow	Ammodramus savannarum	special concern	-			C / N,F / 4-10	C / N,F / 4-10		grass lands	requires grasslands	4 20
long-eared owl	Asio otus	none	-	C / N,H / R				C / N,H / R		nocturnal; prefers dense forested areas near water	4 17
cedar waxwing	Bombycilla cedrorum	none	+	R / N,F / 4-10	C / N,F / 4-10	C / N,F / 4-10	C / N,F / 4-10	C / N,F / 4-10	shrubs, shade trees	prefers open woodlands, orchards and residential areas	4 23 32
ruffed grouse	Bonasa umbellus	none	-	R / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	R / N,F / R		prefers dense cover, thick woods; avoids humans	4 8
great-horned owl	Bubo virginianus	none	-	C / N,H / R	C / N,H / R	C / N,H / R	C / N,H / R	C / N,H / R		nocturnal; rare in wooded areas of less than 20 acres	4 17
red-tailed hawk	Buteo jamaicensis	none	-	C / N,H / R	C / H / R	C / H / R	C / H / R	C / H / R		needs 100 foot radius undisturbed area for nest	4 16
broad-winged hawk	Buteo platypterus	none	-	R / N,H / 4-9						avoids humans; nests only in dense forests; prefers to be near water	4 16
whip-poor-will	Caprimulgus vociferous	none	-	C / N / 5-9	C / N / 5-9	C / F / 5-9	C / F / 5-9	C / N / 5-9		nocturnal; prefers open woods with adjacent fields	4 12
northern cardinal	Cardinalis cardinalis	none	=		C / N,F / R	C / N,F / R	C / N,F / R		feeder,thicket,shrub	found around gardens, yards, parks	4 20
pine siskin	Carduelis pinus	none	=	N / N,F / R			N / N,F / R		feeder, ornimental conifers	one atlas confirmed breeding record on Long Island	4 20
American goldfinch	Carduelis tristis	none	=		C / N,F / 4-11	C / N,F / 4-11	C / N,F / 4-11		shrubs, shadetree, feeder	prefers diet of thistles and dandelions	4 20
house finch	Carpodacus mexicanus	none	+	A / N,F / 3-11	A / N,F / 3-11	A / N,F / 3-11		A / N,F / 3-11		nests almost entirely on buildings; considered a pest species	4 20
purple finch	Carpodacus purpureus	none	-	C / N,F / R	C / N,F / R				feeder, ornimental evergreens	inhabits parks, suburban areas, and coniferous forests	4 20
veery	Catharus fuscescens	none	-	R / N,F / 5-9						prefers damp forest with undergrowth; affected by fragmentation	4 7
hermit thrush	Catharus guttatus	none	=	C / N,F / R	N / N,F / R		R / N,F / R	R / N,F / R	shrubs, thickets	not common on Long Island; when present, prefers pine barrens	4 7
brown creeper	Certhia americana	none	-	C / N,F / 3-10				C / N,F / 3-10		prefers predominantly deciduous wooded areas	4 9
chimney swift	Chaetura pelagica	none	+	C / F / 4-9	C / F / 4-9					nests in chimneys, with few exceptions	4 42
common nighthawk	Chordeiles minor	special concern	=		R / N,F / 5-9	R / N,F / 5-9				primarily a grassland specie; will nest in burnt areas and roofs	4 12
northern harrier	Circus cyaneus	threatened	-		R / H / R	R / H / R	R / H / R			avoids humans; extremely protective of nests	4 16
black-billed cuckoo	Coccyzua erythropthalmus	none	-		C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9		shrub, thicket	avoids human activities	4 11
yellow-billed cuckoo	Coccyzus americanus	none	-	R / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9	shrub, thicket	avoids heavy urban areas; prefers wooded open or edges for nests	4 12
common flicker	Colaptus auratus	none	=	C / N,F / R	C / N,F / R	C / N,F / R	R / H / R	A / N,F / R	nesting box	abundant around parks, suburban and urban areas	4 14
common bobwhite	Colinus virginianus	none	-		C / N,F / R	C / N,F / R	C / N,F / R			somewhat tolerant of humans during spring and summer months	4 8
rock dove	Columba livia	none	+			A / N,F / R		C / N,F / R		nests almost entirely on buildings; considered a pest species	4 8
eastern wood-peewee	Contopus virens	none	=	C / N,F / 4-9	C / N,F / 4-9			C / N,F / 4-9	shade trees	prefers suburban areas, parks and villages with shade trees	4 15

BIRD SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
American crow	Corvus brachyrhynchos	none	=	A / N,H / R	A / N,H / R	A / H / R	A / H / R	A / N,H / R		extremely adaptable; omnivorous	4 11
blue jay	Cyanocitta cristatta	none	=	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R		extremely adaptable to human activity and other stresses	4 10
yellow warbler	Dendrocica petchia	none	=			R / N,F / 5-9			bushes, shrubs, shade trees	rare breeder on LI, winter sps, abundant in parks & yards	4 18
black-throated blue warbler	Dendroica caerulescens	none	=	C / N,F / 5-10					shade trees	migratory, large range; forest interior specie; can adapt to suburb	18
yellow-rumped warbler	Dendroica coronata	none	-	C / N,F / 4-10					conifers,feeder	prefers mixed and conifer forest; may be in yards	4 8
prairie warbler	Dendroica discolor	none	-	C / N,F / 5-9		C / N,F / 5-9	C / N,F / 5-9		shrubs,thickets,wooded area	prefers scrub fields and open pine barrens habitat	4 19
chestnut-sided warbler	Dendroica pensylvanica	none	-		R / N,F / 5-9	R / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9	shrubs,thickets,wooded area	prefers first growth woods, with some open brush area	4 19
pine warbler	Dendroica pinus	none	-	C / N,F / 4-10						prefers pine forest; may appear in overgrown field	4 19
gray catbird	Dumetella carolinensis	none	=	R / N,F / 5-9	A / N,F / 5-9	A / N,F / 5-9	A / N,F / 5-9	C / N,F / 5-9	shrub,thicket	abundant around parks, urban and suburban areas	4 9
least flycatcher	Empidonax minimus	none	=		R / N,F / 5-9	R / N,F / 5-9	R / N,F / 5-9			prefers open areas and woodland borders; uncommon on Long Island	4 15
willow flycatcher	Empidonax trailli	none	-			C / N,F / 5-8	C / N,F / 5-8			found mostly on south shore and western north shore areas	4 15
American kestrel	Falco sparverius	none	-		C / N,H / R	C / H / R	C / H / R	C / N,H / R	nest boxes dead trees	adaptable; prefers open areas and parks; will nest near humans	4 17
common yellowthroat	Geothlypis trichas	none	=			C / N,F / 4-10	C / N,F / 4-10		shrubs, thickets	found in all open brushy wet areas	4 19
barn swallow	Hirundo rustica	none	+		C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9		nests almost entirely on buildings	4 15
wood thrush	Hylicichla mustelina	none	=	R / N,F / 4-10	R / N,F / 4-10		C / N,F / 4-10	C / N,F / 4-10	shrubs,shade trees	prefers vacant wood (trees >40 feet); may adapt of wooded suburban	4 7
northern oriole	Icterus galbula	none	=	R / N,F / 5-9	R / N,F / 5-9				feeder, thickets, shrubs	prefers deciduous woodland and shade trees	4 6
northern (dark-eyed) junco	Junco hyemalis	none	-	R / N,F / 3-10	R / N,F / 3-10	R / N,F / 3-10	R / N,F / 3-10	R / N,F / 3-10		prefers forested area with elevation >300 meters; no LI atlas record	4 21
red-bellied woodpecker	Melanerpes carolinus	none	=	R / N,F / R	C / N,F / R			R / N,F / R	feeder, shade trees	prefers forest openings; mostly found on Long Island north shore	4 14
red-headed woodpecker	Melanerpes erythrocephalus	none	=		C / N,F / 4-10	C / N,F / 4-10			shade trees	prefers open woodlands, parks and suburban areas	4 14
swamp sparrow	Melospiza georgiana	none	-			C / N,F / R	C / N,F / R			prefers fresh water marshes; may be found in weedy fields, parks	4 22
song sparrow	Melospiza melodia	none	=	R / N,F / R	C / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	thickets,nesting box	common to most habitats except deep forest, open field and marsh	4 22
northern mockingbird	Mimus polyglottos	none	+	C / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	C / N,F / R	shrubs,thickets	prefers to nest near humans	4 9
black-and-white warbler	Mniotilta varia	none	-	R / N,F / 4-9	C / N,F / 4-9	R / N,F / 4-9	R / N,F / 4-9	C / N,F / 4-9		builds nests under shrubs and/or trees	4 18
brown-headed cowbird	Molothrus ater	none	=	A / N,F / 3-10	A / N,F / 3-10	A / H / 3-10	A / N,F / 3-10	A / N,F / 3-10		lays eggs in other bird's nests; some stay during winter	4 6
great-crested flycatcher	Myiarchus crinitus	none	-	C / N,F / 5-9	C / N,F / 5-9				nesting box	prefers deciduous forests and deciduous open woodland	4 15
common screech owl	Outus asio	none	=	C / N / R	C / N / R				nesting box	nocturnal; nests in hollow trees, abandoned buildings, nest boxes	4 17
black capped chickadee	Parus atricapillus	none	=	A / N,F / R	A / N,F / R	C / H / R	A / N,F / R	A / N,F / R	nesting box, feeder	abundant around parks, urban and suburban areas	4 11
tufted titmouse	Parus bicolor	none	=	R / N,F / R	C / N,F / R				feeder, nesting box, shade trees	common in suburban areas	4 11
house sparrow	Passer domesticus	none	+	C / N,F / R	C / N,F / R	C / N,F / R		C / N,F / R		prefers buildings, urban, suburban, gardens; considered a pest	4 20

BIRD SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
Savannah sparrow	Passerculus sandwichensis	none	-			R / N,F / 4-9			grass lands	found in shore areas; not expected inland	4 21
fox sparrow	Passerella iliaca	none	-	R / F / 10-5	C / F / 10-5	C / F / 10-5	C / F / 10-5	R / F / 10-5	shrub, thicket, field	boreal species, winters here in edge, thickets, brushy areas	20 21
indigo bunting	Passerina cyanes	none	-		C / N,F / 5-10	C / N,F / 5-10	C / N,F / 5-10		shrubs,thickets	inhabits open woodlands with dense thickets for cover	4 20
ring-necked pheasant	Phasianus colchicus	none	-		C / N,F / R	C / N,F / R	C / N,F / R			needs fields with cover along edge	4 8
rose-breasted grosbeak	Pheucticus ludovicianus	none	=		C / N,F / 5-10	C / N,F / 5-10	C / N,F / 5-10	R / N,F / 5-10	shrubs, ornimental conifers, shade trees	mainly found on north shore	4 20
downy woodpecker	Picoides pubescens	none	=	A / N,F / R	A / N,F / R			A / N,F / R	shade trees	found in parks and suburban areas	4 14
hairy woodpecker	Picoides villosus	none	=	C / N,F / R	C / N,F / R			R / N,F / R		found mainly in deciduous forests	4 14
rufous-sided towhee	Pipilo erythrophthalmus	none	-		A / N,F / 5-10	A / N,F / 5-10	A / N,F / 5-10	A / N,F / 5-10	shrubs, thickets	may be present year round on Long Island	4 20
scarlet tanager	Piranga olivacea	none	-	C / N,F / 4-9						rare in wooded area of less than 50 acres; affected by fragmentation	4
purple martin	Progne subis	none	-		C / N,F / 5-8				nest boxes	found in parks, suburbs, cities and open woods; nests in nest boxes	4 15
common grackle	Quiscalus quiscula	none	=	C / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R		adapts well to urban and suburban habitats	4 6
ruby-crowned kinglet	Regulus calendula	none	-	R / N,H / R			R / N,H / R	R / N,H / R		occurs as non-breeding species; present during migration	4 7
golden-crowned kinglet	Regulus satrapa	none	-	R / N,H / R			R / N,H / R	R / N,H / R		prefers spruce vegetation; no atlas sightings on Long Island	4 7
American woodcock	Scolopax minor	none	-		C / N,F / 3-11	C / N,F / 3-11	C / N,F / 3-11	R / N,F / 3-11		prefers moist woodland and thicket near open fields	4 30
ovenbird	Seiurus aurocapillus	none	-	C / N,F / 5-10						prefers open forest floor and woodlot greater than 35 acres	4 19
American redstart	Setophaga ruticilla	none	-		C / N,F / 5-11		C / N,F / 5-11	C / N,F / 5-11		urbanization and agriculture have negative effects	4 19
eastern bluebird	Sialia sialis	special concern	-		R / N,F / 3-10	R / N,F / 3-10			nesting box	found almost entirely in nesting boxes, extremely rare in wild	4 7
white-breasted nuthatch	Sitta carolinensis	none	=	A / N,F / R					shade trees	abundant in parks, urban and suburban areas	4 9
yellow-bellied sapsucker	Sphyrapicus varius	none	=	C / N,F / 5-10	C / N,F / 5-10			C / N,F / 5-10		nests in tree cavity; found in parks, yards and gardens	14
chipping sparrow	Spizella passerina	none	+		C / N,F / R	C / N,F / R			shrubs, thickets	abundant around man made structures	4 21
field sparrow	Spizella pusilla	none	-		R / N,F / 4-11	C / N,F / 4-11	C / N,F / 4-11		shrub, thicket, field	associated with grasslands, fields and brushy wooded edges	4 21
eastern meadowlark	Sturnella magna	none	-			C / N,F / 5-8	C / N,F / 5-8		7 acres undisturbed nesting area	found in marshes during winter months	4 6
European starling	Sturnus vulgaris	none	+	C / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R		extremely adaptable to human activity; considered a pest	4 23
Carolina wren	Thryothorus ludovicianus	none	=				C / N,F / R	C / N,F / R	feeder, shrubs, thickets	associated with woodland thickets and brushy areas, often near water	4 9
brown thrasher	Toxostoma rufum	none	=	R / N,F / 4-10	C / N,F / 4-10	C / N,F / 4-10	C / N,F / 4-10	C / N,F / 4-10	thickets, shrubs	common in parks and suburban areas, wooded edges and dry open areas	4 9
house wren	Troglodytes aedon	none	=	R / N,F / 5-10	C / N,F / 5-10	C / N,F / 5-10	C / N,F / 5-10	C / N,F / 5-10	nest boxes, thickets, shrubs	found in suburban areas and gardens; nests in crevices of buildings	4 9
American robin	Turdus migratorius	none	=	A / N,F / 4-10	A / N,F / 4-10	A / N,F / 4-10	A / N,F / 4-10	A / N,F / 4-10	nesting box, thicket, shrub	very adaptable; abundant in parks; nests in man-made structures	4 7
eastern kingbird	Tyrannus tyrannus	none	=	C / N,F / 3-10	A / N,F / 3-10	A / N,F / 3-10	A / N,F / 3-10	C / N,F / 3-10		very adaptable to human activities; prefers open areas	4 15

BIRD SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
barn owl	Tyto alba	special concern	=		R / H / R	R / H / R	R / H / R		nesting box	hunts in open areas, nests in man made structures and hollow trees	4 17
blue-winged warbler	Vermivora pinus	none	-		C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9	C / N,F / 5-9		primarily abandoned and overgrown field, and thickets	4 14
red-eyed vireo	Vireo olivaceus	none	=	R / N,F / 5-9	C / N,F / 5-9			C / N,F / 5-9	shade trees, shrubs, thickets	found in parks and suburban areas with shade trees and undergrowth	4 23
yellow throated vireo	Vireu flavifrons	none	-		C / N,F / 5-9				shade trees	sensitive to fragmentation and urbanization	4 23
white eyed vireo	Viro griseus	none	-				C / N,F / 5-9			avoids human activity; prefers dense swampy thickets	4 23
mourning dove	Zenaida macroura	none	=	C / N,H / 4-9	C / N,H / 4-9	A / N,H / 4-9	A / N,H / 4-9	C / N,H / 4-9		abundant around parks, urban and suburban areas	4 8
white-throated sparrow	Zonotrichia albicollis	none	-	R / N,F / R	R / N,F / R		C / N,F / R	C / N,F / R	shrubs, ornimental conifers	prefers brushy areas and thick undergrowth	4 22
white-crowned sparrow	Zonotrichia leucophrys	none	=		C / F / 9-5	C / F / 9-5	C / F / 9-5		feeder, thickets, shrubs	often found in suburban areas and city parks	22 32

MAMMAL SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
short-tailed shrew	Blarina breuicauda	none	=	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R		tunnels underground; abundant in a variety of habitats	1 29
least shrew	Cryptotis parva	none	-		N / N,F / R	N / N,F / R				not commonly documented on Long Island	1 29
Virginia opossum	Didelphis virginiana	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		common in suburban areas, as well as woods, marsh and coastal areas	1 29
big-brown bat	Eptesicus fuscus	none	+	C / N,F / R	C / N,F / R			C / N,F / R		roosts in structures; found throughout LI; hunts over water	1 29
southern-flying squirrel	Glaucimys volans	none	-	C / N,F / R						common in deep mixed, deciduous and coniferous woods	1 29
silver-haired bat	Lasionycteris noctivagans	none	-	R / N,F / 6-9	R / N,F / 6-9			R / N,F / 6-9		prefers wooded areas near water, primarily during summer months	1 29
hoary bat	Lasiurus borealis	none	=	C / N,F / 8-10	C / N,F / 8-10			C / N,F / 8-10		roosts in trees, sometimes found in parks	45
red bat	Lasiurus borealis	none	-	C / N,F / 5-11	C / N,F / 5-11			C / N,F / 5-11		feeds in marsh area; nests within 1000 yards of marsh in trees	1 29
woodchuck	Marmota monax	none	-	R / N,F / R	R / N,F / R	R / N,F / R	R / N,F / R	R / N,F / R		appears primarily in scrub woods and brushy areas; not common on LI	1 29
striped skunk	Mephitis mephitis	none	=	N / N,F / R	N / N,F / R	N / N,F / R	N / N,F / R	N / N,F / R		prefers mixed wood & brush within 2 miles of water; not expected on LI	1 29
meadow vole	Microtus pennsylvanicus	none	=			C / N,F / R	C / N,F / R	R / N,F / R		tunnels underground; prefers open woodland	29 45
pine vole	Microtus pinetorum	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		tunnels underground; prefers sandy soil in woods and field; can swim	1 29
house mouse	Mus musculus	none	+	N / N,F / R	N / N,F / R	R / N,F / R	R / N,F / R			lives in association with man, not expected away from buildings	1 29
long-tailed weasel	Mustela frenata	none	-	R / N,H / R	R / N,H / R	R / N,H / R	R / N,H / R	R / N,H / R		prefers dense wood, but may appear in all land habitats near water	1 29
Keen's bat	Myotis keenii	none	+	R / N / 6-10	R / N / 6-10			R / N / 6-10		roosts in buildings, crevices and bark; more common on eastern LI	1 29
little-brown bat	Myotis lucifugus	none	+	C / N,F / 5-9	C / N,F / 5-9			C / N,F / 5-9		roosts in buildings and man made structures; hunts over water	1 29
white-tailed deer	Odocoileus virginianus	none	-	C / N,F / R	C / N,F / R	C / F / R	C / F / R	C / F / R		requires range of one-half square mile	1 25 29
white-footed mouse	Peromyscus leucopus	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		common to most all habitats; does not adapt well to human activity	1 29
eastern pipistrelle	Pipistrellus subflavus	none	=	R / N,F / 4-10	R / N,F / 4-10					found near water in open woods, also found in buildings	1 29
racoon	Procyon lotor	none	+	C / N,F / R	C / N,F / R	C / F / R	C / F / R	C / N,F / R		nocturnal; very adaptive; found in urban and forest areas	1 29
Norway rat	Rattus norvegicus	none	+		C / N,F / R	C / N,F / R				nocturnal; usually associated with human activity	1 29
black rat	Rattus rattus	none	=		R / N,F / R	R / N,F / R	R / N,F / R			lives in association with man, mainly city water front buildings	1 29
eastern mole	Scalopus aquaticus	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		tunnels underground	1 29
eastern gray squirrel	Sciurus carolinensis	none	=	C / N,F / R	C / N,F / R			C / N,F / R	shade trees	found in parks, urban and suburban areas; very adaptable	1 29
masked shrew	Sorex cinereus	none	=	C / N,F / R				C / N,F / R		tunnels underground; common in wood and wet habitats	1 29
eastern cottontail	Sylvilagus floridanus	none	=	C / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	A / N,F / R	shrubs, thickets	will adapt to suburban areas, if there is sufficient cover	1 29
eastern chipmunk	Tamis striatus	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		prefers open woods, thickets, and rocky areas	1 29

MAMMAL SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
red fox	Vulpes vulpes	none	-	C / N,H / R	C / H / R	C / H / R	C / N,H / R	C / N,H / R		builds den in wooded areas with loose-sandy soil and good drainage	1 29
meadow-jumping mouse	Zapus hudsonicus	none	=	R / N,F / R	R / N,F / R	R / N,F / R	R / N,F / R	R / N,F / R		found around water in pine barrens; prefers open areas with grasses	1 29

REPTILE & AMPHIBIAN SPECIES											
COMMON NAME	SCIENTIFIC NAME	PROTECTION	ADAPT	PINE OAK FOR	WOODED EDGE	ABANDONED FLD	OVERGROWN FLD	1st GROWTH WD	MITIGATION	COMMENTS	REFERENCES
marbled salamander	Ambystoma opacum	none	=	R / N,F / R						moist to sandy areas; lays eggs in fall in low spots wet by rain	34 36 38
eastern tiger salamander	Ambystoma tigrinum tigrinum	endangered	-	R / F / R						needs fishless pond or vernal pond with 500' vacant radius to breed	36 38
Fowler's toad	Bufo woodhousei fowleri	none	-	C / F / R		C / F / R	C / F / R			found in suburban areas, gardens; breeds in shallow permanent ponds	33 37
eastern hognose snake	Heterodon platyrhinos	special concern	=	R / N,H / R		R / N,H / R	R / N,H / R	R / N,H / R		sandy soil and sunny roadside; feeds on herptiles and insects	38
common gray treefrog	Hyla versicolor	none	-	C / N,F / R	C / N,F / R					prefer mossy trees near ponds	33 37
eastern milk snake	Lampropettis d. triangulum	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		occupies a variety of habitats	38 39
red-backed salamander	Plethodon cinerus cinerus	none	-	R / N,F / R						terrestrial, prevelent in moist situations	34 36
eastern spadefoot toad	Scaphiopus holbrooki	none	-	C / N,F / R						nocturnal; burrows in sandy soil; eats insects, worms; gardens, etc.	33
eastern box turtle	Terrepene carolina	none	-	C / N,F / R						terrestrial based species	41
eastern garter snake	Thamnophis sirtalis	none	=	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R	C / N,F / R		occupies a variety of habitats	38 40

jh

WILDLIFE DATABASE REFERENCES
WILDLIFE APPENDIX

Refer Number	Reference
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4	Andrle, R.E., and S.R. Carroll. 1988. The Atlas Of Breeding Birds in New York State. Cornell University Press, Ithaca.
5	Pontin, Al. 1982. Competition and Coexistence Species. Pitman Advanced Publishing Program, Boston, Massachusetts.
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7	Bent, A.C. 1964. Life Histories of North American Thrushes, Ringlets, and their allies. Dover Pub., NY
8	Bent, A.C. 1963. Life Histories of North American Gallinaceous Birds. Dover Pub., NY.
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18	Bent, A.C. 1963. Life Histories of North American Wood Warblers, pt 1. Dover Pub., WY
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20	Bent, A.C. 1968. Life Histories or North American Cardinals, Grosbeaks, Buntings, Towhees, Finches, Sparrows, and their allies, Pt 1. Dover Pub., NY.
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22	Bent, A.C. 1968. Life Histories of North American Cardinals, Grosbeaks, Buntings, Towhees, Finches, Sparrows, and their allies, pt 3. Dover Pub., NY.
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25	Cahalane, V.H. 1961. Mammals of North America. Macmillan Company. NY
26	Bent, A.C. 1963. Life Histories of North American Marsh Birds. Dover Pub., NY.
27	Bent, A.C. 1962. Life Histories or North American Wild Fowl, pt 1. Dover Pub., NY.
28	Bent, A.C. 1962. Life Histories or North American Wild Fowl, pt 2. Dover Pub., NY.

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WILDLIFE APPENDIX

Refer Number	Reference
29	Godin Al. 1977. Wild Mammals or New England. Johns Hopkins University Press, Baltimore, Maryland.
30	Bent, A.G 1962 Life Histories of North American Short Birds, pt 1. Dover Pub., NY.
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37	Dickerson, M.C. 1943. The Frog Book. Dover Pub., NY.
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44	Forbush , E.H. 1912. The History of The Game Birds, Wildfowl, and Shore Birds or Massachusetts and Adjacent States. Wright & Potter Printing, Massachusetts.
45	Barbour, R.W., and W.H. Davis. 1969. Bats or America. The University Press or Kentucky, Lexington, KY.

NYNHP Appendix

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
Website: www.dec.state.ny.

Denise M. Sheehan
Commissioner

January 10, 2007

Erin Duffy
Freudenthal & Elkowitz Consulting Group, Inc
1757-24 Veterans Memorial Highway
Islandia, NY 11749

Dear Ms. Duffy:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Re-development of a 41.55 acre parcel, area as indicated on the map you provided, located on Rte 58, Town of Brookhaven, Suffolk County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and should not be released to the public without permission from the New York Natural Heritage Program.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,

Tara Seoane

Tara Seoane, Information Services
NY Natural Heritage Program

Enc.
cc: Reg. 1, Wildlife Mgr.
Peter Nye, Endangered Species Unit, Albany

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

-This report contains **SENSITIVE** information that should not be released to the public without permission from the NY Natural Heritage Program
-Refer to the User's Guide for explanations of codes, ranks and fields.
-Location maps for certain species and communities may not be provided 1) if the species is vulnerable to disturbance, 2) if the location and/or extent is not precisely known, 3) if the location and/or extent is too large to display, and/or 4) if the animal is listed as Endangered or Threatened by New York State

Natural Heritage Report on Rare Species and Ecological Communities

AMPHIBIANS

Ambystoma tigrinum

Tiger Salamander

Office Use

NY Legal Status:	Endangered	**NYS Rank:**	S1S2 - Critically imperiled	52
Federal Listing:		**Global Rank:**	G5 - Demonstrably secure	
Last Report:	**	**EO Rank:**	**	ESU
County:	Suffolk			
Town:	Riverhead			
Location:	At, or in the vicinity of, the project site			
Directions:	**			
General Quality and Habitat:	**For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located, or the NYS DEC Endangered Species Unit at 518-402-8859.			

COMMUNITIES

Coastal plain pond shore

This occurrence of Coastal Plain Pond Shore is considered significant from a statewide perspective by the NY Natural Heritage Program. It is either an occurrence of a community type that is rare in the state or a high quality example of a more common community type. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value

Office Use

NY Legal Status:	Unlisted	**NYS Rank:**	S2 -	4583
Federal Listing:		**Global Rank:**	G3G4 -	SL
Last Report:	1988-08-09	**EO Rank:**		
County:	Suffolk			
Town:	Riverhead			
Location:	Kroemer Avenue Pond			
Directions:	From Riverhead, go west on Route 25 2 25 miles to Kroemer Avenue. Go north on Kroemer Avenue 0.3 miles. The wetland is due west.			
General Quality and Habitat:	Low diversity, some exotics, small area. A series of three small depressions in the pine barrens with coastal plain pond vegetation. One pond is shrubbed in. All were dry in 1988 but still quite mucky			

VASCULAR PLANTS

Rhynchospora scirpoides

Long-beaked Beakrush

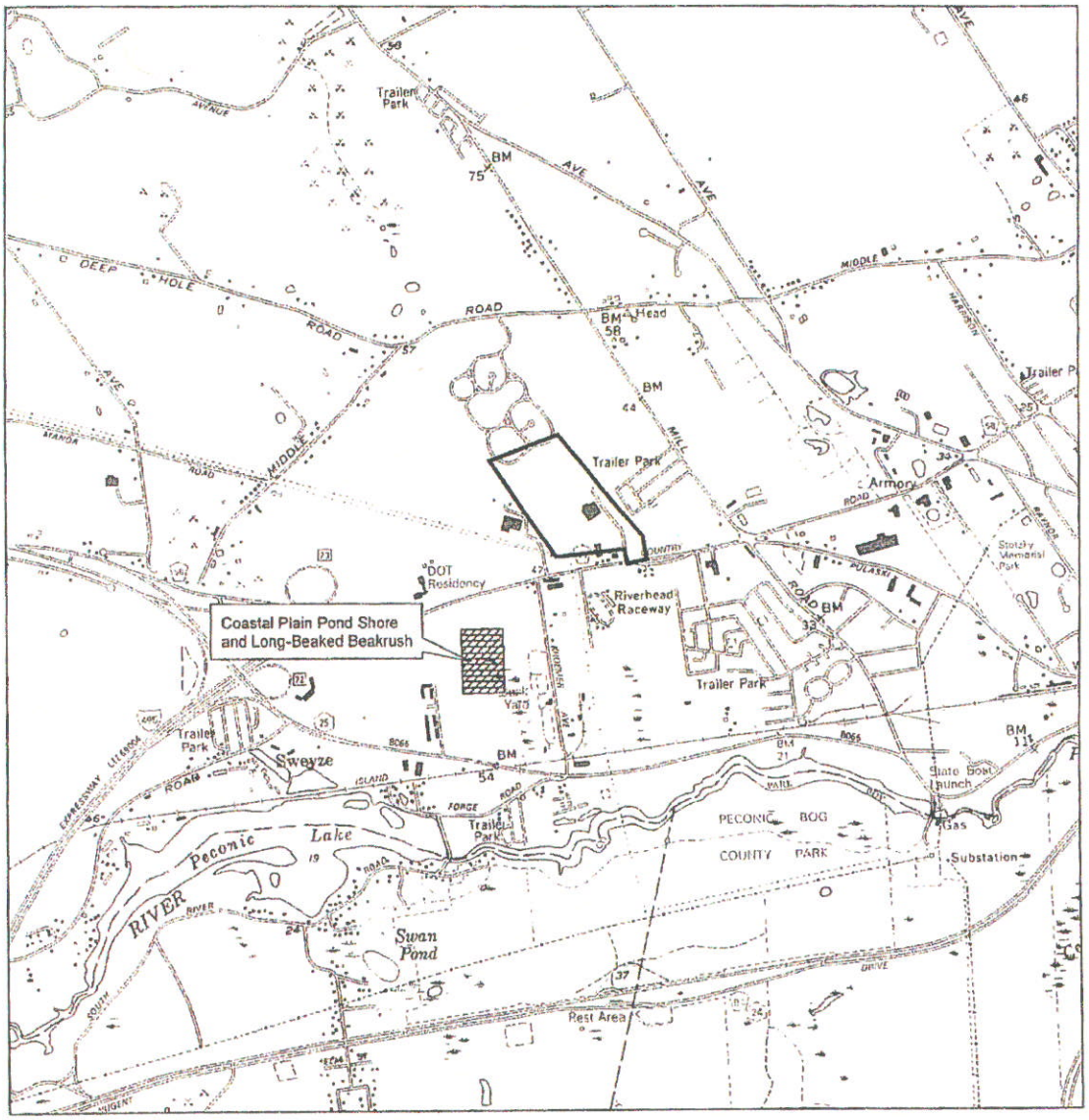
Office Use

NY Legal Status:	Rare	**NYS Rank:**	S3 - Vulnerable	4813
Federal Listing:		**Global Rank:**	G4 - Apparently secure	SL
Last Report:	1988-08-09	**EO Rank:**	Fair	
County:	Suffolk			
Town:	Riverhead			
Location:	Kroemer Avenue Pond			
Directions:	From the junction of Route 25 and Kroemer Avenue, go 0.25 mi southwest to a pond in the woods. The plants are located in the mucky pond shore.			
General Quality and Habitat:	This is a very small population in marginal habitat. Series of small ponds set in woods. Mucky pond shore. Associated species: Rhexia, Juncus canadensis, Panicum and Rhynchospora capitellata			

3 Records Processed

Natural Heritage Map of Rare Species and Ecological Communities

Prepared January 2, 2007 by NY Natural Heritage Program, NYS DEC, Albany, NY



Legend

Project Site

NY Natural Heritage Program Database Records*

Plant

Community

1:24,000

0 0.125 0.25 0.5 0.75 1 Miles

*The locations that are displayed are considered sensitive and should not be released to the public without permission. We do not provide map locations for all records. Please see report for details.

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 625 Broadway, 5th Floor, Albany, NY 12233-4757 phone: (518) 402-8935

NATURAL HERITAGE PROGRAM: The NY Natural Heritage Program is a partnership between the NYS Department of Environmental Conservation (NYS DEC) and The Nature Conservancy. Our mission is to enable and enhance conservation of rare animals, rare plants, and significant communities. We accomplish this mission by combining thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resource planning, protection, and management.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should **not** be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

EO RANK: A letter code for the quality of the occurrence of the rare species or significant natural community, based on population size or area, condition, and landscape context.

A-E = Extant: A=Excellent, B=Good, C=Fair, D=Poor, E=Extant but with insufficient data to assign a rank of A-D
F = Failed to find. Did not locate species during a limited search, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
U = Extant/Historical status uncertain.
Blank = Not assigned.

LAST REPORT: The date that the rare species or significant natural community was last observed at this location, as documented in the Natural Heritage databases. The format is most often YYYY-MM-DD.

NY LEGAL STATUS – Animals:

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E - Endangered Species: any species which meet one of the following criteria:
- Any native species in imminent danger of extirpation or extinction in New York.
- Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T - Threatened Species: any species which meet one of the following criteria:
- Any native species likely to become an endangered species within the foreseeable future in NY.
- Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC - Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P - Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U - Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G - Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NY LEGAL STATUS – Plants:

The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

E - Endangered Species: listed species are those with:
- 5 or fewer extant sites, or
- fewer than 1,000 individuals, or
- restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
- species listed as endangered by U.S. Dept. of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T - Threatened: listed species are those with:
- 6 to fewer than 20 extant sites, or
- 1,000 to fewer than 3,000 individuals, or
- restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
- listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R - Rare: listed species have:
- 20 to 35 extant sites, or
- 3,000 to 5,000 individuals statewide.

V - **Exploitably vulnerable:** listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked

U - **Unprotected:** no state status.

FEDERAL STATUS (PLANTS and ANIMALS): The categories of federal status are defined by the United States Department of the Interior as part of the 1974 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50, no. 188, pp. 39526 - 39527. The codes below without parentheses are those used in the Federal Register. The codes below in parentheses are created by Heritage to deal with species which have different listings in different parts of their range, and/or different listings for different subspecies or varieties

(blank) = No Federal Endangered Species Act status
LE = Formally listed as endangered.
LT = Formally listed as threatened.
C = Candidate for listing
LE,LT = Formally listed as endangered in part of its range, and as threatened in the other part; or, one or more subspecies or varieties is listed as endangered, and the others are listed as threatened
LT,PDL = Populations of the species in New York are formally listed as threatened, and proposed for delisting.

GLOBAL AND STATE RANKS (animals, plants, ecological communities and others): Each element has a global and state rank as determined by the NY Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world. ? = Indicates a question exists about the rank. Range ranks, e.g. S1S2, indicate not enough information is available to distinguish between two ranks

GLOBAL RANK:

G1 - **Critically imperiled** globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 - **Imperiled** globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors
G3 – **Vulnerable:** Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors
G4 - **Apparently secure** globally, though it may be quite rare in parts of its range, especially at the periphery
G5 - **Demonstrably secure** globally, though it may be quite rare in parts of its range, especially at the periphery.
GH - Historically known, with the expectation that it might be rediscovered.
GX - Species believed to be extinct

NYS RANK:

S1 - **Critically imperiled:** Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State
S2 – **Imperiled:** Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State
S3 - **Vulnerable:** Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State
S4 - Apparently secure in New York State
S5 - Demonstrably secure in New York State
SH - Historically known from New York State, but not seen in the past 15 years.
SX - Apparently extirpated from New York State

SxB and SxN, where Sx is one of the codes above, are used for migratory animals, and refer to the rarity within New York State of the breeding (B)populations and the non-breeding populations (N), respectively, of the species

TAXON (T) RANK: The T-ranks (T1 - T5) are defined the same way as the Global ranks (G1 - G5), but the T-rank refers only to the rarity of the subspecific taxon
T1 through T5 - See Global Rank definitions above
Q - Indicates a question exists whether or not the taxon is a good taxonomic entity

Revised April

2005