GENUS AND SPECIES	COMMON NAME	OBSERVED	EXPECTED
Rana palustris	Pickerel frog	X	
Notophthalmus v. viridescens	Red spotted newt		X
Thamnophis s. sauritis	Eastern ribbon snake		X
Birds			
Anas platyrhynchos	Mallard	X	
Geothylpis trichas	Common yellowthroat		X
Agelaius phoeniceus	Red-winged blackbird	X	
Euphagus carolinus	Rusty blackbird		X
Quiscalus quiscala	Common grackle		X
Carduelis tristis	American goldfinch	X	
Mammals			
Didelphus virginiana	Virginia opossum		X
Sylvilagus floridanus	Eastern cottontail		X
S. transitionalis	New England cottontail		X
Zapus hudsonius	Meadow jumping mouse		X
Procyon lotor	Racoon		X

Although water-stained leaves are present within all of the isolated wetlands, indicating the presence of standing water, only the largest basin actually contained standing water. It is likely, given the absence of standing water in the smallest basins that the hydroperiod is far too short to support successful breeding activity by obligate vernal pool species, e.g. the mole salamanders. The USFWS observed that all three pools were dry during their 1993 survey, which was an unusually dry spring.

The vernal pool survey conducted within the largest pool on May 10 indicated the presence of an extremely rich assemblage of aquatic insects including members of the *Dytiscidae Rhantus* (predaceous diving beetle); *Gerridae* (water striders); *Cladocerans* (daphnia); and *Odonata* (dragonfly nymphs). In addition, a number of freshwater gastropods belonging to the *Lymnaeidae* were observed in the pool. Amphibian species identified include *Rana palustris* larvae, which were clustered in dense patches of the sedge species *Dulichium arundinaceum.*

Notwithstanding, the large isolated pool observed on the site is extremely productive and all efforts should be made to protect this resource both during and after construction.

3.3 Rare, Threatened, and Endangered Species

Although suitable habitat is present on the site for both the eastern spadefoot toad and the blue spotted salamander, evidence of breeding activity was not observed nor were individuals observed. Furthermore, habitat for the savannah sparrow is not present on the site.

3.3.1 Ambystoma laterale

Suitable habitat for the blue spotted salamander is present along the northern tip of the site, where a large *Acer rubrum* dominated swamp was observed during the May 2006 survey. It is worth noting that this species will also utilize other wetland types that are in close proximity, including onsite isolated wetlands.

The results of the vernal pool survey within the isolated wetlands indicated that evidence of blue-spotted salamander breeding activity is not present on this site, nor was there evidence of breeding behavior by any of the other mole salamanders, e.g. spotted salamander. However, pickerel frog larvae were abundant both in the large wetland and the onsite isolated wetlands.

It is worth noting that many of the vernal pool species observed in the largest isolated wetland are considered facultative species, which is most likely a consequence of the highly variable nature of the pool hydroperiod. By definition, facultative vernal pool species include those organisms that use both vernal pool and general wetland habitat. As such, their reproductive cycle is not so tightly linked to the vernal as it would be for obligate vernal pool species including wood frogs and spotted salamanders. For this reason alone, it is unlikely that obligate

vernal pool species that generally occur at low frequencies such as the blue spotted salamander would be observed within the isolated wetlands.

3.3.2 Scaphiophus holbrooki

Potential habitat for this species includes the largest isolated wetland on the site, in addition to the highly disturbed sand barren community. Although suitable habitat for the spadefoot toad is present on the site, neither individuals nor evidence of breeding activity were observed during the vernal pool survey.

Specifically, the vernal pool survey conducted within the largest pool on May 10 indicated the presence of an extremely rich assemblage of aquatic insects including members of the *Dytiscidae; Rhantus* (predaceous diving beetle); *Gerridae* (water striders); *Cladocerans* (daphnia); and *Odonata* (dragonfly nymphs). In addition, a number of freshwater gastropods belonging to the *Lymnaeidae* were observed in the pool. Amphibian species identified include *Rana palustris* larvae, which were clustered in dense patches of the sedge species *Dulichium arundinaceum.*

3.3.3 Passerculus sandwichensis

Surveys for the savannah sparrow were conducted in appropriate habitat on the site, where the potential for the occurrence was deemed low to moderate. In that this is another species that is rarely observed, the survey largely involved the identification of the savannah sparrow through vocalizations.

Given the small size of the site, and the lack of open area, suitable habitat for the savannah sparrow is not present. As such, this species was neither observed during the survey period, nor is it likely that that breeding populations of the savannah sparrow would be able to use this site.

4.0 IMPACTS

The project has been designed to minimize impacts to wildlife species and their associated habitat to the greatest extent possible. Specifically, the footprint associated with the facility and attendant structures has been configured to utilize previously disturbed habitats. In general, the more disturbed portions of the site are presently providing limited wildlife habitat. Notwithstanding, both permanent and temporary impacts to wildlife habitat will result from the construction of the facility. Potential impacts related to construction, operation and maintenance of the facility are discussed in the following sections.

4.1 Plant Communities

Impacts associated with the construction of the facility will result in the loss of approximately 16.2 acres of presently disturbed plant communities and dirt access roads. Wildlife species that utilize those types of habitat will also be impacted. The nature of impacts to plants and animals associated with the construction of the facility are discussed in the following sections.

4.1.1 Siting Impacts

Of the area affected by the site, a total of 14.1 acres of the plant communities observed on the site will be permanently impacted (Table 4-1). This total accounts for approximately half of the vegetated areas on the site. With respect to wetland plant communities, a small portion of the red maple swamp and a single disturbed isolated wetland will be impacted by the proposed access road, whereby 0.004 acres (191 square feet) and approximately 0.002 acres (87 square feet) will be filled respectively. In large part however, most impacts will be restricted to terrestrial communities including the *Pinus rigida* (pitch pine) stand, the early successional hardwood stand, and the early successional grass/shrub community.

Table 4-1. Summary of impacts by plant community type.

PLANT COMMUNITY	TOTAL AREA (Acres)	IMPACTED AREA (Acres)	RELATIVE IMPACT (%)
Acer rubrum forested wetland	2.0	0.0044	0.2
Sand Barren	3.1	0.9050	29.0
Early Successional Hardwood Stand	6.8	4.1390	61.3
Pinus rigida Stand	2.3	2.1060	93.6
Forested *Quercus alba-Q. ilicifolia* stand	6.9	2.5100	36.5
Early Successional grass/shrub	6.4	4.4690	70.3
Isolated Wetlands	0.7	0.002	0.3
TOTAL	28.1	14.1	50.3

Habitat related impacts associated with the clearing for construction laydown areas are anticipated to be temporary and cleared areas will be restored following construction.

4.1.2 Air Emission Impacts

The proposed project is situated within the Greater Connecticut one-hour O_3 (ozone) non-attainment area and as such, is subject to Section 176 of the Clean Air Act as amended "*Determining Conformity of General Federal Actions to State and Federal Implementation Plans*". Criteria pollutants analyzed as part of this permit application include particulate matter 10*u*m (PM_{10}); NO_2; SO_2; carbon monoxide (CO); volatile organic compounds (VOCs); carbon dioxide (CO_2); and lead (Pb).

Impacts to plants associated with certain of these criteria pollutants were assessed with the direct impact ambient screening concentrations provided in the USEPA document "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals" (USEPA, 1980). Specifically, impacts associates with NO_2, SO_2, CO, and Pb were assessed by comparing modeled results with the Air Quality Related Value (AQRV) screening concentrations presented in the guidance document (Table 4-2). Direct impact screening criteria have not been developed for either CO_2 or VOCs, and as such are not presented in the USEPA guidance document.

Plant species present on the site that are considered sensitive species include *Betula populifolia*, *Vaccinium angustifolium*, *Dactylis glomerata*, and *Pinus strobus.*

Screening modeling was performed with USEPA's SCREEN3 model (Screen View by Lakes Environmental Software) to evaluate air quality impacts of SO_2, NO_2, CO, and Pb. The modeling was performed using rural dispersion coefficients and the "full meteorology" option in SCREEN3, which includes the set of twenty worst-case meteorological conditions recommended for screening modeling in the CTDEP Ambient Impact Analysis Guideline. Since the present analysis was concerned with onsite impacts, receptors were placed along a single wind direction radial at 25-meter intervals out to 100 meters and 50-meter intervals out to 500 meters. All receptors were assumed to be in flat terrain, at the same terrain height as the stack base elevation. The screening impact analysis was performed using procedures outlined in the CTDEP's Stationary Source Stack Height Guidelines (SSSHG), Addendum to the Stationary Source Stack Height Guideline (ASSSHG) and alternate procedures accepted by CTDEP.

Table 4-2. Comparison of ambient screening criteria (ug/m^3), averaging time, and potential emissions.

Screening Criterion	Averaging Time	AQRV Screening Concentration (ug/m^3)	Preliminary Modeled Emissions (ug/m^3)
SO2	1 hr	917	17.6
	3 hr	786	15.8
	24 hr	--	7.0
	Annual	18	1.4
NO2	4 hr	3,760	33.9
	8 hr	3,760	26.3
	Monthly	564	15.1
	Annual	100	3.0
CO	1 hr	--	50.2
	8 hr	--	35.1
	Weekly	1,800,000	20.1
Pb	3 Month	1.5	0.3

Based upon this screening analysis, none of the modeled emissions of the criteria pollutants will adversely affect sensitive vegetation on the site. It is worth

noting however that preliminary data have been scaled up and that conservative assumptions have been made so that the screening modeling results are considered to be conservatively high.

4.2 Wetlands

As previously discussed, a small portion of a single isolated wetland adjacent to Mill Brook Road and the red maple swamp will be impacted by the proposed access road, whereby approximately 0.002 acres (87 square feet) and 0.004 acres (191 square feet) will be filled respectively.

The nature of the direct and indirect impacts to wetlands are discussed more fully in the following sections.

4.2.1 Direct Impacts

Isolated Wetlands

It is worth noting that the isolated wetland located by Mill Brook Road is extremely degraded and during the time of the field investigation tires, roadway runoff (sand), and other waste types were observed. Combined with the immediate proximity to Mill Brook Road, this degraded habitat is providing little to no wildlife habitat and this fact was confirmed during the field visit.

The present location of the proposed entrance roadway is such that impacts to the largest and most productive isolated wetland have been avoided. With respect to the productivity of the largest isolated wetland, the water within this pool was the deepest (and presumably the least variable) and as such the aquatic plant community was extremely well-developed. Specifically, a number of vernal pool species were observed, including a suite of amphibians and invertebrates and the plant community is especially diverse and supported a number of avian species.

As such, the impacts to the degraded isolated wetland, albeit minor, were unavoidable given the proximity of the isolated wetland habitat and the desire to eliminate impacts to this vernal pool habitat. It is likely however, that the wetland functions associated with the disturbed isolated wetland, e.g. flood storage, will be greatly improved with a combination of wetland restoration and the construction of the detention basin. Furthermore, it also seems plausible that wetland functions that are not currently present in this wetland, e.g. wildlife habitat will be enhanced somewhat. The proposed wetland compensation/restoration approach is discussed more fully in Section 5.0 Mitigation of Impacts.

Forested Wetland Impacts

The impacts to the palustrine forested wetland are also minor and will involve filling along the very edge of the wetland where a shrub and herb–dominated fringe is present. Specifically, the area of filling is immediately upgradient of vegetation sample plot 2, within which shrub species account for 30% cover, red maple accounts for 40% cover, and skunk cabbage accounts for 100% cover. As such, shrub and tree species are considered scattered and as observed in the field, their percent cover decreased markedly at the upland/wetland boundary where the filling will take place. Given the small area of the wetland impact, it is unlikely that wetland functions, e.g wildlife habitat, will be severely comprised.

Impacts to this wetland were also unavoidable, given the close proximity of the forested wetland to an existing property line and the need to construct an access road. Although only a very small portion of the wetland will be directly impacted by the construction of the facility, mitigation of the filled wetland is being proposed and is discussed further in Section 5.0.

4.2.2 Indirect Impacts

Both during and following construction, indirect impacts to wetlands may occur, and primarily include sedimentation, which will be mitigated through best management practices (BMP's). For example, to minimize potential surface soil erosion and runoff into the wetland, areas disturbed following construction would be regraded to their original contours, seeded, and mulched upon completion of their use, which will serve to stabilize the soil.

The potential for indirect impacts on the wetland was considered by the applicant throughout the design of the access roadway, specification of buffer zones around wetlands, and construction methods. For example, wetlands were identified so that wetland fill, where unavoidable, would be located to minimize the impact and avoid the more sensitive portions of the wetland, e.g. those areas with mature *Acer rubrum* (red maple) stems and suitable vernal pool habitat.

Furthermore, much of the clearing and construction activities at the edge of the wetland would be conducted in winter when the ground surface is frozen and vegetation is dormant, thus minimizing the potential for disturbing soil and vegetation.

The wetland restoration/compensation approach and the different types of recommended BMP's are discussed more fully in Section 5.0 Mitigation.

4.3 Wildlife

Temporary displacement and avoidance of active construction areas would have a localized effect on wildlife present on the site by causing them to abandon feeding, breeding (where applicable), and resting activities. Small mammals, reptiles, and amphibians that utilize upland areas adjacent to wetland areas on the site will be displaced during construction activities. Furthermore, foraging and breeding opportunities for those wildlife species that utilized portions of the site that were cleared

during construction and allowed to re-vegetate would be disrupted until vegetation re-establishes.

Although these impacts may appear serious, it is important to note that the plant communities that are being disturbed on the site are early successional plant communities that have developed in response to severe disturbance. As such, they are not unique plant communities with a correspondingly unique suite of wildlife with acute habitat specificity. Rather, many of the observed wildlife species and those species expected to utilize this type of site are going to be habitat generalists and will make use of undisturbed habitat types remaining on the site and the large tracts of undeveloped land to the west of the site.

With respect to the structures being placed on the site, the cooling tower may pose impacts to avian species. As with other tall structures, cooling towers can cause mortality of migrating birds through collisions, particularly at night or during other periods of low visibility (e.g., fog, rain) or under conditions of low cloud cover. Although not as hazardous to birds as tall television broadcasting towers, power plant cooling towers have been found to cause bird mortalities. It seems unlikely however, given the low stature of the cooling tower (42.8 feet) that significant avian collisions will occur.

4.4 Rare, Threatened, and Endangered Species

As previously discussed, habitat for the savannah sparrow is not present on the site given the absence of large expanses of grassland habitat. As such, impacts to this species will not occur.

Given the disturbed nature of the habitat types it can be expected that the more commonly occurring amphibians will be habitat generalists without any acute habitat specificity, although potentially suitable habitat is present for the eastern spadefoot toad and the blue spotted salamander. Specifically, the large red maple swamp may provide excellent habitat for the blue spotted salamander and the combination of the sandy soils in the sand barren habitat and the large isolated wetland collectively provide suitable habitat for the eastern spadefoot toad.

With respect to the level of impact associated with the proposed activities, the work will be conducted within the more disturbed portions of the site, including the dirt access drives, and the early successional shrubland plant communities. As such, the sand barren area (which is presently under a Land Use Restriction), the large isolated wetland, and the red maple swamp will not be significantly impacted by the proposed project.

In conclusion, given the lack of significant impact of the proposed activities on the potentially suitable habitats for amphibians encountered on the site and the absence of observed individuals and breeding activity, it can be stated with some confidence that neither direct nor indirect impacts to eastern spadefoot toad and blue spotted salamander individuals, populations, and associated habitat will occur.

5.0 MITIGATION OF IMPACTS

The project has been designed to minimize impacts to wildlife species and their associated habitat. Specifically, the footprint associated with the facility and attendant structures has been configured to utilize previously disturbed habitats to the greatest extent possible. Unfortunately, the more significantly disturbed areas on the site fall within an Environmental Land Use Restriction Area (ELURA) and as such cannot be used. Potential impacts and mitigation measures related to construction, operation and maintenance of the facility are discussed in the following sections.

5.1 Upland Plant Communities

5.1.1 Siting Impacts and Mitigation

After construction begins, soil surface stabilization should be applied within 14 days to all disturbed areas that may not be at final grade but will remain undisturbed for periods longer than an additional 30 calendar days. In this regard, it is suggested that the "New England Roadside Matrix Upland Mix" be used to re-vegetate all upland areas with exposed loam. This seed mix is available from New England Wetland Plants in Amherst, Massachusetts and is particularly appropriate for roadsides, industrial sites, or cut and fill slopes and is unusual in that it blends native grasses, wildflowers and shrubs together in a native matrix seed mix.

Plant species contained in the mix include several grasses: creeping red fescue (*Festuca rubra*), switch grass (*Panicum virgatum*), little bluestem (*Schizachyrium scoparium*), indiangrass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), Virginia wild rye (*Elymus virginicus*); a number of wildflowers: partridge pea (*Chamaecrista fasciculata*), wild blue lupine (*Lupinus perennis*), showy tick trefoil (*Desmodium canadense*), New England aster (*Aster novae-angliae*), wild senna (*Cassia hebecarpa*), butterfly milkweed (*Asclepias tuberosa*), round-headed bush clover (*Lespedeza capitata*), white vervain

(*Verbena urticifolia*); in addition to several shrub species: gray dogwood (*Cornus racemosa*) and staghorn sumac (*Rhus typhina*).

In areas that may be frequently disturbed, the warm season grasses will dominate. In those areas that are not as frequently disturbed, the wildflower component will become dominant. Along cuts and side slopes that may never be mowed, the shrub component will add structural diversity and excellent wildlife habitat.

Additional upland plantings could be used to enhance upland habitat and vegetated buffers could be maintained along wetland areas. Planting within the upland area should consist only of native plantings and include tree species such as *Pinus rigida*, shrubs including *Myrica pennsylvanica* and *Rhus typhina* (staghorn sumac), and warm season grasses such as *Schizachyrium scoparium* and *Panicum virgatum* (switchgrass).

5.1.2 Air Emission Impacts

Based upon this screening analysis, none of the modeled emissions of the criteria pollutants will adversely affect sensitive vegetation on the site. Therefore mitigation is not being proposed.

5.2 Wetland Restoration

5.2.1 Proposed Isolated Wetland Restoration

As proposed, a detention basin will be constructed adjacent to the disturbed isolated wetland along Mill Brook Road. In order to enhance the functions of both the detention basin and the disturbed wetland, it is recommended that the basin be fully integrated with the existing wetland as a means of both compensation for filled areas and as restoration. Specifically, it is recommended that a palustrine emergent wetland be the target plant community

within the detention basin, with an admixture of scattered berry-bearing shrubs as a structural element for wildlife.

In order to develop the emergent wetland plant community, a wetland seed mix is available from New England Wetland Plants. The seed mix is comprised of a number of herbaceous species that would be fairly effective at out-competing invasive wetland plants, e.g. *Lythrum salicaria* (purple loosestrife). As indicated by the manufacturer, all species are best suited to moist disturbed ground as found in most wet meadows, scrub shrub, or forested wetland restoration areas. If planted during the fall months, the seed mix will germinate the following spring.

Based upon information provided by the manufacturer, the seed mix is comprised of the following species: fox sedge (*Carex vulpinoidea*), bearded sedge (*Carex comosa*), lurid sedge (*Carex lurida*), soft rush (*Juncus effusus*), grass-leaved goldenrod (*Euthamia graminifolia*), boneset (*Eupatorium perfoliatum*), hop sedge (*Carex lupulina*), blue vervain (*Verbena hastata*), nodding sedge (*Carex gynandra*), green bulrush (*Scirpus atrovirens*), sensitive fern (*Onoclea sensibilis*), blue flag iris (*Iris versicolor*), woolgrass (*Scirpus cyperinus*), spotted joe pye weed (*Eupatorium maculatum*), swamp milkweed (*Asclepias incarnata*), monkey flower (*Mimulus ringens*), soft-stem bulrush (*Shoenoplectus tabernaemontani*) (ex- *S. validus*), hardstem bulrush (*Schoenoplectus acutus*) (ex-*Scirpus acutus*), nodding bur marigold (*Bidens cernua*), and flat-top aster (*Aster umbellatus*).

Shrub species could be scattered along the margins of the wetland and include *Salix discolor* (silky dogwood).

5.2.2 Proposed Forested Wetland Restoration

Although only a very small area will be impacted by the proposed construction (0.004 acres/191 square feet), it is recommended that the impacted wetland be mitigated. Mitigation could simply consist of excavating a small area adjacent to the filled area and then planting with suitable wetland tree, shrub, and

herb species. Based upon the species composition observed in the field, it is recommended that the wetland restoration include a similar suite of species (Table 5-1). The plant species identified in the table are readily available from New England Wetland Plants located in Amherst, Massachusetts.

Table 5-1. Proposed wetland restoration species.

STRATUM	SCIENTIFIC NAME	COMMON NAME
	TREES	
TREE	*Acer rubrum*	Red maple
SHRUB	*Vaccinium corymbosum*	Highbush blueberry
	Rhododendron viscosum	Swamp azalea
	Clethra alnifolia	Sweet pepperbush
	Alnus rugosa	Speckled alder
HERB	*Symplocarpus foetidus*	Skunk cabbage
	Carex stricta	Tussock sedge
	Osmunda cinnamomea	Cinnamon fern
	Onoclea sensibilis	Sensitive fern
	Veratrum viride	False hellebore

In addition, it is proposed that the wetland seed mix used within the isolated wetland restoration be included in this wetland.

5.2.3 Buffer Zone Plantings

To the extent that it is possible, a vegetated buffer zone will be constructed around the wetlands on the site, which are the most susceptible to construction related impacts. It is recommended that the buffer zone consist of a mix of patch types that interdigitate with existing shrub, grass/herb habitats, and forested areas.

Enhancement wetland buffer zone plantings could include transitional wetland shrub species such as *Aronia melanocarpa* (black chokeberry), and *Amelanchier canadensis* (common serviceberry), while tree species could include a number of fast growing, early successional species such as grey birch, eastern red cedar, and quaking aspen along with white oak, which tolerates full sun to partial sun conditions, The buffer zone itself will occur in a strip designated for

planting, the width of which will be determined by onsite development. In addition to these species, it is proposed that a conservation seed mix be used that includes a range of wildflowers and grasses. Shrubs could be planted at 300 stems per acre and small trees (3' to 12' tall) relocated from upland disturbance areas on site.

5.2.4 Wetland Restoration Monitoring

The wetland restoration could be monitored the following growing season (or up to five growing seasons) to ensure that planted stock survived and also gauge the success of the restoration. Specifically, a fixed number of $1m^2$ plots could be established in the wetland to assess the percent cover of wetland species, or alternatively, the numbers of live woody species within the restoration could be tallied. A wetland monitoring report would then be prepared and submitted to the applicable regulatory agencies for their review.

5.2.5 Best Management Practices

To minimize the potential for erosion during construction, mitigation measures, including hay bales and silt fence, will be placed in appropriate locations on the site to both protect wetlands and to minimize the erosion of soil from stockpiles on the site. Prior to construction, erosion control devices would be placed between the work area and wetlands/receiving waters that are situated downgradient of construction activities.

6.0 LITERATURE CITED

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APPENDIX A

FLORISTIC INVENTORY

Table 1. Site-wide Floristic Inventory.

COMMUNITY TYPE	PLOT	SCIENTIFIC NAME	COMMON NAME	% COVER
Acer rubrum Swamp	1	*Acer rubrum*	Red maple	30
		Vaccinium corymbosum	Highbush blueberry	70
		Rhododendron viscosum	Swamp azalea	10
		Quercus alba	White oak	10
		Symplocarpus foetidus	Skunk cabbage	40
		Osmunda cinnamomea	Cinnamon fern	40
		Lycopodium complanatum	Lycopodium	10
		Carex stricta	Tussock sedge	20
		Sphagnum magellanicum	Sphagnum moss	5
	2	*Amelanchier canadensis*	serviceberry	15
		Vaccinium corymbosum	Highbush blueberry	15
		Symplocarpus foetidus	Skunk cabbage	100
		Polytrichum commune	Polytrichum moss	5
		Acer rubrum	Red maple	40
	3	*Amelanchier canadensis*	serviceberry	15
		Vaccinium corymbosum	Highbush blueberry	15
		Acer rubum	Red maple	70
		Symplocarpus foetidus	Skunk cabbage	100
		Veratrum viride	False hellebore	1
		Osmunda cinnamomea	Cinnamon fern	40
		Carex stricta	Tussock sedge	10
		Rubus hispidus	Swamp dewberry	5
		Viola sp.	violet	5
	4	*Anemone quinquefolia*	Wood anemone	5
		Symplocarpus foetidus	Skunk cabbage	100
		Osmunda cinnamomea	Cinnamon fern	40
		Carex stricta	Tussock sedge	5
		Impatiens capensis	Spotted touch me not	5
		Galium palustre	Swamp bedstraw	<1
		Aster	Lance leaved aster	<1
		Rubus hispidus	Swamp dewberry	<1
		Sphagnum magellanicum	Sphagnum moss	40
		Clethra alnifolia	Sweet pepperbush	10
		Rhododendron viscosum	Swamp azalea	15
		Amelanchier canadensis	serviceberry	5
	5	*Quercus bicolor*	Swamp white oak	10
		Acer rubrum	Red maple	70
		Clethra alnifolia	Sweet pepperbush	70
		Vaccinium corymbosum	Highbush blueberry	15
		Alnus rugosa	Speckled alder	5
		Viburnum recognitum	Northern arrowwood	<1
		Symplocarpus foetidus	Skunk cabbage	30
		Polytrichum commune	Polytrichum moss	10
		Carex stricta	Tussock sedge	<1
		Anemone quinquefolia	Wood anemone	5

COMMUNITY TYPE	PLOT	SCIENTIFIC NAME	COMMON NAME	% COVER
		Maianthemum canadense	Canada mayflower	5
		Sphagnum spp.	Sphagnum moss	5
		Rubus hispidus	Swamp dewberry	5
		Iris versicolor	Blue flag	1
		Thalictrum thalicroides	Rue anemone	<1
		Lycopodiella inundata	Bog clubmoss	<1
		Osmunda cinnamomea	Cinnamon fern	10
	6	*Rhododendron viscosum*	Swamp azalea	20
		Ilex verticillata	winterberry	10
		Clethra alnifolia	Sweet pepperbush	40
		Alnus rugosa	Speckled alder	10
		Spiraea tomentosa	steeplebush	5
		Acer rubrum	Red maple (sapling)	5
		Carex stricta	Tussock sedge	100
		Symplocarpus foetidus	Skunk cabbage	10
		Sphagnum magellanicum	Sphagnum moss	75
		Viola sp.	violet	<1
	7	*Rhododendron viscosum*	Swamp azalea	10
		Clethra alnifolia	Sweet pepperbush	15
		Vaccinium corymbosum	Highbush blueberry	15
		Acer rubrum	Red maple	20
		Symplocarpus foetidus	Skunk cabbage	20
		Sphagnum spp.	Sphagnum moss	10
		STANDING WATER	NA	70
	8	*Vaccinium corymbosum*	Highbush blueberry	25
		Cephalanthus occidentalis	buttonbush	15
		Acer rubrum	Red maple (sapling)	15
		STANDING WATER	NA	80
Sand Barrens	9	*Pinus rigida*	Pitch pine	10
		Betula populifolia	Grey birch	15
		Schizachyrium scoparium	Little bluestem	15
		Polytrichum commune	Polytrichum moss	50
		Cladonia cristatella	British soldiers	5
		Usnea sp.	lichen	5
		SAND	NA	50
Successional Hardwoods	10	*Acer rubrum*	Red maple	40
		Betula populifolia	Grey birch	10
		Populus tremuloides	Quaking aspen	10
		Prunus serotina	Black cherry	10
		Quercus palustris	Pin oak	10
		Quercus alba	White oak	5
		Lonicera tatarica	Tatarian honeysuckle	5
		Rhus toxicodendron	Poison ivy	5
		Cornus amomum	Silky dogwood	1
		Maianthemum canadense	Canada mayflower	80

COMMUNITY TYPE	PLOT	SCIENTIFIC NAME	COMMON NAME	% COVER
		Potentilla simplex	cinquefoil	5
		Polytrichum commune	Polytrichum moss	5
	11	*Quercus alba*	White oak	60
		Prunus serotina	Black cherry	15
		Cornus stolonifera	Red osier dogwood	10
		Potentilla simplex	cinquefoil	1
		Solidago canadensis	Gray's goldenrod	1
		Carex sp.	sedge	40
		Mainanthemum canadense	Canada mayflower	70
		Pinus strobus	White pine	1
		Galium asparine	bedstraw	1
	12	*Carya ovata*	Shagbark hickory	60
		Juniperus virginiana	Eastern red cedar	5
		Acer rubrum	Red maple	5
		Prunus serotina	Black cherry	10
		Berberis thunbergii	Japanese berberry	15
		Carex pennsylvanica	Pennsylvania sedge	90
		Mainanthemum canadense	Canada mayflower	70
Sand Barrens	13	*Betula populifolia*	Grey birch	40
		Populus tremuloides	Quaking aspen	10
		Quercus ilicifolia	Scrub oak	30
		Carex pennsylvanica	Pennsylvania sedge	15
		Schizachyrium scoparium	Little bluestem	10
		BARE SAND	NA	70
Pitch Pine Barrens	14	*Populus tremuloides*	Quaking aspen	5
		Pinus rigida	Pitch pine	70
		Eleagnus augustifolia	Russian olive	5
		Myrica pennsylvanica	bayberry	25
		Spiraea latifolia	meadowsweet	25
		Carex pennsylvanica	Pennsylvania sedge	20
		Polytrichum commune	Polytrichum moss	40
	15	*Pinus strobus*	White pine	70
		Quercus rubra	Northern red oak	5
		Vaccinium angustifolia	Lowbush blueberry	15
		Schizachyrium scoparium	Little bluestem	20
		Polytrichum commune	Polytrichum moss	10
	16	*Pinus rigida*	Pitch pine	75
		Betula populifolia	Grey birch	5
		Juniperus virginiana	Eastern red cedar	5
		Polytrichum commune	Polytrichum moss	5
Russian olive thicket	17	*Eleagnus augustifolia*	Russian olive	70
		Juniperus virginiana	Eastern red cedar	10
		Schizachyrium scoparium	Little bluestem	5

COMMUNITY TYPE	PLOT	SCIENTIFIC NAME	COMMON NAME	% COVER
		Prunus serotina	Black cherry	5
		Eleagnus augustifolia	Russian olive	10
		Myrica pennsylvanica	bayberry	5
		Schizachyrium scoparium	Little bluestem	70
		Dactylus glomerata	Orchard grass	20
	19	*Pinus strobus*	White pine	5
		Eleagnus augustifolia	Russian olive	90
			Common mullein	5
		Dactylus glomerata	Orchard grass	60
Successional Woodland	20	*Populus tremuloides*	Quaking aspen	20
		Prunus serotina	Black cherry	25
		Lonicera tatarica	Tatarian honeysuckle	5
		Solidago canadensis	Grays goldenrod	60
		Carex pennsylvanica	Pennsylvania sedge	80
Hilltop *Quercus alba*	21	*Quercus alba*	White oak	40
		Quercus ilicifolia	Scrub oak	60
		Betula populifolia	Grey birch	5
		Vaccinium angustifolia	Lowbush blueberry	30
		Carex pennsylvanica	Pennsylvania sedge	80
	22	*Quercus alba*	White oak	60
		Pinus rigida	Pitch pine (SD)	5
		Quercus ilicifolia	Scrub oak	60
		Vaccinium angustifolia	Lowbush blueberry	10
	23	*Quercus alba*	White oak	60
		Prunus serotina	Black cherry	10
		Quercus ilicifolia	Scrub oak	30
		Vaccinium angustifolia	Lowbush blueberry	20
		Carex pennsylvanica	Pennsylvania sedge	20
		Pteridium aquilinum	Bracken fern	70
Isolated Wetland 1	24	*Populus deltoides*	cottonwood	10
		Acer rubrum	Red maple	25
		Vaccinium corymbosum	Highbush blueberry	60
		Onoclea sensibilis	Sensitive fern	15
Isolated Wetland 2	25	*Populus tremuloides*	Quaking aspen	10
		Vaccinium corymbosum	Highbush blueberry	40
		Salix bebbiana	Bebb willow	20
		Spiraea tomentosa	steeplebush	35
		Carex stricta	Tussock sedge	4
		Polytrichum commune	Polytrichum moss	25
Old Field	26	*Juniperus virginiana*	Eastern red cedar	10
		Eleagnus augustifolia	Russian olive	20
		Rhus typhina	Staghorn sumac	25

COMMUNITY TYPE	PLOT	SCIENTIFIC NAME	COMMON NAME	% COVER
		Myrica pennsylvanica	bayberry	15
		Schizachyrium scoparium	Little bluestem	10
		Dactylus glomeratus	Orchard grass	100
		Achillea millefolium	yarrow	10
Isolated Wetland 3	27	*Salix discolor*	Pussy willow	50
		Salix bebbiana	Bebb willow	40
		Equisetum fluviatile	horsetail	10
		Osmunda cinnamomea	Cinnamon fern	5
		Carex stricta	Tussock sedge	15
	28	*Spiraea latifolia*	meadowsweet	30
		Alnus rugosa	Speckled alder	20
		Decodon verticillatus	Water willow	40
		Sphagnum spp.	Sphagnum moss	5
		STANDING WATER	NA	70
Isolated Wetland (Road)	29	*Populus deltoides*	cottonwood	20
		Salix bebbiana	Bebb willow	15
		Cornus amomum	Silky dogwood	20