

Environmental Assessment

of the Parcel B Office Building

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Background

The applicant has proposed changes to the site involving modifications to stormwater management in concert with expansion of parking facilities, which requires work adjacent to regulated wetlands. The proposed development activities occur on both the east and west sides of the building and parking areas. To the west, the site is bounded by another office complex and associated roads and parking, so that there is little in the way of natural resources or impacts to same.

However, to the east, there is a Town and Federal wetland (first delineated by Jay Fain & Associates in 2000 and re-flagged and remapped by Dru Associates, Inc. in 2006) that extends eastward from the edge of the existing Building A parking area over to Purchase Street. This wetland area was altered by the initial development of the site, wherein improvements along the southern edge of the wetland were designed and function for stormwater detention, as indicated by a label on the background survey naming this wetland area as an “Existing stormwater Detention Area”.

The land on which this development (and the wetland) is located was once a portion of the Reid Hall estate, also known as Ophir Farm, and originally contained a narrow watercourse with some limited pockets of shrub swamp habitat, surrounded by elaborate landscaping established at the turn of the 19th Century by the landscape architect Frederick Olmstead. When Parcel B was first developed, Manhattanville Road was constructed with a large berm aligned across the entire open space parcel that now includes the wetland. This berm was fitted with a culvert and outflow structure for drainage of the wetland under the road, to continue southward along the original watercourse. However, the elevation of the culvert invert allowed water to pond, back-up and eventually flood a much greater area north of the berm than had originally been saturated, thus expanding the wetland considerably in both east and west directions. Therefore, the wetland mapped since 2000 is in part an artifact of past land use practices, including both the historic and modern development of the site itself.

There were no mapped, regulated wetlands identified on the site when the US Department of Interior Wetland Inventory maps were prepared and the present vegetation assemblage of the area is a reflection of the historic absence of such wetlands. There are tree species that were clearly introduced, and a margin of native forest along Purchase Road that reflect the distant

history of the area. Within the core of the wetland are some native wetland species, but most of the margin of this wetland is comprised of landscape species (e.g. apple orchard) and invasive vines and shrubs (e.g. wild rose, greenbrier, honeysuckle).

The proposed parking area expansion would effect the existing configuration of the open space by converting approximately 0.46 acres of landscaped lawn and invasive vegetation into new pavement, an area that falls within the 100-foot wetland buffer. This will result in a minimal loss of habitat since much of the area which is to be converted to additional parking space is already disturbed, having been cleared of the original woodland and partially maintained by landscape activities (some of these modern and some originating with the site's history as part of the Ophir Farm, developed in the 1800's). This minimal reduction in open space would not be considered significant to the total size of the natural habitat because its size already falls below the threshold of a preserve serving disturbance sensitive species of wildlife. In addition, no impervious surfaces will be constructed within the wetland limits.

The purpose of this study is to characterize the existing wetland, to inventory the natural resources of the subject site, and to assess the potential for ecological impacts to the wetlands or natural resources of the site.

1. Introduction

The project site is located in the Town of Harrison, on Manhattanville Road, in Westchester County. The project site is approximately 35 acres, with approximately 10 acres (30%) of wooded and third growth landscape/successional area. The proposed parking lot expansion on the eastern portion of the site is next to 3.7 acres of regulated wetland, with three habitat types: emergent wetland, shrub/scrub transition between wetland and upland, and upland (old growth forest and third growth landscaped/successional woodlot).

The soils underlying this area are a combination of “urban” (or impacted by development) and native soils. The hydrology is clearly a surficial drainage system, with little or no true groundwater interaction. The nearest expression of true groundwater is a tributary to the Mamaroneck River, located approximately 300 feet to the west of the project site and occurring at approximately 230 feet elevation. This translates to a groundwater elevation that would be approximately 50 feet below the surface elevation of the on-site wetlands area, which is at 280 feet in elevation at its lowest point.

2. Geology

The original rock of Westchester County was volcanic in origin. The physiography of the area is characteristic of New England Upland that includes Manhattan Prong and Teconic Mountain elements. The tectonic history of Westchester County is Connecticut Valley Synclinorium which metamorphosed from volcanic and marine sediments of Cambrian to Devonian age (540-360 million years ago). It was deformed during the Acadian orogeny at a medium metamorphic grade. The geology of Westchester County dates back to the Middle Proterozoic Age which is approximately 1.3-1.0 billion years ago. The rock is a mixture of Garnet-biotite-quartz-feldspar gneiss, quartzite, quartz-feldspar gneiss and calcsiliate rock.

3. Soils

According to Westchester's Soil Survey, the wetland and its surrounding habitat lie on Paxton fine sandy loam, a deep, well drained soil that is not naturally associated with wetland condition because the water table is 1.5 feet and deeper, and is perched on a dense substratum, so such areas drain except in the wettest seasons. This condition is reflected in the site observations which report only surficial water supplies, not a deep connection to true groundwater. Along the southern-most portion of the wetland area, and passing under Manhattanville Road, soils were historically Ridgebury loam, a deep, poorly drained soil in which perched water resides 1.5 feet below grade during winter. However, at this site, the area of this soil type is now probably altered by the retention of water year round, caused by the construction of Manhattanville Road and the large berm along the road's northern margin. The outflow pipe provided through the berm is raised well above the wetland elevation, so extra water is being held here, perhaps creating pockets of hydric soils. Such hydric soils are not natural and show accumulation of sediment and silt from erosion further up the watershed or from roadway drainage, which dumps directly from Purchase Street into this area.

4. Hydrology

The hydrology is clearly a surficial drainage system, with no true groundwater interaction. The nearest expression of true groundwater is a tributary to the Mamaroneck River, located approximately 300 feet to the west of the project site and occurring at approximately 230 feet elevation. This translates to a groundwater elevation that would be approximately 50 feet below the surface elevation of the on-site wetlands area, which is at 280 feet in elevation at its lowest point. The land area to be involved in the proposed activities on the western side of the site is currently mown lawn and unused asphalt parking lot, with large drainage pipes outletting into a sculpted basin, and eventually into a culvert that drains towards the Mamaroneck River by passing through and under roadways and two other office complexes before passing southward under I-287.

On the eastern side of the site, associated with the wetland, the area drains stormwater runoff through a small channel that declines from north to south, and comes out at the

outfall pipe that passes under Manhattanville Road. The construction of this road required a tall berm along its north side, which now forms a bank or berm retaining water on its north side, which is part of the wetland area noted above. In the absence of this berm, some of the wetland area would not exist. Other parts of the delineated wetland are clearly fed by drainage from the existing eastern parking lot, and the shape of the delineation reflects this drainage. In more recent years, drainage from Purchase Street around the wall bounding that road has helped to expand the wetland surface area in an easterly direction, as this water added to the existing wetland supply, and thus causes back-up into the wooded area behind the wall. There has been no recent change to the western extent of the wetland because it is bounded by the topography created in the initial development of the parking lot.

5. Vegetation

The western portion of the site is entirely altered by grading, drainage, roadways and, where not covered by buildings or asphalt, is covered with lawn and some shrub landscaping. There is a large “bowl” land form in this area into which drainage pipes dump stormwater. It is regularly mowed, so no natural meadow habitat has developed. In all other respects, this side of the site is fully developed.

On the eastern side of the site, associated with the wetland and its surrounding habitat, the cover is mostly shrub or woodland, with patches of meadow closer to the parking lot, and remnants of the historic forest along the eastern margin of the wetland extending up to the wall bounding Purchase Street. Much of this area was once “landscaped” as part of the Ophir Farm, and within the eastern margin of the wetland, there is a remnant of an apple orchard. The wetland system on the eastern side of the site consists of a three to four foot wide channel that flows southward from the northern boundary, picking up flow from the parking lot area on the Manhattanville College campus. Runoff from the on-site parking lot, Purchase Street, and Manhattanville Road create drainage channels that lead into the main channel. A scrub-shrub wetland has formed along and to the sides of this main channel, with a large pocket of marsh and shrub swamp that has formed at the southern end of the channel, behind the berm and outflow pipe area. The wetland is

composed of many exotic species that would not be typically located near a wetland if not for its past use (apple trees are abundant). However, other primary wetland species have moved in such as red maple, sweet gum, tupelo, cottonwood, and slippery elm. The understory is dense and includes mostly multiflora rose, greenbrier, raspberries, honeysuckle and catbrier. Sassafras and red-osier dogwood are also present, typically near the wetland boundary. Herbaceous vegetation include mostly goldenrods and aster species, but sensitive fern, soft rush, common reed, and purple loosestrife are also present.

On the eastern portion of the site, behind a large stone wall that separates this parcel from Route 120, the old woodland is dominated by large cottonwood, sweetgum, red oak, tulip, black locust and osage-orange trees of approximately equal age, some of which are greater than 20" DBH and probably pre-date the first development of the site. American beech, white spruce, black cherry, tree-of-heaven, and shagbark hickory also contribute to the tree layer. The understory in the older woodland is much more open compared to the rest of the site and contains European privet, winged euonymus, American hornbeam, and poison ivy. The northeastern portion of the property is probably an old growth forest remnant.

Shrubs:

- Winged euonymus – *Euonymus alata* (UPL)
- Muliflora Rose - *Rosa multiflora* Thunb. (FACU)
- Black raspberry – *Rubus occidentalis* (UPL)
- Swamp dewberry – *Rubus hispidus* L. (FACW)
- Red-osier dogwood – *Cornus stolonifera* Michx. (FACW+)
- American hornbeam – *Carpinus caroliniana* Walter (FAC)
- Maple-leaved Viburnum
- Clethra
- Poison Ivy – *Toxicodendron radicans* L. (FAC)
- Alder
- European privet - *Ligustrum vulgare* L. (FACU)
- Sassafras – *Sassafras albidum* Nutt. (FACU-)
- Purple loosestrife - *Lythrum salicaria* L. (FACW+)
- Sensitive fern - *Onoclea sensibilis* L. (FACW)
- Soft Rush – *Juncus effuses* L. (FACW+)
- Grape sp. – *Vitis* sp.
- Oriental bittersweet – *Celastrus orbiculata* (UPL)
- Catbrier – *Smilax glauca* (FACU)

Honeysuckle

Trees:

Black locust - *Robinia pseudoacacia* L. (UPL, FAC)
Tulip tree - *Liriodendron tulipifera* L. (FACU, FAC)
Red oak - *Quercus rubra* L. (FACU-)
American beech - *Fagus grandifolia* Emrh. (FACU)
Red maple – *Acer rubrum* L. (FAC)
Sweetgum - *Liquidambar styraciflua* L. (FAC, FACW)
White Spruce - *Picea glauca* Moench (FACU)
Tupelo – *Nyssa sylvatica* Marsh. (FAC)
Common Cottonwood - *Populus deltoids* (FAC, FACW)
European Crabapple - *Malus sylvestris*
Slippery elm - *Ulmus rubra* Muhl. (FAC)
Black Cherry - *Prunus serotina* (FACU)
Osage Orange - *Maclura pomifera* (UPL)
Tree-of-Heaven - *Ailanthus altissima* (FACU)
Shagbark hickory - *Carya ovata* (Mill.) (FACU-,FACU+)
Gray birch – *Betula populifolia* Marsh. (FAC)

6. Wildlife

The wildlife observed on site is almost entirely contained within the eastern side of the site associated with the wetland. All of the wildlife observed, including birds visiting the western part of the site and the area around the building, as well as the species using the wetland area, are cosmopolitan in character. The habitat on site is presently used by white-tailed deer, a variety of small mammals such as white-footed mice, deer mice, eastern chipmunks and eastern grey squirrels, a “suburban” assemblage” of birds such as sparrows, black-capped chickadees, American robins, catbirds, cardinals, blue jays and American crows, as well as an invertebrate community featuring earthworms, beetles, mosquitoes, etc., that are typical of suburban wet habitats in this region.

Within the eastern portion of the site, no particular habitat type, as described above, would be expected to have a higher value for wildlife as compared to the others, due to the long history of disturbance and introduction of landscape or orchard species. The forest remnant, however, may have a slightly different composition of bird species due to the presence of large, old trees that could provide habitat for cavity dwellers and nesters

such as owls, woodpeckers and flying squirrels. But this patch of habitat is small and so does not function as an interior forest.

The wetland and its woodland margin form an active wildlife corridor, linking properties to the north and south, with White-tailed Deer even readily crossing Manhattanville Road. Through this wetland, wildlife using the Anderson Hill Road areas of open space find a useful transit corridor to the open space near and along the Hutchinson River area. This corridor provides north-south access, while any such corridor along the western portion of the site is interrupted by highways and cloverleafs between local roads and the highways. Direct observations of wildlife activity confirm that the animals are still actively using the eastern corridor, despite the challenge of the berm along Manhattanville Road.

Wildlife Inventory, based on field observations, experience in the region and literature.

A. Mammals

Raccoon*
White-tailed Deer*
Cotton-tailed Rabbit*
White-footed mouse
Deer mouse
Eastern chipmunk
Opossum*
Eastern grey squirrel*
Coyote
Rat

* species observed on the site

B. Birds

Blue Jay*
American Robin*
Mourning Dove*
American Crow
Carolina Wren*
Ovenbird*
Red-tailed hawk*
Black-capped chickadee*
Cedar waxwing*
Yellow warbler*
Song sparrow*
Northern cardinal*

Grackle*
Catbird*
American Redstart
American Woodcock
Baltimore Oriole*
Barred Owl
Black-and-White Warbler
Black-throated Blue Warbler
Black-throated Green Warbler
Blue-gray Gnatcatcher
Brown Thrasher
Canada Warbler
Cerulean Warbler
Eastern Bluebird
Eastern Kingbird
Eastern Towhee
Eastern Wood-pewee
Indigo Bunting
Rose-breasted Grosbeak
Scarlet Tanager
Veery
Warbling Vireo
Wood Thrush
Worm-eating Warbler
Yellow-billed Cuckoo
Yellow-throated Vireo
Canada Goose*
Mallards*

* species observed on the site

C. Amphibians

Green frog
Four-toed Salamander
Fowler's Toad
American Toad
Gray Treefrog
Marbled Salamander
Northern Dusky Salamander
Spotted Salamander
Wood Frog

D. Reptiles

Black Rat Snake

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Eastern Box Turtle
Eastern Ribbon Snake
Eastern Worm Snake
Northern Black Racer
Northern Copperhead
Spotted Turtle

7. Impacts of Proposed Activities

The development of the proposed parking and drainage improvements will cause no impacts to natural resources on the western side of the site. At this time, the stormwater drainage through this area is confined to the bowl area mowed as lawn. While some stormwater passes through this area, it enters culverts and descends to deeper piping to pass under neighboring buildings and roadways. The proposed re-design of the stormwater basin will actually improve the ecological resources available to small mammals and birds, particularly waterfowl, by the creation of wet-pond and aquatic bench habitat within the basin (conditions not now present on the western part of the site).

On the eastern side of the site, in association with work proposed along the wetland edge, there will be a reduction in linear setback from the wetland in certain portions of the margin between the wetland and existing parking lot. There is an 0.46 acre area that will be converted from landscaped and mowed buffer to parking lot. This area is now a raised berm and hillside, covered for the most part by dense and invasive vegetation. The buffer zone serves a limited use for wildlife because it slopes towards the parking lot, which exposes animals to contact with people and cars. This area also directs surface runoff back into the parking lot, which then drains towards the southern end of the parking area and through its storm drains directly into the wetland. Accordingly, this loss of buffer zone represents an impact, but one that is not significant to the site's ecological function.

In the design of the new parking areas, the stormwater flows now draining towards the parking lot from the existing landscaped buffer will be collected and treated as part of the new project. The project proposes to install within the existing buffer zone a set of stormwater management features. These features will upgrade the site's treatment of stormwater, some of which presently enters directly into the wetland, carrying sediment and pollutants without treatment. The development of these features will convert 0.4 acre of scrub and shrub habitat into 0.5 acre of new habitat. Thus, there is a loss of existing buffer, but this loss is readily mitigated by the improvement to the habitats and the addition of new water quality treatment to better protect the wetland overall.

The incursion into the buffer zone may induce some of the wildlife using the margin of the existing open space to move further into the interior of the wetland and surrounding open space. However, this will not have an adverse impact on the site's overall function for wildlife, which is largely to support cosmopolitan species already adapted to their proximity to human activities.

8. Mitigation

The newly added parking areas will increase the overall volume of drainage on both the eastern and western portions of the site. Accordingly, designs have been prepared to capture and treat the flows with stormflow control structures (including where necessary stormceptor treatment features) and in vegetated basins, where settling of silt and biological treatment of pollutants can occur. In both proposed storm basin systems on the western and eastern portions of the site, forebays will attenuate flows allowing settling of solids. In both the forebays and aquatic bench habitats created, native emergent and submergent vegetation will aid in the biochemical breakdown of pollutants (e.g. nitrogenous and hydrocarbon compounds). Since each basin system is sized for large storm events, there will be sufficient capacity to hold waters in which concentrations of pollutants are not diluted by the larger storm events, and thereby allow for biotreatment of these lingering storm waters.

In order to preclude any increase in stormwater pollution into the wetlands (on the eastern side of the site) or the watercourse (on the western side of the site), complete capture and treatment are proposed of newly generated stormwater flows. With respect to the western watercourse, there are no additional habitat areas or wetland jurisdictional issues identified at this time. For the wetland on the eastern side of the site, which is regulated by the Town of Harrison and US Army Corps of Engineers, any potential impact to the wetland functions have been addressed by both the maintenance of setbacks to the greatest extent feasible and measures to improve the habitat along the margin of the existing wetland boundary. Not only will the new stormwater features reduce the pollutant loading associated with sediment transport, and eliminate delivery to the

wetland of such sediment, but the new basin features will offer high quality habitat to certain species of wildlife using the site. These species include waterfowl and herpetofauna.

At present, there are some temporary pools within the eastern wetland which serve as breeding habitat for wood frogs and peepers, while with the new basin, this type of habitat will be improved and more reliable for these species. Moreover, waterfowl traveling through the area will find useful feeding and resting habitat in the new basins. Accordingly, the plantings selected include species useful for sediment trapping and processing (e.g. Typha, bulrush, etc.) and plants that provide food for wildlife (e.g. duck potato, arrow arum). Proposed planting plans for the basins are attached, and tabulations of plant species proposed for the basins are:

Eastern Basin plantings:

Scientific Name	Common Name	Symbol	Number	Type
<i>Vaccinium corymbosum</i>	Blueberry	Blb	13	Shrub
<i>Scirpus fluvionalis</i>	Bulrush	Blr	214	Aquat
<i>Typha angustifolia</i>	Cattails	Ctl	121	Aquat
<i>Sambucus Canadensis</i>	Elderberry	Elb	156	Shrub
<i>Cornus foemina racemosa</i>	Grey Dogwood	Gdw	39	Tree
<i>Spiraea ulmaria</i>	Meadowsweet	Mws	40	Emergent
<i>Scirpus sp.</i>	Sedge Various	Ssp	670	Emergent
<i>Panicum virgatum</i>	Switchgrass	Swg	836	Grass
<i>Carex stricta</i>	Tussock Sedge	Ts	27	Aquat
<i>Scirpus cyperinus</i>	Woolgrass	Wg	152	Aquat
Seed	Seed	Seed		Upland

The basin proposed for the western portion of the site will be located in an area which is currently completely mowed and provides virtually no habitat for wildlife. This area is not contiguous with any natural habitat, so unlike the eastern basin, its proposed functions will be limited to stormwater collection, containment and bio-treatment. Nevertheless, the project intends to plant this basin with species that will enhanced its function in cleansing stormwater before it is released to the culvert system.

Western Basin plantings:

Scientific Name	Common Name	Symbol	Number	Type
<i>Scirpus fluvionalis</i>	Bulrush	Blr	104	Aquat
<i>Sambucus canadensis</i>	Elderberry	Elb	98	Shrub
<i>Scirpus cyperinus</i>	Woolgrass	Wg	711	Aquat
<i>Scirpus sp.</i>	Sedge Various	Ssp	287	Emergent
<i>Panicum virgatum</i>	Switchgrass	Swg	1839	Grass
<i>Carex stricta</i>	Tussock Sedge	Ts	121	Aquat
Wildflower Mix	Wildflower Mix	Wm		Upland
Native Grasses	Native Grasses	Ng		Upland

9. Conclusion

The proposed activities at Parcel B have the potential to impact natural resources by altering habitat availability for wildlife on the eastern margin of the site. There are two forms of potential impact: stormwater discharge from impervious areas and activities in the area adjacent to a regulated wetland. In order to prevent adverse impacts from stormwater, the project proposes stormwater basins designed according to current principles of water quality protection. Accordingly, the basins will be planted with native wetland and riparian species that will result in the creation of ecological habitat which can achieve two objectives.

First, the basins will provide for biological treatment of stormwater that removes pollutants by allowing settling of sediment and silt and by the breakdown and uptake of contaminants. As the solids settle from the stormwater, the material will accumulate around plantings that thrive in such soils, helping to stabilize these sediments. The plants themselves will also breakdown and absorb excess nutrients and hydrocarbons, thus removing them from circulation back into local waters.

Second, the newly created wetland and riparian habitat will be self-sustaining because the plant species selected have the capability to sustain their own communities. This

capability is ensured by selection of a cross-section of species that tolerate the fluctuating conditions expected in these storm basins. As these basins grow in, the vegetation will provide cover and food resources for wildlife. In the case of the eastern basin, the new habitat replaces existing scrub and thicket that bounds the wetland, and this new habitat will be of higher diversity and quality than the existing conditions. Hence, while some impact to the buffers is proposed, the net result will be improved buffering for the wetland in the eastern portion of the site, as well as improved habitat for wildlife, especially birds and herpetofauna.