

# **Natural Area Mapping and Inventory of Ridgewood Reservoir 2005 Survey**



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# **Ridgewood Reservoir Natural Area Mapping & Inventory**

**Surveyed June 2005**

**54 acres**

## ***Introduction***

City of New York Parks & Recreation (DPR) manages one of the most extensive and varied park systems of any city in the world. These 29,000 acres of city park property occupy about 15 percent of New York City's total area. In addition to flagship parks such as Central Park and Prospect Park, the city's parklands include over 11,000 acres of natural areas.

Until the 1980's, the Parks Department was primarily concerned with developed landscapes and recreation facilities rather than natural areas. In the absence of a comprehensive management policy, these areas succumbed to invasive species, pollution and erosion.

In 1984, Parks established the Natural Resources Group (NRG) with a mandate to acquire, restore and manage natural areas in New York City. The wetlands, forests, meadows, and shorelines under NRG's jurisdiction provide valuable habitat for hundreds of species, from rare wildflowers to endangered birds of prey. In addition to the goals mentioned above, NRG serves as a clearinghouse for technical research to aid in the protection and restoration of the city's natural resources. This inventory of Ridgewood Reservoir was conducted in 2005 as part of NRG's commitment to improving the natural areas of New York City parks.

Ridgewood Reservoir is located in Queens, near the Brooklyn border. The property sits on a ridge formed by the Wisconsin ice sheet's terminal moraine, adjacent to Highland Park. The reservoir operated as a water supply for Brooklyn from 1858 to 1959. From 1960 to 1989, one basin was used as a backup supply. The reservoir has been inactive since 1990. In 2004, Mayor Michael Bloomberg announced its transfer to DPR, as well as plans to develop the site into a public park.

Today, the reservoir's outer basins are filled and completely vegetated, while the middle basin contains a freshwater pond skirted by reeds. Habitats in the vegetated areas include closed forest, scrub, woodland, and vineland. Ridgewood Reservoir is located along the Atlantic flyway, one of the four main bird migration routes in America. Millions of birds (as well as bats, butterflies and dragonflies) travel the flyway each fall and spring. Natural areas along the flyway, such as Ridgewood Reservoir, provide these animals with food and shelter. A popular pedestrian and bike path around the reservoir offers views of the neighboring landscape as well as glimpses into the reservoir.

To facilitate the protection, management and restoration of Ridgewood Reservoir, NRG completed an inventory of the area using entitiation, a process of identifying and describing ecologically distinct plant communities. Using aerial photographs and field reconnaissance, Parks staff delineated distinct ecological entities, known as entitiation units, based on cover type, understory structure, species composition, and topography. Evidence of historical use, current use, environmental disturbance, and additional notes were also recorded for each unit. Entitiation of Ridgewood Reservoir resulted in a map and database that can be used to locate valuable and threatened areas. They also serve as a baseline for measuring change over time.

## ***Entitiation***

Entitiation is a type of plant community inventory well suited to the patchy environments often found in urban areas. Originally designed for European landscapes, the system was revised by NRG in 1985 for use in urban parkland. NRG has used entitiation widely and successfully to facilitate acquisition and restoration decisions. Put simply, entitiation is a process of breaking up a park into manageable parts called "entities" or

“entitation units.” Entitation units are defined using a weighted list of criteria. The first level of distinction is based on cover type (e.g. closed forest, vineland, scrub), followed by canopy species composition, understory type (e.g. herbs, vines, shrubs), and understory species composition. Additional factors, such as topography and soil condition (e.g. wet, moist, dry) are also taken into account.

To prepare for fieldwork, mapping technicians examine aerial photographs and delineate areas of similar cover. The mapping staff use the aerial information to create a strategy for covering land area. In the field, boundaries are identified as described above. For each unit, staff record the data listed above, as well as current uses, environmental disturbances, historical indicators, community stability, and comments.



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**Ridgewood Reservoir Natural Areas Entitment**

- Entitment Unit Boundaries (2005)
- New York City Parkland (Not Entitled)

This map is limited by the accuracy of its source data and is intended for illustrative use only.

01-31-2006

**Unit:** 1  
**Acreage:** 0.72  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>     | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|--------------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Locust, black      | >30'          |               |                   | Sports      | Dumping            |
| Deciduous     | Knotweed, Japanese | 5'-30'        | Yes           |                   |             | Trash              |
| Geophytes     | Birch, grey        | 5'-30'        |               |                   |             | Vandalism          |
| Level         | Aspen, bigtooth    | >30'          |               |                   |             |                    |
| Dry/Moist     | Aspen, quaking     | >30'          |               |                   |             |                    |
|               | Honeysuckle sp.    | <5'           | Yes           |                   |             |                    |

**Comments:**

Closed forest of mixed composition. Japanese knotweed dominates the understory. However, honeysuckle, buckthorn, mugwort and other invasive species are also present.

**Unit:** 2  
**Acreage:** 1.57  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>  | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|-----------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Birch, grey     | 5'-30'        |               |                   |             | Dumping            |
| Deciduous     | Locust, black   | 5'-30'        |               |                   |             |                    |
| Geophytes     | Royal Paulownia | 5'-30'        | Yes           |                   |             |                    |
| Level         | Aspen, quaking  | 5'-30'        |               |                   |             |                    |
| Moist         |                 |               |               |                   |             |                    |

**Comments:**

The canopy cover in the southern unit is almost exclusively grey birch with the occasional black locust, Royal Paulownia and quaking aspen. The understory is relatively barren with a fairly even mixture of saplings, shrubs, geophytes, hemicryptophytes, and a small patch of moss. The southwestern part of this unit is covered with abandoned baby carriages and other garbage. Species list includes: buckthorn, grey birch, Japanese knotweed, quaking aspen (regenerating), black locust, goldenrod, Japanese honeysuckle, plantain, mugwort, bush honeysuckle, grass, moss, poison ivy, and bindweed. The southeastern portion of this unit is barren with occasional Phragmites, buckthorn and oriental bittersweet. The southwestern portion of this unit consists of

Rubus spp., regenerating red maple and black cherry, plantain, and white snakeroot.

**Unit:** 3  
**Acreage:** 1.18  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>     | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|--------------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Locust, black      | all           |               |                   |             | Dumping            |
| Deciduous     | Knotweed, Japanese | <5' & 5-30'   | Yes           |                   |             | Noise              |
| Geophytes     | Mugwort            | <5'           | Yes           |                   |             |                    |
| Level         | Royal Paulownia    | 5'-30'        | Yes           |                   |             |                    |
| Dry/Moist     |                    |               |               |                   |             |                    |

**Comments:**

The canopy cover in this unit is black locust with an understory of Japanese knotweed, mugwort, Royal Paulownia, and buckthorn. The following species were also found in the unit: grey birch, oriental bittersweet, white snakeroot, black cherry, bittersweet nightshade, jewelweed, goldenrod, and tree of Heaven.

**Unit:** 4  
**Acreage:** 9.8  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Locust, black  | 5'-30'        |               |                   | Sports      | Dumping            |
| Deciduous     | Mugwort        |               | Yes           |                   |             |                    |
| Geophytes     |                |               |               |                   |             |                    |
| Level         |                |               |               |                   |             |                    |
| Dry           |                |               |               |                   |             |                    |

**Comments:**

Black locust and mugwort dominate throughout this area. Other species found are: buckthorn, Phragmites, goldenrod, bush honeysuckle, bigtooth aspen, grey birch, quaking aspen, Royal Paulownia, Japanese knotweed, white snakeroot, smartweed, poison ivy, bittersweet nightshade, oriental bittersweet, and cottonwood. A great deal of bird activity was observed in this unit.

**Unit:** 5  
**Acreage:** 0.39  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Locust, black  | >30'          |               |                   |             | Dumping            |
| Deciduous     | Cherry, black  | 5'-30'        |               |                   |             |                    |
| Phanerophytes | Mugwort        | <5'           | Yes           |                   |             |                    |
| Level         |                |               |               |                   |             |                    |
| Dry/Moist     |                |               |               |                   |             |                    |

**Comments:**

The canopy cover in this unit is black locust with an abundance of regenerating black cherry in the understory. Other species found in this area are the following: mugwort, black cherry, white snakeroot, garlic mustard, white mulberry, Japanese and bush honeysuckle, bittersweet nightshade, oriental bittersweet, and pokeweed.

**Unit:** 6  
**Acreage:** 1.59  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u>      | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|------------------|---------------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland         | Phragmites          | <5' & 5-30'   |               |                   |             | Dumping            |
| Deciduous        | Birch, grey         | 5'-30'        |               |                   |             |                    |
| Hemicryptophytes | Aspen, quaking      | 5'-30'        |               |                   |             |                    |
| Level            | Cottonwood, Eastern | 5'-30'        |               |                   |             |                    |
| Dry/Moist        | Buckthorn           | 5'-30'        | Yes           |                   |             |                    |
|                  | Willow sp.          | <5'           |               |                   |             |                    |

**Comments:**

The eastern section of this unit is wooded, with patches approaching closed forest. Grey birch and Phragmites dominate this area. There are some patches of highly dense Phragmites with a barren understory.

**Unit:** 7  
**Acreage:** 0.38  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>     | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|--------------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland      | Birch, grey        | >30' & 5-30'  |               |                   |             | Dumping            |
| Deciduous     | Knotweed, Japanese | <5' & 5-30'   | Yes           |                   |             |                    |
| Phanerophytes | Aspen, quaking     | 5'-30'        |               |                   |             |                    |
| Level         | Locust, black      | <5' & 5-30'   |               |                   |             |                    |
| Dry/Moist     | Mugwort            | <5'           | Yes           |                   |             |                    |
|               | Cherry, black      | 5-30' & <5'   |               |                   |             |                    |

**Comments:**

The canopy cover in this unit is dominated by grey birch with an abundance of Japanese knotweed and regenerating birch in the understory. Unit is interspersed with red maple throughout. Other species found in this unit are the following: grey birch, Japanese knotweed, buckthorn, mugwort, sycamore maple, black locust, quaking aspen, Royal Paulownia, plantain, ash, goldenrod, moss, grass, dandelion, red maple, tree of Heaven, Phragmites, black cherry, Rubus spp., poison ivy, and sweetgum.

**Unit:** 8  
**Acreage:** 1.55  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|------------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Herbaceous       | Bulrush, black | <5' & >30'    |               |                   |             | Dumping            |
| Deciduous        | Birch, grey    | 5'-30'        |               |                   |             |                    |
| Hemicryptophytes | Pointed broom  | <5' & >30'    |               |                   |             |                    |
| Level            | Eupatorium sp. | <5'           |               |                   |             |                    |
| Dry/Moist        |                |               |               |                   |             |                    |

**Comments:**

This unit is an open grassland with a significant amount of regenerating grey birch. The largest grassland area is dominated with black bulrush while thinner areas are dominated by pointed broom and Eupatorium sp.



**Unit:** 9  
**Acreage:** 2.18  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u>      | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|------------------|---------------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest    | Aspen, quaking      | 5'-30'        |               |                   | Sports      | Dumping            |
| Deciduous        | Birch, grey         | 5'-30'        |               |                   |             | Vandalism          |
| Hemicryptophytes | Cottonwood, Eastern | 5'-30'        |               |                   |             | Trash              |
| Level            |                     |               |               |                   |             |                    |
| Dry/Moist        |                     |               |               |                   |             |                    |

**Comments:**

Unit has a barren understory and a dense canopy of mostly quaking aspen with grey birch, cottonwood and some black locust. Other species included the following: willow, Indian hemp, soft rush, buckthorn, Phragmites, pin oak, grey birch, hairy goldenrod, bigtooth aspen, regenerating birch, oriental bittersweet, poison ivy, Rubus spp., and red maple.

**Unit:** 10  
**Acreage:** 1.95  
**Mgmt. Concern:** Yes

| <u>Site</u> | <u>Species</u>       | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|-------------|----------------------|---------------|---------------|-------------------|-------------|--------------------|
| Vineland    | Oriental bittersweet | <5'           | Yes           |                   |             |                    |
| Deciduous   |                      |               |               |                   |             |                    |
| Lianas      |                      |               |               |                   |             |                    |
| Slope       |                      |               |               |                   |             |                    |
| Dry         |                      |               |               |                   |             |                    |

**Comments:**

This unit is mostly limited to the reservoir slope but the vines are spreading onto trees on the basin floor and over the fence onto the perimeter path in some areas. There is scattered evidence of past management efforts, such as cut vines. There are some patches of trees that are not covered with vines. Other species: Rubus spp., bush honeysuckle, Japanese honeysuckle, multiflora rose, pokeweed, black locust, black cherry, garlic mustard, mugwort, nightshade, grass, moth mullein, Norway maple, maple, mulberry spp.

**Unit:** 11  
**Acreage:** 1.81  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u>      | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u>     | <u>Disturbance</u> |
|------------------|---------------------|---------------|---------------|-------------------|-----------------|--------------------|
| Closed Forest    | Locust, black       | all           |               |                   | Campfire/ party | Dumping            |
| Deciduous        | Mugwort             | <5'           | Yes           |                   | Sports          | Trash              |
| Hemicryptophytes | Cottonwood, Eastern | 5'-30'        |               |                   |                 | Trash              |
| Level            | Aspen, quaking      | 5'-30'        |               |                   |                 |                    |
| Dry              | Birch, grey         | 5'-30'        |               |                   |                 |                    |
|                  | Buckthorn           | all           | Yes           |                   |                 |                    |

**Comments:**

This unit is distinguished from the larger neighboring unit by a greater mix of trees in the canopy cover and less mugwort in the understory. Other species include the following: oriental bittersweet, privet, mugwort, black locust, quaking aspen, Sedge sp., Canada bluegrass, cottonwood, Polygonum sp., smartweed, Queen Anne's lace, buckthorn, bush honeysuckle, rough-leaved goldenrod, flat-topped goldenrod, bigtooth aspen, plantain, poison ivy, Japanese honeysuckle, and black cherry.

**Unit:** 12  
**Acreage:** 0.3  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Birch, grey    | 5'-30'        |               |                   |             | Dumping            |
| Deciduous     | Locust, black  | 5'-30'        |               |                   |             |                    |
| Geophytes     | Mugwort        | <5'           | Yes           |                   |             |                    |
| Level         | Buckthorn      | all           | Yes           |                   |             |                    |
| Dry/Moist     |                |               |               |                   |             |                    |

**Comments:**

Buckthorn is more dominant in the southern part of this unit. This unit also contains the following: black locust, grey birch, buckthorn, white snakeroot, mugwort, black bulrush, Japanese knotweed, plantain, Phragmites, goldenrod, Rubus spp., bush honeysuckle, oriental bittersweet, multiflora rose, bittersweet nightshade, and wineberry.

**Unit:** 13  
**Acreage:** 0.36  
**Mgmt. Concern:** Yes

| <u>Site</u>  | <u>Species</u>        | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|--------------|-----------------------|---------------|---------------|-------------------|-------------|--------------------|
| Herbaceous   | Moss sp.              | <5'           |               |                   |             |                    |
| Deciduous    | Birch, grey           | 5'-30'        |               |                   |             |                    |
| Thallophytes | European pasturegrass | <5'           |               |                   |             |                    |
| Level        |                       |               |               |                   |             |                    |
| Moist        |                       |               |               |                   |             |                    |

**Comments:**

This unit is dominated by a relatively barren moss-covered surface with occasional grey birch, grass and other species. Non-moss areas are generally located at the edge of the area except for the occasional birch in the middle of the moss. Other species include: grey birch saplings, willow, Japanese knotweed, moss, mugwort, rough-leaved goldenrod, poison ivy, pin oak, black cherry and bigtooth aspen.

**Unit:** 14  
**Acreage:** 0.45  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u>      | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|------------------|---------------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland         | Aspen, quaking      | <5' & 5-30'   |               |                   |             |                    |
| Deciduous        | Cottonwood, Eastern | all           |               |                   |             |                    |
| Hemicryptophytes | Birch, grey         | 5'-30'        |               |                   |             |                    |
| Level            | Rush, soft          |               |               |                   |             |                    |
| Moist            | Locust, black       | 5'-30'        |               |                   |             |                    |

**Comments:**

This unit has a very dense, mixed herbaceous layer with frequent dead trees in the center on the eastern end. Black locust is also more common on the eastern end of the unit. Other species include: Phragmites, pointed broom, flat-topped goldenrod, Canada bluegrass, rough-leaved goldenrod, Sedge sp., Eupatorium sp., black locust, cottonwood, milkweed, plantain, multiflora rose, wool-grass, Rubus spp., and poison ivy.

**Unit:** 15  
**Acreage:** 5.72  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Aquatic (fresh)<br>n/a<br>n/a<br>Level<br>Surface water |                |               |               |                   |             |                    |

**Comments:**

This unit is a freshwater pond filling the central chamber of the reservoir. This is probably the portion of the reservoir that was kept open longest, as an emergency supply. The water surface is devoid of vegetation or algae. The depth is unknown.

**Unit:** 16  
**Acreage:** 6.24  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Herbaceous<br>Deciduous<br>Hemicryptophytes<br>Level<br>Surface water | Phragmites     | <5' & 5-30'   |               |                   |             |                    |

**Comments:**

This unit consists entirely of Phragmites, which grows around the edge of the freshwater pond. The Phragmites grows in standing water of unknown depth. There is a notable amount of bird activity; red-winged blackbirds were heard and sighted here often.

**Unit:** 17  
**Acreage:** 1.88  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Sweetgum       | all           |               |                   | Habitation  | Trash              |
| Deciduous     | Birch, grey    | all           |               |                   | Sports      |                    |
| Phanerophytes | Buckthorn      | <5' & 5-30'   | Yes           |                   |             |                    |
| Level         | Aspen, quaking | all           |               |                   |             |                    |
| Dry/Moist     | Maple, red     | all           |               |                   |             |                    |
|               | Cherry, black  | 5-30'         |               |                   |             |                    |

**Comments:**

Sweetgum is present in the canopy cover throughout this unit. Quaking aspen is the second most common in the western portion of the unit, grey birch in the south, and black cherry in the east. Where sweetgum is dominant, the buckthorn understory is usually less dense and made up of younger trees. Other species are present in the understory, most notably a patch of Japanese knotweed in the southeast corner of the basin. Other species: tree of Heaven, staghorn sumac, pin oak, red oak, cottonwood, Sassafras, Royal Paulownia, elderberry, willow, goldenrod, iris, pokeweed, fern, Rubus spp., white snakeroot, poison ivy, Virginia creeper, oriental bittersweet, nettle, water horehound.

**Unit:** 18  
**Acreage:** 0.47  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland      | Aspen, quaking | >30' & 5-30'  |               |                   |             |                    |
| Deciduous     | Buckthorn      | <5' & 5-30'   | Yes           |                   |             |                    |
| Phanerophytes | Birch, grey    | >30' & 5-30'  |               |                   |             |                    |
| Level         |                |               |               |                   |             |                    |
| Dry/Moist     |                |               |               |                   |             |                    |

**Comments:**

This unit is a woodland with a mix of the above species as well as sweetgum and a number of bigtooth aspen at the western edge of the unit. Growth is dense enough to form a closed forest in ~5 years but too short to yet form a canopy. In the north of the unit, quaking aspen and buckthorn are younger and more mixed. In the south, tree growth is denser and buckthorn is concentrated on the basin edge. Buckthorn is dominant throughout the understory and approaches the canopy in the southern portion. There are some canopy clearings formed by fallen birch trees. Species list: oriental bittersweet, Rubus spp., pin oak, Japanese knotweed. Regenerating species: grey birch, buckthorn, pin oak, sweetgum, red maple, quaking aspen, Phragmites.

**Unit:** 19  
**Acreage:** 0.36  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Aspen, quaking | <5' & 5-30'   |               |                   |             |                    |
| Deciduous     | Buckthorn      | <5' & 5-30'   | Yes           |                   |             |                    |
| Phanerophytes | Cherry, black  | <5' & 5-30'   |               |                   |             |                    |
| Level         | Locust, black  | <5' & 5-30'   |               |                   |             |                    |
| Dry/Moist     | Phragmites     | <5' & 5-30'   |               |                   |             |                    |

**Comments:**

This unit contains two huge Eastern cottonwood trees as well as black cherry, quaking aspen, black locust, and pin oak. The western edge of this unit transitions from dense Phragmites to dense buckthorn in the east.

**Unit:** 20  
**Acreage:** 2.64  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>      | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|---------------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland      | Birch, grey         | <5' & 5-30'   |               |                   |             |                    |
| Deciduous     | Maple, red          | <5' & 5-30'   |               |                   |             |                    |
| Phanerophytes | Sweetgum            | <5' & 5-30'   |               |                   |             |                    |
| Level         | Oak, pin            | <5' & 5-30'   |               |                   |             |                    |
| Dry/Moist     | Cottonwood, Eastern | <5' & 5-30'   |               |                   |             |                    |
|               | Buckthorn           | <5' & 5-30'   | Yes           |                   |             |                    |

**Comments:**

The four most common species in this unit are evenly distributed and together comprise about 60% of the canopy-forming vegetation. The canopy cover approaches closed forest in some areas. The understory alternates between open areas and sections with young trees. Regenerating species include grey birch, buckthorn, quaking aspen, sweetgum, and red maple. Regenerating buckthorn commonly establishes around the bases of mature trees. There are many fallen and standing dead birch trees. This unit more grass and less moss than the neighboring scrub unit (22). Other species: Phragmites, moss, lance-leaved goldenrod, Carex sp., silver maple, oriental bittersweet, plantain, Japanese knotweed, Rubus spp., and goldenrod.

**Unit:** 21  
**Acreage:** 1.08  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Scrub         | Birch, grey    | <5' & 5-30'   |               |                   |             |                    |
| Deciduous     | Buckthorn      | <5' & 5-30'   | Yes           |                   |             |                    |
| Phanerophytes | Aspen, quaking | >30' & 5-30'  |               |                   |             |                    |
| Level         |                |               |               |                   |             |                    |
| Dry/Moist     |                |               |               |                   |             |                    |

**Comments:**

This dense thicket has a patchy composition. There are areas of grey birch, quaking aspen and buckthorn. There are occasional large pin oak, quaking aspen, red maple, and most commonly sweetgum. Other species: Rubus spp., goldenrod, multiflora rose, grass, and milkweed.

**Unit:** 22  
**Acreage:** 2.09  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u> | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|------------------|----------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland         | Birch, grey    | <5' & 5-30'   |               |                   |             |                    |
| Deciduous        | Moss sp.       | <5'           |               |                   |             |                    |
| Hemicryptophytes | Maple, red     | <5' & 5-30'   |               |                   |             |                    |
| Level            | Sweetgum       | <5' & 5-30'   |               |                   |             |                    |
| Dry/Moist        | Buckthorn      | <5' & 5-30'   | Yes           |                   |             |                    |
|                  | Willow herb    | <5'           |               |                   |             |                    |

**Comments:**

This unit contains many of the same species as the neighboring woodland, but with fewer trees over 15' and more Phragmites. There are some large sweetgum and red maple along the western edge of the basin. Patches of very dense saplings, especially buckthorn, are present at the western edge of the basin as well as scattered within the unit. Moss covers the ground throughout. Other species: Rubus spp., elderberry, goldenrod, quaking aspen.

**Unit:** 23  
**Acreage:** 1.55  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>        | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|-----------------------|---------------|---------------|-------------------|-------------|--------------------|
| Herbaceous    | Maple, red            | <5' & >30'    |               |                   |             |                    |
| Deciduous     | Phragmites            | <5' & >30'    |               |                   |             |                    |
| Phanerophytes | Buckthorn             | <5' & 5-30'   | Yes           |                   |             |                    |
| Level         | Willow, pussy         | <5' & 5-30'   | Yes           |                   |             |                    |
| Dry/Moist     | European pasturegrass | <5'           |               |                   |             |                    |

**Comments:**

Phragmites gets denser the toward the north of this unit until it excludes almost everything else. Throughout this unit there are scattered red maple, pin oak and sweetgum, and patches of thick buckthorn. At the southern end of the unit groundcover consists of moss, grass, regenerating pin oak, and milkweed, but Phragmites-dominated areas are almost barren. Almost all trees in this unit are less than 10' tall. Species list: bush honeysuckle, grey birch, quaking aspen, cottonwood, Rubus spp., Royal Pawlonia and poison ivy.

**Unit:** 24  
**Acreage:** 4.21  
**Mgmt. Concern:** Yes

| <u>Site</u> | <u>Species</u>       | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|-------------|----------------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland    | Buckthorn            | <5' & 5-30'   | Yes           |                   |             |                    |
| Deciduous   | Knotweed, Japanese   | <5' & 5-30'   | Yes           |                   |             |                    |
| Lianas      | Oriental bittersweet | <5'           | Yes           |                   |             |                    |
| Slope       | Nightshade, common   | <5'           | Yes           |                   |             |                    |
| Dry         | Mugwort              | <5'           | Yes           |                   |             |                    |
|             | Mustard, garlic      | <5'           |               |                   |             |                    |

**Comments:**

This unit is primarily Buckthorn and Japanese knotweed with scattered clumps of trees throughout. There are some very small sections of closed forest where a few large trees cluster together. In the western basin, the unit contains more Norway maple and black locust. In the eastern basin there are several tree of Heaven and smooth sumac. The understory contains herbs at the top of the slope, but transitions into buckthorn saplings at the base of the slope.



**Unit:** 25  
**Acreage:** 2.95  
**Mgmt. Concern:** Yes

| <u>Site</u>      | <u>Species</u>        | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u>  | <u>Disturbance</u> |
|------------------|-----------------------|---------------|---------------|-------------------|--------------|--------------------|
| Scrub            | Honeysuckle, bush     | <5' & 5-30'   |               | Fence             | Foot traffic | Trash              |
| Deciduous        | Rose, multiflora      | <5' & 5-30'   |               | Berm              | Prostitution |                    |
| Hemicryptophytes | Ivy, poison           | <5'           |               |                   |              |                    |
| Slope            | Buckthorn             | <5' & 5-30'   | Yes           |                   |              |                    |
| Dry              | Honeysuckle, Japanese | <5' & 5-30'   | Yes           |                   |              |                    |
|                  | Cherry, black         | <5' & 5-30'   |               |                   |              |                    |

**Comments:**

This unit includes the slope of the center basin as well as the top of the berm separating the eastern and center basins. Bush honeysuckle dominates the top of the berm, with hackberry and black cherry also common. There are large patches of poison ivy growing on the eastern side of the berm and down the slope into the eastern basin. Tree species (a variety) become more common on the eastern slope. The footpath through this unit is well-traveled near the intersections with the perimeter path. Other species: crab apple, Sassafras, pin oak, grey birch, Norway maple, sumac, tree of Heaven, plantain, mugwort, Virginia creeper, hackberry, goldenrod, grass, milkweed, Rubus sp., bigtooth aspen, willow. Regenerating species: oak, sumac.

**Unit:** 26  
**Acreage:** 0.182  
**Mgmt. Concern:** No

| <u>Site</u>      | <u>Species</u>   | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u>  | <u>Disturbance</u> |
|------------------|------------------|---------------|---------------|-------------------|--------------|--------------------|
| Scarcely         | Mugwort          | <5'           | Yes           | Paved path        | Foot traffic |                    |
|                  | Grass sp.        | <5'           |               | Gatehouse         | Prostitution |                    |
| Hemicryptophytes | Plantain, common | <5'           |               |                   |              |                    |
| Level            |                  |               |               |                   |              |                    |
| Dry              |                  |               |               |                   |              |                    |

**Comments:**

This unit includes several reservoir buildings positioned near the edges of the reservoir, including the former gatehouse. The buildings are surrounded by paved areas and chainlink fence.

**Unit:** 27  
**Acreage:** 0.15  
**Mgmt. Concern:** No

| <u>Site</u>   | <u>Species</u>      | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|---------------------|---------------|---------------|-------------------|-------------|--------------------|
| Woodland      | Cottonwood, Eastern | <5' & >30'    |               |                   |             |                    |
| Deciduous     | Buckthorn           | <5' & >30'    | Yes           |                   |             |                    |
| Phanerophytes | Ivy, poison         | <5'           |               |                   |             |                    |
| Slope         | Phragmites          | <5' & 5-30'   | Yes           |                   |             |                    |
| Dry/Moist     | Grass sp.           | <5'           |               |                   |             |                    |

**Comments:**

This unit is a thin strip of woodland with a cottonwood canopy and a dense buckthorn understory. The bottom of the slope and the sides of the unit are all buckthorn, forming a 15'-20' canopy under the cottonwood. Phragmites, poison ivy and Rubus spp. are also mixed in the understory. Species list: white snakeroot, sweetgum, bush honeysuckle, mugwort, willow, goldenrod, bigtooth aspen, and grey birch. Regenerating species include red maple and oak sp.

**Unit:** 28  
**Acreage:** 0.25  
**Mgmt. Concern:** Yes

| <u>Site</u>   | <u>Species</u>     | <u>Height</u> | <u>Exotic</u> | <u>Historical</u> | <u>Uses</u> | <u>Disturbance</u> |
|---------------|--------------------|---------------|---------------|-------------------|-------------|--------------------|
| Closed Forest | Birch, grey        | >30' & 5-30'  |               |                   |             |                    |
| Deciduous     | Sweetgum           | >30' & 5-30'  |               |                   |             |                    |
| Phanerophytes | Buckthorn          | <5' & >30'    | Yes           |                   |             |                    |
| Level         | Knotweed, Japanese | <5' & >30'    | Yes           |                   |             |                    |
| Dry/Moist     |                    |               |               |                   |             |                    |

**Comments:**

Buckthorn is rapidly taking over the understory of this unit with Japanese knotweed encroaching from the slope. Grey birch and sweetgum dominate the barely closed canopy with a huge Eastern cottonwood located near the northern edge. There is a section of exclusively Japanese knotweed in the northeast section of this unit. Buckthorn from this unit is encroaching into adjoining woodland. Other species: poison ivy, goldenrod, grass.

## **APPENDIX: Glossary**

Many of these definitions are adapted from Marge Garguillo's unpublished *Plants of New York City Natural Areas: An ecological manual* (2005).

**Chamaephyte:** Mature branch or shoot system remaining perennially less than or equal to 100in above ground. Buds are produced on aerial branches close to the soil. (e.g. shrubs)

**Closed forest:** An area formed by trees at least 15 feet tall with interlocking crowns and at least 80% canopy closure.

**Competition:** The ability of one plant to overwhelm another plant by shading it out or otherwise overwhelming it.

**Deciduous:** Majority of trees shed their foliage in the autumn months.

**Depression:** A hollow, or low point, as compared to the surrounding topography. May or may not contain water.

**Dominant:** The most abundant plants in a particular plant community. A **codominant** plant is about equally as abundant as the dominant species.

**Exotic:** A species that does not naturally inhabit a specific area. An exotic plant may or may not be invasive where it is introduced.

**Exotic planting:** A gardened area where non-native species (e.g. privet, periwinkle) are tended.

**Full-crown tree:** Initially open-grown and free of competition: currently very large with a dominating crown.

**Geophyte:** Plants with buds or shoots surviving below the ground (rhizomes, bulbs, stem tubers, root tubers.)

**Graminoid:** Grasses and grass-like plants.

**Hedgerow:** Evidence of trees or shrubs planted in line i.e., maple or privet along road or path.

**Hemicryptophyte:** Shoots die back to ground level.

**Herb:** Plants without woody tissues that die back to the ground in the winter. This classification is usually applied to broad-leaved plants rather than grasses, but includes grasses for the purpose of entitation.

**Herbaceous community:** An area where grasses, grasslike plants, and herbaceous plants are predominant. Woody plants may be sparingly present, but cover less than 30% of area.

**Intertidal Communities:** Substrate is exposed and flooded by tides, includes the associated splash zone.

**Invasive plant:** A plant species that grows and reproduces without constraint, crowding or shading out other plants. The term is usually applied to plants that are not native to the given region. Invasiveness in a plant that is native to the region is rare and probably caused by unusual circumstances.

**Knoll:** A small isolated hillock.

**Landfill:** Topography altered by previous filling or dumping: i.e., while building a road or altering a wetland area. Look for rubble on the soil surface or sudden changes in grade.

**Lianas:** Vascular plants needing support, rooting in the ground permanently (vines).

**Native plant:** Plants that were growing in this region before Europeans came to North America. Native plants are adapted to the climate and soils of their region. They have relationships with birds, mammals, insects, and fungi and are integrated into the ecology of the region. New York City's native plants come from seed that spread northward after the last glaciers melted thousands of years ago.

**Ornamental:** Plants used as horticultural specimens in gardens or developed parks, not intended to reproduce or be part of a natural plant community. Very often they are non-native plants.

**Phanerophyte:** Plants that grow taller than 100 in. or whose shoots do not die back periodically to that height (e.g., trees).

**Scrub:** A shrubland or thicket, mainly composed of woody plants 1.5 to 15 feet tall.

**Slope:** Ground that forms a natural or artificial incline.

**Soil compaction:** Increasing soil density and decreasing porosity due to application of mechanical forces to the soil: i.e. due to vehicle, horse, or foot traffic.

**Species:** A group of organisms that can interbreed to produce fertile young.

**Understory:** Habitat below the tree canopy of a forest. The understory is a plant community of tree saplings, shrubs, herbs, graminoids, and mosses that can live in shade or part shade.

**Undulating:** The area has a wavy surface. Its neither a slope, a level area, or a depression, but rather a combination of all three.

**Vineland:** An area formed by at least 30% vines. Vines may be supported by vegetation, artificial means or ground surface. Often occurs on the forest or shrub border.

**Woodland:** An area formed by trees at least 15 feet tall, with most of their crowns not touching each other, but at least 30% canopy closure.