Invasive Species Monitoring and Control Program

Japanese barberry, oriental bittersweet, *Phragmites australis* and multifloral rose are all noted as present within and adjacent to the wetlands on the project site. These invasive species favor areas of disturbed soils and edge areas. This plan will implement an invasive species monitoring and manual control program for the duration of construction and development of the project. It has been designed to carry over into the needed maintenance plans that will need to be developed and implemented by the Project Owner.

Those areas of the site that are closest to the existing wetlands and watercourses have been disturbed and re-graded over the years. These are the portions of the site that are known to support invasive species which are altering the character of the wetlands and adjacent areas and represent a long term risk to the native vegetative community.

By controlling exotic vegetation, and reducing deer populations due to increased human activity on the site, nearby native plants will have less competition and therefore have more resources available for their own growth. An invasive species monitoring and control program will be implemented at the project site as part of the overall development plan. Species targeted for removal include the following:

Tree-of-heaven (Ailanthus altissima)
Multiflora rose (Rosa multiflora)
Mugwort (Artemisia vulgaris)
Autumn olive (Eleagnus umbellata)
Garlic mustard (Alliaria petiolata)
Purple loosestrife (Lythrum salicara)
Common reed (Phragmites australis)
Oriental bittersweet (Celastrus orbiculatus)
Porcelainberry (Ampelopsis brevipedunculata)
Japanese Barberry (Berberis thunbergii)
Japanese Stilt Grass (Microstegium vimeneum)
Winged Euonymus (Euonymus alatus)

The above listed species and all other invasive non-native plants that are detrimental to the ecology of the project site will be removed during site development to the extent practicable. The goal of this program is to reduce the presence of exotic/invasive species to a threshold of less than ten percent total cover within the areas shown on the Wetland Restoration and Buffer Enhancement Plan (the "Plan"). A qualified biologist/botanist will supervise the removal of invasive species. Invasive species can be removed in several ways, depending on the location and species of the plant:

1. If a shrub is isolated and does not have its root system entwined with other plants, it may be removed mechanically. As much of the root system as possible should be removed to prevent the possibility of the invasive plant sprouting from root pieces left behind.
2. If a shrub is growing amongst other native plants in a way that uprooting it may disturb surrounding native plants warranting preservation, the plant may be most safely and effectively removed by chemical means. To remove by chemical means, the plant shall first be cut back to a few stubs and stumps, about twelve inches from the base. An EPA approved solution of glyphosate (Round-up or equivalent) shall be painted on the ends of the stumps. This technique shall be applied in the early fall months before the onset of plant dormancy. Proper notification must be made prior to the application of all restricted pesticides, and application made by a licensed applicator, if required. During project construction, glyphosate will only be applied by a licensed herbicide applicator, as coordinated with the Environmental Site Monitor. Only hand-cutting and removal will be allowed within the Wetland Controlled Area.
3. Highly invasive groundcovers, such as Japanese honeysuckle, are difficult to eliminate due to their habit of rooting along the stem. Groundcovers of this type will be removed by hand or mechanically. If after the second year of treatment the species persists, it may be sprayed with glyphosate, using a very close and targeted application during the active growing season. If the plant is growing among other herbaceous or shrub material that would be harmed by spraying, the glyphosate shall be applied by brush or mechanical removal should be considered. Repeated treatments may be necessary to remove the plant completely.
4. Highly invasive annuals, such as garlic mustard, are difficult to eliminate from their growth from seed that is widespread among the soil seed bank where the plants are found. Several methods may be utilized in removing this type of invasive plants. If the species is growing densely without other plants, the area will be sprayed with glyphosate during the active growing season, following the manufacturer's recommendations. Species will also be removed by hand. Both methods should be performed before plants set seed. Both methods shall be performed multiple times over a season and possibly over several seasons to completely eradicate the target species.

Monitoring and Maintenance Schedule

Following development of the site, a maintenance plan will include the regular inspection of undisturbed areas as shown on the Plan, and removal of these species as necessary. This represents the transitional areas that are most susceptible to opportunistic settling of invasive species. It is anticipated that a schedule of inspections three times a year for the first three years following full project build out (early, mid and late growing season) will be adequate for the identification and removal of the invasive species in this area.

The Town Building Inspector and Wetlands Inspector will be consulted prior to the proposed removal of invasive species within the controlled area. In addition, all activities related to invasive species control, monitoring and assessment of achievement of the 10 percent tolerance threshold for coverage by all invasive species on the project site will be coordinated with the Environmental Site Monitor. These inspections will include the mapping and identification of locations and extent of cover of invasive species, and identify the methods to be used for the subsequent removal. Following treatment, a brief report outlining extent, location and removal method for each species shall be prepared and filed with the Town Planning Office.

Plant Species Choices for Wetland Buffer Enhancement/Restoration

Map Symbol	Quantity*	Scientific Name	Common Name	Size
Trees				
Aru	9	Acer rubrum	Red Maple	5' - 6'
Shrubs				
CSe	44	Cornus sericea	Redosier dogwood	3' - 4'
AC	6	Amelanchier canadensis	Shadblow	4' - 5'
IV	7	Ilex verticillata	Winterberry holly	3' - 4'
VC	21	Vaccinium corymbosum	Highbush blueberry	4' - 5'
VD	21	Viburnum dentatum	Arrowwood	4' - 5'
Herbaceous Plants				
CS	100	Carex stricta	Tussock sedge	2" plug
CC	100	Carex crinita	Fringed sedge	2" plug
JE	100	Juncus effusus	Soft rush	2" plug
Seed Mix				
SWM	8 pounds	Riparian Buffer Mix ERNMX-154 Or equivalent		

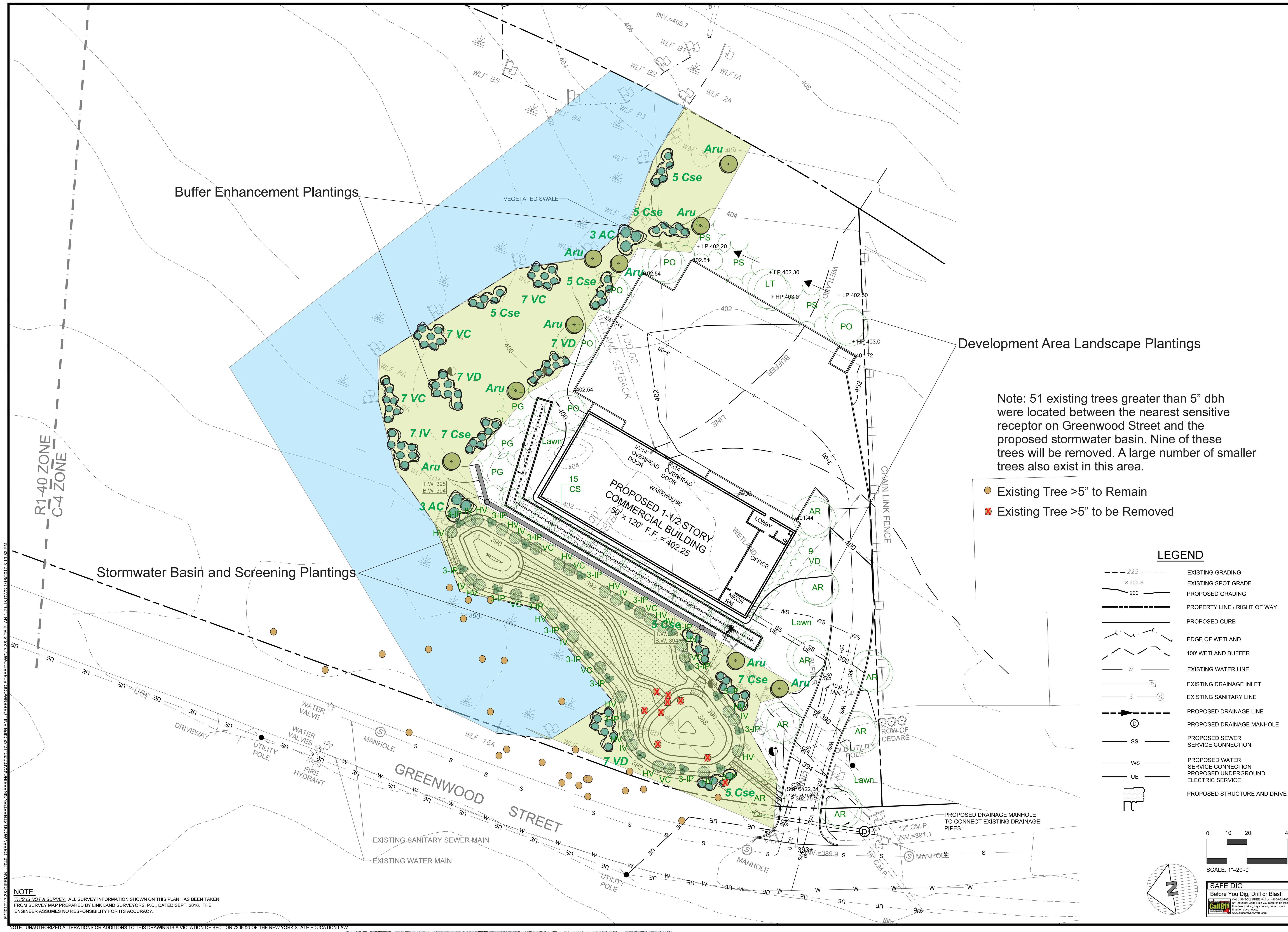
* Plant quantities will be held, but final locations will be determined in the field following removal of invasive and dead plant materials.

Wetland Buffer Enhancement Areas

Following the removal of non-native invasive species as specified in the invasive species eradication plan, wetland and buffer areas will be seeded using the following seed mixes:

Buffer Areas - Riparian Buffer Mix (ERNMX-154 or equivalent) at 20 lbs/acre.

Native trees will remain to the extent practicable, and field adjustments may be made to the location of the proposed plantings if existing trees are present. The quantity of plantings to be added will not change.



PROJECT # 17-38

Site Design Consultants
Civil Engineers • Land Planners
251-F Underhill Avenue, Yorktown Heights, NY 10598
(914) 962-4488 - Fax: (914) 962-7386
www.sitedesignconsultants.com

Engineer: Joseph C. Riina, P.E. NYS Lic. No. 64431

Revisions:

No.	Date	Comments:
1.	11/8/17	ADD' DETAILS
2.	1/22/18	ALT PLAN
3.	2/14/18	LEGEND ADDED
4.	5-31-18	Soil Test Loc

SCALE: 1" = 20'
DRAWN BY: MD
DATE: 10-16-17

IMPROVEMENT PLAN

SITE PLAN PREPARED FOR ENVIROGREEN ASSOCIATES
2040 GREENWOOD ST.
Town Of Yorktown, Westchester County, NY

Sheet 4 of 8

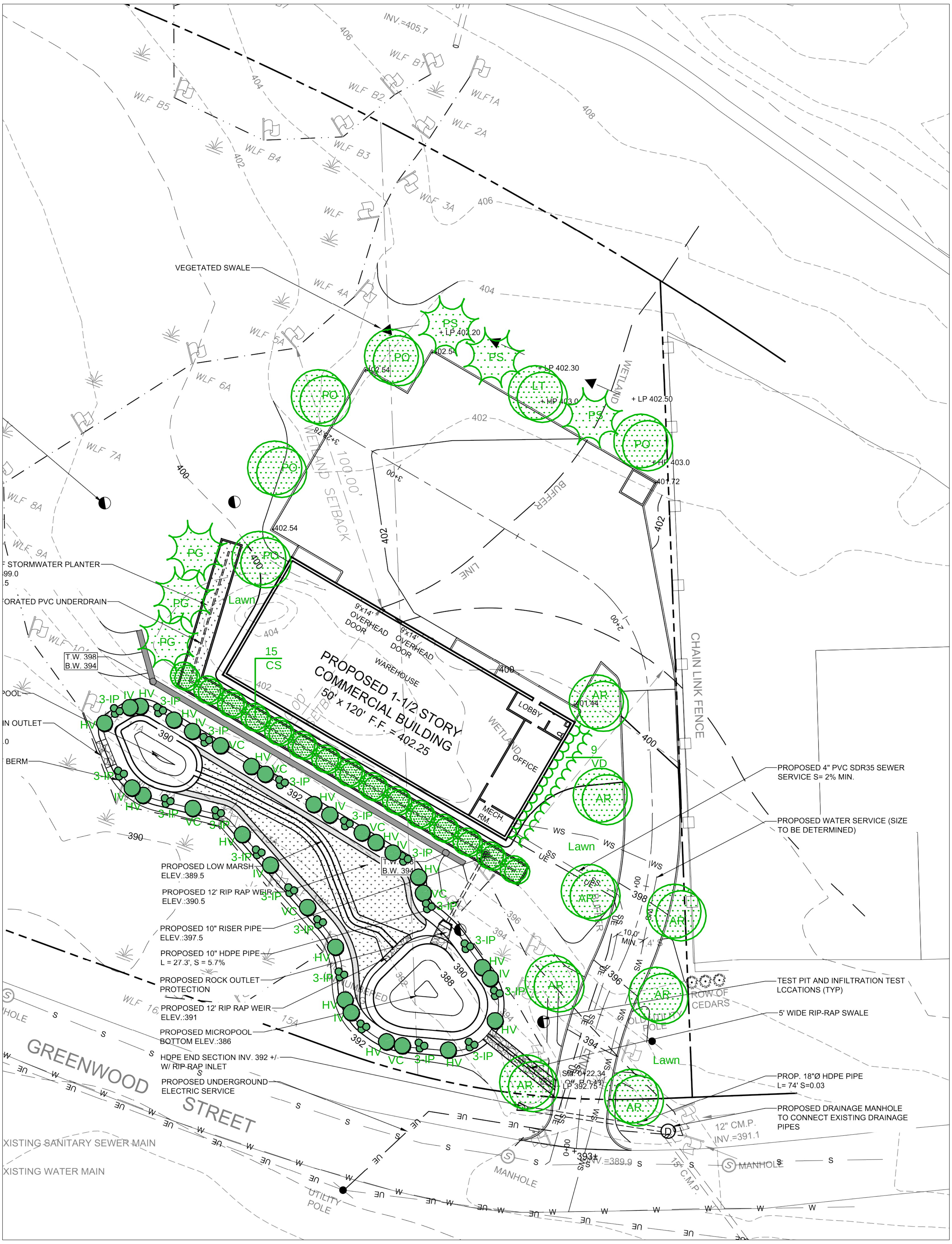
Plant List					
Date: December 21, 2018					
Abb.	**Scientific Name**	**Common Name**	**Size**	**Spacing**	**Quan.**
Trees					
AR	Acer rubrum	Red Maple	2-2.5" cal. 14-16' ht.	As Shown	8
LT	Liriodendron tulipifera	Tulip Tree	2-2.5" cal. 14-16' ht.	As Shown	1
PO	Platanus occidentalis	Sycamore	2-2.5" cal. 14-16' ht.	As Shown	5
Evargreen Trees					
PG	Picea glauca	White Spruce	10-12' ht.	As Shown	3
PS	Pinus strobus	White Pine	8-10' ht.	As Shown	3
Shrubs & Perennials					
CS	Cornus sericea	Red Twig Dogwood	3.5-4' ht.	10' O.C.	15
HV	Hamamelis virginiana	Witch Hazel	3.5-4' ht.	As Shown	15
IV	Ilex verticillata	Winterberry	3.5-4' ht.	As Shown	8
IP	Iris pseudacorus	Yellow Flag Iris	Tubers	As Shown	57
VC	Vaccinium corymbosum	Highbush Blueberry	3.5-4' ht.	As Shown	7
VD	Viburnum dentatum	Arrowwood	3.5-4' ht.	6' O.C.	9

Plant Notes:
1. Contractor to verify all plant quantities listed above and adjust if necessary.
2. All plants to be full and shall have branching and a shape characteristic of the species. All plants to be warranteed for a period of one year or two full growing seasons.
3. Provide 12" loamy topsoil around all rootballs. Mulch all plants with 2" shredded cedar bark to extents of plant pits.
4. Provide all deciduous trees with a slow release Greenscapes watering bag, 20 gal. capacity, or equal. Fill at planting and as necessary therafter, remove after warranty period.
5. Water all Conifers and Large Shrubs weekly during the first growing season and as needed after the first year.
6. Seed basin with ERNMX-122, mulch with EZ-Straw Seeding Mulch.

Existing winter view from west side of Greenwood Street towards location of proposed stromwater basin and building.

Mitigation plan prepared by Steve Marino, PWS
Tim Miller Associates, Inc.
Cold Spring, NY

Composite Landscape/Buffer Enhancement Plan
Envirogreen Associates
Town of Yorktown, Westchester County
Basemap Source: Site Design Consultants
January 3, 2019



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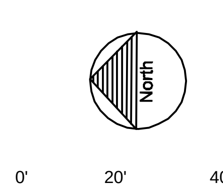
General Notes:
1. This drawing is for specification of plant material only.
2. All base data by others, no representation of accuracy is made or implied.
3. Contractor shall keep the site in a safe condition during construction, and thereafter the owner will maintain the site in a safe condition.



Graphic Scale

Stephen Lopez
Landscape Architect

Tim Miller Associates, Inc.
10 North Street, Cold Spring, NY 10516
(845) 265-4400, Fax: 265-4418

Landscape Design
2040 Greenwood Street
Town of Yorktown, Westchester County, NY
December 21, 2018

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