

COMPENSATORY WETLAND ENHANCEMENT SITES MONITORING REPORT

Maurice Rose Armed Forces Reserve Center
Boardman Lane Wetland Mitigation Site
Middletown, Connecticut



Headquarters, 99th Regional Support Command
5231 South Scott Plaza
Fort Dix, New Jersey 08640-5062

FALL 2014

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1.0 PROJECT OVERVIEW

This report presents the findings of wetland monitoring at two U.S. Army Reserve, 99th Regional Support Command (RSC) wetland mitigation sites located in Middletown, Connecticut. The U.S. Army Corps of Engineers (USACE), Baltimore District conducted monitoring in September 2014 on behalf of the 99th RSC.

The USACE, Louisville District constructed the Maurice Rose Armed Forces Reserve Center (AFRC) and accompanying support facilities on behalf of the U.S. Army Reserve in accordance with the Defense Base Realignment and Closure (BRAC) Act of 1990 (Public Law 101-510) and (“BRAC Commission”) recommendations. The Maurice Rose AFRC is located within nontidal wetlands on the 40-acre Cucia Park property located on Smith Street in Middletown, Connecticut. The USACE, New England District, Regulatory Branch issued a Department of the Army Individual Permit (NAE-2008-2372) to USACE, Louisville District in care of the 99th RSC. The permit was issued for impacts to 1.5 acres of nontidal wetlands. The permit is contingent upon compensatory wetlands mitigation to replace the lost functions and values of the impacted wetlands at the project site. This mitigation will be in the form of enhancement and invasive species control at both on-site and off-site locations (Appendix A, Figure 1).

The on-site mitigation project is identified as “Smith Street” and involves 0.75 acre of wetland and upland buffer enhancement plantings located adjacent to the impact areas. It also includes invasive vegetation species control and management within a 20-acre area neighboring Sawmill Brook (Appendix A, Figure 2). The off-site mitigation project, which is owned by the Middlesex Land Trust, but remains the responsibility of the 99th RSC, is identified as “Boardman Lane” and involves enhancement plantings and invasive species control within a 4-acre riparian area. It includes invasive species control and Box Turtle Habitat Management within a 10-acre area, both of which are identified as being grazed wet meadow (Appendix A, Figure 3).

The permit contains special conditions in the form of a wetland monitoring plan. This plan requires that both sites be routinely evaluated for a minimum of five years to ensure that the mitigation planting measures are successful and a minimum of 10 years to ensure the successful control of invasive species. The conditions further state that, periodic monitoring reports are to be prepared which contain information indicating an inventory of the health of the surviving plant enhancement planting species. The reports will include a percent aerial coverage of area to show if invasive species are being successfully controlled. The reports will also include representative photographs of the sites and the locations and orientation of each photograph, and a written plan to correct any deficiencies identified during the monitoring phase.

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2.0 REQUIREMENTS

It was established during the permit negotiation stage that the goal of the on-site and off-site mitigation projects was to replace the lost functions and values. This mitigation includes wildlife habitat, groundwater discharge, and water quality treatment of the non-tidal wetlands impacted at the project site, through enhancement activities being performed at the Smith Street and Boardman Lane project locations.

SMITH STREET (CUCIA PARK): The compensatory mitigation measures at the Smith Street site include 0.75 acre of wetland and upland buffer enhancement plantings and 20 acres of invasive vegetation species control and management. The planting plan includes a variety of species of native woody plantings and native seed mixes, in accordance with the enclosed planting plan prepared by AECOM, entitled: *Overview On-Site Mitigation Cucia Park, drawing number 4 of 6*, dated December 2009, which is included in the mitigation plan, entitled: *Integrated Wetland Resource Stewardship Plan, Armed Forces Reserve Center Project, On-site Mitigation Area, 375 Smith Street, Middletown, CT*, dated January 28, 2011 (Appendix A, Figure 4). The plantings of the shrubs species range in heights of between 18 inches to 24 inches, and the plantings of the sapling species range in heights of between 4 feet and 6 feet.

BOARDMAN LANE: The compensatory mitigation measures at the Boardman Lane site include permanent preservation of a 40-acre area consisting of 17 acres of wetlands and 23 acres of uplands. Within the 40-acre area, an existing 14-acre grazed wet meadow is being enhanced through the activities of native woody plantings and invasive species control within the riparian zone along a 4-acre area. Enhancement activities of invasive species control and Box Turtle and Squarrose Sedge Habitat Management within a 10-acre area will occur within the 14-acre grazed wet meadow. The habitat management involves not only invasive species control and management, but also appropriate mowing restrictions to provide conditions conducive to Box Turtle habitat. The planting plan includes a variety of native species of native woody plantings and native seed mixes, in accordance with the enclosed planting plan prepared by AECOM, entitled: *Planting Plan, Off-Site Mitigation, Boardman Lane, drawing number 2 of 6*, dated December 2009, which is included in the mitigation plan, entitled: *Integrated Wetland Resource Stewardship Plan, Armed Forces Reserve Center Project, Boardman Lane Off-site Mitigation Area, 218 Boardman Lane, Middletown, CT*, dated January 28, 2011 (Appendix A, Figure 5). The plantings of the shrubs species are approximately 18 inches in height, and the plantings of the sapling species range in heights of between 18 inches to 24 inches.

The invasive species control and management at both the Smith Street and Boardman Lane sites involves the removal of existing invasive species, as well as control of previously unobserved species. The invasive species include, but are not limited to, the removal and control of common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), autumn olive (*Elaeagnus sp.*), multiflora rose (*Rosa multiflora*), Oriental bittersweet (*Celastrus orbiculatus*), honeysuckle (*Lonicera sp.*), cattails (*Typha latifolia*, *Typha angustifolia*, *Typha glauca*), reed canary-grass (*Phalaris arundinacea*), Japanese knotweed (*Fallopia japonica*), Russian olive (*Elaeagnus angustifolia*), and smooth and common buckthorns (*Frangula alnus* and *Rhamnus frangula*).

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3.0 SUMMARY DATA

GENERAL SITE CONDITIONS

SMITH STREET (CUCIA PARK): The Smith Street mitigation enhancement project site is owned and operated by the 99th RSC. At this location, the Army has recently constructed the new Maurice Rose AFRC and accompanying support facilities. The AFRC consists of a five-story, approximately 164,000 square-foot training facility. Associated support facilities include an approximately 34,979-square foot Organizational Maintenance Shop and an approximately 3,886-square foot storage building. The combined facilities support approximately 900 personnel, to include reservists and civilians. The site is located on Smith Street in Middletown, Connecticut. Interstate 91 borders the east side of the site, while the western side of the site consists of Sawmill Brook and its bordering wetlands and floodplains. The site is surrounded by mixed land use, which includes commercial and industrial businesses, agriculture farm land, and residential properties. The site was selected due to the proximity of the project impacts, which occurred directly adjacent to the on-site vegetation restoration and invasive species control areas.

BOARDMAN LANE: The Boardman Lane mitigation enhancement project site is an approximately 40-acre site located north of Boardman Lane in Middletown, Connecticut in the Lower Connecticut River Watershed and encompasses reaches of Richards Brook and Sawmill Brook and their bordering floodplain wetlands. Much of the fields contain soils with hydric soil indicators (and are consistent with Wilbraham silt loam complex), and most of which is within the floodplain of the mentioned brooks. The floodplain wetlands extend over a significant area of the eastern portion of the site. The western portion of the site contains elevated landform, much of which is uplands. The 14-acre area where the mitigation activities are occurring is surrounded mainly by forested uplands to the west and north; forested and residential property immediately to the east, and developed commercial property further to the east; and residential property to the south bordering Boardman Lane. Although the 99th RSC is the responsible party for the Section 404 permit, the property where the Boardman Lane mitigation enhancement project site is located is owned by the Middlesex Land Trust who has a Cooperative Agreement with the 99th RSC allowing site access for work related to the Section 404 permit and required mitigation. The site is used by a diverse mix of wildlife typical to upland forest, forested wetlands and agricultural fields in Connecticut. Upland habitats on the site are comprised of mixed hardwood/coniferous forests, hardwood forests, scrub/shrub areas, old agricultural fields, pastureland and barnyard area. This site was selected because it offered the most preferred conditions of the alternatives investigated, and it is within the same watershed as the project site. Sufficient acreage exists at this site to achieve the mitigation ratios in accordance with USACE guidance.

As stated, the site visits occurred on 3 and 4 September 2014. At the time of the site visit, the vegetation was dense with leaf on conditions. The temperature was approximately 80 degrees Fahrenheit with sunny conditions. Precipitation events prior to the site visit were normal and typical for the season.

SITE VISIT FINDINGS

SMITH STREET (CUCIA PARK):

VEGETATION: The types of species planted within the 0.75-acre of buffer plantings appeared to be precise with the planting plan, with the exception of Planting Area 4 (Appendix C, Figure 1), which is identified on the planting plan as arrowwood (*Viburnum dentatum*); however, highbush blueberry (*Vaccinium corymbosum*) was observed within this planting area in absence of the arrowwood. This was not evident during the Fall 2013 monitoring due to the leaf-off conditions. Mulch has been placed throughout the planting area. The plantings included white pine (*Pinus strobus*), red cedar (*Juniperus virginiana*), mountain laurel (*Kalmia latifolia*), winterberry holly (*Ilex verticillata*), arrowwood, highbush blueberry and sweet pepperbush (*Clethra alnifolia*).

The findings of the site visit resulted in observation of sectors of dense herbaceous vegetation amid the plantings, which consisted primarily of invasive species, including, but not limited to, deer-tongue grass (*Dichanthelium clandestinum*), goldenrod (*Solidago* species), reed canary-grass, Japanese stiltgrass (*Microstegium vimineum*) and various other species. The overall aerial coverage of herbaceous volunteer species was approximately 75 percent with approximately 15 percent being invasive species. Deer-tongue grass and reed canary-grass were identified in somewhat dense quantities in and around the buffer planting areas of 1 and 2 (Appendix C, Figure 1).

The total numbers of plantings observed within each species designation area in accordance with the planting plan were identified. The total number of plantings identified did not precisely match the numbers listed on the planting plan. In some instances, there were more plantings of a particular species than what was stated on the planting plan, and in other instances, there were fewer. Due to the dense herbaceous vegetation, some of the plantings located near the outer limits of the buffer (adjacent to the invasive species control location) were not readily located until the dense vegetation was pushed aside. This being the case, it is likely that unobserved plantings are present, but obscured by the dense herbaceous vegetation.

The species of white pine, red cedar, winterberry holly, arrowwood, highbush blueberry and sweet pepperbush appeared to be predominantly healthy. Approximately three white pines had not survived, but the health of the existing live pines was positive with a high-expected survival rate. Of the mountain laurel plantings located, many appeared to have not survived, and others appeared to be losing leaves and branches dying off, although it is unclear as to why the mountain laurel is struggling. This species tolerates partial shade, however there is a stone wall directly adjacent to the buffer plantings which may be causing the area to receive only minimal sunlight. Additionally, it may be that the wall is blocking rainfall from adequately reaching the plantings below. The total number of dead and dying plantings has increased from the Fall 2013 monitoring.

New England Conservation Wildlife Mix, consisting of seeds of native species, was to be broadcast in the western corner of the planting plan between the red cedar and white pine. Vegetation was identified within the stated area and included, but is not limited to, goldenrod, fox sedge (*Carex Vulpinoidea*), soft rush (*Juncus effuses*), Japanese stiltgrass and other herbaceous species. Areal coverage of vegetation consisted of approximately 50 percent FACW and OBL species and 50 percent FAC and FACU species. Additionally, New England Wetmix, consisting of seeds of native species, was to be broadcast on the western side of the project between the arrowwood and highbush blueberry. This location is an existing wetland according to the project and mitigation

plan. A soil sample was also taken at this location (S1) (Appendix C, Figure 1). The soil exhibited a silty loam consistency, was saturated and was colored 7.5 YR 3/2 from 0 to 12+ inches with approximately 15 percent redox concentrations colored 7.5 Y/R 4/6. The findings of the soil profile, per the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, indicates this soil to be a hydric soil, which is consistent with the project and mitigation plans. Additional hydrology may be entering this location due to the geographic position of the wetland and adjacent slopes, which will further provide hydrology for the wetland and potentially expand the size of the wetland. The details of this investigation are documented on the enclosed Data Forms (Appendix A, Figure 6), and the location is indicated on the enclosed map (Appendix C, Figure 1). There were multiple wetland plant species observed within this area, to include but not limited to, yellow nutsedge (*Cyperus esculentus*), fox sedge, soft rush and other FACW, OBL, FAC and FACU species. The observed planting species totals are identified in Table 3-1.

Table 3-1: Plantings and Observations at Smith Street

Cover Type	Scientific Name	Common Name	Plantings	Observed
Trees	<i>Pinus strobus</i>	White pine	68	80
	<i>Juniperus virginiana</i>	Red cedar	39	45
Shrub	<i>Kalmia latifolia</i>	Mountain laurel	90	70
	<i>Ilex verticillata</i>	Winterberry holly	15	49
	<i>Viburnum dentatum</i>	Arrowwood	60	23
	<i>Vaccinium corymbnosum</i>	Highbush blueberry	105	69
	<i>Clethra alnifolia</i>	Sweet pepperbush	75	53
Seed Mix	New England Conservation Wildlife Mix			
	New England Wetmix (Wetland Seed Mix)			

The 20-acre area of invasive species control location was field surveyed at various representative locations to identify the presence of invasive species. Located in the western corner of the site was a large patch of common reed. The area appeared to have increased in size as compared to the Fall 2013 monitoring. Also identified sporadically within the site were canary reed-grass, multiflora rose, poison ivy (*Toxicodendron radicans*), greenbrier (*Smilax rotundifolia*) and deer-tongue grass. These species were not considered to be overtaking any areas within the site. Some of the listed species were adjacent to, and also within, the 0.75 buffer planting area with some areas somewhat being dense. For example, deer-tongue grass and reed canary-grass were identified in somewhat dense quantities in and around the buffer planting areas of 1 and 2 (Appendix C, Figure 1). A soil sample was taken at one location (S2) (Appendix C, Figure 1) within the invasive species control area as identified on the enclosed plan (Appendix C, Figure 1). The soil exhibited a silty loam consistency and was colored 10 YR 4/4 from 0 to 12+ inches with no redox concentrations. The findings of the soil profile, per the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, indicate that this soil is not a hydric soil, which is consistent with the plans included with the permit. The details of this investigation are documented on the enclosed Data Forms (Appendix A, Figure 7), and the location is indicated on the enclosed map (Appendix C, Figure 1).

The stormwater management facility, which was also part of the compensatory mitigation, appeared to be in compliance with the plans. The ponds were highly vegetated with hydrophytic vegetation, to include sedges, rushes and grasses. The ponds appeared to be functioning appropriately and

performing in accordance with the permit conditions, as is consistent with the findings of the Fall 2013 monitoring.

FISH and WILDLIFE: Vertebrate species identified during the site visit included a few species of birds. Conclusive identification of species was not able to be made due to the briefness of which the birds were located within the area. Various invertebrate species were observed, to include *Hymenoptera* species (sawflies, wasps, bees and ants), arthropod species and *Lepidoptera* species (butterflies and moths).

BOARDMAN LANE:

VEGETATION: According to the previous information provided by the Middlesex Land Trust representative, the plantings occurred during the 2011 growing season. Per the compensatory mitigation plan, an approximately 4-acre area was to be planted with a variety of plant species, to include shrubs and canopy cover woody plant species, as indicated on the enclosed plan (Appendix A, Figure 5). The conditions of the compensatory mitigation plan included the placement of mulch around the plantings. The overall site findings identified during the site visits consisted of a multitude of conditions. The conditions identified within the 4-acre planting area consisted of dense vegetation consisting of a significant amount of multiflora rose, *Solidago* species, bull thistle (*Cirsium vulgare*), common milkweed (*Asclepias syriaca*), New York ironweed (*Vernonia noveboracensis*) and others. The aerial coverage of herbaceous vegetation within the 4-acre enhancement planting area was approximately 95 percent with approximately 35 percent of the vegetation being invasive species. Approximately 25 woody plantings were identified, to include swamp white oak, red maple and pin oak (*Quercus palustris*). The swamp white oak was the most numerous of the observed plantings. The shrub plantings observed included silky dogwood (*Cornus amomum*) and elderberry (*Sambucus canadensis*) which is consistent with the planting plan. Few plantings were observed. The mentioned woody and shrub plantings were located somewhat outside of the prescribed locations identified on the planting plan. The health of the existing woody and shrub plantings appeared to be positive with a high expected survivability.

The findings of the Fall 2013 visit were that this section had been mowed. The Fall 2014 site visit resulted in findings that some of the partially cut plantings from the 2013 mowing were recovering and have a high survivability rate. However, this segment is significantly overtaken with invasive species which will likely cause the plantings to be negatively impacted. A soil sample was taken within this location (B1) (Appendix C, Figure 2). The soil exhibited a silty loam consistency and was colored 10 YR 4/4 from 0 to 12+ inches with no redox concentrations present. Also, no hydrology indicators were present. The details of this investigation are documented on the enclosed Data Forms (Appendix A, Figure 8), and the location is indicated on the enclosed map (Appendix C, Figure 2). Much of the site is identified as being a wet meadow which would indicate the conditions of wetlands exist, but the soil profile at this location did not exhibit wetland soil criteria.

As stated, the 4-acre area was to be planted with specific species and monitored for invasive species. In accordance with the planting plan, a hedgerow exists approximately midway through the enhancement planting areas (approximately 2 acres of enhancement plantings on the north and approximately 2 acres on the south side of the hedgerow). The section within the hedgerow was densely vegetated with similar herbaceous species, to include invasive species, as the previously mentioned, with the addition of reed canary-grass. The conditions of the approximately 2 acre enhancement planting area on the north side of the hedgerow exhibited similar conditions as the

southern section. A portion of this location had also been mowed per the Fall 2013 site visit. Woody species were not observed. Several shrub species were identified sporadically throughout this area, which included silky dogwood, arrowwood, and speckled alder (*Alnus rugosa*) and are listed on the planting plan. Autumn olive was also identified, which is considered to be an invasive species and should be eradicated. The aerial coverage of autumn olive within this area is approximately 10 percent. The silky dogwood plantings appeared to be the most numerous within this section. The plantings appeared to be healthy and would be expected to have a high survivability rate. However, the invasive species may affect this likelihood. The observed plantings species and totals are identified in Table 3-2.

Table 3-2: Plantings and Observations at Boardman Lane

Area	Cover Type	Scientific Name	Common Name	Plantings	Observed
Wet Meadow	Shrub	<i>Viburnum dentatum</i>	Arrowwood	55	10
		<i>Clethra alnifolia</i>	Sweet pepperbush	60	0
		<i>Vaccinium corybosum</i>	Highbush blueberry	75	0
		<i>Cornus amomum</i>	Silky dogwood	60	34
		<i>Salix discolor</i>	Pussy willow	95	0
		<i>Alnus rugosa</i>	Speckled alder	60	2
		<i>Sambucus canadensis</i>	Elderberry	55	5
PFO	Canopy	<i>Quercus palustris</i>	Pin oak	180	2
		<i>Acer rubrum</i>	Red maple	660	2
		<i>Populus deltoides</i>	Cottonwood	400	0
		<i>Acer saccharinum</i>	Silver maple	240	0
		<i>Quercus bicolor</i>	Swamp white oak	120	21
PFO Planting Cluster		Scientific Name	Common Name	Plantings	Observed
Type I		<i>Quercus palustris</i>	Pin oak	30	Identified Above
		<i>Acer rubrum</i>	Red maple	50	
		<i>Populus deltoides</i>	Cottonwood	20	
		<i>Acer saccharinum</i>	Silver maple	40	
		<i>Quercus bicolor</i>	Swamp white oak	20	
Type II		<i>Acer rubrum</i>	Red maple	90	
		<i>Populus deltoides</i>	Cottonwood	70	

The 10-acre area designated as Wet Meadow Grasslands Invasive Species Control and Box Turtle Habitat Management was to be mowed in accordance with specific timeframes (before April 1st and after October 31st). Approximately 1 acre +/- of this 10-acre area lies adjacent to the northernmost location of the enhancement planting area. This area was inundated with pockets of standing water and was vegetated with a variety of OBL, FAC and FACW vegetative species, which included, but not limited to, woolgrass (*Scirpus cyperinus*), Joe Pye weed (*Eutrochium purpureum*), reed canary-grass, common rush, common boneset (*Eupatorium perfoliatum*) and mountain mint (*Pycnanthemum virtinianum*). This area had not been mowed per the findings of the Fall 2013 site visit, but is included in the managed mowing section. Current conditions also show that the area has not been mowed recently, which is consistent with the time of year mowing restrictions. Drier conditions prevail within the remaining section of the 10-acre invasive species control area.

Few invasive species were identified within this area. Multiple herbaceous species identified include, but are not limited to, *Solidago* species, bull thistle, common milkweed, common boneset,

New York ironweed, knotweed species (*Polygonum*) and grass species. A soil sample was taken within the northern limits of the invasive species control area, and to the west of the enhancement planting area (B2) (Appendix C, Figure 2). The soil exhibited a silty loam consistency and was colored 10 YR 4/2 from 0 to 10 inches with approximately 10 percent redox concentrations colored 10 YR 5/8, and colored 10YR 5/2 from 10-12+ inches with approximately 10 percent redox concentrations colored 10YR 5/8. The findings of the soil profile, per the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, indicate this soil to be a hydric soil. The details of this investigation are documented on the enclosed Data Forms (Appendix A, Figure 8), and the location is indicated on the enclosed map (Appendix C, Figure 2).

FISH and WILDLIFE: Vertebrate species identified during the site visit of Boardman Lane included various birds briefly flying through the area and amphibians (toads and frogs). Invertebrates observed included *Hymenoptera* species (sawflies, wasps, bees and ants), arthropod species and *Lepidoptera* species (butterflies and moths).

4.0 CONCLUSIONS

SMITH STREET (CUCIA PARK): The majority of the on-site mitigation project appears to be in compliance with the compensatory mitigation planting plan and invasive species management. The plantings identified within the 0.75 buffer planting location correlated with the location and species listed on the planting plan, except for Planting Area 4 (Appendix C, Figure 1), which is identified on the planting plan as being arrowwood – site visit findings identified the plantings as being highbush blueberry. The plantings are doing well, so this is not viewed as negatively affecting the overall mitigation site. In some instances, there were more plantings of particular species than indicated on the planting plan. In other instances, the total number of located plantings of some species was fewer than what is listed on the planting plan, however, it is predicted that the plantings were present, but just difficult to locate due to the dense vegetation. The majority of plantings were healthy and appeared to be thriving with an expected high rate of survivability. However, the majority of the mountain laurel plantings were dead or dying with a low expected survivability of the remaining plantings based on the conditions of the others. Invasive species, to include reed canary-grass, multiflora rose, poison ivy, deer-tongue grass and greenbrier, were identified adjacent to the buffer planting area and within the invasive species control area. These invasive species did not appear to be overtaking the area. There was a large stand of common reed located within the invasive species management area which appears to have increased in size since the Fall 2013 site visit. Sections of the planting areas were consumed by herbaceous vegetation, such as deer-tongue grass, *Solidago* species and others. If not controlled, these species may hinder the survivability of the deciduous planting species by spreading and choking the plantings.

Recommended actions include:

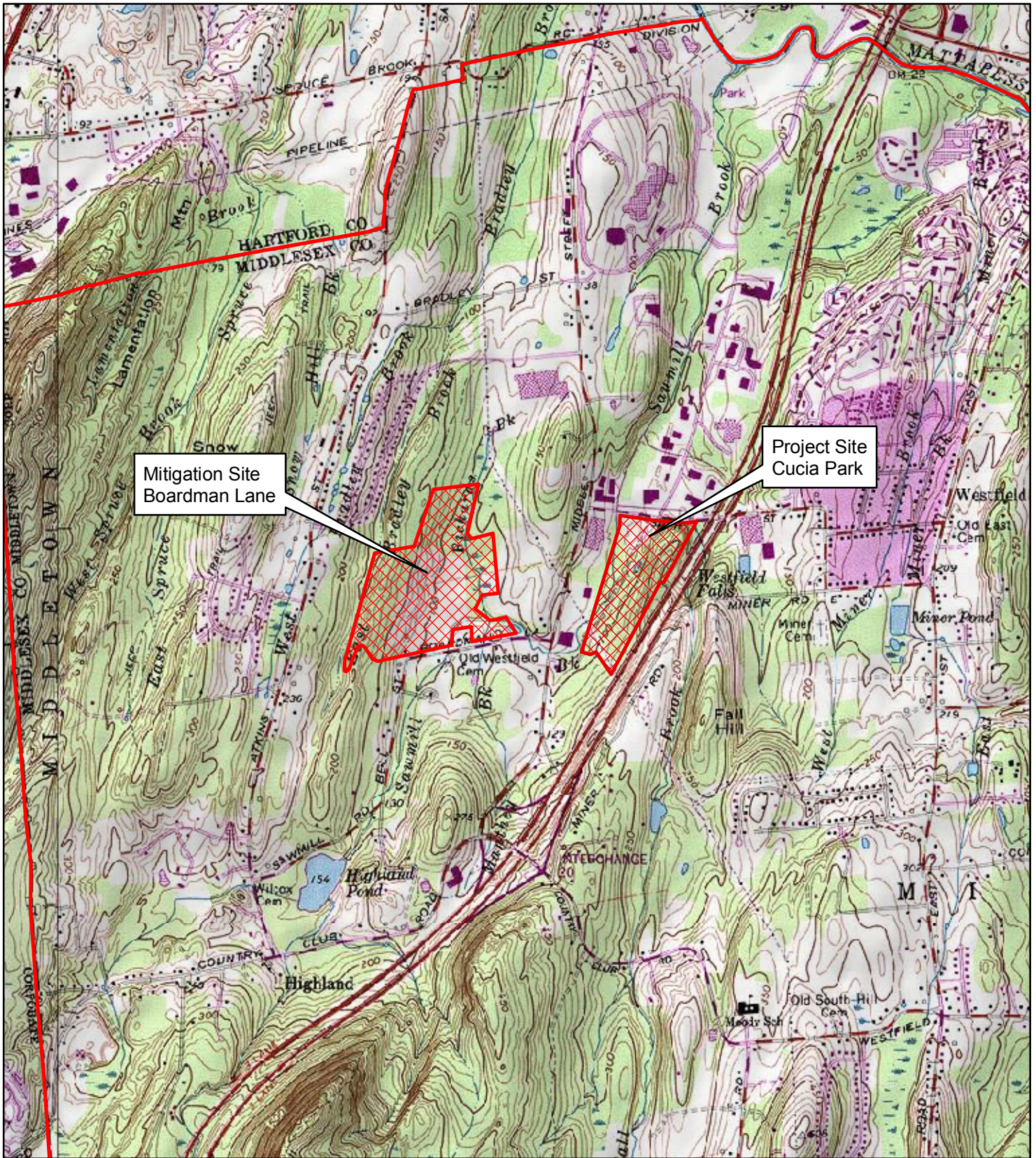
1. Evaluate the plantings, and replace the plantings that did not survive in accordance with the planting plan (Appendix A, Figure 4).
2. Eradicate the common reed stand located to the southwest of the buffer plantings area and as indicated on the enclosed map (Appendix C, Figure 1). The stand can be seen in the photos taken at the site identified as Photo 53 and Photo 54.
3. Eliminate the invasive species identified within and adjacent to the buffer plantings.
4. Continue regular monitoring to ensure removal of invasive species and survival of buffer plantings.

BOARDMAN LANE: The off-site mitigation site is not in compliance. Assuming that the site was planted in accordance with the mitigation plans, many of the plantings are no longer present and may have been eliminated by mowing or invasive species. There were some canopy and shrub enhancement plantings observed within the southern approximately 2-acre area (south of the hedgerow); however, invasive species were engulfing this section. Only shrub plantings were observed in the northern approximately 2-acre section of enhancement planting area (north of the hedgerow). This area was also predominantly vegetated with invasive species. The 10-acre invasive species control and mowing management area appeared to be in accordance with the compensatory mitigation plan. No mowing had occurred, which is consistent with the mitigation plan. Also, invasive species were not as predominant within this section from the Fall 2013 site visit.

Recommended actions include:

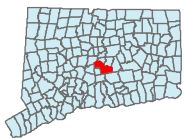
1. Locate the surviving plantings within the entire 4-acre enhancement planting area.
 - a. Place mulch around the surviving plantings in accordance with the permit special conditions.
 - b. Replace the plant species, which did not survive or were mowed, in accordance with the planting plan and instructions as indicated on the enclosed plan (Appendix A, Figure 5).
 - c. Clearly mark the enhancement planting area to protect the area from mowing. To do so, the perimeter of the enhancement planting area should be demarcated in the field in a manner that is easily identifiable for monitoring purposes and compliance inspections and shows at a minimum four points on each side of the enhancement area.
2. Eradicate the invasive species identified within the enhancement planting area after all surviving plantings have been located and mulch has been placed around.
3. In accordance with the recommended actions per the Fall 2013 Monitoring Plan, evaluate the area at the northeast limit of the invasive species control and managed mowing area to determine if this area should remain unmowed due to the wet conditions, or if this area should be mowed in accordance with the mitigation plan and in accordance with the New England District Corps Regulatory Branch.
4. Monitor the site on a regular basis to ensure survivability of plantings and control of invasive species.

Appendix A
Maps and Datasheets



Mitigation Site
Boardman Lane

Project Site
Cucia Park



Source: USGS Quadrangle Middletown CT

Coordinate System: NAD 1983,
State Plane Connecticut
FIPS 0600 Feet



1 inch = 2,000 feet

Site Locus BRAC Realignment Middletown, CT

AECOM

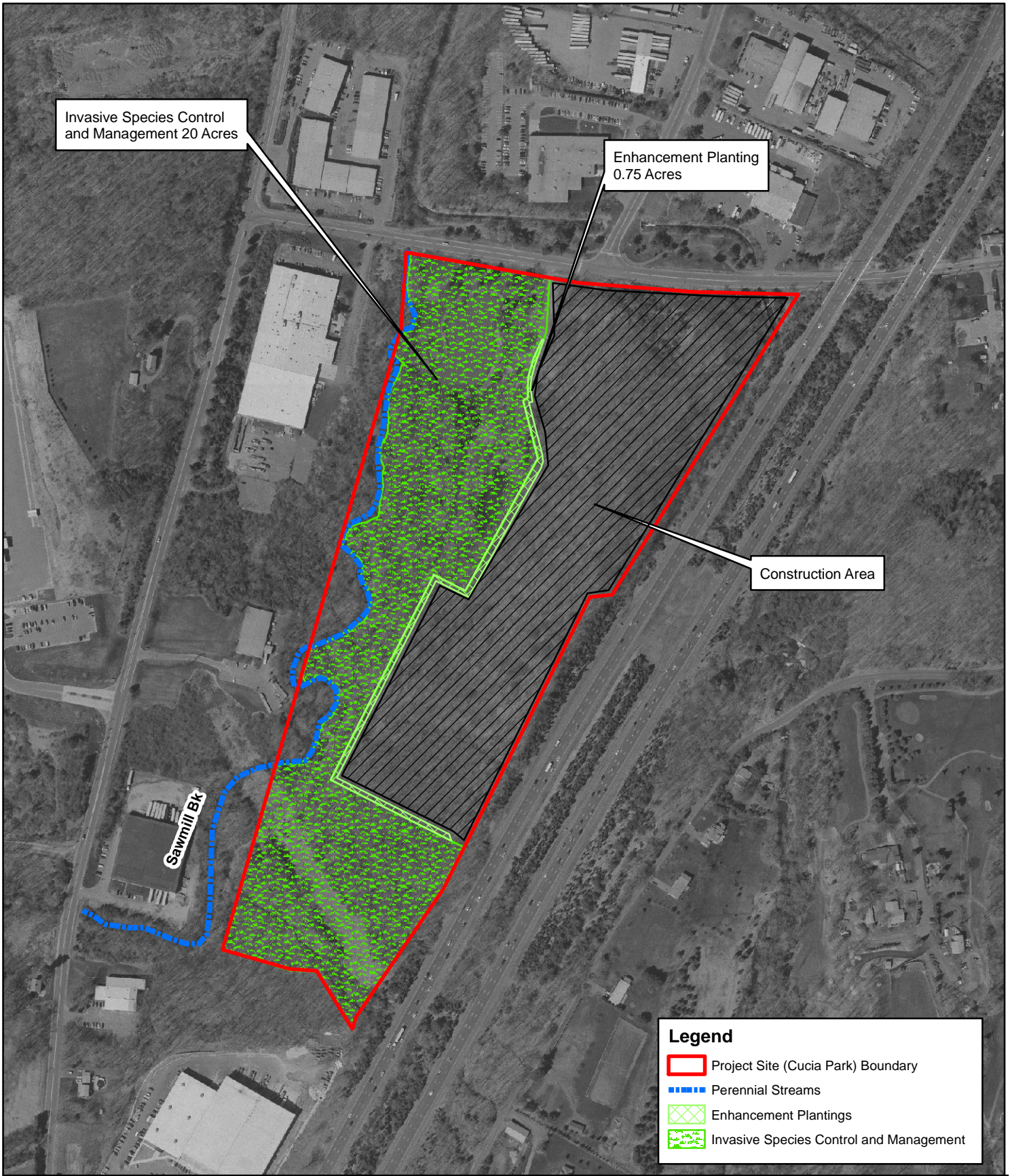
Figure Number

1

SCALE
1:3,600

DATE
12/09

PROJECT NO.
60140125



Invasive Species Control and Management 20 Acres


Enhancement Planting 0.75 Acres

Construction Area

Sawmill Bk

Legend

- Project Site (Cucia Park) Boundary
- Perennial Streams
- Enhancement Plantings
- Invasive Species Control and Management



Source: CT Ortho Photograph
 Coordinate System: NAD 1927, State Plane Connecticut
 FIPS 0600 Feet

N

1 inch = 400 feet

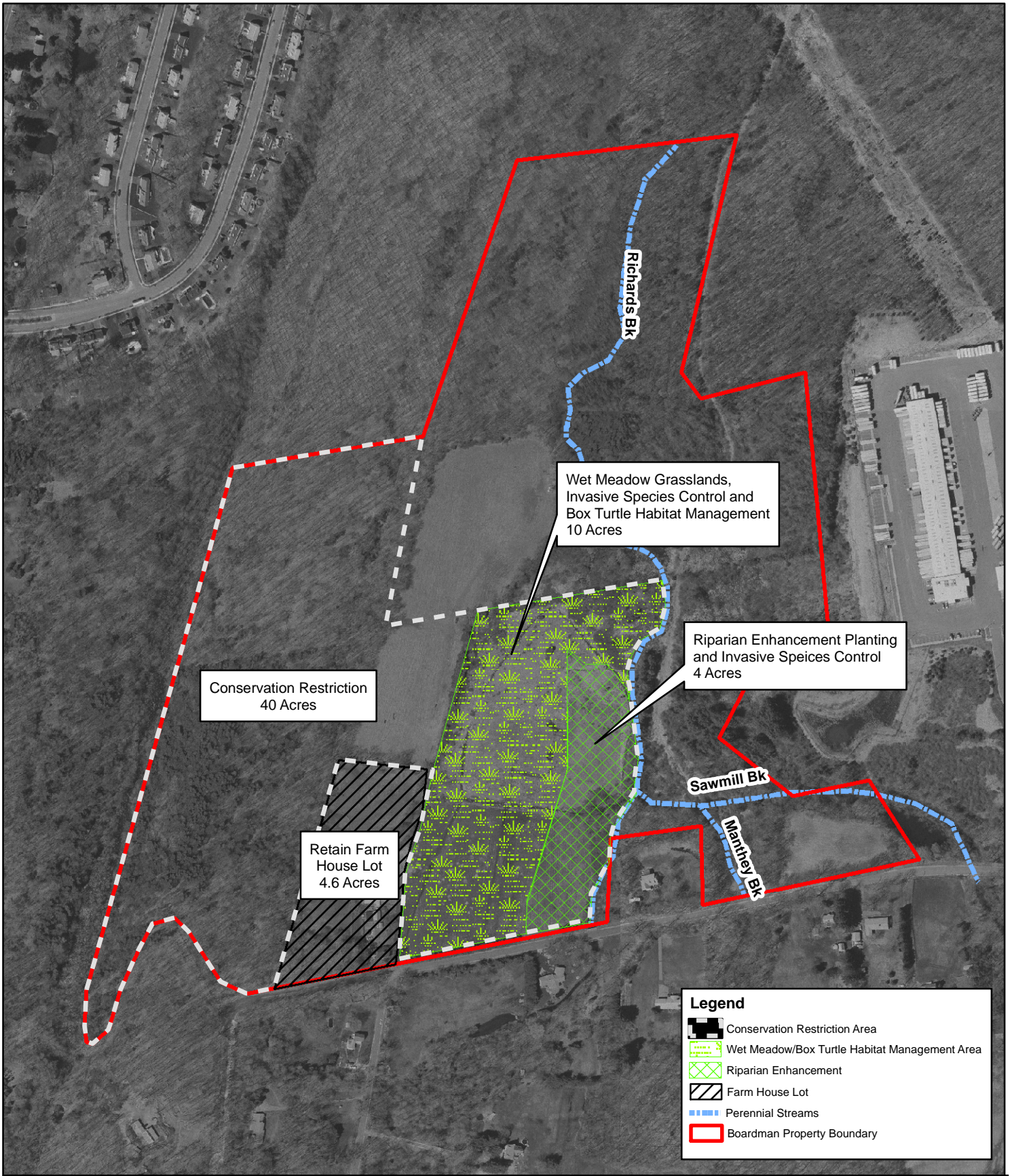
**BRAC Realignment
 Project Site Cucia Park On-Site
 Mitigation Plan
 Middletown, CT**

SCALE	DATE	PROJECT NO.
1:4,800	12/09	60140125

AECOM

Figure Number

2



Source: CT Ortho Photograph

Coordinate System: NAD 1927,
State Plane Connecticut
FIPS 0600 Feet

1 inch = 400 feet

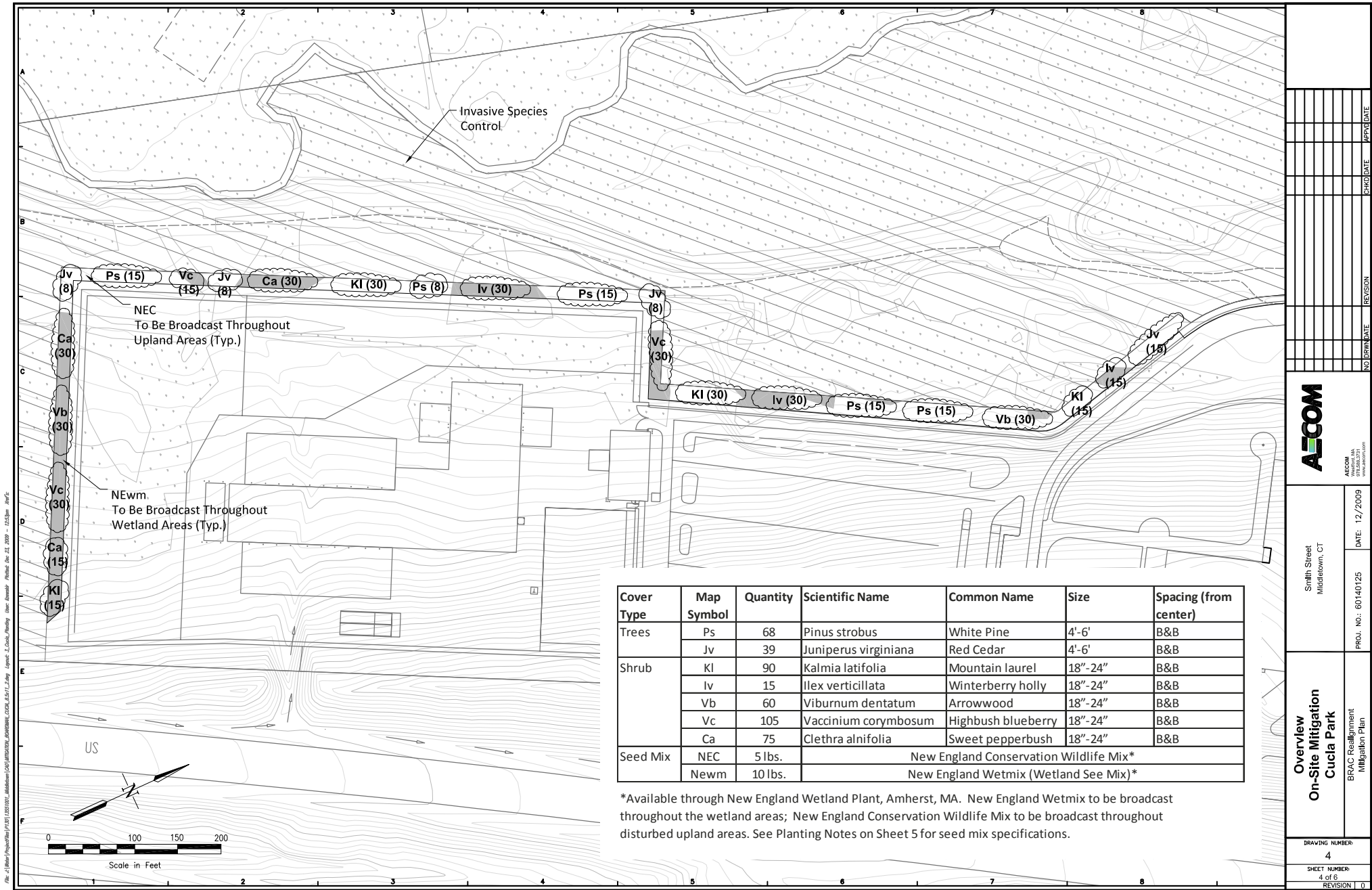
**BRAC Realignment
Boardman Lane Off-Site
Mitigation Plan
Middletown, CT**

SCALE	DATE	PROJECT NO.
1:4,800	6/2010	60140125

AECOM

Figure Number

2



Cover Type	Map Symbol	Quantity	Scientific Name	Common Name	Size	Spacing (from center)
Trees	Ps	68	<i>Pinus strobus</i>	White Pine	4'-6'	B&B
	Jv	39	<i>Juniperus virginiana</i>	Red Cedar	4'-6'	B&B
Shrub	Kl	90	<i>Kalmia latifolia</i>	Mountain laurel	18"-24"	B&B
	Iv	15	<i>Ilex verticillata</i>	Winterberry holly	18"-24"	B&B
	Vb	60	<i>Viburnum dentatum</i>	Arrowwood	18"-24"	B&B
	Vc	105	<i>Vaccinium corymbosum</i>	Highbush blueberry	18"-24"	B&B
	Ca	75	<i>Clethra alnifolia</i>	Sweet pepperbush	18"-24"	B&B
Seed Mix	NEC	5 lbs.	New England Conservation Wildlife Mix*			
	Newm	10 lbs.	New England Wetmix (Wetland See Mix)*			

*Available through New England Wetland Plant, Amherst, MA. New England Wetmix to be broadcast throughout the wetland areas; New England Conservation Wildlife Mix to be broadcast throughout disturbed upland areas. See Planting Notes on Sheet 5 for seed mix specifications.

File: J:\Bids\Proposals\113113\113113.dwg Address: C:\ProgramData\AutoCAD 2009\CTB\acad.ctb Plot: A3-24in.dwg User: jason.L.Chase Date: 12/21/2009 11:53am

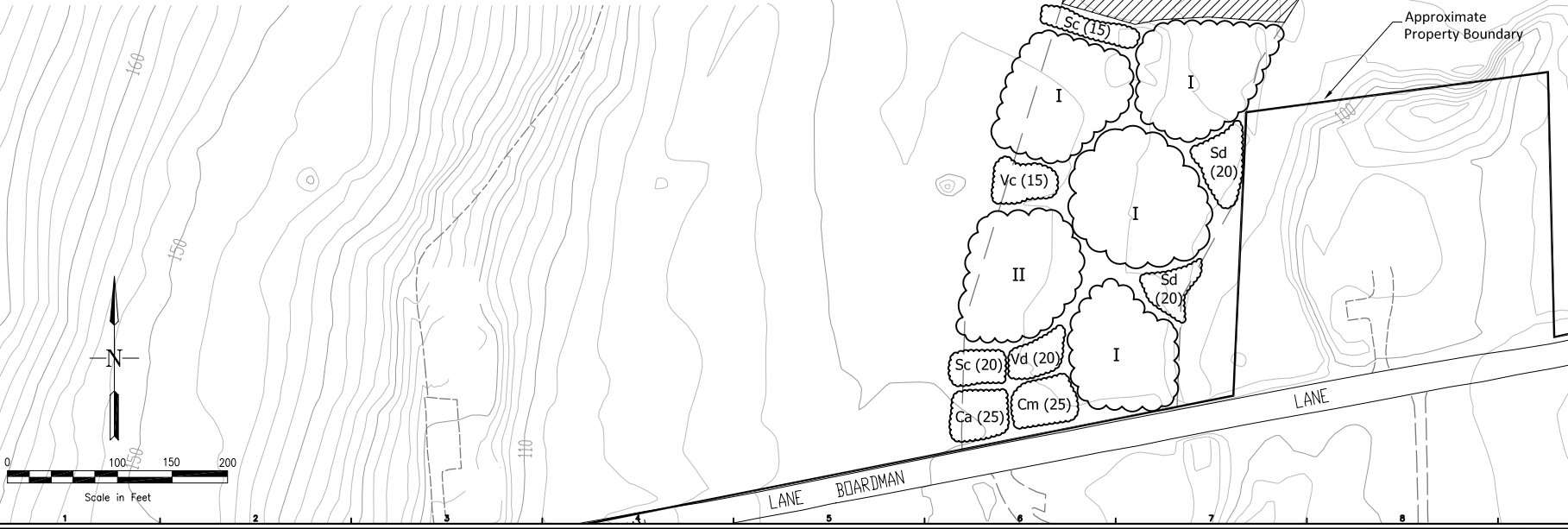
		3rd Street Middletown, CT		DATE: 12/2009
		PROJ. NO.: 60140125		REVISION:
Overview On-Site Mitigation Cucla Park		BRAC Realignment Mitigation Plan		DRAWING NUMBER: 4
				SHEET NUMBER: 4 of 6
				REVISION:

APPENDIX A - FIGURE 4

File: \\nas01\proj\proj\proj\110112\110112.dwg; Address: \\nas01\proj\proj\proj\110112\110112.dwg; User: jason@ac.com; Plot Date: 12/20/09; 11:23am; Job:

Area	Cover Type	Map Symbol	Quantity	Scientific Name	Common Name	Size	Spacing (from center)
Wet Meadow	Shrub	Vd	55	<i>Viburnum dentatum</i>	arrowwood	18" (container)	
		Ca	60	<i>Clethra alnifolia</i>	sweet pepperbush	18" (container)	
		Vc	75	<i>Vaccinium corybosum</i>	highbush blueberry	18" (container)	
		Cm	60	<i>Cornus amomum</i>	silky dogwood	18" (container)	
		Sd	95	<i>Salix discolor</i>	Pussy willow	18" (container)	
		Ar	60	<i>Alnus rugosa</i>	Speckled alder	18" (container)	
		Sc	55	<i>Sambucus canadensis</i>	Elderberry	18" (container)	
PFO	Canopy	Qp	180	<i>Quercus palustris</i>	Pin oak	18"-24"	8'-10'
		Ar	660	<i>Acre rubrum</i>	Red maple	18"-24"	8'-10'
		Pd	400	<i>Populus deltoides</i>	Cottonwood	18"-24"	8'-10'
		As	240	<i>Acer saccharinum</i>	Silver maple	18"-24"	8'-10'
		Qb	120	<i>Quercus bicolor</i>	Swamp white oak	18"-24"	8'-10'

PFO Planting Cluster	Map Symbol	Tree Symbol	Quantity Per Cluster	Scientific Name	Common Name
Type I	I	Qp	30	<i>Quercus palustris</i>	Pin oak
		Ar	50	<i>Acre rubrum</i>	Red maple
		Pd	20	<i>Populus deltoides</i>	Cottonwood
		As	40	<i>Acer saccharinum</i>	Silver maple
		Qb	20	<i>Quercus bicolor</i>	Swamp white oak
Type II	II	Ar	90	<i>Acre rubrum</i>	Red maple
		Pd	70	<i>Populus deltoides</i>	Cottonwood



NO.	DATE	REVISION	APPROVED

AECOM
INCORPORATED
 275 WALTON ST
 WASHINGTON DC 20007

Boardman Lane
 Middletown, CT
 PROJ. NO.: 60140125
 DATE: 12/2009

**Planting Plan
 Off-Site Mitigation
 Boardman Lane**
 BRAC Realignment
 Mitigation Plan

DRAWING NUMBER:
 2
 SHEET NUMBER:
 2 of 6
 REVISION: 0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Smith Street Site City/County: Middletown, Middlesex Sampling Date: 9-3-2014
 Applicant/Owner: 99th RSC State: CT Sampling Point: S1
 Investigator(s): Tarrie Ostrofsky Section, Township, Range: _____
 Landform (hillside, terrace, etc.): flat area adjacent to structure Local relief (concave, convex, none): none Slope (%): 0-10%
 Subregion (LRR or MLRA): LRR R Lat: 41.579228 Long: -72.719197 Datum: NAD83
 Soil Map Unit Name: Wilbraham and Menlo NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
---	---

Remarks: (Explain alternative procedures here or in a separate report.)
 The sampling site is located adjacent to a large building. A portion of the wetland was permanently impacted per a USACE permit. The impact does not appear to have affected the wetland at the sampling site.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) <u>X</u> Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
---	--

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0-12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Soils were saturated to 12 inches.

VEGETATION – Use scientific names of plants.

Sampling Point: S1

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Acer rubrum</i></u>	<u>25</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 5 </u> (A) Total Number of Dominant Species Across All Strata: <u> 5 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 100.0% </u> (A/B) Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u> 20 </u></td> <td>x 1 = <u> 20 </u></td> </tr> <tr> <td>FACW species <u> 10 </u></td> <td>x 2 = <u> 20 </u></td> </tr> <tr> <td>FAC species <u> 40 </u></td> <td>x 3 = <u> 120 </u></td> </tr> <tr> <td>FACU species <u> 0 </u></td> <td>x 4 = <u> 0 </u></td> </tr> <tr> <td>UPL species <u> 0 </u></td> <td>x 5 = <u> 0 </u></td> </tr> <tr> <td>Column Totals: <u> 70 </u> (A)</td> <td><u> 160 </u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u> 2.29 </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> 20 </u>	x 1 = <u> 20 </u>	FACW species <u> 10 </u>	x 2 = <u> 20 </u>	FAC species <u> 40 </u>	x 3 = <u> 120 </u>	FACU species <u> 0 </u>	x 4 = <u> 0 </u>	UPL species <u> 0 </u>	x 5 = <u> 0 </u>	Column Totals: <u> 70 </u> (A)	<u> 160 </u> (B)	Prevalence Index = B/A = <u> 2.29 </u>	
Total % Cover of:	Multiply by:																			
OBL species <u> 20 </u>	x 1 = <u> 20 </u>																			
FACW species <u> 10 </u>	x 2 = <u> 20 </u>																			
FAC species <u> 40 </u>	x 3 = <u> 120 </u>																			
FACU species <u> 0 </u>	x 4 = <u> 0 </u>																			
UPL species <u> 0 </u>	x 5 = <u> 0 </u>																			
Column Totals: <u> 70 </u> (A)	<u> 160 </u> (B)																			
Prevalence Index = B/A = <u> 2.29 </u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>25</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Viburnum dentatum</i></u>	<u>10</u>	Yes	FAC	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is $\leq 3.0^1$ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>10</u> =Total Cover																				
Herb Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Juncus effusus</i></u>	<u>10</u>	Yes	OBL	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u> X </u> No <u> </u>																
2. <u><i>Cyperus esculentus</i></u>	<u>5</u>	No	FACW																	
3. <u><i>Carex vulpinoidea</i></u>	<u>10</u>	Yes	OBL																	
4. <u><i>Dichanthelium clandestinum</i></u>	<u>5</u>	No	FACW																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>30</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Toxicodendron radicans</i></u>	<u>5</u>	Yes	FAC																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
<u>5</u> =Total Cover																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: S1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12+	7.5YR 3/2	90	7.5YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> High Chroma Sands (S11) (LRR K, L) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Marl (F10) (LRR K, L) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stripped Matrix (S6) | | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Dark Surface (S7) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Smith Street Site City/County: Middletown, Middlesex Sampling Date: 9-3-2014
 Applicant/Owner: 99th RSC State: CT Sampling Point: S2
 Investigator(s): Tarrie Ostrofsky Section, Township, Range: _____
 Landform (hillside, terrace, etc.): flat, wooded area Local relief (concave, convex, none): none Slope (%): 0-10%
 Subregion (LRR or MLRA): LRR R Lat: 41.582439 Long: -72.718699 Datum: NAD83
 Soil Map Unit Name: Wilbraham and Menlo NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
---	---

Remarks: (Explain alternative procedures here or in a separate report.)
 The sampling site is located near but not adjacent to the 99th RSC building. The sampling site is located within the invasive species control area.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
---	---

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Soils were dry.

VEGETATION – Use scientific names of plants.

Sampling Point: S2

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Acer rubrum</i></u>	25	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 5 </u> (A) Total Number of Dominant Species Across All Strata: <u> 8 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 62.5% </u> (A/B)																
2. <u><i>Quercus palustris</i></u>	5	No	FACW																	
3. <u><i>Juniperus virginiana</i></u>	5	No	FACU																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	35	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;">Total % Cover of:</th> <th style="width:50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u> 0 </u></td> <td>x 1 = <u> 0 </u></td> </tr> <tr> <td>FACW species <u> 5 </u></td> <td>x 2 = <u> 10 </u></td> </tr> <tr> <td>FAC species <u> 65 </u></td> <td>x 3 = <u> 195 </u></td> </tr> <tr> <td>FACU species <u> 30 </u></td> <td>x 4 = <u> 120 </u></td> </tr> <tr> <td>UPL species <u> 0 </u></td> <td>x 5 = <u> 0 </u></td> </tr> <tr> <td>Column Totals: <u> 100 </u> (A)</td> <td><u> 325 </u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u> 3.25 </u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u> 0 </u>	x 1 = <u> 0 </u>	FACW species <u> 5 </u>	x 2 = <u> 10 </u>	FAC species <u> 65 </u>	x 3 = <u> 195 </u>	FACU species <u> 30 </u>	x 4 = <u> 120 </u>	UPL species <u> 0 </u>	x 5 = <u> 0 </u>	Column Totals: <u> 100 </u> (A)	<u> 325 </u> (B)	Prevalence Index = B/A = <u> 3.25 </u>	
Total % Cover of:	Multiply by:																			
OBL species <u> 0 </u>	x 1 = <u> 0 </u>																			
FACW species <u> 5 </u>	x 2 = <u> 10 </u>																			
FAC species <u> 65 </u>	x 3 = <u> 195 </u>																			
FACU species <u> 30 </u>	x 4 = <u> 120 </u>																			
UPL species <u> 0 </u>	x 5 = <u> 0 </u>																			
Column Totals: <u> 100 </u> (A)	<u> 325 </u> (B)																			
Prevalence Index = B/A = <u> 3.25 </u>																				
Sapling/Shrub Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Viburnum dentatum</i></u>	10	Yes	FAC																	
2. <u><i>Frangula alnus</i></u>	5	Yes	FAC																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	15	=Total Cover																		
Herb Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Lonicera japonica</i></u>	10	Yes	FACU	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> X </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u><i>Microstegium vimineum</i></u>	15	Yes	FAC																	
3. <u><i>Rosa multiflora</i></u>	10	Yes	FACU																	
4. <u><i>Solidago species</i></u>	5	No																		
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	40	=Total Cover																		
Woody Vine Stratum (Plot size: <u>15-foot radius</u>)																				
1. <u><i>Toxicodendron radicans</i></u>	10	Yes	FAC	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. <u><i>Parthenocissus quinquefolia</i></u>	5	Yes	FACU																	
3. _____																				
4. _____																				
	15	=Total Cover																		
Hydrophytic Vegetation Present? Yes <u> X </u> No <u> </u>																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: S2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12+	7.5YR 3/3	90					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Histic Epipedon (A2)
- Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Hydrogen Sulfide (A4) High Chroma Sands (S11) (LRR K, L)
- Stratified Layers (A5) Loamy Mucky Mineral (F1) (LRR K, L)
- Depleted Below Dark Surface (A11) Loamy Gleyed Matrix (F2)
- Thick Dark Surface (A12) Depleted Matrix (F3)
- Sandy Mucky Mineral (S1) Redox Dark Surface (F6)
- Sandy Gleyed Matrix (S4) Depleted Dark Surface (F7)
- Sandy Redox (S5) Redox Depressions (F8)
- Stripped Matrix (S6) Marl (F10) (LRR K, L)
- Dark Surface (S7)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Boardman Lane Site City/County: Middletown, Middlesex Sampling Date: 9-3-2014
 Applicant/Owner: 99th RSC State: CT Sampling Point: B1
 Investigator(s): Tarrie Ostrofsky Section, Township, Range: _____
 Landform (hillside, terrace, etc.): flat meadow Local relief (concave, convex, none): none Slope (%): 0-10%
 Subregion (LRR or MLRA): LRR R Lat: 41.578844 Long: -72.728506 Datum: NAD83
 Soil Map Unit Name: Wilbraham and Menlo NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Site is located within the enhancement planting area.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Soils were dry.	

VEGETATION – Use scientific names of plants.

Sampling Point: B1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>15-foot radius</u>)				
1.	_____	_____	_____	
2.	_____	_____	_____	
3.	_____	_____	_____	
4.	_____	_____	_____	
5.	_____	_____	_____	
6.	_____	_____	_____	
7.	_____	_____	_____	
	_____	=Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15-foot radius</u>)				
1.	<u>Quercus bicolor</u>	10	Yes	FACW
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
	_____	=Total Cover		
Herb Stratum (Plot size: <u>15-foot radius</u>)				
1.	<u>Lonicera japonica</u>	5	No	FACW
2.	<u>Cirsium vulgare</u>	15	Yes	FAC
3.	<u>Rosa multiflora</u>	20	Yes	FACU
4.	<u>Solidago species</u>	10	No	_____
5.	<u>Asclepias syriaca</u>	10	No	UPL
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
	_____	=Total Cover		
Woody Vine Stratum (Plot size: <u>15-foot radius</u>)				
1.	<u>Toxicodendron radicans</u>	10	Yes	FAC
2.	<u>Parthenocissus quinquefolia</u>	5	Yes	FACU
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
	_____	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	<u> 0 </u>	x 1 =	<u> 0 </u>
FACW species	<u> 15 </u>	x 2 =	<u> 30 </u>
FAC species	<u> 25 </u>	x 3 =	<u> 75 </u>
FACU species	<u> 25 </u>	x 4 =	<u> 100 </u>
UPL species	<u> 10 </u>	x 5 =	<u> 50 </u>
Column Totals:	<u> 75 </u> (A)		<u> 255 </u> (B)
Prevalence Index = B/A =			<u> 3.40 </u>

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

 X 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12+	10YR 4/4	90					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Histic Epipedon (A2) Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Black Histic (A3) High Chroma Sands (S11) (LRR K, L)
- Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (LRR K, L)
- Stratified Layers (A5) Loamy Gleyed Matrix (F2)
- Depleted Below Dark Surface (A11) Depleted Matrix (F3)
- Thick Dark Surface (A12) Redox Dark Surface (F6)
- Sandy Mucky Mineral (S1) Depleted Dark Surface (F7)
- Sandy Gleyed Matrix (S4) Redox Depressions (F8)
- Sandy Redox (S5) Marl (F10) (LRR K, L)
- Stripped Matrix (S6)
- Dark Surface (S7)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Boardman Lane Site City/County: Middletown, Middlesex Sampling Date: 9-3-2014
 Applicant/Owner: 99th RSC State: CT Sampling Point: B2
 Investigator(s): Tarrie Ostrofsky Section, Township, Range: _____
 Landform (hillside, terrace, etc.): flat meadow Local relief (concave, convex, none): none Slope (%): 0-10%
 Subregion (LRR or MLRA): LRR R Lat: 41.580988 Long: -72.728444 Datum: NAD83
 Soil Map Unit Name: Wilbraham and Menlo NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Site is located within the enhancement planting area.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Water-Stained Leaves (B9) ___ High Water Table (A2) ___ Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ___ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes ___ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No ___ Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Soils were saturated.	

VEGETATION – Use scientific names of plants.

Sampling Point: B2

	Absolute % Cover	Dominant Species?	Indicator Status																										
Tree Stratum (Plot size: <u>15-foot radius</u>)																													
1.	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 3 </u> (A) Total Number of Dominant Species Across All Strata: <u> 4 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 75.0% </u> (A/B)																									
2.	_____	_____	_____																										
3.	_____	_____	_____																										
4.	_____	_____	_____																										
5.	_____	_____	_____																										
6.	_____	_____	_____																										
7.	_____	_____	_____																										
			=Total Cover	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:30%;"></td> <td style="width:30%; text-align:center">Total % Cover of:</td> <td style="width:30%; text-align:center">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td style="text-align:center"><u> 30 </u></td> <td style="text-align:center">x 1 = <u> 30 </u></td> </tr> <tr> <td>FACW species</td> <td style="text-align:center"><u> 30 </u></td> <td style="text-align:center">x 2 = <u> 60 </u></td> </tr> <tr> <td>FAC species</td> <td style="text-align:center"><u> 0 </u></td> <td style="text-align:center">x 3 = <u> 0 </u></td> </tr> <tr> <td>FACU species</td> <td style="text-align:center"><u> 0 </u></td> <td style="text-align:center">x 4 = <u> 0 </u></td> </tr> <tr> <td>UPL species</td> <td style="text-align:center"><u> 0 </u></td> <td style="text-align:center">x 5 = <u> 0 </u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align:center"><u> 60 </u> (A)</td> <td style="text-align:center"><u> 90 </u> (B)</td> </tr> <tr> <td colspan="3"></td> <td style="text-align:right">Prevalence Index = B/A = <u> 1.50 </u></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species	<u> 30 </u>	x 1 = <u> 30 </u>	FACW species	<u> 30 </u>	x 2 = <u> 60 </u>	FAC species	<u> 0 </u>	x 3 = <u> 0 </u>	FACU species	<u> 0 </u>	x 4 = <u> 0 </u>	UPL species	<u> 0 </u>	x 5 = <u> 0 </u>	Column Totals:	<u> 60 </u> (A)	<u> 90 </u> (B)				Prevalence Index = B/A = <u> 1.50 </u>
	Total % Cover of:	Multiply by:																											
OBL species	<u> 30 </u>	x 1 = <u> 30 </u>																											
FACW species	<u> 30 </u>	x 2 = <u> 60 </u>																											
FAC species	<u> 0 </u>	x 3 = <u> 0 </u>																											
FACU species	<u> 0 </u>	x 4 = <u> 0 </u>																											
UPL species	<u> 0 </u>	x 5 = <u> 0 </u>																											
Column Totals:	<u> 60 </u> (A)	<u> 90 </u> (B)																											
			Prevalence Index = B/A = <u> 1.50 </u>																										
Sapling/Shrub Stratum (Plot size: <u>15-foot radius</u>)																													
1.	<u> <i>Quercus bicolor</i> </u>	10	Yes	FACW																									
2.	<u> <i>Cornus amomum</i> </u>	10	Yes	FACW																									
3.	<u> <i>Sambucus canadensis</i> </u>	5	Yes	FACW																									
4.	_____	_____	_____																										
5.	_____	_____	_____																										
6.	_____	_____	_____																										
7.	_____	_____	_____																										
			=Total Cover																										
Herb Stratum (Plot size: <u>15-foot radius</u>)																													
1.	<u> <i>Lonicera japonica</i> </u>	5	No	FACW																									
2.	<u> <i>Juncus effusus</i> </u>	15	No	OBL																									
3.	<u> <i>Carex stipata</i> </u>	5	No	OBL																									
4.	<u> <i>Solidago species</i> </u>	10	No																										
5.	<u> <i>Asclepias incarnata</i> </u>	10	No	OBL																									
6.	<u> <i>Panicum species</i> </u>	50	Yes																										
7.	_____	_____	_____																										
8.	_____	_____	_____																										
9.	_____	_____	_____																										
10.	_____	_____	_____																										
11.	_____	_____	_____																										
12.	_____	_____	_____																										
			=Total Cover																										
Woody Vine Stratum (Plot size: <u>15-foot radius</u>)																													
1.	_____	_____	_____																										
2.	_____	_____	_____																										
3.	_____	_____	_____																										
4.	_____	_____	_____																										
			=Total Cover																										

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: **B2**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 4/2	90	10YR 5/8	10	C	M	Loamy/Clayey	Prominent redox concentrations
10-12+	10YR 5/2	80	10YR 5/8	10	C	M	Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) (LRR R, **MLRA 149B**)
- Thin Dark Surface (S9) (LRR R, **MLRA 149B**)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, **MLRA 149B**)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No _____

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

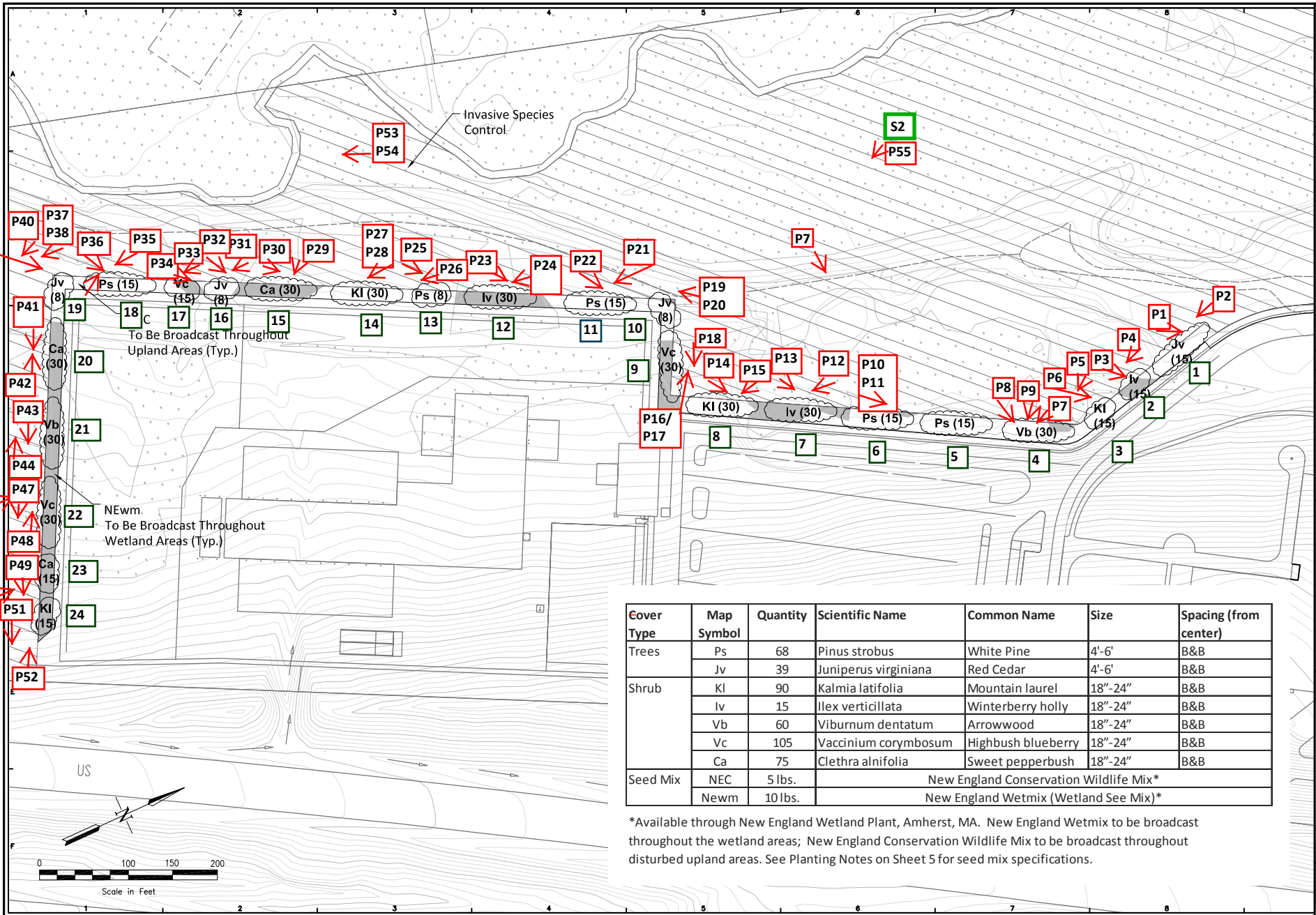
Appendix B
Volunteer Species

SMITH STREET (CUCIA PARK): Volunteer species of shrubs and trees, above and beyond the planned plantings, were not identified. Multiple emergent vegetative species were present and are included within the body of this report.

BOARDMAN LANE: Volunteer species of shrubs and trees, above and beyond the planned plantings, were not identified. Multiple emergent vegetative species were present and are included within the body of this report.

Appendix C

Photos

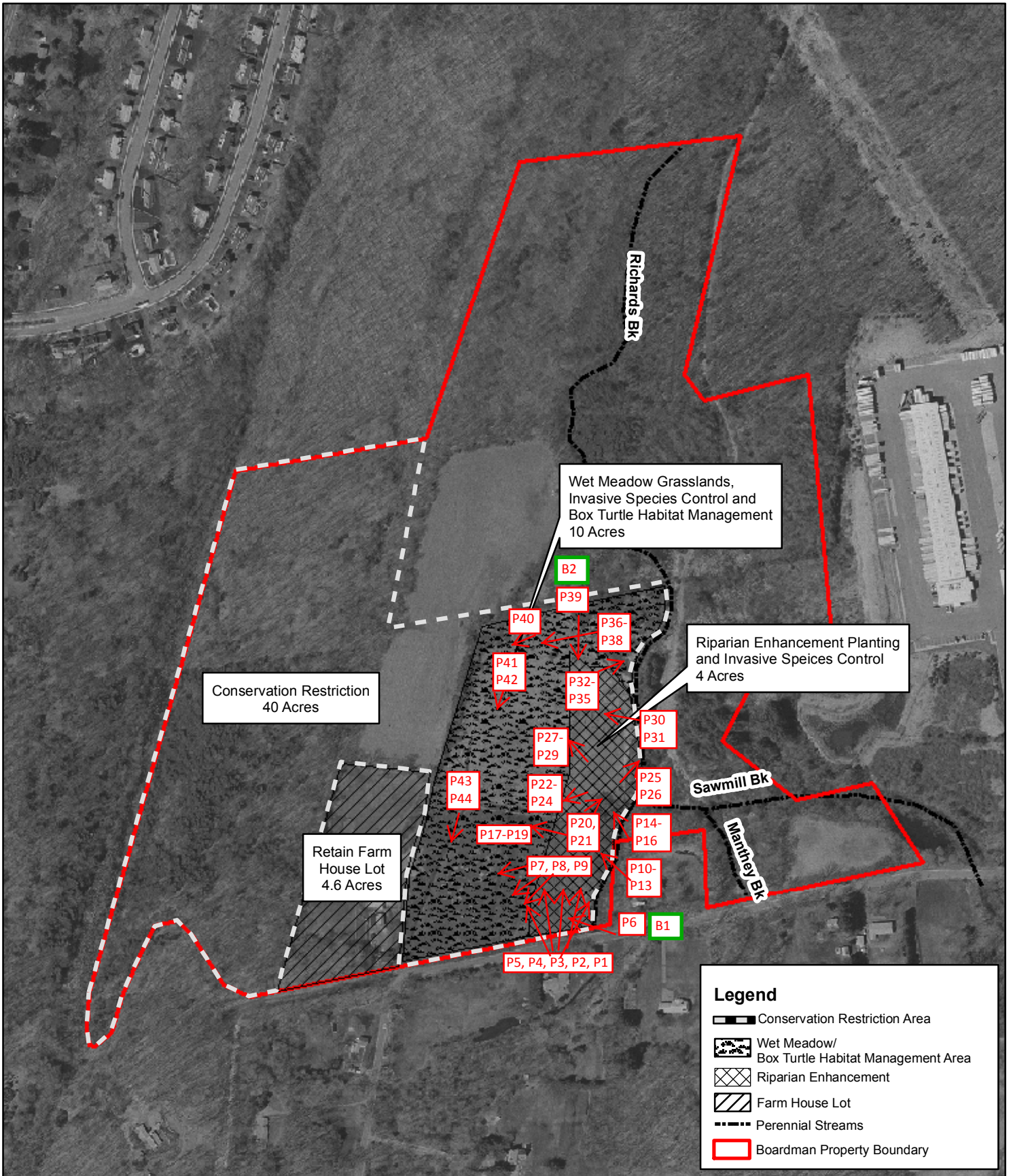


Cover Type	Map Symbol	Quantity	Scientific Name	Common Name	Size	Spacing (from center)
Trees	Ps	68	<i>Pinus strobus</i>	White Pine	4'-6'	B&B
	Jv	39	<i>Juniperus virginiana</i>	Red Cedar	4'-6'	B&B
Shrub	Kl	90	<i>Kalmia latifolia</i>	Mountain laurel	18"-24"	B&B
	Iv	15	<i>Ilex verticillata</i>	Winterberry holly	18"-24"	B&B
	Vb	60	<i>Viburnum dentatum</i>	Arrowwood	18"-24"	B&B
	Vc	105	<i>Vaccinium corymbosum</i>	Highbush blueberry	18"-24"	B&B
	Ca	75	<i>Clethra alnifolia</i>	Sweet pepperbush	18"-24"	B&B
Seed Mix	NEC	5 lbs.	New England Conservation Wildlife Mix*			
	Newm	10 lbs.	New England Wetmix (Wetland See Mix)*			

*Available through New England Wetland Plant, Amherst, MA. New England Wetmix to be broadcast throughout the wetland areas; New England Conservation Wildlife Mix to be broadcast throughout disturbed upland areas. See Planting Notes on Sheet 5 for seed mix specifications.

		Smith Street Middletown, CT		DATE: 12/2009
		PROJ. NO.: 60140125	BRAC Realignment Mitigation Plan	DRAWING NUMBER: 4 SHEET NUMBER: 4 of 6 REVISION: 0

APPENDIX C - FIGURE 1



Source: CT Ortho Photograph

Coordinate System: NAD 1927,
State Plane Connecticut
FIPS 0600 Feet

1 inch = 400 feet

**BRAC Realignment
Boardman Lane Off-Site
Mitigation Plan
Middletown, CT**

SCALE	DATE	PROJECT NO.
1:4,800	12/09	60140125

AECOM

Figure Number

3

Smith Street

(Cucia Park)

Planting Area 1: Red Cedar (*Juniperus virginiana*) / 15 plantings observed. (Photo 1 and Photo 2)



Planting Area 2: Winterberry Holly (*Ilex verticillata*) / 12 plantings observed. (Photo 3 and Photo 4)



Planting Area 3: Mountain Laurel (*Kalmia latifolia*) / 11 plantings observed—majority have not survived or are struggling. (Photo 5 and Photo 6)



Planting area 4: Should be Arrowwood (*Viburnum dentatum*) but is Highbush blueberry (*Vaccinium corymbosum*) / 28 plantings observed. (Photos 7, Photo 8, and Photo 9)



Highbush blueberry plantings observed



Planting Areas 5 and 6: White Pine (*Pinus strobus*) / 39 plantings observed. (Photo 10 and Photo 11)



Planting Area 7: Winterberry Holly (*Ilex verticillata*) / 19 plantings observed. (Photo 12 and Photo 13)



Planting Area 8: Mountain Laurel (*Kalmia latifolia*) / 24 plantings observed. (Photo 14 and Photo 15)



Mountain Laurel



Mountain Laurel

Planting Area 9: Highbush Blueberry (*Vaccinium corymbosum*) / 18 plantings observed. (Photo 16, Photo 17, and Photo 18)



Planting Area 10: Red Cedar (*Juniperus virginiana*) / 9 plantings observed. (Photo 19 and Photo 20)



Planting Area 11: White Pine (*Pinus strobus*) / 14 plantings observed. (Photo 21 and Photo 22)



Planting Area 12: Winterberry Holly (*Ilex verticillata*) / 18 plantings observed. (Photo 23 and Photo 24)



Planting Area 13: White Pine (*Pinus strobus*) / 11 plantings observed. (Photo 25 and Photo 26)



9/3/2014
Photo 25



9/3/2014
Photo 26

Planting Area 14: Mountain Laurel (*Kalmia latifolia*) / 24 plantings observed. (Photo 27 and Photo 28)



Mountain Laurel



Mountain Laurel

Planting Area 15: Sweet Pepperbush (*Clethra alnifolia*) / 16 plantings observed. (Photo 29 and Photo 30)



Planting Area 16: Red Cedar (*Juniperus virginiana*) / 10 plantings observed) (Photo 31 and Photo 32)



Planting Area 17: Highbush Blueberry (*Vaccinium corymbosum*)/ 9 plantings observed. (Photo 33 and Photo 34)



Highbush Blueberry



Highbush Blueberry

Planting Area 18: White Pine (*Pinus strobus*) / 16 plantings observed. (Photo 35 and Photo 36)



Planting Area 19: Red Cedar (*Juniperus virginiana*) / 11 plantings identified. (Photo 37 and Photo 38)



NEC Planting Location. (Photo 39 and Photo 40)



Planting Area 20: Sweet Pepperbush (*Clethra alnifolia*) / 24 plantings observed. (Photo 41 and Photo 42)



Planting Area 21: Arrowwood (*Viburnum dentatum*) / 23 plantings observed. (Photo 43 and Photo 44)



NEwm seed mix and soil sampling location (S1). (Photo 45 and Photo 46)



Planting Area 22: Highbush Blueberry (*Vaccinium corymbosum*) / 14 plantings observed. (Photo 47 and Photo 48)



Planting Area 23: Sweet Pepperbush (*Clethra alnifolia*) / 13 plantings observed. (Photo 49 and Photo 50)



Planting Area 24: Mountain Laurel (*Kalmia latifolia*) / 11 plantings observed. (Photo 51 and Photo 52)



Common reed (*Phragmites australis*) location. (Photo 53 and Photo 54)



Soil sample 2 location (S2). (Photo 55)



Boardman Lane

Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 1 and Photo 2)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 3 and Photo 4)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 5). B1 Soil Sample Location (Photo 6)



Boardman Lane: Riparian Enhancement Area and Invasive Species Control Area / Invasive Species Control and Box Turtle Habitat Management Area (Photo 7 and Photo 8)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 9 and Photo 10)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 11 and Photo 12)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 13 and Photo 14)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 15 and Photo 16)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area / Hedgerow (Photo17 and Photo 18)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area / Invasive Species Control and Box Turtle Habitat Management Area (Photo 19). Riparian Enhancement Area at Hedgerow (Photo 20)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area / Invasive Species Control and Box Turtle Habitat Management Area at Hedgerow (Photo 21). Invasive Species Control and Box Turtle Habitat Management Area (Photo 22)



Boardman Lane: Invasive Species Control and Box Turtle Habitat Management Area (Photo 23). Riparian Enhancement Area and Invasive Species Control (Photo 24)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 25 and Photo 26)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 27 and Photo 28)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 29 and Photo 30)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 31 and Photo 32)



9/3/2014
Photo 31



9/3/2014
Photo 32

Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 33 and Photo 34)



Boardman Lane: Riparian Enhancement and Invasive Species Control Area (Photo 35 and Photo 36)



Boardman Lane: Invasive Species Control and Box Turtle Habitat Management Area (Photo 37 and Photo 38)



Boardman Lane: B2 Soil Sample Location (Photo 39). Invasive Species Control and Box Turtle Habitat Management Area (Photo 40)



Boardman Lane: Invasive Species Control and Box Turtle Habitat Management Area (Photo 41 and Photo 42)



Boardman Lane: Invasive Species Control and Box Turtle Habitat Management Area at Hedgerow
(Photo 43 and Photo 44)

