

**U.S ARMY RESERVE 99TH REGIONAL SUPPORT COMMAND
MAURICE ROSE ARMED FORCES RESERVE CENTER CONSTRUCTION AND
BOARDMAN LANE COMPENSATORY WETLAND ENHANCEMENT SITES
MIDDLETOWN, CONNECTICUT**

**COMPENSATORY WETLAND ENHANCEMENT SITES
MONITORING REPORT
FALL 2013**

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, Baltimore District (USACE) conducted monitoring in November 2013 on behalf of the 99th RSC.

In 2011, USACE Louisville constructed the Maurice Rose Armed Forces Reserve Center (AFRC) and accompanying support facilities on behalf of the 99th RSC 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.

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 nontidal wetlands impacted at the project site, through enhancement activities being performed at the Smith Street and Boardman Lane project locations.

SMITH STREET: The compensatory mitigation measures at the Smith Street site include 0.75 acres 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 not only involves 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*).

3.0 SUMMARY DATA

GENERAL SITE CONDITIONS

SMITH STREET: 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. I-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 on-site to achieve the mitigation ratios in accordance with USACE guidance.

As stated, the site visits occurred on 19 and 20 November 2013. At the time of the site visit, the vegetation was sparse with leaf off conditions due to the late Fall season. The temperature was approximately 40 degrees Fahrenheit with sunny conditions and moderate to high winds. Precipitation events prior to the site visit were normal and typical for the season.

SITE VISIT FINDINGS

SMITH STREET: The Smith Street site was planted in [insert date]. The types of species planted within the 0.75-acre of buffer plantings appeared to be precise with the planting plan and 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 (*Viburnum dentatum*), highbush blueberry (*Vaccinium corymbosum*) and sweet pepperbush (*Clethra alnifolia*). A count of the plantings for each identified plant species was conducted for the length of the buffer area. Due to the leaf off conditions, some species were difficult to locate. 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. As stated, some of the plant species were difficult to locate due to the site visit taking place late in the Fall season and the condition of leaf off. Although some of the plantings were not located during the site visit, it is likely that the plantings are present and were just not located.

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. Of the mountain laurel plantings located, four 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. It should be noted that the total number of dead and struggling mountain laurel plantings is still minimal compared to the overall total number which were planted. According to the existing health of the mentioned plantings, it appears that survivability is high for the majority of the existing live plantings. Also on the planting plan, 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, but the vegetation was not able to be identified to specific species due to the late Fall timeframe but consisted of grasses and other various herbaceous species. Areal coverage of vegetation consisted of approximately 70 or greater percent of what appears to be FAC and/or FACU species at this location.

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. Hydrology was visibly present with standing water. A soil sample was also taken at this location (S1). The soil exhibited a silty loam consistency and was colored 10 YR 3/1 from 0 to 12+ inches with approximately 5 percent redox concentrations colored 10 Y/R 5/6. 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 was multiple wetland plant species located within this area. The vegetation was not identified to specific species, but consisted of various sedges and rushes. Areal coverage of the plantings consisted of approximately 50+ percent of what appears to be FAC and/or FACW species at this location.

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	79
	<i>Juniperus virginiana</i>	Red cedar	39	42
Shrub	<i>Kalmia latifolia</i>	Mountain laurel	90	72
	<i>Ilex verticillata</i>	Winterberry holly	15	33
	<i>Viburnum dentatum</i>	Arrowwood	60	21
	<i>Vaccinium corymbnosum</i>	Highbush blueberry	105	16
	<i>Clethra alnifolia</i>	Sweet pepperbush	75	29
Seed Mix	New England Conservation Wildlife Mix			
	New England Wetmix (Wetland Seed Mix)			

The 20-acre area of invasive species control location was walked through 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. Also identified sporadically within the site were reed canary-grass, multiflora rose, poison ivy (*Toxicodendron radicans*) and greenbriar (*Smilax rotundifolia*). These species were not considered to be overtaking any areas within the site. Some of the listed species were located adjacent to the 0.75 buffer planting area. There may be additional invasive species located sporadically throughout the site, but conclusive identification of specific species was difficult due to the late Fall site visit and leaf off conditions.. A soil sample was taken at one location within the invasive species control area as identified on the enclosed plan (Appendix C, Figure 2). The soil exhibited a silty loam consistency and was colored 10 YR 3/3 from 0 to 10 inches with approximately 10 percent redox concentrations colored 10 YR 5/6. The soil was colored 10 YR 3/2 at 10 to 12+ inches with approximately 10 percent redox concentrations also colored 10 YR 5/6. 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 not a hydric soil. 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.

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. No other species of vertebrates were identified. No species of invertebrates were identified. The minimal number of vertebrates and lack of invertebrates witnessed at the site is likely due to the late Fall season and weather conditions existing during the site visit.

BOARDMAN LANE: Upon arrival at the site, a representative of the Middlesex Land Trust met with USACE representatives. According to the information provided by the 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 mowed areas, one of which contained some enhancement plantings, and a section which is covered with significant

vegetation, to include invasive species. Beginning at the compensatory mitigation enhancement planting area adjacent to Boardman Lane, an approximate 1-acre portion of the 4-acre enhancement planting area had been mowed. Approximately 23 woody plantings were identified. Swamp white oak (*Quercus palustris*) plantings were among the plantings, which is consistent with the planting plan. Red maple (*Acer rubrum*) may be among the plantings, which would also be consistent with the planting plan. Due to the late Fall season and leaf off conditions, precise species identification was not made. The health of the existing woody plantings appeared to be positive with a high expected survivability. Some of the plantings were partially cut as a result of the mowing, and it is unclear if these will recover/thrive. Other species identified within the upper limits of this approximate 1-acre area is silky dogwood (*Cornus amomum*) and elderberry (*Sambucus canadensis*). These species are included on the planting plan but appear to be somewhat outside of the locations shown on the planting plan. These existing plant species appeared to be in good health and are expected to have a high survivability. A soil sample was taken within this location (B1). The soil exhibited a silty loam consistency and was colored 7.5 YR 5/4 from 0 to 12+ inches with no redox concentrations 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 3). 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.

Further north of this area is an approximate 1-acre area which was highly vegetated with various plant species, to include multiflora rose, silky dogwood, common milkweed (*Asclepias syriaca*), unidentified *Solidago* species, unidentified grass species, etc. There were some woody plantings identified within a small open area located in the center of this section. The precise species of plantings were difficult to identify due to the late Fall season and leaf off conditions. The overall areal coverage was approximately 80 percent. As stated, this area was to be planted and monitored for invasive species. The existing hedgerow within the enhancement planting area was vegetated with similar species, as mentioned, and was not distinguishable as being separate from the enhancement planting area. Additional species located in the hedgerow area is reed canary-grass.

Continuing north of the hedgerow location, another large area which is to be within the enhancement planting and invasive species location had been mowed. This mowed area comprised of approximately 2 acres of the remaining enhancement planting area according to the planting plan. A few woody plantings were identified at sporadic locations throughout this area. It is difficult to determine what the precise species of the plantings are due to the late Fall season and leaf off conditions. Shrub species were identified sporadically throughout this location, which included silky dogwood and speckled alder (*Alnus rugosa*) which are both species listed on the planting plan. Autumn olive was also identified, which is considered to be an invasive species and which is to be eliminated. These few plants appeared to be healthy and would be expected to have a high survivability rate.

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	0

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

*Silky dogwood and elderberry are included on the planting plan, but appear to be somewhat outside of the locations shown on the planting plan. Approximately 23 woody plantings were identified including swamp white oak and red maple. Exact amounts are unknown due to leaf off conditions.

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). A large portion of the 10-acre site was mowed. There is a large area (approximately 1 acre +/-) which was to be mowed according to the mitigation plan and is located north and outside of northernmost section of the enhancement planting area—this area had not been mowed. This area was inundated with pockets of standing water and was vegetated with a variety of FAC and/or FACW vegetative species (approximately 80 percent areal cover), which included sedges, rushes and grasses. The area may not have been mowed due to the wet conditions of the site. A soil sample was taken within the northern limit of the enhancement planting area and adjacent to the managed mowing area (B2). The soil exhibited a silty loam consistency and was colored 10 YR 4/2 from to 10 inches with approximately 5 percent redox concentrations colored 10 Y/R 5/8. 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. The details of this investigation are documented on the enclosed Data Forms (Appendix A, Figure 9), and the location is indicated on the enclosed map (Appendix C, Figure 3).

Vertebrate species identified during the site visit of Boardman Lane included a red-tailed hawk (*Buteo jamaicensis*) which was flying overhead of the site. No other species of vertebrates were identified. No species of invertebrates were identified. The minimal number of vertebrates and lack of invertebrates witnessed at the site is likely due to the late Fall season and weather conditions existing during the site visit.

4.0 CONCLUSIONS

SMITH STREET: The on-site mitigation site is doing well. The majority of the plantings are thriving, and there were minimal occurrences of dying or struggling plantings. The site is expected to be fully successful. Minimal additional work is necessary. The plantings identified within the 0.75 buffer planting location correlated with the location and species listed on the planting plan. 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 late Fall season and leaf off conditions. The majority of plantings were healthy and appeared to be thriving with an expected high rate of survivability. Invasive species, to include reed canary-grass, multiflora rose, poison ivy and greenbriar, 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.

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 photo taken at the site identified as Photo 30.
3. Eliminate the invasive species identified 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 enhancement plantings identified within this area; however, the invasive species were overtaking this section. Much of the 10-acre invasive species control and mowing management area appeared to be in accordance with the compensatory mitigation plan. A section which was identified on the plan to be mowed had not been mowed, however, it consisted of pockets of standing water.

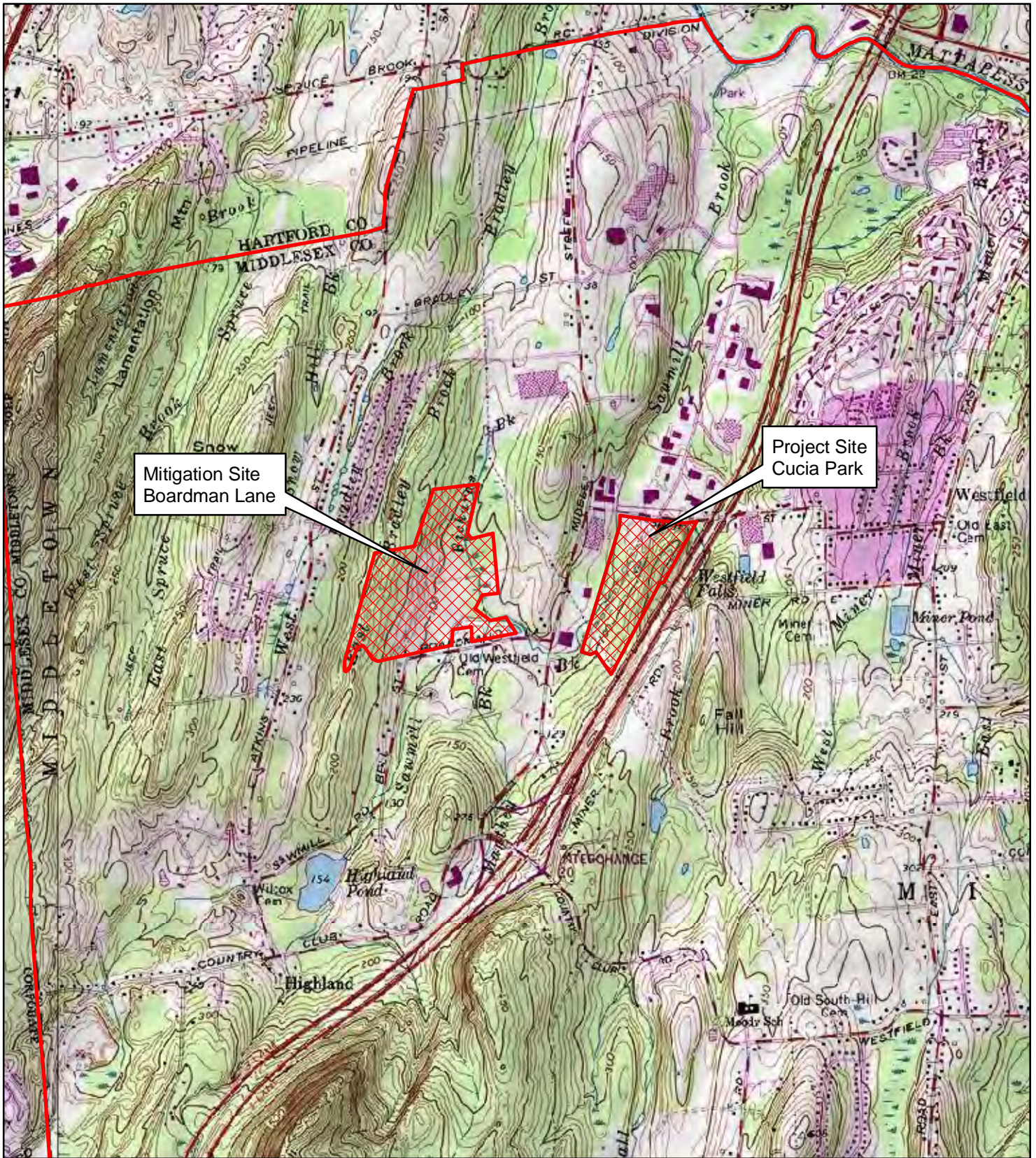
Recommended actions include:

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. 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 coordination 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.

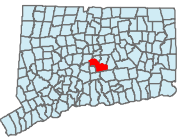
Appendix A

Maps



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

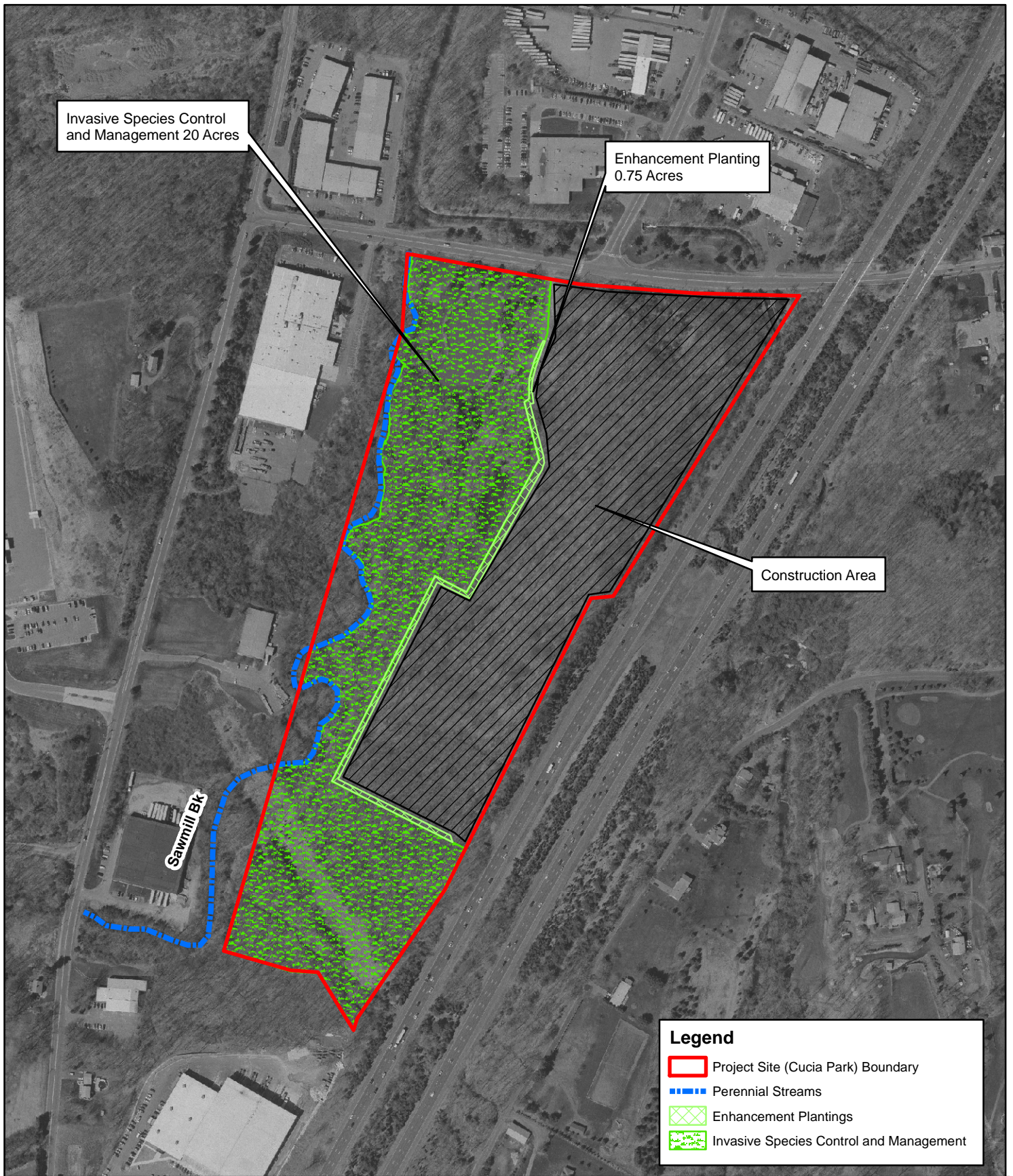



Figure Number

1

SCALE	DATE	PROJECT NO.
1:3,600	12/09	60140125

FIGURE 1





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


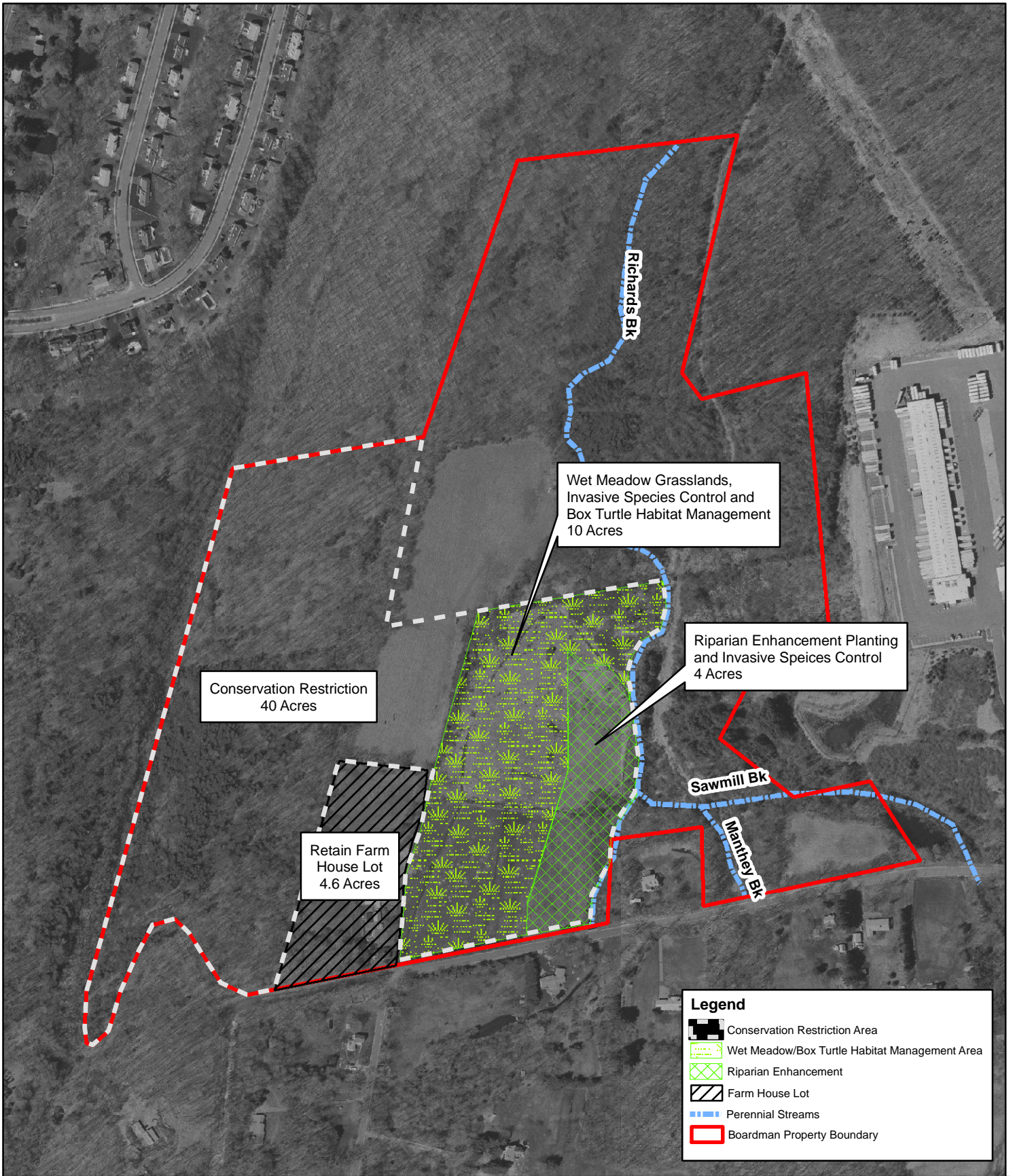


Figure Number

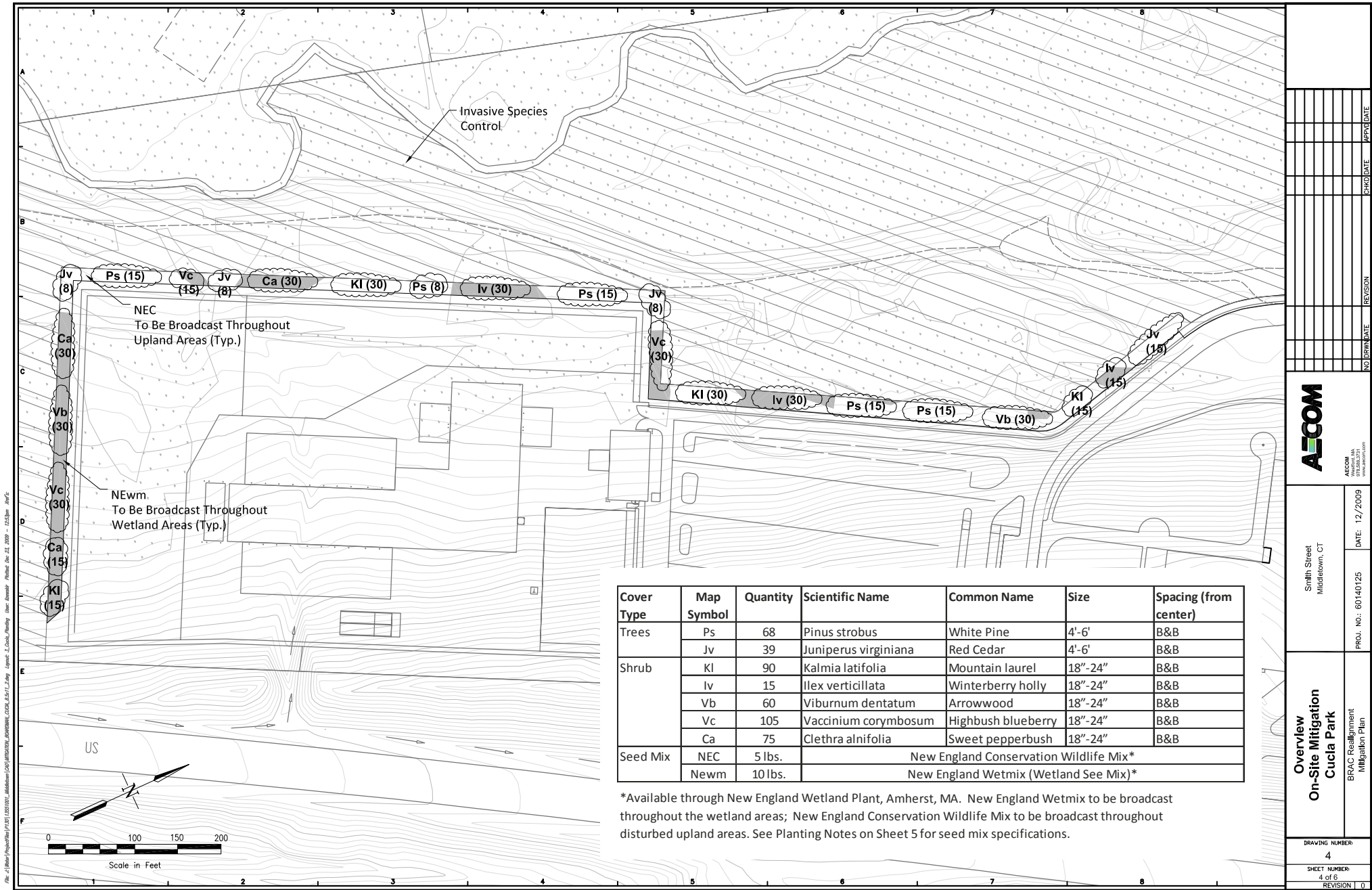
2

FIGURE 2



<p>Source: CT Ortho Photograph</p> <p>Coordinate System: NAD 1927, State Plane Connecticut FIPS 0600 Feet</p> <p>1 inch = 400 feet</p>	<p>BRAC Realignment Boardman Lane Off-Site Mitigation Plan Middletown, CT</p>		<p>Figure Number</p> <p>2</p>
	<p>SCALE</p> <p>1:4,800</p>	<p>DATE</p> <p>6/2010</p>	

FIGURE 3



File: J:\Bids\Proposals\131313\131313.dwg, Address: J:\Bids\Proposals\131313\131313.dwg, User: jacob, Date: 12/21/2009, Time: 11:53am, Plot: 1

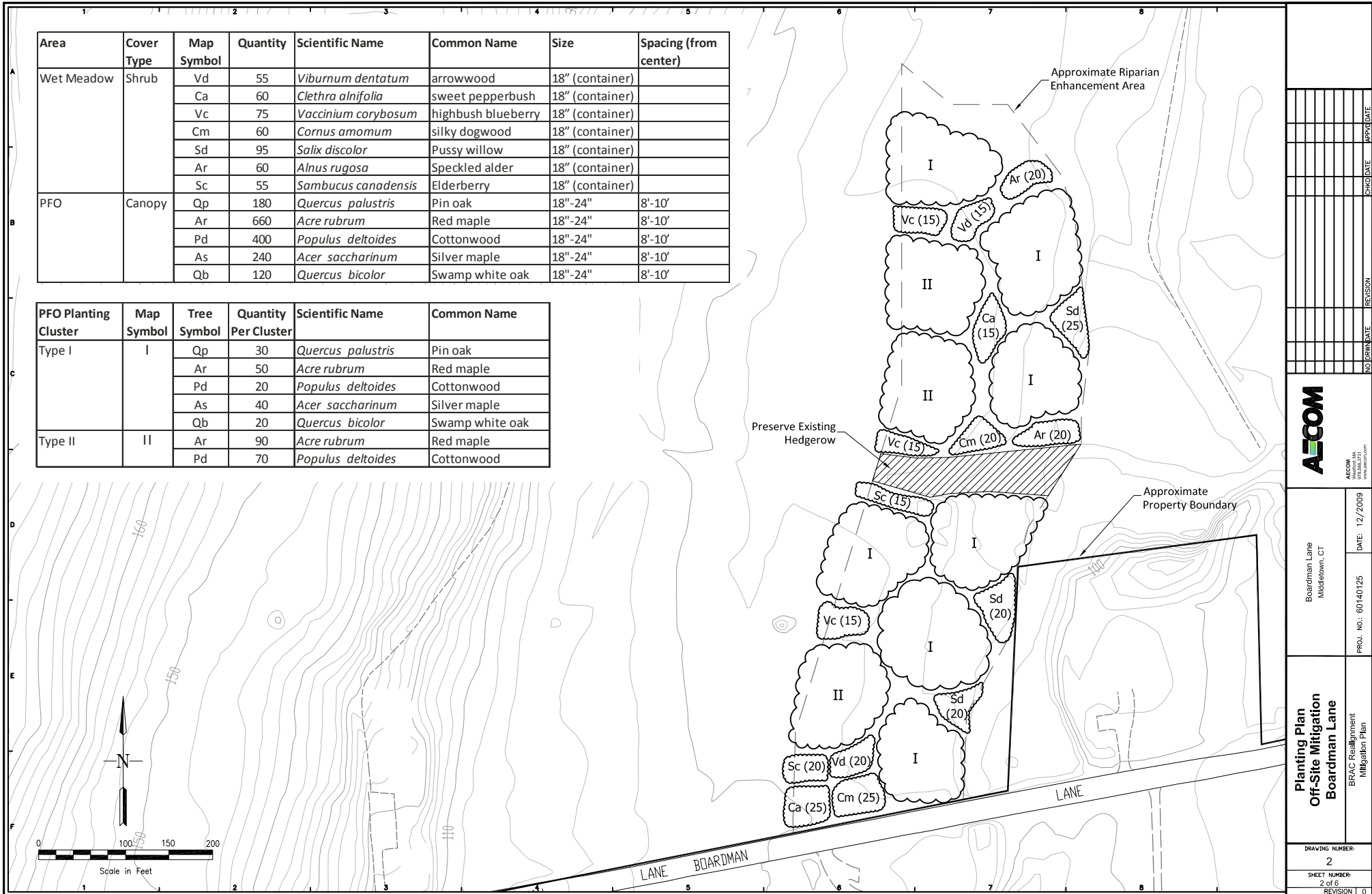
Cover Type	Map Symbol	Quantity	Scientific Name	Common Name	Size	Spacing (from center)
Trees	Ps	68	<i>Pinus strobus</i>	White Pine	4'-6'	B&B
	Jv	39	<i>Juniperus virginiana</i>	Red Cedar	4'-6'	B&B
Shrub	Kl	90	<i>Kalmia latifolia</i>	Mountain laurel	18"-24"	B&B
	Iv	15	<i>Ilex verticillata</i>	Winterberry 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.

 <small>AECOM 77 WASHINGTON ST WILMINGTON, MA 01897</small>	Smith Street Middletown, CT	DATE: 12/2009 PROJ. NO.: 60140125
	Overview On-Site Mitigation Cucla Park	
	BRAC Realignment Mitigation Plan	
DRAWING NUMBER: 4		
SHEET NUMBER: 4 of 6		
REVISION: 0		

FIGURE 4

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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



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

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: 11-20-2013
 Applicant/Owner: 99th RSC State: CT Sampling Point: S 1
 Investigator(s): Tarric Ostrofsky, Sharon Sartor Section, Township, Range: —
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0-35%
 Subregion (LRR or MLRA): LRR R Lat: 41.5793 Long: -72.7193 Datum: NAD83
 Soil Map Unit Name: Wilbraham and Mento NWI classification: —
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation —, Soil —, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation —, Soil —, 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"/>	Hydic 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.)
 - Structure exists adjacent to wetland.
 - A portion of the wetland had been previously impacted per USACE permit.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	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:

FIGURE 6

VEGETATION – Use scientific names of plants.

Sampling Point: 51

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)					
1. <u>Acer Rubrum</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	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>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	<u>20</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
		= Total Cover		Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: _____)					
1. <u>Juncus Effusus</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>OBL</u>		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>Carex Sp.</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>-</u>		
3. <u>Scirpus Sp.</u>	<u>10</u>		<u>-</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>60</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
3. _____					
4. _____					
		= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No	
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		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
D-12 ⁺	10YR 3/1	95	10YR 5/6	S	C	M	Silty-loam	

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) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- 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)

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)
- Dark Surface (S7) (LRR K, L, M)
- 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:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 997B RSC, Smith Street Site City/County: Middletown, Middlesex Sampling Date: 11-20-2013
 Applicant/Owner: 997B RSC State: CT Sampling Point: S2
 Investigator(s): Tannie Ostrofsky, Sharon Sartor Section, Township, Range: -
 Landform (hillslope, terrace, etc.): washed area Local relief (concave, convex, none): convex Slope (%): 0-35%
 Subregion (LRR or MLRA): LRR R Lat: 41.8822 Long: 72.7188 Datum: NAD 83
 Soil Map Unit Name: Wilbraham and Mendon NWI classification: -
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , 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 type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) <p align="center" style="font-size: 1.2em;">area adjacent to a facility and within Invasive Species Control Area.</p>	

HYDROLOGY

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

FIGURE 7

VEGETATION – Use scientific names of plants.

Sampling Point: S2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</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>40%</u> (A/B)
1. <u>Acer Rubrum</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Acer Saccharum</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>30</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Lonicera Japonica</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. <u>Rosa multiflora</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>10</u> = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators 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.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>Toxicodendron radicans</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>5</u> = Total Cover				
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		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-10	10YR 3/3	98	10YR 5/6	2	C	M	Silty loam	
10-12+	10YR 3/2	95	10YR 5/10	5	C	M	Silty loam	

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Boardman Lane Site City/County: Middletown, Middlesex Sampling Date: 11-20-2013
 Applicant/Owner: 99th RSC / Middlesex Land Trust State: CT Sampling Point: B1
 Investigator(s): Tarric Ostrofsky, Sharon Sartor Section, Township, Range: —
 Landform (hillslope, terrace, etc.): agricultural field Local relief (concave, convex, none): — Slope (%): 0-10%
 Subregion (LRR or MLRA): LRR R Lat: 41.5786 Long: -72.7286 Datum: NAD 83
 Soil Map Unit Name: Wilbraham and Menlo loams NWI classification: —
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , 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 type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) <p align="center" style="font-size: 1.2em;">area was mowed. The site is a prior agricultural field.</p>	

HYDROLOGY

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

FIGURE 8

VEGETATION – Use scientific names of plants.

Sampling Point: B1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 2 </u> (A) Total Number of Dominant Species Across All Strata: <u> 1 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: _____)				
1. <u>Panicum sp.</u>	<u>95</u>		<u>?</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>95</u> = Total Cover				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.
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>

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

panicum species was not identified. However, it is estimated that the species is UPL. The Spring 2014 site visit may confirm.

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			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-12+	7.5 YR 5/4	100					Silty loam	

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

- | | | |
|--|--|--|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B) | <ul style="list-style-type: none"> <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) | <p>Indicators for Problematic Hydric Soils³:</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) <input type="checkbox"/> Dark Surface (S7) (LRR K, L, M) <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> 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:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Boardman Lane City/County: Middletown, Middlesex Sampling Date: 11-19-2013
 Applicant/Owner: 99th RSC/Middlesex Land Trust State: CT Sampling Point: B2
 Investigator(s): Tarric Ostrowsky, Sharon Santos Section, Township, Range: ---
 Landform (hillslope, terrace, etc.): agricultural field Local relief (concave, convex, none): - Slope (%): 0-10%
 Subregion (LRR or MLRA): LRR 9R Lat: 41.5805 Long: -72.7285 Datum: NAD83
 Soil Map Unit Name: Wilbrham and Menlo Loams NWI classification: -
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , 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 type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) <p align="center" style="font-size: 1.2em;">site is within a prior agricultural field. mowing is currently occurring.</p>	

HYDROLOGY

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

FIGURE 9

VEGETATION – Use scientific names of plants.

Sampling Point: B2

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>?</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____)				
1. <u>panicum sp.</u>	<u>90</u>	<u>?</u>	<u>?</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>90</u> = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)				
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.)

The site is an agricultural field which is currently being mowed (no longer farmed). The panicum species was not identified. However it is estimated that the species is UPL. The Spring 2014 site visit may confirm

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 99th RSC, Smith Street Site City/County: Middletown, Middlesex Sampling Date: 11-20-2013
 Applicant/Owner: 99th RSC State: CT Sampling Point: S 1
 Investigator(s): Tarric Ostrofsky, Sharon Sartor Section, Township, Range: —
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0-35%
 Subregion (LRR or MLRA): LRR R Lat: 41.5793 Long: -72.7193 Datum: NAD83
 Soil Map Unit Name: Wilbraham and Mento NWI classification: —
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation —, Soil —, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation —, Soil —, 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"/>	Hydic 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.)

- Structure exists adjacent to wetland.
 - A portion of the wetland had been previously impacted per USACE permit.

HYDROLOGY

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

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	

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

Remarks:

Appendix B
Volunteer Species

SMITH STREET: There were no clearly identified volunteer shrub and/or canopy species located within the 0.75 acre enhancement planting area. Due to the late Fall site visit and leaf off conditions, existing volunteer species may be present, but unidentified.

BOARDMAN LANE: Much of the Boardman Lane site has been mowed. Some enhancement plantings remain; however, most have been mowed. No volunteer species were identified during the site visit.

Appendix C

Photos

Smith Street



Photo 1: Red Cedar (*Juniperus virginiana*) first planting area from northern location (14 counted).



Photo 2: Winterberry Holly (*Ilex verticillata*) second plantings from northern location (7 counted). Reed Canary-Grass (*Phalaris arundinacea*) and Poison Ivy (*Toxicodendron radicans*) were identified adjacent to this area.



Photo 3: Mountain Laurel (*Kalmia latifolia*) third planting area from northern location (11 counted).



Photo 4: Arrowwood (*Viburnum dentatum*) fourth planting area from northern location (21 counted).



Photo 5: White Pine (*Pinus strobus*) fifth planting area from northern location (19 counted).



Photo 6: White Pine (*Pinus strobus*) sixth planting area from northern location (19 counted).



Photo 7: Winterberry Holly (*Ilex verticillata*) seventh planting area from northern location. Pre-existing holly plant seen in photo (left). Enhancement plantings are difficult to see (19 counted).



Photo 8: Winterberry Holly (*Ilex verticillata*) seventh planting area (cont'd). Plantings can be seen at lower center of photo (19 counted).



Photo 9: Mountain Laurel (*Kalmia latifolia*) eighth planting area from northern location (22 counted).



Photo 10: Highbush Blueberry (*Vaccinium corymbosum*) ninth planting area from northern location. A few plantings can be seen at the lower center of the photo (7 counted).



Photo 11: Highbush Blueberry (*Vaccinium corymbosum*) ninth planting area (cont'd) from northern location. Planting with leaves remaining.



Photo 12: Red Cedar (*Juniperus virginiana*) tenth planting area from northern location (8 counted).



Photo 13: White Pine (*Pinus strobus*) eleventh planting area from northern location (14 counted). Greenbriar (*Smilax rotundifolia*) was found adjacent to this location.



Photo 14: White Pine (*Pinus strobus*) eleventh planting area (cont'd) from northern location.



Photo 15: Winterberry Holly (*Ilex verticillata*) twelfth planting area. Planting can be seen at lower left of photo. Others are difficult to see (7 counted). Volunteer holly plants are seen in background.



Photo 16: Winterberry Holly (*Ilex verticillata*) twelfth planting area (cont'd). Planting can be seen at lower right of photo. Others are difficult to see. Volunteer holly plants are seen in background.



Photo 17: White Pine (*Pinus strobus*) thirteenth planting area from northern location (11 counted).



Photo 18: Mountain Laurel (*Kalmia latifolia*) fourteenth planting area from northern location (27 counted).



Photo 19: Sweet Pepperbush (*Clethra alnifolia*) fifteenth planting area from northern location (11 counted).



Photo 20: Sweet Pepperbush (*Clethra alnifolia*) fifteenth planting area (cont'd) from northern location.



Photo 21: Red Cedar (*Juniperus virginiana*) sixteenth planting area from northern location (10 counted).



Photo 22: Red Cedar (*Juniperus virginiana*) sixteenth planting area (cont'd) from northern location.



Photo 23: Highbush Blueberry (*Vaccinium corymbosum*) seventeenth planting area from northern location (9 counted). Plantings are difficult to see in photo.



Photo 24: Highbush Blueberry (*Vaccinium corymbosum*) seventeenth planting area (cont'd) from northern location.



Photo 25: End of Highbush Blueberry (*Vaccinium corymbosum*) planting area in lower center of photo and beginning of White Pine (*Pinus strobus*) planting area (eighteenth planting area from northern location) in upper left of photo.



Photo 26: White Pine (*Pinus strobus*) eighteenth planting area from northern location (16 counted).



Photo 27: White Pine (*Pinus strobus*) eighteenth planting area from northern location (16 counted). Also, general location of NEC seed mix.



Photo 28: Red Cedar (*Juniperus virginiana*) nineteenth planting area from northern location (10 counted). Also, general location of NEC seed mix.



Photo 29: Red Cedar (*Juniperus virginiana*) nineteenth planting area (cont'd) from northern location.



Photo 30: Red Cedar (*Juniperus virginiana*) nineteenth planting area (cont'd) from northern location. Reed Canary-Grass (*Phragmites australis*) stand is seen in the upper right of the photo.



Photo 31: Sweet Pepperbush (*Clethra alnifolia*) twentieth planting area from northern location (7 counted). Plantings are very difficult to see in photo.



Photo 32: Existing wetland area and general NEwm seed mix location in lower front of photo. Upper area of photo is Arrowwood (*Viburnum dentatum*) twenty-first planting area from northern location. Plants are difficult to see. Planting can be seen in lower center of photo.



Photo 33: Existing wetland area and general NEwm seed mix location at lower front of photo. Upper portion of photo is Highbush Blueberry (*Vaccinium corymbosum*) twenty-second planting area from northern location. Plantings are difficult to see in photo.



Photo 34: Highbush Blueberry (*Vaccinium corymbosum*) twenty-second planting area (cont'd) from northern location. Plantings are difficult to see in photo.



Photo 35: Sweet Pepperbush (*Clethra alnifolia*) twenty-third planting area from northern location (11 counted). Plantings are difficult to see in photo.



Photo 36: Mountain Laurel (*Kalmia latifolia*) twenty-fourth planting area from northern location (12 counted). Plantings are seen on lower left of photo.



Photo 37: Upper limits of planting area from southern limit of planting area.

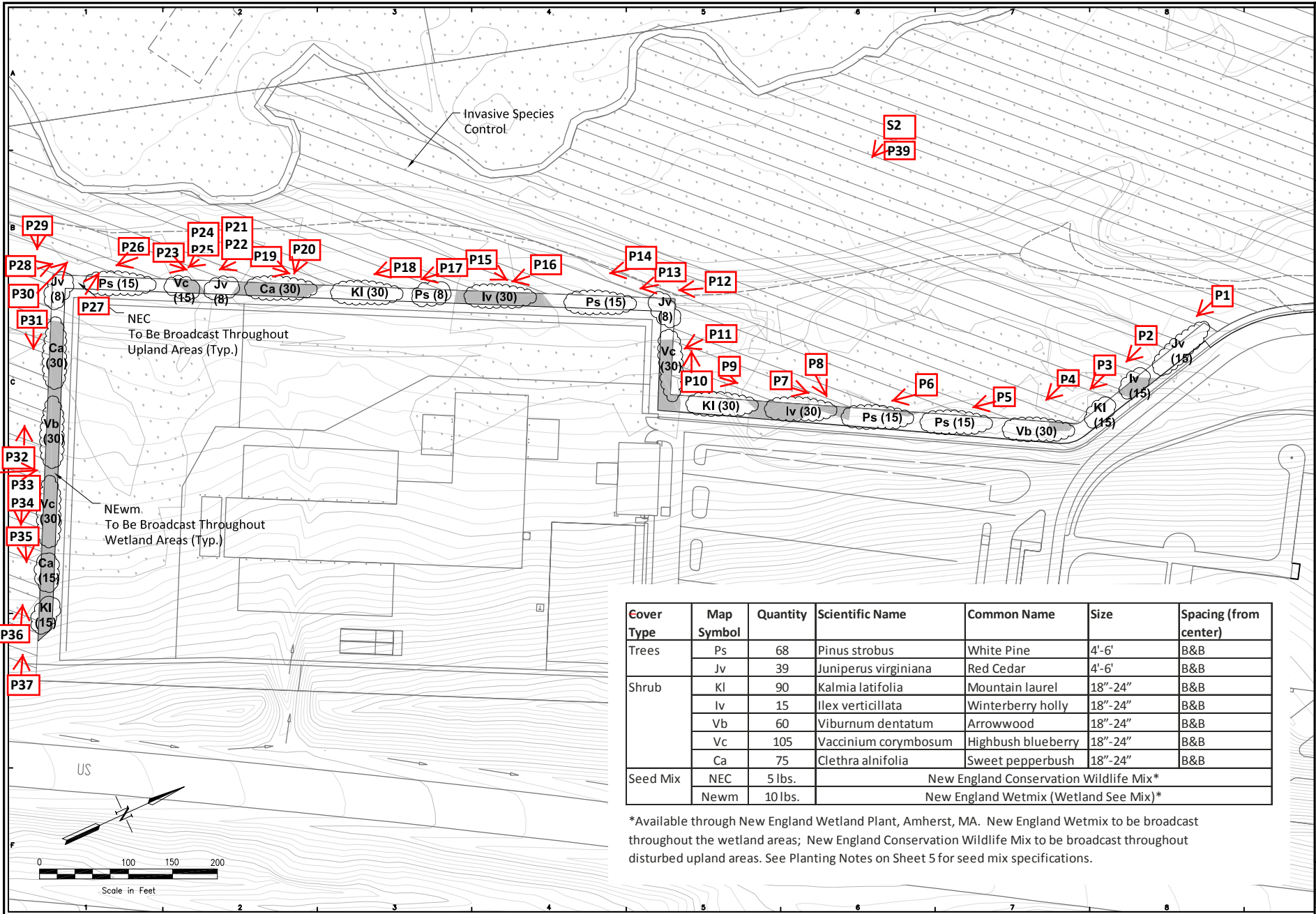


P38: Smith Street Soil Sample 1.



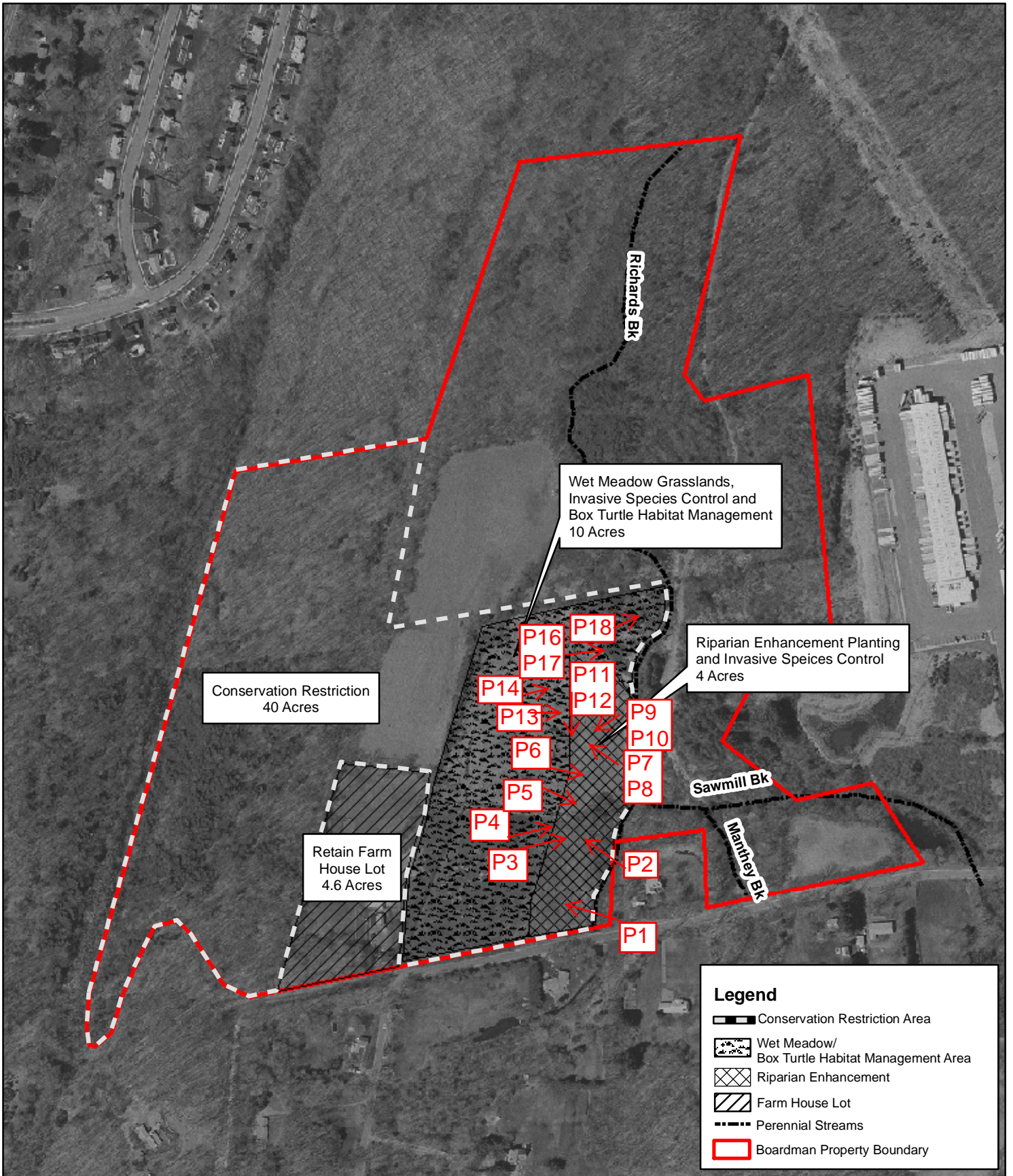
P39: Smith Street Soil Sample 2.

Boardman Lane



AECOM AECOM 075.0043.0311 www.aecom.com	
Smith Street Middletown, CT	DATE: 12/2009
PROJ. NO.: 60140125	REVISION
Overview On-Site Mitigation Cucla Park BRAC Realignment Mitigation Plan	
DRAWING NUMBER: 4	APPROVAL DATE
SHEET NUMBER: 4 of 6	NO DRAW DATE
REVISION	APPROVAL DATE

FIGURE 1



Legend

- Conservation Restriction Area
- Wet Meadow/Box Turtle Habitat Management Area
- Riparian Enhancement
- Farm House Lot
- Perennial Streams
- Boardman Property Boundary

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

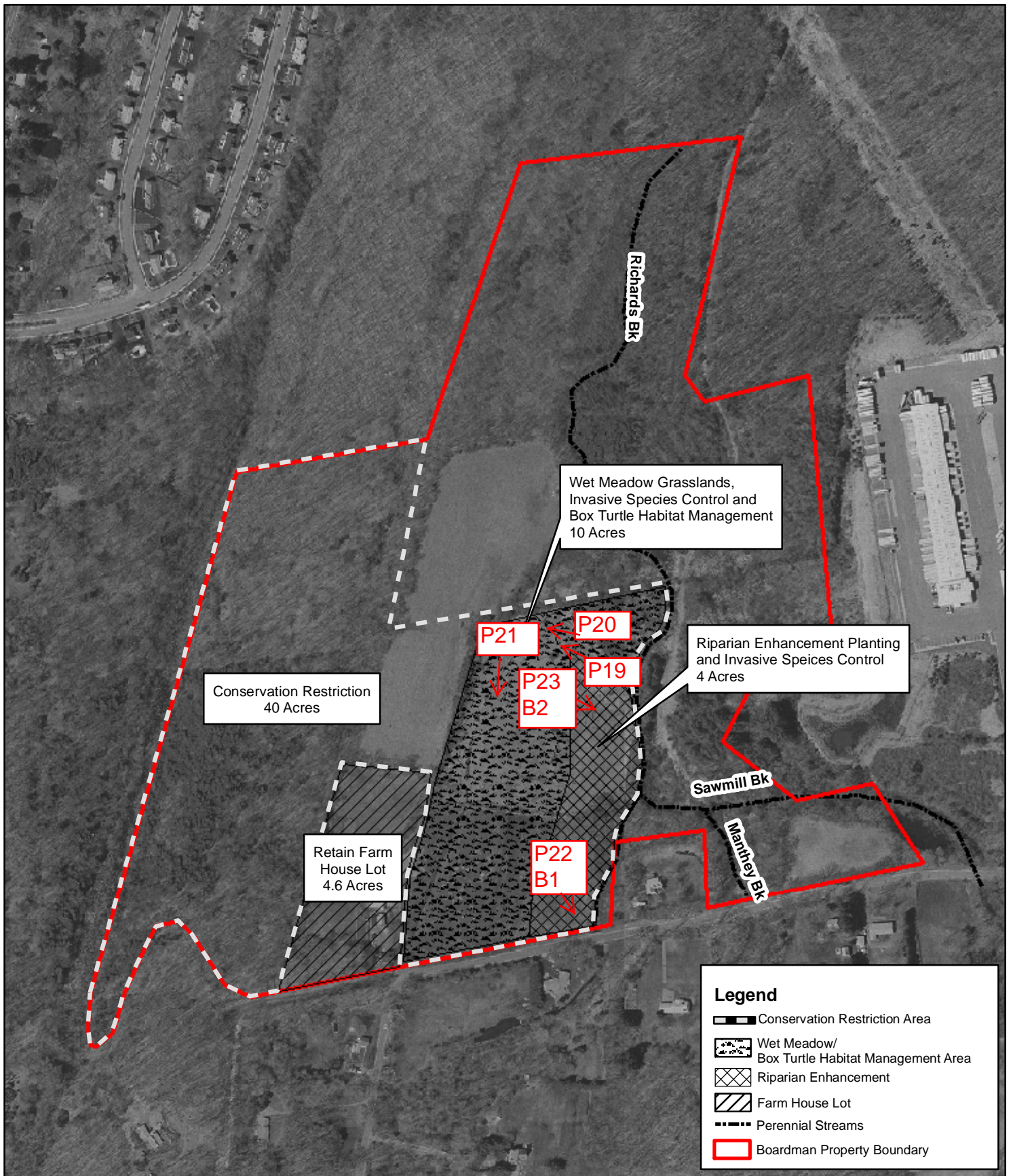
1 inch = 400 feet

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

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

Figure Number
G

FIGURE 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	12/09	60140125

AECOM

Figure Number

3

FIGURE 3

approximate separation
between mowing area
and enhancement
planting area

managed mowing area

surviving plantings in
enhancement planting
area

11/19/2013

P1: Planting Area adjacent to Boardman Lane
facing west



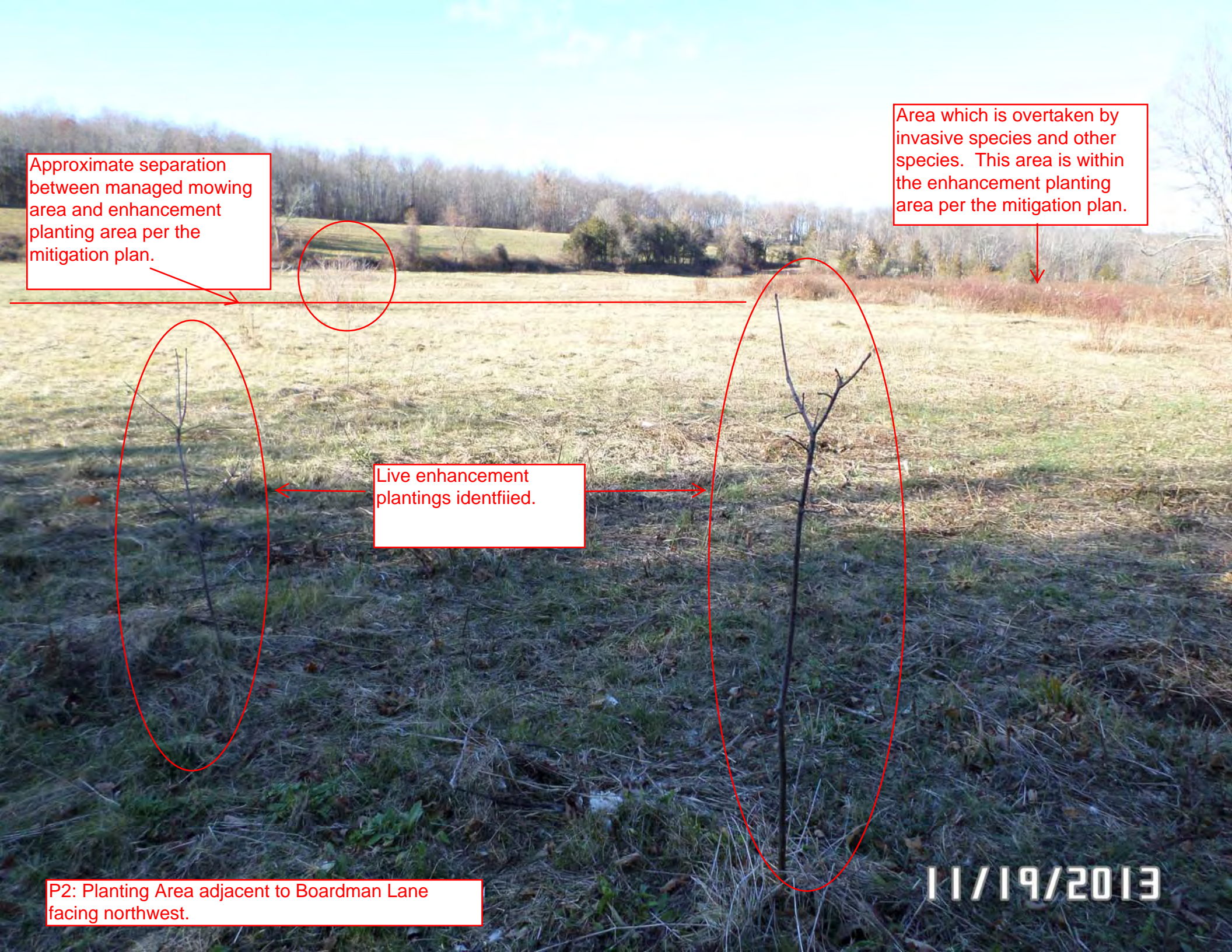
Approximate separation between managed mowing area and enhancement planting area per the mitigation plan.

Area which is overtaken by invasive species and other species. This area is within the enhancement planting area per the mitigation plan.

Live enhancement plantings identified.

P2: Planting Area adjacent to Boardman Lane facing northwest.

11/19/2013





Multiflora
rose (*Rosa
multiflora*)

11/19/2013

P3: Within enhancement planting area; this area had been overtaken by invasive species. Enhancement plantings were difficult to locate. Photo taken facing east.

Approximate limit of mowing per permit conditions.

Enhancement planting area

P4: Hedgrow location. Approximate center of enhancement planting area. Reed Canary-Grass identified.

11/19/2013



Enhancement planting area which is overtaken by invasive species.

Hedgerow

11/20/2013

P5: Enhancement planting area with a portion having been mowed and a portion overtaken with invasive species. Hedgerow is seen in center of photo. Photo taken facing south toward Boardman Lane.



P6: Enhancement planting area north of hedgerow location. Area had been mowed. Photo taken east of western edge of enhancement planting area.

11/20/2013



P7: Managed mowing area. Photo taken facing northwest from enhancement planting area.

11/20/2013

E102/61/11



Planting located

P8: Enhancement planting seen in front center of photo. Managed mowing area in background. Photo taken facing northwest from enhancement planting area.



Hedgerow

P9: Enhancement planting area facing southwest.
Hedgerow is seen in upper left of photo.

11/19/2013



P10: Enhancement planting area facing toward managed mowing area. Photo is taken facing southwest from enhancement planting area.

11/19/2013



P11: Enhancement planting area facing toward managed mowing area. Photo is taken facing south from enhancement planting area (toward Boardman Lane).

11/19/2013

Northern area of enhancement planting area--mowing had occurred.

Enhancement area which is overtaken by invasive species.

Hedgerow (approximate center of enhancement planting area).

P12: Photo taken from approximate northern limits of enhancement planting area (to the left). Hedgerow can be seen at upper portion of photo.

11/19/2013



P13: Enhancement planting area to the left of photo. Managed mowing to the center and right of photo. Photo taken from northern area of managed mowing location facing southeast (toward Boardman Lane).

11/19/2013



P14: Similar to P13 except facing more to the north east.

11/19/2013



P15: Area within northern limits of enhancement planting area and beginning of managed mowing area. Photo facing northeast.

11/20/2013



P16: Area within northern limits of enhancement planting area and beginning of managed mowing area. Photo facing east.

11/19/2013



P17: Northern limits of managed mowing area. This area is to be mowed. Standing water can be seen in the upper center of the photo. Photo is facing northeast toward project limits. Photo facing northeast.

11/19/2013



P18: Northern limits of managed mowing area. Photo facing north from enhancement planting area.

11/19/2013



P19: Northern limits of managed mowing area. Photo facing northwest from enhancement planting area.

11/19/13



Approximate limits of managed mowing area.

P20: Northern portion of managed mowing area. Photo taken from center to southwest.

11/19/2013



P21: Northern portion of managed mowing area. Photo taken from northern project limits to south (towards Boardman Lane).

11/19/2013



P22: Soil Sample 1
(B1)

11/20/2013

P23: Soil Sample 2
(B2)

10/19/2013