BlueFlax LLC

fine landscape design with nature in mind

PROPOSED INVASIVE SPECIES MANAGEMENT AND LAND RESTORATION

JANUARY 7, 2019
CHATHAM CONSERVATION FOUNDATION
LOT 9K PARCEL C3
0 ORLEANS ROAD, CHATHAM, MASSACHUSETTS

CONTENTS

INTRODUCTION

This Plan is written to accompany the Restoration/Planting Plan for 0 Orleans Road Lot 9K-Parcel C3 Chatham, MA dated September 20, 2018. This Plan describes the project in detail, clearly defining the main goals and objectives of the project, outcomes and benefits, and an outline of the steps and timeline for management procedures.

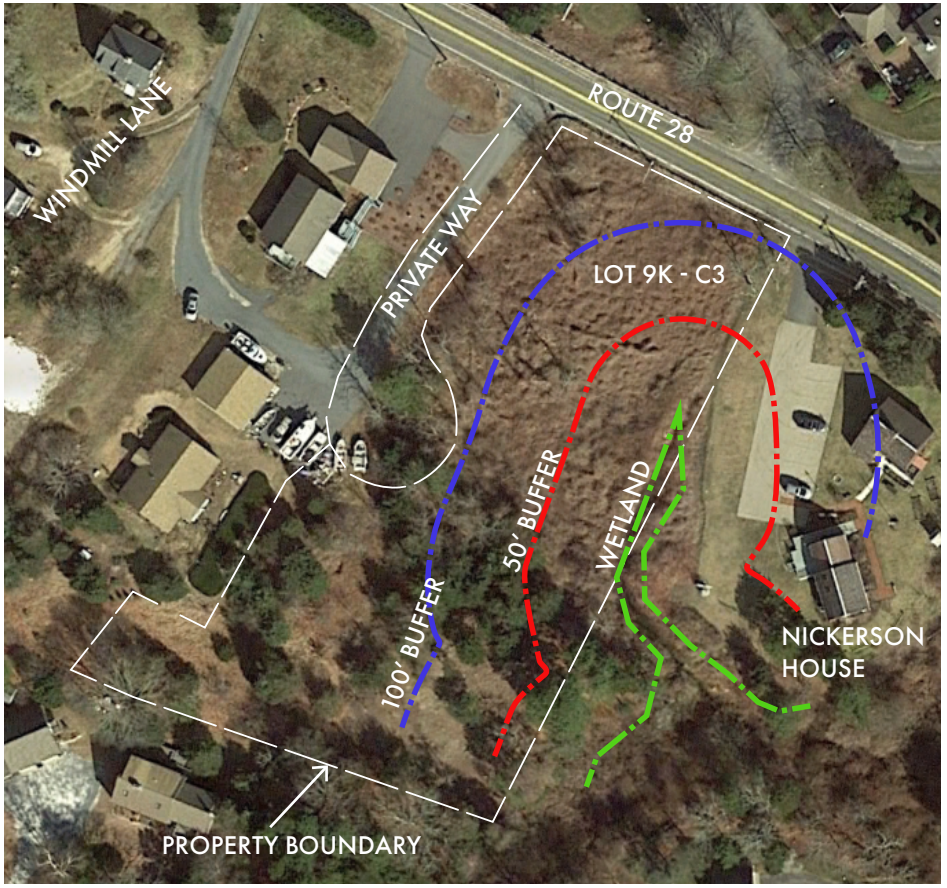
The property located is owned by the Chatham Conservation Foundation (CCF). A southern portion of the lot is actively being excavated as a archeaological dig sponsored by the Nickerson Association. Understory vegetation was cleared and some trees were cleared to conduct the excavation, however some invasive species remain or are resprouting. The goals for the property are to manage invasive vegetation and restore a native plant community, while allowing for possible future excavation activities in certain areas and allowing public access through the buffer area. BlueFlax Design, LLC was contracted by CCF to prepare a plan addressing these goals, supporting the following interests of the Massachusetts Wetlands Protection Act (section 10.55) and the Town of Chatham Wetland Protection Regulations (section 3.02 and 4.01):

- Storm Damage Prevention
- Flood Control
- Protection of Wildlife Habitat
- Protection of Public and Private Water Supply
- Protection of Groundwater Supply
- Prevention of Pollution
- Erosion and sedimentation control

This Plan addresses the following project outcomes, resulting in a net benefit to the ecological health of the resource areas at 0 Orleans Rd:

- Management/removal of invasive vegetation within the project area.
- Restoration and enhancement of the Adjacent Upland Resource Areas (AURA) using native herbaceous and woody species with high wildlife habitat value (forage, breeding, cover etc.).
- Establish 4'-wide paths for public access through the AURA.

PROJECT AREA



Google Earth image of the project area at 0 Orleans Rd, Lot 9k - C3 in Chatham.

EXISTING CONDITIONS

The property is located on Orleans Road (Route 28) in North Chatham, just north of Ryder's Cove, adjacent to the Caleb Nickerson Homestead. The entire lot is undeveloped; however there is some development on the adjacent lots to the east and west. There is a bordering vegetated wetland (BVW) delineated along the eastern property line of which a small portion is contained on the property. The 0- to 100-foot buffers to the BVW cover a majority of the remaining lot. This wetland is hydrologically connected through a culvert (that runs beneath route 28) to Ryder's Cove to the southeast. An existing footpath runs along the eastern edge of the lot, partially overlapping the BVW.

The property can effectively be conceptualized into two portions: the north and south portions of the lot. Vegetation on the north portion of the lot (as well as on the adjacent property to the southeast) is extremely dense and highly invaded (95+%) by primarily porcelainberry (*Ampelopsis brevipedunculata*) and Asiatic bittersweet (*Celastrus orbiculatus*). The topography in this area is gently sloping from the northwest corner of the lot to the southeast. Tree cover is predominantly provided by invasive black locust (*Robinia pseudoacacia*), which themselves are heavily covered by invasive vines. Other species in this area include border privet, shrub honeysuckle, rhaspberry briars, and various species of goldenrod.

On the southern portion of the lot, the understory vegetation and some eastern red cedars were cleared during summer 2018 to conduct an an archaeological dig. Prior to clearing, the vegetation in this area was a mix of native and invasive species. Invasives species including porcelain berry (*Ampelopsis brevipedunculata*), bittersweet (*Celastrus orbiculatus*), and shrub honeysuckle (*Lonicera morrowwii*) are resprouting and in all likelihood will completely dominate the disturbed site if no intervention steps are taken to manage them.

The southern and western edges of the cleared area still have an abundance of standing invasive vegetation that was not disturbed as part of the archaeological dig. In addition, there is a significant amount of invasive vegetation, including a stand of Japanese knotweed (*Fallopia japonica*), on the southern portion of the Nickerson Family Association property located directly to the east of the CCF lot.

View of area where understory vegetation and several eastern red cedars were cleared, taken March 2018.

View of excavation area, looking south, taken September 2018.

EXISTING CONDITIONS MAP

Invasive Species present

Area cleared for excavation

(Areas Boundaries Approximate)

EXISTING CONDITIONS PHOTOGRAPHS

View of excavation area of original homestead site.

View of southwest portion of the property (on the edge of the cleared area) where bittersweet and shrub honeysuckle are growing.

View looking north where delineated wetland overlaps the existing footpath (after a recent rain), taken March 2018.

View of northern portion of lot which is entirely taken over by invasive vines.

GOALS AND OBJECTIVES

GOAL 1: Enhance the ecological integrity of the wetland and Adjacent Upland Resource Areas (AURA) ensuring it provides its functions as defined in the Massachusetts Wetlands Protection Act and the Chatham Wetland Protection Regulations.

- Manage invasive species within the AURA.
- Restore invasive species management areas with a site-appropriate native plant community.

GOAL 2: Improve existing wildlife habitat function and value within the resource area and AURA.

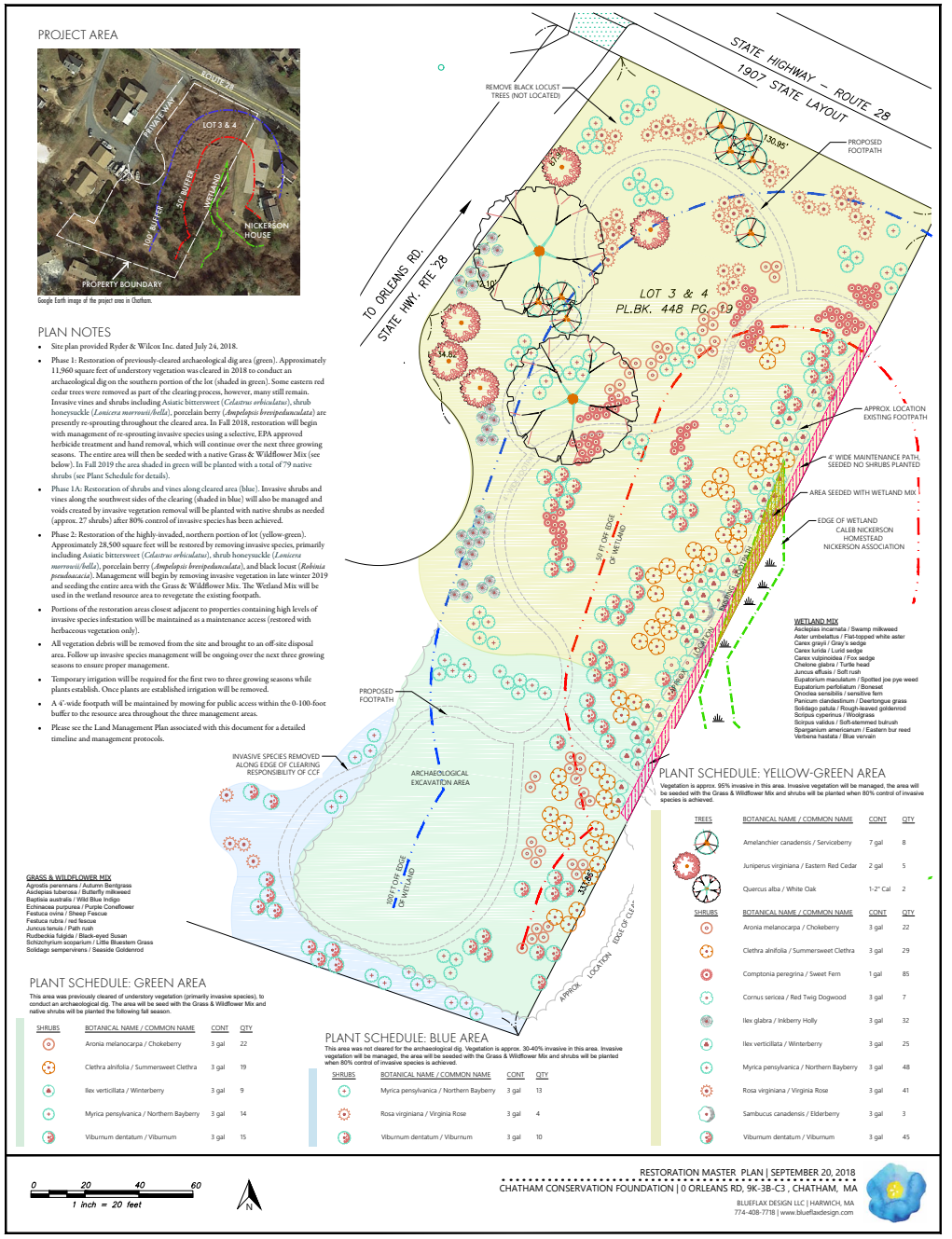
- Manage invasive species within the AURA that compete with species that provide native habitat to increase habitat diversity.
- Restore appropriate native upland species within the resource area that will increase cover, forage, and breeding habitat for wildlife.

GOAL 3: Accommodate future public use to meet CCF's functional goals for the property.

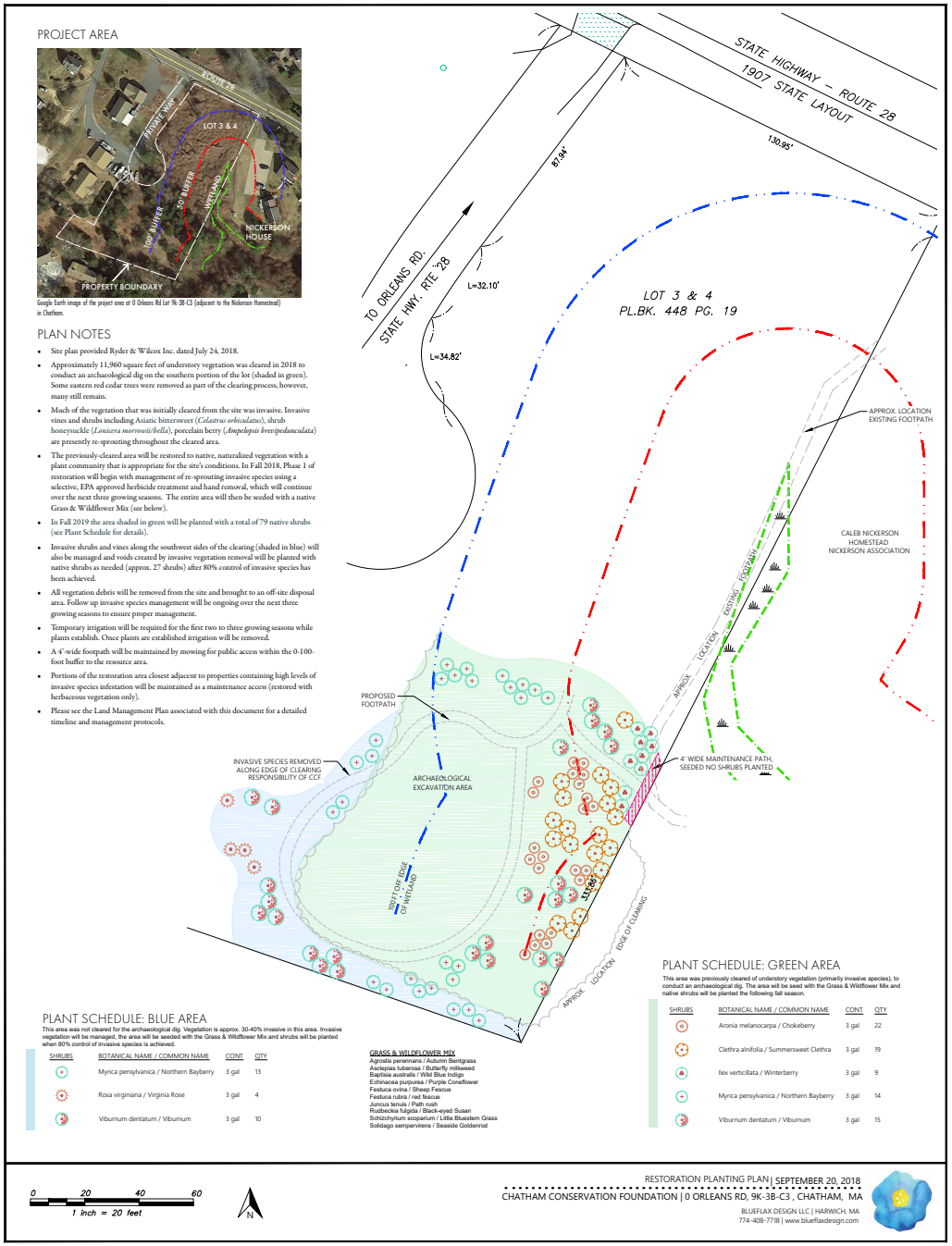
- Establish 4'-wide footpaths throughout AURA.

This project will result in an overall improvement to the resource area and AURA at 0 Orleans Rd by improving quality of vegetation and wildlife habitat.

The proposed project will not destroy or permanently alter any portion of the resource areas and will not have any adverse effects on the resource areas' functions as stated in the Massachusetts Wetlands Protection Act. According to the Natural Heritage and Endangered Species Program there is no Estimated or Priority Habitats of Rare Species on this property. The proposed restoration measures will have no adverse impact on the resource area or AURA. The proposed project will enhance and protect the functions of the resource area and AURA and the stated interests of the State Wetlands Protection Act and the Chatham Wetland Protection Regulations. Please see Appendix A of this document for information regarding State and Local Performance Standards.

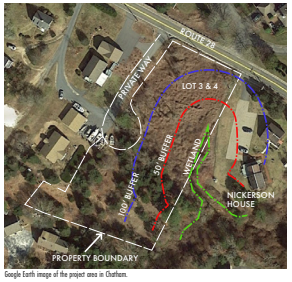


RESTORATION/PLANTING PLAN ARCHAEOLOGICAL DIG - AREA 1



RESTORATION/PLANTING PLAN - UPLAND AREA 2

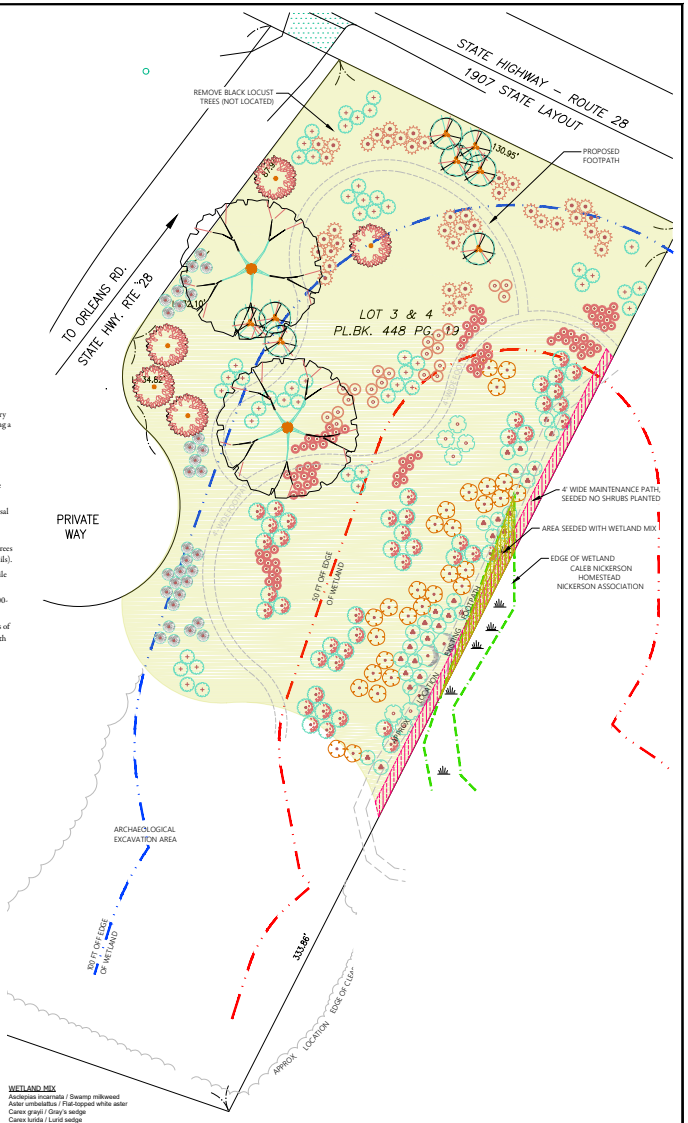
PROJECT AREA



Google Earth image of the project area in Chatham.

PLAN NOTES

- Site plan provided Ryder & Wilcox Inc. dated July 24, 2018.
- Approximately 28,500 square feet will be restored to native, naturalized shrub and grassland by removing invasive species, primarily including Asiatic bittersweet (*Celastrus orbiculatus*), shrub honeysuckle (*Lonicera morrowii/bella*), porcelain berry (*Ampelopsis brevipedunculata*), and black locust (*Robinia pseudoacacia*) and restoring a native plant community appropriate to the site's conditions.
- Management will begin by removing invasive vegetation in late winter 2019 and seeding the entire area with the Grass & Wildflower Mix. The Wetland Mix will be used in the wetland resource area to revegetate the existing footpath.
- Invasives will be managed using a combination of selective EPA approved herbicide treatment and mechanical removal.
- All vegetation debris will be removed from the site and brought to an off-site disposal area. Follow up invasive species management will be ongoing over the next three growing seasons to ensure proper management.
- The management area will be planted with native 337 native shrubs and 15 native trees after 80% control of invasive species has been achieved (see Plant Schedule for details).
- Temporary irrigation will be required for the first two to three growing seasons while plants establish. Once plants are established irrigation will be removed.
- A 4'-wide footpath will be maintained by mowing for public access within the 0-100-foot buffer to the resource area.
- Portions of the restoration area closest adjacent to properties containing high levels of invasive species infestation will be maintained as a maintenance access (restored with herbaceous vegetation only).
- Please see the Land Management Plan associated with this document for a detailed timeline and management protocols.



PLANT SCHEDULE: YELLOW-GREEN AREA

Vegetation is approx. 95% invasive in this area. Invasive vegetation will be managed, the area will be seeded with the Grass & Wildflower Mix and shrubs will be planted when 80% control of invasive species is achieved.

TREES	BOTANICAL NAME / COMMON NAME	CONT	QTY
	Amelanchier canadensis / Serviceberry	7 gal	8
	Juniperus virginiana / Eastern Red Cedar	2 gal	5
	Quercus alba / White Oak	1-2" Cal	2
SHRUBS	**BOTANICAL NAME / COMMON NAME**	**CONT**	**QTY**
	Aronia melanocarpa / Chokeberry	3 gal	22
	Clethra alnifolia / Summersweet Clethra	3 gal	29
	Comptonia peregrina / Sweet Fern	1 gal	85
	Cornus sericea / Red Twig Dogwood	3 gal	7
	Ilex glabra / Inkberry Holly	3 gal	32
	Ilex verticillata / Winterberry	3 gal	25
	Myrica pensylvanica / Northern Bayberry	3 gal	48
	Rosa virginiana / Virginia Rose	3 gal	41
	Sambucus canadensis / Elderberry	3 gal	3
	Viburnum dentatum / Viburnum	3 gal	45

WETLAND MIX
Asclepias incarnata / Swamp milkweed
Aster umbellatus / Flat-topped white aster
Carex grayii / Gray's sedge
Carex lurida / Lurid sedge
Carex vulpinoidea / Fox sedge
Chelone glabra / Turtle head
Juncus effusis / Soft rush
Eupatorium maculatum / Spotted joe pye weed
Eupatorium perfoliatum / Boneset
Onoclea sensibilis / sensitive fern
Panicum clandestinum / Deertongue grass
Solidago patula / Rough-leaved goldenrod
Scirpus cyperinus / Woolgrass
Scirpus validus / Soft-stemmed bulrush
Sparganium americanum / Eastern bur reed
Verbena hastata / Blue vervain

GRASS & WILDFLOWER MIX
Agrostis perennans / Autumn Bentgrass
Asclepias tuberosa / Butterfly milkweed
Baptisia australis / Wild Blue Indigo
Echinacea purpurea / Purple Coneflower
Festuca ovina / Sheep Fescue
Festuca rubra / red fescue
Juncus tenuis / Path rush
Rudbeckia fulgida / Black-eyed Susan
Schizchyrium scoparium / Little Bluestem Grass
Solidago sempervirens / Seaside Goldenrod

0 20 40 60
1 inch = 20 feet

N

RESTORATION PLANTING PLAN | SEPTEMBER 20, 2018
CHATHAM CONSERVATION FOUNDATION | 0 ORLEANS RD, 9K-38-C3 , CHATHAM, MA

BLUEFLAX DESIGN LLC | HARWICH, MA
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VEGETATION RESTORATION PROCESS

The project will begin with a selective basal bark/injection herbicide pretreatment of invasive and aggressive species throughout the project area. This pretreatment will be followed approximately three weeks later (giving time for herbicide to translocate to root systems) with a combination of mechanical and hand removal of invasive species. It is expected that some root material that has not been destroyed by herbicide pre-treatment will be left behind, and that there is a substantial invasive species seed bank throughout the area. Therefore, follow-up treatments beginning in spring 2019 and continuing through late summer and fall for the next three to five growing seasons will be necessary. Please see the Invasive Plant Management/Three Year Management Time-Line in this document for details.

The entire project area will be seeded with native species after the initial removal of invasive species. The seed mixes will include native warm and cool-season grasses and wildflowers to establish a native groundcover throughout the area.

After the first phase of invasive species management is complete and 80% control of invasive species infestation has been achieved, native shrubs and trees will be planted. The project area will be planted with approximately 443 native shrubs and 15 trees. Please see Planting Plan for a detailed list of species.

Temporary irrigation will be required for the first two to three growing seasons while plants establish. Once plants are established, irrigation will be removed. Follow up invasive species management will be ongoing over the next three growing seasons.

INVASIVE PLANT MANAGEMENT

Invasive plants, also known as noxious weeds, are plants introduced from other regions that have the ability to reproduce rapidly and displace native species. According to the National Invasive Species Council (NISC) "Invasive species may prey upon, displace or otherwise harm native species. Some invasive species also alter ecosystem processes, transport disease, interfere with crop production, or cause illnesses in animals and humans; affecting both aquatic and terrestrial habitats." Invasive plants threaten natural communities by reducing habitat and food for native insects, birds, and other wildlife. These invasive plants have a competitive advantage because they are no longer controlled by their natural predators, and can quickly spread out of control. For these reasons, invasive species are of national and global concern. NISC's recommendations for managing invasive species includes 5 Strategic Goals for managing invasive species nationwide:

Prevention
Early Detection and Rapid Response
Control and Management
Restoration
Organizational Collaboration

While we recognize that prevention is the best and most important management strategy, it is often too late to prevent invasive species colonization of our landscapes, including our most sensitive resource areas. Whenever land disturbance occurs, whether for development or simply for planting, we recommend a monitoring program to ensure that invasive vegetation does not expand into these disturbed areas, preparing a plan for Early Detection and Rapid Response.

On project sites where invasive species have been identified, BlueFlax Design LLC follows NISC's guidelines for Control and Management; Restoration; and Organizational Collaboration. Control and Management calls for containing and reducing the spread of invasive populations to minimize their harmful impacts. Restoration calls for the restoration of high-value ecosystems to meet resource conservation goals; Organizational Collaboration calls for maximizing management effectiveness through collaboration with property owners, experienced land management professionals, and local Conservation Commissions (for project sites within Conservation Jurisdiction).

The invasive plant species (as listed by the Massachusetts Invasive Plant Advisory Group) on the following pages have been identified within the proposed project area at 0 Orleans Road, Chatham Massachusetts.

INVASIVE SPECIES DESCRIPTIONS

Asiatic Bittersweet, (Celastrus orbiculatus) According to the University of Illinois Vegetation Management Guidelines, Asiatic bittersweet is capable of climbing up to 60 feet in trees, and can cover ground cover and understory layers, eliminating native species. Vines constrict trees and shrubs, killing them by shading. Bittersweet poses a serious threat because it spreads rapidly through underground root systems that form new stems, reproduces prolifically by seed, is shade tolerant, and seedlings may stay suppressed for some time before being released by disturbance.

Asiatic bittersweet fruit

Asiatic bittersweet vines

Multi-flora rose (Rosa multiflora) Initially introduced from Japan to provide erosion control, this prolific species, which reproduces both by seed and vegetatively, can create impenetrable thickets that out compete native plants species. Multi-flora rose can tolerate a wide range of site conditions, including salt and wind, and can be found throughout coastal areas on Cape Cod.

Multi-flora rose growing in

Multi-flora rose flowers and

Porcelain berry (Amepolpsis brevipedunculata) is a very aggressive vine that poses a serious threat to native plant communities. Porcelain berry has been officially classified as an invasive plant in Massachusetts, because it has the ability to overwhelm open fields, shrublands, banks and forests by forming dense stands. The vines should be flush cut and Glyphosate should be applied to the cut stem. Regular hand pulling of these juvenile plants is recommended.

Porcelainberry fruit and leaves

Porcelainberry vines

Black Locust (Robinia pseudoacacia) spreads rapidly by both seed and root suckers. By managing the invasive tree, understory species will respond positively, increasing fruit production and understory canopy development. Additional sunlight will also enhance the herbaceous groundcovers. Note: Black Locust is known to re-sprout vigorously after removal. Substantial root sucker growth should be expected from the remaining root material within 60 days of the initial removal. Re-sprouting can be minimized with the application of a glyphosate-based herbicide applied directly to the cut stem.

Black locust leaf

Black locust bark

Shrub Honeysuckle (Lonicera morrowii, bella) will invade a wide variety of native habitats, with or without any previous disturbance. Shrub honeysuckle has a broad tolerance to a variety of moisture regimes and habitats, making most natural communities susceptible to invasions. This species is believed to produce allelopathic chemicals that inhibit the growth of other plants, thereby out-competing native vegetation.

Shrub honeysuckle blooming

Shrub honeysuckle leaves and flowers

LAND MANAGEMENT TIME-LINE (CONT.)

	Year 1				Year 2				Year 3			
	Winter 1	Spring 1	Summer 1	Fall 1	Winter 2	Spring 2	Summer 2	Fall 2	Winter 3	Spring 3	Summer 3	Fall 3
If 80% control of invasive species has been achieved, commence planting of woody vegetation as specified in the Restoration/Planting Plan												
Plan irrigation needs for upcoming growing season												
Prepare and submit monitoring report to Conservation Commission												
Selectively remove invasive resprouts using a cut & wipe application of a 20% concentration of a Glyphosate-based herbicide to all other invasive shrubs after July 15th												
Adjust temporary irrigation as necessary to ensure proper care of newly installed vegetation while using the least amount of water necessary to support plant establishment												
Continue invasive plant management using a selective, foliar spot application												
Assess health of restored vegetation, replace any vegetation that may have succumbed to winter kill												

Herbicides used are to be applied by insured, licensed, and trained individuals only.

Invasive Species/Land

Planting/Irrigation

Monitoring

ONGOING INVASIVE SPECIES MAINTENANCE:

After the third management season, invasive species should be under control. At this juncture invasive plants should be reduced to low enough numbers that an annual hand removal and selective herbicide treatment strategy will suffice to keep them out of the naturalized areas. (This will vary depending on actual carbohydrate stores in the roots and environmental conditions throughout the treatment period.) Invasive plants generally take a minimum of three to five years of active management to reach a level of successful control. Annual monitoring and minimal maintenance for invasive species should be ongoing throughout the restoration area.

LAND MANAGEMENT TIME-LINE

Using objectives developed by the National Invasive Species Council for Control and Management, Restoration and Organizational Collaboration as our guide, BlueFlax Design LLC proposes the following methods and techniques for managing the invasive species listed above within the coastal bank and adjacent upland resource area at 0 Orleans Road:

Control and Management Objectives:

- Identify and evaluate appropriate invasive species control methods; create action plan
- Reduce the spread and harm caused by invasive species using the identified methods of control

	Year 1				Year 2				Year 3			
	Winter 1	Spring 1	Summer 1	Fall 1	Winter 2	Spring 2	Summer 2	Fall 2	Winter 3	Spring 3	Summer 3	Fall 3
Pre-treat all invasive species throughout the project area with basal bark treatment (vines) or injection treatment (shrubs)												
Second pre-treatment two to three weeks after first pretreatment												
Approximately 3-5 weeks after second pre-treatment, uproot invasive vegetation												
If any root material is left in the ground, apply a 20% concentration of a Glyphosate-based herbicide to invasive shrubs by wiping directly onto the cut stump immediately following the cutting treatment												
Remove all vegetation debris from the site for proper disposal												
Monitor invasive plant response to previous season's management treatments and calibrate upcoming treatments to correspond with the observed plant response												

Herbicides used are to be applied by insured, licensed, and trained individuals only.

Invasive Species/Land Planting/Irrigation Monitoring

APPENDIX A: STATE AND LOCAL PERFORMANCE STANDARDS

The proposed invasive species management/restoration planting project must meet the following state performance standards for Vegetated Wetlands as stated in the Massachusetts Wetlands Protection Act 310 CMR 10.55 and the Town of Chatham Wetlands Protection Regulations Sections 3.02 and 4.01:

10.55 BORDERING VEGETATED WETLANDS

(4) General Performance Standards

(a) Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.

(b) Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost: 1. the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area"); 2. the ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area; 3. The overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area; 4. the replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area; 5. the replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area; 6. at least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and 7. the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.

In the exercise of this discretion, the issuing authority shall consider the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the extent to which adverse impacts can be avoided, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

(c) Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of a portion of Bordering Vegetated Wetland when; 1. said portion has a surface area less than 500 square feet; 2. said portion extends in a distinct linear configuration ("finger-like") into adjacent uplands; and 3. in the judgment of the issuing authority it is not reasonable to scale down, redesign or otherwise change the proposed work so that it could be completed without loss of said wetland.

(d) Notwithstanding the provisions of 310 CMR 10.55(4)(a),(b) and (c), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.

(e) Any proposed work shall not destroy or otherwise impair any portion of a Bordering Vegetated Wetland that is within an Area of Critical Environmental Concern designated by the Secretary of Energy and Environmental Affairs under M.G.L. c. 21A, § 2(7) and 301 CMR 12.00: Areas of Critical Environmental Concern. 310 CMR 10.55(4)(e): 1. supersedes the provisions of 310 CMR 10.55(4)(b) and (c); 2. shall not apply if the presumption set forth at 310 CMR 10.55(3) is overcome; 3. shall not apply to work proposed under 310 CMR 10.53(3)(l); and 4. shall not apply to maintenance of stormwater detention, retention, or sedimentation ponds, or to maintenance of stormwater energy dissipating structures, that have been constructed in accordance with a valid order of conditions.

CHATHAM WETLANDS PROTECTION REGULATIONS

3.02 VEGETATED WETLANDS

(3) Performance Standards

Any proposed work, permitted by the Commission, in a vegetated wetland or within 100 feet of a vegetated wetland shall not: (a) destroy any portions of said vegetated wetland; (b) limit the capacity of the adjacent slope to perform its functions [section 3.02(1)]; (c) impair in any way the vegetated wetland's ability to perform any of the functions in section 3.02(1). (d) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering a vegetated wetland or of any land within 50ft of any vegetated wetland shall be permitted by the Commission, except for activity which is allowed under Part IV, section 4.01(d) or any other activity permitted under a variance from the regulations granted pursuant to Part IV, section 4.03.

4.01 ADJACENT UPLAND RESOURCE AREAS

(3) Performance Standards for Adjacent Upland Resource areas

APPENDIX A: STATE AND LOCAL PERFORMANCE STANDARDS (CONT.)

(a) Site Characteristics

In considering the permitting of proposed activities within adjacent upland resource areas, the Commission shall consider the following: 1. the quality and quantity of the wetland functions and values to be protected; and 2. the physical characteristics of the adjacent upland resource area including, but not limited to slope, soils, drainage, groundwater flow and depth of groundwater, vegetation composition and depth of the VBS, connectivity to other naturalized areas on adjacent parcels; and 3. the presence or evidence of likely habitat of rare or endangered species – both plant and animal, regardless of designation by the Department of Fish and Game Natural Heritage & Endangered Species Program (NHESP). The Commission may consult with the NHESP or other authorities as it deems necessary for guidance and recommendations.

(b) Vegetated Buffer Strip (VBS)

A vegetated buffer strip of continuous undisturbed naturalized vegetative cover that is located within an adjacent upland resource area, typically lying between a proposed development activity and a wetland resource area, is critical to the protection of the environmental values and public interests protected by this Bylaw. In such areas that are required by the Commission to be a VBS, the following standards are applicable: 1. turf lawn shall not constitute part of the VBS, 2. the introduction of exotic or invasive species shall be prohibited, 3. the connectivity with other naturalized areas shall be preserved, enhanced or created as is practicable, 4. wherever possible within the adjacent upland resource area, trees shall be allowed to remain. Tree removal may be permitted for the following reasons: (a) location and/or health pose a safety concern and threaten property or public safety; (b) species is deemed a harmful exotic invasive (eg) Tree of Heaven (Ailanthus altissima); (c) thinning or culling, as a best management practice to improve viability of other trees or other important vegetation; (d) recommendation by a certified arborist for reasons of disease, decay, structural failure, or presence of invasive insect species; (e) mitigation deemed adequate by the Commission is proposed (see policy # 04-101).

(c) Protection of Wildlife Habitat

In order to protect the adjacent upland resource area in accordance with the fundamental purpose of the Bylaw, a project must be designed to avoid adverse impact on wildlife habitat – either project specific or cumulative – for more than two growing seasons. Therefore any activity, which is allowed in the adjacent upland resource area shall not have an adverse impact on wildlife habitat caused by: 1. disturbance or removal of vegetation providing cover, food source, breeding or nesting sites without mitigation; 2. creating a barrier to wildlife movement within and between resource areas through the placement of fencing or other obstruction; 3. destruction of habitat features including, but not limited to large cavity trees (except as permitted under 4.01(3)(b)4 above), turtle nesting areas, existing nest trees for birds that reuse nests, dens, burrows, vernal pools, vertical sandy banks, migration corridors that provide connectivity between wildlife habitats; 4. indirect impacts of human activities near wildlife habitat; including, but not limited to, limiting work or recreational activity within 100 feet of an active den, or within 200 feet of an existing osprey, great blue heron, bird of prey, or rare or endangered species nest; 5. cumulative impacts which under reasonable assumption could result in a measurable decrease in the existing wildlife populations or biological structure, composition, or richness on the site or in the vicinity, taking into account the potential impact of future projects that could be proposed in the vicinity which could have similar detrimental or negative synergistic effect on wildlife habitat.

(d) No Disturb Zone

The purpose of the no disturb zone is to give greater protection to the resource's environmental interests by preserving and improving water quality, reducing pollution and erosion, and by providing wildlife habitat and corridors. In such areas as are designated or required by the Commission to be a no-touch area, no activity, other than maintenance of an already existing structure and actively maintained landscaping, which will result in the building within or upon, filling, or altering land within 50 feet of a coastal or inland wetland area shall be permitted by the Commission, except for an activity which is allowed under a variance from these regulations pursuant to section 4.03. Notwithstanding that an area is designated by the Commission to be a no-disturb zone, the following alterations may be permitted: 1. pervious walking paths to a width of no more than 4ft to provide access; 2. elevated stairs or at-grade steps; 3. pruning or selective cutting of vegetation for windows of view or invasive species or noxious plant control; 4. water dependent projects, if no practicable alternative is available, (such a project shall be designed and conditioned to minimize any adverse impacts on the protected environmental interests); 5. fertilizer use for new plantings based on best management practices; 6. use of IPM (Integrated Pest Management) based on best management practices; 7. herbicide use at the discretion of the Commission; 8. fences that are not a hindrance to wildlife movement; 9. conversion of impervious surfaces to vegetated or other pervious surfaces; 10. activities that are considered temporary (eg) installation of monitoring wells, exploratory borings, sediment sampling, surveying; 11. planting of indigenous species of trees, shrubs, groundcover; 12. removal of dangerous or diseased trees.

APPENDIX B: PLANT GUIDE

Botanical Name	Common Name	Height	Bloom Period	Characteristics	Plant Notes
			TREES AND SHRUBS		
Amelanchier canadensis	Serviceberry	15-30'	Apr-May		Understory tree
Juniperus virginiana	Easter red cedar	30-65'	NA		Evergreen
Quercus alba	White oak	50-80'	Mar-May		
Rosa virginiana	Virginia rose	4-6'	June-Aug		
Clethra alnifolia	Summersweet	5-8'	July-Aug		
Ilex verticillata	Winterberry holly	3-12'	June-July		Red berries persist in winter
Aronia meloncarpa	Black chokeberry	4-6'	May		
Myrica pensylvanica	Northern bayberry	5-8'	N/A		"Fixes" nitrogen in soil
Viburnum dentatum	Arrowwood viburnum	6-12'	May		
Ilex glabra	Inkberry holly	5-8'	N/A		Evergreen
Comptonia peregrina	Sweet fern	2-4'	N/A		"Fixes" nitrogen in soil
Cornus sericea	Red osier dogwood	5-10'	May-Jun		
Sambucus canadensis	Black Elderberry	5-12'	Jun-July		

Pollen and/or nectar producer
Shelter/cover for wildlife
Food for caterpillars
Salt tolerant
Flood tolerant
Food for birds
Nesting sites for wildlife
Food for mammals
Prevents erosion
Winter food

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Online Resources

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