

Cricket Lane LLC
92 Middlesex Road
Tyngsborough MA 01879

September 10, 2021

Samantha Holt, Conservation Agent
Town of Newbury
12 Kent Way
Byfield, Ma 01922

RE: Villages at Cricket Lane

Dear Ms. Holt,

At the last Conservation Commission meeting on September 7, one of the commission members requested additional information on the Wetland Replication area.


Attached please find a copy of the "Wetland Restoration and Replication Report" prepared for Cricket Lane by Norse Environmental Services, Inc. The report and wetlands replication plan was compiled after negotiations and comments between Norse Environmental Services, our Wetlands Scientist; and Ann Marton of LEC Environmental Consultants, the Town of Newbury's wetland consultant. It calls for the planting of 26 trees and 226 shrubs in the wetlands replication area, well in excess of the recommendations of the DEP guidelines.

In addition, we planted additional shrubs and located trees to save along the edge of the wetlands in the buffer zone to help mitigate some of the disturbance there.

Lastly, at the public hearing during discussion of the isolated wetland, it was remarked that this was an exceptionally dry year, and if it was a normal year this area may be certified as a vernal pool. However, that statement was incorrect, as April and May received average amounts of precipitation, and the pool still dried up during times in May and June.

Please let me know if I can provide any additional information for you.

Sincerely,


Walter Eriksen, Manager

Cc Ben Osgood
Attorney Douglas Deschenes



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Wetland Restoration & Replication Report

For

The Villages at Cricket Lane 55 Pearson Drive

Prepared For

Cricket Road Development, LLC
92 Middlesex Road ~ Suite 3
Tyngsboro, MA 01879

Prepared By

Norse Environmental Services, Inc.
92 Middlesex Road ~ Suite 4
Tyngsboro, MA 01879

November 2020
Revised December 16, 2020

Narrative

The Village at Cricket Lane proposes a limited project roadway crossing, wetland alteration, wetland replication/restoration, (24) single family dwellings (including (6) affordable units), roadway, subsurface sewage disposal system, drainage, grading and associated utilities.

The previous owner of 55 Pearson Drive altered or filled 2039 s.f. of bordering vegetated wetland. This alteration occurred, at the rear of the property, between wetland flags E15-E23 & D21. The historic fill area was estimated by utilizing historical mapping and aerial photographs. Please see plan sheet 3 of 19 that highlights the historically filled wetland.

The limited project roadway crossing proposes to permanently alter 1730 s.f. and temporarily alter 495 s.f. of bordering vegetated wetland. The alteration is proposed between wetland flags D19-E22. The proposed 495 s.f. temporary wetland alteration is for the installation of the roadway retaining wall. The temporary wetland alteration will be restored, seeded, and planted.

The applicant is proposing to replicate the wetland at a 1:1.5 ratio. The total proposed wetland alteration is 1730 s.f. for the limited project roadway crossing and 2039 s.f. historic wetland alteration for a total 3769 s.f. of wetland. The applicant is proposing a 5660 s.f. of wetland replication north of the E-series wetland. This area will be accessed between wetland flags D14 & D15 and E4. The 290 s.f. of temporary wetland alteration will be restored, seeded, and planted.

Wetland Replication Requirements

Projects that impact bordering vegetated wetlands (BVW) require replication under 310 CMR 10.55(4)(b). The performance standards for BVW impacts include the requirement of wetland replication if a BVW is destroyed or otherwise impaired. The general conditions governing the replication of up to 5000 square feet of BVW set forth in 310 CMR 10.55(4)(b) is summarized as follows:

- Surface area must be equal to the lost area;
- The replication area must have similar ground water and surface elevation as the lost area;
- The replication area must have a similar location relative to the bank as the lost area;
- The replication area must have an unrestricted hydraulic connection to the same water body or waterway as the lost area;
- The location of the replication area must be in the same general area as the lost wetland;

- The replication area must have at least 75% cover of native wetland plants within two growing seasons, and there must be temporary stabilization of exposed soil to avoid erosion.

Evaluation of Existing Conditions and Functions

The wetland regulations presume that Bordering Vegetated Wetland's serve the following public interests identified in the WPA: public or private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, fisheries, and wildlife habitat (land containing shellfish pertains to coastal wetlands only).

Existing Conditions

The wetland replication area consists of 5660 s.f. and proposed along the northerly side of the E-series wetland, between flags E3.5-E10. The E-series wetland is a red maple swamp consisting of red maple, green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*) and American hornbeam (*Carpinus caroliniana*) in the overstory. The understory consists of common buckthorn (*Rhamnus cathartica*), spicebush (*Lindera benzoin*), northern arrow-wood (*Viburnum recognitum*) and winterberry (*Ilex verticillata*). The herbaceous layer consists of jewelweed, cinnamon fern (*Osmunda cinnamomea*), poison ivy (*Toxicodendron radicans*), false nettle (*Boehmeria cylindrica*) and marsh fern (*Thelypteris thelypteroides*)

Soils

The Web Soil Survey maps the wetland soils as a Maybid Silt Loam. Maybid soils are deep, nearly level, very poorly drained soil in depressions and low areas near large streams. The surface layer is friable, very dark gray silt loam about 7 inches thick. The subsurface layer is friable gray silty clay loam 4 inches thick. The subsoil is firm, mottled, greenish gray silty clay 8 inches thick. The substratum is greenish gray and dark greenish gray, firm silty clay to a depth of 60 inches or more. The permeability is slow or very slow. Available water capacity is high, and the rooting zone is restricted by a seasonal high-water table which is at or near the surface in winter and spring.

The adjacent uplands areas are mapped as a Charlton-Hollis-Rock Outcrop Complex consisting of well drained Charlton soils, somewhat excessively drained Hollis soils and rock outcrops that occur in such intricate patterns on the landscape, that it is not practical to separate them at the scale of mapping. Generally, these areas consist of about 50 percent Charlton soils, 15 percent Hollis soils, 10 percent rock outcrop and 25 percent other soils. Major limitations are related to rockiness and slope, and depth to bedrock in the Hollis soil.

Replication Site Selection

The wetland replication area is located near the lost wetland and will readily take because it is adjacent to the main wetland area. In addition, the adjacent natural wetland will aid in revegetation by opportunistic native species.

Hydrology, Soils, and Vegetation

The hydrology at the replication site is critical in controlling the plant community that develops, and many of the ecological functions of the site. There will be unrestricted hydraulic connection between the replicated wetland and water source. The replication area will be excavated to the groundwater elevation and fed by the intermittent stream flow.

Replication Area Characteristics	Existing	Proposed
Estimated Seasonal High-Water Table	varies from 2 ft - 4 ft.	At grade
Duration of seasonal saturation	dry	year round
Expected seasonal inundation	dry	spring

These conditions were determined by soil auguring within the proposed wetland replication area and visual examination of the surrounding wetland.

Soil

An important factor in the success of a replication area is the proper use of soils either translocated (i.e. the relocation and reuse of hydric soils from the impacted resource area to the proposed replication area) from the impacted wetland or soil amendments brought from off-site. The development of hydric soils provides substrate for wetland plants, which in turn supports wildlife habitat. Hydric soil acts as a matrix to treat groundwater, adsorbs and absorbs pollutants, and supports vegetation that slows floodwaters. A minimum of four inches of topsoil will be required over the replication area.

Soil Translocation

Soil translocation is the preferred methodology for obtaining replication soils. Wetland soils from the altered areas will be used for replication purposes. Since this will be insufficient for complete coverage, composted leaf litter will be mixed with soil as an amendment. A wetland scientist will inspect the soils prior to installation. Prior to placement of hydric soils in the replication area, all excavation of the replication area to appropriate sub grade elevations should be completed. Competent wetland/soil scientists will inspect the excavated area to ensure the area is excavated to the water table. Soil taken from areas where the invasive species are present should always be avoided.

Soil Amendments

Composted leaf litter is to be mixed with topsoil as an amendment. The objective is to obtain approximately 50% organic material/topsoil. After the soil is managed for proper consistency (e.g. loose to friable), the soil consistency and organic content shall be tested and approved by the wetland scientist prior to placement in the wetland replication area.. If the proper consistency has not been achieved, further efforts shall be undertaken to achieve proper consistency. Surveying of subgrades and finished elevations should be conducted frequently during construction.

To supplement organic material, coarse woody debris (e.g. logs) shall be scattered on the replication area in between plantings to add structure and a long-term source of decaying organic material, to cover at least five percent of the area.

Soils to be used at the mitigation site should be used immediately if possible or stockpiled for as little time as possible. While stockpiled, the soils should be kept wet and not be allowed to dry out. Contamination of these soils should be prevented. They should be transported in vehicles that have been washed so that no exotic/invasive seeds from other sites get mixed in with them.

Vegetation

In accordance with 310 CMR 10.55, at least 75% of the surface of the replacement area must be reestablished with indigenous wetland plant species within two growing seasons. In order to accomplish this, the hydrology and soils conditions must be appropriate for each type of wetland vegetation (i.e. emergent, shrub, forested etc.) that is proposed in the replication area.

Wetland Replication Planting Plan

The applicant shall plant the following tree and shrub species in the 5660 s.f. wetland replication area north of the E-series wetland. The trees shall be planted 15 ft. on center and the shrubs 5 ft. on center. A mixture of all the trees and a minimum of (5) different shrubs shall be planted. A total of (26) trees and (226) shrubs shall be planted. Species selection shall be based on cost and availability.

Common Name	Latin Name	Wildlife Benefits Food, Cover & Nesting
Trees:		
Red Maple	<i>Acer rubrum</i>	American robin, prairie warbler, American goldfinch, cardinal, grosbeaks, squirrels, chipmunk
American Elm	<i>Ulmus americana</i>	Wild turkey, ruffed grouse, pheasant, sparrow, cardinal, American goldfinch, woodpeckers, American robin
Eastern Hemlock	<i>Tsuga canadensis</i>	Ruffed grouse, rabbit, red squirrels, mice, deer and porcupines
Shrubs:		
Arrow-wood	<i>Viburnum dentatum</i>	Ruffed grouse, brown thrasher, American robin, eastern bluebird & gray catbird
Swamp Azalea	<i>Rhododendron viscosum</i>	Waterfowl, deer, & small mammals
Silky Dogwood	<i>Cornus amomum</i>	Wild turkey, white tailed deer, & gray catbird
Spicebush	<i>Lindera benzoin</i>	Veery, ruffed grouse, American robin, gray catbird, wild turkey, thrushes, white tailed deer
High bush blueberry	<i>Vaccinium corymbosum</i>	Blue jay, chickadee, titmouse, thrasher, eastern bluebird, ruffed grouse, American robin, mourning dove.
Common Winterberry	<i>Ilex verticillata</i>	Red-winged blackbird, American crow, American robin, rabbit, squirrel

These are all perennial species that should adapt to the conditions on site and provide a good basic wetland community. These species were chosen because they're native to the area and shall readily take.

Wetland Restoration Planting Plan

As mentioned above there are two areas of proposed temporary wetland alterations. The first area is located along the limited project roadway crossing and consists of 495 s.f. The temporary alteration is for the installation of the roadway retaining wall. The applicant is proposing to restore this area by planting shrubs (5) ft. on center and applying the New England Wetmix to the area. A total of (19) wetland shrubs shall be planted and a minimum of (3) different shrub species shall be selected from the table below:

The second wetland restoration area is for the temporary wetland replication crossing and consists of 290 s.f. Once the 5660 s.f. wetland replication area is created, planted and work is finished the temporary wetland crossing will be restored. The restoration includes removing the ground protection mats, applying the New England Wetmix (provided by New England Wetland Plants, Inc.) to the area and plantings shrubs. The shrubs shall be planted 5 ft. on center and a total of (14) shrubs shall be planted. A minimum of (3) different shrub species shall be selected for the temporary wetland crossing. Please see the shrub planting table below:

Wetland Restoration Shrub Plantings

Common Name	Latin Name
Arrow-wood	Viburnum dentatum
Swamp Azalea	Rhododendron viscosum
Silky Dogwood	Cornus amomum
Spicebush	Lindera benzoin
High bush blueberry	Vaccinium corymbosum
Common Winterberry	Ilex verticillata

Invasive Species

If the following invasive species are found growing in replication areas, measures should be taken to eliminate them as soon as possible by hand weeding. Soils from existing wetlands containing these species should never be used in replication areas.

- Purple Loosestrife (*Lythrum salicaria*);
- Phragmites (*Phragmites australis*);
- Buckthorn, (*Rhamnus Frangula alnus*);
- Honeysuckles (*Lonicera spp.*);
- Garlic Mustard (*Alliaria petiolata*);
- Japanese Knotweed (*Polygonum cuspidatum or Fallopia Japonica*);
- Japanese Stilt Grass (*Microstegium vimineum*);
- Reed Canary Grass (*Phalaris arundinacea*);
- Bittersweet nightshade (*Celastrus Orbiculatus*);

- Black Swallow-wort (*Cynanchum nigrum*);
- Pale Swallow-wort (*Cynanchum rossicum*).

Trucks that have previously been on other sites should be washed prior to introduction to the replication site so that mud/dirt with exotic/invasive seeds is not inadvertently brought to the replication site.

Timing of Plantings

All plantings should occur at the end of the growing season or during dry conditions to minimize impact. Fall plantings should be done before the first frost. Shrubs and trees, however, may be planted up to November 15th, weather permitting.

Within two growing seasons, a viable plant community of indigenous species should be present, this includes some or all of the following red maple (*Acer rubrum*) and American elm (*Ulmus americana*), arrowwood (*Viburnum dentatum*), high bush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillate*) and sensitive fern (*Onoclea sensibilis*). In case of vegetation mortality, the Commission will be informed of plantings of nursery stock.

Wildlife Habitat

Wetland resource areas provide important food, shelter, migratory and over-wintering areas, and breeding areas for many birds, mammals, amphibians, and reptiles. Wetland characteristics that provide wildlife habitat include hydrologic regime, plant and soil composition and structure, topography and water chemistry.

Woody vegetation of varying heights adds structural diversity that is important for wildlife. While it is not immediately feasible to replicate a mature forested swamp complete with large trees and standing snags, replication projects will incorporate shrubs and saplings so that woody components will develop over time, as well as emergent areas and hummocks. It is also beneficial to provide water at varying depths, times and duration.

The wetland replication area should have approximately 5% woody debris consisting of stumps or logs, three to four feet in length and six inches or larger in diameter.

Erosion Control

Erosion controls will be placed along the boundary of the wetland replication area. Upon completion of the replication area, installation of siltation fencing between the replication area and the adjacent upland will be provided to prevent silt from entering the replication area. Prior to permanent establishment of vegetation in the replication area, soils will be temporarily stabilized to prevent impacts from erosion by mulching and seeding with a wetland seed mixture until re-establishment of wetland vegetation occurs. Hydroseeding is a valuable erosion control measure and may discourage colonization by invasive species.

All embankment slopes adjacent to wetland replication areas should have slopes no greater than 2H:1V unless stabilized by structural means. Bioengineering stabilization methods are recommended for slope stabilization.

Organic soils and wetland vegetation should not be placed in the replication area until the wetland scientist has verified the ESHW table and final excavated grade for the replication area. Please see, plan sheet 18 of 19, that notes the final proposed grade of elevation 52 ft.- 54 ft.

Following excavation work, the contractor shall remove all construction debris, gravel, crossing materials/matts within the restoration/replication areas. Once the final grades are established, the area shall be inspected by the wetland scientist and landscaping should be completed as soon as possible to minimize erosion. All exposed soils will be stabilized using seed-free mulch or other appropriate erosion control measures in the event that seasonal conditions result in a delay in planting. If the site is excavated to the subgrade in the fall and a delay is inevitable, consideration should be given to stabilizing the site for winter and conducting final grading in the spring. Use of hydroseeding has been found to stabilize a site quickly and may possibly hinder growth of invasive species. Erosion control measures such as hay bales and silt fences shall be removed as soon as the site is stable to allow for proper hydrologic conditions.

Monitoring Requirements

Monitoring is critical in wetland replication efforts due to the complex issues that can arise when trying to replace the specific ecological conditions of wetlands. Monitoring to ensure that the project is built according to the design specifications will ensure that the most common cause of failure is avoided. A project monitor (preferably a qualified professional with training in wetland science) with a minimum 5 years of experience in the construction of wetland replication areas and general construction practices should be on-site to monitor the excavation, grading, and planting of the replication area (at the end of the first growing season, a professional with less than 5 years experience in wetland replication construction may conduct the monitoring if supervised by a professional with at least 5 years experience). The project supervisor or monitor should be present during the most important tasks in replication construction including:

1. Before excavation or erosion control installation work begins to inspect site flagging;
2. During excavation of the altered area if vegetation is to be translocated to the replication area to ensure survival of the plantings;
3. Before soil translocation or addition into the replication area to inspect excavated elevations and likely post-construction ground water elevations for the replication area;
4. After each stage of grading work is completed to inspect finished elevations;
5. During planting and seeding and after the first month of the growing season to inspect propagation techniques;
6. After one growing season to observe vegetation development and regulatory compliance;
7. After two growing seasons to determine vegetation development and regulatory compliance
8. After subsequent growing seasons, if a greater than 2-year monitoring program is required.

A monitoring report shall be submitted in the late spring and at the end of each of the first two growing seasons. Monitoring will be required until regulatory compliance goals are met. Reports should include recommendations for additional plantings should the replication area appear to be unlikely to meet the 75% reestablishment standard (note that the 75% revegetation may include volunteer hydrophytic species as well as replacement plantings and seeding). Monitoring for invasive species should also be conducted and any invasive handpicked before becoming widespread and established. The final monitoring report should be accompanied by an as-built plan. The final monitoring report should indicate the conditions at the replication site (including stabilization of embankments), and describe in detail how the functions of the impacted wetland have been replaced by the development of the replication site.

1. An as-built plan stamped by a R.L.S. or P.E. should be submitted which documents the construction of the replication area. The size of the replication area should be documented as consistent with the size proposed.
2. A site visit should be conducted prior to issuing a Certificate of Compliance. The replication area should be compared with the design plans and the Order of Conditions to ensure that it has been constructed as proposed and wetland interests have been replicated.
3. At least 75% of the surface area of the replication site should be reestablished with indigenous wetland species within two growing seasons. A qualified wetland professional should certify to the plant species composition of the area and compliance with this condition. The qualified wetland professional should also certify that the plants proposed in the planting plan are those that were planted, in the correct number, and the spacing of the plantings. The Order of Conditions may be extended if it is about to expire but the replication area has not fully established itself through two growing seasons. Each different layer of wetland vegetation (forested, shrub, herbaceous etc.) should be checked to ensure that it is surviving as designed and that the hydrology is appropriate.
4. Vegetation should be checked to ensure that no invasive species are colonized in the replication area. If so, measures should be taken to eliminate the invasive species.
5. All surrounding buffer zone areas should be stabilized. Inspections should be conducted of erosion control devices such as hay bales and silt fences and those devices should be removed once the site is stabilized. A Certificate of Compliance should not be issued until all erosion controls are removed and any soils disturbed by their removal stabilized.

If the developer or landscaper performing work has any questions, please contact Norse Environmental Services Inc.