

**Pond shoreline restoration project  
10 Sheraton Park Arlington  
Project start: September 2019**

1) Arlington Conservation Commission Notice of Intent

- contact Con Comm clerk (David Morgan as of Sept 2023) for application form and guidance on required materials and documentation to be submitted with the NOI to the Con Comm.

Project approval was obtained over two Con Comm meetings. At the first meeting, application contained a standard property survey and not a topo survey, so Con Comm would not approve the application. They advised hiring a wetland consultant or botanist (I used Oxbow Associates) to delineate (flag) the wetland boundary so the surveyor could accurately mark the wetland boundary on the survey. At the second meeting, same materials were presented, as well as the topo survey, and approval was obtained.

Topographic survey of the property (used Rober Survey) must contain the following (confirm with Con Comm clerk):

- 100 year flood line
- jurisdictional setbacks (25, 50, 75, 100ft buffer lines from pond)
- indication of pond bank (water line or elevation drop from bank to pond bottom)
- elevation wherever work will be performed on the property
- wetland delineation (flag locations) if installed by botanist prior to survey

Con Comm can approve NOI prior to approval by NHESP (below) but work cannot begin before NHESP approval.

Once Con Comm approves NOI, they will provide an Order of Conditions outlining the requirements for the work. There is a 10 business day period for disputes to be filed. After the 10 day period, the Order of Conditions must be recorded with the Registry of Deeds and the registry receipt provided to Con Comm clerk. Once the registry receipt is submitted, the work can begin.

The OOC is valid for 3 years, during which there is a monitoring period in which the conditions outlined in the OOC must be maintained. Once a Certificate of Compliance is obtained (i.e., permit sign off), the OOC conditions are not longer required. One of the OOC conditions is displaying a sign with the MA DEP permit number visible from the street.

Provide Con Comm clerk with 48 hour notice of start of construction, which must start with the erection of an erosion control barrier as per the Order of Conditions. Con Comm clerk may conduct a walk-through to approve the barrier before the rest of work can be performed. NHESP may require the botanist to be on-site when the erosion control barrier is erected if Engelman's Umbrella sedge is present to ensure it is not disrupted by the barrier.

At completion of project (everything stated in the project description, including planting of vegetation), Con Comm clerk must conduct a walk-through to sign off the permit.

2) Natural Heritage and Endangered Species Protection (NHESP) MA Endangered Species Act (MESA) review

<https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review>

- MESA review required because Spy Pond contains endangered Engelmann's Umbrella Sedge that falls under NHESP protection

- Submit NOI (same NOI submitted to Con Comm) with Section C 'Other Applicable Standards and Requirements' section 2.c MESA filing fee checked off
- NHESP reviewer will send letter indicating requirements for permit
- Will likely request a certified botanist (used Oxbow Associates) to survey of the pond edge for presence of sedge and draft a report that is submitted to NHESP
- NHESP reviewer will send another letter indicating requirements under which work must be performed (protection of sedge if during growth season, seeds fall in Oct/Nov so work performed after this would require fewer protective measures)

3) shoreline work conducted by Concord Tree and Landscape. Con Comm did not require a contractor specialized in shoreline restoration to perform the work, so used Concord Tree and Landscape because had used for other hardscaping projects. If a company not experienced in shoreline restoration is used, recommend being on-site during the work and being familiar with the Con Comm requirements, installation of the coir logs (US Construction is very helpful with questions), etc. Probably a good idea even with a company experienced in shoreline restoration since homeowner will be responsible for adhering to the Order of Conditions.

4) Purchased coir logs, coir rope, and wood stakes to secure the logs, as well as coir erosion control blanket from US Construction. This company provided coir logs for pond bank restoration project by the town at the north end of Spy Pond. Premium and standard logs are available that differ in how long they last before biodegrading. Used a mix of both but recommend premium which appear to compress less as they become waterlogged. The coir logs are available in 12, 16, and 20 inch diameter and can be stacked to achieve the desired height of the bank. Stacked three layers of logs (i.e., 3 logs high) to a height of ~28 inches, with each layer set back from the layer below it to create a slope, using wood stakes on each side of the logs for each layer of logs, and coir rope looped around the stake ends and over the logs as tight as possible. The logs will settle a few inches when they take on water and start to degrade. The bottom layer of logs should be placed about at least 6 inches below the ground surface to prevent soil from washing out under the logs.

The logs will shift over time because the wood stakes and coir rope holding each layer rot and degrade faster than the logs. The coir rope degraded within 2 years in many places and some wood stakes rotted and broke within 3-4 years, resulting in the top and middle layers of logs sagging towards the pond in some areas, and the bank in those areas dropping because the soil washed into the pond. Recommend using wood stakes on the pond side of the logs only and not using coir rope to secure the logs (or do not rely on the rope to hold

the logs for more than a year). Also recommend setting each layer of logs so they create a shallow slope (i.e., more gradual slope) so once the bank is established it will erode less than a steep slope.

5) Placed a coir erosion control blanket on top of the bank and planted small plants through the blanket or spread seeds under the blanket (the seeds did not grow so not recommended). The blanket was not required by Con Comm but added to prevent wind/rain from washing away seeds and to secure the soil. The blanket will biodegrade over 1-2 years.

6) Vegetation must be planted into the coir logs and the top of the bank to form dense roots to stabilize the bank. Only native plantings are permitted by Com Comm. Use species that grow in wet/moist soil (OBL and FACW) and have deep root systems and/or spread by rhizomes, which will stabilize the bank. The coir logs biodegrade over a few years (depending on the density of the logs) so the roots will be the only means to prevent erosion.

The OOC required plantings to be maintained with a survival rate of at least 80%, and invasive species removal implemented, during the three year monitoring period of the OCC. A monitoring report must be submitted annually in November during this time that includes the number and types of restoration plantings evaluated, condition of the plantings (whether they have survived), and status of invasive plant removal and measures to remove invasive species if they are discovered.

Planted live stakes of osier (redtwig) dogwood into the seams between log levels. The stakes were cut from established plants in early spring prior to budding. During the 4<sup>th</sup> growing season, the logs below the water line had begun to degrade such that holes could be dug in them to plant tubelings (2" plugs) of species that grow in shallow water. Each spring/summer starting in 2020, spread seeds and planted tubelings (2" plugs) and 3-6" potted nursery plants on the bank top in an area about 4-5 feet wide along the length of the bank. A wider area of plantings may be better to control future erosion of the bank once the coir logs degrade.

Recommendations based on best success:

- 1) Plant live stakes in late winter/early spring before they start to bud leaves (planting later in the season had low chance of rooting and surviving). Plant 2-3 stakes together in the seams between logs every ~4 feet. Create a hole by hammering a long (~4ft) piece of rebar into the seam, wiggle around to make the hole larger, then remove the rebar and insert the live stakes to a depth of ~2ft (deep enough that the stake ends extend beyond the coir logs and contact soil). The red osier live stakes create vigorous bushes within 2-3 seasons.
- 2) Plant tubelings/plugs in spring on the bank top in relatively weed-free soil so the plugs do not have to compete with weeds for water and light. Plant densely (e.g. at least 1 plant per sqft) since not all will survive. Plant along the edge of the coir logs so roots will grow into the logs to stabilize them as they degrade. Take photos of the

plants so you can distinguish them from other plants/weeds that will also grow and should be removed to allow the tubelings to establish.

- 3) Seed mixes require the soil to be bare so the seeds can contact the soil and germinate before native weeds take over. Seed mixes were less successful than plants but were more economical.
- 4) Invasive plants take over quickly so remove and cut back invasives frequently so your plants don't have to compete. Use a plant identification app (e.g., PlantNet) to identify undesirable plants.

#### Native plants:

Arlington and Lexington Conservation Commissions have lists of native vegetation and local and online nurseries that carry natives. Lexington's list is more extensive. Most nurseries have native plants and the plant tags usually state if it is native.

Santa Rosa Gardens (online) – planted small plugs of Juncus, switchgrass, and little bluestem, which all survived and grew well, 3 plugs for ~\$10 dollars

Prairie Moon Nursery (online) – purchased seed packs of asters, milkweed, monkey flower, joe pye-weed.

Vermont Wildflower Farm (online) – purchased wet meadow wildflower and grass seed mix.

New England Wetland Plants – website says it is wholesale, but they sell retail. They carry live stakes through the winter months and tubelings (2" plugs) through spring/summer. Purchased 11 flats of plugs (550 plants) in June 2023 that were of high quality: blue flag iris and pickerelweed for shallow water and wet soil (pickerelweed established very quickly when planted in and between the first level of coir logs after they had partially degraded at water level after a few years); tussock sedge, cardinal flower, monkey flower, blue vervain, new England aster for moist soil on bank top. Highly recommend speaking with and purchasing from NEWP. They are very knowledgeable and will recommend suitable plants.

7) Once all work is complete, close out the permit by submitting a request for a certificate of compliance (COC) which releases the property from the Order of Conditions.

#### PREPARE THE APPLICATION

Review the Order of Conditions to make sure you've complied with each condition and the approved plans. Ensure any materials required by the Order of Conditions are compiled. For example, the OOC required a written statement from a MA professional engineer, registered land surveyor, or registered landscape architect certifying that the completed work complies with the plans referenced in the OOC, or must provide an as-built plan and statement describing any differences.

#### SUBMIT THE APPLICATION

Deliver the following to the Conservation Agent (David Morgan):

- Completed Wetlands Protection Act Form 8A (download from the internet)
- All relevant plans and documents required by the Order of Conditions
- If the OOC is expired, \$200 Bylaw Filing Fee by check payable to the Town of Arlington (No charge if before expiration date)

The COC request needs to be submitted two weeks prior to the preferred date of the hearing. When ready to submit, deliver the following to Town Hall for the Conservation Agent

- One electronic copy of the full filing
- One printed copy of the full filing For the Conservation Commission
- One printed copy of the full filing packaged with postage for shipping within Arlington
- Three full size copies of all submitted plans, each packaged with postage for shipping within Arlington

The Conservation Agent will schedule a site visit to confirm the information given in the Request for Certificate of Compliance before the hearing.

#### PRESENT THE PROJECT AT A PUBLIC HEARING

Either you can present the COC request at the Conservation Commission public hearing (first and third Thursdays of the month at 7 PM) or the Conservation Agent can do it on your behalf.

#### RECEIVE AND FILE THE ORDER OF CONDITIONS PAPERWORK

After the public hearing is closed, the Conservation Agent will issue a Certificate of Compliance. To clear title, you must record the paperwork with the Registry of Deeds. The recorded version of the COC should be kept with the deed for your property. The COC will contain continuing conditions that future owners are supposed to abide by.

#### **CONTACTS:**

Oxbow Associates 978-929-9058 – Scott (project manager), Matt Charpentier (botanist)

Rober Survey 781-648-5533

NHESP MESA 508-389-6357 - Melany Cheeseman (reviewer)

US Construction Fabrics, Windham NH. <https://www.usconstructionfabrics.com/>

New England Wetland Plants [www.newp.com](http://www.newp.com)