October 13, 2011

To: **Grady Miller, Town Manager**
Town of Narragansett
25 Fifth Avenue
Narragansett, RI 02882

From: **Thomas Fortier, President**
Friends of Canonchet Farm
PO Box 418
Narragansett, RI 02882

The Friends of Canonchet Farm is proposing a three-year invasive plant control program in which we would remove Japanese knotweed, Oriental bittersweet and other invasive plants from the east shore of Lake Canonchet.

The Friends will manage the removal program over a three-year period at no cost to the Town of Narragansett.

Removal of invasive plants and restoration of native species in this area are important objectives in and of themselves. The work is also a necessary first step in the development of the linear park along Boston Neck Road and Narragansett Avenue, as described in the Canonchet Farm Master Plan outline adopted on June 27, 2011. Moreover, successful restoration of native species in this highly visible location will be a powerful example of what can be accomplished on public and private land in Narragansett and throughout South County.

The program would require that the Town of Narragansett apply to the Rhode Island Coastal Resource Management Council (CRMC) for a permit to conduct an "Invasive Plant Management Project," naming the Friends of Canonchet Farm as the Contractor.

This proposal will be attached to the application to CRMC as Exhibit 1 to provide a program description.

The program would also require a letter of understanding between the Town of Narragansett and the Friends of Canonchet Farm wherein you will designate the Friends of Canonchet Farm as the contractor for Invasive Plant Management at Lake Canonchet for a period of at least three years.

The letter of understanding will be attached to the application to CRMC as Exhibit 2.

Following is a detailed description of the plan:

Lake Canonchet Invasive Plant Control Program

Contractor

The contractor for this project is the Friends of Canonchet Farm, a 501(c)(3) non-profit organization dedicated to the preservation and improvement of Canonchet Farm in Narragansett, R.I.

Four members of the Friends of Canonchet Farm who are Certified Invasive Plant Managers will be involved in management of the project:

- Thomas Fortier (Cert. No. 121, expires March 2012; RIAL# 534) is a Trustee and the President of the Friends of Canonchet Farm
- Kathleen Kelleher (Cert. No. 130, expires March 2012) is a Trustee and the Secretary of the Friends of Canonchet Farm
- Michael Lapisky (Cert. No. 133, expires March 2012)
- David Smith (Cert. No. 149, expires March 2012)

The Friends of Canonchet Farm will organize volunteers from among its members and other interested citizens, who will be trained and supervised by the Invasive Plant Managers.

The Friends of Canonchet Farm successfully managed a similar volunteer effort in partnership with the Town of Narragansett in November 2009, in which 58 volunteers removed asphalt from Canonchet Farm in response to a CRMC complaint.

Area to be Managed

The area to be managed is the 850 foot long eastern shore of Lake Canonchet in Narragansett. The lake is located across Boston Neck Road (RI 1A) from the Narragansett Town Beach (Figure 1).

Figure 1 Lake Canonchet, Narragansett, R.I.

The lake is separated from the beach by the state highway and beach facilities including an asphalt parking lot and the beach's South Pavilion. If these facilities are included in the definition, the lake is within 200 feet of the beach. However, for purposes of this proposal, Lake Canonchet itself is considered a coastal feature/coastal pond.

Lake Canonchet is normally a fresh water body fed by sheet flow from the upland on Canonchet Farm to the west and north. Testing of the water on July 11, 2011 showed that there was 0 ppt salinity (see Exhibit 3). However, the lake is subject from time to time to an ocean overwash during major storms, such as Hurricane Bob.

Ownership

The lake occupies the southeast corner of Canonchet Farm, a 176-acre parcel owned by the Town of Narragansett. The parcel was purchased with funds from the U.S. Department of the Interior for open space and passive recreation.

Dimensions

The area to be managed is an irregularly shaped band running 850 feet north-south and varying in width from 10 feet to 20 feet. The area to be managed extends approximately two feet into the water because of the presence of Phragmites (Phragmites australis).

The area is abutted on the east by a cultivated plot at the corner of Narragansett Avenue and Boston Neck Road, a gravel parking lot and the state highway.

Figure 2 The Area to be Managed in Phase 1 is Divided into Four Segments

As shown in Figure 2, the area is divided into four segments. The plan is to start with segment A and work northward.

Additional Areas to be Managed

The Friends of Canonchet Farm plans to propose adjacent areas to be managed, including the east shore of Little Neck Pond to the north and on the other side of Anne Hoxsie Lane (Phase 2 in Figure 3) and the south edge of Lake Canonchet (Phase 3 in Figure 3). Timing of proposals for additional phases depends on the early outcomes in the area described for this project.

Figure 3 Additional Areas to be Managed

Existing Vegetation

Vegetation along the water's edge includes both native plants and invasive species that are common in the Rhode Island coastal environment.

The native (or naturalized non-invasive) vegetation includes:

- Shadbush (Amelanchier canadensis)
- Bayberry (Morella [Myrica] pensylvanica)
- Sweet pepperbush (Clethra alnifolia)

The following invasive plant species are present:

- Autumn olive (Elaeagnus umbellata)
- Black swallow-wort (Vince toxicum negrum)
- European honeysuckle (Lunicera periclymenum)
- Japanese knotweed (Plygonum cuspidatum)
- Oriental bittersweet (Celastrus orbicalutus)
- Phragmites (Phragmites australis)

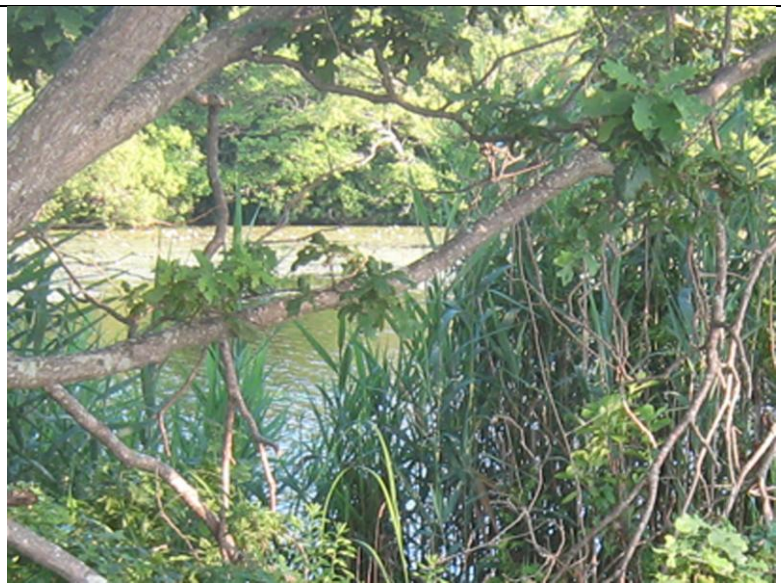
In most of the management area, no one invasive has gained dominance and the invasives appear to be competing with each other as much as with the native species. With selective removal, the native plants will be able to gain control of the shore line without the need for additional planting.

However, we anticipate that some portions of the shoreline will require planting of native species to restore habitat and secure the embankment. Plants will be selected from the Rhode Island Coastal Plant Guide (URI CELS Outreach Center/CRMC).

The photos in Figure 4 through Figure 7 are representative of the mix of invasive vegetation and native plants in the area to be managed.

Japanese Knotweed is present in most areas along the east shore of Lake Canonchet, here encroaching on the shadbush (in the background).

Figure 4 Invasive Plants in Segment A, Phase 1



Bittersweet vines competing with an oak species. Note Phragmites in the background.

Figure 5 Invasive and Native Plants

Here phragmites and knotweed so dominate this spot that planting will be required after the invasives have been removed.

Figure 6 Competing Invasive Species

Some knotweed had been cleared for vehicular safety from this area adjacent to Anne Hoxsie Lane, but returned in 2011.

Figure 7 Vegetation in Segment D, Phase 1

Project Schedule

The Friends of Canonchet Farm will organize the project during the First Quarter 2012 and begin the actual removal work in April to coincide with the beginning of the growing season, when the invasives are more easily identified.

In each project year, the work will be divided into a **Removal Campaign** in the growing season and a **Maintenance Phase** in the late summer and fall. The Removal Campaign will focus on mechanical methods, while the Maintenance Phase will include evaluation of planting requirements and selective use of herbicides as needed.

The Removal Campaign for 2012 will start in Segment A and move to Segment B (see Figure 2). We have a reasonable expectation that we will be able to sustain the volunteer effort throughout the summer to complete the removal efforts in both segments, roughly half of the management area.

Removal Campaign Management Methods

We will organize volunteers to work one day a week, clearing specific segments of the water's edge. Each week, multiple crews of four to five volunteers each will receive specific instructions on handling the plants in their assigned segment. They will then use hand tools to remove the unwanted vegetation. The following week, the crews will clear an adjacent segment, while going over the previous week's work to remove any new shoots.

We propose to use only mechanical removal methods using hand tools for the following reasons:

- The stands of the invasive species are relatively small.
- The work area is an easily accessed narrow strip of vegetation. Crews of volunteers can safely and effectively work a line.
- Use of chemicals and burning is not recommended on this environmentally sensitive area across a street from residential property.
- We are more likely to maximize volunteer cooperation if chemicals and burning are not involved.
- The invasives are mixed in with native species, and selective cutting and pulling of invasives will result in minimal disruption to the competing native species.
- Mowing is not recommended because of the slope near the water's edge, indiscriminate cutting of native species, and safety of the volunteers.

However, we are aware that removal of the invasive species will only be effective with repeated treatment of the area over several growing seasons. Table 1 describes the constraints of mechanical management practices in the absence of chemical, biological and burning methods.

Table 1 Notes on Mechanical Removal of Invasive Plants

Invasive Plant	Notes on Mechanical Removal
Black swallow-wort	Repeated cutting and digging of small stands can be effective in preventing spread of Black swallow-wort, provided the plants are removed before seeds are released. Cutting is most effective when there are small, immature pods on the plants. Cutting during the flowering period, before pod formation will allow plants to recover and still produce a viable seed crop. This is often impractical for larger stands due to the regenerative capability of the rhizomes and the fibrous roots, which must be removed completely. Digging up the root crowns has proven more effective than pulling alone. In addition, once a stand has released seeds, the seeds have a long persistence in the seed bank, so eradication is unlikely. Still, in environmentally sensitive areas physical removal may be the only acceptable solution.
Autumn olive	Removal of established Autumn olive stands requires a sustained effort over several growing seasons. Mature plants produce a large quantity of fruit which are widely dispersed by birds and other wildlife. Plants do not produce fruit until they are three years old so it is critical that seedlings are removed in subsequent years to prevent later infestation.
Oriental bittersweet	Because of the persistence of the seed bank and the ability to spread by root suckering, mechanical control of Oriental bittersweet is a long-term project. It is most practical in a small plot, or in an area where chemical control is unacceptable. At best it is a means of restricting growth until the roots and seeds are no longer viable. Pulling plants is rarely successful unless **all** the root material can be removed. Even then, germination of seeds will continue for several growing seasons. Grubbing (with a "Pulaski" tool) can work with the same caveats as pulling. In both methods, disposal of all plant parts, including fruits (sealed in plastic bags) is necessary to prevent re-seeding. Some measure of control can be achieved by regular cutting over several growing seasons. Small shoots may be mowed weekly for a year or more, although less frequent mowing (2-3 times a year) will stimulate re-sprouting from the roots. Large shoots require cutting to the ground at two-week intervals. Vines should be cut as close to the root collar as possible. Eventually the root stock expends all of its stored energy, leaving only the seed bank to deal with.

Table 1 Notes on Mechanical Removal of Invasive Plants

Invasive Plant	Notes on Mechanical Removal
Japanese knotweed	Digging and cutting are mechanical methods that are appropriate for controlling smaller stands of Japanese knotweed, or in environmentally sensitive areas where the use of herbicides is not advised. Digging to remove Japanese knotweed is considered labor-intensive and largely ineffective at controlling growth of large stands, but may be effective for very small, young populations. The entire plant, including roots and runners must be removed with a digging tool. Juvenile plants may be pulled by hand. Cutting shoots as close to the ground as possible reduces the viability of Japanese knotweed rhizomes, and can be done any time during the growing season before senescence. Cutting is most effective when done three or more times per growing season. Cut plant parts should be bagged and disposed of properly to prevent further spread.
European honeysuckle	For small patches, hand-pulling of new root systems in most areas may be effective. A hoe can be used to help free root systems. Otherwise, roots must be dug up. Repeated removal may be necessary to prevent reestablishment.
Phragmites	Mechanical treatment should be limited to only those areas where phragmites is present, and should not include broad-scale mowing of other wetland vegetation. Mechanical control of phragmites includes the use of weed whips, small mowers, brush hogs, and flail mowers or hand-cutting of stems and seed heads. The use of mechanical equipment is highly dependent on the size and wetness of the site and the density of phragmites. Weed whips or handheld cutting tools are ideal for use on wet or dry sites with low plant densities. Under limited circumstances, when isolated plants or low density stands of phragmites exist and herbicide treatment is not feasible, mechanical treatments alone may be used to reduce phragmites and encourage native plants. In these situations, cutting individual plants or mowing small areas of phragmites once during late summer/fall (September to first killing frost) appears to have the best results because it eliminates the surface biomass of the plant when it is using most of its energy for flower and seed production. Cutting/ mowing in late summer also eliminates potential disruption to the breeding and nesting seasons for most birds.

Maintenance Phase Management Methods

During the Maintenance Phase each year, we will perform the following tasks:

- Police the segments where invasives have been removed and cut/dig any new shoots in the last gasp of the growing season.
- Assess the need for new plantings, acquire the appropriate native species, and install in those in those cases where fall planting is appropriate.
- Selectively apply herbicides where invasives are likely to return:
    - Paint cut roots of bittersweet and autumn olive with Roundup (glyphosate)
    - Wick-wipe Phragmites and Japanese knotweed with Rodeo (glyphosate marine formulation).

Herbicide treatment will only be scheduled for the Maintenance Phase in the fall. The treatments will done by a licensed applicator after securing permits from both the Town of Narragansett and CRMC.

Reporting

The Friends of Canonchet Farm will formally report on the progress of the invasives management project at the end of the Removal Campaign and again at the end of the Maintenance Phase. Reports will contain plans for the additional areas to be managed at Lake Canonchet and Little Neck Pond.