Polatin Ecological Services

Habitat Restoration & Management of Natural Areas, Invasive Plant Control, Native Plant Revegetation

May 1st, 2007

Ellen Cushman
McLean Open Space Land Management Committee
133 Brookside Avenue
Belmont, MA 01773

RE: *Proposal for Invasive Plant Control at McLean Open Space, Belmont, MA.*

Dear Ms. Cushman,

Polatin Ecological Services and Heritage Fields are pleased to offer the following proposal for habitat restoration activities at the McLean Open Space in Belmont, MA. Bruce Scherer and I met with you and members of the McLean Land Management Committee on March 28th, 2007 to visit the site and discuss project details. The project is well described and mapped in a report entitled *Recommendations for Field Management at the McLean Open Space* produced by Jeffrey Collins of Mass Audubon's Ecological Extension Service (5/15/2006). We have integrated Mass Audubon's recommendations and have keyed our proposal to fit the descriptions and acreage calculations submitted in their report.

We are particularly concerned with three of the invasive plants that Mass Audubon outlined as management concerns for your property. The following summaries represent a review of the management literature as well as our own experiences with several of the invasive plants present on your site:

Common buckthorn (*Rhamnus cathartica)* and glossy buckthorn (*Frangula alnus):* These buckthorns are very aggressive invasive woody shrubs or small trees that if left alone can grow as high as twenty feet. Once established these exotic buckthorns crowd or shade out native species and will be a constant hindrance to grassland establishment. We had one project last year in Vermont which had well established small buckthorn plants that covered three fields (over 30 acres) as well as the entire field edge. Mowing had kept the plants small, but had encouraged new vegetative sprouts. Our own experience with buckthorn suggests that the plant will persevere and perhaps thrive over time even with an annual mowing regime. We strongly recommend that the resurgent buckthorn plants be treated with a suitable herbicide as well as an annual mow. A 2% solution of Garlon 4 (active ingredient triclopyr) is suggested for repeated foliar herbicide applications. Garlon 4 is suggested because it will do no harm to desirable grasses in the vicinity. Our proposed approach will control buckthorn within two years. Buckthorn may continue to be spread onto the property from birds since all exotic buckthorns produce a fruit that is readily eaten by birds. The severe laxative effect of these fruits results in abundant distribution of seed. Areas will need to be monitored regularly in case new plants appear.

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Buckthorn is easy to hand pull within the first year and can be maintained with the help of diligent volunteers.

Japanese knotweed *(Polygonum cuspidatum):* Knotweed is an extremely tenacious invasive plant which originates from East Asia. It was introduced to the United States for horticultural purposes between the late 1800's and early 1900's. Knotweed is a shrub-like plant that can grow as high as 10 feet high with stout stems which are hollow and bamboo-like. It spreads by way of rhizomes which can reach a length of 20 feet. Mowing stimulates knotweed growth and in order to be effective mowing must be done multiple times during the growing season over a course of several years to be effective. Herbicide application is considered the most effective treatment and has been an effective means toward total knotweed control on sites with small to medium sized infestations. We have worked with the stem injection method for herbicide application and consider it very effective. We also appreciate the fact that the herbicide is contained within the individual knotweed stems and therefore there is no damage to non-target plants.

Black swallowwort *(Cynanchum louiseae):* Swallowwort blooms June through September. Fruit ripens late July in sunny locations and throughout August in shadier conditions. Seedbank dynamics are not well understood at this point therefore it is hard to determine how long previously set seed will remain viable in the soil. We propose an integrated management approach. Repeated herbicide applications with annual mowing are currently considered the best management practice. It is best to spray early in the season before viable seeds are produced (prior to Mid-July). A 2% solution of Garlon 4 (active ingredient triclopyr) is suggested for repeated foliar herbicide applications. Research and professional experience suggest that we may reduce the biomass of swallowwort by 80% and reduce the density of stems by 75% after the first herbicide application. Garlon 4 is suggested because it will do no harm to desirable grasses in the vicinity. It will likely take three years to eradicate swallowwort from your site and vigilant monitoring will be necessary to keep the area clean since swallowwort exists on neighboring properties.

PROJECT TASKS:
Specifically, we propose to accomplish the following tasks:

- Task 1. Herbicide treatment (foliar spray). Herbicide application of a 2% solution of Garlon 4 (active ingredient = triclopyr) with surfactant, indicator dye, and drift control agent will be applied by licensed herbicide applicators by way of low volume backpack sprayers. Herbicide will be applied to resurgent invasive plants including buckthorn, bittersweet, multiflora rose, and tree of heaven. In addition, special care will be taken to treat the black swallowwort patches within the Great Field. One of the benefits of the selected herbicide is that it is selective and will not affect grasses. Garlon 4 is a "general use" herbicide appropriate to use in sensitive natural areas. We have provided several sources of information on this herbicide for your review.

- Task 2. Low volume herbicide application within the pine alee area to control poison ivy (*Toxicodendron radicans).* Poison ivy will be foliar sprayed with the same herbicide solution prescribed in Task 1.

- Task 3. Herbicide injection to stems of Japanese knotweed and cut stem/stump herbicide application to buckthorn. *Knotweed:* Inject each individual stem with 3cc/ml of the wetland approved glyphosate-based herbicide *Rodeo* (EPA Reg. No. 62719-324) with injection tool and herbicide reservoir (JK Injection Systems). Herbicide will be injected at a 100% concentration as recommended in the literature and on the herbicide label. Based on observations during our site visit we believe that we cannot stem inject all of the knotweed on the site during the 2007 season. Based on the label we can legally inject 2,500 stems within a given acre of land at the 3 cc rate of application. Therefore, it will be necessary to return in 2008 to complete the control efforts. We have provided several sources of information on this herbicide for your review.

The decision whether to use herbicides to combat invasive plants is not an easy one. We and many other land managers such as The Nature Conservancy consider the two "general use" herbicides selected for your project (Rodeo and Garlon 4) to be appropriate and safe for use in natural areas and to pose a low risk to humans and wildlife. In addition we strive to use techniques that minimize the amount of herbicide used and reduce non-target damage. Our proposal to use the stem injection technique reflects our commitment to this "judicious use of herbicides" philosophy. Furthermore, we seek to time our management activities whether mechanical or chemical to the times that the invasive plants are at their most vulnerable. We have been very successful at this especially when using more than one approach that is timed well. An example of this is our approach to spot spray the previously cut buckthorn. We want the buckthorn to spend its energy this spring in growing and producing leaves. Research has shown that the carbohydrate levels in buckthorn are at their lowest in June, therefore the plant is most vulnerable and susceptible to a spot spray herbicide treatment. I have included information pertaining to these herbicides as attachments to this proposal for your review in hopes that your committee will feel assured that we are working in the best interests of the McLean Open Space.

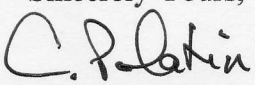
When herbicides are used we are required by state law to post warning signs in all public entry ways to the property before work begins and for 48 hours after work has ceased. We will strategize with the McLean Land Management Committee as to the best places to post these signs. At your discretion it may also be desirable to provide additional information to the public about the habitat restoration and management objectives for the McLean Open Space. We are happy to assist you with developing materials that can be used for public outreach.

In proposing this work we assume that there are not any endangered species (or other issues associated with the Massachusetts Endangered Species Act) or wetland concerns

or restrictions within the work area that we have described in this proposal. We will not conduct any work within 100 feet of the certified vernal pool within the Great Field.

Please feel free to call either Bruce or I to discuss our proposed approach and budget. We will remain receptive to your feedback, questions, or concerns. We look forward to working with you to make this project a success. Thank you for your consideration.

Sincerely Yours,



Chris Polatin
Habitat Restoration Specialist

PROJECT COSTS: The following are lump-sum costs for each task. The costs for labor, equipment transportation, day to day transportation, equipment use, and materials are included in these totals:

Management Practice	Timing	Management Units	Acres	Total
2007				
TASK 1. Targeted low volume foliar spray herbicide application	June 2007	*Buckthorn* Great Field: 20/21/22/23/24 *Swallowwort* Great Field: 11/13 *Poison Ivy* Northern pine tree perimeter *Other Invasive Plants (bittersweet, tree of heaven, multiflora rose, bush honeysuckle)* Great Field: 2/4/7/8/20/ Heart-Shaped Field: 1/2	6.4 0.29 0.10 1.44 Total = 8.23	$2,500.00
TASK 2. Low volume herbicide application to control poison ivy.	June 2007	Great Field: Pine Alee	< 1	$500.00
TASK 3. Herbicide stem injection to stems of Japanese knotweed and cut stem/stump herbicide application to buckthorn.	August 2007	Great Field: 5/9/11/14	0.34* (actual area infested by knotweed is about 0.20)	$1,900.00
PROJECT TOTAL				***$4,900.00***

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Polatin Ecological Services and *Heritage Fields* offer habitat restoration contracting services as a joint venture in which we work with private landowners, community organizations, nonprofit conservation organizations and land trusts, municipalities, state natural resource agencies, and federal agencies on small or landscape-scale stewardship projects. We work in a variety of natural settings including agricultural lands, early-successional grasslands, shrublands, oldfields, riparian zones, sensitive wetland habitats (including estuaries and salt marshes), and forested uplands. We are committed to providing an environmentally sound, cost effective and practical approach to land management. We are licensed and insured to provide the following habitat restoration contracting services throughout the New England region:

- *Habitat Management* (Ecological mowing, early successional habitat creation and maintenance, land clearing, warm and cool season grassland establishment and maintenance)
- *Native Plant Revegetation* (installation, plant salvage, seeding)
- *Erosion Control/Streambank Stabilization* (We use soil bioengineering principles: the use of native plants and biodegradable erosion control materials to stabilize and protect unstable slopes and streambanks)
- *Invasive Plant Control* (manual, mechanical, judicious use of herbicides)

ACCEPTANCE OF ESTIMATE:

The above prices, specifications and conditions are hereby accepted. The contractor is authorized to execute the project as outlined in this agreement. Payment will be made at the completion of the project.

Client signature _____ Date_____
Ellen Cushman, McLean Open Space Committee

Contractor signature _____ Date _____
Chris Polatin, Polatin Ecological Services

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