LAND STEWARDSHIP, INC.

June 28th, 2023

Amy Green
Town of Littleton
Cloverdale Conservation Land
63 Great Rd.
Littleton MA 01460

INVASIVE PLANT MANAGEMENT PLAN – *Phragmites* Management. Cloverdale Conservation Land. Littleton, MA

Invasive plant management services associated with common reed (*Phragmites australis*) are planned at Cloverdale Conservation Land. The Cloverdale Conservation Area is located on Great Road (Rt. 119) in Littleton, MA, approximately 2 miles southeast of the downtown Littleton area (Figure 1). On 6/21/23 the property was walked by Director of Land Stewardship Inc. (LSI) Chris Polatin, LSI Associate Project Manager Adriana Hughes, and LSI Intern Lizzy Polatin. During the site visit we assessed the *Phragmites* infestation and site conditions. We propose approximately 1.5 acres for management.

As the project areas fall under the jurisdiction of the Wetlands Protection Act (WPA), a Notice of Intent (NOI) must be filed with the Littleton Conservation Commission and with the Massachusetts Department of Environmental Protection (DEP).

Maps displaying *Phragmites* populations as well as DEP wetlands, buffer zones, and approximate hydrology are included below for reference (Figures 2 & 3).

Methods Summary

Prep Cut

Where conditions allow, areas of *Phragmites* need to be cut with brush saws in order to prepare the site for a more effective foliar application. The cut material will be left on the ground to decompose. Keeping invasive plant material on site is a best management practice to avoid spreading invasive plants to other properties.

Foliar spray application (backpack sprayers)

A foliar spray herbicide application using backpack sprayers will to be conducted in areas where *Phragmites* is the only plant growing and no native plants are present. Foliar treatments should be applied in a targeted manner by trained ecological restoration technicians during appropriate weather conditions (wind <5 mph and no rain forecast within 24 hours, in accordance with product labeling). A 2% Aquamaster solution will be used along with 0.5% wetland surfactant.

Targeted Herbicide Application Methods for Common Reed/Phragmites

Targeted methods must be used when applicable to ensure that herbicide is applied carefully only to *Phragmites*. A brief description of each method is below.

Cut and drip

Each stem is cut below a node on the stem. One drop of a solution of herbicide with water and indicator dye is dripped into each stem. This technique is typically used within a three-foot perimeter where *Phragmites* are growing directly adjacent to native species. A 50% Aquamaster solution will be used.

Glove technique (hand wiping)

An herbicide applicator wears a chemical resistant glove underneath an absorbent cotton glove. The applicator moistens the glove with herbicide from a backpack sprayer equipped with specialized ultra-low-volume nozzles into the glove, and then wipes the stem and leaves of each *Phragmites* plant. A 5% Aquamaster solution will be used along with 0.5% wetland surfactant.

Herbicide Selection

Only wetland-appropriate herbicides suitable for use in sensitive natural areas should be used in the lowest effective concentrations.

The herbicide Aquamaster (EPA Reg. No.524-343) should be used for this project in the application techniques listed above. Aquamaster is a wetland-approved glyphosate-based herbicide that is considered the standard for successful *Phragmites* control and protection of wetland resource areas. In addition, a wetland-approved non-ionic surfactant should be mixed into the herbicide solution along with indicator dye.

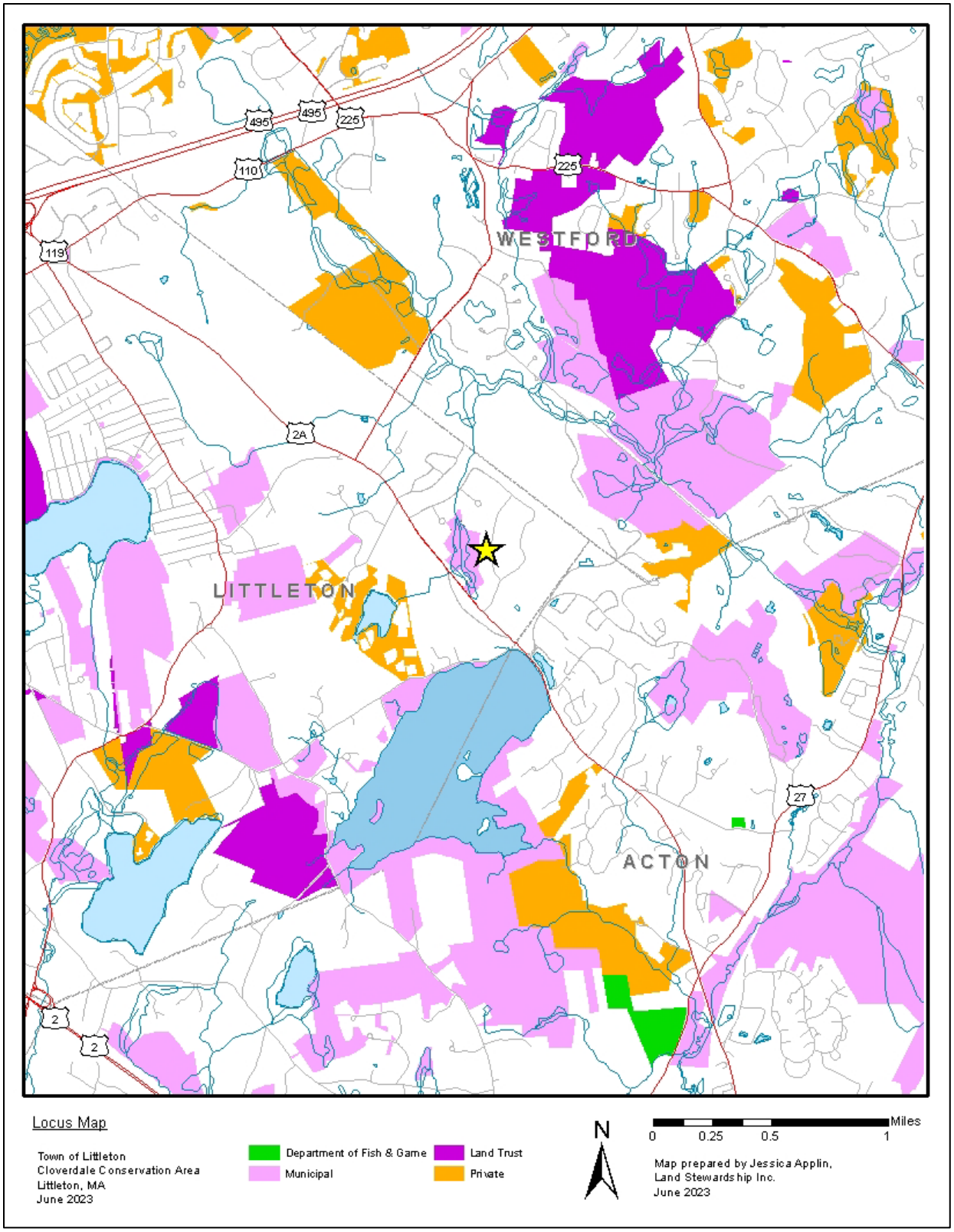

Figure 1. Map displaying location of Cloverdale Conservation Land at 63 Great Rd.

Figure 2. Map displaying *Phragmites* patches proposed for management.

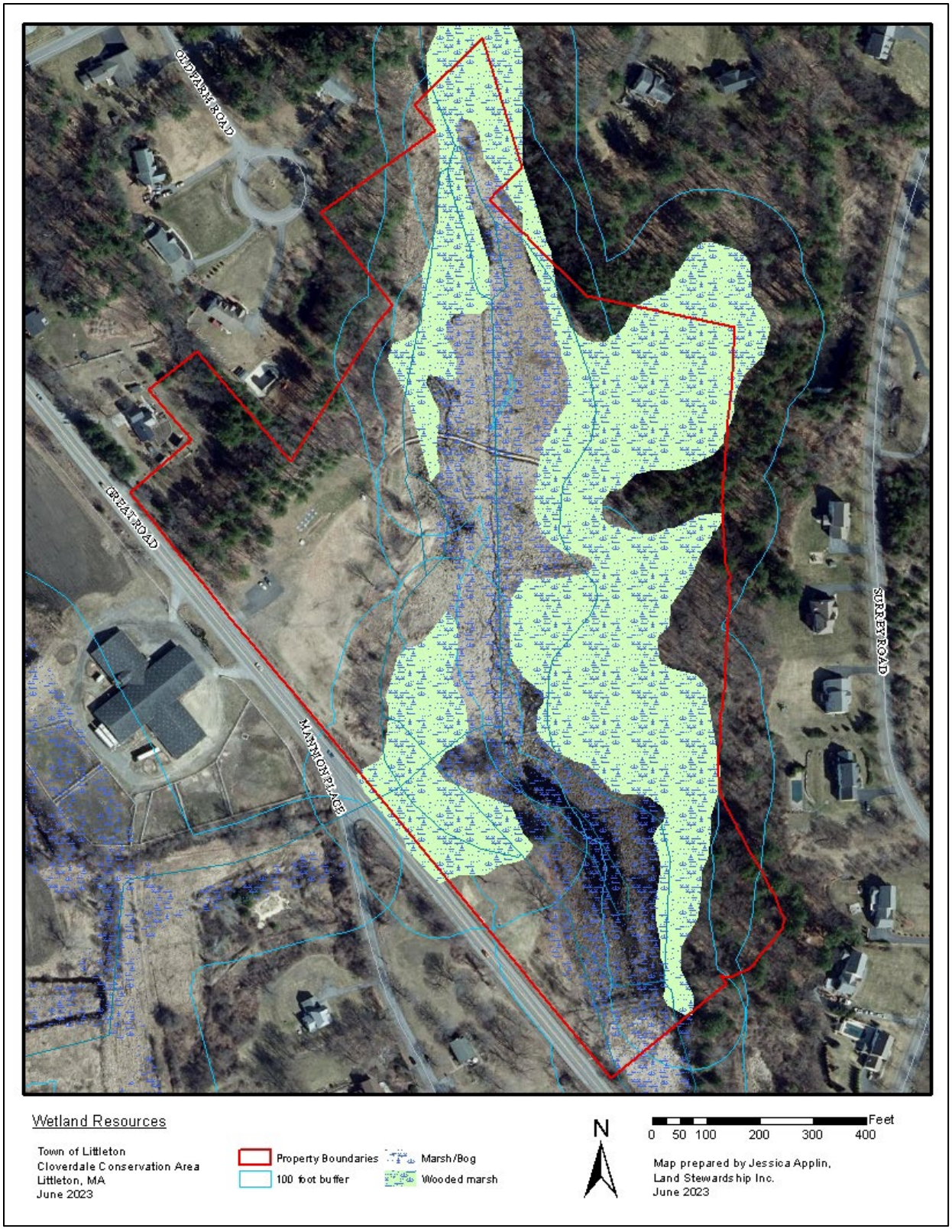

Figure 3. Map displaying Mass DEP wetlands, hydrology, and buffer zones.

Restoration Potential

Natural regeneration of site-specific plant species will proceed once the overstory of *Phragmites* is removed. During the site visit, we took note of a variety of plants currently existing on site (Table 1).

Table 1. Plant species seen at Cloverdale Conservation Land on 6/21/23.

Common Name	**Scientific Name**
Boneset	*Eupatorium perfoliatum*
Alder	*Alnus sp.*
Willow	*Salix sp.*
Goldenrod	*Solidago sp.*
Sedges	*Carex sp.*
Joe-pye-weed	*Eutrochium sp.*
Bulrushes	*Scirpus sp.*
Meadowsweet	*Spirea sp.*
Arrowhead	*Sagittaria latifolia*
Black Elderberry	*Sambucus canadensis*
Blue Flag Iris	*Iris versicolor*
Cat-tail	*Typha sp.*
Spotted Jewelweed	*Impatiens capensis*
Purple Loosestrife (INVASIVE)	*Lythrum salicaria*
Glossy Buckthorn (INVASIVE)	*Frangula alnus*

After treatment, we expect that many of the species listed above will start to fill into areas where *Phragmites* has been removed over the course of several years. Native plant re-establishment must be carefully monitored once the initial foliar treatment has been completed. After two full growing seasons, the progress of native plant restoration needs to be assessed to determine if a planting plan is recommended. Only site-appropriate species should be planted. We fully expect that passive native revegetation will be sufficient to restore vegetation to these areas.

Based on the conditions and species seen during the site visit, two natural communities should be referenced: deep emergent marshes and shallow emergent marshes. These natural communities are reference ecosystems that represent Cloverdale Conservation Land's likely composition prior to invasive species infestations and habitat degradation.

More information is available at the following Natural Heritage and Endangered Species Program website:
Shallow emergent marsh: https://www.mass.gov/doc/shallow-emergent-marsh-0/download
Deep emergent marsh: https://www.mass.gov/doc/deep-emergent-marsh-0/download

Treatment Methods and Schedule

2023

- *Task 1.* Permitting. This project falls under the jurisdiction of the Wetlands Protection Act (WPA). Therefore, a Notice of Intent (NOI) or Request for a Determination of Applicability (RDA) would need to be filed with the Littleton Conservation Commission and with the Massachusetts Department of Environmental Protection (DEP). This task should be conducted by the Town of Littleton.

- *Task 2.* Prep cut. November/December 2023 or dormant season 2024. *Phragmites* must be prep cut with brush saws in order to prepare the site for a more effective and efficient initial foliar application.

2024

- *Task 3.* Initial foliar treatment & select hand wiping. June. Foliar treatment to all *Phragmites* within the management area. Select hand wiping may be necessary in some locations to preserve native vegetation.

- *Task 4.* Follow up foliar treatment & select hand wiping. September. Follow up foliar treatment and select hand wiping to all *Phragmites* within the management area.

2025

- *Task 5.* Follow up foliar treatment & select hand wiping. June. Follow up spot foliar and select hand wiping to any resurgent *Phragmites* growth within the main management area.

- *Task 6.* Follow up foliar treatment & select hand wiping. September. Follow up spot foliar and select hand wiping to any new *Phragmites* growth within the management area.

2026

- *Task 7.* Follow up foliar treatment & select hand wiping. Summer. Follow up spot foliar and select hand wiping to any new *Phragmites* growth within the main management area.

Monitoring & Reporting

Objective: 80% (or better) *Phragmites* control resulting from 2024 series of treatments; 90% resulting from 2025 follow-up methods; and 95% control from 2026 follow-up treatment. The results of treatments each year should be monitored over the course of the project.

The project manager will install permanent photo monitoring points before work begins in order to quantify/measure success and keep the project accountable to the stated success criteria.

The monitoring and reporting schedule will be as follows:

- Baseline conditions monitoring: Before phragmites herbicide work in June 2024 (Year 1)
- Land Management Records to be submitted in July 2024
- Photo monitoring (Year 2) in June 2025
- Monitoring report submitted before the end of the year 2025
- Photo monitoring (Year 2) in June 2026
- Monitoring report submitted before the end of the year 2026
- Photo monitoring (Year 2) in June 2027
- Final monitoring report submitted before the end of the year 2027

Stewardship & Maintenance

Phragmites management requires a serious commitment and will need to be ongoing in order to protect your investment in management. To keep the *Phragmites* out of the area for the long term it will be necessary to watch the area closely by scouting for new patches and individual plants, even after the 3 years of treatment. Options for managing *Phragmites* after the initial three years usually consist of hand pulling, spot herbicide spraying, and/or cutting.

This plan has been prepared by:

Adriana Hughes.
Associate Project Manager

Adriana Hughes has worked with LSI since March 2023. She is knowledgeable in botany, best management practices for invasive species and wildlife conservation. She has a BS in Wildlife and Conservation Biology (University of Rhode Island). She has 5 years of experience working in ecology including 2 years working solely in invasive plant management.

Reviewed and approved 6/28/2023 by:

Chris Polatin Digitally signed by Chris Polatin
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Christopher Polatin, M.S., CERP
Principal & Restoration Ecologist