

Brooks Property Farm Pond Mechanical Management Program

East Lyme, CT

December 2021

Prepared for:

Brooks Property Farm
% Patricia Brooks
14 Upper Walnut Hill Road
East Lyme, CT 06333

Prepared by:

SOLitude Lake Management
590 Lake Street
Shrewsbury, MA 01545



TABLE OF CONTENTS

- ◆ ATTACHMENT A – Project Narrative

- ◆ ATTACHMENT B - Figures
 - Figure 1: Site Locus
 - Figure 2: Hydro-raking proposed access/staging/offloading Area
 - Figure 3: Hydro-raking Treatment Area



Office Use Only/Date of Receipt (Stamp)

APPLICATION FOR DETERMINATION OF PERMITTED/NON-REGULATED ACTIVITY

- 1. SITE LOCATION (Street) and Description: 14 Upper Walnut Hill Road, East Lyme, CT, 06333
- 2. Assessor's Map 8288 Parcel Id: 54.0 2 Lot # 14

Note: It is the applicant's responsibility to provide the correct site address, map/lot number for the legal notice. Provide a description of the land in sufficient detail to allow identification of the inland wetlands and watercourses, the area(s) (in acres or square feet) of wetlands and watercourses to be disturbed, soil type(s), and wetland vegetation.

- 3. APPLICANT: SOLitude Lake Management

4. Address: 590 Lake Street, Shrewsbury, MA 01545 Phone: 508-865-1000
 Fax:
 Cell: 508-414-4272
 Email: mary.nickerson@solitudelake.com

Applicant's interest in the land: See Project Narrative

***If the applicant is a Limited Liability Corporation or a Corporation provide the managing member's or responsible corporate officer's name, address, and telephone number.*

- 3. OWNER: _Patricia Brooks

Address: 14 Upper Walnut Hill Rd, East Lyme, CT 06333 Phone: 860-442-4237
 Email: patti@pattibrooksbooks.com Cell: 860-442-4237

***As the legal owner of the property listed on this application, I hereby consent to the proposed activities. And I hereby authorize the members and agents of the Agency to inspect the subject land, at reasonable times, during the pendency of the application and for the life of the permit.*

Patricia Brooks

Owners Printed Name:

Owners Signature: Patricia Brooks
Patricia Brooks (Dec 4, 2021 14:17 EST)

Date: 12/04/21

- 4. Person Responsible for Compliance: SOLitude Lake Management
- 5. Address: 590 Lake St, Shrewsbury, MA 01545
- 6. Phone Number:508-865-1000 Email: mary.nickerson@solitudelake.com
- 7. Describe the Activity and Purpose: **See Project Narrative**
- 8. Describe mitigation measures such as erosion controls, added wetlands plantings, infiltration and run off: **See Project Narrative**

7. Is the property within 500 ft of an adjoining town? Yes No

8. Inland Wetland/Watercourse Information:

Area of wetland to be disturbed 0 sq. ft.

Area of watercourse to be disturbed 34,955 sq. ft.

Upland Review Area to be disturbed 0 sq. ft. (area within 100' of wetland)

Will fill be needed on site? Yes No

If Yes, how much fill is needed? _____ cubic yards

Will material be removed from site? Yes No

If Yes, how much will be removed? _____ cubic yards

The property contains (circle one or more) WATERCOURSE WATERBODY WOODED-WETLAND
SWAMP

Name of Soil Scientist and date of survey N/A

9. Site Plan Title, Date, Engineer/Surveyor Name: Brooks Property Farm Pond Mechanical Management Program, SOLitude Lake Management, 2022

The undersigned owner hereby consents to necessary and proper inspections of the above mentioned property by the Commission or agent of the Commission, at reasonable times both before and after a final decision has been issued by the Commission. The undersigned also swears that the information supplied is accurate to the best of his/ her knowledge and belief.

Patricia Brooks
Patricia Brooks (Dec 4, 2021 14:17 EST)

12/04/21

Signature of Owner (s)

Date



ATTACHMENT A

Introduction:

Brooks Property Farm Pond located at 14 Upper Walnut Hill East in East Lyme, Connecticut. The Owner is requesting permission to initiate a mechanical control/removal program of nuisance aquatic vegetation to maintain open water for irrigation and aquatic/wildlife. The use of the pond is solely for irrigation of the property. The pond is approximately 0.8 acres of freshwater body. The pond has excessive growth of white water lilies and decaying organic material (aquatic plant biomass, leaves, sticks, etc). The accumulation of organic material has significantly reduced the water volume storage of the pond to the point that the pond, even at full pool, is insufficient to fulfill the irrigation needs of the farm property. The goal of the project is to restore depth and remove nutrients within the organic material, by employing a hydro-rake.

Hydro-Rake Plan Description:

The mechanical hydro-rake removal program at Brooks Property Farm Pond will focus on the removal of floating-leaf vegetation (primarily white water lilies), emergent vegetation encroaching open water, associated root material, and accumulated organic debris.

The hydro-rake can best be described as a “floating backhoe” with a York Rake attachment. The barge is paddle wheel driven to facilitate operation in shallow water (<2 feet) and it can effectively work to depths of about 10 feet. It works from the water, thereby avoiding damage to sensitive shoreline habitat and property. The hydro-rake is most effective at removing plants with large/well defined root systems, typically floating-leafed and emergent species. The attachment “rakes” through the organic material collecting plants and their attached root systems. By removing the stems and roots of the plants, multiple years of control is often achieved. In addition, the nutrients stored in the plant biomass is also removed from the system, which can retard the eutrophication process and reduce internal nutrient sources. The hydro-rake works slowly, enabling mobile aquatic organisms to avoid the raking activity.

Shore-Based Disposal – The raked material will be temporarily be received in a loader/ tractor up from the hydro-rake and placed in a dewatering area adjacent to the pond. Upon completion of the inwater hydro-rake management activity, the Brooks Farm owner will move the material to an onsite upland compost location.

Turbidity Control - While some temporary disturbance to the bottom accumulated organic matter layer occurs and some hydro-soils attached to the plant’s root systems will be removed, no change in the original consolidated bottom contours should occur as a result of the raking. Studies, including a Vermont DEC study (“Lake Bomoseen Hydro-Raking Project”, Crosson, 1988) have shown that temporary increases in turbidity typically settle-out to background levels within 24 hours of the completion of a hydro-raking project. As an additional precaution floating turbidity curtain will be placed across the outlet spillway.

Schedule of Work – The mechanical aquatic plant removal project is currently planned for the late summer / fall (late August - early October) of 2022. In-pond hydro-rake management activity is expected to last approximately 5 days. The total amount of material to be removed will be approximately 200 cubic yards of plant and organic material before the dewatering period.

ALTERNATIVES ANALYSIS:

Alternatives to the proposed mechanical Aquatic Plant Management Plan were considered. SŌLitude evaluated all available strategies for water volume storage restoration and nuisance aquatic plant control of the Brooks Property Farm Pond. Findings and recommendations are based on direct experience and discussions found in the Eutrophication and Aquatic Plant Management in Massachusetts Final Generic Environmental Impact Review (FGEIR, EOEIA 2004).

Harvesting: Not Recommended

Harvesting of rooted plant growth is not recommended as it will only provide very short-term control of target vegetation, likely allowing plants to reach full maturity without 2-3 harvests per growing season. As such, harvesting is costly for short-term control and will not provide any long-term benefit to the annual accumulation of plant biomass.

Biological: Not Recommended

There are no proven biological controls available or approved by the State for the control of aquatic plants..

Sediment Excavation/Dredging: Not Recommended at this time

Dredging nutrient rich bottom sediment is sometimes used as a strategy to control excessive weed growth and the accumulation of organic material. Although these are the goals of the current program, conditions at this time do not warrant this more aggressive and costly strategy. Conventional (dry) or hydraulic dredging would likely require the expenditure of tens of thousands of dollars in design and permitting fees alone.

Drawdown: Not Recommended

Annual drawdowns of the water level can be an effective and cost-efficient strategy towards managing rooted aquatic vegetation. Although reducing water volume may impact active aquatic plant growth it will not address the accumulation of organic material and the resulting reduction in water storage capacity.

Do Nothing: Not Recommended

If the plant growth is allowed to continue unabated, it will continue to contribute to the organic sediment load in the pond, resulting in continued loss of water storage volume, which is counter to the intended functions of this system. Additionally the abundant growth of aquatic plants along with decreasing water depth can lead to possible anoxic conditions that would degrade water quality and potentially impact fish and other aquatic organisms dependent on the pond. Stagnant conditions will also increase water temperatures promoting both algae and bacterial growth as well as providing extensive mosquito breeding habitat.

INTERESTS OF THE WETLANDS PROTECTION:

The following section provides a brief discussion of the proposed management programs impacts on the statutory interests of the Wetlands Protection:

Protection of public and private water supply – The irrigation pond is not used as a drinking water supply in any way. Mechanical hydro-rake management activity will not have any adverse impacts on the public or private water supply. Careful refueling and equipment component lubrication protocol is followed by the operator. Oil-absorbent pads and socks will be kept onsite in the unlikely event of a spill. The hydro-rake uses biodegradable vegetable-based hydraulic oil.

Protection of groundwater supply – The proposed hydro-raking program will not significantly impact the groundwater supply. There is little disruption to the bottom sediments as a result of this proposed hydro-rake program. In addition the machine is equipped with a biodegradable hydraulic oil, in the event of damage to the machine or a spill. SOLitude's experienced operators also take all necessary precautions when refueling and servicing equipment to ensure that no groundwater supplies are affected. Oil absorbent pads and booms are also standard equipment on the job site.

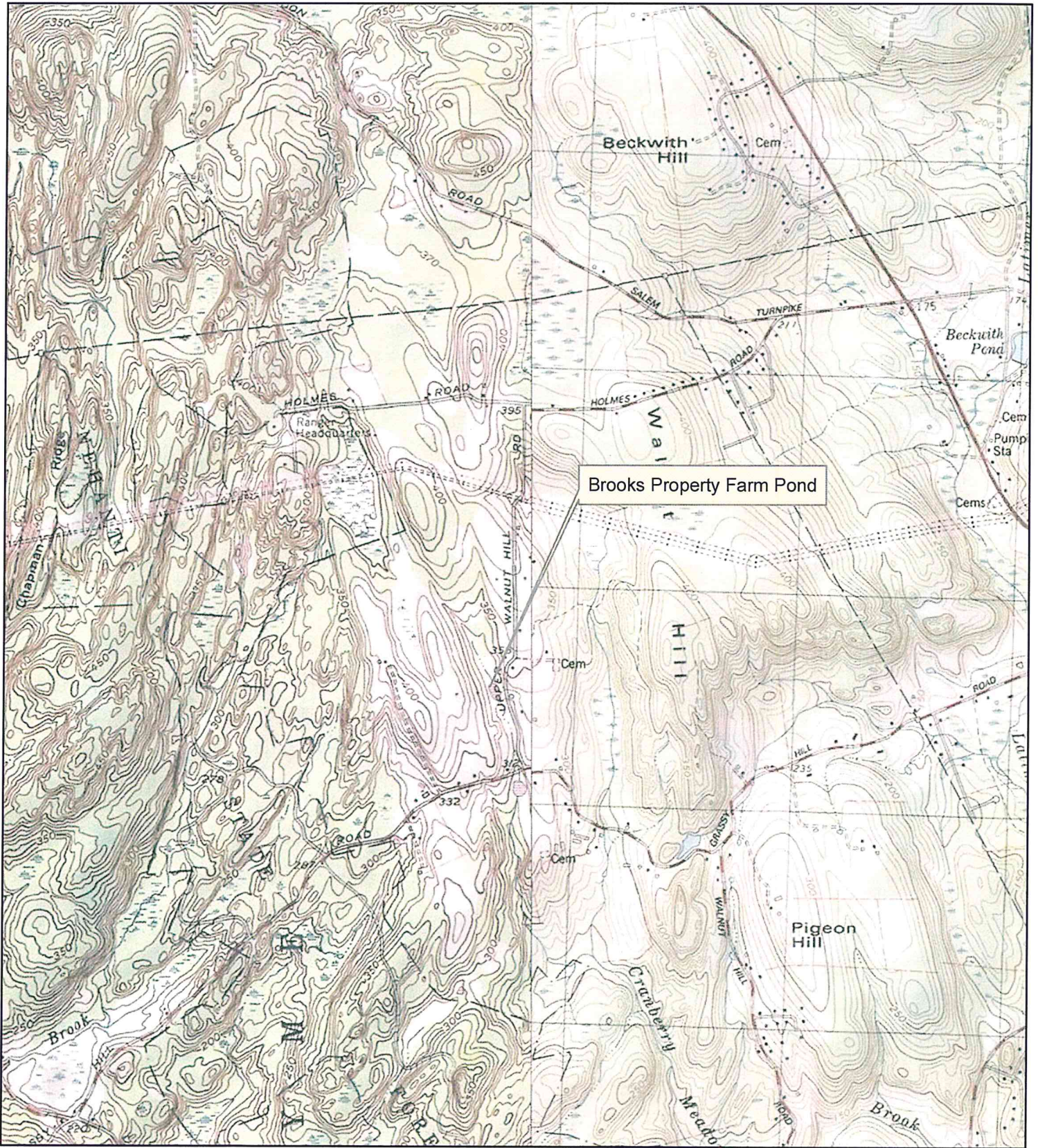
Flood control and storm damage prevention – No construction, dredging or alterations of the existing floodplain and storm damage prevention characteristics of the pond is proposed. In some instances, however, abundant and excessive aquatic plant growth can contribute to high water and flooding. Most commonly this occurs in the vicinity of waterbody outlets or water conveyance channels and structures. The unmanaged annual growth and decomposition of abundant plant growth is also known to increase sediment deposition at an accelerated rate. Therefore, the hydro-rake program may increase the ability of the resource area over the long-term to provide flood protection.

Prevention of pollution – No degradation of water quality or increased pollution is expected by the use of the mechanical hydro-rake. Removal of the excessive growth of aquatic vegetation will contribute to improved water circulation and a reduction in the potential for anoxic conditions.



ATTACHMENT B

Figure 1: Site Locus




Brooks Property Farm
East Lyme, CT



Brooks Property Farm Pond

0 1,900 3,800
Feet

1:24,000



Date: 12/2021
Prepared by: MN