

July 6, 2023

Sudbury Conservation Commission Attention: Ms. Lori Capone 275 Old Lancaster Road Sudbury, MA 01776

Dear Ms. Capone and Conservation Commission Members,

Water & Wetland, LLC will be continuing the water chestnut control program, under contract with US Fish and Wildlife Service. This includes Clearcast (Imazamox) treatments, and affiliated surveys, water quality analysis, and reporting at the stretch of the Sudbury River between Sherman's Bridge Road and Route 20. Water & Wetland is a small firm, with a large amount of water chestnut control experience. Last year we completed water chestnut control projects using identical methodology to that of the Sudbury River Project, under contracts with Norwood Conservation Commission, Canton Conservation Commission, Town of Norfolk, and more.

We have completed the required pre-treatment monitoring and I've included our "field notes," from the survey, as well as the affiliated maps. Information discussing the surveys, water quality analysis, and treatments will all be included within the year-end report submitted to the Commission by December 1<sup>st</sup>. DEP signs have been made and will be placed at the access, as well as neon signs noting the treatment and any affiliated water-use restrictions.

As part of the 2023 work, we again do not anticipate negative impacts on non-target native vegetation, water quality, fish, invertebrate, and/or aquatic life. Instead, we anticipate an improvement in the overall ecosystem, as water chestnut limits biodiversity of native plant species, and dense water chestnut, like that observed within the Hop Brook Ponds, can limit oxygen exchange, thus lowering dissolved oxygen. By controlling the water chestnut in the stretch of river, we anticipate increased open-water habitat for fish and wildlife, improved oxygen transfer, and additional sunlight to allow for native plants to recolonize. The foliar spray will follow all best management practices, including pairing the herbicide with the approved surfactant, which acts as a sticking agent and helps the herbicide penetrate the target water chestnut plants. Additionally, the treatment will be performed using low-volume application methodology and will be conducted on a day without rain or high winds. These best management practices help limit any overspray. The concentrations of herbicide actually going into the water are so low that they will not impact any beneficial native submerged species. pondweed, etc.

We welcome any questions and look forward to working with the Sudbury Conservation Commission for many years to come, alongside US Fish and Wildlife Service, to improve the health of the management area, by controlling invasive water chestnut.

Sincerely,

Colin Gosselin

Co-Owner

c: 508-259-3153

o: 888-4WETLAN(D)

<u>colin@waterandwetland.com</u> www.waterandwetland.com

enclosures: Pre-Treatment Field Notes and Maps, Water & Wetland Staff Bios, MA DEP Permit



#### ENVIRONMENTAL SCIENTIST: JAMES LACASSE JAMES@WATERANDWETLAND.COM C: (774) 276-6098

CALL/TEXT WITH ANY QUESTIONS!



#### FIELD NOTES SUMMARY

Customer: US Fish & Wildlife Service

**Pond Name:** Great Meadows (Sudbury River) **Site Location:** Sudbury/Wayland, MA

**Date:** 6/12/23

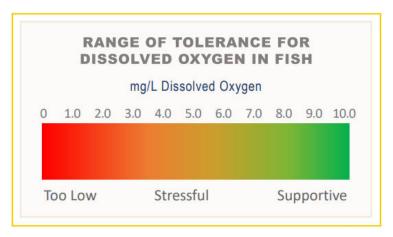
On 6/12/23, Senior Environmental Scientist, James Lacasse, and Aquatic Field Assistant, Grace Adams, made a visit to Great Meadows. The following services were completed during the visit:

Great Meadows is a portion of the Sudbury River that extends from Sherman's Bridge Road (to the north of the area) and Route 27 (at the southern point of Great Meadows). This portion of the river is located in both Sudbury and Wayland, MA. Upon arrival to the site, a survey was conducted using visual observation paired with a standard throw-rake and handheld GPS/ArcGIS Field Maps, as applicable. Plants documented during the survey are documented in the table below. (\*) denotes an invasive species. Invasive species are non-native to the ecosystem and are likely to cause economic harm, environmental harm, or harm to human health.

Species Identified				
Common Name	Latin Name			
Thin-leaf Pondweed	Potamogeton pusillus			
Curly-leaf Pondweed*	Potamogeton crispus			
Fanwort*	Cabomba caroliniana			
Eurasian Milfoil*	Myriophyllum spicatum			
Filamentous Algae				
Watermeal	Wolffia			
Waterlilies	Nymphaeaceae			
Duckweed	Lemna			
Coontail	Ceratophyllum demersum			
Water Chestnut*	Trapa natans			



While on-site, dissolved oxygen (DO) and temperature readings were collected using a calibrated YSI meter with optical sensor. Dissolved oxygen is the amount of oxygen in water that is available to aquatic organisms. DO is necessary to support fish spawning, growth, and activity. Tolerance varies by species, but the figure below provides a general range of fish tolerance (Source: epa.gov). Dissolved oxygen can be affected by



many outside factors, such as: temperature, time of day, and pollution. Dissolved oxygen levels are typically lowest early in the morning. Healthy water should generally have concentrations of about 6.5-8+ mg/L.

Results from the visit are included in the table below:

Temperature & Dissolved Oxygen						
Depth	Surface Temp (°C)	Surface DO (mg/L)				
Surface	21.2	7.28				
1 Ft	21.1	7.23				
2 Ft	21.0	7.19				
3 Ft	20.9	7.05				
4 Ft	20.8	6.88				

A Secchi disk is a disk with alternating black and white quadrants. It is lowered into the water of a lake until it

Secchi Disk Clarity				
Secchi Disk Depth (Feet)	3′ 1″			

can no longer be seen by the observer. This depth of disappearance, called the Secchi depth, is a measure of the transparency of the water.

Water Quality Parameters		
Turbidity		
Total Alkalinity		
Ammonia Nitrogen		
Total Kjeldahl Nitrogen		
Free Reactive Phosphorus		
Total Phosphorus		

Additional samples were collected from the River as required within the Order of Conditions. The samples were properly preserved, and shipped onice via FedEx Overnight, or transported directly to the most appropriate lab. The lab will analyze the samples for the contracted/required parameters which are listed in the table above. Results will be



provided upon receipt from the lab or in the year end-summary report, as applicable. Any concerning results will immediately be brought to the attention of the Client. pH was also measured with a calibrated meter and was 7.2 which is within a standard range for freshwaters and is considered neutral.

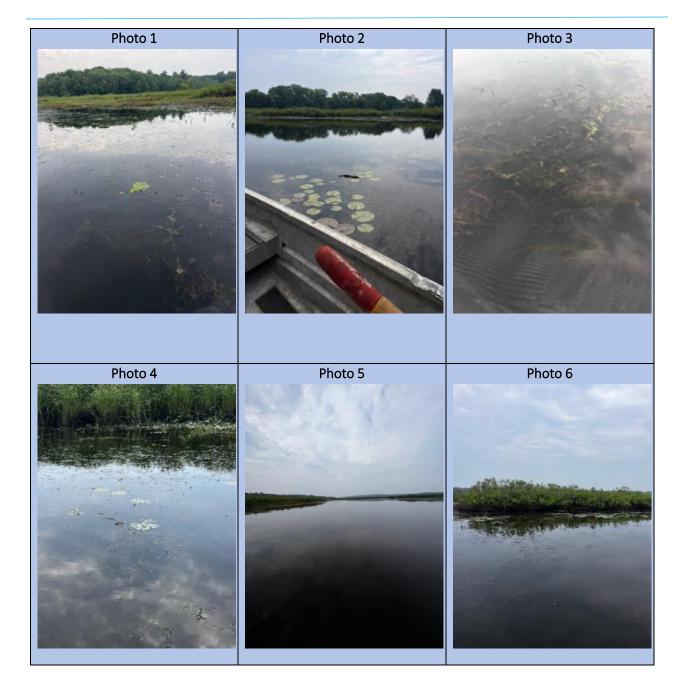
#### \*Additional Notes from the Biologist\*

Consistent with 2022, several invasive species were documented during the survey. Invasive species include fanwort, Eurasian milfoil, curly-leaf pondweed, and water chestnut. Water chestnut is again the invasive species target under the 2023 management program. Curly-leaf pondweed and Eurasian milfoil were the most dominant invasive species documented as populations expanded throughout the entire stretch of river. Water chestnut was documented in trace to sparse densities in the northern section of the river and became denser, but still scattered, when travelling south. It is important to note that the dots on the map indicate GPS points where individual plants or patches of water chestnut were documented, polygons indicate more contiguous stretches of water chestnut. In addition to the invasive species noted above, several native species were documented. Throughout the majority of the stretch of river, thin-leaf pondweed, waterlilies, callitriche, and duckweed were all noted. Trace densities of filamentous algae were also noted. Some of the vegetation also contained epiphytic algae, which is an indication that the plant is dead or decaying.

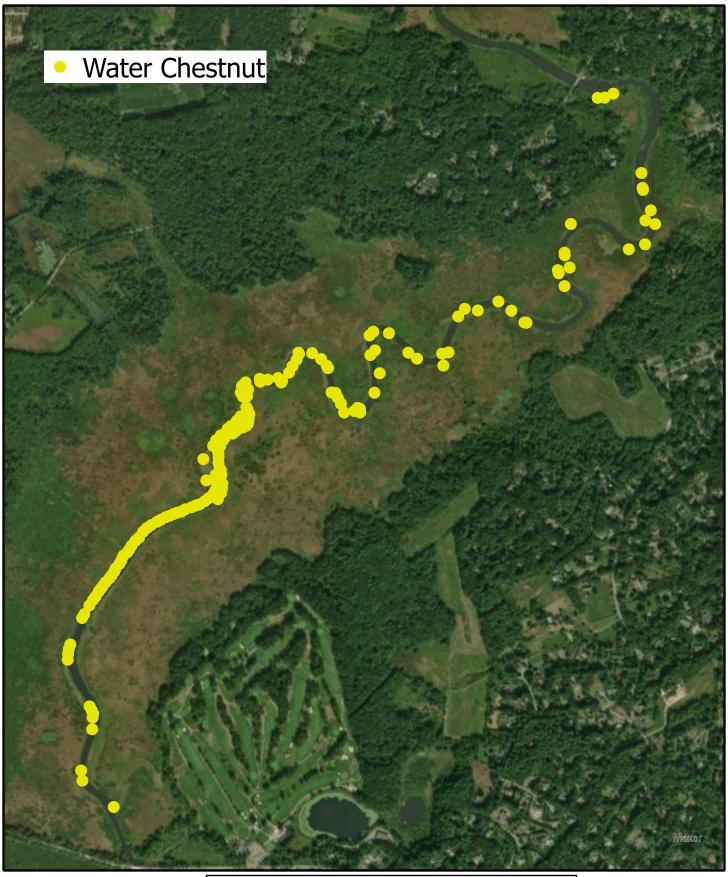
We anticipate the first water chestnut treatment in early July as we are waiting for the water quality results from the lab. The Conservation Commission requires these prior to the start of work. A newspaper ad will also be placed as required within the OOC.

As always, we will notify you prior to any upcoming visits, as applicable. Please feel free to reach out to us directly with any questions.





Maps include: Water Chestnut Map (Raw Data), Water Chestnut Map (with Polygons), Southern Section Water Chestnut Map Zoomed, Northern Section Water Chestnut Map Zoomed, Fanwort Map, Eurasian Milfoil/Curly-Leaf Pondweed Map

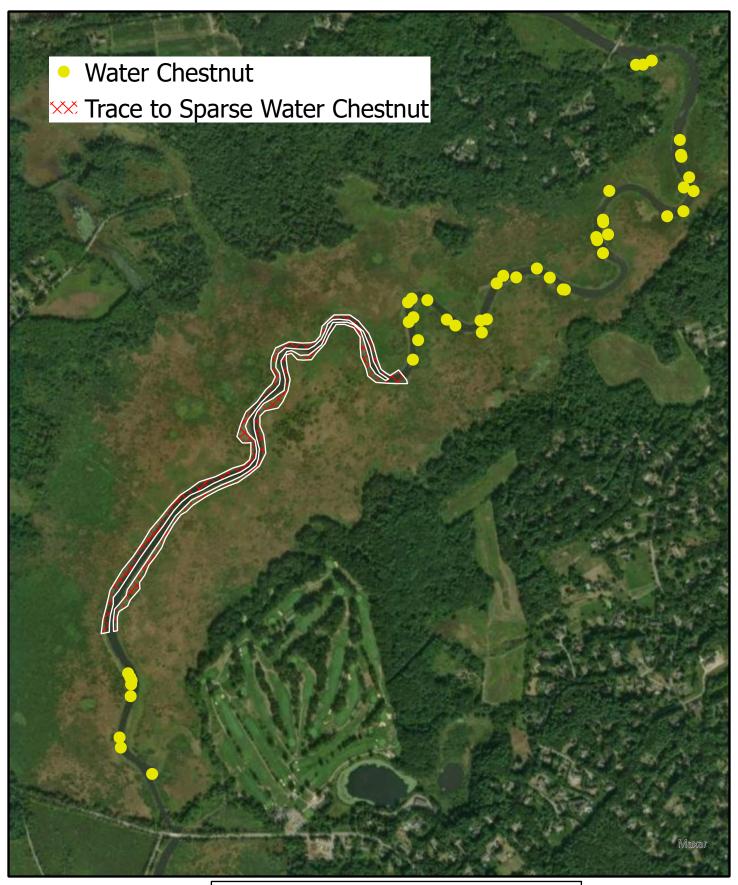




Great Meadows
Water Chestnut Distribution
Sudbury, MA

Survey Date 6/12/2023



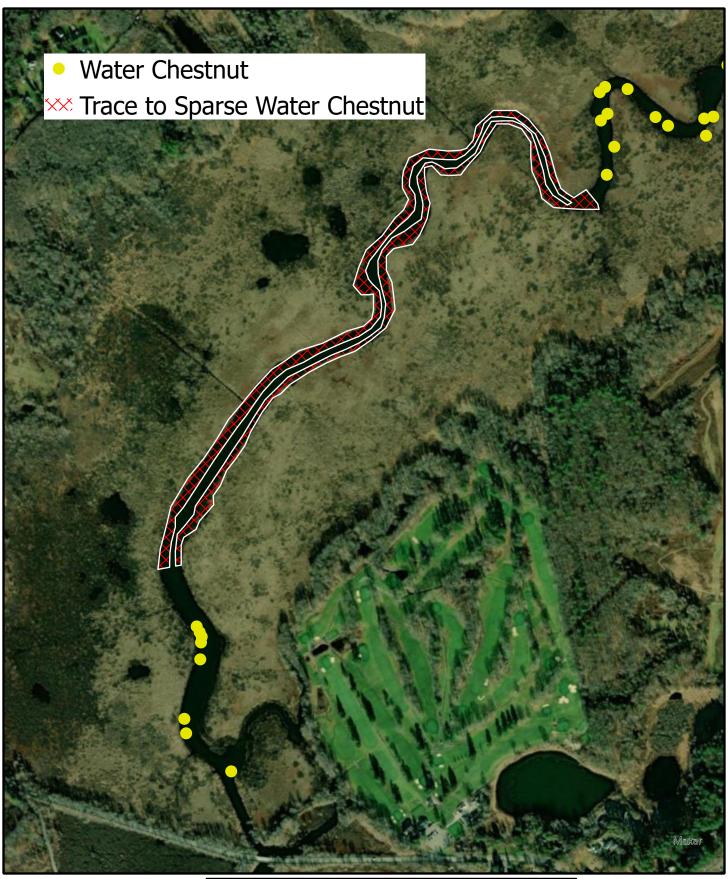




Great Meadows
Water Chestnut Distribution
Sudbury, MA

Survey Date 6/12/2023



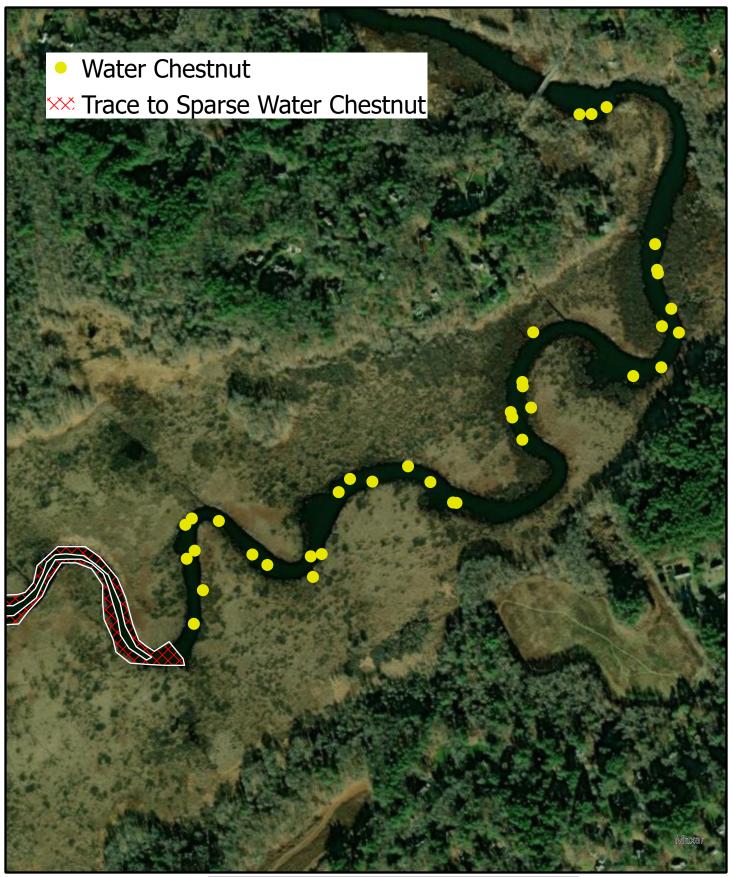




Great Meadows (Southern Half)
Water Chestnut Distribution
Sudbury, MA

Survey Date 6/12/2023







Great Meadows
Water Chestnut Distribution
Sudbury, MA

Survey Date 6/12/2023



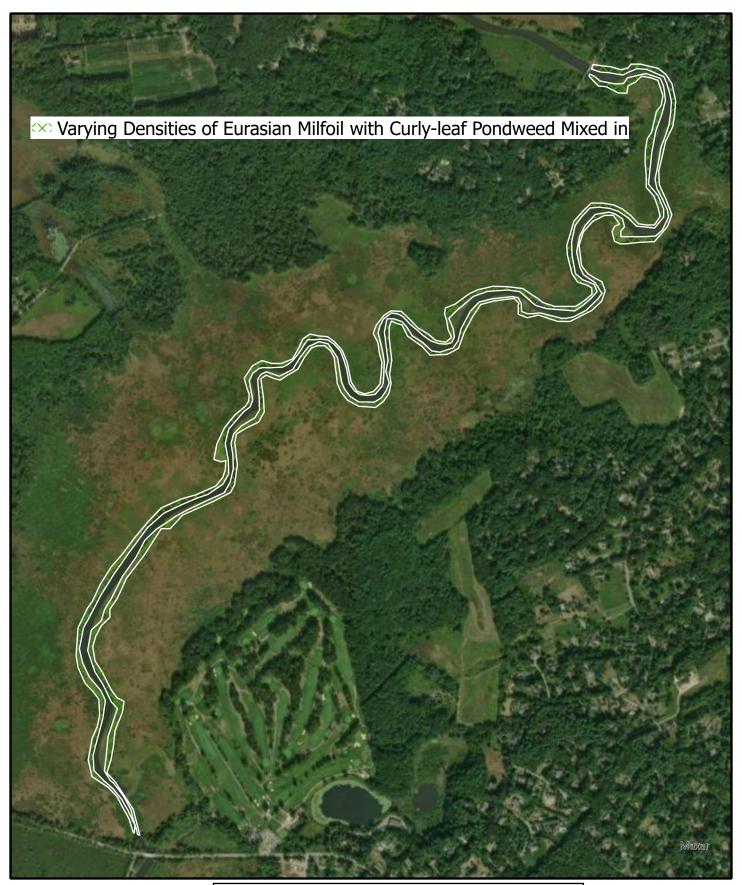




Great Meadows
Fanwort Distribution
Sudbury, MA

Survey Date 6/12/2023 Map Date







Great Meadows

Eurasian Milfoil and Curly-leaf Distribution

Sudbury, MA

Sudbury, MA

Sudbury, MA

Survey Date
6/12/2023

Map Date
6/20/2023





Colin has been working in the aquatic / invasive species field since 2006. He is a licensed aquatics applicator in MA, RI, and CT. As Director of Operations for Water & Wetland, Colin oversees and is on site for all projects.

#### **SCIENTIFIC FOCUS**

- Invasive Species ID
- Invasive Species Management Plans
- Water Quality Programs
- GIS/GPS Mapping
- Invasive Species Control
- Phragmites Management
- Fountains & Aeration Installation, Service and Design

#### **CONTACT INFORMATION**

Mobile: (508) 259-3153 Office: (888) 493-8526

Email: Colin@waterandwetland.com

Office Address: 115 South St. Upton, MA 01568

www.waterandwetland.com



## COLIN GOSSELIN

DIRECTOR OF OPERATIONS/ AQUATIC BIOLOGIST

#### **CAREER SUMMARY**

## **Director of Operations / Aquatic Biologist**WATER & WETLAND, LLC | JUNE 2020 - PRESENT

- Oversees and project manages all projects, including: aquatic & upland surveys, invasive species control treatments, water quality programs, permitting and more
- Maintains equipment such as: airboats, other treatment boats, pumping systems, backpack sprayers, UTV's
- Project design / alternatives analysis
- Effectively communicates project progress / development with customers, regulatory agencies, etc.

#### **Project Manager / Aquatic Biologist**

SOLITUDE LAKE MANAGEMENT | 2006 - JUNE 2020

- Biological surveys and aquatic vegetation mapping
- Reporting and Invasive Species Management Plans
- Water quality monitoring
- Invasive species treatments and other management
- Directing crew and project coordination
- GPS/GIS mapping
- Maintenance of equipment
- Permitting and regulatory compliance
- Communication of project progress with customers and regulatory agencies

#### **ACADEMIC HISTORY**

## **Plymouth State University - Plymouth, NH** B.S. IN ENVIRONMENTAL PLANNING, 2009

- Completed in May 2009
- Focus on sustainability in the environment, GIS mapping
- Senior year internship with Town Engineer, Danvers, MA with focus on sewer mapping, oversight of stormwater projects, culverts, etc.

#### PROFESSIONAL AFFILIATIONS

- NALMS North American Lake Management Society
- NEAB New England Association of Environmental Biologist
- NEAPMS Northeast Aquatic Plant Management Society
- APMS Aquatic Plant Management Society



As Director of Business Development for Water & Wetland, Joe specializes in working directly with customers on their specific project goals. He is involved with all of Water & Wetland's projects from start to finish.

#### **FOCUS**

- Understanding Customer Goals
- Project Design / Alternatives Analysis
- Ensuring Proper Communication
- Coordination of Project with Operations
- Fountains & Aeration Systems
- Phragmites Management
- Ensuring Regulatory Compliance

#### **CONTACT INFORMATION**

Mobile: (508) 250-6238 Office: (888) 493-8526

Email: Joe@waterandwetland.com
Office Address: 115 South St.

**Upton, MA 01568** 

www.waterandwetland.com



# JOE ONORATO

DIRECTOR OF BUSINESS DEVELOPMENT / AQUATIC SPECIALIST

#### **CAREER SUMMARY**

## Director of Bus. Dev. / Aquatic Specialist WATER & WETLAND, LLC | JUNE 2020 - PRESENT

- Focuses on client management and project design
- Coordinates project implementation and scheduling with Director of Operations
- Presents management options / alternatives analysis to Customers including: municipalities, homeowners associations, lake associations, golf course superintendents, property owners, land trusts, etc.
- Works with herbicide / algaecide manufacturers to properly dose projects
- Works with fountain and aeration manufacturers to properly size aeration systems and fountains for specific waterbodies

## Bus. Dev. Consultant / Aquatic Specialist SOLITUDE LAKE MANAGEMENT | MAY 2016 - JUNE 2020

- Project design and pricing
- Offering best solution for full suite of lake management offerings, including: mechanical, manual and chemical options
- Design of water quality monitoring programs
- Conflict resolution
- Project coordination with Operations
- Growth of revenue YOY, including specific categories such as fountains & aeration, erosion control

#### **ACADEMIC HISTORY**

#### Roger Williams University - Bristol, RI

B.S. IN LEGAL STUDIES, 2004

- Completed in May 2004
- Magna Cum Laude 3.68 GPA
- Focus on Legal Studies and Spanish with an additional concentration on Life Sciences

## PROFESSIONAL SPEAKING ENGAGEMENTS

- "Pond Management Strategies for Homeowners Associations," Condo Associations Institute 2018
- "Mosquito Management in Ponds," Condo Associations Institute Connecticut 2018
- "Pond Management for the Golf Course Industry," New England Turfgrass Association 2019



As a Senior Environmental **Engineer/Project Manager for Water &** Wetland, James specializes in completing projects from design through implementation. This includes everything from developing management plans, through permitting, to treatments, surveys, water quality, fountains / aeration, and reporting.

#### **FOCUS**

- Invasive Species ID
- Invasive Species Management Plans
- Water Quality Programs
- GIS/GPS Mapping
- Invasive Species Control
- Phragmites Management
- Fountains & Aeration Installation, **Service and Design**

#### **CONTACT INFORMATION**

Mobile: (774) 276-6098 Office: (888) 493-8526

Email: James@waterandwetland.com

Office Address: 115 South St. **Upton, MA 01568** 

www.waterandwetland.com



# JAMES LACASSE

SENIOR ENVIRONMENTAL SCIENSTIST/ PROJECT MANAGER

#### **CAREER SUMMARY**

#### Senior Environmental Scientist

WATER & WETLAND, LLC | MAY 2021 - PRESENT

- Oversees and manages projects, including: aquatic & upland surveys, invasive species control treatments, water quality programs, permitting and more
- Maintains equipment such as: airboats, other treatment boats, pumping systems, backpack sprayers, UTV's
- Project design / alternatives analysis
- Effectively communicates project progress / development with customers, regulatory agencies, etc.
- Prepares and files both Town and State permits
- Installs, maintains, and troubleshoots aeration systems and fountains

#### **Environmental Scientist**

SOLITUDE LAKE MANAGEMENT | MAY 2016 - JUNE 2020

- Biological surveys and aquatic vegetation mapping
- Reporting and Invasive Species Management Plans
- Water quality monitoring
- Invasive species treatments and other management
- Directing crew and project coordination
- GPS/GIS mapping
- Permitting and regulatory compliance
- Communication of project progress with customers and regulatory agencies

#### Field Chemist/Environmental Spec. II TRIUMVIRATE ENVIRONMENTAL | 2015-2016

- Maintain Research Compliance, Chemical Inventory, Laboratory and Chemical Moves
- Site Remediation and Consulting
- Transportation of Hazardous Material, Emergency Response Planning
- Team Management and Task Management
- Licensing and Permitting: Air Emissions, Wastewater, Storm Water, Biosafety, Flammable Storage

#### **Biologist Assistant/Field Associate**

AQUATIC CONTROL TECHNOLOGY, INC. | 2012-2014

 Worked as a Summer intern, assisting with the management of waterbodies throughout New England.

#### ACADEMIC HISTORY

University of Rhode Island - Kingston, RI B.S. IN ENVIRONMENTAL SCIENCE, 2015

- Lake, Pond & Wetland Management -



As an Aquatic Biologist/Project Manager for Water and Wetland, Scott specializes in completing projects from conception through implementation. This includes everything from management plans, permitting, treatments, surveys, water quality, fountains/aeration, and reporting.

#### **FOCUS**

- Aquatic Vegetation ID
- Invasive Species ID
- Water Quality Programs
- GIS/GPS Mapping
- Invasive Species Control
- Fountains & Aeration Installation, Service and design
- New technologies & Innovative treatments

#### **CONTACT INFORMATION**

Mobile: (607)267-7103 Office: (888) 493-8526

Email: Scott@waterandwetland.com

Office Address: 115 South St.
Upton, MA 01568

www.waterandwetland.com



# SCOTT CONRADE

AQUATIC BIOLOGIST/ PROJECT MANAGER

#### **CAREER SUMMARY**

#### **Aquatic Biologist**

WATER & WETLAND, LLC | MARCH 2023 - PRESENT

- Oversees and manages projects, including aquatics & upland surveys, invasive species control treatments, water quality and more.
- Maintains and designs innovative treatment equipment.
- Installs, maintains, and troubleshoots aeration and fountain systems.
- Prepare and file town and state permits.
- Effectively communicate and develop projects with shareholders and regulatory officials.
- Oversee new technologies and their applicatablity to the company

#### **Aquatic Biologist**

AQUATECHNEX, LLC | FEBRUARY 2021 - FEBRUARY 2023

- Removal of invasive and nussance aquatic vegetation from lakes, ponds, streams, and wetland
- Complex aquatic vegetation surveys utilizing new technologies such as hydroacoustic mapping software and underwater drones
- water quality monitoring
- Removal of excess nutrients using nutrient inactivation technologies
- GPS/GIS mapping
- Permitting and regulatory compliance
- Communication of project progress with federal, state and private customers
- Maintain equipment and design treatment systems as necessary

#### **Aquatic Biologist**

SOLITUDE LAKE MANAGEMENT - NY | SEPTEMBER 2017 - AUGUST2020

- Aquatic invasive species removal treatments and other management
- Permitting and Regulator Compliance
- Aquatic vegetation identification and mapping
- Water quality monitoring
- · Herbicide monitoring programs
- GPS/GIS Mapping
- Directing crews and project coordination
- Maintaining equipment and troubleshooting problems in the field
- Install, maintain, and troubleshoot aeration systems and fountains

#### **Aquatic Technician**

ALLIED BIOLOGICAL | 2015-2016

 Worked as a seasonal employee, helping with treatments and surveys, as well as maintaining equipment, while working toward his degree.

#### **ACADEMIC HISTORY**

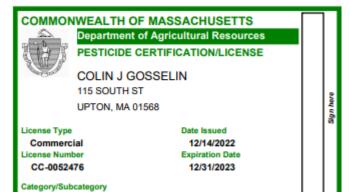
State University of New York College at Oneonta- Oneonta, NY

B.S. IN ENVIRONMENTAL SCIENCE, MAY 2017



— LAKE, POND & WETLAND MANAGEMENT –

## **Massachusetts Applicator Licenses**



#### COMMONWEALTH OF MASSACHUSETTS



Department of Agricultural Resources
PESTICIDE CERTIFICATION/LICENSE

JAMES FRANCIS LACASSE 7 HOLBROOK LANE

PAXTON, MA 01612

 License Type
 Date Issued

 Applicator (Core)
 10/3/2022

 License Number
 Expiration Date

 AL-0047160
 12/31/2023

#### **COMMONWEALTH OF MASSACHUSETTS**



Department of Agricultural Resources
PESTICIDE CERTIFICATION/LICENSE

SCOTT MILLARD CONRADE

1388 UNIT 2 MAIN ST. TEWKSBURY, MA 01876

 License Type
 Date Issued

 Applicator (Core)
 3/16/2023

 License Number
 Expiration Date

 AL-0055483
 12/31/2023

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100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey

Kimberley Driscoll Lieutenant Governor Rebecca L. Tepper Secretary

Gary Moran Acting Commissioner

License No.:

WM04-0001025

## LICENSE TO APPLY CHEMICALS FOR CONTROL OF NUISANCE AQUATIC VEGETATION

Applicant: COLIN J GOSSELIN

Name of Waterbody: GREAT MEADOWS NATIONAL WILDLIFE REFUGE (SUDBURY RIVER)

**Location of Waterbody: SUDBURY** 

**Project Proponent: US FISH AND WILDLIFE** 

#### AUTHORITY FOR ISSUANCE

Pursuant to the authority granted to the Department of Environmental Protection, by Massachusetts G.L.c. 111, s5E, the following license is hereby issued to **COLIN GOSSELIN**, **WATER AND WETLAND** (hereinafter called the "licensee"), authorizing the application of chemicals for the control of nutrients, algae or aquatic plants to **GREAT MEADOWS NATIONAL WILDLIFE REFUGE (SUDBURY RIVER)**, **SUDBURY**; such authorization being expressly conditional on compliance by the licensee with all terms and conditions of the license hereinafter set forth. This license shall become effective on the date of the Director's signature and shall expire on the **12/31/2023**.

Sincerely,

License Effective Date: 01/22/2023

Stephanie Moura

Maura T. Healey Governor Rebecca L. Tepper Secretary

Kimberley Driscoll Lieutenant Governor Gary Moran Acting Commissioner

License No.:

WM04-0001025

Director, Division of Wetlands and Waterways Department of Environmental Protection 100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey Governor

Kimberley Driscoll Lieutenant Governor Rebecca L. Tepper Secretary

Gary Moran Acting Commissioner

**License No.:** 

WM04-0001025

#### A. Application Condition(s)

#### **Chemical Information**

Product Brand Name/Trade Name	Chemical Form (dry/liquid)	Total Weight/Volume Applied	Units of Measurement (lbs/gallons)	Acres Treated	Application Rate	Planned Maximum Concentration (ppm)
Clearcast	liquid	20	gal	20	1 gal/acre	

Treatment Method: The treatment will be conducted via foliar method.

#### B. Application Report

By December 31st of the year of this treatment, the licensee shall submit a written report to the Department certifying the treatment date, application rate and the total weight/volume for each chemical used in the treatment, in accordance with requirements of Section I.A. of this license.

Please send the report to the Massachusetts Department of Environmental Protection (David.W.Wong@mass.gov).

#### C. Modification of Application Conditions

The licensee shall not apply chemicals in a manner contrary to, or inconsistent with, the application conditions set forth in Section I.A. of this license without the prior written approval of the Department.

#### **General Conditions**

- A. The licensee is hereby notified that chemical treatments to control aquatic nuisances in public or private lakes and ponds of the Commonwealth involve the alteration of wetland resource areas protected under both Massachusetts G.L.c. 131, s40, the Wetlands Protection Act and 310 CMR 10.00, Massachusetts Wetlands Protection Regulations.
- B. The licensee is hereby notified that issuance of this license does not in any way constitute the Department's approval of the chemical treatment as it related to the provisions of the Wetlands Protection Act.
- C. The licensee shall obtain either a final Order of Conditions or a negative Determination of Applicability from the SUDBURY AND WAYLAND Conservation Commission(s) prior to application of chemicals authorized under this license.

### **Department of Environmental Protection**

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper Secretary

Gary Moran
Acting Commissioner

License No.:

WM04-0001025

- D. Shoreline areas of the lake or pond must be posted with signs warning the general public of any water use restrictions stated on the chemical label minimum for one week. This is especially important at bathing beaches and other areas of common access. These signs shall clearly state that the chemical treatment is being conducted pursuant to a license issued by the Department of Environmental Protection, "DEP". A new sign shall be posted for each treatment event.
- E. The Department may require the licensee to cease application of chemicals to a body of water at any time following the issuance of a license if the Department determines that the chemical treatment will be ineffective, or will result in unreasonable restrictions on current water uses, or will produce unnecessary adverse side effects on nontarget flora or fauna.
- F. Chemical applications shall be performed in accordance with the manufacturer's label directions, existing pesticide use laws, and any conditions imposed by other local or state agencies.
- G. Chemical treatments to water using general use pesticides shall only be performed by an applicator currently licensed by the Massachusetts Department of Agricultural Resources Pesticide Program in the aquatics category. Chemical treatments to Bordering Vegetated Wetlands (310 CMR 10.55(2)(a)) and Salt Marsh (310 CMR 10.32(2)) using general use pesticides and techniques that insure chemicals are not applied to water shall only be performed by an applicator currently licensed in Massachusetts Department of Agricultural Resources Pesticide Program. Chemical treatments using restricted use pesticides shall only be performed by an applicator currently certified by the Massachusetts Department of Agricultural Resources Pesticide Program.
- H. Issuance of this license does not release the licensee from liability resulting from the use of chemicals or from negligent or reckless application of chemicals specified in Section I.A of this license.
- I. Electronic notification of treatment must be made to the Massachusetts Division of Fisheries and Wildlife (jason.stolarski@mass.gov, jason.carmignani@mass.gov). Notification that the treatment was performed shall be made within 24 hours of treatment. The notification message should include waterbody, town, license number and chemicals used.
- J. No chemical treatment shall be conducted while a Massachusetts Department of Public Health advisory is in effect.
- K. In general, less than 1/3 of the lake area and less than ½ of the littoral zone should be targeted for herbicide treatment when native plants (particularly low growth forms) are dominant.