DEROSA Environmental CONSULTING, INC.

167 Main Street
P. O. Box 716
Rowley Massachusetts
USA

978.948.7717 Office

derosaenvironmental.com

July 15, 2019

BY ELECTRONIC MAIL & HAND DELIVERY

Boxford Conservation Commission
Town Hall
7A Spofford Road
Boxford, MA 01921

Attn: Mr. Ross Povenmire, Conservation Director
(978) 887-6000 ext.181
dircons@town.boxford.ma.us

RE: **Proposed Wetland Restoration Plan**
Wheeler Property | 76 Surrey Lane
Boxford, Massachusetts

Dear Mr. Povenmire and Members of the Commission:

We are writing on behalf of Mr. David Wheeler, current owner of property at 76 Surrey Lane, Boxford, Massachusetts. The purpose of this letter is to restore a previously disturbed vegetated wetland and re-establish the hydologic connection between a currently isolated wetland to a bordering vegetated wetland. The intent of this letter is to propose a restoration plan that is consistent with sound ecological principals as well as sustainable in design and long term maintenance integral to the success of the proposed work.

Our proposal is based on our knowledge in ecology, wetland and landscape restoration as well as a site visit to inspect current conditions in the impacted area as well as the surrounding areas. Michael DeRosa is a Professional Wetland Scientist (PWS No. 2250). Our firm is an active member of the Ecological Landscape Association (ESA), Society of Ecological Restoration (SER) and the Massachusetts Horticultural Society. Much of our professional practice is centered on invasive plant species control, management and ecological landscape restoration.

Project Background

The site appears on the MassGIS Wetland Change data layer viewed in Oliver at http://maps.massgis.state.ma.us/map_ol/oliver.php. This data has been summarized and shows the change from the construction of the beach and pond pre-2005 to the current condition in 2018 (Appendix A. Summary of Google Imagery). Although not completely clear, the hydrology of the site has been altered in a way that has impeded the flow of water from the north and east across the site to the west and south to feed a much large vegetated wetland area. The new owner of the property intends to restore the hydrologic connection between these two wetland areas (Figure 2a and Figure 2b).

Example of Riffle and Pool feature which will be emulated on a smaller scale at 76 Surrey Lane to re-connect two wetland resource areas. (See Figure 2b).

Version 2 of The Natural Channel Design Review Checklist. Stream Mechanics & USFWS. November 2011.

From : Source: Michael Baker Corporation; Photo by Will Harman

Accordingly, we have prepared the following wetland restoration plan that intends to meet that purpose and scope and comply with the intent of the *Massachusetts Inland Wetland Replication Guidelines*. Guidance No. BRP/DWM/WetG02-2. March 1, 2002.

Grading of Upland Soils |Riffle & Pool Feature

We propose to restore the surface hydrologic connection that was modified by the prior landowners. The upland buffer zone between Wetland Flags A32, A33, and A34 to Wetland Flags L23 and L24 will be graded to the approximate elevation of the water table and adjacent vegetated wetland (Figure 2a and Figure 2b) reconnecting the flow between the upland isolated wetland (L-Series Wetland) to the larger, lower A-Series Wetland (Figure 2b). Approximately 2050

square feet of upland will be converted to bordering vegetated wetland and intermittent stream as part of this portion of the restoration effort (see Figure 2a and Figure 2b).

We intend to have the work implemented during the dryer period of the year to reduce impacts to wetland and upland areas. Irrigation will be provided as needed to insure germination and establishment of planted material.

Existing soil will be removed to approximately 12 inches below the grade of the water table (to approximately Elevation 110.0). This will represent the bottom of the replication area. The grade will then be brought up to final finished grade at approximately Elevation 111.0 with a blended soil consisting of 1 part loam from the site, 1 part sand and 1 part organic compost. This blended soil will be the planting media for the wetland replication area.

The intent of the design is to create a riffle and pool connection from the upper isolated wetland area to the lower bordering vegetated wetland.

Accordingly, the proposed replication area will be at the approximate elevation of the existing vegetated wetland. This will insure the presence of sufficient hydrology during the growing season to sustain a wetland plant community within the replication area.

Proposed Plantings

Plantings of various species adapted to the local habitat will be installed in the replication area (Figure 2b). Specific locations of these plantings will be chosen at the time of installation based on site conditions (Figure 2b). All planted species will be native and will serve to substantially improve the function and value of the Bordering Vegetated Wetland (BVW) and adjacent intermittent stream.

Cinnamon Fern is a common native fern that does very well in shaded sites.

Proposed Wetland Plantings

Native plants in this area will include high-bush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), elderberry (*Sambucus canadensis*), cinnamon fern (*Osmunda cinnamomea*), and royal fern (*Osmunda regalis*). A wetland seed mix will be applied in the restored wetland area. The seed mix is comprised of soft

rush (*Juncus effusus*), sensitive fern (*Onoclea sensibillis*), riverbank wildrye (*Elymus riparius*), fough bentgrass (*Agrostis scarbra*), fowl bluegrass (*Poa palustris*), and virginia wildrye (*Elymus virginicus*). Seeding will occur immediately after grading and then supplemented as needed after plantings have been installed. The entire restoration area will be lightly raked to cover the seeds with soil and then hay mulched to retain moisture and facilitate germination.

Canopy trees will be ordered in at least 2 inch caliper size and will be installed with the assistance of a mini excavator. Shrubs will vary in size from two (2) gallon to five (5) gallon size and herbaceous material will be approximately one (1) gallon; all according to availability at the time of installation. All plantings are native and sourced from local nurseries.

Aftercare & Monitoring Program

Post Construction Monitoring

Competent wetlands professionals should oversee planting oversight and provide follow-up and aftercare services. The restoration area will be visited at least once each month for the first 4 months of the growing season to insure that plants are established and growing. After the first growing season the restoration area will be visited quarterly until the 75% cover performance standard is achieved. It is proposed that the restoration area be reviewed prior to the issuance of a Certificate of Compliance on or before the two (2) year regulatory provision to insure that plant material has established itself as required under 310 CMR 10.55(4)(b)(6).

Irrigation During Establishment Period

The area will be irrigated, if necessary, to insure that the planted material and seed material is established. All seed material will be hand sown.

Final Report & Request for a Certificate of Completion

Observations and maintenance over the two-year period will be summarized in a final written report, which will be submitted before or with the request for a Certificate of Completion. This report will summarize the restoration and enhancement effort and function and value of the created inland wetland area.

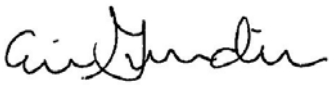
We will prepare a construction completion report summarizing the implementation of the replication planting plan when the plantings are installed. Subsequent update reports and

photos will be submitted once at the end of each growing season on or before October 30th of each year.

Should you have any questions or comments, please call anytime.

Respectfully submitted,

DeRosa Environmental Consulting, Inc.



Evin G. Guvendiren
Resource Economist/Conservation Biologist

Michael J. DeRosa
Wetland Ecologist, PWS, LSP, LEED AP

EGG/MJD/mjd

Attachments:

Figure 1. USGS Map
Figure 2a. Site Plan by The Morin-Cameron Group
Figure 2b. Wetland Restoration Plan by DeRosa
Professional Qualifications

Summary of Google Orthoimagery History

76 Surrey Lane | Boxford MA

2005 Google Orthophoto from MassDEP GIS Oliver

2008/2009 Google Orthophoto from MassDEP GIS Oliver

2016 Google Orthophoto from MassDEP GIS Oliver

2017 Google Orthophoto from MassDEP GIS Oliver

2018 Google Orthophoto
from MassDEP GIS Oliver

Wetland Change Data Layer

MassDEP GIS Oliver

Figure 2a. - Site Plan By The Morin-Cameron Group, Inc.

GENERAL NOTES:

1. THE EXISTING CONDITION DEPICTED HEREON IS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY THE MORIN-CAMERON GROUP, INC.
2. PROPERTY LINE INFORMATION COMPILED FROM RECORD PLANS AND AN ON-THE-GROUND SURVEY.
3. WETLAND RESOURCE AREAS WERE DELINEATED BY DEROSA ENVIRONMENTAL CONSULTING, INC., 167 MAIN STREET, PO BOX 716, ROWLEY, MA 01969 (978-948-7717).
4. UNDERGROUND UTILITY INFORMATION AND LOCATIONS WERE NOT AVAILABLE AT THE TIME OF SURVEY. LOCATIONS OF ALL UTILITIES SHOULD BE CONFIRMED WITH THE UTILITY PROVIDED PRIOR TO THE COMMENCEMENT OF ANY SITE WORK. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES.

RECORD OWNER:

- DAVID & KAREN WHEELER
  76 SURREY LANE
  BOXFORD, MA 01921
  SERD BOOK 36273, PAGE 230

ZONING DISTRICT:

- RESIDENCE-AGRICULTURAL DISTRICT (RA)

FLOOD NOTE:

- THE SUBJECT PROPERTY IS LOCATED IN A ZONE 'X' AS ILLUSTRATED ON THE FLOOD INSURANCE RATE MAP PANEL 25009C0-264F, WHICH HAS AN EFFECTIVE DATE OF JULY 3, 2012.

PLBK 171, PL 73

LEGEND

- WETLAND RESOURCE AREA
- WETLAND FLAG (A28)
- 25' NO DISTURB
- 100' BUFFER ZONE
- INTERMITTENT STREAM FLAG (IS1)
- INTERMITTENT STREAM
- POST AND RAIL FENCE
- CHAIN-LINK FENCE
- LIGHT POST
- PROPOSED CONTOUR (115)
- PROPOSED FENCE

ASSESSOR'S MAP 34, BLOCK 1, LOTS 57 & 30A & MAP 38, BLOCK 2, LOT 24
LOT AREA = 33.5± ACRES

PROP. WETLAND CONNECTION (2,050± SF) (SEE PLAN BY DEROSA ENVIRONMENTAL CONSULTANTS, INC.)

TEMPORARY WETLAND ALTERATION (1,050± SF) (SEE PLAN BY DEROSA ENVIRONMENTAL CONSULTANTS, INC.)

EXIST. FENCE TO BE REMOVED

PROP. 25' NO DISTURB ZONE ENHANCEMENT PLANTINGS (SEE PLAN BY DEROSA ENVIRONMENTAL CONSULTANTS, INC.)

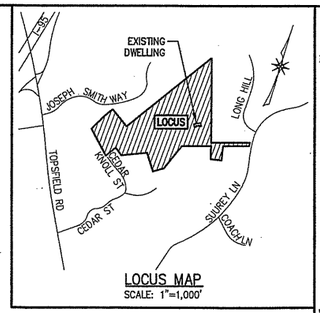
EXIST. GRAVEL DRIVEWAY TO BE ABANDONED

N/F
JANET M. ROSSMAN
ASSESSOR'S
MAP 34, BLOCK 1, LOT 55

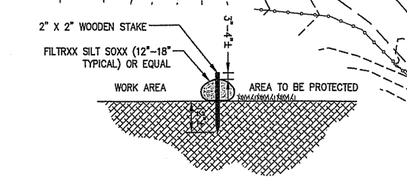
N/F
PAUL G. & CHRISTINE
HENDRICKSON
ASSESSOR'S
MAP 34, BLOCK 1, LOT 56

EXISTING DWELLING
EXISTING POND
EXISTING WATER FEATURE
EXISTING PATIO
SHED
GAZEBO
DEBRIS PILE
PROPANE TANK
BITUMINOUS DRIVEWAY
PROPOSED GRAVEL ROAD
WOOD ROAD
PROP. SILT SOCK
PROP. FENCE
INTERIOR LOT LINE
UGE
SEPTIC TANK (APPROX. SIZE AND LOCATION)
FF=131.0±
FF=129.9±
GAR.F.F.=128.9±

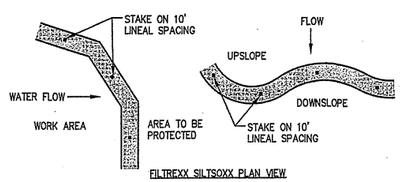
PLAN
SCALE: 1" = 20'
0 10 20 40



LOCUS MAP
SCALE: 1"=1,000'



FILTREXX SILTSOXX SECTION



FILTREXX SILTSOXX PLAN VIEW

SILT SOCK
(N.T.S.)

The Morin-Cameron GROUP, INC.
CIVIL ENGINEERS | ENVIRONMENTAL CONSULTANTS
LAND SURVEYORS | LAND USE PLANNERS
66 HALE STREET, PEABODY, MASSACHUSETTS 01960
P: 978-777-3050, F: 978-774-7816, W: WWW.MORINCAMERON.COM

COMMONWEALTH OF MASSACHUSETTS — JOHN M. MORIN — No. 28836 — REGISTERED PROFESSIONAL ENGINEER

SURVEY BY: PM / SR
DRAFTED BY: DJP
CHECKED BY: JMM
APPROVED BY: JMM
SCALE: 1"=20'
DATE: JULY 15, 2019

NO.	DESCRIPTION	DATE

SITE PLAN OF LAND
IN
BOXFORD, MASSACHUSETTS
76 SURREY LANE
(ASSESSOR'S MAP 34, BLOCK 1, LOTS 57 & 30A & MAP 38, BLOCK 2, LOT 24)
PREPARED FOR:
DAVID WHEELER

SITE PLAN

DRAWING NO. 1 OF 1

PROJ. #3622
DRAWING: 3622 MAIN.DWG

Figure 2b. Restoration Planting Plan

76 Surrey Lane | Boxford, MA

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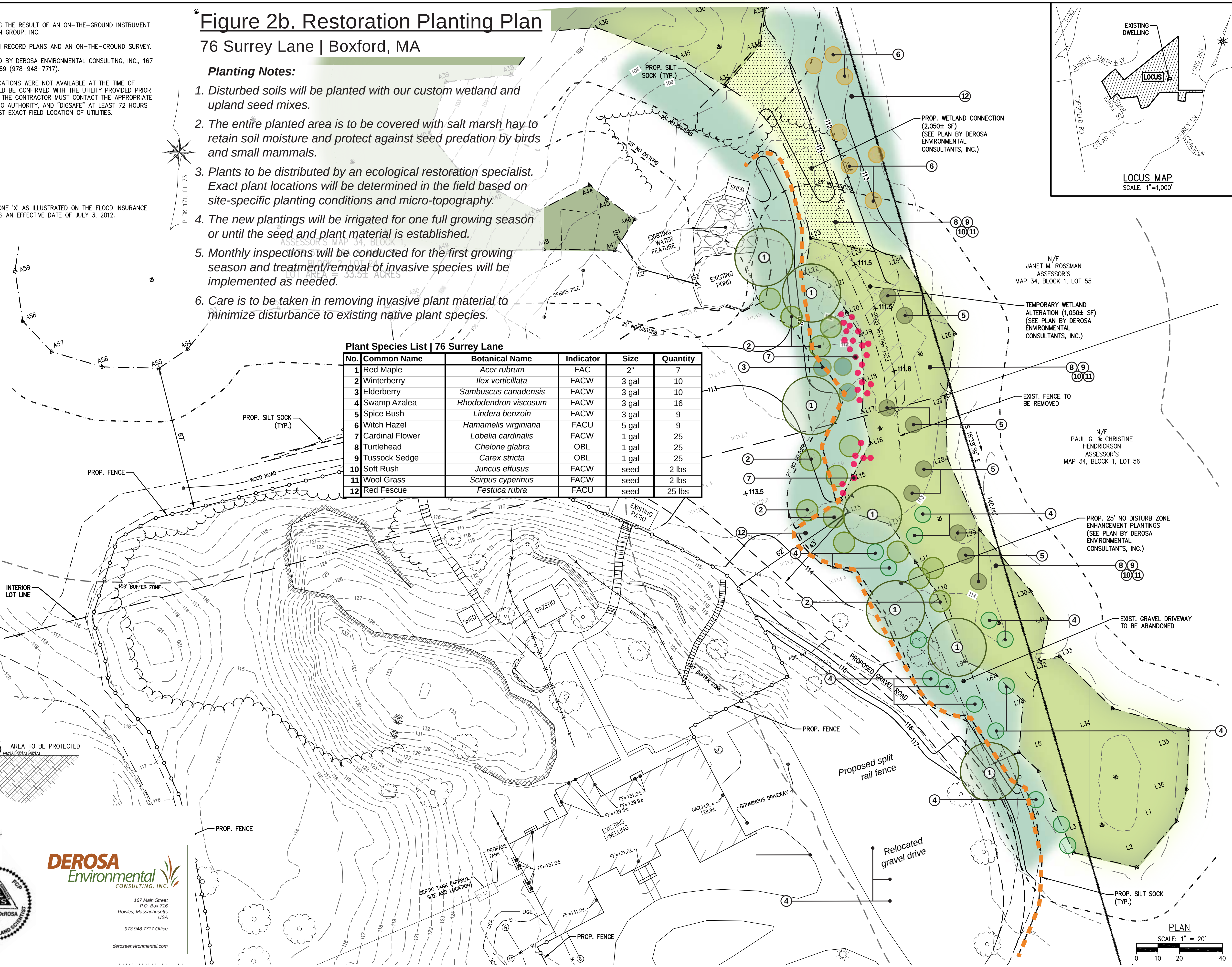
100' BUFFER ZONE
INTERMITTENT STREAM FLAG IS1
INTERMITTENT STREAM
POST AND RAIL FENCE
CHAIN-LINK FENCE
LIGHT POST
PROPOSED CONTOUR —115—
PROPOSED FENCE

Planting Notes:

1. *Disturbed soils will be planted with our custom wetland and upland seed mixes.*
2. *The entire planted area is to be covered with salt marsh hay to retain soil moisture and protect against seed predation by birds and small mammals.*
3. *Plants to be distributed by an ecological restoration specialist. Exact plant locations will be determined in the field based on site-specific planting conditions and micro-topography.*
4. *The new plantings will be irrigated for one full growing season or until the seed and plant material is established.*
5. *Monthly inspections will be conducted for the first growing season and treatment/removal of invasive species will be implemented as needed.*
6. *Care is to be taken in removing invasive plant material to minimize disturbance to existing native plant species.*

Plant Species List | 76 Surrey Lane

No.	Common Name	Botanical Name	Indicator	Size	Quantity
1	Red Maple	*Acer rubrum*	FAC	2"	7
2	Winterberry	*Ilex verticillata*	FACW	3 gal	10
3	Elderberry	*Sambuscus canadensis*	FACW	3 gal	10
4	Swamp Azalea	*Rhododendron viscosum*	FACW	3 gal	16
5	Spice Bush	*Lindera benzoin*	FACW	3 gal	9
6	Witch Hazel	*Hamamelis virginiana*	FACU	5 gal	9
7	Cardinal Flower	*Lobelia cardinalis*	FACW	1 gal	25
8	Turtlehead	*Chelone glabra*	OBL	1 gal	25
9	Tussock Sedge	*Carex stricta*	OBL	1 gal	25
10	Soft Rush	*Juncus effusus*	FACW	seed	2 lbs
11	Wool Grass	*Scirpus cyperinus*	FACW	seed	2 lbs
12	Red Fescue	*Festuca rubra*	FACU	seed	25 lbs



Michael J. DeRosa
PWS No. 2250

MJD/ledr
July 15, 2019

PWS MICHAEL J. DeROSA 2250 PROFESSIONAL WETLAND SCIENTIST

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DATE: JULY 15, 2019

REVISIONS

NO.	DESCRIPTION	DATE

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PREPARED FOR:
DAVID WHEELER

SITE PLAN

DRAWING NO. 1 OF 1

PROJ. #3622
DRAWING: 3622 MAIN.DWG

REPRESENTATIVE PROJECTS

Private Residence | Dune Grass Restoration
Manchester, MA

Private Residence | Dune Grass Restoration
Ipswich, MA

Commercial Property | Wetland Restoration
Rowley, MA

Private Residence | Reconstruction of a Single Family Home
Ipswich, MA

Invasive Plant Management | Restoration Project
Ipswich, MA

Sally's Meadow | Butterfly Meadow Restoration
Ipswich, MA

Town Wide Beach and Road Management Plans
Manchester, MA

Wetland Restoration | MassDEP ACOP
Rockport, MA

Wetland Restoration | MassDEP ACOP
Essex, MA

CERTIFICATION

40 Hour Hazardous Waste Site Worker (OSHA)

Adult and Pediatric First Aid/CPR/AED

Evin Guvendiren, BS

Natural Resource Economist

Evin graduated from the University of Massachusetts Amherst with a Bachelor of Science in Natural Resource Economics and minors in Environmental Science, Economics, and Natural Resource Conservation. Her studies focused on sustainability, econometrics, land conservation, environmental policy and natural resource management.

Evin joined DeRosa Environmental Consulting in the Summer of 2017 and is currently holding the position as Environmental Scientist.

During her bachelor's studies, Evin spent a semester abroad with the School for Field Studies in Costa Rica. There, she lived on a sustainable farm and implemented an integrated pest management system. Her classes consisted of field experience and course work on sustainable development, tropical ecology, and resource management in a developing country. She also participated in environmental stewardship and spent one month conducting a Socio-economic directed research project with a national park.

Evin also spent a semester researching the Colony Collapse Disorder as an independent study. She helped a professor with a grant from the USDA to determine consumers' willingness to pay for native bee pollination on cranberries. This research was funded to help find an alternative to commercial honeybee pollination to support the agriculture industry and economy.

Having grown up near beaches and ocean, marshes, rivers, vernal pools, and national parks, Evin has a strong love and passion for the environment. She spends most of her time outdoors and camps, hikes and kayaks whenever she can.

EDUCATION

BS, Natural Resource Economics | 2014
University of Massachusetts, Amherst, MA

PROFESSIONAL EXPERIENCE

Environmental Scientist | 2017 – Present
DeRosa Environmental Consulting Inc
Student Researcher |January – May 2014
University of Massachusetts Amherst-Resource Economics department
Student Researcher |January – May 2013
The SFS Center for Sustainable Development Studies, Atenas, Costa Rica

REPRESENTATIVE PROJECTS

Ipswich River Watershed Association
Ipswich MA

Miles River Task Force | Watershed Restoration
Beverly Wenham Hamilton Ipswich MA

Paumier Residence | Dune Restoration
Manchester MA

Matignon High School Athletic Fields | Landfill Cap Remediation
Cambridge/Somerville MA

Turner Hill Golf Course | Wetland Mitigation & Pond Design
Ipswich MA

Saint Aidan's Church | UST Remediation
Brookline MA

Saint Kevin's School | AST Remediation
Dorchester MA

Saint Joseph's School | UST Remediation
Salem MA

Ipswich Country Club | Wetland Restoration
Ipswich MA

Ould Newbury Golf Club | LID Runoff Design
Newbury MA

Ferncroft Country Club | Pond Restoration
Topsfield/Middleton MA

Michael J. DeRosa

Principal, LSP, LEED AP BC&D

Michael J. DeRosa, Principal and project manager specializing in habitat restoration and wetland restoration projects. He has more than 24 years experience working with ecological systems focused on restoration and rehabilitation of damaged landscapes. Ecological principles inform his design and restoration practices.

Mike was the principal wetland permitting leader for the Turner Hill Resort Center in Ipswich Massachusetts. He has consulted with the Archdiocese of Boston since 1989 in all environmental areas. His firm is known for their expertise in wetland and wildlife habitat restoration and rehabilitation and invasive species control and management.

Mike incorporated DeRosa Environmental Consulting, Inc., in May 1994 after spending 8 years working in the environmental consulting industry as technical director and project manager. Prior to his consulting career he was a researcher at the Harvard School of Tropical Public Health working with infectious diseases and tick transmitted Lyme disease, in particular.

Mike has been involved with many projects associated with MGL Ch. 21e and Massachusetts Contingency Plan (MCP) projects. He received his Licensed Site Professional (LSP Lic. 3452) registration in 1993. Mike is uniquely credentialed in hazardous waste site assessment and remediation and has over 24 years experience in wetland permitting, habitat restoration and mitigation. Mike has permitted projects with all federal, state and local environmental agencies. Mike is on the Practice Faculty at The Boston Architectural College. His new passion is the incorporation of urban agriculture and food justice initiatives in mixed use community based projects.

EDUCATION

MA, Boston University, 1993
North Carolina State University, 1986
Harvard University, 1985
BA, University of Denver, 1982

PROFESSIONAL EXPERIENCES

Principal, LSP, LEED AP BC&D
DeRosa Environmental Consulting, Inc. | 1994-Present
Technical director, Environmental Engineering Division
Web Engineering Associates, Inc.| 1990-1994
Project manager/Environmental Scientist,
Dennison Environmental, Inc.| 1988-1989
Population Ecologist & Wetlands Specialist,
Lelito Environmental Consultants, LLC| 1987-1988
Research Assistant,
North Caroline State University| 1985-1987
Air Pollution Analyst
Entropy Environmentalists, Inc.| 1985-1987
Senior Research Assistant
Harvard University| 1983-1985
Naturalist
The Trustees of Reservations| 1983-1985

PROFESSIONAL MEMBERSHIPS/AFFILIATIONS

New England Wildflower Society
USGBC | United States Green Building Council
NGWA | National Ground Water Association
AMWS | Association of Massachusetts Wetland Scientists
LSPA | Licensed Site Professional Association
SWS | Society of Wetland Scientists
MACC | Massachusetts Association of Conversation Commissioners

CERTIFICATIONS AND SPECIAL TRAINING

Licensed Site Professional (LSP), Lic. No. 3452
Professional Wetland Scientist (PWS)
LEED Accredited Professional | 10342989
Certified Ecologist, The Ecological Society of America |
June 2002 – May 2007
CERCLA 40 Hour Hazardous Materials Safety Training |
OSHA 29 CFR 1910.120
Confined Space Entry Training | OSHA 29 CFR 1910.146
Management Training Workshop | Dun and Bradstreet
Hazardous Materials Chemistry Seminar | University of Toledo
Unmanned Aircraft License | FAA | Exp. 2/28/2019