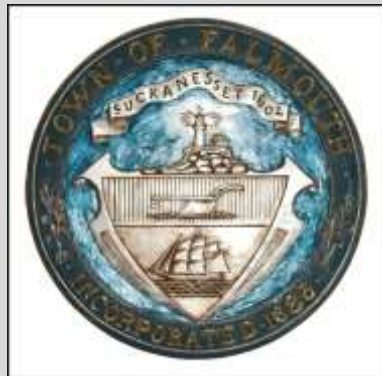
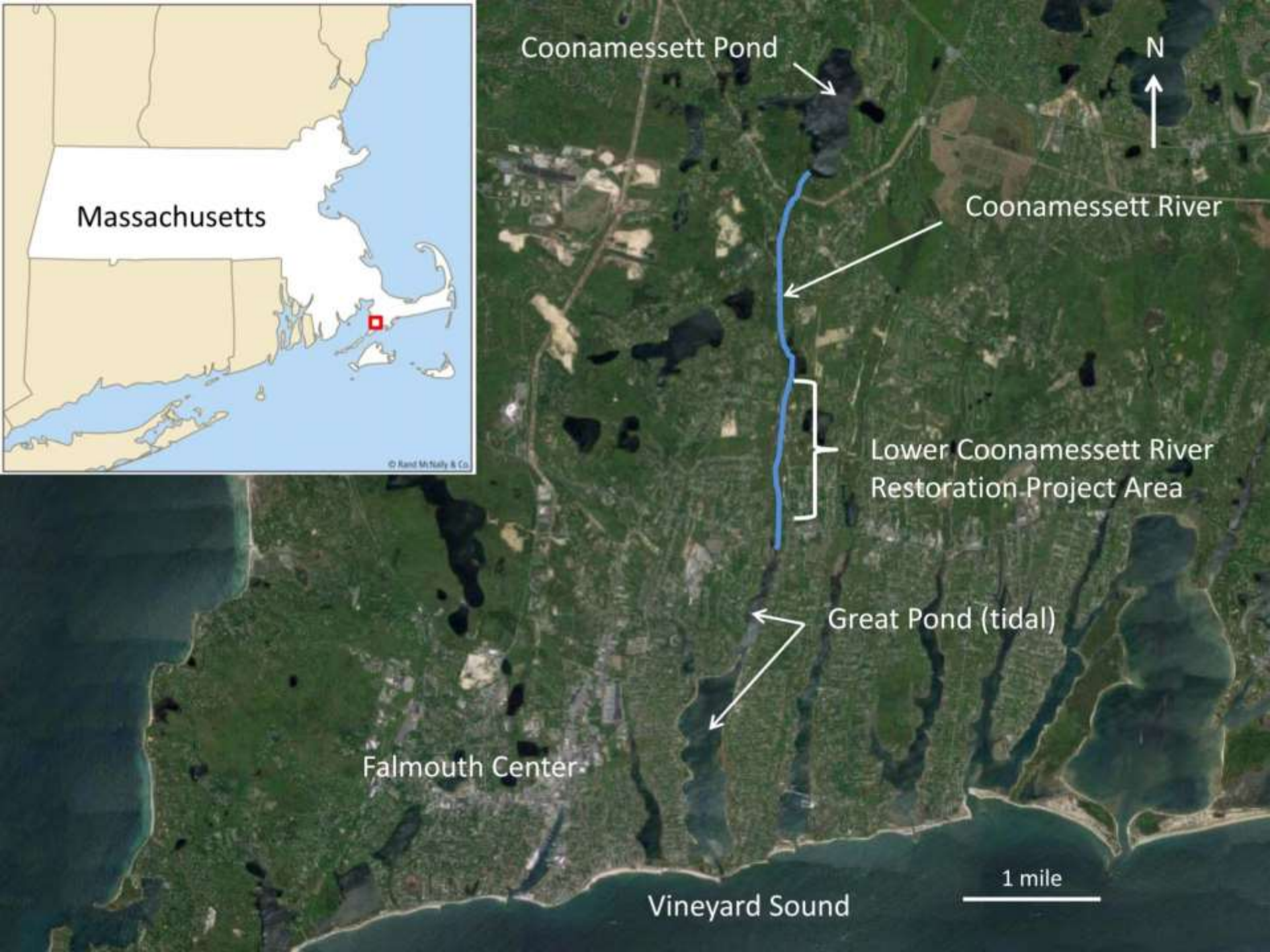


5TH ANNUAL CAPE COASTAL CONFERENCE

COONAMESSETT RIVER RESTORATION PROJECT

Elizabeth H. Gladfelter, Ph.D.
Conservation Commission
Town of Falmouth







Mural by Teaticket Elementary School 2nd graders, Spring 2017



THE TOWN OF FALMOUTH

invites you to celebrate the groundbreaking of the

COONAMESSETT RIVER RESTORATION PROJECT

Monday, October 30, 2017 from 1 pm to 2 pm

At the Coonamessett River, East Falmouth
Off John Parker Road opposite Clark Street
Please see attached for parking directions



NOAA HABITAT CONSERVATION | RESTORATION CENTER
NATIONAL MARINE FISHERIES SERVICE





**River flows free:
First time in greater than 300 years**



Timeline

2003-2009

T3C: Coonamessett Greenway

Coonamessett River Trust: monitoring

2009-2014:

(FAF/NOAA; MA Environmental Trust)

\$/year MA Division of Ecological Restoration

2015: MA Environmental Trust -

2016: Funding covering Phase 1 and much of Phase 2

NOAA Restoration funding

National Fish & Wildlife Fund

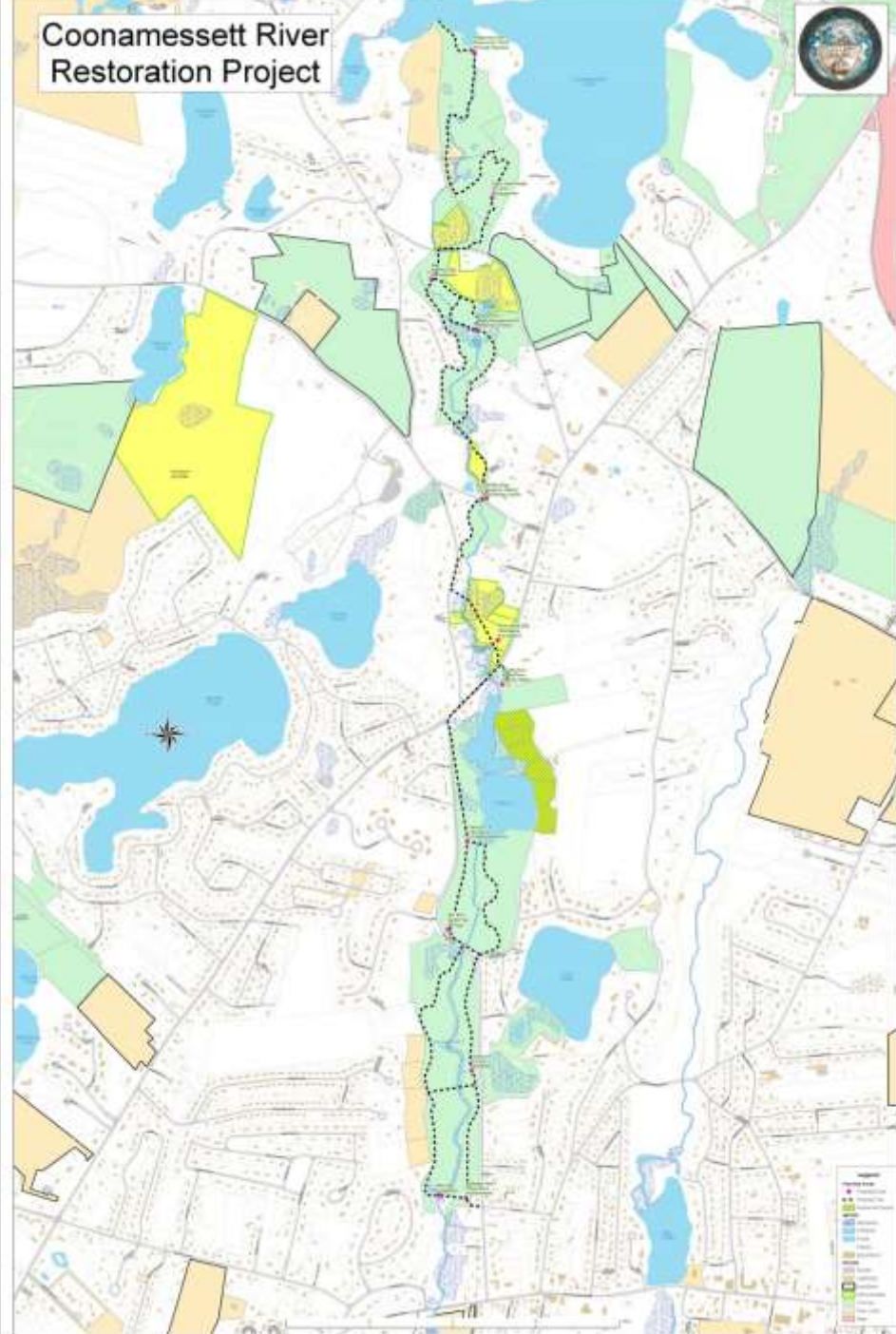
2017: Falmouth Community Preservation Fund

Falmouth Rod & Gun Club

Pending:

Natural Resources Conservation Service (USDA)

***Most funds matched by in kind support of volunteers and Town of Falmouth**



greenway: a corridor of undeveloped land preserved for recreational use or environmental protection.

Timeline

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T3C: Coonamessett Greenway

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(FAF/NOAA; MA Environmental Trust)

\$/year MA Division of Ecological Restoration

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2017: Falmouth Community Preservation Fund

Falmouth Rod & Gun Club

Pending:

Natural Resources Conservation Service (USDA)

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CRT: River Characteristics

1. Physical conditions

flow

temperature

channel structure

2. Habitats

aquatic, wetland structure

3. Biological diversity and function

herring count

herring tagging

plant diversity and cover

Timeline

2003-2009

Coonamessett River Trust: monitoring

T3C: Coonamessett Greenway

2009-2014:

(FAF/NOAA; MA Environmental Trust)

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Pending:

Natural Resources Conservation Service (USDA)

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PROJECT GOALS

- To establish a **healthy, self-sustaining river and wetland ecosystem** that supports fish, other aquatic organisms, and wildlife
- To increase **coastal resiliency** by removing blockages and creating connectivity of floodplain
- To increase **recreational and educational opportunities** for people of all ages to discover the environmental, land use, and cultural history surrounding the Coonamessett River

Stressors

- **Compromised river channel (straight, wide, sandy bottom with no structure, no shade)**
Poor habitat for reproduction (blueback herring, trout)
Poor habitat for successful migration (predation pressure)
- **Temperature**
- **Filled in wetlands (100+ years of sand)**
- **Blockages to floodplain connectivity and migration**



John Parker Road Culvert: design and permitting to replace with a bridge or similar



Middle Dam: removal



Lower Dam: removal



Lower Coonamessett River Restoration Project Area Barriers and Proposed Outcomes with NOAA Funds

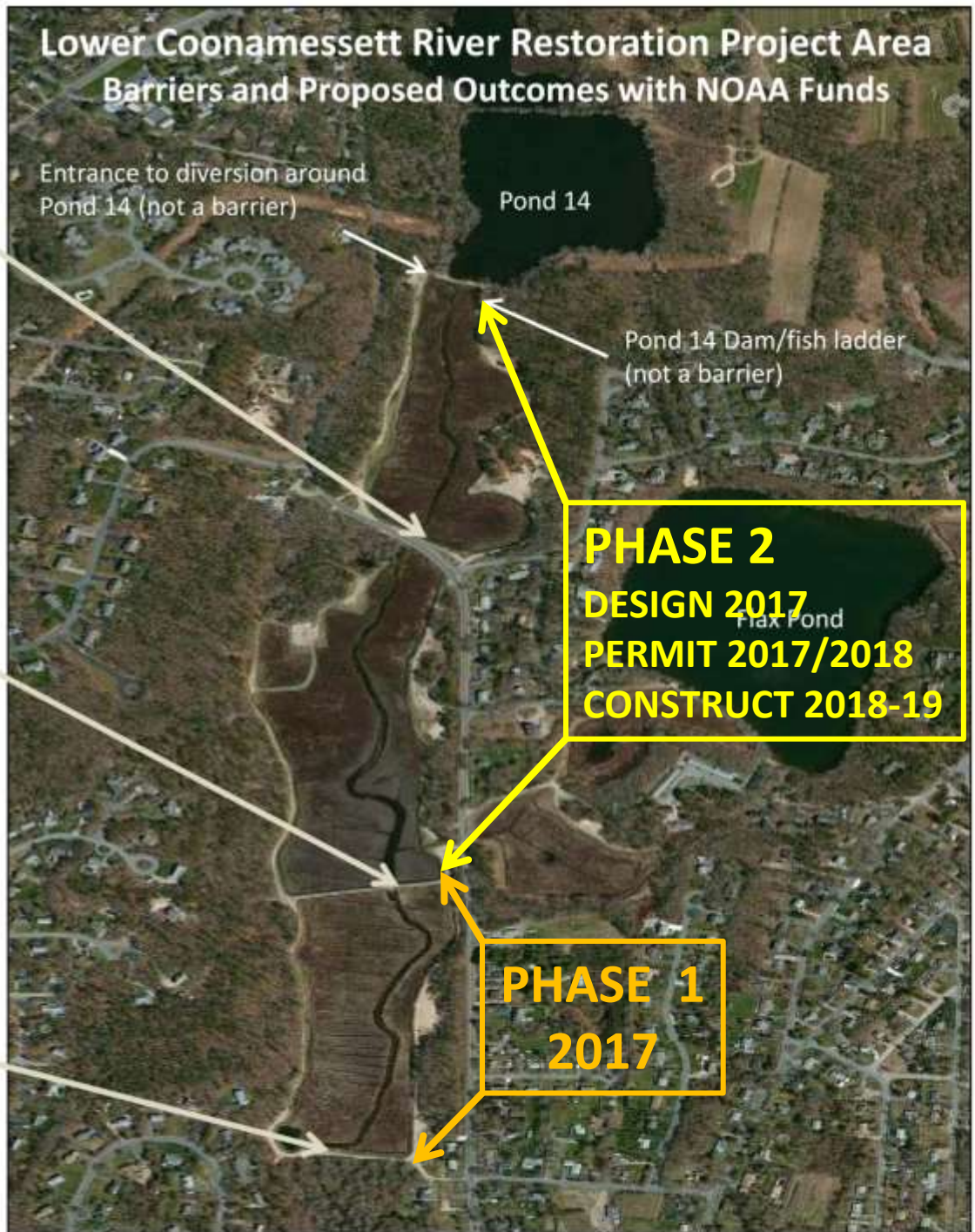
Entrance to diversion around
Pond 14 (not a barrier)

Pond 14

Pond 14 Dam/fish ladder
(not a barrier)

PHASE 2
DESIGN 2017
PERMIT 2017/2018
CONSTRUCT 2018-19

PHASE 1
2017



Restoration Actions



- Remove accumulated sand
- Add LWD:
 - more sinuous: more rapid flow
 - Curves provide overhangs for shelter
- Add buffer plantings
- Tie into cold water springs
- Remove barriers to floodplain continuity (along length; accessing side springs and seeps)
 1. Remove dams (lower, middle)
 2. Replace deteriorating pipe culvert with MA approved stream crossing Culvert at John Parker Road





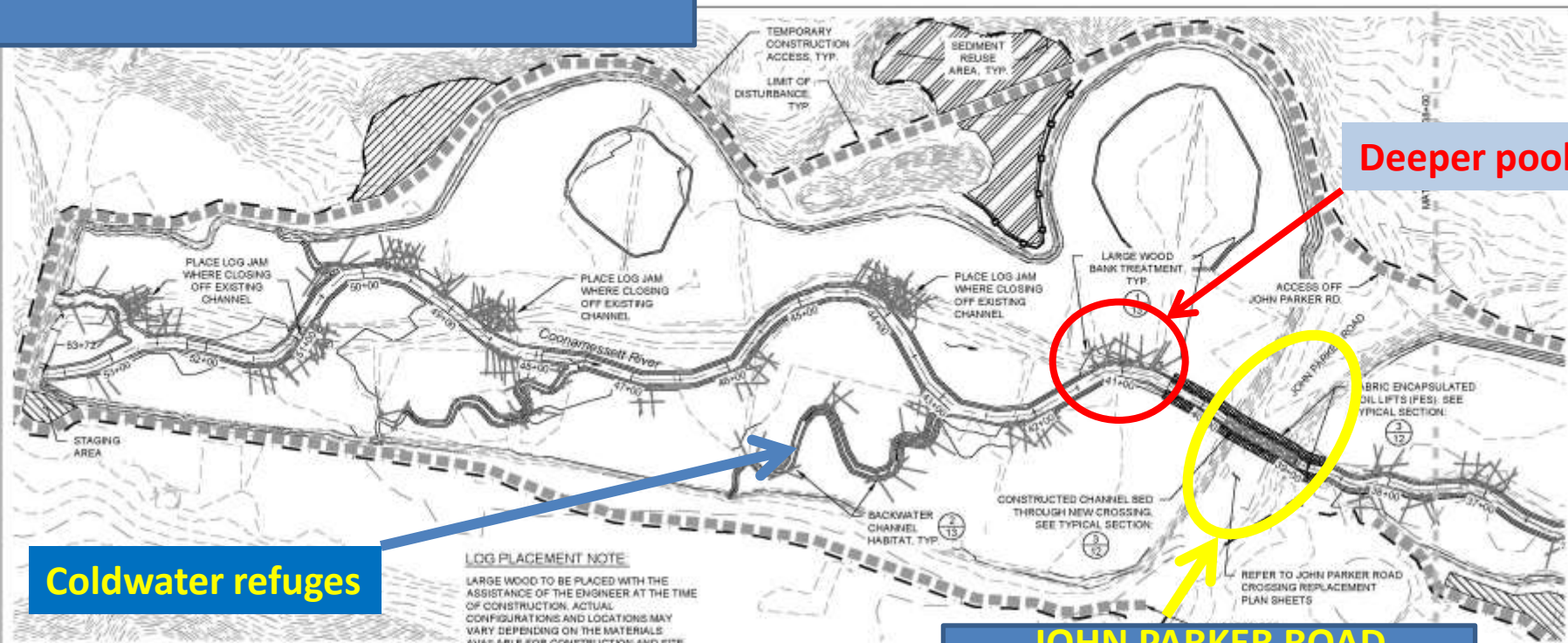
Coonamessett River Bogs - Upper section

Ground Penetrating Radar Survey 12/7/2016
Depths measured from soil surface to bottom of peat deposit. Approximately 2 feet of sand overlies all peat deposits throughout bog.

Created on: 12/21/2016
By: Maggie Payne, Resource Soil Scientist
USDA NRCS



RESERVOIR/UPPER BOG



Coldwater refuges

Deeper pools

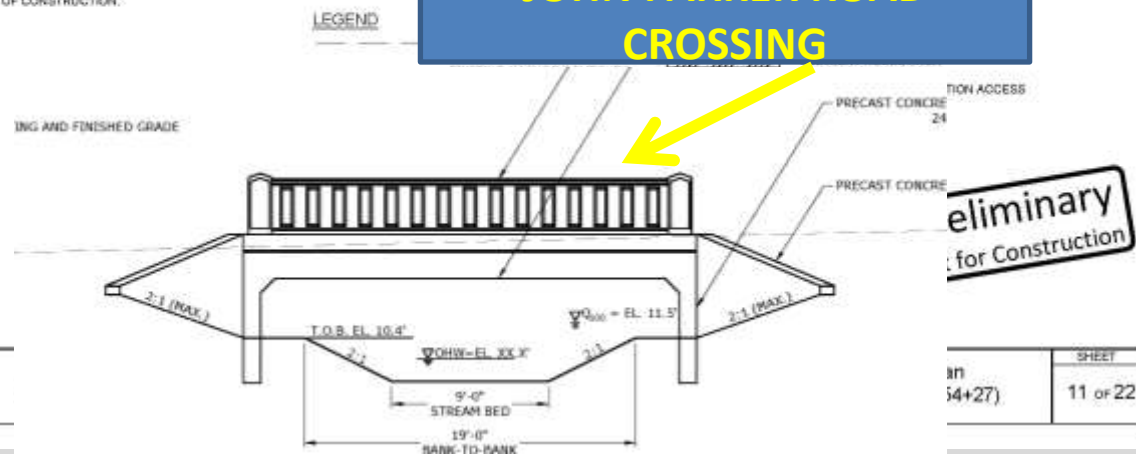
JOHN PARKER ROAD CROSSING

LARGE WOOD REQUIREMENTS TABLE

STATION*	BANK	LOGS	LOGS WITH ROOTS/BRANCHES	BLASH (CY)	ATTACHMENTS
37+54 TO 37+77	RIGHT	0	0	0	0
37+77 TO 38+76	RIGHT	0	0	0	0
38+76 TO 40+00	RIGHT	0	0	0	0
40+00 TO 42+00	LEFT	0	0	0	0
42+00 TO 44+00	LEFT	0	0	0	0
44+00 TO 46+00	RIGHT	0	0	0	0
46+00 TO 47+00	RIGHT	0	0	0	0
47+00 TO 48+00	RIGHT	0	0	0	0
48+00 TO 49+00	LEFT	0	0	0	0
49+00 TO 50+00	RIGHT	0	0	0	0
50+00 TO 51+00	RIGHT	0	0	0	0
51+00 TO 52+00	LEFT	0	0	0	0
52+00 TO 53+00	LEFT	0	0	0	0
DISPERSAL LOCATIONS		0	0	0	0
TOTALS		0	0	0	0

Information to be updated with final 75% submittal

DESIGNED	BY	DATE	REVISION DESCRIPTION
APPROVED	BY	DATE	
	NO. MR. MR.	NO.	
	DESIGNED	DRAWN	
	8/26/2017	XX-XX-XX	
	DATE	PROJECT	



IF: COONAMESSETT, BASE (NW)

TYPICAL EXCAVATION FOR LARGE WOOD. BACKFILL WITH SALVAGED NATIVE MATERIAL COMPACTED TO INSTU DENSITY AND PACK ANY REMAINING VOIDS WITH SLASH. SEE: TYPICAL SECTION DETAIL 2, SHEET 7

VERTICAL SNAG OR PILE (TYP)

PARTIALLY BURIED TOE LOG (TYP)

TOP OF BANK

BANK TOE

FLOODPLAIN LARGE WOOD

BURIED ROOT CROWN OR STUMP

1 TYPICAL WOOD PLACEMENT
PLAN VIEW
NOT TO SCALE

REPLACE AND COMPACT SOIL TO MATCH OR EXCEED INSTU DENSITY

LOG TO BE DRIVEN INTO THE BANK AT RIVER TOE

LOG ON SURFACE TYP

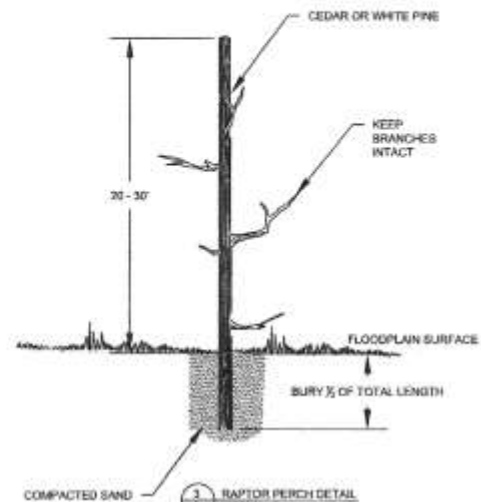
TYPICAL MICROTOPOGRAPHY

BURIED ROOT CROWN OR STUMP

BANK CUT INTO EXISTING SOIL TYP

BANK CUT INTO EXISTING SOIL TYP

BACKFILL



LOG TO BE BURIED TO A DEPTH TO BE DETERMINED IN THE FIELD

VERTICAL PILE OR SNAG

LOW FLOW

EXISTING GROUND

2 RANDOM LARGE WOOD
TYPICAL SECTION VIEW
NOT TO SCALE

RESERVED FOR P.E. STAMP

NO.	BY	DATE	REVISION OR DESCRIPTION
1	SG	4/7/2015	DESIGNED
2	SG	12/15/15	DESIGNED
3	SG	12/15/15	DESIGNED
4	SG	12/15/15	DESIGNED
5	SG	12/15/15	DESIGNED
6	SG	12/15/15	DESIGNED
7	SG	12/15/15	DESIGNED
8	SG	12/15/15	DESIGNED
9	SG	12/15/15	DESIGNED
10	SG	12/15/15	DESIGNED

SG	SG	SG
SG	SG	SG
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SG	SG	SG

COONAMESSETT RIVER
RESTORATION & DAM REMOVAL
FALMOUTH, MA



200 Concord Ave., 2nd Floor
Concord, MA 01702
978.744.5500
www.inter-fluve.com

Typical Wood Placement Details

SHEET
8 of 14

	Phase 1: Removal of Lower Dam and restoration of lower 1600 linear feet and 17 acres	Phase 2: Removal of Middle Dam, restoration of 3000 linear feet and 39 acres; replacement of John Parker Road culvert
MA Policy Act Record of Decision	Received	Intend to apply 11/17
Restoration Order of Conditions	Received	Intend to apply 1/18
Chapter 91 dredge license (MA DEP)	Received	Intend to apply 1/18
401 Water Quality Certificate	Received	Intend to apply 1/18
Section 106 Compliance	MOA between Mass Historical Commission and NOAA	Begin coordination 10/17
Army Corps 404	Received	Intend to apply 6/18
Ch 85 MA DOT	N/A	Pre-application coordination 9/17

November 29, 2017



**It's not going to look
so pretty at first...**

**But it won't be long before
plants are re-established and
begin to thrive**



BEFORE

Eel River Plymouth



AFTER

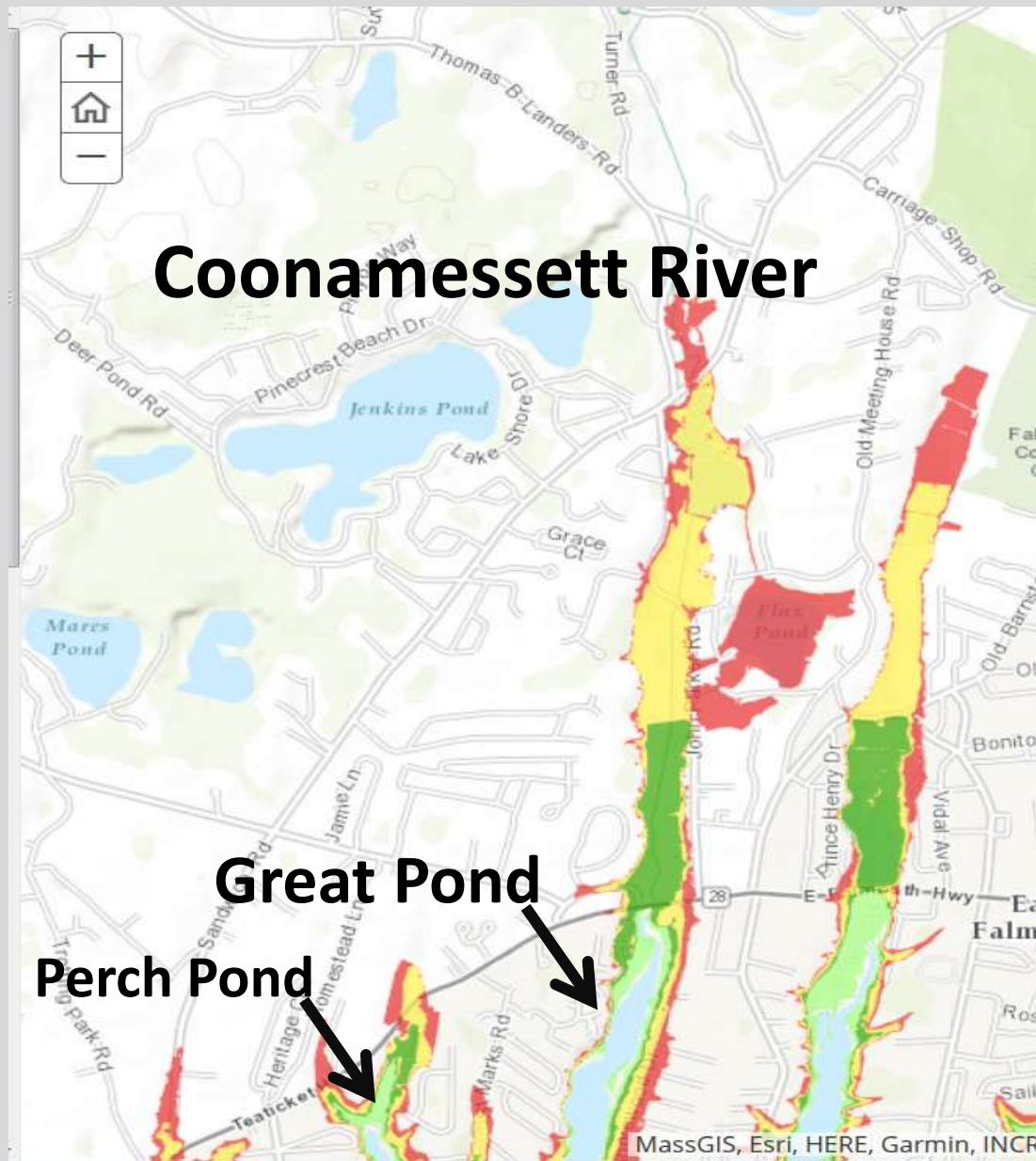
3 YEARS POST RESTORATION



Anticipated Benefits

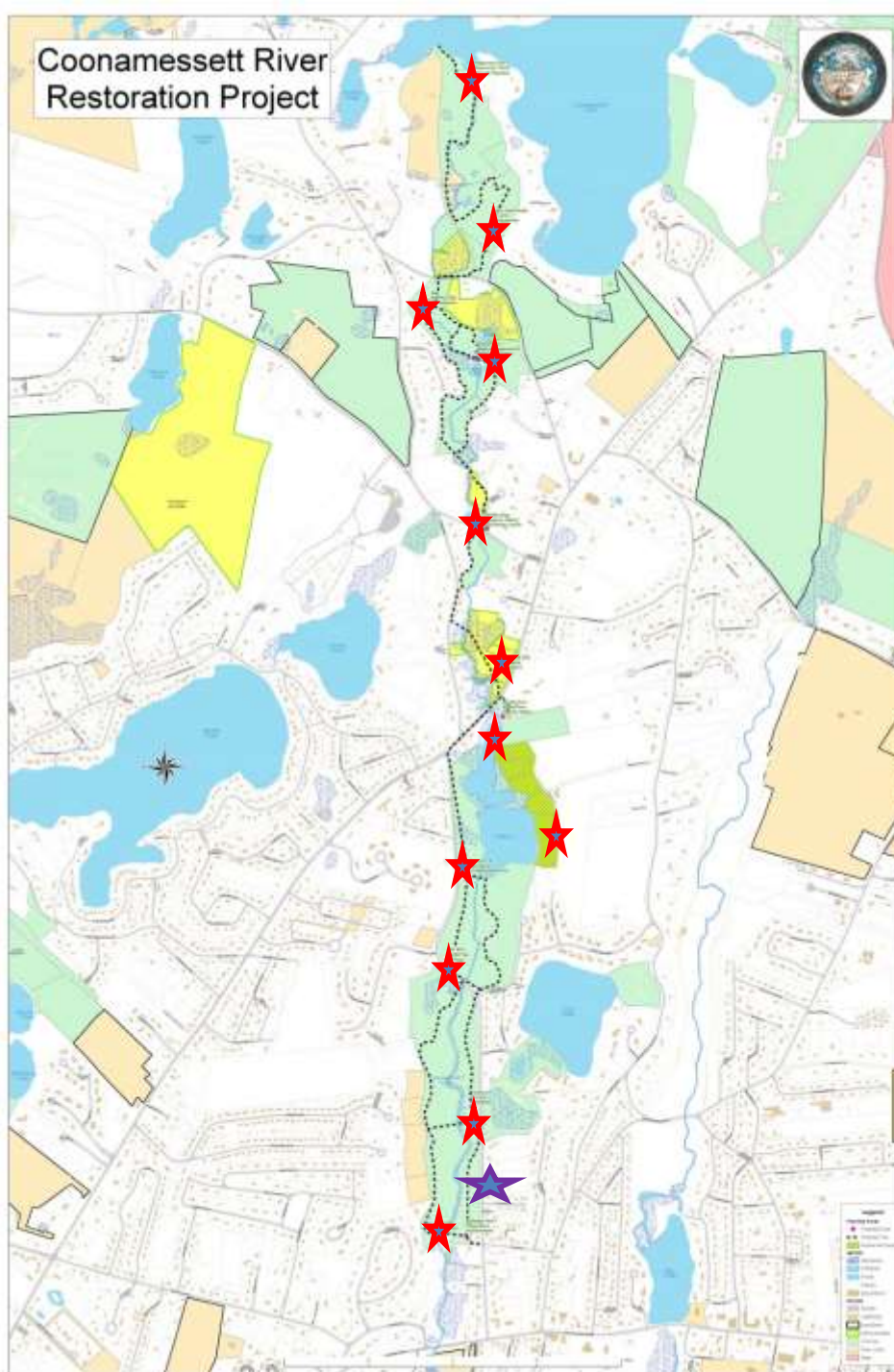
- **Fish access** to 2.2 miles of free-flowing river and 158 acres of spawning habitat in Coonamessett Pond, and **restored river channel to improve habitat** for other aquatic life (turtles, frogs, insects, etc.)
- **Enhanced coastal resiliency** (flood storage, nutrient reduction, rapid recovery after disturbances) by virtue of **restoring floodplain connectivity and wetland biodiversity** (58 acres of bog restored to natural wetland)
- **Improved access for recreation** (walking, birdwatching, wildlife observation) and **New opportunities to learn** about the river's environmental, industrial, and cultural history

Coastal Storm Flood Surge



Hurricane Surge Scenarios

- Category 1
- Category 2
- Category 3
- Category 4



Coonamessett Greenway Heritage Trail

3.5 long,
multiple loops

Wetlands of the COONAMESSETT RIVER

LAND USE CHANGE THROUGH TIME

Late 1600s-late 1800s

Industry
Millponds/mills

Pre-contact
Period



Late 1800s-early 2000s

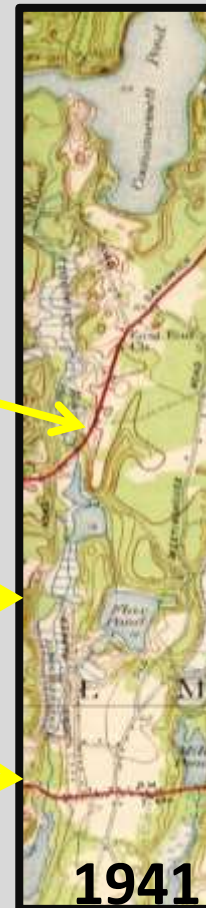
Agriculture

Rewilding
wetlands

Sandwich Rd

John Parker Rd

Rte 28



3 YR

POST RESTORATION
Eel River, Plymouth

The Town of Falmouth thanks the partners and supporters of the Coonamessett River Restoration Project



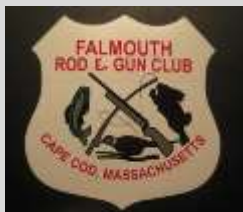
NOAA HABITAT CONSERVATION | RESTORATION CENTER
NATIONAL MARINE FISHERIES SERVICE



APCC
Association to
Preserve Cape Cod



NFWF



Design Engineer



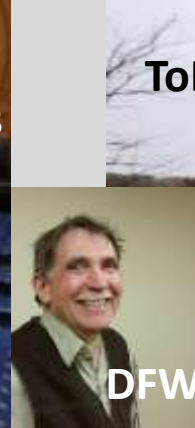
Contractor



TOWN OF FALMOUTH

**State representatives, Selectmen, Town Manger, Asst. Town Manager
DPW, Conservation, CRT**







Discussion of migration

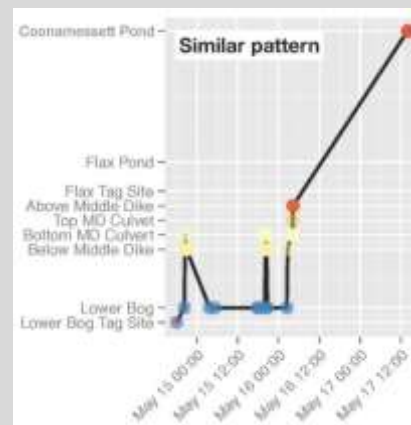
Paint
a herring

Field Trip



Make Mural

FALMOUTH
2nd Graders
study herring
migrations



Adopt a Herring



Wrap up discussion



THANK YOU