

COUNTRY POND WATERSHED-BASED PLAN: KICKOFF MEETING

AUGUST 19, 2019

AGENDA

- INTRODUCTIONS
- GOALS OF THE WATERSHED-BASED PLAN
- WHAT WE KNOW ABOUT THE COUNTRY POND WATERSHED
- SCOPE OF THE WATERSHED-BASED PLAN
- PROJECT SCHEDULE
- QUESTION & ANSWER



INTRODUCTION – PROJECT PARTNERS



GOALS OF THE WATERSHED-BASED PLAN



Help address water quality problems by fully addressing the potential contributing causes and sources of pollution, then prioritizing restoration and protection strategies to address these problems



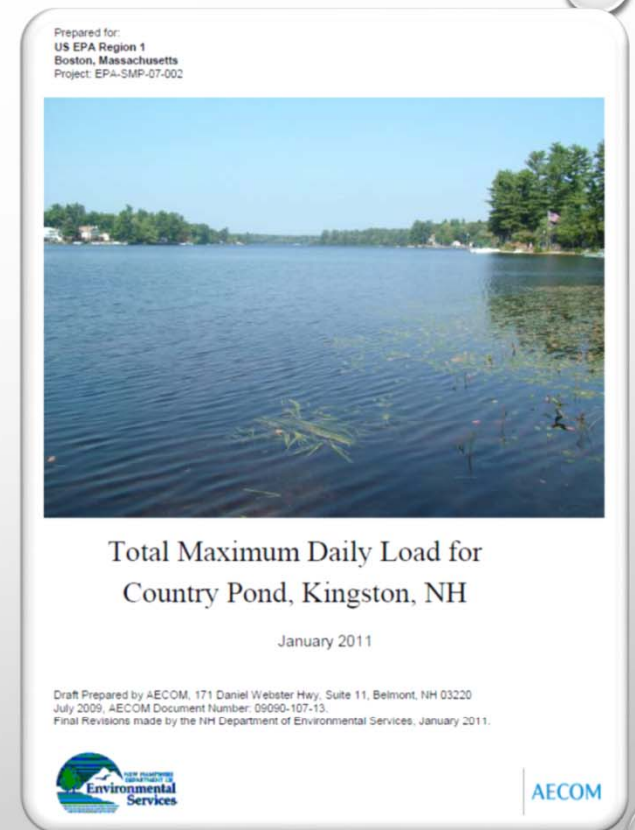
Assist the Towns in meeting regulatory obligations
(Phosphorus Lake TMDL and NPDES MS4 Permit Phosphorus Control Plan)

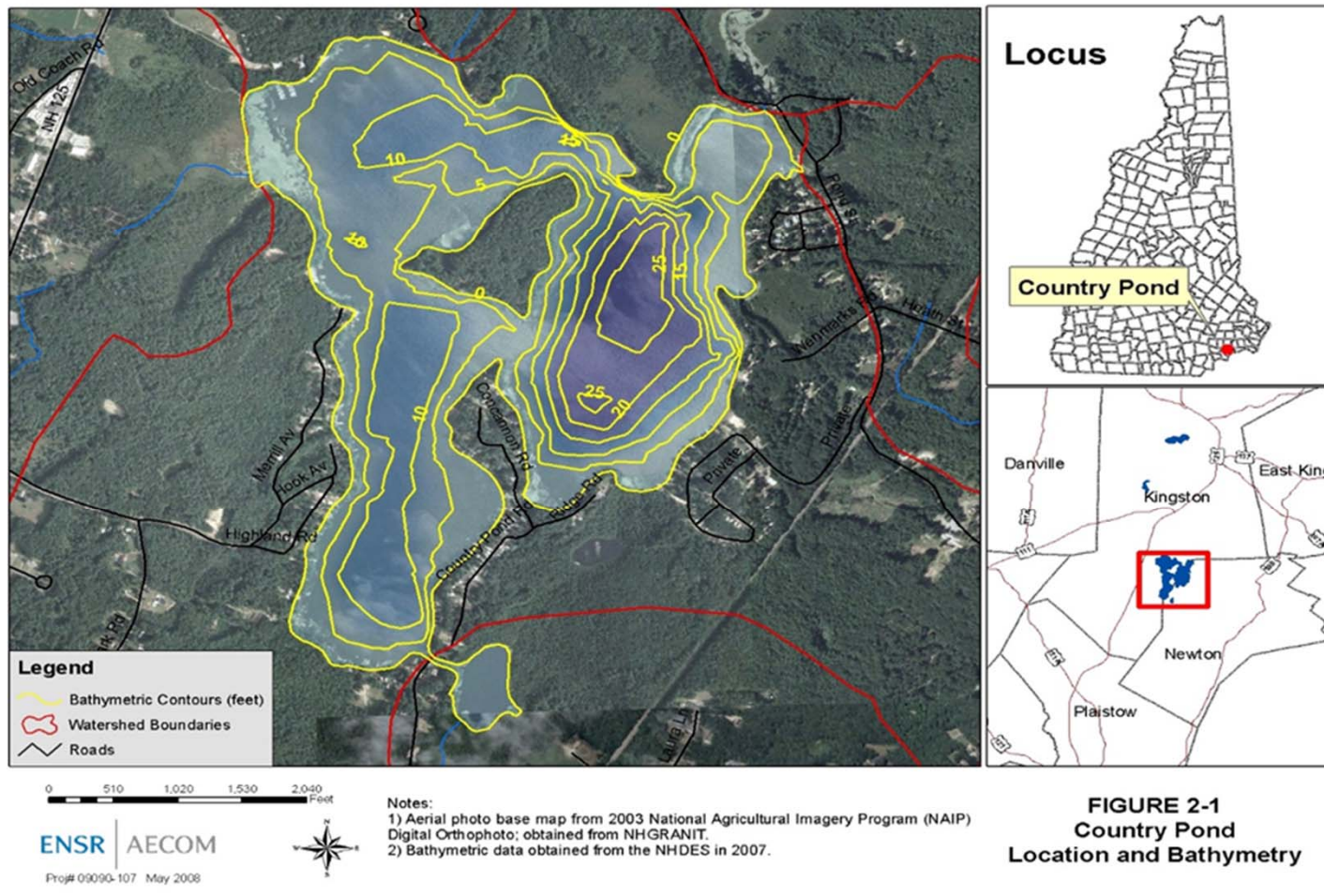


Identify restoration and protection strategies eligible for grant funding

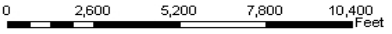
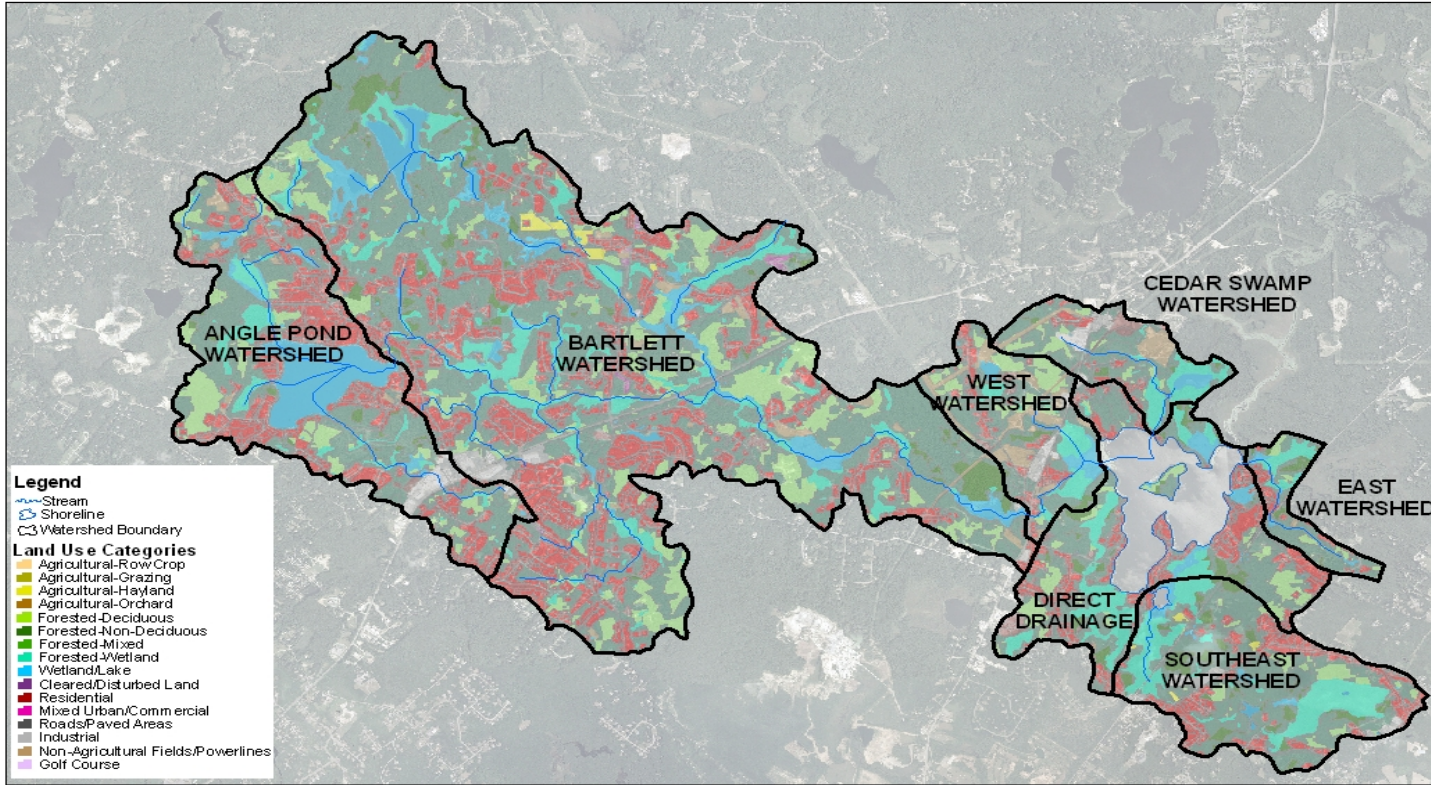
WHAT WE KNOW ABOUT COUNTRY POND

- COUNTRY POND IS IMPAIRED FOR PRIMARY CONTACT RECREATION DUE TO THE PRESENCE OF CYANOBACTERIA
- A TOTAL MAXIMUM DAILY LOAD (TMDL) (PHOSPHORUS “BUDGET”) WAS COMPLETED IN 2011 TO PROVIDE GUIDANCE FOR REDUCING THE FREQUENCY OF CYANO BLOOMS
- TMDL WAS BASED ON 3 IN-LAKE WATER SAMPLES
- 2011, 2018 AND 2019 MORE VLAP DATA
- TIME FOR UPDATE TO SEE WHERE WE ARE





Flushes 6+ times per year, most of lake is shallow with extensive plant beds



ENSR | AECOM
 Proj# 09090-107



Notes:
 1) Aerial photo base map from 2003 National Agricultural Imagery Program (NAIP); obtained from NHGRANIT.
 2) Land use polygons were compiled by ENSR from Land Use polygon data, Land Cover raster data, and National Wetlands Inventory (NWI) data obtained from NHGRANIT, and from windshield survey information.

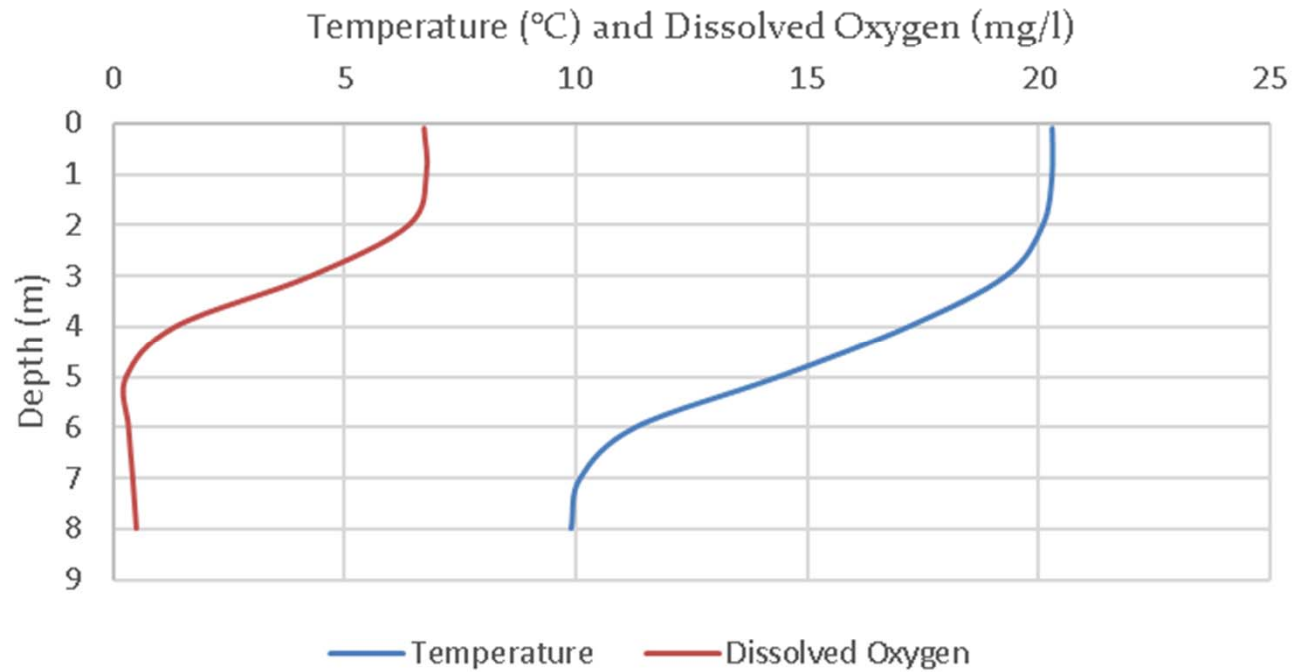
FIGURE 3-1
Land Use
Country Pond
Kingston, NH

Watershed Ponds Bartlett Mill, Cub, Little Cub, Angle Greenwood and Showell

WATER QUALITY DATA

	Epilimnetic Total Phosphorus	Metalimnetic Total Phosphorus	Hypolimnetic Total Phosphorus	Chlorophyll <i>a</i>	Secchi Transparency (with viewscope)
2010-2019	0.014	0.014	0.022	3.029	3.233
pre- 2010	0.016	0.016	0.027	5.517	2.233
Significant difference	no	no	no	yes	yes

Country Pond 9/11/2006

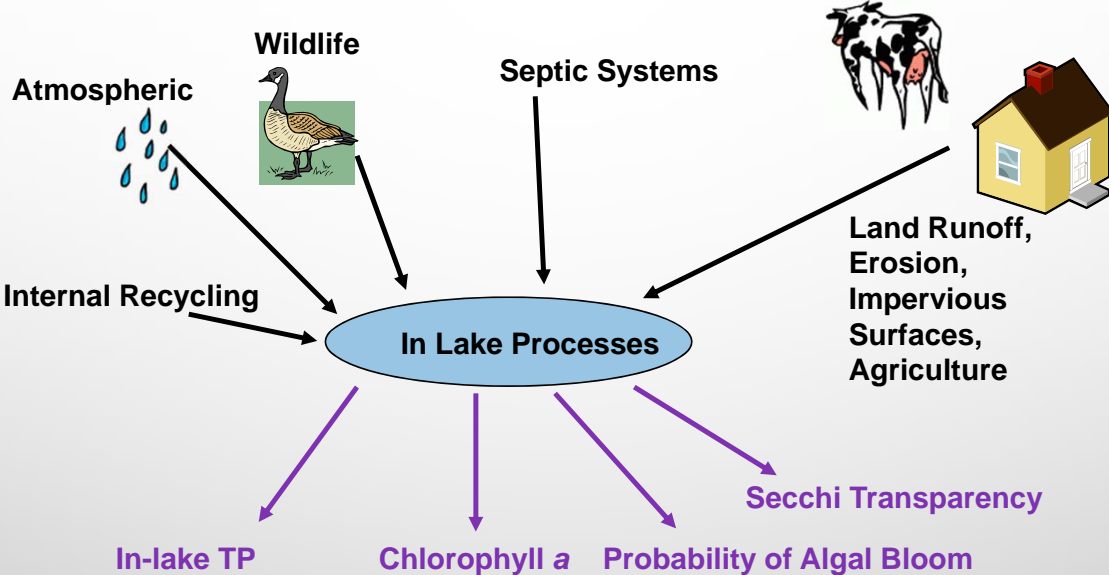


Oxygen deficiency noted as early as 1952 by NH Fish and Game.

WATERSHED MODELING

Direct Phosphorus Loads

Watershed Phosphorus & Hydrologic Loads



IT IS MUCH EASIER TO KEEP PHOSPHORUS FROM
GETTING INTO YOUR LAKE THAN TO TRY TO GET
ALGAE OUT LATER.



HOW MUCH P DO WE NEED TO REDUCE

TMDL in-lake P concentration

22 ug/L

Watershed Load = 1,348 lbs/yr

46% P reduction

*Watershed load reduction = 611
lbs/yr*


Target TMDL in-lake P concentration

12 ug/L

Watershed Load = 729 lbs/yr



MONITORING RECOMMENDATIONS

- KEEP UP WITH VLAP MONITORING
 - COLLECT DATA IN EARLY SPRING (POST ICE OUT) AND THROUGH FALL, BOTH IN-LAKE AND IN TRIBUTARIES.
 - COLLECT DO/TEMP PROFILES IN SEPTEMBER BEFORE THE POND TURNS OVER. COLLECT DEEP P SAMPLE THEN AS WELL.
- 

RESOURCES WE CAN LEVERAGE



SEPTIC SYSTEM
SURVEY (2018)



LAND USE HOT SPOT
MAPPING (2019)



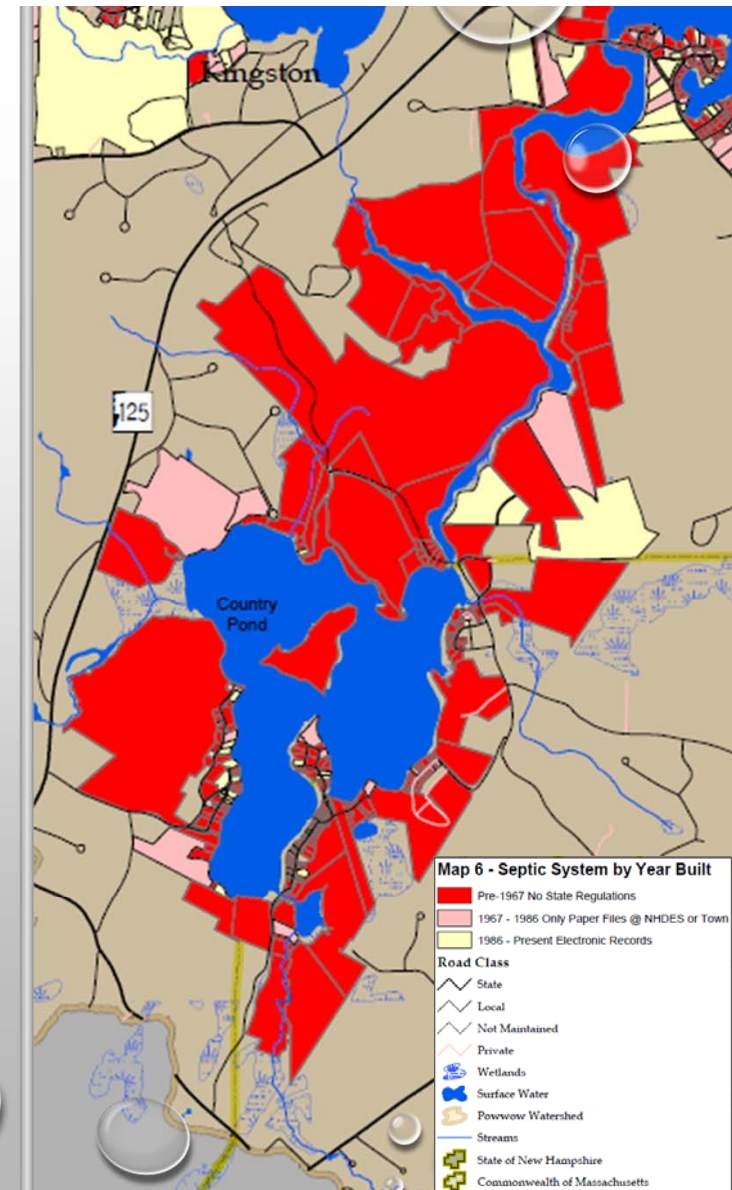
VLAP DATA
(ON-GOING)

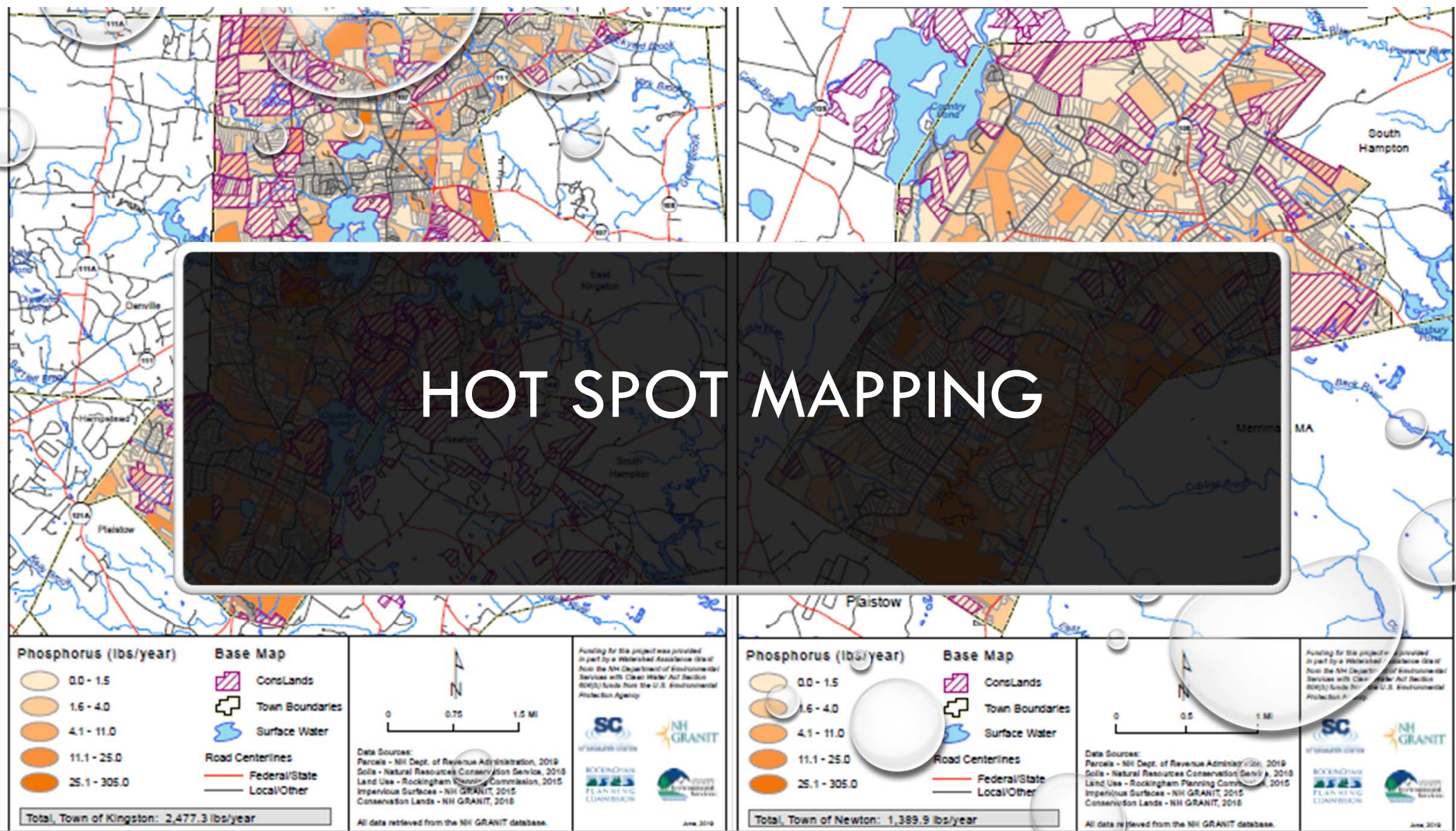


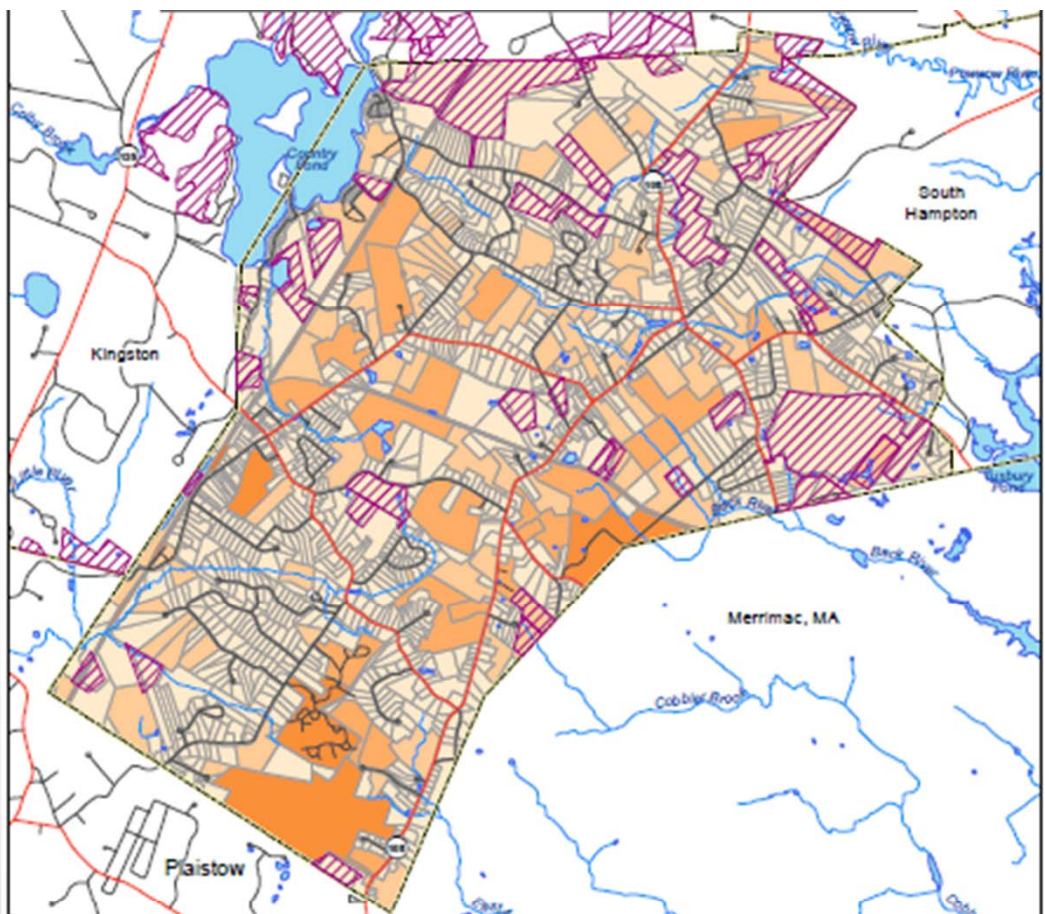
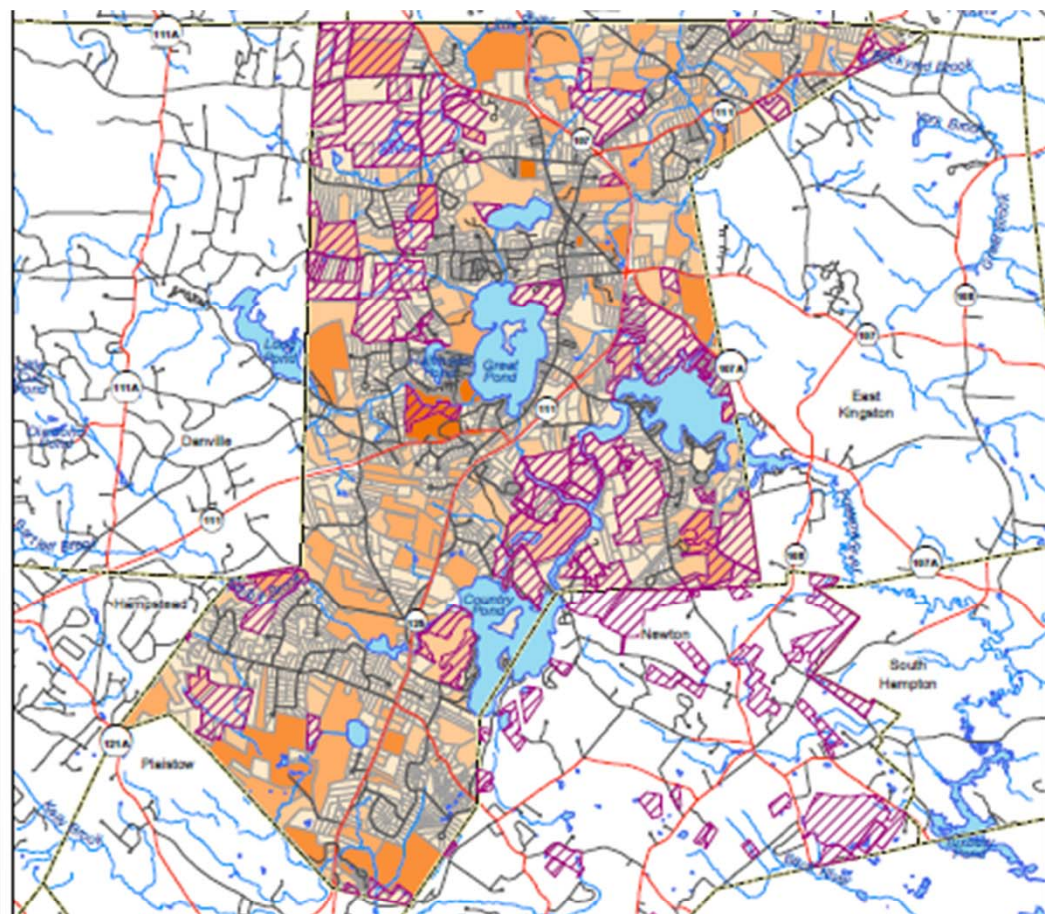
POLLUTION TRACKING
AND ACCOUNTING
PILOT PROJECT (PTAPP)

SEPTIC SYSTEM SURVEY

- 2018 SURVEY ESTIMATES THE NUMBER OF SYSTEMS WITHIN 500-FEET OF A SURFACE WATER BODY
- QUANTIFIED THE AGE OF EACH SYSTEM
- THOSE WITHIN PROXIMITY TO A WATERBODY HAVE A HIGHER POTENTIAL TO CONTRIBUTE TO AN IMPAIRMENT







Phosphorus (lbs/year)

- 0.0 - 1.5
- 1.6 - 4.0
- 4.1 - 11.0
- 11.1 - 25.0
- 25.1 - 305.0

Base Map

- ConsLands
- Town Boundaries
- Surface Water
- Road Centerlines
 - Federal/State
 - Local/Other

Total, Town of Kingston: 2,477.3 lbs/year

0 0.75 1.5 MI

Data Sources:
 Parcels - NH Dept. of Revenue Administration, 2019
 Soils - Natural Resources Conservation Service, 2018
 Land Use - Rockingham Planning Commission, 2015
 Impervious Surfaces - NH GRANIT, 2015
 Conservation Lands - NH GRANIT, 2015

All data retrieved from the NH GRANIT database.

Funding for this project was provided in part by a Watershed Assistance Grant from the NH Department of Environmental Services with Clean Water Act Section 106(j) funds from the U.S. Environmental Protection Agency.

SC
 OF REGIONAL SERVICE

NH GRANIT

ROCKINGHAM
 PLANNING
 COMMISSION

NEWTON
 ENVIRONMENTAL
 SERVICES

June 2019

Phosphorus (lbs/year)

- 0.0 - 1.5
- 1.6 - 4.0
- 4.1 - 11.0
- 11.1 - 25.0
- 25.1 - 305.0

Base Map

- ConsLands
- Town Boundaries
- Surface Water
- Road Centerlines
 - Federal/State
 - Local/Other

Total, Town of Newton: 1,399.9 lbs/year

0 0.5 1 MI

Data Sources:
 Parcels - NH Dept. of Revenue Administration, 2019
 Soils - Natural Resources Conservation Service, 2018
 Land Use - Rockingham Planning Commission, 2015
 Impervious Surfaces - NH GRANIT, 2015
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POLLUTANT TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP)

- ALLOWS THE COMMUNITIES TO TRACK:
 - CHANGES IN LAND USE THAT CAUSE CHANGES IN PHOSPHOROUS LOADING
 - IMPLEMENTATION OF BMPs
- ALLOWS THE COMMUNITIES TO ACCOUNT FOR:
 - INCREASE OR DECREASE IN PHOSPHORUS CONCENTRATION
- HELPS MEET MS4 COMPLIANCE



SCOPE OF THE WATERSHED-BASED PLAN

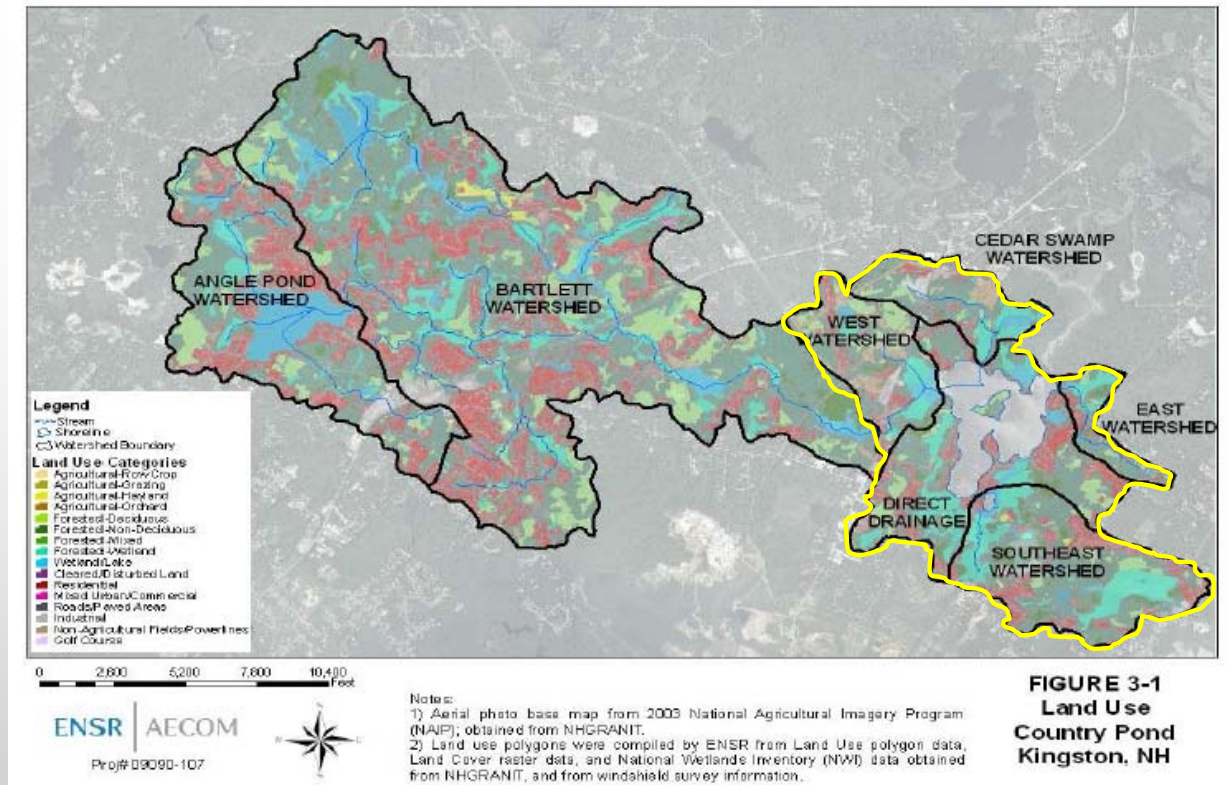



FIGURE 3-1
Land Use
Country Pond
Kingston, NH



SCOPE OF THE WATERSHED- BASED PLAN

Nine elements

- a. Identify causes and sources of pollution
- b. Estimate pollutant loading into the watershed and the expected load reductions
- c. Describe management measures that will achieve load reductions and targeted critical areas
- d. Estimate amounts of technical and financial assistance and the relevant authorities needed to implement the plan
- e. Develop an information/education component
- f. Develop a project schedule
- g. Describe the interim, measurable milestones
- h. Identify indicators to measure progress
- i. Develop a monitoring component

ESTIMATE LOAD REDUCTIONS



Develop Site-Specific Project Plan (SSPP)



Update lake loading response model and current p load



Estimate p load reductions using MS4 methodologies



IDENTIFY ACTIONS TO REDUCE POLLUTION

- NON-STRUCTURAL STRATEGIES
 - VOLUNTARY FERTILIZER REDUCTIONS
 - STREET SWEEPING
 - REGULATORY UPDATES
- STRUCTURAL STRATEGIES
 - PAVEMENT REDUCTION
 - BIORETENTION CELLS
 - EROSION CONTROL

EXAMPLE SITES – 23 SUNSHINE DR

- SITE ISSUES
 - WEST SIDE OF LAWN HAS MINIMAL VEGETATION AND HARD PACKED SOIL
 - EAST SIDE OF LAWN HAS THIN BERM, WHICH HELPS CATCH AND FILTER RUNOFF
- POSSIBLE RETROFITS
 - INSTALLATION OF VEGETATED BUFFER ON WEST LAWN TO PREVENT ADDITIONAL EROSION
 - INCREASE HEIGHT OF BERM TO CAPTURE AND IMPROVE RUNOFF QUALITY



EXAMPLE SITES – 74 WILDERS GROVE RD

- SITE ISSUES
 - STORMWATER RUNS ACROSS ROAD, CREATES CHANNEL AS IT RUNS OVER BEACH INTO LAKE
 - LARGE STORMS RESULT IN FLOODING ACROSS LAWN
- POSSIBLE RETROFITS
 - IMPROVEMENT OF VEGETATED SWALE ALONG PROPERTY
 - INFILTRATION TRENCH OR POROUS PAVEMENT IN DRIVEWAY



EXAMPLE SITES – 19 HIGHLAND RD

- SITE ISSUES
 - WATER AND SEDIMENT FROM ROAD ARE WASHING ONTO PROPERTY
- POSSIBLE RETROFITS
 - CREATE INFILTRATION AREA USING PAVERS AND A SUB-BASE IN FRONT OF SHED
 - INSTALL SEDIMENT TRAP IN DRIVEWAY

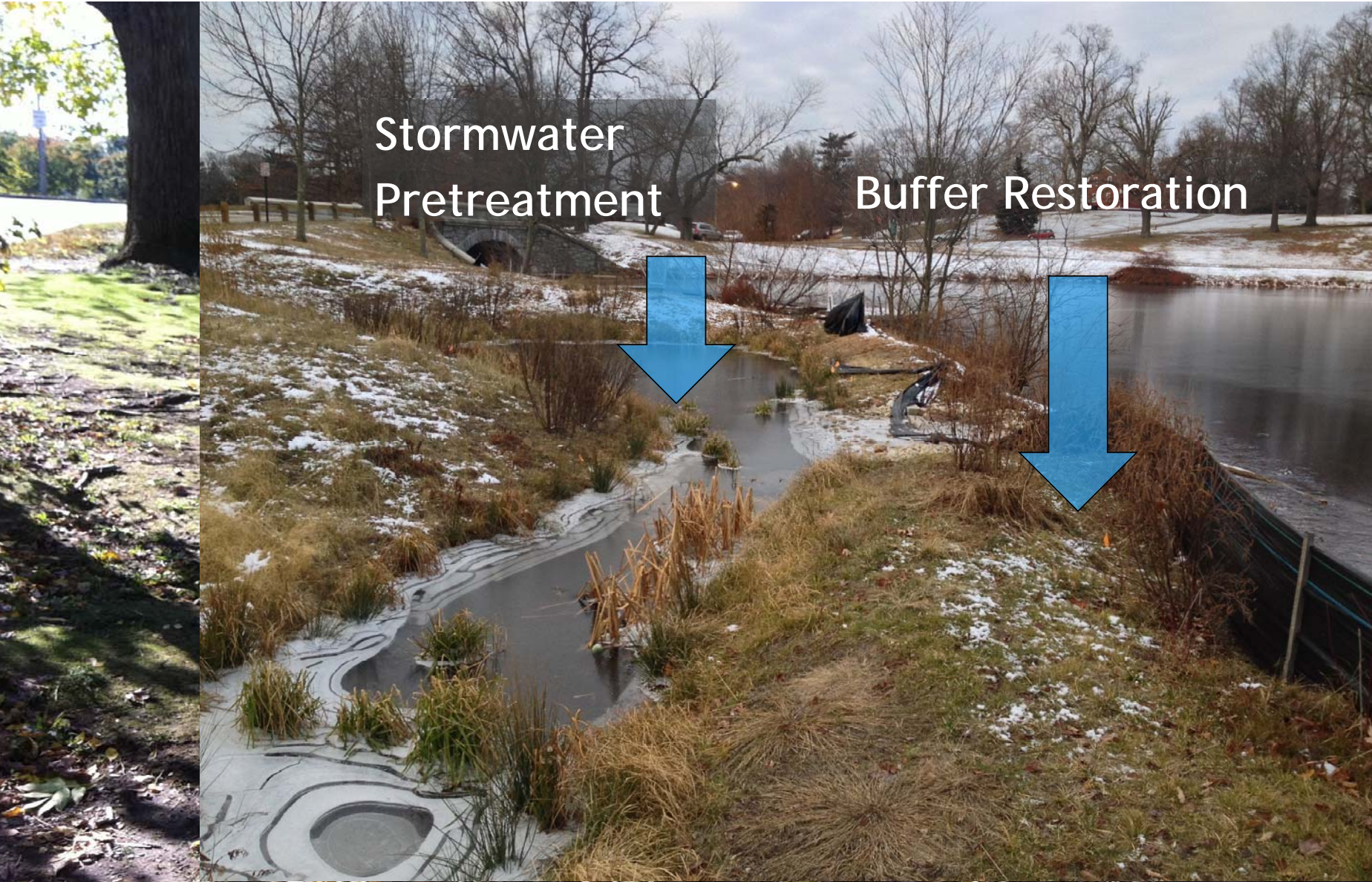






Stormwater
Pretreatment

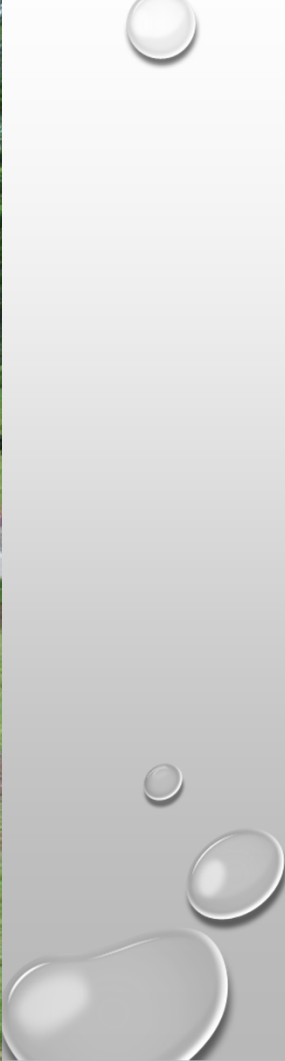
Buffer Restoration











BE ON THE LOOK OUT...

- FOR SITES THAT MIGHT BE GOOD CANDIDATES FOR STRUCTURAL STORMWATER PRACTICES
- PROVIDE PICTURES OR ADDRESSES FOR THESE LOCATIONS TO JULIE LABRANCHE (JLABRANCHE@THERPC.ORG)
- **BEFORE SEPTEMBER 23RD**
- ALWAYS BE ON THE LOOKOUT, ESPECIALLY AFTER RAIN EVENTS



DEVELOP PRIORITIZED MATRIX OF ACTIONS

Identify factors to rank each structural and non-structural bmp

Achieve Target
P reductions

Improve overall
water quality

Natural flow
Restoration

Habitat
restoration



Actions are prioritized based on cost/benefit analysis

DEVELOP SUCCESS INDICATORS



Decrease in in-lake P concentration



Fewer cyanobacteria blooms



Reduction in impervious cover



DEVELOP MONITORING PLAN

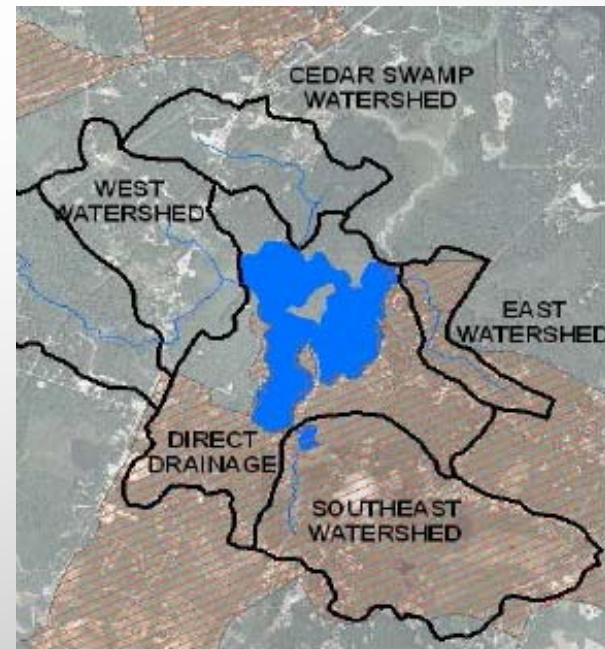
Review current Country Pond monitoring plan and determine need for:

- Additional protocol
- Additional monitoring locations
- Modifications to current plan

Use PTAPP to track the implementation of BMP's and changes in land use

WHAT DOES THE 2017 MS4 PERMITS REQUIRE?

- PHOSPHORUS CONTROL PLAN (PCP)
 - ✓ DETERMINE PCP AREA
 - ✓ CALCULATE BASELINE P LOAD, P REDUCTION REQUIREMENT, AND ALLOWABLE (TARGET) P LOAD
 - ✓ SELECT BMP'S TO IMPLEMENT IN PCP AREA
 - ✓ DEVELOP O&M PLAN
 - ✓ CREATE IMPLEMENTATION SCHEDULE





PROJECT SCHEDULE



QUESTION & ANSWER

PROVIDE PICTURES OR ADDRESSES FOR STORMWATER
LOCATIONS TO
JULIE LABRANCHE
JLABRANCHE@THERPC.ORG

