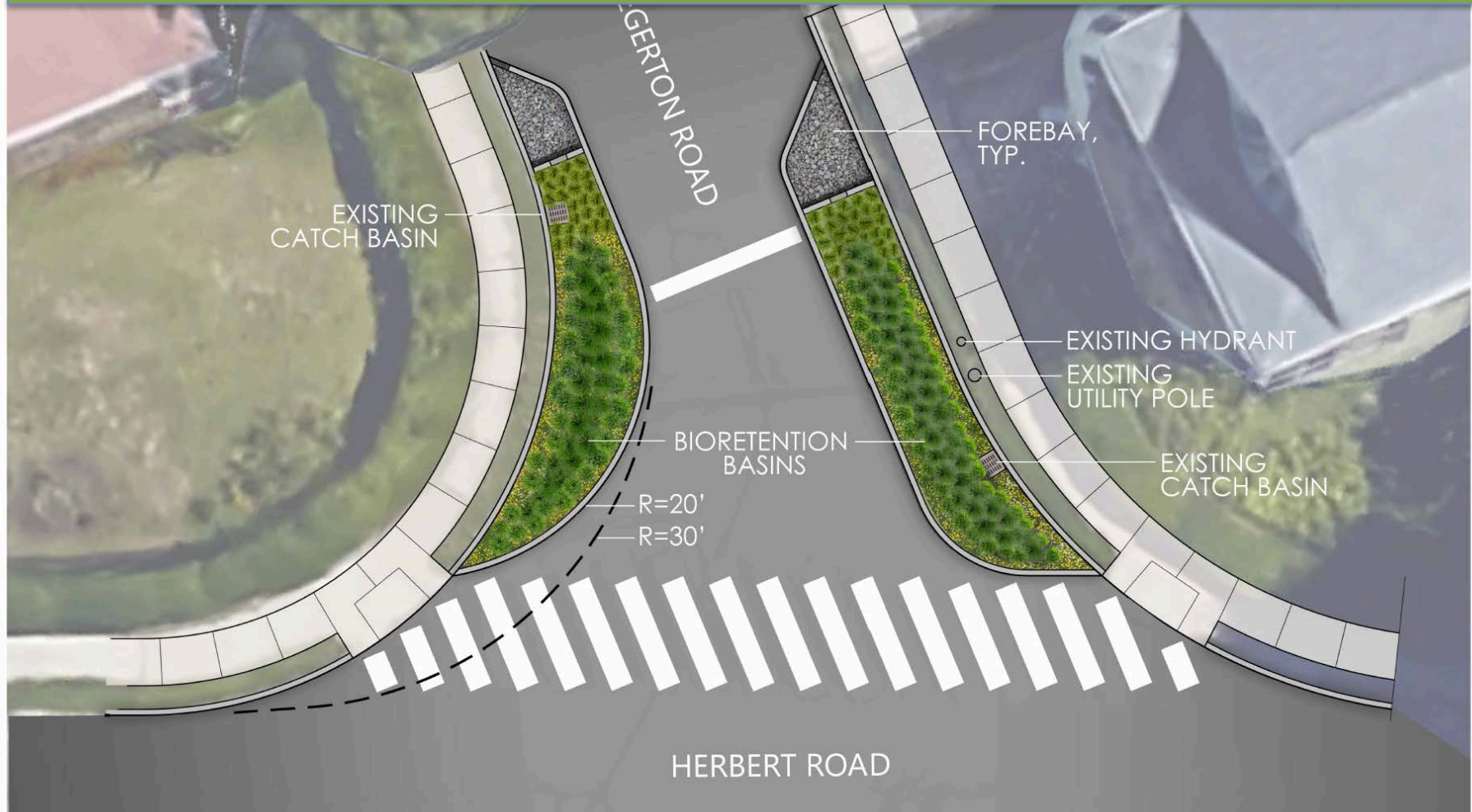


# Construction of the Egerton – Herbert Green Infrastructure Project



Patrick Herron, MyRWA



## BIORETENTION BASIN CONCEPT PLAN

Egerton Road / Herbert Road Intersection, Arlington, MA

MAY 2017



# Phosphorus high in urban stormwater

- Soil particles
- Leaf litter
- Fertilizer
- Pet waste





An aerial photograph showing a residential neighborhood with houses and trees along a river. The river is heavily infested with green, floating aquatic plants, likely hydrilla or water hyacinth, which cover most of the water's surface. Several boats are docked along the riverbank, and a parking lot is visible in the lower right corner. The text "Evidence of impairment: Invasive plants" is overlaid in white on the right side of the image.

# Evidence of impairment: Invasive plants

Photo credit: David Mussina



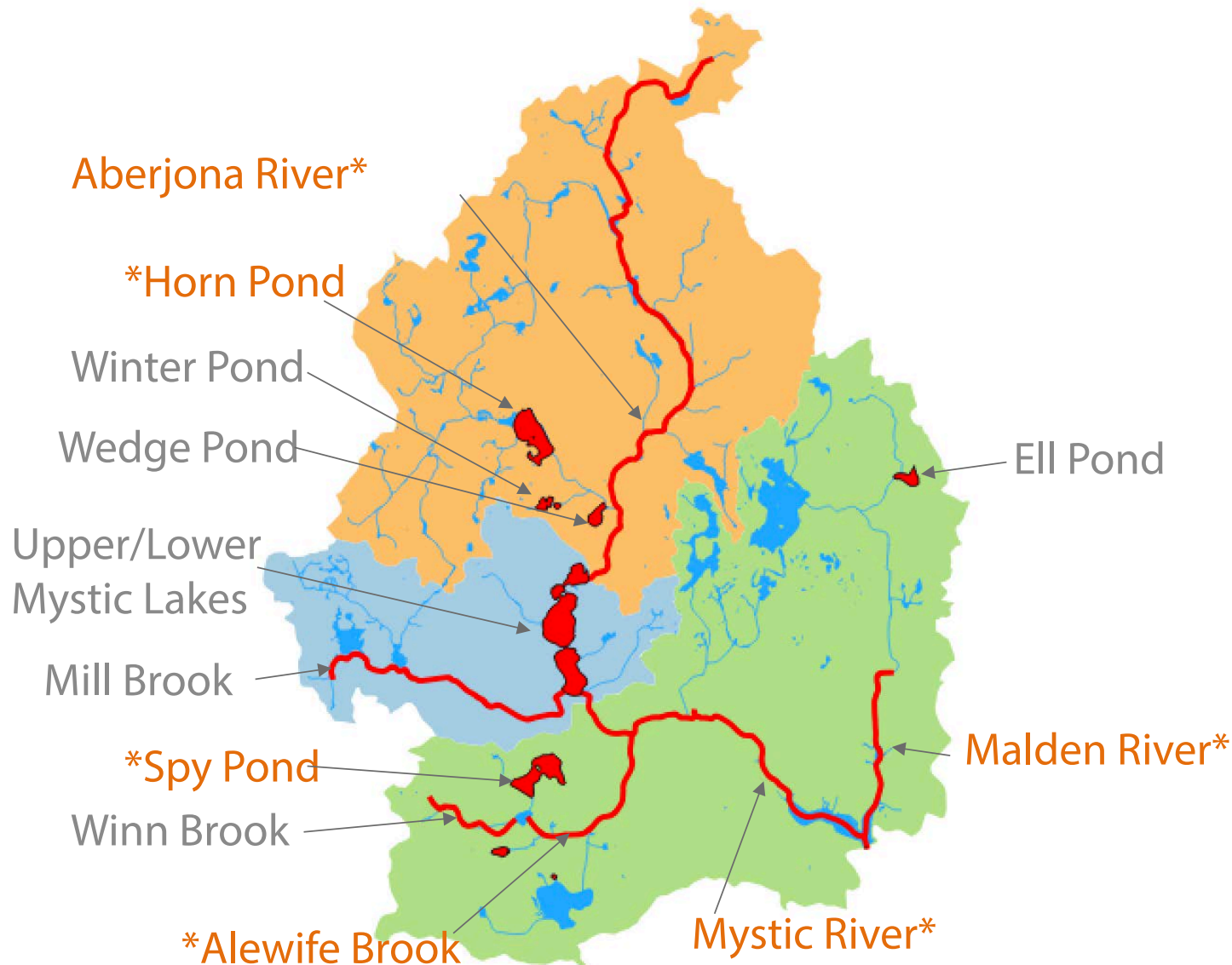
# Mystic River Cyanobacteria Bloom Summer 2017



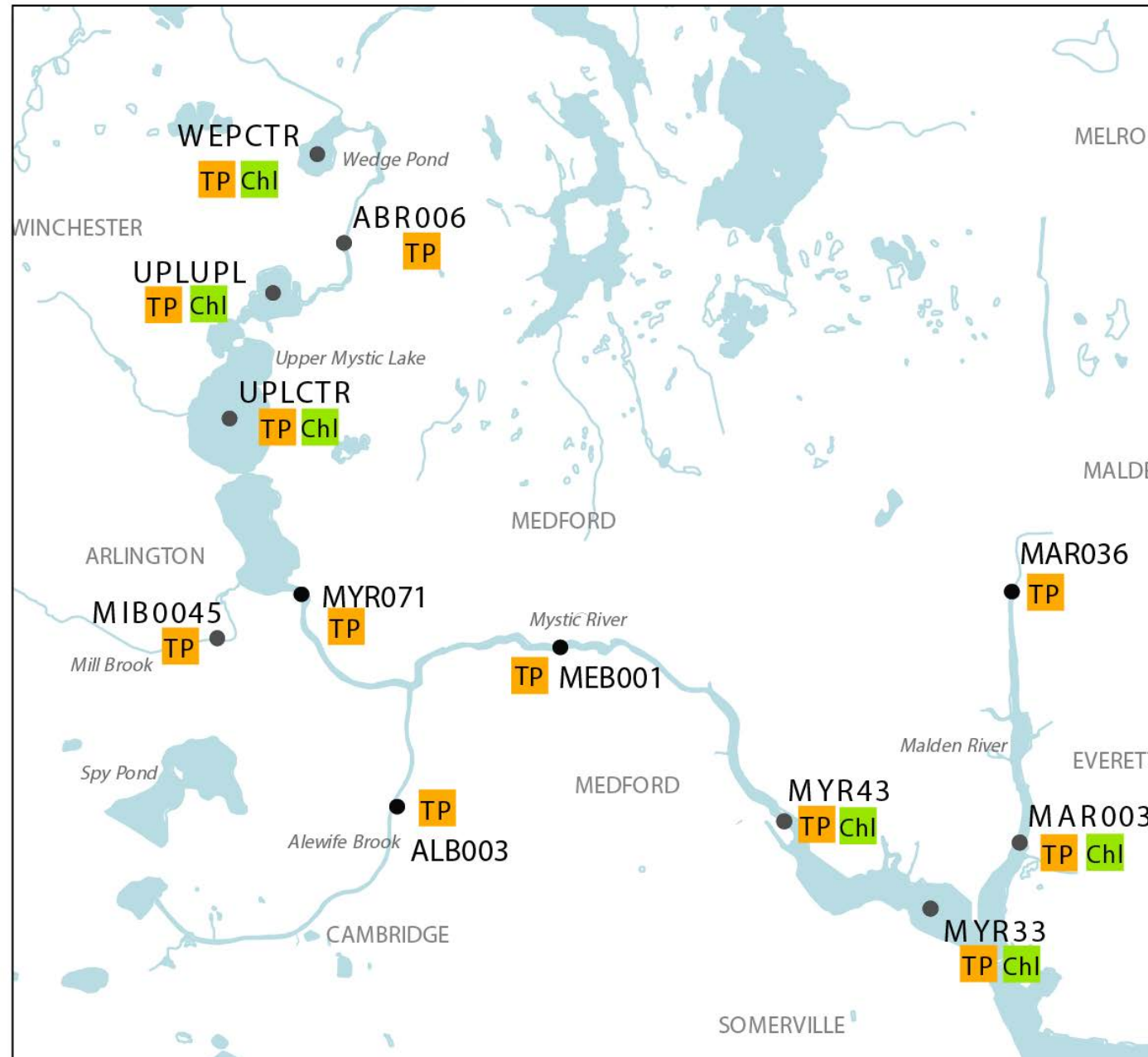


# 303(d)-listed Water Bodies in Watershed

All category 5 impairments (TMDL required) 2014



# Phosphorus and chlorophyll grab sample locations 2015-2017

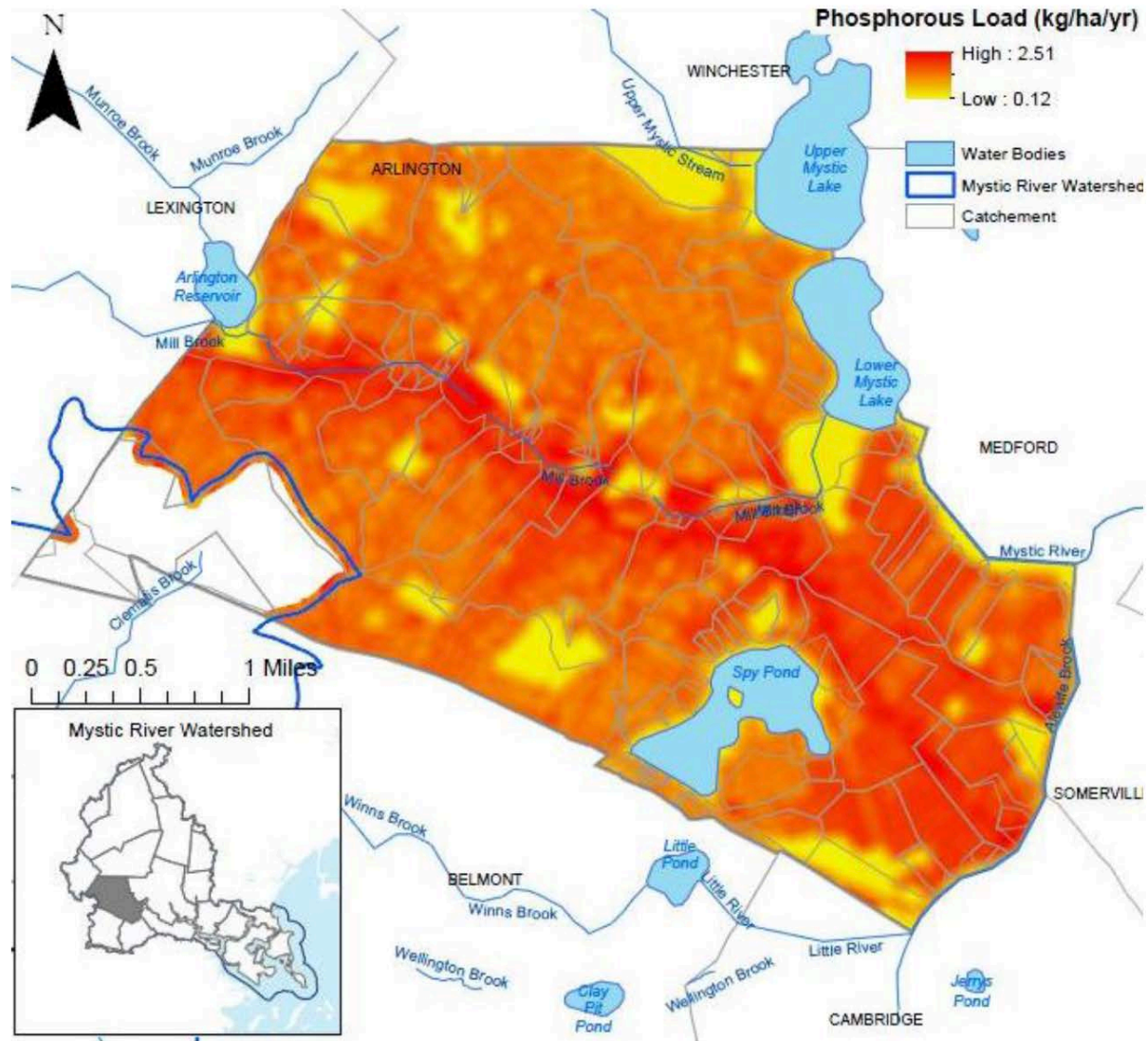


Chl Chlorophyll-a sampling location  
TP TP grab sampling location

- Sampling and Analysis Plans each year
- SOPs
- Approved by EPA and DEP

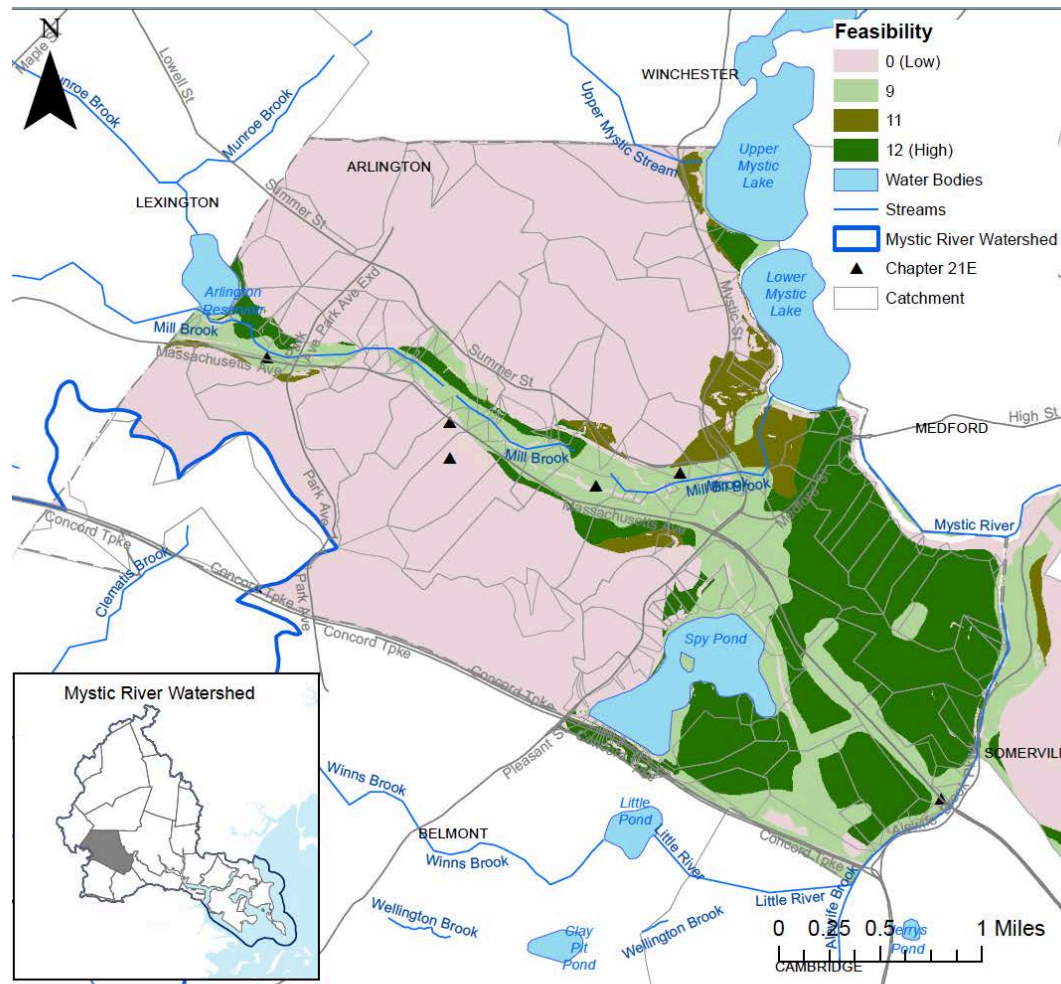
# Arlington – Phosphorus everywhere!

Figure 4. Phosphorus load in Arlington as modeled by GIS export coefficient model





# East Arlington – great for infiltration

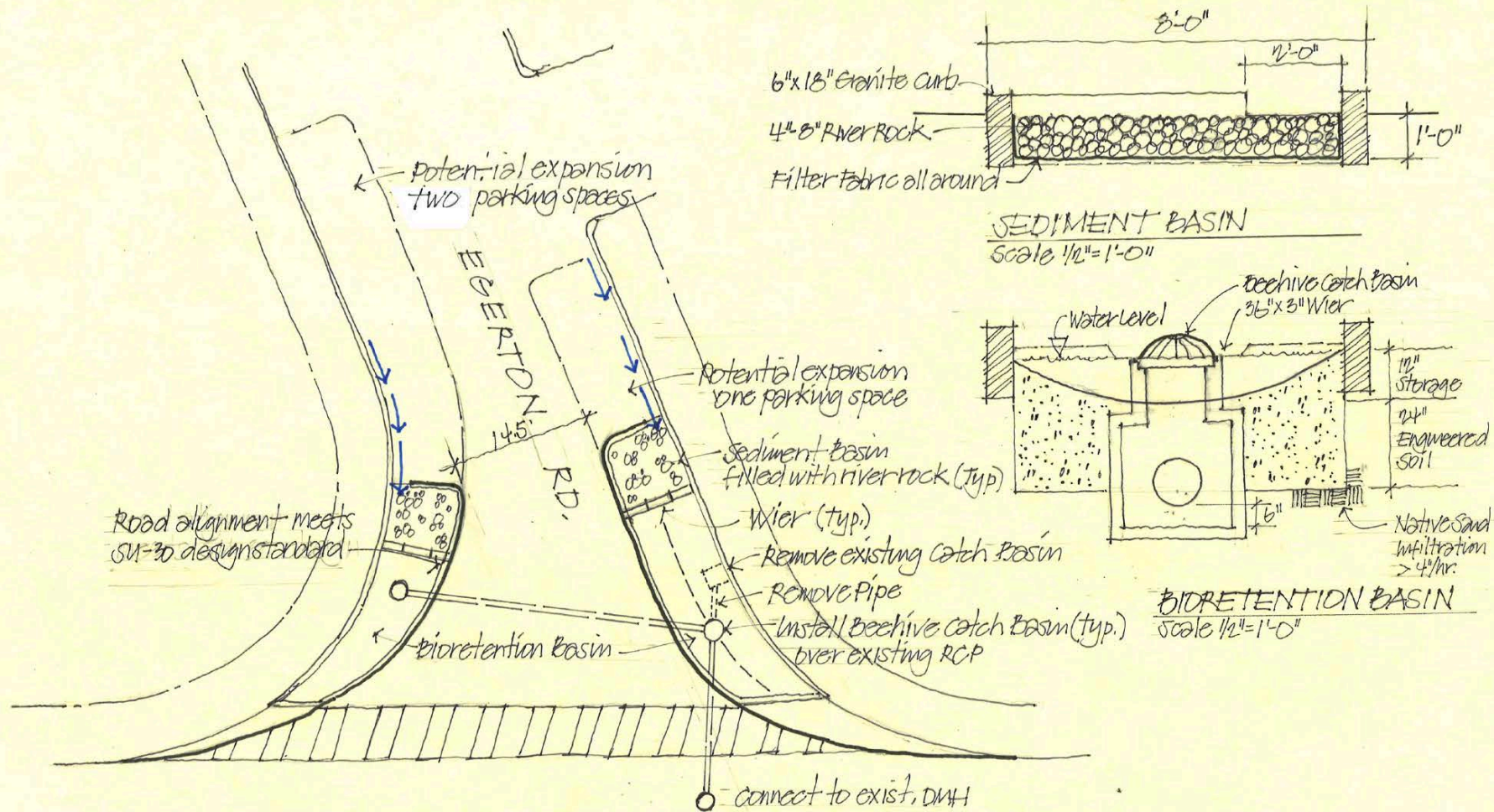




# Egerton and Herbert







HERBERT RD.

## SKETCH PLAN

Design Concept for Egerton Rd./Herbert Rd. Intersection  
Arlington, MA

June 2014  
by  
Bioengineering Group

0 5 10 20  
Scale 1" = 10'





Site	Drainage Area (acre)	Pollutant Loading Rate (lb/ac/yr) <sup>a</sup>		Percent Pollutant Removal <sup>b</sup>	Annual Load Removed (lbs)
North side	0.53	TSS	465.08	46%	112.5
		TP	1.1	19%	0.1
		Zn	0.79	53%	0.2
South side	0.61	TSS	465.08	70%	197.7
		TP	1.1	34%	0.2
		Zn	0.79	79%	0.4

Source: Tetra Tech (2010) page 161 Bioretention BMP Performance Table.

<sup>a</sup> Annual pollutant loading rates for high-density residential.

<sup>b</sup> North side percent removal based on depth of runoff treated = 0.1 inches. South side depth of runoff treated = 0.2 inches.

# EGERTON ROAD GREEN INFRASTRUCTURE IMPROVEMENTS ARLINGTON, MA

## BID DOCUMENTS

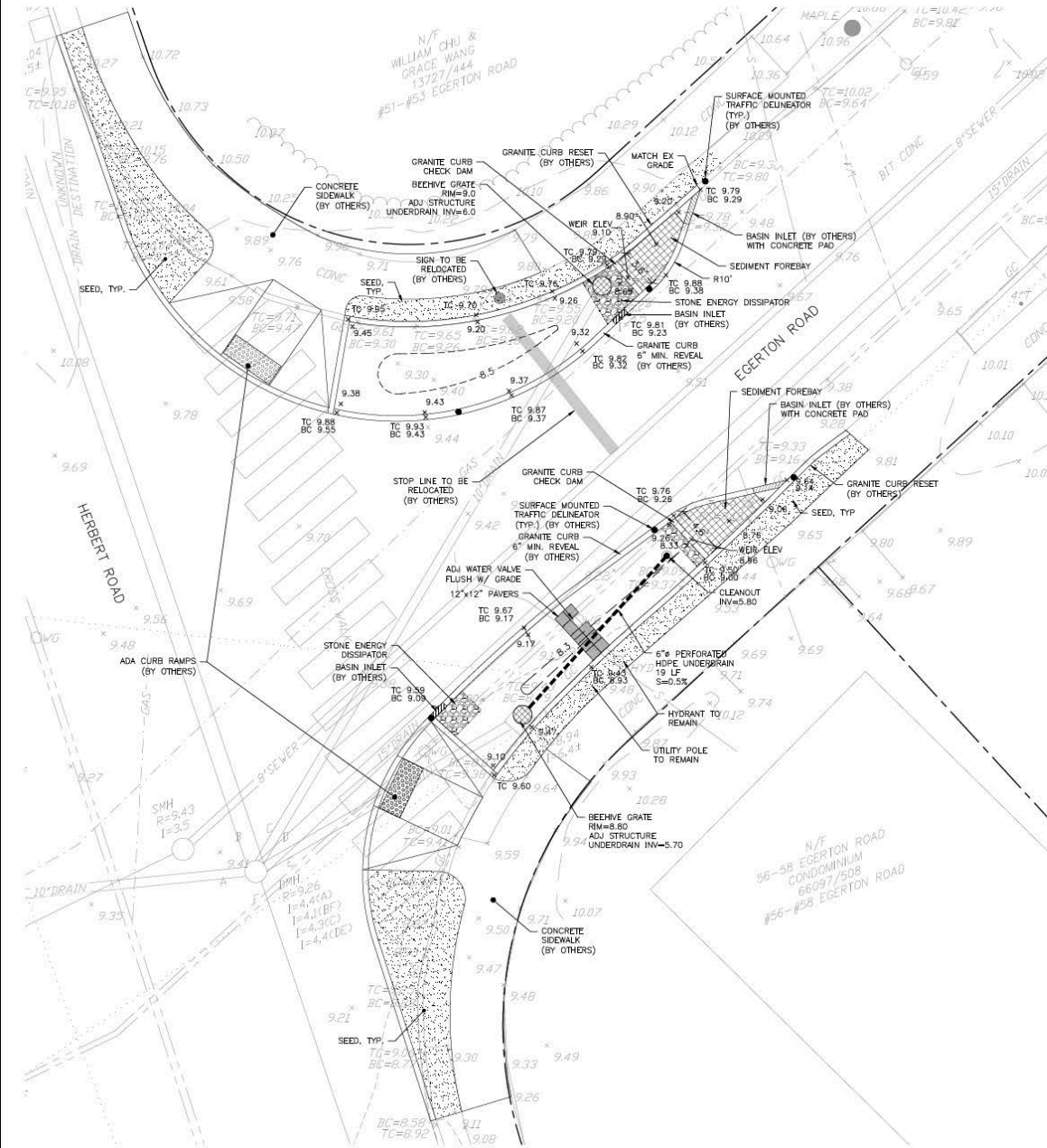


Issue Date: March 8, 2018  
Drawn By: HH  
Rev'd By: DE/SA

Sheet Title:  
**SITE PLAN**

Sheet No:

# C-1

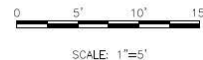


### LEGEND:

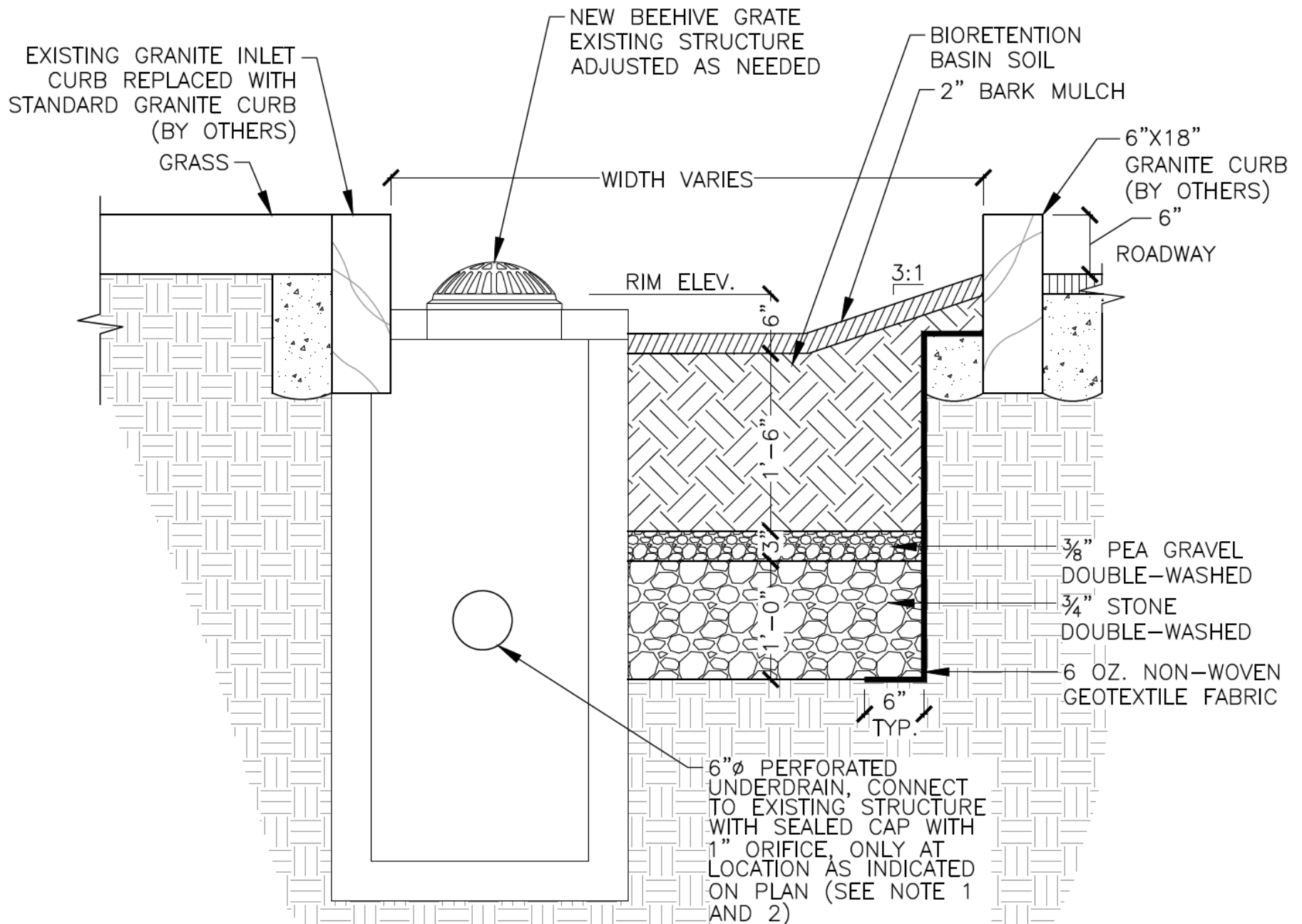
ADJ	ADJUST
BIT CONC	BUTYMOUS CONCRETE
BC	BOTTOM CURB
CB	CATCH BASIN
CONC	CONCRETE
DMH	DRAIN MANHOLE
EX	EXISTING
GC	GRANITE CURB
HYO	HYDRANT
I=	INVERT=
LP	LIGHT POLE
UP	UTILITY POLE
WG	WATER GATE
PB	PULL BOX
R=	RIM=
S	SIGN
TC	TOP CURB
UP	UTILITY POLE
WG	WATER GATE
12" T	12" TREE
-----	EXISTING OVERHEAD WIRES
=====	EXISTING WATER LINE
-----	EXISTING DRAIN LINE
-----	EXISTING SEWER LINE
-----	EXISTING DRAIN LINE
-----	EXISTING GAS LINE
-----	EXISTING CATCH BASIN
-----	EXISTING MANHOLE
-----	GRANITE CURB (SEE NOTE 12)
-----	6" PERFORATED UNDERDRAIN
-----	CLEANOUT
-----	DOMED GRATE OVERFLOW
-----	STONE DISSIPATOR
-----	OPEN CELL CONCRETE PAVEMENT
-----	12"x12" CONCRETE PAVEMENT

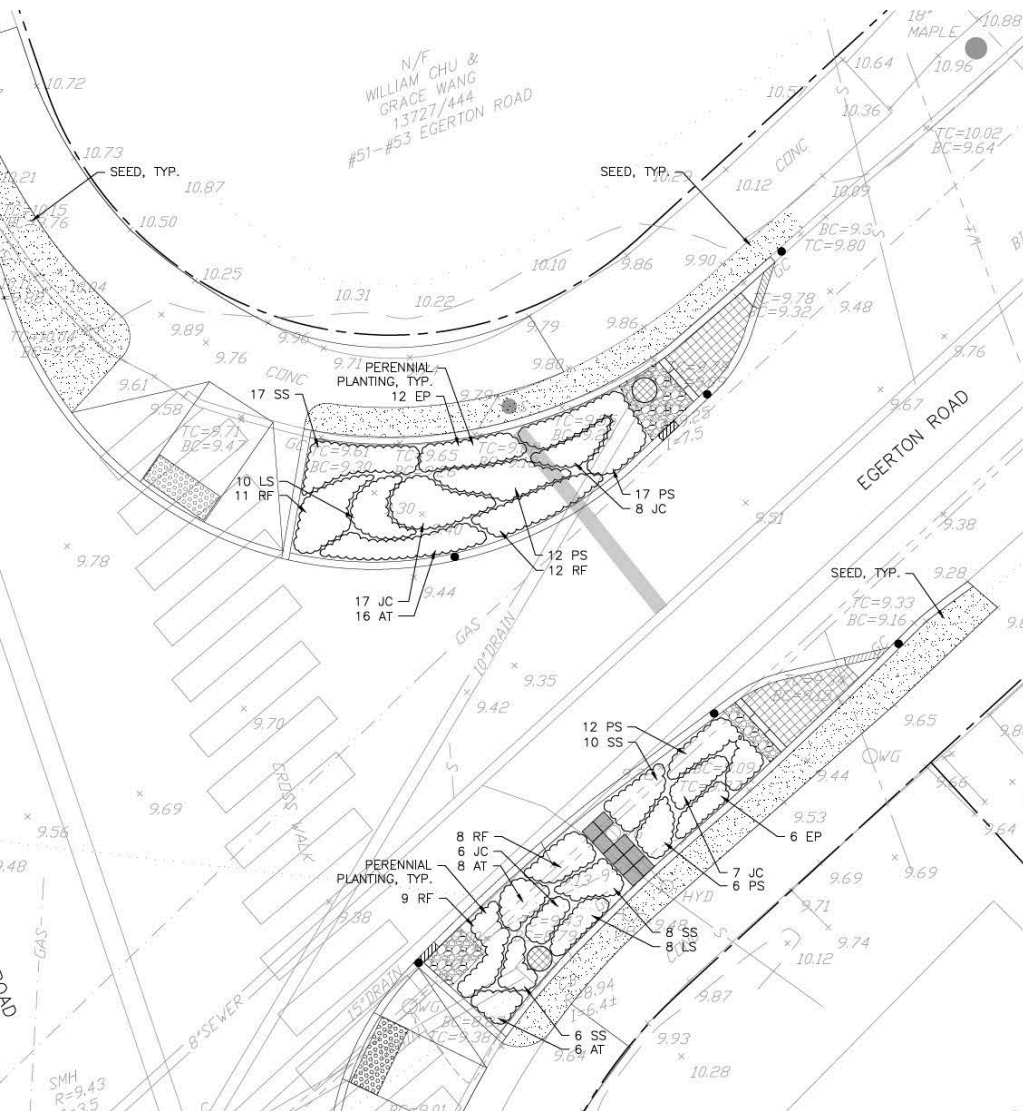
### NOTES:

- ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), AND WERE DETERMINED BY GPS OBSERVATIONS AND AN OPUS REDUCTION ON 6/9/2017 BY PRECISION LAND SURVEYING, INC.
- THIS PLAN AND THE SURVEY ON WHICH IT WAS BASED WERE PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND ARE SUBJECT TO THE FINDINGS OF SUCH A REPORT MAY DISCLOSE.
- PROPERTY LINES WERE NOT INVESTIGATED AS A PART OF THE CURRENT WORK EFFORT.
- THE AREA SHOWN HEREON IS LOCATED IN FLOOD ZONE X (SHADED) AS SHOWN ON THE FLOOD INSURANCE RATE MAP MIDDLESEX COUNTY, MASSACHUSETTS, MAP NUMBER 25017C0419E, EFFECTIVE DATE: JUNE 4, 2010.
- UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES AND ARE APPROXIMATE ONLY. BEFORE DESIGN AND CONSTRUCTION CALL "DIG SAFE" 1-888-344-7233. SOME DATA IS CONFLICTING AND CAN ONLY BE VERIFIED BY EXCAVATION.
- UTILITY REFERENCES:
  - NATIONAL GRID (GAS) GIS SHEETS ARL-M1235
  - TOWN OF ARLINGTON WATER LINE PLAN L.S. 72
  - TOWN OF ARLINGTON STORM DRAIN PLAN 1303 & 1709
  - TOWN OF ARLINGTON SEWER ASSESSMENT EGERTON RD. 2260
- THE CONTRACTOR SHALL FIELD VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE APPROPRIATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION.
- ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, PRIOR TO EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORATION OR REPAIRING.
- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES EXCEPT THOSE NOTED TO BE ABANDONED, REMOVED AND DISPOSED.
- THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIAL IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS AT HIS/HER OWN EXPENSE, OUTSIDE OF THE PROJECT LIMITS.
- CURB, SIDEWALK, BASIN INLETS, AND ADA CURB RAMPS WERE INSTALLED BY TOWN ENGINEER IN NOVEMBER 2017 UNDER SEPARATE CONTRACT. CONTRACTOR TO VERIFY CURB AND CURB INLET LOCATIONS AND ELEVATIONS AS PART OF THIS CONTRACT PRIOR TO CONSTRUCTION.
- WORK INCLUDING FURNISHING AND INSTALLING TRAFFIC DELINEATORS, REMOVAL AND REPLACEMENT OF PAVEMENT MARKINGS, AND RELOCATION OF SIGNAGE ARE NOT PART OF THIS CONTRACT AND ARE TO BE COMPLETED BY OTHERS.



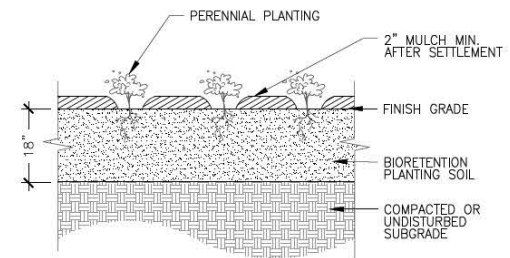






## PLANT SCHEDULE

QTY.	SYM.	SCIENTIFIC NAME	COMMON NAME	CONTAINER	COMMENTS
30	AT	<i>Asclepias tuberosa</i>	Butterfly Weed	Quart	12" O.C.
18	EP	<i>Echinacea purpurea</i>	Purple Cone Flower	Quart	12" O.C.
38	JC	<i>Juncus canadensis</i>	Canada Rush	Quart	12" O.C.
18	LS	<i>Liatris spicata</i>	Gayfeather	Quart	12" O.C.
47	PS	<i>Panicum virgatum</i> 'Shenandoah'	Switchgrass	#2 Cont.	15" O.C.
40	RF	<i>Rudbeckia fulgida</i>	Black Eyed Susan	#1 Cont.	15" O.C.
41	SS	<i>Schizachyrium scoparium</i>	Little Bluestem	Quart	12" O.C.
232	TOTAL				



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## BIORETENTION BASIN PLANTING

SCALE: NTS

### NOTES:

1. NO PLANTING MATERIALS SHALL BE INSTALLED PRIOR TO ACCEPTANCE OF GRADING BY THE OWNER'S REPRESENTATIVE.
2. ALL DISTURBED AREAS SHALL RECEIVE THE FOLLOWING TREATMENT: RAKE/SCARIFY SURFACE OF TOPSOIL, APPLY OWNER APPROVED TURF SEED MIX BY HAND OR USING BRILL-TYPE SEEDER (2 APPLICATIONS 90 DEGREES FROM ONE ANOTHER), COMPACT SURFACE WITH LAWN ROLLER.
3. ALL PLANTS SHALL BE STRAIGHT SPECIES, NO CULTIVARS SHALL BE USED, UNLESS OTHERWISE NOTED.
4. ALL PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED FOR NURSERY STOCK PUBLISHED BY THE AMERICAN SOCIETY OF NURSERYMEN, INC. IN ADDITION, ALL NEW PLANT MATERIAL FOR THE PROJECT SHALL BE OF SPECIMEN QUALITY.
5. THE CONTRACTOR SHALL SUPPLY ALL NEW PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING PLAN SHOWN.
6. ANY PROPOSED SUBSTITUTION OF PLANT SPECIES SHALL BE MADE WITH PLANTS OF EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE AND ONLY AFTER WRITTEN APPROVAL BY THE OWNER'S REPRESENTATIVE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL DAMAGED, STOLEN, DEAD, DECLINING OR LOST MATERIAL UNTIL COMPLETION OF THE (1) YEAR MAINTENANCE AND GUARANTEE PERIOD.





Photo credit: Patrick Herron





Photo credit: Patrick Herron





Photo credit: Patrick Herron





Photo credit: Patrick Herron





Photo credit: Patrick Herron





# Small: Bioretention basin / Raingarden

Photo credit: Patrick Herron

Hardy School, Arlington



This project has been financed with Federal Funds from the United States Environmental Protection Agency (EPA) to the Massachusetts Department of Environmental Protection under an s. 319 competitive grant.

## Funders



## Partners



## Contractors



Richard D'Ambrosia  
Construction



# Large: Stormwater constructed wetland

Alewife Reservation, Cambridge