



Fawn Lake Preservation Study



PROJECT UPDATE
December 3, 2014



Discussion Items



Tasks Under this Study:

- Lake Bathymetry
- Sediment Depth
- Extent of Plant Masses
 - plant type/relative densities
- Sediment Sample(s)
- Evaluate Various Lake Management Strategies

Completed Oct 2014
Focus of this Update

Next Step/In Progress

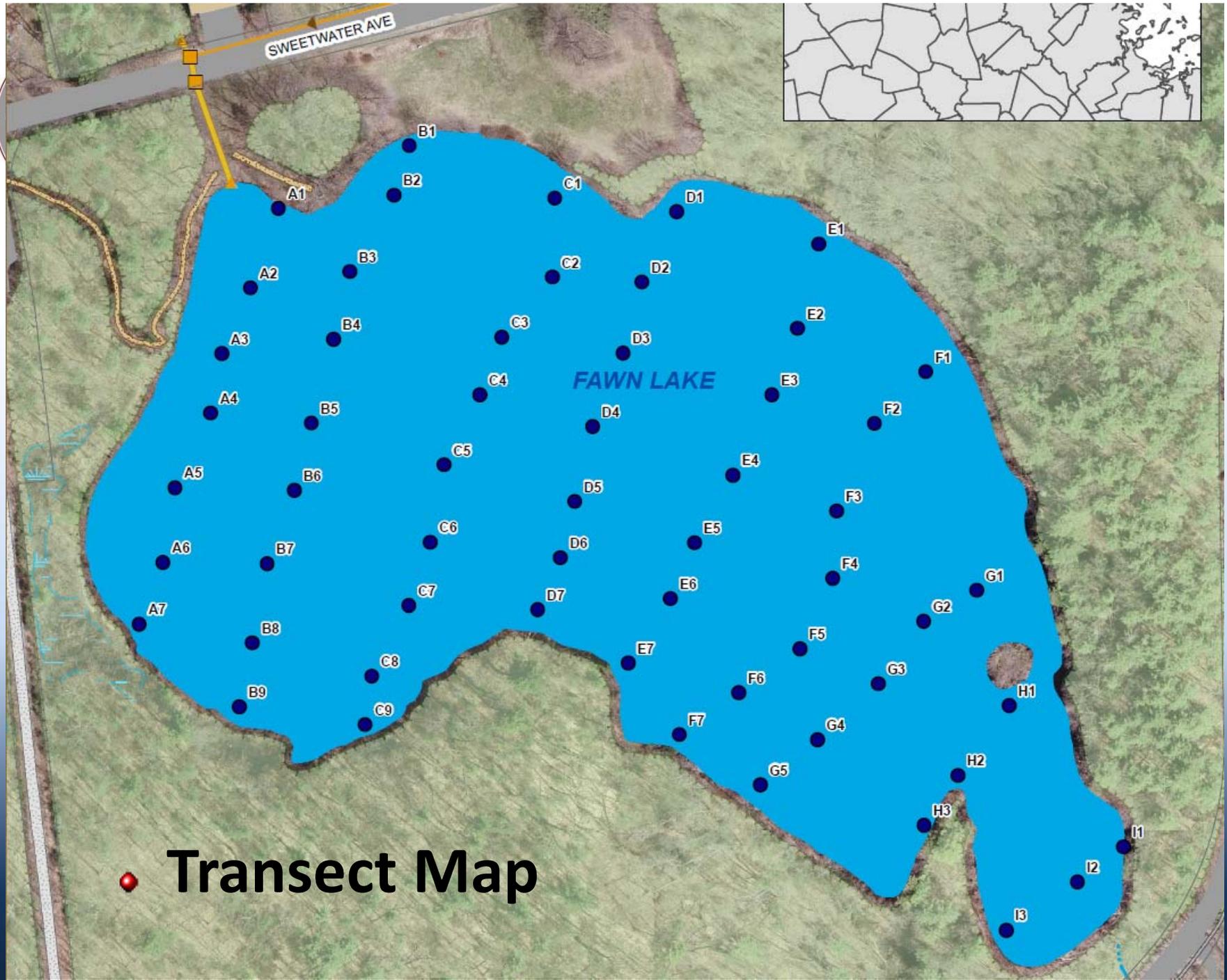


Transects



- 9 Transects
 - 57 monitoring points
 - GPS located
- Monitoring Points
 - Sediment and Water Depth Measurements
 - Plant Survey
 - Composite of random locations for two sediment samples





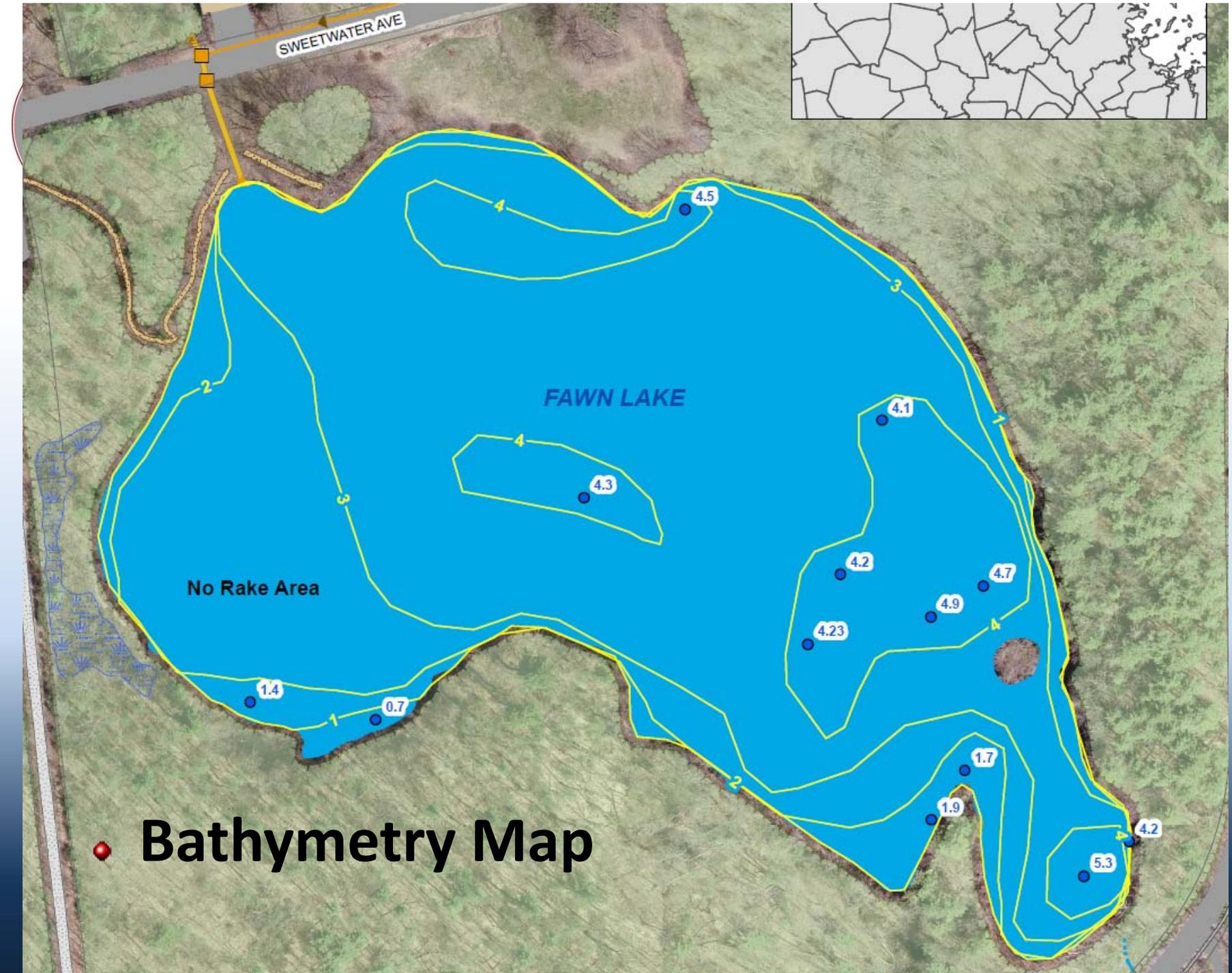
● **Transect Map**



Lake Bathymetry



- Measures Depth of Water Throughout Lake
 - Place Secchi disk on bottom of lake and record the depth from the surface
 - Displayed visually as a contour map of the lake
- Results
 - Depth ranges from 0.7 to 5.3 feet
 - Deepest portions are near the outlet
 - Average depth is 3.3 feet
 - Estimated total volume is 10.2 million gallons

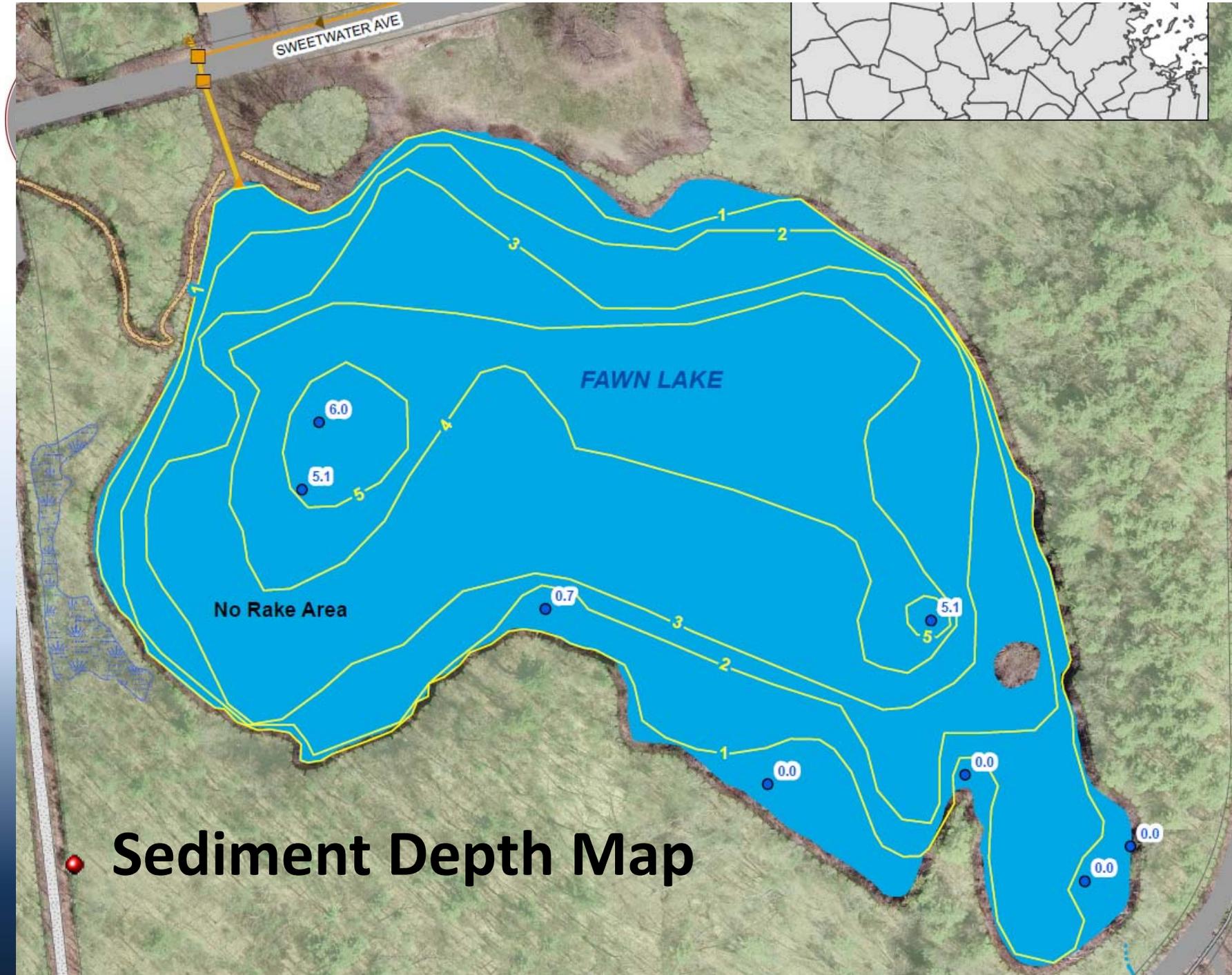




Sediment Depth



- Measures Thickness of Sediment Throughout Lake
 - Place Secchi disk on bottom of lake and record the depth from the surface
 - Push calibrated bar into soft sediment and record total depth
 - Sediment depth is the difference between the two
- Results
 - Sediment depth ranges from 0 to 6 feet
 - Deepest portions: NE of no rake zone, NW of island
 - Average depth is 2.9 feet



● Sediment Depth Map



Sediment Depth



- Results

Sediment Depth (feet)	Lake Area (acres)
1	10.8
2	8.9
3	6.8
4	2.7
5	0.3

- Estimated total volume of sediment is **47,752 cubic yards**



Plant Survey



- Identify each aquatic plant species present above and below the surface
- Record relative density of each species
- Results
 - 5 Floating Plant Species present
 - 8 Submerged Plant Species present
 - Filamentous Algae observed both floating and submerged



Relative Densities Floating Species



Species	Presence	Relative Density
White Water Lily	52 of 57	32%
Yellow Water Lily	39 of 57	18%
Watershield	21 of 57	8.1%
Bur-Reed	4 of 57	2.5%
Lesser Duckweed	1 of 57	0.2%
Filamentous Algae	14 of 57	8.8%



Relative Densities Submerged Species



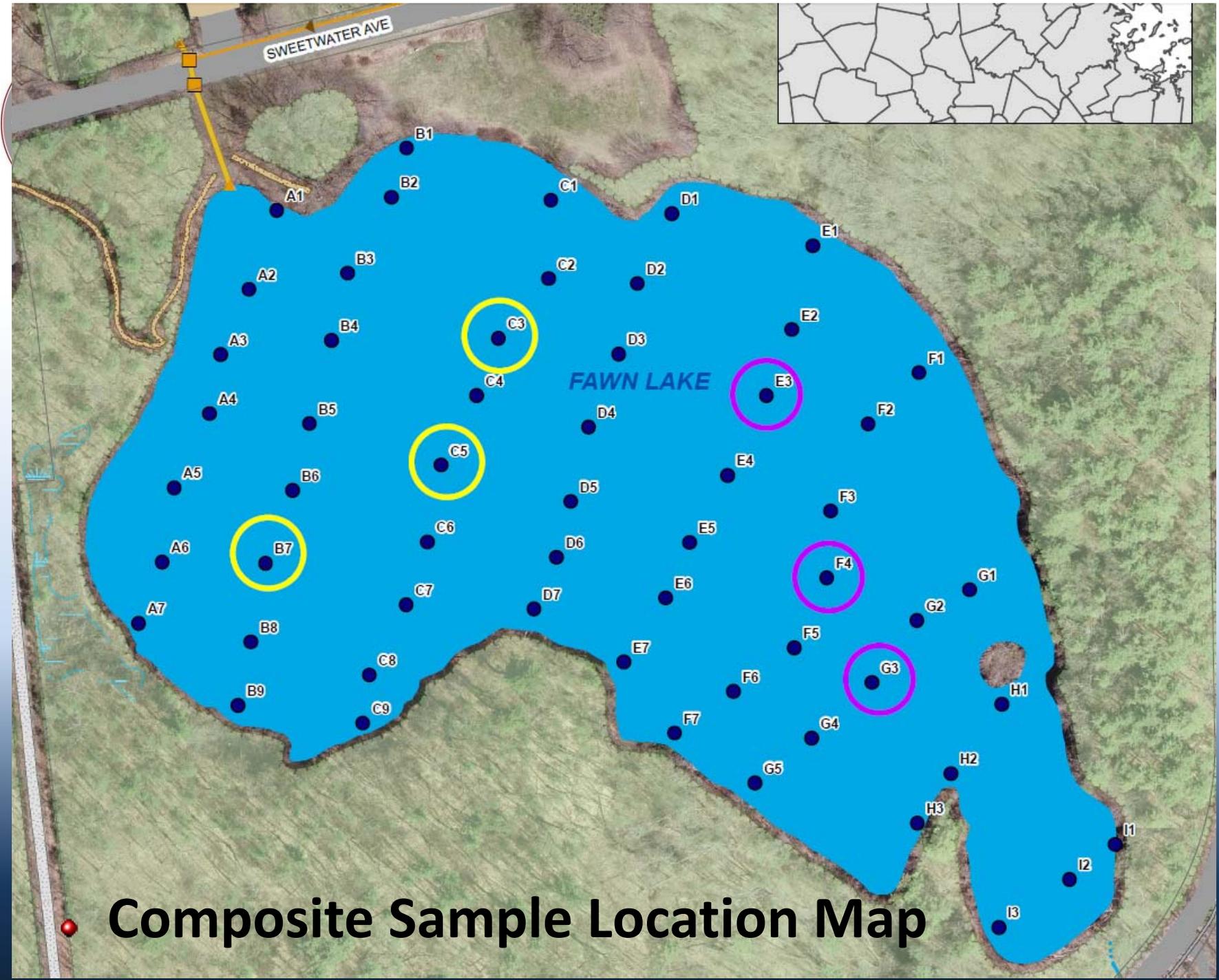
Species	Presence	Relative Density
Slender Water nymph	48 of 57	35%
Coontail	32 of 57	18%
Bushy Pondweed	16 of 57	10%
Common Bladderwort	18 of 57	8.8%
Stonewort	13 of 57	4.6%
Ribbonleaf Pondweed	4 of 57	2.2%
Purple Bladderwort	4 of 57	0.9%
Eel Grass/Tape Grass	2 of 57	0.4%
Filamentous Algae	3 of 57	0.7%



Sediment Samples



- Collected two composite samples of sediment
 - “West Composite” – 3 sites combined for 1 sample
 - “East Composite” – 3 sites combined for 1 sample
- Both samples were analyzed for:
 - Water Content
 - Metals
 - TPH (Total Petroleum Hydrocarbons)
 - EPH (Extractable Petroleum Hydrocarbons)
 - PAHs (Polynuclear Aromatic Hydrocarbons)
 - VOCs (Volatile Organic Compounds)
 - Sieve Analysis
 - Total Volatile Solids
 - PCBs (Polychlorinated Biphenyls)



● Composite Sample Location Map



Sample Results



Parameter	Unit	West Composite	East Composite	Reuse Level for Unlined Landfills
Water Content	%	94	93	--
Total Volatile Solids (Organic Solids)	mg/L dry	64.3	51.7	--
Arsenic	mg/Kg dry	ND	ND	40
Cadmium	mg/Kg dry	ND	ND	30
Chromium	mg/Kg dry	ND	ND	1,000
Copper	mg/Kg dry	ND	ND	--
Lead	mg/Kg dry	158	225	1,000
Nickel	mg/Kg dry	ND	ND	--
Zinc	mg/Kg dry	226	284	--
Mercury	mg/Kg dry	ND	ND	10
PCBs	mg/Kg dry	ND	ND	<2
TPH	mg/Kg dry	ND	ND	2,500
EPH	mg/Kg dry	ND	ND	--
PAHs	mg/Kg dry	ND	ND	--
VOCs	mg/Kg dry	ND	ND	4



Sample Results



Sieve Analysis			
Sieve Name	Sieve Size (mm)	Percent Finer	
		West Composite	East Composite
0.5 in	12.50	100	100
0.375 in	9.50	99	96
#4	4.75	90	71
#10	2.00	42	41
#20	0.85	25	28
#40	0.42	17	22
#60	0.25	13	19
#100	0.15	10	15
#200	0.075	9.2	14
	% Cobble	0	0
	% Gravel	9.7	29.3
	% Sand	81.1	57.2
	% Silt & Clay Size	9.2	13.5



Observations



- 1 swan, migrating geese, couple ducks
- 1 abandoned beaver lodge, no signs of activity
- No sport fish, only minnows
- 1 turtle near “no rake” area
- No invasive plant species
- Most filamentous algae located in NE corner
- Water level high, lake elevation higher than road
- Middle of lake and to the east has more open water
- Water more turbid by “no rake” area, clearer near outlet
- A lot of visitors, many dog walkers



Questions?

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