

# Program Management and Tracking Post-construction Controls

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Allison Hamel | Thomas Valton | Matt Davis  
Gretchen Young | Peter Carney

**The Future of Stormwater In New England:**  
Strategies to solve our nutrient dilemma





# Allison Hamel

Rhode Island Dept of Transportation

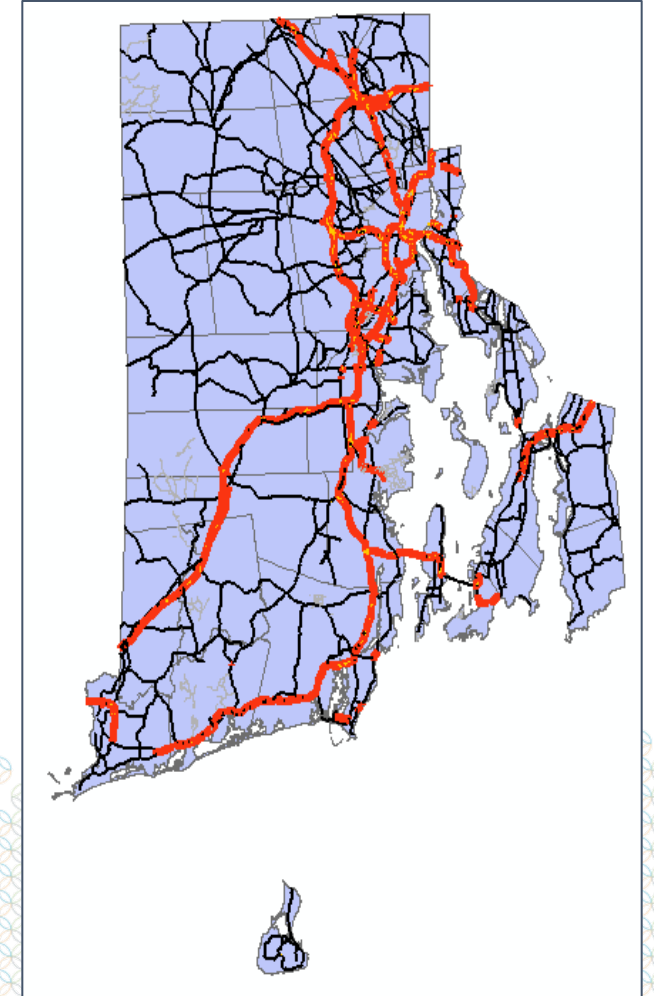
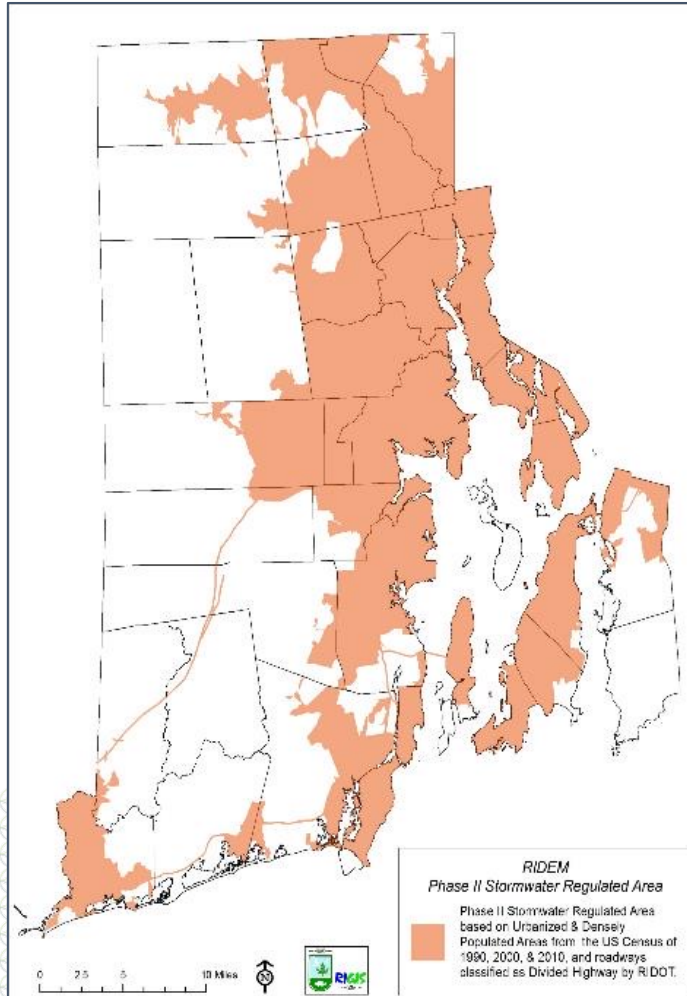


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# Allison Hamel

## Rhode Island Dept of Transportation



# Allison Hamel

## Rhode Island Dept of Transportation

Your **d****g**  
is cute,  
but its **p****o****p** is  
**t****x****i****c** !  
and can close the  
**BE****ACH**  
after **r****y** days  
if you don't  
**sc****p** it up  
and  
**disp****ose** of it  
properly.





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WORKING FOR WATER QUALITY

# Allison Hamel

## Rhode Island Dept of Transportation



UNITED STATES DISTRICT COURT  
DISTRICT OF RHODE ISLAND

UNITED STATES OF AMERICA,

Plaintiff,

v.

RHODE ISLAND DEPARTMENT OF  
TRANSPORTATION,

Defendant.

CIVIL ACTION NO.  
CV-15-433





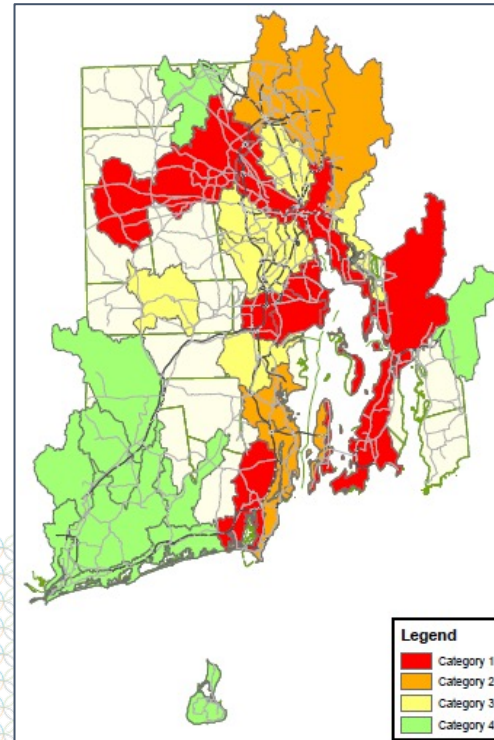
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# Allison Hamel Rhode Island Dept of Transportation

## IDDE



## Impaired Waters



## Maintenance Tracking





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# TRACKING Water Quality Credits Inspections, & Maintenance







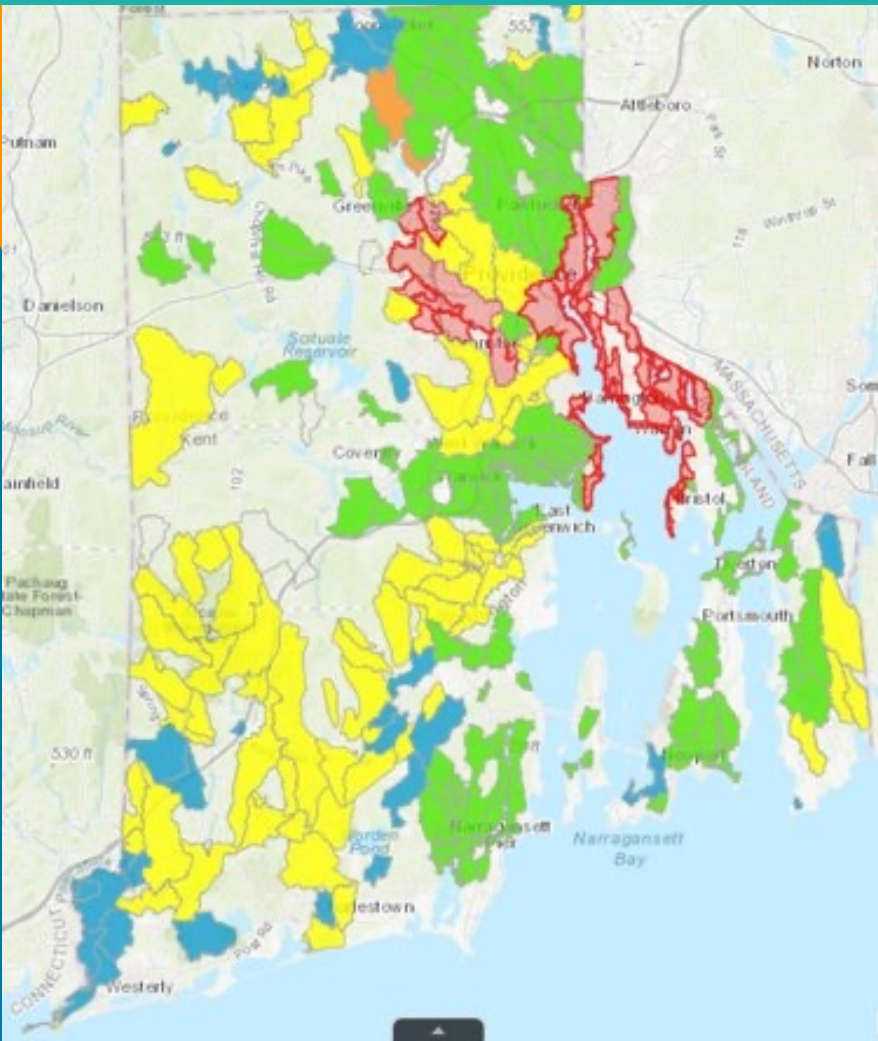
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# TRACKING Water Quality Credits Inspections, & Maintenance



RIDOT Stormwater Program

<https://ridot.maps.arcgis.com/>

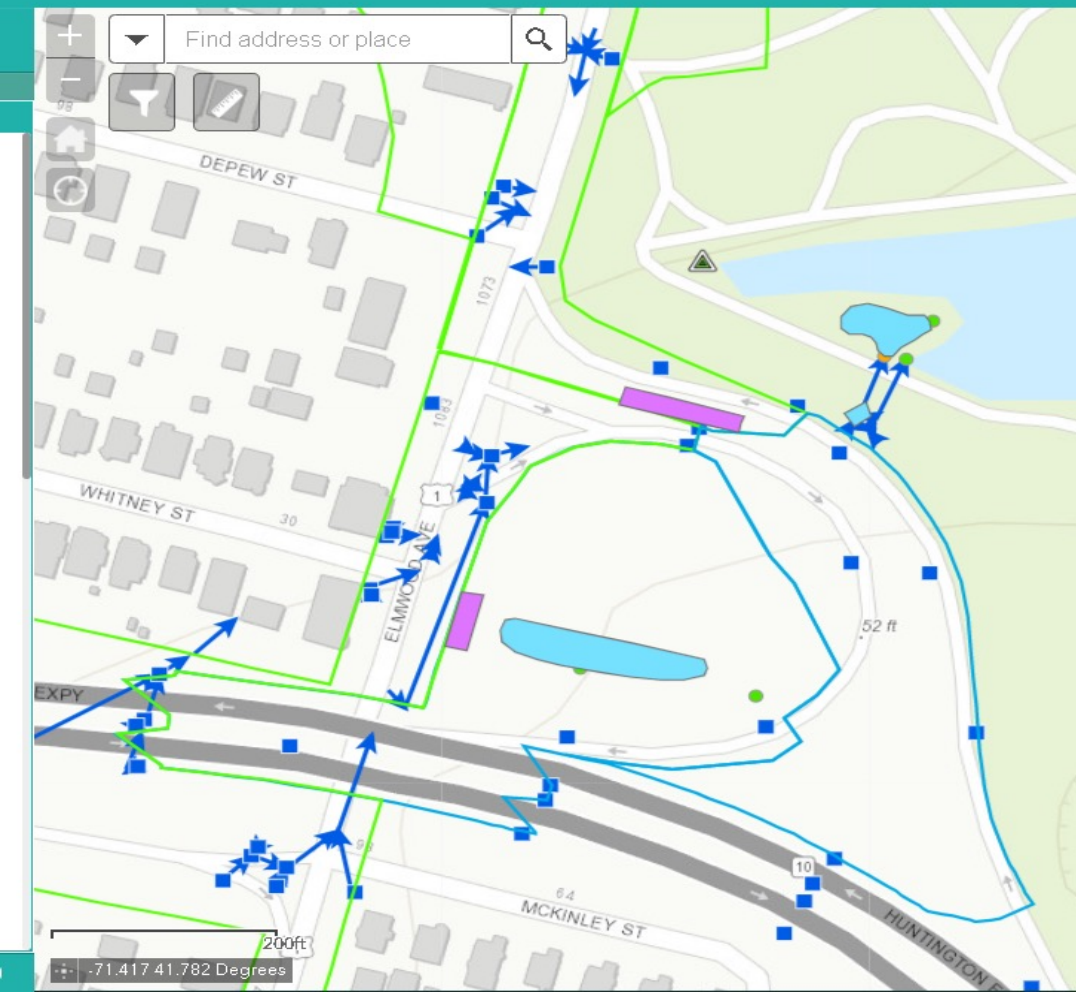


**RIDOT** RIDOT Stormwater Program



### Legend

- STU**
- STU Status
- Active
  - Existing: Not Functioning
  - Existing: Retrofit Opportunity
  - In Construction
  - In Design
  - Limited ROW
  - Potential
  - Not Feasible
- RIDOT Catchments**
- Existing
  - Limited ROW
  - Not Feasible
  - TIP
  - Potential
  - Discharge to CSO
  - Non-discharge





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# TRACKING Water Quality Credits Inspections, & Maintenance

**VueWorks\_RIDOT**

Welcome, allison.hamel

- Document Link
- Service Requests
- Work Orders
- Resource Manager
- Stormwater

Surface STU: (ADAB0A0E-663C-4BBF-82F7-FF30C06BB089)

**Attributes**

- Attributes
- Documents
- Condition
- Work Orders
- Service Requests

Current STU Type: Infiltration Basin

Unit Type: Sand Filter with sediment forebay

Location: Inside Rt 10 clover offramp to Elmwood Ave

PTSID: 60004B

Contract Number: 2018-CH043

Installed Year: 2019

Consultant: horsley Whitten

STU Owner: RIDOT

Partnership: Yes

Partnership\_Type: Other

Map Scale: 1:2,256

System Responsibility = Municipality

System Responsibility = RIDOT

System Responsibility = RIDOT

**Condition Form**

Record Documents

Asset Class: Stormwater  
Asset Type: Surface STU  
Form: Drainage - Surface STU Condition

Record Date: 11/23/24  
Recorded By: Day d. Messer

**Site**

Item	Rating	Score
Erosion adjacent to site?	No	100
Signs of oil/gasoline?	No	100
Signs of illegal dumping?	No	100
Signs of non-stormwater flow?	No	100
Unhealthy/invasive veg present?	No	100
Veg removal/management req?	No	100
Areas w/veg present?	No	100
Overall Site Condition	Good	100

**Collect (Discharge Point to STU)**

Item	Rating	Score
Structural damage	No	100

**Capture (Pre-treatment/Forebay)**

Item	Rating	Score
Structural damage	No	100

**Manage Work Orders**

vueworks.dct.nj.gov/VUEWorks/WorkOrders/FindManageReport.aspx?ActivityID=1474088;OpenedBy=...

Form View Assets

ID: 040623\_122 Logged By: Nate Pacheco 04/06/2023 03:37 PM

Priority: Low

Type: General

Dist: Highway and Bridge Maintenance

Group: Operations-East Providence

Activity Description: Drainage - STU Surface Routine Maintenance

Location (Inside 70 ft clover): (Lat/Long: 41.761506, -74.413993)

Description: Annual STU Inspection Work Order for Surface STUs

Assigned To: **Bode, East Providence Facility** 04/06/2023 3:37 PM

Project Group: Project

Associate with...

**Details** Costs Tasks Labor Equipment Inventory Recurrence Assets Documents Work Orders

**Comments**

Inspector Name: STU Type: Infiltration Basin

Structure Found?: STU Name: EOP-FHW-009 Structure ID: S400

Structure Accessible?: Asset ID: (ADAB0A0E-663C-4BBF-82F7-FF30C06BB089)

Access Notes:

Routine Maintenance Actions Performed (check all that apply)

Clear Inlet Forebay:  Remove Sediment:

Mowing:  Remove Vegetation:

IMPROVINGLY: THIS IS A POLLUTANT AREA, DO NOT MOW UNTIL POLLUTANT SEASON IS OVER/NOVEMBER.

STU Specific Maintenance Considerations:

\* Required To Close

Save Cancel Print Close



# TRACKING Water Quality Credits Inspections, & Maintenance

## Stormwater Asset Management

No issues detected x Edit x

Catch Basin Inspection and Cleaning | STU Inspection Tracking | **STU Condition Tracking**

### STU Inspection Results

Dashboard to assist in identifying/prioritizing STU maintenance needs. Open the tab on the left for additional filters and instructions. Filter by Maintenance District: No Filter

#### STU malfunctioning

Click a slice to filter the Surface STU Inspection

Null	12
Yes	8
No	171

Surface STU | Subsurface STU

#### Surface STU Number of Failing Components

Select a bar below to filter the Surface STU

Number of Failing Components	STU Count
0	~180
1	~10
2	~5
4	~2

Surface STU | Subsurface STU

Eri, HERE, Garmin, USG...

#### Selected Surface STU Inspection Details

Use the arrows to scroll through all condition inspection forms for the selected Surface STU.

Inspection Date: 4/3/2023, 7:51 AM  
Inspector Name: David.messier  
STU Structure ID: 6,447  
Structure: NA - See Work  
Accessible? Order  
Is erosion adjacent to the site that could contribute sediment to the treatment system present? No  
Are there signs of oil or gasoline? No

Last update: a few seconds ago

#### Follow-up required

Click a slice to filter the Surface STU Inspection

Null	10
No	142
Yes	39

Surface STU | Subsurface STU

#### STUs Unable to be Located: 11

Click an STU below to pan and zoom the map. This list contains both surface and subsurface STUs.

STU Name: 0143W-BMP1  
STU Type: Infiltration Basin  
Structure Access Notes:  
Last Inspection Date: 7/1/2022, 12:12 PM

STU Name: 0153N-STU-3  
STU Type: Jellyfish Filter  
Structure Access Notes:  
Last Inspection Date: 1/9/2023 4:24 AM

STUs Unable to be Located

#### Surface STU Inspection Results: 191

Select a Surface STU in the list below to pan and zoom the map to that location.

STU Name: SCP-BLK-111  
STU Type: Infiltration Swale  
Maintenance District: Smithfield  
Last Inspection Date: 1/20/2023, 4:45:00 AM  
Overall Site Condition: Fair  
Inlet Condition: Failing  
Pretreatment Components Condition: Fair  
Move Components Condition: Fair  
Treatment Component Condition: Fair  
Outlet Condition: Good

Last update: a few seconds ago

Surface STU | Subsurface STU

#### Immediate safety issues

Click a slice to filter the Surface STU Inspection

Null	11
No	172
Yes	8

Surface STU | Subsurface STU



# Thomas Valton



DCR

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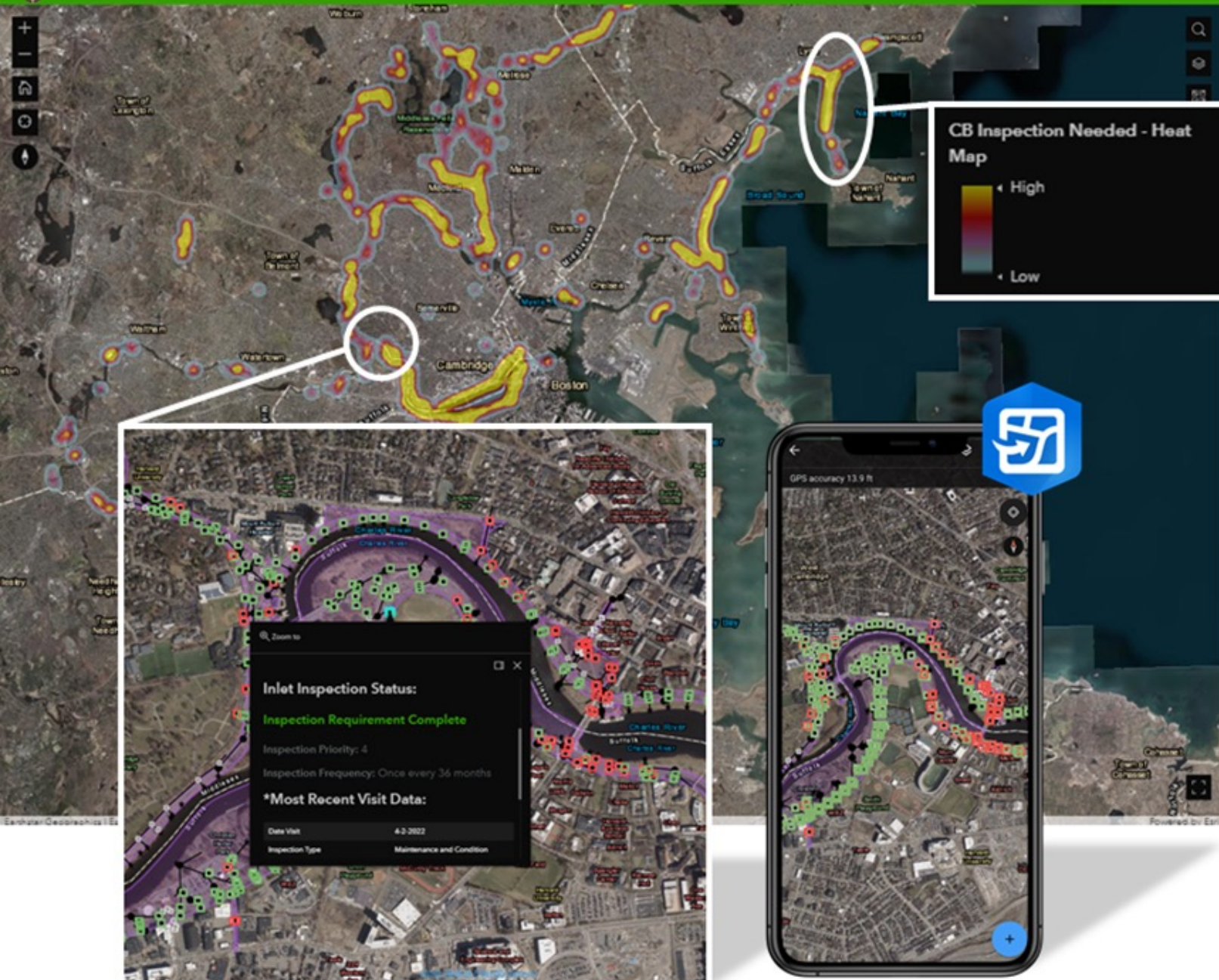
# Thomas Valton - DCR

- Director – Stormwater & Environmental Section
- Oversee all stormwater & MS4 operation and maintenance field work
  - Field mapping of drainage system and BMPs
  - Catch basin cleaning
  - BMP inspections
  - SWPPP inspections
  - Street sweeping
- Use ArcGIS Online apps and dashboards to optimize and prioritize field work

# Catch Basin Cleaning Optimization

Goal: Prioritize catch basins to be cleaned using historical inspections and on-going field data collection

- Use **last 5 year of inspection** data and **recorded sediment level** to assign catch basins a priority and inspection frequency
- GIS script that auto-populates inspection frequency based on current data
- Prioritize catch basins to be cleaned based on:
  - Flood-prone areas
  - Sediment accumulation



### CB Inspection Needed - Heat Map

█ High  
█ Low

**Inlet Inspection Status:**

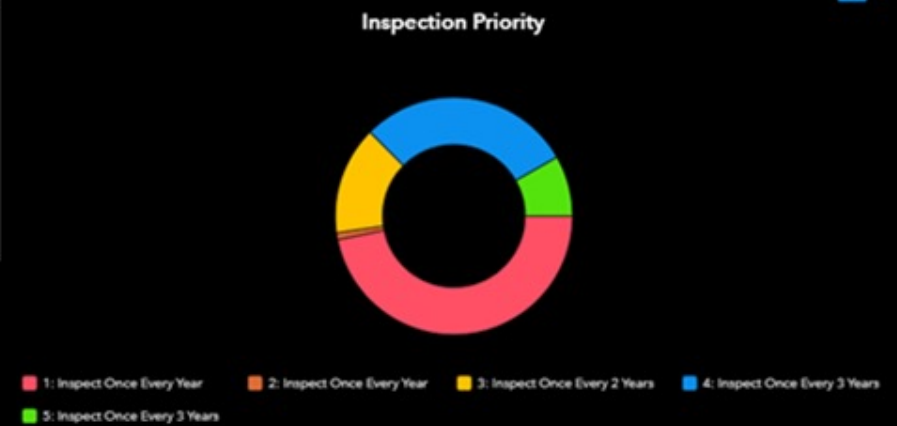
**Inspection Requirement Complete**

Inspection Priority: 4

Inspection Frequency: Once every 36 months

**\*Most Recent Visit Data:**

Date Visit	4-3-2022
Inspection Type	Maintenance and Condition



Click trash icon in upper right corner to clear selection

**Yearly Required Inspection Progress**

**57%**

**4,362 | 3,278**

(Inspections Completed | Inspections Still Needed)





# Matt Davis



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Brown & Caldwell

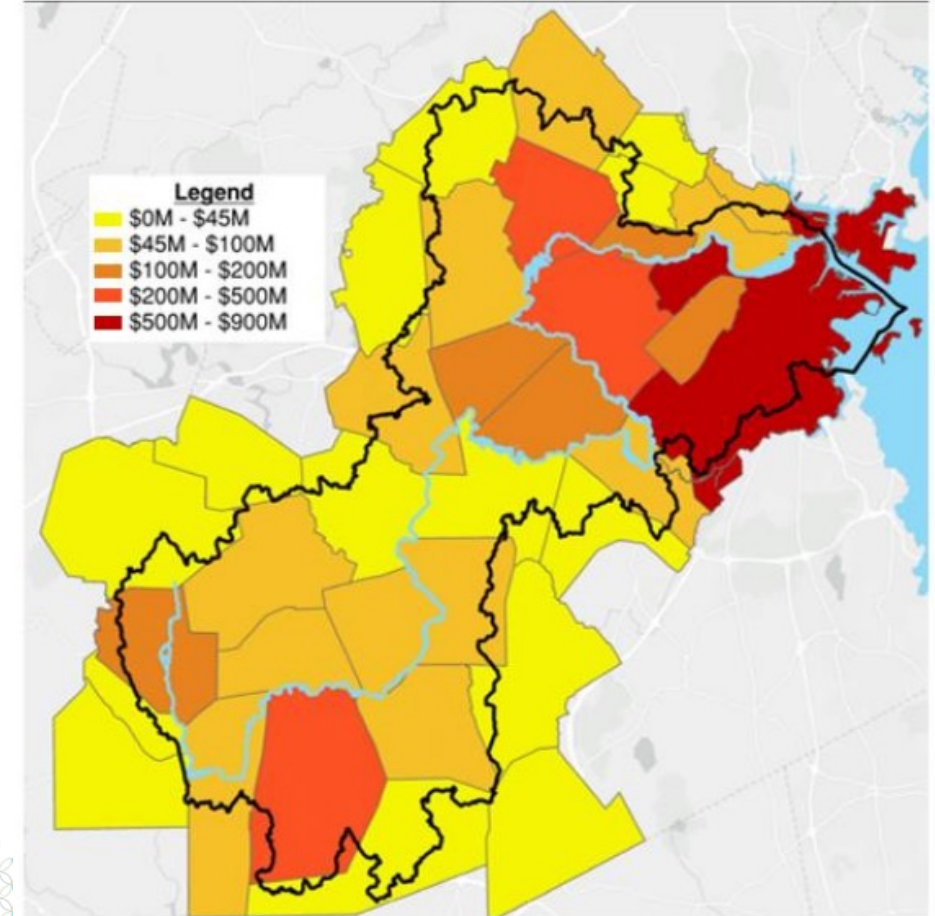
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# Phosphorus Reduction Requirements in Massachusetts

- Driven by TMDLs and enforced through MA MS4 Permit
  - Charles River
  - Lakes and Ponds
- MS4 Permittees required to meet stormwater phosphorus reduction targets by 2038
- Permit has credit system for BMPs
  - Non-structural
  - Structural



**Estimated Cost of Meeting Charles River Phosphorus Control Plan Requirements**

*Assumes construction cost of \$100K/lb of phosphorus removed.*

# Tracking Changes in Stormwater Phosphorus Loads

- Permit established baseline phosphorus loads for 2005
- Tracking changes in stormwater phosphorus loads
  - Development/redevelopment (since 2005)
  - Structural BMPs
    - Public
    - Private
- Tracking operation and maintenance of structural BMPs
  - Public
  - Private



# Nutrient Tracking Portal

Stormwater Nutrient Tracking Portal  
**Projects in the City of Waltham, MA**

 Bob

Address Locator

	Name	Address	Author	Type	Submission Date	Project Completion Date	Δ Phosphorus (lb/yr)	Δ Nitrogen (lb/yr)
<input type="checkbox"/>								
<input type="checkbox"/>								
<input type="checkbox"/>								
<input type="checkbox"/>								

Only display projects authored by me

Create new project

View selected project

Removed selected project

Export table to Excel

Export GIS data

Export EPA Reports

# Wizard for Inputting Redevelopment Projects

Stormwater Nutrient Tracking Portal

Project Creation Wizard

?

Bob

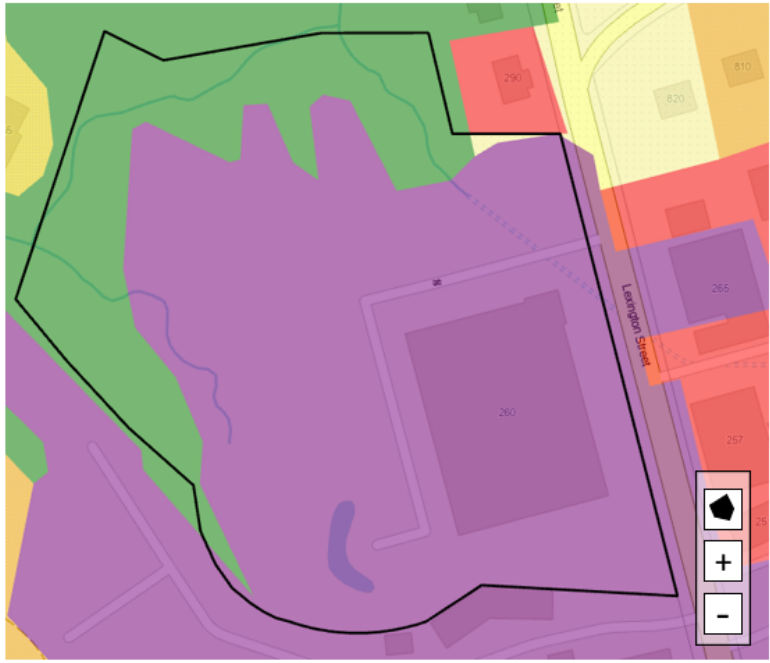
Is this a development/redevelopment project?

Yes No

Exit Back Next

# Make Updating GIS Data Easy

The land use for the site is shown in the map for pre-project conditions. Is it correct?



If not, please update the map by drawing the correct land uses on the map.

Please select the type of land use you would like to add to the map

Commercial

# Gretchen Young

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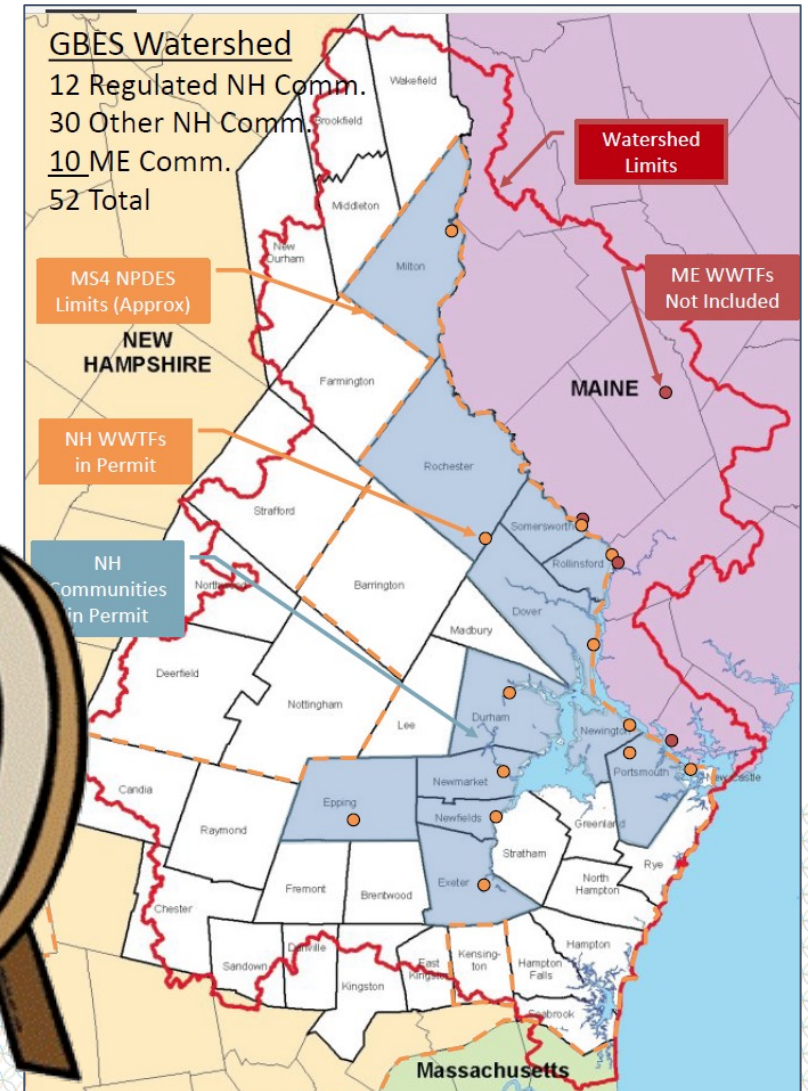
Great Bay Accounting and Tracking

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# Pollutant Tracking and Accounting Program

- Consistent & Manageable
- Tracks Long Term Trends
- Allows Communities to start to get “Credit” for work
- Uses EPA data analysis tool
- VERY Collaborative approach led (funded) by NHDES in response to Communities asking for help
- Owned by the users



# Pollutant Tracking and Accounting Program

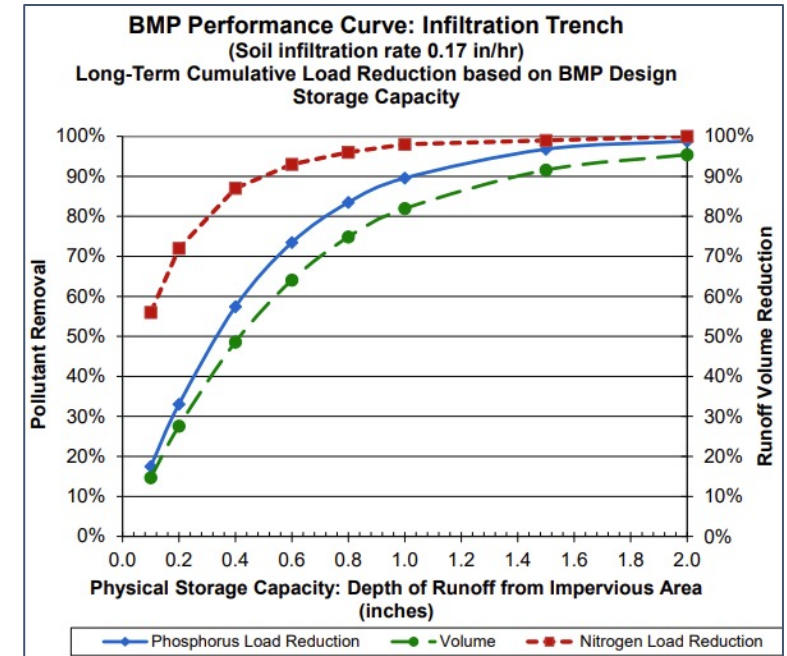
Impervious Surface Management Table - Non-Structural BMPs

Non-Structural BMP	Amount	Description	Operations
Leaf Collection Composting Program (frequency of collection)	6.00	Leaf Pick up curbside for 6 weeks in the fall	<a href="#">Add Row</a>
Pet Waste Pickup Program	1.00	Send Scoop the Poop mailers to all registered dog owners	<a href="#">Delete Row</a>
Fertilizer Control Program	23.00	Organic Only Fertilizer Program on 23 Municipally Controlled acers of lawn and fields	<a href="#">Delete Row</a>

Land Use Conversion Table

Soils		Existing Conditions			Future Conditions			Operations
Hydrologic Group	Acres	Land Use Type	Acres	Impervious and/or Paved Surfaces Acres	Land Use Type	Acres	Impervious and/or Paved Surfaces Acres	
Select	0.00	Select Type	0.00	0.00	Select Type	0.00	0.00	<a href="#">Actions</a>
Totals	0		0	0		0	0	





# Pollutant Tracking and Accounting Program

## Dover Municipal Report

### Land Use Conversion Table

Soils		Existing Conditions			Future Conditions			Report of Origin
Hydrologic Group	Acres	Land Use Type	Acres	Impervious and/or Paved Surfaces Acres	Land Use Type	Acres	Impervious and/or Paved Surfaces Acres	
C/D	5.77	Residential	5.77	0.06	Commercial/Institutional	5.77	1.06	Broadview Urgent Care Animal Hospital
A	0.45	Residential	0.45	0.17	Residential	0.45	0.25	Hanson Court Apartments
A	1.65	Residential	1.65	1.19	Residential	1.65	0.98	Roberts Road Reconstruction, Dover NH
A	2.04	Residential	2.04	0.76	Residential	2.04	0.75	Locust Street Inn & Locust Common
B	0.61	Residential	0.61	0.06	Residential	0.61	0.35	
C	0.47	Residential	0.47	0.00	Residential	0.47	0.22	





# Peter Carney



**Long Creek Watershed Management District**

Portland, South Portland, Scarborough, and Westbrook, Maine

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# Annual Site Walk of Every Property

Mar 30 • Written By Ali Clift

## Annual Property Inspections Are Starting Soon



Each year we inspect properties in the Long Creek Watershed to help landowners improve their properties and reduce stormwater pollutants. Our inspection kit includes waterproof boots (sometimes waders), an orange safety vest, a giant magnet, a powerful flashlight, a camera, and maps of the underground pipe network. If you would like to join us during your inspection, please respond to the email from our inspectors.

After the inspection is completed, recommendations are provided to the landowner on how to fix sources of pollution.

# Established Relationships with Contractors

- Pavement Sweeping
- Catch Basin Cleaning
- BMP Inspection and Maintenance
- Landscaping
- Water Quality Monitoring
- Cumberland County Soil & Water Conservation District



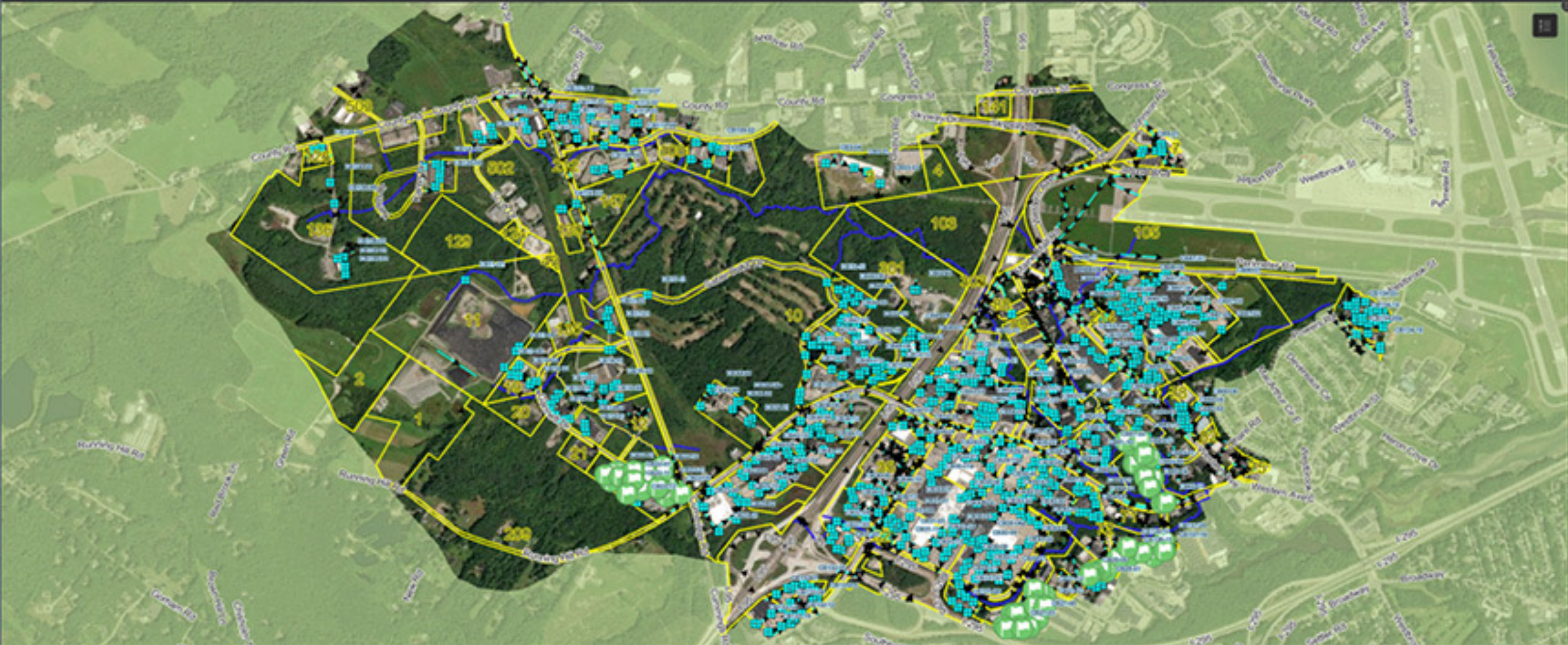


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# ESRI Simple “Live” Dashboard

LCWMD: Catch Basin Inspections and Maintenance

Select a date  
2023



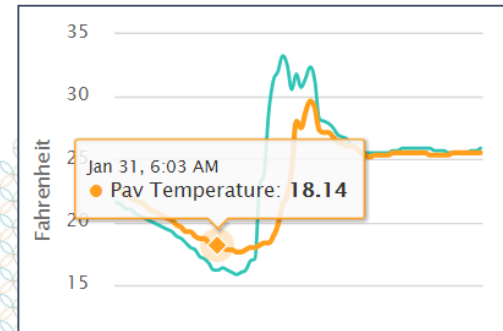
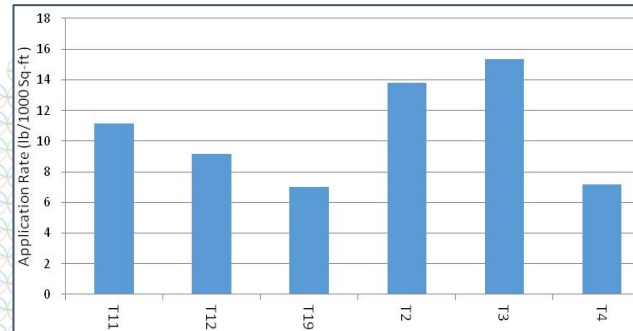
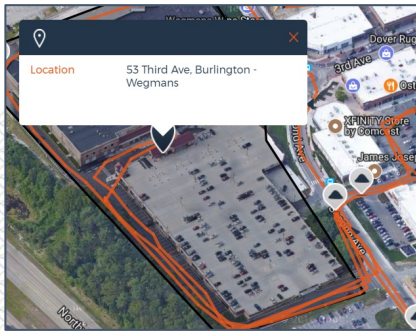
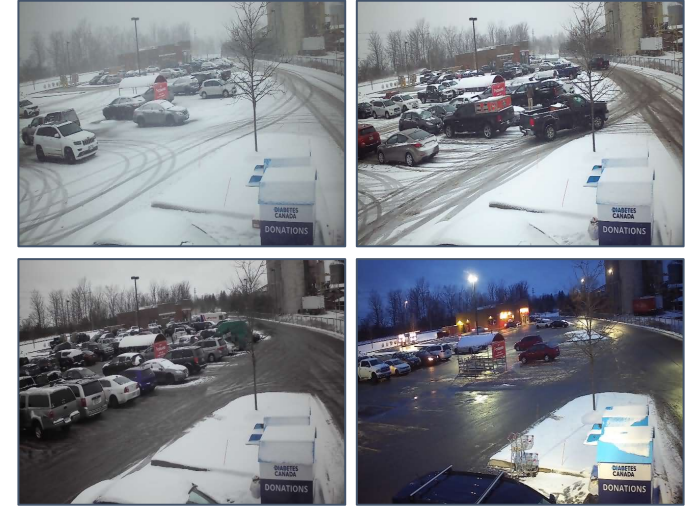
# Salt Tracking

Application Rates: The figure below shows monthly averages

- Some properties are much heavier on a per 1000sqft basis
- Some trucks are much heavier

Site Conditions:

- Camera systems with air and pavement temperature options allow us to verify/compare level of service
- Determine effectiveness of materials (brine) and equipment (plows)



# Long Term Financial Planning

- Based on estimates, LCWMD will need to budget for or set aside funding of \$6,258,190 to provide for the maintenance, repair, and replacement of BMPs owned or managed by the District from 2020 to 2040.



# Contact

- **Allison Hamel** [allison.hamel@dot.ri.gov](mailto:allison.hamel@dot.ri.gov)  
RIDOT (Regional Accounting and Tracking)
- **Thomas Valton** [thomas.valton@mass.gov](mailto:thomas.valton@mass.gov)  
MADCR (Regional Accounting and Tracking)
- **Matt Davis** [MDavis@Brwncald.com](mailto:MDavis@Brwncald.com)  
Brown and Caldwell (Municipal Tracking and Accounting programs)
- **Gretchen Young** [g.young@dover.nh.gov](mailto:g.young@dover.nh.gov)  
Great Bay Accounting and Tracking
- **Peter Carney** [pcarney@restorelongcreek.org](mailto:pcarney@restorelongcreek.org)  
Long Creek Watershed Management District O&M