

Tracking Pollutant Sources – Dogs, Sampling, and Other Tools

January 11, 2013

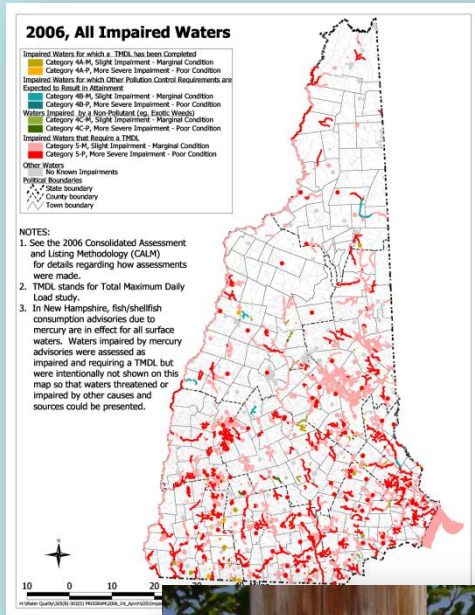
Lamprey River Symposium, UNH

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Municipalities Need to Protect and Restore the Health of their Waterbodies



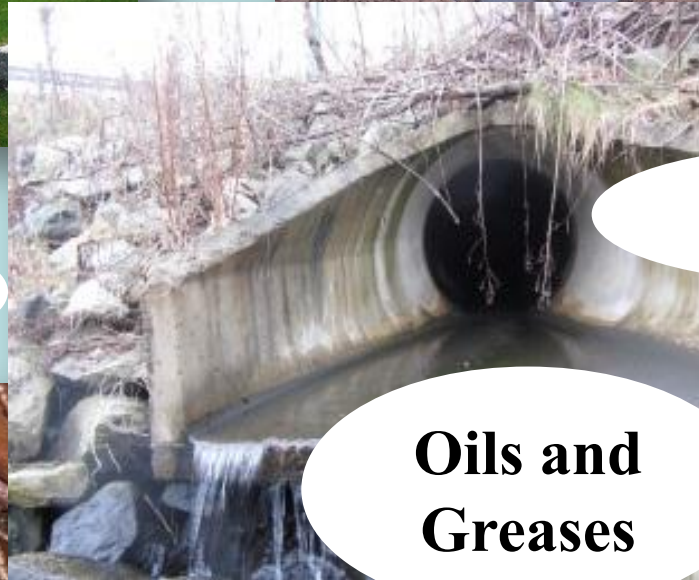
Sources of Pollution to a Waterbody



Nutrients



Sediment



Bacteria



Other

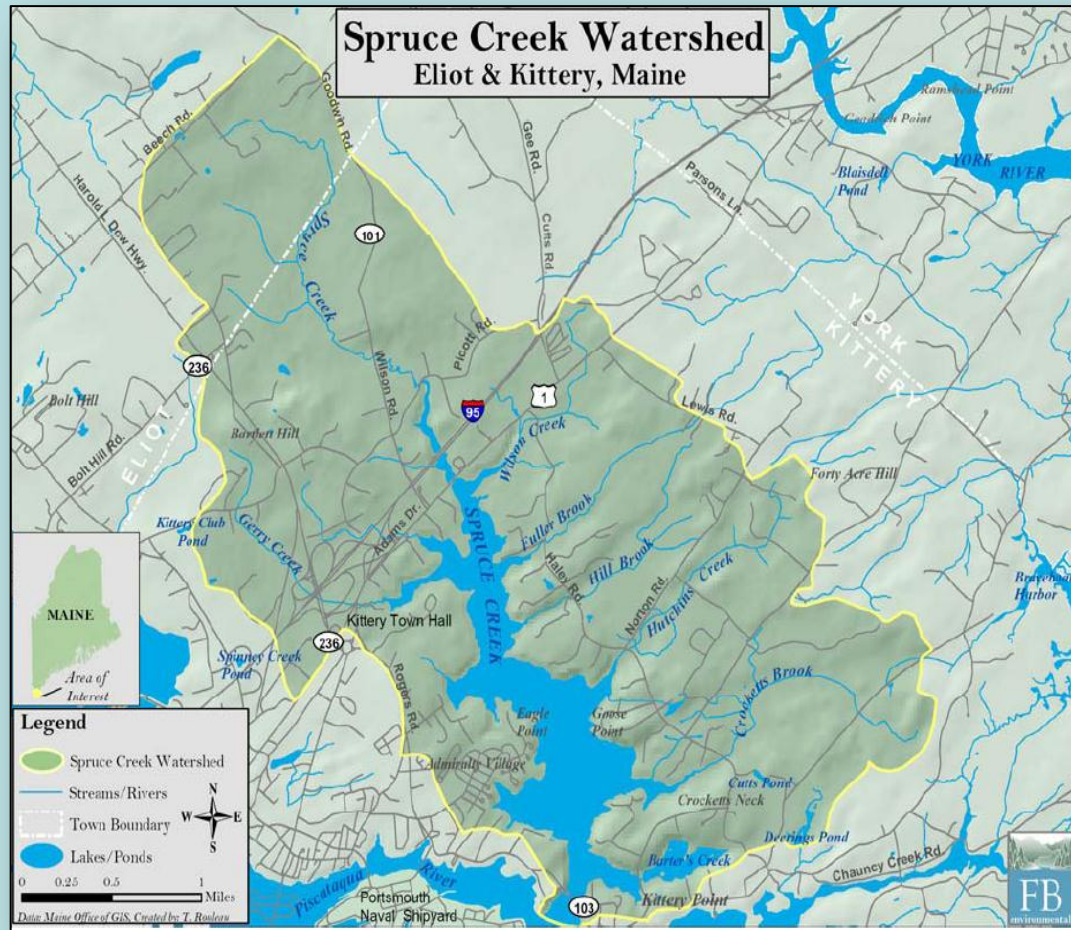
Oils and Greases



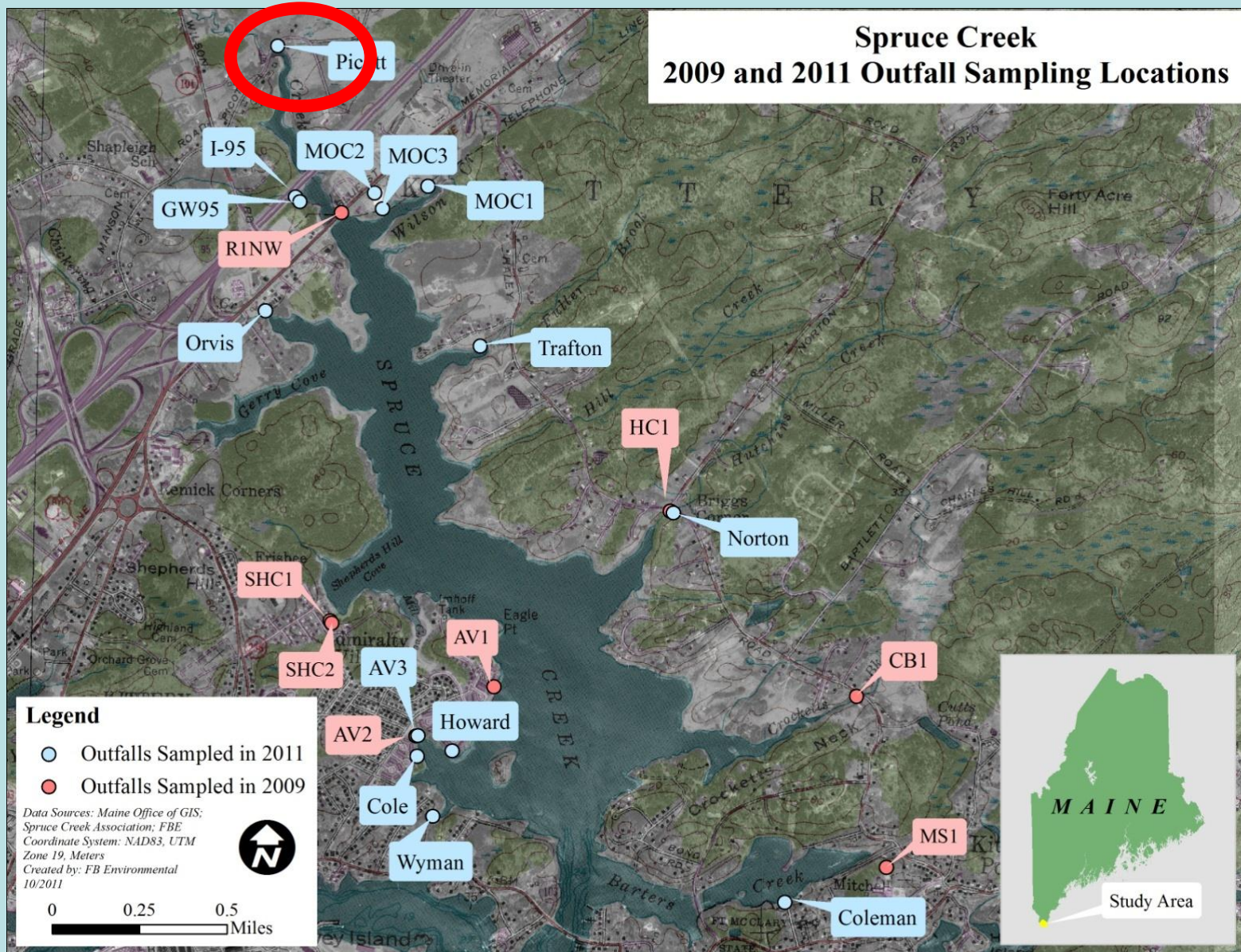
How do we Track these Sources?



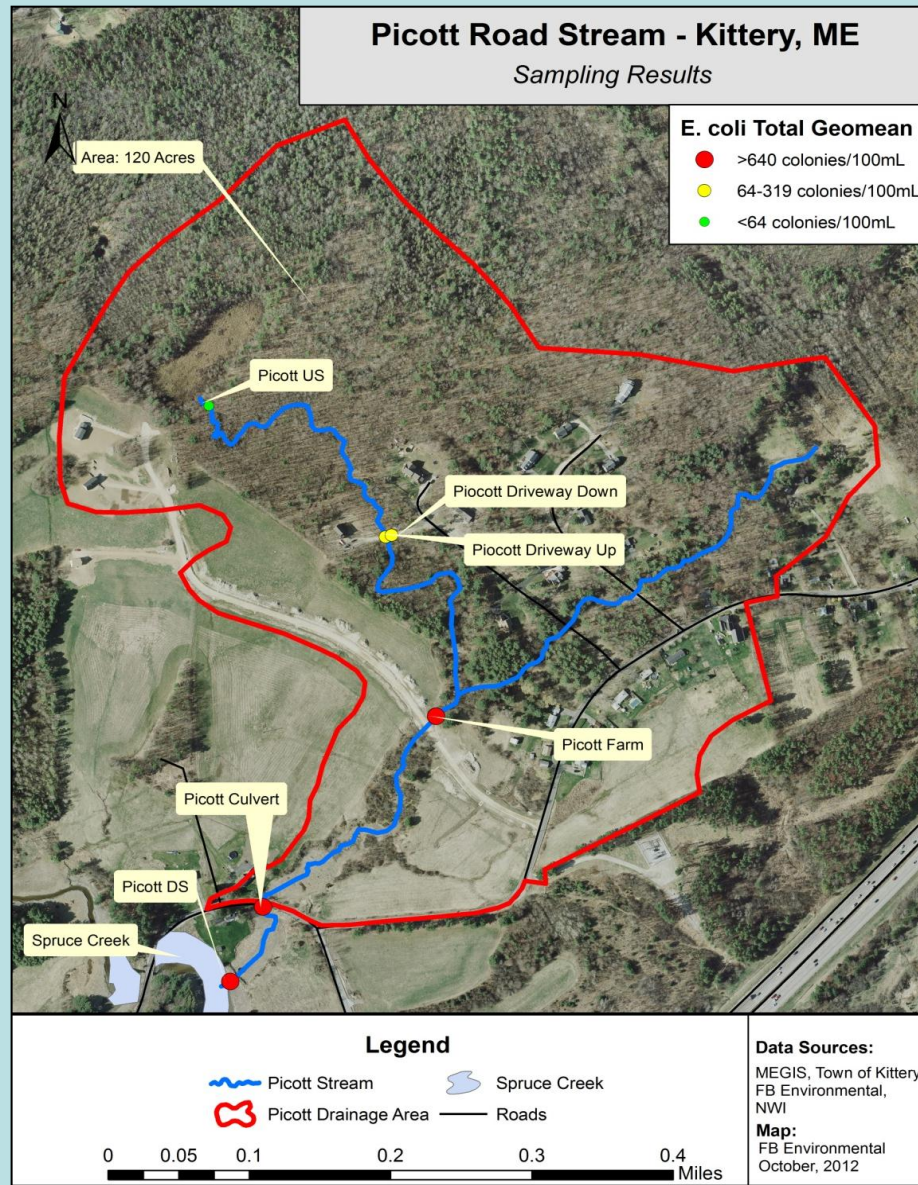
Example: Tracking Non-Point Source Pollution in Kittery, ME



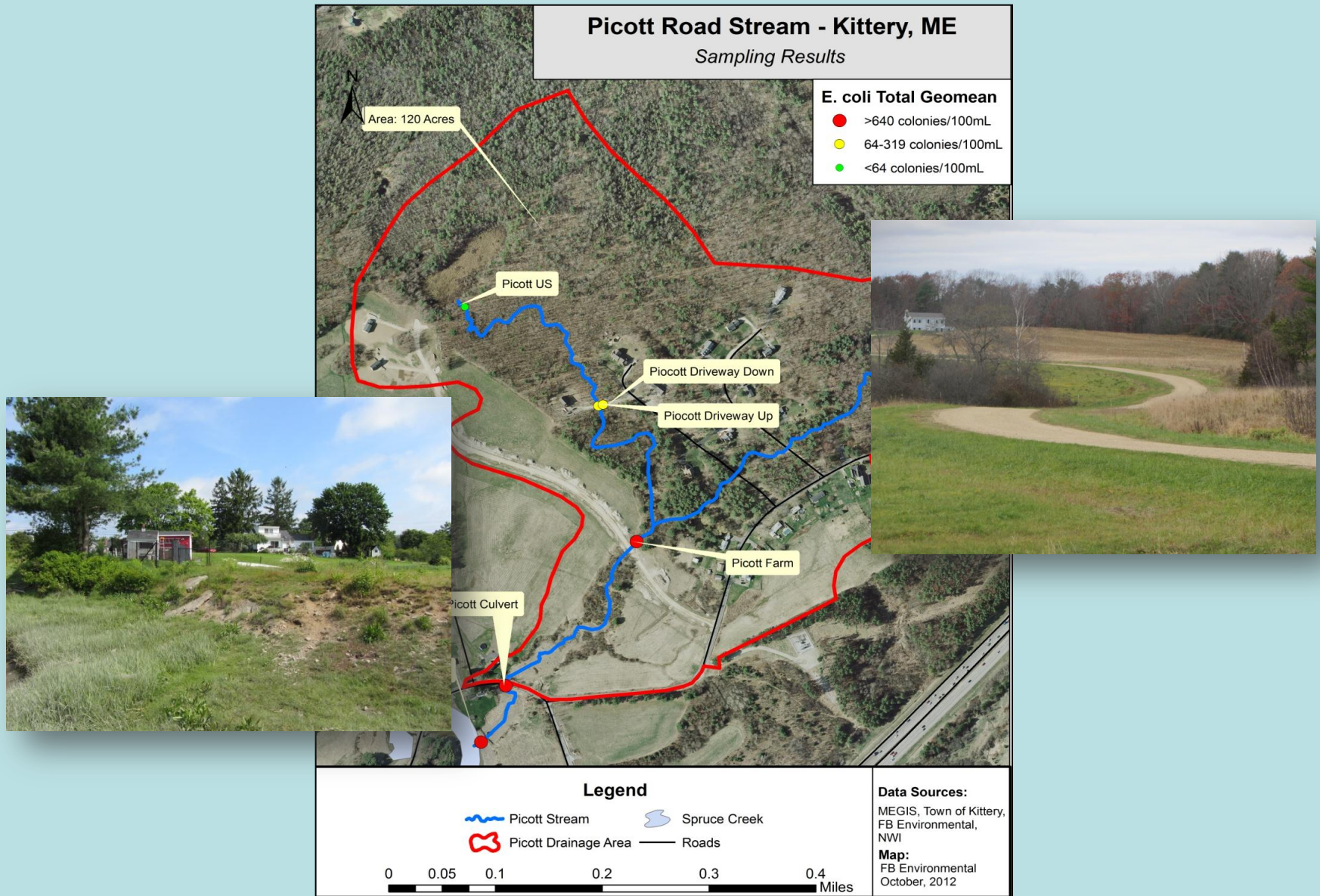
Identify “Hotspots” in a Watershed



Map the Drainage Area to that “Hotspot”



Identify POTENTIAL Sources in the Drainage Area

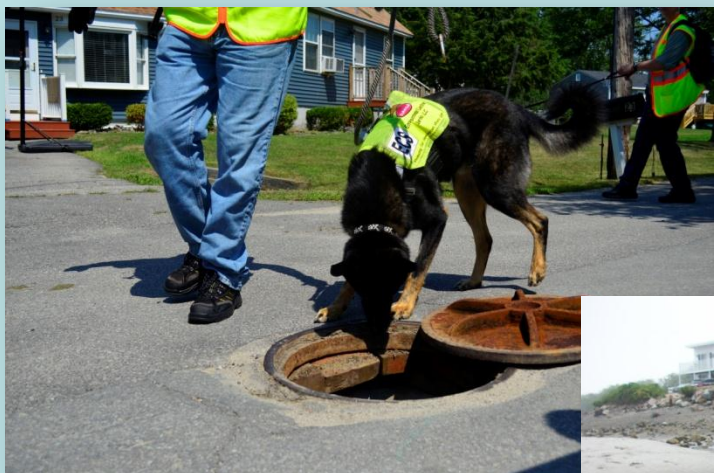


Choose the Best Method to Identify ACTUAL Sources

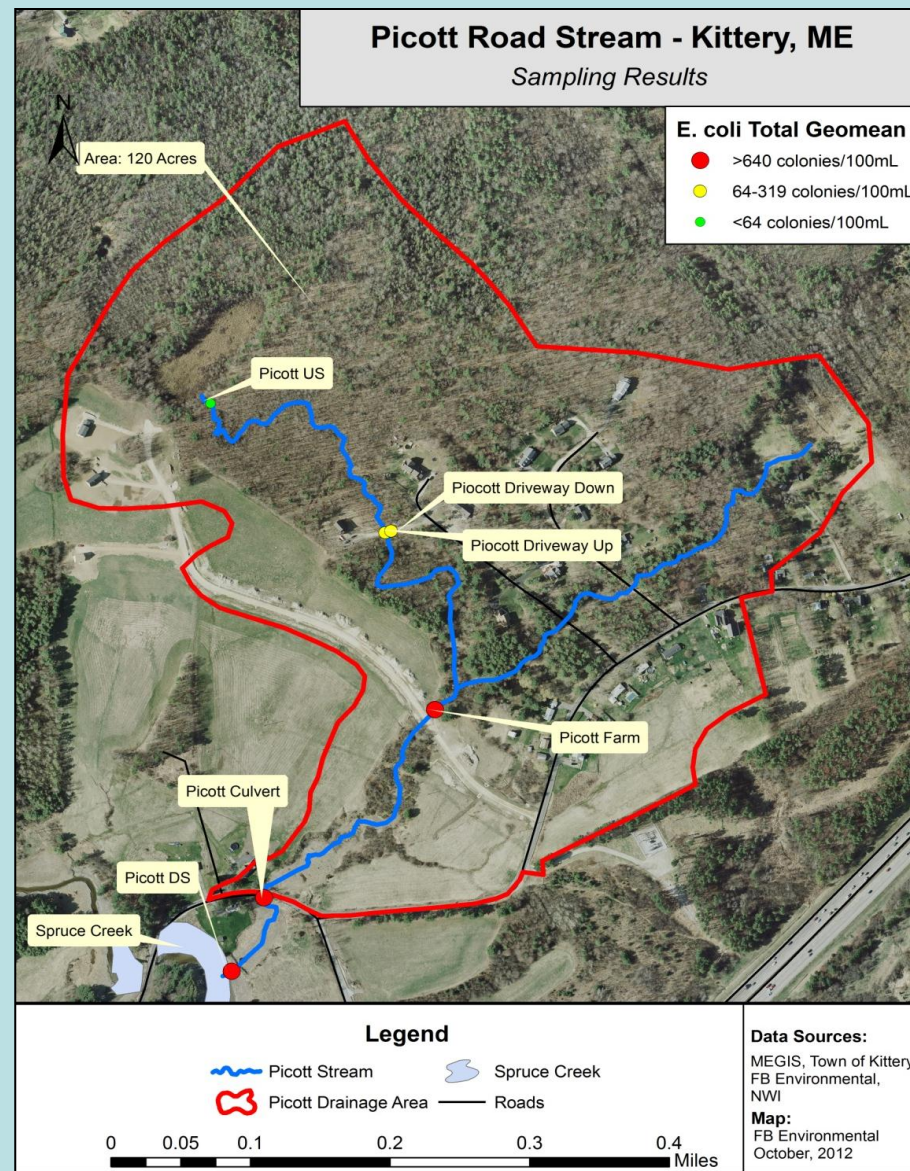
- Bracket Sampling
- Smoke/Dye Testing
- Genetic Analysis
- Canine Detection
- Other



Canine Detection



Kittery: Bracket Sampling and Canine Detection



Picott Road Bacteria/Canine Results

| Sampling Location | <i>E.coli</i> (colonies/100 mL) Geometric Mean | Canine Response | Potential Sources |
|-----------------------|--|-----------------|--|
| Picott US | 23 | No/No | -- |
| Picott Driveway Down | 121 | No/No | -- |
| Picott Driveway Up | 83 | No/No | -- |
| Picott Farm | 1290 | No/No | Agricultural Runoff |
| Picott Culvert | 856 | No/No | Agricultural Runoff Stormwater Runoff |
| Picott DS | 915 | Yes/Yes | Agricultural Runoff Stormwater Runoff Malfunctioning Septic System(s) |

E.coli Geometric Mean WQS = 64 colonies/100 mL

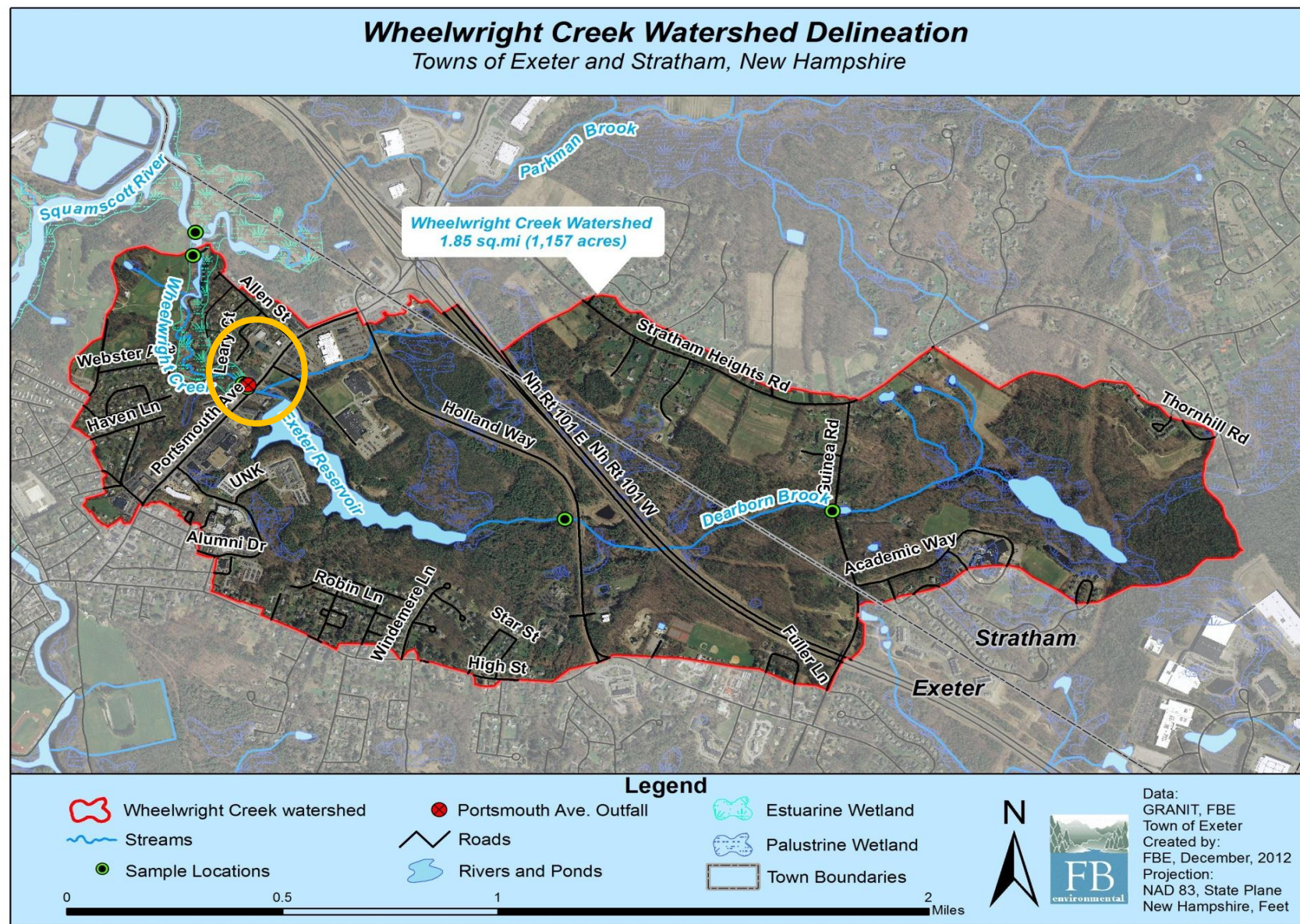
Next Steps

1. **EDUCATION**: Educate farmers about increasing buffer width.
2. **INVESTIGATION**: Look for potential septic systems failures.
3. **IMPLEMENTATION**: Identify areas for BMP implementation to treat stormwater runoff.
4. **FOLLOW-UP**: Conduct routine bacteria monitoring to assess success of mitigation efforts.

Example: Tracking Illicit Discharges in Exeter, NH



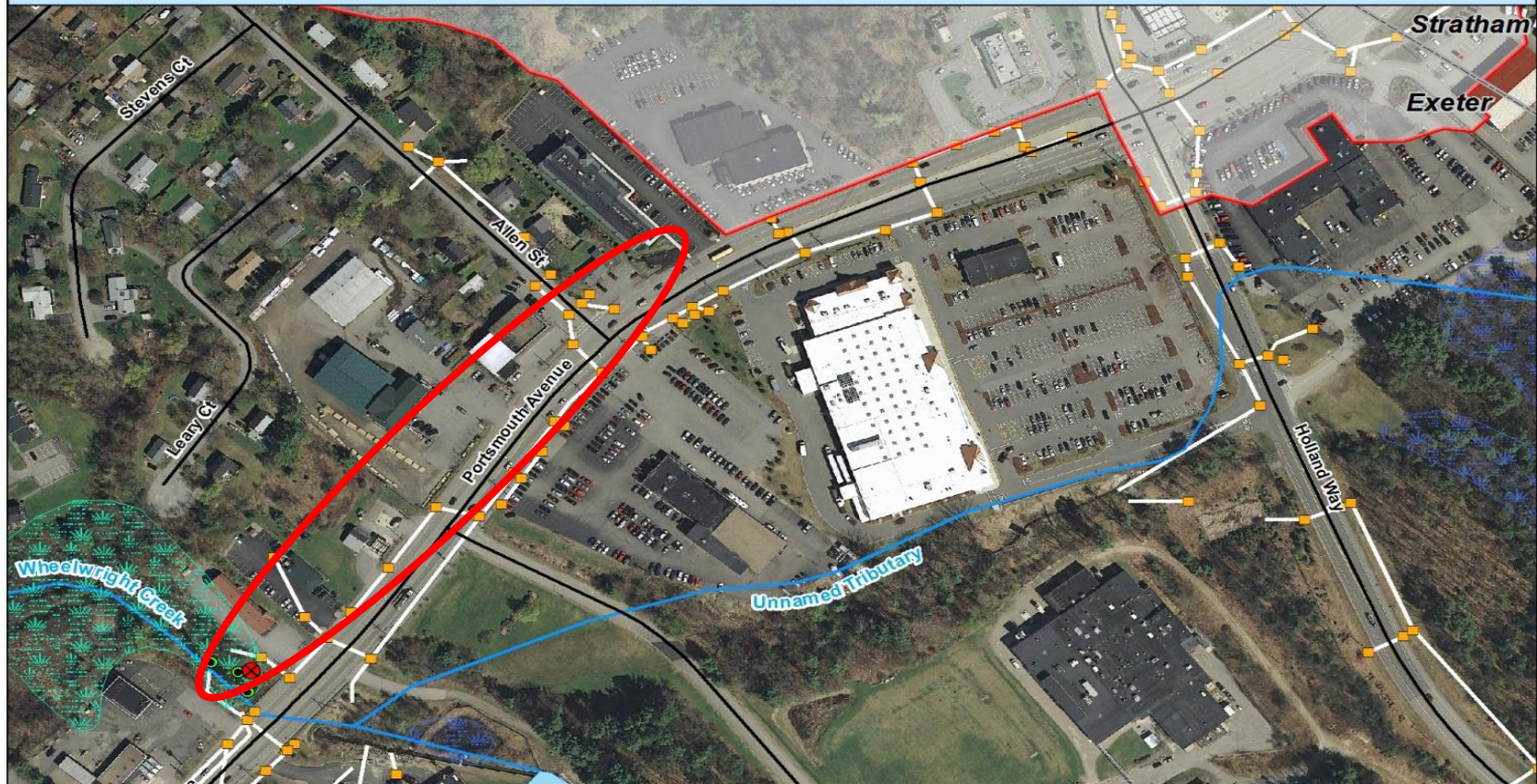
Exeter: Bracket Sampling, Smoke Test, and Canine Detection



Map the Drainage Area to Stormwater Outfall

Wheelwright Creek Watershed Delineation - Portsmouth Avenue

Portsmouth Avenue Storm Sewer Infrastructure, Outfall, and Sample Locations



Legend

- | | | | |
|-----------------------------|-------------------------|------------------|--------------------|
| Wheelwright Creek watershed | Portsmouth Ave. Outfall | Roads | Estuarine Wetland |
| Catch Basins | Sample Locations | Rivers and Ponds | Palustrine Wetland |
| Storm Sewer Pipes | Streams | Town Boundaries | |
- 0 0.125 0.25 Miles



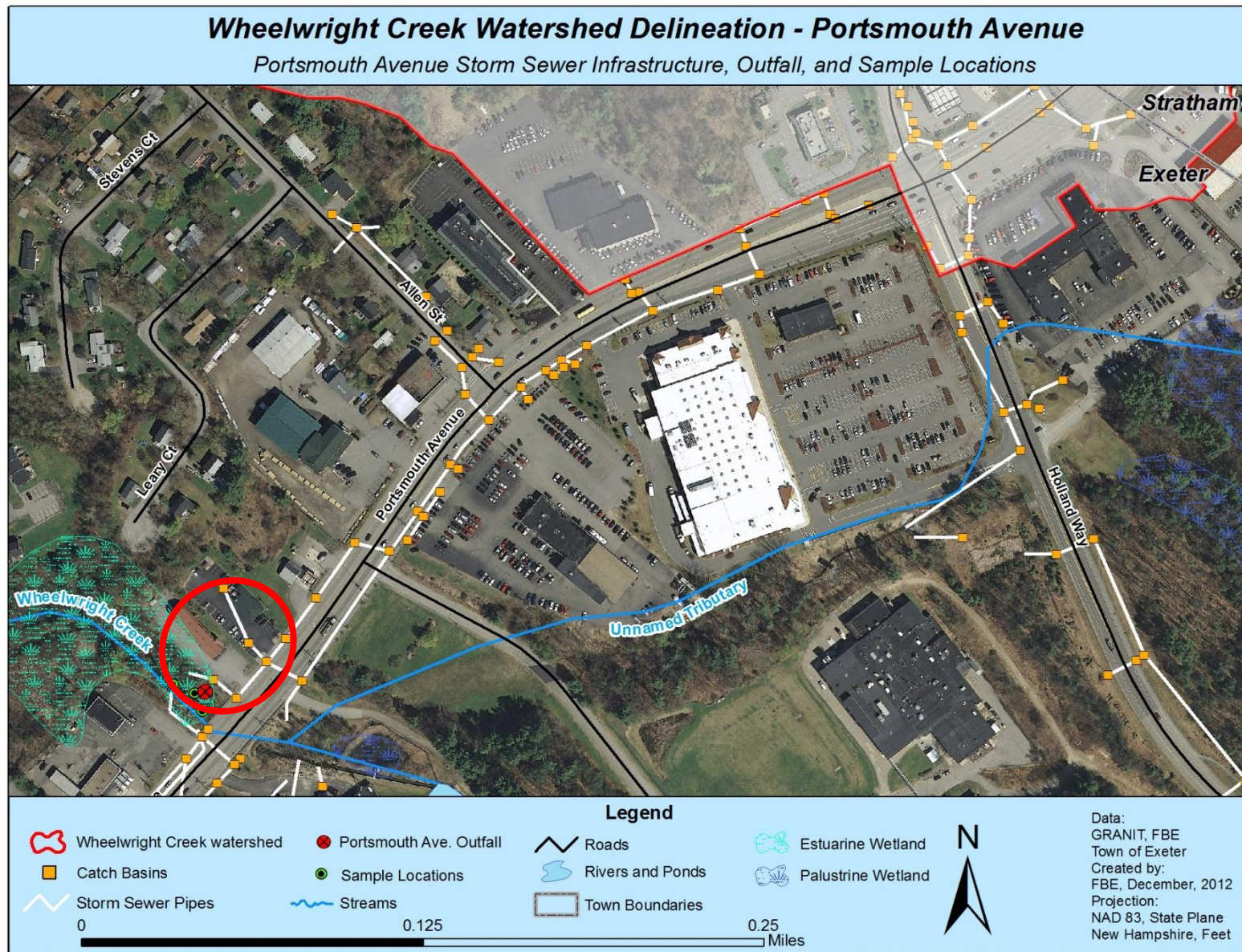
Data:
GRANIT, FBE
Town of Exeter
Created by:
FBE, December, 2012
Projection:
NAD 83, State Plane
New Hampshire, Feet

Bracket Sampling and Canine Detection

| Site | E.coli (colonies/100mL) | Logan Response | Sable Response |
|---|----------------------------|----------------|----------------|
| Storm Drain System on Portsmouth Avenue | | | |
| Wheelwright Creek | 21 | -- | Yes |
| Wheelwright Creek Outfall | >2420 | -- | Yes |
| WC1 | >2420 | Yes | -- |
| WC2 | >2420 | Yes | No |
| WC3 | * | No | No |
| WC4 | * | No | No |
| WC5 | 20 | Yes | No |
| WC6 | 23 | Yes | No |
| WC7 | * | Yes | No |
| WC8 | * | Yes | Yes |
| WC9 | * | Yes | -- |
| WC10 | * | Yes | No |
| WC11 | 0 | Yes | Yes |
| WC12 | * | Yes | Yes |
| WC13 | * | Yes | No |
| WC14 | * | Yes | No |
| WC15 | 2 | Yes | No |
| WC16 | * | No | No |
| WC17 | * | Yes | No |
| WC18 | * | Yes | Yes |
| WC19 | 10 | Yes | Yes |
| WC20 | * | No | No |
| WC21 | * | No | No |

Car Dealership

Re-focus Efforts to Lower Section of System

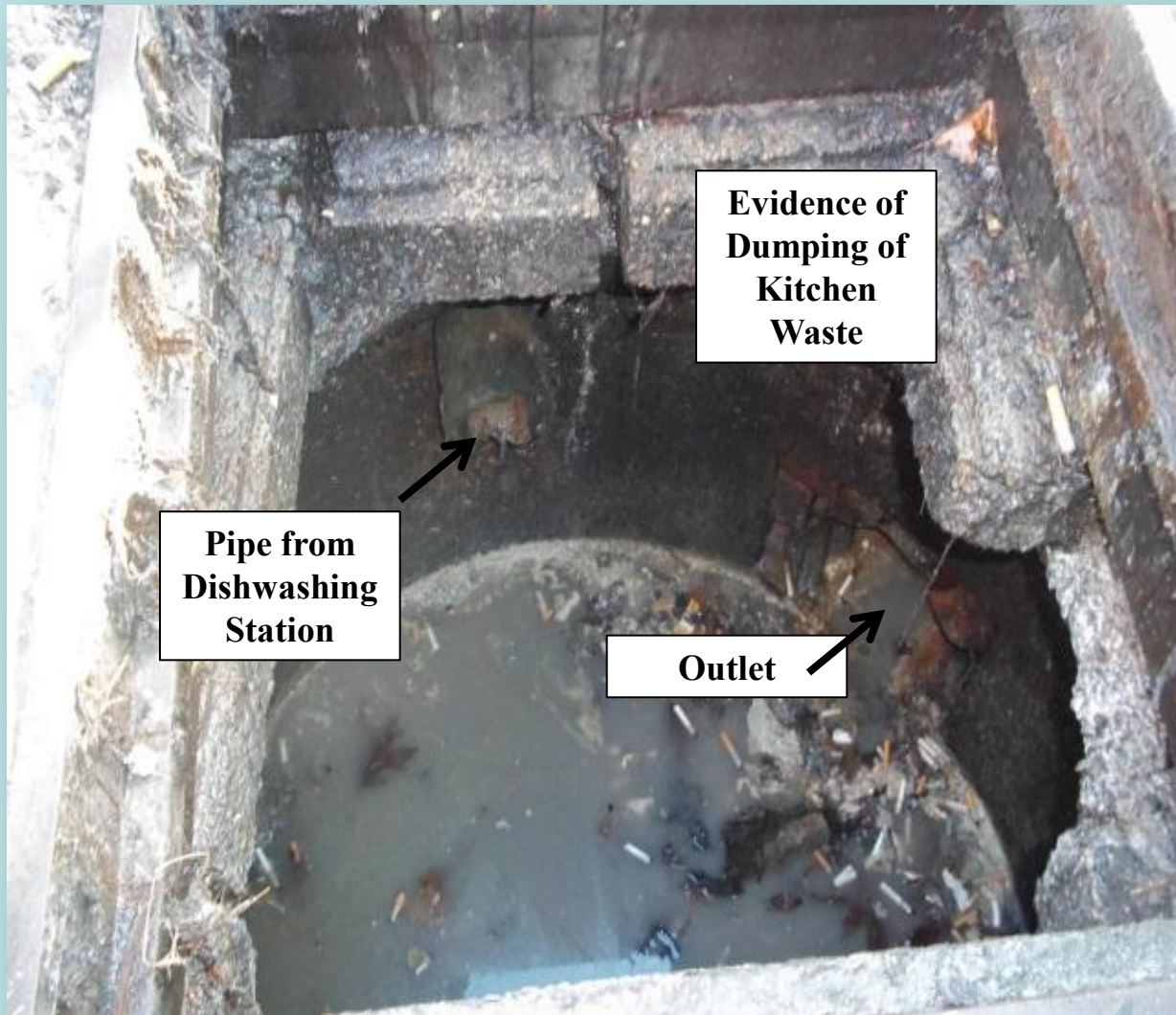


Smoke Test



Connection Found





**Evidence of
Dumping of
Kitchen
Waste**

**Pipe from
Dishwashing
Station**

Outlet

Next Steps

1. **ENFORCEMENT**: Letter to restaurant to disconnect pipe from catch basin and cease illegal dumping.
2. **EDUCATION**: Education of restaurant staff about dumping kitchen waste in catch basin.
3. **FOLLOW-UP**: Routine follow-up sampling/inspection of catch basin.

Summary

- 1. Tracking sources of pollution is an iterative process.**
- 2. Success relies on an engaged municipal staff and community.**
- 3. Follow-up is key to long-term success.**

Questions?

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