

Illicit Discharge Detection and Elimination: Merrimack and Seacoast Basin Investigations



Presented at:

Seacoast Stormwater Coalition
Meeting

June 27th 2018

Presented by:

Steve Landry & Rob Livingston
NHDES – Watershed Watershed
Assistance Section

603.271.2969

stephen.landry@des.nh.gov

603.271.3398

robert.livingston@des.nh.gov









Shade in the box if a sample was collected at this site

2003 MERRIMACK SHORELINE SURVEY SHEET
NH DES Watershed Management Bureau, Watershed Assistance Section

Date: 8/22/03 Time: 1204 Contact: Andrea Donlon (x 8862) or Steve Landry (x 2969)

Town name: 42° 47' 42.7" N, 71° 30' 40.7" W
Direct waterbody affected: Bona Field Brook Downstream waterbody affected: MERRIMACK RIVER

Collected by: A. Donlon + S. Landry Rainfall/weather past 48 hours: DRY + HOT Latitude/longitude: _____

Street and location information: 22 Cabot Road - Behind Botucci's Field measurements (temperature, conductivity, etc.): _____

Physical Observations: pipe box culvert seep swale diameter: 18"
 Outfall material: granite cast iron corrug. metal corrug. plastic concrete white PVC green PVC
 red clay asbestos other: _____

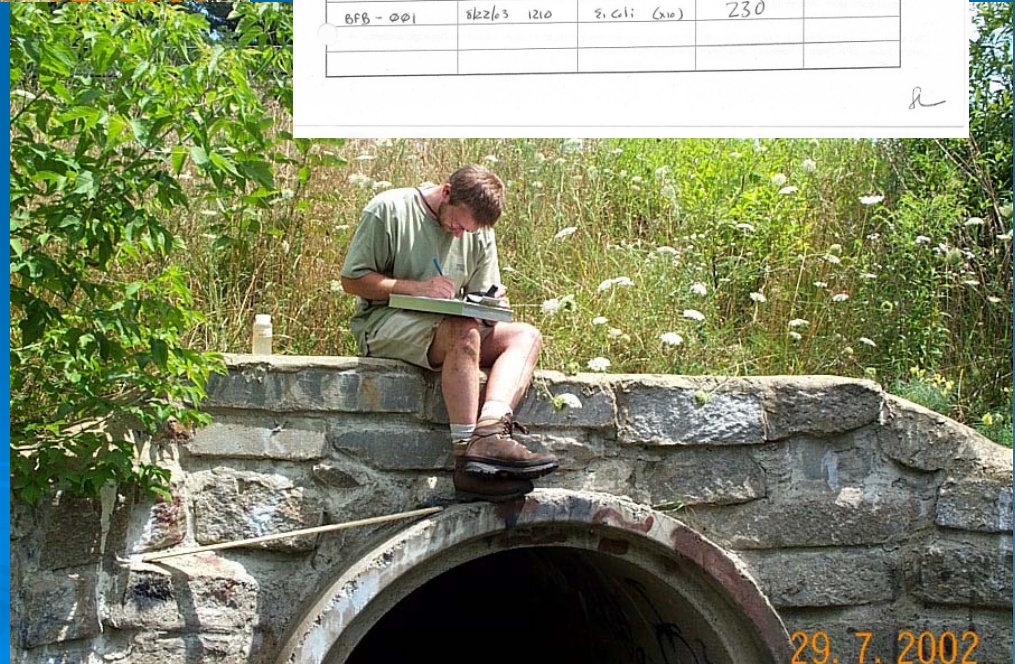
Functioning? no possibly yes Note condition: Good
 dry moist drip trickle moderate standing water
 sewage oil/gas laundry sulfide other: _____

Color: none gray brown yellow green other: _____
 Turbidity: none cloudy opaque comments: _____
 Floatables: none sewage oil sheen soap suds other: _____
 posits/stains: none black brown yellow white describe: Green-Brown (algae)
 veg. growth: normal excessive inhibited describe: _____

Site map/notes (please note land use)
 Includes a hand-drawn map of the site with coordinates, a sketch of the culvert, and notes such as "Sample collected here" and "Botucci's".

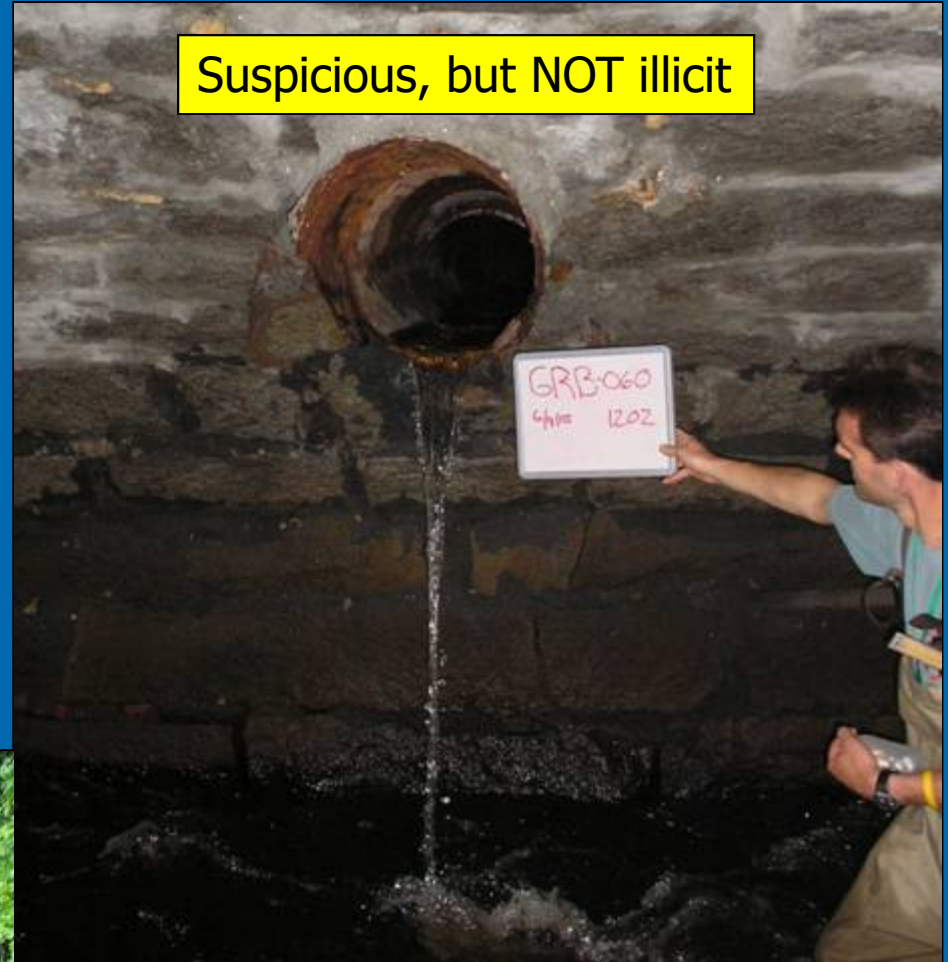
If samples collected, fill out sample info below

Sample ID #	Date/Time Sampled	Parameter	RESULTS	Other/Notes
BFB-001	8/22/03 1210	Temp: (51)	230	





Nasty, but NOT illicit



Suspicious, but NOT illicit

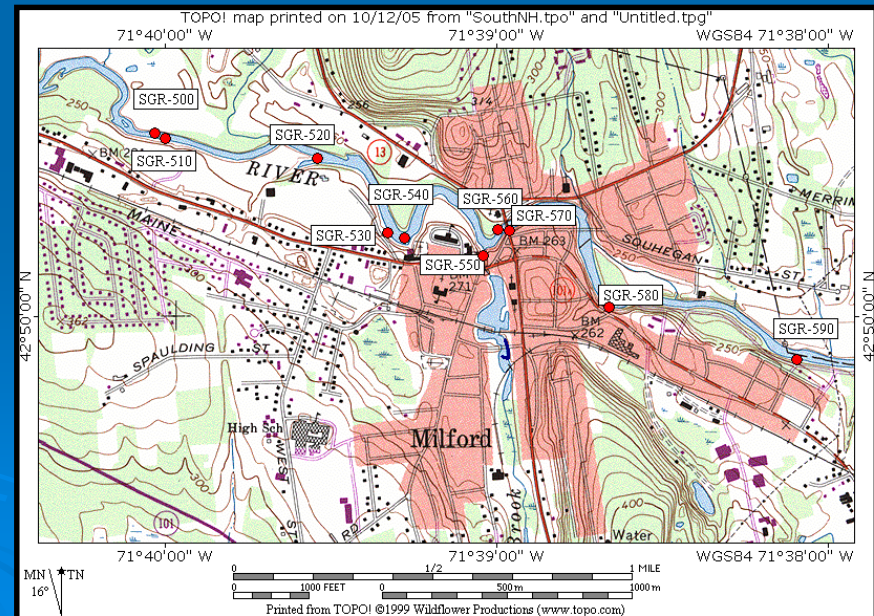


Dirty, but NOT illicit



Anatomy of an IDDE program

- Worked to develop (if not already completed) an inventory of storm sewer system (and other) outfalls and location of all waters that receive discharges from them



Anatomy of an IDDE program

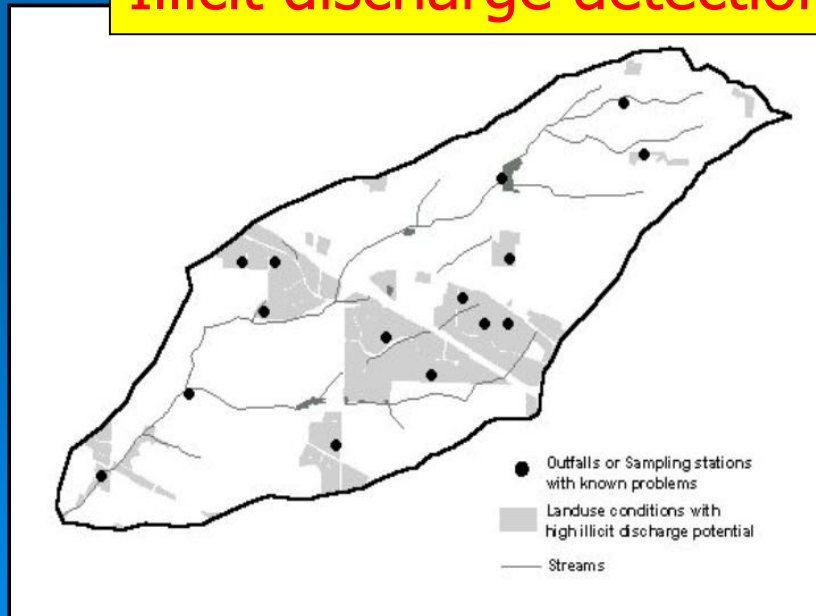
- Informed municipal officials, businesses, and public of hazards associated with illegal discharges and improper disposal of waste



Anatomy of an IDDE program

- Developed and implemented a plan to detect and address illicit discharges, including illegal dumping to MS4s

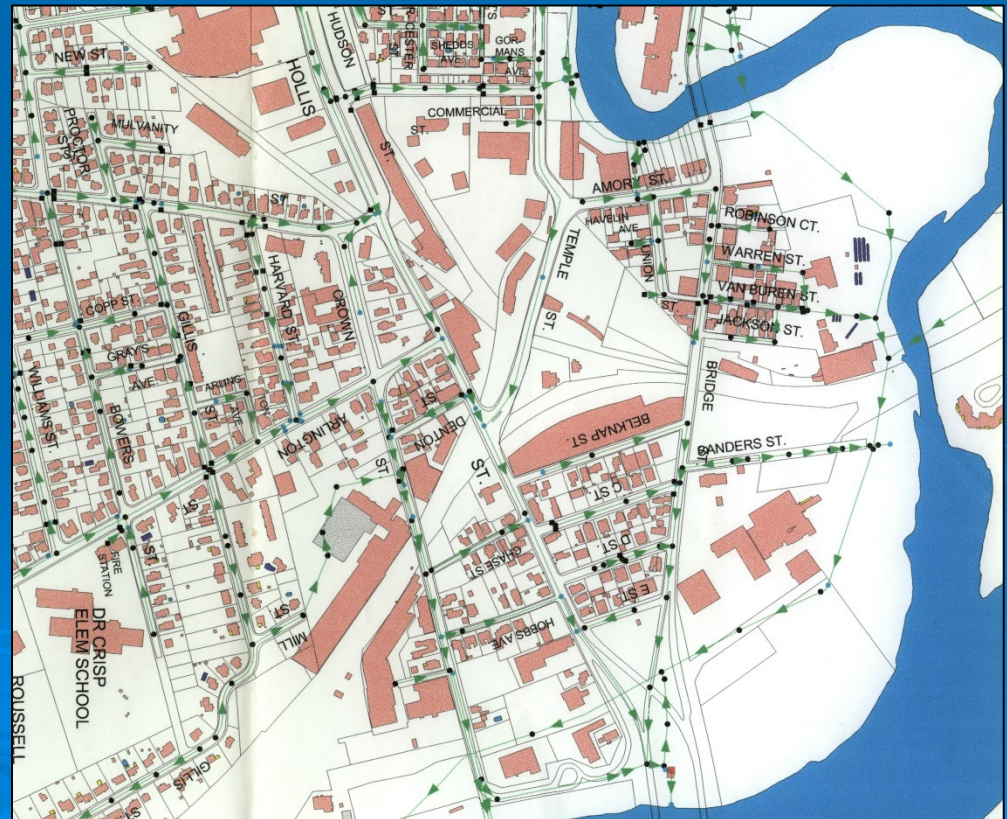
Illicit discharge detection & elimination surveys



Anatomy of an IDDE program

➤ Tools of the trade:

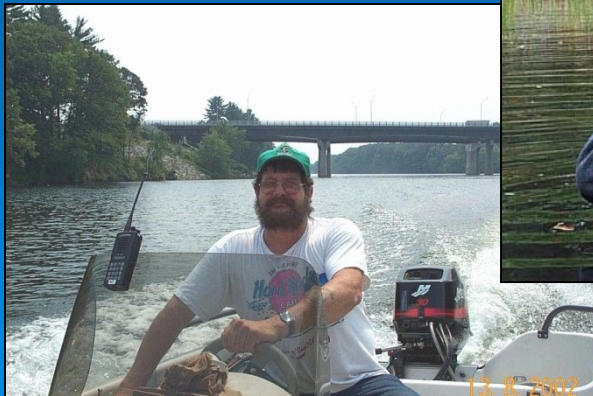
- Storm sewer and/or sanitary sewer maps
- GPS unit



Anatomy of an IDDE program

➤ Tools of the trade:

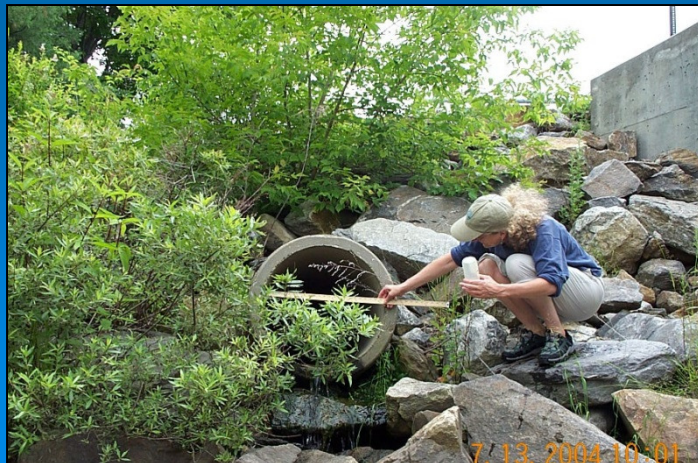
- Transportation (boats, canoes, waders, boots etc.)



Anatomy of an IDDE program

➤ Tools of the trade:

- Digital camera / phone
- Measuring stick and/or measuring tape
- Dry erase board & markers



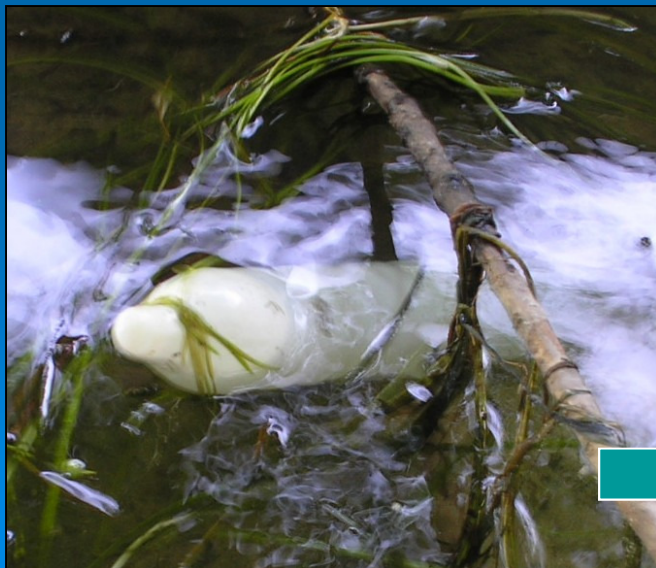
MER-1740

MER-1710

Anatomy of an IDDE program

➤ Tools of the trade:

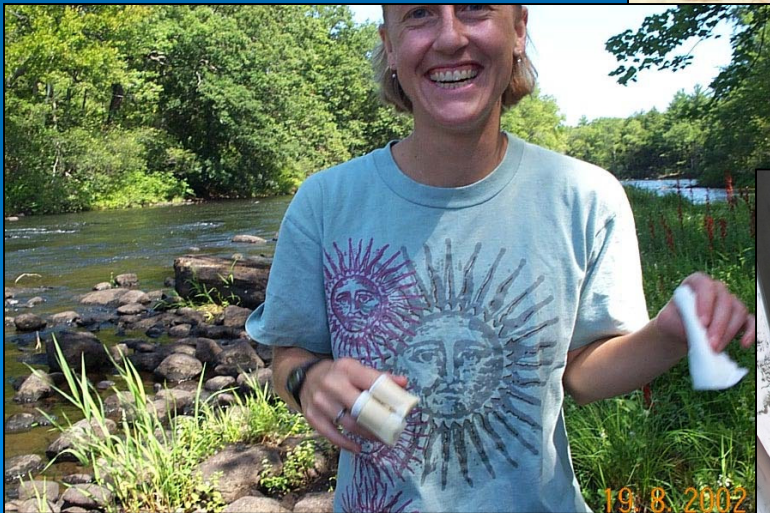
- Field sheets
- Clipboard (metal)
- Sample bottles, ice & cooler
- Gloves and hand sanitizer



Anatomy of an IDDE program

➤ Tools of the trade:

- Sampling pole
- Flashlight / mirror
- First aid kit
- Tetanus shot
- Hepatitis shot

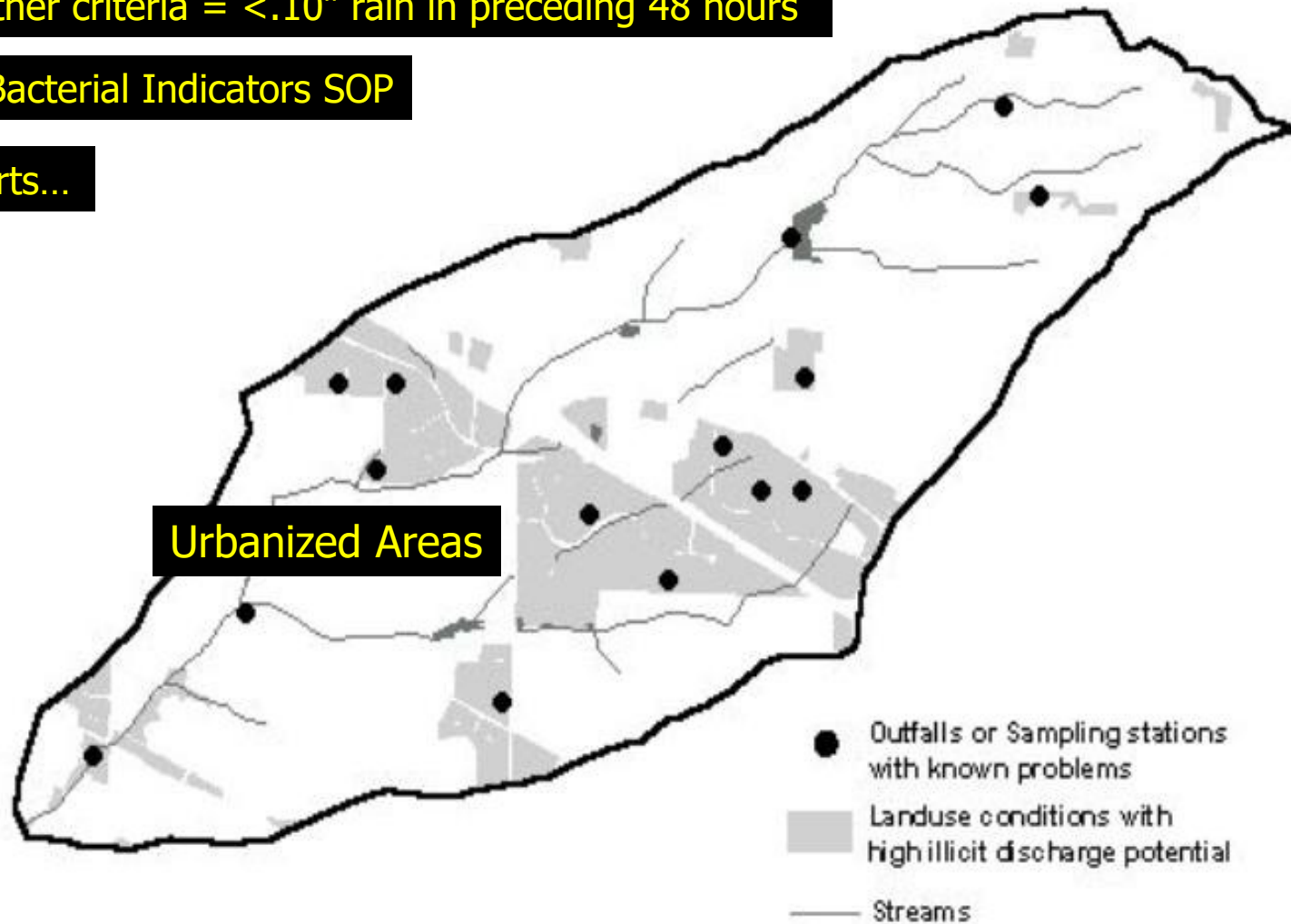


Anatomy of an IDDE program

Dry weather criteria = $<.10''$ rain in preceding 48 hours

NHDES Bacterial Indicators SOP

Tide charts...



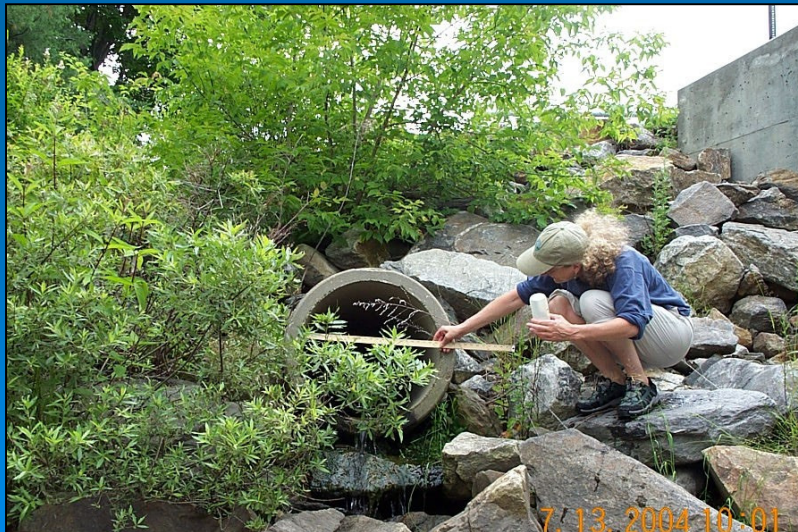
Anatomy of an IDDE program

Reconnaissance, reconnaissance, reconnaissance...



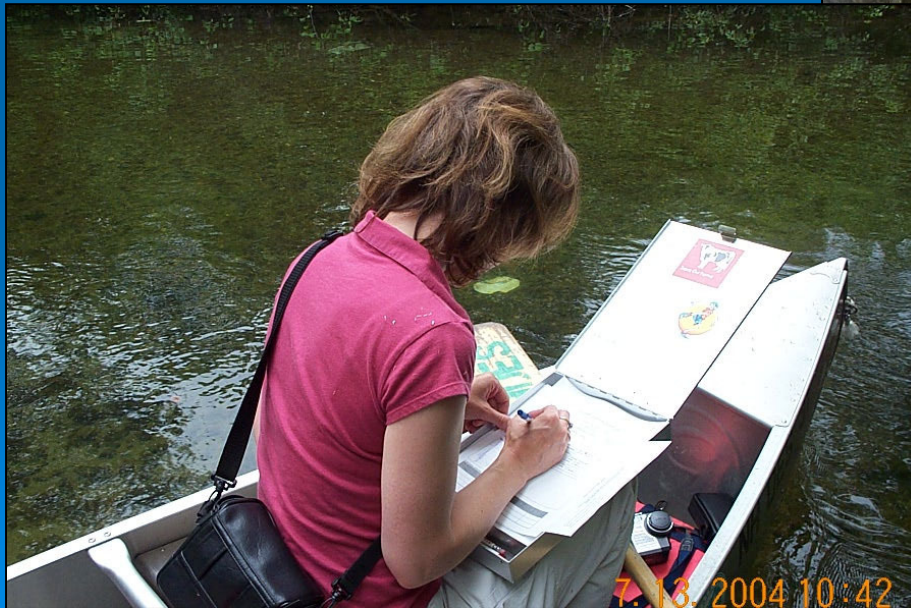
Anatomy of an IDDE program

- Identified / confirmed outfalls
- Recorded outfall conditions
 - Type
 - Diameter
 - Material
 - Functioning?
 - Flow amount
 - Odor
 - Deposits



Anatomy of an IDDE program

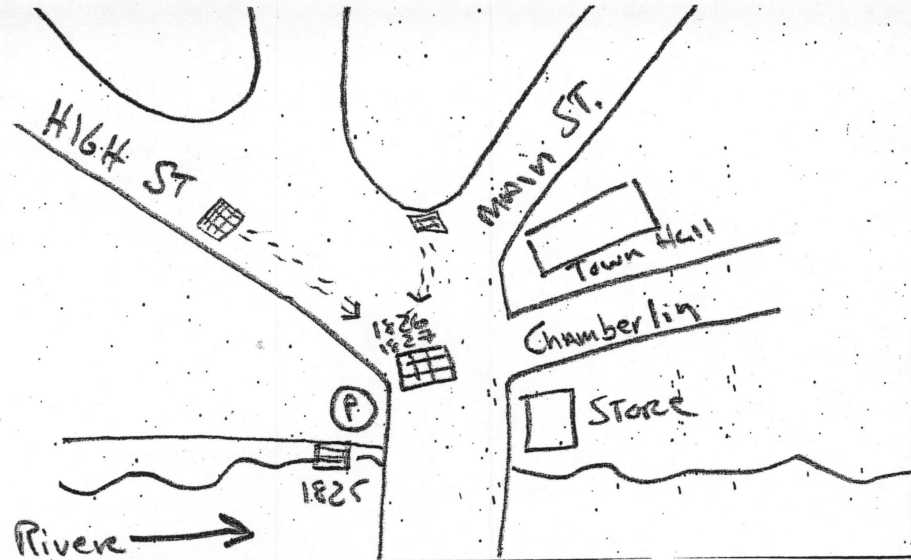
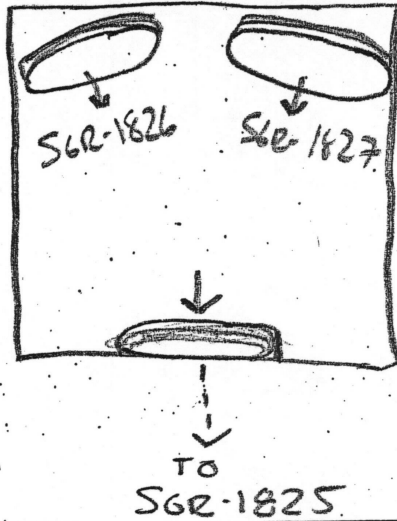
- Recorded GPS coordinates
- Assigned an outfall ID
- Site sketch
- Notes, observations, etc.



Anatomy of an IDDE program

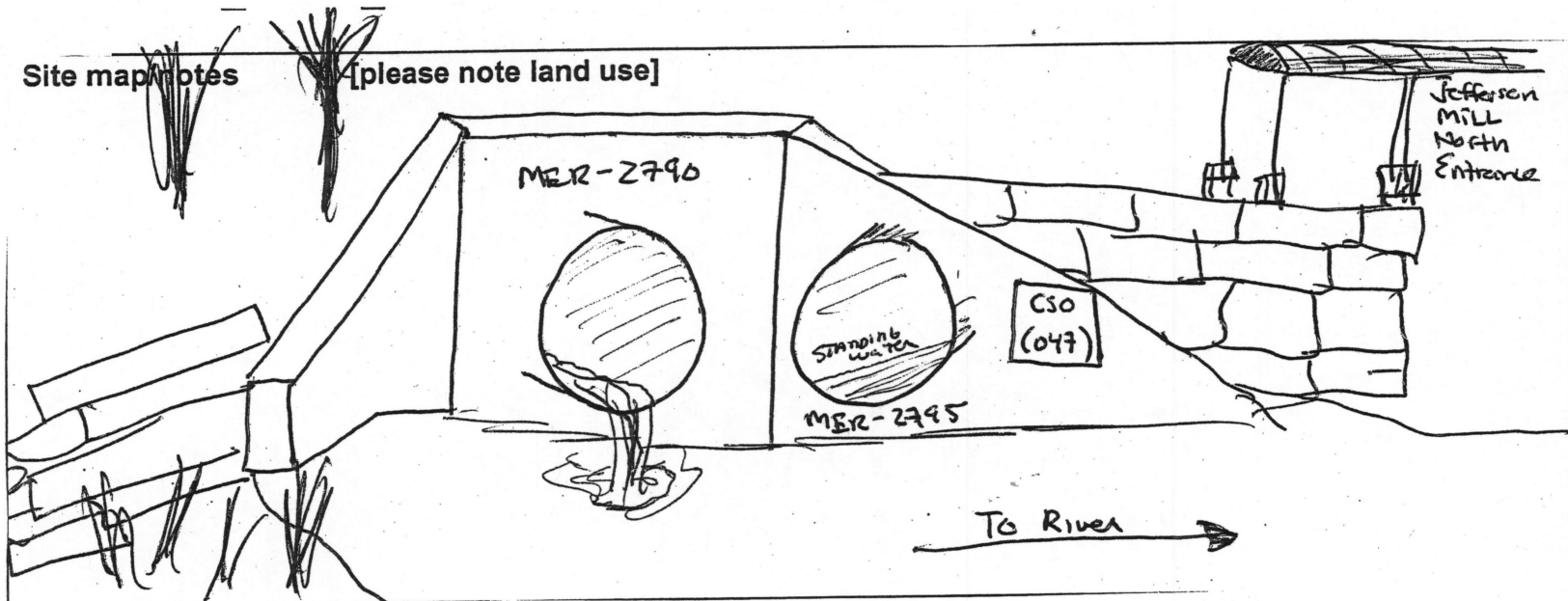
Site map/notes

[please note land use]



Site map/notes

[please note land use]



Shade in the box if a sample was collected at this site

2003 MERRIMACK SHORELINE SURVEY SHEET
NH DES Watershed Management Bureau, Watershed Assistance Section

Date	8/22/03	Time	1346	Contact:	Andrea Donlon (x 8862) or Steve Landry (x 2969)
Town name	Nashua	Direct waterbody affected	Downstream waterbody affected MERRIMACK RIVER		
Collected by	S. Landry + A. Donlon	Rainfall/weather past 48 hours	Latitude/longitude N: 42° 47' 4.4" W: 71° 30' 38.7"		
Street and location information	Cotton Rd.	Field measurements (temperature, conductivity, etc.)			

Physical Observations: **A**

Outfall type: pipe box culvert seep swale diameter: 20"

Outfall material: granite cast iron corrug. metal corrug. plastic concrete white PVC green PVC

Functioning? no possibly yes Note condition: trickle moderate standing water

Flow amount: dry moist drip laundry sulfide other:

Odor: none sewage oil/gas laundry sulfide other:

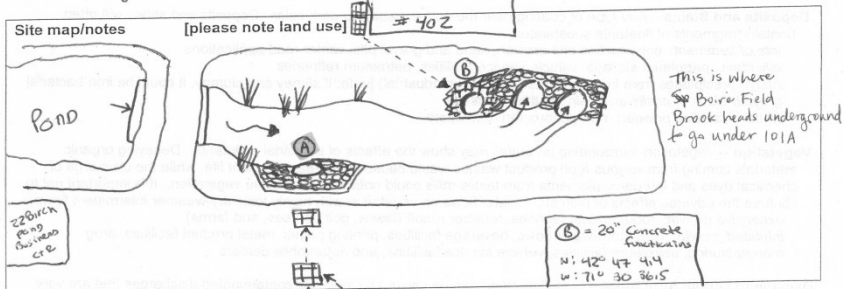
Color: none gray brown yellow green other:

Turbidity: none cloudy opaque comments:

Floatables: none sewage oil sheen soap suds other:

posits/stains: none black brown yellow white describe:

veg. growth: normal excessive inhibited describe:



If samples collected, fill out sample info below

Sample ID #	Date/Time Sampled	Parameter	RESULTS	Other/Notes
(A) BFB-095				
(B) BFB-105				

Shade in the box if a sample was collected at this site

2003 MERRIMACK SHORELINE SURVEY SHEET
NH DES Watershed Management Bureau, Watershed Assistance Section

Date	8/22/03	Time	1121	Contact:	Andrea Donlon (x 8862) or Steve Landry (x 2969)
Town name	NASHUA	Direct waterbody affected	Downstream waterbody affected MERRIMACK RIVER - Pennacook		
Collected by	A. Donlon + S. Landry	Rainfall/weather past 48 hours	Latitude/longitude		
Street and location information	Cotton Ave - 22 Cotton Rd BIRCH POND BUSINESS CR	Field measurements (temperature, conductivity, etc.)			

Physical Observations:

Outfall type: pipe box culvert seep swale diameter:

Outfall material: granite cast iron corrug. metal corrug. plastic concrete white PVC green PVC

Functioning? no possibly yes Note condition: trickle moderate standing water

Flow amount: dry moist drip laundry sulfide other:

Odor: none sewage oil/gas laundry sulfide other:

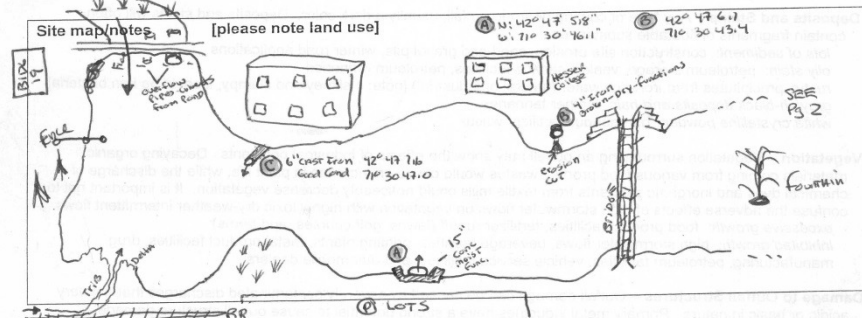
Color: none gray brown yellow green other:

Turbidity: none cloudy opaque comments:

Floatables: none sewage oil sheen soap suds other:

posits/stains: none black brown yellow white describe:

veg. growth: normal excessive inhibited describe:



If samples collected, fill out sample info below

Sample ID #	Date/Time Sampled	Parameter	RESULTS	Other/Notes
(A) BFB-015				
(B) BFB-025				
(C) BFB-035				

Shade in the box if a sample was collected at this site



Crack
Sample
ID

2002 MERRIMACK SHORELINE SURVEY SHEET
NH DES Watershed Management Bureau, Watershed Assistance Section

Date 6/16/03	Time 10:20am	Contact: Andrea Donlon (x 8862) or Steve Landry (x 2969)	
Town name NASHUA Merrimack	Direct waterbody affected Merrimack R.	Downstream waterbody affected MERRIMACK RIVER	
Collected by Steve Landry T. O'Hare S. Neff	Rainfall/weather past 48 hours sat - drizzle sun - dry today - dry	Latitude/longitude N 42° 14.4' W 71° 27' 26.7"	
Street and location information		Field measurements (temperature, conductivity, etc.) E. coli	

Physical Observations:

Outfall type: pipe box culvert seep swale diameter: _____

Outfall material: granite cast iron corrug. metal corrug. plastic concrete white PVC green PVC

red clay asbestos other: sheet piling

Functioning? no possibly yes Note condition: _____

Flow amount: dry moist drip trickle moderate standing water

Odor: none sewage oil/gas laundry sulfide other: petroleum

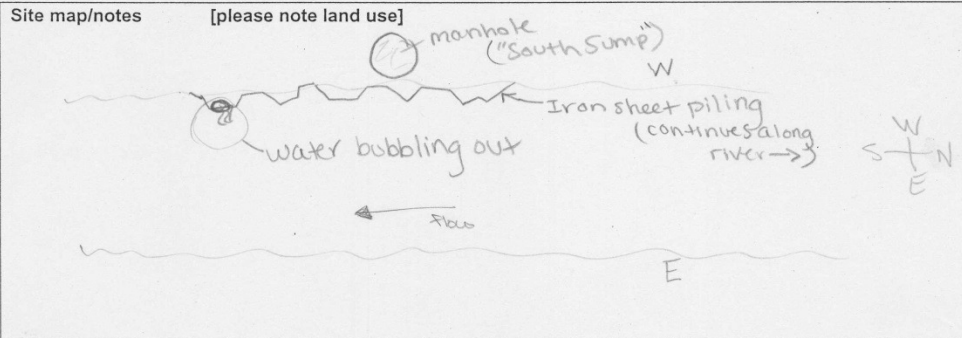
Color: none gray brown yellow green other: _____

Turbidity: none cloudy opaque comments: _____

Foatables: none sewage oil sheen soap suds other: _____

Deposits/stains: none black brown yellow white describe: petroleum sheen

Veg. growth: normal excessive inhibited describe: _____

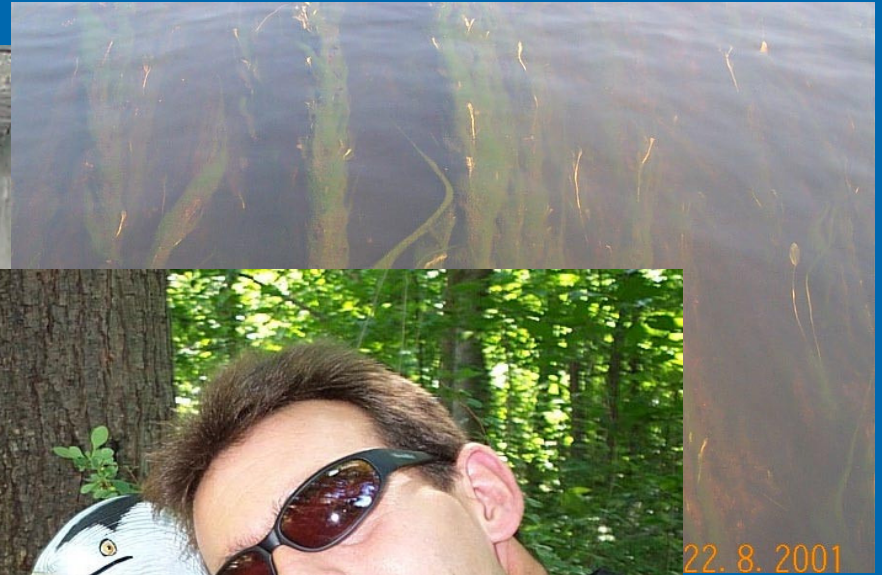


If samples collected, fill out sample info below

Sample ID #	Date/Time Sampled	Parameter	RESULTS	Other/Notes
MER-1261 300	6/16/03 10:20am	E. coli	<10 cfs/100ml	
MER-305				

Anatomy of an IDDE program

- Documented surrounding area
- Documented unusual sightings



Anatomy of an IDDE program

- Sampled if necessary



What do we mean by sampled if necessary?



What do we mean by sampled if necessary?



Toilet paper

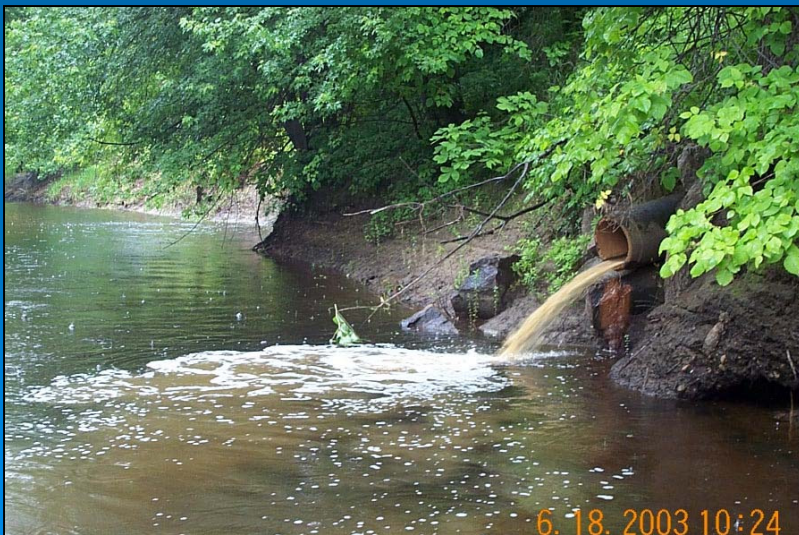
Poop nuggets

What do we mean by sampled if necessary?



Anatomy of an IDDE program

- *E.coli* bacteria used as indicator
- Determine course of action for each outfall sampled based upon lab results
- Was a revisit necessary?
- Confirmation monitoring and source tracking



Tracking illicit sources

- **Tools of the trade:**
 - Drainage system maps
 - Sampling pole
 - Dye tablets
 - Pick & shovel
 - Safety vests
 - Traffic cones




```
ERROR: undefined
OFFENDING COMMAND: f'~
STACK:
```