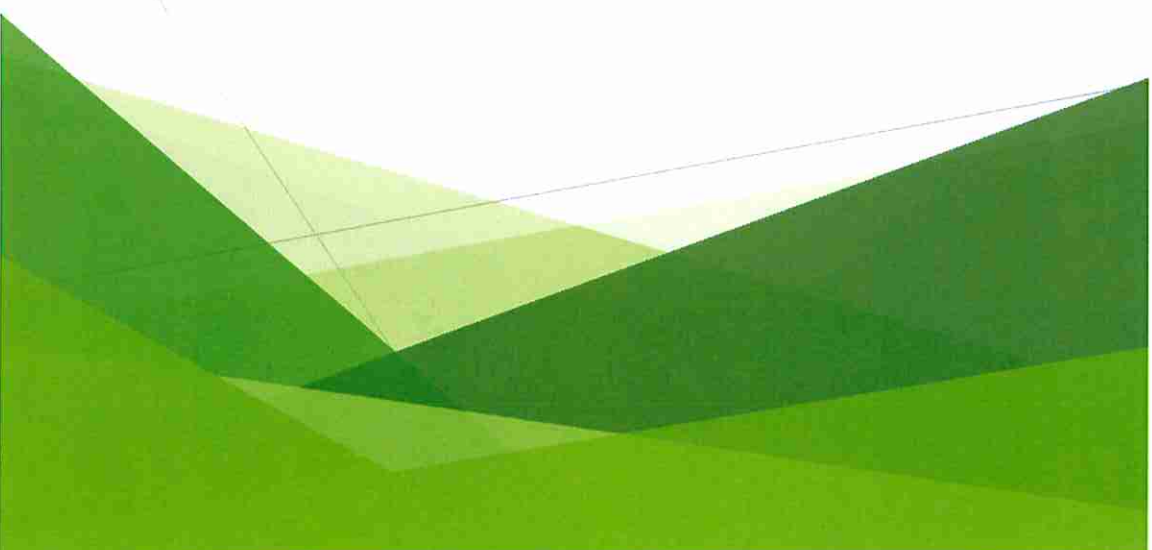




NPDES MS4 & IDDE Training for Boxford DPW and Staff

Chris Olbrot, PE - DPW Superintendent/Town Engineer

*September 26, 2019
Town Hall*





Topics to Discuss Today

- ❖ What is stormwater and why does it matter?
- ❖ What is NPDES, MS4, & IDDE?
- ❖ Tips on managing IDDE
- ❖ Good Housekeeping and Best Management Practices at Town Facilities and work sites



What is Stormwater & Why Does it Matter?

- ❖ Stormwater is the runoff generated from rain or snow/sleet melt that eventually drains into the Town's system or MS4 and ultimately ends up as a point source or non-point source discharge.
- ❖ The importance of managing stormwater is that it is the leading cause of pollution to our rivers, lakes and streams today. As runoff carries with it any pollutants such as oil, fertilizers, bacteria, trash, etc. it all eventually sets into those water bodies.

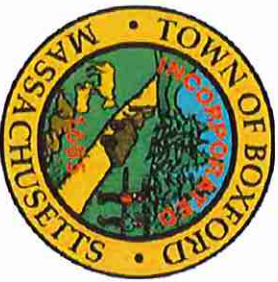




So What?! Why am I here?

- ❖ Boxford's drainage system is regulated by the Environmental Protection Agency (EPA) under the NPDES- Phase II MS4 Permit Program of the Clean Water Act
- ❖ Part of that permit requires Annual employee training to maintain compliance with the MS4 permit





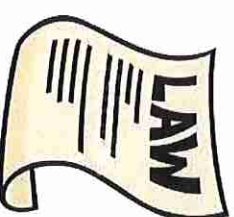
What is NPDES and MS4?

❖ National Pollutant Discharge Elimination System

- ❖ Established by Clean Water Act of 1972 that prohibits discharging "pollutants" through a "point source" into water of the U.S. unless you have a NPDES permit to do so.

❖ A Municipal Separate Stem Sewer System

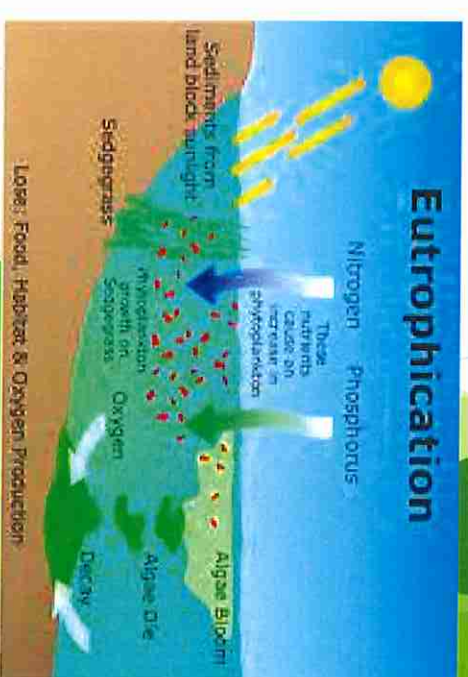
- ❖ Roads with Drainage
- ❖ Town streets
- ❖ CBs
- ❖ Curbs
- ❖ Gutters
- ❖ Ditches or Swales





Why do I care about MS4?

- ❖ Its OUR job to manage our MS4 system
- ❖ Pollution to our Natural Resources
 - ❖ Create toxic drinking water
 - ❖ Ruins recreational uses of waterbodies
 - ❖ Growth of algae and bacteria
 - ❖ Eutrophication
 - ❖ Kills fish and other aquatic life to disrupt ecosystems





MS4 Requirements

- ❖ Boxford must manage stormwater to reduce the discharge of pollutants from our MS4 through six minimum control measures:
 - ❖ Public Education & Outreach
 - ❖ Public Involvement and Participation
 - ❖ **Illicit Discharge Detection and Elimination**
 - ❖ Construction Site Stormwater Runoff Control
 - ❖ Post Construction Stormwater Management
 - ❖ Municipal Pollution Prevention and Good Housekeeping



What is an Illicit Discharge?

Any Discharge, either direct or indirect, to a MS4 system that is not comprised of stormwater:

Indirect Discharges:

- Spills and dumping
- Infiltration of Septic Gray Water
- Construction/Post Construction runoff issues
- Litter
- Grass clippings



Direct Discharges:

- Non-stormwater conduits/pipes connected to the MS4
- Slop sink tied into sump pit
- Floor drains
- Septic system line daylighting





But what about all those other things? Answer: Exemptions!

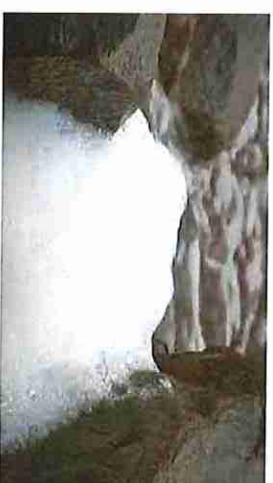
- ❖ Irrigation
- ❖ Diverted streams
- ❖ Rising groundwater
- ❖ Pumped groundwater
- ❖ Foundation Drains
- ❖ Air conditioning condensation
- ❖ Residential Car Washing
- ❖ Street wash/sweeping water
- ❖ & More





Common Illicit Discharges

- ❖ Industrial Waste
- ❖ Sewage/Septic Systems
- ❖ Hazardous Waste
- ❖ Automotive Fluids
- ❖ Paint /Mineral Spirits/Thinner
- ❖ Soap and Surfactants
- ❖ Grease and Oils





How to Identify a possible Illicit Discharge?

- ❖ Foam or suds (Surfactants)
- ❖ Oil Sheen
- ❖ Highly discolored water
- ❖ Odors
- ❖ Anything that looks completely out of place should be investigated





What do we do when we find one?

- ❖ Assess safety!
- ❖ Call Dave, Eric, or me. Don't do anything on your own.
- ❖ We will collectively decide on a course of action.
- ❖ Always document for future reference. (i.e. notes and pics)



Stormwater Mapping

- ❖ GIS mapping of the town's drainage system is part of the IDDE program and NPDES permit
- ❖ A portion of the town's system has been mapped; but it still needs to be updated
- ❖ Training in early October on Mobile APP that will help document and help with compliance



Good Housekeeping Techniques

-
- [SHI Sack - Type B]**
- Top Panel
 - Side Panel
 - Bottom Panel
 - Front Panel
 - Back Panel
 - Top Flap
 - Side Flap
 - Bottom Flap
 - Front Flap
 - Back Flap
 - Top Seam
 - Side Seam
 - Bottom Seam
 - Front Seam
 - Back Seam
 - Top Edge
 - Side Edge
 - Bottom Edge
 - Front Edge
 - Back Edge
 - Top Corner
 - Side Corner
 - Bottom Corner
 - Front Corner
 - Back Corner
 - Top Reinforcement
 - Side Reinforcement
 - Bottom Reinforcement
 - Front Reinforcement
 - Back Reinforcement
 - Top Strap
 - Side Strap
 - Bottom Strap
 - Front Strap
 - Back Strap
 - Top Handle
 - Side Handle
 - Bottom Handle
 - Front Handle
 - Back Handle
 - Top Closure
 - Side Closure
 - Bottom Closure
 - Front Closure
 - Back Closure
 - Top Label
 - Side Label
 - Bottom Label
 - Front Label
 - Back Label
 - Top Patch
 - Side Patch
 - Bottom Patch
 - Front Patch
 - Back Patch
 - Top Seal
 - Side Seal
 - Bottom Seal
 - Front Seal
 - Back Seal
 - Top Gasket
 - Side Gasket
 - Bottom Gasket
 - Front Gasket
 - Back Gasket
 - Top Fastener
 - Side Fastener
 - Bottom Fastener
 - Front Fastener
 - Back Fastener
 - Top Rivet
 - Side Rivet
 - Bottom Rivet
 - Front Rivet
 - Back Rivet
 - Top Bolt
 - Side Bolt
 - Bottom Bolt
 - Front Bolt
 - Back Bolt
 - Top Nut
 - Side Nut
 - Bottom Nut
 - Front Nut
 - Back Nut
 - Top Washer
 - Side Washer
 - Bottom Washer
 - Front Washer
 - Back Washer
 - Top Bracket
 - Side Bracket
 - Bottom Bracket
 - Front Bracket
 - Back Bracket
 - Top Mounting
 - Side Mounting
 - Bottom Mounting
 - Front Mounting
 - Back Mounting
 - Top Support
 - Side Support
 - Bottom Support
 - Front Support
 - Back Support
 - Top Guide
 - Side Guide
 - Bottom Guide
 - Front Guide
 - Back Guide
 - Top Roller
 - Side Roller
 - Bottom Roller
 - Front Roller
 - Back Roller
 - Top Wheel
 - Side Wheel
 - Bottom Wheel
 - Front Wheel
 - Back Wheel
 - Top Tire
 - Side Tire
 - Bottom Tire
 - Front Tire
 - Back Tire
 - Top Rim
 - Side Rim
 - Bottom Rim
 - Front Rim
 - Back Rim
 - Top Hub
 - Side Hub
 - Bottom Hub
 - Front Hub
 - Back Hub
 - Top Axle
 - Side Axle
 - Bottom Axle
 - Front Axle
 - Back Axle
 - Top Bearing
 - Side Bearing
 - Bottom Bearing
 - Front Bearing
 - Back Bearing
 - Top Grease
 - Side Grease
 - Bottom Grease
 - Front Grease
 - Back Grease
 - Top Lubricant
 - Side Lubricant
 - Bottom Lubricant
 - Front Lubricant
 - Back Lubricant
 - Top Oil
 - Side Oil
 - Bottom Oil
 - Front Oil
 - Back Oil
 - Top Fuel
 - Side Fuel
 - Bottom Fuel
 - Front Fuel
 - Back Fuel
 - Top Air
 - Side Air
 - Bottom Air
 - Front Air
 - Back Air
 - Top Water
 - Side Water
 - Bottom Water
 - Front Water
 - Back Water
 - Top Gas
 - Side Gas
 - Bottom Gas
 - Front Gas
 - Back Gas
 - Top Dust
 - Side Dust
 - Bottom Dust
 - Front Dust
 - Back Dust
 - Top Dirt
 - Side Dirt
 - Bottom Dirt
 - Front Dirt
 - Back Dirt
 - Top Debris
 - Side Debris
 - Bottom Debris
 - Front Debris
 - Back Debris
 - Top Trash
 - Side Trash
 - Bottom Trash
 - Front Trash
 - Back Trash
 - Top Waste
 - Side Waste
 - Bottom Waste
 - Front Waste
 - Back Waste
 - Top Pollution
 - Side Pollution
 - Bottom Pollution
 - Front Pollution
 - Back Pollution
 - Top Contaminant
 - Side Contaminant
 - Bottom Contaminant
 - Front Contaminant
 - Back Contaminant
 - Top Hazardous Material
 - Side Hazardous Material
 - Bottom Hazardous Material
 - Front Hazardous Material
 - Back Hazardous Material
 - Top Explosive
 - Side Explosive
 - Bottom Explosive
 - Front Explosive
 - Back Explosive
 - Top Flammable
 - Side Flammable
 - Bottom Flammable
 - Front Flammable
 - Back Flammable
 - Top Corrosive
 - Side Corrosive
 - Bottom Corrosive
 - Front Corrosive
 - Back Corrosive
 - Top Toxic
 - Side Toxic
 - Bottom Toxic
 - Front Toxic
 - Back Toxic
 - Top Radioactive
 - Side Radioactive
 - Bottom Radioactive
 - Front Radioactive
 - Back Radioactive
 - Top Biohazard
 - Side Biohazard
 - Bottom Biohazard
 - Front Biohazard
 - Back Biohazard
 - Top Infectious Agent
 - Side Infectious Agent
 - Bottom Infectious Agent
 - Front Infectious Agent
 - Back Infectious Agent
 - Top Pathogen
 - Side Pathogen
 - Bottom Pathogen
 - Front Pathogen
 - Back Pathogen
 - Top Virus
 - Side Virus
 - Bottom Virus
 - Front Virus
 - Back Virus
 - Top Bacteria
 - Side Bacteria
 - Bottom Bacteria
 - Front Bacteria
 - Back Bacteria
 - Top Fungus
 - Side Fungus
 - Bottom Fungus
 - Front Fungus
 - Back Fungus
 - Top Parasite
 - Side Parasite
 - Bottom Parasite
 - Front Parasite
 - Back Parasite
 - Top Allergen
 - Side Allergen
 - Bottom Allergen
 - Front Allergen
 - Back Allergen
 - Top Irritant
 - Side Irritant
 - Bottom Irritant
 - Front Irritant
 - Back Irritant
 - Top Sensitizer
 - Side Sensitizer
 - Bottom Sensitizer
 - Front Sensitizer
 - Back Sensitizer
 - Top Carcinogen
 - Side Carcinogen
 - Bottom Carcinogen
 - Front Carcinogen
 - Back Carcinogen
 - Top Mutagen
 - Side Mutagen
 - Bottom Mutagen
 - Front Mutagen
 - Back Mutagen
 - Top Teratogen
 - Side Teratogen
 - Bottom Teratogen
 - Front Teratogen
 - Back Teratogen
 - Top Reproductive Toxin
 - Side Reproductive Toxin
 - Bottom Reproductive Toxin
 - Front Reproductive Toxin
 - Back Reproductive Toxin
 - Top Endocrine Disruptor
 - Side Endocrine Disruptor
 - Bottom Endocrine Disruptor
 - Front Endocrine Disruptor
 - Back Endocrine Disruptor
 - Top Neurotoxin
 - Side Neurotoxin
 - Bottom Neurotoxin
 - Front Neurotoxin
 - Back Neurotoxin
 - Top Developmental Toxicant
 - Side Developmental Toxicant
 - Bottom Developmental Toxicant
 - Front Developmental Toxicant
 - Back Developmental Toxicant
 - Top Immunotoxicant
 - Side Immunotoxicant
 - Bottom Immunotoxicant
 - Front Immunotoxicant
 - Back Immunotoxicant
 - Top Hematopoietic Agent
 - Side Hematopoietic Agent
 - Bottom Hematopoietic Agent
 - Front Hematopoietic Agent
 - Back Hematopoietic Agent
 - Top Bone Marrow Transplant
 - Side Bone Marrow Transplant
 - Bottom Bone Marrow Transplant
 - Front Bone Marrow Transplant
 - Back Bone Marrow Transplant
 - Top Organ Transplant
 - Side Organ Transplant
 - Bottom Organ Transplant
 - Front Organ Transplant
 - Back Organ Transplant
 - Top Cell Transplant
 - Side Cell Transplant
 - Bottom Cell Transplant
 - Front Cell Transplant
 - Back Cell Transplant
 - Top Tissue Transplant
 - Side Tissue Transplant
 - Bottom Tissue Transplant
 - Front Tissue Transplant
 - Back Tissue Transplant
 - Top Blood Transfusion
 - Side Blood Transfusion
 - Bottom Blood Transfusion
 - Front Blood Transfusion
 - Back Blood Transfusion
 - Top Plasma Transfusion
 - Side Plasma Transfusion
 - Bottom Plasma Transfusion
 - Front Plasma Transfusion
 - Back Plasma Transfusion
 - Top Platelet Transfusion
 - Side Platelet Transfusion
 - Bottom Platelet Transfusion
 - Front Platelet Transfusion
 - Back Platelet Transfusion
 - Top Red Blood Cell Transfusion
 - Side Red Blood Cell Transfusion
 - Bottom Red Blood Cell Transfusion
 - Front Red Blood Cell Transfusion
 - Back Red Blood Cell Transfusion
 - Top White Blood Cell Transfusion
 - Side White Blood Cell Transfusion
 - Bottom White Blood Cell Transfusion
 - Front White Blood Cell Transfusion
 - Back White Blood Cell Transfusion
 - Top Lymphocyte Transfusion
 - Side Lymphocyte Transfusion
 - Bottom Lymphocyte Transfusion
 - Front Lymphocyte Transfusion
 - Back Lymphocyte Transfusion
 - Top Monocyte Transfusion
 - Side Monocyte Transfusion
 - Bottom Monocyte Transfusion
 - Front Monocyte Transfusion
 - Back Monocyte Transfusion
 - Top Neutrophil Transfusion
 - Side Neutrophil Transfusion
 - Bottom Neutrophil Transfusion
 - Front Neutrophil Transfusion
 - Back Neutrophil Transfusion
 - Top Eosinophil Transfusion
 - Side Eosinophil Transfusion
 - Bottom Eosinophil Transfusion
 - Front Eosinophil Transfusion
 - Back Eosinophil Transfusion
 - Top Basophil Transfusion
 - Side Basophil Transfusion
 - Bottom Basophil Transfusion
 - Front Basophil Transfusion
 - Back Basophil Transfusion
 - Top Mast Cell Transfusion
 - Side Mast Cell Transfusion
 - Bottom Mast Cell Transfusion
 - Front Mast Cell Transfusion
 - Back Mast Cell Transfusion
 - Top Stem Cell Transfusion
 - Side Stem Cell Transfusion
 - Bottom Stem Cell Transfusion
 - Front Stem Cell Transfusion
 - Back Stem Cell Transfusion
 - Top Progenitor Cell Transfusion
 - Side Progenitor Cell Transfusion
 - Bottom Progenitor Cell Transfusion
 - Front Progenitor Cell Transfusion
 - Back Progenitor Cell Transfusion
 - Top Immature Cell Transfusion
 - Side Immature Cell Transfusion
 - Bottom Immature Cell Transfusion
 - Front Immature Cell Transfusion
 - Back Immature Cell Transfusion
 - Top Undifferentiated Cell Transfusion
 - Side Undifferentiated Cell Transfusion





Proper Erosion Control BMPs

CONSTRUCTION EXIT

A stone pad located where traffic leaves a construction site to eliminate the transport of soil to public streets.



Excellent stone coverage. No mud tracking onto roadway.



Fair stone coverage. Some mud tracking onto roadway.



Very poor stone coverage. Significant mud tracking and flowing onto roadway.

SEDIMENT BARRIER

Silt fence or straw bales used to slow runoff velocity. The barriers cause sediment deposition of this structure, and filters sediment from runoff.



Excellent silt fence installation.



Silt fence adequate, but NEVER stick silt fence.



Complete barrier failure. Significant quantities of sediment passing the barrier.

ROCK FILTER DAM

Stone filter dam installed across small streams to reduce water velocity and filter sediment at the structure.



Excellent application with two filter dams. Look for signs of structure working such as sediment trail.



Good application, but bough inadequate.



Poor application. Virtually unworkable without significant disturbance. Removal of features at completion very difficult.



Any Questions?

