MS4 STORMWATER AND GOOD HOUSEKEEPING TRAINING

COGF Environmental Division

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FEDERAL CLEAN WATER ACT

Goal: Clean Rivers & Streams

"Fishable"

"Swimmable"

"Drinkable"

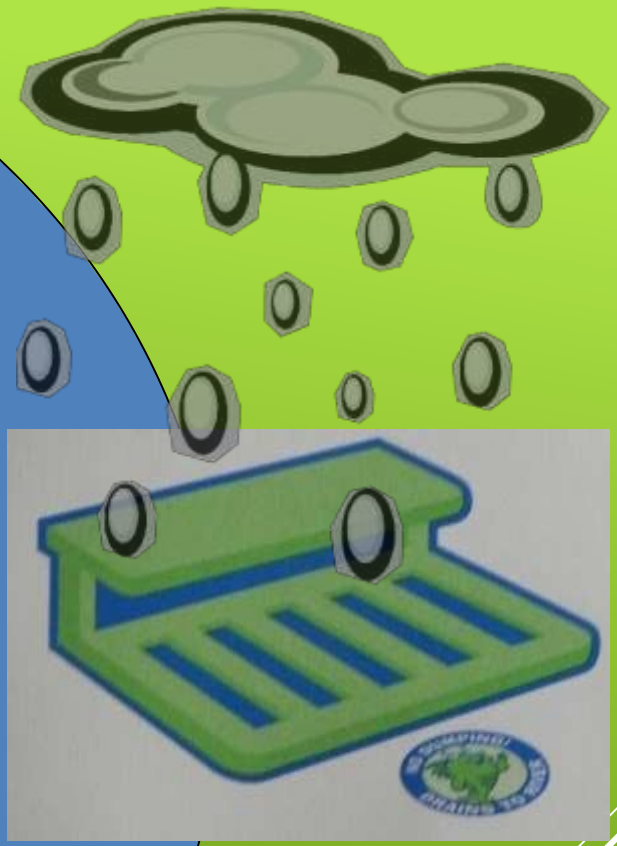
By "reducing the discharge of pollutants to the maximum extent practicable (MEP)".

TOPICS OF DISCUSSION

- Urban Runoff & Common Pollutants
  - Control measures to reduce pollutants
- Good Housekeeping Practices
- Stormwater Facility Operation & Maintenance

Urban Runoff Pollution

A major source of water pollution in our Nation's waterways today



ACTIVITIES CONTRIBUTING TO "URBAN" STORMWATER RUNOFF POLLUTION:

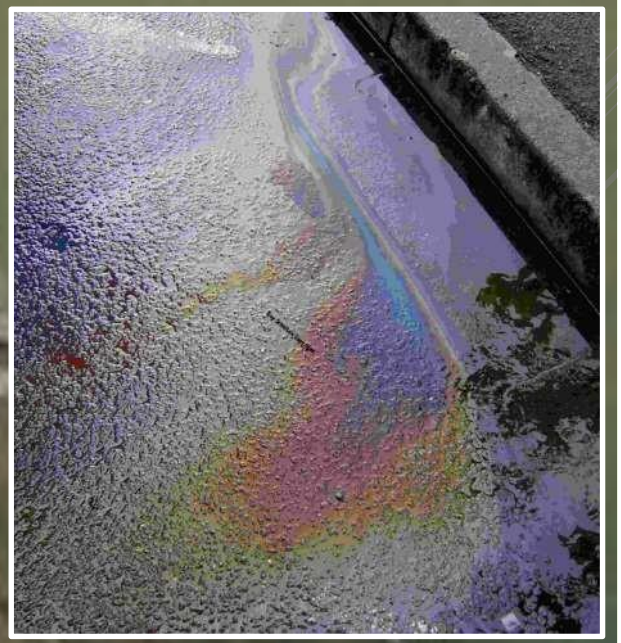
- Road Maintenance
- Vehicle Fleet Management
- Fueling & Vehicle Repair
- Loading, Transfer & Storage
- Waste Management
- Painting & Coating
- Cleaning & Degreasing
- Facility, Park, Landscape Maintenance

COMMON STORMWATER POLLUTANTS

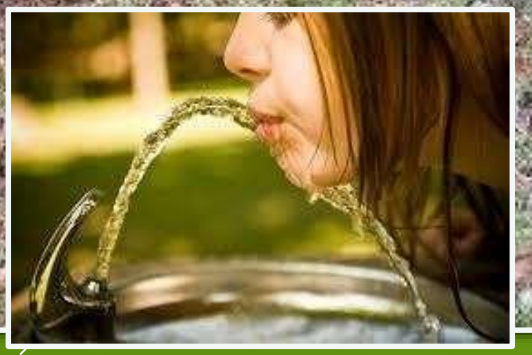
Oil & Grease
Sediment
Nutrients
Trash
Toxics
Chlorides

OIL AND GREASE

1 quart of oil contaminates 250,000 gallons of water



SEDIMENT POLLUTION




ERODING
BANKS

NUTRIENT POLLUTION

Excess **Phosphorus** & **Nitrogen**

cause algae blooms that consume oxygen in streams.

TRASH, DEBRIS & LITTER

ORGANIC CHEMICALS

Chemicals
Solvents & Degreasers
Anti-Freeze & Coolant
Hydraulic Fluid
Lubricants & Grease
Paints & Coatings

Pesticides & Herbicides
Detergents & Degreasers

WHERE WILL POLLUTANTS GO IF NOT CONTROLLED AT THE SOURCE ?

Rain and snowmelt carry pollutants into a

Municipal Separate Storm Sewer System (MS4)

that discharges into rivers and streams.

To reduce pollution from municipal operations, MS4s must comply with DEQ MS4 permit, specifically:

Minimum Control Measure (MCM) 6 - Pollution Prevention / Good Housekeeping for Permittee Operations

The permittee shall develop and implement an operation and maintenance program which includes a training component, and has the ultimate goal of preventing or reducing pollutant runoff from permittee operations.

MUNICIPAL ASSET INVENTORY

- Streets, roads, highways, and parking lots
- Maintenance and storage yards
- Waste transfer stations
- Parks
- Fleet or maintenance shops
- Wastewater treatment plants,
- Stormwater conveyances (open and closed)
- Riparian buffers
- Stormwater storage or treatment units (e.g. basins, constructed wetlands, etc.).


MUNICIPAL ACTIVITIES

- Inlet/outlet cleaning
- Lawn/grounds care
- Storm system maintenance, inspection, and repair
- Park and open space maintenance
- Municipal building maintenance
- New construction and land disturbances
- Right of way maintenance
- Vehicle maintenance, operation, fueling, and washing
- Material transfer operations, including leaf/yard debris
- Pickup and disposal procedures


Public works good housekeeping best management practices (BMPs) to reduce pollution:

- Vehicle Fueling
- Vehicle Maintenance
- Vehicle Washing
- Winter Road Management

VEHICLE FUELING

- Monitor fueling activity
- Don’t top it off
- Cleanup spills immediately
- Prevent fuels from entering storm drains

VEHICLE FUELING

Fuel Tanks

- On concrete pad
- Elevated off the ground
- Overfill prevention system
- Secondary containment

VEHICLE MAINTENANCE BMPS

Damaged Vehicles:

- Steer clear of storm Inlets
- Park indoors or under cover
- Collect leaking fluids
- Empty drip pans as needed
- Report damage & leaks

VEHICLE MAINTENANCE

Anti-freeze, Coolant, Brake Cleaner, Degreasers, Solvents, Batteries,

Used Filters & Rags…

Material Storage and Handling:

- Prevent exposure to rain & runoff
- Away from storm inlets
- Know the procedures:
  - Indoors or under cover
  - On concrete surface
  - Secondary containment
  - Safe & stable storage
  - Dispose properly

- **Refer to Material Safety Data Sheets**

VEHICLE MAINTENANCE

Fluid Transfer:

- Know procedures
- Use supplies to simplify tasks
- Use designated stations
- Secondary containment
- Cleanup spilled product
- Dry wipe ports & containers

WHAT ARE HAZARDOUS MATERIALS?

- Any item or agent with the potential to cause harm to humans, animals, or the environment
  - biological
  - chemical
  - radiological
  - physical

- Laws govern manufacture, distribution and use, disposal, cleanup and remediation

- Federal Laws
  - Environmental Protection Agency (EPA)
  - Occupational Safety and Health Administration (OSHA)
  - Department of Transportation (DOT)
  - Nuclear Regulatory Commission (NRC)

Label Containers!

SPILL RESPONSE & CLEANUP

1. Be Prepared.
   - Proper Response and Cleanup Procedures
   - Storm Drain Inlet Locations
2. Protect Inlets Immediately
3. Locate Spill Cleanup Supplies
4. Apply Absorbent
5. Cleanup and Dispose of Spent Absorbent
6. Reapply absorbent as needed

If Hazardous Waste, must dispose as such.
If don't know, consult MSDS

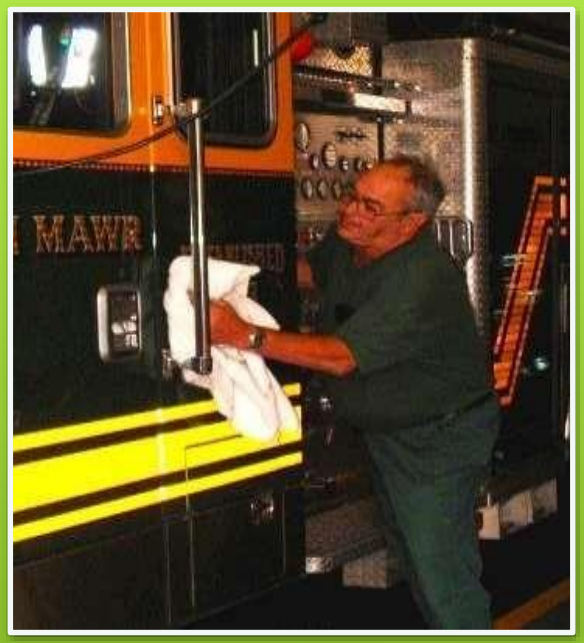
ABSORBENTS

Different absorbent products may absorb specific product or chemical.

- Granular Products
- Absorbent pads & mats
- Drum covers & pillows
- Replenish Supplies !

VEHICLE WASHING

- Routine dry wipe down
- Don't hose off vehicles into storm drains unless inlets have treatment structures
- Use designated wash station that filters wash-water
- Avoid excessive detergent



VEHICLE WASHING - TREATMENT DEVICES

Hydra-clean

Water Quality Inserts:

- Trap Grit & Dirt Particles
- Capture Oil & Petroleum

THE DEAL WITH DETERGENTS…

Preferable Cleaners = Easier on the Environment :

- "Phosphate-free"
- Aqueous = water-based
- Citrus-based cleaners are preferable
  - non-toxic
  - no chlorinated ingredients
  - biodegradable

  Note: must contain "Citrus Oil" to avoid rust
- Biodegradable = bacteria naturally breaks down constituents in a reasonable timeframe

Other Municipal Activities

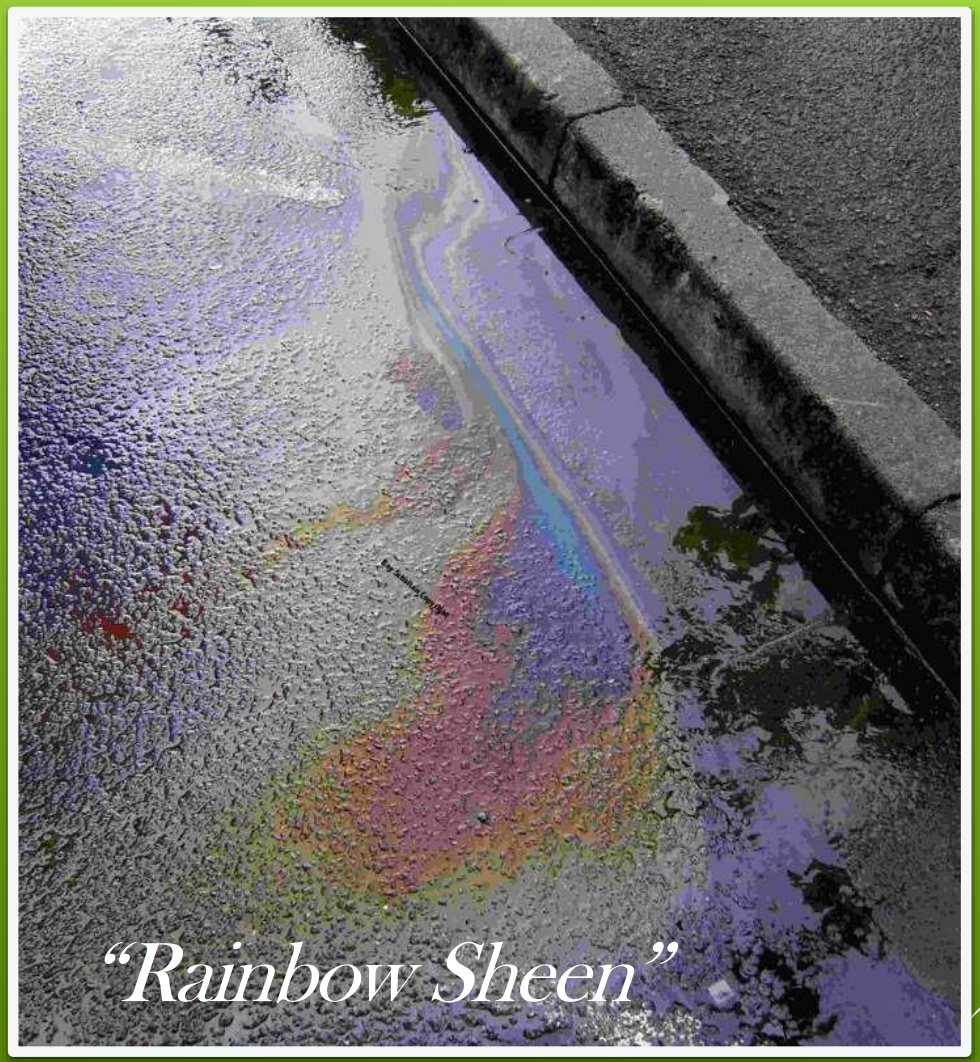
—

Pollution Prevention Good Housekeeping BMPs

1) FACILITY & ROAD MANAGEMENT

- Sweep regularly using **dry methods**
  - Broom
  - Vacuum Equipment
- Avoid hosing down & power washing to prevent pollutants from inlets
- Regularly check and cleanup areas prone to litter / debris accumulation

EXAMPLE OF STORMWATER POLLUTION



"Rainbow Sheen"

2) WASTE HANDLING & DISPOSAL

- Locate dumpsters away from inlets
- Select well-designed receptacles
- Cover or use leak proof lids
- Label receptacle for contents
- Contain all wastes (heavy duty bags)

EXAMPLE OF PROPERLY COVERED WASTE CONTAINER

3) LOADING AND UNLOADING

- Follow proper procedures - read signs
- Inform contractors of proper procedures
- Routinely inspect and clean loading / unloading locations
- Report and respond to problems

4) STOCKPILE & STAGING

- Locate outside floodplains
- Away from inlets & drainage paths
- Cover, Contain and Elevate to prevent contact with rainwater
- Sweep up
- Set yourself up for success
  - Plan ahead, assess options, keep supplies on-hand (tarps, etc.)

5) PAINTING

- Contain and collect sanding dust and stripping debris
- Drop Cloths
- Block inlets
- Clean brushes, applicators, and supplies into containers, sinks, or drains tied to sanitary sewer
- Proper disposal

Non-Hazardous water-based paints, Dispose
- to sanitary sewer or
- absorbed & solid waste
Hazardous Oil-Based - read label and follow disposal requirements

6) EARTH DISTURBANCE & CONSTRUCTION

- Properly install Erosion & Sediment (E&S) Controls
- Inspect E&S regularly
- Inspect before/after major storms
- Clean-out & Maintain E&S devices
- Ensure work site is stabilized before E&S removal
- Attend E&S Training / Consult Conservation District

POLLUTION PREVENTION PAYS:

- Preventing spills and leaks avoids cleanup & remediation costs
- Lowers liability
- Reduces employee risk —> safer work conditions
- Reduces Insurance Claims
- Avoids fines

STORMWATER FACILITY OPERATION AND MAINTENANCE

- The MS4 Permit requires an O&M Plan for municipal stormwater facilities

STORMWATER FACILITY OPERATION & MAINTENANCE

Overall Goals:

- Prevent / reduce pollutant discharge to rivers
- Reduce runoff volume discharging to rivers
- Increase infiltration into the ground

Can be achieved through:

- Routine Inspections
- Routine Maintenance
- Potential Upgrades

Frequent BMP Inspections are an essential part of an O&M Plan

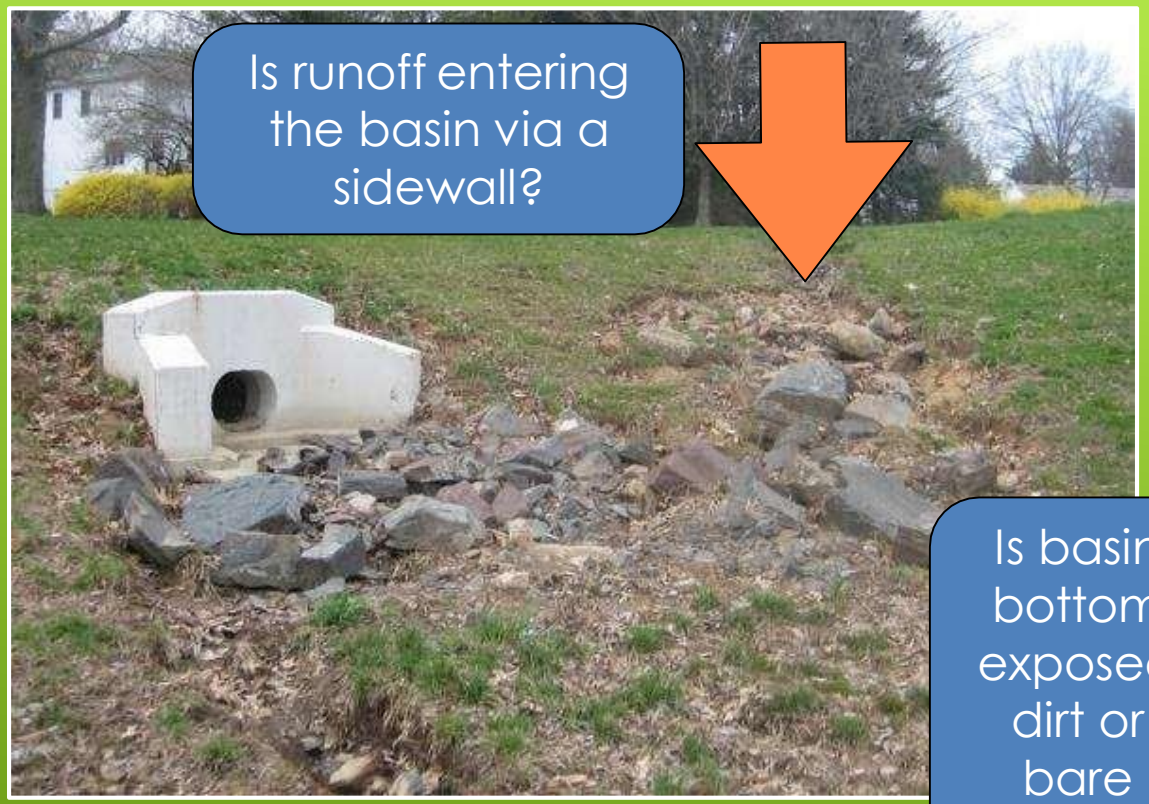
WHO CONDUCTS STORMWATER BMP INSPECTIONS?

- ✓ MUNICIPAL STAFF (ENV Division)
- ✓ TRAINED INSPECTOR OR ENGINEER
- ✓ CONTRACTOR WITH SPECIAL TRAINING

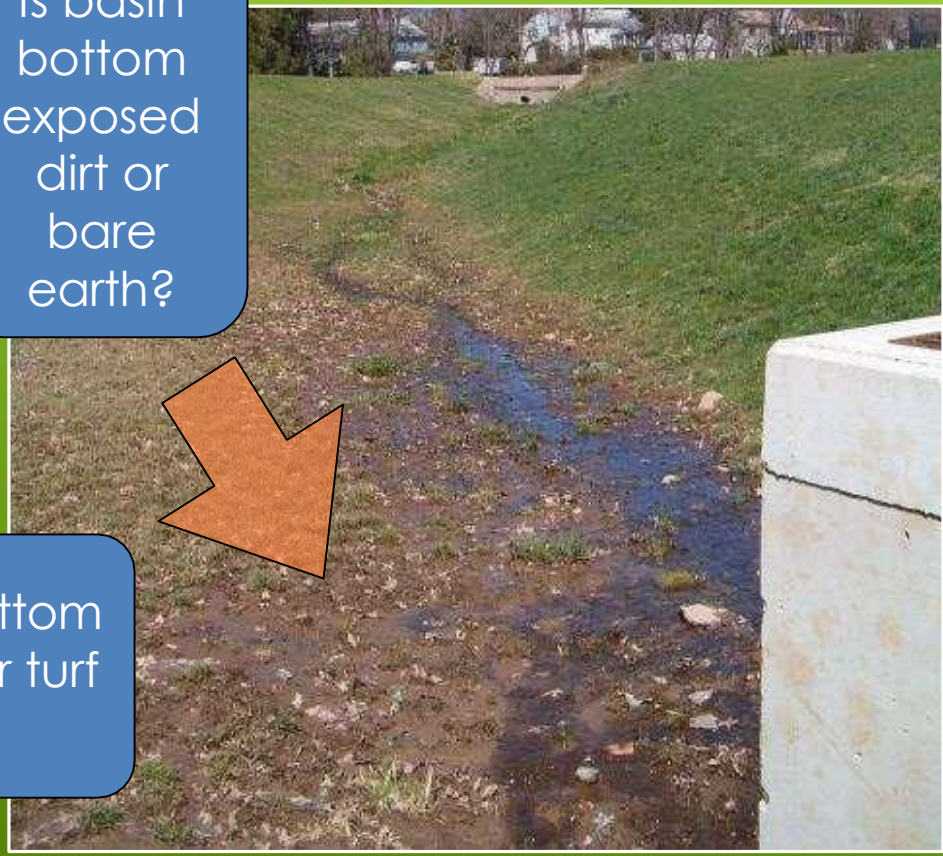
WHAT DO INSPECTIONS INVOLVE?

- Make observations to verify design and performance, identify clean-out and maintenance needs
- Record observations:
  - » Drainage
  - » Signs of erosion or scour
  - » Excessive debris or sediment
  - » Vegetation
  - » Structural components free of damage & functioning, being undermined
  - » Identify need for specialists/engineer

INSPECTION: EROSION OR SCOUR?



Is basin bottom exposed dirt or bare earth?



Is the basin a source of sediment pollution?

Is basin bottom too wet for turf grass?

INSPECTION: EROSION OR SCOUR?

Is earth around outlet control structure undermined, caving in or slumping?

INSPECTION: IS LITTER REMOVAL NEEDED?

Trash clogs grates, inlets & pipes

Solids impact capacity & function

Sumped Inlets trap debris

INSPECTION: IS DEBRIS CLEAN-OUT NEEDED?

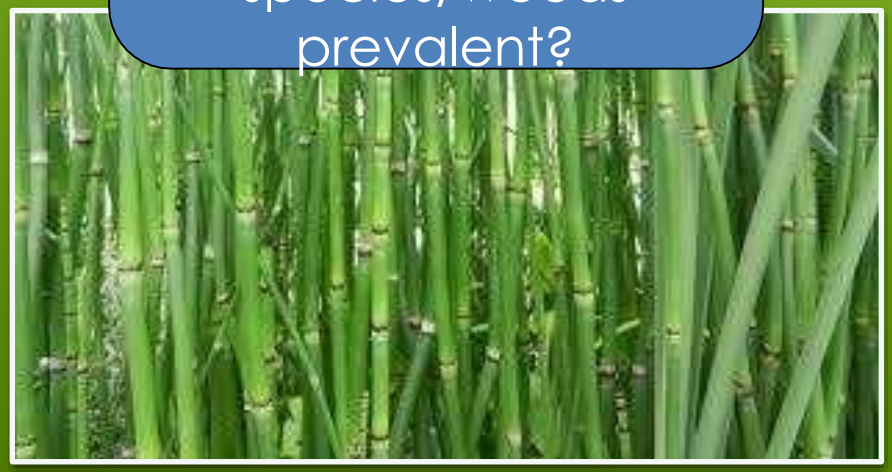
Stump grindings leftover after tree removal

Organic debris

Fine Sediment

INSPECTION: VEGETATION?

Invasive species/weeds prevalent?



Is outlet visible or overgrown?

Woody trees growing inside the basin?

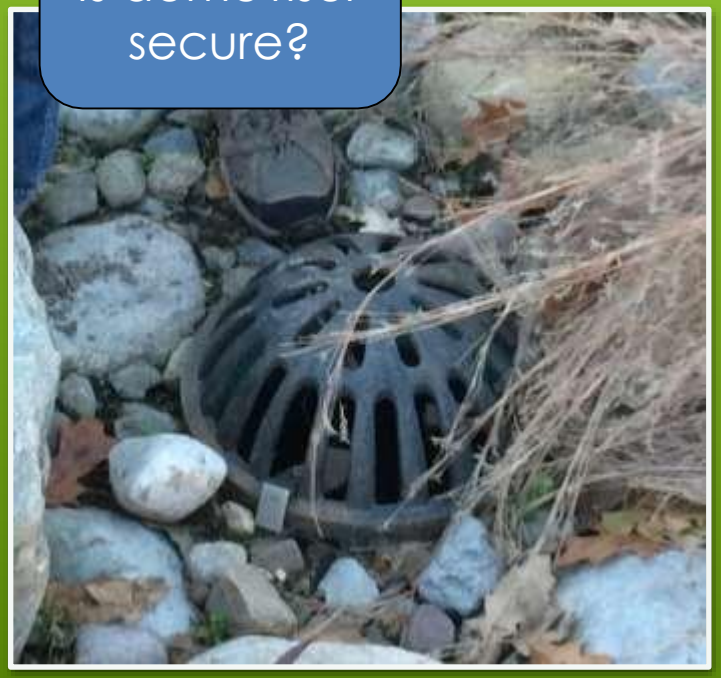
INSPECTION: CONDITION OF STRUCTURES

Grates or Inlets damaged or missing?

INSPECTION: CONDITION OF STRUCTURES

Re-grade & stabilize?

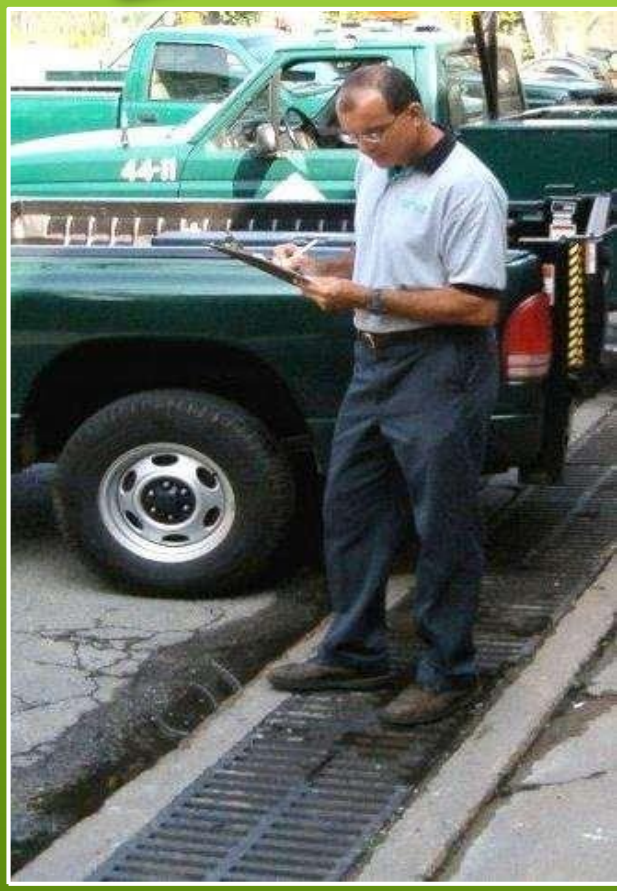
Is dome riser secure?



Riser Damaged?

HOW OFTEN SHOULD INSPECTIONS OCCUR?

- Consult maintenance plan
- Once a year is minimum
- After major storms (2“ or more)
- More frequently, as warranted
  - » New installation
  - » Site conditions
  - » Drainage area & land uses
  - » Prevalent litter or debris



EXAMPLE OF REQUIRED MAINTENANCE - DRAIN CLEAN-OUT

Vacuum Removal and Jet Vac

Maintaining City infrastructure is essential to ensure proper functionality, to reduce the possibility of flooding or other public safety concerns, as well as protect the water quality in local waterbodies.

EXAMPLE OF REQUIRED MAINTENANCE – CITY OWNED BMPS (VEGETATION / OUTLET STRUCTURES)

Maintenance of City owned / operated stormwater BMPs (ponds, drainages, etc) is also essential for similar reasons as other City infrastructure. These BMPs can provide mitigation of flooding and other public safety concerns as well as aide in protecting water quality. However, proper maintenance is required in order for them to provide those benefits.

Replace, Replant & Revive Vegetation

HOW YOU CAN HELP

- Review and understand the standard operating procedures (SOPs) applicable to your daily activities
- Carefully consider stormwater concerns when conducting your daily work activities
- Report to COGF ENV any instances where possible stormwater pollution may have occurred
- Bring any questions or concerns to COGF ENV