



Good Housekeeping

Southeast Stormwater Association

July 20, 2017

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Good Housekeeping – What is it?



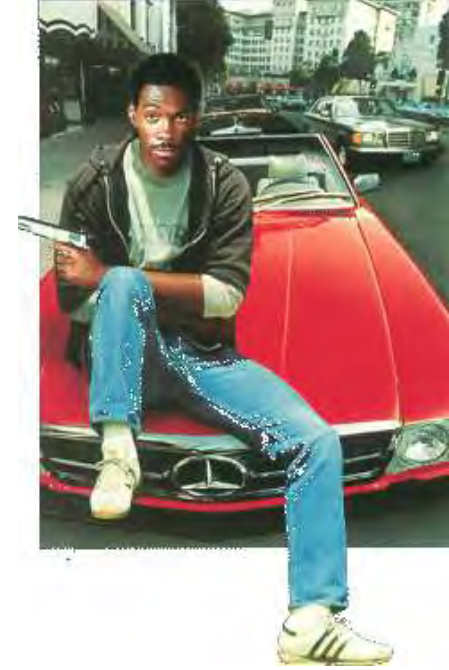
Good Housekeeping

- All day to day municipal activities can influence water quality – can either be positive or negative
- Includes activities and functions at:
 - Parks
 - Roads
 - Fueling facilities
 - Vehicle/fleet maintenance shops
 - Landscaped areas
 - Physical plants
- Good housekeeping is an integral part of all stormwater management programs
- Many items related to good housekeeping are common sense



Why is good housekeeping necessary?

- Permit required – EPA and/or state enforcement
- Protect water quality and minimize negative impacts
- Good service to citizens
- Set the right example – can't expect others to do it if we won't



Poor housekeeping can discharge pollutants

- Sediment – poor or failed erosion control
- Nutrients – fertilizer application or sewage
- Metals – vehicle/equipment maintenance
- Hydrocarbons – fueling or maintenance
- Toxins – pesticides
- Bacteria – pet waste or sewer leakage/spills
- Trash



Some of the main components of Good Housekeeping:

- Control structure inventory
- Inspection program
- Maintenance program
- Roadway, bridge and parking lot management
- Employee training
- Materials management
- Spill response
- Flood management
- Municipal facilities
- Vehicle/Fleet Maintenance



DECEMBER 2012

Good Housekeeping

Spend a little,
GIVE A LOT
Great gifts \$3-\$35

**Holiday Cookies
MADE EASY**
(shhh...it's store-bought dough!)

**7 Things
ANYONE
can do to
be happier**

Make it *
S-P-A-R-K-L-E!

- Trim a gorgeous tree
- Serve an amazing feast
- Throw a WOW! party

**LOOK
AMAZING**
Party styles that **FIX** your figure
PLUS Best shapewear

**Melissa
McCarthy**
**"IT'S WHAT'S
INSIDE THAT
COUNTS!"**

America's newest funny girl
on why she's so confident
and how she's raising
strong daughters

goodhousekeeping.com

0 73361 08345 6
\$3.49

History

- City of Dunwoody
Incorporated on December 1
of 2008.
- Stormwater Utility Established
on March 23rd of 2009.
- Adopted a System needing
Significant Maintenance



Who is Dunwoody Stormwater?

- Overview Statistic
 - 10,800 Structures
 - 11,600 Conveyances
 - 213 Miles of Conveyance
 - Average System Age of system is 40 years
 - 51% of improved conveyances are CMP
 - 93% of immediate repair needs are CMP
- Young Utility dealing with Aged System
 - Budget 2.1 Million
 - Roughly 60% Invested in Capital Improvements



Control Structure Inventory

- Develop Inventory
 - Catch basins
 - Ditches
 - Ponds
 - Conveyances
- Annual Updates
 - New Structures



New City's Motivation For GIS Development

- No Data provided from predecessor
- What is the extent of our needs?
- Governmental Accounting Standards Board (GASB) Statement 34
- MS4 Requirements
- Make the data accessible!



Process

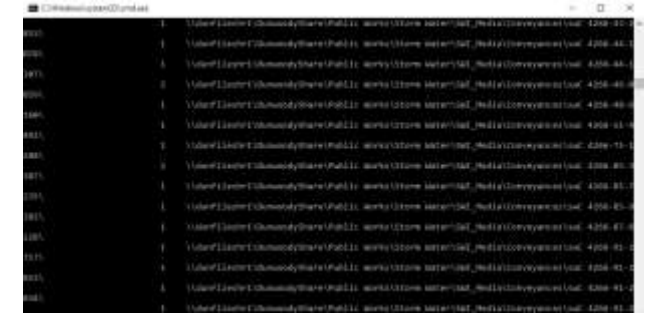
1. Receive picture or video



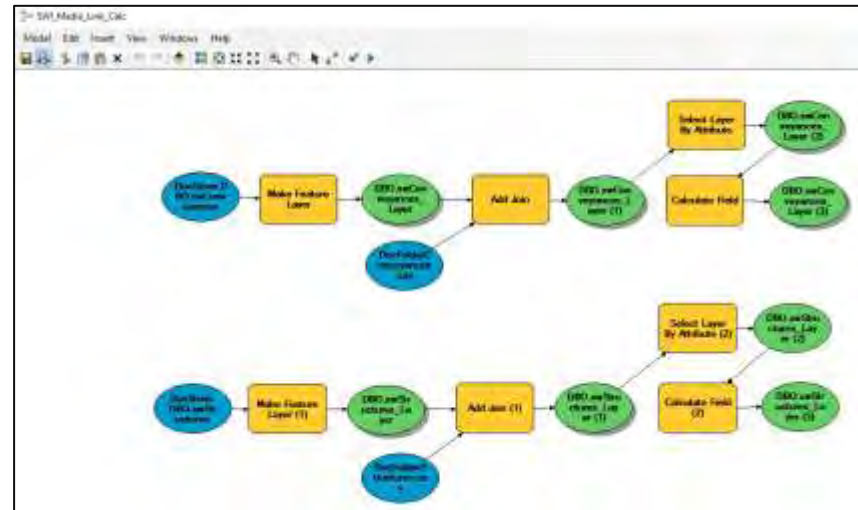
2. Place in folder

- swC 4328-78-0669
- swC 4328-77-4899
- swC 4328-76-6257
- swC 4328-75-6057
- swC 4328-75-4294
- swC 4328-54-8269
- swC 4328-43-2179
- swC 4328-42-5715
- swC 4328-42-3996
- swC 4328-32-5709

3. Mirror (copy) to web server which only copies changes = quick



4. Run GIS model to update web server hyperlink



Demo

City of Dunwoody

Help Welcome, andy.summers

4939 STE 100 4939 STE 300 18869 18871 4939 18870 18872 18875 18876 18877 18878 18879 18880 18881 18882 18883 18884 18885 18886 18887 18888 18889 18890 18891 18892 18893 18894 18895 18896 18897 18898 18899 18900

Expand for full view

Conveyance

- Asset ID Tag: swC 6353-22-7907
- Conveyance Historical ID: 09040
- Conveyance Owner: CITY OF DUNWOODY
- Conveyance Type: GRAVITY PIPE
- Conveyance Material: RCP
- Conveyance Height (inches): 24
- Conveyance Width (inches): 24
- Conveyance Length (feet): 67
- Second Cleaning Assessment: 5 - EXCELLENT
- Second Condition Assessment: 4 - GOOD
- Folder Link: [Click](#)

cityworks.dunwoodyga.gov

cityworks.dunwoodyga.gov/media/Conveyances/swC%206353-22-7907/

cityworks.dunwoodyga.gov - /media/Conveyances/swC 6353-22-7907/

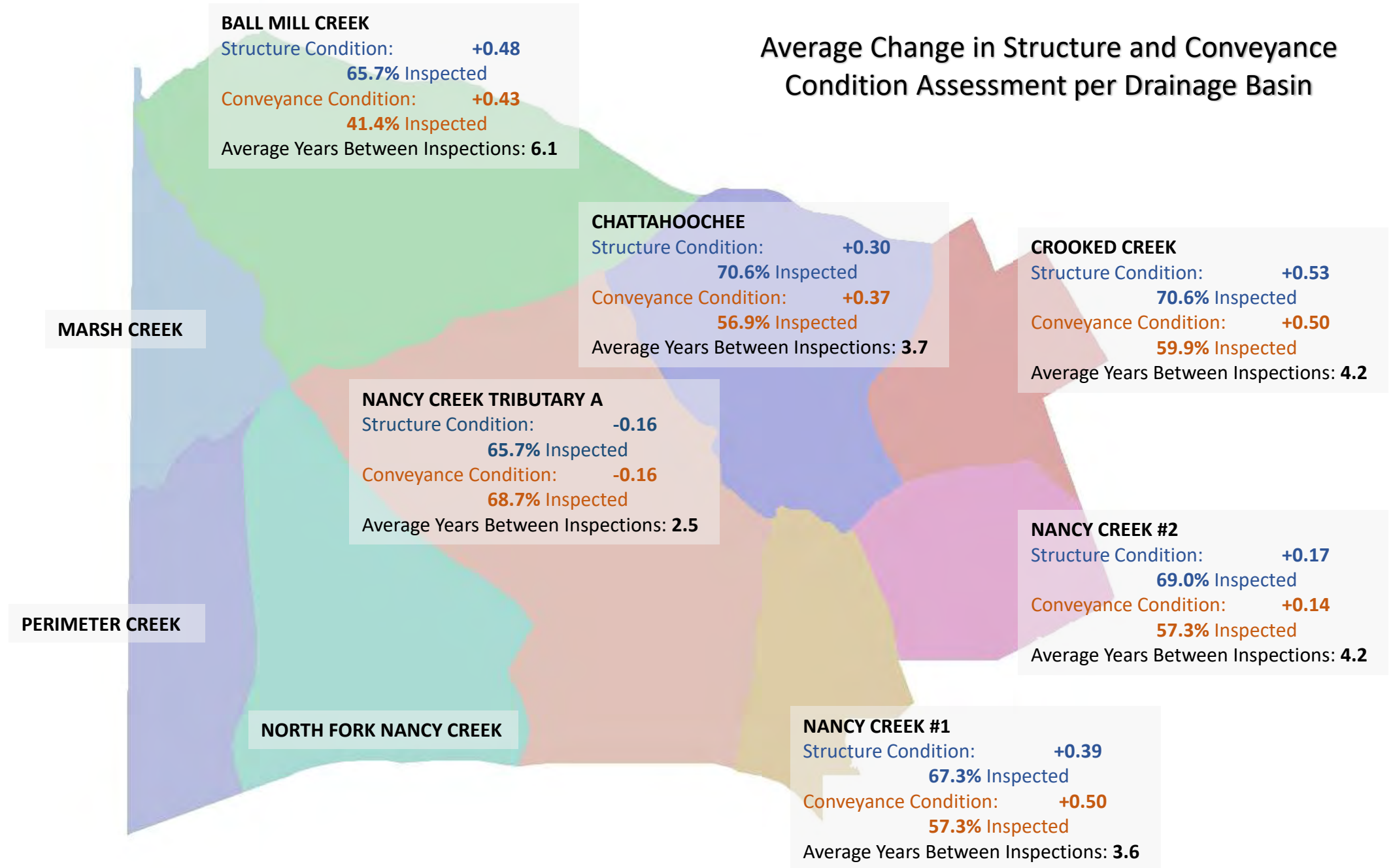
[\[To Parent Directory\]](#)

9/1/2016 1:14 PM	93926219	SwC_6353_22_7907-001_x264.mp4
9/1/2016 1:14 PM	93321130	SwC_6353_22_7907_x264.mp4
5/6/2010 12:27 PM	59111	swS_6353-22-4719 to swS_6353-23-9194 (2010).jpg
9/11/2015 9:43 AM	192849	swS_6353-22-4719 to swS_6353-23-9194 (2015).jpg
5/6/2010 12:13 PM	61759	swS_6353-23-9194 to swS_6353-22-4719 (2010).jpg
9/11/2015 9:43 AM	158543	swS_6353-23-9194 to swS_6353-22-4719 (2015).jpg

Inspection Program

- A useful MS4 Requirement!
- Inspect on a 5 year cycle (100%)
- Required to inspect structures maintained by Utility
- Required to inspect all BMPs / Ponds
- Draft Permit requires that the method of documentation is specified (Georgia)

Average Change in Structure and Conveyance Condition Assessment per Drainage Basin



Maintenance Program

- Prioritization
- Draft Permit requires that the method of documentation is specified (Georgia)
- Provide number assets maintained
- Good maintenance records can help in other ways
 - Demonstrate your utilities progress
 - Demonstrate responsible management

Work Management Software



Cityworks | [Inbox](#) | [Service Requests](#) | [Work Orders](#) | [Inspections](#) | [Project Manager](#) | [Calendar](#) | [Reports](#) | [GIS Search](#) | [Admin](#) | [Crew Manager](#)

Work Order | [View](#) | [Save](#) | [Close](#) | [Delete](#) | [Tools](#) | [Legend](#) | [Locate](#)

Work Order

Description: SINKHOLE
Number: 151026003
Entity Type: SIVCORREYANCES
Category:
Initiated By: LESTER, MONTE | Date: 10/26/2015 11:31 AM
Status: In Progress | Priority: 2
Requested By: LESTER, MONTE | Supervisor:
Submit To: RWX STORMWATER, | Date: 10/26/2015 3:11 PM
Projected Start: 10/26/2015 11:31 AM | Projected Finish: 11/16/2015 11:31 AM
Opened By: | Date:
Closed By: | Date:
Completed By:
Actual Start: | Actual Finish:
Stage: Actual | Expense Type: Maintenance
Add Comments:
[Select](#)
Existing From Request 3243:
Comments: Code: Sinkhole Evaluate
Description: Sinkhole Evaluate
Details: Sinkhole 4 ft deep laterally headed under roadway,
Comments: Caller: UNKNOWN, :
Q: Is the sinkhole at a road or drive?
A: NO
Q: Is there a dog in the yard
A: NO
Instructions: Need to excavate extents of sinkhole and back fill with concrete slurry underneath roadway and allow to fully set. Back fill over

[duncwvm/CITYWORKS/WorkManagement/ProjectManager.aspx?NodeKey=8](#)

An aerial GIS map showing a residential area with a sinkhole location highlighted in green. The map includes street names like "VANDON DR" and "MOUNTAIN VIEW DR", and various utility lines. A toolbar on the left side of the map provides navigation and tool options. The map also shows property boundaries and some buildings.

Work Management Software



Cityworks | Inbox | Service Requests | Work Orders | Inspections | Project Manager | Calendar | Reports | GIS Search | Admin | Crew Manager

Stormwater Work Orders


Open Expand


Locator

An aerial satellite map showing a residential area with numerous red work order markers. A popup window is open over one of the markers, displaying the following details:

WORKORDERID:	151209002
STRUCTURE:	REPAIR/REPLACEMENT /CONSTRUCTION
Description:	REPAIR/REPLACEMENT /CONSTRUCTION
Priority:	4
Status:	OPEN
Address:	4770 N PEACHTREE RD
Date Initiated:	Wed, 09 Dec 2015 12:15:40 GMT
Domain:	1
X:	2256009.19
Y:	1430719
Zoom to	

Storm Water Projects in Dunwoody 2012 - 2016

 Capital Projects 2012 - 2016 (142)

 Work Orders 2012 - 2016 (1,108)



Dunwoody
Public Works
41 Perimeter Center East | Dunwoody, Georgia
Suite 250 | 30346-1902
678-382-6850 ~ www.dunwoodyga.gov

Date: 1/30/2017

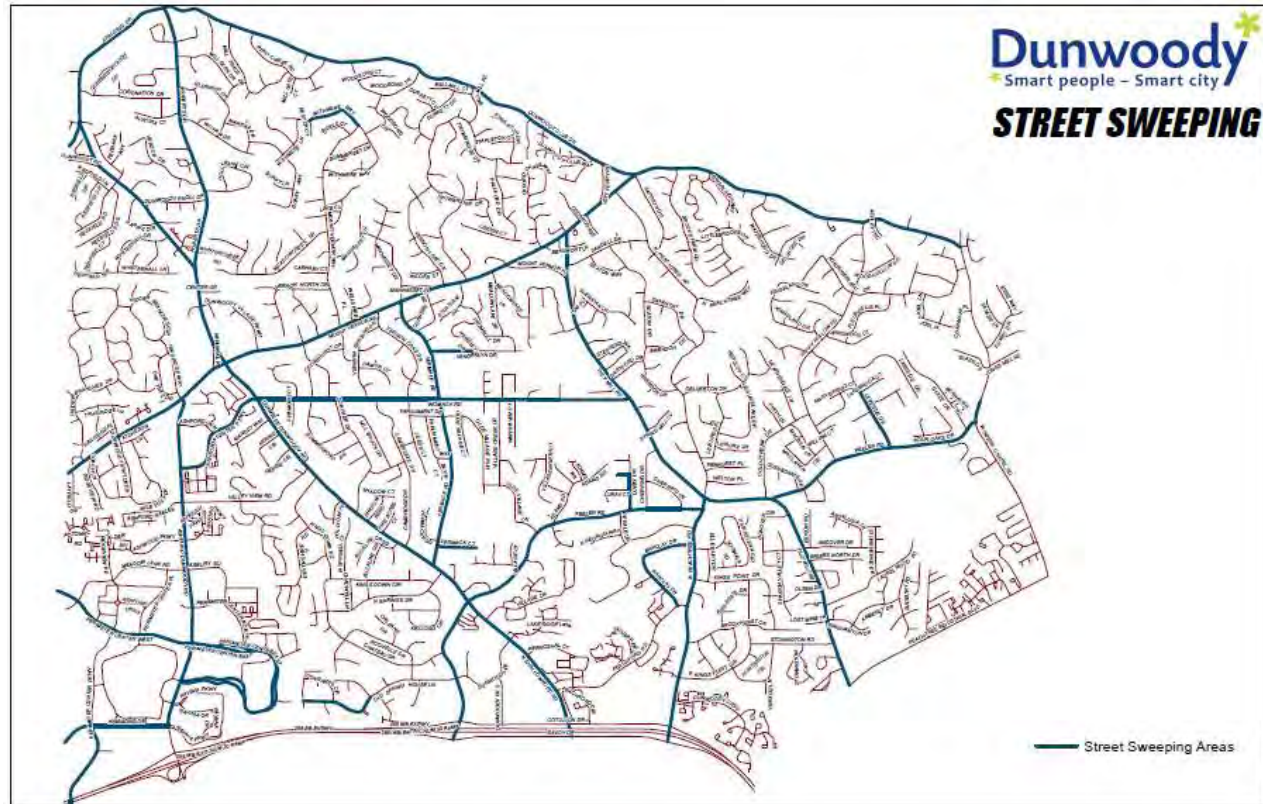
Street and parking lot cleaning

- Street sweeping is done to remove sediment buildup and large debris from curb gutters
- Factors affecting street sweeping
 - Sweeper technology
 - The condition of the street
 - Location
 - Operator's skill
 - Presence of parked cars



Street / Parking Lot Cleaning

- Follow procedures in SWMP
- Document miles/area swept and amount of litter/debris removed/disposed of
- Snow Treatment
- Increasing Demand



Roadway, bridge and parking lot management

- Changes in the methods used for maintaining road surfaces, removing debris and sediments from roads, and cleaning of runoff control structures can help improve the overall storm water quality discharging from roads and bridges



Roadway, bridge and parking lot management

- Pave only in dry weather
- Proper materials staging to reduce spillage during repair of potholes
- Sweep and/or vacuum heavily traveled roadways and/or parking lots
- Regularly clean off runoff control structures
- Restrict use of pesticides and herbicides on roadside vegetation
- Allow roadside ditch vegetation to grow taller than typical turf grass height
- Use rip rap or turf reinforcement mats (TRM) at pipe outlets & in ditches to minimize erosion



Employee Training

- Typically required at least annually
- Different topics to keep employee attention
- Recommend more frequent trainings – some folks do monthly at safety meetings
- Different training for new employees
- Consultants will often do free lunch-n-learns
- Commercially available training videos
- Document type of training and who was trained
- Evaluate and revise training as needed – use anonymous employee awareness surveys



Materials Management

- Proper handling of materials based on job function
- Management of chemicals such as
 - Pesticides, Herbicides, Fertilizers, - PHFs
 - Solvents
 - Fuel
 - Oils
- Proper handling of products in all stages of useful lives
- Select proper product for job
- Correct storage and use
- Proper disposal



Materials Management

- Identify all hazardous and nonhazardous substances present in the facility
- Label all containers with:
 - the name of the chemical
 - unit number
 - expiration date
 - handling instructions
 - health or environmental hazards
- Make note of chemicals that require special handling, storage, or disposal
- Safety Data Sheets (SDS) – formerly known as Material Safety Data Sheets or MSDS – needed for each chemical used or stored at a location



SAMPLE LABEL

CODE _____	} Product Identifier	Hazard Pictograms
Product Name _____		
Company Name _____	} Supplier Identification	Signal Word Danger
Street Address _____		
City _____ Date _____		
Postal Code _____ Country _____		
Emergency Phone Number _____		
Keep container tightly closed. Store in a cool, well-ventilated place that is locked. Keep away from heat, sparks, open flame. No smoking. Only use near marking tools. Use explosion-proof electrical equipment. Take precautionary measures against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear protective glasses. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of in accordance with local, regional, national, international regulations as specified.		} Hazard Statements Highly flammable liquid and vapor. May cause liver and kidney damage.
Precautionary Statements		
Supplemental Information Directions for Use _____ _____		
First Aid If exposed call Poison Center. If on skin (or hair): Take off immediately any contaminated clothing. Rinse skin with water.		www.osha.gov Expiration Date _____

Materials Management

- Improper storage of materials dramatically increases the probability that they will end up in waterways
- Ensure sufficient aisle space
- Store materials well away from high traffic areas
- Stack containers in accordance with the manufacturer's directions
- Store containers on pallets (spill pallets suggested) or equivalent structures and/or with secondary containment
- Delegate the responsibility for management of hazardous materials to trained personnel
- Hazardous materials must be handled & stored to prevent contact with stormwater
- Look into alternative products



Spill Containment Pallet
<http://www.dawginc.com>

Alternative products

- The promotion of safer alternative products should be coupled with other programs designed to reduce the presence of hazardous and toxic materials
- Examples of commonly used products and safer alternatives:
 - *Aerosols* - pump type or non-aerosols
 - *Batteries* - rechargeable batteries
 - *Chemical fertilizers* – compost
 - *Gasoline* - electric engine
 - *Diesel* - bio diesel
 - *Motor oil* - re-refined motor oil
 - *Pesticides* – *insecticidal soaps*, garlic oil, and marigold plants



Spill Prevention and Response



Spill Prevention and Response

- Spill prevention and control plans - may be needed
 - Measures to stop source of a spill
 - Contain the spill
 - Clean up the spill
 - Properly dispose of contaminated materials
- Public and employee safety is always number one
- Plan for a spill before it happens
- Train in spill response



Hazardous Materials DO NOT Cross / Hazardous Materials DO NOT Cross / Ha



Spill Prevention and Response

- Documentation and spill response equipment at every facility where a spill could occur
- Step by step instructions for spill response
- Spill response plan can be a handbook or even a sign
- Place spill kits in locations where easily accessible and in close proximity to where materials are stored or used
- Ensure spill kits are labeled



Emergency Spill Kit
Spill Kit Type

↓ ↓

Last Used		Last Checked		Last Refilled	
Signature	Date	Signature	Date	Signature	Date

www.seton.net.au



Landscaping and vegetation care



Applying too much lawn fertilizer can significantly contribute to water quality problems

Landscaping and vegetation care

- Do not over use chemicals
- Follow all prescribed rates of application for pesticides, fertilizers, and herbicides
- Document applications
 - Date applied
 - Amount used
 - Location of application
- Use native vegetation – minimizes need for chemicals and water
- Proper vegetation prevents erosion



Flood Management

- Require flood management BMPs (detention/retention ponds) include water quality in the design
- Retrofit old detention/retention ponds to add water quality component



Flood Management

- Flood plain buyout program – FEMA funding
 - Provides wildlife and plant habitat
 - Recharge groundwater
 - Filter impurities
 - Protects people and infrastructure
 - Maintain, enhance, and restore the natural functions of the floodplain



Municipal Facilities

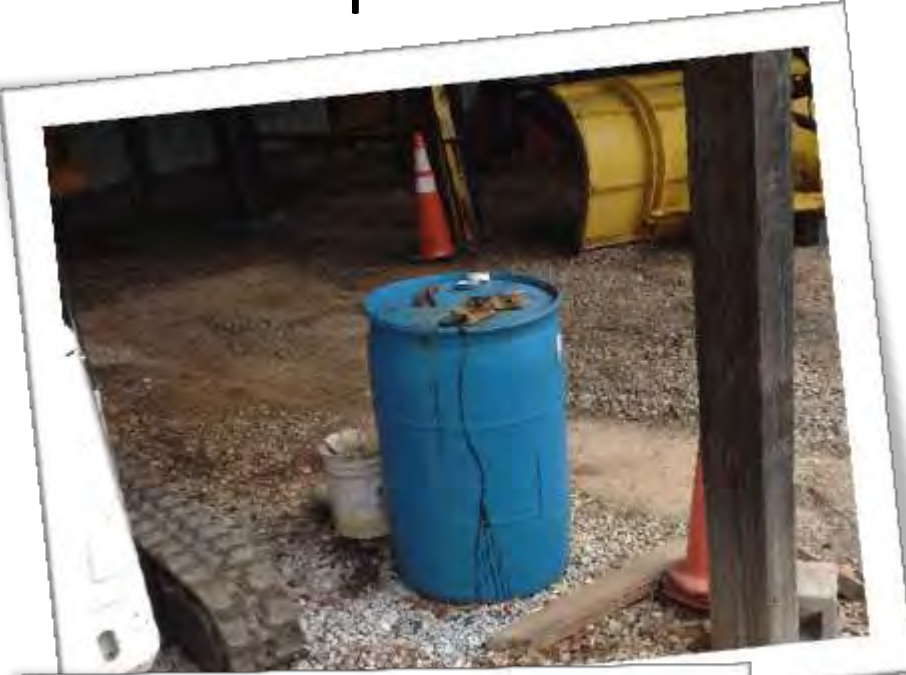
- Up to date inventory of all facilities – including maintenance yards, parks, public golf courses, schools, fire/police stations, wastewater facilities, landfill or solid waste facilities, and any municipally owned industrial facility
- Industrial facility - ensure Stormwater Pollution Prevention Plan (SWPPP) is being followed
- Evaluate all facilities for potential to impact water quality
- Prioritize for inspection – all at least once per permit cycle, high priority once per year or possibly more frequently
 - Inspections by someone other than at the facility – stormwater manager or even 3rd party inspections
- All high priority facilities probably need a facility specific SWPPP, spill response plan, and/or other stormwater planning documents



Municipal Facilities



Municipal Facilities



More Facilities



Vehicle/Equipment Maintenance

- Most effective way to minimize the impacts of waste is by preventing its production
- Run a dry shop
 - Clean up spills immediately and water should not be used for clean up
 - Floor drains are not connected to storm sewer and even if connected to sanitary sewer, they should be sealed off or at minimum connected to oil water separator with valve to isolate it from the sewer if needed
 - Solvent service to supply parts cleaning materials and to collect spent solvent



Vehicle/Equipment Washing



Vehicle/Equipment Washing

- Wash in wash bay tied to sanitary sewer with an oil water separator
- Wash vehicles at a commercial car wash
- Wash vehicles on gravel, grass or other permeable surfaces when washing
 - **DO NOT CLEAN ENGINES**
- Use only bio-degradable cleaners
- Clean parts in parts washer – proper handling/disposal of cleaning fluids via a disposal contractor
- Do not ever assume a floor/building drain is tied to the sanitary sewer
- Wash racks and floor drains should connect to a oil water separator prior to discharge to sanitary sewer



Documentation



YEARLY REPORTING MUNICIPAL GOODHOUSEKEEPING CHECKLIST

RUNOFF CONVEYANCE			
Description	Number/Length Maintained	Tons of Sediment/Debris Removed	Proper Disposal
Storm Drain Inlets	#		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Culverts	#		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Street Sweeping	Length		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Closed Systems	Length		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Open Channel/Ditch Systems	Length		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA

Inspection Findings and Corrective Actions:

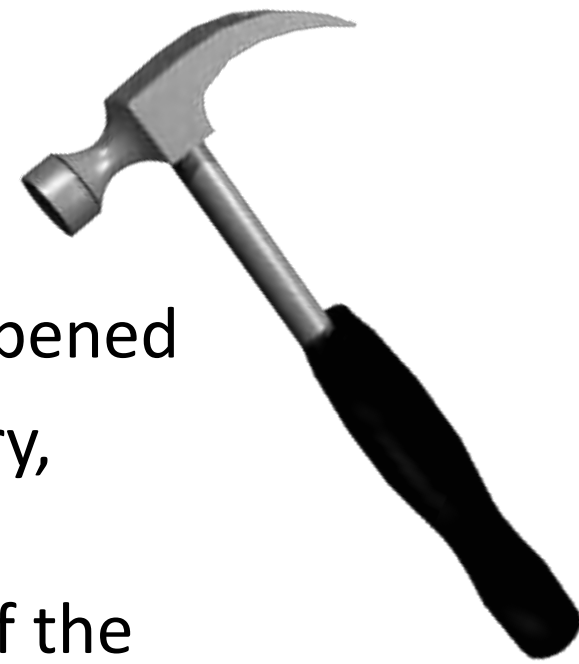
Comments

PARKS AND RECREATIONAL AREAS				
Description	Types	Amount Purchased	Amount Used	Storage
Fertilizer				
Herbicides				
Pesticides				

Inspection Findings and Corrective Actions:

Comments

Take-A-Ways



- If you don't document it then in a regulator's eyes it never happened
- Asset management systems can help with maintaining inventory, inspection, and maintenance performed
- Inspection by someone not at the facility – look at every part of the site and all activities
- Training is key
- Audits – do an internal audit or bring in a 3rd party
 - Better to get your “house” in order prior to a state or federal audit
- Document everything



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678-382-6858



References:

- https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjkhJKKpOPUAhUJ1oMKHRqfDacQjRwIBw&url=http%3A%2F%2Fwww.weekendnotes.com%2Fbundoora-park%2F&psig=AFQjCNEExPtmsZMSJka5rfrOFMKw_Zo5yQ&ust=1498833443609709
- <https://assets.entrepreneur.com/content/3x2/1300/1412721888-2-chart-goals-create-road-map-success.jpg>
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- <http://media.dentalcompare.com/m/25/article/123596-400x300.jpg>
- https://www.denios-us.com/media/catalog/product/cache/40/image/9df78eab33525d08d6e5fb8d27136e95/F/I/Flammable_Cabinet_M31-5320-W/pesticide-storage-cabinet-pe47-fm-3.jpg
- <http://www.carbonicsystemsinc.com/hazmat.gif>
- http://www.truevalue.com/assets/product_images/styles/xlarge/115845.jpg
- <https://rationalopinionsblog.files.wordpress.com/2013/10/spraying-chemicals-on-food.jpg>
- <http://www.davisvanguard.org/wp-content/uploads/2017/03/Parks-Spray-1.jpg>