

Stormwater Management Training for **POST-CONSTRUCTION ACTIVITIES**



City of Cottonwood

2023

Agenda

PART 1

Stormwater Overview

- What is stormwater?
- What is an illicit discharge?
- Permit compliance
- Identifying and reporting illicit discharges
- How you can help

PART 2

POST-CONSTRUCTION STORMWATER MANAGEMENT PROGRAM

- Best Management Practices
- Stormwater Control Inventory
- Site Plan Review Procedures
- Operation & Maintenance

What is Stormwater?



- Runoff due to rain or snow melt
- Stormwater is collected by natural channels, storm drains, ditches, and gutters
- Along the way, stormwater picks up sediment, pathogens, oil, fertilizer, pesticides, and other **pollutants**
- Stormwater enters streams and rivers **without treatment**

Where does stormwater go?

Retention basins, washes, rivers, lakes...



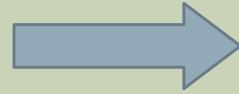
Where does YOUR stormwater go?

Ultimately, to the Verde River



How does stormwater get there?

Through the Municipal Separate
Storm Sewer System (**MS₄**)



And exits through outfalls.

The MS₄ consists of:

- Curbs and gutters
- Storm drains
- Catch basins
- Ditches
- Pipes



Why is stormwater quality important?

Polluted stormwater harms:

- Human health and safety
- Wildlife and habitat
- Recreation and tourism
- Land preservation

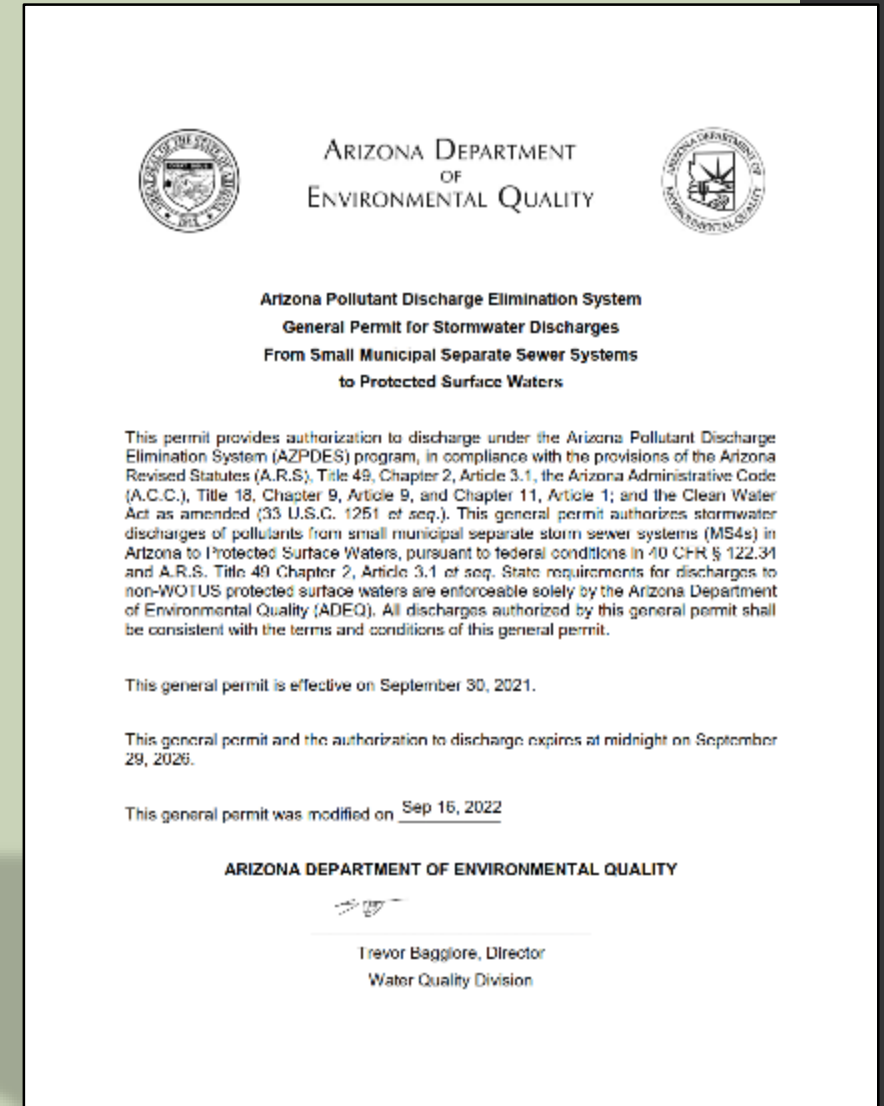


Stormwater Regulations

- Clean Water Act, Section 402
 - EPA delegated authority to ADEQ in 2002
 - Arizona Pollutant Discharge Elimination System (AZPDES)
 - AZPDES permits allow the discharge of stormwater to Protected Surface Waters
 - MS₄ Permit, Construction General Permit (CGP), Industrial Permit (MSGP)
- Cottonwood City Code chapters 13.24 & 15.40
 - Regulates discharge of stormwater pollutants
 - Authorizes Cottonwood to take enforcement actions
- Cottonwood Engineering Design Standards Manual
 - Sets City requirements for stormwater management in construction and post-construction

MS4 Permit Requirements

- Develop and implement a Stormwater Management Plan (SWMP)
- Minimize discharge of pollutants “to the maximum extent practicable”
- Education & Outreach
- Visual and analytical monitoring of stormwater
- Inspect construction sites
- Submit annual reports
- **Illicit Discharge Detection and Elimination (IDDE)**
- **Provide employee training**



What is an Illicit Discharge?

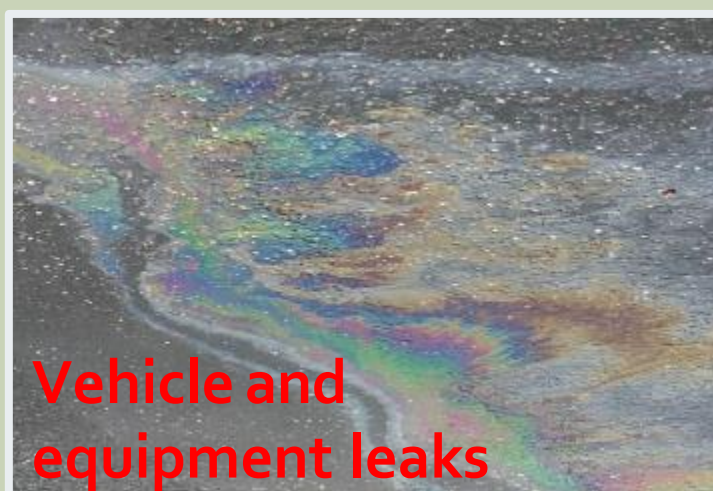
Any discharge to the MS₄ not composed entirely of stormwater, except:

- Certain allowable non-stormwater (*we'll get to this*)
- Discharges covered under their own AZPDES permit

Illicit Discharges may be intentional or accidental



Common Examples of Illicit Discharges



Other Types of Illicit Discharges

Littering and illegal dumping



Illicit Connections

A physical connection of a non-stormwater source to the storm drain system.



Some non-stormwater discharges are “allowable”

*... BUT they **must** be pollutant free!*

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated groundwater infiltration
- Uncontaminated pumped groundwater
- Discharge from potable sources
- Fountain drains
- Air conditioning condensate
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Non-commercial, charity car washes
- Discharge from riparian habitats and wetlands
- Street wash water
- Discharges of flows from fire-fighting activities
- Building washing without added cleaning products

Recognizing Potential Illicit Discharges

- Flow in a gutter or outfall without a rain event
- Unusual water characteristics (color, odor, bubbles, solids, etc.)
- Visual observation of discharge/disposal
- Pavement staining



Illicit Discharges: What to Report?

- Chemical dumping
- Malfunctioning septic systems
- Leaking or blocked stormwater systems
- Dry weather discharges that may contain any pollutant
- Silt and sediment runoff from poorly controlled construction sites



*Anything that doesn't look like
normal rain runoff!*

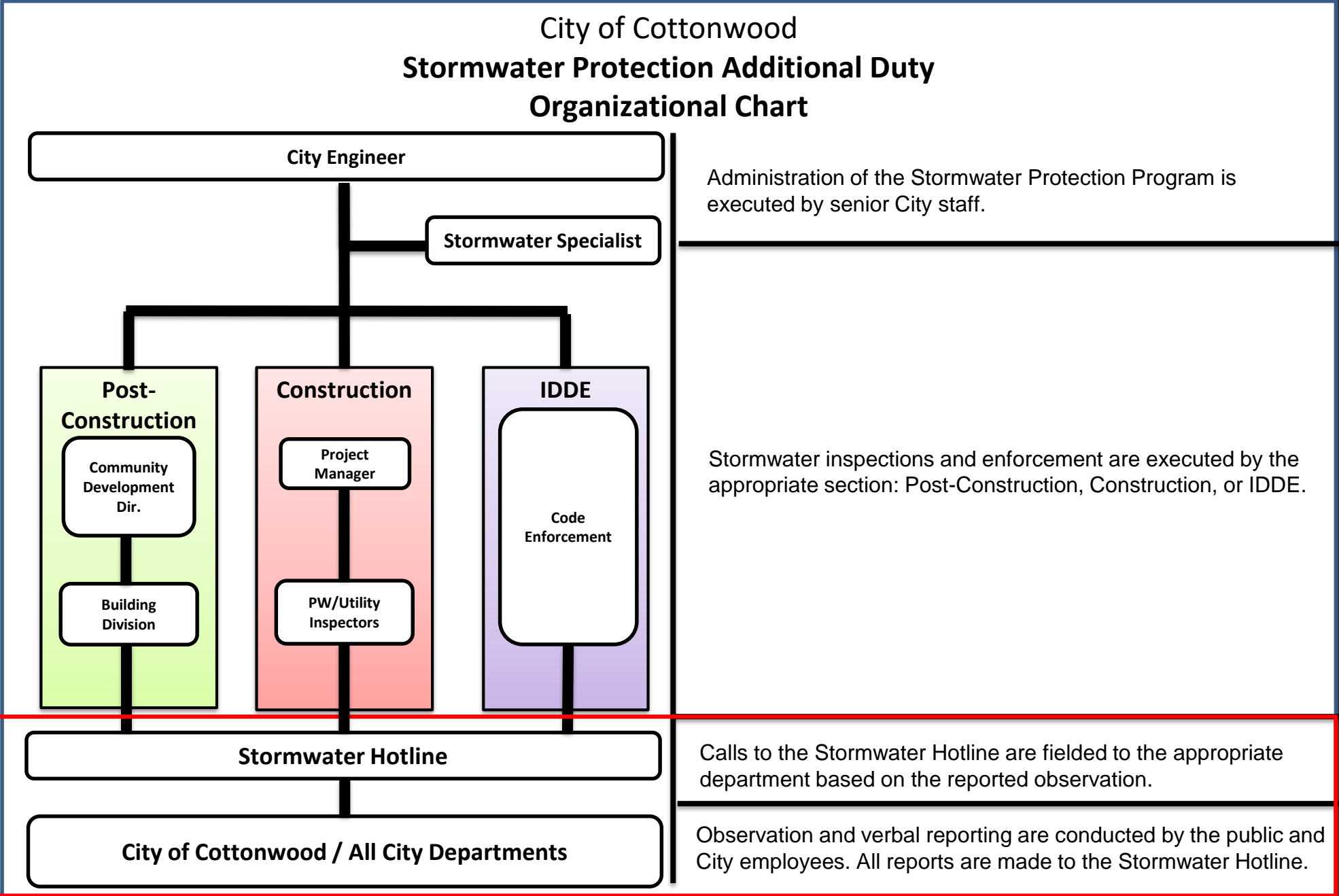
How to report Illicit Discharges

- If you see a potential illicit discharge:
 - Identify location, discharge characteristics, obvious sources
 - Take a picture or video (if it is safe to do so)
 - Notify Stormwater Staff:
 - Email: stormwater@cottonwoodaz.gov
 - Call: (928) 340-2772
- If the discharge might be hazardous material/waste:
 - DO NOT touch it!
 - Call the Fire Department at 911
 - Then contact stormwater staff

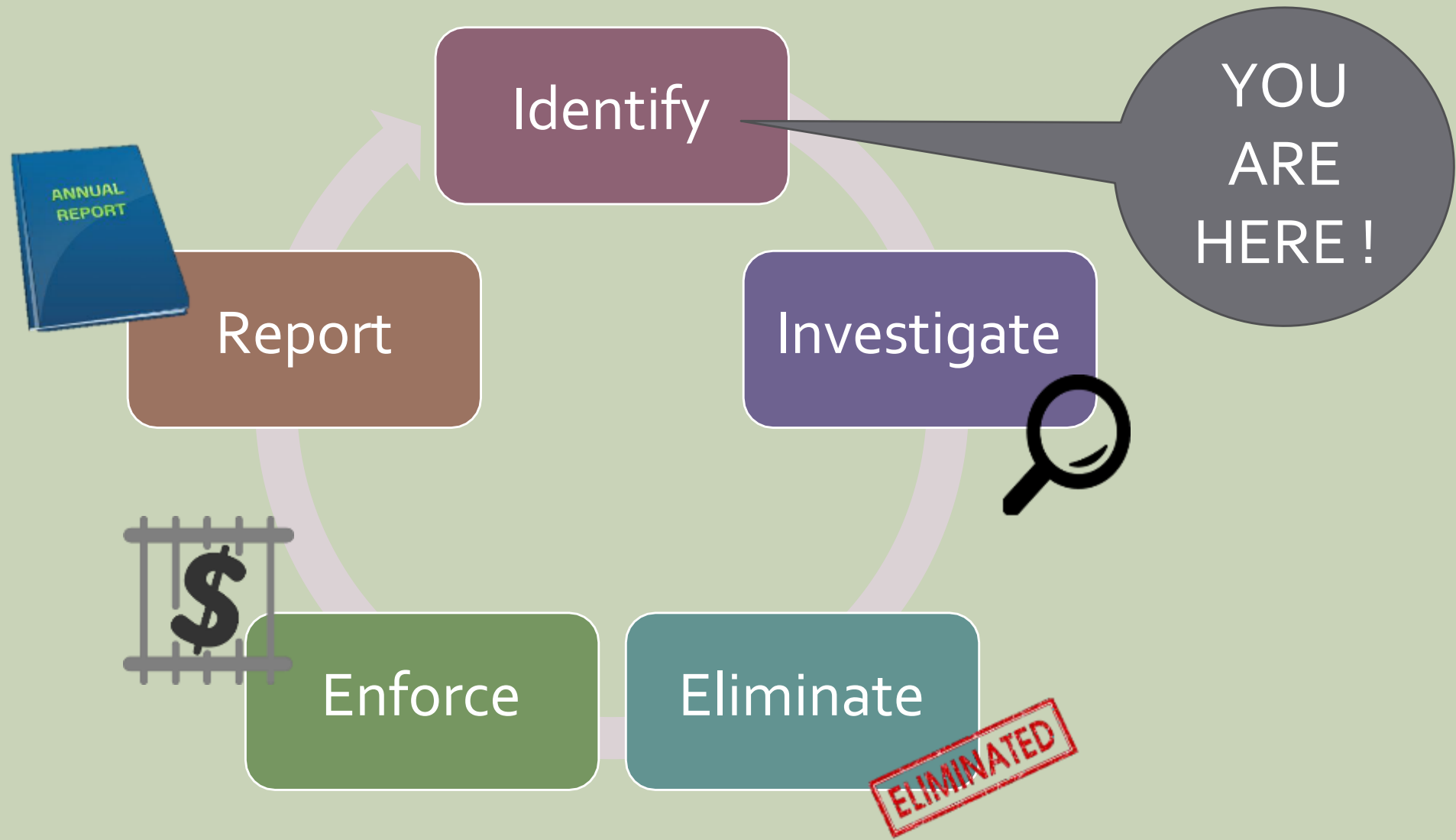


Organizational Chart for Stormwater Program

Illicit
Discharge
Reporting



City IDDE Program Responsibilities



How can you help keep our water clean?



As a Citizen...

- Maintain your vehicles
- Wash your vehicles at car washes
- Don't over-fertilize plants and lawns
- Pick up pet waste
- Maintain septic systems

As an Employee...

- Put vehicles in for service as needed
- Clean vehicles and equipment in designated areas
- Maintain vehicles and equipment in designated areas
- Report illicit discharges

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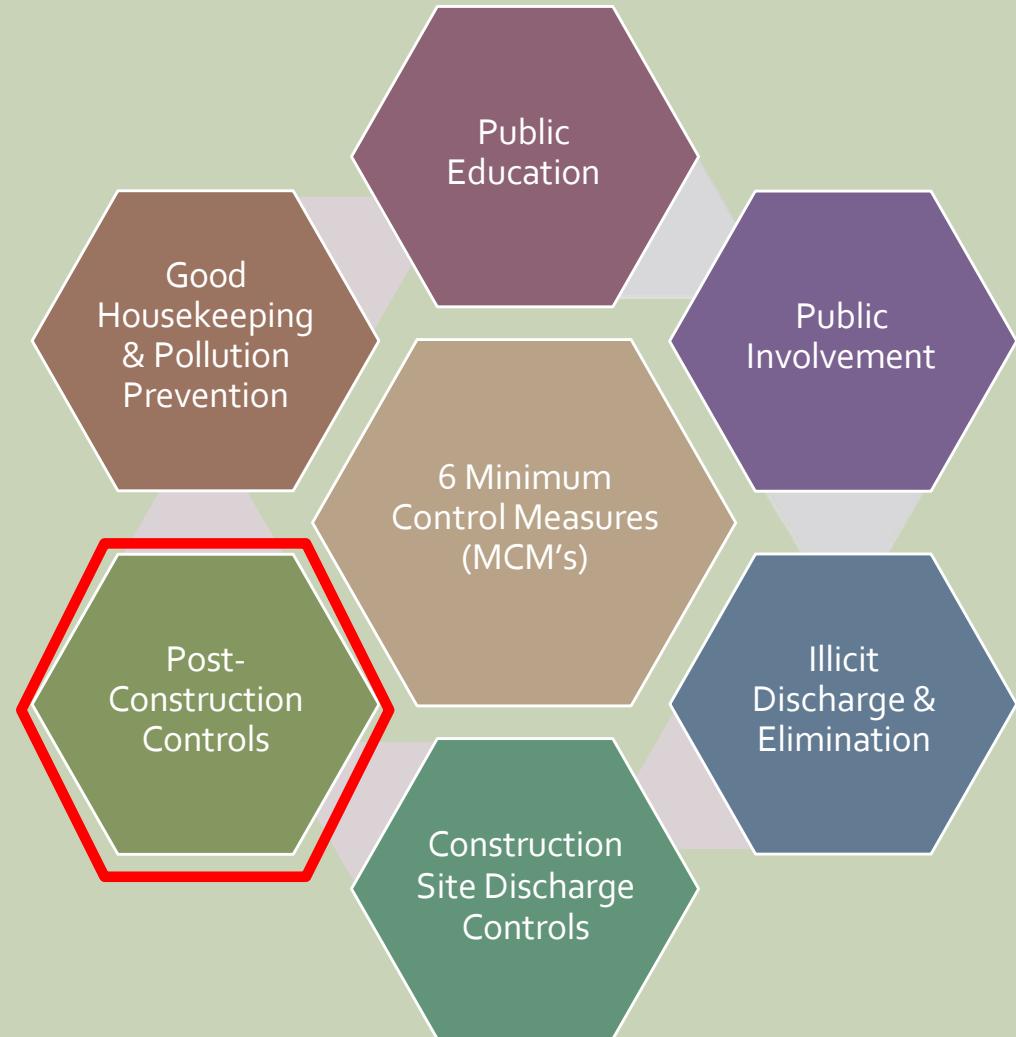
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POST-CONSTRUCTION STORMWATER MANAGEMENT PROGRAM

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Post-Construction Stormwater Management

- Post-Construction Stormwater Management is one element of the Stormwater Management Plan
- The objectives of this program are to:
 1. Reduce the discharge of pollutants in stormwater runoff from new development and redevelopment
 2. Ensure long-term operation, maintenance, and inspection of post-construction stormwater controls



City Requirements

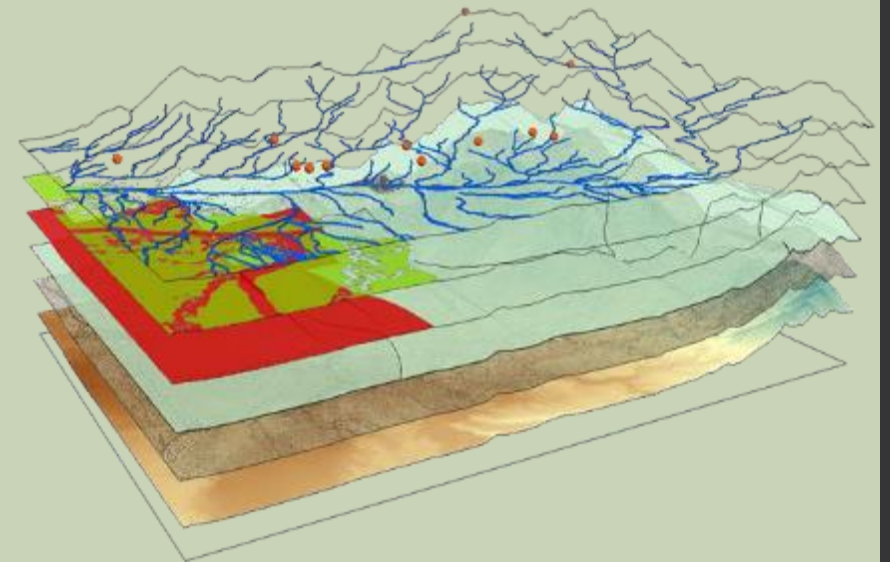
The MS4 Permit requires the City to:

- Have an ordinance that addresses runoff from new development and redevelopment projects to the MS4
- Ensure post-construction controls minimize impacts to water quality from stormwater runoff
- Maintain an inventory of post-construction stormwater controls
- Review site plans for compliance with stormwater control requirements
- Ensure the long-term operation maintenance of stormwater controls

Stormwater Control Inventory

- All Post-Construction stormwater controls are recorded in GIS
- As-Built plans are submitted by the contractor prior to issuance of the Certificate of Occupancy
- As-Built plans are digitized by Public Works

*An accurate map and inventory are helpful
when tracking the source and/or
destination of spills and illicit discharges!*



Site Plan Review Procedures

- Plans are reviewed prior to construction to verify post-construction stormwater quality controls and methods.
- Plans are reviewed against the Stormwater Ordinance, Grading, and Retention Ordinances, Yavapai County Drainage Criteria Manual, and Engineering Design Standards Manual



Operations and Maintenance

- Post-construction stormwater structures that discharge to the MS₄ are maintained by their Owner
- Sites with private stormwater controls sign a Standard Operation and Maintenance (O&M) Agreement, which follows the property regardless of future owner
- Privately owned structures are inspected by City staff annually
- The City inspects 20% of City-owned structures annually



Document Inspections

Inspection results are documented on page 2 of the construction site inspection form.

CONSTRUCTION SITE STORMWATER INSPECTION FORM CITY OF COTTONWOOD

Section 4: Post-Construction Sites

Have all temporary stabilization measures been removed? **YES** **NO**

Area	Required Per Plan?		Installed?		Operating as Intended?	Comments/Observations
Check dams	Y	N	Y	N	Y N	
Embankment Protection	Y	N	Y	N	Y N	
Rip Rap	Y	N	Y	N	Y N	
Retention / Detention Pond	Y	N	Y	N	Y N	
Vegetation	Y	N	Y	N	Y N	
Soil Retention Blankets	Y	N	Y	N	Y N	
Inlet Protection	Y	N	Y	N	Y N	
Outlet Protection	Y	N	Y	N	Y N	
Headwalls	Y	N	Y	N	Y N	
Other:	Y	N	Y	N	Y N	
Other:	Y	N	Y	N	Y N	
Other:	Y	N	Y	N	Y N	

Document if maintenance is needed or if enforcement actions are required.

Examples of Post-Construction Stormwater Controls

- Retention basins
- Catch basin sumps
- Oil-water separators (Stormceptor, EnviroHood, Snout, etc.)
- Rain gardens/extended detention basins
- Washes and waterways
- Inlet filters
- Vegetated swales



Basins and Headwalls

- Use a grate to cover and protect the pipe opening
- Remove sediment and trash trapped behind or in front of the grate
- Perform maintenance of grate, headwalls, wingwalls, and surrounding landscaping as needed



Catch Basins



- Remove sediment, trash, and debris near the inlet, on the surface, to allow water to flow into catch basins
- Periodically clean out collected vegetation and debris



- Repair cracks and repair damaged grates

Catch Basin Inlet Filters

- Installed in catch basins to collect sediment, trash & debris
- Can add medium to absorb oils
- Easily clogged or damaged if not maintained



Filter completely full of sediment



Filter fairly clean, oil absorbent still has capacity



Filter has plenty of capacity

Washes and Waterways

- Keep washes free of overgrown vegetation, sediment, and trash
- Report illegal dumping
- Perform maintenance as needed to maintain shape and flow



Oil-Water Separators

- Installed in catch basins or manholes
- Allow sediment to settle out and floatables (oil and trash) to float
- Need to be cleaned regularly with a vacuum truck



Use a “sludge judge” or similar to check for sediment in a separator’s sump



Sump is completely full of sediment & requires immediate maintenance



Nasty! Excessive oil indicates an illicit discharge occurred

Enforcement Authority

- The City has legal authority to
 - Prohibit illicit discharges to the MS₄
 - Conduct inspections
 - Carry out enforcement procedures
- Basis for enforcement is codified in the City Code
 - Chapter 13.24 Stormwater Policy
 - Chapter 15.40 Post-Construction Stormwater Detention Code
- The Enforcement Response Plan (ERP) describes the City's procedures for enforcing stormwater violations

Enforcement Response Plan (ERP)

INTRODUCTION

As required by the by the Arizona Department of Environmental Quality's (ADEQ) Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) to Waters of the United States No. AZG2016-002 (Permit), the City of Cottonwood is required to develop and implement an Enforcement Response Plan (ERP). This ERP describes the City's procedures and policies regarding enforcement of the City's municipal ordinances relating to stormwater quality, including illicit discharges. Compliance shall be achieved through progressively stricter responses as needed. The ERP includes the following items relative to the City's enforcement procedures:

- A description of the types of enforcement issued by the City.
- A description of specific strategies for escalating enforcement response, where necessary, to address persistent, repeat or escalating violations.

The basis for the City's stormwater program enforcement can be found in the following documents:

- City Code Chapter 15.40 Ord. 172 § 1, 1985 City of Cottonwood Post Construction Stormwater Detention Code
- City Code Chapter 15.44.090 Ord. 144 § 10, 1984 City of Cottonwood Illicit Discharge and Illegal Connection Stormwater Code

This ERP documents the policies and procedures in support of the documents noted above.

1.0 ENFORCEMENT PROCESS

The City's enforcement of construction stormwater violations, water quality violations and illicit discharges is authorized by multiple sections of the City's municipal code.

1.1 NEW DEVELOPMENT

For new development and redevelopment sites, the City issues Planning and Zoning, and Building Permits. Permits are issued by the Planning and Zoning and Building Safety Divisions of the Community Development Department, respectively. Prior to issuing a building permit, Building Safety staff ensure that Planning and Zoning Permits and/or other stormwater-related permits have been submitted and approved. Once development is completed, Building Safety staff ensures as-builts have been submitted and approved by the Public Works Department before issuing a Certificate of Occupancy. If issues arise during construction, the City will withhold inspections and/or Certificates of Occupancy as necessary. Withholding inspections and/or Certificates of Occupancy is found to be the most effective in achieving compliance.

1.2 ILLICIT DISCHARGES

The City has a training program to educate appropriate employees on the identification of illicit discharges. Where an illicit discharge has been identified, it is routed to Code Enforcement for investigation. The Code Enforcement Officer performs an inspection to

Enforcement

- Compliance is achieved through progressively stricter measures:
 1. Verbal warning.
 2. Written warning.
 3. Notice of Violation (NOV)
 4. Civil Citation
 5. Criminal penalties

SUGGESTED FIELD EQUIPMENT AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Camera
- Clipboard
- Inspection forms
- First Aid Kit
- Flashlight or spotlight
- Handheld GPS
- Tape Measure
- Traffic cones
- Waterproof marker/pen
- Mirror
- Hook/Crowbar
- Reflective safety vests
- Hearing protection
- Safety glasses
- Steel-toe boots



PPE needs may vary based on site and weather conditions!

HEALTH AND SAFETY CONCERNS

- If evidence of a health or safety issue exists....STOP the inspection.
- Notify your supervisor, fire department, or police department.



RECORDKEEPING

The City is required to keep any records pertaining to the MS₄ Permit for a minimum of 3 years

This includes:

- Reports
- Inspection Records
- Enforcement Actions
- Follow-up Documentation



Questions / Comments?

For any questions or concerns, contact:

Stormwater Hotline

stormwater@cottonwoodaz.gov

(928) 340-2772

City Engineer

(928) 340-2770



City of Cottonwood