

Stormwater Management Training  
for  
**ILLICIT DISCHARGE  
DETECTION  
AND ELIMINATION**



City of Cottonwood

**JUNE 2017**

# AGENDA

## PART 1 - STORMWATER OVERVIEW

- What is stormwater?
- What is an illicit discharge?
- Permit compliance
- Identifying and reporting illicit discharges

## PART 2 - IDDE PROGRAM

- IDDE Program elements
- IDDE investigation
- Dry weather screening
- Wet weather monitoring
- General information

# STORMWATER, WHAT'S IT ALL ABOUT?



- Stormwater is runoff due to rain or snow melt that enters streams and rivers via natural geologic features such as channels as well as urbanized features such as storm drains and gutters *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 – a system to move stormwater to receiving waters)

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



And exits through outfalls.



# WHY IS STORMWATER QUALITY IMPORTANT?



Polluted stormwater negatively impacts:

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

# STORMWATER REGULATIONS

- Stormwater compliance falls under Section 402 of the Clean Water Act and is administered by the EPA.
- EPA delegated authority to the ADEQ in 2002.
- ADEQ re-issued the Small MS<sub>4</sub> General Permit in 2016.
- Arizona Pollutant Discharge Elimination System (AZPDES)  
*"This general permit specifically authorizes stormwater discharges from small MS<sub>4</sub>s in Arizona to Waters of the United States"*

# PERMIT REQUIREMENTS

The City's Stormwater Permit requires many activities, including:

- Developing and implementing a Stormwater Management Plan (SWMP)
- Performing inspections
- Conducting visual assessments
- Compiling and submitting annual reports
- **Prohibiting illicit discharges**
- **Providing employee training**

 **ADEO**  
Arizona Department  
of Environmental Quality

**PERMIT** www.azdeq.gov

PERMIT NO. AZG2016-002

STATE OF ARIZONA  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER QUALITY DIVISION  
PHOENIX, ARIZONA 85007

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM  
GENERAL PERMIT FOR STORMWATER DISCHARGES  
FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS  
TO WATERS OF THE UNITED STATES

This permit provides authorization to discharge under the Arizona Pollutant Discharge Elimination System (AZPDES) program, in compliance with the provisions of the Arizona Revised Statutes (A.R.S) and, Title 49, Chapter 2, Article 3.1, the Arizona Administrative Code (A.C.C.), and Title 18, Chapter 9, Article 9.

This general permit specifically authorizes stormwater discharges from small municipal separate storm sewer systems (MS4s) in Arizona to Waters of the United States, pursuant to 40 CFR § 122.34. All discharges authorized by this general permit shall be consistent with the terms and conditions of this general permit.

This general permit becomes effective on September 30, 2016.

This general permit and the authorization to discharge expires at midnight September 29, 2021.

Signed this 29<sup>th</sup> day of September, 2016.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

  
Trevor Baggione, Director  
Water Quality Division

# WHAT IS AN ILLICIT DISCHARGE?

Any discharge to the MS<sub>4</sub> not composed entirely of stormwater, except for allowed or separately permitted discharges.

Also includes:

- Illegal dumping and littering
- Illicit connections



# COMMON EXAMPLES OF ILLICIT DISCHARGES



**Improper Disposal**



**Improper disposal**



**Pool / spa discharges**



**Leaking / damaged dumpsters**



**Vehicle and equipment leaks**



**Overflow / damaged septic tanks**

# OTHER TYPES OF ILLICIT DISCHARGES

## Littering and illegal dumping



## Illicit Connections

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



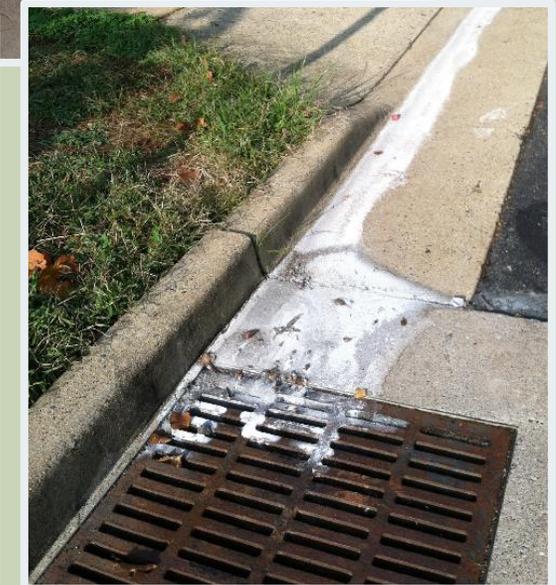
# SOME TYPES OF DISCHARGES ARE “ALLOWABLE”

*... BUT they still 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 the gutter or at an 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
- Information on malfunctioning septic systems
- Leaking or blocked stormwater systems
- Dry weather discharges that may contain pollutant
- Silt and sediment runoff from poorly controlled construction sites

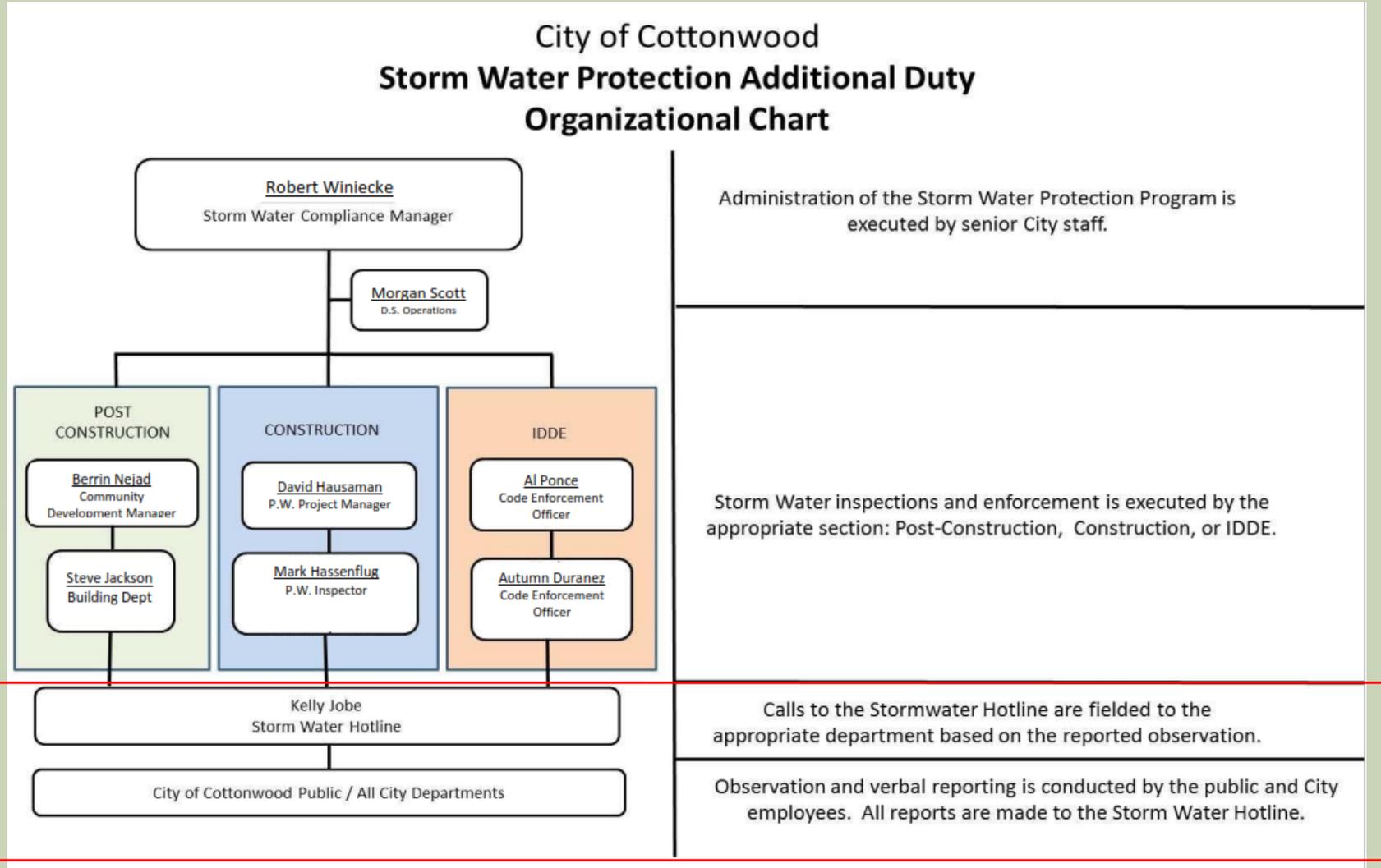


*Anything else that doesn't look like normal rain runoff!*

# HOW TO REPORT ILLICIT DISCHARGES

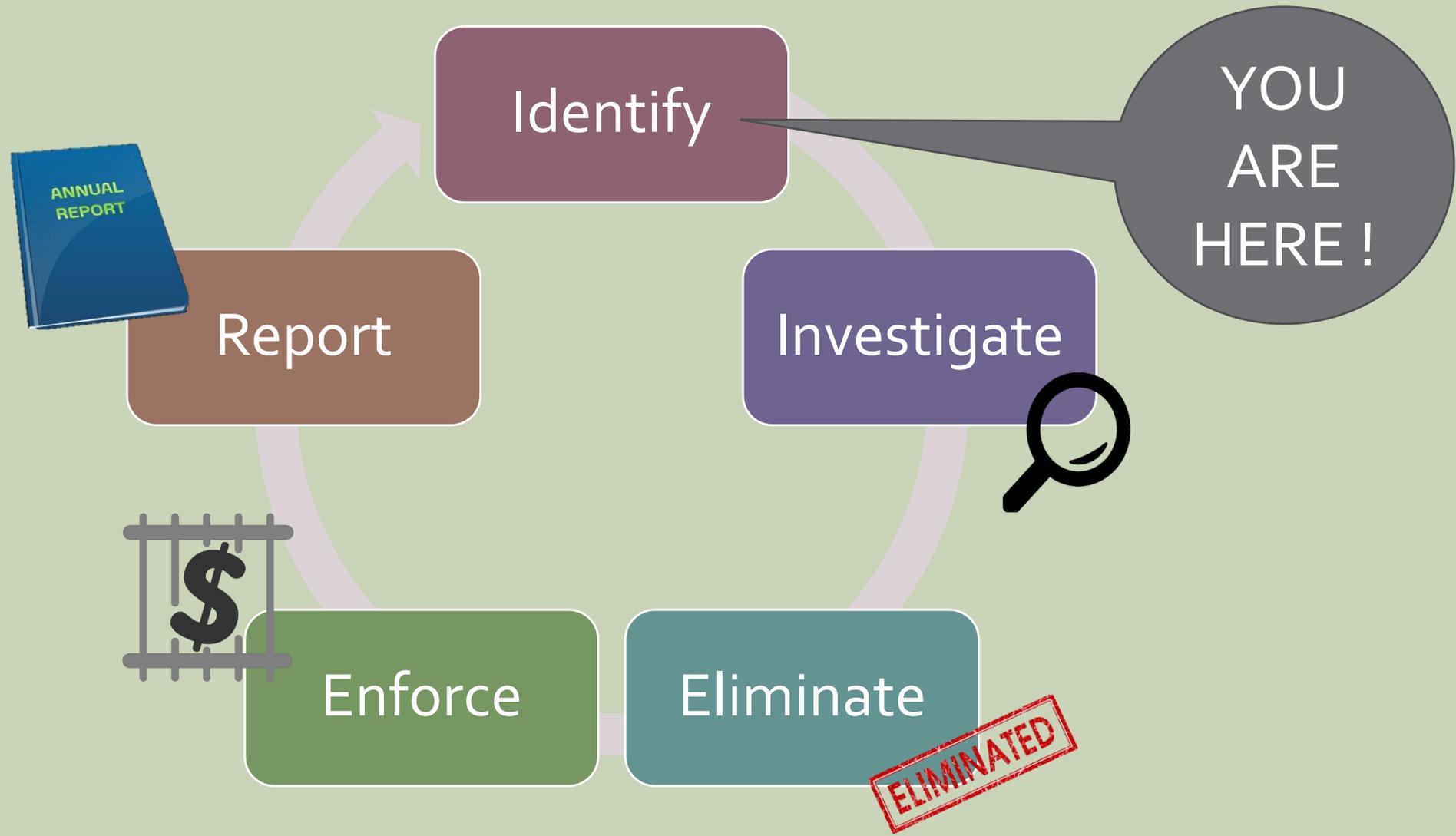
- If a potential illicit discharge is spotted:
  - Identify key information (such as location, discharge characteristics, obvious sources)
  - Take a picture (if safe to do so)
  - Notify Police Department Code Enforcement Officers or Engineering Inspectors by:
    - submitting an online complaint (<http://cottonwoodaz.gov/363/Public-Works>)
    - calling the stormwater hotline (928-340-2775)

# ORGANIZATIONAL CHART FOR STORMWATER PROGRAM



Illicit discharge reporting

# CITY IDDE PROGRAM RESPONSIBILITIES



# HOW CAN YOU HELP?

## 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

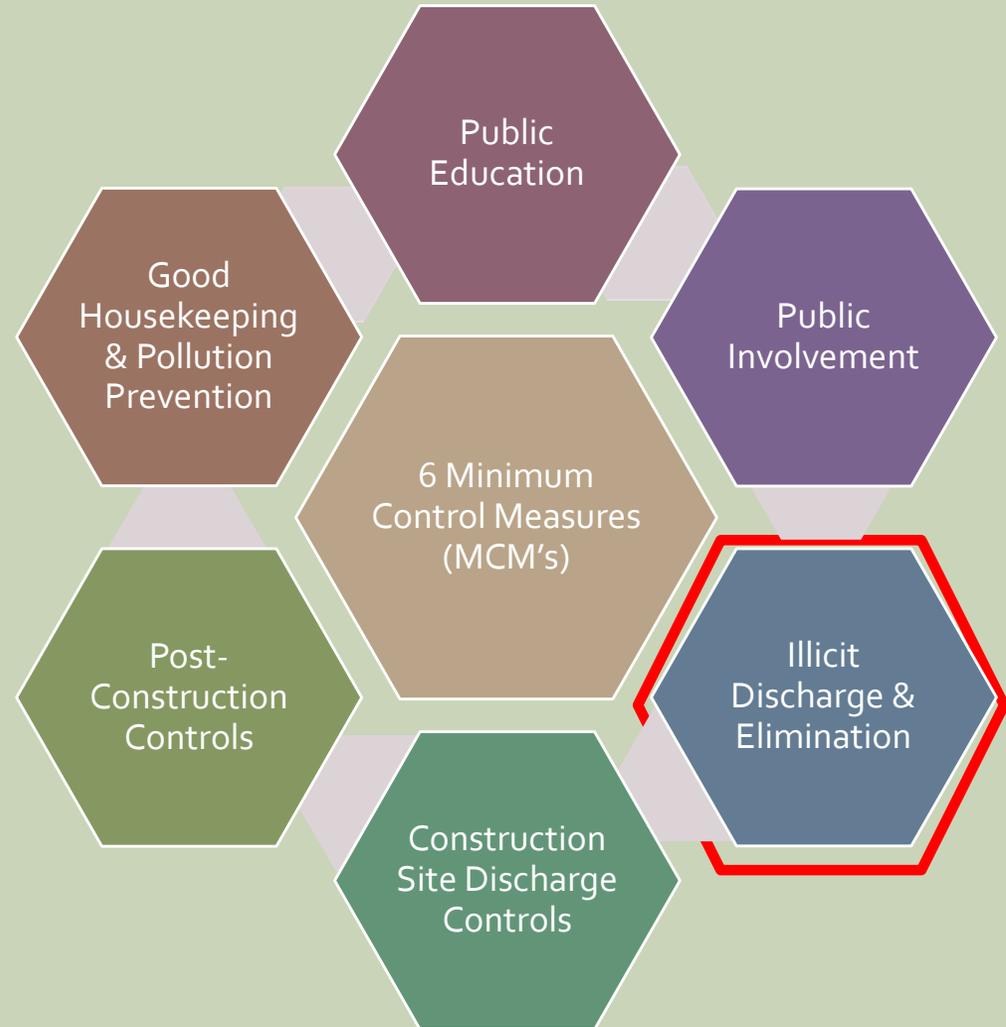
## As an Employee...

- Put vehicles in for service as needed
- Clean vehicles and equipment in designated areas
- Maintain vehicles and equipment in designated areas
- Properly track and report any illicit discharges



# WHAT IS THE IDDE PROGRAM?

- IDDE is just one program element described in the SWMP
- **Illicit discharge detection and elimination** is a comprehensive program that assists the city in detecting, identifying, isolating, regulating, and eliminating illicit discharges.



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# CITY'S IDDE PROGRAM ELEMENTS

Eliminating  
Illicit  
Discharges

Unpermitted  
Discharges

Dry Weather  
Screening

Wet Weather  
Monitoring

Follow-up  
Screening  
Procedures



# ILLICIT DISCHARGE INVESTIGATION METHODS

- Above ground tracking – track discharge upstream until you locate the source
- Below ground tracking – review maps, gis, as-builts, etc.
  - Manhole inspection
  - Dye testing
  - Smoke testing
  - CCTV



# ILLICIT DISCHARGE INVESTIGATION



- Initiate source tracking
- Indicate the potential source
- Use information from the field analysis to help identify the suspected source

**WHO DONE IT?**

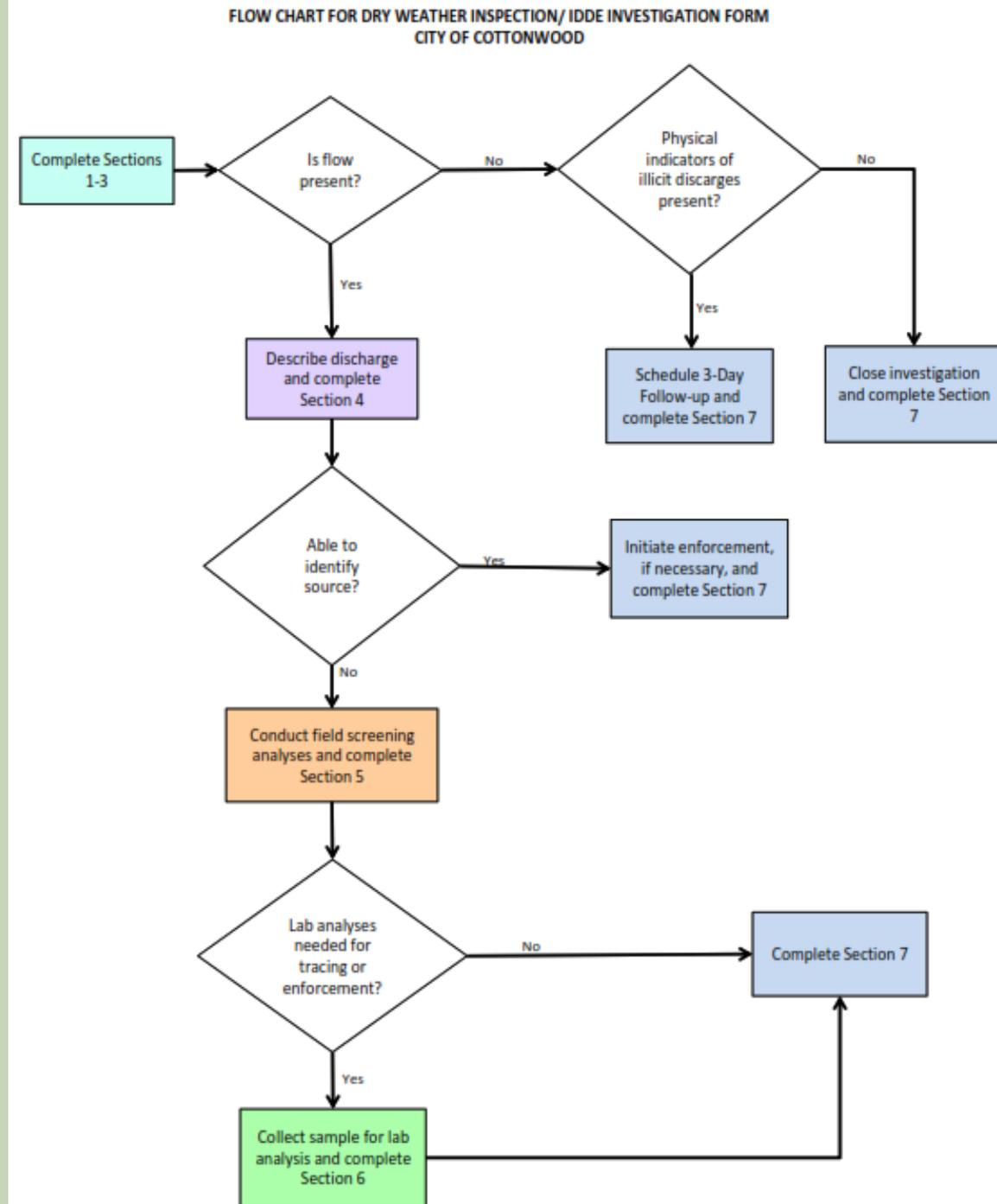
# TRACKING ILLICIT DISCHARGE CONNECTIONS

- Source related
  - Periodic in nature, time of day, one-time discharges
- Program related
  - Mapping, limited resources, task prioritization
- Infrastructure related
  - Access, complexity of system, multi-sources



# ILLICIT DISCHARGE ELIMINATION

- The city will conduct dry and wet weather screenings
- 1 outfall and 4 screening locations
- Wet weather monitoring (2 times per wet season)
  - Summer wet season (June 1<sup>st</sup> – October 31<sup>st</sup>)
  - Winter wet season (November 1<sup>st</sup> – May 31<sup>st</sup>)
- Dry weather screening
  - To be completed during dry periods at least 72 hours after a rain event





# DRY WEATHER SCREENING

- City will inspect 20% of outfalls annually
- Illicit discharges found will be followed upstream ASAP
- Investigate potential facility discharge and re-inspect to ensure no additional discharge is present
- Follow IDDE Investigation Form and SOP



**DRY WEATHER INSPECTION/ IDDE INVESTIGATION FORM  
CITY OF COTTONWOOD**

**Section 4: Discharge Description (flowing outfalls only)**

INDICATOR	CHECK if Absent	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	<input type="checkbox"/> (No odor)	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/Sour <input type="checkbox"/> Sulfide <input type="checkbox"/> Laundry <input type="checkbox"/> Petro/gas <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1-Faint	<input type="checkbox"/> 2-Easily detected	<input type="checkbox"/> 3-noticeable from a distance
Color	<input type="checkbox"/> (Colorless)	<input type="checkbox"/> Gray <input type="checkbox"/> Brown <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Red/Orange <input type="checkbox"/> Multicolor <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1-Faint color visible in sample bottle	<input type="checkbox"/> 2-Color clearly visible in sample bottle	<input type="checkbox"/> 3-Clearly visible in outfall flow
Turbidity	<input type="checkbox"/> (Clear)	See severity	<input type="checkbox"/> 1-Slightly cloudy	<input type="checkbox"/> 2-Cloudy	<input type="checkbox"/> 3-Opaque
Floatables – does not include trash!	<input type="checkbox"/> (Clean)	<input type="checkbox"/> Sewage <input type="checkbox"/> Suds/Foam <input type="checkbox"/> Oil sheen <input type="checkbox"/> Plant Debris <input type="checkbox"/> Other: _____	<input type="checkbox"/> 1-Few/slight; origin not obvious	<input type="checkbox"/> 2-Some indications of origin	<input type="checkbox"/> 3-Some; origin obvious
Do physical indicators suggest an illicit discharge is present? (Y/N)					
Able to trace flow to source? <input type="checkbox"/> Yes If yes, proceed to Section 7. <input type="checkbox"/> No If no, proceed to Section 5.					

Record all background data associated with the sampling event

**Section 5: Field Screening Analyses (flowing outfalls only)**

Parameter	Results	Comments	Equipment
Temperature			
pH			
Total Residual Chlorine			
Phenols			
Detergents			
Total Copper			

Document known details

**Section 6: Sample Collected for Lab Testing (see flow chart) (flowing outfalls only)**

1. Sample for the lab?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, explain (source identified, or other): _____
2. Chain of Custody (COC) completed:	<input type="checkbox"/> Yes <input type="checkbox"/> No	COC Information (Date, Time, Lab Name): _____
3. Analyses requested:	<input type="checkbox"/> <i>E. coli</i> <input type="checkbox"/> Metals <input type="checkbox"/> Oil & Grease <input type="checkbox"/> Total Petroleum Hydrocarbons <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs <input type="checkbox"/> Pesticides <input type="checkbox"/> PCBs <input type="checkbox"/> Other _____	

Document samples collected

**Section 7: Enforcement and Resolution**

<input type="checkbox"/> Source identified (describe below) <input type="checkbox"/> 3-Day Follow-up Inspection required (describe reason why below)
<input type="checkbox"/> No flow and no sign of illicit discharge, investigation closed.
Enforcement action taken? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe:
Source/Resolution:

Describe any actions taken to enforce ID

# WET WEATHER MONITORING



- Inspect 1 outfall and 4 monitoring points, 2 times each wet season
  - Summer Wet Season (June 1<sup>st</sup> – October 31<sup>st</sup> )
  - Winter Wet Season (November 1<sup>st</sup> – May 31<sup>st</sup> )
- Follow IDDE Investigation Form and SOP

# QUALITATIVE SCREENING

Collect samples in a clear, clean container.

Characterize sample:

- Color
- Odor
- Turbidity
- Floatables
- Sediment
- Oil sheen



# QUANTITATIVE SCREENING

- Measure flow rate and conduct field screening analysis (when/if appropriate)
- Analytes
  - Temperature
  - pH
  - Phenols
  - Copper
  - Chlorine
  - Detergents
  - Organic Substances



# UNPERMITTED DISCHARGES

- Identify construction sites operating without CGP coverage
- City will cross-reference the list of businesses using ADEQ's MegaSearch database;

(<http://megasearch.azdeq.gov/megasearch/>)



# RECORDKEEPING

- The City will keep any records pertaining to the Permit for a minimum of 3 years
- This includes:
  - Reports
  - Inspection Records
  - Enforcement Actions
  - Follow-up Documentation



# WHY DOCUMENT?

Each year an annual report must be prepared.

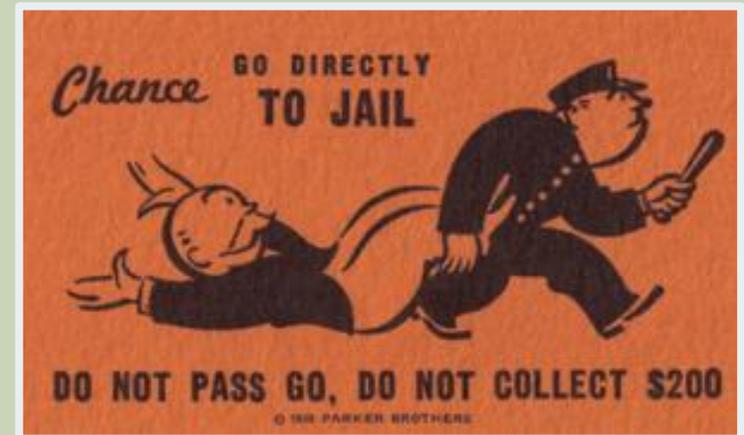
Annual report contains numeric and narrative descriptions of MS<sub>4</sub> activities including:

- Number of inspections
- Results of enforcement measures
- Number of operators educated
- Names and locations of potential non-filers



# ILLICIT DISCHARGE ENFORCEMENT

- The City has legal authority to fully implement the SWMP including the right to prohibit illicit discharges to the MS<sub>4</sub>, conduct inspections, and carry out necessary enforcement procedures.
- The City applies the following enforcement measures:
  1. A verbal warning.
  2. Written warning.
  3. Notice of Violation (NOV).
  4. Criminal penalties (if compliance is not met)



# SAMPLE FIELD EQUIPMENT AND PPE LIST

- Camera
- Storm drain and street maps
- Hook/Crowbar
- Clipboards
- Waterproof marker/pen
- Mirror
- Field Sheets
- Sledgehammer
- Reflective safety vests
- First Aid Kit
- Spray paint
- Flashlight or spotlight
- Rubber/latex gloves
- Gas monitor or probe
- Manhole
- Two-way radios
- Measuring Tape
- Handheld GPS



# HEALTH AND SAFETY CONCERNS

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



# QUIZ QUESTIONS

- 1. How many outfall locations does Cottonwood have?
- 2. How many screening locations does Cottonwood have?
- 3. What kind of containers are used for visual assessments?

# QUESTIONS/COMMENTS?

Any questions or concerns contact:

Robert Winiecke

[rwiniecke@cottonwoodaz.gov](mailto:rwiniecke@cottonwoodaz.gov)

(928) 634-8033



**City of Cottonwood**