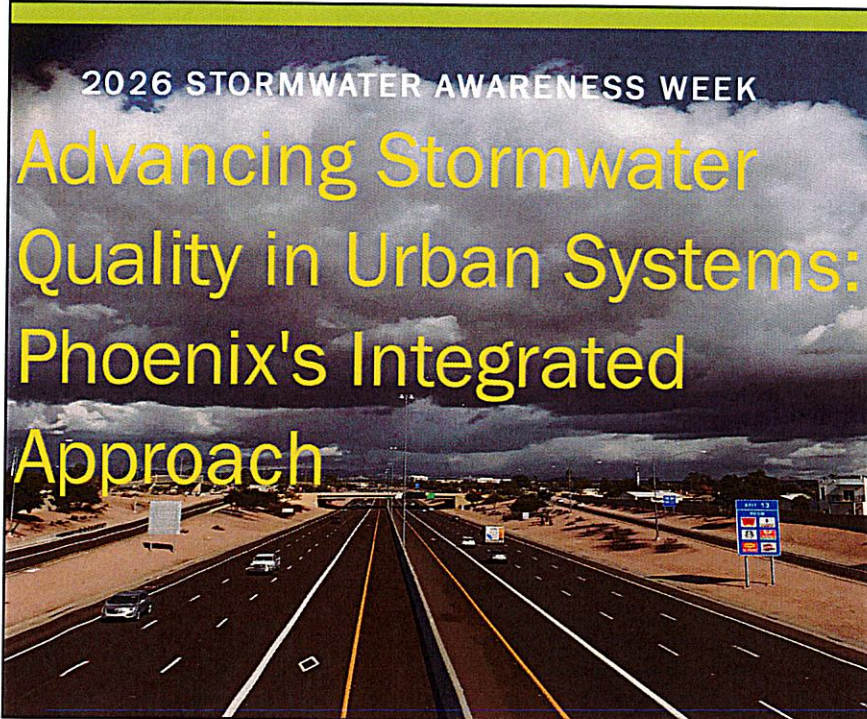




2026 STORMWATER AWARENESS WEEK

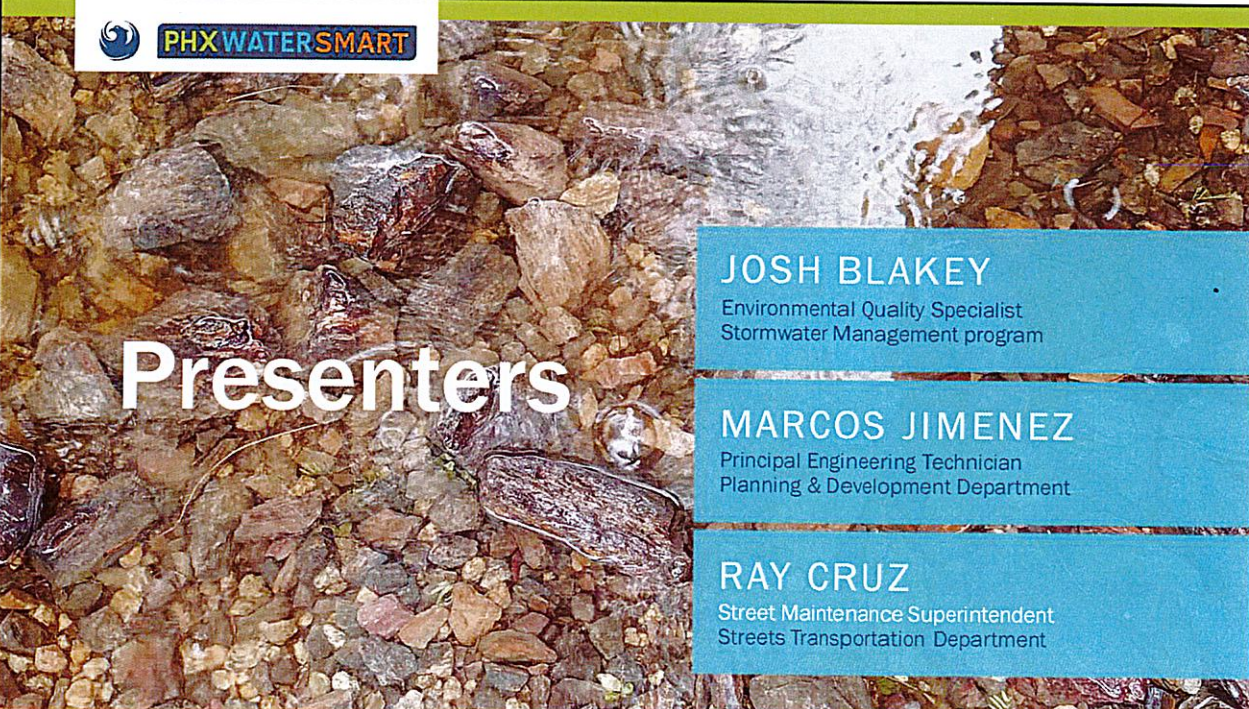
Advancing Stormwater Quality in Urban Systems: Phoenix's Integrated Approach







1





Presenters

JOSH BLAKEY
Environmental Quality Specialist
Stormwater Management program

MARCOS JIMENEZ
Principal Engineering Technician
Planning & Development Department

RAY CRUZ
Street Maintenance Superintendent
Streets Transportation Department

2

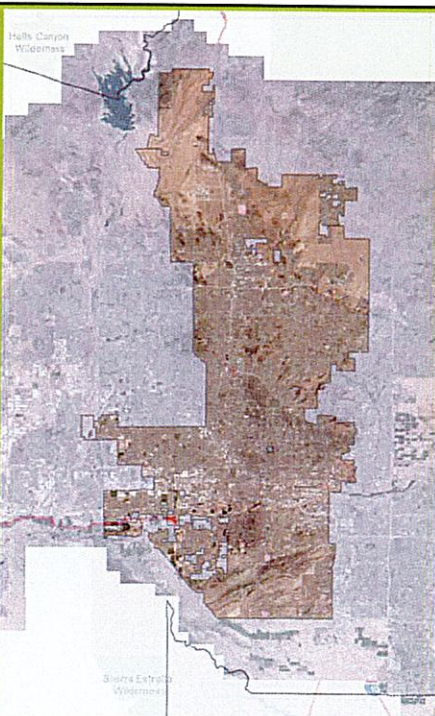


PHXWATERSMART

Outline

- Background
 - City of Phoenix MS4 General Info
 - Rainfall in the Desert
- Phoenix MS4 Program
 - Common Pollutants
 - Stormwater Management Program
 - Outreach Efforts
- PDD Program
- STR Program
- WSD Program
- City of Phoenix Projects

3



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City Phoenix MS4 Boundary

Facts:

- 520 Square Miles – N to S is 43 miles!
- 1 sq mile of water!
- Elevation ~1100 feet
- Population >1.6 million
- 300+ days of sunshine
- Average rainfall 7.22 (Sky Harbor)



4

Facts:

- 5000+ miles of streets
- Nearly 23,000 operational inlets
- 781 outfalls
- Most outfalls discharge to dry “rivers”



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5



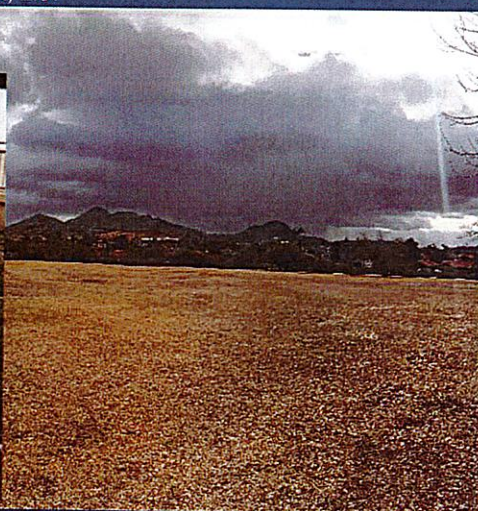
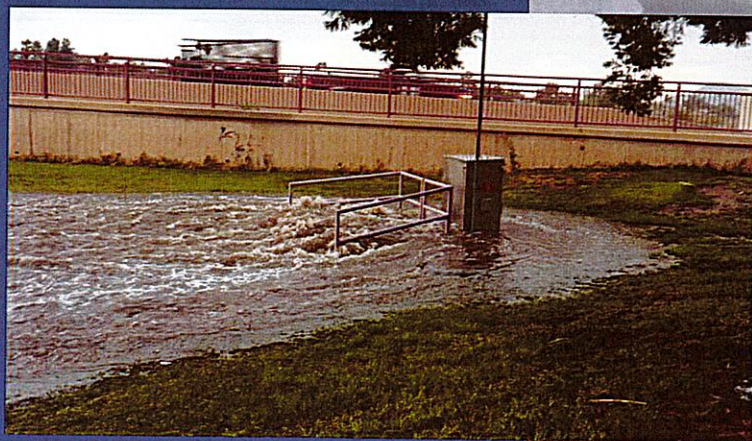
PHXWATERSMART

Rain in the Desert

A. Two distinct “seasons”

A. Winter Rains (Nov-Mar) 3.88"

B. Summer Rains (Jul-Oct) 2.97"



6



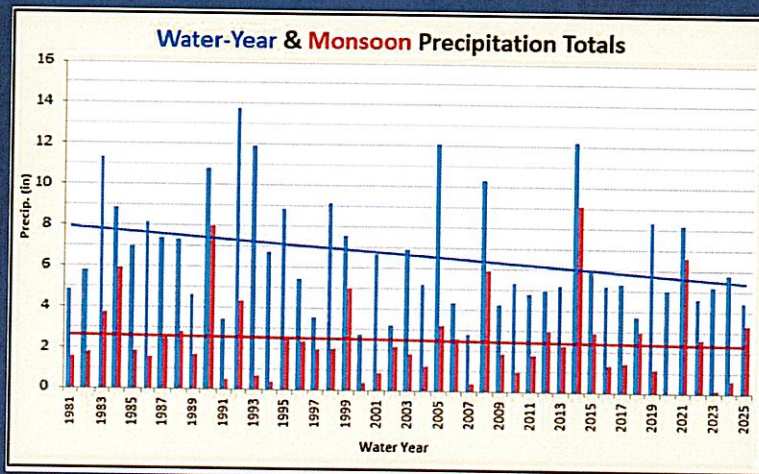
PHXWATERSMART

Rain in the Desert

A. Precipitation (FCDMC Water Year Oct 1 to Sept 30)

A. Annual Range from 2.72" to 13.74"

B. Monsoon Range from 0.12" to 9.13"



Frequency Statistics	Inches	Date
Greatest 15-min. total:	1.18	08/13/2021
Greatest 1 hour total:	2.20	07/10/2008
Greatest 3 hour total:	3.03	09/08/2014
Greatest 6 hour total:	3.94	09/08/2014
Greatest 24 hour total:	3.94	09/08/2014
Greatest 72 hour total:	3.94	09/08/2014

5

7



PHXWATERSMART

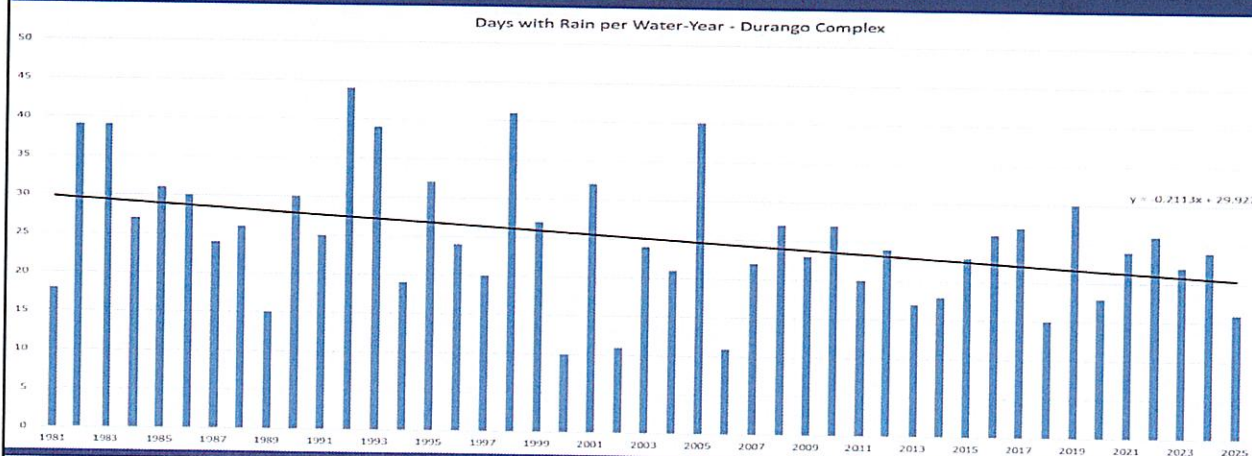
Rain in the Desert

A. Sporadic Rainfall Patterns (FCDMC Water Year Oct 1 to Sept 30)

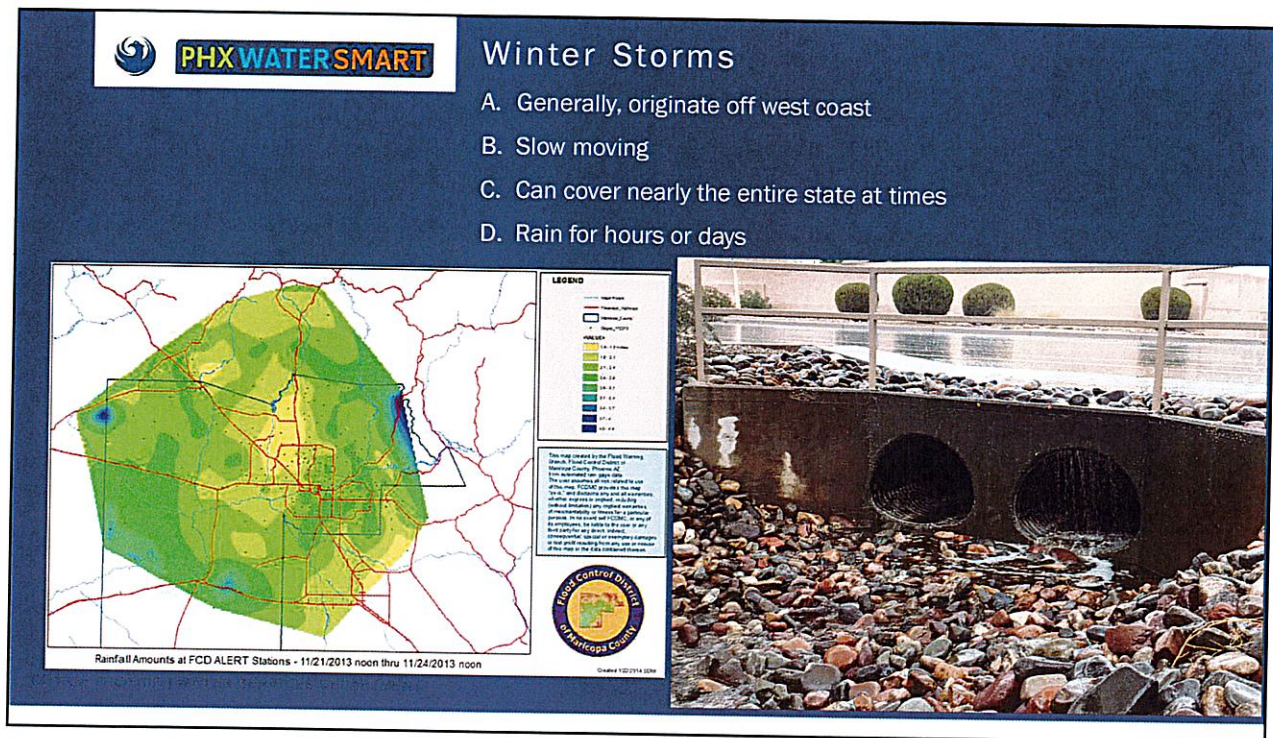
A. Low 10 Events

B. High - 44 Events

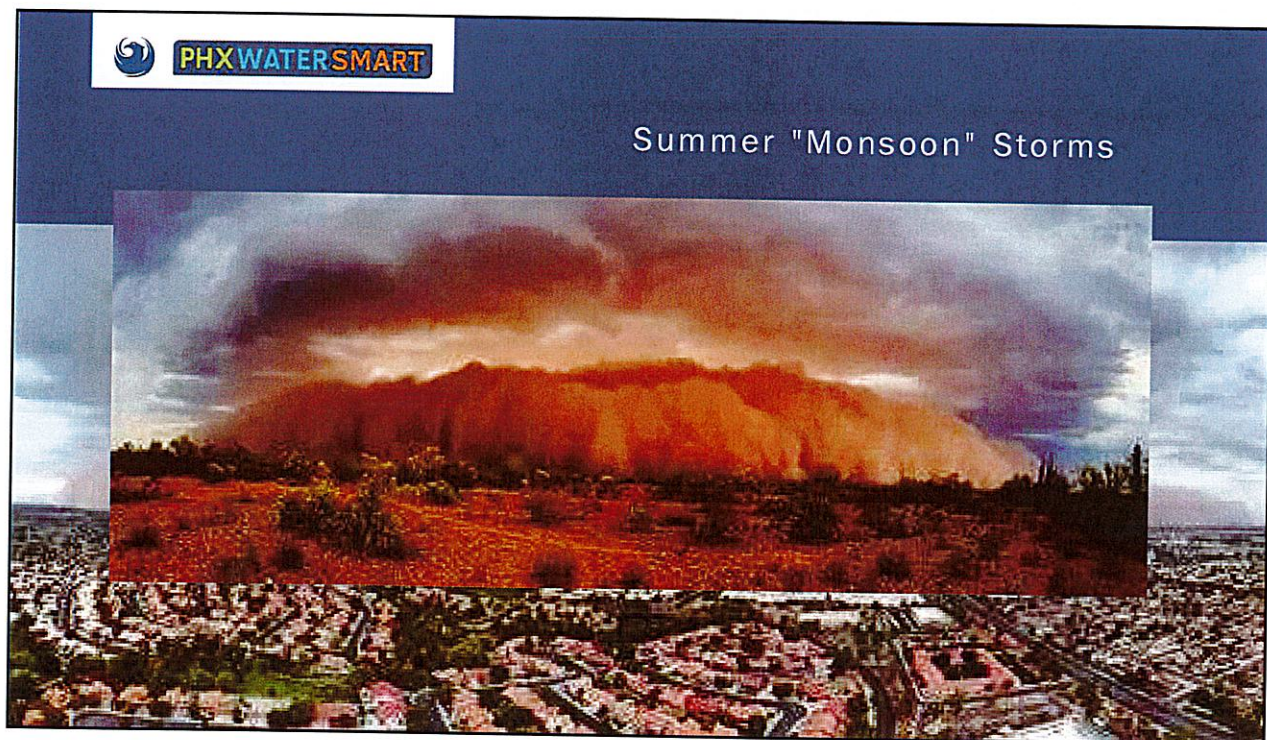
C. Average - 25 Events



8



9



10

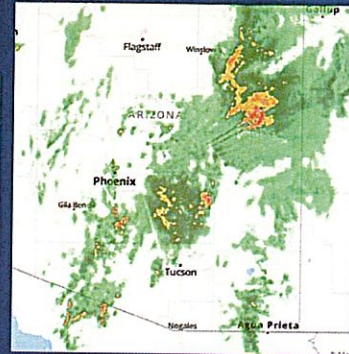
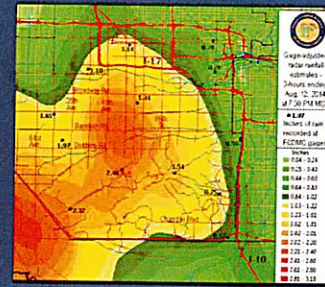


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Summer "Monsoon" Storms

- A. Originate south, south east
- B. Fast moving
- C. Can be highly localized
- D. Rain for minutes to hours

NEED Photos here

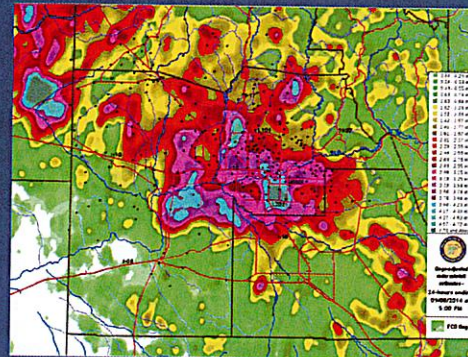


11



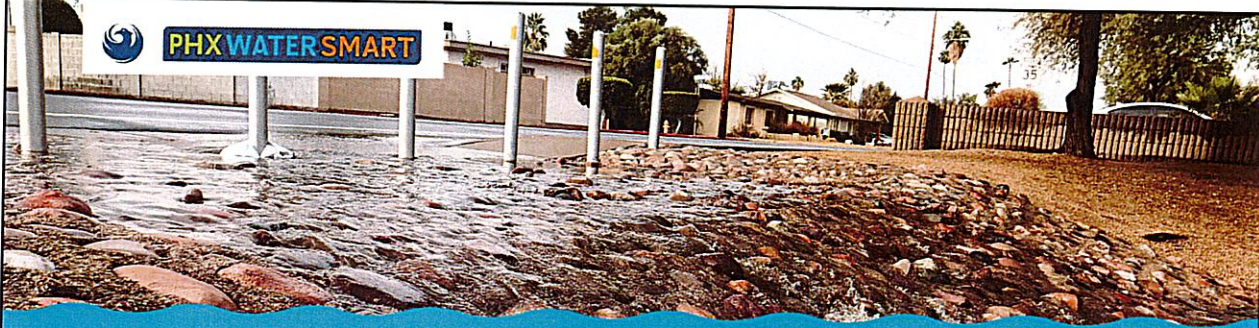
PHXWATERSMART

Summer "Monsoon" Storms September 8, 2014



Some areas got over 5 inches of rain
I-10 Flooded out due to pump failure
Massive SSO's due to stormwater
infiltrating sewer system

12

City of Phoenix MS4

NO STORMWATER TREATMENT SYSTEM
 MASTER PLAN – SOME TREATMENT IN-SITU
 DISCHARGE TO RETENTION/DETENTION BASINS, WASHES, RIVERS

13



Common Stormwater Quality Exceedances



E. COLI

- Bacteria
- Improper Disposal



DISSOLVED COPPER

- Brake pad dust
- Architectural materials
- Pesticides/Algicides



TOTAL LEAD

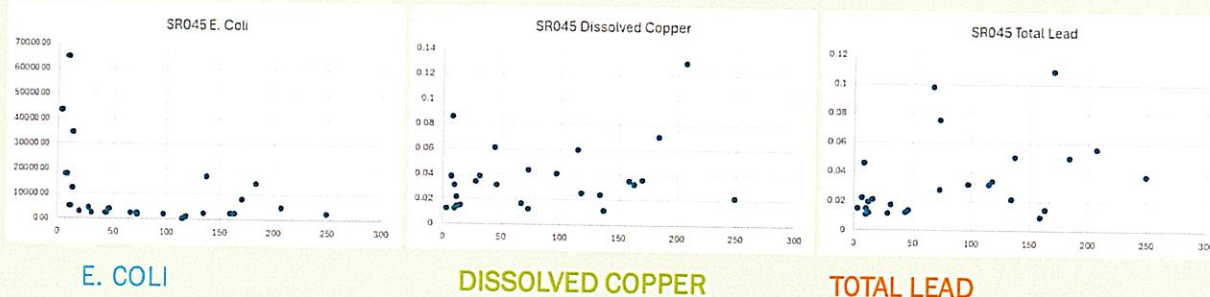
- Atmospheric Deposition
- Vehicular Traffic

14



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Common Stormwater Quality Exceedances



15

Common Sources of Stormwater Pollution



PHXWATERSMART



SEDIMENT



ILLEGAL DUMPING



IMPROPER STORAGE



TRASH



SPILLS



CHEMICALS

16



17



Stormwater Management Program

- ➔ Multi-Department Effort
- ➔ Comprehensive Activities
- ➔ Written Stormwater Management Plan
 - How the City complies with the MS4 permit
- ➔ Primarily funded by a Stormwater Fee
 - \$0.95 – monthly charge (single family residential)
 - Industrial/Commercial fee varies by meter size
- ➔ Summarize Activities in the Annual Report

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Stormwater Management Responsibilities

- Working group manages compliance activities
- Reports to executive oversight committee



Admin	Annual Report	Construction Inspections	Training	Public Outreach	Drainage System Maintenance
Facility Inspections	Sampling/Monitoring	Plan Review	City Facility Inspections	Solid Waste Activities	Street Sweeping
Outfall Inspections	Public Outreach	Post-Construction Program	City Spill Reports	Household Haz Waste	Mapping
IDDE Investigations			MS4 Constr. Inspections		Floodplain Management

19



CIP Funded Project



20



Public Involvement Public Outreach



- Annual Workshop
- Household Hazardous Waste Collection
- River And Wash Cleanup Events
- Annual Compliance Academy
- Public Outreach Events
- Social Media, Newsletter, Videos
- Member Stormwater Outreach for Regional Municipalities (AZSTORM)
- Public Reporting System
 - Hotline 602-256-3190
 - Phoenix.gov/Stormwater
 - Public Reporting System: Ask.Water@Phoenix.gov

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Stormwater Program Activities

Planning & Development

- Plan Review
- Construction Inspections
- Post-Construction Program

Street Transportation

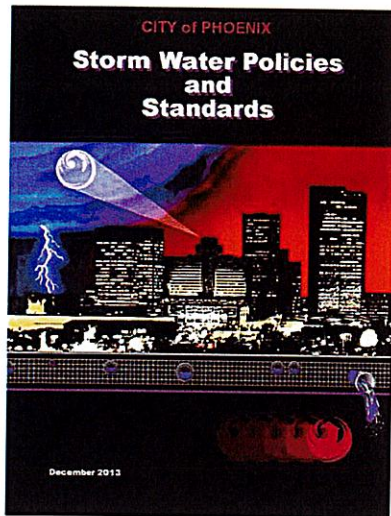
- Operation Overview
- Natural Conveyance Maintenance
- Street Sweeping

Water Services

- Administration
- Inspections
- IDDE Program
- Wet Weather Monitoring




22



Planning & Development Department

PLAN REVIEW & PERMITTING

- Grading & Drainage/Paving Plan Review
- Stormwater Management Plan Review
- Grading & Drainage/Paving Plan Permits
- Construction Stormwater Permit

23



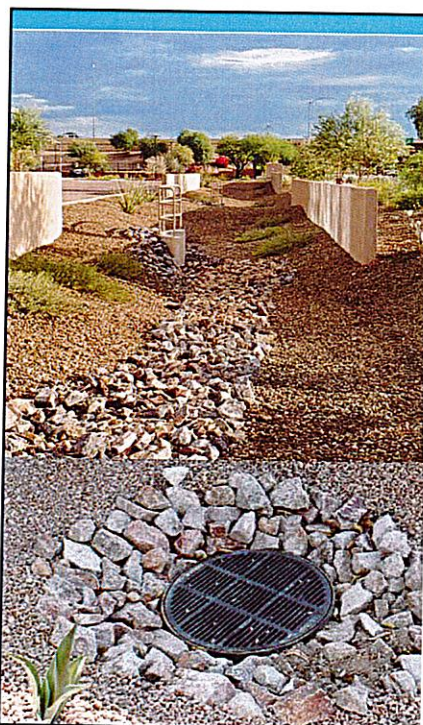
Planning & Development Department

CONSTRUCTION INSPECTIONS

- Pre-construction
- Progress
- Final
- Warranty Walk



24



Planning & Development Department

POST-CONSTRUCTION PROGRAM

- The City must develop a program that includes an inventory, inspection, maintenance, and tracking program.
- **Effective July 1, 2022**
- All Development/Redevelopment Projects
 >= 1 Acre In Disturbance
- Contains at Least 1 Post-construction Control

25



Planning & Development Department

POST-CONSTRUCTION PROGRAM

- **Effective July 1, 2022**
- Inventory, inspect, verify maintenance
- All Development / Redevelopment projects
 >= 1 Acre in Disturbance
- Contains at Least 1 Post-construction Control



City of Phoenix
PLANNING & DEVELOPMENT DEPARTMENT

Stormwater Post-Construction Control Operations & Maintenance Plan Template

The purpose of this template is to provide guidance and set the minimum submittal requirements for the Stormwater Post-Construction Control Operations & Maintenance Plan Template.

In 2021, new permit requirements for controls were included in the City's Municipal Separate Storm Sewer System (MS4). The City is now required to inventory, inspect, and track for permanent stormwater post-construction controls. Authority to administer this program is granted in Phoenix City Code (PCC) Chapters 32A and 32C.

This template shall be completed and submitted in conjunction with the Grading & Drainage (GSD) plans for projects that meet the criteria below:

- Private or public development and redevelopment project
- Application was submitted on or after July 1, 2023
- Area of disturbance is one (1) acre or greater in size
- Project contains a stormwater post-construction control
- Control discharges or has the potential to discharge to the City's MS4

Maintenance of stormwater post-construction controls is not a new requirement. PCC and the current Stormwater Policies and Standards require permanent controls to be maintained to design standards. Regular inspections of controls and addressing maintenance needs early is the most reliable approach to meet this standard. This approach also benefits the property owner, identifying and resolving issues when they are small is more cost effective than waiting until a major control failure occurs.

The template will serve as a guide for the property owner or their designee by addressing the most common types of maintenance activities for each control type. Sections Two through Six of the template should be completed by the applicant or their designee (consultant, designer, etc.) using industry best management practices. It will be charged the "Analysis of Master Drainage or Storm Management Report" fee as outlined in Phoenix City Code, Chapter 9, Appendix A.2.

Questions about this template should be directed to the Stormwater Post Construction Program Manager at 602-534-1672 (voice), 7-1-1 (TTY), or postconstruction.storm@phoenix.gov

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City of Phoenix
PLANNING & DEVELOPMENT DEPARTMENT

Stormwater Post-Construction Control Operations & Maintenance Plan Template

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This template will serve as a guide for the most common types of maintenance activities of the template should be completed by PCC using industry best management practices or Storm Management Report Appendix A.2.

Questions about this template should be Program Manager at 602.261.4122 or stormwater@phoenix.gov

Planning & Development Department



Stormwater Post-Construction Program Inventory Form

PLANNING & DEVELOPMENT DEPARTMENT

Effective July 1, 2021, this form must be included with the grading permit (also see deconstruction). This information will be used to produce an inventory of permanent stormwater features, and ensure compliance with stormwater requirements per the Arizona Department of Environmental Quality's Municipal Separate Stormwater System (MS4) Phase I Permit issued to the City of Phoenix (Section 8 & 9).

Project Name: _____ Station Number (Mile): _____
 Project Address: _____ Cross Streets: _____
 Project Owner: _____ Company: _____
 City of Phoenix Project Number: _____ Plot Number Number (LPTC): _____
 Project Phase Size (acres): _____ Stormwater Permit Number (COWA/CORC): _____

(If more than one structure, complete one additional copy if necessary)

Post-Construction Control Feature Submittal	Feature Identifier (Per Plan Drawing Sheet 1 of 2)	Regulatory Design Information (Flow Rate, Volume, etc.)	Stormwater Office Use (Check with high)	Coordinates of Feature (Latitude and longitude)	Comments or Additional Information
Retention Basin					
Detention Basin					
Retention Basin					
Retention Basin					
Retention Basin					
Retention Basin					
Retention Basin					
Retention Basin					
Retention Basin					
Retention Basin					

POST-CONSTRUCTION PROGRAM

- Operations & Maintenance Plan
- Inventory Form
- Education And Enforcement
- Inspections
 - Administrative
 - Random/Annual Inspections
 - Complaints



City of Phoenix
PLANNING & DEVELOPMENT DEPARTMENT



PRESERVE SHAPE BUILD



PLANNING & DEVELOPMENT
**PRESERVE
SHAPE
BUILD**

Connect With Us!

Postconstruction.
storm@phoenix.gov

 @phxplananddev

Website



Green
Stormwater
Infrastructure





Street Transportation Department



STREET MAINTENANCE OPERATIONS OVERVIEW

Operational Inlets

- 22,886 inlets citywide
- Inspected annually and cleaned as needed to ensure optimal water flow

Vactor Truck Fleet

- 5 Vactor trucks in operation
- Used to clean and rod storm drain lines, removing debris and obstructions

Contracted Services

- Contractor supports operations by:
- Cleaning storm drain lines
- Conducting CCTV inspections
- Cutting and removing root intrusions

29



Street Transportation Department

STREET SWEEPING OPERATIONS

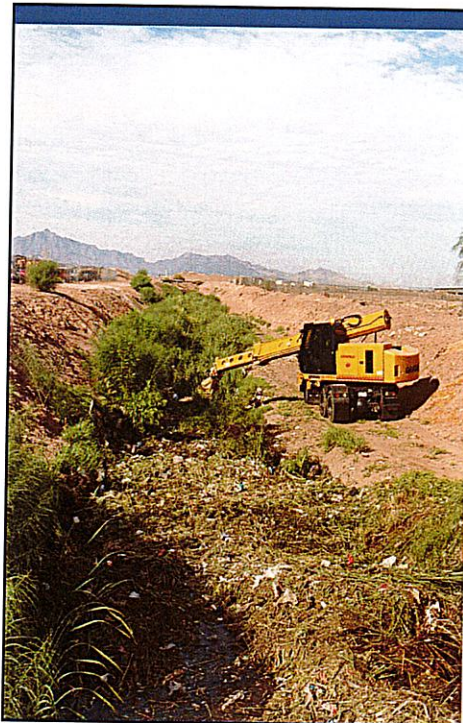
- 5,000+ miles of streets
- 36 street sweepers
 - Prevent debris from entering storm drain inlets

Sweeping Schedule

- Majors and collectors 14 days
- Local streets quarterly



30



Street Transportation Department

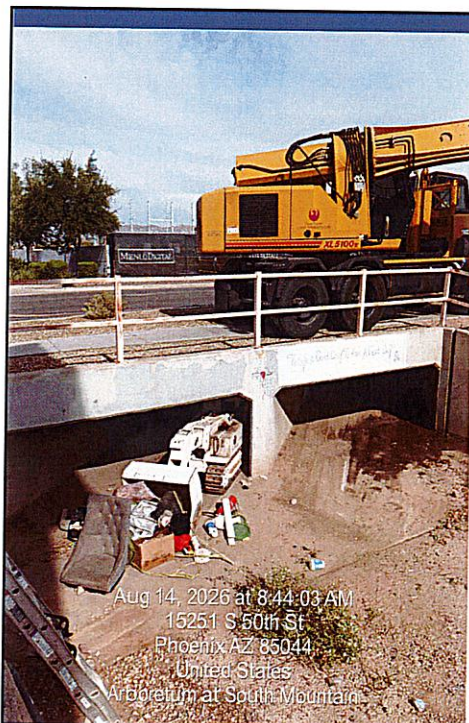


NATURAL CONVEYANCE SYSTEM MAINTENANCE

Coverage

- Approximately 29.5 miles of natural conveyance channels
- Maintained through a combination of in-house crews and contracted services

31



Street Transportation Department



NATURAL CONVEYANCE SYSTEM MAINTENANCE

Culvert Cleaning Operations - Equipment Utilized:

- *Micro Tracs*: Remote-controlled, multi-task skid steer loaders for compact or hard-to-reach areas
- *Backhoes & Gradall Excavators*: Deployed in larger, more accessible culverts
- *Mowers & Chippers*: Used for vegetation control and maintenance

32

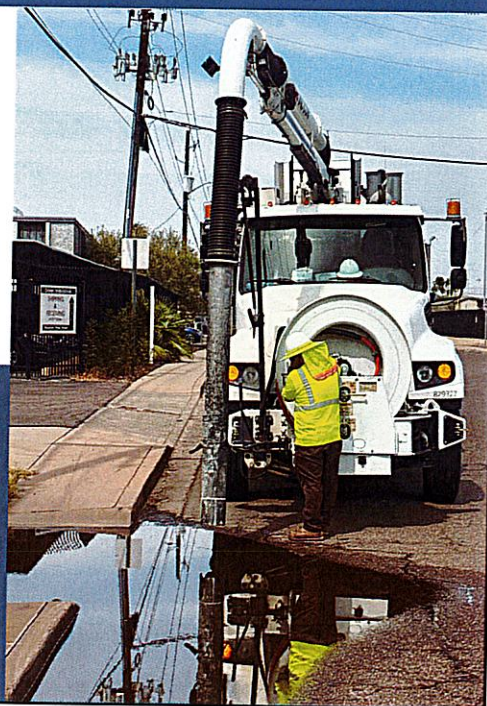


Connect With Us!

Dispatch (24/7)
602-262-6441



Submit a work
order through
myPHX311



33



PERMIT

ADEQ.gov

Permit No.	AZ000003
STF No.	100334
Place ID No.	143368

AUTHORIZATION TO DISCHARGE STORMWATER FROM A MUNICIPAL SEPARATE STORM SEWER SYSTEM TO PROTECTED SURFACE WATERS UNDER THE ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Arizona Revised Statutes (A.R.S.) Title 49, Chapter 1, Article 1.1, the Federal Water Pollution Control Act, (33 U.S.C. §1251 et seq., as amended), and Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Article 9, and amendments thereto, the

City of Phoenix
Phase I Municipal Separate Storm Sewer System (MS4)
200 West Washington Street
Phoenix, Arizona 85005-1611

is authorized to discharge stormwater from the municipal separate storm sewer system (MS4) owned or operated by the City of Phoenix to waters of the U.S. (WOTUS) and non-WOTUS protected surface waters in accordance with the terms and conditions set forth in this permit. State requirements for discharges to non-WOTUS protected surface waters are enforceable solely by the Arizona Department of Environmental Quality (ADEQ).

Annual Registration Fee (A.R.S. 49-255 01 and A.A.C. R13-14-104)

The annual registration fee for this permit is payable to ADEQ each year.

This permit shall become effective on July 23, 2026

This permit and the authorization to discharge shall expire on June 30, 2031

Signed May 28, 2026

Josephine Maresca, Deputy Director
Water Quality Division
Arizona Department of Environmental Quality



PHX WATERSMART

Water Services

- Administration of Permit
 - July 2026-June 2031
- Prepare and Facilitate SWMP
- Prepare Annual Report
- Submit Discharge Monitoring Reports

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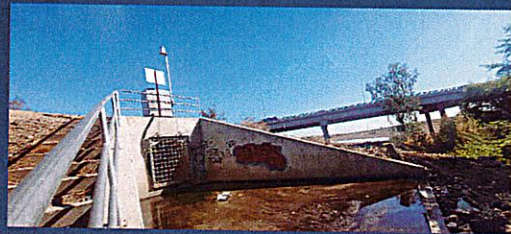
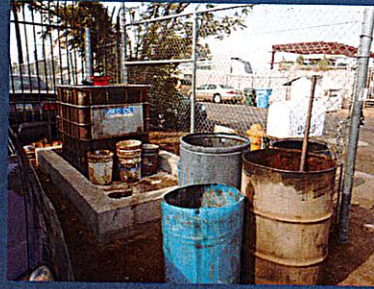
Water Services Activities

Commercial/Industrial Inspections

- 3-5 Year Cycle
- Enforcement

Outfall Inspections

- 5 Year Cycle
- Priority Annual



35



PHXWATERSMART

Water Services Activities

IDDE Investigations

- Between 250-300 complaints per FY
- Enforcement

Camera Operations

- Push Camera
- Pull Camera
- CCTV Camera



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Water Services Activities

Wet Weather Monitoring

- 5 Monitoring Stations
- Winter Nov 1- May 31
- Summer June 1 to Oct 31
- Analyze between 25-125 samples depending on year



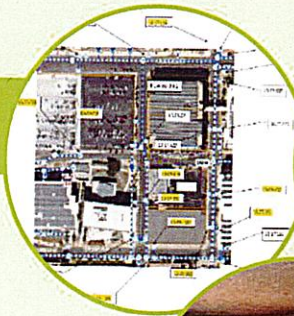
37



PHXWATERSMART

Catch Basin Screen Pilot Project Wing-Gate

CATCH BASINS
DOWNTOWN
PHOENIX



TRASH IN
OUTFALL



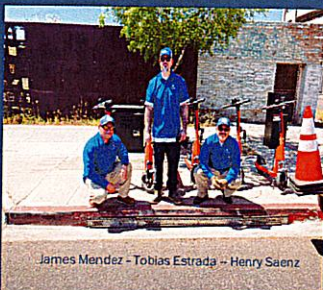
TRASH IN
CATCHBASIN

38



Phoenix using new tech to keep trash out of city storm drains

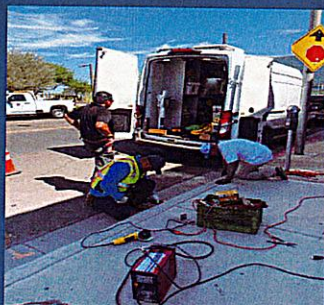
More than 40 grates have been installed around the city, with the main goal of pollution prevention.



James Mendez - Tobias Estrada - Henry Saenz



VIDEO







39



Before and After

BEFORE



AFTER



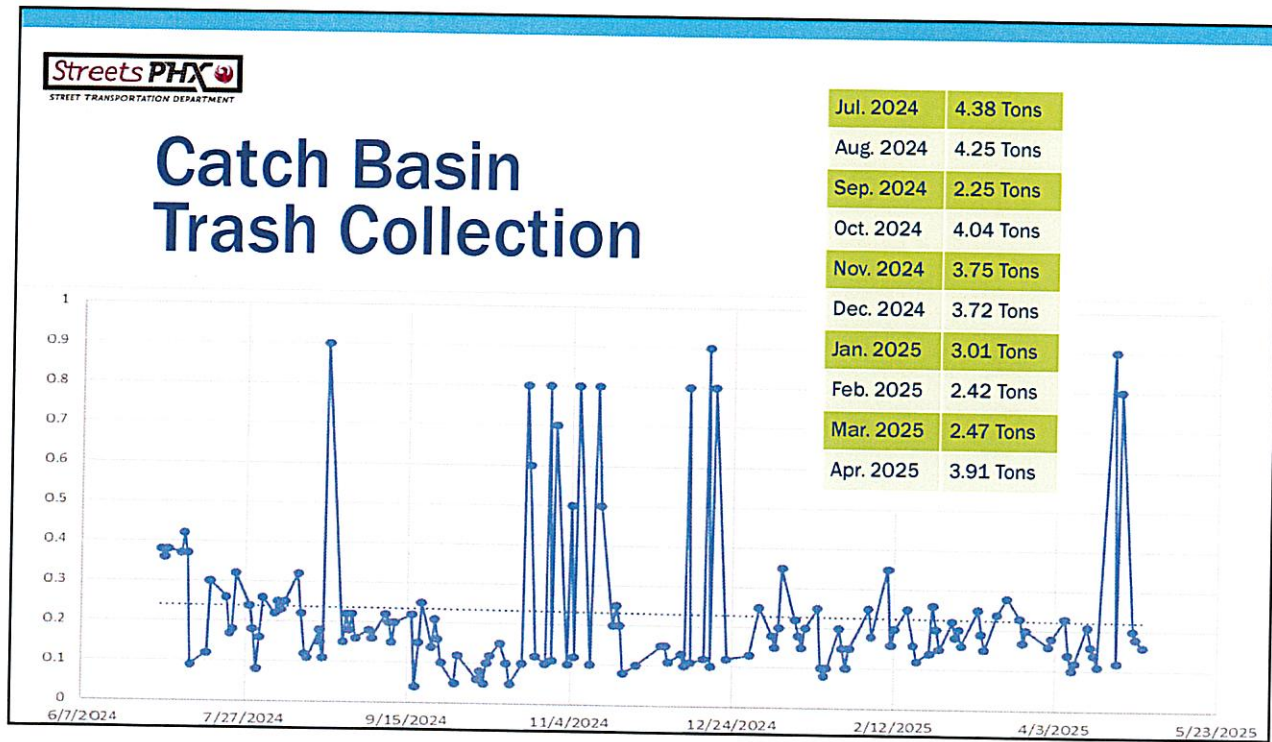
BEFORE



AFTER



40



41

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STOP POO-LUTION: Bag it, tie it, trash it!

→ Permit Requirement to Measure Outreach Effectiveness

→ Working with Consultant

- Outreach Strategies
- Report Documenting Outreach Efforts

→ Partnership With Parks Department

→ Focus On 2 Trail In South Mountain Park

- Telegraph Pass
- Pima Canyon

→ Controlled Environment

→ Data Collection – Field Efforts

→ Outreach Event Kickoff

→ Monthly Outreach Efforts

→ Final Data Collection

→ Submit Final Report To ADEQ With Annual Report

We all have a responsibility to keep stormwater safe and clean.

STOP POO-LUTION

BAG IT, TIE IT, TRASH IT!

Pet waste doesn't just disappear. When left behind, bagged or unbagged pet waste can pollute local water bodies. Proud pet guardians can prevent stormwater pollution by picking a bag for each walk to pick up their pet's waste and dispose of it correctly in the trash. Cleaning up after your pets keeps our community and environment healthy.

PHXWATERSMART **HIKE RIGHT** **STOP POO-LUTION** **BAG IT, TIE IT, TRASH IT!**

City of Phoenix Water & Gas Department, 2024-2025 Water Region Survey, 2617 Ave. Phoenix, AZ 85001

waterworks.phoenix.gov

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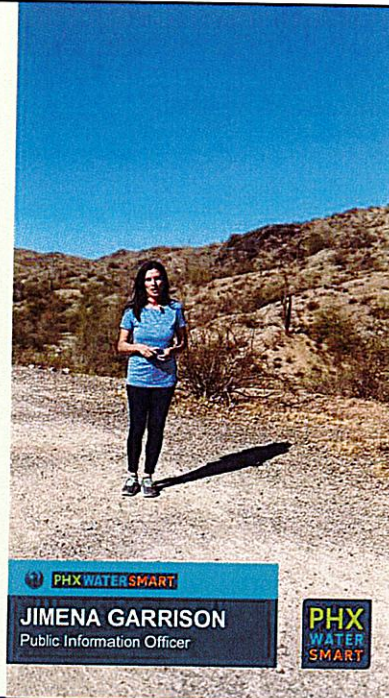
Local News



Officials raise awareness on need to keep trails clear of pet waste

Phoenix officials stress importance of keeping pet waste off popular trails

According to South Mountain Park Ranger Sverre Bodung, roughly 10,000 visitors per week pass through the Dirt Road Trail during the cooler months.



PHX WATER SMART

JIMENA GARRISON
Public Information Officer

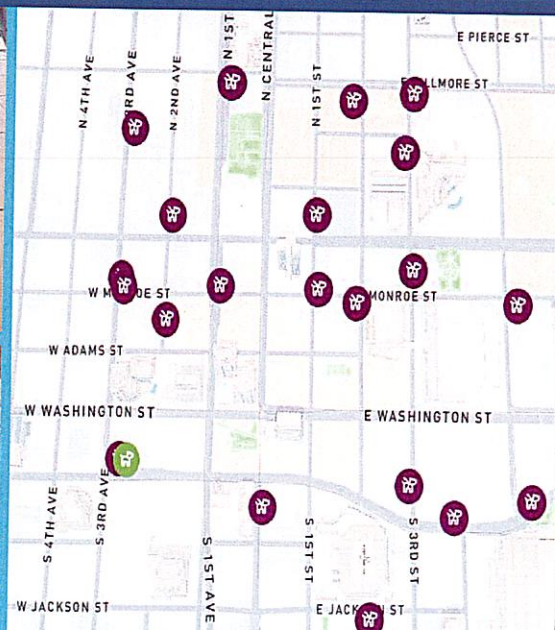
PHX
WATER
SMART

43



Expanding Outreach Activities

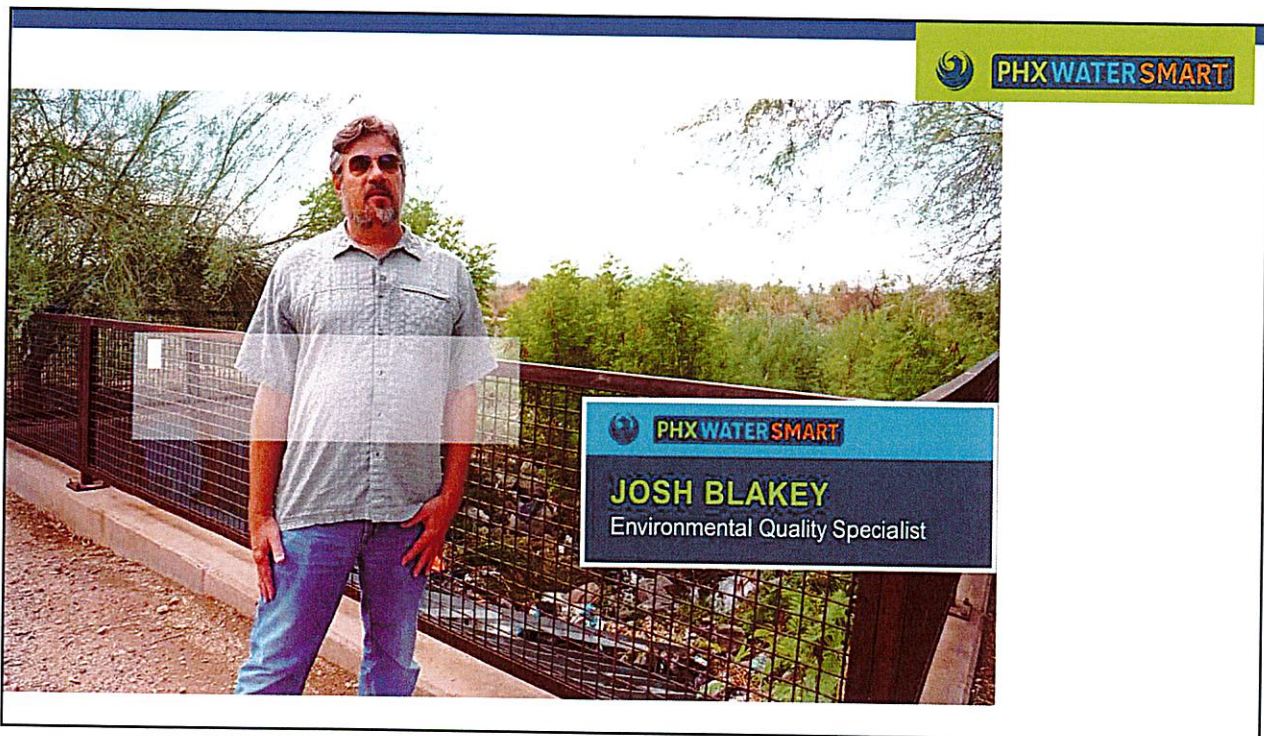
- Phoenix Partnership with Downtown Phoenix (DTPHX) to install pet waste stations
- Originally installed 6
- Purchased another 17



44



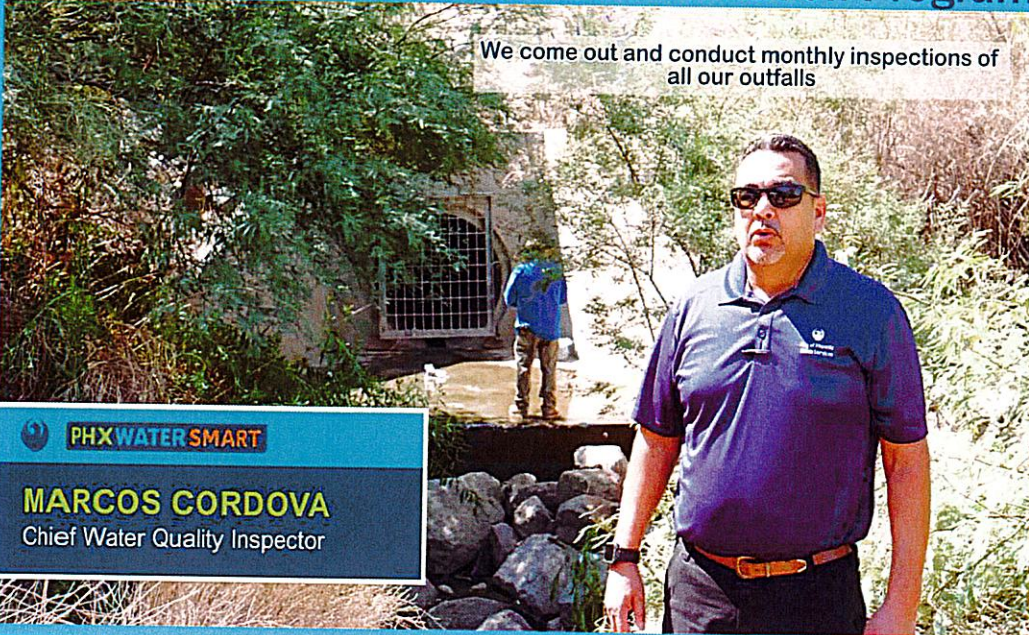
45



46

Illicit Discharge Detection and Elimination Program (IDDE)

We come out and conduct monthly inspections of all our outfalls





PHXWATER SMART

MARCOS CORDOVA
Chief Water Quality Inspector

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Thank you!
Contact Us

PHOENIX.GOV/STORMWATER

Environmental & Safety Division
602-256-3190
Ask.water@phoenix.gov

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[@PHXWATER](https://www.instagram.com/PHXWATER)

[YouTube.com/User/CityofPhoenixAZ](https://www.youtube.com/user/CityofPhoenixAZ)

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