

# Stormwater Management

## City of Phoenix



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Transportation Planning & Programming Division  
Street Transportation Department

# Stormwater Management

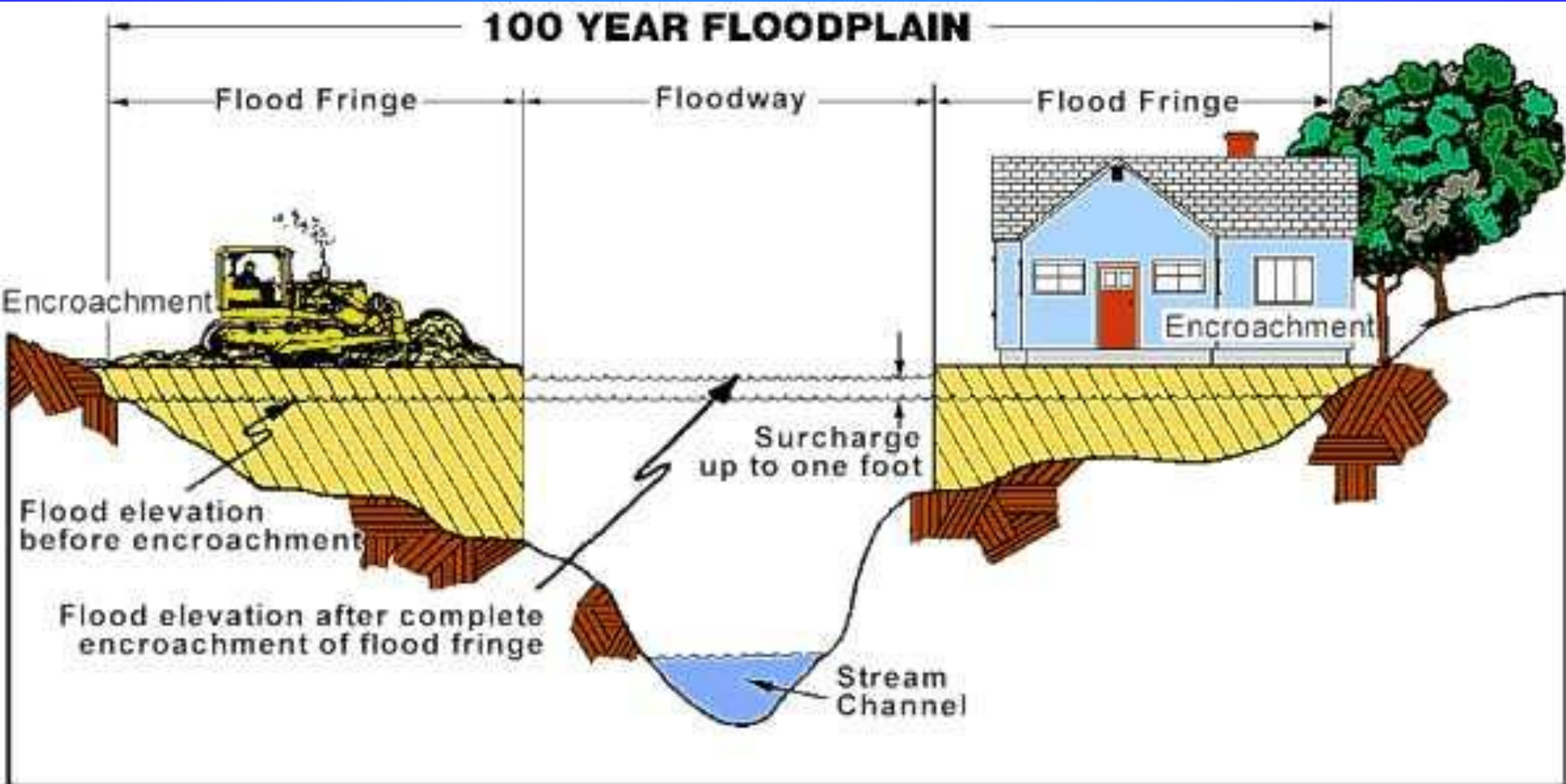
- Floodplain Management
- Local Drainage Program
- Small Project Assistance Program (SPAP)
  - Master Drainage Planning
- Capital Improvement Projects
- Grant Program Applications
  - AZPDES/NPDES Permit
  - Dam Safety Program

# Floodplain Management

- Regulate private development and public infrastructure projects:
  - Code of Federal Regulation (CFR)
  - Federal Emergency Management Agency (FEMA)
    - National Flood Insurance Program (NFIP)
    - Community Rating System (CRS)
  - State Standards, Arizona Dept. of Water Resources
  - Chapter 32B – Floodplains, Phoenix City Code
  - Storm Water Policies and Standards Manual
- 100 YEAR FLOOD
- Special Flood Hazard Area (SFHA)
- Flood Insurance Rate Maps (FIRM)

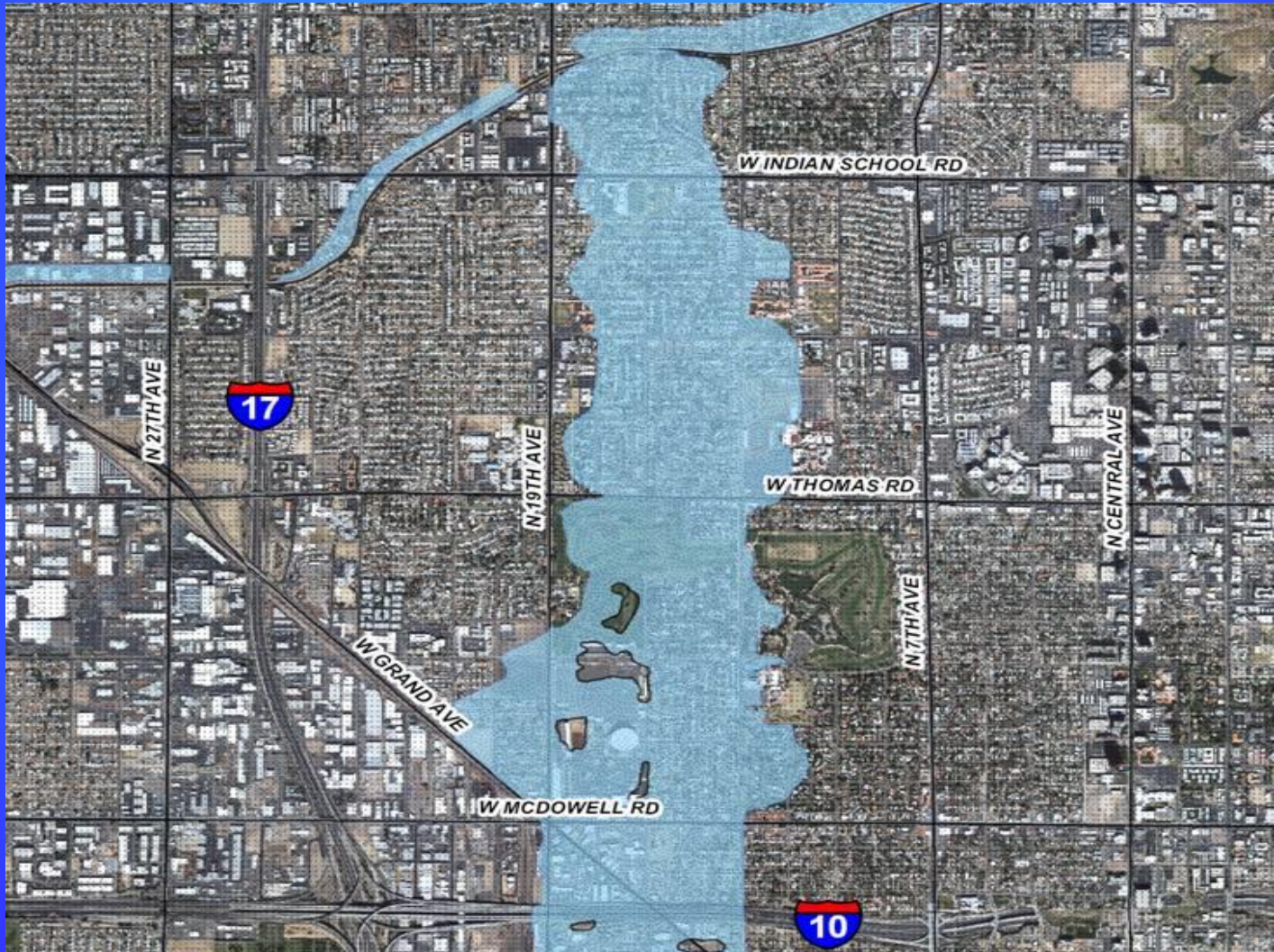
# Floodplain Management

**FLOOD HAVING A 1% CHANCE OF BEING EQUALLED OR EXCEEDED IN ANY GIVEN YEAR**





# Floodplain Management



# Local Drainage Program

## Goals and Objectives

- Reduce or eliminate local flooding
  - Benefits small group of citizens
    - Cost-effective solutions
      - Limited resources
  - Approximately \$500,000/year
    - Short term benefits

# Local Drainage Program

## Goals and Objectives

- Local Drainage Database
- More than 650 Locations Citywide
  - Funding via 2001/2006 Bonds
  - Study, Design and Construction
- Cycle time is approximately 2 years
  - Average cost is \$750,000/project

**Estimated Cost :            \$479 million**



# Local Drainage Program



## Example Project 18<sup>th</sup> Street & Jefferson Street

Study	16k
Construction	38k
<b>Total</b>	<b>54k</b>

Street Maintenance Division

**Completion**      **5 months**





# Local Drainage Program



## Example Project 4942 East Lakepoint Court

Study	16k
Construction	49k
<b>Total</b>	<b>65k</b>

Design & Construction Management Division

**Completion**      **23 months**





# Local Drainage Program



# Local Drainage Program

## Example Project

### 60<sup>th</sup> Street and Hollyhock Street

Study	\$35K
Construction	\$471K
Total	<b>\$506K</b>

Design & Construction Management Division  
Completion **18 months**



# Small Project Assistance Program (SPAP)

Flood Control District of Maricopa County  
(FCDMC)

- Cost share program started in 2011
- Reimburse up to \$250,000
- Construction costs only
- Must complete within 12 months
- Funding cannot be carried over to next FY

# Small Project Assistance Program (SPAP)

Number of Projects (2011-2016)	24
City Cost share	\$10.2 million
FCDMC Cost share	\$5.6 million
Total Construction Cost	\$15.8 million
<b>Average cost / project</b>	<b>\$660 K</b>

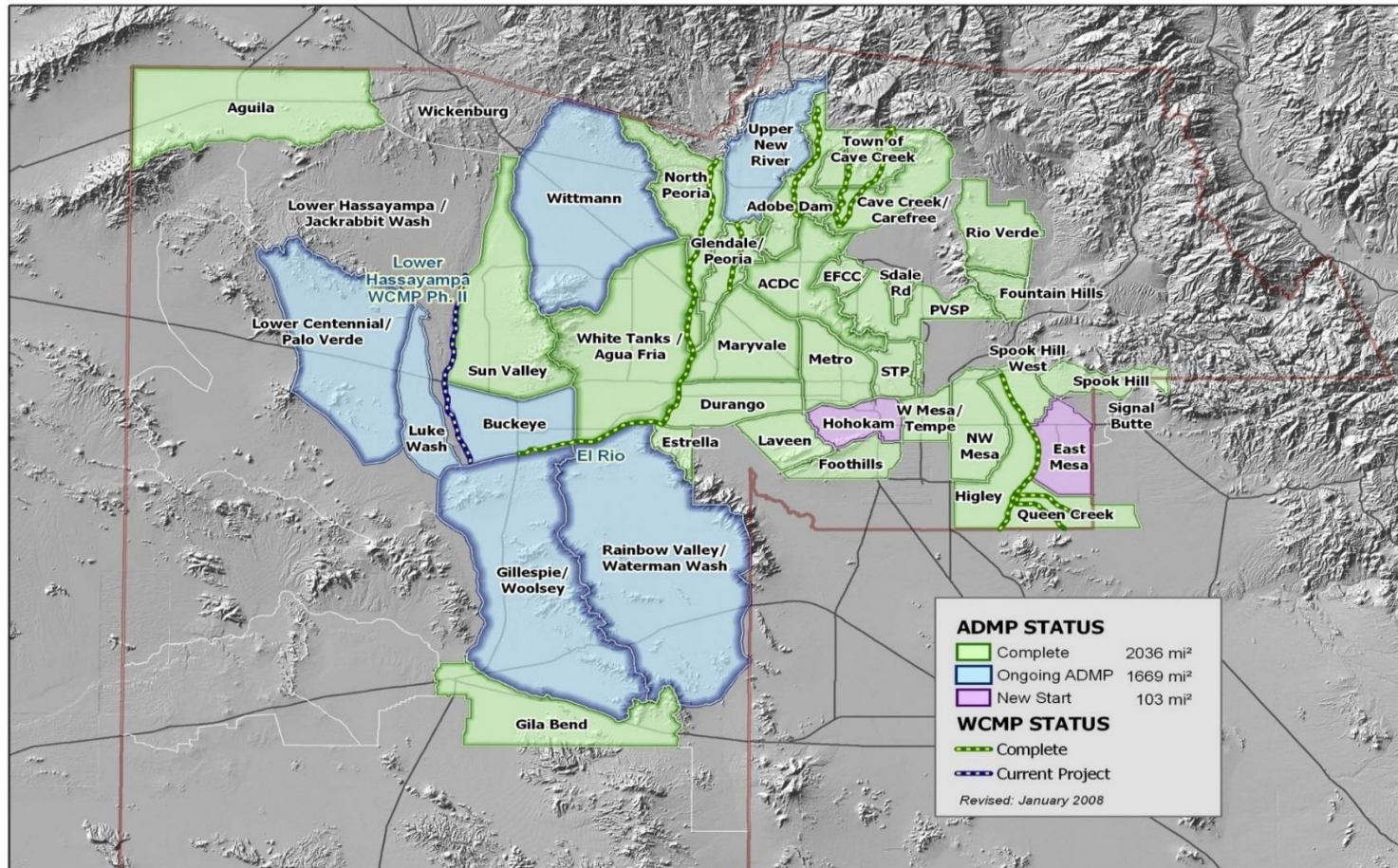
# Master Drainage Planning

- Large Planned Community Districts (PCD)
  - Drainage Infrastructure review & approval
  - Subdivision plan review
- Area Drainage Master Study (ADMS)
  - Hydrology & Hydraulics review
  - Alternatives Analysis & Concept Designs
- Capital Improvement Projects
  - Multiuse Mitigation Projects
  - Flood Control District of Maricopa County



# Master Drainage Planning

EXHIBIT B



# Master Drainage Planning Capital Improvement Projects

- METRO ADMS
- 90 sq. miles
- Downtown SD Projects
- \$12.0 M
- FCDMC cost share of \$6.0M



# Capital Improvement Projects

## Durango ADMP (\$42.7M)

- DRCC – Phase II
- Sunland Avenue Channel
- 47<sup>th</sup> Avenue Channel System

## Arcadia Drainage Projects (\$24.9M)

- 40<sup>th</sup> Street Storm Drain
- Arcadia Drive Storm Drain
- Camelback Road Storm Drain
- Lafayette Blvd. Storm Drain

## Other Projects (\$82.8M)

- 20<sup>th</sup> Ave and Turney Basin
- Skunk Creek Levee at CAP
- 43<sup>rd</sup> Ave Storm Drain Outfall Project
- Pecos Basin Outfall Project
- Salt River Channelization at 67<sup>th</sup> Ave
- Palisene-Paradise Ridge Drainage Project
- Skunk Creek Channel at Pinnacle Peak Rd

## METRO ADMP (\$344.7M)

- Downtown Storm Drains (north of railroad)
- Durango Curve basin
- Encanto Park Golf Course Basin
- Palo Verde Golf Course Basin
- 15th Ave Storm Drain (Palo Verde Golf Course to Butler Dr.)
- 21st Ave Storm Drain (Encanto Golf Course to Northern Ave)
- 15th Ave Storm Drain (Encanto Golf Course to Grand Canal)
- 3rd Ave Storm Drain (Encanto Golf Course to Bethany Home Rd)
- Thomas Rd Storm Drain (Encanto Golf Course to 24th Ave)
- McDowell Road Storm Drain (ADOT SWI to 15th Ave)
- Downtown Storm Drains (south of Railroad)
- Van Buren Street Storm Drain Project
- Thomas Rd Storm Drain Project (60<sup>th</sup> St. to Old Cross Cut Canal)
- Central Ave Storm Drain (Bethany Home Road to Arizona Canal)
- Jefferson Street/I-17 Storm Drain Project

**Estimated Cost : \$495.1 million**



# Capital Improvement Projects

## South Phoenix/Laveen

### Laveen ADMP (\$18.1M)

- 43<sup>rd</sup> Avenue and Dobbins Basin
- 44<sup>th</sup> Avenue and Carver Basin
- 51<sup>st</sup> Avenue Storm Drain
- 51<sup>st</sup> Avenue and Dobbins Basin
- 51<sup>st</sup> Avenue and Elliot Road Basin
- Carver Hills Storm Drain
- Dobbins Road Storm Drain
- Western Canal Channel
- 67<sup>th</sup> Ave Channel
- Reservation Channel

### South Phoenix/Laveen ADMP (\$26.6M)

- 27<sup>th</sup> Avenue/Dobbins Road Basin
- 27<sup>th</sup> Ave and South Mountain Ave Basin
- 7<sup>th</sup> Ave SD (Baseline Rd to SM Ave)
- 27<sup>th</sup> Ave SD (Baseline Rd to SM Ave)
- South Phoenix/Laveen Drainage Improvement Project

### Hohokam ADMP (\$25.8M)

- Basin 5/Circle K Park
- 14<sup>th</sup>/15<sup>th</sup> Street Storm Drain
- Basin 1/Ardmore Road Storm Drain
- South Mountain/17<sup>th</sup> Way Storm Drain
- Basin 11 and Outfall Storm Drain
- 20<sup>th</sup> Street/Euclid Avenue Storm Drain
- 19<sup>th</sup> Street/South Mountain Avenue SD
- Basin 10/Head Scout Pueblo BSC

**Estimated Cost : \$70.5 million**

# Overall Funding Needs

## Citywide

- **Local Drainage / SPAP**                      **\$479M**
- **Master Drainage / CIP**                      **\$566M**
- **Trunk line SD Projects**                      **\$702M**  
(161 miles of Storm Drains)

**Estimated Total :        \$1.747 billion**

# Master Drainage Planning / CIP

## Multiuse Mitigation Projects Citywide

Name	Cost (millions)
10 <sup>th</sup> Street Wash Basins 1 & 2	\$5.25
10 <sup>th</sup> Street Wash Storm Drain Project	\$3.10
23rd Avenue/Roeser Road Basin	\$9.00
24 <sup>th</sup> Avenue/Camelback Road Detention Basin	\$11.00
26 <sup>th</sup> Avenue/Verde Lane Detention Basin	\$4.25
27th Avenue Storm Drain Project, Southern Avenue to Salt River	\$1.00
43rd Avenue SD Project and Baseline Road SD Project	\$18.50
43rd Avenue/Baseline Road Basin	\$3.50
43rd Avenue/Southern Avenue Basin	\$7.00
75th Avenue Storm Drain and Durango Regional Conveyance Channel – Phase I	\$32.00
9 <sup>th</sup> Avenue Storm Drain Project, Peoria Avenue to ACDC	\$4.60
Aguila Golf Course Basin	
Arcadia Drive Storm Drain Project	\$4.00
Bethany Home Road Outfall Channel Project	\$70.00
Downtown Storm Drain Project	\$9.50
Lafayette Boulevard Interceptor Drain Project	\$8.30
Laveen Area Conveyance Channel Project, 43rd Avenue to 79th Avenue	\$20.50
<b>Total</b>	<b>\$211.50</b>

**Cost:**

**\$212 million**

# Master Drainage Planning / CIP

## Multiuse Mitigation Projects

### South Phoenix/Laveen

Name							Cost (millions)
23rd Avenue/Roeser Road Basin							\$9.00
27th Avenue Storm Drain Project, Southern Avenue to Salt River							\$1.00
43rd Avenue SD Project and Baseline Road SD Project							\$18.50
43rd Avenue/Baseline Road Basin							\$3.50
43rd Avenue/Southern Avenue Basin							\$7.00
Aguila Golf Course Basin							\$6.50
Laveen Area Conveyance Channel Project, 43rd Avenue to 79th Avenue							\$20.50
Total							\$66.00

**Cost :**

**\$66 million**



# Master Drainage Planning / CIP

## Ongoing ADMS/P

- Pinnacle Peak West ADMP
- Cave Creek ADMP
- Middle Indian Bend ADMP
- Tempe ADMP
- Ahwatukee ADMP

# Grant Programs Application

- **Federal Emergency Management Agency (FEMA)**
  - **Pre-Disaster Mitigation (PDM) Grant**

Received a \$25K for Updating Floodplain Management Plan (City share \$35K)
  - **Hazard Mitigation Grant Program (HMGP)**

Applied for a Property Acquisition Project for \$379K (City share \$95K)
- **U.S. Army Corps of Engineer**
  - **Planning Assistance to States (PAS), Section 22**
  - **Continuing Authorities Program (CAP), Section 205**
  - **Floodplain Management Services Program (FPMS)**

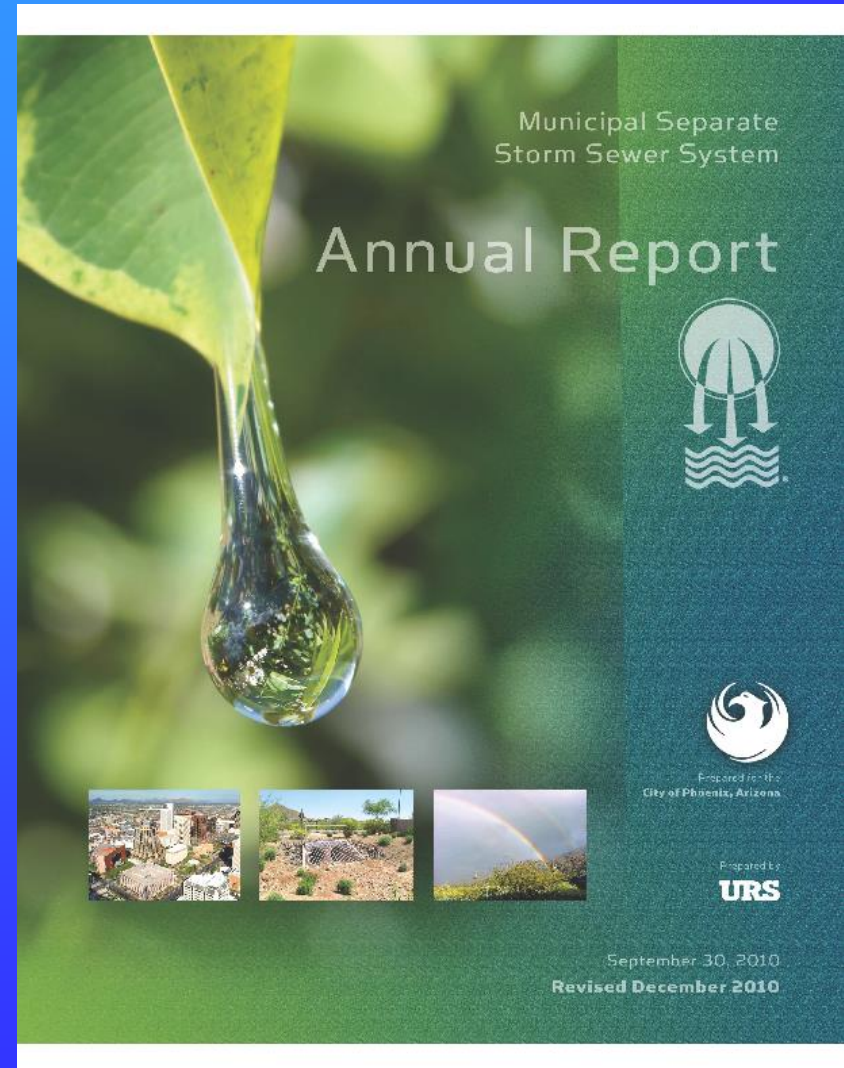
# Grant Programs Application

- **Natural Resources and Conservation Service**
  - Emergency Watershed Protection Program (EWP)
    - EWP – Recovery
    - EWP – Floodplain Easement
  
- **Water Infrastructure Financing Authority (WIFA)**
  - Planning and Design Technical Assistance Funding



# AZPDES / NPDES Permit

- AZPDES Permit, March 2009
- Liaison for Street Transportation Dept.
- Permit requirements for Compliance
  - Street Maintenance
  - Design & Construction Mgmt.
  - Transportation, Planning and Programming
  - Management Services
- Monthly Meetings with working group
- Bi-monthly Meetings w/ Executive Management
- Meetings with divisions as needed
- Coordinate compliance for the Dept.



# **Dam Safety Program**

**Federal Emergency Management  
Agency (FEMA)**

**Arizona Department of Water  
Resources (ADWR)**

**Street Maintenance Division**

**Flood Control District of Maricopa County**



# Dam Safety Program

## Technical Assistance:

- **Develop and maintain the Dam Safety Program**
- **Coordinate Intergovernmental Agreements for Dam Safety Projects**
- **Received more than 2 million dollars assistance**
- **Review Study, Design Reports, & Final Plans**
- **Participate in the Emergency Action Plans / Exercise**
- **Certified Responder**

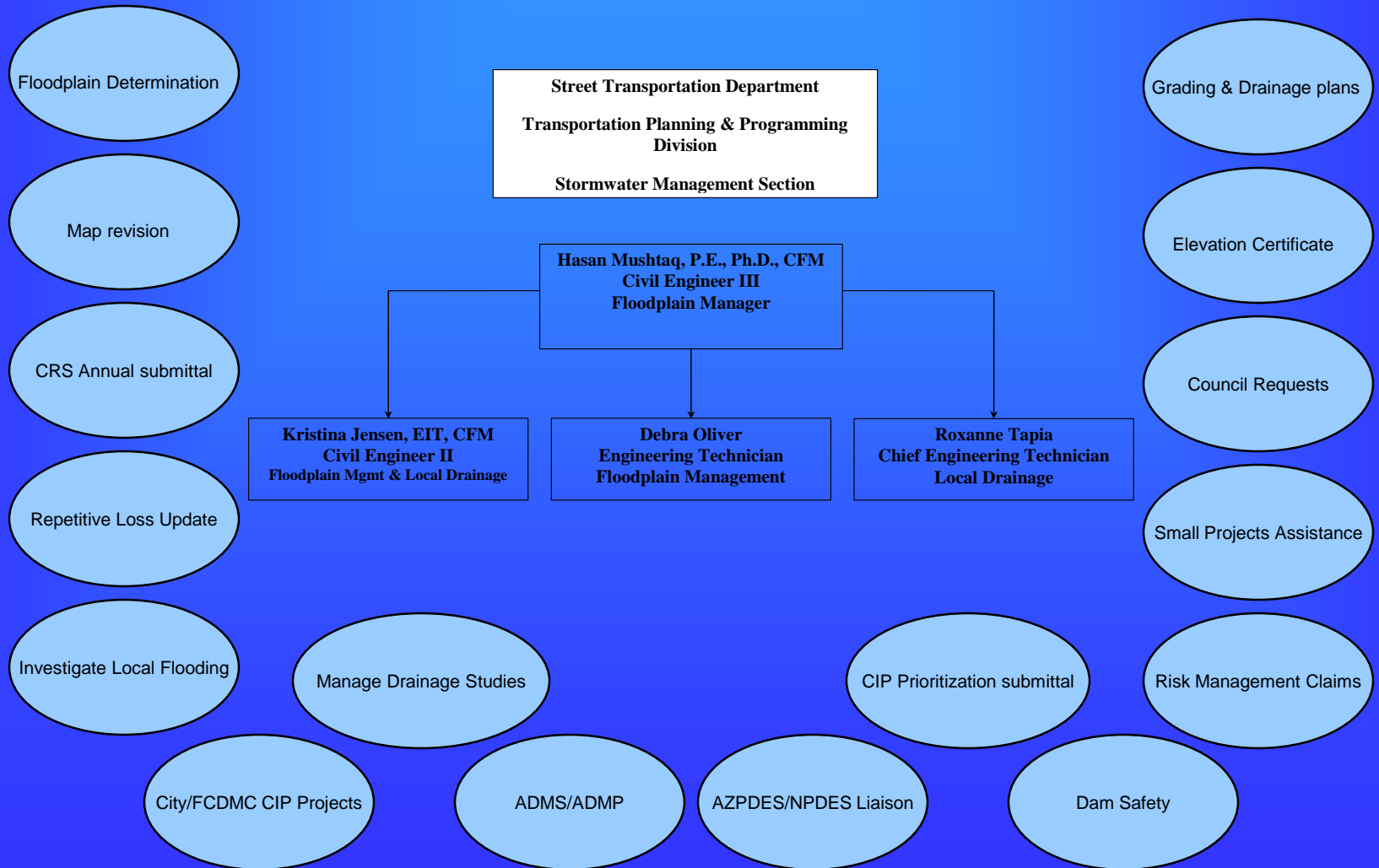


**Detention Dam No. 7**

**Cost shared with Flood Control District of Maricopa County  
Construction Cost \$1.2 million**



# Stormwater Management



Questions?

