



Flood Control District Overview: Policies, Programs, and Challenges

Flood Control District Board of Directors

June 21, 2023

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PINAL COUNTY

WIDE OPEN OPPORTUNITY

Agenda

- Mission, Authority, & Funding
- Flood Control Districts and Flood Protection Districts
- Flood Control District Programs Overview
- Challenges & Policy Discussion



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District Formation, Authority, & Regulations

- District Formed by ARS § 48-3602
- Floodplain Management Ordinance (*Adopted April 2019*)
- Flood Control District Staff also Administers:
 - Pinal County Drainage Ordinance (*Adopted October 1998*)
 - Pinal County Stormwater Ordinance (*Adopted May 2015*)



District Mission Statement

It is the mission of the Pinal County Flood Control District to reduce the risk of flooding to life and property by managing our floodplains, regulating development, constructing and maintaining flood control infrastructure, and providing public outreach and response.



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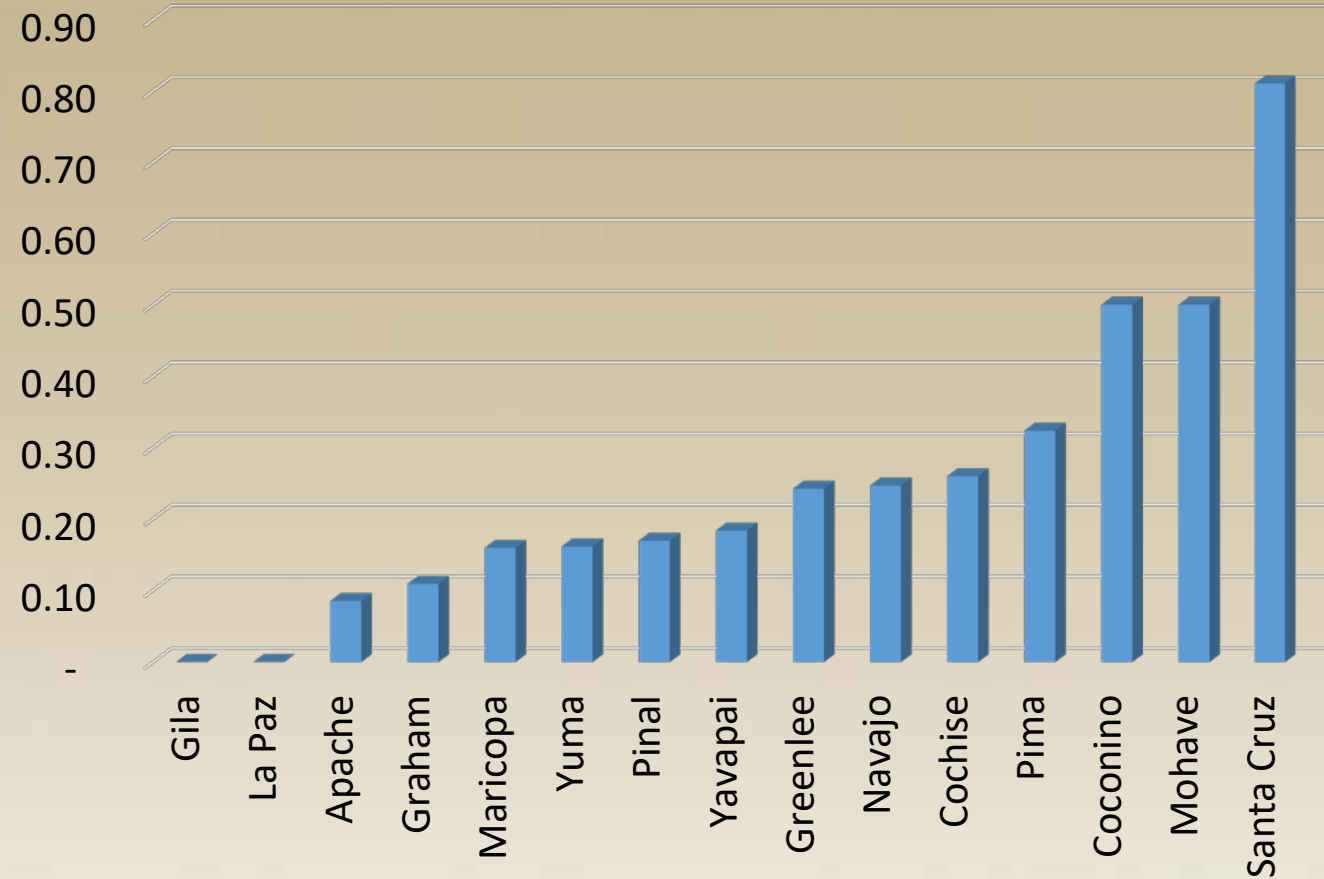
District Funding

- Total Annual Revenue is ~4.6 Million (2022)
- Primarily Funded by a Secondary Property Tax
 - Tax Rate is \$0.1693 per \$100 Assessed Value
 - Includes all property both in the incorporated and unincorporated areas
 - Excludes State Lands, Federal Lands, Tribal Lands, National Parks, etc.
- Grant Funding for Capital Projects (USACE, FEMA, NRCS)
- Permit and review fees



District Tax Rate Comparison

County	Tax Rate per \$100 Assessed Value
Apache	\$0.0850
Cochise	\$0.2597
Coconino	\$0.5000
Gila	-
Graham	\$0.1090
Greenlee	\$0.2421
La Paz	-
Maricopa	\$0.1592
Mohave	\$0.5000
Navajo	\$0.2465
Pima	\$0.3235
Pinal	\$0.1693
Santa Cruz	\$0.8103
Yavapai	\$0.1834
Yuma	\$0.1611



- Minimum Tax Rate: \$0.0000 (General Funded)
- Maximum Tax Rate: \$0.8103 (Santa Cruz County)
- Average Tax Rate: \$0.2884

*Data Compiled for FY 22/23

Grant District Funding

- Grant Funding

- Over the past five years, the District has received 8 grants, totaling more than \$6.7M

- Challenges

- Local Match
- Project Eligibility/Timing
- Program Limitations
- Cost increases over time

- Opportunities

- FEMA, USACE, NRCS, WIFA, ADEQ, etc.

Project Name	Grant Award*
Lower Santa Cruz River Feasibility Study (USACE – WRDA)	\$2,700,000
Greene Wash Watershed Plan (USDA/NRCS – WFPO)	\$600,000
Guild Wash Watershed Plan (USDA/NRCS – WFPO)	\$400,000
El Camino Viejo Bridge Replacement (FHWA/ADOT – Off System Bridge)	\$1,000,000
Christensen Rd. Bridge/Culvert	\$506,250
Sunland Gin Road at Greene Reservoir (DHS/FEMA – PDM)	\$1,200,000
Dudleyville Community Center Flood Mitigation (State of Arizona – Emergency Council	\$330,958
Post Fire Flood Mit. Telegraph Fire (State of Arizona – DFFM Post Fire Fund)	

Construction Costs

- Escalation of Construction Costs*
 - The Construction Cost Index (CCI) has historically increased at rate of 2% - 4% per year
 - Costs increased nationally by 6% in FY 21/22 and more than 8% in FY 22/23
 - Phoenix has experienced record inflation (13%) since 2021
 - Global supply chain disruptions/materials delays
 - Labor shortages for construction
 - Record-high value of construction starts lead to high demand on labor
 - Cost escalation over the next fiscal year is expected to be higher than the historical norm, but lower than FY 22.



Cost Increases on District Projects

- Sunland Gin Road Bridge at Greene Canal (2018 PDM)
 - Original Cost Estimate: \$1,606,900
 - \$1,200,000 Federal; \$406,900 Local
 - Cost at time of bid (2023): \$7.2M
- Queen Creek Bridge at El Camino Viejo (2020 ADOT)
 - Original Cost Estimate: \$1,263,405
 - \$1,000,000 Federal; \$263,405 Local
 - Cost at time of bid (2022): \$3.3M
- Dirtwater Springs Detention Basin
 - Original Cost Estimate: \$2.6M
 - Current Cost Estimate (2023): \$5.9M
 - Current Budget Request is for \$7M (FY23/24)

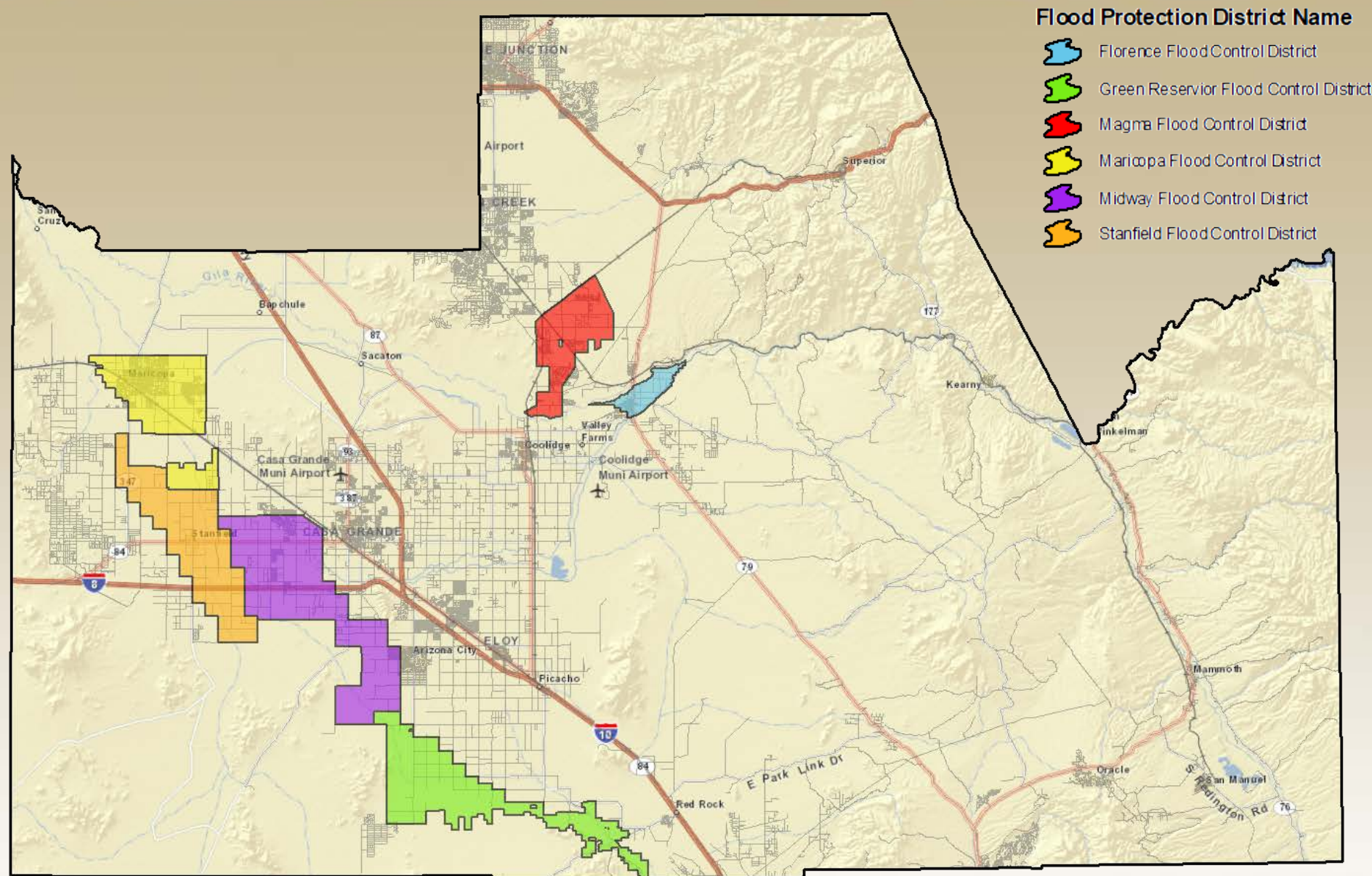


Flood Protection Districts

- Within Pinal County there are currently 6 Flood Protection Districts
 - Districts Formed by ARS § 48-2602 (as opposed to 48-3602)
- Originally intended to provide taxing authority to construct and maintain flood control infrastructure for protecting agricultural lands
- Flood Protection Districts may be dissolved
 - Flood Control Structures turned over to the County Flood Control District for Operation and Maintenance



Flood Protection Districts



District Programs: Floodplain Management

- Floodplain Use Permits

- All development within a regulatory floodplain requires a Floodplain Use Permit
- Ensure all development is “reasonably safe from flooding” and that the development would not cause an adverse impact to adjacent properties
- Development includes any man-made change to land including but not limited to buildings, mining, dredging, filling, grading, paving, or storage of materials or equipment
- Regulatory Floodplains include those mapped by the Federal Emergency Management Agency (FEMA) as well as those mapped locally
- Permits are also issued within cities that are County Dependent (All except Casa Grande, Apache Junction, Florence, and Kearny)



District Programs: Floodplain Management

- Permit Review

- New or substantially improved buildings in a FEMA floodplain require an elevation certificate sealed by a surveyor
- A Grading & Drainage Plan and/or or Drainage Report may be required depending on circumstances
- New buildings must also meet a setback from regulatory washes or provide erosion protection
- If no floodplain issues exist with a given development, a Floodplain Clearance is issued



District Programs: Floodplain Management

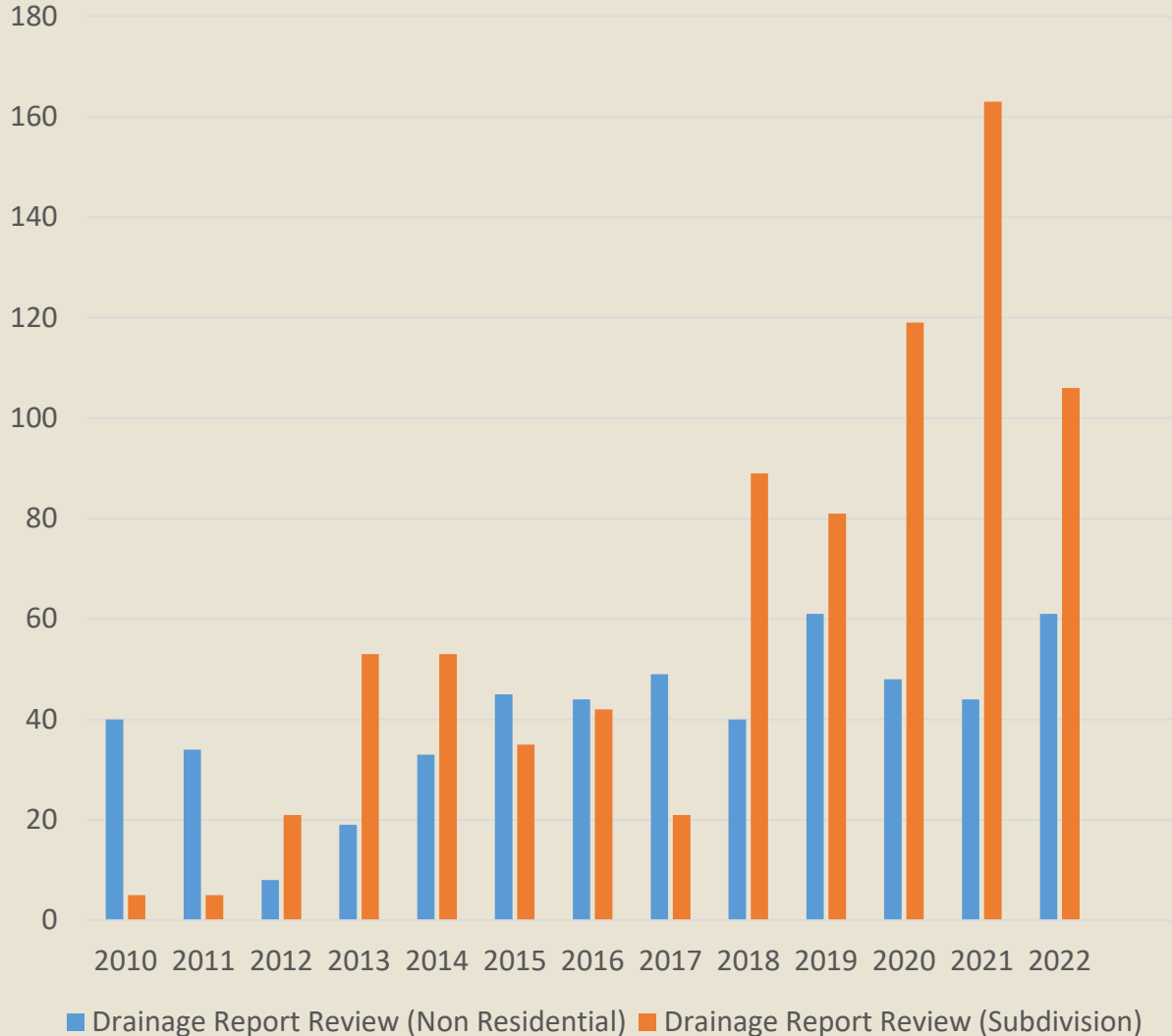
- Subdivisions

- No new homes to be built in a FEMA floodplain. Developer must provide detail engineering analysis and design the subdivision so that new homes will be out of the floodplain
- This process may require a Conditional Letter of Map Revision (CLOMR) and a Letter of Map Revision (LOMR). These documents ultimately revise the floodplain maps
 - Process may take 6 months to a year or more
 - Requires Board of Directors approval
- No above-grade flood control solutions (.e.g. levees, berms, dams, etc.) permitted without prior Board Approval

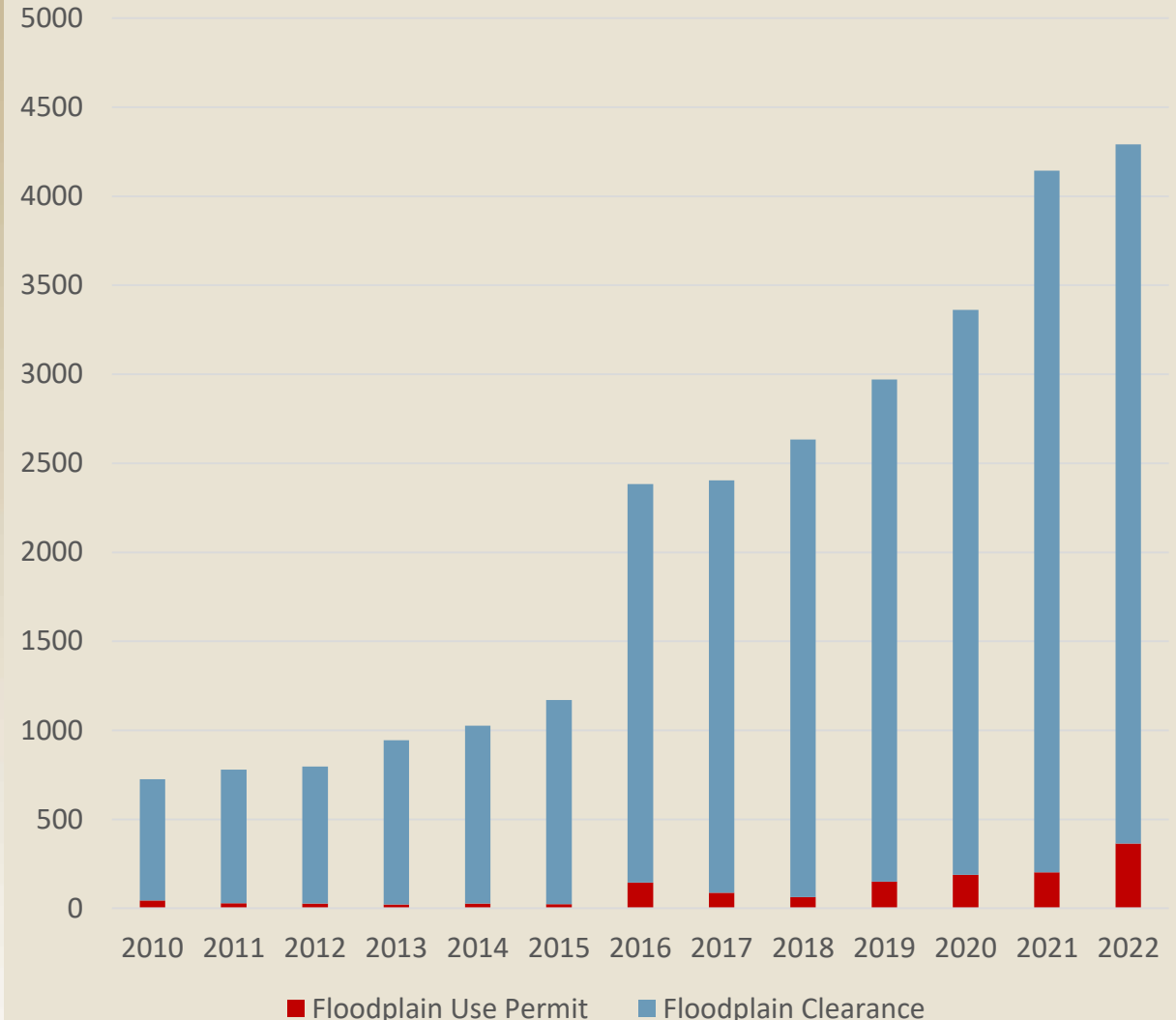


District Programs: Floodplain Management

Drainage Report Reviews



Floodplain Clearance/Permit Issuance



District Programs: Floodplain Management

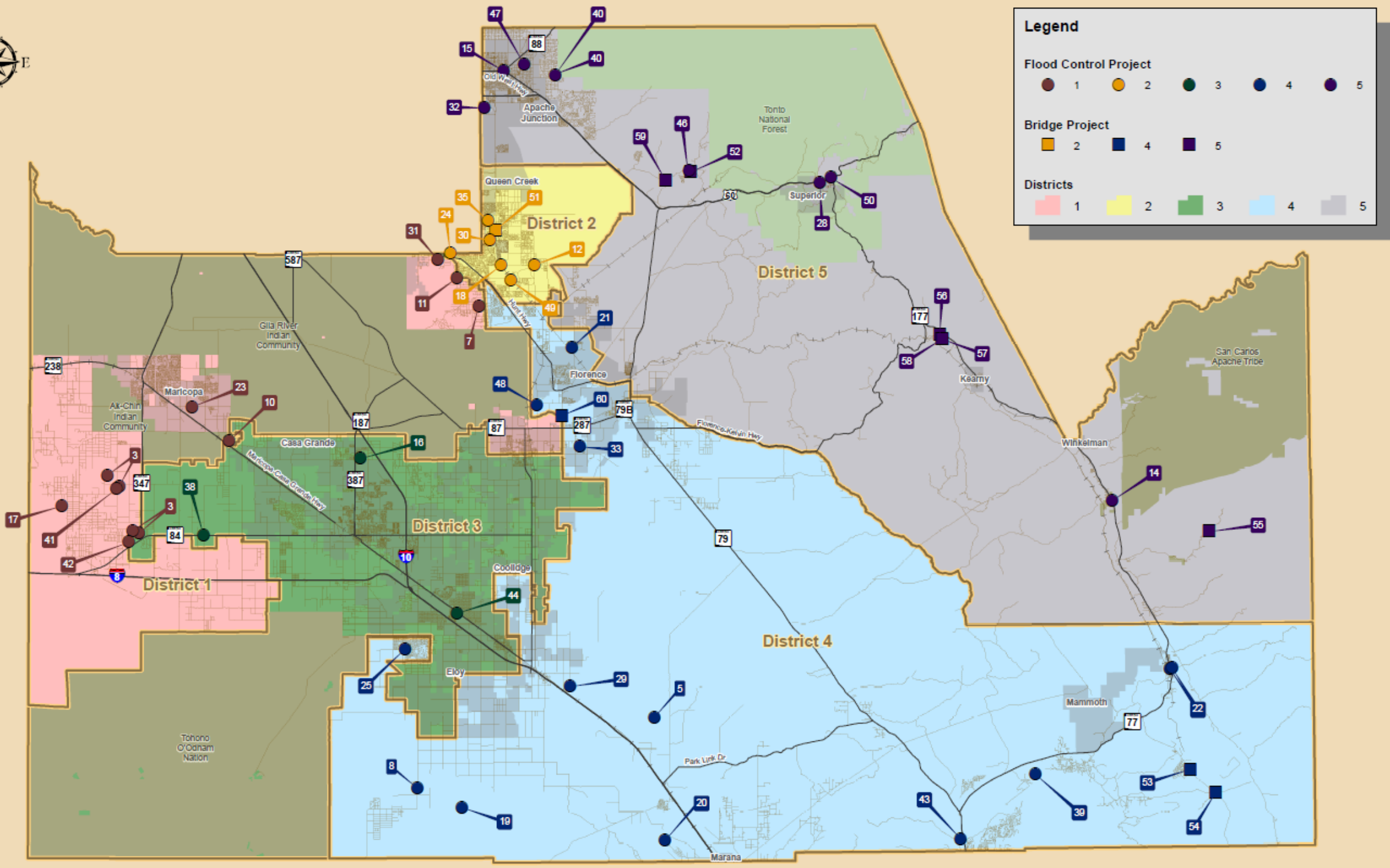
- Community Rating System (CRS)
 - Recognizes floodplain management programs that go above and beyond the federal minimum
 - Pinal County became a CRS member on 05/01/2015
 - Currently Pinal County has a Class 6 Rating resulting in up to a 20% discount in Flood Insurance for area residents



District Programs: Capital Projects

- Since 2008, we've invested more than \$11 million in constructing new flood control/drainage infrastructure in Pinal County
- Current 5-Year Plan includes:
 - 40 Flood Control (\$36 Million)
 - 11 Bridge Projects (\$3.4 Million)
 - An additional 19 projects are listed beyond the 5 year horizon valued at \$82 Million



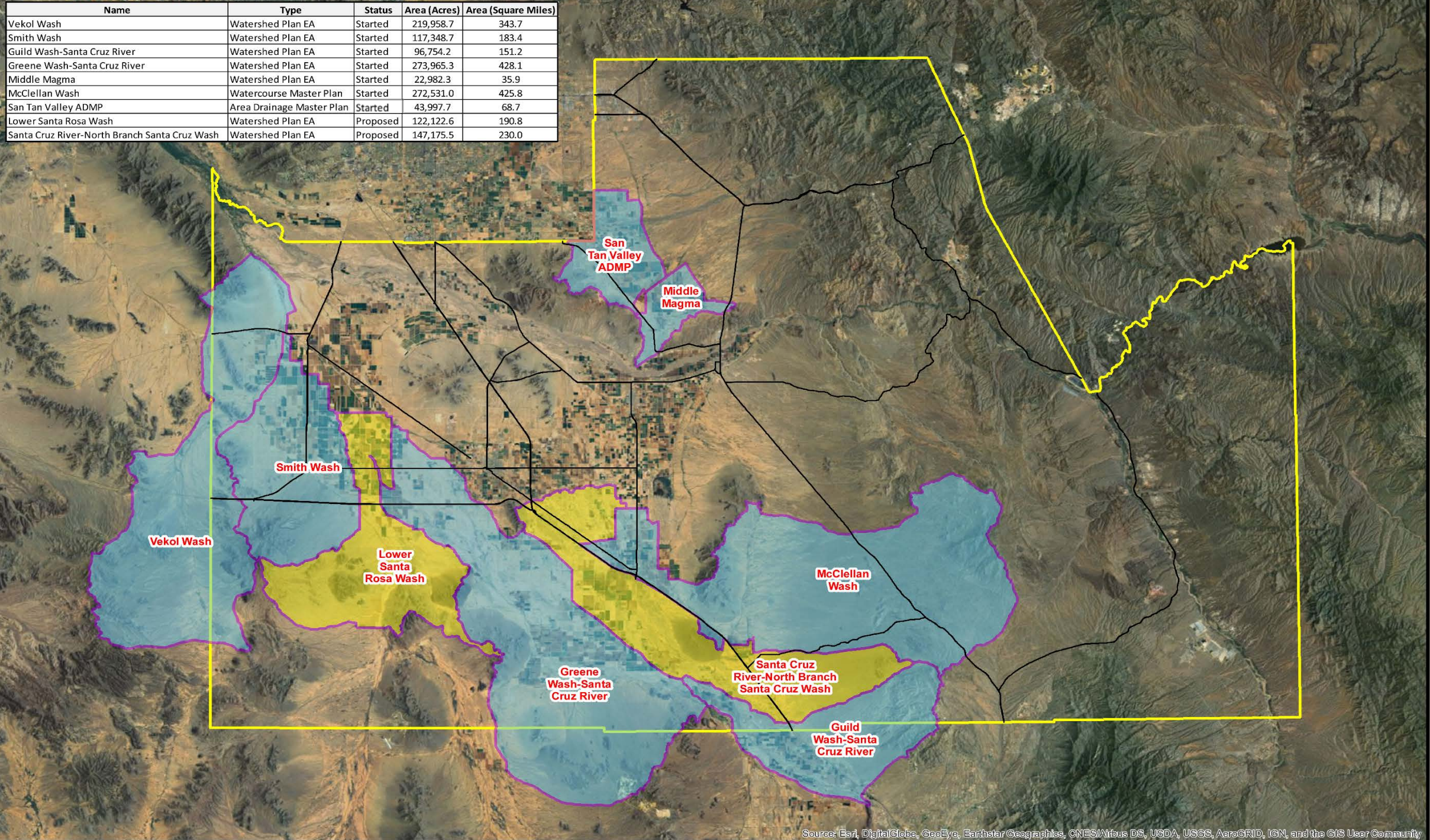


District Programs: Area/Watershed Studies

- Area Drainage Master Plans
 - Current project is for San Tan Valley
 - Master Hydrology for Model for all of Pinal County
- Watercourse Master Plans (ARS § 48-3609)
 - McClellan Wash Watercourse Master Plan
- Watershed Plans (NRCS Criteria)
 - Greene Wash
 - Guild Wash
 - Vekol/Smith Wash
 - Middle Magma



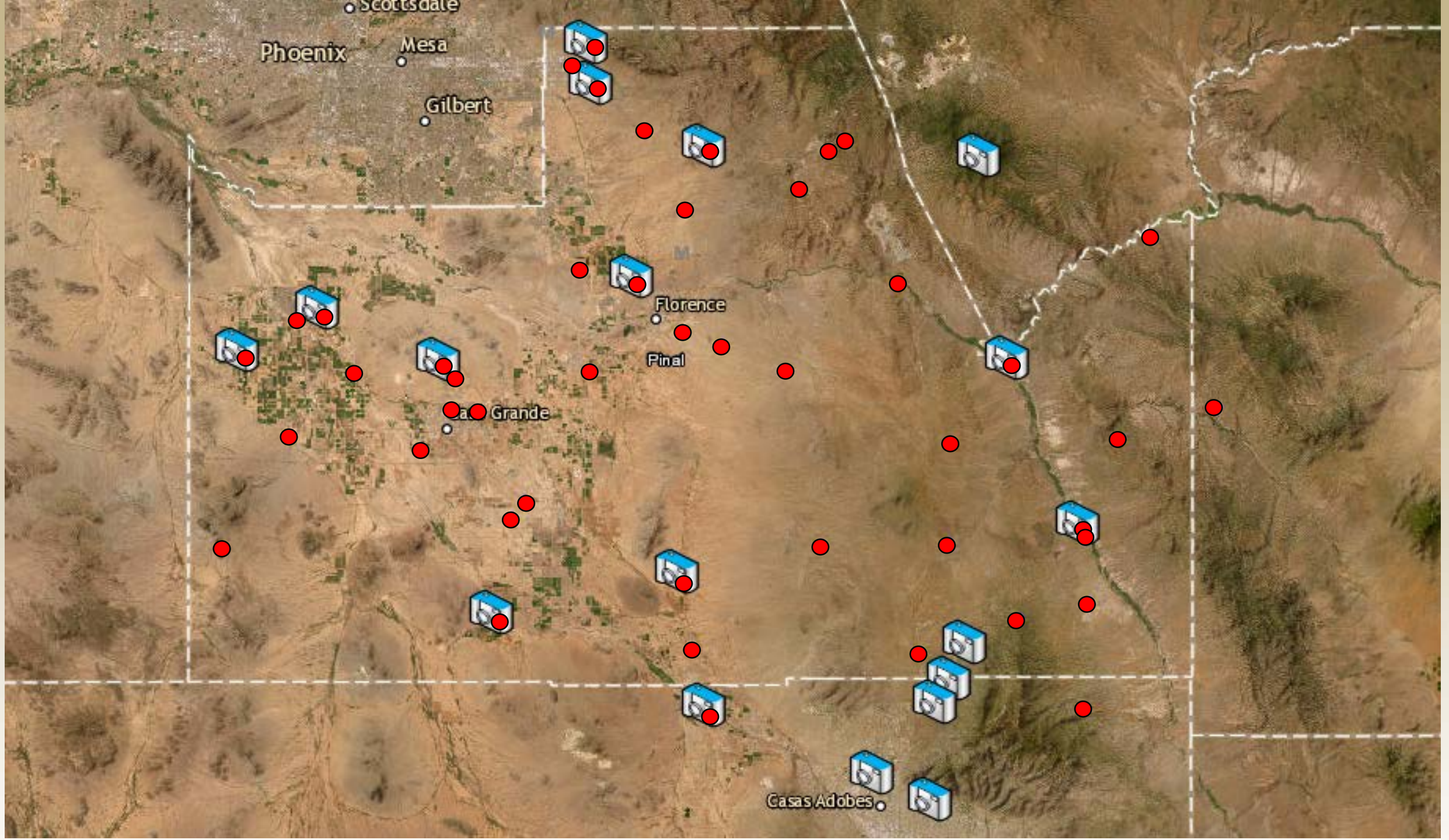
Name	Type	Status	Area (Acres)	Area (Square Miles)
Vekol Wash	Watershed Plan EA	Started	219,958.7	343.7
Smith Wash	Watershed Plan EA	Started	117,348.7	183.4
Guild Wash-Santa Cruz River	Watershed Plan EA	Started	96,754.2	151.2
Greene Wash-Santa Cruz River	Watershed Plan EA	Started	273,965.3	428.1
Middle Magma	Watershed Plan EA	Started	22,982.3	35.9
McClellan Wash	Watercourse Master Plan	Started	272,531.0	425.8
San Tan Valley ADMP	Area Drainage Master Plan	Started	43,997.7	68.7
Lower Santa Rosa Wash	Watershed Plan EA	Proposed	122,122.6	190.8
Santa Cruz River-North Branch Santa Cruz Wash	Watershed Plan EA	Proposed	147,175.5	230.0



District Programs: ALERT System

- Automated Local Evaluation in Real Time (ALERT)
- Currently operate and maintain a network of 47 stream & precipitation gauges as well as 18 webcams
 - Includes 2 gauges in the Telegraph Fire Area for post-fire flood monitoring
 - ALERT system supports National Weather Service Forecasting and Warnings
 - ALERT system also supports Pinal County Emergency Management
- ALERT Program 5-year plan to be updated this calendar year







McClellan Wash normal conditions



Date: 21-12-13 Time: 11-00-01

McClellan Wash flood conditions

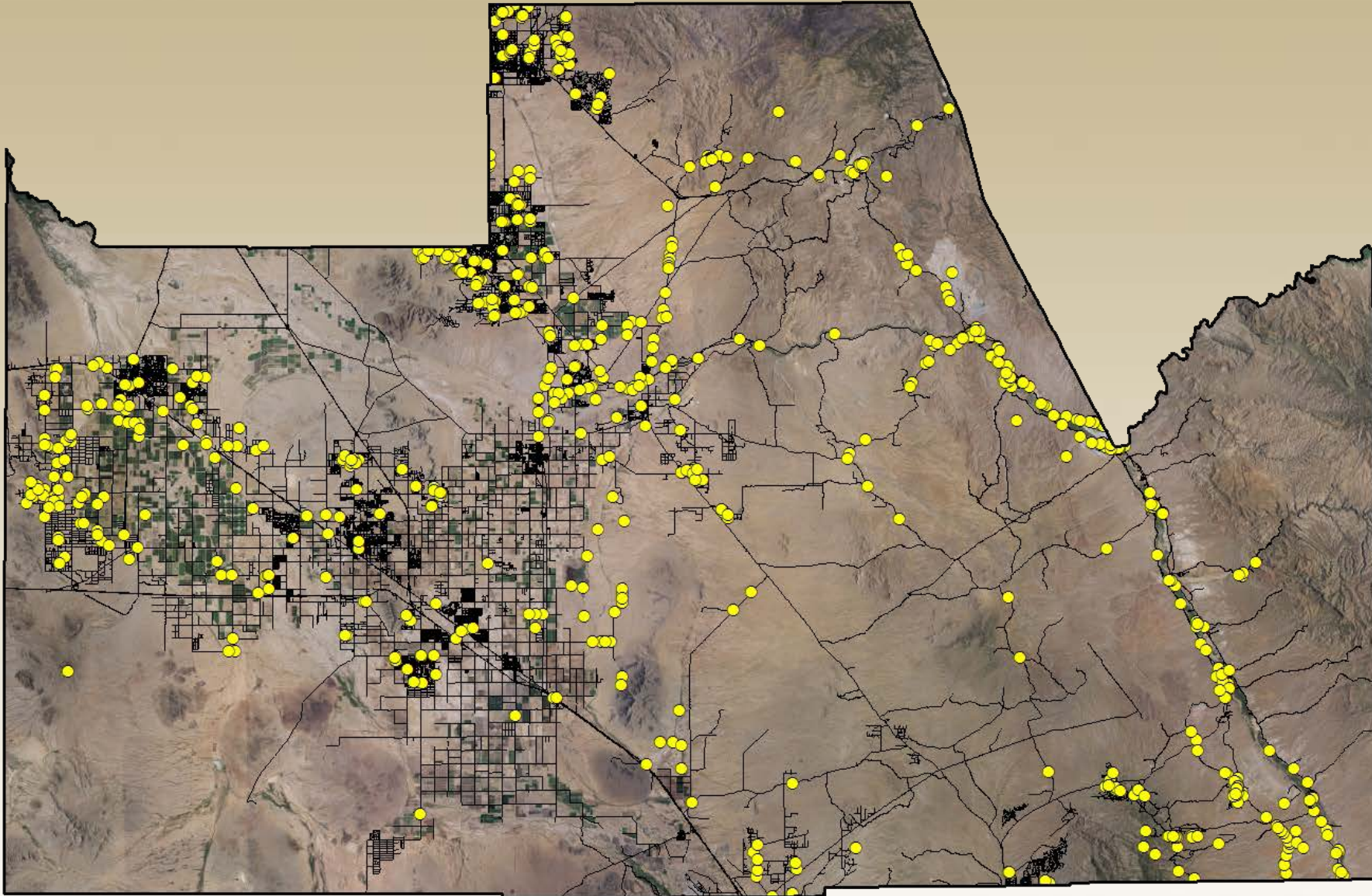


District Programs: Infrastructure & Maintenance

- Flood Control Structures
 - 7 Detention Basins
 - 10 Channels (5.6 Miles)
 - 3 Dams (Recently Decommissioned)
 - 1 Levee (Inspection Responsibility Only)



District Programs: Investigations & Enforcement



- Respond to citizen requests and complaints
- Investigate potential violations of the Floodplain Ordinance
- Document flooding problems areas
- We've recorded more than 800 flooding complaints since 2003.

District Programs: Stormwater Management

- Ensure compliance with ADEQ/EPA Stormwater regulations for County Operations
- Ensure land developers obtain necessary stormwater permits and that they adhere to their approved plans
- Provide education, outreach, and training on stormwater issues

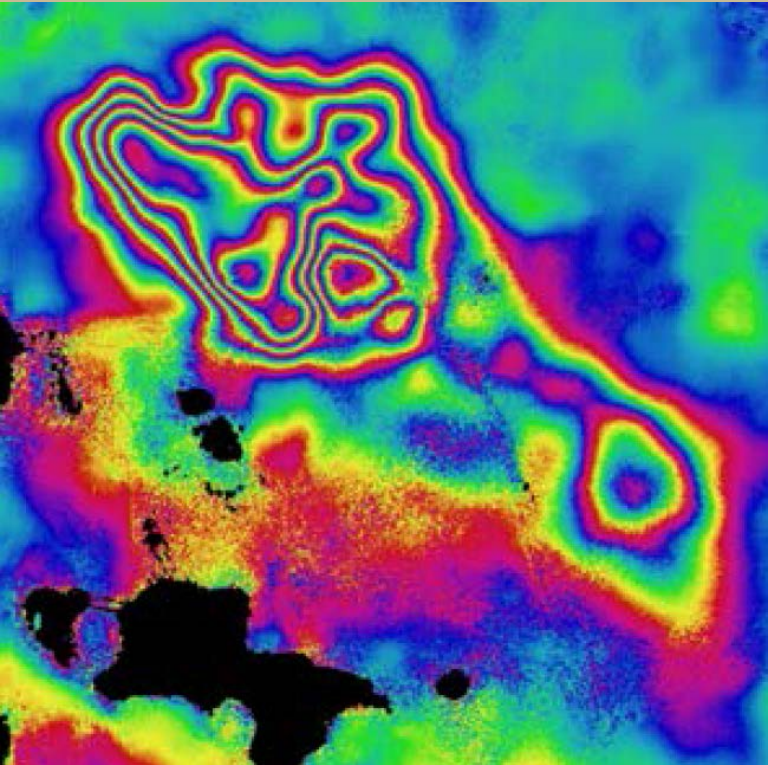


District Programs: Land Subsidence & Earth Fissures

- Partner with ADWR on InSAR Program
 - Interferometric Synthetic Aperture RADAR (InSAR)
- Works with AZGS to report earth fissure activity
- Development & Permitting
 - Setbacks
 - Geotechnical Engineering and Earth Fissure Investigations



District Programs: Land Subsidence & Earth Fissures



Hawthorn Rock
Interferogram
(2010-2018)



Subsidence, leaving
Well head exposed
above ground



Earth Fissure near
Tator Hills, Pinal County
February 2017



District Programs: Bridge Inspection Management

- The Bridge Program is funded by HURF (Highway User Revenue Fund) but Managed by Flood Control District Staff
 - Most bridges cross washes, rivers, and floodplains
 - Most maintenance challenges for bridges are related to hydraulic processes (flooding, erosion, and scour)
 - FCD Staff works with ADOT on inspections
- There are currently 154 Bridges in Pinal County



District Challenges: Funding Infrastructure Projects

- Funding Infrastructure is Challenging
 - A single local project may cost \$2 Million or more to plan, design and construct
 - Regional scale projects provide better benefits per dollar spent, however, may cost \$5-10 Million or more to implement
 - Grant programs are competitive, limited in scope, and often have stringent criteria
 - The FCD 5-Year CIP includes a list of projects that go well beyond the 5-year horizon totaling 19 projects at more than \$82 Million
 - This excludes projects in the McClellan Wash Watercourse Master Plan or any of the ongoing ADMP's or Watershed Plans



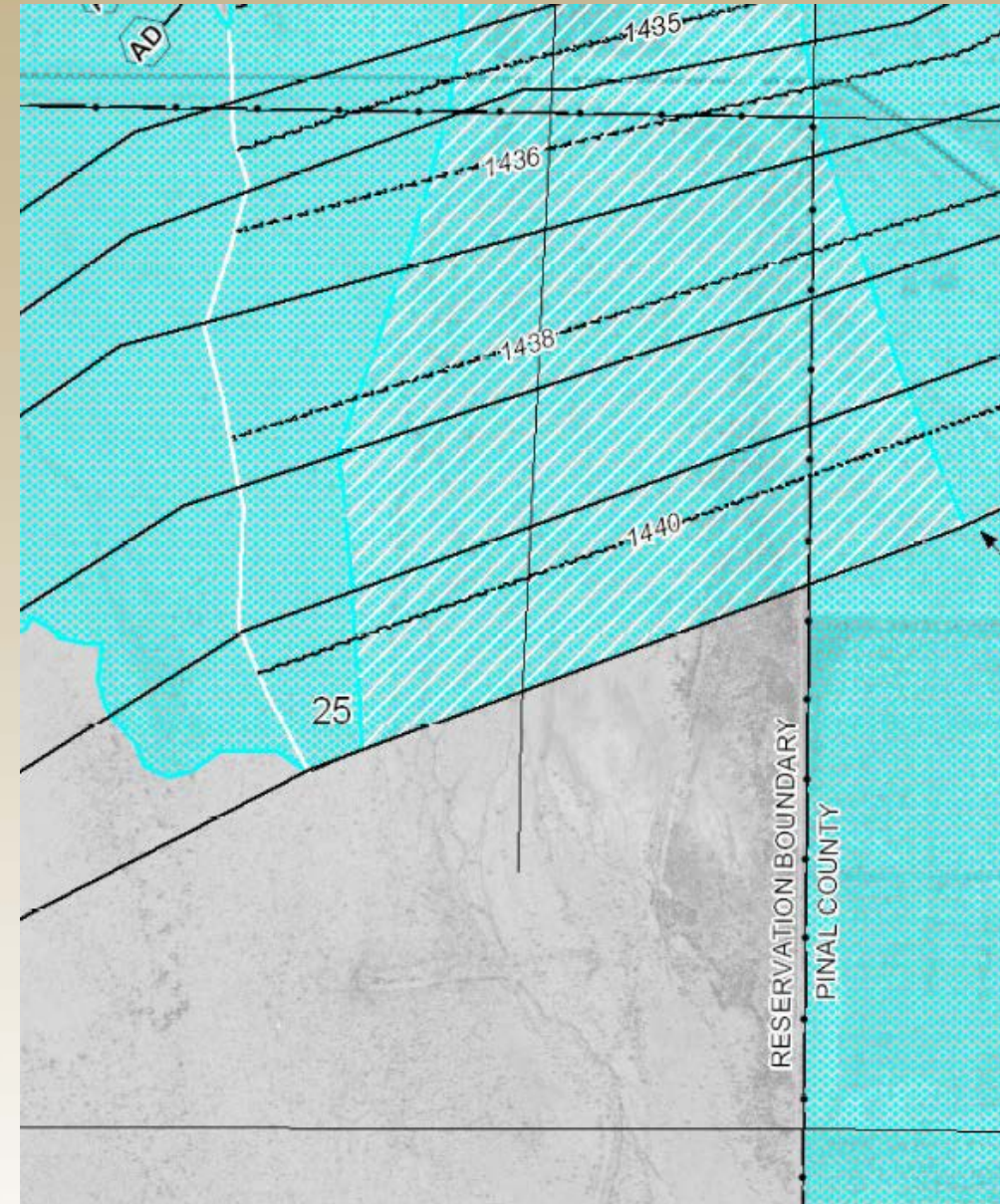
District Challenges: Single Lot Development

- Most Drainage & Flooding problems occur in Single-Lot Residential Development areas.
 - Development in these areas are often Exempt from the Drainage Ordinance
 - These areas also lack any regional or local drainage infrastructure
 - Many complaints often cannot be resolved under current regulatory framework resulting in the dispute becoming a civil matter between neighbors
- Currently working on a New Drainage Ordinance



District Challenges: Floodplain Map Accuracy

- Floodplain Maps are often seen as inaccurate due to:
 - Old data (some maps are 40+ years old)
 - Old methods (some maps use 1970's scientific/engineering methods)
 - Funding limitations
 - Lack of sufficient data (such as topographic mapping)



District Challenges: Levees & Dams

- New levees, dams, embankments, etc. to control flooding will not be insured under ACIP rules
- Development pressure often moves towards high risk solutions such as these due to their small footprint
- Residual risk is high. Requires development of Emergency Action Plans, rigorous inspections, etc.
 - Above grade structures frequently fail
 - 2021 Monsoon saw breach of at least 5 berm/levee structures



Questions or Comments?



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