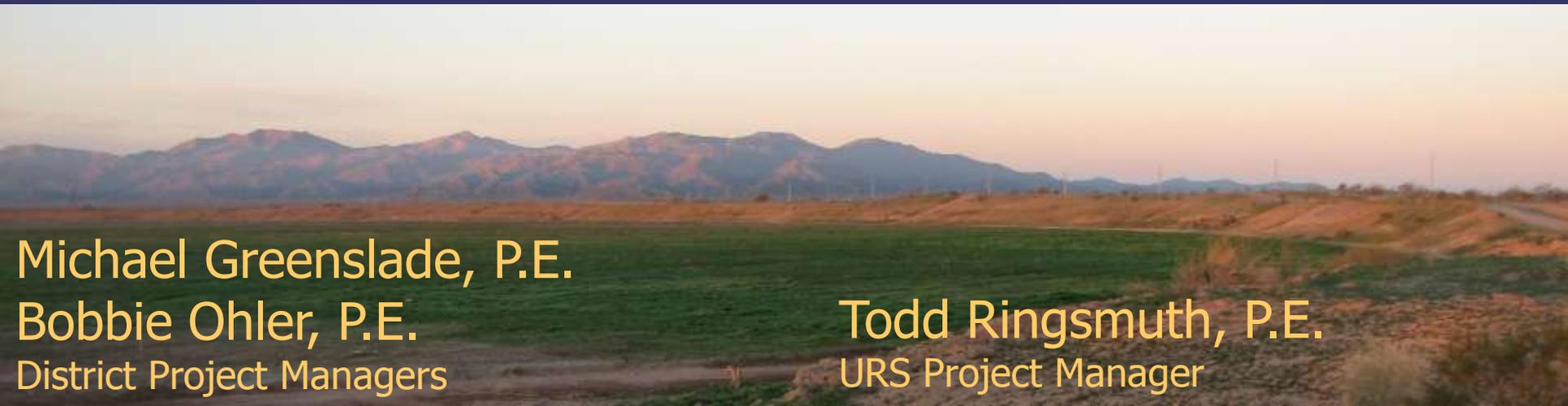




Public Meeting March 14, 2013

McMicken Dam Rehabilitation Project



Michael Greenslade, P.E.
Bobbie Ohler, P.E.
District Project Managers

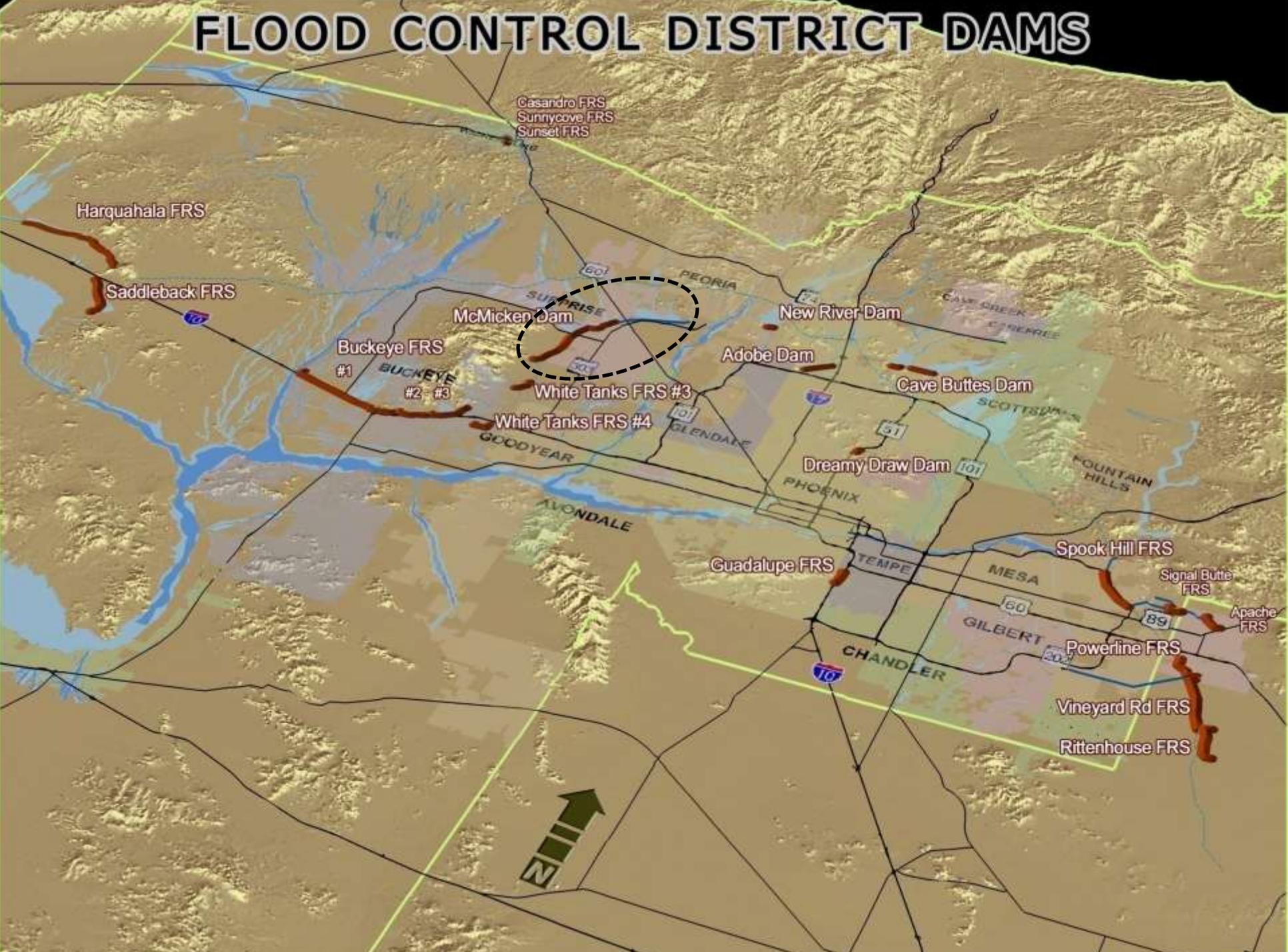
Todd Ringsmuth, P.E.
URS Project Manager

Meeting Purpose

- Need for Project
- Alternatives Considered
- Selected Alternative
- Schedule
- Questions and Answers

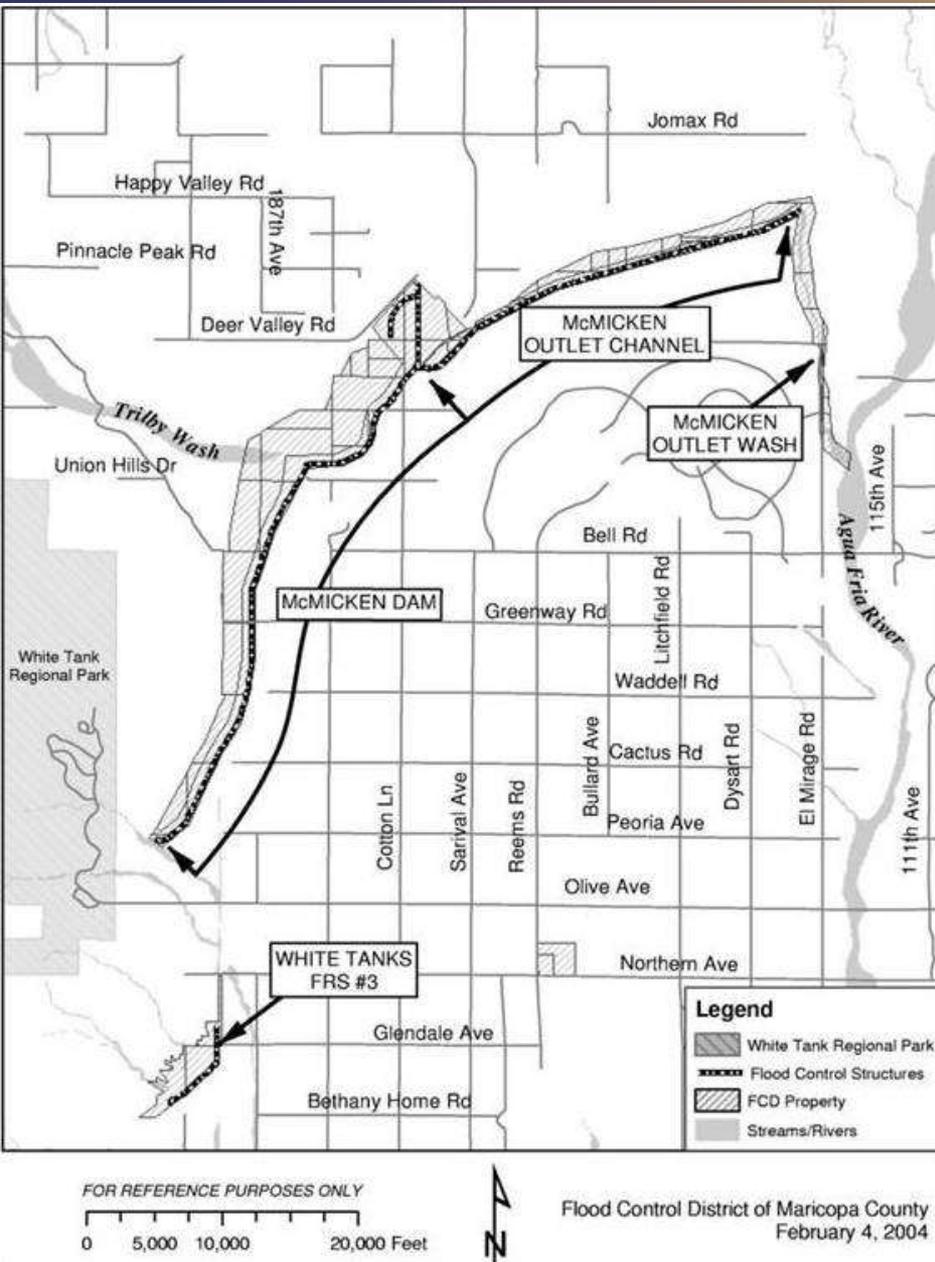


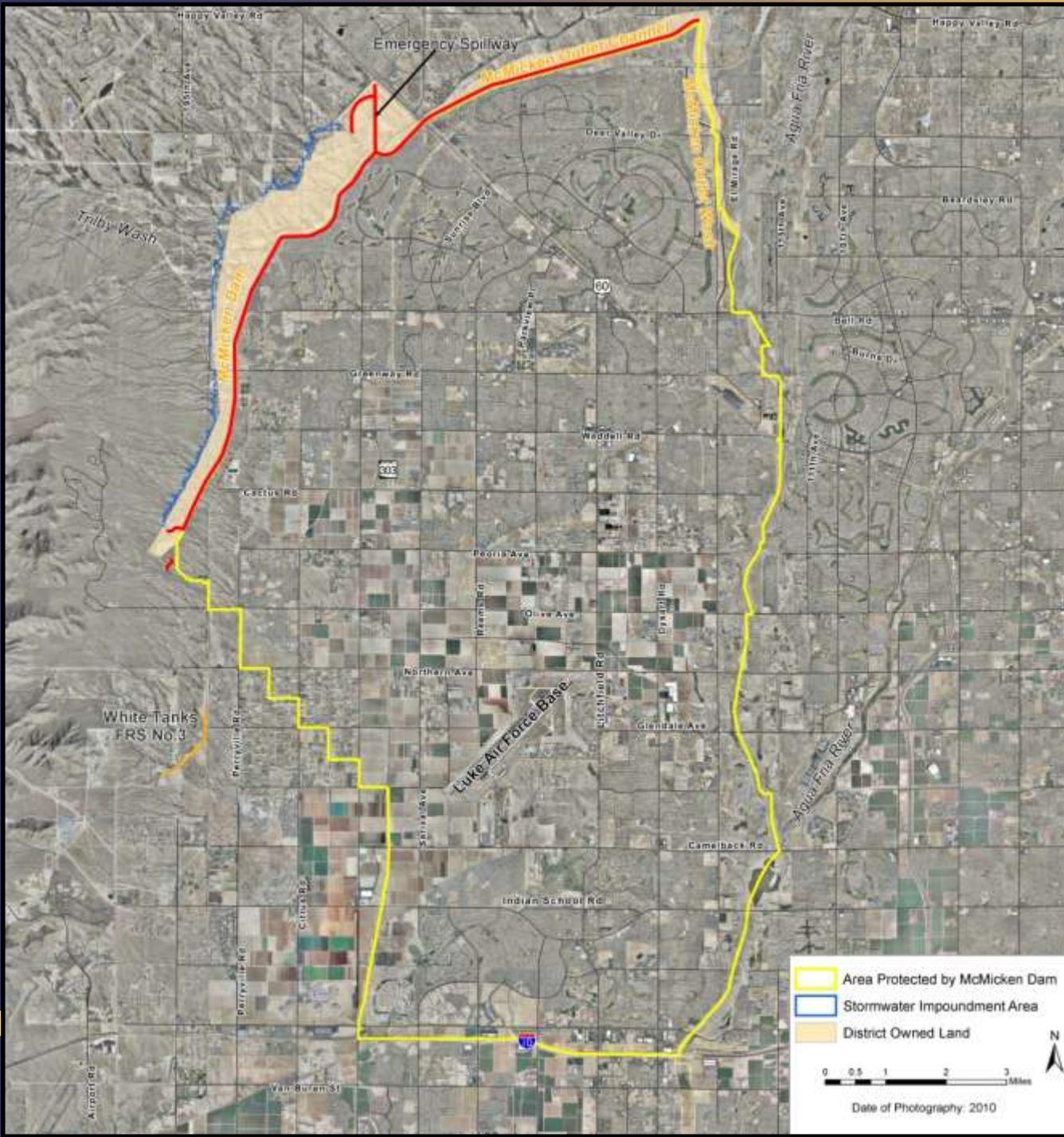
FLOOD CONTROL DISTRICT DAMS



McMicken Dam

- Original function to protect Luke AFB & agricultural lands
- Provides 100-year flood protection
- Includes 9 mile long dam, 6 mile long channel & 2.5 mile long natural wash
- Operated and maintained by the District
- ADWR is jurisdictional agency
- Classification: High Hazard/intermediate with Safety Deficiencies

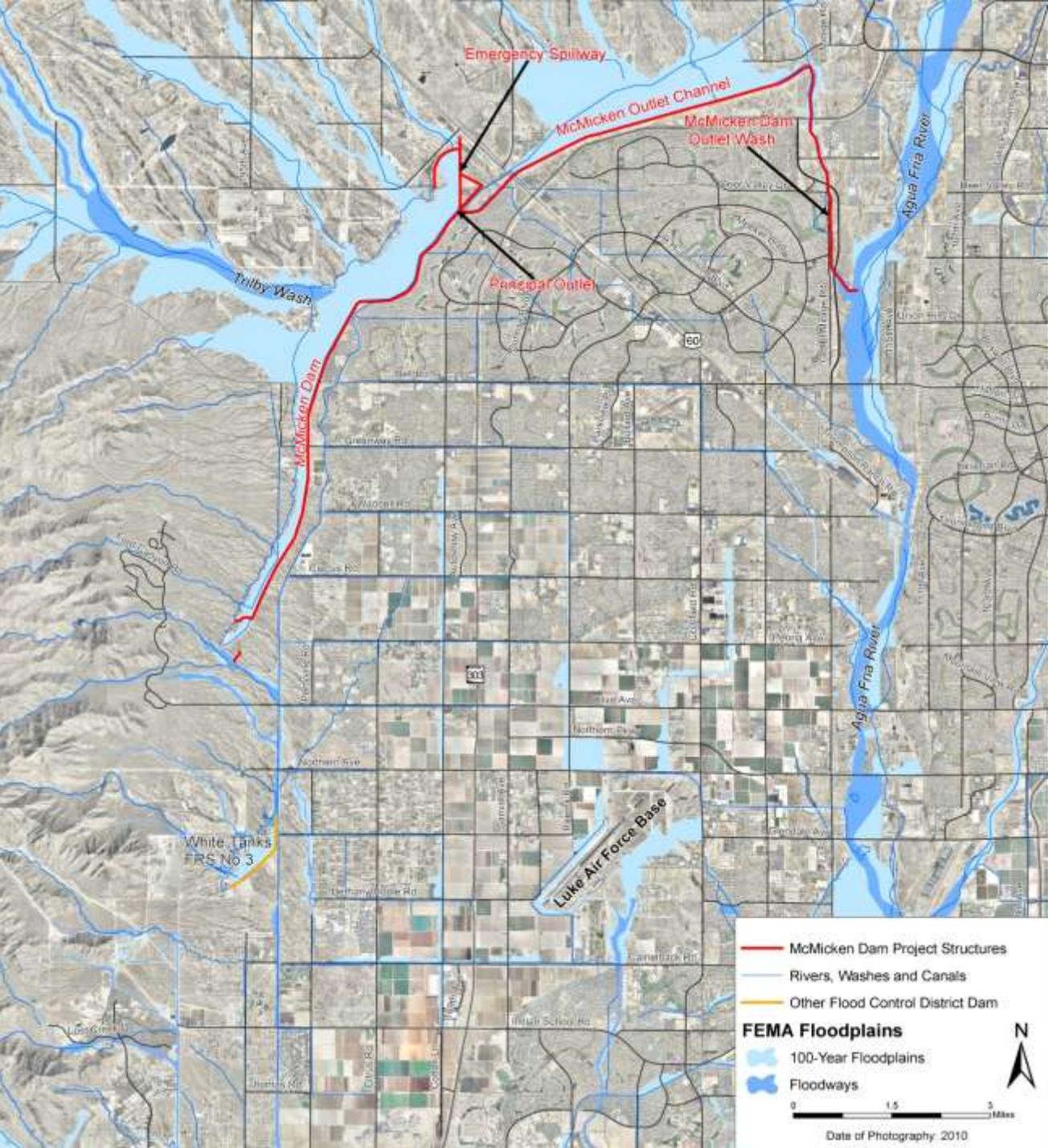




Area Protected by McMicken Dam



Floodplains Controlled by McMicken Dam



1958

Grand Ave.

McMicken Dam

Luke AFB



2009

Grand Ave.

McMicken
Dam



McMicken Dam History

- 1951 - August floods (7.3"-24hr., 13.6" total storm)
- 1956 - Construction completed by Army Corps of Engineers
- 1970 - First significant filling
- 1977 - Army Corps of Engineers breaches dam
- 1978 - Flood Flows through breaches
- 1985 - Modifications by District repairs breaches
- 2004 - 2011 Federal Funding Pursued
- 2006 - Modifications by District to mitigate earth fissure risk
- 2007 - Repairs by District at principal outlet
- 2009 - Alternative analysis completed
- 2010 - Lead from gun ranges removed
- 2012 - Final design initiated by District



Luke Air Force Base and Goodyear
August 1951 (7.3"-24hr., 13.6" total storm)

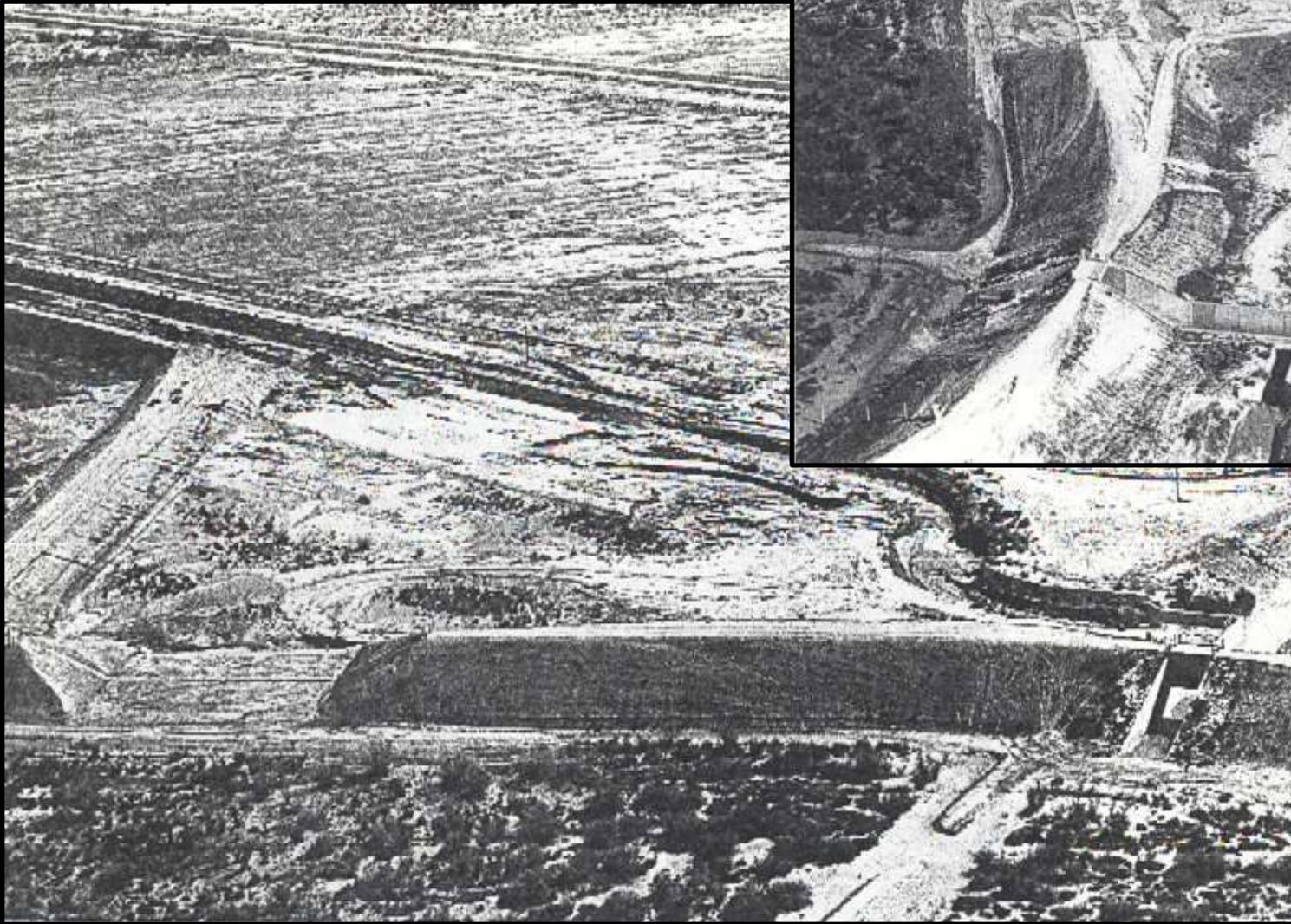


1970 – First significant filling (within 15 feet of dam crest)

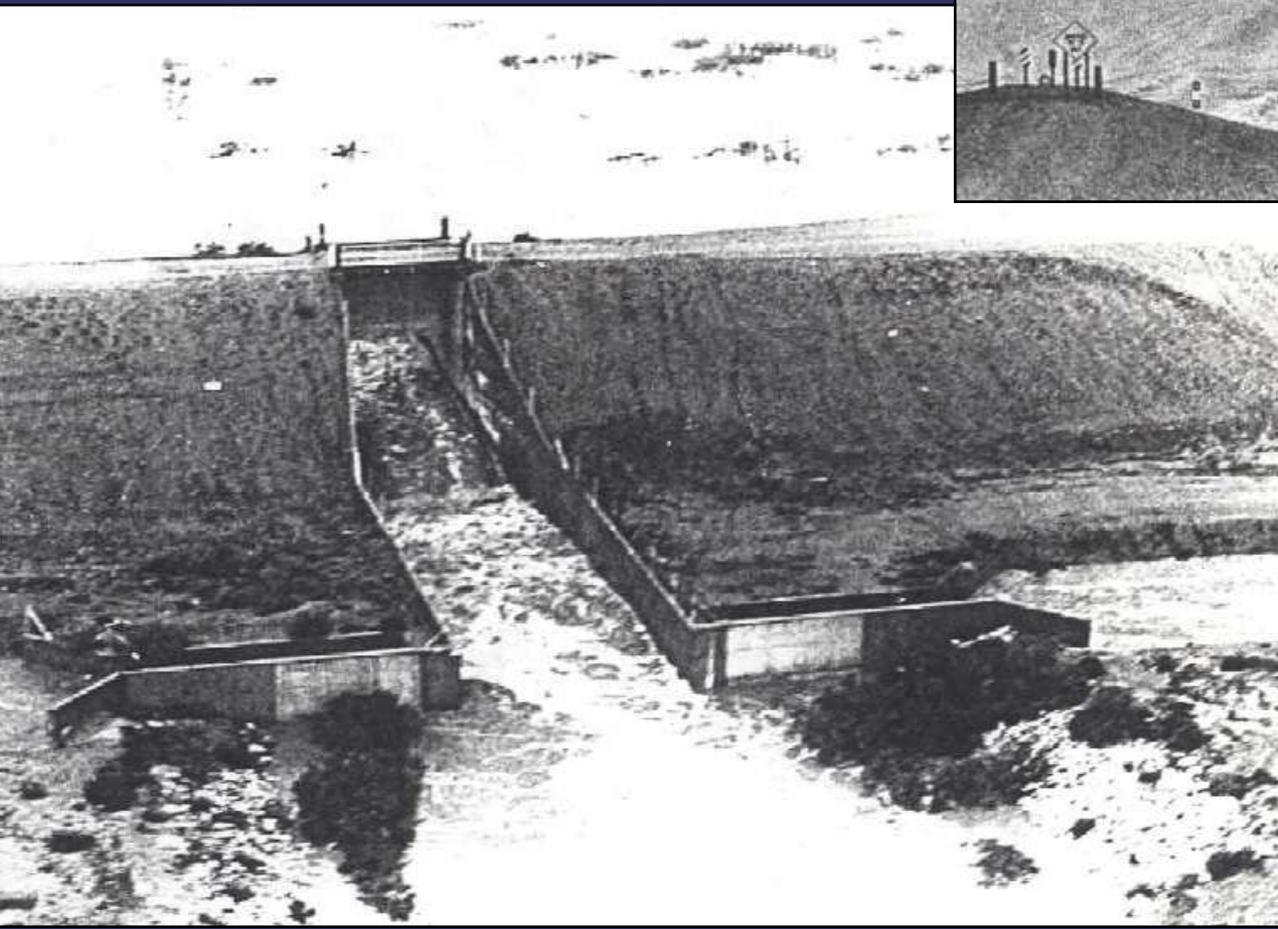
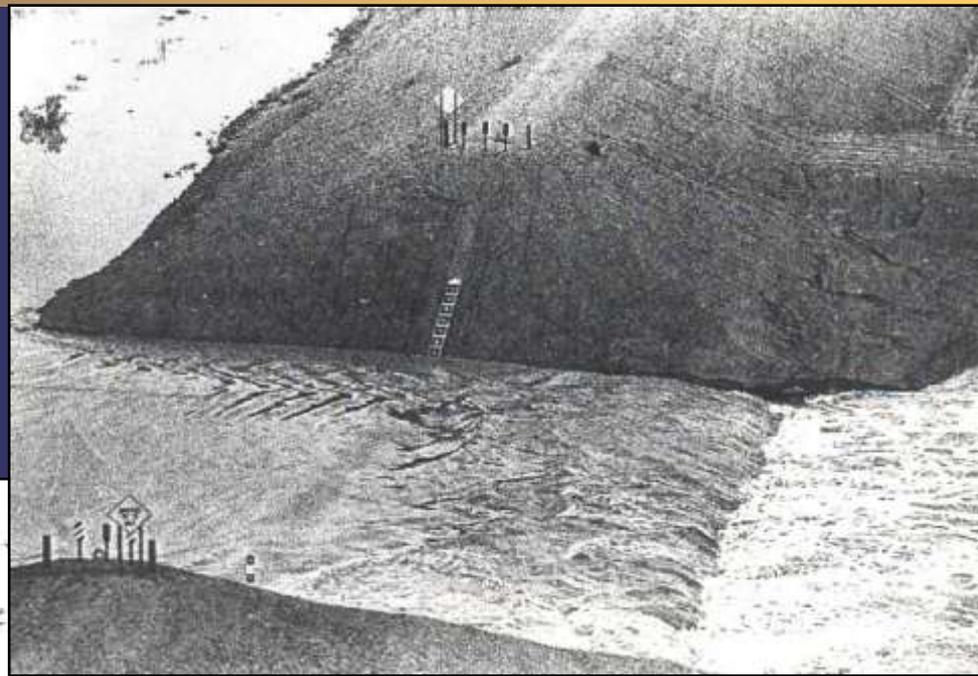
1970



1977 - Army Corps of Engineers Breaches the Dam



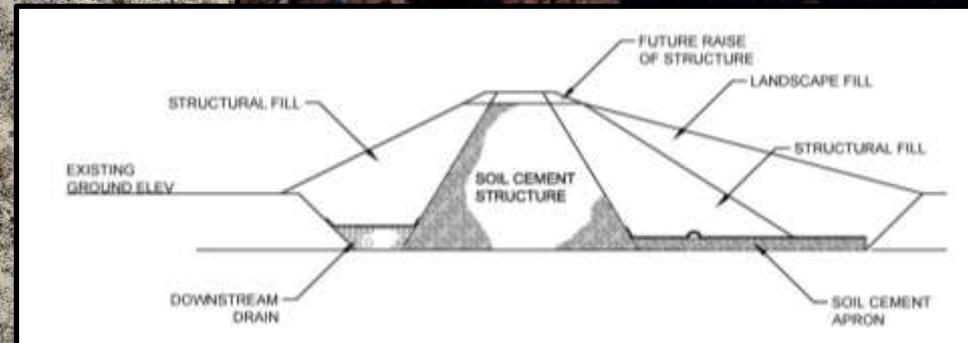
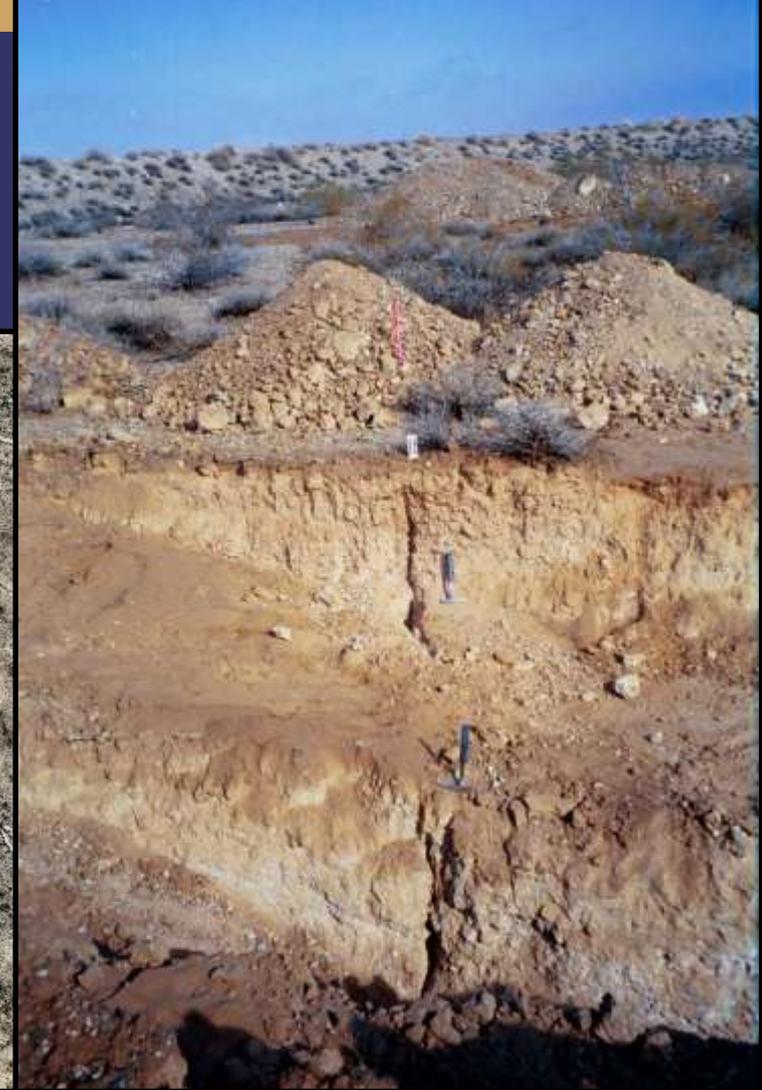
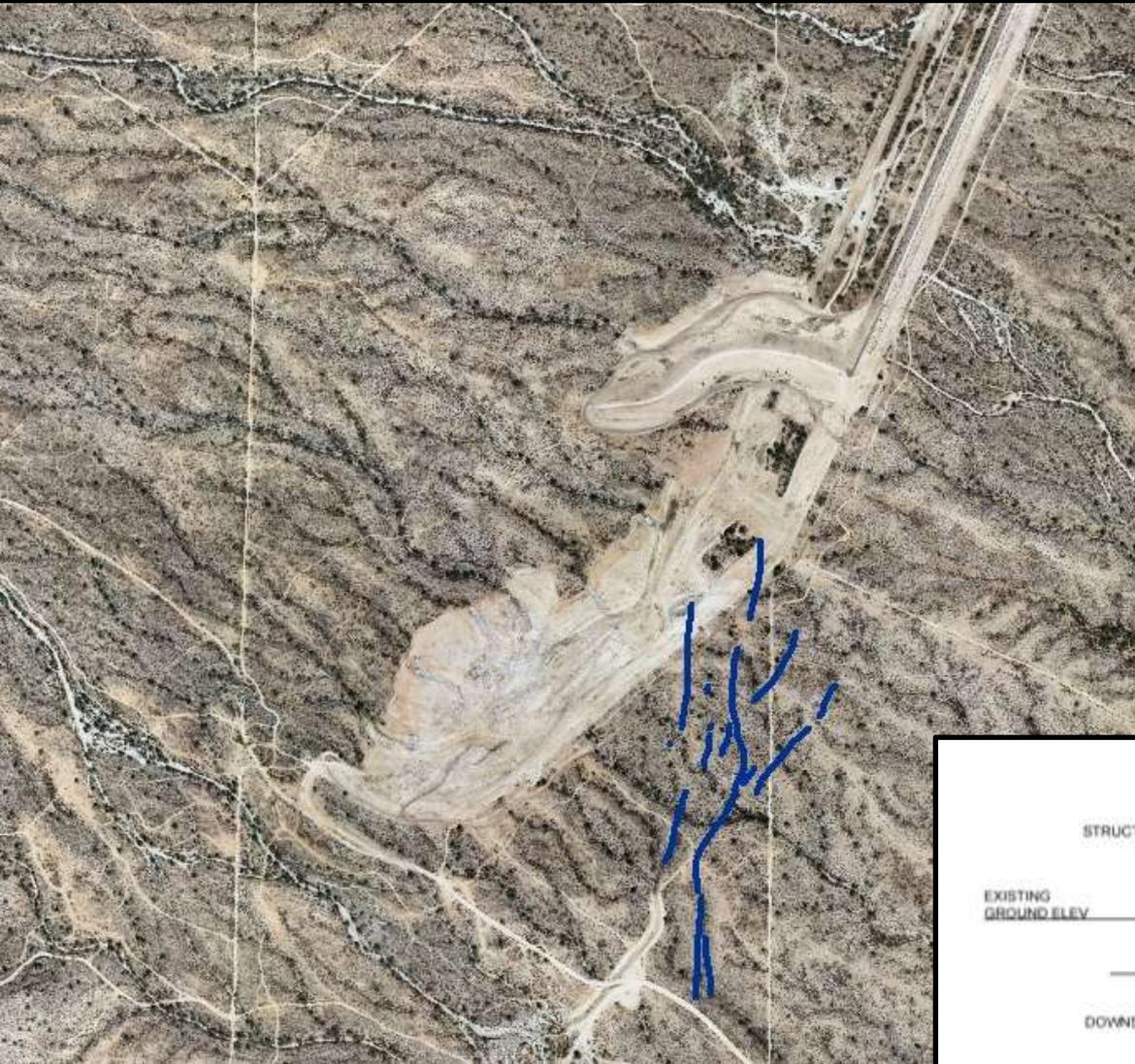
1978 – Significant Flows through Breach in Dam



1985 – Dam Modifications by District



2006 – Dam Modifications by District



2007 – Dam Modifications by District



McMicken Dam Rehabilitation Project

Dam Safety Issues

- Subsidence
- Earth fissures
- Embankment cracking
- Foundation concerns
- Outlets pipe concerns
- Emergency spillway adequacy



Alternatives Analysis

- Wittmann ADMSU Alternatives (2005)
- Wittmann ADMP Alternatives (2009)
 - Preliminary
 - Secondary
 - Tertiary
 - Recommended Final

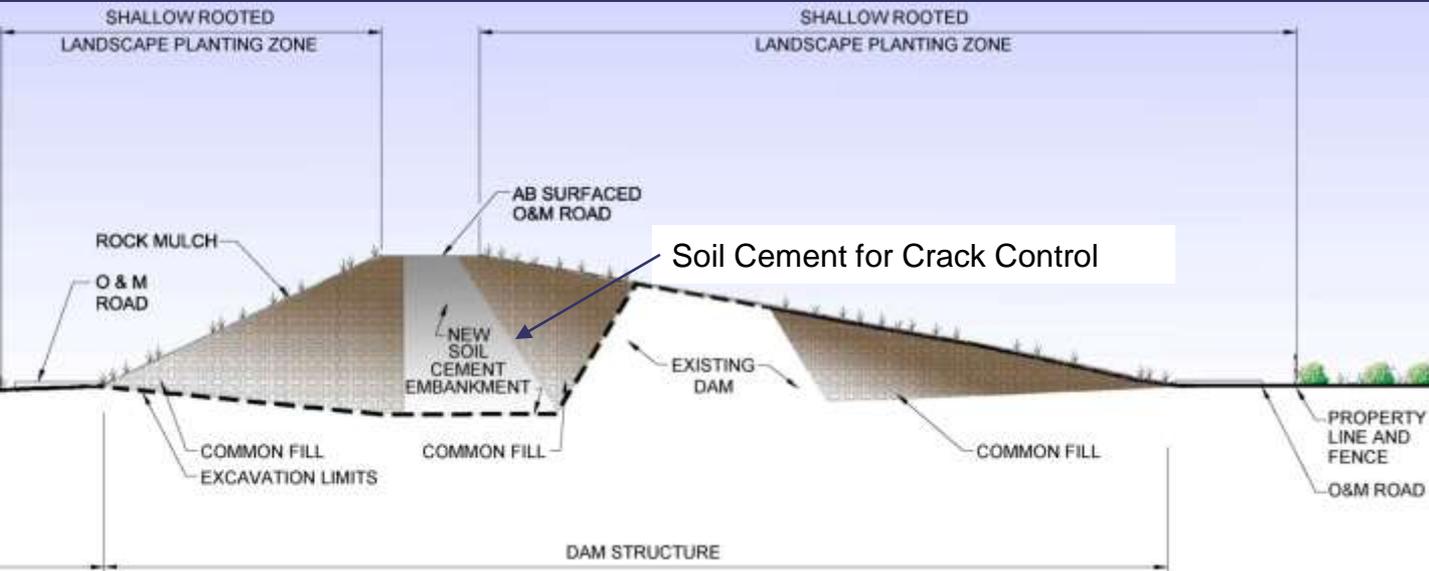
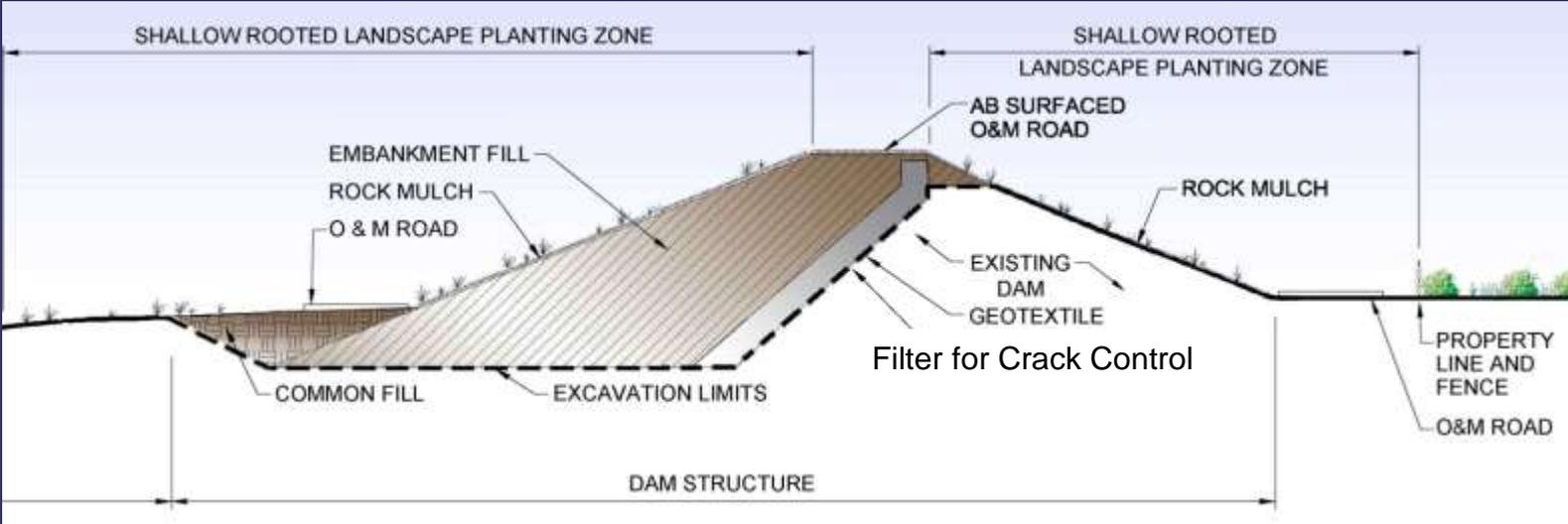


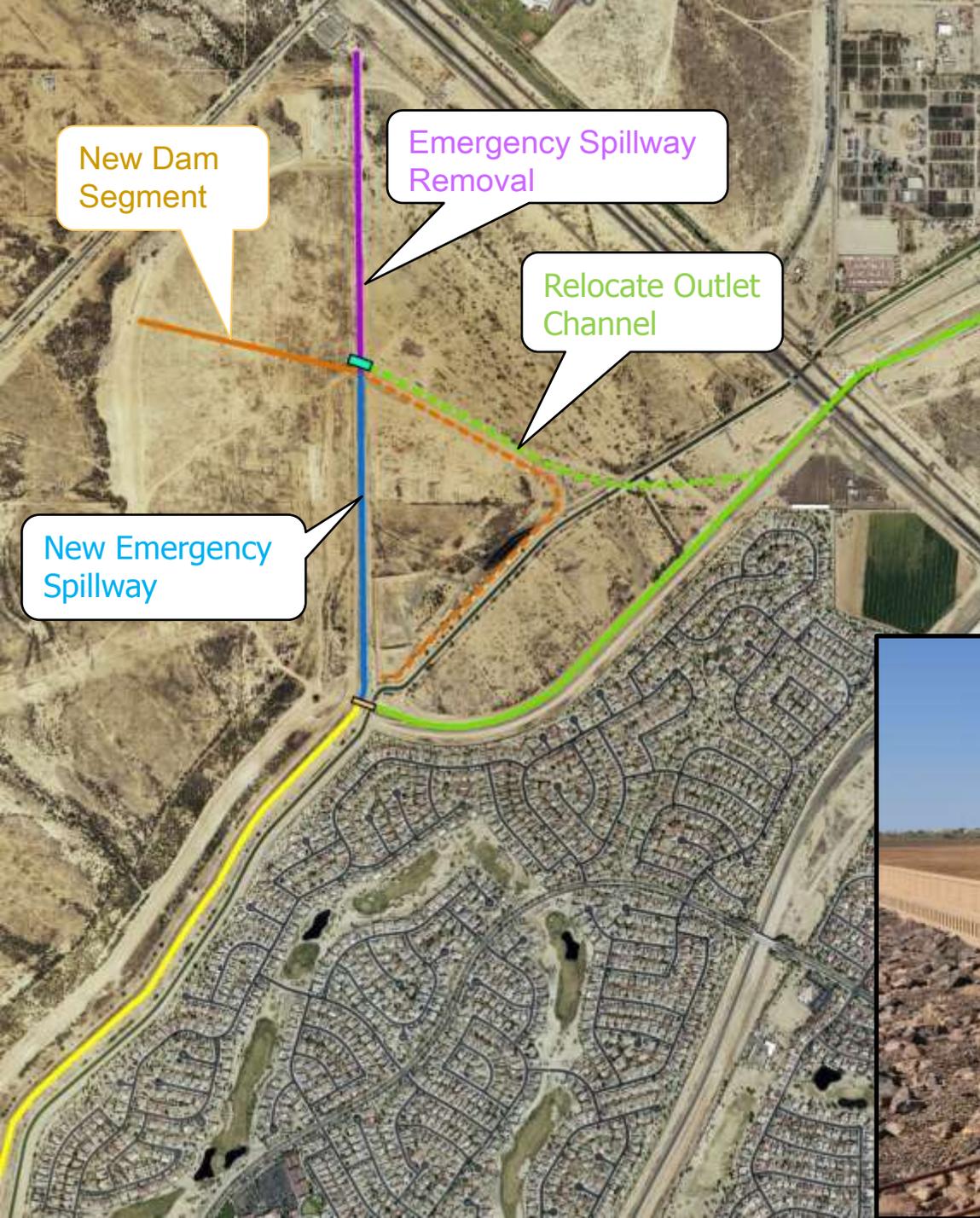
Alternatives Considered

- 1* - Raise & rehabilitate the dam
- 2 - Decommission dam south of Sun Valley Parkway (SVP) & replace with basins and/or channels
- 3 - New dam south of SVP
- 4 - Segment dam at one or more locations
- 5 - New dam at CAP Canal
- 6 - New dam at CAP Canal & decommission McMicken Dam south of SVP
- 7 - New dam at CAP Canal & decommission McMicken Dam



Selected Alternative - Dam Rehabilitation

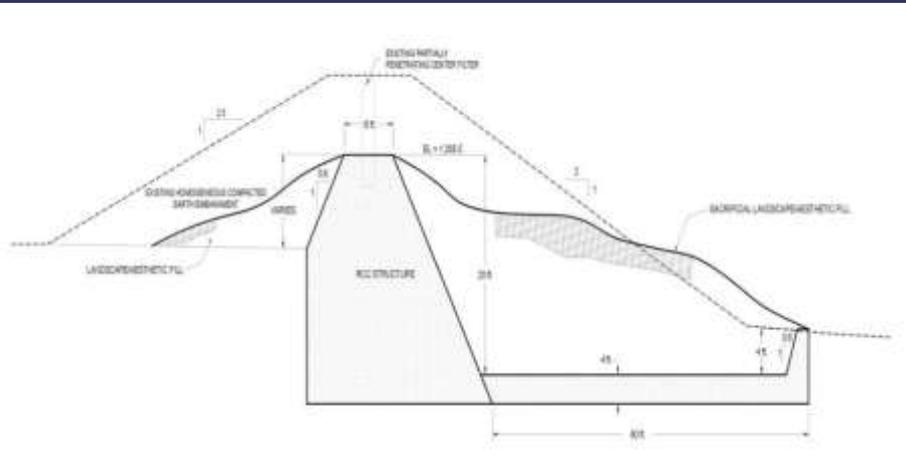




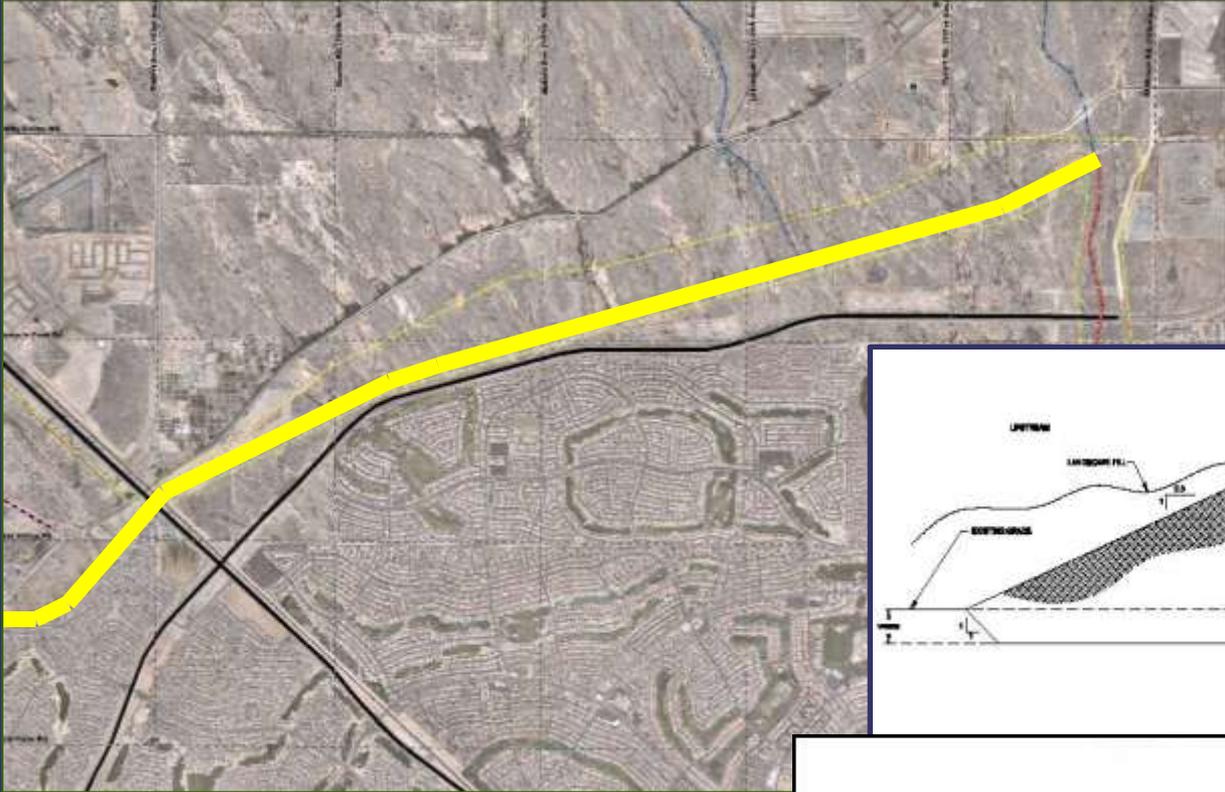
Emergency Spillway and Principal Outlet Relocation



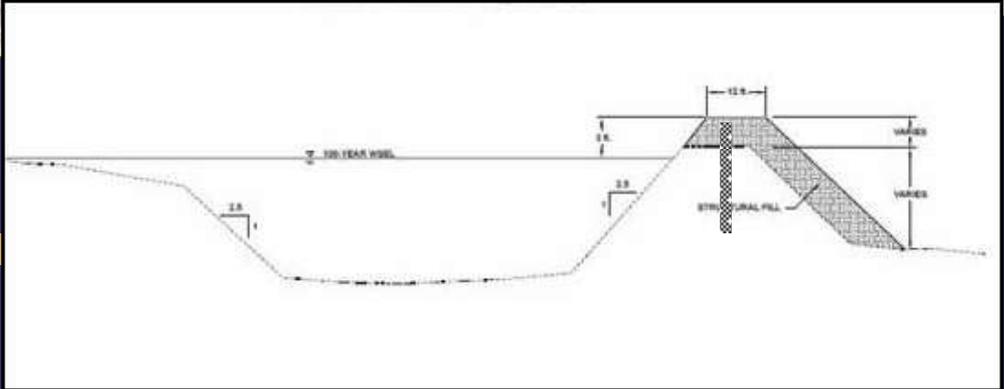
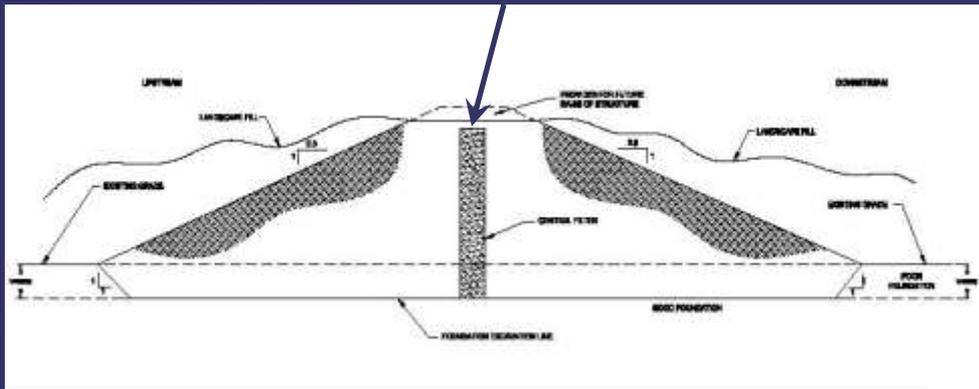
Emergency Spillway Concepts



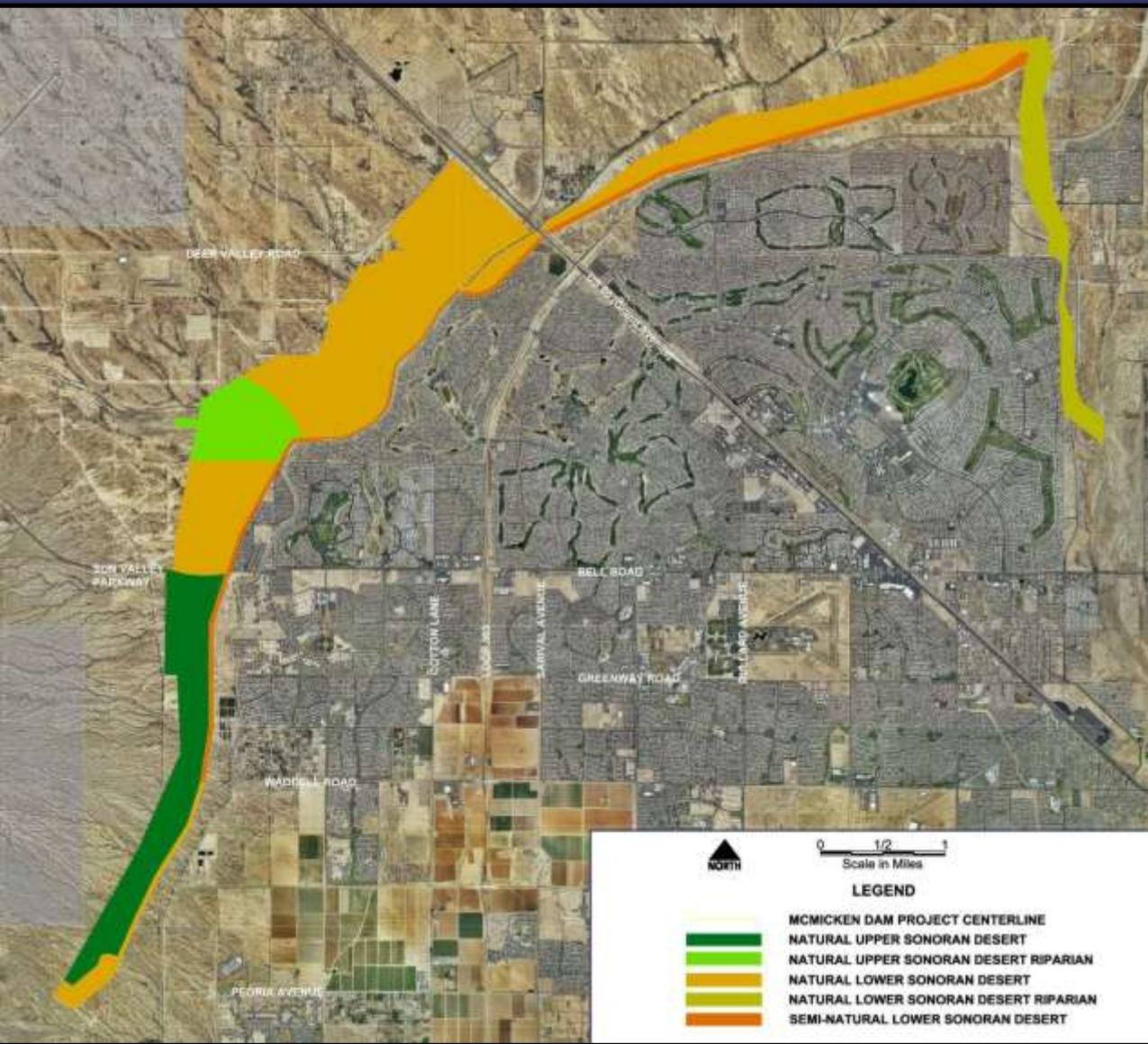
Outlet Channel



Filter for Crack Control



Landscape Design Themes



Natural Upper Sonoran Desert



Natural Lower Sonoran Desert



Natural Upper Sonoran Desert Riparian

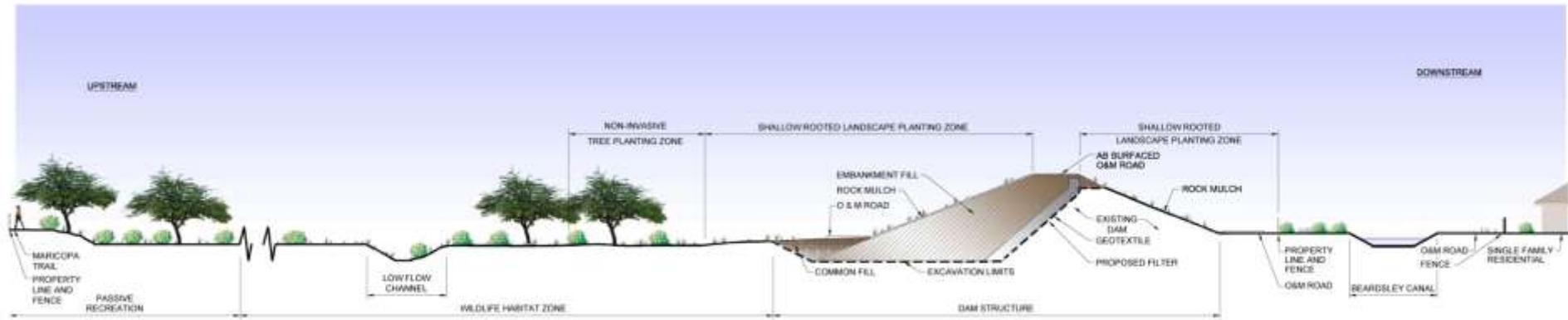


Natural Lower Sonoran Desert Riparian



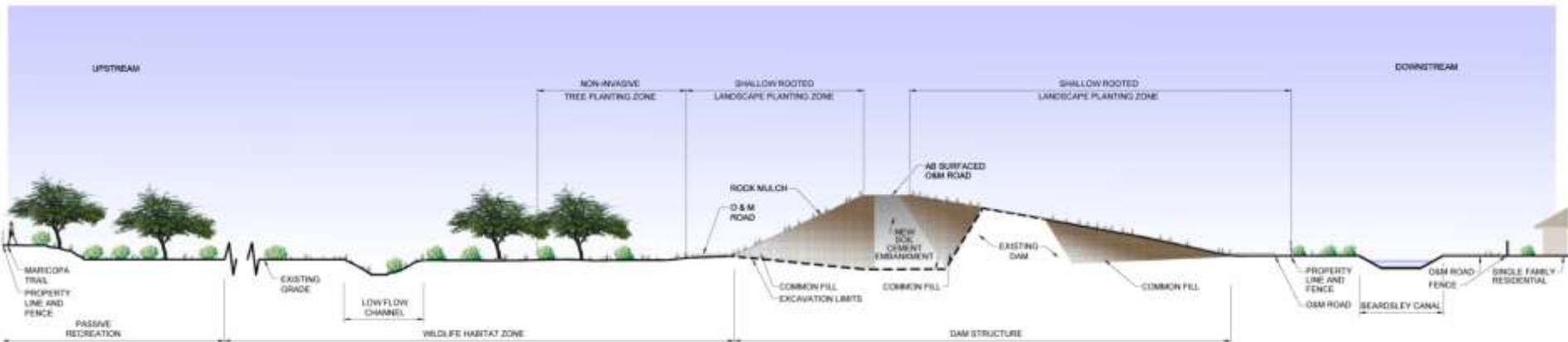
Semi-natural Lower Sonoran Desert





NON-FISSURE RISK ZONE EMBANKMENT (UPSTREAM RAISE)

SCALE: NTS



FISSURE RISK ZONE EMBANKMENT

SCALE: NTS

Multi-Use Management Concept





Construction



White Tanks FRS No. 3

Post-Construction

White Tanks FRS No. 3



Spook Hill FRS

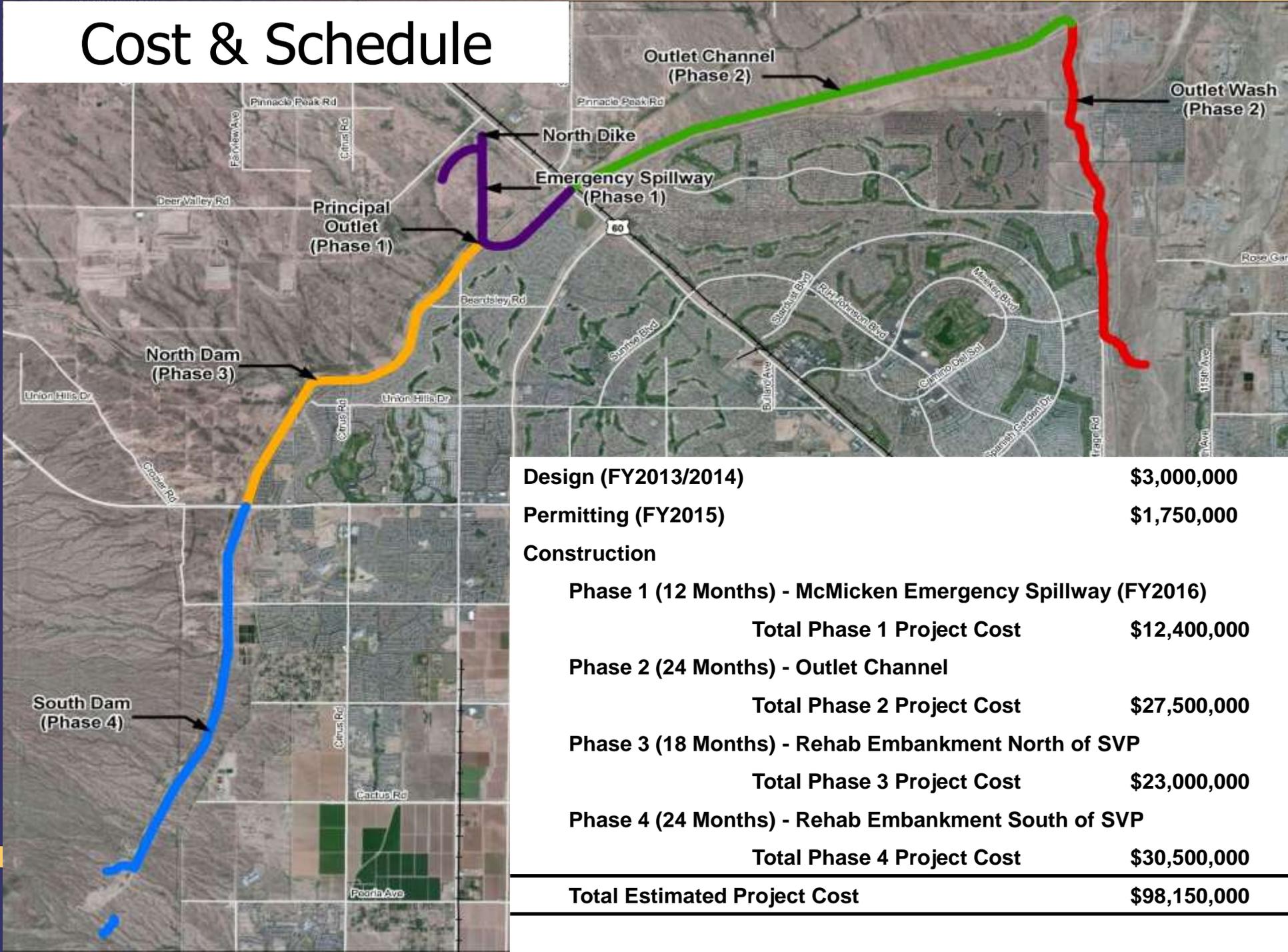


McMicken Dam Project Rehabilitation Summary

- Eliminates or mitigates all dam safety deficiencies
- Meets current design criteria for high hazard dams
- Has high benefit-to-cost ratio
- Maintains at least 100-year flood protection for residents downstream of structure for the next 100 years
 - Downstream population 80,000+
 - Property Improvements and Infrastructure \$6 billion
- Construction sequencing is flexible
- Provides maximized opportunities for multi-use, landscaping and aesthetics



Cost & Schedule



Design (FY2013/2014)	\$3,000,000
Permitting (FY2015)	\$1,750,000
Construction	
Phase 1 (12 Months) - McMicken Emergency Spillway (FY2016)	
Total Phase 1 Project Cost	\$12,400,000
Phase 2 (24 Months) - Outlet Channel	
Total Phase 2 Project Cost	\$27,500,000
Phase 3 (18 Months) - Rehab Embankment North of SVP	
Total Phase 3 Project Cost	\$23,000,000
Phase 4 (24 Months) - Rehab Embankment South of SVP	
Total Phase 4 Project Cost	\$30,500,000
Total Estimated Project Cost	\$98,150,000

District Dam Safety Program

Risk Reduction and Risk Management

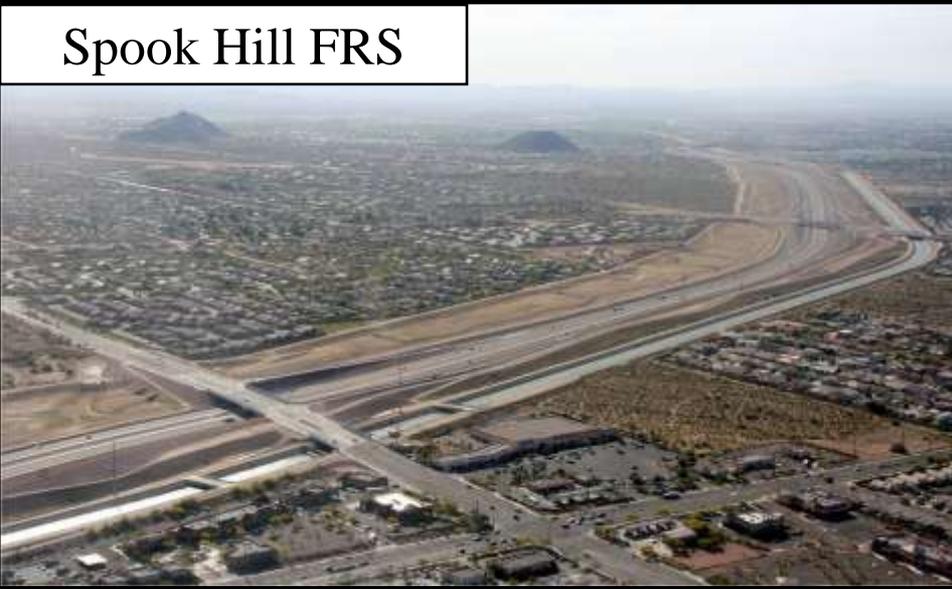
- Stay ahead of issues to assure no imminent threats to public safety
- Reduce dam safety risk through dam rehabilitation and modifications
- Maintain or improve current level of flood protection provided
- Prioritized approach to address dam safety issues over time
- Manage risk through inspections, monitoring, surveys, maintenance , repairs and Emergency Action Plans



Dam Rehabilitation and Dam Modifications

- Dams are well maintained
- Recurrent dam safety activities and structures assessment are keeping the dams safe to operate for the short term and interim term
- 2 dam rehabilitation projects completed
- 7 dams identified for rehabilitation or replacement for dam safety reasons
- 2 dams identified for modifications

Spook Hill FRS



White Tanks FRS No. 3





For More Information go to
www.fcd.maricopa.gov

