



Metro Phoenix

area drainage master plan

AUGUST 2008

Area Drainage Master Plan Purpose

The Flood Control District of Maricopa County (District), in association with the City of Phoenix (City), is finalizing the Metro Phoenix Area Drainage Master Plan (Metro ADMP). The Metro ADMP quantifies the extent of drainage and flooding problems within the study area and develops a concept drainage plan to mitigate the flooding hazards. The City and the District will use the final recommended conceptual drainage plan to identify, define, and budget future drainage improvement projects.

Study Area

The Metro ADMP study area is located mainly within the City of Phoenix. The study area is approximately 90 square miles in size and covers the older, developed part of Phoenix, which lies south of the Arizona Canal and north of the Salt River, between Interstate 17 (I-17) and the Papago Buttes.

Purpose of Public Meeting

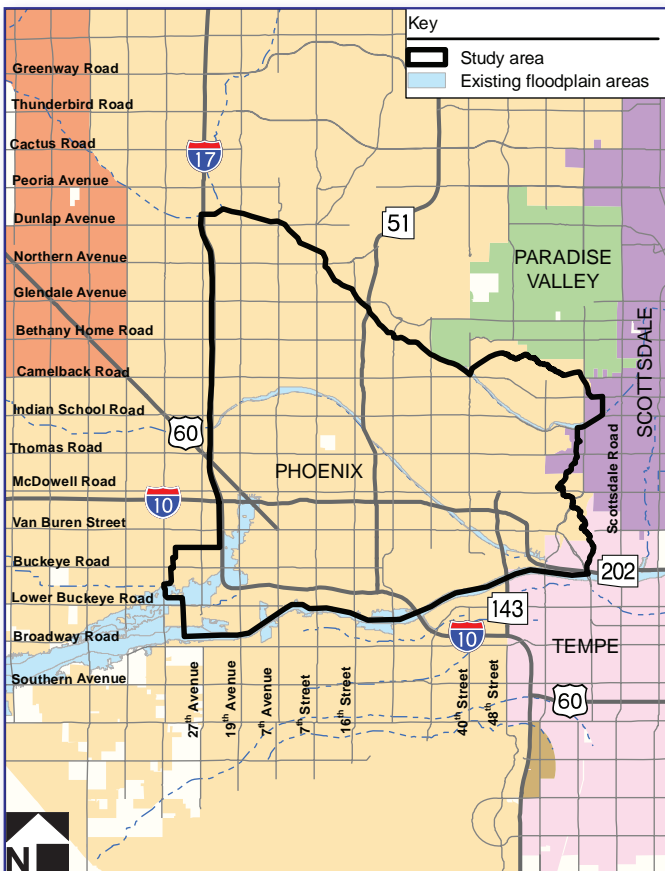
The purpose of this fourth and final series of public meetings is to present the recommended drainage plan

for the Metro ADMP. The recommended plan is based on technical, environmental, and public input consideration. Public comments and feedback received throughout the project and at previous public meetings held in July 2005, August 2006, and July and August 2007 have played an important role in selecting the recommended plan.

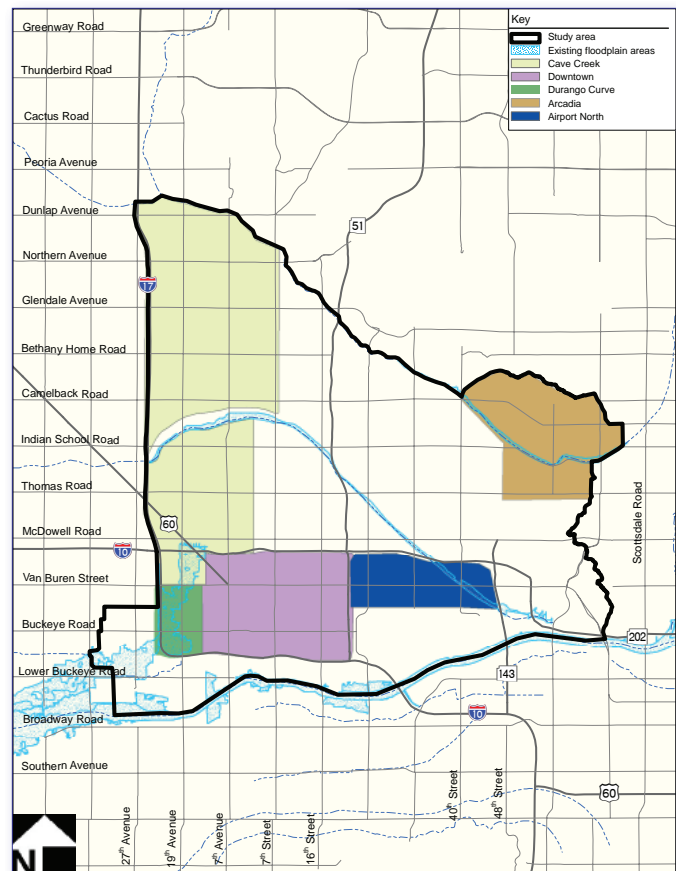
Study Progress

Since August 2007, the Metro ADMP study team has completed the following tasks:

- Submitted the revised Cave Creek floodplain, between Interstate 10 (I-10) and the Grand Canal, to the Federal Emergency Management Agency (FEMA)
- Gained approval from FEMA to eliminate the Cave Creek floodplain designation between I-10 and the Grand Canal
- Identified the recommended drainage plan for each floodprone area of the Metro ADMP by evaluating hydrologic conditions; environmental, aesthetic, and multiuse opportunities; and public feedback received at past public meetings



Study Area



Floodprone Areas

RECOMMENDED PLAN

The Metro ADMP began as a comprehensive drainage study of the central metro Phoenix area. A multidisciplinary study team conducted technical research and provided numerous opportunities for public feedback on the development of drainage plan alternatives. Based on this

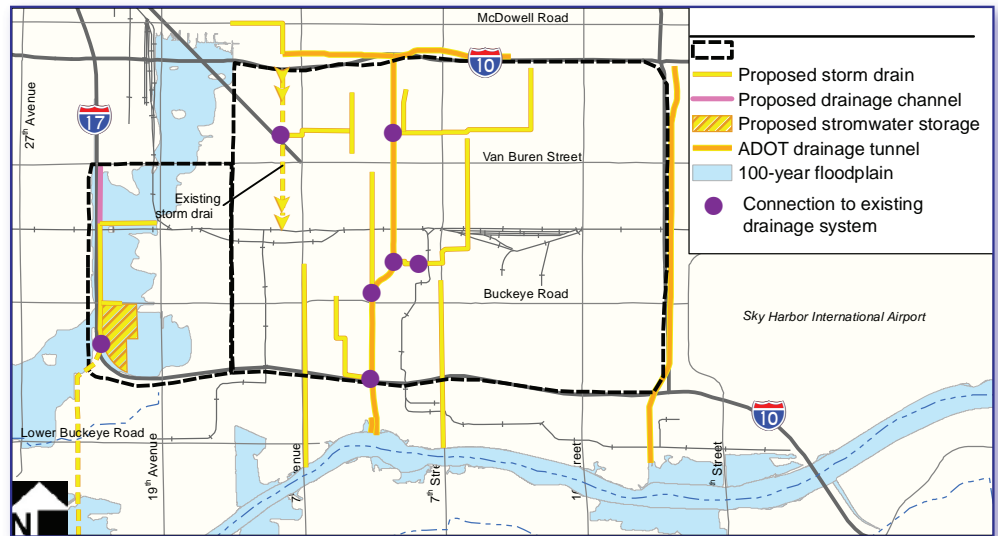
technical research and public feedback, the study team has developed a recommended drainage plan that is technically sound, environmentally sensitive, responsive to community needs, and complementary to existing land use.

Downtown Area

Drainage Issues – The downtown area is subject to substantial flood flows, as evidenced by the August 2005 and July 2008 floods that caused considerable disruption to the downtown areas. These flooding problems are largely due to development and the lack of open, undeveloped land that can absorb water.

Recommended Drainage Plan – New storm drains north and south of railroad; estimated cost \$48 million

- Increase the capacity of the storm drain system from the existing 2-year design to provide a 10-year level of protection
- Use excess capacity of existing storm drains in 19th, 15th, 11th, and 7th Avenues, as well as 12th and 16th Streets
- Construct new storm drains both in 3rd and 9th Avenues and in Fillmore Street that drain to the Arizona Department of Transportation's (ADOT) existing drainage system
- Construct new storm drains south of the railroad in 7th Avenue and 7th Street that drain to the Salt River



Downtown and Durango Curve Recommended Drainage Plan

Durango Curve Area

Drainage Issues – Most of the study area drains into this location upstream of the I-17 Durango Curve. If the capacity of the storm drain system in this area is exceeded, ponding of stormwater behind the elevated I-17 freeway results in flooding of a number of homes and businesses.

Recommended Drainage Plan – 100-year collection system with stormwater storage at Durango Curve; estimated cost \$74 million

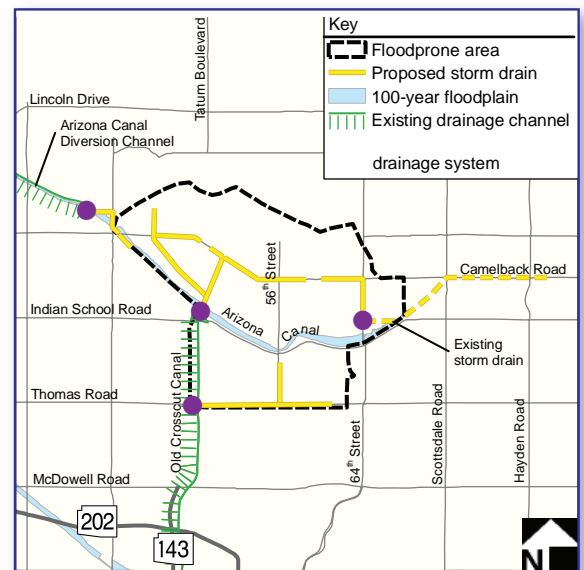
- Provide a 100-year level of protection for the Durango Curve area
- Construct a new large-diameter storm drain and open channel to collect stormwaters and drain them into a new multiuse stormwater storage basin at the Durango Curve
- Use ADOT's existing 102-inch storm drain to discharge stormwater from the new storage basin into the Salt River
- Apply a suburban park landscape theme to complement multiuse of the basin and enhance local community character

Arcadia Area

Drainage Issues – The Arcadia area is subject to flooding from Camelback Mountain runoff. In addition, several properties located in the low-lying area downstream of the Arizona Country Club have a history of flooding.

Recommended Drainage Plan – New storm drain system; estimated cost \$36 million

- Provide a 10-year level of protection for the Arcadia / Old Crosscut Canal watershed
- Construct new 10-year storm drains in Camelback Road, Lafayette Boulevard, Arcadia Drive, Invergordon Road, and Thomas Road



Arcadia/Old Crosscut Canal Recommended Drainage Plan

Cave Creek Floodplain

Drainage Issues – The topography of the area causes runoff from large storms to exceed the capacity of the storm drain system and flood low-lying areas. This area was part of the Cave Creek floodplain before construction of the Arizona Canal Diversion Channel (ACDC). Even though the ACDC diverts stormwater from Cave Creek upstream of the Grand Canal, this area is still subject to shallow flooding.

Recommended Drainage Plan – New storm drains with stormwater storage at Palo Verde and Encanto golf courses; estimated cost \$170 million

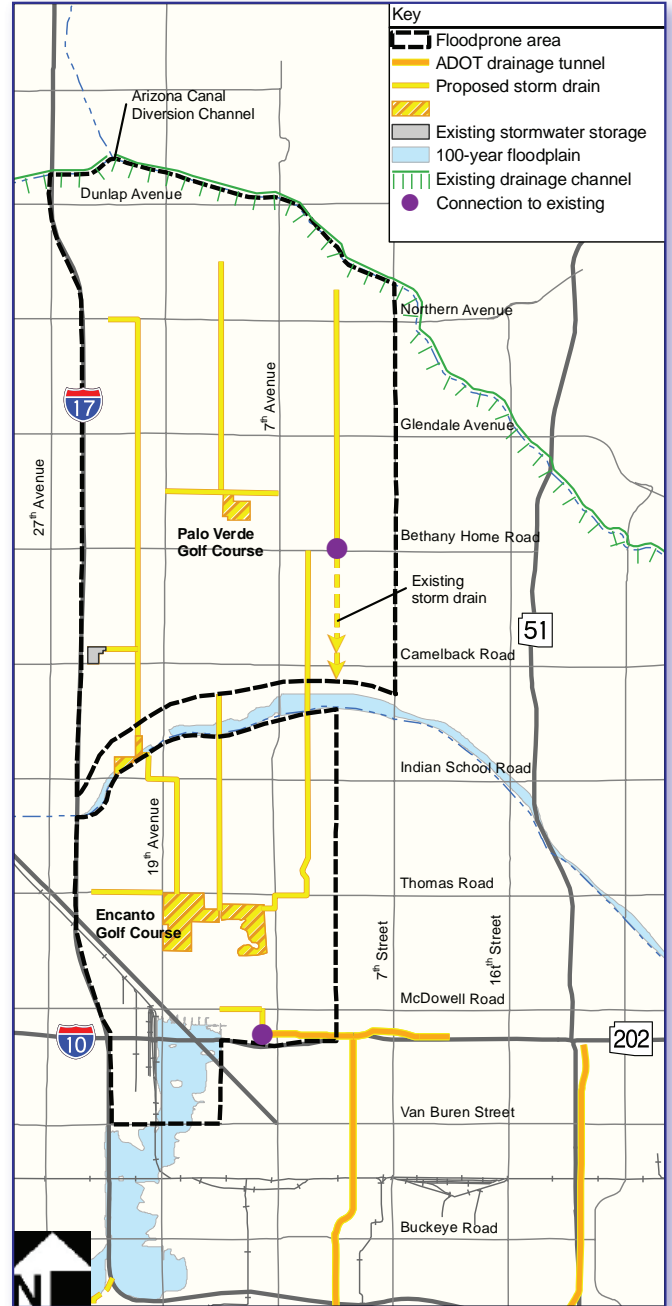
- Increase the storm drain system capacity from the existing 2-year design to provide a 10-year level of protection
- Construct new storm drains in 21st, 18th, 15th, 3rd, and Central Avenues
- Reconstruct Palo Verde and Encanto golf courses to provide stormwater storage and enhance playability of the courses
- Drain Palo Verde Golf Course stormwater storage into the existing 15th Avenue storm drain
- Drain Encanto Golf Course stormwater storage into the existing I-10 freeway drainage system
- Add inlets to the existing storm drains in 19th, 15th, and 7th Avenues to collect the 10-year stormwaters
- Apply a suburban park landscape theme to Palo Verde and Encanto golf courses to preserve their historic character and complement the adjacent setting

Grand Canal

Drainage Issues – Homes along the Grand Canal were built lower than the elevation of the banks of the canal, creating a floodplain designation along the upstream (north) side of the canal. If the capacity of the City’s storm drain system is exceeded, excess runoff backs up behind the canal banks and may cause flooding to homes and businesses.

Alternatives Considered – In order to remove the 100-year floodplain designation, several alternatives were investigated. These alternatives included new storm drains, new detention basins, and the buyout of homes located in the floodplain. All structural alternatives were found to be cost prohibitive and were not supported by the community.

Recommended Drainage Plan – Properties subject to frequent flooding may qualify for the Floodprone Properties Assistance Program (FPAP). Through the FPAP, the District acquires or floodproofs properties subjected to repetitive flooding. FPAP participation by property owners is voluntary; however, selection for aid is not automatic. FPAP-eligible properties are compared to others in Maricopa County that submit to the program, and are prioritized through a ranking system. Funding determines the number of properties that can be selected annually.



Cave Creek Recommended Drainage Plan

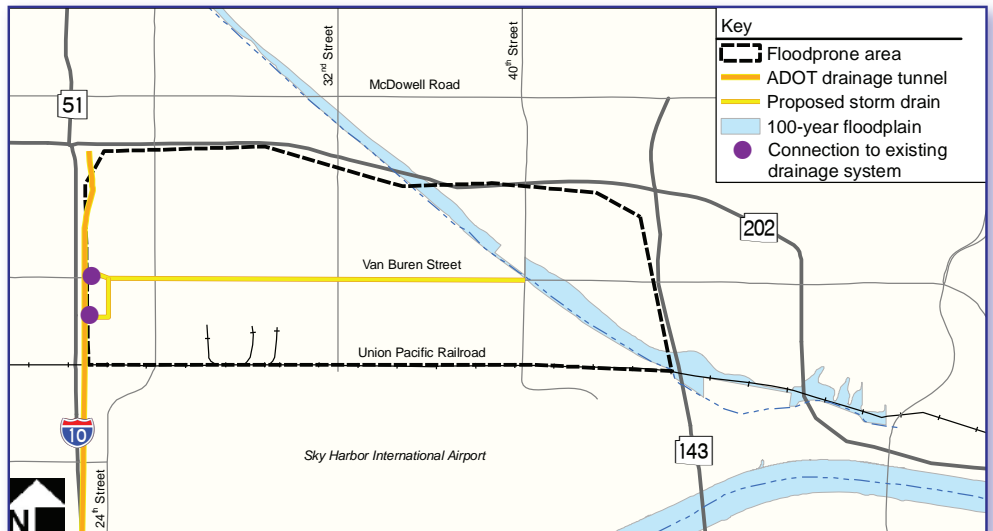
Although the recommended plan for the Grand Canal area does not include any structural flood-control elements, the new 10-year storm drain system recommended for the Cave Creek floodplain area will provide significant flood control for some homes along the Grand Canal. This storm drain system will not remove the Grand Canal floodplain designation, but it will significantly reduce flooding frequency.

Airport North Area

Drainage Issues – Substantial stormwater accumulation occurs along the north side of Sky Harbor Airport. Similar to the Cave Creek floodplain, this area is characterized by a wide, shallow floodplain that extends westward toward I-10. Once the capacity of the storm drain system is exceeded, runoff accumulates and results in a flood hazard for low-lying properties.

Recommended Drainage Plan – New storm drain in Van Buren Street; estimated cost \$25 million

- Provide a 10-year level of protection by increasing the capacity of the storm drain system from the existing 2-year design
- Construct a new storm drain in Van Buren Street that drains runoff into ADOT's existing drainage facility
- Intercept flows from the existing storm drains in 24th, 32nd, and 40th Streets to allow the Aviation Department to use the residual capacity of these three existing storm drains to provide much needed storm drain capacity for the airport



Airport North Recommended Drainage Plan

Revision of Cave Creek Floodplain

The Cave Creek floodplain review indicated that the average depth of stormwaters within some portions of the floodplain does not warrant a floodplain designation. In the area upstream of McDowell Road, stormwaters flow over a very wide area, spreading out between 19th Avenue and 7th Street. This wide, shallow flooding does not meet the criteria for a floodplain designation, which usually involves more concentrated and deeper flooding. The District's study results were reviewed and approved by FEMA in January 2008. Results indicate that the floodplain designation can be removed between McDowell Road and the Grand Canal.

However, the overall flood risk will not change. The area removed from the floodplain is still subject to shallow flooding, although it does not warrant official floodplain designation. The recommended drainage plan presented in this handout is designed to reduce or eliminate the remaining flooding potential within the existing Cave Creek floodplain.

Next Steps

Metro ADMP – The study team will complete the recommended plan report. The recommended plan will be presented to the Flood Control Advisory Board and the Flood Control Board of Directors for endorsement. The District and the City will work together to implement the drainage elements of the recommended plan as funding becomes available through future City bond elections or other funding mechanisms.

For more information, contact:

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