

ADOBE
DAM/DESERT
HILLS

AREA DRAINAGE MASTER PLAN

Part 10

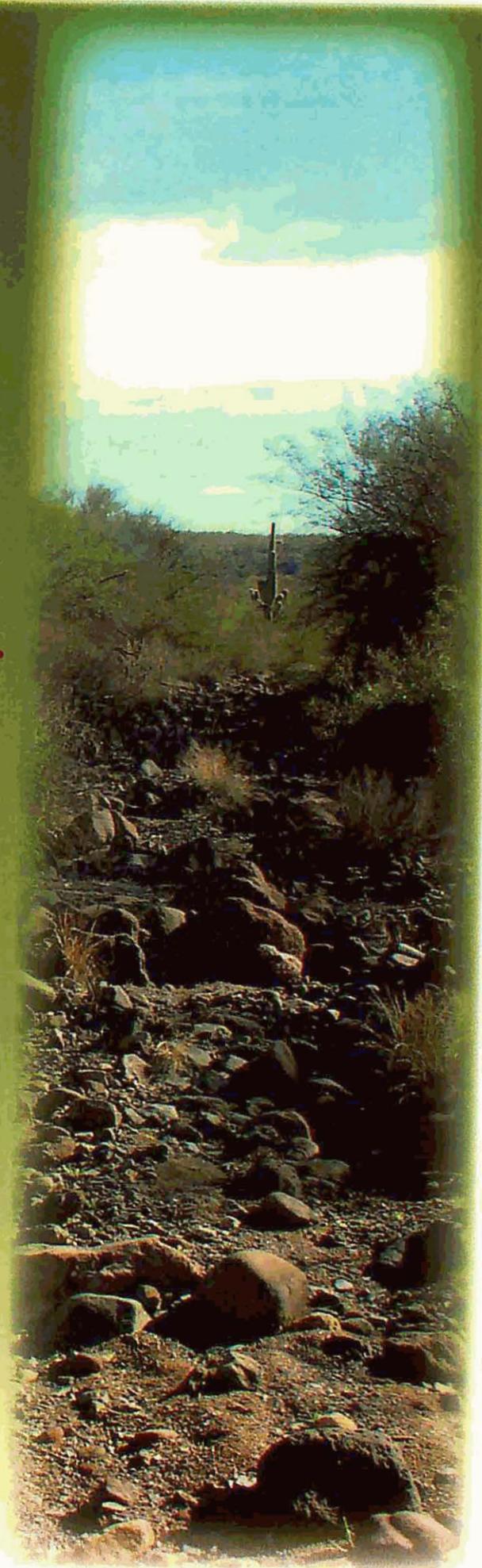
Executive Summary

Volume 1



December 2005

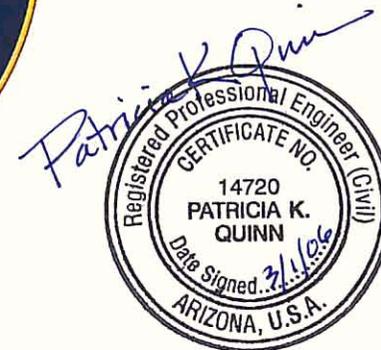
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ADOBE DAM/DESERT HILLS
AREA DRAINAGE MASTER PLAN

EXECUTIVE SUMMARY

PART 10, VOLUME 1



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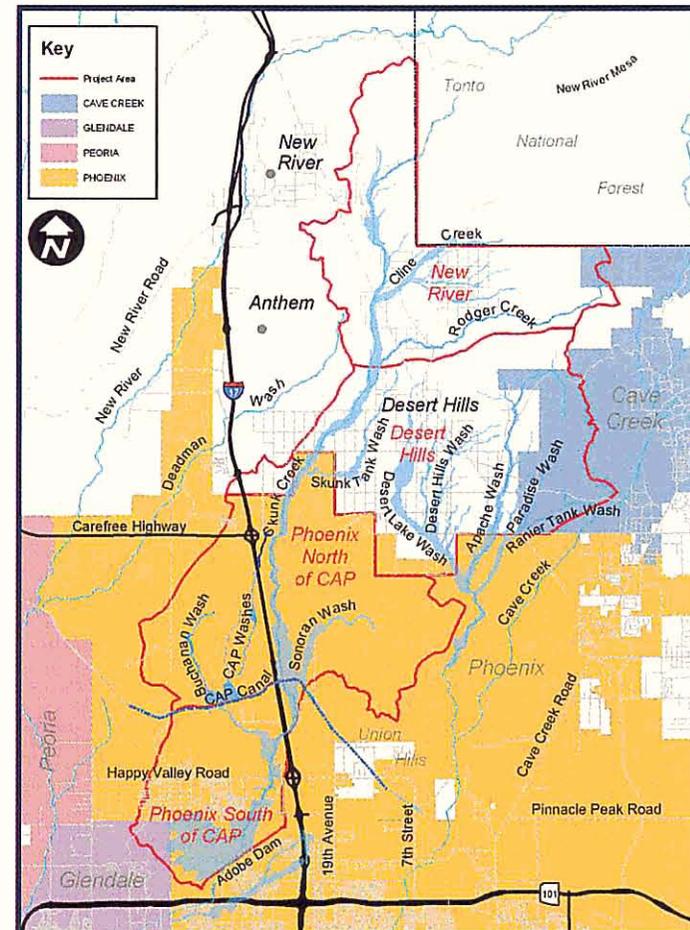
ADOBE DAM/ DESERT HILLS AREA DRAINAGE MASTER PLAN



PROJECT BACKGROUND

The Flood Control District of Maricopa County (District) completed work on the Adobe Dam/ Desert Hills Area Drainage Master Plan (ADMP) in June 2005. The study area is located in the northern portion of the county. The area includes the Skunk Creek, Desert Hills Wash, Apache Wash, and Paradise Wash watersheds as shown to the right. The total project area is approximately 100 square miles.

The Adobe ADMP is a continuation of the Skunk Creek Watercourse Master Plan (WCMP). The WCMP recommended that the ADMP investigate key locations along the Skunk Creek corridor warranting further analysis and address watershed management issues to maintain flows in Skunk Creek as near as possible to existing conditions.



PROJECT PURPOSE

The purpose of the Adobe ADMP was to develop a Recommended Alternative to mitigate identified drainage, flooding, and erosion hazards in the study area. The Recommended Alternative comprised a combination of both structural and nonstructural components resulting from a rigorous analysis and comparative evaluation of multiple alternative measures.

PROJECT OUTCOME

The work products of the Adobe ADMP addressed both structural and nonstructural components of the Recommended Alternative. These products included concept design plans and engineer cost estimates for the structural alternatives and the Flood Response Plan, Federal Emergency Management Agency (FEMA) Floodplain Delineation Studies, floodway residence risk assessment for the voluntary Floodprone Property Acquisition Program (FPAP), and Development Guidelines for the nonstructural elements. An Implementation Plan was prepared to serve as a road map for the District's implementation efforts after the ADMP was adopted by the Board in June 2005. These products will serve as the starting point for further engineering design, nonstructural program implementation, project funding agreements, and construction scheduling for the



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structural components of the Recommended Alternative in the District's Capital Improvement Program (CIP) track, Maricopa County Department of Transportation's Design Concept Report (DCR) process, or other mechanisms, as appropriate.

RECOMMENDED ALTERNATIVE

The study area is divided into three subareas: Phoenix, Desert Hills, and New River. These subareas were identified based on jurisdictional boundaries and similar watershed characteristics. After an extensive stakeholder and public involvement process, the project team identified a Recommended Alternative to mitigate existing drainage and erosion issues and to reduce future flooding and drainage problems as the area develops. The structural and nonstructural elements of the Recommended Alternative are listed for each subarea and are shown on the accompanying map.

Recommended Alternative – Phoenix Subarea

Structural Components

- Connect channel banks from the Pinnacle Peak Road bridge upstream to the location where Skunk Creek flows out of the landfill area to keep all streamflow in the channel passing through the bridge opening.
- Construct new grade control structure in the Skunk Creek channel upstream of the Pinnacle Peak Road bridge to prevent erosion of the channel bottom.
- Construct new levees immediately downstream of the CAP aqueduct from the end of the existing levees up to CAP overchutes to keep all streamflow in the channel and prevent flooding of the adjacent areas.
- Construct new levees immediately upstream of the CAP overchutes to keep all streamflow in the channel and prevent flooding of I-17 and along the upstream side of the canal embankment.

Nonstructural Components

- Flood Response Plan
- Upper Buchanan Wash Floodplain Delineation Study



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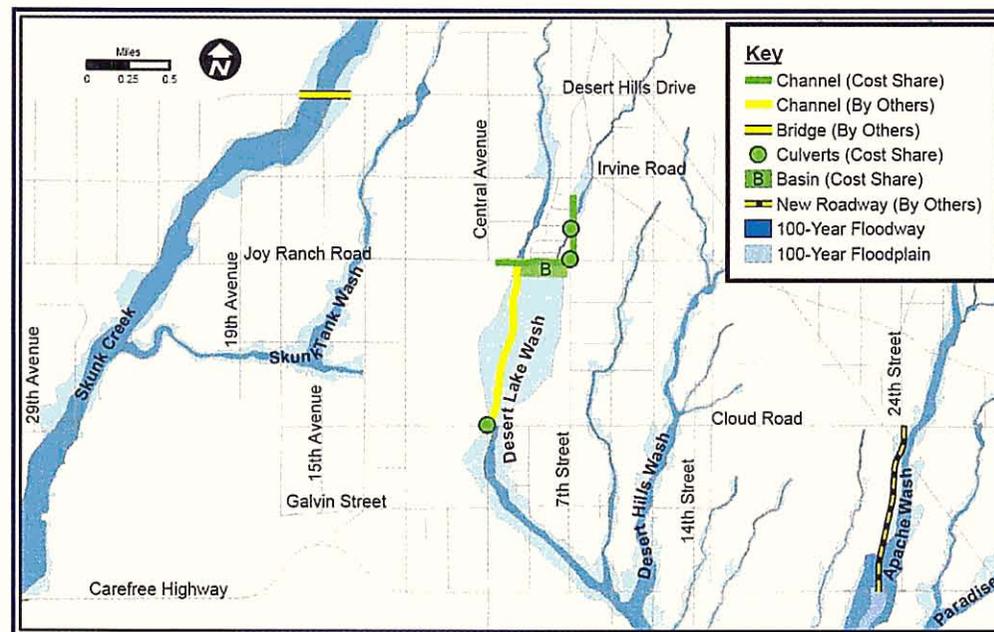
Recommended Alternative – Desert Hills Subarea

Structural Components

- Construct new roadside interceptor channel along east side of 7th Street north of Joy Ranch Road to prevent flooding of 7th Street.
- Construct new culvert at the intersection of Joy Ranch Road and 7th Street to prevent flows from continuing south along east side of 7th Street and causing flooding of residences southwest of 7th Street and Cloud Road intersection.
- Construct new roadside interceptor channel along south side of Joy Ranch Road west of 7th Street to collect flows from multiple small channels.
- Construct new detention basin on the State Trust Land parcel to reduce peak streamflow.
- Construct new channel through State Trust Land parcel from Joy Ranch Road to Cloud Road to reduce the floodplain area and to direct flows to improved culvert crossing at Cloud Road.
- Realign 24th Street roadway out of the Apache Wash floodplain to improve public safety and maintain access to residential areas to the north of Cloud Road.
- Construct new bridge at Desert Hills Drive crossing of Skunk Creek to improve public safety and maintain access to residential areas west of Skunk Creek.

Nonstructural Components

- Participation in Floodprone Property Acquisition Program
- Flood Response Plan
- Development Guidelines





Recommended Alternative – New River Subarea

Structural Components

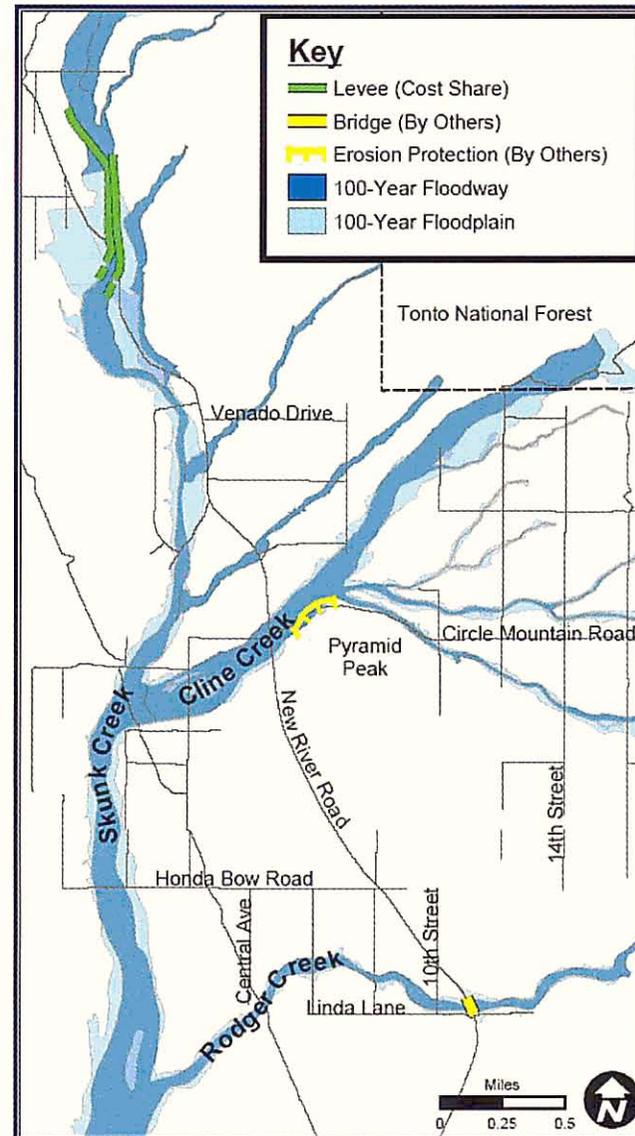
- Construct new bridge at the New River Road crossing of Rodger Creek to improve public safety and maintain access between Desert Hills and New River.

Creek to improve public safety and maintain access between Desert Hills and New River.

- Construct bank protection at Circle Mountain Road embankment to control erosion resulting from flows in Cline Creek and maintain access to residential area.
- Construct new levees along Skunk Creek upstream of the New River Road bridge to prevent flow breakouts flooding residences and maintain access on New River Road.
- Construct channel improvements in Skunk Creek in the vicinity of the New River Road bridge to keep all stream flow in the channel passing through the bridge opening.

Nonstructural Components

- Participation in Floodprone Property Acquisition Program
- Flood Response Plan
- Development Guidelines
- Upper Skunk Creek / Tributary 6B Floodplain Delineation Study
- Cline Creek Floodplain Delineation Study



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Recommended Alternative – Structural Components

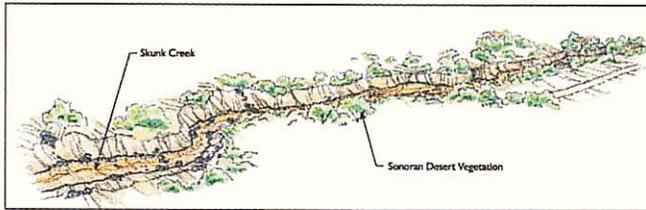
An important part of the development and design of the Recommended Alternative was the consideration of the visual impacts and opportunities to improve the aesthetic quality of drainage control measures. The illustrations shown here reflect the possible design and treatment of facilities that could be included to integrate this alternative into the community and the surrounding landscape. Design guidelines were developed as part of the ADMP to ensure that the aesthetic treatments concepts are considered the design.



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Conceptual Aesthetic Treatments of Levees and Channels

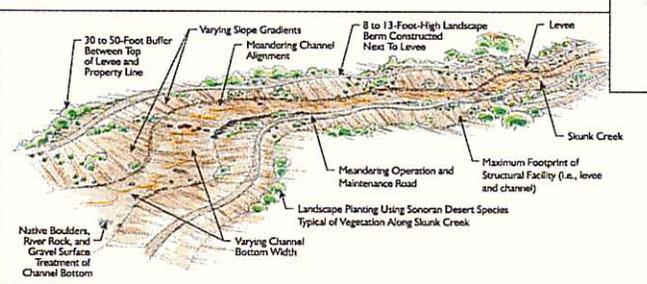


Existing Conditions

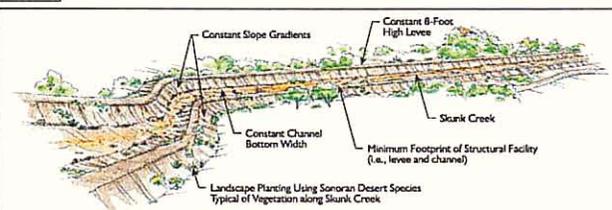
The District has developed general guidelines for incorporating aesthetic features into flood protection facilities. The primary goals for the aesthetic treatments of District flood protection facilities are to incorporate features and measures that will:

- * enhance the visual appearance of flood protection facilities
- * help preserve the visual character of natural Sonoran Desert landscapes
- * protect and enhance local community character
- * create aesthetic value

The sketches provided here are intended to give you an idea of what the levee and channel could look like in the Recommended Alternative along Skunk Creek east of the New River Bridge.



Conceptual Levee and Channel Aesthetic Treatments



Conceptual Levee and Channel without Aesthetic Treatments

September 2004



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Recommended Alternative – Area-Wide Nonstructural Components

The ADMP not only addressed mitigation measures at specific problem areas, but also watershed-wide management issues, including the following:

- Gaps in areal coverage in the flood detection network that impacted the District's ability to monitor imminent or occurring flood events in the study area and to respond in a timely manner to the extent possible; and
- Residences located in regulatory floodways that were permitted prior to the availability of floodplain delineation mapping;
- Localized drainage problems resulting from lot splits and subsequent construction of parcel improvements;
- Lack of floodplain and erosion hazard mapping in areas currently being developed or where development was imminent.

These watershed-wide issues were addressed through the development of area-wide measures, including the Flood Response Plan, Voluntary Floodway Residence Buyout Program, Development Guidelines, and Floodplain Delineation Studies. These non-structural components of the Recommended Alternative are intended to:

- Mitigate existing drainage and flood hazards to residents and emergency responders in the study area,
- Guide future development in the watershed so that drainage conditions are maintained at current levels, and
- Provide the best available information for regulation of future development in the floodways and floodplains of watercourses in the study area.



The Flood Response Plan and Floodprone Property Acquisition Program are focused on helping residents currently living in the ADMP study area. The Development Guidelines and Floodplain Delineation Studies generally address future development conditions in the study area. The applicability of the nonstructural components to existing and future conditions is described in more detail.

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Existing Conditions

Flood Response Plan

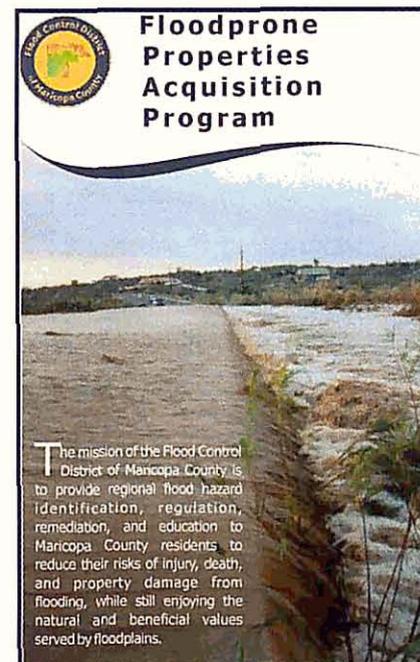
The purposes of the Adobe Flood Response Plan include the following:

- Assess rainfall and streamflow data from existing and new gages in the watershed so that imminent flood events may be detected and appropriate flood response actions may be triggered;
- Facilitate the sending of timely and informative flood warning messages to emergency response agencies and area residents; and
- Communicate critical information to law enforcement and fire protection agencies and roadway barricade crews to assist them in carrying out emergency flood response activities in minimal time and with maximum safety.



Voluntary Floodway Residence Buyout Program

Residences have been identified that are currently occupied and are located in the floodways of watercourses mapped by the Federal Emergency Management Agency (FEMA) throughout the study area. An engineering assessment has been performed of the flooding risk to those floodway residences. The voluntary floodway residence buyout program is intended to facilitate the purchase by the District of those floodway residences determined to be at high risk. Since the program is voluntary, floodway residents may choose to accept the buyout offers proposed by the District or decide to remain in their homes. The purpose of this program is to remove current residents from existing flood hazard areas through purchase of their residences and to relocate them to other areas.

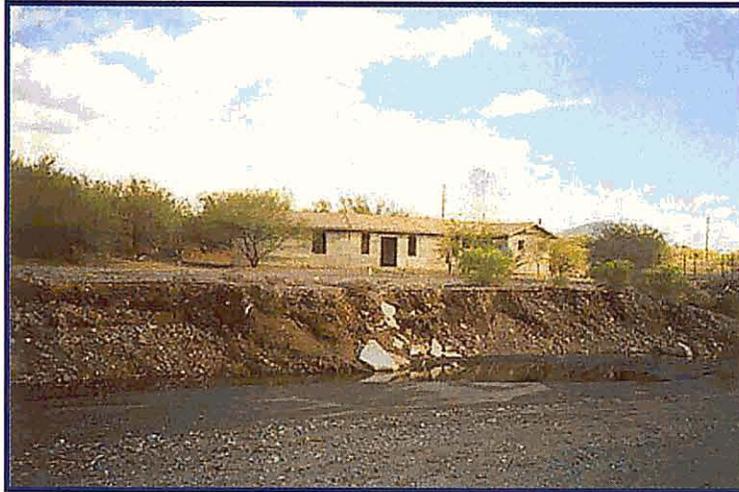


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Future Conditions

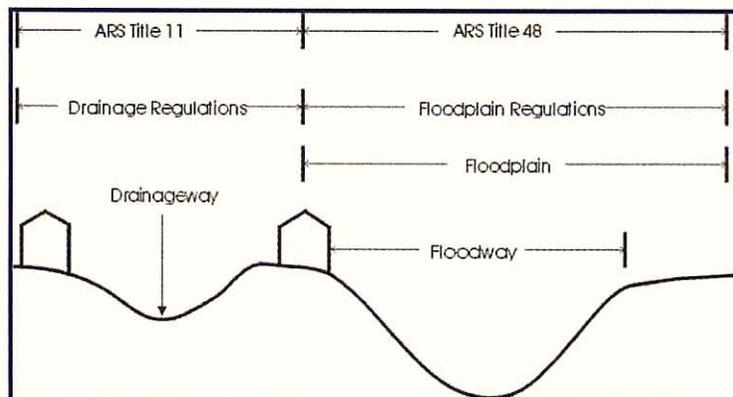
Development Guidelines



The Development Guidelines are intended to establish guidelines for single-family development on individual lots within the unincorporated portion of the study area. The purposes of these guidelines are to avoid problems resulting from the cumulative impacts of single-lot development on local drainage conditions and to maintain future runoff to area watercourses at current levels.

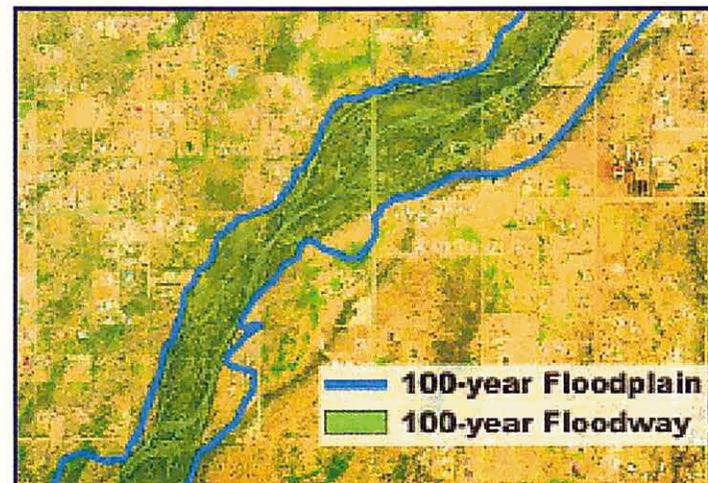
The guidelines address the following elements of single-lot development:

- Drainageways
- Erosion Hazard Setbacks
- Finished Floor Elevations
- Disturbance Envelopes
- Culverts, Driveways & Roads
- Wall, Fences & Berms
- Retention Basins



Floodplain Delineation Studies

The Floodplain Delineation Studies provide information used to update existing FEMA Flood Insurance Rate Maps (FIRMs). The purpose of the floodplain delineation studies is to provide the best available information to local and regional planners and floodplain administrators to further promote sound land use practices and floodplain development. In this manner, future development within mapped floodways is prevented and construction within floodplains is regulated to enhance public safety in floodprone areas.



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RECOMMENDED ALTERNATIVE PRELIMINARY COST ESTIMATE

Recommended Alternative Component	Cost Range ¹
Structural Components	\$51 - \$81 Million
Nonstructural Components	\$13.5 Million
Total for Recommended Alternative	\$64.5 - \$94.5 Million

¹ Lower limit of cost range reflects minimal land acquisition costs based on purchase solely of the footprint of the structural components (e.g., levees, basin, channels, etc.). Upper limit reflects maximum land acquisition costs for purchase of entire parcels crossed by structural components.

PLANNING AND IMPLEMENTATION PROCESS

The Recommended Alternative is technically sound, coordinated with other planned infrastructure improvements in the area, and formulated with the input and concurrence of impacted parties. The construction of many of the structural elements of the recommended alternative will be entirely funded by stakeholders or by the District with cost-share assistance from other agencies. The Implementation Plan was prepared for the ADMP details the Recommended Alternative by location, capital improvement costs, potential cost sharing partner, participation interest, mechanism for participation and preliminary timeline.

The Implementation Plan was developed iteratively and in cooperation with the affected stakeholders. It does not represent a binding legal agreement on any partners, but does provide a solid summary of implementation strategies to date and a roadmap for the District's implementation efforts given the ADMP's adoption by the Board of Directors in June 2005. Many of the Recommended Alternatives are connected with other agency programs. The result is that often their schedule or funding will drive the construction timeline. Recognition of this fact by the District and planning for this in future follow through efforts will allow for cost effective and efficient construction completion. If the coordination is not continued after ADMP completion, it is possible that other agencies will move ahead with their projects and not include Recommended Alternatives drainage improvements. The flowchart below presents the next steps in the planning process for implementation of the ADMP:

