

**TOWN**  
*Of*  
**PARADISE VALLEY**



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**STAFF REPORT**

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**TO:** Mayor Bien-Willner and Town Council Members

**FROM:** Andrew Ching, Town Manager  
Chad Weaver, Community Development Director  
Shar Johnson, Town Engineer  
Geoffery Brownell, Kimley-Horn Consulting Project Manager

**DATE:** November 14, 2024

**DEPARTMENT:** Community Development – Engineering Division  
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**AGENDA TITLE:**  
Town of Paradise Valley's Stormwater Master Plan Development (Council Check-In #2)

**SUMMARY STATEMENT:**

The Town's Stormwater Master Plan Development is in progress and staff is prepared to present project update materials to Council for a second check-in.

The project scope of work includes combining and overlaying modeling efforts from the Flood Control District of Maricopa County's previous Area Drainage Master Studies and Plans with additional modeling within the Town of Paradise Valley to identify and prioritize alternative projects for high hazard areas.

The major scope tasks for the Stormwater Master Plan includes:

- Task 1 – Project Management
- Task 2 – Data Collection
- Task 3 – Mapping and Assessment of Storm Drain Assets
- Task 4 – Townwide FLO-2D Model
- Task 5 – Long Range Capital Improvement Plan Development
- Task 6 – Development of Stormwater Master Plan
- Task 7 – Town Council Meetings/Coordination

## BACKGROUND

Between 2013 and 2014, the Town of Paradise Valley experienced significant flooding events and property damage during these events. The Town Council was moved to host a Community Conversation on Stormwater on February 26, 2015. Town staff proceeded to develop a plan in 2015 that included short-term, mid-term and long-term measures to educate residents and provide solutions to remediate flooding in the Town.

Major milestones for stormwater management in the Town include the following Council actions:

- 1) On April 13, 2017, the Town Council Approves Resolution 2017-08 with the following excerpt:
 

**NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF PARADISE VALLEY, ARIZONA, THAT:**

**SECTION 1.** The Town of Paradise Valley will:

  - A. provide storm water data and information available to it concerning the 100 year, 2 hour storm event to property owners;
  - B. participate in National Flood Insurance Program such that property owners have the ability to purchase federally backed flood insurance;
  - C. regulate development to mitigate the impacts of storm drainage;
  - D. budget for small (i.e. under the Capital Improvement Program financial threshold) flood control projects that benefit two or more Paradise Valley parcels and seek cost sharing opportunities for these or other storm water management projects; and,
  - E. consider cost-benefit analysis for all proposed projects.
  
- 2) Town Council Approves Ordinance 2017-01 on 4/13/2017 adopting the updated Storm Drainage Design Manual
  - Originally adopted in 1987, first comprehensive update
  - The updated manual incorporated all aspects of stormwater management.
    - Major changes include comprehensive submittal requirements, BMPs, updated rainfall data, updated retention requirements, certification of retention basin volume, first flush requirements.
  
- 3) Between 2017 and 2023, Council declines to participate in some large (\$10M+) Flood Control District of Maricopa County (FCDMC) projects identified in the Area Drainage Master Plan/Study (ADMP/S) due to cost/benefit analyses.
  
- 4) April 27, 2023, Council approves the FY24 Capital Improvement Plan budget. The budget includes \$450,000 for Watershed Studies / Storm Drainage Strategic Plan (i.e. Stormwater Master Plan).

- 5) On November 9, 2023, Council issued comments and directions to staff to revise the scope and fee proposal to develop a Town Stormwater Master Plan for further review. Council's comments and directions emphasized: a) The benefits and costs associated with developing a Town-wide Stormwater Master Plan; b) A cost-effective project approach that includes more direct oversight by staff; c) Council "check-ins" throughout the plan's development; public involvement by data collection activities; d) understanding the Town's history of stormwater management and mitigation practices; and e) the identification of new flood hazard areas, prioritization of new and existing projects and the process to include these projects in the Town's Five-Year Capital Improvement Program budget.
- 6) On January 11, 2024, Council directed staff to proceed with a professional services contract with Kimley-Horn to develop a Town-wide Stormwater Master Plan.
- 7) The Town of Paradise Valley's professional services contract agreement (CON-24-025) with Kimley-Horn was entered on March 6, 2024.
- 8) Intergovernmental Agreement (IGA) between the Town of Paradise Valley and the Flood Control District of Maricopa County (FCD) was approved and accepted on March 27, 2024.

## PROJECT PROGRESS

The project kick-off meeting took place on March 26, 2024 and an initial Council Session check-in on June 13, 2024. At the initial Council check-in, staff presented the results of data collection and cataloging, and the compilation of a townwide comprehensive two-dimensional hydrologic and hydraulics modeling effort.

- **Data collection and cataloging** – Considerable data on flood problem areas and potential mitigation projects has already been identified by residents, Town Staff, and through the various watershed studies completed within Town boundaries. The intent is for the PVSWMP to springboard off and build from this data to identify the project that will benefit residents the most. To this end, the project team has collected all pertinent study data, project data, flood complaints, and staff identified problem locations.
- **Hydrologic and Hydraulic Modeling** – The project team focused on compiling the townwide model that will serve as the basis of design for conceptual project formulation. The model results will also allow Town staff to effectively manage new development such that flood hazards are reasonably mitigated. Modeling is scheduled to continue until the end of November 2024 with refinement and calibration of flood areas.

## WORK SESSION MATERIALS

This session will include updates on the flood hazard area classification and prioritization.

### Flood Hazard Area Designation

Flood Hazard Areas are classified based on the following:

- **Nuisance Flooding** – A half foot of flood water at the road crossings and/or with the Flood Hazard Area.
- **Moderate Flooding** – One foot of flood water at the road crossings and properties within the Flood Hazard Area.
- **Severe Flooding** – Greater than two feet of flood water at the road crossings and properties within the Flood Hazard Area.

The classifications are overlaid onto the Flood Hazard Areas map in the Work Session presentation. Also illustrated on maps are factors and parameters to delineate the flood hazard areas:

- **Maximum Depth Map** – Based on a 100-year flood analysis and modeling with flood depths ranging from 0.51 to 27.2 feet.
- **Depth (x) Velocity Map** – Basic calculation determines the flood hazard levels to improve floodway delineations; The map shows four levels of flow depths ranging with the lower at 5.01 ft<sup>2</sup>/sec and upper over 40.0 ft<sup>2</sup>/sec
- **Erosion and Sedimentation Potentials Map** – Both maps show the levels of potential erosion and sediment ranging from low to extreme due to flood water dynamics.

The Reported Flooding Issues map overlays the Flood Hazard Classifications areas with property flooding, road closures due to flooding risks, road flossing and structural flooding. The flooding issues are demonstrated throughout the entire Town with many clusters near or within the flood hazard areas.

### Flood Area Prioritization

A decision matrix has been prepared to assist with prioritizing flood areas. Here is the list of decision variables included and with initial priority weightings:

- Severity of Flooding,
- Potential Benefits to Streets/Structures,
- Potential Streets Protected,
- Emergency Access, and
- Multi-Use Opportunities.

The results of the areas ranking based on the decision matrix will be mapped and overlaid with the flood hazard areas for prioritization.

## Project Prioritization

The presentation includes a brief overview of the proposed project alternative analysis in preparation for next steps in the development of the Town's Stormwater Master plan. The analysis will include categorizing and prioritizing project alternatives for capital improvements in the Town. Major project categories include small, medium and large projects based on the Flood Control District of Maricopa County's (FCDMC) funding program thresholds and other qualifying regional and federal grant programs.

### General Plan:

The project supports the General Plan, particularly the Environmental Planning and Water Resources section by recognizing the hazards within the Town due to rainfall runoff. Analyzing such hazards with the best available data in concert with regional authorities in the area and formulating plans for mitigation and improvement when they are needed, warranted, and represent an efficient use of the Town's resources.

### BUDGETARY IMPACT:

The Town staff administers Capital Improvement Projects through the Town based on approvals by the Town Council during the annual budget process. The Stormwater Master Plan project is in the Town's approved FY 2024 Capital Improvement Plan (CIP) Stormwater category for \$450,000. The Town is also seeking cost participation through the Flood Control District of Maricopa County (FCDMC) for this study.

Here is a breakdown of the project budget with FCDMCs participation:

- 1) Town of PV (FY24 Approved CIP) - **\$450,000**
- 2) Flood Control District of Maricopa County (FCDMC) – 50/50 share = **\$316,000**

<b>Total Estimated Project Fee/ Cost (Intergovernmental Agreement)</b>	<b>\$632,000 (rounded)</b>
FCDMC Share	\$316,000
Town of PV's Share	\$316,000

With the Flood Control District of Maricopa County's 50/50 participation, the current approved CIP budget is sufficient to fund all phases of the project.

**RECOMMENDATION:**

Staff recommends Town Council's input on the project progress material and the project alternatives decision matrix to proceed with building a comprehensive Town-wide model for the development of the Stormwater Master Plan.

**ATTACHMENT(S):**

- A. Staff Report
- B. Presentation
- C. Area of Mitigation Interest Maps