



STORM DRAINAGE DESIGN MANUAL ADOPTION

June 14th, 2018



RECOMMENDED ACTION

Adoption Ordinance 2018-14 Amending Chapter 5, Building and Construction, Section 5-10-3, Storm Drain Design of the Town of Paradise Valley Town Code

and

Adopt Resolution 2018-16 Declaring the Storm Drainage Design Manual a Public Record



June 14th, 2018

AGENDA

- **What is the Storm Drainage Design Manual?**
- **Current Storm Drain Design Manual**
- **Updated Storm Drainage Design Manual**
- **Policy Decisions**



WHAT IS THE STORM DRAINAGE DESIGN MANUAL?

- **Day to day document utilized by staff to review drainage improvement plans and stormwater master plans typically for development of private property**
- **Document utilized by developers to design drainage improvement plans for their projects**
- **Includes:**
 - **Acceptable design requirements specific to the Town**
 - **Submittal requirements for drainage plans/reports**
 - **Methods for runoff calculations, retention, etc.**



CURRENT STORM DRAIN DESIGN MANUAL

- Originally adopted in March of 1987 by Resolution 537
- Uses outdated rainfall data and engineering practices
- Part of Dibble's scope with the Watershed Studies to Update this document

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UPDATED STORM DRAINAGE DESIGN MANUAL

- **Incorporates all aspects of Stormwater Management**
 - **Floodplain Management**
 - **Stormwater Management**
 - **Erosion Hazards**
 - **Stormwater Quality**



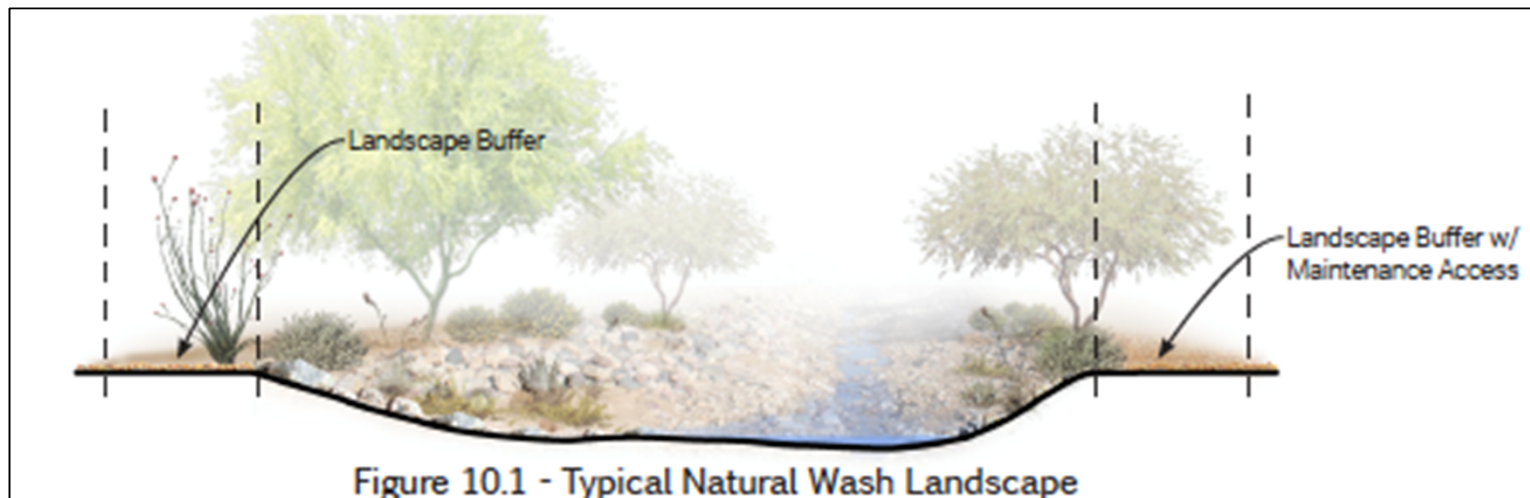
UPDATED STORM DRAINAGE DESIGN MANUAL

- **In addition, more specifically provides guidance on:**
 - **Drainage Reports and Plans**
 - **Drainage Easements**
 - **Grading Permits**
 - **Design and Maintenance of infrastructure**
- **All while keeping with the Town's unique character**



UPDATED STORM DRAINAGE DESIGN MANUAL

- **Coordination of Government Authorities and their Standards (i.e. FEMA, EPA, Corps, ADWR, ADEQ, FCDMC)**
- **Requirements for Stormwater Quality during construction**



UPDATED STORM DRAINAGE DESIGN MANUAL

- **Stormwater Quality During Construction**
 - **Provides information to contractors on the Arizona Department of Environmental Quality's process for Notice of Intent**
 - **Storm Water Pollution Prevention Plan requirements and process**



UPDATED STORM DRAINAGE DESIGN MANUAL

- **Requirement for First Flush for SUP properties and hillside homes that provide no retention per the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES)**
 - **Reduces the amount of pollutants entering the storm drain system and subsequent washes and waterways**
 - **Requires first ½ inch of rainfall to be retained and/or "treated" before leaving the site**



UPDATED STORM DRAINAGE DESIGN MANUAL

- **Stormwater Storage Volume based on 100 Year 2 Hour Storm for consistency with FCD**
 - **Non-SFR – Retain entire runoff volume**
 - **Flatland SFR's – Retain runoff volume due to development**
 - **Hillside SFR's – Retain change in runoff volume with a sliding scale based on increasing slopes**
- **Certified volume requirement**



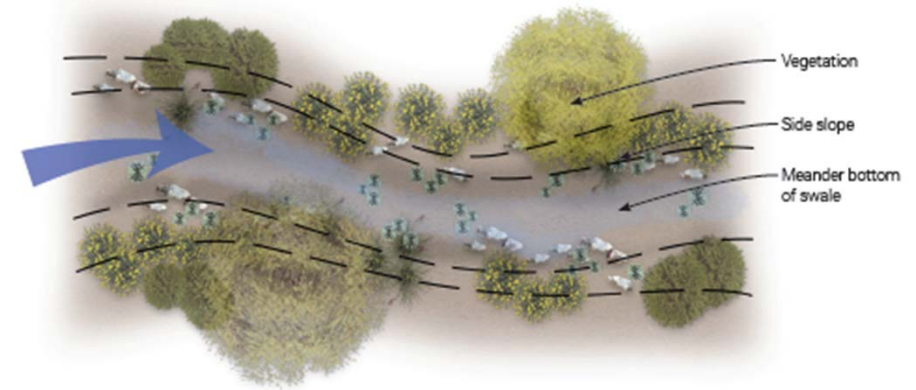
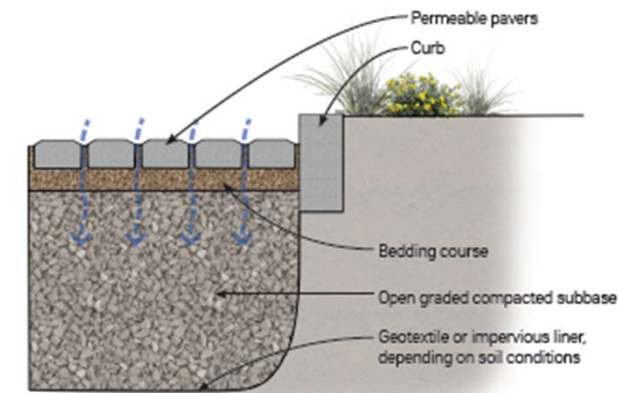
UPDATED STORM DRAINAGE DESIGN MANUAL

- **Drainage Reports**
 - **Type of reports required for different submittals**
 - **What is required in each report**
- **Drainage Plans and Permits**
 - **When required**
 - **Acceptable methodology and calculations**
- **Grading Permits**
- **On-going maintenance**



UPDATED STORM DRAINAGE DESIGN MANUAL

- **Low Impact Development Appendix**
 - **Toolbox for homeowners/developers to utilize**
 - **Encourages more natural approach to addressing stormwater management at the source**



June 14th, 2018



MAJOR POLICY ISSUES

- 1. Retention Easement Requirements**
- 2. First Flush Requirements**
- 3. Approach to Maintenance of Stormwater Facilities**
- 4. Natural Wash Preservation**
- 5. Parking Lot Storage**



RETENTION BASINS / ACCESS EASEMENTS

Issue: Notifying owners in the change of possession of real property that a retention basin exists on the property and has to remain in its location and be maintained

Direction: Continue to acquire easements for washes that cross private property but do not acquire easements for retention basins or other stormwater facilities (i.e. drywells, culverts, etc.) or require easements for access. Instead, utilize a recordable document that identifies said storm water drainage facilities.



FIRST FLUSH REQUIREMENT

Issue: First Flush is the first ½” of rain on a property that often collects and transports oil, grease, gas and other pollutants into the storm drainage system.

Direction: Require first flush for SUP properties and for Hillside Properties with a slope greater than 30%, as they will not be providing any retention per the proposed manual.



MAINTENANCE OF STORMWATER FACILITIES

Issues: Property owners don't know its their responsibility to maintain washes, basins, culverts, etc. that are on their property

- More recently, staff has been proactively providing this information
- Town has been approving more drywells and underground retention facilities

Direction: Continue the status quo, but better. In addition to continue on-going efforts, staff designed and distributed a Residential Drainage Facilities Flyer and will do this annually, as well as hand out to residents at our service counters.



MAINTENANCE OF STORMWATER FACILITIES

Town of Paradise Valley Residential Drainage Facilities



What is a drainage facility?

Drainage facilities are any type of infrastructure designed to capture, convey or block stormwater. Large drainage facilities, such as those found at Indian Bend Wash, are often built to help protect entire communities from the risk associated with our infrequent storms. But drainage facilities also include smaller infrastructure and are often designed and built as part of the construction of a home.

As a resident you may not be aware of the drainage facilities that are on your property, what they look like, and what is required to keep them working as intended.

What is my responsibility?

Keeping drainage facilities working as intended protects your home and property from damage from storms. It also helps prevent damage to others' property and protects you from liability.

How can I tell if there are drainage facilities on my property?

Recognizing drainage facilities is the first step. The backside of this brochure provides examples of the kinds of facilities typically found on a residential property in Paradise Valley. Contact a professional civil engineer to help identify and evaluate the facilities on your property if you have any questions.

Dry Wells and Underground Storage

Drywells are used to dispose of retained stormwater from both above-ground basins and underground storage facilities. The only visible evidence of the presence of underground retention facilities and drywells is the grated inlet that is flush with the ground surface. This lack of visibility leads to the problem of "out of sight, out of mind," and a potential lack of maintenance of these critical facilities. It is important to clean dry wells annually.

For more information about dry wells and their maintenance, please visit the following website: <http://paradisvalleyaz.gov/520/Stormwater-Management>

Mosquito Control

Standing water is the breeding ground for mosquitos. Drainage facilities are required to completely drain within 36 hours to help control this pest and the spread of disease.

Questions? Contact us.

PUBLIC WORKS/ENGINEERING DEPARTMENT
Paul Mood, Town Engineer
(Monday-Friday, 8 AM to 5 PM)
6401 E. Lincoln Drive
Paradise Valley, AZ 85253
Phone: (480) 348-3573
pmood@paradisvalleyaz.gov

- 1 Pay attention to how stormwater runs onto or collects on your property. Hillsides, roadway swales, and washes are common sources but not the only ones. Look for facilities in these areas.
- 2 Trench drains need to be kept clean and their connecting pipes inspected for clogs, breaks or if they were removed and not replaced.
- 3 Wall openings should be kept clear of debris, vegetation, and other blockages. Screens and grates should be designed to allow water to get under or around debris during a flood.
- 4 Permeable pavers, often located at driveways and patios, will lose the ability to let water pass through over time and require periodic professional maintenance.
- 5 Culvert and pipe openings need to be kept clear of debris, vegetation, sediment and other blockages.
- 6 Retention basins and swales collect debris and sediment over time that need to be removed. Contact a civil engineer if you plan on regrading your property.
- 7 Underground stormwater storage and dry wells include a wide range of different facilities. Look for inlet grates at roof drains, in retention basins, or at low points on your property. These facilities require periodic professional maintenance and cleaning.
- 8 Rain falling on roof tops can accumulate into a meaningful source of runoff that needs to be controlled to reduce flooding potential. Rain gutters, downspouts, and swales should be kept clean.



PRESERVATION OF NATURAL WASHES

Issue: Allow private property owners to modify washes or require them to be protected.

Direction: It is a town value to protect natural character of washes but recognize private property development rights. Mimic existing town code requirements but when modifications are requested utilize the tiered system with allowance for fenced in side and rear yards as a guide for review.



PRESERVATION OF NATURAL WASHES

Tier 1 – Modification to Minor Wash

Less than 2 feet deep/5 feet wide or 50 CFS

Allow developer to modify, relocate, or enclose the wash

Tier 2 – Modification to Natural Wash

Greater than 2 feet deep/5 feet wide or 50 CFS

Impacts more than 25% buildable area

Allow developer to relocate or enclose the wash to accommodate development

Tier 3 – Protection of Natural Wash

Greater than 2 feet deep/5 feet wide or 50 CFS

Impacts less than 25% buildable area

Unable to modify, relocate, or enclose unless necessary to access property

FENCE RULE APPLIES TO ANY TIER

All washes must maintain the location of entry and outfall on the property with no adverse impact to adjacent property owners.

June 14th, 2018



STORMWATER STORAGE ON PARKING LOTS

Issue: Allowing stormwater storage on parking lot surfaces.

Direction: Acceptable on SUP properties



June 14th, 2018



PUBLIC OUTREACH


- **March 21st 2017 Public Meeting**
- **April 5th 2018 Wash Charrette**

You are Invited!
Paradise Valley Watershed Study Public Meeting:
Storm Drainage Design Manual Draft Review
 Tuesday, March 21st 6:00pm - 8:00pm
 Paradise Valley Town Hall

Storm Drainage Design Manual
 Come hear about proposed new requirements for:

- Stormwater Management
- Drainage Reports
- Storm Drainage Design

Meeting Purpose: The town is currently in the process of updating its Storm Drainage Design Manual, originally written in 1987. A proposed draft of the updated document can be downloaded by going to the website below. The updated document seeks to provide property owners and the development community the most comprehensive source for storm drainage design, including requirements for Drainage Reports, SWPPP's, storm water facility design guidelines, retention requirements, first flush requirements, etc. for projects within the Town of Paradise Valley. The town will be holding a public meeting to receive public comments on the document.
www.paradisevalleyaz.gov/S20/Stormwater-Management

 Town of Paradise Valley
 WATERSHED STUDIES

You are Invited!
Wash Preservation & Modification Open House
 Provide Input on a Critical Town Policy

Thursday, April 5th @ 6:00pm - 8:00pm
 Paradise Valley Town Hall- Community Room

 TOWN OF PARADISE VALLEY
 INCORPORATED MAY 1981



Natural Wash Corridors: The Town's policy encourages the protection of Natural Wash corridors and discourages constructed and piped systems whenever possible. While there may be situations where a natural wash can be modified, it must be done in a way that mimics the natural channel and uses native materials.

Meeting Purpose: Residents and stakeholders are invited to help the Town answer what should be done when property owners want to enclose, relocate, or fill in a natural wash.

For More Information, please contact
 Jeremy Knapp, Engineering Services Analyst
 at (480)-348-3622 or
 Paul Mood, Town Engineer
 at (480)-348-3573.
 Visit us at
www.paradisevalleyaz.gov

 Town of Paradise Valley
 WATERSHED STUDIES

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