

# SPANISH PALMS

Stormwater Management and Open Space Plan  
compiled by **bc**WORKSHOP

## Spanish Palms Colonia Overview

Spanish Palms is a 24 acre subdivision located in Hidalgo County Precinct 1 in the Lower Rio Grande Valley, Texas. To the north it is bordered by agriculture land, to the east by the FM1015, to the south by Mile 13 road, while to the west it is bordered by Cano Road (figure 1). It is composed of 36 private lots of land, 31 of which have structures and a diverse age population. Spanish Palms Drive has a right of way of 50 feet with a street width of 28 feet and 11 feet of grassed area in both sides of the road.

The effects of rainwater on the colonia can be seen in a regular basis. With a regular 3 to 5 inches of rainfall as seen in November 2013, the colonia's streets, backyards and many houses get flooded. In a larger storm like Hurricane Dolly in 2008, the water level may be 2 feet deep, leaving residents stranded in their homes and in many cases with extensive damage to their property. Since Spanish Palms' soils consist mostly of clay, water remains on site for long periods of time due to the low slopes (nearly flat) and low absorption capacity. Added to this, underground water could be found at 30 to 54 inches between the months of September to May reducing the soil absorption capacity even more.<sup>1</sup>

The colonia was platted in 1995 (Figure 2) by Sigler, Winston, Greenwood & Associates, Inc. It presented the 36 lots currently in place, and a proposed drainage system consisting of two 20 feet wide areas (utility easements) on the north and south border of the colonia. Both easements recommended a water retention swale (ditch) connected to the interior of the colonia by four smaller easements between lots 3 and 4; 8 and 9; 12 and 13; and 17 and 18. Today, only the surrounding ditches at the north and south, and the swale (ditch) between lots 8 and 9 remain. The southern swale along Mile 13 N road right of way is well maintained, however its small depth limit the amount of water it can hold. The northern swale has been altered, but is more difficult to maintain since is located within the private properties protected by fences. To the west there is another swale running along Cano Rd., however it has not the capacity to manage the amount of water on site.

Besides the conditions mentioned above, there are other factors that enhance accumulation of water within the colonia. The FM 1015 acts as a barrier due to its higher elevation, preventing water to move from west to east as the natural contours of the land suggest. Also the extremely bad conditions of the street makes water move in an irregular way, often towards people's front and back yards and forming large puddles which block pedestrian and car access.

In order to reduce the effects of flooding, some residents have added dirt to fill their properties and build their homes on higher ground. This expensive measure may alleviate flooding issues for some residents, but, since not all residents are capable of filling their land, the higher ground of their neighbors may serve as a barrier for water to move. Also, the Precinct's Administration has commissioned TEDSI Infrastructure Group to provide a connection (outfall) from the entrance of the colonia in the FM 1015 right of way towards a drainage ditch 0.25 miles to the south Drain in Mile 12 1/2 North to the H.C.D.D #1 Main Floodway Channel to the north. This drainage ditch is expected to connect to the proposed East Lateral Drain that runs from the Existing Mercedes Lateral financed by the 2012 Drainage Bond Improvements funds.

<sup>1</sup> Hidalgo County Soil Survey, United States Department of Agriculture, Soil Conservation Service in cooperation with the Texas Agricultural Experiment Station.



Figure 2: Spanish Palms Aerial and Flood Extent

Image Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGR, swisstopo, and the GIS User Community



Figure 3: Spanish Palms Plat



Figure 4: Spanish Palms Lot "27" after a November 2013 storm event. Water had been on site for at least two weeks according to the residents.



Figure 5: South Spanish Palms Dr. Flooded and unpaved condition

## Spanish Palms Colonia Proposed Drainage and Open Space

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However, work within the colonia for both road and drainage improvements should follow strategies that help reduce pressure to the regional system while providing the residents with a better open space and making the colonia look better. With the provision of Low Impact Development (LID) strategies, drainage challenges can be addressed, while at the same time providing environmentally responsible measures, and providing a better quality of space to the community.

In Spanish Palms, three community meetings were organized with the collaboration of LUPE. The first meeting was crucial to understand the flooding issues, open space needs, and priorities within the colonia. Also, several drainage strategies were discussed and prioritized to serve as a base to develop design options for the Colonia.

At the second meeting, three design options were presented to the colonia residents addressing issues of stormwater management and open space improvements. During this meeting, residents were asked to prioritize between having more space for car traffic vs. providing more space for water management. After deliberating, option 2 was chosen with some changes and a final plan was made (Figure 10). The design proposes the reduction of the 28 ft. wide road to an 18 ft. paved road with 1 foot of gravel strip at each side. This leaves 15 ft. of open space at each side of the road for a vegetated swale and a sidewalk that can benefit the colonia residents by promoting connectivity and social interaction. It is recommended that native vegetation is used within the swale in order to reduce maintenance while promoting native species to thrive.

Although the Model Subdivision Rules specify a minimum of 28 ft. paved surface edge to edge, it is important for the county to

start evaluating options that address the stormwater challenges in the region while at the same time helping solve other problems such as high speed vehicles and lack of open space for the community. Space for parks, sidewalks and other amenities may serve to improve a much needed sense of belonging and pride within the community.

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### Option 1:

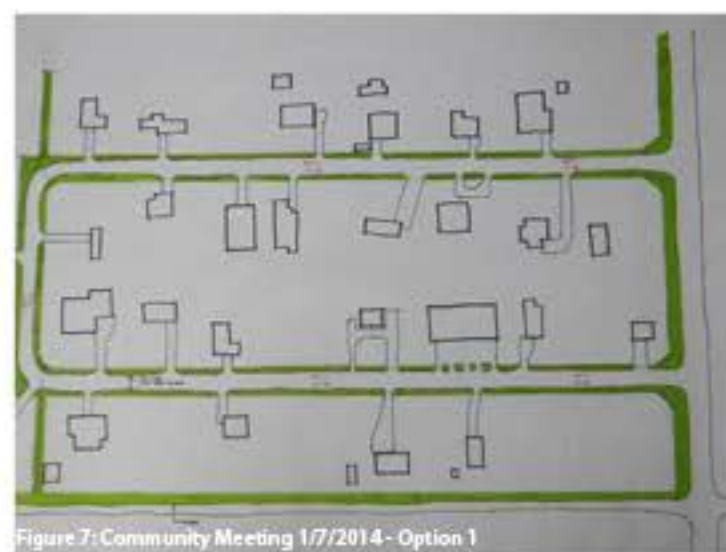
- Street Width: 28ft(existing)
- Swale Width: 11ft
- No Sidewalk
- Water Capacity:

### Option 2:

- Street Width: 16ft
- Swale Width: 17ft
- Sidewalk
- Water Capacity:

### Option 3:

- Street Width: 16ft
- Swale Width: 17ft
- Sidewalk
- Acquire lot 12 for Park and retention area.
- Water Capacity:



## Spanish Palms Colonia Proposed Drainage and Open Space



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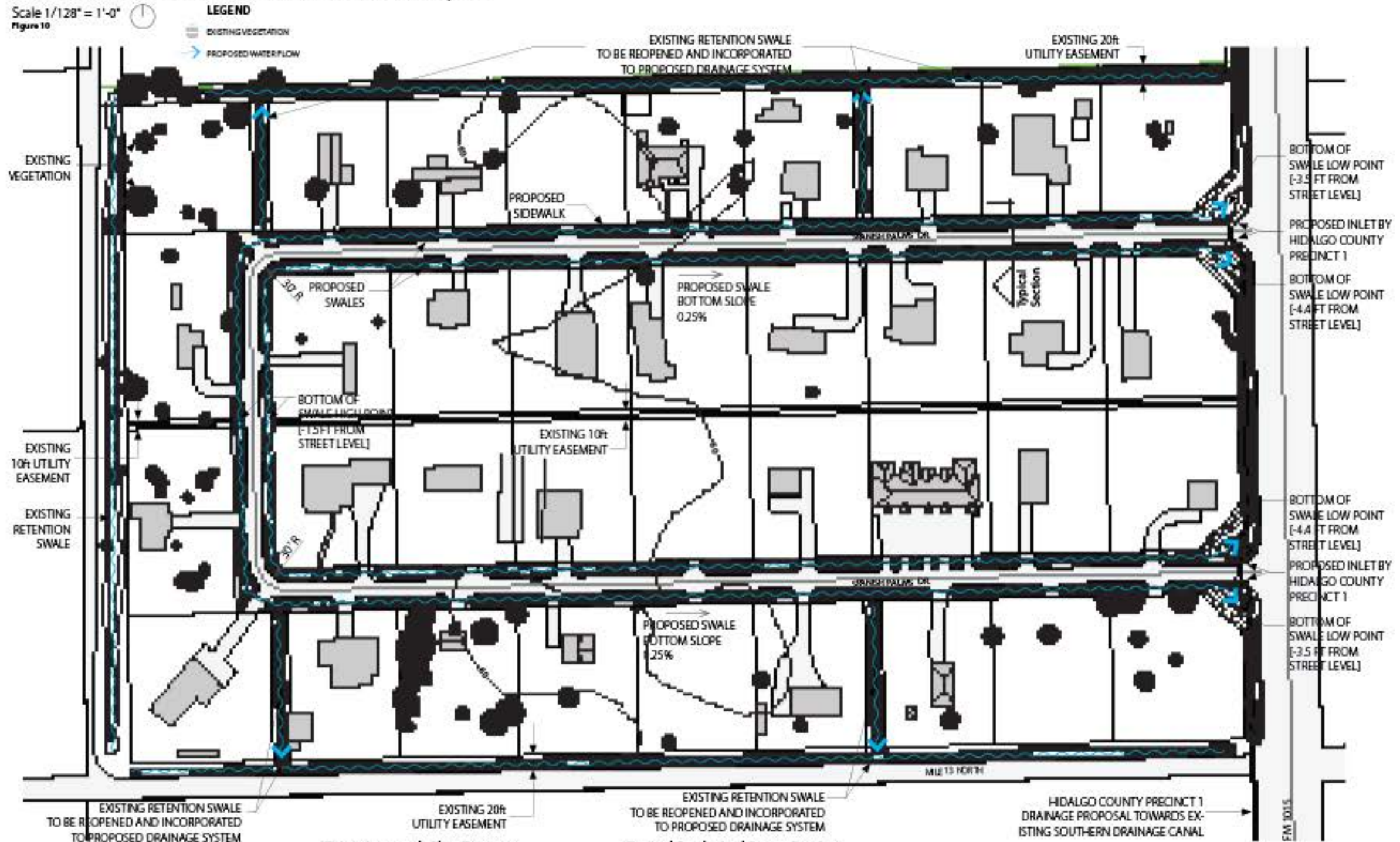
- |                                |                     |  |
|--------------------------------|---------------------|--|
| <b>Option 1:</b>               | <b>Option 2:</b>    | <b>Option 3:</b>                             |
| -Street Width: 28ft (existing) | -Street Width: 16ft | -Street Width: 16ft                          |
| -Swale Width: 11ft             | -Swale Width: 17ft  | -Swale Width: 17ft                           |
| -No Sidewalk                   | -Sidewalk           | -Sidewalk                                    |
| -Water Capacity:               | -Water Capacity:    | -Acquire lot 12 for Park and retention area. |
|                                |                     | -Water Capacity:                             |

proposes the reduction of the 28 ft. wide road to an 18 ft. paved road with 1 foot of gravel strip at each side. This leaves 15 ft. of open space at each side of the road for a vegetated swale and a sidewalk that can benefit the colonia residents by promoting connectivity and social interaction. It is recommended that native vegetation is used within the swale in order to reduce maintenance while promoting native species to thrive.

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## Spanish Palms Colonia Proposed Drainage and Street Layout

Scale 1/128" = 1'-0"  
Figure 10



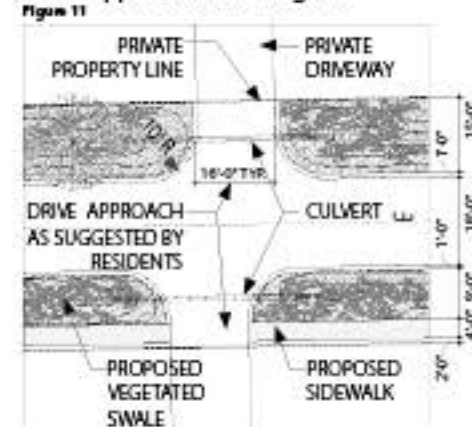
### Existing Details:

- Total Project Area: 24 acres
- Road Linear Feet: 2,630 ft.
- Runoff Calculation - Rational Method
- Runoff: ~10 cfs

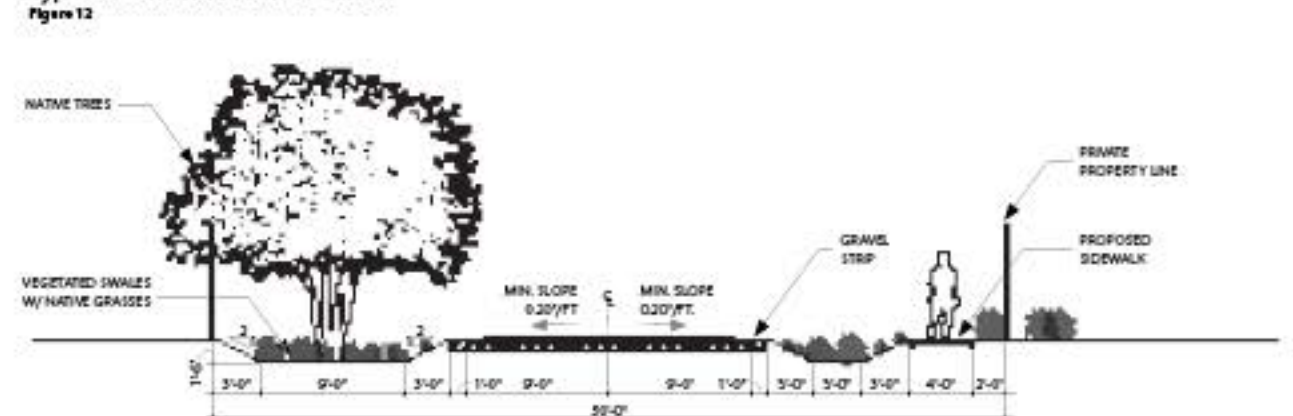
### Proposed:

- Sidewalk Linear Feet: 2606 ft.
- Sidewalk Area: 8,193.25 ft<sup>2</sup>
- Swale Area along Spanish Palms Dr.: 64,099.1503 ft<sup>2</sup>
- Volume Detention Capacity of proposed swales along Spanish Palms Dr.: 99,728 ft<sup>3</sup>
- Provide drive approach of 16' wide as suggested by the residents to allow for culverts between swales and to build private driveways. (Figure 11)
- The county may benefit from acquiring vacant lots in order to build a park and add water retention area within the subdivision.

### Drive Approach Plan Diagram



### Typical Swale And Street Section



## PARTNERS:



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### A Resource in Serving Equality

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