



**CITY OF FAIR OAKS RANCH
AGENDA – CITY COUNCIL VIDEOCONFERENCE
SPECIAL MEETING**

November 18, 2020 9:00 AM
Via Zoom Videoconference
7286 Dietz Elkhorn, Fair Oaks Ranch

THERE EXISTS A PUBLIC HEALTH EMERGENCY RELATED TO THE COVID-19 VIRUS THAT NECESSITATES A MEETING OF THE CITY COUNCIL TO TAKE PLACE VIA VIDEO CONFERENCE PURSUANT TO GOVERNMENT CODE CHAPTERS AND 551.127, AS MODIFIED BY EXECUTIVE ORDER OF THE GOVERNOR

Zoom Videoconference Link: <https://www.zoomgov.com/j/1610993565>

Phone in number: US: +1 669 254 5252 or +1 646 828 7666 or 833 568 8864 (Toll Free)

Webinar ID: 161 099 3565

If you wish to address the commission via telephone, please select *9 on your phone, this will place you in a queue for speaking. At the appropriate time, the City Secretary will call upon each individual separately.

I. OPEN MEETING

A. Roll Call – Declaration of a Quorum.

II. CITIZENS and GUEST FORUM / PRESENTATIONS

If you wish to address the Council, select *9 on your phone; this will place you in a queue for speaking. At the appropriate time the City Secretary will call upon each individual separately. In accordance with the Open Meetings Act, Council may not discuss or take action on any item which has not been posted on the agenda.

A. Citizens to be heard.

III. PURPOSE OF SPECIAL CALLED MEETING

A. Stormwater Capital Improvements Plan.

Tobin E. Maples, AICP, City Manager
Ron Emmons, P.E., Public Works Director
Sarah Buckelew, CPA, Finance Director
Mike Persyn, P.E., Associate, Water Practice Leader, K Friese & Associates
Matthew Garrett, MBA, CGFO, CPM, New Gen Strategies
Kate Ploetzner, P.E., CFM, Kimley-Horn

Pgs. 2-111

VII. ADJOURNMENT

Requests for City topic needing additional information/research; or, potential consideration for a future agenda.

Signature of Agenda Approval: _____

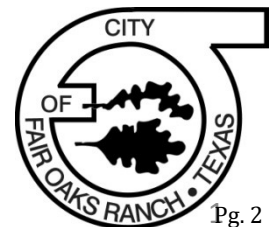
I, Christina Picioccio, City Secretary, certify that the above Notice of Meeting was posted on the outside bulletin board at the Fair Oaks Ranch City Hall, 7286 Dietz Elkhorn, Fair Oaks Ranch, Texas, and on the city's website www.fairoaksranchtx.org, both places being convenient and readily accessible to the general public at all times. As per Texas Government Code 551.045, said Notice was posted by 9:00 AM, November 15, 2020 and remained so posted continuously for at least 72 hours before said meeting was convened.

The Fair Oaks Ranch City Hall is wheelchair accessible at the side entrance of the building from the parking lot. Requests for special services must be received forty-eight (48) hours prior to the meeting time by calling the City Secretary's office at (210) 698-0900. Braille is not available. The City Council reserves the right to convene into Executive Session at any time regarding an issue on the agenda for which it is legally permissible; pursuant to *Texas Government Code* Chapter 551. Section 551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices) and 551.087 (Economic Development).

City of Fair Oaks Ranch

STORMWATER CAPITAL IMPROVEMENT PROGRAM (CIP)

November 18, 2020



Agenda



- Workshop Purpose
- Master Plan Review
- Implementation Approaches
- Funding





Purpose / Goal



- Intent of presentation
 - Refresh council on approved Stormwater Master Plan and associated Capital Improvement Plan (CIP)
 - Present a plan to implement the CIP
- Goals
 - Ratify project priorities in the Stormwater CIP and establish a funding plan





Background

- Resident feedback and complaints
- 2015 Floods
 - o Memorial Day
 - o Halloween
- 2016 Council discussion



Background



- Comprehensive Plan Update
- Unified Development Code
- Master Drainage Plan



Master Drainage Plan & MS4 Assistance Services
November 2018



Master Plan Overview

- Completed in 2018
- Stakeholder Committee
 - 5 workshops
 - 2 surveys
- 60 initial projects narrowed to 46 projects prioritized by stakeholders
- Master Plan approved by council
 - Drainage policy (UDC)
 - Capital Improvement Program
- \$10.40M (2018 dollars) – Public + Private
 - \$7.42M Construction
 - \$2.98M Engineering, Land, Contingencies

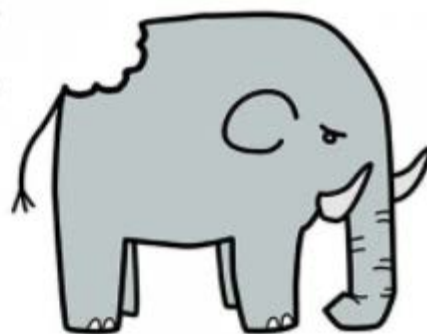




Master Plan vs CIP

- Master Plan = high level look at future desired condition
- Capital Improvement Program = outline of how the Master Plan will be implemented (budgets, timelines, interdependencies, phasing)

HOW DO YOU EAT
AN ELEPHANT?
ONE BITE
AT A TIME!





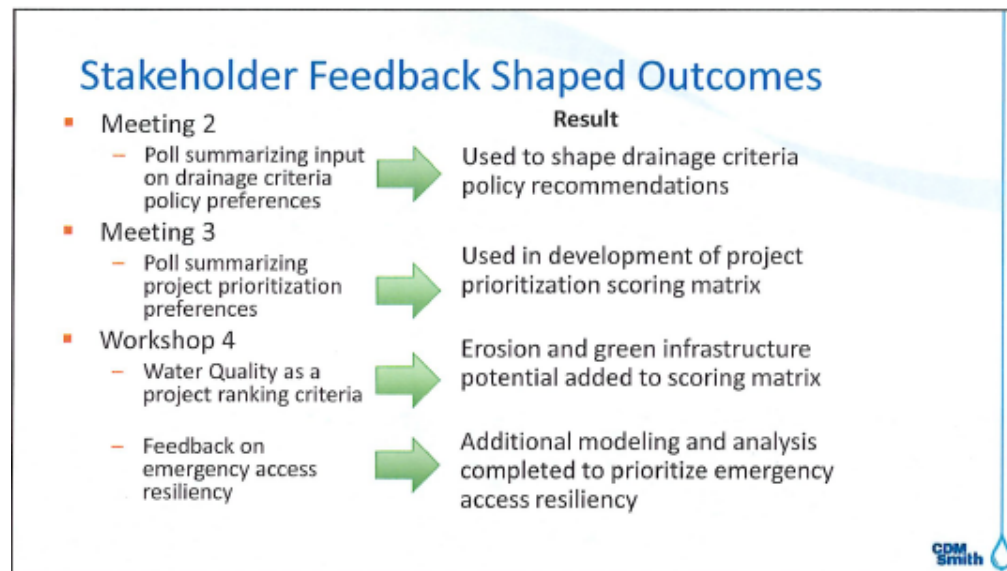
Master Plan Process

- Scoped in 3 categories of analysis
 - “A” – detailed analysis (4)
 - “B” – general, targeted project analysis (5)
 - “C” – basic stormwater assessment (37)
- Site visits to all project locations



Master Plan Process

- Criteria developed to score the projects
 - Estimated Cost
 - Source of Water/Destination
 - Public Infrastructure at Risk
 - Number of Parcels Affected
 - Erosion Issue
 - Green Infrastructure Applicable
 - City priority



Project Scoring



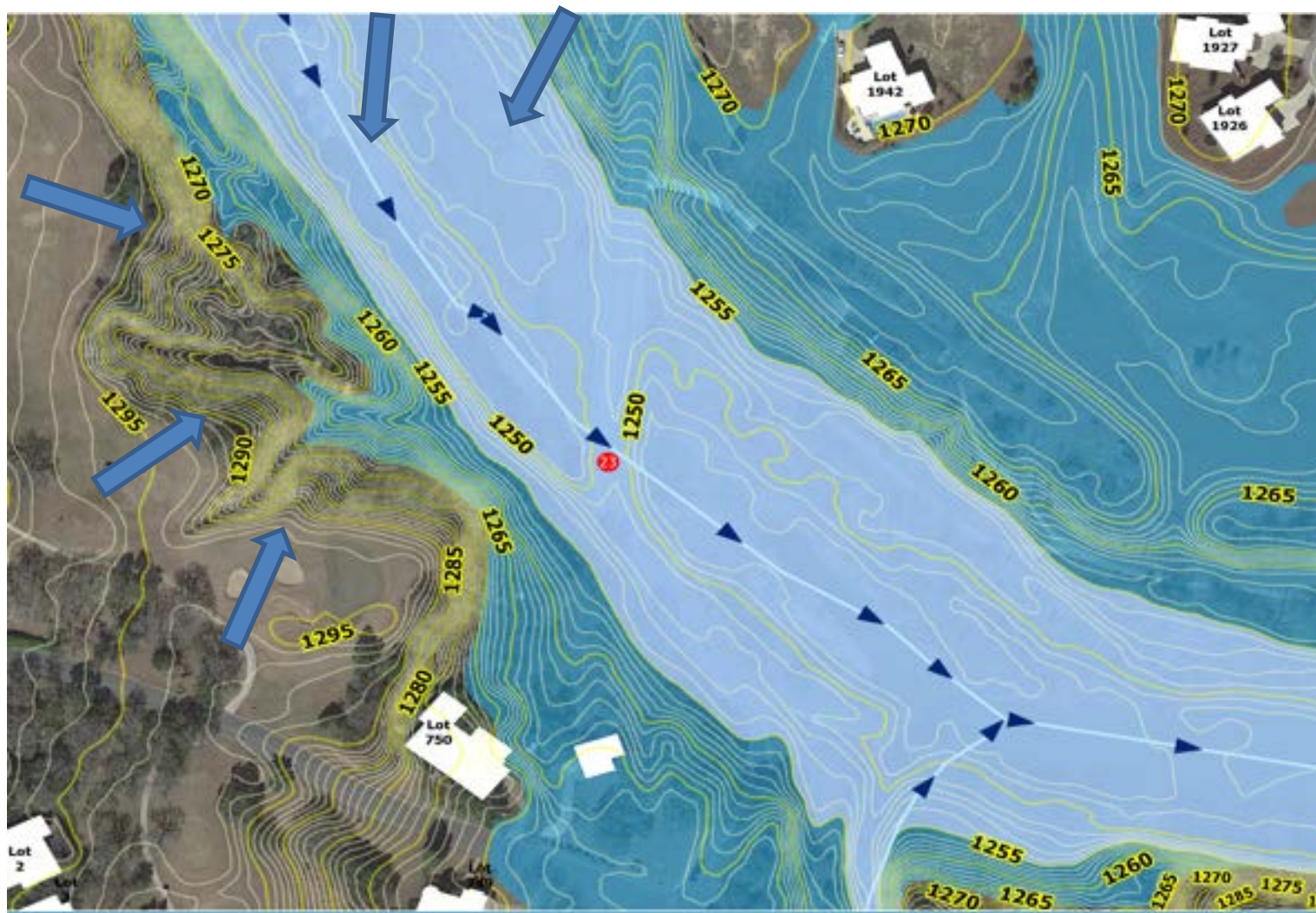
- Scoring developed prioritization of each project

Item	Weight	Score
Estimated Cost		
Low	2	5
Medium		3
High		1
Source/Destination		
Public to Private	3	5
Public to Public		3
Private to Public		2
Private to Private		0
Public Infrastructure at Risk?		
Yes - Large Effect	3	5
Yes - Small Effect		2
No		0
Number of Homes Affected		
Number of Homes	1	n
Erosion Issue?		
Yes	0.5	5
No		0
Green Infrastructure Applicable?		
Yes	0.5	5
No		0
City Priority		
Score Range	3	-5 to +5

Public to Private (#34)



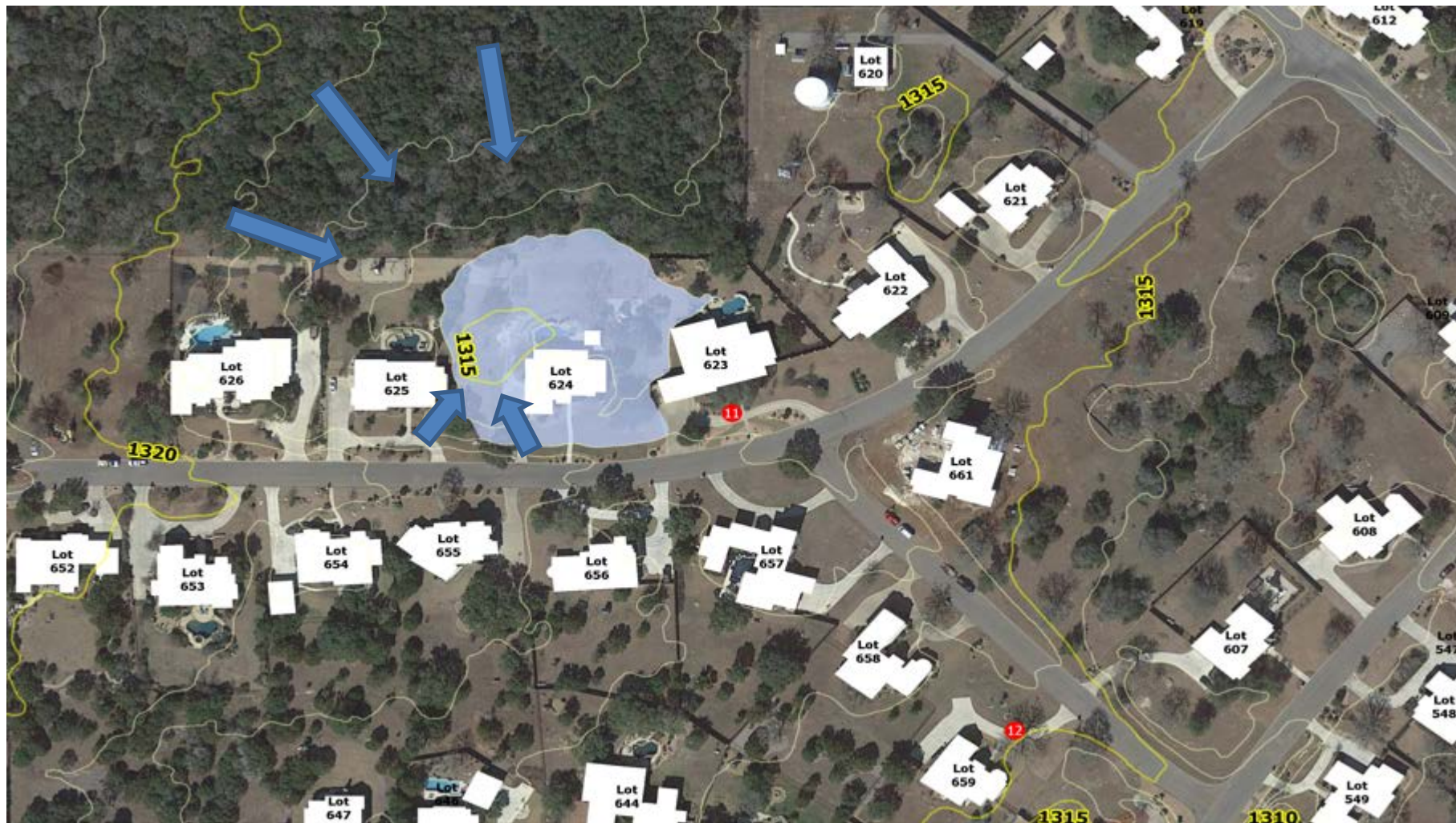
Public to Public (#23)



Private to Public (#35)



Private to Private (#11)



Project Scoring – Example 1

- Project 4 – 8040 Rolling Acres Trail
 - Regrading or new channel/culvert

Project 4 - 8040 Rolling Acres Trail (Regrading Project)				
Item	Response	Score Given	Weight	Points Received
Estimated Cost	Medium	3	2	6
Source/Destination	Public to Private	5	3	15
Public Infrastructure at Risk	Yes - small effect	2	3	6
Number of Homes Impacted	1	1	1	1
Erosion Issue	No	0	0.5	0
Green Infrastructure Applicable	No	0	0.5	0
City Priority	0	0	3	0
Total Score				28

- Priority 2 based on total score

Project Scoring – Example 2

- Project 5 – 7820 Rolling Acres Trail
 - Low water crossing

Project 5 - 7820 Rolling Acres Trail (Low Water Crossing)				
Item	Response	Score Given	Weight	Points Received
Estimated Cost	High	1	2	2
Source/Destination	Public to Private	5	3	15
Public Infrastructure at Risk	Yes - large effect	5	3	15
Number of Homes Impacted	None	1	1	0
Erosion Issue	No	0	0.5	0
Green Infrastructure Applicable	No	0	0.5	0
City Priority	5	5	3	15
Total Score				47

- Priority 1 based on total score

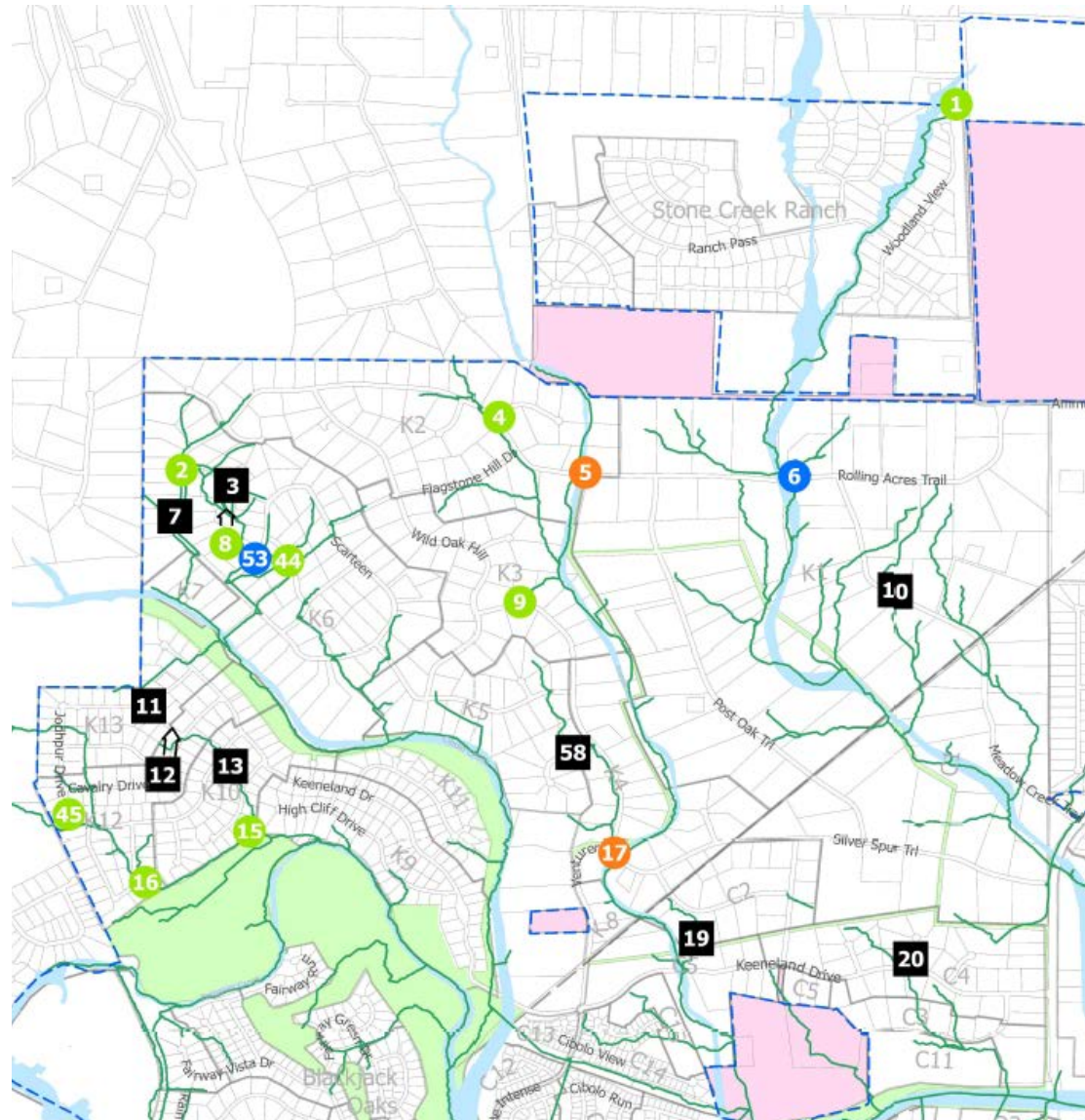
Project Scoring – Example 3

- Project 6 – 7420 Rolling Acres Trail
 - Low water crossing

Project 6 - 7420 Rolling Acres Trail (Low Water Crossing)				
Item	Response	Score Given	Weight	Points Received
Estimated Cost	High	1	2	2
Source/Destination	Public to Private	5	3	15
Public Infrastructure at Risk	Yes - large effect	5	3	15
Number of Homes Impacted	None	0	1	0
Erosion Issue	No	0	0.5	0
Green Infrastructure Applicable	No	0	0.5	0
City Priority	-5	-5	3	-15
Total Score				17

- Priority 3 based on total score

Project Locations/Priority



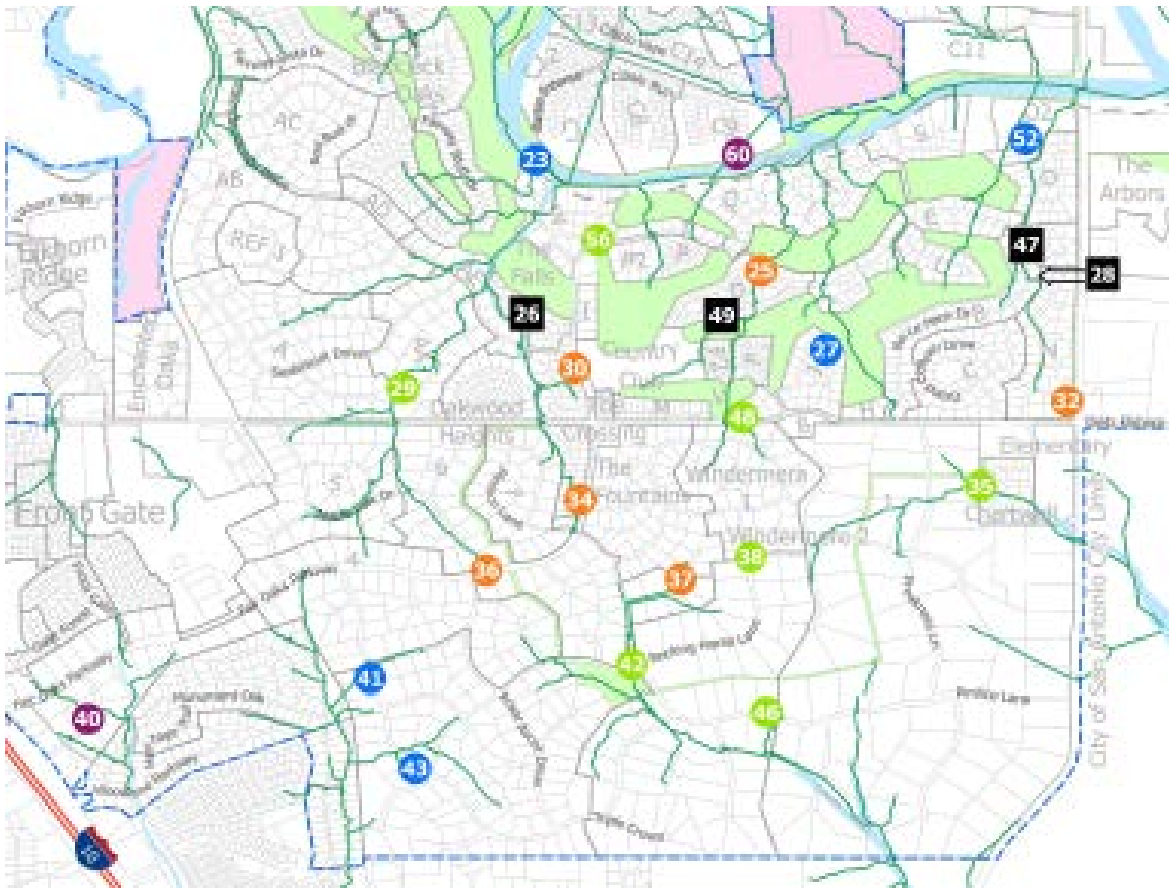
Project Priority

-  1
 2
 3
 4
 Private

- Flowpaths
- Parks, Trails & Golf Course
- Fair Oaks ETJ
- City Limits



Project Locations/Priority



Project Priority

- 1
- 2
- 3
- 4

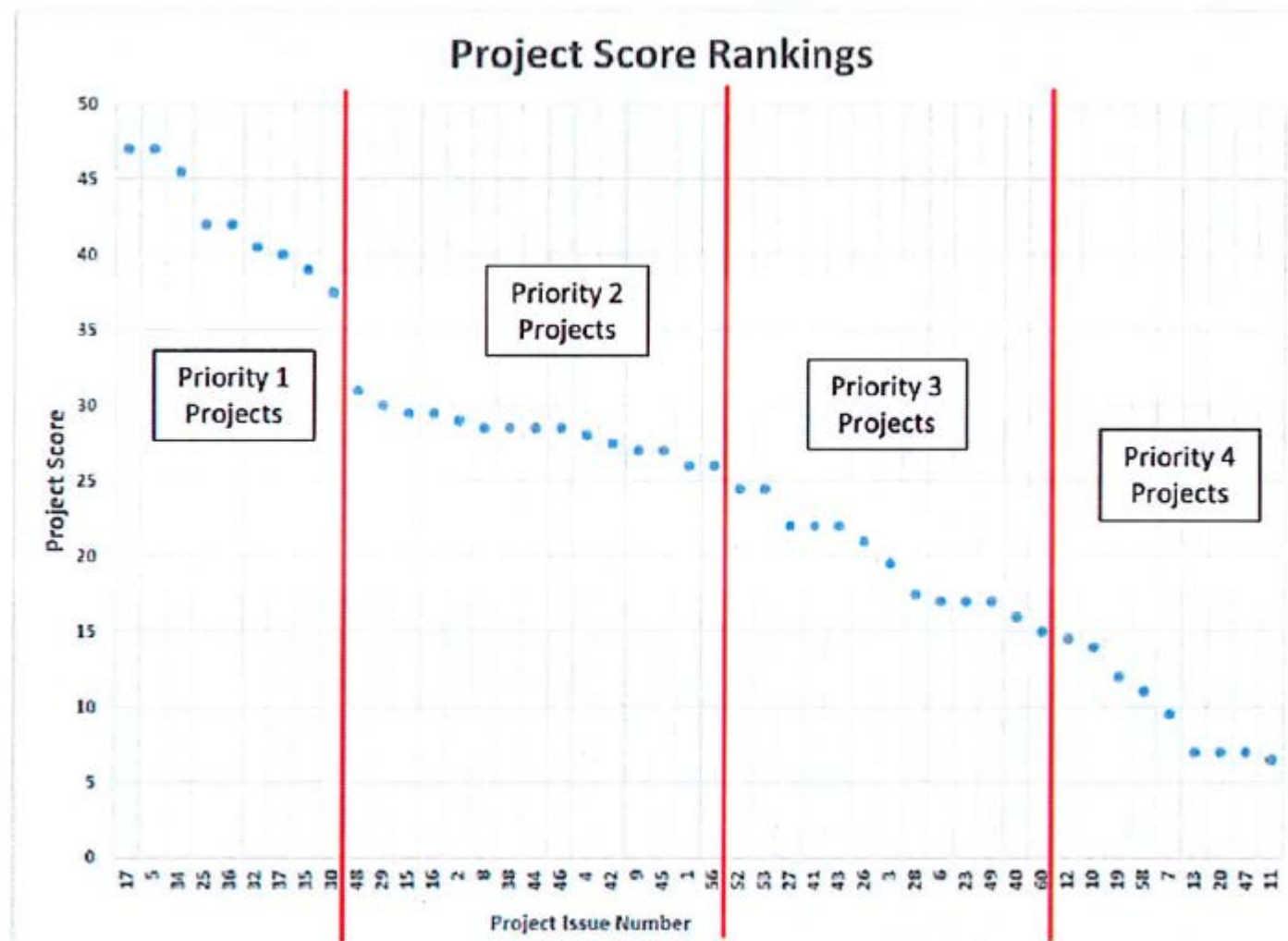
Private

- Flowpaths
- Parks, Trails & Golf Course
- Fair Oaks ETJ
- City Limits





Implementation



Project Recap



- Individual project review

Project Scoring



- Scoring developed prioritization of each project

Item	Weight	Score
Estimated Cost		
Low	2	5
Medium		3
High		1
Source/Destination		
Public to Private	3	5
Public to Public		3
Private to Public		2
Private to Private		0
Public Infrastructure at Risk?		
Yes - Large Effect	3	5
Yes - Small Effect		2
No		0
Number of Homes Impacted		
Number of Homes	1	n
Erosion Issue?		
Yes	0.5	5
No		0
Green Infrastructure Applicable?		
Yes	0.5	5
No		0
City Priority		
Score Range	3	-5 to +5

Private Projects



Water knows no boundaries





Private Easement Challenges

- 1. No Easement (1975-1991)
- 2. Owner Responsibility (1992-2003)

EASEMENT NOTES
ALL PROPERTIES DESIGNATED AS EASEMENTS SHALL OR MAY BE UTILIZED FOR THE FOLLOWING PURPOSES:

DRAINAGE EASEMENT:
DRAINAGE, WATER DIVERSION, AND SANITARY CONTROL, INCLUDING WITHOUT LIMITATION, WALLS, BEDS, EMBANKMENTS, SPILLWAYS, APPURTENANCES, AND OTHER ENGINEERED DEVICES.

(THE "DRAINAGE SYSTEM")

TOGETHER WITH RIGHT OF INGRESS OVER THE ADJACENT LAND TO OR FROM THE EASEMENT FOR THE PURPOSE OF CONSTRUCTING, RECONSTRUCTING, INSPECTING, PATROLLING, OPERATING, MAINTAINING, REPAIRING, AND

THE MAINTENANCE OF EASEMENTS SHALL BE THE RESPONSIBILITY OF LOT OWNERS AND NOT THE RESPONSIBILITY OF THE CITY OF FAIR OAKS RANCH.

OR OTHER OBSTRUCTIONS, WHICH REASONABLY ENDANGER OR MAY

THE MAINTENANCE OF EASEMENTS SHALL BE THE RESPONSIBILITY OF LOT OWNERS AND THE RESPONSIBILITY OF THE CITY OF FAIR OAKS RANCH.

- 3. Standard Note Easement (2008-Present)

PROPERTY FOR THE BENEFIT OF THE PROPERTY, ADJACENT PROPERTY, AND THE COMMUNITY, BUT THE CITY DOES NOT GUARANTEE OR WARRANT THAT

ASSUME
OOD,
ANY OTHER
EAM, WASH,

ANY PART
MAGE,
THE USE
EPT CLEAR

RTS TO
) THE
NNECTION
ION IN
S

I

- 1. THE PROPERTY OWNER RETAINS THE RIGHT TO USE ALL OR ANY PART OF THE EASEMENT FOR ANY PURPOSE WHICH DOES NOT DAMAGE, DESTROY, INJURE, AND/OR UNREASONABLY INTERFERE WITH THE USE OF THE EASEMENT. HOWEVER, THE EASEMENT SHALL BE KEPT CLEAR OF ALL STRUCTURES OR OTHER IMPROVEMENTS.
- 2. THE UTILITY SHALL MAKE COMMERCIALY REASONABLE EFFORTS TO ENSURE THAT DAMAGE TO THE PROPERTY IS MINIMIZED AND THE UTILITY WILL AT ALL TIMES, AFTER DOING ANY WORK IN CONNECTION WITH THE SYSTEM, RESTORE THE PROPERTY TO THE CONDITION IN WHICH THE PROPERTY WAS FOUND BEFORE SUCH WORK WAS UNDERTAKEN TO THE EXTENT THAT SUCH RESTORATION IS REASONABLE IN ACCORDANCE WITH THE UTILITY USUAL AND CUSTOMARY PRACTICES.
- 3. THE MAINTENANCE OF THE TURF, GRASSES AND LANDSCAPE VEGETATION WITHIN THE EASEMENT SHALL BE THE DUTY AND RESPONSIBILITY OF THE PROPERTY OWNER.

Master Plan – Updates

- Master Plan programmed 2018 dollars
- Inflation adjustments for implementation timeline
- Budget corrections
 - Project 1, 11, 35
- Recommend bump to higher construction values for smaller projects due to preliminary assessment

Project No	Low Range	High Range	Master Plan	Recommended
2	\$50,000	\$125,000	\$87,500	\$125,000
16	\$6,000	\$50,000	\$28,000	\$50,000
28	\$6,000	\$50,000	\$28,000	\$50,000
49	\$6,000	\$50,000	\$3,000	\$50,000

Master Plan – Updates

- Public vs private
- Projects completed (subject to engineering verification)
 - 30
 - 36
 - 45
- TxDOT Improvements
 - Project 23 deferral for Ralph Fair/Cibolo Creek project
 - Project 32 deferral for Ralph Fair Road project

Master Plan – Updates

- Net effect of potential changes
 - Inflation and budget adjusted, remove Private projects
 - \$7,419,000 → \$8,167,949 (Construction)
 - \$2,984,000 → \$2,863,965 (Engineering, Contingency)
- Any projects that aren't in the master plan that need to be added when master plan is refreshed
- Focus on first 5 years
 - Re-evaluate master plan in 2023-24
 - Update the SWU fees in 2024-25

Public vs Private (#34)



Master Plan – Updates

- Project 30



Master Plan – Updates

- Project 36



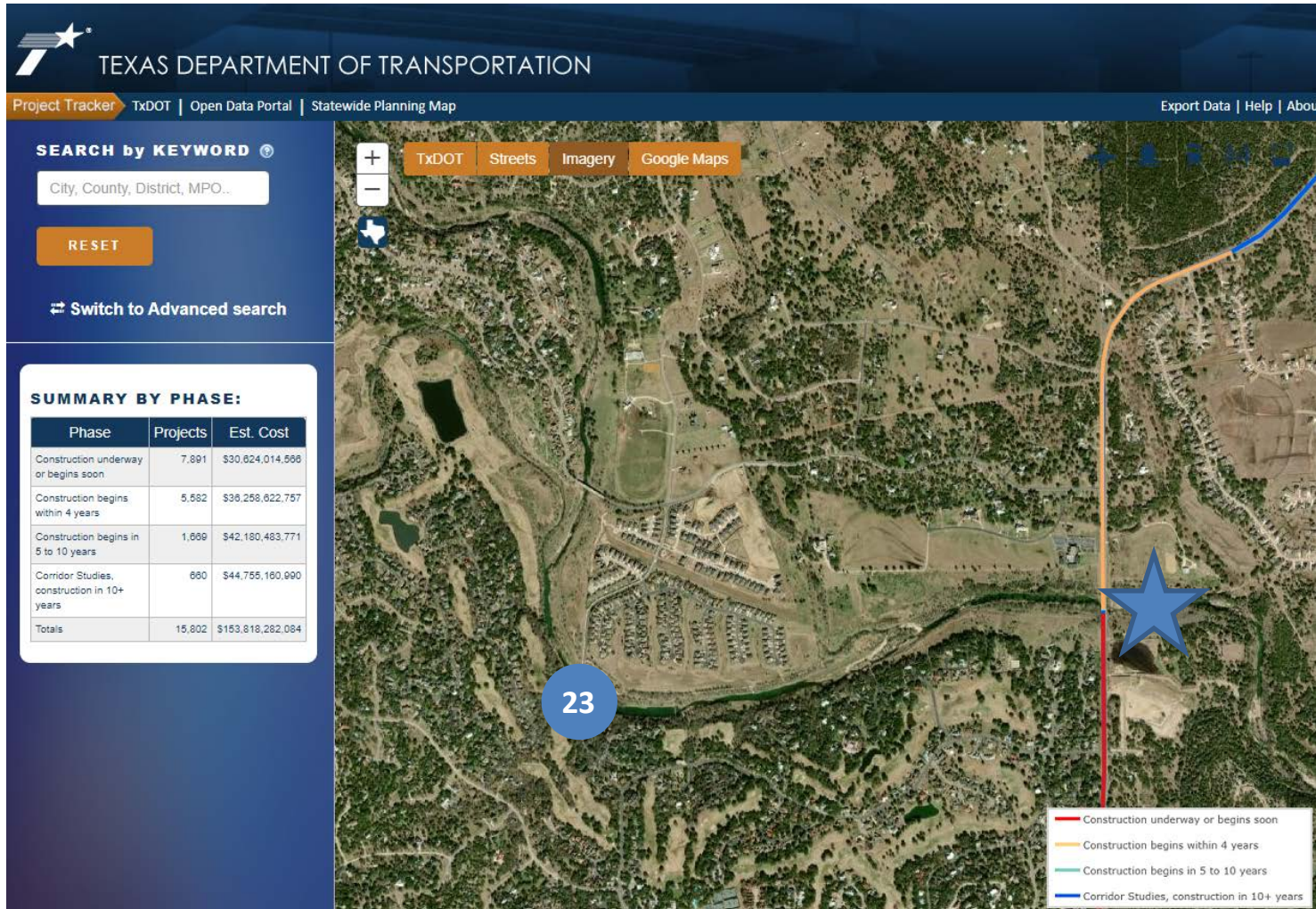
Master Plan – Updates

- Project 45



Master Plan – Updates

- Project 23



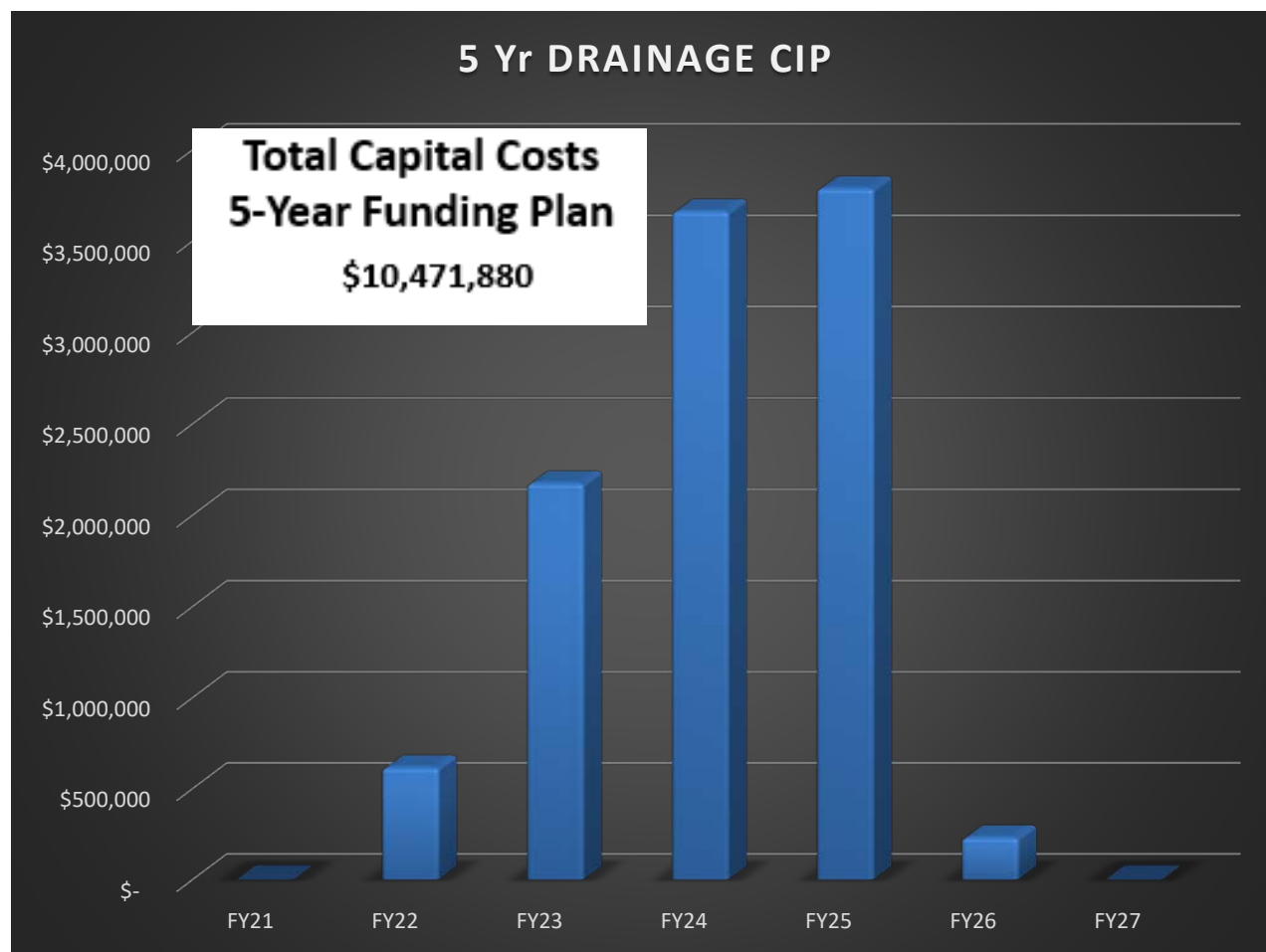
Master Plan – Updates

- Project 32



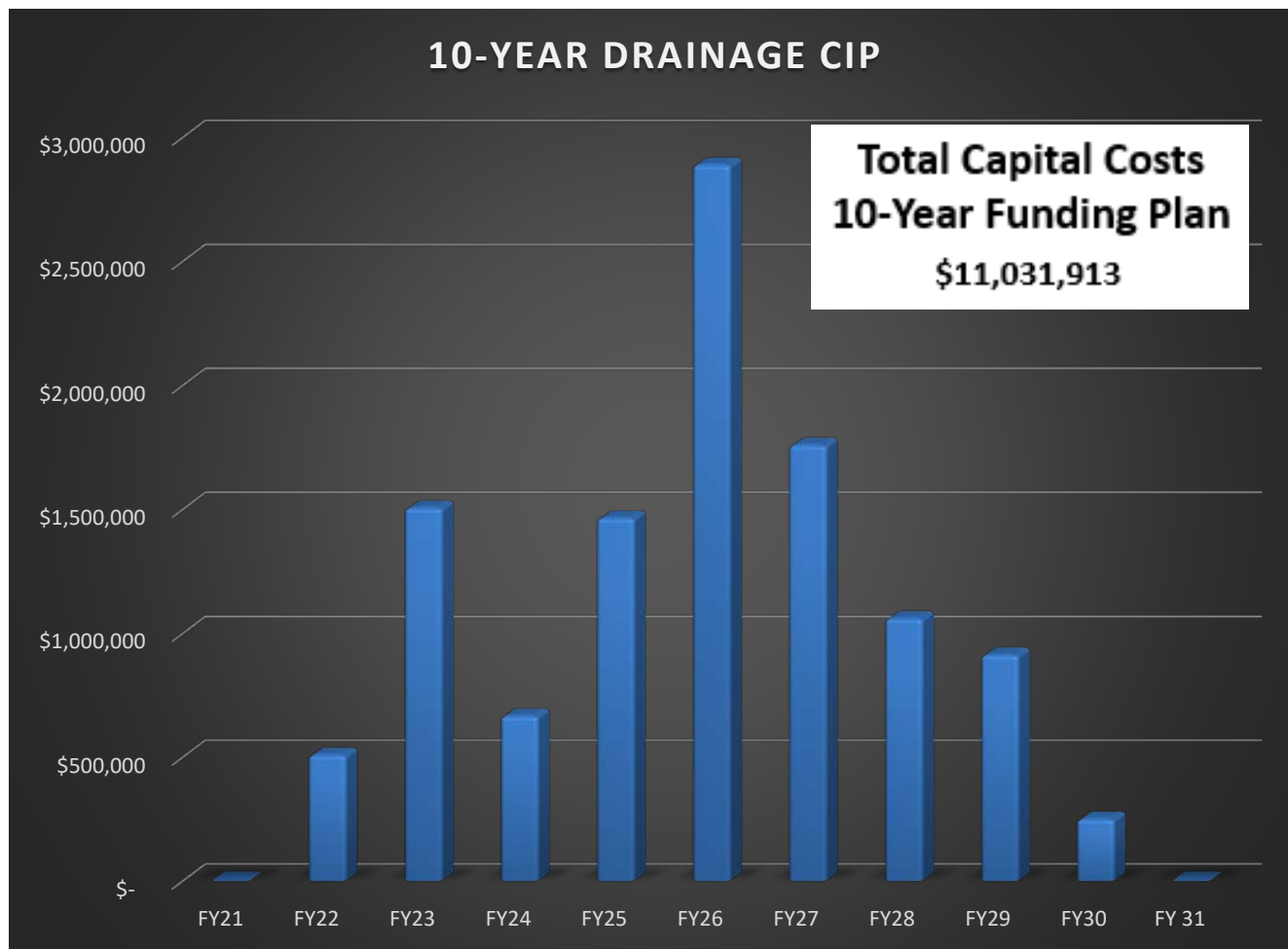
Implementation Approaches

- Includes 33 Public Projects



Implementation Approaches

- Includes 33 Public Projects





Implementation Pros/Cons

5-Year CIP		10-Year CIP	
Pros	Cons	Pros	Cons
Completed faster	Increased staffing supplement required	Reduced staffing supplement	Slower implementation
Reduced engineering and construction costs	Increased community impacts (eg road closures)		Increased cost due to inflation, reduced efficiencies with project packaging



Implementation – Priority 1

Issue No	Public/Private	Cost*	Public Safety
5	Public	\$574k	Yes
17	Public	\$588k	Yes
34	Public	\$70k	No
25	Public	\$175k	No
36**	Public	\$175k	No
32	Public	\$175k	No
37	Public	\$70k	No
30**	Public	\$87k	No
Total		\$1.91M	

* Adjusted 2018 dollars (Total Project Cost)

** Issues 30/36 Completed by staff (subject to engineering analysis)



Project 5 – 7820 Rolling Acres Trail

- Low water crossing (Road Closure gate deploys during large storm events.
- Bridge/Culvert Upgrades
- Emergency access is a concern during rain events.
- Public Project
- Criticality Score: 47
- Priority: 1
- Project Cost (2018)
 - \$574,000



Project 5	
Item	Score
Estimated Cost	2
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	15
Total Score	47



Project 17 – 7840 Silver Spur Trail

- Runoff collects from the north side of the city and passes this point before passing under Keeneland and then to the Cibolo Creek. Post Oak Creek LWC
- Bridge/Culvert upgrades
- Public Project
- Criticality Score: 47
- Priority: 1
- Project Cost (2018)
 - \$588,000



Project 17	
Item	Score
Estimated Cost	2
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	15
Total Score	47

Project 34 – 29010 Tivoli Way

- Large amount of runoff from Windermere crosses Fair Oaks Parkway and is intercepted by homes.
- Additional Analysis required
- Public Project
- Criticality Score: 45.5
- Priority: 1
- Project Cost (2018)
 - \$70,000 (Adjusted)



Project 34	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	3
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	45.5



Project 25 – 7715 Fair Oaks Parkway

- Large amount of runoff passes under Fair Oaks Pkwy and is causing erosion through the easement.
- Earthwork / Regrading
- Public Project
- Criticality Score: 42
- Priority: 1
- Project Cost (2018)
 - \$175,000 (Adjusted)



Project 25	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	42

Project 36 – 8410 Noble Lark Dr

- Runoff flows in a channel next to the right-of-way and has caused erosion in this area.
- Project has been completed by city staff
- Public Project
- Criticality Score: 42
- Priority: 1
- Project Cost (2018)
 - \$175,000 (Adjusted)



Project 36	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	42

Project 32 – 29314 Sumpter Drive

- Runoff flows from Nooner's Store and is intercepted by the homes across Ralph Fair Road. Severe slope accelerates runoff towards homes.
- Additional Analysis required
- TxDOT project resolves issue
- Public Project
- Criticality Score: 40.5
- Priority: 1
- Project Cost (2018)
 - \$175,000 (Adjusted)



Project 32	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	40.5

Project 37 – 7967 Turf Paradise Lane

- Large amount of runoff sheet flows down the street and across properties.
- Channel improvements
- Additional analysis required
- Public Project
- Criticality Score: 40
- Priority: 1
- Project Cost (2018)
 - \$70,000 (Adjusted)



Project 37	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	6
Number of Houses Impacted	4
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	40

Project 30 – 7900 Fair Oaks Parkway

- Large amounts of runoff flows from country club parking lot across Fair Oaks Pkwy. Runoff jumps curb and flows through fences into backyard.
- Additional Analysis required
- Public Project
- Criticality Score: 36.5
- Priority: 1
- Project Cost (2018)
 - \$87,000 (Adjusted)



Project 30	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	9
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	36.5

Bury it and forget about it?



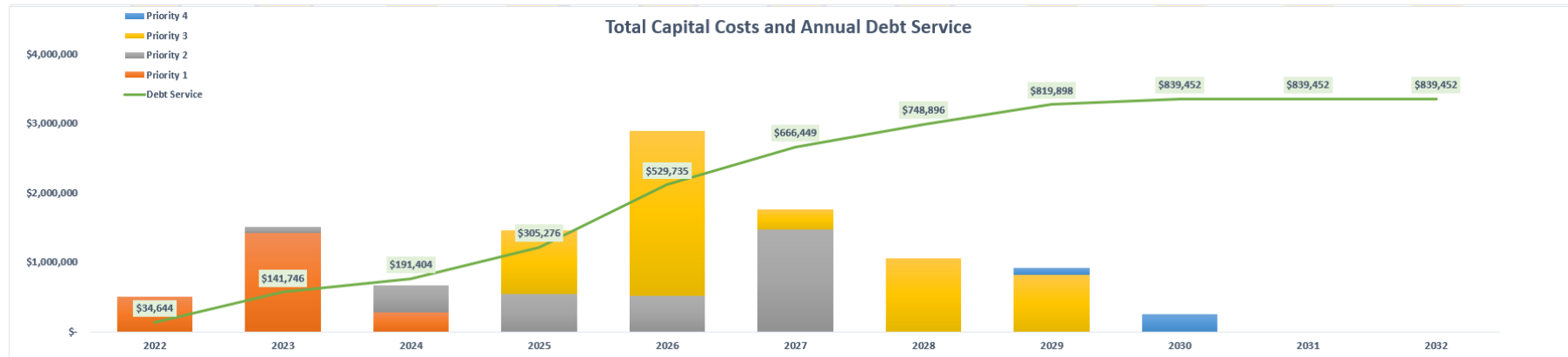


Bury it and forget about it?

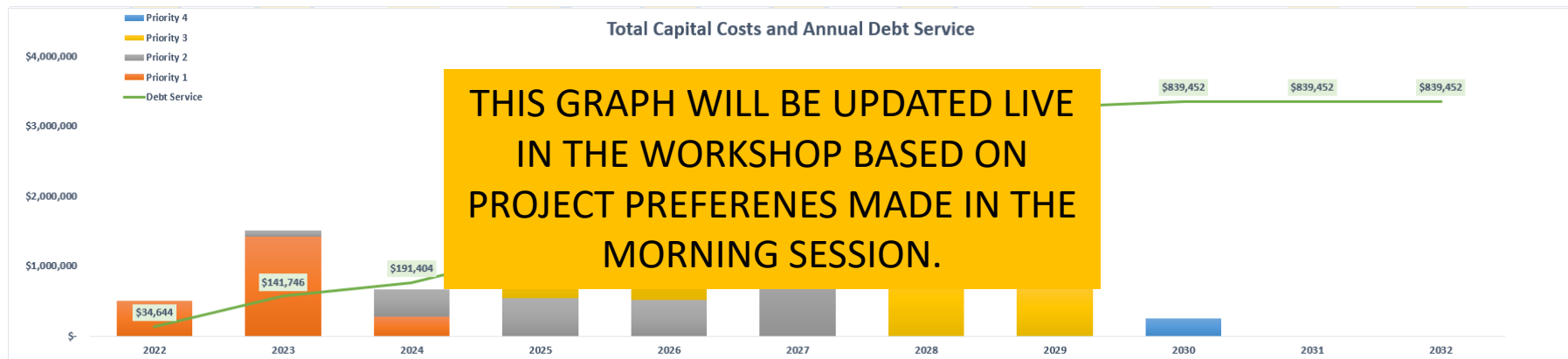


Stormwater Capital Improvement Projects

Before Adjustments



After Adjustments



Stormwater Utility: Overview

A Stormwater Utility is a user-fee-based funding program for the City's drainage management activities and drainage infrastructure needs.

Stormwater Utility: High-Level Considerations

- The Stormwater Utility can serve as a means for the City to manage the stormwater system
- This presentation discusses structural options for **potential** implementation of the utility
- Any decision regarding the utility and possible fees will be made by **City Council in the future**
- Any new revenues to support the Stormwater Utility will affect residents and commercial customers

Funding



STEPS IN THIS PROCESS

- 1) Nail down program costs
- 2) Evaluate and determine source of funding (Stormwater fees or taxes) for program
- 3) If a Stormwater utility is utilized for any costs – determine the rate structure for those costs.

Funding



The dynamic model shows the total Program Costs, in all available options of funding from either Stormwater Utility Fees or General Fund.

#	Option Name	CIP Debt	Program Support	Ongoing Maintenance
1	All funded in SWU	SWU	SWU	SWU
2	CIP debt svc only in SWU	SWU	GF	GF
3	CIP debt and Maint in SWU	SWU	GF	SWU
4	CIP debt and program support	SWU	SWU	GF
5	Maint Only in SWU	GF	GF	SWU
6	CIP debt only in GF	GF	SWU	SWU
7	CIP debt and Maint in GF	GF	SWU	GF
8	All funded in GF	GF	GF	GF

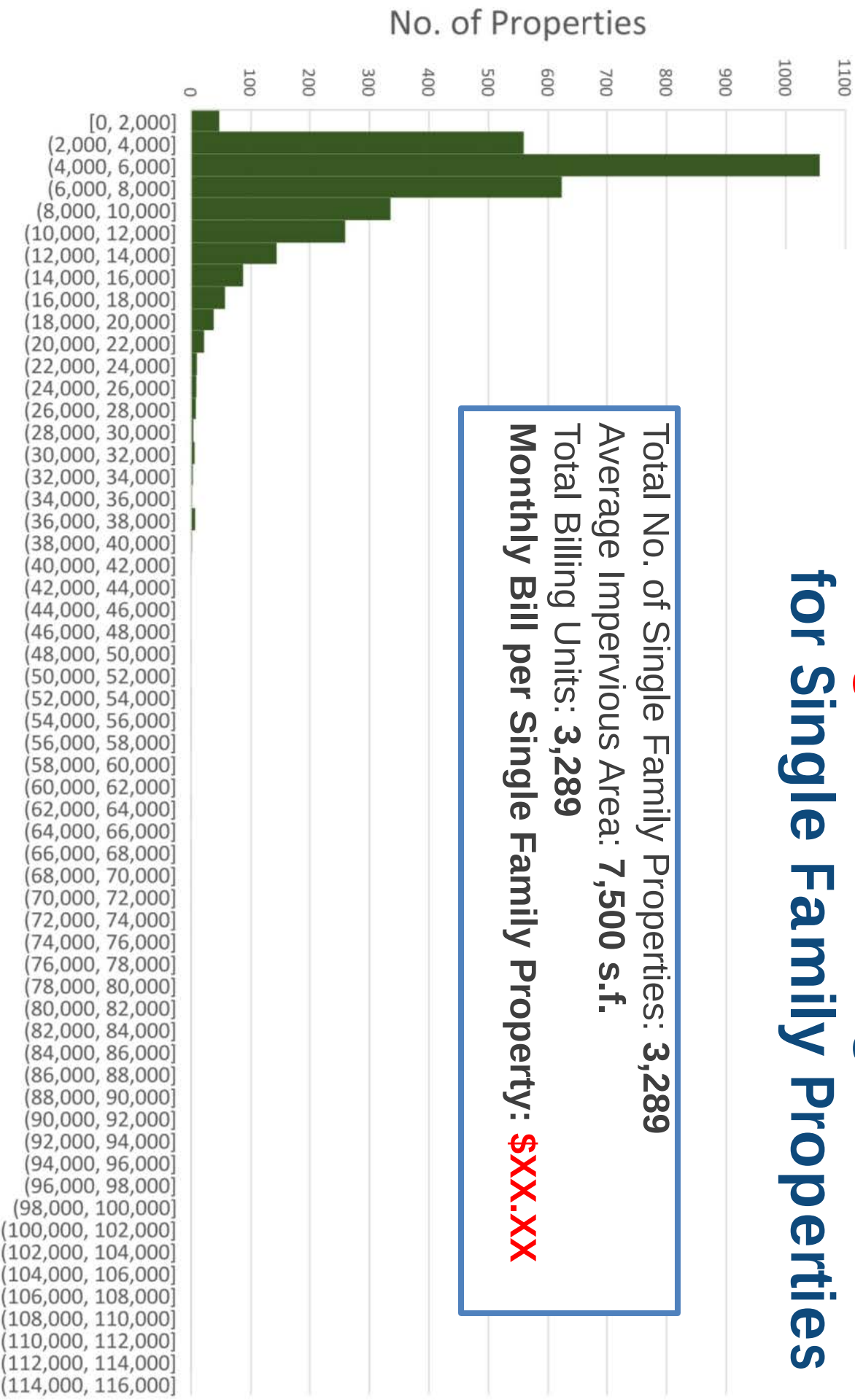
Dashboard discussion

Orientation of the dashboard

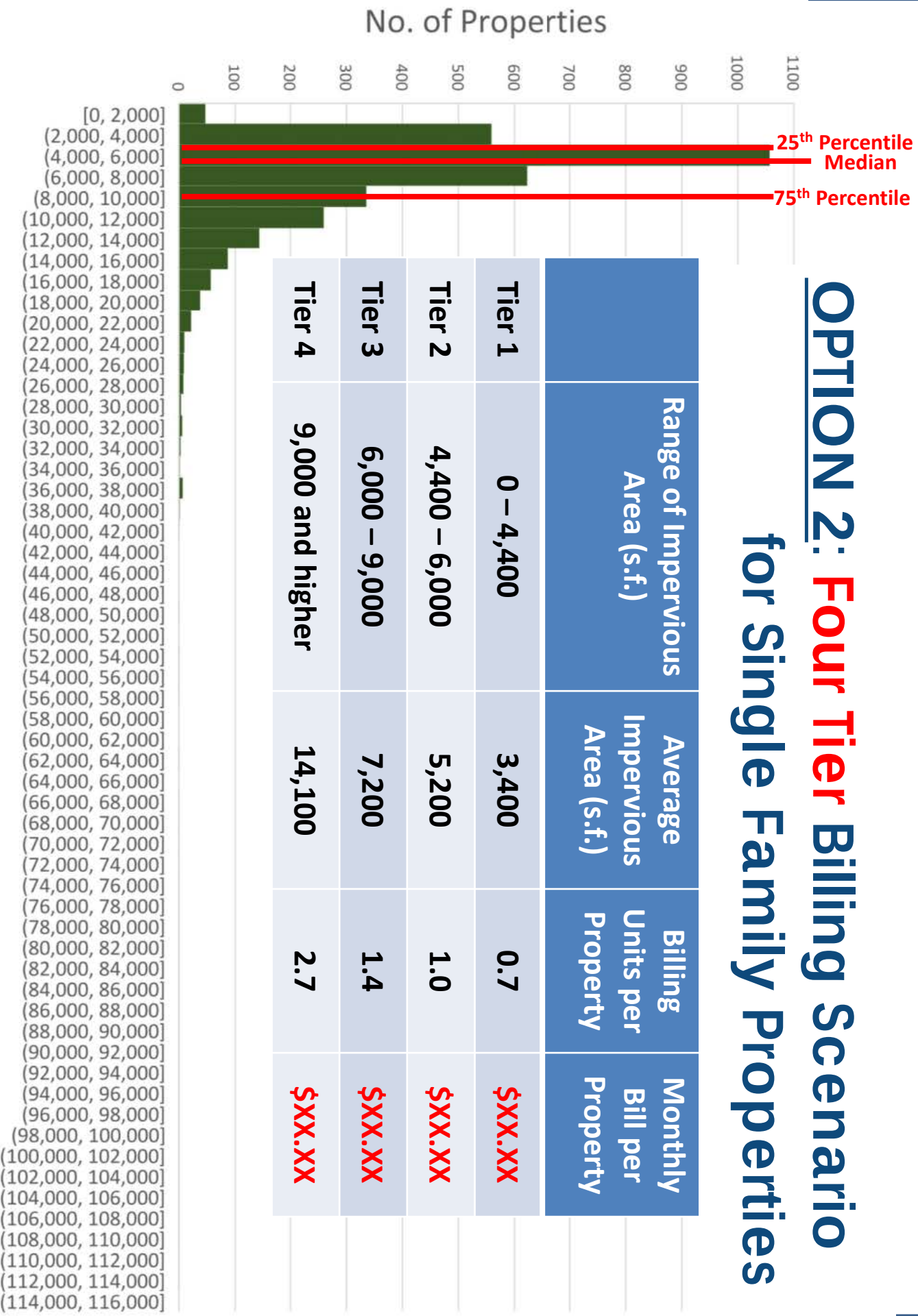
- Cash Flow needs
- Program Costs
- Resulting fees under each rate structure
 - Single Tier
 - Four Tier
- Resulting tax and budget consequences

OPTION 1: **Single Tier** Billing Scenario for Single Family Properties

Total No. of Single Family Properties: **3,289**
Average Impervious Area: **7,500 s.f.**
Total Billing Units: **3,289**
Monthly Bill per Single Family Property: **\$XXX.XX**

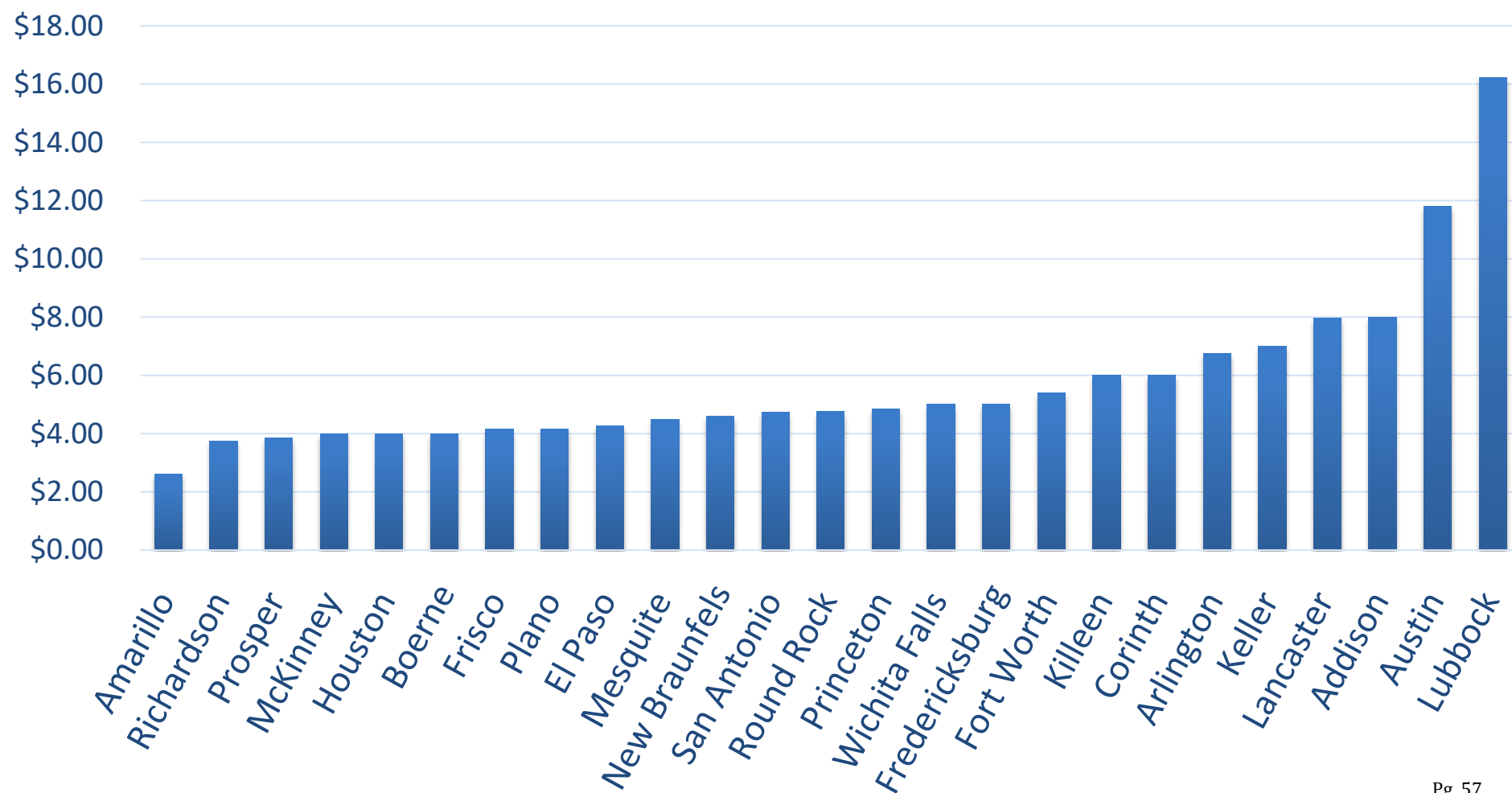


OPTION 2: Four Tier Billing Scenario for Single Family Properties



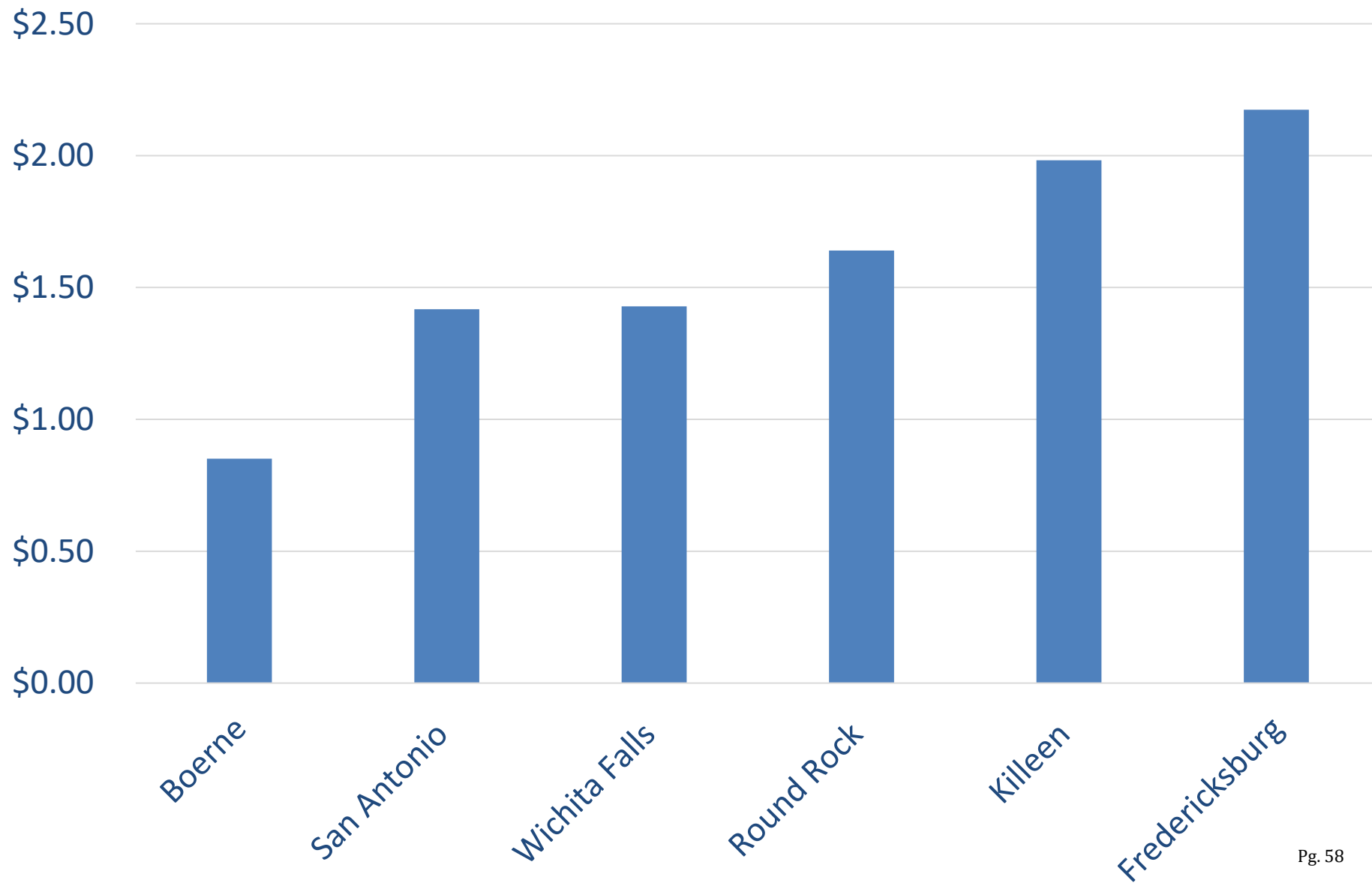


Market Survey of Texas Stormwater Fees per Billing Unit





Texas Monthly Stormwater Fees per 1,000 s.f. of Impervious Area





Next Steps

- Council direction on the funding plan
- Decisions to discuss at a future meeting
 - Exemptions
 - Incentives
 - Franchise Fees
 - HOA impacts
- Schedule
 - Ordinance Adoption
 - Utility Setup
 - Funding Implementation
- Other

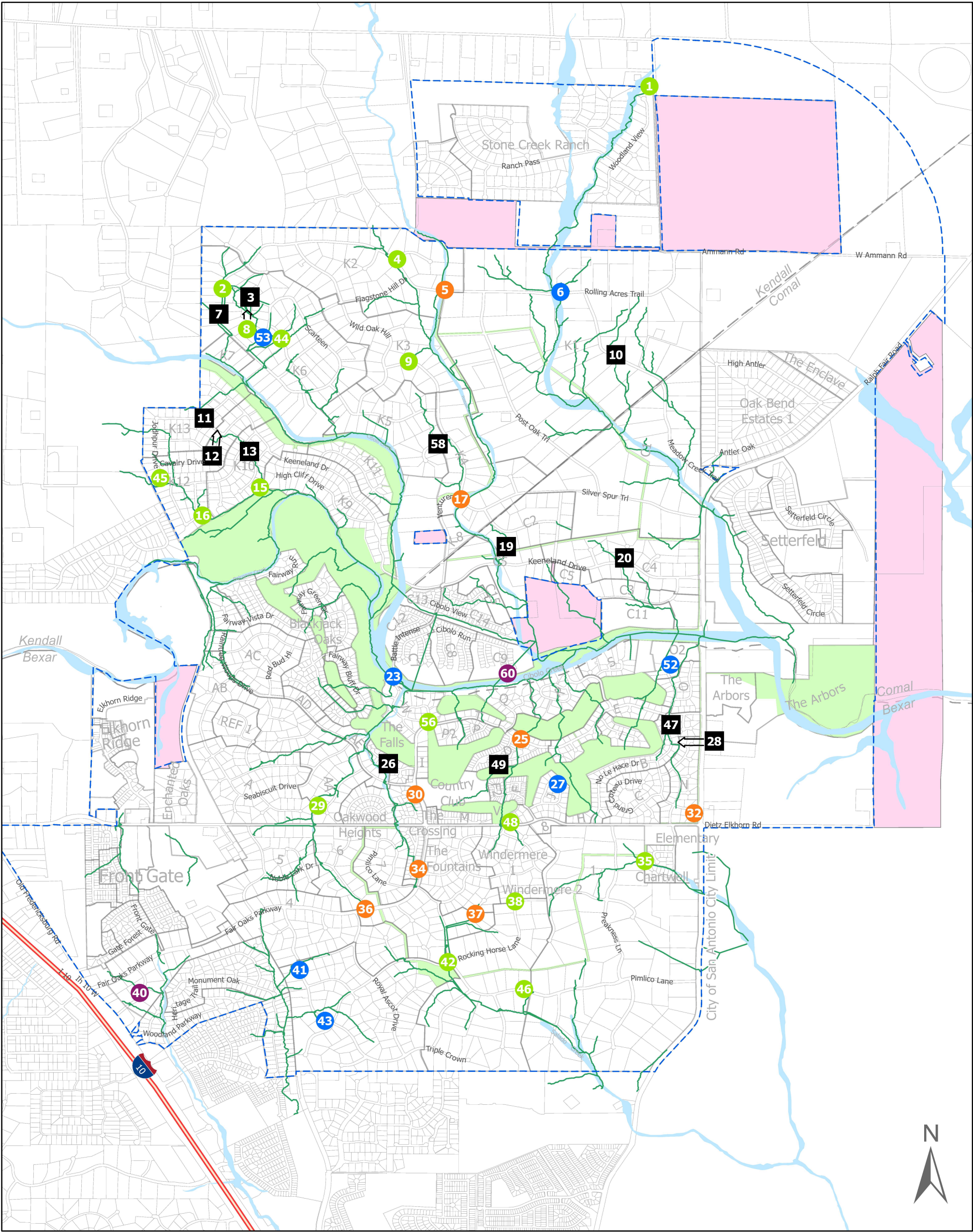
City of Fair Oaks Ranch - Stormwater Issue Summary

										WEIGHTS:	2		3		3	1		0.5		0.5	3		
Issue Number	Type	Address	Description	Public / Private	Next Steps / Proposed Project	Construction Average Cost (Calculated Cost for "B" Sites, except Site 58)**	Engineering Fees, Land Acquisition, Contractor Contingency, Bonds, Insurance, etc. (40%)**	Total Project Cost	Estimated Cost	Estimated Cost Priority	Public/Private	Public/Private Priority	Public Infrastructure at Risk	Public Infrastructure Priority	Number of houses affected	Erosion Problem	Erosion Priority	GI Opportunity	GI Opportunity Priority	City Priority	Score	Priority	
5	Structural design/bridge	7820 Rolling Acres Trail	Low water crossing. Road Closure gate is deployed at this crossing during large storm events.	Public	* Upgrade low water crossing by raising road surface elevation and/or upsizing the existing culverts to convey larger storm events.	\$410,000	\$164,000	\$574,000	High	1	public to public	5	yes	5	0	no	0	no	0	5	47	1	
17	Structural design/bridge	7840 Silver Spur Trail	Runoff collects from the north side of the city and passes this point before passing under Keeneland then to the Cibolo Creek. Poast Oak Creek low water crossing.	Public	* Upgrade low water crossing by raising road surface elevation and/or upsizing the existing culverts to convey larger storm events.	\$420,000	\$168,000	\$588,000	High	1	public to public	5	yes	5	0	no	0	no	0	5	47	1	
34	Earthwork/Regrading and Flatwork	29010 Tivoli Way	Large amount of runoff from Windermere crosses Fair Oaks Parkway and is intercepted by homes. This issue contains 100% design plans from the Road Bond Project	Public	* Utilitze existing stormwater infrastructure by regrading the roadway to slope towards existing inlets and open channels on the north and south side of Windermere Dr on the east side of Fair Oaks Parkway. New curb installed along the west side of Fair Oaks Parkway (across the street from Windermere Dr.) to convey water towards stormwater inlet would also improve collection. This approach would likely increase flows conveyed downstream and these increases would need to be accounted for as part of any project. * Alternately, expand the open channel on the west side of Fair Oaks Parkway in the existing flow path and regrade the right of way to drain to the channel which conveys flow beneath the fence to Tivoli Way. Note: A project to mitigate flooding at this location was already developed, and this may provide a more detailed path forward.	\$28,000	\$12,000	\$40,000	*High *Low	5	public to private	5	yes - busy highway Fair Oaks Parkway	5	3	no	0	yes	5	0	45.5	1	
25	Earthwork/Regrading	7715 Fair Oaks Parkway	Great amount of runoff passes under Fair Oaks PKWY and is causing erosion through the easement. This area was surveyed during the Terra Vista retaining wall project	Public	* Regrade the channel and install erosion control measures, such as riprap or turf reinforced mat, to protect channel.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	Fair Oaks Parkway	5	1	yes	5	yes	5	0	42	1	
36	Earthwork/Regrading	8410 Noble Lark Dr	Runoff flows in a channel next to the ROW and has caused erosion in this area	Public	* Regrade the channel and install erosion control measures, such as riprap or turf reinforced mat, to protect channel. * Repair the eroded foundation of the culvert headwall.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	yes - busy highway Fair Oaks Parkway	5	1	yes	5	yes	5	0	42	1	
32	Alternatives Analysis - still pending	29314 Sumpter Drive	Runoff flows from Nooner's Store and is intercepted by the homes across Ralph Fair Road. Severe slope accelerates runoff towards homes.	Public	* Add a swale to the west side of Ralph Fair Rd to handle runoff coming from Nooners parking lot. This swale could be routed through a culvert south of Dietz Elkhorn and detained in the open field area of Fair Oaks Ranch Elementary and ultimately routed south and tied in with the conduit drainage located on the east end of Fair Oaks Ranch Elementary. * Define existing outfall structure located on the west side of the Nooner's Store parking lot to catch runoff from parking lot as well as the already existing channel to handle runoff from the Nooner's Store parking lot so it more effectively carries runoff to existing channels	\$87,500	\$35,000	\$122,500	*Medium *Medium	3	public to private	5	yes - busy highway FM3351	5	2	no	0	yes	5	0	40.5	1	
37	Modeling/System Capacity Work	7967 Turf Paradise Lane	Large amount of runoff sheet flows down the street and across properties.	Public	* Investigate the capacities of driveway culverts to see if they cause water to back up and flow into yards. Based on the model results, it is expected that these will be hydraulic constrictions contributing to uncontrolled stormwater flow, and that replacing them with adequately sized culverts will mitigate the issue.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	yes - small road turf paradise lane	2	4	yes	5	yes	5	0	40	1	
30	Retaining Wall? Runoff Dissipators/Rip Rap some system modeling and analysis	7900 Fair Oaks PKWY	Large amount of runoff flows from country club parking lot across Fair Oaks PKWY. Runoff jumps curb and flows through fences into backyard	Public	* The new wall may represent a solution which mitigates stormwater from passing into the backyards mentioned in this complaint, however this may cause new stormwater issues down Oakview Pass where the runoff is now routed	\$62,000	\$25,000	\$87,000	Low	5	public to private	5	no	0	9	no	0	yes	5	0	36.5	1	
48	Earthwork/Channel Improvements	28207 Kempton Circle	Large amount of runoff is intercepted by wall around house and is causing erosion and exposing irrigation pipe.	Public	* Regrade the channel to keep stormwater from encroaching on the property. Slightly widening and deepening the channel reduced velocities in the model.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	no	0	1	yes	5	yes	5	0	31	2	
29	Earthwork/Channel Improvements and Erosion Control	8531 Alydar Circle	Water flows over the natural channel that is located within a platted drainage easement. Banks have been eroded due to large runoff flows	Public	* Regrade the channel to restore its shape and remove steep side slopes, remove any sediment buildup, install riprap or turf reinforced mat in areas experiencing high velocities/erosion potential	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	no	0	4	yes	5	yes	5	0	30	2	
15	Erosion Control or Channel Improvements	8622 Delta Dawn	Erosion is caused by runoff coming from Jophpur and is in close proximity to the city's lift station	Public	* Potential options include reinforcing the channel using erosion control mats or rip rap to mitigate against erosion, or widen the channel to reduce velocities.	\$87,500	\$35,000	\$122,500	Medium	3	private to public	2	lift station at risk of structural issues caused by erosion	5	0	yes	5	no	0	0	29.5	2	
16	Channel Improvements and New Channel (easement reqd)	30817 Man O War	Runoff drains around this property and one side contains a platted easement. Drainage flows over the channel in the easement and backs up into front and back yards	Public	* Increase conveyance by excavating the channel the be deeper and/or wider. * Decrease flows in the channel by constructing a detention pond on the upstream side of Man O War Drive. This would require easement acquisition.	\$28,000	\$12,000	\$40,000	*Low *Medium	5	public to private	5	no	0	2	no	0	yes	5	0	29.5	2	
35	Erosion Control or Channel Improvements	Easement behind Chartwell Lane	Channel experiencing erosive velocitites	Public	* Line channel with erosion control, such as rip rap or turf reinforced mat or * Expand channel to slow velocities *Construct detention upstream of channel in undeveloped area	\$567,000	\$227,000	\$794,000	Low	1	private to public	2	yes - busy highway Fair Oaks Parkway	5	4	no	0	yes	5	0	29.5	2	
2	Modeling/System Capacity Work Possible Detention Pond (easement reqd)	8472 Rolling Acres Trail	Drainage backs up in culverts that pass under driveway. Large amount of runoff flows across the property towards Cibolo Creek.	Public	* Increase the diameter of the driveway culverts for the properties on the west side of Rolling Acres Rd. May require addressing the culverts in the site as well as 6-8 downstream culverts to prevent perpetuating issues downstream before this channel is routed out to Cibolo Creek. Current driveway culvert geometry in this site is a 3.17'x2' horizontal ellipse. In the model, increasing the size to 3.75'x2.41' did not have a substantial effect in reducing out of bank flow (using 10 year event)(A 3X6 concrete box culvert did not result in significant improvements either). * Develop a detention project on the northeast corner of the intersection of Rolling Acres Trail and Sunland to address flows from this site (which flows across the road during large events) as well as westward drainage from Sunland. This may require an easement from property owner.	\$87,500	\$35,000	\$122,500	*Medium *High	3	public to private	5	no	0	3	yes	5	yes	5	0	29	2	

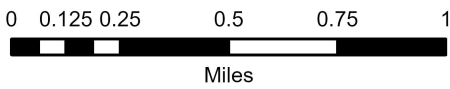
City of Fair Oaks Ranch - Stormwater Issue Summary																						
Issue Number	Type	Address	Description	Public / Private	Next Steps / Proposed Project	Construction Average Cost (Calculated Cost for "B" Sites, except Site 58)**	Engineering Fees, Land Acquisition, Contractor Contingency, Bonds, Insurance, etc. (40%)**	Total Project Cost	WEIGHTS:	2	Public/Private	3	Public Infrastructure at Risk	3	1	Erosion Problem	0.5	GI Opportunity	0.5	3	Score	Priority
									Estimated Cost	Estimated Cost Priority		Public/Private Priority		Public Infrastructure Priority	Number of houses affected		Erosion Priority		GI Opportunity Priority	City Priority		
8	Regrading, SD piping, drainage channel (easement reqd)	31789 Sunland	A natural recharge zone takes a large amount of runoff during storm events	Public	* Acquire a drainage easement to the west of this property to route flow to the sinkhole and away from it when it becomes filled. This would require continuous routing along Scarteen southward towards Cibolo Creek. * Construct a drainage ditch on the south side of Sunland to route flow west towards Rolling Acres and its existing right of way drainage ditch	\$28,000	\$12,000	\$40,000	*High *Low	5	public to private	5	no	0	1	no	0	yes - natural recharge feature	5	0	28.5	2
38	New channel, SD piping	7626 Rocking Horse Ln	Large amount of flow goes across street and ponds in front yard of the property	Public	*Construct a channel in the right of way to intercept runoff from Rocking Horse Lane and convey this flow east along Secretariat Land to an already existing channel at the intersection of Secretariat Lane and Dapper Dan Drive.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	no	0	1	no	0	yes	5	0	28.5	2
44	Regrading, Channel Improvements	31988 Scarteen	Runoff from Sky Blue Ridge runs down road and heads in direction of home	Public	* Increase the capacities of the roadside channels by regrading them to have a more define flowpath with larger widths and depths.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	no	0	1	no	0	yes	5	0	28.5	2
46	New channel, SD piping	7644 Pimlico Lane	Large amount of runoff moves through property toward Salado Creek	Public	* Construct a new channel along the south side of Pimlico Lane from Steeplechase Lane to Aqueduct Lane. This channel would convey flow east to the west side of Aqueduct Lane, where a channel would be constructed to convey flow south to Salado Creek.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	no	0	1	no	0	yes	5	0	28.5	2
4	Regrading, earthwork, new channel and small culvert	8040 Rolling Acres Trail	The drainage does not have positive flow in one direction as it crosses Rolling Acres Trail at multiple points	Public	* Build a drainage ditch to capture stormwater as it exits the upstream culvert and route to the culvert at the downstream end of the property. This should prevent the city's stormwater from flowing on the property. Will require the construction of a driveway culvert.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	small residential road is flooded	2	1	no	0	no	0	0	28	2
42	Channel and SD piping Improvements,	7740 Pimlico Lane	Large amount of runoff moves through the HOA park and towards the Salado Creek	Public	* Regrade the channel to deepen it one foot and increase the size of the culvert from a 4-foot corrugated metal pipe to 5.5 foot diameter corrugated metal pipe to provide a 10-year level of service.	\$28,000	\$12,000	\$40,000	Low	5	public to public	3	yes - the culvert under equestrian drive is undersized	2	0	no	0	yes	5	0	27.5	2
9	Earthwork, new channel	31521 Silver Spur Trail	A large amount of runoff flows between the properties before making its way toward Post Oak Creek.	Public	* Construct a drainage ditch along Silver Spur Trail which conveys flow to Post Oak Creek south of the intersection of Silver Spur Trail and Venturer.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	no	0	2	no	0	no	0	0	27	2
45	Regrading, curb and gutter	8816 Jodphur	Runoff flows from outside of the city and accumulates near this lot. The City installed a drainage improvement in this area.	Public	* Recent improvements may have been sufficient to alleviate this issue.	\$28,000	\$12,000	\$40,000	NA	5	public to private	5	no	0	2	no	0	no	0	0	27	2
1	Structural design/bridge	Amman Road	—	Public	* Replace current road with concrete bridge elevated above flood stage.	\$943,000	\$378,000	\$1,321,000	High	1	public to public	3	yes	5	0	no	0	no	0	0	26	2
56	Regrade channel and maintenance	29707 High Eschelon	Drainage from road collects and faster than the drainage easement can move it	Public	* Regrade the drainage channel and clear it of vegetation and debris.	\$28,000	\$12,000	\$40,000	Low	5	public to private	5	no	0	1	no	0	no	0	0	26	2
52	Regrading, new channel, possible perm erosion control measures (study??) (easement reqd)	29755 No Le Hace	Runoff from No Le Hace culminates at the end of the cul de sac before making its way to Cibolo Creek. Large amounts of erosion and silt exists	Public	* Acquire an easement which runs north from the cul de sac and construct a channel to convey flow north to Cibolo Creek.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	no	0	1	no	0	yes	5	0	24.5	3
53	Channel improvements (larger culvert)/regrading	32030 Scarteen	City installed berms and swales have eroded and silted over time. Flooding occurs in driveway and has come close to entering home.	Public	*Regrade the channel on the east side of Scarteen to convey flow more efficiently and replace the driveway culvert with a larger culvert to increase conveyance.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	no	0	1	yes	5	no	0	0	24.5	3
27	Easement acquisition; flatwork, curb and gutter	29358 Duberry Ridge	Runoff flows from the street into the front yard of the property	Public	* Obtain a drainage easement between two of the properties. Construct curb cut and route runoff through easement onto golf course	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	no	0	1	no	0	no	0	0	22	3
41	SD capacity; improvements	8426 Triple Crown	Large amount of runoff flows down ROW and through a platted easement. Culvert is undersized and backs up/becomes obstructed	Public	*Increase the capacity of the culvert and provide proper maintenance to prevent clogging of the culvert. Increasing the size to a 2.417 ft x 3.75 ft provides conveyance for a 10-year event.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	no	0	1	no	0	no	0	0	22	3
43	new SD and channel	8312 Triple Crown	Large amount of runoff moves down Rocking Horse Ln towards the south of the city	Public	*A culvert and channel can be constructed along the south side of Triple Crown and the west side of Rocking Horse Lane in the right of way to help catch flow running down the street before it can cause an issue on private property.	\$87,500	\$35,000	\$122,500	Medium	3	public to private	5	no	0	1	no	0	no	0	0	22	3
26	Channel improvements; perm erosion control	47 Falls Terrace	Large amounts of runoff flows through backyards. Floodplain was revised and further encroaches into properties in this gated subdivision	Private	* Increase conveyance by excavating the channel the be deeper and/or wider to mitigate flooding from FEMA floodplain. * Install erosion control measures, such as riprap or turf reinforced mat, to protect channel and slow velocities.	\$28,000	\$12,000	\$40,000	Low	5	private to private	0	no	0	6	yes	5	yes	5	0	21	3
3	Alternatives Analysis - still pending	31872 Sunland	Large amount of runoff from Burnt Cedar flows through the property towards Rolling Acres Trail	Private	* Widen the channel to reduce the flow velocity. The channel is relatively shallow, thus deepening the channel may be an option but downstream effects should be further investigated. (Widening the channel approx. 15 ft did not significantly change the Water Surface Elevation (WSE) but did decrease the velocity by about 35% for the 10 year event) * Reinforce the channel and convey flow more efficiently by lining it with concrete. This option would likely result in increased flows downstream which could be mitigated by the detention project proposed for Site 2. * Increase road surface elevation to prevent overtopping of Burnt Cedar Rd. This could cause backups onto properties. * Site #8 is a sinkhole and to mitigate this issue a culvert could be constructed to convey flow beneath Sunland. This would require acquisition of a drainage easement to route the flow to the sink hole.	\$28,000	\$12,000	\$40,000	*Low *High *Medium	5	private to private	0	small residential road is flooded	2	1	yes	5	no	0	0	19.5	3

City of Fair Oaks Ranch - Stormwater Issue Summary																							
										WEIGHTS:	2		3		3	1		0.5		0.5	3		
Issue Number	Type	Address	Description	Public / Private	Next Steps / Proposed Project	Construction Average Cost (Calculated Cost for "B" Sites, except Site 58)**	Engineering Fees, Land Acquisition, Contractor Contingency, Bonds, Insurance, etc. (40%)**	Total Project Cost	Estimated Cost	Estimated Cost Priority	Public/Private	Public/Private Priority	Public Infrastructure at Risk	Public Infrastructure Priority	Number of houses affected	Erosion Problem	Erosion Priority	GI Opportunity	GI Opportunity Priority	City Priority	Score	Priority	
28	Channel improvements	29534 No Le Hace Drive	A drainage channel exists on the rear property lines in this area. The city does not have an easement and this channel backs up and floods backyards due to fence blockages	Private	* Expand ditch to increase conveyance	\$28,000	\$12,000	\$40,000	Low	5	private to private	0	no	0	5	no	0	yes	5	0	17.5	3	
6	Structural design/bridge	7420 Rolling Acres Trail	Low water crossing moves toward home on Meadow Creek Trail. Road closure gate is deployed at this crossing during large storm events.	Public	* Upgrade low water crossing by raising road surface elevation and/or upsizing the existing culverts to convey larger storm events.	\$460,000	\$184,000	\$644,000	High	1	public to public	5	yes	5	0	no	0	no	0	-5	17	3	
23	Structural design/bridge	8402 Battle Intense	Battle Intense is often shut down during large rain events. Debris collects and damages this low water crossing.	Public	* Upgrade low water crossing by raising road surface elevation and/or upsizing the existing culverts to convey larger storm events.	\$1,860,000	\$744,000	\$2,604,000	High	1	public to public	5	yes	5	0	no	0	no	0	-5	17	3	
49	Channel improvements	7754 Terra Manor	Runoff exceeds channel capacity	Private	* Increase the height of the berm. Add fill and grade it to 3:1 slope on either side. * Excavate channel down to increase its capacity to convey flow and lower water surface elevation *Widen channel to increase its capacity	\$3,000	\$2,000	\$5,000	Low	5	private to private	0	no	0	7	no	0	no	0	0	17	3	
40	Channel improvements	28337 Leslie Pfeiffer Dr.	Runoff flows through a 20' platted drainage easement and is intercepted by fences running across them. This issue is examined in the 2009 Costello Report	Public	*The channel running underneath the fence can be deepened so debris is less likely to catch on the fence and cause the channel to backup. Deepening the channel a foot and widening it to 15-feet wide should greatly reduce instances of debris from catching in the fence as the model calculated that the 10-year event would be contained within its banks. Proactive management and cleaning of the fence and channel should greatly improve conveyance and prevent the channel from backing-up.	\$28,000	\$12,000	\$40,000	Low	5	private to public	2	no	0	0	no	0	no	0	0	16	4	
60	New SD	Cibolo Trails Common Area	Ponding occurs in this common area located in the floodplain.	Public	*Construct culverts to drain through the trail embankment at low points.	\$87,500	\$35,000	\$122,500	Medium	3	public to public	3	no	0	0	no	0	no	0	0	15	4	
12	Easement acquisition; new drainage	31104 Furtoso Way	A large amount of runoff flows through front and backyard of the property towards the platted recharge features at the corner of Calvary Dr. and Furtoso Way	Private	* Acquire a drainage easement in the rear of the properties and install a drainage ditch to route flow to Calvary Dr.	\$87,500	\$35,000	\$122,500	Medium	3	private to private	0	no	0	6	no	0	yes	5	0	14.5	4	
10	New SD; Channel improvements	31520 Meadow Creek Trail	A large amount of ponding occurs in this area. Drainage does not pass the road efficiently.	Private	* Install culvert under Meadow Creek Trail on the northwest side of the driveway of this address. * Increase conveyance of the drainage ditch along the north side of Meadow Creek Trail (increase culvert size, widen drainage ditches)	\$87,500	\$35,000	\$122,500	*Medium *Medium	3	private to private	0	small residential road is flooded	2	2	no	0	no	0	0	14	4	
19	SD capacity	7660 Intrepid Drive	Runoff makes its way through a platted easement to the rear of the property. From there it enters an undersized culvert that passes below the HOA trail. This culvert backs up and water ponds in the area.	Private	* Increase culvert size to three 3-foot diameter corrugated metal pipe culverts reduced the upstream flooding by approximately 50% in the model.	\$87,500	\$35,000	\$122,500	Medium	3	private to public	2	no	0	0	no	0	no	0	0	12	4	
58	Alternatives Analysis - still pending	8037 Rock Oak Circle	Water flows down between two lots; ponds on property and erodes channel in ROW	Private	–	\$28,000	\$12,000	\$40,000	Low	5	private to private	0	no	0	1	no	0	no	0	0	11	4	
7	Easement acquisition; new SD system	8524 Rolling Acres Trail	A natural drainage feature is located in backyard. A large amount of runoff flows across the property towards Cibolo Creek.	Private	* Acquire a drainage easement on the north boundary of this property to intercept flow and route it south behind the houses on the affected properties.	\$87,500	\$35,000	\$122,500	Medium	3	private to private	0	no	0	1	no	0	yes - natural recharge feature	5	0	9.5	4	
13	Channel improvements	8609 Delta Dawn Lane	A large amount of runoff from Jodphur makes its way into the backyard of the property. Runoff from Keeneland makes its way into the front yard	Private	* Improve conveyance of the existing drainage easement through the backyard. * A 45 ft wide channel can handle the 100 yr event with a 1 ft. depth of flow	\$87,500	\$35,000	\$122,500	Medium	3	private to private	0	no	0	1	no	0	no	0	0	7	4	
20	Alternatives Analysis - still pending	30621 Sweetridge Circle	Water ponds in this natural low area. Residence maintains a curb around property which exacerbates the issue.	Private	Potential solutions include: * Install a culvert or drain in the low area and a curb cut to drain the ponded area onto Keeneland * Obtain an easement on the west end of the property to route flow down to the curb & gutter on Keeneland.	\$87,500	\$35,000	\$122,500	Medium	3	private to private	0	no	0	1	no	0	no	0	0	7	4	
47	new SD	29636 No Le Hace	Runoff from neighboring backyard does not have a clear path towards the street. During large rain events, water accumulates in garage	Private	Capture stormwater at Saddleback Circle and route it to the west in a controlled channel.	\$87,500	\$35,000	\$122,500	Medium	3	private to private	0	no	0	1	no	0	no	0	0	7	1	
11	New culvert	Jodphur near Furtoso Way	Runoff from offsite ponds on private property.	Private	* Construct a storm sewer which conveys flow northwest to Cibolo Creek to convey 50 cfs and provide a 10-year level of service	\$468,000	\$188,000	\$656,000	High	1	private to private	0	no	0	2	no	0	yes	5	0	6.5	3	

** The costs shown are 2018 dollars presented in the Master Plan.



2018 Stormwater Master Plan Known Drainage Issues Fair Oaks Ranch, Texas

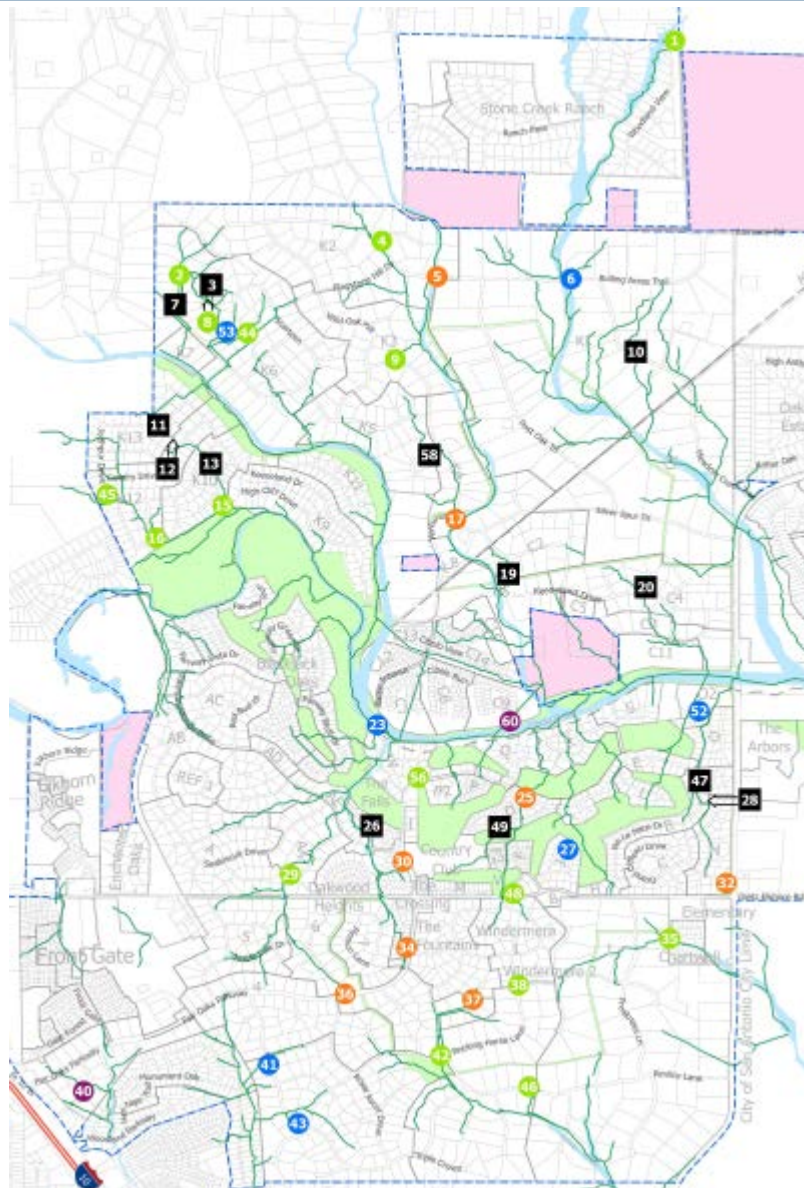


K·FRIESE
+ ASSOCIATES

Project Priority

- 1
- 2
- 3
- 4
- Private
- Flowpaths
- Parks, Trails & Golf Course
- Fair Oaks ETJ
- City Limits

Project Locations/Priority



Project Priority

1

2

3

4

Private

Flowpaths

Parks, Trails & Golf
Course

Fair Oaks ETJ

City Limits

Types of Projects

- Earthwork/Regrading/Maintenance – could include removing silt from a channel to improve channel conditions or regrading areas to create positive drainage flow.
- Channel Improvements/Capacity – could include widening and/or deepening a channel to improve capacity.
- Erosion Control – can include “armoring” channels by installing erosion control mats or concrete rip rap.
- New Storm Drain/Channel – installation/construction of a storm drain pipe/culvert/channel.
- Additional analysis required – based on the level of analysis presented in the master plan, additional analysis is required to determine the potential resolution.

Project 1 – Ammann Rd LWC

- This project will replace the current road with an elevated concrete bridge above the flood stage.
- Structural design/bridge
- Public Project
- Criticality Score: 26
- Priority: 2
- Total Project Cost
 - \$1,321,000



Project 1	
Item	Score
Estimated Cost	2
Source/Destination	9
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	26

Project 2 – 8472 Rolling Acres Trail

- Drainage backs up in existing culverts that pass under driveway causing large amounts of runoff to flow across property toward Cibolo Creek.
- Additional analysis required
 - Upsize Culverts or potential detention
- Potential easement required
- Public Project
- Criticality Score: 29
- Priority: 2
- Total Project Cost
 - \$122,500



Project 2	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	3
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	29

Project 3 – 31872 Sunland

- Large amount of runoff from Burnt Cedar flows through property towards Rolling Acres Trail.
- Alternatives analysis required
 - Widen existing channel
 - Install new culvert
- Private Project
- Criticality Score: 19.5
- Priority: 3
- Total Project Cost
 - \$40,000



Project 3	
Item	Score
Estimated Cost	10
Source/Destination	0
Public Infrastructure at Risk	6
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	0
City Priority	0
Total Score	19.5

Project 4 – 8040 Rolling Acres Trail

- Drainage does not have positive flow in one direction as it crosses Rolling Acres Trail.
- Regrading/Earthwork/Channel Construction
- Public Project
- Criticality Score: 28
- Priority: 2
- Total Project Cost
 - \$122,500



Project 4	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	6
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	28

Project 5 – 7820 Rolling Acres Trail

- Low water crossing (Road Closure gate deploys during large storm events.
- Bridge/Culvert Upgrades
- Emergency access is a concern during rain events.
- Public Project
- Criticality Score: 47
- Priority: 1
- Total Project Cost
 - \$574,000



Project 5	
Item	Score
Estimated Cost	2
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	15
Total Score	47



Project 6 – 7420 Rolling Acres Trail

- Low water crossing (Road Closure gate deploys during large storm events).
- Bridge/Culvert Upgrades
- Emergency access is a concern during rain events.
- Public Project
- Criticality Score: 17
- Priority: 3
- Total Project Cost
 - \$644,000



Project 6	
Item	Score
Estimated Cost	2
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	-15
Total Score	17



Project 7 – 8524 Rolling Acres Trail

- Property includes a natural drainage feature which generates a large amount of runoff across the property towards Cibolo Creek.
- Additional analysis required
- Easement Acquisition Required
- Private Project
- Criticality Score: 9.5
- Priority: 4
- Total Project Cost
 - \$122,500



Project 7	
Item	Score
Estimated Cost	6
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	9.5

Project 8 – 31789 Sunland

- Natural recharge feature accepts a large amount of runoff during storm events.
- Additional analysis required
- Easement acquisition potentially required
- Public Project
- Criticality Score: 28.5
- Priority: 2
- Total Project Cost
 - \$40,000



Project 8	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	28.5

Project 9 – 31521 Silver Spur Trail

- A large amount of runoff flows between properties before making its way toward Post Oak Creek.
- Earthwork / New channel
- Additional analysis required
- Public Project
- Criticality Score: 27
- Priority: 2
- Total Project Cost
 - \$40,000



Project 9	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	27

Project 10 – 31520 Meadow Creek Trail

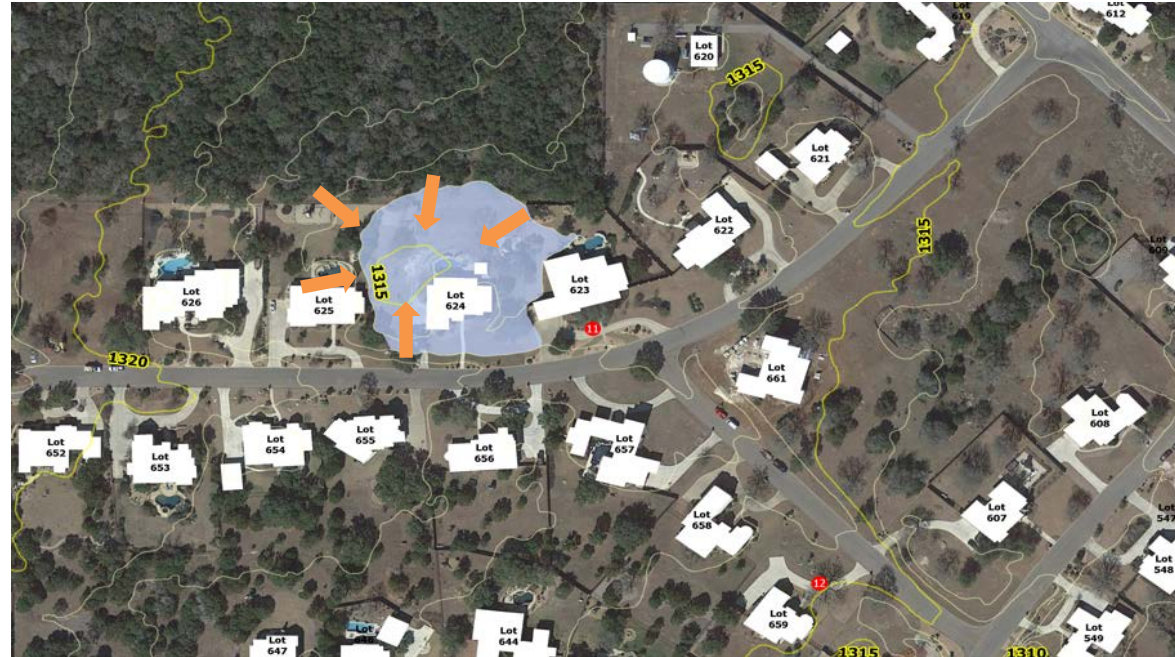
- Drainage does not pass the roadway efficiently causing ponding in the area.
- Additional analysis required
 - Install new culvert under Meadow Creek Trail
 - Channel Improvements on north side of Meadow Creek Trail
- Private Project
- Criticality Score: 14
- Priority: 4
- Total Project Cost
 - \$122,500



Project 10	
Item	Score
Estimated Cost	6
Source/Destination	0
Public Infrastructure at Risk	6
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	14

Project 11 – Jodphur near Furtoso Way

- Natural recharge feature collects runoff that backs up into neighboring property (9048 Jodphur)
- Additional analysis required
- Private Project
- Criticality Score: 6.5
- Priority: 4
- Total Project Cost
 - \$656,000

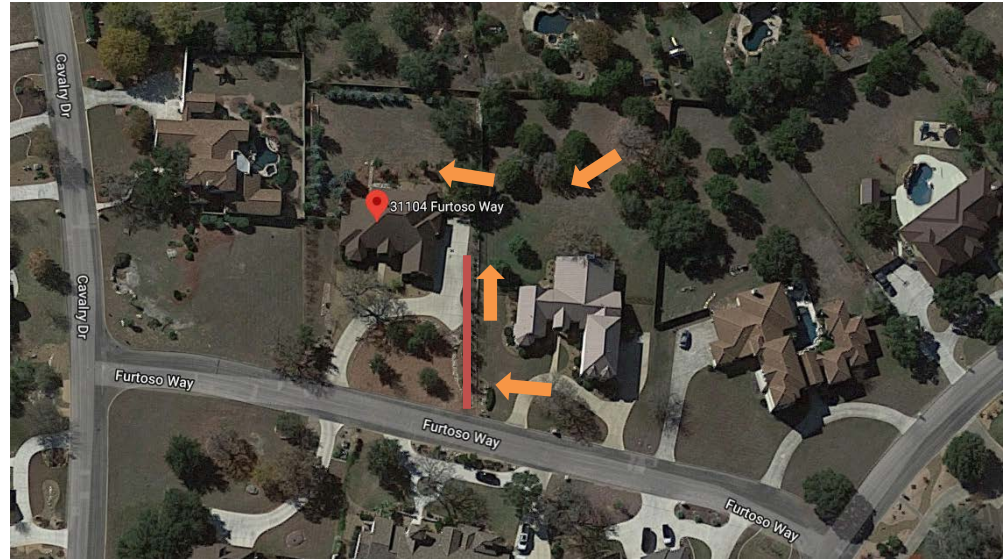


Project 11	
Item	Score
Estimated Cost	2
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	6.5



Project 12 – 31104 Furtoso Way

- Large amount of runoff flows through property towards platted recharge feature at the corner of Calvary Dr and Furtoso Way.
- Additional analysis required
- Private Project
- Criticality Score: 14.5
- Priority: 4
- Total Project Cost
 - \$122,500



Project 12	
Item	Score
Estimated Cost	6
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	6
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	14.5

Project 13 – 8609 Delta Dawn Lane

- Large amount of runoff from Jodhpur makes its way into the backyard of the property. Runoff from Keeneland makes its way into the front yard.
- Channel Improvements
- Private Project
- Criticality Score: 7
- Priority: 4
- Total Project Cost
 - \$122,500



Project 13	
Item	Score
Estimated Cost	6
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	7



Project 15 – 8622 Delta Dawn

- Erosion is a concern caused by runoff coming from Jodphur near city's lift station
- Erosion Control / Channel Improvements
 - Reinforce channel using erosion control mats or concrete rip rap
 - Widen channel to reduce velocities
- Public Project
- Criticality Score: 29.5
- Priority: 2
- Total Project Cost
 - \$122,500



Project 15	
Item	Score
Estimated Cost	6
Source/Destination	6
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	2.5
Green Infrastructure Applicable	0
City Priority	0
Total Score	29.5

Project 16 – 30817 Man O War

- Runoff drains around this property and one side contains a platted easement. Drainage flows over the channel in the easement and backs up into yards.
- Channel Improvements / Possible new channel
- Easement required
- Public Project
- Criticality Score: 29.5
- Priority: 2
- Total Project Cost
 - \$40,000



Project 16	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	29.5

Project 17 – 7840 Silver Spur Trail

- Runoff collects from the north side of the city and passes this point before passing under Keeneland and then to the Cibolo Creek. Post Oak Creek LWC
- Structural Design; Bridge/Culvert upgrades
- Public Project
- Criticality Score: 47
- Priority: 1
- Total Project Cost
 - \$588,000



Project 17	
Item	Score
Estimated Cost	2
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	15
Total Score	47

Project 19 – 7660 Intrepid Drive

- Runoff makes its way through a platted easement to the rear of the property. From there it enters an undersized culvert that passes below the HOA trail which backs up and water ponds in the area.
- Additional analysis required
 - Possibly upsize culvert
- Private Project
- Criticality Score: 12
- Priority: 4
- Total Project Cost
 - \$122,500



Project 19	
Item	Score
Estimated Cost	6
Source/Destination	6
Public Infrastructure at Risk	0
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	12

Project 20 – 30621 Sweetridge Circle

- Water ponds in this natural low area. The resident maintains a curb around the property which exacerbates the issue.
- Additional analysis required
- Private Project
- Criticality Score: 7
- Priority: 4
- Total Project Cost
 - \$122,500



Project 20	
Item	Score
Estimated Cost	6
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	7

Project 23 – 8402 Battle Intense

- Battle Intense is often shut down during large rain events. Debris collects and damages this low water crossing.
- Structural Design / Bridge
- Public Project
- Criticality Score: 17
- Priority: 3
- Total Project Cost
 - \$2,604,000



Project 23	
Item	Score
Estimated Cost	2
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	-15
Total Score	17

Project 25 – 7715 Fair Oaks Parkway

- Large amount of runoff passes under Fair Oaks Pkwy and is causing erosion through the easement.
- Earthwork / Regrading
- Public Project
- Criticality Score: 42
- Priority: 1
- Total Project Cost
 - \$122,500



Project 25	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	42

Project 26 – 47 Falls Terrace

- Large amount of runoff flows through backyards. Floodplain was revised and further encroaches into properties in this gated subdivision.
- Channel Improvements / Erosion Control
 - Increase conveyance making channel deeper and wider
 - Installation of erosion control measures to protect channel
- Private Project
- Criticality Score: 21
- Priority: 3
- Total Project Cost
 - \$40,000



Project 26	
Item	Score
Estimated Cost	10
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	6
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	21

Project 27 – 29358 Duberry Ridge

- Runoff flows from the street into the front yard of the property.
- Additional analysis required
- Easement required
- Public Project
- Criticality Score: 22
- Priority: 3
- Total Project Cost
 - \$122,500



Project 27		
Item	Score	
Estimated Cost		6
Source/Destination		15
Public Infrastructure at Risk		0
Number of Houses Impacted		1
Erosion Issue		0
Green Infrastructure Applicable		0
City Priority		0
Total Score		22

Project 28 – 29354 No Le Hache Drive

- A drainage channel exists on the rear property lines in this area. The city does not have an easement and this channel backs up and floods backyards
- Channel Improvements / Additional analysis required
- Easement required
- Private Project
- Criticality Score: 17.5
- Priority: 3
- Total Project Cost
 - \$40,000



Project 28	
Item	Score
Estimated Cost	10
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	5
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	17.5

Project 29 – 8531 Alydar Circle

- Water flows over the natural channel that is within a platted drainage easement. Banks have been eroded due to large amounts of runoff.
- Earthwork / Channel Improvements / Erosion Control
- Public Project
- Criticality Score: 30
- Priority: 2
- Total Project Cost
 - \$122,500



Project 29	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	4
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	30

Project 30 – 7900 Fair Oaks Parkway

- Large amounts of runoff flows from country club parking lot across Fair Oaks Pkwy. Runoff jumps curb and flows through fences into backyard.
- Additional Analysis required
- Recent improvements may have been sufficient to alleviate this issue.
- Public Project
- Criticality Score: 36.5
- Priority: 1
- Total Project Cost
 - \$87,000



Project 30	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	9
Erosion Issue	2.5
Green Infrastructure Applicable	0
City Priority	0
Total Score	36.5

Project 32 – 29314 Sumpter Drive

- Runoff flows from Nooner's Store and is intercepted by the homes across Ralph Fair Road. Severe slope accelerates runoff towards homes.
- Additional Analysis required
- TxDOT project resolves issue
- Public Project
- Criticality Score: 40.5
- Priority: 1
- Total Project Cost
 - \$122,500



Project 32	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	40.5

Project 34 – 29010 Tivoli Way

- Large amount of runoff from Windermere crosses Fair Oaks Parkway and is intercepted by homes.
- Additional Analysis required
- Public Project
- Criticality Score: 45.5
- Priority: 1
- Total Project Cost
 - \$40,000



Project 34	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	3
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	45.5



Project 35 – 28907 Chartwell Lane

- Channel experiences erosive velocities.
- Erosion Control / Channel Improvements
- Public Project
- Criticality Score: 29.5
- Priority: 2
- Total Project Cost
 - \$794,000



Project 35	
Item	Score
Estimated Cost	2
Source/Destination	6
Public Infrastructure at Risk	15
Number of Houses Impacted	4
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	29.5



Project 36 – 8410 Noble Lark Dr

- Runoff flows in a channel next to the right-of-way and has caused erosion in this area.
- Project has been completed by city staff
- Public Project
- Criticality Score: 42
- Priority: 1
- Total Project Cost
 - \$122,500



Project 36	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	15
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	42

Project 37 – 7967 Turf Paradise Lane

- Large amount of runoff sheet flows down the street and across properties.
- Channel Improvements
- Additional analysis required
- Public Project
- Criticality Score: 40
- Priority: 1
- Total Project Cost
 - \$40,000



Project 37	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	6
Number of Houses Impacted	4
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	40

Project 38 – 7626 Rocking Horse Lane

- Large amount of flow goes across street and ponds in front of yard of the property.
- Regrade street or Inlet/Culvert
- Additional analysis required
- Public Project
- Criticality Score: 28.5
- Priority: 2
- Total Project Cost
 - \$40,000

Project 38	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	28.5



Project 40 – 28337 Leslie Pfeiffer Drive

- Runoff flows through a 20' platted drainage easement and is intercepted by fences running across them.
- Channel Improvements
- Public Project
- Criticality Score: 16
- Priority: 4
- Total Project Cost
 - \$40,000

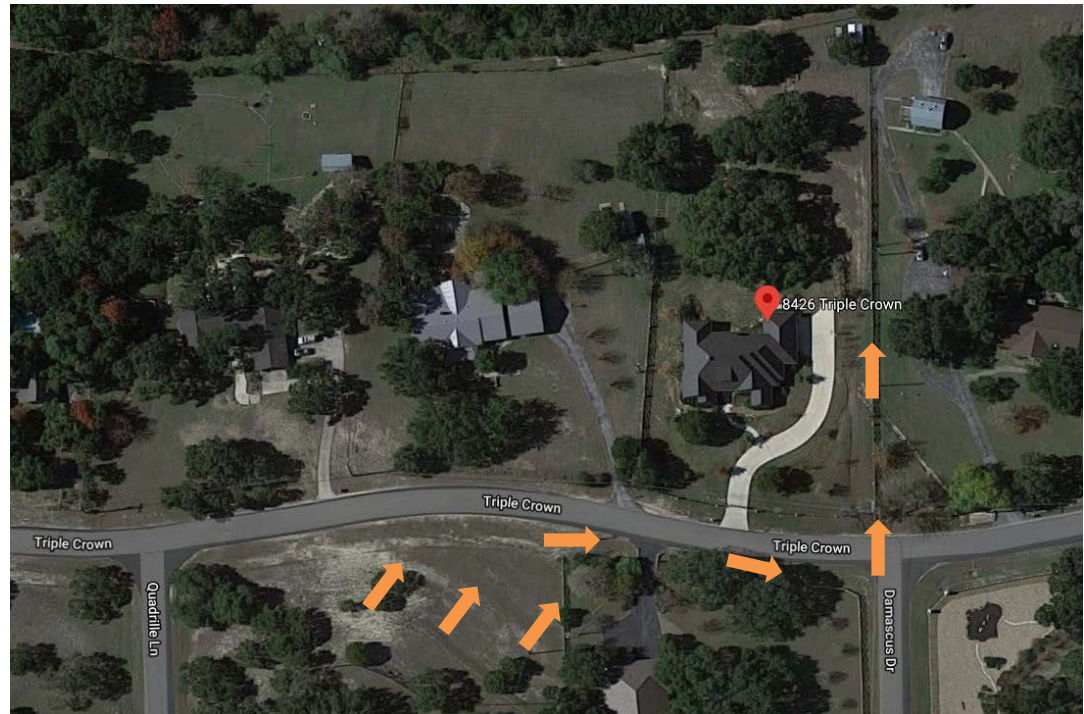


Project 40	
Item	Score
Estimated Cost	10
Source/Destination	6
Public Infrastructure at Risk	0
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	16



Project 41 – 8426 Triple Crown

- Large amount of runoff flows down right-of-way and through a platted easement. Culvert is undersized and becomes obstructed and eventually backs up.
- Channel Improvements
- Public Project
- Criticality Score: 22
- Priority: 3
- Total Project Cost
 - \$122,500



Project 41	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	22



Project 42 – 7740 Pimlico Lane

- Large amount of runoff through the HOA park and towards the Salado Creek.
- Channel and SD piping improvements
- Public Project
- Criticality Score: 27.5
- Priority: 2
- Total Project Cost
 - \$40,000



Project 42	
Item	Score
Estimated Cost	10
Source/Destination	9
Public Infrastructure at Risk	6
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	27.5

Project 43 – 8312 Triple Crown

- Large amount of runoff moves down Rocking Horse Lane towards the south of the city.
- Additional analysis required
 - Potential to construct a culvert and channel to catch flows before reaching private property
- Public Project
- Criticality Score: 22
- Priority: 3
- Total Project Cost
 - \$122,500



Project 43	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	22



Project 44 – 31988 Scarteen

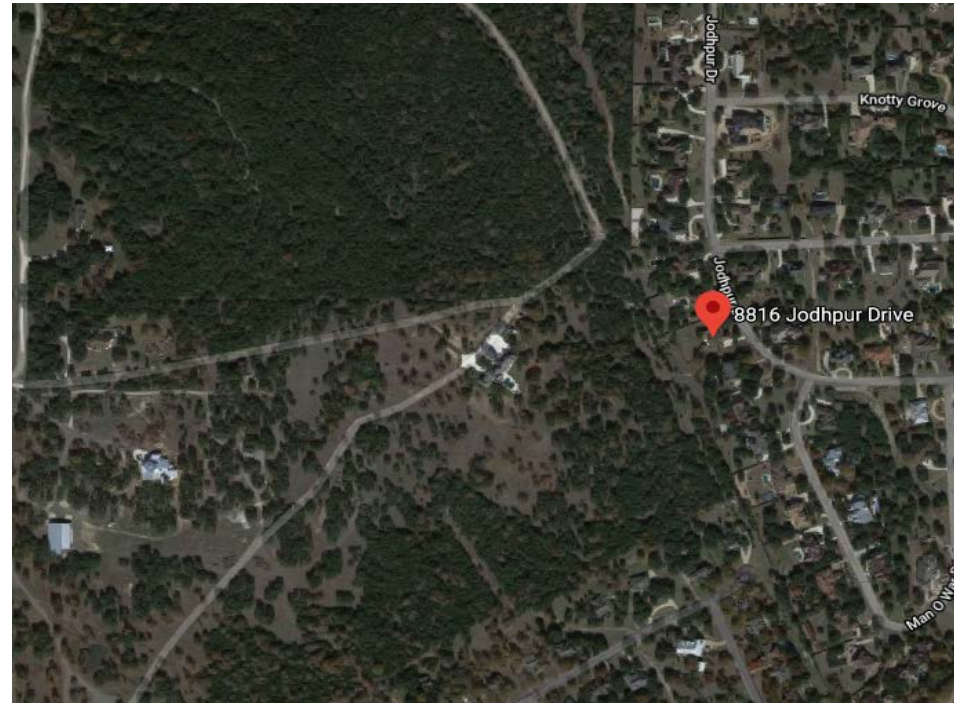
- Runoff from Sky Blue Ridge runs down road and heads in direction of home.
- Channel Improvements / Regrading
- Public Project
- Criticality Score: 28.5
- Priority: 2
- Total Project Cost
 - \$40,000



Project 44	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	28.5

Project 45 – 8816 Jodhpur

- Runoff flows from outside of city and accumulates near this lot. The city installed a drainage improvement in this area.
- Additional analysis required
- Recent improvements may have been sufficient to alleviate this issue.
- Public Project
- Criticality Score: 27
- Priority: 2
- Total Project Cost
 - \$40,000

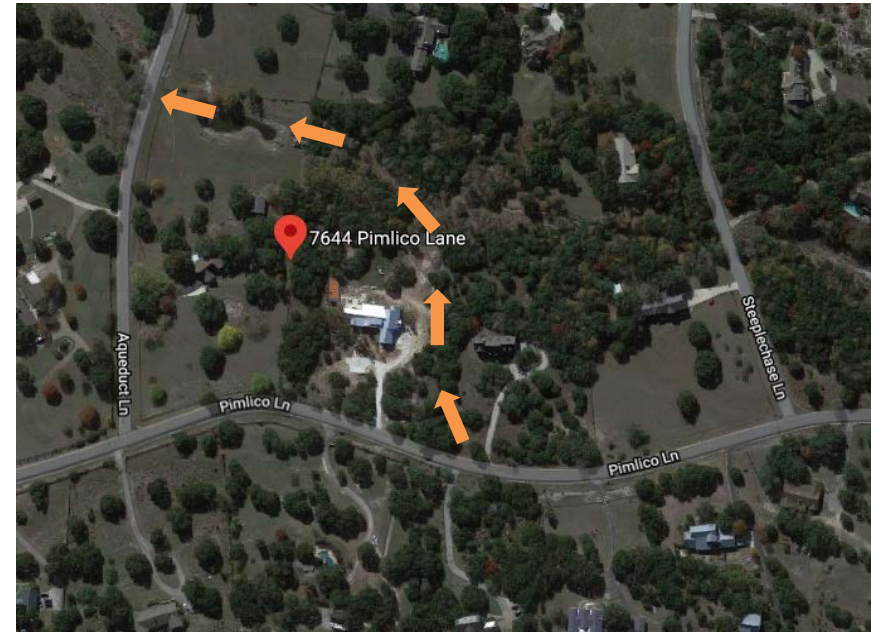


Project 45	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	2
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	27



Project 46 – 7644 Pimlico Lane

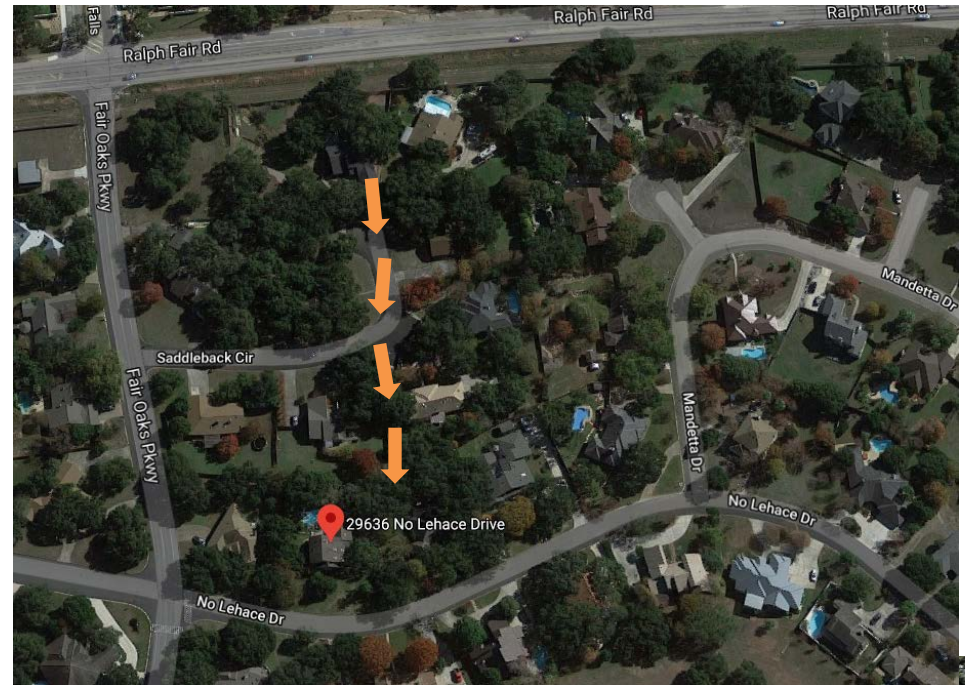
- Large amount of runoff moves through property towards Salado Creek.
- New Channel / SD piping
- Additional Analysis required
 - Could construct a new channel on south side of Pimlico between Aqueduct and Steeplechase
- Public Project
- Criticality Score: 28.5
- Priority: 2
- Total Project Cost
 - \$40,000



Project 46	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	28.5

Project 47 – 29636 No Le Hache Drive

- Runoff from neighboring backyard does not have a clear path towards the street. During large rain events, water accumulates in the garage.
- Additional analysis required
- Private Project
- Criticality Score: 7
- Priority: 4
- Total Project Cost
 - \$122,500



Project 47	
Item	Score
Estimated Cost	6
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	7



Project 48 – 28207 Kempton Circle

- Large amount of runoff is intercepted by wall around house and is causing erosion and exposing irrigation pipe.
- Channel Improvements / Regrading
- Public Project
- Criticality Score: 31
- Priority: 2
- Total Project Cost
 - \$40,000

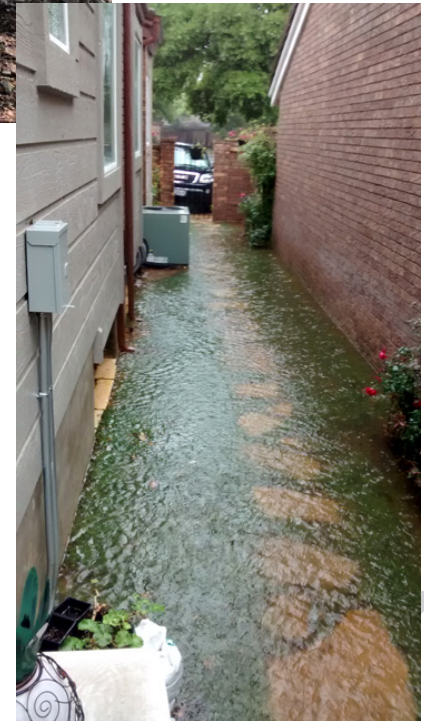


Project 48	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	31



Project 49 – 7754 Terra Manor

- Runoff from golf course exceeds channel capacity flooding adjacent properties.
- Channel Improvements
- Additional analysis required
 - Increase height of berm
 - Deepen/widen channel to increase capacity
- Private Project
- Criticality Score: 17
- Priority: 3
- Total Project Cost
 - \$5,000



Project 49	
Item	Score
Estimated Cost	10
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	7
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	17

Project 52 – 29755 No Le Hache Drive

- Runoff from No Le Hache culminates at the end of the cul de sac before making its way to Cibolo Creek.
- Additional analysis required to determine mitigation options
- Public Project
- Criticality Score: 24.5
- Priority: 3
- Total Project Cost
 - \$122,500



Project 52	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	2.5
City Priority	0
Total Score	24.5



Project 53 – 32030 Scarteen

- City installed berms and swales which have eroded and silted over time. Flooding occurs in driveway and has come close to entering the home.
- Channel Improvements
- Public Project
- Criticality Score: 24.5
- Priority: 3
- Total Project Cost
 - \$122,500



Project 53	
Item	Score
Estimated Cost	6
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	2.5
Green Infrastructure Applicable	0
City Priority	0
Total Score	24.5



Project 56 – 29707 High Eschelon

- Drainage from road collects faster than the drainage easement can move it.
- Channel regrading and maintenance
- Public Project
- Criticality Score: 26
- Priority: 2
- Total Project Cost
 - \$40,000



Project 56	
Item	Score
Estimated Cost	10
Source/Destination	15
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	26



Project 58 – 8037 Rock Oak Circle

- Water flows between two lots, ponds on property and erodes channel in ROW
- Channel regrading and maintenance
- Additional analysis is required
- Private Project
- Criticality Score: 11
- Priority: 4
- Total Project Cost
 - \$40,000



Project 58	
Item	Score
Estimated Cost	10
Source/Destination	0
Public Infrastructure at Risk	0
Number of Houses Impacted	1
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	11

Project 60 – Cibolo Trails Common Area

- Ponding occurs in this common area located in the floodplain.
- New Storm Drain
- Additional analysis required
 - Install new culverts
- Public Project
- Criticality Score: 15
- Priority: 4
- Total Project Cost
 - \$122,500



Project 60	
Item	Score
Estimated Cost	6
Source/Destination	9
Public Infrastructure at Risk	0
Number of Houses Impacted	0
Erosion Issue	0
Green Infrastructure Applicable	0
City Priority	0
Total Score	15