Stormwater Study for Flood Management and Water Quality Funding

CITY OF
FAYETTEVILLE
ARKANSAS

October 2019

JACOBS | olsson

Executive Summary

Additional Funding is Needed:

- To further protect the public (safety), public roads, and private property from flooding,
- For watershed improvements to continue protecting the quality of the Beaver Lake, the City's drinking water source
- To proactively maintain current drainage systems while starting to retrofit and replace, as needed, aging infrastructure
- To continue complying with increasing NPDES Phase II MS4 permit requirements
- To encourage the use of green infrastructure and other sustainable development practices to help mitigate stormwater runoff and flooding

The City of Fayetteville (the City) needs additional funding for drainage, flood management, and water quality improvements. The City continues to attract new residents, with corresponding new development, while its existing stormwater system continues to age. At the same time, recent flooding demonstrated the need to proactively plan for storms of increasing intensity and frequency. A combination of more high-intensity rainfall and growth of hard surfaces has contributed to flooded streets and properties, among other drainage issues, which can ultimately impact the quality of the City's drinking water source, Beaver Lake. Other stormwater-related funding needs are driven by the need for compliance with more stringent National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) regulations. In response, the City initiated this Flood Management and Water Quality Funding Study (Funding Study) to identify the most equitable way to fund these needs going forward. The key findings of the Funding Study are summarized in **Table ES-1**.

Stakeholder Engagement and Education

Over a dozen workshops and meetings were held with City staff, Council, and Stakeholders between June 2018 and August 2019 to educate Stakeholders about Fayetteville's drainage needs and secure input on how to fund these needs. Stakeholders were further engaged via a dedicated website, factsheets, and two Speak Up Fayetteville Surveys. Survey #1 found that a majority (82%) of the 166 surveyed individuals think that drainage issues are either a major or minor problem in their area. **Figure ES-1** notes what type of drainage issues Stakeholders are experiencing. Flooding in streets, roads, or private drives; flooding on their property; and trash/debris in streams or drainage ditches each received over 75 responses.

Figure ES-1. Survey #1 Results

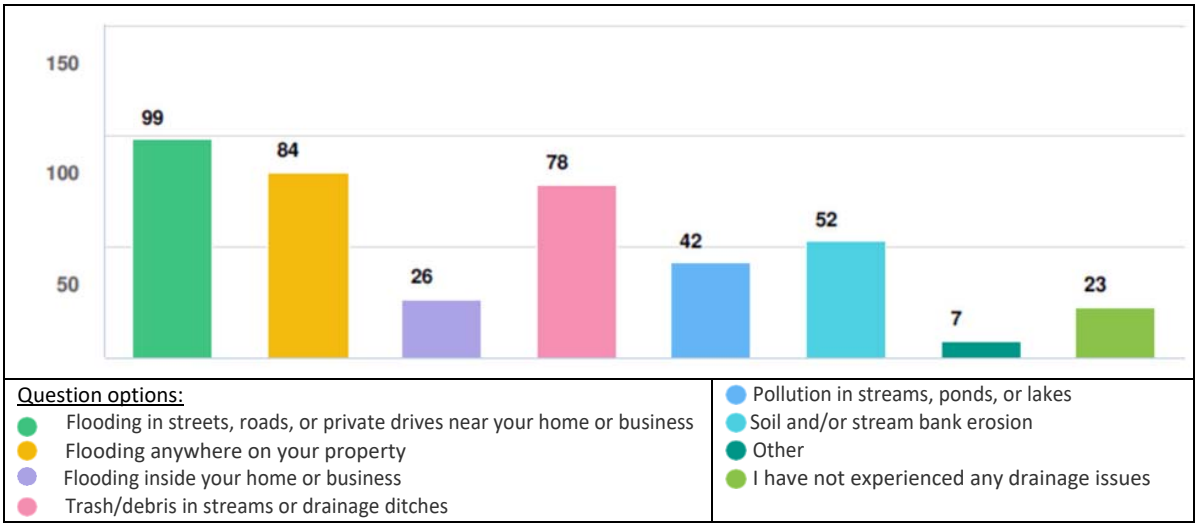

Table ES-1. Flood Management and Water Quality Funding Study—Key Findings

Topic	Findings
Stakeholder Engagement *(Refer to Section 2 for more details.)*	• 82% of survey respondents think drainage is a major or minor problem in the City. • 39% of those surveyed were willing to pay a Flood Management and Water Quality fee based on IA, 35% said they were not, and 26% were undecided. • Additional Stakeholder education and engagement efforts would be conducted if the City proceeds with implementation.
Current Stormwater Program Costs *(Refer to Section 3.2.)*	• The City currently spends approximately $1.5 million annually, of which $200,000 is on capital projects. • Drainage services are currently funded by the Street Fund, General Fund, Sales Tax Capital Improvements Fund, and the intermittent issuance of revenue bonds.
Stormwater EOS *(Refer to Section 3.3.1.)*	• The recommended EOS was selected to make the City's current drainage services more equitable for those older areas developed before public drainage easements were required. • It would include public roads, public detention ponds, and ROWs, and drainage features within existing dedicated public easements (excluding private commercial detention ponds). • The City would establish procedures for accepting public drainage easements from existing property owners and for assuming public maintenance responsibilities of private residential detention ponds.
Stormwater LOS *(Refer to Section 3.3.2.)*	• The recommended LOS would address the backlog of drainage projects and meet Flood Management and Water Quality goals in a 20-year time frame. • Examples of the services included in this LOS include: – Cleaning/inspecting approximately 20% of the overall drainage system annually (400,000 LF). – Replacing 2.5% of drainage system annually (8,500 LF). – Performing maintenance on residential detention basins (110 total).
Future Stormwater Program Costs *(Refer to Section 3.3.3.)*	• Depending on the LOS option selected, the City would need $3.5 to $4.6 million annually to fund Operation and Maintenance, Engineering and Planning, Regulatory Compliance, and Administration (CIP costs described separately in **Section 3.4**). • Alternative funding sources such as additional taxes, special assessments, developer trust funds, impact fees and grants would not be equitable, provide adequate funding or allow for use across the City.
Programmatic Capital Improvement Project Costs *(Refer to Section 3.4.)*	• Depending on the option selected, total Future CIP needs range from $35 to $59 million over a 15- to 20-year time period, respectively. • Excluding the $15 million of early action plan CIP projects funded by 2019 drainage bond program, the City would need approximately $1 to $3 million annually to fund its CIP needs. • This would fund drainage improvements, floodplain buyouts/elevation projects, projects identified by drainage studies and watershed improvement/stream restoration projects. The higher level of CIP funding would also provide large-scale regional detention projects and some detention pond retrofits.

CIP = Capital Improvements Program
EOS = extent of service
IA = impervious area
LF = linear foot (feet)
LOS = level of service
ROW = right of way
SF = square foot (feet)

Table ES-1. Flood Management and Water Quality Funding Study—Key Findings

<table>
<tr><th>Topic</th><th>Findings</th></tr>
<tr><td>Financial Planning and Rate Analysis
(Refer to Section 4.)</td><td>

IA, using a billing unit of 1,000 SF, was selected as the basis of the fee in order to quantify the approximate burden a property places on the City's drainage system.
A six-tier, customer-neutral rate structure was selected as the most equitable and cost-effective option given the distribution of the City's IA.
The selected rate option would be phased in over a 5-year period.
Future services would be funded from a stand-alone enterprise fund sourced from a new Flood Management and Water Quality Fee and the intermittent issuance of revenue bonds.
The City plans to evaluate two methods for billing property owners during implementation, either its existing, monthly utility system or Washington County's annual property tax system.

<table>
<tr><th>Tier Range (SF of IA)</th><th>Year 5 Monthly Fee</th></tr>
<tr><td>Tier 1 (0 and 2,000)</td><td>$2.31</td></tr>
<tr><td>Tier 2 (2,000 and 3,500)</td><td>$5.09</td></tr>
<tr><td>Tier 3 (3,500 and 5,000)</td><td>$7.86</td></tr>
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<tr><td>Tier 5 (6,500 and 8,000)</td><td>$13.41</td></tr>
<tr><td>Tier 6 (over 8,000)</td><td>$1.85/1000 SF</td></tr>
</table>
</td></tr>
<tr><td>Stormwater Credit and Incentive Programs
(Refer to Section 5.)</td><td>

A sustainable credit system would be developed with additional Stakeholder input.
Credits would be available to all customers and be based on the sizing criteria found in City's drainage criteria manual with additional credits likely offered for green infrastructure practices, rain barrels and public education.
A stormwater rebate program and in lieu of fee program may also be considered as incentives during implementation.

</td></tr>
<tr><td>Policy and Legislative Considerations
(Refer to Section 6.)</td><td>

Selection of IA as the billing unit established a "rational nexus" between the drainage services provided by the City and how they are funded.
The Funding Study was structured to reflect the following "fee for service" policy considerations:

Unlike a tax, it is also important that all properties with impervious surfaces pay, there should be no exemptions, only credits for reducing a property's burden on the stormwater system. As a result, important City Stakeholders who have historically not paid impact fees for police and fire, will still be expected to contribute to the Flood Protection and Water Quality fee program.
The overall cost of the program would be reasonably related to the services being provided,
Revenue from the fee would be accounted for separately in an enterprise fund for use by the stormwater program,
The tiered rate structure would be proportional to a property's contribution to stormwater runoff.

At the State level, stormwater management, including the creation and operation of a stormwater utility, is authorized by the definition of the term "works" in Arkansas Code 14-235-201.
There are currently two communities in Arkansas with drainage fees: Bryant and Hot Springs.

</td></tr>
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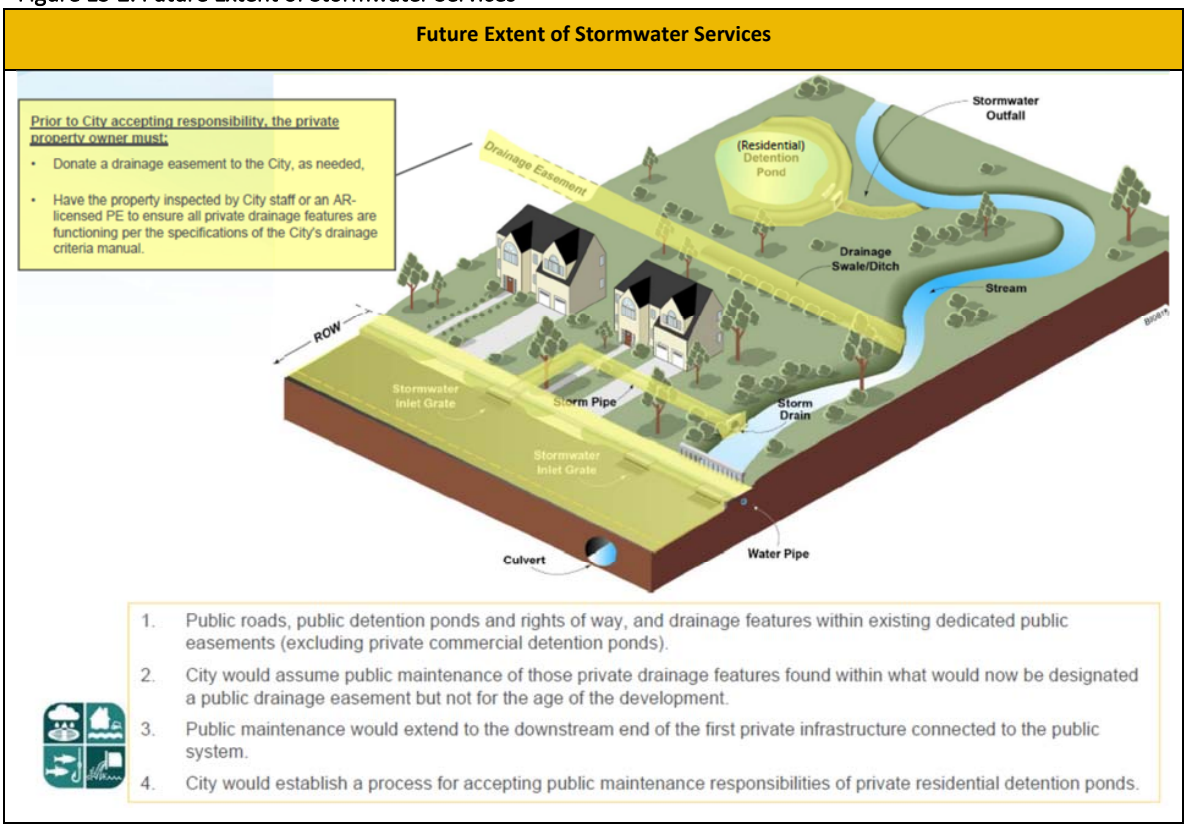
CURRENT STORMWATER SYSTEM AND COSTS

The City currently provides stormwater services within the public rights of way (ROWs), on City-owned property, and in those areas with public drainage easements. The City spends approximately $1.5 million annually on these services, of which $200,000 is for capital projects. Although the City does try to leverage grants and other funding sources, these activities are primarily supported by the Street Fund, General Fund, and Sales Tax Capital Improvements Fund. As such, these activities are competing for limited funds with the City's other transportation and operating needs on a year-to-year basis.

FUTURE STORMWATER SERVICES AND COSTS

A range of future service options was evaluated in the study. This included looking at different options for the EOS (where the City will work) and LOS options (what stormwater services the City would provide and at what frequency). Routine, proactive, and enhanced EOS/LOS options were studied to enable a comparison of benefits versus costs and consideration of how they relate to the City's financial capacity. Based on Stakeholder input, the City intends to pursue a future EOS option that makes the City's current drainage services more equitable by extending maintenance to older parts of Fayetteville while taking on public responsibility of select private infrastructure (residential detention ponds and private infrastructure connected to Public ROW) (**Figure ES-2**).

Figure ES-2. Future Extent of Stormwater Services



A 20-year capital program schedule and routine maintenance approach for the future LOS was selected to address the backlog of drainage projects and meet Flood Management and Water Quality Goals. This LOS option would provide for services such as:

- Cleaning/inspecting approximately 20% of the overall drainage system annually (approximately 400,000 LF)
- Replacing 2.5% of drainage system annually (approximately 8,500 LF)
- Performing maintenance on residential detention basins (110 total)

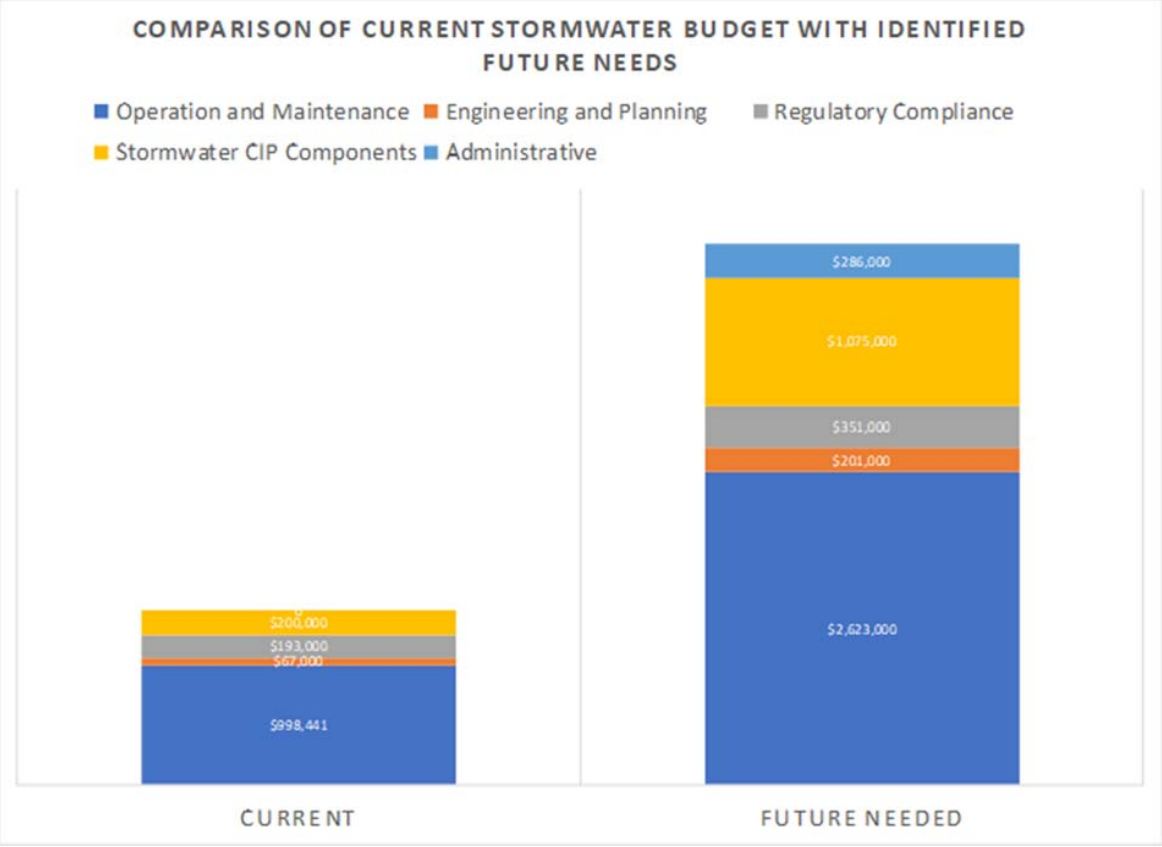
To do so, the City would spend $4.5 million annually in the future, of which $1.1 million would be on capital projects.

FUTURE CAPITAL COSTS

The 2018 Drainage Plan estimated that more than $15 million is needed to address the most urgent backlog of known capital projects (**Figure ES-3**). Because it can take several years for the City to save enough to complete a single drainage project at the current funding level, the 2019 Drainage Bond was passed as an Early Action Plan to start addressing these high priority capital projects.

However, additional funds are also needed to fully evaluate the City's watersheds and drainage system to identify the full extent of issues and identify cost-effective, sustainable flood management and water quality solutions. After removing the projects funded by the Drainage Bond, future CIP needs total $34.6 million over a 20-year period, or $1.1 million on an annual basis. This would fund drainage improvements, floodplain buyouts/elevation projects, projects identified by drainage studies and watershed improvement/stream restoration projects.

Figure ES-3. Comparison of Current Stormwater Budget with Identified Future Needs



Basis of Potential Fee For Future Services

Figure ES-4. Impervious Area

Impervious Area, or surfaces that do not absorb stormwater such as rooftops, driveways, and parking, would be the basis of the Flood Protection and Water Quality Fee.

IA was selected as the basis of a potential Flood Management and Water Quality fee. It is the most common basis for stormwater-related fees nationwide because using this metric ensures that customers pay according to the demand their property places on the City's stormwater system. IA causes an increase in the amount of water entering the drainage system, which can then increase the chance of flooding, stream bank erosion, and sedimentation. Runoff from IA also carries pollutants that can impact water quality, such as sediment, herbicides and pesticides, metals, and bacteria from pet waste. Therefore, IA is an equitable basis for the fee because larger developments, businesses, and homes, with corresponding parking lots and driveways, generate a greater need for stormwater services because of the greater amount of runoff that they generate (**Figure ES-4**).

A preliminary customer billing database was developed by the City's Geographic Information System (GIS) department to assess the funding potential of the 236 million SF of IA identified within its 25,690 parcels. A six-tier, customer-neutral rate structure based on IA was selected as the most equitable and cost-effective method of billing a Flood Management and Water Quality fee (**Table ES-2**).

Recommended Flood Management and Water Quality Fee Structure

A range of fee estimates was examined with and without the continuation of current funding from the Street and General Funds. Ultimately, a stand-alone program for future services was recommended that discontinues reliance on these sources for the City's drainage program. It would instead be administered from an enterprise fund sourced from the new Flood Management and Water Quality fee and the intermittent issuance of revenue bonds. The proposed rate structure shaded yellow in **Table ES-2** would be phased in over a 5-year period to achieve these monthly rates in Year 5. This would result in an $5.09 monthly fee for a 1,500-SF home with a two-car garage, a $67 monthly fee for a typical fast food restaurant, and a $250 monthly fee for a 75-unit apartment complex.

Table ES-2. Tiered Rate Structure

Tier Range (SF of Impervious Area)	Proposed Monthly Fee Without Current Funding [a.]	Monthly Fee with Current Funding [a.]
Tier 1 (0 and 2,000)	$2.31	$1.60
Tier 2 (2,000 and 3,500)	$5.09	$3.52
Tier 3 (3,500 and 5,000)	$7.86	$5.44
Tier 4 (5,000 and 6,500)	$10.64	$7.36
Tier 5 (6,500 and 8,000)	$13.41	$9.28
Tier 6 (over 8,000)	$1.85/1,000 SF	$1.28/1,000 SF

[a.] *If there is an onsite stormwater management facility, there could be a reduced fee based on a sustainable credit program established by the City.*

SUSTAINABLE CREDIT PROGRAM

A sustainable credit program would be developed with additional Stakeholder input if the City proceeds with implementation. A stormwater credit is an ongoing, renewable reduction in the Flood Management and Water Quality fee that is provided to property owners that implement practices onsite that reduce the stormwater runoff from their properties; all properties subject to the fee are eligible to apply for a fee credit. Credits would be offered to customers based on the sizing criteria found in City's drainage criteria manual with additional credits likely offered to property owners that implement green infrastructure practices on their properties or contribute substantially to public education related to the City's stormwater programs. Other incentives such as a stormwater rebate program and in lieu of fee program may also be considered during implementation.

POLICY BASIS OF A POTENTIAL FEE SERVICE PROGRAM

Development of this Funding Study was guided by establishing a "rational nexus" between the drainage services provided by the City and how the services are funded. User fees are based on the "polluter pays" principle; therefore, the size of the fee charged must be related to the burden a property places on the City's stormwater system. The Funding Study was structured to reflect the following "fee for service" policy considerations:

- All properties with impervious surfaces would pay; unlike a tax, there would be no exemptions only appropriate appeals and credits would be allowed (NAFSMA, 2006).
- The overall cost of the program would be reasonably related to the services being provided.
- Revenue from the fee would be accounted for separately in an enterprise fund for use by the stormwater program.
- The tiered rate structure would be proportional to a property's contribution to stormwater runoff.

Unlike a tax, it is also important that all properties with impervious surfaces pay, there should be no exemptions, only credits for reducing a property's burden on the stormwater system. As a result, important City Stakeholders who have historically not paid impact fees for police and fire, will still be expected to contribute to the Flood Protection and Water Quality fee program.

Contents

Section Page

Executive Summary ES-1

Acronyms and Abbreviations v

1 Introduction and Background 1-1
- 1.1 Strategic Vision and Goals 1-1
- 1.2 Background 1-2
  - 1.2.1 2010 Stormwater Utility Feasibility Study 1-3
  - 1.2.2 2018 Drainage Improvement Plan 1-3
  - 1.2.3 2019 Bond Program 1-4

2 Stakeholder Engagement and Education 2-1
- 2.1 Stakeholders 2-1
- 2.2 Funding Study Survey #1 2-3
- 2.3 Funding Study Survey #2 2-4

3 Stormwater Program Costs 3-1
- 3.1 Current Stormwater System and Services 3-1
  - 3.1.1 Current Stormwater Services 3-2
- 3.2 Current Stormwater Program Costs 3-4
- 3.3 Extent of Service and Level of Service Analysis 3-5
  - 3.3.1 Extent of Service 3-6
  - 3.3.2 Level of Service 3-10
  - 3.3.3 EOS/LOS Program Cost Estimates 3-13
- 3.4 Programmatic Stormwater Capital Improvement Plan 3-15
- 3.5 Final Future Program Costs by Option 3-17
- 3.6 Preliminary Organizational Structure 3-18

4 Financial Planning and Rate Analysis 4-1
- 4.1 Alternative Funding Sources 4-1
- 4.2 Basis of Proposed Fee Estimates 4-3
- 4.3 Financial Planning Assumptions 4-5
- 4.4 Recommended Fee Option 4-6
  - 4.4.1 Flood Protection and Water Quality Fee Examples 4-7

5 Stormwater Credit and Incentive Programs 5-1
- 5.1 Stormwater Credits 5-1
- 5.2 Other Incentive Programs 5-2

6 Policy and Legislative Considerations 6-1
- 6.1 Existing Stormwater Management Regulations 6-1
- 6.2 Policy Considerations 6-2
- 6.3 Legislative Implementation Steps 6-3
- 6.4 Arkansas Authorizing Legislation and Fee Programs 6-3

7 Next Steps Towards Implementation 7-1

8 References 8-1

Tables

ES-1 Flood Management and Water Quality Funding Study—Key Findings ES-2
ES-2 Tiered Rate Structure ES-6
1-1 Drivers for Flood Management and Water Quality Funding 1-2
1-2 2018 Capital Budget Projects 1-4
1-3 2019 Drainage Bond Phase I Projects 1-5
2-1 Key Stakeholders and Methods of Engagement 2-2
3-1 City of Fayetteville Stormwater System 3-1
3-2 Overview of Current City Drainage Levels of Service 3-2
3-3 Current Stormwater Program Costs 3-4
3-4 Overview of Initial Extent of Service and Level of Service Options 3-5
3-5 Extent of Service Options 3-6
3-6 Level of Service Options 3-11
3-7 Programmatic Costs by EOS/LOS Option 3-14
3-8 Stormwater CIP Program Elements by Option 3-15
3-9 Initial Capital Improvement Program Costs by Option 3-15
3-10 Final Capital Improvement Program Total Costs by Option 3-16
3-11 Final Future Program Costs by Option 3-17
4-1 Summary of Alternative Funding Sources 4-2
4-2 Parcel Count and Impervious Area by Customer Class 4-3
4-3 Comparison of Billing Unit Distribution by Customer Class 4-4
4-4 Proposed Tier Structure *(Applies to All Properties)* 4-5
4-5 Monthly Fee Estimates by Tier and Scenario 4-6
4-6 Staging of Recommended Fee Structure under Scenario 2 ($/1,000 SF/month) 4-6
4-7 Monthly Residential Fee Examples by Tier in Year 5 4-7
4-8 Fee Examples for Other Property Types 4-8
6-1 Surveyed Status of Billing and Collecting Stormwater Fees from Government Entities 6-2
6-2 Stormwater Fee Rates for Hot Springs, Arkansas 6-4
7-1 Next Steps Towards Implementation 7-1

Figures

ES-1 Survey #1 Results ES-1
ES-2 Future Extent of Stormwater Services ES-4
ES-3 Comparison of Current Stormwater Budget with Identified Future Needs ES-5
ES-4 Impervious Area ES-6
1-1 Historical Stakeholder Education Example 1-2
1-2 2017 Flooding Service Requests 1-3
1-3 2019 Drainage Bond Phase I Projects 1-6
2-1 Funding Study Business Card 2-1
2-2 Funding Study included in the Beaver Water District Speaker Series 2-3
2-3 Drainage Issues Identified in Survey #1 2-3
2-4 Survey #1 Results 2-4
2-5 Survey #1, Willing to pay a fee for additional services? 2-4
3-1 Current Extent of Service 3-7
3-2 Standard Extent of Service (Option A) 3-8
3-3 Proactive Extent of Service (Option A/B and B) 3-9
3-4 Enhanced Extent of Service (Option C) 3-10
3-5 Final Future Program Costs by Option 3-17
3-6 Potential Future Organizational Integration 3-19

Section Page

4-1 Distribution of Parcel Count versus Impervious Area....4-4
4-2 Recommended Monthly Flood Management and Water Quality Fee Structure in Year 5 4-7
4-3 Example of a Residence that falls within Tier 2 4-8
5-1 2014 Drainage Criteria Manual Sizing Criteria....5-1

Acronyms and Abbreviations

ADEQ	Arkansas Department of Environmental Quality
BMP	Best Management Practices
CIP	Capital Improvements Program
CWA	Clean Water Act
DCM	Drainage Criteria Manual
EOS	extent of service
ERU	equivalent residential unit
GIS	Geographic Information System
IA	impervious area
ID	Identification number
LF	linear foot (feet)
LID	low-impact development
LOS	level of service
MCM	Minimum Control Measures
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
O & M	operation and maintenance
ROW	right of way
SF	square foot (feet)
SWMP	Stormwater Management Plan
USGS	U.S. Geological Survey
WCRC	Watershed Conservation Resource Center

SECTION 1

Introduction and Background

The City of Fayetteville (the City) needs additional funding for drainage, flood management, and water quality improvements. The City continues to attract new residents and corresponding new development, while its existing stormwater system continues to age. At the same time, recent flooding demonstrated the need to proactively plan for storms of increasing intensity and frequency. A combination of more high-intensity rainfall and growth of hard surfaces have contributed to flooded streets and properties, among other drainage issues, which can ultimately impact the quality of its drinking water source, Beaver Lake. Other stormwater-related funding needs are driven by the need for compliance with evolving National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) regulations and the inherent operation and maintenance (O & M) requirements of aging infrastructure. As a result, the City embarked on this Flood Management and Water Quality Funding Study (Funding Study) to assess what services are currently provided by our drainage program and to compare the cost of these services with the cost of a more proactive approach to reduce flooding and pollutants that impact water quality.

1.1 Strategic Vision and Goals

The strategic vision for the Funding Study is taken from Fayetteville Vision 2050 (InVeritas, 2017), which seeks "*to support the City's guiding principles of well-maintained infrastructure and facilities, a financially sustainable City government and ecosystem preservation to meet its future vision of a vibrant and welcoming city that encourages diversity, creativity, and innovation while providing our citizens the opportunity to thrive*."

In addition to the goals found in the City's MS4 Stormwater Management Plan (SWMP) (based on the City of Fayetteville 2015 Stormwater Management Program for Permit ARR 040010), the Council provided feedback at the beginning of the Funding Study on the six primary drivers for additional Flood Management and Water Quality Funding. The City Council clearly noted that its intent was to identify a funding source that is fair and equitable, that helps prevent flooding, and that addresses erosion while improving water quality (**Table 1-1**).

These goals and the guiding principles from Vision 2050, listed as follows, were used to define the extent of service (EOS) and level of service (LOS) options:

1. A diverse growing local economy
2. A naturally beautiful city
3. Well-maintained city infrastructure
4. Greater ease of mobility – effective transportation system
5. Financially sustainable government
6. Quality public school system
7. Reputation as a safe community
8. A fun city in which to live
9. Pathways to prosperity
10. Education, research, and healthcare excellence
11. Ecosystem preservation

EOS goals are defined as "what infrastructure" and "where" the City is responsible for managing stormwater. LOS goals are defined as "how well" and "how often" stormwater infrastructure is to be managed.

Table 1-1. Drivers for Flood Management and Water Quality Funding

Drivers	MS4 SWMP Goals and Related Council Chartering Feedback
Education and Engagement	SWMP Goal: Educate citizens and businesses to understand the need to protect water quality
Equity and Fairness	• How to pay for it in a fair and legal way • Cost • Equitable to everyone
Flood Management	SWMP Goal: Protect citizens and property from flooding • Address topography, clogged ditches, and inadequate existing drainage • Prevent home flooding • "Get the water out"
Proactive and Sustainable	• Look to the future and plan for it • Have clear long term, value-added solution • Fund and implement CIP projects in a shorter time frame
Water Quality	SWMP Goal: Improve the quality of surface and sub-surface drainage • Need to address erosion • Water quality
Watershed Maintenance and Preservation	SWMP Goal: Preserve and maintain surface waters, wetlands and riparian areas • Need to address erosion • Water quality

CIP = Capital Improvements Program

1.2 Background

The City has a long history of educating and engaging its Stakeholders on the importance of sustainable drainage practices in creative ways (**Figure 1-1**). On April 29, 2017, a large rain event occurred in Fayetteville, Arkansas, causing flooding in much of the City and surrounding areas. In response to this event, many citizens contacted the City to report damages to structures, roadways, streams, and other damages. The City recorded the customer service requests and has used this record to identify over 100 drainage improvement and maintenance projects ranging in size and complexity (**Figure 1-2**). The 2018 Drainage Improvement Plan (Fayetteville, 2018a), described further in the following section, estimated that the cost of drainage projects is between $15 to $20 million, excluding O & M costs and projects that require additional flood studies.

Figure 1-1. Historical Stakeholder Education Example

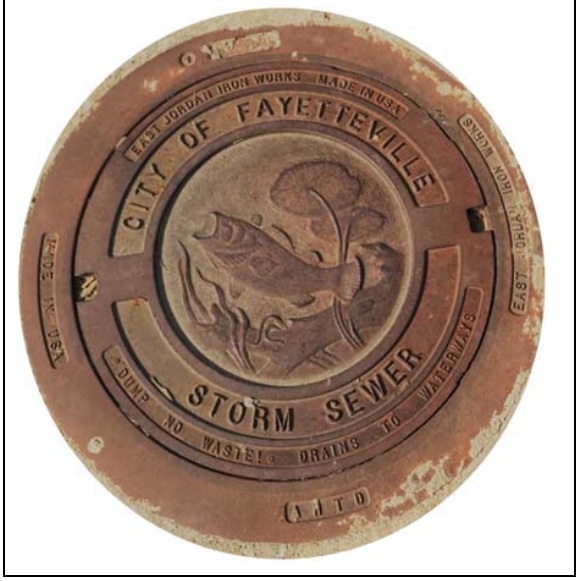
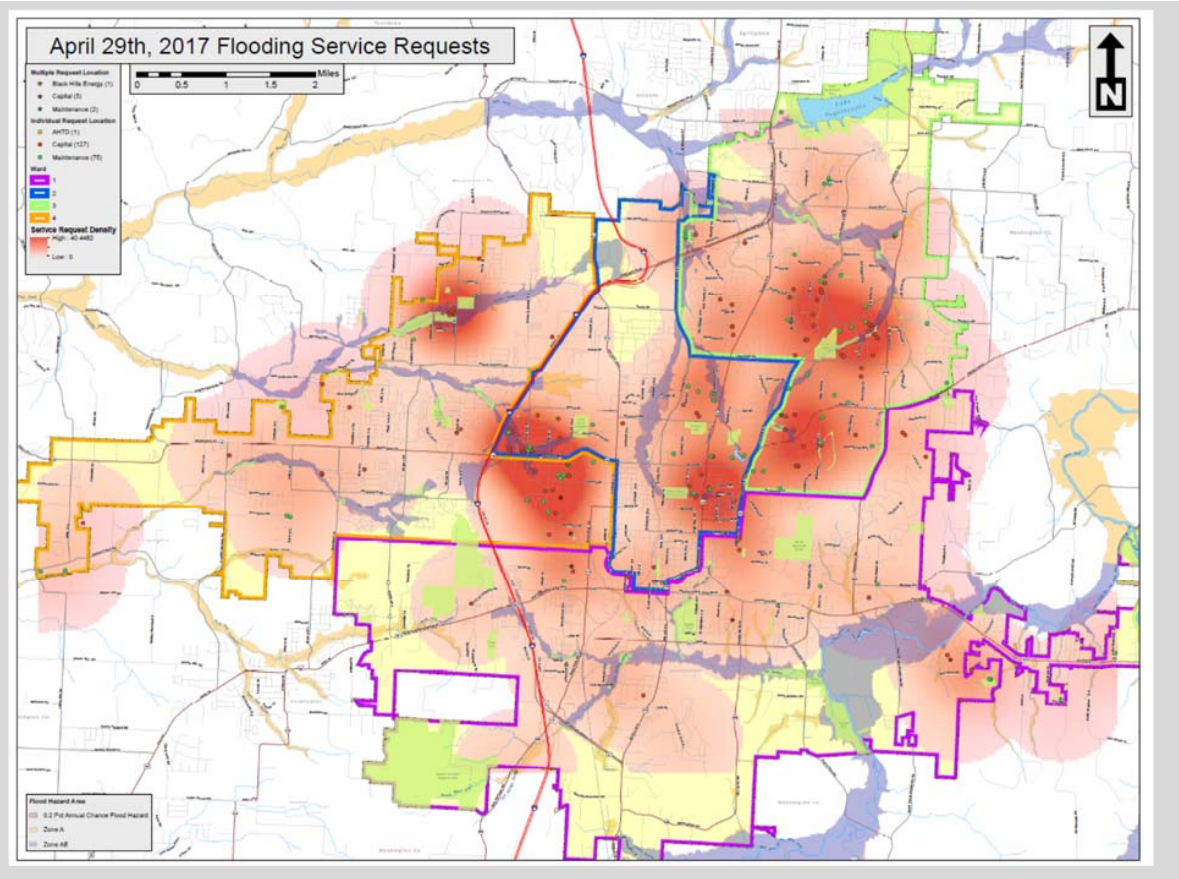


Figure 1-2. 2017 Flooding Service Requests



Source: 2018 Drainage Improvement Plan (Fayetteville, 2018a)

1.2.1 2010 Stormwater Utility Feasibility Study

This Funding Study builds on the *Stormwater Utility Feasibility Study* completed by the City in 2010. It was developed in response to the funding needs identified in the Nutrient Reduction Plan to reduce the load of total phosphorus into Beaver Lake as part of a 2006 agreement between the City and the Beaver Water District (Geosyntec, 2009). It found that a utility funded by a user fee would be beneficial as the City continues to grow and develop.

1.2.2 2018 Drainage Improvement Plan

To prioritize the many drainage projects within the City, a numeric ranking system was developed by City staff and approved by the City Council. The prioritization system ranks projects on a points system with scoring based on the number of structures flooded, the number of structures with water against or surrounding them, and other occurrences of property damage. The City prioritizes projects with flooding structures by giving a score of 5 points to each residence or commercial building with water intrusion. Water against or surrounding a structure is scored 2 points for each occurrence. Other property damage, such as damage to an outbuilding or fence, scores 1 point for each occurrence. For example, the ranking system would result in a score of 25 total points for a drainage project with two structures flooded (10 points), five structures with water against or surrounding them (10 points), and five other incidents of property damage (5 points). This sample drainage project would have a lower priority than projects that scored above 25 and a higher priority than projects with fewer than 25 points.

To begin planning for a capital improvement program, the City compiled a list of all potential improvement projects identified during the 2017 flooding incident. The cost of the projects, maintenance, and floodplain buyouts were combined with contingencies, contractor overhead and profit, and design fees to determine a total cost for the existing project demand. **Table 1-2** summarizes the projects implemented as part of the 2018 capital budget of $500,000; some projects were ultimately delayed due to budget overruns.

Table 1-2. 2018 Capital Budget Projects

Project Location	Estimated Cost	Status
Eastern Avenue Interim	$3,000	Complete
Park Avenue/Wilson Park	$33,000	Design Complete/ Transportation to Construct
Ramsey	$56,000	Design Complete/Bid 2020
Ferguson/Country Way	$ 427,624	Under Construction
Spyglass Hill	$172,621	Complete
Black Canyon	$500	Complete
South Emma Avenue	$7,000	Complete

1.2.3 2019 Bond Program

The City proposed an "Early Action Plan" to address the most significant stormwater projects in early 2019 as part of a bond program for flood mitigation and drainage improvement projects identified from the April 2017 flooding event. Funding for these Drainage Improvement Projects, approved at a level not to exceed $15,840,000, was passed by voters on April 9, 2019. The 2019 Bond Program will be implemented in two phases, Phase I (2019 to 2022) and Phase II (2022 to 2025). Eleven projects have been identified for Phase I (**Table 1-3** and **Figure 1-3**); **Table 1-3** lists each of the Phase I projects' location, estimated cost, and rank. The rank total is calculated using a point scoring system to prioritize projects that will have the greatest impact. The scoring system used for the bond program projects is the same scoring system described in **Section 1.2.1**. The estimated construction cost of each of the 11 projects is a planning-level estimate and does not include contingencies, contractor overhead and profit, and design. Although the Drainage Bond projects are generally focused on improvements larger than $200,000, smaller system upgrades such as North Palmer Avenue, and floodplain buyout efforts (on Linda Jo Place, for example) are also included.

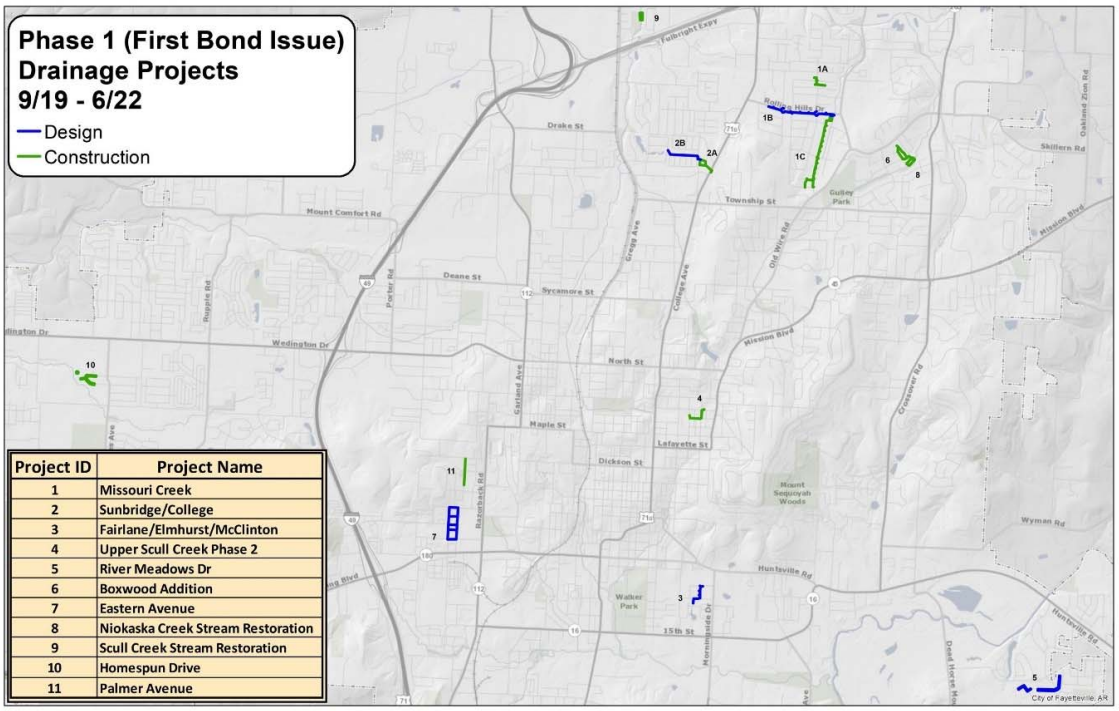
The drainage projects outlined in this section were identified as top priorities to kickstart improvement of the City's stormwater system. However, once these projects are completed, an ongoing and sustainable effort will be required to maintain a quality stormwater management system over time. This study for Flood Management and Water Quality Funding will evaluate the most equitable way to fund the remaining needs going forward. The total estimated cost of these drainage projects during Phase I is just under $9 million. With contingencies, contractors' overhead and profit, and the costs of design, the total cost of these Phase I and II projects will be much closer to the $15 million in capital funding from the proposed bond.

Table 1-3. 2019 Drainage Bond Phase I Projects

Project ID	Project Location	Estimated Cost	Project Type	Rank Total
1	Missouri Creek/Rolling Hills Phase I	$3,726,000	Large Drainage Improvement. To alleviate street flooding, property damage, and flooding in structures throughout the drainage basin	22
2	Sunbridge Drive/North College Avenue Area Phase I	$1,400,000	Large Drainage Improvement. Additional storm drainage capacity in order to alleviate flooding the intersection and structures near/at the intersection	16
3	Fairlane, Elmhurst, and McClinton Street Area Phase I	$247,500	Large Drainage Improvement. To alleviate flooding in several structures in the area from drainage that flows from the north	17
4	Upper Scull Creek, Part 2	$700,000	Large Drainage Improvement. Continuation of the Upper Scull Creek project to address neighborhood wide flooding of streets that is also causing damage to private property	10
5	South River Meadows Drive / Cherry Hills	$630,000	Drainage Improvements	8
6	Boxwood Addition Drainage Improvements	$632,500	Large Drainage Improvement. To alleviate the flooding of multiple structures and property damage by installation of new storm drain along Ashbrook Drive	15
7	Eastern Avenue, Part 2	$490,000	Large Drainage Improvement	25
8	Niokaska Creek Stream Restoration	$350,000	Streambank Stabilization. Stream restoration project that would address major erosion currently damaging private property	4
9	Scull Creek Stream Restoration	$350,000	Streambank Stabilization. Stream restoration project that would address major erosion currently damaging private property in the area	4
10	Homespun Drive	$210,000	Large Drainage Improvement. Upgrades of the existing storm drainage system to alleviate structure flooding	10
11	North Palmer Avenue	$161,000	Drainage Improvement. Upgrades of the existing storm drainage system to alleviate structure flooding near Hotz Park	5

ID = identification number

Figure 1-3. 2019 Drainage Bond Phase I Projects



After the $15,000,000 drainage bond is considered, the 2018 Drainage Plan identified a known remaining CIP demand of just over $3,000,000, not counting the large-scale floodplain issues that require further study. **Section 3.4** further describes the City's programmatic stormwater CIP.

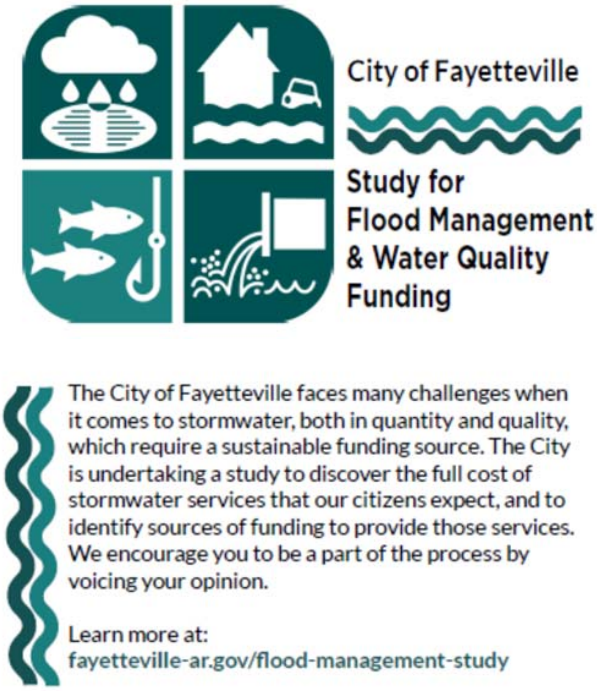
SECTION 2

Stakeholder Engagement and Education

2.1 Stakeholders

The City was cognizant that input from its many Stakeholders, listed in **Table 2-1**, would be vital to the City Council making an informed decision of how to fund its Flood Management and Water Quality needs. As a result, the Funding Study, with extensive support from the City's Communication Department, used multiple methods of engaging its Stakeholders. These included developing a business card for City leadership to use at community gatherings to raise awareness and direct Stakeholders to the project website (**Figure 2-1**).

Figure 2-1. Funding Study Business Card



The project website was populated with meeting presentations and other materials such as flyers and common acronyms (**Appendix A**), to keep Stakeholders up to date on the progress of the Funding Study. Speak Up Fayetteville, the City's new interactive engagement website, was also used to administer the two surveys described in this section as well as to allow Stakeholders to identify drainage issues that City staff might otherwise not be aware of.

Due to the multiple studies and bond referendum activities that were ongoing concurrent with the Funding Study, additional Stakeholder engagement and education efforts are planned, should the City decide to proceed with implementation of the recommended option.

Table 2-1. Key Stakeholders and Methods of Engagement

Key Stakeholders	Methods of Engagement
Mayor and Council Members	1. Direct coordination via in-person meetings, presenting the program, and answering potential questions from their constituencies 2. Special Committee Meetings 3. Public Meetings and presence at Community Events
City Staff: Representatives of Key Departments	1. Direct coordination via in-person meetings, presenting the program, and answering potential questions from their constituencies 2. Staff Technical Advisory Committee (STAC)
General Public	1. Stormwater Public Meetings: • September 20, 2018 (Ozark Natural Foods) • September 22, 2018 (Fayetteville Farmers' Market) • January 9, 2019 (Fayetteville Public Library) • January 10, 2019 (Arkansas Research & Technology Park) • January 17, 2019 (Boys & Girls Club) 2. Funding Study materials at other community events 3. Dedicated Funding Study website with presentations, acronyms and definitions, and Factsheets #1 and #2 4. Speak Up Fayetteville with Survey #1 and Survey #2 as well as a mapping tool to identify drainage needs 5. Direct mailing of outreach postcard to all residential utility account holders.
Stakeholders (Known Service Calls)	Citizens who contacted the City during the April 2017 storm event were provided direct notification of upcoming Funding Study events and opportunities to submit comments.
Key Stakeholders	Key Stakeholder such as the University of Arkansas, Residential Property Managers/Student Housing Providers, Chamber of Commerce members, and those holding business licenses were contacted using the following methods: 1. Direct notification of upcoming Funding Study events and opportunities to provide comment. 2. Additional e-mails to key Stakeholder groups as well as traditional mailings to reach those without e-mail/internet access. 3. Coordination via in-person meetings, presenting the program and answering potential questions.

As outlined in Table A-1 in Appendix A and illustrated by the photograph on **Figure 2-2**, over a dozen workshops and meetings were held with City staff, Council, and Stakeholders between June 2018 and August 2019 to:

- Establish a strategic vision and goals for the Funding Study
- Review the City's current stormwater system and services
- Identify future stormwater needs and the additional cost of providing these services
- Present options related to where the City provides drainage services (EOS) and what services the City provides and their frequency (LOS)
- Select impervious area (IA) by property as the basis for billing a six-tier, customer neutral rate structure as the most equitable method of linking a property's impact on the drainage system with the fee it is charged
- Review a range of Flood Management and Water Quality fee estimates by program options
- Review options for a sustainable credit program to reduce the fees of those owners willing to proactively manage their property's stormwater runoff

2.2 Funding Study Survey #1

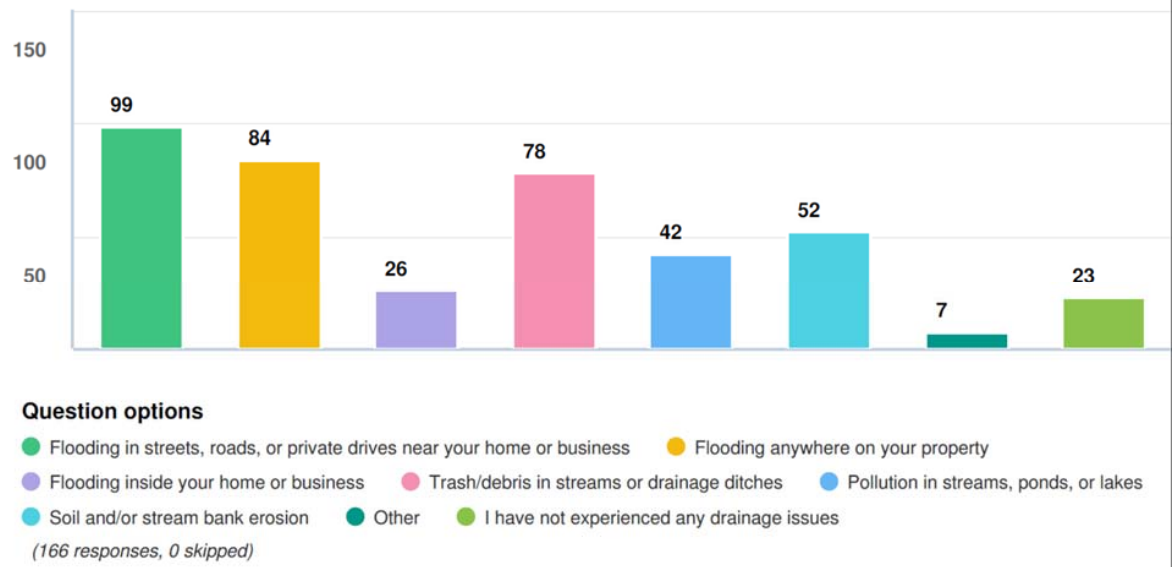
Stakeholder Survey #1 was open from August 8, 2018 to April 7, 2019, during which 166 responses were logged. Of these, 157 responses were from survey takers that live in the City, with approximately 85% of these owning their residence and 15% renting. During this time period, on average, there were:

- 554 total visits to the website
- A maximum of 49 visits per day
- 64 engaged visitors, meaning they filled out a survey or dropped pins on the map
- 196 informed visitors, meaning that they clicked on something, either viewing a page or downloading a document

Figure 2-2. Funding Study included in the Beaver Water District Speaker Series

Overall, the majority (82%) think drainage issues are either a major or minor problem in their area. **Figure 2-3** characterizes what type of drainage issues the Stakeholders are experiencing. Although Stakeholders could select more than one issue, flooding in streets, roads, or private drives; flooding on their property; and trash/debris in streams or drainage ditches each received over 75 responses.

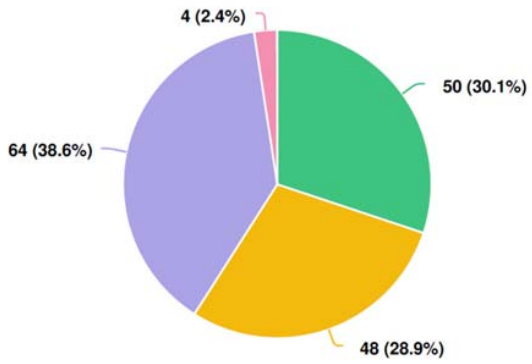
Figure 2-3. Drainage Issues Identified in Survey #1



To gauge the extent to which the City is aware of its overall drainage needs, Survey #1 asked how many of those surveyed were affected by the April 2017 storm. Of the 166 respondents, 76 were affected; however, only 18 (23%) logged a service request with City staff. To determine whether the City would have legal access to fix drainage issues when a service request is filed, survey takers were asked whether there was an existing public drainage easement on their property. **Figure 2-4** illustrates that 30% do have a drainage easement on their property while 39% did not know, indicating that additional Stakeholder education is needed on public easements. Almost half of those responding noted that drainage issues in their part of Fayetteville were a major issue while 33% thought they were a minor issue (**Figure 2-4**).

Figure 2-4. Survey #1 Results

Public Drainage Easement on Property?

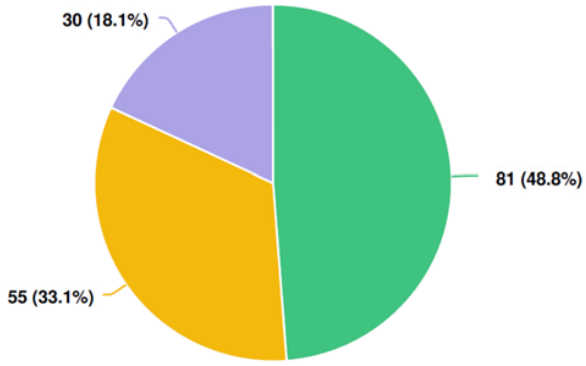


Question options

Yes No I don't know Does not apply

Optional question (166 responses, 0 skipped)

How serious are the drainage issues in your area of Fayetteville?



Question options

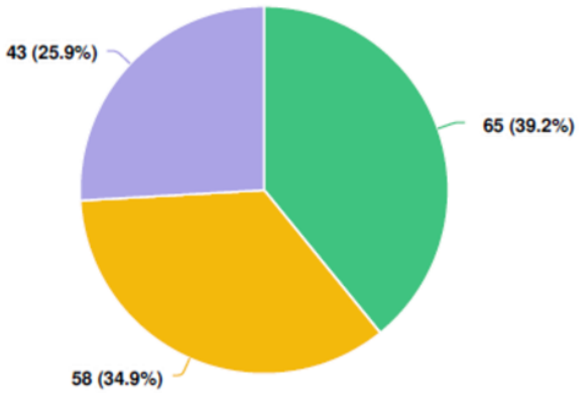
Major problem Minor problem Not a problem

(166 responses, 0 skipped)

Survey #1 also asked Stakeholders about their willingness to pay a Flood Management and Water Quality fee based on the amount of impervious surface (**Figure 2-5**). Sixty-five (39%) responded that they were willing to pay a fee while fifty-eight, 35%, said they were not, and 25% were undecided. Survey #1 provided an open-ended question; a sample of these responses included the following:

- Comments encouraging credits for low impact/green infrastructure measures, such as preservation of drainage onsite through bioswales, rain gardens, or rainwater collection for metered irrigation
- Comments regarding affordability and equity
- Willingness to pay for long-term, forward-thinking, sustainable solutions, not more ditches/culverts/higher curbs, and similar; instead, solutions such as more permeable surfaces, more native vegetation, and education

Figure 2-5. Survey #1, Willing to pay a fee for additional services?



Question options

Yes No Maybe

(166 responses, 0 skipped)

2.3 Funding Study Survey #2

Funding Study Survey #2 was posted on July 11, 2019 and will be open through the end of the September 2019. It solicits the City's businesses' and residents' opinions on the reasonableness of the proposed rates needed to proactively fund the management of flooding and water quality issues.

SECTION 3

Stormwater Program Costs

This section summarizes the cost of the City's current stormwater program and the potential programmatic costs of future program options related to EOS, where the City will work, and LOS, what stormwater services the City would provide and at what frequency. To do so, it first characterizes the City's current stormwater system and then describes the range of EOS/LOS options developed to allow the City to characterize potential tradeoffs between cost of these services and its financial capacity (**Section 4**). Understanding the required costs associated with stormwater program implementation is critical to identifying required revenue and the associated financial management strategy.

3.1 Current Stormwater System and Services

Currently, the City focuses its limited stormwater management funding on complying with the City's MS4 NPDES permit and responding to emergency repairs. The City is only responsible for operating and maintaining the public portion of its municipal stormwater system.

Table 3-1. City of Fayetteville Stormwater System

	Total		Responsibility		
	Feature Count	**Miles**	**City**	**Private/ Other**	**City % of Total**
Area of City of Fayetteville	--	55 square miles	--	--	--
Rivers and Creeks draining > 100 acres	--	101	--	--	--
Highways	--	91	X	X	
City Streets	--	386	X	--	--
Private Streets	--	110	--	X	--
Bridges	50	--	X	X	--
Detention Ponds	286	--	12	274	4%
Outfall	1,494	--	643	851	43%

Maintenance of the City's stormwater assets is primarily done in response to an emergency or to customer calls complaining about a stormwater management issue (typically associated with localized or nuisance flooding). The City relies on its Transportation Division to perform street sweeping and the cleaning out of curb inlets to remove sediment and debris that could potentially clog storm drains. They manage roadside ditches and continually clean and reshape the ditches to maintain positive drainage. **Table 3-1** summarizes the City's stormwater assets and provides information on some relevant contributing aspects of the City, such as the rivers and creeks or streets. Various stormwater assets are tabulated based on type, and the responsibility for both City features and stormwater assets is included. The quantity of various assets and the responsibility for them affects both the current and future stormwater program costs (**Sections 3.2** through **3.4**).

The City's stormwater assets also include:

- 257 miles of conduit pipes, of which 167 miles are in drainage easements or ROWs
- 11 miles of box culvert, of which 7 miles are in drainage easements or ROWs
- 238 miles of channel, of which 114 miles are in drainage easements or ROWs
- 7,921 inlets and 794 junctions, also within easements or ROWs

3.1.1 Current Stormwater Services

The City currently provides the stormwater services summarized by program area in **Table 3-2** for the public assets listed in **Table 3-1**. As noted previously, the City is not responsible for the 110 miles of private streets and ROWs (which include drainage infrastructure), nor does it maintain the 274 private detention ponds that are not part of the public drainage system.

Table 3-2. Overview of Current City Drainage Levels of Service

Program Area	Current City Services
Maintenance of Public Drainage System *(Public Roads, ROWs, and Infrastructure with Easements)*	The City is responsible for 43% of its outfalls (643 of 1,484 total), 48% of channels (114 miles of 238 total) and 386 miles of streets/ROWs.
Maintenance of Private Drainage System *(Private Roads and Infrastructure)*	Not applicable. There are approximately 110 miles of private streets in Fayetteville.
Maintenance of BMPs (*Detention Ponds)*	Fayetteville is responsible for maintaining the 12 public (of 286 total) detention ponds within the City.
Maintenance of City Streamside Corridor	There are currently no funding or corresponding public easements to allow the City to maintain most of its City Streamside Corridor. The City is currently inventorying and assessing the 100 miles of rivers and creeks draining more than 100 acres in Fayetteville as part of a multi-year project, as funding allows.
Capital Improvement Program Projects	Approximately $200,000 is currently budgeted annually for CIP projects. The 2019 Drainage Bond approved by voters provides for an Early Action Plan to address $15 million of the City's known $17.3 million backlog of projects.
Program Administration *(Plan Reviews and Inspections)*	Drainage/stormwater plan reviews and inspections are addressed by a mix of City staff located in multiple departments. These services are funded via multiple sources (impact fees and tax revenue).
Stream Restoration and Stabilization Projects	As funding allows, the City has started inventorying and assessing streams on a watershed basis to prioritize restoration and stabilization activities.
NPDES MS4 Program Administration	Phase II Small Community responsible for dry weather screening of all of the City's existing stormwater outfalls within a 5-year period, monthly construction site stormwater runoff control (erosion and sediment control) inspections, post-construction stormwater plan reviews (DCM and similar), post-construction stormwater plan "as built" inspections, and municipal maintenance/good housekeeping inspections.
Water Quality Monitoring	The City currently funds two USGS Stations.

BMP = Best Management Practice
DCM = Drainage Criteria Manual
USGS = U.S. Geological Society

The City's Engineering Department is responsible for the following flood management and water quality-related functions and services:

- NPDES MS4 permit compliance
- Floodplain administration
- Streamside protection
- Stormwater quality and nutrient reduction
- Design, bid, and construction management of drainage improvement projects

As an operator under the NPDES ARR040000 MS4 general permit, the City must comply with all permit conditions. Violation of any condition of the general permit constitutes a violation of the Arkansas Water and Air Pollution Control Act and subjects the discharger to the penalties specified therein. The Arkansas Department of Environmental Quality (ADEQ) issued a revised five-year permit, effective August 1, 2019, in order to renew general permit coverage for Phase II MS4s like Fayetteville. The level of effort and cost of ensuring compliance continues to increase with each subsequent permit renewal. For example, ADEQ has implemented a two-phase permit in order to be compliant with the federal general permit remand rule[1]. This makes the City's associated SWMP an integral and enforceable part of its permit, requiring public notice in the event of major modifications. As part of the recent MS4 permit renewal, ADEQ also made over 30 changes to the permit conditions that the City must integrate to ensure compliance going forward[2].

The City's NPDES MS4 permit conditions include six Minimum Control Measures (MCMs). The MCMs provide a framework for operators to design their programs to meet the three goals of reducing discharge of pollutants, protecting water quality, and satisfying the appropriate water quality requirements of the Clean Water Act (CWA). The six MCMs, or program elements, are as follows:

- Public Education and Outreach on Stormwater Impacts
- Public Involvement/Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

Public education and outreach on stormwater impacts includes distributing educational materials and performing outreach to inform citizens about the impacts of polluted stormwater runoff on water quality. Public involvement/participation takes this a step farther by providing opportunities for citizens to participate in program development and implementation. Illicit discharge detection and elimination deals with both systematic and episodic discharges and includes public outreach as citizens should be informed of the hazards associated with illegal and improper disposal of waste. Construction site runoff control involves developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb 1 or more acres of land. Post-construction runoff control continues this process by implementing community-appropriate BMPs to reduce the impact of developments over their lifespan. Pollution prevention from municipal operations includes staff training on pollution prevention measures and it is the City's stated intention to "lead by example" and use this MCM to model excellent pollution control practices for Fayetteville citizens and businesses.

The City is responsible for reviewing all new development plans for compliance with the City of Fayetteville Code of Ordinances and other applicable regulations. These regulations include, but are not limited to, the City of Fayetteville DCM and the flood damage prevention code. The City participates in the National Flood Insurance Program and has adopted a flood prevention ordinance in order to help protect residents and comply with the program.

[1] For more information, see https://www.epa.gov/npdes/npdes-stormwater-final-ms4-general-permit-remand-rule for documents associated with the final MS4 general permit remand rule.

[2] See Section 1.10 of https://www.adeq.state.ar.us/water/permits/npdes/stormwater/pdfs/ms4/arr040000-final-fact-sheet-20190801.pdf.

Streamside protection, stormwater quality, and nutrient reduction are also handled by the City's engineering department. A streamside protection ordinance is in effect and the City published a Streamside Protection BMP Manual to assist the public in complying with this ordinance. They also partner with the Watershed Conservation Resource Center (WCRC) and perform stream restoration projects.

3.2 Current Stormwater Program Costs

The City currently spends approximately $1.3 million to $1.5 million annually on water quality and flood management activities (**Table 3-3**). Although the City does try to leverage grants and other sources, these activities are primarily funded by the Street Fund, General Fund, and Sales Tax Capital Improvements Fund. The Street Fund is used to maintain and repair City streets, ROWs, drainage, traffic control and maintenance, and City-owned sidewalks; portions are also allocated for public transit to Razorback and Ozark Transit systems. The Street Fund is primarily financed by turnback revenues received from the State of Arkansas and turnback monies received from the County Road Millage Tax, as well as a temporary gasoline tax levied by the State. The General Fund, the City's major operating fund, is sourced from over 10 different taxes, fees, and services. Over 80% of the revenue supporting the General Fund comes from the City's Share of county sales tax, the city sales tax, franchise fees, and the property tax millage (Fayetteville, 2018b). The Sales Tax Capital Improvements Fund is sourced from the City's sales and use taxes and is used for acquisition and improvement projects as well as equipment additions and replacements that are included in the City's 5-year CIP. Contributions to the stormwater program come from various departments including Engineering, Parks and Recreation, Transportation Division, and Water and Sewer.

Table 3-3. Current Stormwater Program Costs

Department and Cost Center	2017
Engineering	***$460,000***
Non-project-related labor (Floodplain Administration, Streamside Protection, and similar)	$100,000
Stormwater Quality Management and Nutrient Reduction	$160,000
Drainage Projects/Other	$200,000
Parks & Recreation	**$25,000**
Maintenance of public owned detention and stormwater quality features	$25,000
Transportation Division	**$959,682**
Drainage	$697,101
Street Sweeping	$262,581
Water & Sewer	**$13,759**
Staffing - Inspections	$1,207
Dam Inspection and Maintenance	$12,552
Grand Total	***$1,458,441***

Note: Drainage capital increased from $200,000 annually to $500,000 annually in 2018 for Engineering.

The current costs of the City's stormwater program, as of 2017, are summarized in **Table 3-3**. The City's Engineering Department is also responsible for the design, bid, and construction management of drainage improvement projects throughout the City. Projects are generally classified as small, medium, or large based on their cost. Small drainage projects are defined as less than $500,000; some examples include culvert replacement or size increase, curb or inlet construction, increasing inlet capacity, and creation of ditches or swales to divert runoff. Medium drainage projects are similar project types but are larger in scope and range from $500,000 to $1 million. Large drainage projects are those that would be

over $1 million and be implemented throughout entire watersheds. Projects this size have been considered previously but were deferred due to cost considerations.

Maintenance is a combined effort between the City and the property owners. The Parks and Recreation Department maintains the 12 detention ponds as well as the parks in which many low-impact development (LID) features have been installed. However, the bulk of maintenance efforts for stormwater assets are addressed by the Transportation Services Department. The City maintains all public facilities, including above and below ground storm drainage. When needed, the City will address waterways located within the city limits by removing debris, sediments and other items that may inhibit effective conveyance of stormwater runoff. However, in many instances this maintenance activity dependent on the existence of a drainage easement surrounding the structures and waterways in question. If no drainage easement exists or if the portion of the storm drainage system is private, it becomes the responsibility of the property owner or owners to maintain that portion of the system. This is also applicable for stormwater detention basins as the maintenance responsibility is placed on the property owner or in some instances the Property Owner's Association. The Water and Sewer Department is responsible for inspections including dam inspection and maintenance on the three major lakes in Fayetteville (Lakes Fayetteville, Sequoyah, and Wilson).

3.3 Extent of Service and Level of Service Analysis

Future stormwater program costs are based on a range of options for both EOS and LOS (**Table 3-4**). The EOS defines where the City will work or, in other words, what drainage infrastructure the City will be responsible for. The LOS defines what stormwater services the City would provide and at what frequency. These services generally fall into categories such as O & M, regulatory compliance, engineering and planning, and capital improvement planning. Three initial options were provided for both EOS and LOS—Routine, Proactive, and Enhanced—ranging from the least to the most involved. Having a range of potential EOS and LOS options will allow the City to characterize potential tradeoffs between the cost of these services and its financial capacity. Programmatic cost estimates are tabulated for these options in later sections while a blended option of Standard/Proactive was added later in the Funding Study.

Table 3-4. Overview of Initial Extent of Service and Level of Service Options

Likely Cost	Option	Time Frame[a.]	Purpose of Option
--	Current	--	Characterize existing conditions, that is, what drainage services the City provides and where for the current program costs
$	Standard	20 years	Characterize the cost to address unintended inequities in the City's current drainage services
$$$	Proactive	10 years	Characterize the cost of additional public responsibility of private infrastructure and to estimate the cost of additional unfunded regulatory compliance if the City continues to grow in population
$$$$$	Enhanced	5 years	Characterize the cost of additional public responsibility of private infrastructure. Estimate the cost of additional unfunded regulatory compliance if the City continues to grow in population

[a.] Time frame to address backlog of drainage projects and meet Flood Management and Water Quality goals

Financial planning and rate analysis, described in **Section 4**, follows an iterative process to help the City identify the right balance of stormwater services, given its financial capacity and Stakeholder priorities.

3.3.1 Extent of Service

Although the current EOS has been implemented fairly consistently, some areas of the City do not have drainage easements simply due to the age of the development, while others are adjacent to larger waterways or drainage conveyances that are not realistic to maintain privately. **Table 3-5** outlines the City service areas and dictates which service areas would be addressed by each EOS.

Table 3-5. Extent of Service Options

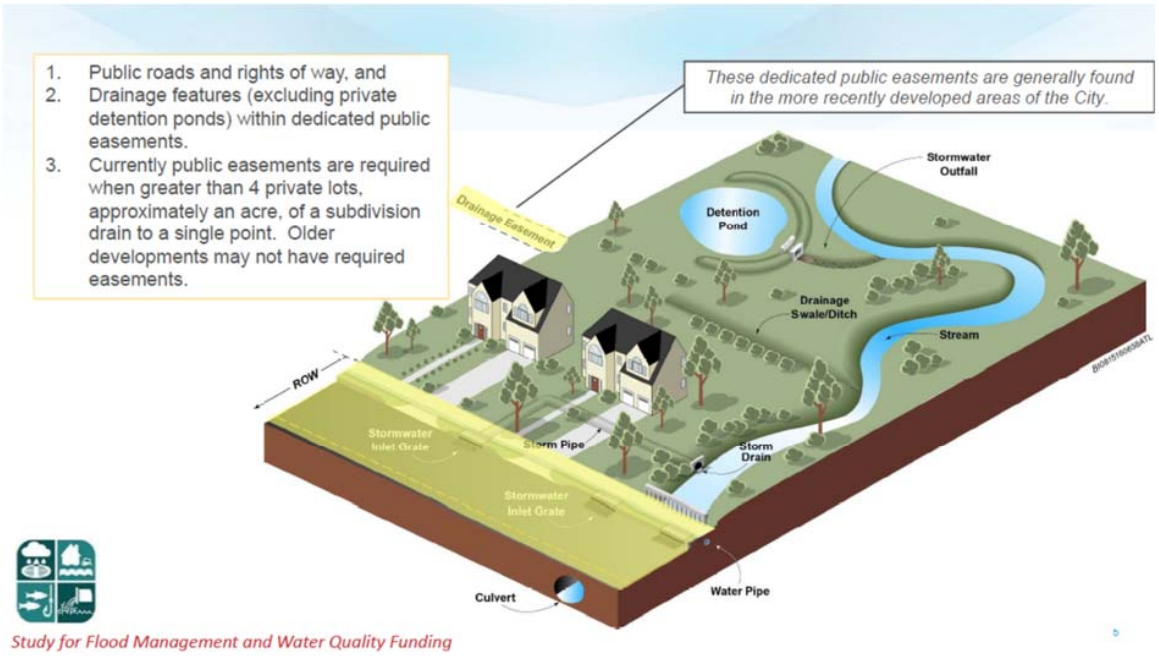
Service Area	Current	Standard (Option A)	Proactive (Option A/B and B)	Enhanced (Option C)
Public Roads and ROW	X	X	X	X
Private infrastructure connected to Public ROW[a.]			X	X
Drainage Easements				
Existing	X	X	X	X
Assume Easements Equitably (City-wide)		X	X	X
Detention Ponds[b.]				
Public	X	X	X	X
Residential			X	X
Non-Residential				X
City Streamside Corridor[c.]				X

[a.] Public maintenance would extend to the downstream end of the first private infrastructure connected to the ROW.
[b.] Donated easement and a brief report certified by a licensed Arkansas Professional Engineer demonstrating that all private drainage features are functioning according to the specifications of the City's DCM prior to being accepted by City.
[c.] A corridor representing a 10-foot buffer from the top of each waterway's banks downstream of the City's 100-acre headwater for streamside protection areas.

3.3.1.1 Current Extent of Service

Figure 3-1 illustrates existing conditions in which the City maintains public roads and ROWs as well as drainage features (excluding detention ponds) within dedicated easements. These dedicated public easements are generally found in the more recently developed areas of the City.

Figure 3-1. Current Extent of Service

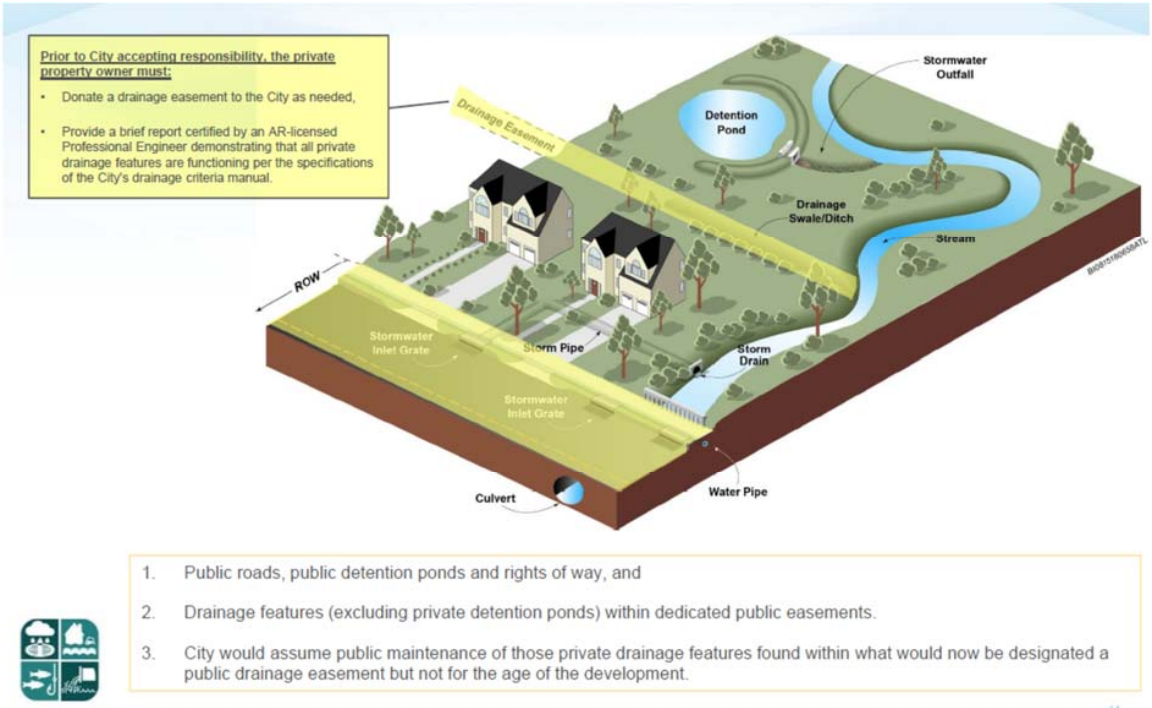


3.3.1.2 Standard Extent of Service (Option A)

Current EOS plus public maintenance of those private drainage features found within what would now be designated a public drainage easement but not for the age of the development (**Figure 3-2**). Private property owners would be expected to:

- Donate these new drainage easements to the City on an as needed basis
- Provide a brief report certified by a licensed Arkansas Professional Engineer demonstrating that all private drainage features are functioning per the specifications of the City's drainage criteria manual prior to being accepted. Alternately, should the City decide to proceed with implementation, the City may assess the cost and legal implications of allowing City staff to perform these certifications for private property owners.

Figure 3-2. Standard Extent of Service (Option A)

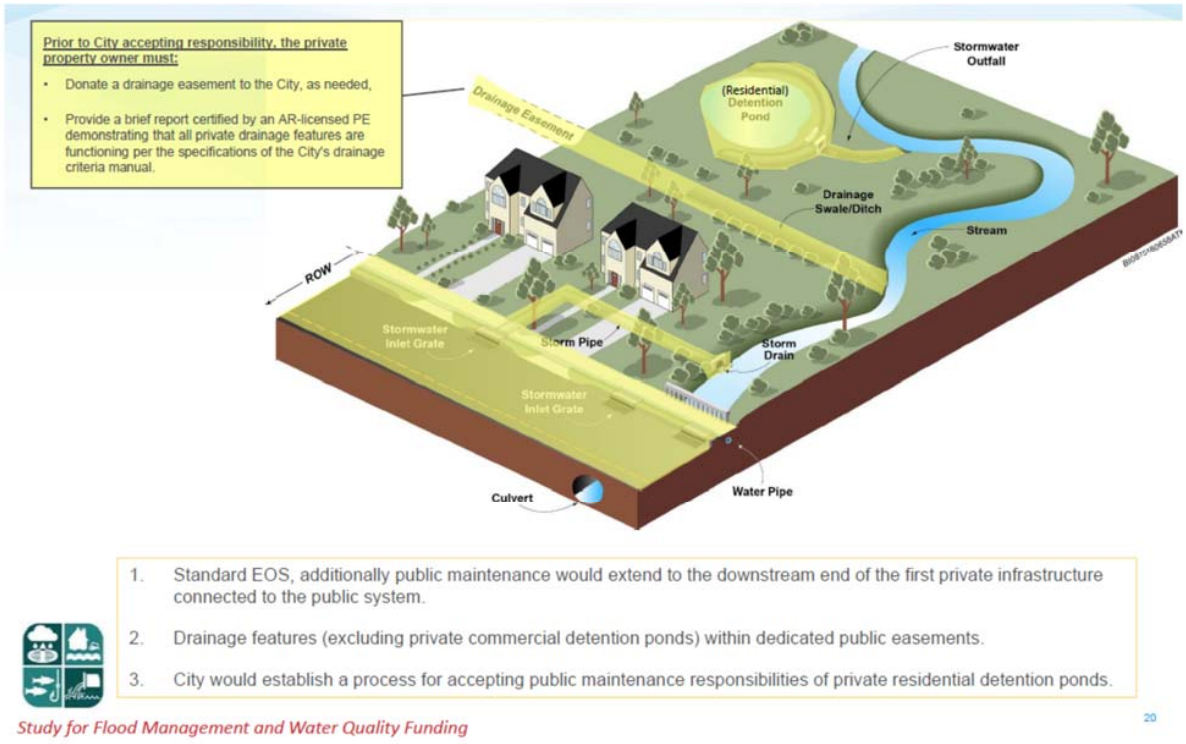


1. Public roads, public detention ponds and rights of way, and
2. Drainage features (excluding private detention ponds) within dedicated public easements.
3. City would assume public maintenance of those private drainage features found within what would now be designated a public drainage easement but not for the age of the development.

3.3.1.3 Proactive Extent of Service (Option A/B and B)

The proactive EOS alternative, referred to later as "Option A/B and B," includes the standard EOS plus the City would establish a process for accepting public maintenance responsibilities of private residential detention ponds as needed (**Figure 3-3**). Private property owners would be held to the same expectations as the standard EOS.

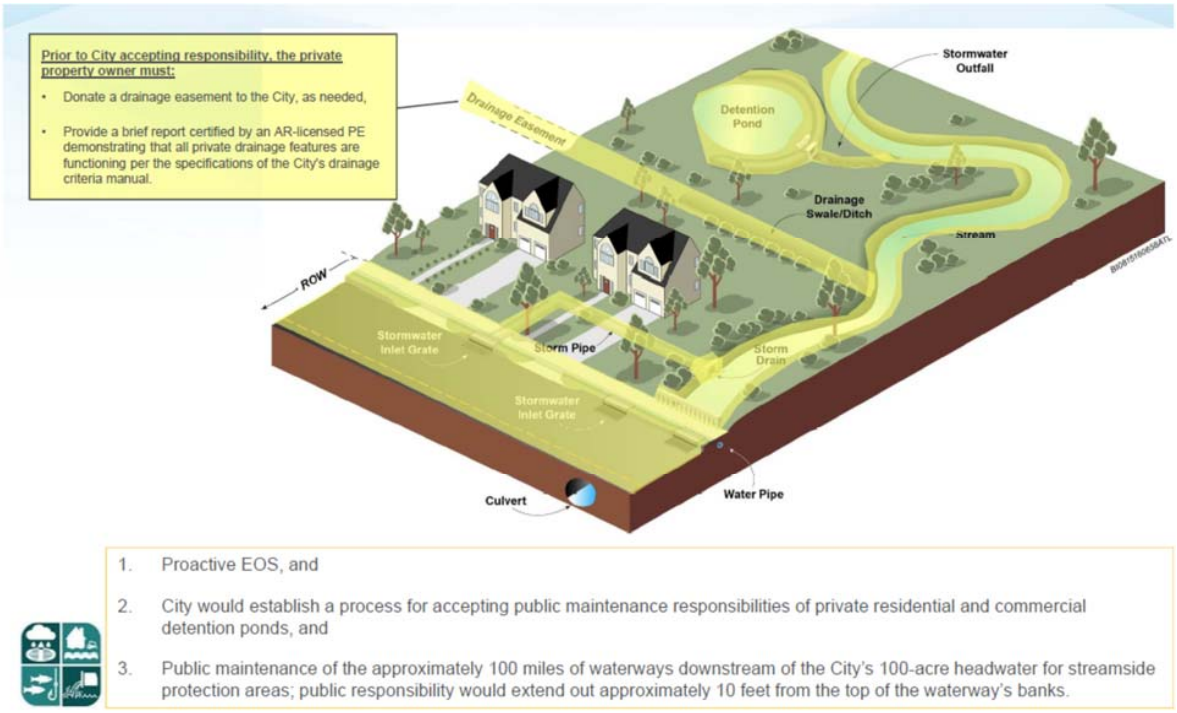
Figure 3-3. Proactive Extent of Service (Option A/B and B)



3.3.1.4 Enhanced Extent of Service (Option C)

Includes the proactive EOS described previously, plus public maintenance of commercial detention ponds and those waterways downstream of the City's 100-acre headwater for streamside protection areas with public responsibility extending out approximately 10 feet from the top of the waterway's banks (**Figure 3-4**). Private property owners would be held to the same expectations as proactive EOS.

Figure 3-4. Enhanced Extent of Service (Option C)



3.3.2 Level of Service

The LOS dictates what stormwater services would be provided by the City and at what frequency. These services, listed by option in **Table 3-6**, are generally distributed among four categories: O & M, regulatory compliance, engineering and planning, and stormwater CIP. After additional Stakeholder feedback, Option A/B was added to characterize the financial impacts of the Option B EOS with the Option A "standard" frequency of maintenance and time frame for CIP.

3.3.2.1 Current Level of Service

Table 3-6 outlines the stormwater services provided for a current LOS. These are the services that are currently provided by the City. O & M services are primarily reactionary, drainage calls are responded to and resolved, and public detention ponds are inspected and maintained at a minimum level. The current LOS does not cover inspection and maintenance of private residential or commercial ponds. Regulatory compliance actions include administration of the NPDES MS4 program as well as water quality monitoring and inspections that meet regulatory minimums. Program elements related to engineering and planning are limited for the current LOS (**Table 3-6**). Dam safety studies are performed, as are a limited number of drainage studies, stream and watershed assessments, and floodplain studies. Low impact development retrofits are not addressed at this LOS. Capital improvement projects are limited by

funding. At this LOS, a limited number of drainage improvements, watershed improvements, and dam safety upgrades are performed but many larger stormwater improvement projects are not feasible.

Table 3-6. Level of Service Options

Program Elements	Current	Standard (Options A and A/B)	Proactive (Option B)	Enhanced (Option C)
Operations and Maintenance[a.]				
Respond to Drainage Calls	X[b.]	X	X	X
Provide Resolution to Drainage Call (No Action, Routine Fix, CIP Fix, or Drainage Study)	X[b.]	45 days	30 days	2 weeks
Inspection and Routine Maintenance of Public Detention Ponds	X[c.]	Annually	Annually	Annually
Inspection and Routine Maintenance of Private Residential Ponds	--	15% Annually	25% Annually	50% Annually
Inspection and Routine Maintenance of Private Commercial Detention Ponds	--	--	--	25% Annually
Inspection and Routine Maintenance of Public Drainage System/MS4	Reactive[c.]	20% Annually	25% Annually	50% Annually
Regulatory Compliance				
NPDES MS4 Program Administration	Phase II Small	Phase II Small	Phase II Medium	Phase II Medium
Water Quality Monitoring	Two USGS Stations	Two USGS Stations	Four USGS Stations[d.]	Four USGS Stations[d.]
Dry Weather screening of existing stormwater outfalls (Compliance goal = Screen all outfalls every 5 years)	20% Annually	20% Annually	50% Annually	100% Annually
Construction Site Stormwater Runoff Control (Erosion and Sedimentation Control) Inspections	Monthly	Monthly	Biweekly	Biweekly
Post Construction Stormwater Plan Reviews (DCM and similar)	X	X	X	X
Post Construction Stormwater Plan "As Built" Inspection	X	X	X	X
Dam Safety Inspections	X[c.]	X	X	X
Municipal Maintenance/Good Housekeeping Inspections	Annually[c.]	Annually	Two per Year	Two per Year

Table 3-6. Level of Service Options

Program Elements	Current	Standard (Options A and A/B)	Proactive (Option B)	Enhanced (Option C)
Engineering and Planning				
Drainage Studies	Limited	Prioritize basins, 10% of City studied annually	Prioritize basins, 25% of City studied annually	City-wide Drainage Study
Stream and Watershed Assessments	Limited	Prioritize basins, 10% of City studied annually	Prioritize basins, 25% of City studied annually	City-wide Watershed Assessment, including Stream Condition Assessment
Floodplain Studies	Limited	As Needed	As Needed	As Needed
LID Retrofits	--	Limited	As Redevelopment Occurs	Prioritize and implement retrofits based on Drainage Studies
Dam Safety Studies	X	X	X	X
Stormwater CIP Components				
CIP Project Completion Rate	Limited	20 Year	10 Year [e.]	5 Year
Potential CIP Project Types:				
Drainage Improvements/Retrofits (Pipe Replacements, Neighborhood Systems)	Limited	X	X	X
Floodplain Buyouts or Improvement/Elevation Projects	--	X	X	X
Large-scale regional detention projects	--	--	X	X
Watershed Improvement, that is, Stream Restoration and Stabilization Projects	Limited	--	X	X
Dam Safety Upgrades	Limited	--	--	X
Detention Pond Retrofits	--	--	X	X

[a.] O & M to address both the drainage and water quality criteria of the City DCM
[b.] Where public drainage easements exist to legally allow the City to work on private property
[c.] Meeting regulatory minimum, frequency limited by current City resources (funding and staff)
[d.] Additional monitoring points may be required under a Phase II Medium permit and/or due to Total Maximum Daily Load monitoring of the Illinois River.
[e.] After additional analysis of potential costs and input from City Stakeholders, the CIP completion rate was later increased modestly for Option B from 10 years to the 15 years

3.3.2.2 Future Level of Service Options

Three future LOS options were considered including Options A and A/B (standard), Option B (proactive), and Option C (enhanced). Each LOS alternative provides an increase to the baseline LOS currently provided, see **Table 3-6**. The frequency of several program elements would remain constant for each LOS. These include responding to drainage calls, post-construction plan reviews and "as built" inspections, and dam safety inspections and studies. However, the LOS options provide a framework for program elements to be transitioned from reactionary to scheduled. O & M activities could become more preventive in nature and greater numbers of water quality control efforts could be implemented. **Table 3-6** illustrates that increases in LOS would allow the City's Engineering and Planning Departments to play a much larger role in the stormwater management program. Currently, studies of drainage, streams and watersheds, and floodplains are limited. The three new levels of service would allow for portions of the City, or even the City as a whole, to be studied with the added benefit that the new information facilitates appropriate use of future capital improvement funds.

3.3.3 EOS/LOS Program Cost Estimates

Feedback on these three EOS/LOS options was solicited from Stakeholders and Council members through a series of meetings regarding what should be included in each option. The three alternatives for EOS and LOS have different associated costs, which increase over time. Programmatic cost estimates were generated and projected forward over a 5-year time frame and are provided in **Tables 3-7** and **3-8** or, with respect to capital improvement components, in **Section 3.4**.

The programmatic costs for O & M are based on the services needed for the current stormwater system, as quantified in **Table 3-1**. Costs for responding to drainage calls and resolving them as well as inspecting and maintaining detention ponds are consistent for Option A, Option B, and Option C services. However, the O & M costs for Option A/B were adjusted to reflect the City taking care of private, residential detention ponds. O & M costs were estimated based on several factors including: quantity of various assets, frequency of maintenance, and the required time and personnel to complete maintenance. Salary schedules were used to obtain costs from the annual number of labor hours required for various maintenance levels. O & M costs also include construction materials such as new conduit and annual operating costs for equipment such as trucks, excavators, and trailers. Equipment operating costs were based on unit prices provided by the Transportation Division.

Engineering and planning programmatic costs consist of staffing costs for inspection and engineering services as well as the cost of contracted studies. Inspection costs span various aspects of the program and include:

- Dry Weather Screening
- Construction Site Inspection
- Building Safety EC Inspections
- Inspection of MS4 Facilities
- Illicit Discharge Detection
- Inspection of Public and Private Detention Basins
- Dame Safety Inspections
- MS4 Reporting

Each EOS/LOS involves an increased number of facilities requiring inspection and increased frequencies of inspection which are detailed in the previous sections. Engineering services include the costs for engineering work on drainage studies, stream and watershed assessments, and LID retrofits, as well as the cost of managing contracted studies in these areas. The cost of contracted studies varies between

the LOS options depending on who is performing the work. The City would self-perform 5% of the prioritized studies for both a standard and proactive LOS. For a standard LOS, 5% of them would be contracted annually, and 20% would be contracted annually for a proactive LOS. The enhanced LOS involves City-wide studies, which would be 100% contracted. Approximate costs for contracted stream and watershed assessments were determined based on previous WCRC projects.

The programmatic costs for Regulatory Compliance are based on the size of stormwater program. **Section 3. 2** describes how the program is considered to be Phase II Small for the baseline and standard EOS/LOS. This is upgraded to Phase II Medium for the proactive and enhanced EOS/LOS to reflect the possibility of continued population growth. The MS4 permit cost and cost per USGS station were held constant for this cost estimate. The cost for the standard EOS/LOS was assumed to be the same as the Baseline. For the remaining sources of Regulatory Compliance cost, the costs were scaled up for each EOS/LOS. These sources include staff time charged to program administration, partnerships with the University of Arkansas Cooperative Extension Service, the Illinois River Watershed Partnership, and the Beaver Watershed Alliance for public outreach and education, and natural stream restoration maintenance through the WCRC. **Table 3-7** provide 5-year projections of cost of each EOS/LOS alternative; these projections assumed a 3% annual rate of increase.

Table 3-7. Programmatic Costs by EOS/LOS Option

Option A (Standard EOS/LOS)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Operation and Maintenance	$1,630,000	$1,678,900	$1,729,267	$1,781,145	$1,834,579
Engineering and Planning	$290,000	$298,700	$307,661	$316,891	$326,398
Regulatory Compliance	$193,000	$198,790	$204,754	$210,896	$217,223
Option B (Proactive)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Operation and Maintenance	$2,190,000	$2,255,700	$2,323,371	$2,393,072	$2,464,864
Engineering and Planning	$799,000	$822,970	$847,659	$873,089	$899,282
Regulatory Compliance	$333,000	$342,990	$353,280	$363,878	$374,794
Option C (Enhanced)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Operation and Maintenance	$3,860,000	$3,975,800	$4,095,074	$4,217,926	$4,344,464
Engineering and Planning	$2,250,000	$2,317,500	$2,387,025	$2,458,636	$2,532,395
Regulatory Compliance	$333,000	$342,990	$353,280	$363,878	$374,794

Note: Refer to **Section 3.4** for stormwater CIP components.

3.4 Programmatic Stormwater Capital Improvement Plan

Historically, the City has budgeted $200,000 per year to address design and construction of drainage projects. As discussed in **Section 1.2.2**, the high demand for drainage projects revealed by the 2017 flooding prompted the City Council to approve an increase for the 2018 drainage improvement budget to $500,000. For 2018, the City has used this increased budget to address seven drainage improvements projects (listed in **Table 3-8**). These costs do not include labor costs for maintenance projects or the capital costs for projects that need additional flood studies. **Section 1.2.3** describes the 2019 Bond Program, which funds a $15 million Early Action Plan of flood mitigation and drainage improvement projects (larger than $200,000). However, the increase in 2018 funds to $500,000 along with the $15 million bond are anticipated to be insufficient to address many of the stormwater improvements identified, particularly with respect to large-scale, City-wide studies and improvements. **Table 3-8** summarizes the current and future CIP program elements considered for the Funding Study.

Table 3-8. Stormwater CIP Program Elements by Option

Program Elements	Current	Option A and A/B	Option B	Option C
CIP Project Completion Rate	Limited	20 Year	10 Year [a.]	5 Year
Potential CIP Project Types:				
Drainage Improvements/Retrofits (pipe replacements, neighborhood systems)	Limited	X	X	X
Floodplain Buyouts or Improvement/Elevation Projects	--	X	X	X
Large-scale Regional Detention Projects	--	--	X	X
Watershed Improvement, that is, Stream Restoration & Stabilization Projects	Limited	--	X	X
Dam Safety Upgrades	Limited	--	--	X
Detention Pond Retrofits	--	--	X	X

Note: [a.] After additional analysis of potential costs and input from City Stakeholders, the CIP completion rate was later increased modestly for Option B from 10 years to the 15 years

Table 3-8 was used to develop a budget for capital improvement projects for the EOS/LOS options. In addition to these program elements, the capital cost of equipment used for O & M and the cost of completion for projects identified by drainage studies were included in the budget for each option. Once the budgets were compiled, the total cost was annualized by the project completion rates listed previously to generate a yearly cost for each LOS (**Table 3-9**).

Table 3-9. Initial Capital Improvement Program Costs by Option

	Option A and A/B (Standard)	Option B (Proactive)	Option C (Enhanced)
Total Programmatic Cost	$22,813,000	$46,046,000	$49,217,000
Annual Average Programmatic Cost	$1,141,000	$4,605,000	$9,844,000

After additional analysis of potential costs and input from City Stakeholders, these options were narrowed to Options A/B and B. Concurrently, the CIP completion rate was increased modestly for Option B from 10 years to the 15 years noted in **Table 3-10**. **Table 3-10** provides these final CIP costs by project type prior to excluding the $15 million budged for the Early Action Plan and funded by 2019 Drainage Bond. O & M costs are not eligible for Bond funding.

Table 3-10. Final Capital Improvement Program Total Costs by Option

	Option A/B (Standard)		**Option B (Proactive)**	
CIP Project Completion Rate (years)	20		15	
CIP Project Types	***Total Budget***	***% of Total***	***Total Budget***	***% of Total***
Drainage Improvements	$26,693,450	77%	$26,693,450	45%
Flood Plain Buyouts/Elevation Projects	$1,750,000	5%	$ 2,500,000	4%
Operation and Maintenance Equipment (startup)	$1,654,000	5%	$1,885,500	3%
Projects identified by drainage studies	$ 2,500,000	7%	$5,000,000	8%
Large-scale Regional Detention			$15,000,000	25%
Watershed Improvement/Stream Restoration	$2,000,000	6%	$ 2,500,000	4%
Detention Pond Retrofits			$ 5,500,000	9%
Totals (rounded)	**$ 34,598,000**		**$59,079,000**	
Minus FY 2018 Funding	*($500,000)*		*($500,000)*	
Minus 2019 Bond Funding	*($15,000,000)*		*($15,000,000)*	
Net Total CIP Needs (rounded)	**$19,100,000**		**$43,600,000**	

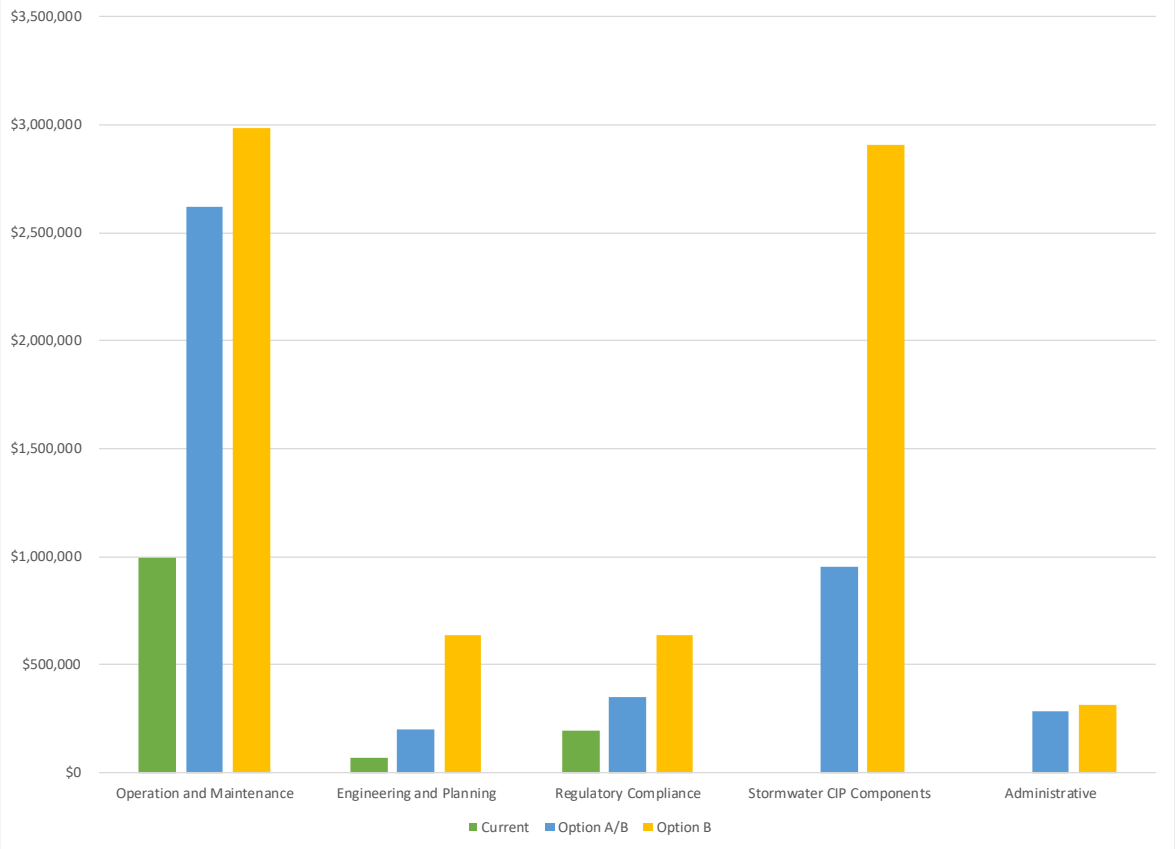
3.5 Final Future Program Costs by Option

As discussed previously, program costs were developed for each option and refined for Option A/B and Option B. **Table 3-11** and **Figure 3-5** present these costs (in 2018 dollars) for each aspect of the program along with a total programmatic cost for each both EOS/LOS options.

Table 3-11. Final Future Program Costs by Option

	Current	% of Total	Option A/B (Standard)	% of Total	Option B (Proactive)	% of Total
Operation and Maintenance	$998,441	68%	$2,623,000	58%	$2,982,000	38%
Engineering and Planning	$67,000	5%	$201,000	4%	$638,000	8%
Regulatory Compliance	$193,000	13%	$351,000	8%	$638,000	8%
Stormwater CIP Components	$200,000*	14%	$954,900	24%	$2,905,267	42%
Administrative			$286,000	6%	$315,000	4%
Total	**$1,458,441**		**$4,415,900**		**$7,478,267**	

Figure 3-5. Final Future Program Costs by Option

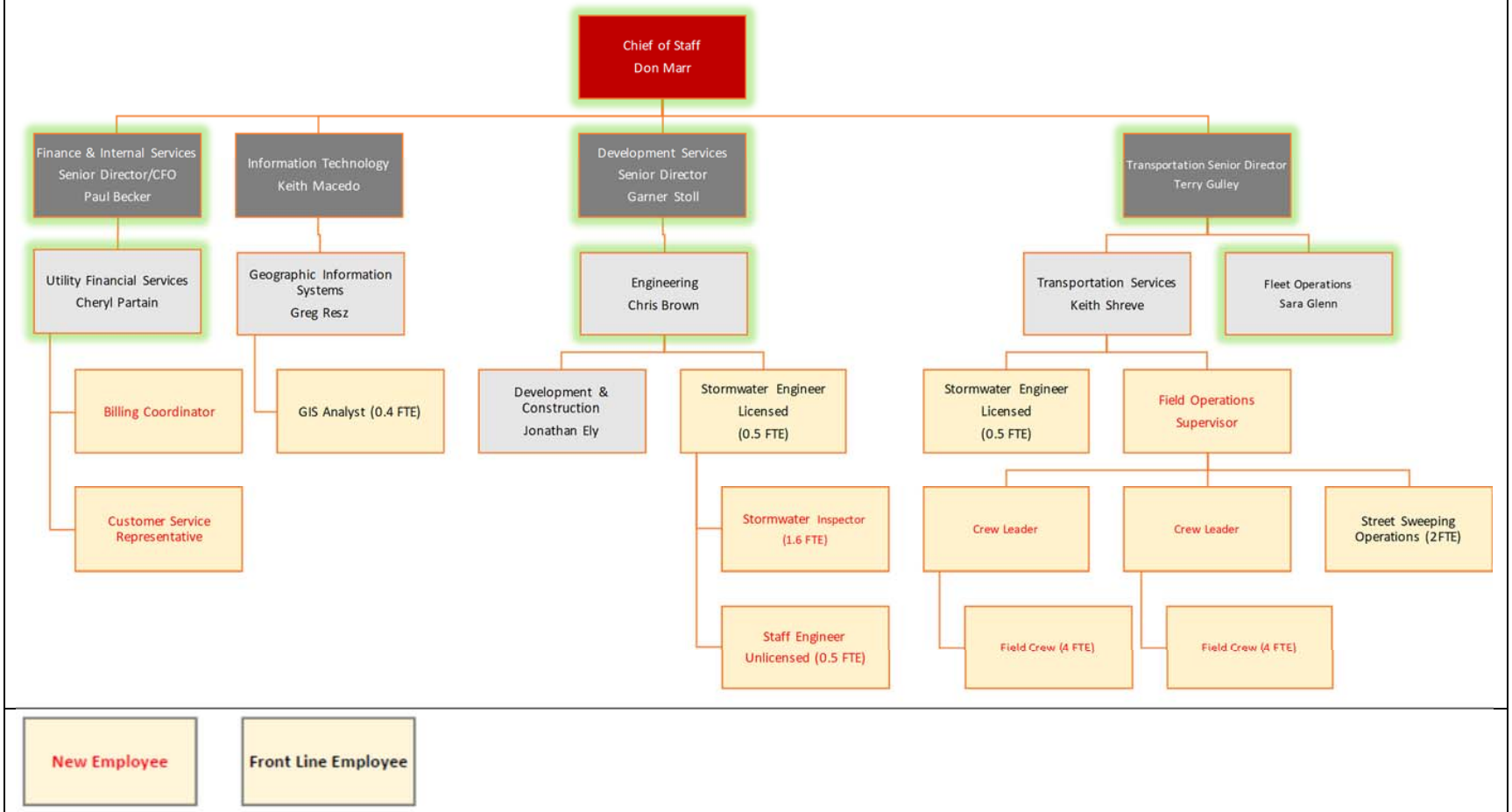


3.6 Preliminary Organizational Structure

There are many ways that the City could integrate a Flood Management and Water Quality fee program into its current organization structure, ranging from a new stormwater organization to a matrixed organization that leverages existing resources and sharing of expertise between City departments. The City has indicated its preliminary interest in a matrixed approach (**Figure 3-6**), using existing departments and divisions. The Engineering Department, housed under Development Services, would lead the implementation of a Flood Management and Water Quality fee if the City decides to proceed. Engineering staff provide technical review and support for all private development including the technical review of compliance with the City's water, sanitary sewer, street design, grading, and stormwater runoff standards and ordinances. It also supports of the Planning Department and Planning Commission at the development review meetings. The Engineering Division is responsible for the following:

- Providing design and project management for City infrastructure projects
- Reviewing development proposals for compliance with city criteria such as water, sewer, streets, drainage, grading, and other technical requirements
- Managing the planning, design, and permitting of trails projects and oversees construction of trails by the Transportation Division or private contractors.
- Assisting in the acquisition and sale of City property, ROWs, easements, and similar
- Managing miscellaneous stormwater and water quality initiatives
- Ensuring compliance with the City's NPDES Stormwater Permit issued through ADEQ and its floodplain regulations

Figure 3-6. Potential Future Organizational Integration



SECTION 4

Financial Planning and Rate Analysis

The Financial Planning and Rate Analysis followed an iterative process to help the City identify the right balance of stormwater services, given its financial capacity and Stakeholder priorities. Financial planning for developing a stormwater utility is typically an iterative process that includes both a "top down" and "bottom up" evaluation. The "top down" component focuses on what it would actually cost to deliver the anticipated LOS, and the "bottom up" component typically focuses on what customers are willing to pay.

A sound financial planning process that considers all relevant revenue sources is critical to rate setting, because the level of revenues required from user fees should consider the projected revenues available from other revenue sources. This financial planning must support the correlation between the cost of service and the relative burden of an individual property on the stormwater system in order to develop a defensible recommended fee. Therefore, the financial planning activities are usually conducted in parallel with the development of the final LOS/EOS and rate structure evaluation to identify an overall fee and financial plan that supports the goals for improving stormwater management and is acceptable to key Stakeholders.

4.1 Alternative Funding Sources

There are several types of funding sources that can be used for drainage services, which may include one or more ad valorem taxes, grants, loans, and/or user charges. Stormwater programs often depend on mix of other funding sources beyond a potential drainage fee or general fund sourced from tax revenue. For example, some capital projects may qualify for federal or State grant funding; as another example, plan review and inspection fees or other special fees may be used to cover some program-related activities. A number of utilities secure State revolving fund loans to pay for capital projects that merit such long-term funding. For the 2019 Drainage Bond, the City is using a revenue bond, which consist of municipal bonds secured by a specified revenue source. Use of these other funding sources can increase the LOSs offered by a stormwater program because the stormwater user fees are employed to pay the annual debt service rather than the upfront capital expenditure costs.

The City's current drainage program is primarily funded by the Street Fund, General Fund, Sales Tax Capital Improvements Fund, and the intermittent issuance of revenue bonds. However, due to the increasing and competing demands for these limited funds, the City recognizes the need to identify other dedicated and equitable funding sources to sustainably support its future drainage needs. The City's 2010 Feasibility Study reviewed a series of alternative funding sources and generally eliminated additional funding from the following other long-term funding sources due to the reasons noted as follows and summarized in **Table 4-1**:

- **Millage from Property Taxes** – Not equitable because tax exempt organizations do not pay for the management of the stormwater they generate. Not a stable, dedicated funding source.
- **Sales Taxes** – No direct relationship with the amount of stormwater management needed nor dedicated specifically to drainage needs. Taxes can also be politically difficult to increase and can vary from year to year.

Similarly, the following supplemental funding sources were found to be inadequate for the City's future needs:

- **Special Assessments** – Typically used to fund public works associated with specific properties and for a specific purpose, as opposed to the long-term O & M of a system.
- **Developer trust funds** – Typically only successful when associated with a new development's desire to be annexed into a community. Because these funds cannot be retroactively applied to existing developments, these trust funds can raise the cost of new construction, while their revenue potential is limited to new development.
- **Impact Fees** – Use of revenue from impact fees on new construction is limited to new facilities that serve those paying the fee and cannot be used to retrofit existing infrastructure unless it is redeveloped and must go through the City's permitting process. The amount of revenue from impact fees is directly related to the rate of new development and thus vary from year to year.
- **Low Interest Capital Funding** – Sometimes offered by various agencies; however, these typically fund short-term capital projects and not long-term O & M needs.
- **Bond Financing of Capital Projects** – Used for capital projects with the potential to generate new revenue. However, the revenue stream must first be established and proven prior to bonds being issued.
- **Grants** – Offered by various agencies such as the U.S. Environmental Protection Agency and the U.S. Department of Agriculture. Although useful for specific projects, the grant amounts are typically not sufficient to fund long-term O & M needs, and the administrative requirements can be burdensome for local communities.

Table 4-1. Summary of Alternative Funding Sources

	Equitable	Flexible	Can provide adequate funds?	Data/ Administrative Complexity	Use of Funds
Stormwater User Fee	Yes	Yes	Yes	High	City-wide
Millage from Property Taxes	--	--	Yes	Low	City-wide
Sales Taxes	--	--	Yes	Low	City-wide
Special Assessments	--	--	Yes	Medium	Project-specific, not for O & M
Developer trust funds	--	--	--	Medium	Project-specific, not for O & M
Impact Fees	Yes	--	--	Medium	Project-specific, not for O & M
Low Interest Capital Funding	--	--	Yes	--	Project-specific, not for O & M
Bond Financing of Capital Projects	--	--	Yes	High	Project-specific, not for O & M
Grants	--	--	--	High	Project-specific, not for O & M

4.2 Basis of Proposed Fee Estimates

IA was selected as the basis of the fee because it increases the amount of water entering the drainage system and waterways, which can then increase the chance of flooding, stream bank erosion, and sedimentation. Runoff from IA also carries pollutants that can impact water quality, such as sediment, sand, fuel from spills and leaks of vehicles, herbicides and pesticides, detergents, metals, and bacteria from pet waste. It is an equitable basis for a fee for services since larger, developed properties tend to have larger amounts of IA which generates a greater volume of runoff. More runoff requires more drainage infrastructure, which necessitates additional O & M as well as the long-term capital costs of repair and replacement. Put simply, larger developments and homes with corresponding parking and driveways create a greater need for stormwater services.

To determine the revenue potential of a user fee program, accurate spatial data is needed to calculate individual user fees based on IA and property boundaries and to determine the number of billing units, while other attributes such as ownership, billing, and service addresses (if different) are needed to generate a customer billing database. The City's Geographic Information System (GIS) Department performed a preliminary spatial analysis of:

- The number of properties within the City
- The amount of imperviousness (buildings, driveways, and similar) by parcel/property
- Their distribution by customer class

The Funding Study team then reviewed of distribution of IA by parcel boundary and customer type (**Table 4-2**) to identify an equitable billing unit and whether a tiered rate structure would be appropriate. Due to the historical expense of mapping all the IA within a local governments service area, many entities adopted an "equivalent residential unit" (ERU) billing unit based on statistical sample of the median impervious area of single-family residential properties. For the City, the ERU based on all 18,974 single family parcels would be approximately 3,500 square feet (SF) of IA.

Table 4-2. Parcel Count and Impervious Area by Customer Class

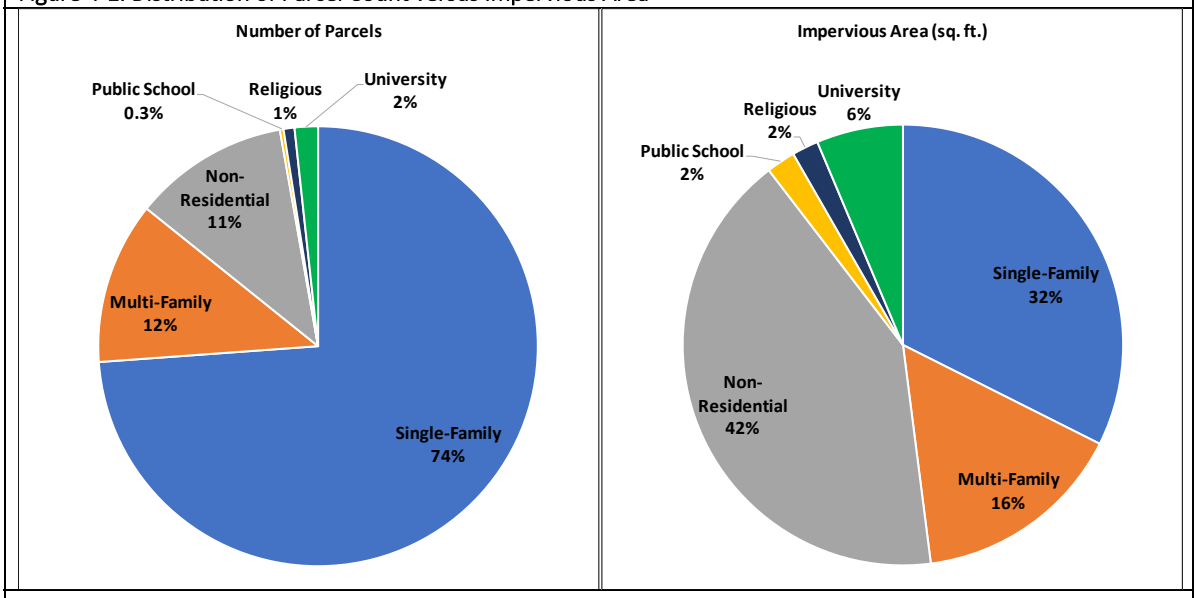
Customer Class	Parcel Count	Total IA (SF)	Average IA (SF)	Median IA (SF)	Maximum IA (SF)
All Properties	25,690	235,940,932	9,184	3,425	2,325,502
Single-Family	18,974	76,451,588	4,029	3,466[a]	90,954
Multi-Family	3,059	36,724,982	12,006	3,734	521,127
Non-Residential	2,943	98,178,891	33,360	12,819	2,325,502
Public School	68	5,002,386	73,565	14,188	530,925
Religious	206	4,589,749	22,280	8,353	428,155
University	440	14,993,336	34,076	7,265	1,210,092

[a] Based on a preliminary GIS analysis by City staff; minimum mapping unit of data is 100 SF.

Figure 4-1 illustrates this comparison and why IA serves as an equitable representation of the cost of providing these services. This avoids the multiple issues generated by using a flat rate based on customer or meter type. For example, if the City adopted a program similar to the City of Bryant, Arkansas (bills based a monthly flat fee of $3 for residential utility account holders and $6 for

commercial and industrial accounts), which is closer to parcel count distribution on the left, there would be an inequitable "disconnect" between the cost of services and fee/charge paid by the customer for these services.

Figure 4-1. Distribution of Parcel Count versus Impervious Area



Customer billing equity was further assessed by comparing the percent distribution of billing units by customer class using an ERU method versus a tiered method to illustrates the distribution of potential costs (**Table 4-3**). It shows the potential for non-residential and multi-family residential properties (shaded light gray) to subsidize the cost of providing single family residential stormwater services under an ERU billing unit method.

A six-tier billing unit method, using a rate expressed as cost per 1,000 SF of IA, was found to most closely equate to the distribution of actual IA and therefore could best serve to avoid inter-customer class subsidies. Therefore, a tiered rate structure, shown in **Table 4-4**, with no customer class distinction was selected to balance equity with ease of administration. Most properties pay based on tier assignments where the fee is based on middle value of the range divided by 1,000 SF. For example, a property assigned to Tier 3 (more than 3,500 and less than or equal to 5,000 SF) pays based on 4.25 billing units (4,250/1,000). For those properties with imperviousness greater than 8,000 SF, the owner would pay based on actual impervious area divided by 1,000 SF. For example, a property with 10,000 SF pays based on 10 billing units (10,000/1,000).

Table 4-3. Comparison of Billing Unit Distribution by Customer Class

	Parcels	Total IA	ERU Method (1 ERU = +/-3,500 SF of IA)	Tier Method (1 Billing Unit = 1,000)
Single-Family	74.6%	*34.8%*	30.4%	34.8%
Multi-Family	11.6%	*15.6%*	16.6%	15.6%
Non-Residential	11.2%	*39.2%*	41.8%	39.2%
Public School	0.2%	*2.1%*	2.3%	2.1%
Religious	0.8%	*1.9%*	2.1%	1.9%
University	1.6%	*6.4%*	6.8%	6.4%

4.3 Financial Planning Assumptions

Using the tier structure presented in **Table 4-4**, the Funding Study then assessed a series of financial planning scenarios and narrowed them down to the following two based on feedback from the City:

- Scenario 1 reflects rates with the continuation of current funding ($1.5 million) from the City budget.
- Scenario 2 represents a stand-alone program without the current funding from City budget.

Assumptions include:

- Staging over a 5-year period to allow adequate time for the City to implement an enhanced program

Table 4-4. Proposed Tier Structure
(Applies to All Properties)

Tier	Tier Range (SF)	Property Count	Billing Units
1	≤ 2,000	2,196	2,745
2	>2,000 and ≤ 3,500	9,602	26,406
3	>3,500 and ≤ 5,000	6,491	27,587
4	>5,000 and ≤ 6,500	2,644	15,203
5	>6,500 and ≤ 8,000	1,093	7,924
6	>8,000	3,664	156,095
	Total	**25,690**	**235,960**

- A reduction in CIP costs, reflecting an Early Action Plan of projects being funded by the 2019 Drainage Bond (http://www.fayetteville-ar.gov/3713/Drainage-Projects)
- A baseline credit/rebate program to encourage BMPs that will modestly reduce potential revenue

Assumptions do not yet include:

- Reductions in revenue due to the potential for bad debt
- Increases in revenue due to new/infill development

As noted previously, Option A/B was added to characterize the financial impacts of the Option B EOS with the Option A "routine" frequency of maintenance and time frame for CIP. After additional Stakeholder feedback, the City chose to narrow the EOS/LOS options to those that could be realistically implemented by a reasonable rate structure (Options A/B and B). **Table 4-5** presents the monthly Flood Management and Water Quality fee estimates for these two options by tier and scenario based on the assumptions stated previously.

Table 4-5. Monthly Fee Estimates by Tier and Scenario

Scenario 1: With Current Funding from City Budget		
Tier Range	**A/B Monthly Fee (Standard)**	**B Monthly Fee (Proactive)**
Tier 1 (0 and 2,000)	$1.60	$3.23
Tier 2 (2,000 and 3,500)	$3.52	$7.10
Tier 3 (3,500 and 5,000)	$5.44	$10.97
Tier 4 (5,000 and 6,500)	$7.36	$14.84
Tier 5 (6,500 and 8,000)	$9.28	$18.71
Tier 6 (over 8,000)	$1.28/1000 SF	$2.58/1000 SF
Scenario 2: Without Current Funding from City Budget		
Tier Range	**A/B Monthly Fee (Standard)**	**B Monthly Fee (Proactive)**
Tier 1 (0 and 2,000)	$2.31	$3.94
Tier 2 (2,000 and 3,500)	$5.09	$8.66
Tier 3 (3,500 and 5,000)	$7.86	$13.39
Tier 4 (5,000 and 6,500)	$10.64	$18.11
Tier 5 (6,500 and 8,000)	$13.41	$22.84
Tier 6 (over 8,000)	$1.85/1000 SF	$3.15/1000 SF

Note: If there is an onsite stormwater management facility, there could be a reduced fee based on a sustainable credit program established by the City.

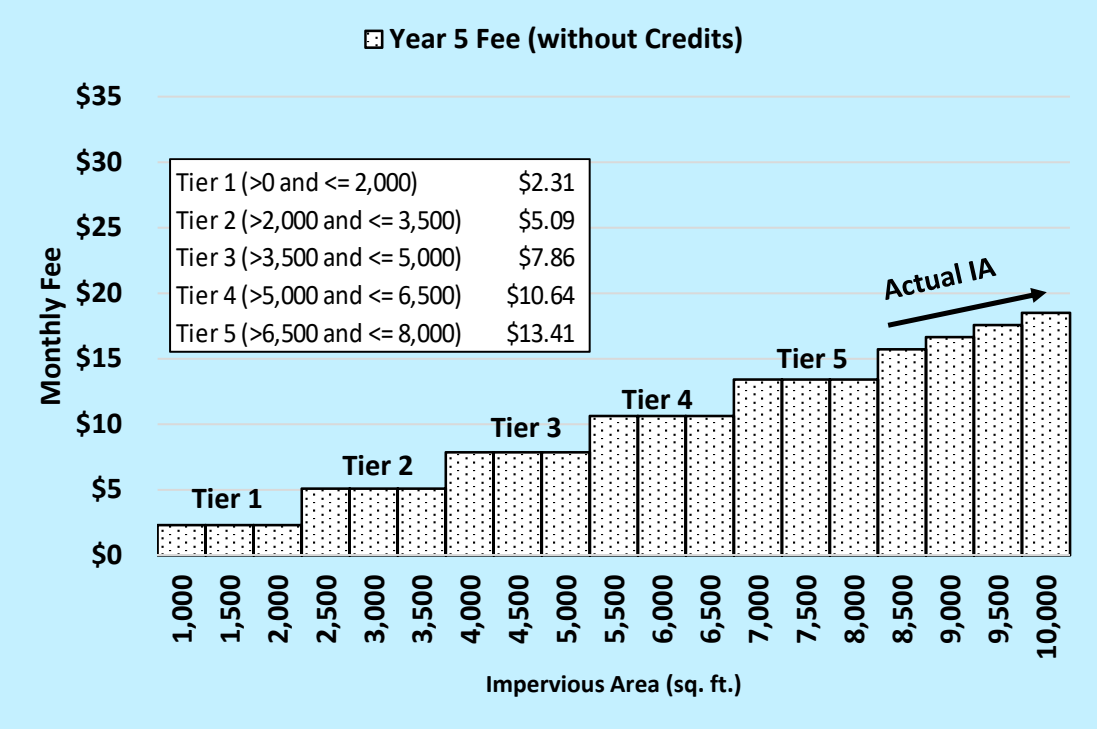
4.4 Recommended Fee Option

The City is considering proceeding with the implementation of a stand-alone Flood Management and Water Quality Fee Program (that is, Scenario 2) with the Option A/B rates. A stand-alone program for future services was selected that discontinues current funding and is instead administered from an enterprise fund sourced from a Flood Management and Water Quality fee and the intermittent issuance of revenue bonds. Option A/B was selected because it would provide the funding needed for an equitable, sustainable drainage program while also addressing the ongoing challenges many homeowner associations in the City have with operating and maintaining their detention ponds. Further, more than half of those responding to Survey #2 as of August 2019 found the Option A/B rates to be reasonable. The selected rate option would be staged/ramped up over a 5-year period (**Table 4-6**), to the monthly rates in Year 5, illustrated on **Figure 4-2**.

Table 4-6. Staging of Recommended Fee Structure under Scenario 2 ($/1,000 SF/month)

	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Option A/B	$0.74	$0.93	$1.14	$1.35	$1.85

Figure 4-2. Recommended Monthly Flood Management and Water Quality Fee Structure in Year 5



Note: Base rate of $1.85/1,000 SF/month

4.4.1 Flood Protection and Water Quality Fee Examples

This would result in an $5.09 monthly fee for a 1,500-SF home (**Table 4-7** and **Figure 4-3**) with a two-car garage, a $67 monthly fee for a typical fast food restaurant and a $250 monthly fee for a 75-unit apartment complex (**Table 4-8**).

Table 4-7. Monthly Residential Fee Examples by Tier in Year 5

Tier Range	Option A/B Monthly Fee	Example Residential Property
Tier 1 (0 and 2,000)	$2.31	1,000 SF home, no garage or carport
Tier 2 (2,000 and 3,500)	$5.09	1,500 SF home, attached two-car garage
Tier 3 (3,500 and 5,000)	$7.86	2,500 SF home, attached three-car garage
Tier 4 (5,000 and 6,500)	$10.64	3,500 SF home, attached three-car garage
Tier 5 (6,500 and 8,000)	$13.41	4,500 SF home, attached three-car garage
Tier 6 (over 8,000)	$1.85/1000 SF	Based on actual IA

Note: If there is an onsite stormwater management facility, there could be a reduced fee based on a sustainable credit program established by the City.

Figure 4-3. Example of a Residence that falls within Tier 2

Table 4-8. Fee Examples for Other Property Types

	Impervious Area (SF)	Option A/B: Monthly
Stand-alone Fast Food[a.]	36,000	$67
Big Box Retailer/Commercial Center	300,000–750,000	$555–$1,388
Apartment (76 units)	135,000	$250
Apartment with Clubhouse (306 units)	413,820	$766
Industrial/Manufacturing	780,000	$1,443
Industrial/Manufacturing	665,000 (floor area), 1,100,000 (total)	$2,035

Note: If there is an onsite stormwater management facility, there could be a reduced fee based on a sustainable credit program established by the City.

[a.] The average IA for the more than 2,900 commercial properties in the City is 33,360 SF.

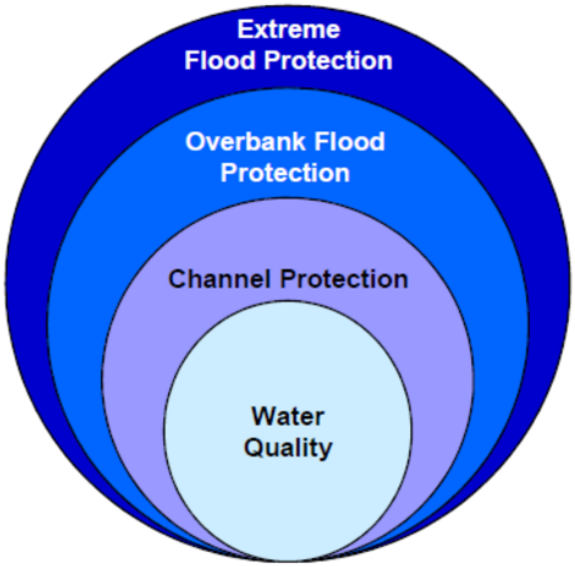
SECTION 5

Stormwater Credit and Incentive Programs

A stormwater credit is an ongoing, renewable reduction in the fee charged to a property for its contribution (measured via its amount of IA) of runoff to the stormwater system; all properties subject to the Flood Management and Water Quality fee would be eligible to apply. Credits would be offered for existing practices or facilities that reduce the water quality and quantity burden imposed on the City drainage system by runoff from a property. Other incentive programs such as a stormwater rebate program (for private investments to mitigate drainage from existing developments) and in lieu of fee program (for small development sites or areas where a regional solution is practical) would also be considered during implementation.

5.1 Stormwater Credits

Figure 5-1. 2014 Drainage Criteria Manual Sizing Criteria



Basic credit programs typically mimic the requirements of a community's DCM (**Figure 5-1**), which helps support the City's compliance with its MS4 permit. To the extent that property owners mitigate the effects of stormwater runoff before it is discharged to the City of Fayetteville MS4 system (essentially pretreating their stormwater runoff), the burden placed on the City's system is somewhat less than if no such mitigation were in place. Therefore, the Flood Management and Water Quality fees for properties having certain stormwater management facilities or for owners performing approved stormwater educational activities will be reduced to recognize the public benefits of privately owned and managed facilities. It is recommended that full credits not be offered for undeveloped property or those treating 100% of stormwater onsite because all property owners benefit from the following City services:

- Maintaining the public ROWs including, but not limited to, storm drain cleaning and street sweeping.
- Maintaining regional stormwater infrastructure that serves multiple property owners
- Inspection of public and private stormwater facilities to ensure operating as designed

Additional credits can be offered for green infrastructure practices, public education, and other activities important to a community. Credits are typically calculated based on the amount of IA and/or the volume of water managed onsite. For example, a property could earn a 40% credit for demonstrating that it meets all four sizing criteria illustrated in **Figure 5-1**, or a 10% credit for meeting each one individually.

Key characteristics of a sustainable credit program would include:

- Customizing it to Fayetteville's unique mix of customers
- Providing the opportunity to meaningfully mitigate a customer's fees
- Keep it administratively simple
- Establishing a cap on the credit offered to ensure adequate revenue

A sustainable credit system will be developed with additional Stakeholder engagement on eligibility and technical guidelines; application, inspection, and verification procedures; and duration between renewals as part of implementation. It would be offered to customers based on the sizing criteria found in the City's DCM, with additional credits possibly offered for green infrastructure practices and public education.

5.2 Other Incentive Programs

The City is also considering other inventive programs to encourage long-term, sustainable solutions both during and after construction, such as:

- **Stormwater rebates** could be offered to eligible property owners that are willing to retrofit existing or install new stormwater treatment facilities. Rebates would provide them with a mechanism to recoup some of the costs of installing approved DCM facilities up to the amount of the actual fee for a set period of time.
- **A stormwater "in lieu of" fee program** could be offered, wherein an owner or developer may contribute via a fee to the construction of a regional or sub-regional detention site in lieu of constructing onsite detention. For example, Hot Springs offers an in-lieu fee program where the fee is calculated based on $10,000 per acre-foot of stormwater storage. However, no in-lieu contributions are allowed when existing flooding occurs downstream from the development, or if the development will cause downstream flooding.

SECTION 6

Policy and Legislative Considerations

This section provides an overview of the City's existing stormwater management regulations, key legal considerations for development of a Flood Management and Water Quality fee program, Arkansas' authorizing legislation for stormwater utilities, and potential legislative steps, should the City decide to proceed with implementation.

6.1 Existing Stormwater Management Regulations

Fayetteville is home to many streams and water bodies and is near the upstream end of two main watersheds, the Beaver Lake Watershed and the Illinois River Watershed. As a result, the City has a long history of implementing regulations that manage the volume and quality of stormwater. These efforts have included the adoption of a LID ordinance in 2010, a streamside protection ordinance in 2011, and a DCM in 2014 (Fayetteville, 2014). The DCM summarizes the regulations governing development and stormwater management, which include:

- Chapter 161 – Zoning Regulations
- Chapter 166 – Development
- Chapter 167 – Tree Preservation & Protection
- Chapter 168 – Flood Damage Prevention Code
- Chapter 169 – Physical Alteration of Land
- Chapter 170 – Stormwater Management, Drainage, & Erosion
- Chapter 171 – Streets and Sidewalks
- Chapter 172 – Parking & Loading
- Chapter 173 – Building Regulations
- Chapter 177 – Landscape Regulations
- Chapter 179 – Low Impact Development
- City Plan 2030
- City of Fayetteville Drainage Criteria Manual, Appendix H Exhibits
- City of Fayetteville Landscape Manual
- City of Fayetteville Streamside Protection BMP Manual City of Fayetteville Minimum Street Standards
- City of Fayetteville Water and Sewer Specifications

6.2 Policy Considerations

To be equitable and legal, a fee for service program should be structured to reflect the following policy and rate-setting considerations:

- The overall cost of the program must be reasonably related to the services being provided.
- The funds raised must be segregated for use by the stormwater program.
- The fee should be proportional to the property's contribution to stormwater runoff.
- Participation in the program should allow appropriate exemptions and credits (NAFSWA, 2006).

Development of this Funding Study was guided by establishing a "rational nexus" between the drainage services provided by the City and how they are funded. Selection of IA as the basis for funding these services was considered key to creating a legally defensible and equitable user fee program. These fees are based on the "polluter pays" principle and therefore the size of the fee charged must be related to the burden a property places on the City's stormwater system.

Unlike a tax, it is also important that all properties with impervious surfaces pay, there should be no exemptions, only credits for reducing a property's burden on the stormwater system. As a result, important City Stakeholders such as the University of Arkansas, who have historically not paid impact fees for police and fire, will still be expected to contribute to the Flood Protection and Water Quality fee program.

The question of whether sovereign immunity is applicable when stormwater fees are billed to federal and State properties typically hinges on the question of whether the CWA waives sovereign immunity about imposition of fees on these properties (SESWA, 2017). Although there are still challenges, an amendment to the CWA passed in January 2011, 33 *United States Code* § 1323(a), clarified that there is a federal responsibility for municipal stormwater charges. Additionally, many communities around the country have successfully billed and collected stormwater utility fees from State, federal, and local government properties, including school districts.

Table 6-1. Surveyed Status of Billing and Collecting Stormwater Fees from Government Entities

Government Entity	Exempt	Bill and Collect	Bill But Do Not Collect	Not Billed
Federal	4	63	8	2
% of Total	*5%*	*82%*	*10%*	*3%*
State	6	59	10	4
% of Total	*8%*	*75%*	*13%*	*5%*
County	2	74	4	2
% of Total	*2%*	*90%*	*5%*	*2%*
City	3	76	7	2
% of Total	*3%*	*86%*	*8%*	*2%*
School District	6	66	3	0
% of Total	*8%*	*88%*	*4%*	*0%*
Special District	1	45	0	3
% of Total	*2%*	*92%*	*0%*	*6%*

Source: SESWA, 2017

In practice, the 2017 SESWA survey found that 82% of 77 communities responding to this question on the survey billed and collected from these public entities (**Table 6-1**). As a result, it is recommended that that no exemptions be provided and that the City instead integrate these entities in to a credit program, where possible. Similar to other utilities, it is important that revenue from stormwater fees be accounted for separately via an enterprise fund, instead of being added to the existing Street or General Funds. This helps ensure that these funds are only used for their intended purpose (that is, to provide stormwater services).

6.3 Legislative Implementation Steps

Because each local and State government is unique, there are multiple legislative routes that can be taken to establish a stormwater fee program once a community has assessed the feasibility of developing a fee program and decided to move forward. Further, some utilities will develop a guidebook or other document (that is, cross-referenced in the legislation) detailing the step-wise processes used for administration of the fee program. This allows the enabling legislation to be more succinct while allowing the local government to make minor program adjustments without revisiting the original ordinance. As illustrated by the legislative examples provided in **Appendix B**, local governments have successfully adopted fee programs without some of the following key legal requirements. However, it is recommended that the City's ordinance(s) include these key elements at a minimum:

- Establish a separate Enterprise Fund
- Establish the City's Administrator for the Stormwater Program
- Identify the scope of stormwater services (what will be funded)
- Establish a Flood Protection and Water Quality fee
- Note exemptions (limited)
- Provide a mechanism for appeals
- Provide a Credit Program

6.4 Arkansas Authorizing Legislation and Fee Programs

At the State level, stormwater management, including the creation and operation of a stormwater utility, is authorized by the definition of the term "works" in *Arkansas Code* § 14-235-201. This statute provides for:

1. The structures and property as provided in *Arkansas Code* § 14-235-203
2. Stormwater management
3. The creation and operation of a stormwater utility
4. The creation and operation of a stormwater department
5. Other like organizational structures related to the disposal or treatment of stormwater by municipalities [3]

[3] 2017 Arkansas Code, Title 14 - Local Government, Subtitle 14 - Solid Waste Disposal, Waterworks, And Sewers Generally, Chapter 235 - Municipal Sewage Systems, Subchapter 2 - Operation of Systems by Municipalities, § 14-235-201 - Definition.

To date, two Arkansas communities have adopted stormwater fees:

1. **Hot Springs, Arkansas:** Flat rate for residential and tiered rate for nonresidential based on the square footage of impervious surface *(Ord. No. 6153, '1, 6-7-2016)*, as described in **Table 6-2**:

Table 6-2. Stormwater Fee Rates for Hot Springs, Arkansas

		Cost Per Month					
		Current	**June 2016**	**Jan. 2017**	**Jan. 2018**	**Jan. 2019**	**Jan. 2020**
Residential		$3.00	$4.00	$4.00	$4.00	$4.25	$4.25
Commercial	0–9,999	$6.00	$8.00	$10.00	$12.00	$12.00	$12.00
	10,000–49,999	$6.00	$10.00	$12.00	$21.60	$28.80	$36.00
	50,000–99,999	$6.00	$12.00	$30.00	$54.00	$72.00	$90.00
	100,000–249,999	$6.00	$28.00	$70.00	$126.00	$168.00	$210.00
	250,000–Above	$6.00	$60.00	$150.00	$270.00	$360.00	$450.00

2. **Bryant, Arkansas:** Monthly flat fee of $3 for residential utility account holders and $6 for commercial and industrial accounts *(Ord. No. 2016-3, § 1, 2-23-2016).*

SECTION 7

Next Steps Towards Implementation

This section summarizes the additional activities that need to occur prior to a Flood Management and Water Quality fee being billed by the City. It is estimated that 1 to 2 years would be needed to complete these activities, with the bulk of the level of effort associated with developing a customer billing database that is compatible with the existing utility or the County property tax systems. The next steps towards implementation are detailed in **Table 7-1**.

Table 7-1. Next Steps Towards Implementation

Program Element	Next Steps
Stakeholder Engagement and Education	• Additional Stakeholder involvement and education with a particular focus on the owners of rental property and key Stakeholders. • Educate Stakeholders on the findings of this Funding Study and the timeline for implementation • Engage Stakeholders on the development of a sustainable credit program. • Establish Intergovernmental Agreements with key Stakeholders.
Stormwater Program Definition	• Refine future program costs based on selected LOS/EOS options using updated stormwater system condition and needs. • Finalize preferred EOS option and publish it via legislation or other mechanism to ensure Stakeholders understand public versus private drainage responsibilities.
Customer Billing Database	• Refine preliminary customer billing database to confirm impervious area by parcel, property identification number, ownership, mailing address and existing utility account number, if applicable. • Establish method of billing property owners either within the existing utility billing system or on the County property tax bill. • Establish procedures for billing rental and multi-family properties as well as properties that do not have a utility account currently. • Establish procedures for adding new customers and capturing new impervious area as property is developed or redeveloped.
Policy and Ordinance Development	• Pass a resolution to accept the Funding Study, establish a new enterprise fund, the basis of fee and definition of the rate structure. • Pass ordinance with the final rate structure and fees, credit and appeal programs and other administrative requirements. • Develop process and procedures for obtaining public drainage easements in an iterative fashion for those portions of Fayetteville that developed prior to them being required.
Stormwater Credit and Incentive Programs	• Engage Stakeholders on the development of a sustainable credit program. • Determine whether the City wants to pursue other incentives such as rebates and in lieu of fee programs. • Develop policies for eligibility and technical guidelines; application, inspection and verification procedures; and duration between renewal.
Appeals and Administration	• Develop a robust customer service program that addresses appeals and ongoing administration of the fee program. • Proactively establish a process that allows customers to request a review of their fee should they think it was calculated incorrectly.

SECTION 8

References

InVeritas. 2017. Fayetteville Vision 2050: Strategic Planning Final Report. March.

City of Fayetteville, Arkansas (Fayetteville). 2010. *Stormwater Utility Fee Feasibility Study.*

City of Fayetteville, Arkansas (Fayetteville). 2014. *Drainage Criteria Manual. July.*

City of Fayetteville, Arkansas (Fayetteville). 2018a. 2018 Drainage Improvement Plan.

City of Fayetteville, Arkansas (Fayetteville). 2018b. *2019 Annual Budget and Work Program*. November 20. https://www.fayetteville-ar.gov/ArchiveCenter/ViewFile/Item/1991.

Geosyntec. 2009. *Nutrient Reduction Plan.* April.

National Association of Flood and Stormwater Management Agencies (NAFSMA). 2006. *Guidance for Municipal Stormwater Funding*. Prepared under a grant provided by the U.S. Environmental Protection Agency. January.

Southeast Stormwater Water Association (SESWA). 2017. *2017 Southeast Stormwater Utility Report*. Prepared by CDM Smith, Dewberry.

Appendix A
Stakeholder Information

APPENDIX A

Stakeholder Information

Table A.1. Funding Study Meetings and Topics

Date	Topics
Full Council	
June 25, 2018	• Chartering • Study and Schedule Overview • Review Relevant Goals • Constituent Concerns Roundtable • Review Draft Stakeholder Engagement Strategy
Special Council Committee	
July 31, 2018	• Chartering • Study and Schedule Overview • Review Relevant Goals • Constituent Concerns Roundtable with Ward Map • Review Draft Stakeholder Engagement Plan
August 28, 2018	• Review Current Stormwater System, Regulatory Requirements and Costs • Stormwater Extent of Service Options • Stormwater Level of Service Options • Committee Feedback and Next Steps
April 9, 2019	• Speak Up Fayetteville Results to Date • Program Costs and EOS/LOS Options Refresher • Review Draft Fee Estimates by Program Option • Policy Primer on Credit/Rebate Program Options • Next Steps
July 30, 2019	• Final Extent of Service and Level of Service Option Refresher • Review Final Fee Estimates by Program Option and Scenario • Speak Up Fayetteville Survey #2 Results to Date • Staff Recommendations for Council Committee Consideration • Next Steps
Staff Technical Advisory Committee (STAC)	
June 25, 2018	• Chartering • Study and Schedule Overview • Review Relevant Goals • Review Draft Stakeholder Engagement Plan • STAC Homework Assignment for Stormwater Needs Analysis Meeting,

Table A.1. Funding Study Meetings and Topics

Date	Topics
August 1, 2018	• Review Baseline Stormwater Program Elements and Costs • Review Chartering Feedback and Completed Homework Assignments • Review Preliminary Extent and Level of Service Options • Stormwater Needs Prioritization Exercise
December 10, 2018	• Study Update • Review Final Extent and Level of Service Options • Review Corresponding Future Program Costs • Next Steps
Public	
September 30, 2018	• Study Purpose • What is the City's Role? • What are the funding needs? • What are the proposed solutions? • Speak Up Fayetteville!
November 29, 2018 **Beaver Water District Speaker Series**	• Study Background • 2017 Flooding • Review Current Stormwater System, Regulatory Requirements and Costs • Stormwater Extent of Service Options • Stormwater Level of Service Options • Proposed Solutions/Funding Options
December 12, 2018 **AWWWEA NW District Meeting**	• Study Background • 2017 Flooding • Review Current Stormwater System, Regulatory Requirements and Costs • Stormwater Extent of Service Options • Stormwater Level of Service Options • Proposed Solutions/Funding Options
January 17, 2019	• Study Update • Review Final Extent and Level of Service Options and Corresponding Future Program Costs • Review of National and Regional Average Stormwater Fees

AWWWEA NW = Arkansas Water Works and Water Environment Association, Northwest District
EOS = extent of service
LOS = level of service

Figure A-1. Speak Up Fayetteville Factsheet

City of Fayetteville Stormwater Study: Flood Management & Water Quality Funding

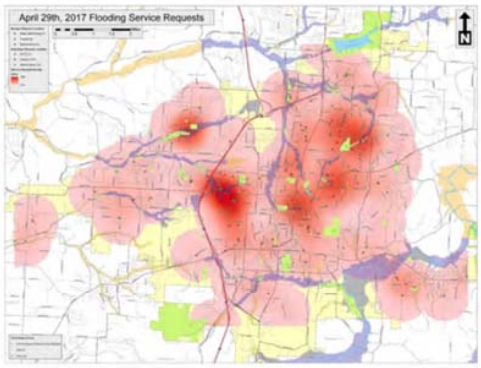
Stormwater runoff is generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and rooftops, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, and dirt/sediment that can harm our rivers, streams, and lakes. —US Environmental Protection Agency

Why is the City Concerned about Stormwater?

Fayetteville faces a growing backlog of drainage and stormwater management issues that can cause flooding of streets, structures, and the property of those who live here. Although customers can tell us where the worst issues are, the City does not currently have the financial resources or legal access to fix them all. Recent storms have generated hundreds of service requests for the City, on top of stormwater management activities and water quality projects that are mandated, but not funded, by the Clean Water Act.

The City is responsible for operating and maintaining the public portion of Fayetteville's municipal stormwater system. For example, approximately 65 percent of its roads and rights of way, 57 percent of the drainage pipes, and 43 percent of its outfalls are public.

Flood Service Requests, April 2017



With our city's growing population, we recognize that there is an increasing need to identify sustainable options for funding stormwater management.

Fayetteville's stormwater system includes over 585 miles of roads and rights of way, 500 miles of drainage pipes or channels, 1,500 stormwater outfalls, 12,000 manholes, and 285 detention ponds.

What are the Funding Needs?

The City currently spends approximately **$1.3 million annually** on stormwater activities. This includes compliance with the Arkansas Department of Environmental Quality stormwater permit requirements, maintenance and repair of the public drainage system, as well as water quality and flood management activities. The City's 2018 Drainage Improvement Plan estimates that **more than $15 million is needed** to protect public safety by addressing our most urgent backlog of stormwater maintenance and capital projects. *More* **funds are needed** to identify issues that have not yet been documented.

Under current policy, it will take several years for the City to accrue enough funds to complete even one of these significant stormwater projects.

What is the Proposed Solution?

The City is proposing to develop an "Early Action Plan" to address the most significant stormwater projects, to be presented to voters in early 2019 as part of a bond program.

To determine the best way to fund the remaining needs going forward, the City is conducting this **Study for Flood Management & Water Quality Funding** to evaluate a range of options.

What Will the Study Do?

The purpose of the study is to **present options for sustainable funding for stormwater management, to reduce flooding, and protect water quality.** The study has three phases:

1. Review the City's existing stormwater system and program.
2. Collect input from the City Council, staff, and City residents regarding the current state, and the necessary/desired future state of the CIty's stormwater programs.
3. Assess the advantages and disadvantages of various means of funding the program, including ongoing intermittent bond referendums, additional General Fund or Capital Improvement Program resources, and/or a dedicated stormwater fee.

SPEAK UP FAYETTEVILLE

We Need Your Input!

Input collected from stakeholders on both the program and funding options will be vital to the process in order for the City Council to make an informed decision early in 2019. To provide your input, visit Speak Up Fayetteville, the City's civic engagement portal, and complete our public input survey: **fayetteville-ar.gov/speakup.**

Table A-2. Common Acronyms and Terms

Acronym	Description	Definition
ADEQ	Arkansas Department of Environmental Quality	Government agency responsible for protecting human health and the natural environment in Arkansas. Permitting authority for stormwater / drainage. https://www.adeq.state.ar.us/
BMP	Best Management Practices	Activities, practices, procedures, and treatment processes utilities use to reduce or prevent pollutants from being released into streams, lakes, rivers, and oceans. Fayetteville-specific BMPs can be found in: https://www.fayetteville-ar.gov/696/Drainage-Criteria-Manual https://www.fayetteville-ar.gov/DocumentCenter/View/1556/Streamside-Protection-Best-Management-Practices-Manual-PDF
CIP	Capital Improvement Plan	The CIP for the City of Fayetteville examines the infrastructure and capital needs of the City for the next five years. https://www.fayetteville-ar.gov/527/Capital-Improvements-Plan
CIP Projects	Capital Improvement Plan Projects	Projects and their cumulative component areas totaling $10,000 or more should be included in the CIP. Projects costing less than $5,000 are not considered capital and are funded through program operating budgets.
CWA	Federal Clean Water Act, i.e. Federal Water Pollution Control Act, 33 U.S.C. 1251.	Federal measure to regulate pollutant discharge into streams, rivers, lakes, and oceans of the United States. https://www.epa.gov/laws-regulations/summary-clean-water-act
DCM	City of Fayetteville 2014 Drainage Criteria Manual	City document that provides guidance on procedures and design to control stormwater. https://www.fayetteville-ar.gov/696/Drainage-Criteria-Manual
EOS	Extent of Service	Defines where the City will work, i.e. drainage infrastructure for which the City will be responsible.
FEMA	Federal Emergency Management Agency	Federal entity that handles disaster response in case the event is too large for state or local governments to effectively handle. www.fema.gov
FIRM	Flood Insurance Rate Map	Map created by the Federal government that shows areas that are at higher risk of flooding. https://www.fayetteville-ar.gov/402/Floodplain-Management
FS	Study for Flood Management and Water Quality Funding	Study to evaluate sustainable funding options for the City's stormwater program, including a review of the existing program and additions needed to satisfy future regulatory and customer service needs. https://www.fayetteville-ar.gov/3328/Flood-Management-Study
IDDE	Illicit Discharges Detection and Elimination	Monitoring stormwater outfalls to detect illegal discharges including trash, yard waste, wastewater, oil, petroleum products, cleaning products, paint products, hazardous waste and sediment. https://www.fayetteville-ar.gov/491/Report-Stormwater-Pollution
LOS	Level of Service	What stormwater services the City would provide and at what frequency, i.e. regulatory compliance, operations and maintenance, and capital improvement planning, etc.
MS4	Municipal Separate Storm Sewer System	A conveyance (e.g., storm drains, channels, pipes,) or system of conveyances that is owned by the City of Fayetteville that discharges to waters of the U.S. and is designed or used to collect or convey stormwater runoff. https://www.epa.gov/npdes/stormwater-discharges-municipal-sources
Phase I Medium MS4	Medium municipal separate storm sewer systems	There are no Phase I Large MS4 permit holders in Arkansas; the City of Little Rock and Arkansas DOT are the only Phase I Medium MS4 entities. https://www.adeq.state.ar.us/water/permits/npdes/stormwater/

Table A-2. Common Acronyms and Terms

Acronym	Description	Definition
Phase II Small MS4	Small municipal separate storm sewer systems	City of Fayetteville is a Phase II small MS4 community covered under ADEQ's General Permit, # ARR040000.
NPDES	National Pollutant Discharge Elimination System	A permit program that regulates water pollution from distinct pipe, ditch, channel, tunnel, conduit, well, container, animal feeding operation, landfill, or floating vessel that discharges pollutants. The Clean Water Act prohibits anybody from discharging "pollutants" through a "point source" into a "water of the United States" unless they have an NPDES permit. The NPDES permit program addresses water pollution by regulating point sources that discharge pollutants to waters of the United States.
NPS	Non-point Source Pollution	Pollution from a combination of dispersed sources resulting from rainfall or snowfall moving over and through the ground during which it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters and ground waters.
	Protected Streams	Streams that drain at least 100 acres as identified on the Streamside Protection Map available on: https://www.fayetteville-ar.gov/1214/Streamside-Protection.
PS	Point Source Pollution	Distinct pipe, ditch, channel, tunnel, conduit, well, container, animal feeding operation, landfill, or floating vessel that discharges pollutants. This term does not include agricultural stormwater runoff.
SW	Stormwater	Rain, once it lands on the ground, which can either evaporate, seep underground, or flow downhill into streams, rivers, lakes, and oceans. In the natural environment, stormwater is soaked up by the soil and some plants, however in developed places with more asphalt, concrete, and roofs where the rainwater can't seep into the soil or be absorbed by plants, it can accumulate on top of the ground and cause flooding if not managed.
SWMP	City of Fayetteville 2015 Storm Water Management Program	The City of Fayetteville's plan to ensure compliance with their stormwater permit. https://www.fayetteville-ar.gov/DocumentCenter/View/1689/Stormwater-Management-Plan-PDF?bidId=
	Streamside Protection Areas	Streamside Protection Areas should be measured from the stream's top of bank as defined in: https://www.fayetteville-ar.gov/DocumentCenter/View/1556/Streamside-Protection-Best-Management-Practices-Manual-PDF
UDC	Unified Development Code	Document which consolidates all development-related activity including zoning requirements, subdivision regulations, design and development standards, and review procedures within a local government's jurisdiction. https://library.municode.com/ar/fayetteville/codes/code_of_ordinances?nodeId=CD_ORD_TITXVUNDECO
USACE	U.S. Army Corps of Engineers	Federal governing entity over waters of the United States.
WQ	Water Quality	Desired condition (chemical, physical, or biological) of a water body. Standards of water quality are enacted to preserve environmental health.

References:

www.epa.gov, www.fema.gov, Fayetteville, AR DCM, 2014. University of Arkansas Extension. What Is Water Quality? https://www.uaex.edu/publications/pdf/FSA-9528.pdf

Appendix B
Legislative Examples

APPENDIX B

Legislative Examples

The following ordinances were provided to the City of Fayetteville as legislative examples:

1. **City of Bryant, AR** – Rates in ordinance. Exemption for seniors only. No appeals or credits offered in ordinance.
2. **City of Hot Springs, AR** – Rates in ordinance. No appeals or credits offered in ordinance.
3. **City of San Antonio, TX** – Provided due to its central-U.S. location. This drainage utility example covers all legal considerations and is an example of tiered rates in ordinance.
4. **City of Charlotte, NC** – Provided as an example because it: establishes rates by a separate resolution, includes the precedence in which fees will be applied to a utility bill and establishes a Stormwater Advisory Committee within the ordinance.
5. **City of Brookhaven, GA** – This municipal example covers all legal considerations and is an example of rates established by Mayor and City Council outside of ordinance.
6. **DeKalb County, GA** –The ordinance for DeKalb County, Georgia is provided as an example of a single ordinance that establishes the enterprise fund and rate structures in one step. Like Hot Springs, this ordinance has withstood formal legal challenge since it was adopted in 2004.
7. **Montgomery County, MD** – Water Quality Protection charge with rates established by resolution.

The ordinances for the cities of Bryant (2016) and Hot Springs (2008) are provided to demonstrate the legislation used for the two other stormwater fee programs in Arkansas. However, the consulting team recommends the following modifications to these two ordinances for the City of Fayetteville's purposes:

- Removal of the actual fee/rate schedule from the ordinance, see later examples from the City of Brookhaven, GA and Montgomery County, MD for how this can be referenced outside of the legislation.
- Exemptions should only be specified for public right of ways, no discharge properties and select other subsets.
- Add essential sections for appeals and a credit system.