

City of Mission

CITY COUNCIL WORKSESSION

May 11, 2016

6:00 p.m.

Mission City Hall, 6090 Woodson

AGENDA

- 1. Community Investment Program (CIP)**
 - **Overview**
 - **Stormwater**

- 2. Adjournment**

Mission City Hall
6090 Woodson, Mission, Kansas
913-676-8350



Date: May 6, 2016

To: Mayor and City Council

From: Laura Smith, City Administrator

RE: 2015 Budget Memo #3

Mission long prided itself in a low mill-rate, relying primarily on sales tax revenues to support the annual budget. However, in the early 2000's a combination of factors began to emerge that put pressure on the City's resources, including:

- FEMA revisions to the 100-year floodplain, impacting the central business corridor
- Deferred maintenance of streets and stormwater infrastructure city-wide
- Deferred maintenance of City vehicles and equipment
- Deferred maintenance of City facilities (City Hall, Public Works)
- Increasing operating subsidies for the Community Center
- Increasing capital needs for the Community Center, the outdoor pool and the park system

These factors potentially threatened not only the City's ability to sustain the delivery of basic services, but also had long-term implications for maintaining property values throughout the community.

Historically, General Fund revenues were shared between operating costs and investment in infrastructure projects. From 2004-2013, approximately \$11 million was transferred from the General Fund for capital project construction or debt service associated with capital project construction, representing approximately 18% of total General Fund (operating) revenues for that same time period. With the exception of a \$560,000 transfer from the General Fund in 2015 for stormwater debt, deliberate steps have been taken to relieve the General Fund of responsibility for infrastructure maintenance.

For many years, there were no multi-year capital project plans guiding spending decisions for streets, stormwater, parks and other public facilities. Debt financing prior to 2005 was used primarily for construction and expansion of the Community Center, acquisition of parkland (Mohawk), economic development (Target) and limited stormwater improvements.



Community Investment Program - Overview

Since 2013, the City has used a 5-year Community Investment Program (CIP) to account/plan for revenues and expenses related to infrastructure investment, and provide a systematic plan for providing infrastructure improvements within a prioritized framework. The CIP is not only a management tool for the Governing Body and City staff, it can also provide valuable information to the Planning Commission, citizens, developers and businesses who are interested in the development and redevelopment of Mission. The CIP document can assist in leveraging available resources through improved timing of projects, and coordination of City projects with those of other public or private entities.

Goals and Objectives

The City's Community Investment Program (CIP) relies on the following principles to assist in evaluating and prioritizing capital project requests.

- Provide effective and efficient governmental services to residents, businesses and visitors.
- Enhance public health, safety and welfare.
- Consider solutions that extend beyond the City's boundaries.
- Use public investment as a catalyst for economic growth in a manner consistent with the major planning processes the City has performed.
- Safeguard the environment through implementation of sustainable solutions.
- Maintain and sustain effective land use planning.
- Maintain or enhance cultural, recreational, educational and social opportunities.
- Protect existing investment in facilities and infrastructure Anticipate future facility and infrastructure needs to best leverage the City's capital resources.
- Comply with applicable state and federal mandates.

Mission continues to face infrastructure challenges which will put pressure on current and future budgets. The CIP is an important tool to guide the decision-making process, and unlike the annual budget, with the exception of the first year, the 5-Year CIP does not have to be balanced.

The CIP provides a solid framework within which to understand the revenues and expenses associated with our capital investment priorities. It accounts for current debt service and construction obligations as well as allows time to evaluate and discuss future priorities.



We develop the plan each year with the following objectives.

1. Integrate the CIP budget into the Annual Operating Budget in order to provide a comprehensive financial plan for accomplishing the goals of Mission.
2. Execute the CIP budgetary process in a manner that will provide the Governing Body with an opportunity to respond to community needs.
3. Leverage City resources against available federal, state and county funds in such a manner that the present and future citizens of Mission will be provided with the highest level of services and facilities without adverse financial impacts in the future.
4. Ensure that all decisions and actions will assist in maintaining the City's bond ratings.

Despite the benefits of multi-year capital planning, it is important to remember that the CIP is fluid. It must be reviewed and updated continually. Changes can occur for many reasons. Revenues can fluctuate as a result of changing economic conditions or shifts in public policy. Private economic decisions can also affect the timing, scale and location of capital projects. Finally, community objectives and priorities are often revised during the annual budget process. Frequent review provides opportunities to maintain flexibility to ensure an effective level of service for present and future citizens.

In our conversations surrounding the CIP, we will review and evaluate needs and priorities, consider funding options, and discuss the potential impact of private economic decisions on the timing, scale and location of various public projects.

City Funding Sources

Implementing dedicated revenue streams for capital infrastructure investment has allowed the City to make progress in addressing street, stormwater and park needs. Revenue streams within the Council's control that will be part of our 2017 Budget discussions include:

- Stormwater Utility Fees
- Transportation Utility Fees
- Property Tax Revenues
- Sales Tax Revenues
 - 1/4-cent Dedicated Street Sales Tax
 - 3/8-cent Dedicated Parks & Recreation Sales Tax
- Drainage District Revenues



Outside Funding Sources

In addition to developing dedicated local revenue streams, the City has also aggressively pursued outside funding to help support the investment in capital infrastructure. More than \$30 million in federal, state and county funds were secured for infrastructure projects between 2005-2015.

Major stormwater projects can be funded with assistance from the Johnson County Stormwater Management Advisory Committee (SMAC). This program collects revenue county-wide and reallocates it among all cities through an application process. Mission has also benefitted from state and local grants for stormwater.

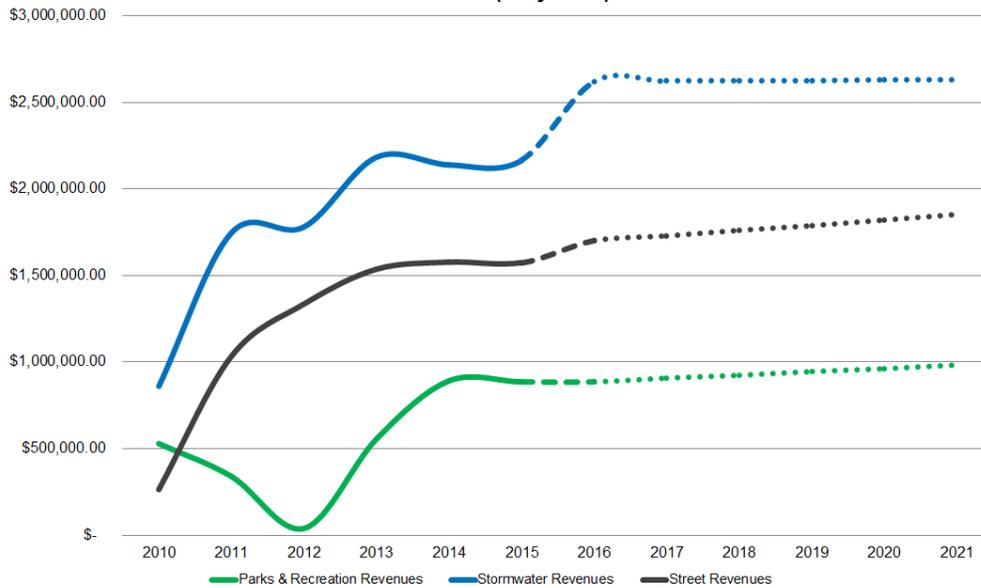
Arterial street projects are eligible for support through the Johnson County Assisted Road Systems (CARS) program. CARS funding is considered and appropriated annually by the Board of County Commissioners and is derived from the County's share of the state assessed gasoline taxes (Special Highway funds).

Other outside revenue sources that help support the CIP include Special Highway revenues (pass through from State) and Special Parks & Recreation Revenues (pass through from State).

Capital Infrastructure Revenue Forecast

The tables below illustrate, by category, the forecast for Mission's dedicated infrastructure revenues over the next five years.

**Community Investment Program Revenues
2010 - 2021 (Projected)**



	P&R	Stormwater	Streets	Grand Total
2011	\$339,277.55	\$1,746,157.62	\$1,032,919.66	\$3,118,354.83
2012	\$38,569.30	\$1,779,809.42	\$1,334,873.01	\$3,153,251.73
2013	\$555,793.05	\$2,182,831.06	\$1,536,021.81	\$4,274,645.92
2014	\$891,473.14	\$2,138,317.64	\$1,576,539.91	\$4,606,330.69
2015	\$885,548.30	\$2,163,647.13	\$1,574,066.50	\$4,623,261.93
2016	\$885,548.30	\$2,620,912.57	\$1,699,122.33	\$5,205,583.20
2017	\$906,458.69	\$2,622,795.73	\$1,729,794.19	\$5,259,048.61
2018	\$924,471.55	\$2,624,720.70	\$1,758,989.11	\$5,308,181.36
2019	\$942,842.57	\$2,626,688.40	\$1,788,886.90	\$5,358,417.88
2020	\$961,578.88	\$2,628,699.79	\$1,819,501.87	\$5,409,780.54
2021	\$984,288.65	\$2,630,755.83	\$1,853,249.24	\$5,468,293.72



Debt Summary

The City has also consciously used debt to address deferred infrastructure needs. The amount of debt incurred in recent years is not insignificant, but it is important that we evaluate debt in relationship to the increase in the City's net assets and the useful life of the assets being constructed or repaired. We will review the City's outstanding debt in detail as are part of our discussions surrounding the 5-Year Community Investment Program (CIP). A summary of the City's outstanding debt for 2016 is included in the packet.

2017-2021 Community Investment Program

The 5-Year CIP is structured in three functional areas: stormwater, streets and parks. The goal of presenting individual project plans is to provide a clear picture of the dedicated revenue sources to allow for meaningful discussion and programming of future infrastructure projects. A comprehensive understanding of how each Project Plan works allows us to be more effective in presenting and evaluating alternatives related to operations and capital infrastructure funding throughout the remainder of the budget process. We will work through each area individually, eventually bringing them all together into a comprehensive plan. Our attention during the first work session will be focused on stormwater.

Stormwater

Over the last ten years, the City made major investments in stormwater improvements along the Rock Creek Channel, removing significant sections of private commercial properties from the 100-Year FEMA Floodplain. Prior to approval of the 2016 Budget, stormwater utility fee revenues essentially covered existing debt service only, providing no funds for new projects or system maintenance.

In addition providing no excess revenue, over the last two to three budget cycles, we had anticipated a revenue shortfall for stormwater debt service. It materialized in 2015, and was accommodated through the one-time use of unanticipated General Fund revenues.

The Council took two actions as part of the 2016 Budget to address the shortfall going forward. The first was to increase the stormwater utility fee by \$5/ERU/month. This resulted in an increase in revenues of \$450,000 per year. A \$1/ERU/month adjustment generates approximately \$90,000 annually. Additionally, the Council took the final steps to certify the stormwater special benefit district at the Gateway site, providing for assessment revenues of approximately \$600,000 per year.

These actions now make funds available for new projects or system maintenance. Despite the investment already made in stormwater since 2005, there are still significant issues to be



addressed. The 2016-2020 Stormwater Project plan (current) is included in the packet, along with two future scenarios which we will discuss in more detail during the work session.

New Projects

In early 2012, the Council received the results of the Rock Creek Cost Benefit Study (Black & Veatch), and in June approved Resolution No. 862 (both attached) establishing the City's preferred stormwater management and floodplain mitigation strategy as outlined below:

Option 4 eliminates flooding of properties in the study area by implementing an option from the previously discussed Rock Creek PES. This option includes a new interceptor pipe beneath Johnson Drive between Maple Street and Metcalf Avenue, secondary system improvements north of Johnson Drive to capture and convey water to the new interceptor, and reinforced concrete box improvements to Rock Creek between Maple Street and Lamar Avenue.

Following this strategy, the first phase of the interceptor (Maple to Lamar) was installed with the Johnson Drive Improvements. Based on completed projects, and stormwater management best practices, the optimal approach for sequencing future stormwater projects was developed.

Regardless of when they are constructed, the remaining stormwater projects contemplated in Resolution 862 should be considered in the following order:

- Project 1: Interceptor Connection at Outlook
- Project 2: Interceptor Connection at Horton
- Project 3: Johnson Drive Interceptor Phase II (Lamar to Metcalf)
- Project 4: Rock Creek Channel Improvements (Maple to Outlook)
- Project 5: Rock Creek Channel Improvements (Outlook to Woodson)
- Project 6-7: Rock Creek Channel Improvements (Woodson to Lamar) + 61st St. Tributary

Because of budgetary constraints, several engineering studies were removed from the Stormwater Project Plan in 2014. The studies were intended to: 1) establish costs for the projects; and 2) to assist the City in pursuing outside funding sources, primarily SMAC, for future projects. Details of the plans/studies are included below.

Stormwater Master Plan: Phase II (\$68,000)

A subsequent phase of the Stormwater Master Plan should be completed to prioritize the most critical improvements upstream of the main Rock Creek channel. It should integrate stormwater system improvements with available funding mechanisms and future capital improvement projects such as street projects, private redevelopment projects, green solutions, and other



utility work projects. This would provide critical baseline information for how to optimally sequence those projects in future years.

PES #1 – Interceptor Connection at Outlook (\$35,000)

The first preliminary engineering study (PES) would focus on limited secondary system pipe improvements north of Johnson Drive at Outlook that connect to the Johnson Drive interceptor. These improvements are required to capture and convey stormwater from the 100-year storm event into the interceptor pipe, connecting it with the Rock Creek channel improvements that have already been constructed from Maple to the Gateway site. Strategically placed inlets are required to capture the 100-year runoff before overflows accumulate in the streets in the business district.

PES #2 – Interceptor Connection at Horton (\$35,000)

The second PES would focus on limited secondary system pipe improvements north of Johnson Drive at Horton that connect to the Johnson Drive interceptor. These improvements are required to capture and convey stormwater from the 100-year storm event into the interceptor pipe, connecting it with the Rock Creek channel improvements that have already been constructed from Maple to the Gateway site. Strategically placed inlets are required to capture the 100-year runoff before overflows accumulate in the streets in the business district.

System Maintenance

In addition to the “new” projects, there are also an increasing number of maintenance issues or projects that should be incorporated into the Stormwater Project Plan. Perhaps the most significant is the section of the Rock Creek channel just west of Nall as it travels west toward Roeland Drive.



There is significant erosion along this channel, both on the north and south sides. There are some portions of the channel within drainage easements, and others which are not. This is one of several potential projects we will discuss in more detail.

Summary

We do not expect to be in a position to finalize a 5-year stormwater plan during our first work session. However, staff will be looking for specific discussion and direction on the following issues:

- How/when should we proceed with the engineering studies originally included in the 2014 CIP?
- How much should be set aside in a maintenance fund annually?
- Reprioritization of stormwater projects?
- What is your philosophical approach to funding future stormwater projects (debt financing vs. pay as you go)?

CITY OF MISSION
DEBT SUMMARY 2016

Debt Issue	Issue Date	Original Issue Amount	Interest Rates	Amount Outstanding 1/1/2016	Debt to be Issued in 2016	Debt Service 2016		Amount Outstanding 12/31/2016	Repayment Source
						Interest	Principal		
GO Taxable Bonds, Series 2007A Mission Pet Mart Relocation	5/1/2007	\$ 750,000	5.0-5.3	\$ 270,000	\$ -	\$ 14,250	\$ 85,000	\$ 185,000	Private loan repayment
GO Bonds, Series 2010A Refunding of 2008-2 Taxable Temp Notes	8/18/2010	\$ 3,200,000	2.0-2.75	\$ 1,695,000	\$ -	\$ 46,612	\$ 320,000	\$ 1,375,000	Stormwater utility fees, drainage district revenues, transfers
GO Refunding Bonds, Series 2010B Restructure 2005A and portion of 2009A	12/15/2010	\$ 6,945,000	4.0-4.25	\$ 6,945,000	\$ -	\$ 279,132	\$ -	\$ 6,945,000	Stormwater utility fees, drainage district revenues, transfers
GO Bonds, Series 2011A Nall Avenue Construction	3/15/2011	\$ 4,440,000	1.25-1.75	\$ -	\$ -	\$ -	\$ -	\$ -	Transportation Utility fees & CARS Reimbursements
GO Bonds, Series 2012A Johnson Drive/Martway Improvements	2/16/2012	\$ 4,360,000	.40-2.0	\$ 3,095,000	\$ -	\$ 45,870	\$ 425,000	\$ 2,670,000	1/4-cent Street Sales Tax beginning 4/1/2012 and sunseting after 10 years
GO Bonds, Series 2013A Streetlight Acquisition	7/11/2013	\$ 680,000	2.0-3.0	\$ 555,000	\$ -	\$ 13,476	\$ 65,000	\$ 490,000	General Fund operating savings
GO Bonds, Series 2013B Mission Aquatic Center	7/11/2013	\$ 4,510,000	2.0-3.0	\$ 3,715,000	\$ -	\$ 111,450	\$ 415,000	\$ 3,300,000	Parks & Recreation Sales Tax
GO Bonds, Series 2013C Johnson Drive Improvements	12/20/2013	\$ 4,480,000	2.0-2.5	\$ 4,020,000	\$ -	\$ 84,438	\$ 470,000	\$ 3,550,000	1/4-cent street sales tax, Special Highway, Transportation Utility fees and Stormwater Utility fees
GO Refunding, Series 2014-A (replaced portion of 2009-A)	8/7/2014	\$ 9,795,000	2.0-3.0	\$ 9,695,000	\$ -	\$ 224,838	\$ 100,000	\$ 9,595,000	Stormwater utility fees, drainage district revenues, transfers
GO Refunding, Series 2014-B (replaced portion of 2009-A)	8/27/2014	\$ 4,035,000	2.0-4.0	\$ 2,785,000	\$ -	\$ 98,800	\$ 1,260,000	\$ 1,525,000	Stormwater utility fees, drainage district revenues, transfers
Totals		\$ 43,195,000		\$ 32,775,000	\$ -	\$ 918,866	\$ 3,140,000	\$ 29,635,000	

Total Debt Service Payments:
\$ 4,058,866

Types of Improvements:

Streets
Stormwater
Parks
Private/Special Assessments
General Fund

Stormwater Program Plan (2016-2020) - \$5/ERU Increase

Revenues	2015	2016	2017	2018	2019	2020
Beginning Balance	127,198	87,314	47,995	3,076	539,932	989,738
<i>Local Revenue</i>						
Stormwater Utility Fund Revenues	2,050,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Drainage District Revenues	80,000	80,000	80,000	80,000	80,000	80,000
Transfer from General Fund for Debt Service	485,000					
Transfer from CIP Fund for Debt Service						
Gateway Special Benefit District Revenues				600,000	600,000	600,000
Sub-total	2,615,000	2,580,000	2,580,000	3,180,000	3,180,000	3,180,000
<i>External Revenue</i>						
SMAC Revenues						
Miscellaneous Revenues						
Sub-total	0	0	0	0	0	0
<i>Debt Proceeds</i>						
Sub-total	0	0	0	0	0	0
Total Stormwater Revenues	2,615,000	2,580,000	2,580,000	3,180,000	3,180,000	3,180,000
Expenses						
<i>Capital Projects</i>						
Sub-total	0	0	0	0	0	0
<i>Maintenance Programs</i>						
Repair and Maintenance Fund			35,000	50,000	50,000	50,000
Stormwater Administrative Costs						
Miscellaneous Engineering						
Sub-total	0	0	35,000	50,000	50,000	50,000
<i>Debt Service/Loan Repayment</i>						
KDHE ARRA Loan Repayment	6,562	6,562	6,562	6,562	6,562	6,562
GO Series 2010A	367,913	366,613	367,813	368,738	369,388	364,763
GO Series 2010B	279,131	279,131	279,131	279,131	279,131	974,131
GO Series 2013C - Stormwater Portion	283,075	283,375	283,575	283,675	283,675	283,575
GO Series 2014-A	343,027	324,838	321,838	1,389,838	1,741,438	1,050,538
GO Series 2014-B	1,375,176	1,358,800	1,331,000	265,200	0	0
Sub-total	2,654,884	2,619,319	2,589,919	2,593,144	2,680,194	2,679,569
Total Stormwater Expenses	2,654,884	2,619,319	2,624,919	2,643,144	2,730,194	2,729,569
Ending Balance	87,314	47,995	3,076	539,932	989,738	1,440,169

Remaining Debt Service/ Year Retires
 \$ 75,465 (2031)
 \$7,333,150 (2029)
 \$ 853,450 (2023)
 \$6,563,963 (2029)

Stormwater Program Plan (2017-2021) - \$28/ERU - Full Gateway Assessment

	2016	2017	2018	2019	2020	2021	
Revenues							
Beginning Balance	78,704	638,980	1,178,656	1,690,107	2,114,508	2,539,534	
<i>Local Revenue</i>							
Stormwater Utility Fund Revenues	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	
Drainage District Revenues	80,000	80,000	80,000	80,000	80,000	80,000	
Transfer from General Fund for Debt Service							
Transfer from CIP Fund for Debt Service							
Gateway Special Benefit District Revenues	599,595	599,595	599,595	599,595	599,595	599,595	
Sub-total	3,179,595	3,179,595	3,179,595	3,179,595	3,179,595	3,179,595	
<i>Extenal Revenue</i>							
SMAC Revenues							
Miscellaneous Revenues							
Sub-total	0	0	0	0	0	0	
<i>Debt Proceeds</i>							
Sub-total	0	0	0	0	0	0	
Total Stormwater Revenues	3,179,595	3,179,595	3,179,595	3,179,595	3,179,595	3,179,595	
Expenses							
<i>Capital Projects</i>							
Sub-total	0	0	0	0	0	0	
<i>Maintenance Programs</i>							
Repair and Maintenance Fund		50,000	75,000	75,000	75,000	75,000	
Stormwater Administrative Costs							
Miscellaneous Engineering							
Sub-total	0	50,000	75,000	75,000	75,000	75,000	
<i>Debt Service/Loan Repayment</i>							
KDHE ARRA Loan Repayment	6,562	6,562	6,562	6,562	6,562	6,562	Remaining Debt Service/ Year Retires \$68,903 (2031)
GO Series 2010A	366,613	367,813	368,738	369,388	364,763	-	
GO Series 2010B	279,131	279,131	279,131	279,131	974,131	1,331,331	\$4,944,455 (2026)
GO Series 2013C - Stormwater Portion	283,375	283,575	283,675	283,675	283,575	283,375	\$570,075 (2023)
GO Series 2014-A	324,838	321,838	1,389,838	1,741,438	1,050,538	1,052,838	\$5,511,127 (2029)
GO Series 2014-B	1,358,800	1,331,000	265,200	-	-	-	
Sub-total	2,619,319	2,589,919	2,593,144	2,680,194	2,679,569	2,674,106	
Total Stormwater Expenses	2,619,319	2,639,919	2,668,144	2,755,194	2,754,569	2,749,106	
Ending Balance	638,980	1,178,656	1,690,107	2,114,508	2,539,534	2,970,023	

Stormwater Program Plan (2017-2021) - \$28/ERU - Less 3 Years Gateway Assessment

	2016	2017	2018	2019	2020	2021
Revenues						
Beginning Balance	78,704	638,980	579,061	490,917	315,723	740,749
<i>Local Revenue</i>						
Stormwater Utility Fund Revenues	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Drainage District Revenues	80,000	80,000	80,000	80,000	80,000	80,000
Transfer from General Fund for Debt Service						
Transfer from CIP Fund for Debt Service						
Gateway Special Benefit District Revenues	599,595				599,595	599,595
Sub-total	3,179,595	2,580,000	2,580,000	2,580,000	3,179,595	3,179,595
<i>External Revenue</i>						
SMAC Revenues						
Miscellaneous Revenues						
Sub-total	0	0	0	0	0	0
<i>Debt Proceeds</i>						
Sub-total	0	0	0	0	0	0
Total Stormwater Revenues	3,179,595	2,580,000	2,580,000	2,580,000	3,179,595	3,179,595
Expenses						
<i>Capital Projects</i>						
Sub-total	0	0	0	0	0	0
<i>Maintenance Programs</i>						
Repair and Maintenance Fund		50,000	75,000	75,000	75,000	75,000
Stormwater Administrative Costs						
Miscellaneous Engineering						
Sub-total	0	50,000	75,000	75,000	75,000	75,000
<i>Debt Service/Loan Repayment</i>						
KDHE ARRA Loan Repayment	6,562	6,562	6,562	6,562	6,562	6,562
GO Series 2010A	366,613	367,813	368,738	369,388	364,763	-
GO Series 2010B	279,131	279,131	279,131	279,131	974,131	1,331,331
GO Series 2013C - Stormwater Portion	283,375	283,575	283,675	283,675	283,575	283,375
GO Series 2014-A	324,838	321,838	1,389,838	1,741,438	1,050,538	1,052,838
GO Series 2014-B	1,358,800	1,331,000	265,200	-	-	-
Sub-total	2,619,319	2,589,919	2,593,144	2,680,194	2,679,569	2,674,106
Total Stormwater Expenses	2,619,319	2,639,919	2,668,144	2,755,194	2,754,569	2,749,106
Ending Balance	638,980	579,061	490,917	315,723	740,749	1,171,238

Remaining Debt Service/ Year Retires
 \$68,903 (2031)
 \$4,944,455 (2026)
 \$570,075 (2023)
 \$5,511,127 (2029)

March 2, 2012

Rock Creek Cost Benefit Analysis

CITY OF MISSION, KANSAS

BLACK AND VEATCH

Laura Adams
3/2/2012

Executive Summary

The purpose of this study is to evaluate the costs and benefits of a range of options to address flooding along Rock Creek in order to identify the most cost effective plan for the City of Mission. The City of Mission, Kansas, is one of the pioneering communities in Johnson County and as the contributing drainage areas have developed, the City has become increasingly impacted by flood events. The majority of the City's flooding issues are documented along the main channel of Rock Creek. The options evaluated in this cost benefit analysis include the design and construction of stormwater improvements along the Rock Creek main channel as well as limited secondary collection areas to alleviate street flooding.

Four options are presented in this study and each option addresses a distinct set of goals. Each option is evaluated with a probable cost of such improvement, benefits, and the possibility of leveraging outside funding for the project. These are as follows:

Option 1: This option includes removing all buildings from the floodplain by purchasing and demolishing structures in the FEMA floodplain along Rock Creek between Lamar Avenue and Maple Street.

Option 2: This option builds on Option 1 (the removal of buildings from the floodplain through purchase and demolition) by incorporating aesthetic improvements to the channel, stabilization strategies along the main channel of Rock Creek and general beautification. This option includes a range of costs that represent both stacked stone bank protection strategy and more naturalized aesthetic bank protection strategy.

Option 3: The flood mitigation goal of Option 3 is to mitigate street flooding of arterials per APWA 5600 guidelines. This option addresses street flooding of Johnson Drive and Nall Avenue and removes some structures from the floodplain by including the Johnson Drive interceptor project and additional measures that reduce flood elevations of the main channel. Some buy-out and demolition is still required with Option 3. This option also includes the stabilization strategies along the main channel and general beautification to develop the Rock Creek channel as a community resource.

Option 4: This option eliminates flooding of all properties and streets within the FEMA floodplain along Rock Creek by including the Johnson Drive interceptor project between Maple Street and Lamar Avenue and reinforced concrete box improvements along Rock Creek between Maple Street and Lamar Avenue, an option from the Rock Creek PES that was presented in March 2011.

Black & Veatch compiled an opinion of probable cost for each project based on unit cost data that reflects recent project experience in the City. Some costs of design and construction were sourced from the Johnson Drive PES (RC-06-016) dated March 2011 and the Secondary Stormwater Drainage Master Plan, developed by Black and Veatch in June 2010. The City provided land and structure values from Johnson County Land Records. The following table presents the costs and benefits associated with each of the four options.

City of Mission, Rock Creek Cost Benefit Analysis

COSTS	Option 1	Option 2	Option 3	Option 4
Improvement Cost	\$100,000	\$6,403,000 to \$8,678,000	\$19,284,000	\$26,890,000
Land Acquisition + Demolition	\$5,502,000	\$5,614,000	\$4,996,000	\$1,683,000
Contingency on Land	\$1,375,000	\$1,404,000	\$1,249,000	\$421,000
Design, Bidding, Construction Observation, Permitting	\$698,000	\$1,570,000	\$2,553,000	\$2,899,000
TOTAL COST	\$7,675,000	\$14,991,000 to \$17,265,000	\$28,082,000	\$31,893,000

BENEFITS				
Street Flooding	NA	NA	Mitigates flooding on Johnson Drive and Nall Avenue	Mitigates street flooding in project extents
Total Property Value Removed from Floodplain	\$0	\$0	\$3,198,000	\$7,402,000

Options 1 and 2 do not achieve specific goals regarding flood mitigation within the currently impacted areas. However, these options remove structures from the floodplain, and Option 2 incorporates aesthetic enhancements to channel and addresses sanitary sewer relocation issues. Although the amount of outside funding from Johnson County SMAC (Stormwater Management Advisory Council) is unknown at this time, the City could pursue county funding for implementation of any option.

Both Options 3 and 4 remove significant areas of developed and vacant land from the floodplain, as represented by the values shown in the table above. These options also address street flooding. SMAC rules would allow Options 3 and 4 to benefit from SMAC funding, up to 75% of total eligible project costs. However, given current SMAC program funding levels, multi-agency approvals (including downstream Cities), and overall magnitude of improvements, the SMAC program may not contribute a significant percentage towards these projects.

Overall, selection of a strategy for protection of private property or flood mitigation in the downtown area of the City of Mission is dependent on the goals the City chooses to achieve and the amount of funding that is available for the project(s). Upon City Council direction, Staff will continue to work to implement the improvement strategy selected by the Council – including the procurement of outside sources of funding for these projects. Depending on the option selected, additional City funds would have to be dedicated to this area of the City.

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1.0 Introduction

The purpose of this study is to evaluate the costs and benefits of a range of options to address flooding along Rock Creek in order to identify the most cost effective plan for the City of Mission. The City of Mission, Kansas, is one of the pioneering communities in Johnson County and as the contributing drainage areas have developed, the City has become increasingly impacted by flood events. The majority of the City's flooding issues are documented along the main channel of Rock Creek. The options evaluated in this cost benefit analysis include the design and construction of stormwater improvements along the Rock Creek main channel as well as limited upstream secondary collection areas to alleviate business, home and street flooding.

This cost benefit analysis includes the main channel of Rock Creek between Nall Avenue and Lamar Avenue and secondary system improvements along Johnson Drive. The extent of the analysis is shown in Figure 1, highlighted in yellow.

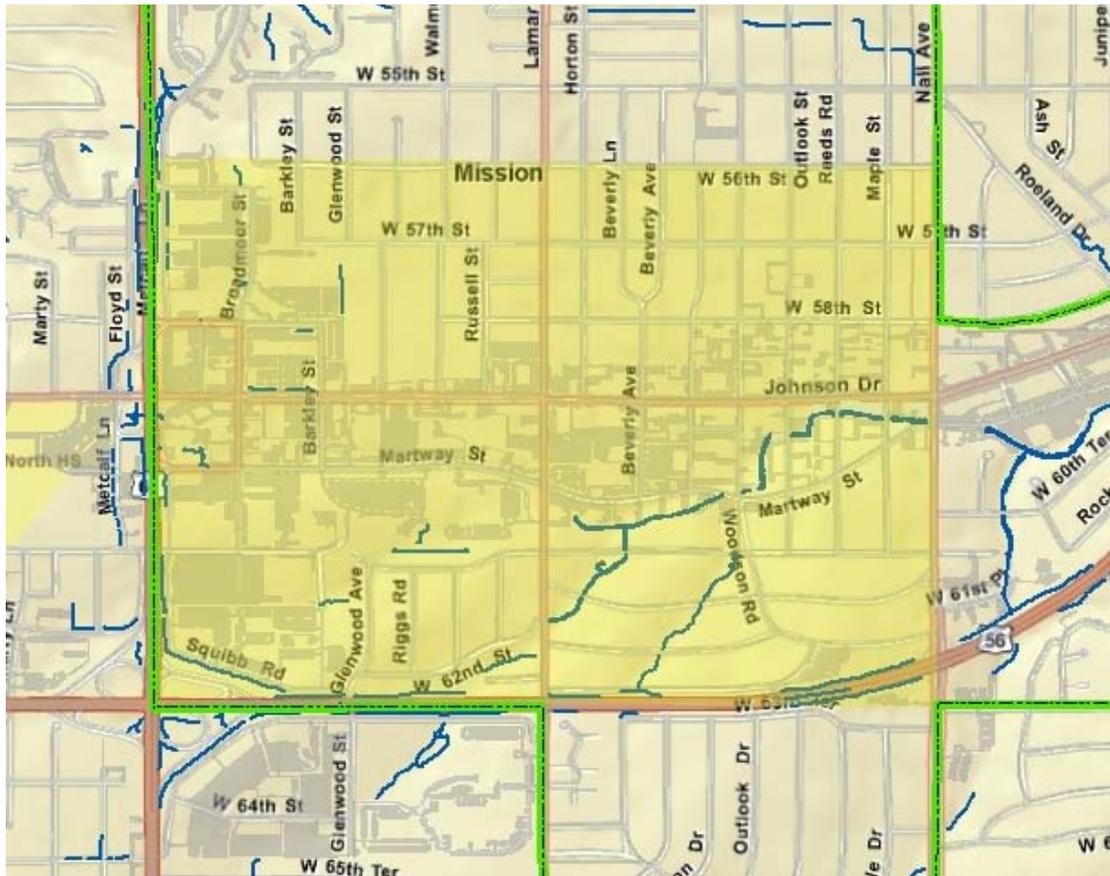


FIGURE 1. EXTENT OF ANALYSIS (HIGHLIGHTED IN YELLOW)

Four options are presented in this study and each option addresses a distinct set of goals. Each option is evaluated with a probable cost of improvement, benefits, and the possibility of leveraging outside funding for the project. These are as follows:

Option 1: This option includes removing all buildings from the floodplain by purchasing and demolishing structures in the FEMA floodplain along Rock Creek between Lamar Avenue and Maple Street.

Option 2: This option builds on Option 1 (the removal of buildings from the floodplain through purchase and demolition) by incorporating aesthetic improvements to the channel, stabilization strategies along the main channel of Rock Creek and general beautification. This option includes a range of costs that represent both stacked stone bank protection strategy and more naturalized aesthetic bank protection strategy.

Option 3: The flood mitigation goal of Option 3 is to mitigate street flooding of arterials per APWA 5600 guidelines. This option addresses street flooding of Johnson Drive and Nall Avenue and removes some structures from the floodplain by including the Johnson Drive interceptor project and additional measures that reduce flood elevations of the main channel. Some buy-out and demolition is still required with Option 3. This option also includes the stabilization strategies along the main channel and general beautification to develop the Rock Creek channel as a community resource.

Option 4: This option eliminates flooding of all properties and streets within the FEMA floodplain along Rock Creek by including the Johnson Drive interceptor project between Maple Street and Lamar Avenue and reinforced concrete box improvements along Rock Creek between Maple Street and Lamar Avenue, an option from the Rock Creek PES that was presented in March 2011. These structures are highlighted in orange and presented in Figure 2. Table 1 presents the address and values associated with each of these properties, provided by Johnson County Land Records. All figures are presented in Appendix B as well, with legends.



FIGURE 2. STRUCTURES (HIGHLIGHTED IN ORANGE) IN FEMA FLOODPLAIN (BLUE)

TABLE 1. STRUCTURE AND LAND VALUE OF PROPERTIES IN FLOODPLAIN, LAMAR TO MAPLE (JOHNSON COUNTY LAND RECORDS)

ID	Address	Structure Value	Land Value	Total Value
1 through 3	RESIDENTIAL	\$325,050	\$102,950	\$428,000
4	6219 MARTWAY ST	\$261,290	\$485,570	\$746,860
5	6005 MARTWAY ST	\$890,070	\$322,930	\$1,213,000
6	same as 5			
7	5909 MARTWAY ST	\$241,780	\$112,220	\$354,000
8	5945 WOODSON ST	\$136,680	\$76,210	\$212,890
9	same as 8			
10	5939 WOODSON ST	\$58,800	\$106,820	\$165,620
11	5929 WOODSON ST	\$65,340	\$78,620	\$143,960
12	5923 WOODSON ST	\$40,880	\$70,800	\$111,680
13	5917 WOODSON ST	\$158,170	\$70,830	\$229,000
14	5932 OUTLOOK ST	\$711,000	\$169,000	\$880,000
15a*	5801 JOHNSON DR	\$127,480	\$294,120	\$421,600
15b*	5908 OUTLOOK ST	\$299,140	\$141,120	\$440,260
16	5735 JOHNSON DR	\$306,370	\$134,630	\$441,000
17	5954 WOODSON ST	\$779,000	\$195,000	\$974,000
18	6025 LAMAR AVE	\$546,000	\$177,000	\$723,000
TOTAL				\$7,485,000

**Properties are separate tax parcels but building shares common wall.*

2.0 Historical Review

The City of Mission has invested along the Rock Creek channel over the last decade. The focus has been on alleviating flooding in the downstream portion of the City’s business district, from Maple Street to Roe Avenue. The City has leveraged SMAC funding to complete Preliminary Engineering Studies for projects along Rock Creek and has completed four major construction projects, including the Gateway Site, Nall Avenue Bridge, Nall Avenue Floodwall, and Maple Street Extension.

The City Council has guided these stormwater improvements along Rock Creek since 2005 with several resolutions. A summary of these resolutions, provided by the City, is presented in Table 2.

TABLE 2. CITY COUNCIL RESOLUTIONS RELATED TO STORMWATER IMPROVEMENTS

Resolution #	Date	Title
R-601	8/10/2005	A Resolution Adopting Individual Components of the Mission/Rock Creek Master Plan, Vision Document, Thus Establishing Municipal Flood Control, Redevelopment and Financing Policies for Capital Infrastructure Improvements and Associated Redevelopment Within the Rock Creek Channel Improvement Area
R-609	10/12/2005	A Resolution of Intent That the City of Mission, Kansas Shall Pursue Improvements to the Rock Creek Channel and The Anticipated Costs Thereof
R-625	3/8/2006	A Resolution Adopting Individual Components of the Mission/Rock Creek Redevelopment Master Plan, Vision Document, Thus Establishing Municipal Flood Control, Redevelopment and Financing Policies for Capital Infrastructure Improvements and Associated Redevelopment Within the Rock Creek Channel Improvement Area, and Further Adopting the Vision of a Future Signature Park Along the Proposed Alignment of the Rock Creek Flood Control Improvement Project Area, Between Johnson Drive, Nall Avenue, Martway Street, and Woodson Avenue
R-683	10/17/2007	A Resolution Establishing Municipal Flood Control Strategies For Capital Infrastructure Improvements Within the Rock Creek Channel Improvement Area Between Woodson Avenue and Lamar Avenue
R-651	12/13/2007	A Resolution Establishing Municipal Flood Control, Redevelopment and Financing Policies for Capital Infrastructure Improvements and Associated Redevelopment Within the Central Rock Creek District
R-722	8/20/2008	A Resolution Establishing Tax Rates and Financial Policies For Budget Year 2009 For the Rock Creek Drainage District No. 2 In The City of Mission, Kansas
R-720	10/20/2008	A Resolution Establishing Tax Rates and Financial Policies For Budget Year 2009 For the Rock Creek Drainage District No. 1 In The City of Mission, Kansas.
R-733	1/21/2009	A Resolution Endorsing Projects Proposed by the City of Mission as Candidate Projects for a Federal Stimulus Package
R-737	2/18/2009	A Resolution Establishing Municipal Flood Control Strategies For Capital Infrastructure Improvements Within the Rock Creek Channel Improvement Area Between Nall Avenue and Roeland Drive
R-769	9/16/2009	Resolution 769 (This resolution accepts and adopts the Rock Creek Watershed Planning- Futures Study, and directs staff to begin process of making all necessary ordinances and resolutions to support the recommendations found in the study.)

City of Mission, Rock Creek Cost Benefit Analysis

R-811	12/15/2010	A Resolution Amending the Maximum Expenditure Authority For the 2010 Budget for the Rock Creek Drainage District #1 in The City of Mission, Kansas
R-834	8/17/2011	A Resolution Establishing the Rate for the Stormwater Utility
R-852	1/12/2012	A Resolution Establishing An Evaluation Process of Various Stormwater Improvement Strategies Under Consideration for the Rock Creek Watershed

Over the past decade, the City of Mission has spent approximately \$23 million on four significant stormwater improvements along Rock Creek. These investments have resulted in a significant change in the floodplain of Rock Creek through the eastern downtown business district of the City. FEMA floodplain maps are provided in Appendix C to show the floodplain extent before and after improvements. The following table, provided by the City, shows the breakdown of expenditures on Rock Creek projects.

TABLE 3. SUMMARY OF MAJOR PAST PROJECTS ALONG ROCK CREEK

Project	Engineer	Contractor	\$ Amount Spent To-Date
Gateway Stormwater Improvements	Black & Veatch	Max Rieke & Brothers	\$15,863,700
Nall Avenue Bridge	Black & Veatch	J.M. Fahey	\$5,333,383
Maple Extension	Black & Veatch	J.M. Fahey	\$353,231
Rock Creek Nall to Roeland Dr.	Black & Veatch	Max Rieke & Brothers	\$1,604,628
TOTAL			\$23,000,000

These improvements have resulted in significant changes to the floodplain. The tax value of land that is now located outside of the floodplain is approximately \$20 million, based on 2011 values provided by Johnson County Land Records. The real value is estimated to be significantly higher due to market value of land at Johnson Drive and Roe: "Gateway Site". Table 4, provided by the City, presents the addresses that have been removed and their associated 2011 valuation.

TABLE 4. PARCELS REMOVED FROM FLOODPLAIN, PAST PROJECTS

Address	Title (if app.)	2011 Land Value	2011 Improved Value	2011 Total Value
Johnson Drive and Roe Blvd	NW Corner Vacant Field	\$1,298,130	\$0	\$1,298,130
Johnson Drive and Roe Blvd	The East Gateway	\$3,621,750	\$0	\$3,621,750
5872 Granada Ln.		\$48,770	\$55,730	\$104,500
5852 Granada Ln.		\$47,330	\$60,870	\$108,200
5848 Granada Ln.		\$46,790	\$109,110	\$155,900
5844 Granada Ln.		\$47,170	\$75,230	\$122,400
5840 Granada Ln.		\$48,600	\$109,100	\$157,700
5836 Granada Ln.		\$50,510	\$64,690	\$115,200
5832 Granada Ln.		\$75,920	\$114,280	\$190,200
5850 Granada Ln.		\$72,690	\$105,310	\$178,000
5848 Granada Ln.		\$73,780	\$70,520	\$144,300
5000 Johnson Dr.		\$192,880	\$10,910	\$203,790
5807 Ash Dr.		\$28,220	\$98,880	\$127,100
5100 Johnson Dr.		\$196,310	\$126,820	\$323,130
5812 Roeland Dr.		\$89,950	\$62,410	\$152,360
5808 Roeland Dr.		\$28,930	\$50,670	\$79,600
5101 Johnson Dr.	Wild Oats	\$788,210	\$397,790	\$1,186,000
5201 Johnson Drive	Mission Bank	\$1,332,450	\$3,255,550	\$4,588,000
5301 Johnson Dr.	Mission Mart	\$653,480	\$2,379,520	\$3,033,000
5331 Johnson Dr.	Mission Mart	\$301,480	\$659,520	\$961,000
5400 Martway	Mission Mart	\$340,450	\$349,550	\$690,000
5399 Martway	Mission Bowl	\$362,620	\$557,920	\$920,540
5395 Martway	JOCO Wastewater Pumping Station	\$24,090	\$29,600	\$53,690
5501 Johnson Drive	Capitol Federal	\$632,150	\$535,850	\$1,168,000
Totals		\$10,402,660	\$9,279,830	\$19,682,490

3.0 Existing Data

As the City has focused on Rock Creek improvements over the past decade, extensive study of the channel has been completed. The resulting information, specifically the Rock Creek 2011 PES, was used in this study to evaluate the costs and benefits of a range of improvement options for the Rock Creek channel in the study extents.

3.1 Rock Creek PES (March 2011)

The March 2011 Rock Creek PES evaluated the design and construction of stormwater improvements along the Rock Creek main channel as well as upstream secondary collection areas to alleviate business, home, and street flooding. Five options were presented in this study, each addressing existing flooding within the project area. All options focused on removing buildings from the floodplain and reducing

stormwater flow in the arterial, collector, and residential streets in order to meet the regional APWA street stormwater design criteria. One of the PES options is presented in this study as Option 4.

3.2 GIS Data

The City provided the most current Johnson County AIMS data available. The data used for this analysis is listed below:

1. Street Centerlines and Categorization
2. Buildings
3. Pavement Edge
4. Contours

4.0 Alternatives Development

4.1 Assumptions

General assumptions were developed in order to evaluate the four options. These assumptions include the following:

Cost-Related Assumptions

- 1) If more than 25% of a parcel is required for the proposed improvement, the value of the entire parcel is assumed to be a cost.
- 2) The cost of the Johnson Drive interceptor is based on the cost estimate of a stand-alone project. If timed with major street rehabilitation, the costs presented are conservative.
- 3) Additional cost estimating assumptions are provided in Section 5.1 of this study.

Benefit-Related Assumptions

- 1) If a portion of a parcel is removed from the floodplain as a result of the improvement, an equivalent portion of the value of that parcel is assigned as a benefit value.
- 2) For Option 3, two additional parcels were considered to be purchased based on City input.
- 3) For Option 4, one additional parcel along Johnson Drive and several parcels along Woodson Drive were considered to be purchased based on City input.
- 4) Final utility easement requirements were not determined by this study.

4.2 Options

This cost benefit study includes four options that represent a wide variety of improvements along Rock Creek. Each of the four options presented in this analysis addresses a distinct set of goals.

1. Option 1 removes buildings from the floodplain by purchasing and demolishing structures in the FEMA floodplain along Rock Creek (parcels highlighted in blue). It should be noted that at some point in the future, Johnson County Wastewater may require that the sanitary sewer relocation issues along Rock Creek be addressed and this cost is not included in Option 1. Flood proofing rather than buyout is assumed for three of the structures (highlighted in yellow).



FIGURE 3. OPTION 1 PARCELS TO PURCHASE AND FLOODPROOF

TABLE 5. OPTION 1 COST AND BENEFITS

COSTS	Option 1
Improvement Cost	\$100,000
Land Acquisition + Demolition	\$5,502,000
Contingency on Land (25%)	\$1,375,000
Design, Bidding, Construction Observation, Permitting	\$698,000
TOTAL COST	\$7,675,000 *

BENEFITS	
Addresses Street Flooding	NA
Total Property Value Removed from Floodplain	\$0

** Given unique conditions in the Rock Creek Watershed, City would pursue SMAC funding, which would reduce City share of costs.*

- Option 2 builds on the previous option by developing the main channel of Rock Creek as a community resource, stabilizing the banks and incorporating aesthetic features. Buildings within the floodplain would be purchased and demolished (with the exception of floodproofing three structures). Stabilization and beautification strategies are applied along the main channel of Rock Creek between Maple Street and Lamar Avenue. This option is associated with a range of costs that includes both stacked stone bank protection and a more naturalized restored channel. Additionally, this option includes sanitary sewer relocations and other utility coordination costs associated with construction in the channel.

In the following figure, the construction limits are outlined. Parcels highlighted in blue have buildings that would be purchased and demolished in order to remove them from the floodplain. Floodproofing is necessary for the three structures highlighted in yellow. Additional parcels that are within the construction limits are highlighted in orange. Highlighted parcels that are not owned by City are included in the estimate of land acquisition costs. Appendix B presents larger versions of all figures, with legends.



FIGURE 4. OPTION 2 CONSTRUCTION LIMITS AND IMPACTED PARCELS

TABLE 6. OPTION 2 COSTS AND BENEFITS

COSTS	Option 2
Improvement Cost	\$6,403,000 to \$8,678,000
Land Acquisition + Demolition	\$5,614,000
Contingency on Land	\$1,404,000
Design, Bidding, Construction Observation, Permitting	\$1,570,000
TOTAL COST	\$14,991,000 to \$17,265,000*
BENEFITS	
Addresses Street Flooding	NA
Total Property Value Removed from Floodplain	\$0

* Given unique conditions in the Rock Creek Watershed, City would pursue SMAC funding, which would reduce City share of costs.

- Option 3 builds on the previous options by mitigating street flooding of Johnson Drive and Nall Avenue, per APWA 5600 guidelines. In order to address street flooding, it is necessary to construct the Johnson Drive interceptor and associated secondary drainage improvements. This option includes significant channel improvements between Maple and Outlook that help solve flooding on Johnson Drive and address sanitary sewer relocations. Stabilization and beautification strategies are applied along the main channel of Rock Creek upstream of Outlook to Lamar Avenue. Some buy-out and demolition is still required to remove buildings from the floodplain.

In the figure below, the required secondary stormwater system improvements and the Johnson Drive interceptor are highlighted in purple. Parcels impacted by construction improvements are highlighted in blue and orange; blue parcels indicate land and buildings that were included in the PES and orange parcels indicate additional parcels. There are four buildings that are removed from the FEMA floodplain as a result of the proposed improvements. Two of these, however, are assumed to be purchased because the improvements are too close to the structure. The buildings highlighted in green represent structures that are removed from the floodplain and may not need to be purchased during construction. The channel construction limits are outlined. Lastly, two buildings along Woodson would require floodproofing in order to remove these structures from the floodplain; these are highlighted in yellow.

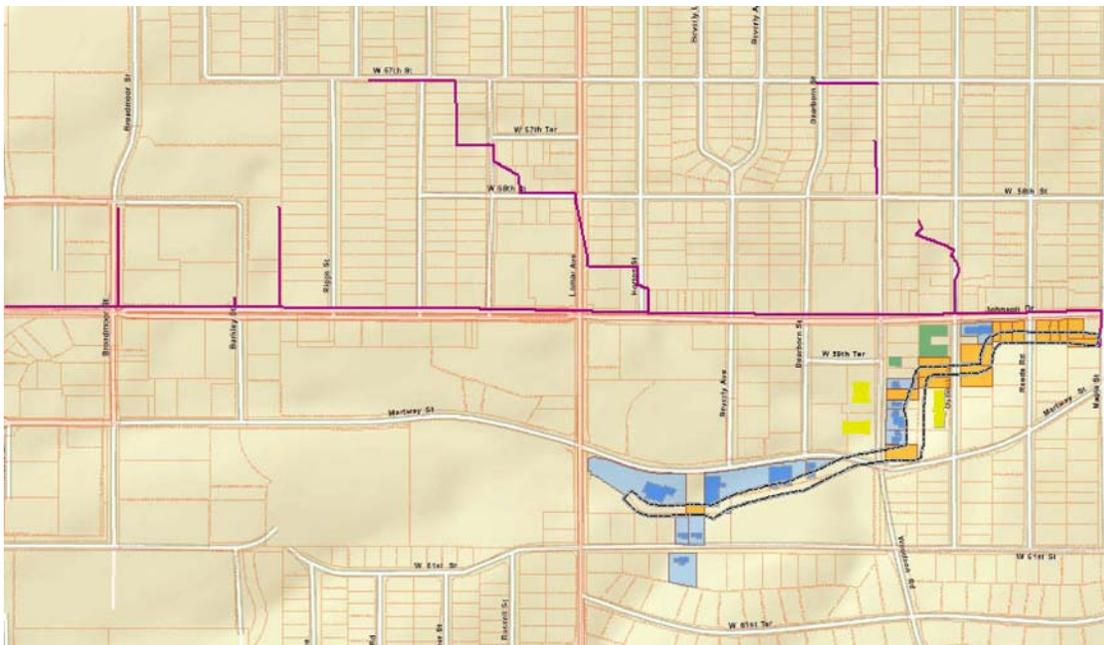


FIGURE 5. OPTION 3 CONSTRUCTION LIMITS AND IMPACTED PARCELS

Figure 6 presents a closer view of the proposed improvement extents for Option 3.



FIGURE 6. OPTION 3 PROPOSED CONSTRUCTION LIMITS AND IMPACTED PARCELS

TABLE 7. OPTION 3 COSTS AND BENEFITS

COSTS	Option 3
Improvement Cost	\$19,284,000
Land Acquisition + Demolition	\$4,996,000
Contingency on Land	\$1,249,000
Design, Bidding, Construction Observation, Permitting	\$2,553,000
TOTAL COST	\$28,082,000*

BENEFITS	
Addresses Street Flooding	Along Johnson Drive
Total Property Value Removed from Floodplain	\$3,198,000

* Given the unique conditions of the Rock Creek watershed, the City would pursue SMAC funding, which would reduce City costs.

- 4. Option 4 eliminates flooding of properties in the study area by implementing an option from the previously discussed Rock Creek PES. This option includes a new interceptor pipe beneath Johnson Drive between Maple Street and Metcalf Avenue, secondary system improvements north of Johnson Drive to capture and convey water to the new interceptor, and reinforced concrete box improvements to Rock Creek between Maple Street and Lamar Avenue.

In the figure below, the secondary system improvements are highlighted in purple. Parcels to purchase are highlighted in blue, indicating land needed for construction improvements. Parcels highlighted in orange may be impacted by construction. Buildings highlighted in green are removed from the FEMA floodplain.

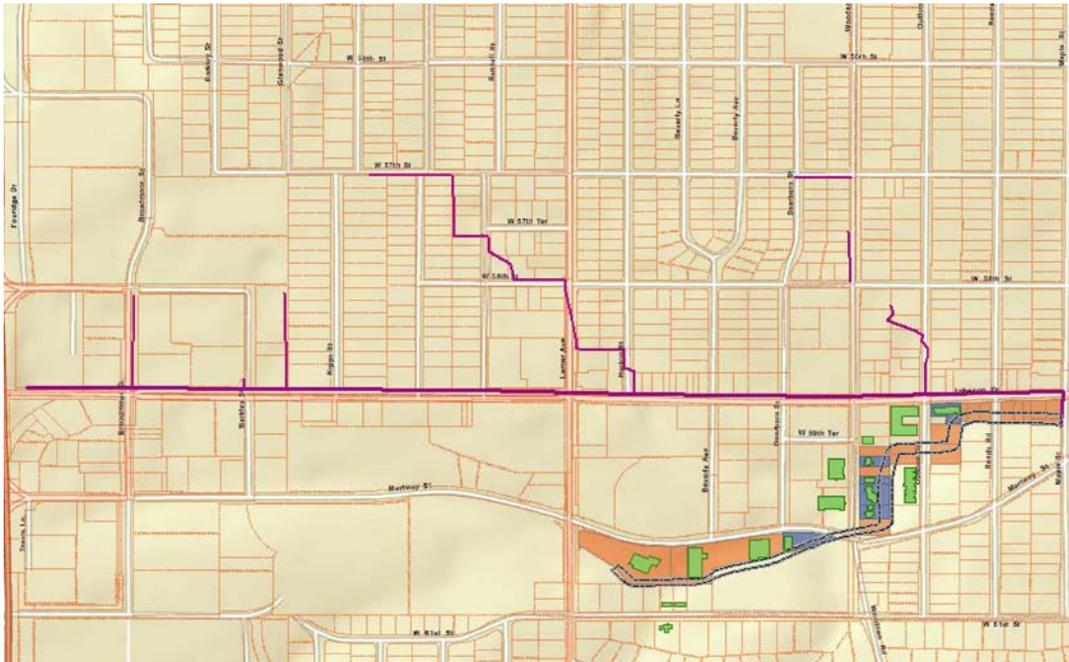


FIGURE 7. OPTION 4 CONSTRUCTION LIMITS AND IMPACTED PARCELS

TABLE 8. OPTION 4 COSTS AND BENEFITS

COSTS	Option 4
Improvement Cost	\$26,890,000
Land Acquisition + Demolition	\$1,683,000
Contingency on Land	\$421,000
Design, Bidding, Construction Observation, Permitting	\$2,899,000
TOTAL COST	\$31,893,000*

BENEFITS	
Addresses Street Flooding	Throughout Project Extents
Total Property Value Removed from Floodplain	\$7,402,000

* Given the unique conditions of the Rock Creek watershed, the City would pursue SMAC funding, which would reduce City costs.

5.0 Cost Benefit Comparison

5.1 Cost Estimate Development

Black & Veatch compiled an opinion of probable cost for each project based on unit cost data that reflects recent project experience in the City. Some costs of design and construction were taken from the Johnson Drive PES (RC-06-016) dated March 2011 and the Secondary Stormwater Drainage Master Plan, developed by Black and Veatch in June 2010.

Structure and land values were provided by Johnson County Land Record and the value of land already owned by the City was not included in the total cost. Land value was calculated based on the percentage of the parcel purchased for implementation of the option. However, if more than 25% of a parcel needs to be purchased for implementation, it is assumed that the whole parcel would be purchased. A general contingency of 25% was added to the improvement cost and land acquisition cost. Demolition is assumed to be 12% of the acquisition price. The cost of improvements includes a general contingency of 25% as well. Mobilization is estimated at 10%, erosion control is estimated at 5% of the subtotal. Engineering design, bidding, construction observation, and permitting is considered an additional 10% of the entire project cost.

The following table presents the unit cost of each project component.

TABLE 9. UNIT COSTS

Item	Unit Cost	Unit	Source
Pre- and Post-Construction Survey	\$125,000	LS	PES
Vibration Monitoring	\$250,000	LS	PES
Temporary Utility Support	\$50,000	LS	PES
Power Utility Relocation	\$400,000	LS	PES
Telephone Utility Relocation	\$100,000	LS	PES
Cable Utility Relocation	\$0	LS	PES
Sewer Utility Relocation	\$1,001,025	LS	PES
Water Utility Relocation	\$50,000	LS	PES
Common Excavation	\$20	CY	PES
Embankment	\$30	CY	PES
Drainage Outfalls Stabilization	\$1,000	EA	PES
Stacked Stone Walls	\$60	FSF	BV Estimating, 2011
Concrete Footing	\$1,000	CY	BV Estimating, 2011
Riprap	\$65	CY	BV Estimating, 2011
Landscaping	\$5	SF	

The following table presents the costs associated with each of the four options.

TABLE 10. COST SUMMARY OF ALTERNATIVES

COSTS	Option 1	Option 2	Option 3	Option 4
Improvement Cost	\$100,000	\$6,403,000 to \$8,678,000	\$19,284,000	\$26,890,000
Land Acquisition + Demolition	\$5,502,000	\$5,614,000	\$4,996,000	\$1,683,000
Contingency on Land	\$1,375,000	\$1,404,000	\$1,249,000	\$421,000
Design, Bidding, Construction Observation, Permitting	\$698,000	\$1,570,000	\$2,553,000	\$2,899,000
TOTAL COST	\$7,675,000	\$14,991,000 to \$17,265,000	\$28,082,000	\$31,893,000

5.2 Establishment of Benefits and Consequences

Benefits and consequences to be analyzed were developed in a collaborative meeting with the City. The following benefits were established:

1. Number and value of buildings removed from floodplain.
2. Area of land removed from floodplain, available for redevelopment.
3. Downtown market opportunity.
4. Qualification for SMAC funding.
5. Aesthetically appealing main channel.
6. APWA 5600 compliance during street flooding along major streets.

Each of the four options provides unique benefits and consequences to the City of Mission. A matrix summary of these benefits is presented in Appendix A.

Option 1 removes buildings from the floodplain by purchasing and demolishing structures. Redevelopment of the area in the floodplain will be limited; however there may be areas available for redevelopment (i.e. civic spaces) outside of the regulated floodway. This option does not include any channel improvements and therefore, Rock Creek is not an aesthetically appealing community resource and sanitary sewer relocation issues are not addressed. Under this option, SMAC program funding would be requested by the City.

Option 2 offers similar benefits and consequences to Option 1 except that the channel becomes a community resource. Aesthetically appealing improvements eliminate the need for most fencing along the channel, clean up the banks, and include landscaping. This option also addresses the sewer relocation needs along the channel. Under this option, SMAC program funding would also be requested by the City.

Option 3 solves street flooding along Johnson Drive and Nall Avenue by increasing the capacity of the main channel of Rock Creek and constructing the Johnson Drive interceptor pipe and secondary system improvements along Johnson Drive. Aesthetically appealing improvements along the creek, similar to Option 2, provide an improved community resource. Additionally, this option removes some land and structures from the floodplain; the total value of land and structures removed from the floodplain by Option 3 is \$3,198,000. These parcels extend over a total area of approximately 3 acres. This option would qualify for SMAC funding because it addresses structure and street flooding in a specific area. Overall SMAC program funding levels and competition for this funding among Johnson County communities, need for approval from downstream Cities, and availability of less expensive improvement options may influence the ability to leverage funding.

Option 4 addresses structure and street flooding along the entire Rock Creek corridor between Maple and Lamar. The total value of land and structures removed from the floodplain by Option 4 is

\$7,402,000. These parcels extend over a total area of approximately 9 acres. This option provides the greatest opportunity for redevelopment and removes the most properties from the FEMA floodplain. As with Option 3, this option would qualify for SMAC funding. Overall SMAC program funding levels and competition for this funding among Johnson County communities, need for approval from downstream Cities, and availability of less expensive improvement options may influence the ability to leverage funding.

Two of the proposed options have an impact on current street projects that are under design. Option 3 impacts the Johnson Drive interceptor and selection of Option 4 has repercussions for the ongoing Martway Woodson Bridge project and the Johnson Drive work. If either of these two options are selected, the Johnson Drive improvement project will require an additional \$1.5 to \$2 million for 2013. Currently, construction of the interceptor pipe has not been budgeted and if the City pursued either of these options, additional funds must be allocated to the Johnson Drive project. If Option 4 is selected, the design of the Martway Woodson Bridge project should be modified to incorporate the recommended improvements. Additional funding would be needed for this project as well. This bridge is currently being designed as a replacement without additional stormwater capacity.

6.0 Funding Partnership Opportunities

Some of the options presented in this analysis qualify for various funding opportunities. An important partnership that Mission has leveraged in the past is with the Johnson County Stormwater Management Program and their advisory council (SMAC). Two of the options analyzed in this study, Options 3 and 4, were evaluated as part of the March 2011 Rock Creek PES.

7.0 Conclusion

Overall, selection of a strategy for protection of private property or flood mitigation in the downtown area of the City of Mission is dependent on the goals the City chooses to achieve, and the amount of funding that is available for the project(s). Upon City Council direction, Staff will continue to work to implement the improvement strategy selected by the Council – including the procurement of outside sources of funding for these projects. Depending on the option selected, additional City funds would have to be dedicated to this area of the City.

A summary of each of the options follows:

Option 1 is considered a “baseline” alternative and removes all structures from the FEMA regulatory floodplain through purchase and demolition. This option is the least expensive option, but it fails to enhance the aesthetic appearance of the channel, does not mitigate existing street flooding, and does not resolve the pending sanitary sewer relocation with Johnson County Wastewater. Significant long

term maintenance would be needed, and opportunities for parkland and civic improvements in the vicinity would be limited. Street flooding would not be addressed by this option. SMAC funding for property purchases would be requested by the City, however, the amount of funding cannot be estimated at this time because the current SMAC formulas do not support this type of strategy. Nevertheless, the City could make a strong case that SMAC should participate in this approach. Under this option, the current improvement design strategy for the Martway Rehabilitation Project (and Woodson Bridge) would continue but the Johnson Drive interceptor would not be constructed. No additional dollars would need to be allocated to any given project at this time because main channel improvements could be implemented at a later date.

Option 2 is the “baseline” alternative with some additional improvements to the main Rock Creek channel in order to enhance the aesthetic appearance of the area, allow for parkland and civic space, and focus investment in the areas close to the creek but not within the regulatory floodplain. With this option, the regulatory floodplain would remain as it exists today, and street flooding would not be mitigated. SMAC funding for property purchases would be requested by the City, however, the amount of funding cannot be estimated at this time because the current SMAC formulas do not support this type of strategy. Nevertheless, the City could make a strong case that SMAC should participate in this approach. Under this option, the current improvement design strategy for the Martway Rehabilitation Project (and Woodson Bridge) would continue but the Johnson Drive interceptor would not be constructed. No additional dollars would need to be allocated to any given project at this time because main channel improvements could be implemented at a later date.

Option 3 is a flood control strategy that eliminates street flooding on Johnson Drive and Nall Avenue. This option includes more significant channel improvements, construction of the Johnson Drive interceptor pipe, and secondary stormwater capacity improvements. If this option were selected, the Johnson Drive project would require \$1.5 to \$2 million in additional funding in order to add the Johnson Drive interceptor between Lamar and Maple. (Not currently budgeted for ongoing Johnson Drive project). SMAC dollars would be requested by the City. However, SMAC may not contribute 75% of project costs, given the magnitude of the project, needed approval by downstream cities, and overall level of funding in the program that is distributed among several municipalities in Johnson County.

Option 4 is the flood control strategy that implements an option from the 2011 PES and therefore addresses structure and street flooding between Lamar Avenue and Maple Street. The improvements associated with Option 4 would provide a redevelopment opportunity for most of the impacted property in downtown Mission between Maple Street and Lamar Avenue. If this option were selected, the Martway project (Woodson Bridge) should be redesigned in order to add capacity under this bridge. Additional funding would have to be dedicated to this project. Further, the Johnson Drive project would require \$1.5 to \$2 million in additional funding in order to add the Johnson Drive interceptor under this street. (Not currently budgeted for Johnson Drive project). Under this option, SMAC dollars would be requested by the City. However, SMAC may not contribute 75% of project costs, given the magnitude of the project, needed approval by downstream cities, and overall level of funding in program which leads to competition among all Johnson County cities.

Appendix A. Summary Matrix

Option	Goals	Actions	Extent	Benefits	Consequences			
1	<ul style="list-style-type: none"> Remove all buildings from the floodplain 	<ul style="list-style-type: none"> Buyout Buildings Demolish Buildings Floodproof 3 Structures 	<ul style="list-style-type: none"> Buildings demolished along Rock Creek, between Maple and Lamar Vacant parcels to be covered in sod 	<ul style="list-style-type: none"> Buildings are removed from floodplain Potential civic space along channel 	<ul style="list-style-type: none"> Some of the surrounding land is within the floodway and cannot be developed. Rock Creek is not an aesthetically appealing channel Street flooding 			
		<ul style="list-style-type: none"> Remove all buildings from the floodplain Eliminate need for fencing along creek Cleanliness and beautification Address sanitary sewer relocations and manhole in Rock Creek 	<ul style="list-style-type: none"> Buyout Buildings Demolish Buildings 2A: Vegetated, Natural System Approach with Increased Land Area, Some Hardscaping 2B. Stacked Stone with Buffer to trail. Some fencing may be required Floodproof 3 Structures 	<ul style="list-style-type: none"> Buildings demolished along Rock Creek, between Maple and Lamar Improved channel between Maple and Lamar 	<ul style="list-style-type: none"> Aesthetically appealing channel becomes community resource Buildings are removed from floodplain 	<ul style="list-style-type: none"> Some of the surrounding land is within the floodway and cannot be developed Street flooding 		
		3	<ul style="list-style-type: none"> Eliminate street flooding of arterials per APWA 5600 guidelines Remove all buildings from the floodplain Eliminate need for fencing along creek Cleanliness and beautification Address sanitary sewer relocations and manhole in Rock Creek 	<ul style="list-style-type: none"> Buyout Buildings Demolish Buildings Purchase Land for Channel Improvements, as needed Johnson Drive Interceptor and Limited Secondary System Improvements Aesthetic Improvements 	<ul style="list-style-type: none"> Significant channel improvements between Maple and Outlook Johnson Drive Interceptor between Maple and Metcalf Aesthetic improvements between Outlook and Lamar Limited Secondary Improvements on Lamar and Reeds 	<ul style="list-style-type: none"> Aesthetically appealing channel becomes community resource Some buildings are removed from floodplain Select parcels removed from floodplain <i>Valued at: \$3,198,000</i> Street flooding mitigated on Johnson Drive 	<ul style="list-style-type: none"> Martway Street flooding remains Parcels upstream of Outlook remain in floodplain 	
		4	<ul style="list-style-type: none"> Eliminate flooding Remove all buildings from floodplain Retain buildings Address sanitary sewer relocations and manhole in Rock Creek 	<ul style="list-style-type: none"> Channel is enclosed in box culverts Johnson Drive Interceptor is constructed 		<ul style="list-style-type: none"> Johnson Drive Interceptor - Maple to Metcalf Limited Secondary Improvements on Lamar and Reeds Channel Improvements Maple to Lamar 	<ul style="list-style-type: none"> Select parcels removed from floodplain <i>Valued at: \$8,342,000</i> Land available for redevelopment Street flooding mitigated on Johnson Drive 	

Appendix B. Figures

**FEMA 100-year
Regulatory Floodplain**

Lamar Avenue to Maple Street



0 100 200
Feet
1 inch = 200 feet

LEGEND

-  Buildings in FP
-  Property
-  FEMA Floodplain
-  Creek
-  Pavement Edge
-  World Imagery

Rock Creek Cost Benefit Analysis

Option 1

City of Mission, KS

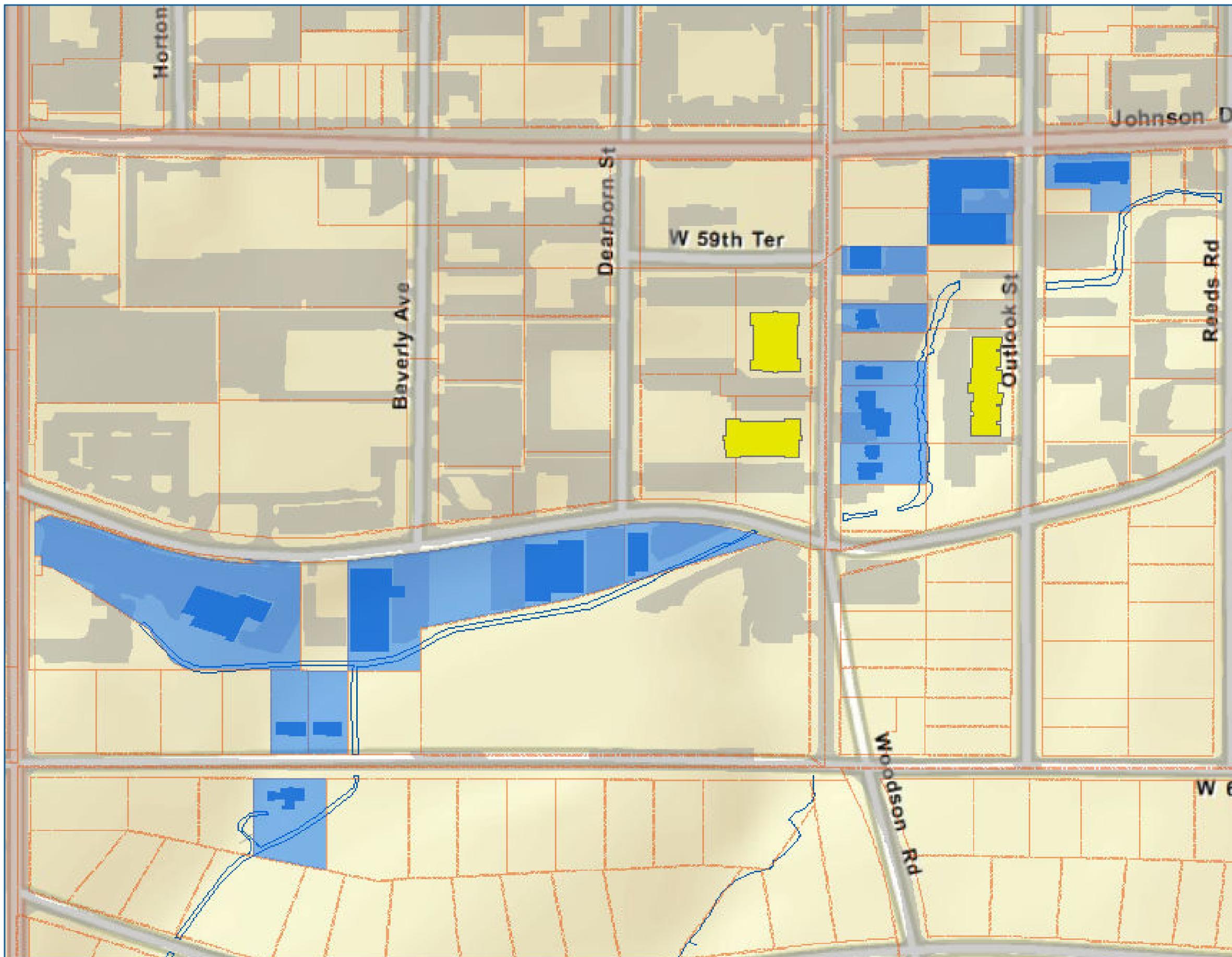


0 100 200
Feet

1 inch = 200 feet

LEGEND

- Select Parcels (PES)
- Floodproofing
- Buildings to Demo
- Property
- Creek
- Pavement Edge
- World Street Map



Rock Creek Cost Benefit Analysis

OPTION 2

City of Mission, KS

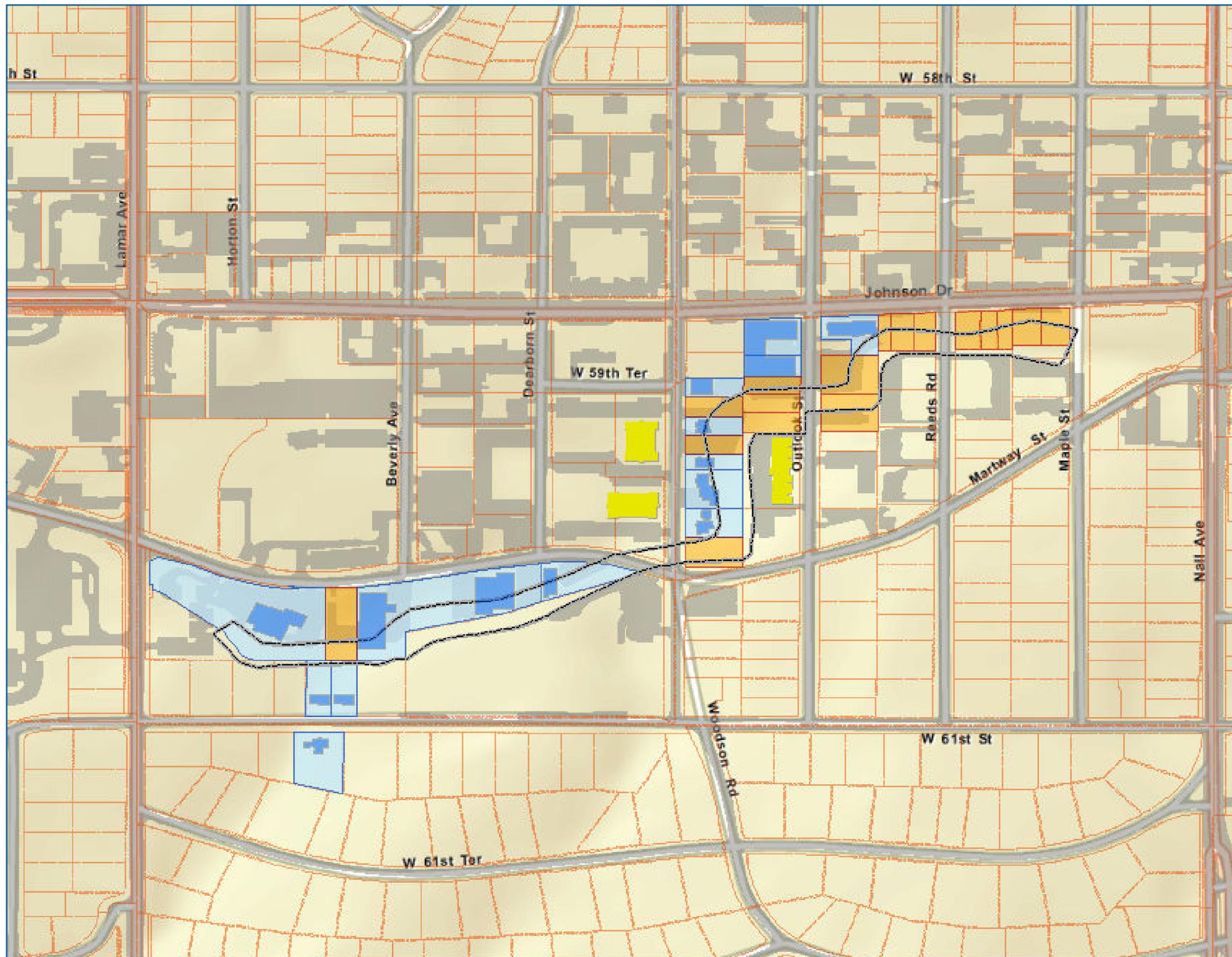


0 150 300
Feet

1 inch = 300 feet

LEGEND

- Floodproofing
- Buildings to Demo
- Option 2 Construction Limits
- Select Parcels (Other)
- Select Parcels (PES)
- Property
- PavementEdge



Rock Creek Cost Benefit Analysis

OPTION 3

City of Mission, KS

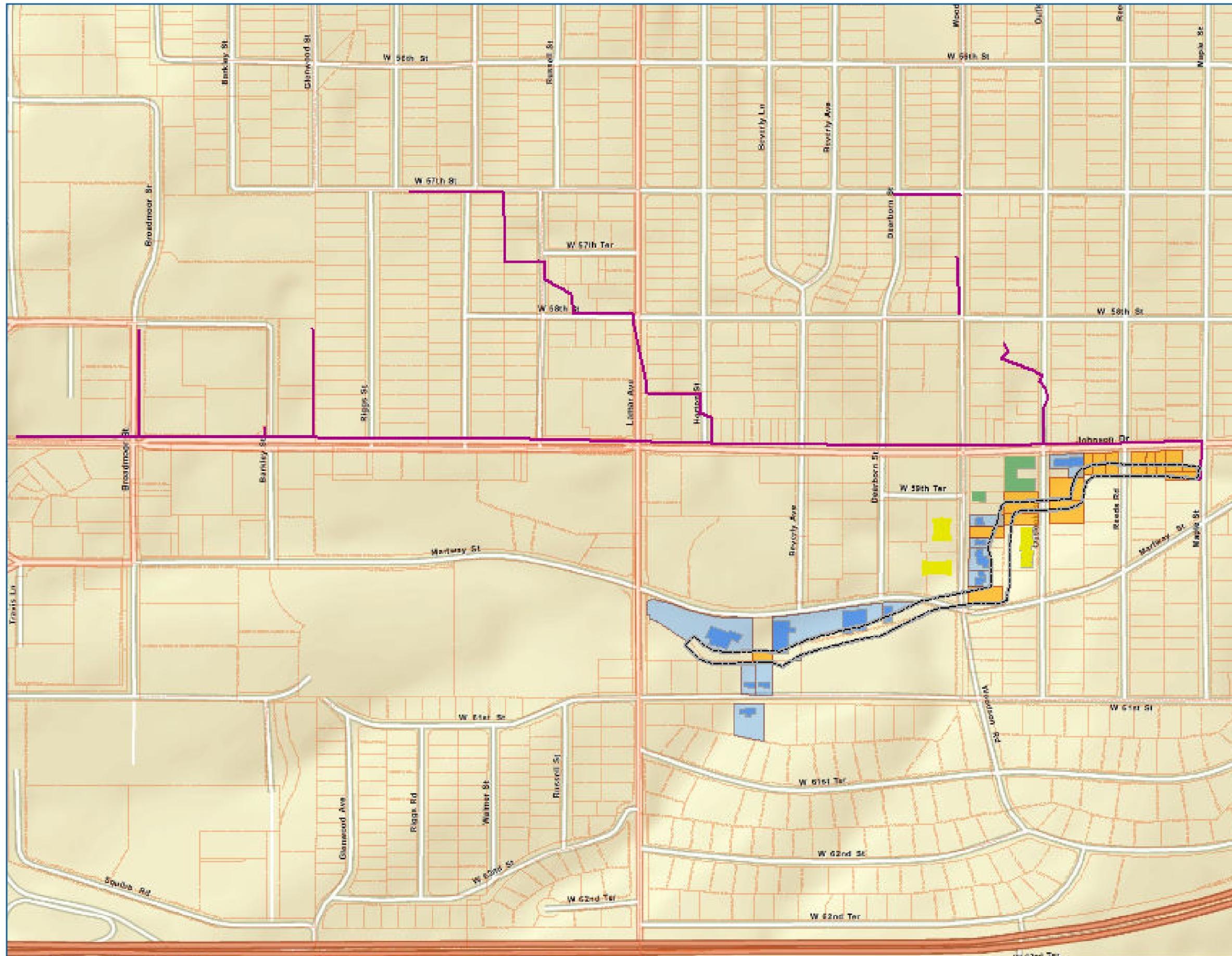


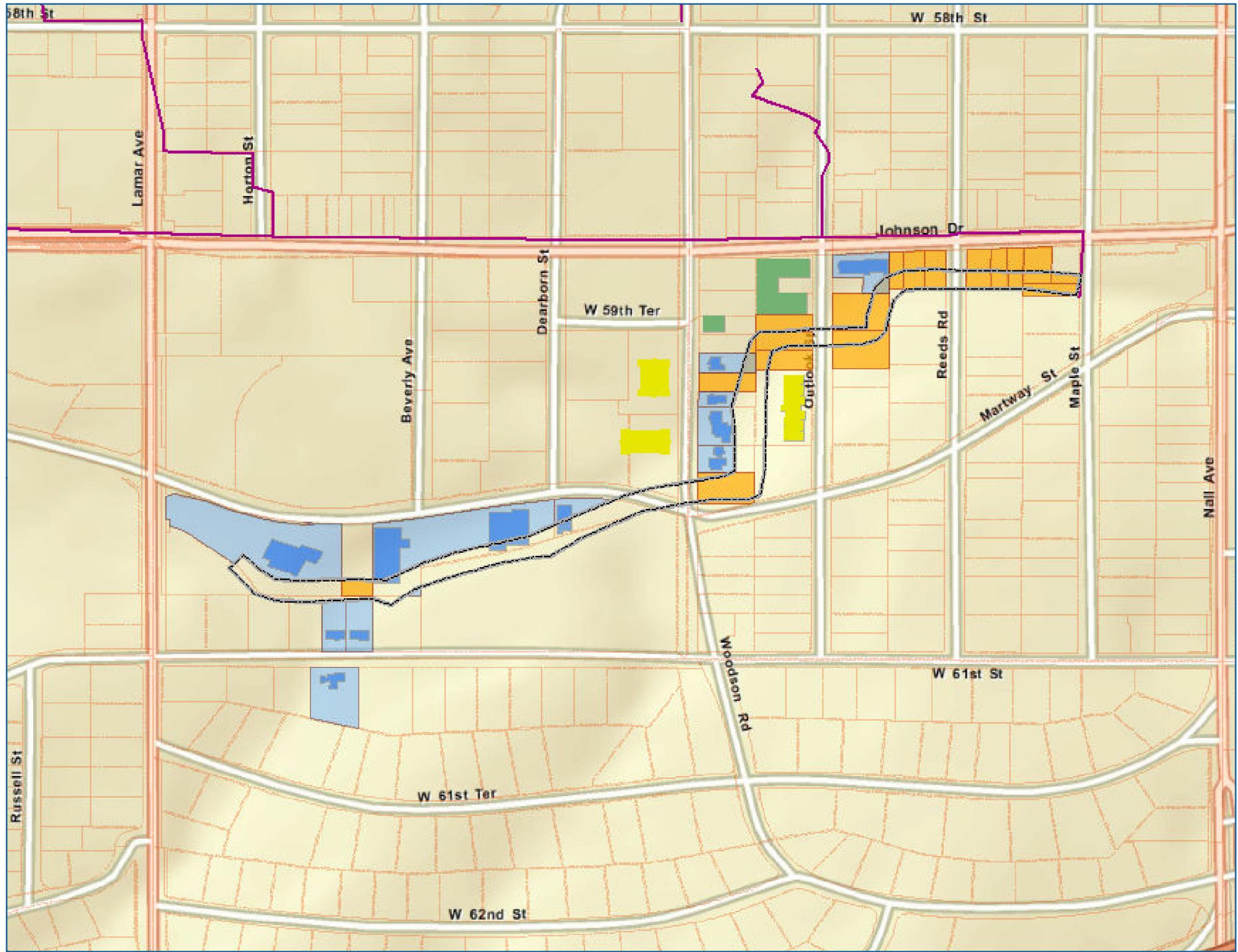
0 250 500
Feet

1 inch = 500 feet

LEGEND

-  Construction Limits (Opt 3)
-  Buildings to Floodproof
-  Secondary Pipes (Opt 3)
-  Interceptor (Opt 3)
-  Buildings Saved (Opt 3)
-  Property
-  Buildings to Demo
-  Select Parcels (PES)
-  Select Parcels (Opt 3)

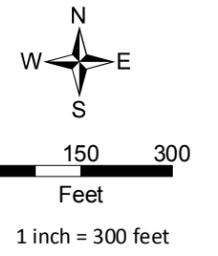




Rock Creek Cost Benefit Analysis

OPTION 3

City of Mission, KS

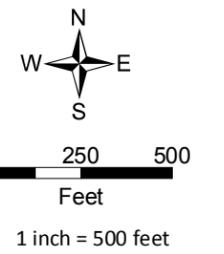


LEGEND

-  Construction Limits (Opt 3)
-  Buildings to Floodproof
-  Secondary Pipes (Opt 3)
-  Interceptor (Opt 3)
-  Buildings Saved (Opt 3)
-  Property
-  Buildings to Demo
-  Select Parcels (PES)
-  Select Parcels (Opt 3)

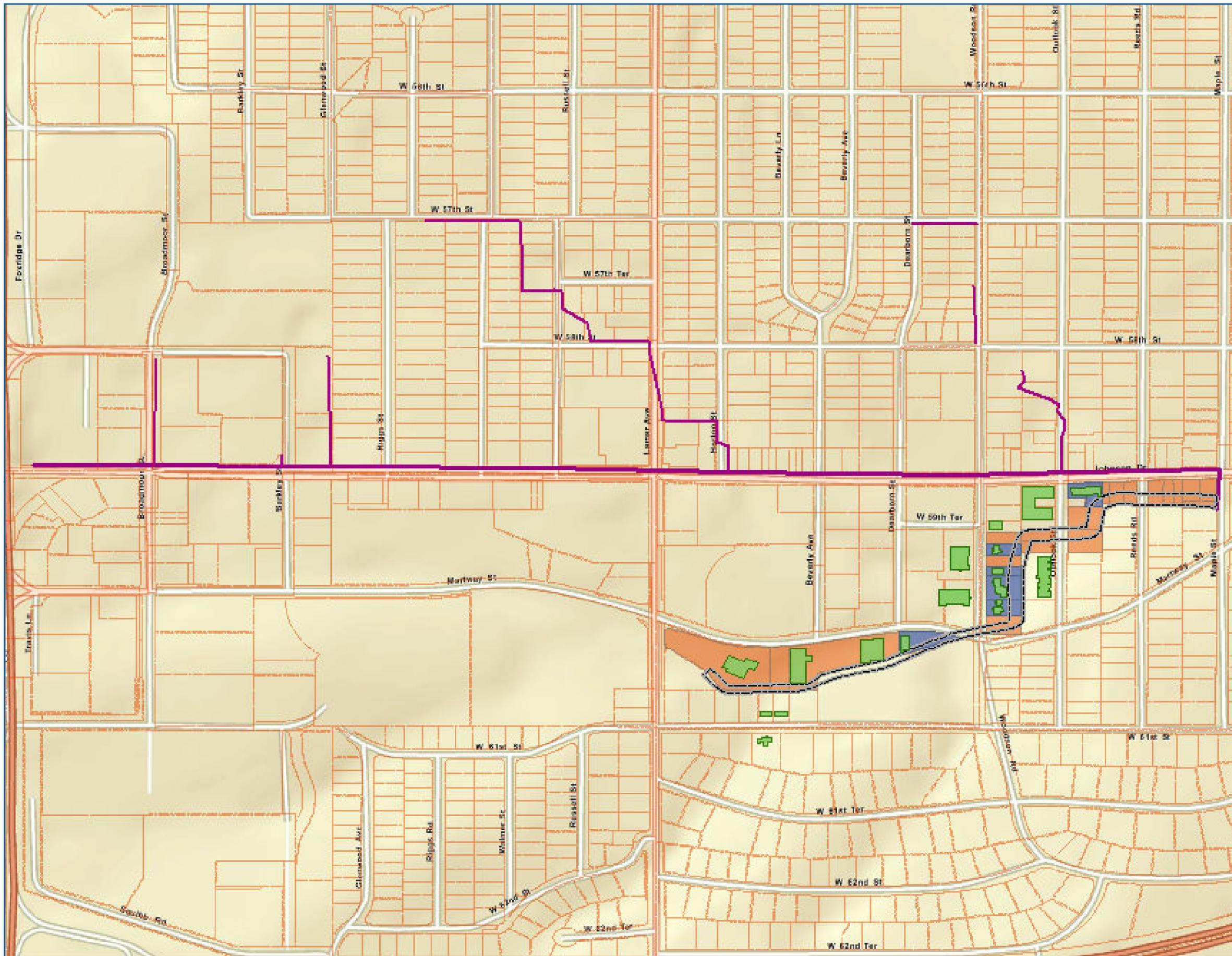
Rock Creek Cost Benefit Analysis

OPTION 4
City of Mission, KS



LEGEND

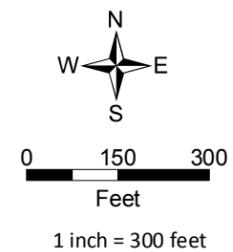
- Buildings Saved
- Construction Limits (Opt 4)
- Parcels to Purchase (Opt 4)
- Other Impacted Parcels
- Secondary Pipes (Opt 4)
- Interceptor (Opt 4)
- Property



Rock Creek Cost Benefit Analysis

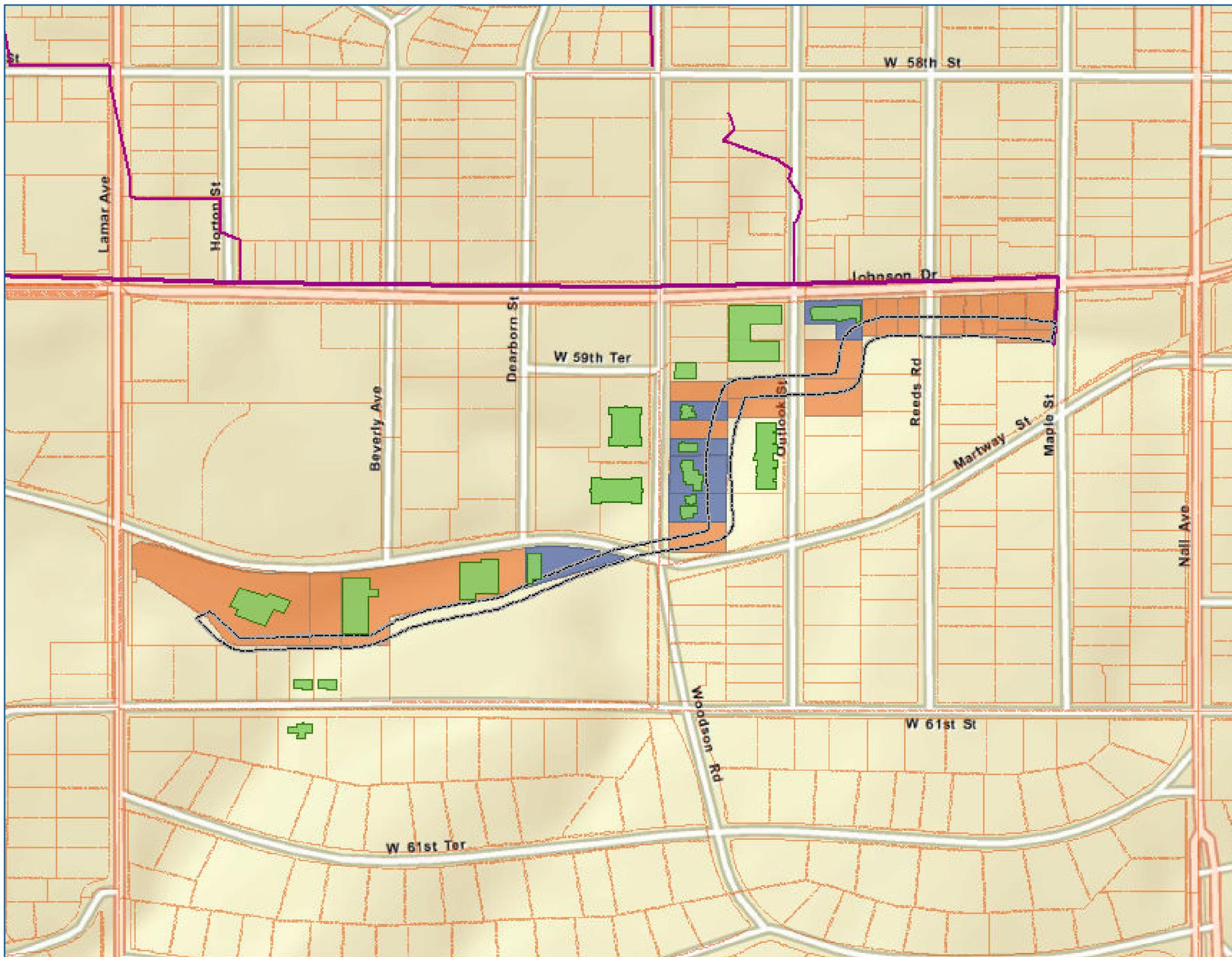
OPTION 4

City of Mission, KS



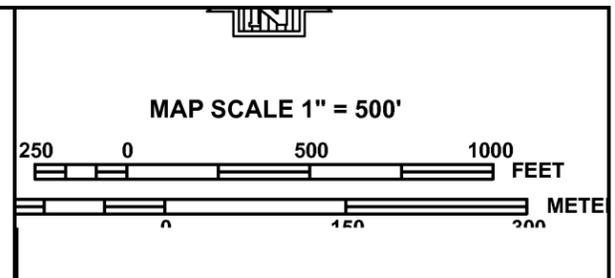
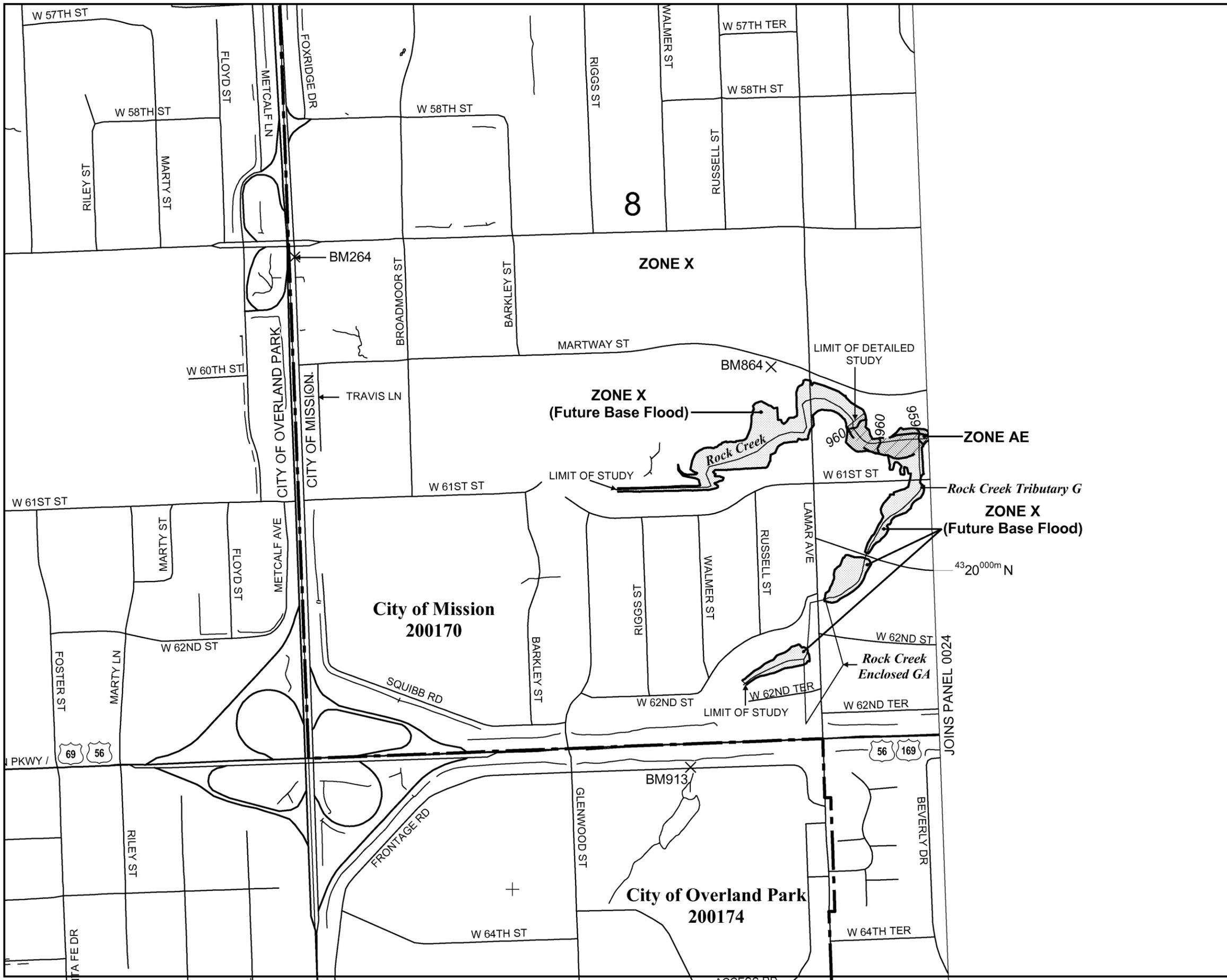
LEGEND

-  Buildings Saved
-  Construction Limits (Opt 4)
-  Parcels to Purchase (Opt 4)
-  Other Impacted Parcels
-  Secondary Pipes (Opt 4)
-  Interceptor (Opt 4)
-  Property



Appendix C. FEMA Floodplain Maps

- 1) 2009 FEMA Regulatory Floodplain, Panel 1**
- 2) 2009 FEMA Regulatory Floodplain, Panel 2**
- 3) FEMA Regulatory Floodplain after Nall Avenue Culvert Improvements**
- 4) FEMA Regulatory Floodplain after Nall Avenue Floodwall and Gateway Box Culvert Improvements**



PANEL 0023G

FIRM
FLOOD INSURANCE RATE MAP

**JOHNSON COUNTY,
KANSAS
AND INCORPORATED AREAS**

PANEL 23 OF 161
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MERRIAM, CITY OF	200169	0023	G
MISSION, CITY OF	200170	0023	G
OVERLAND PARK, CITY OF	200174	0023	G

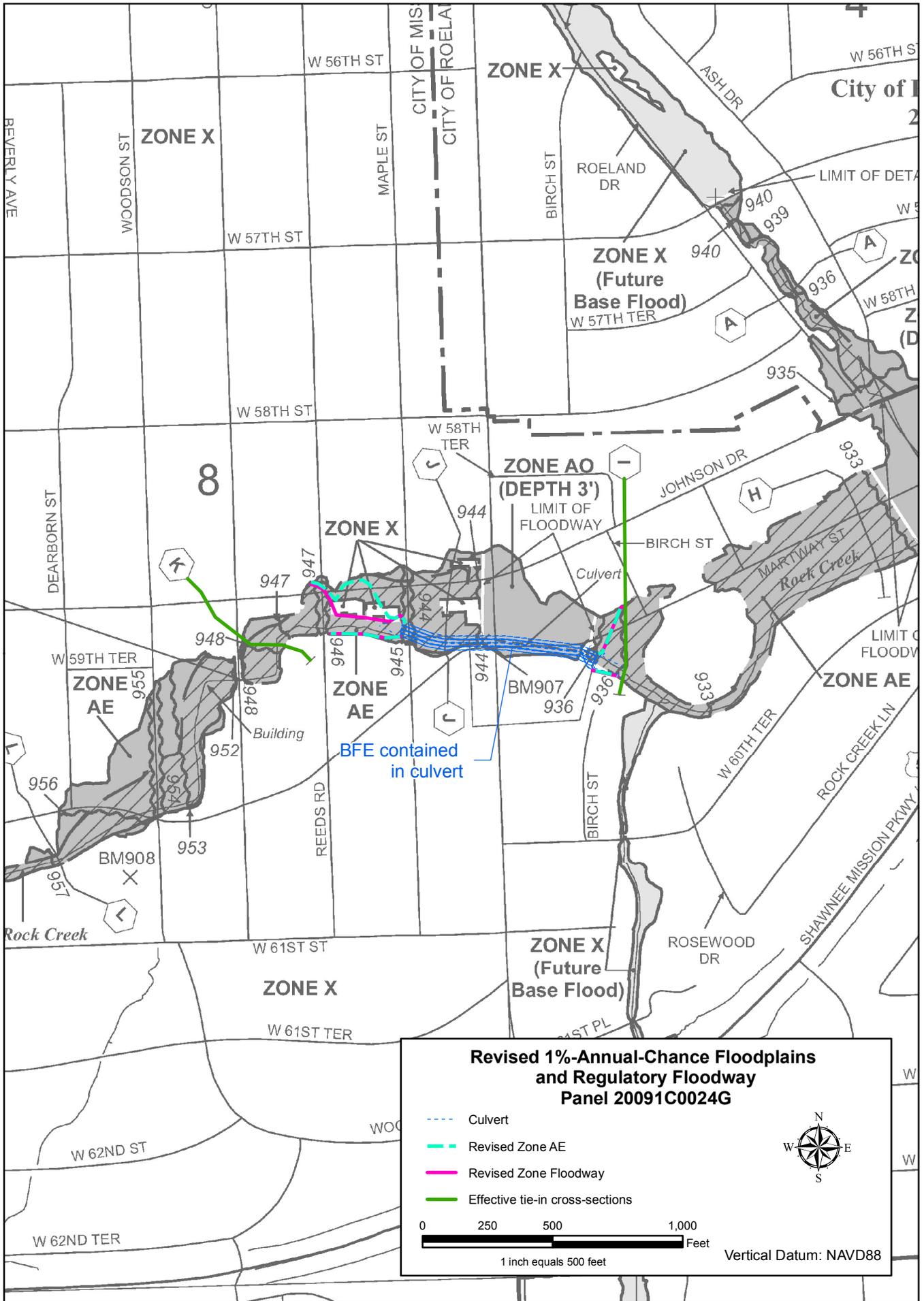
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

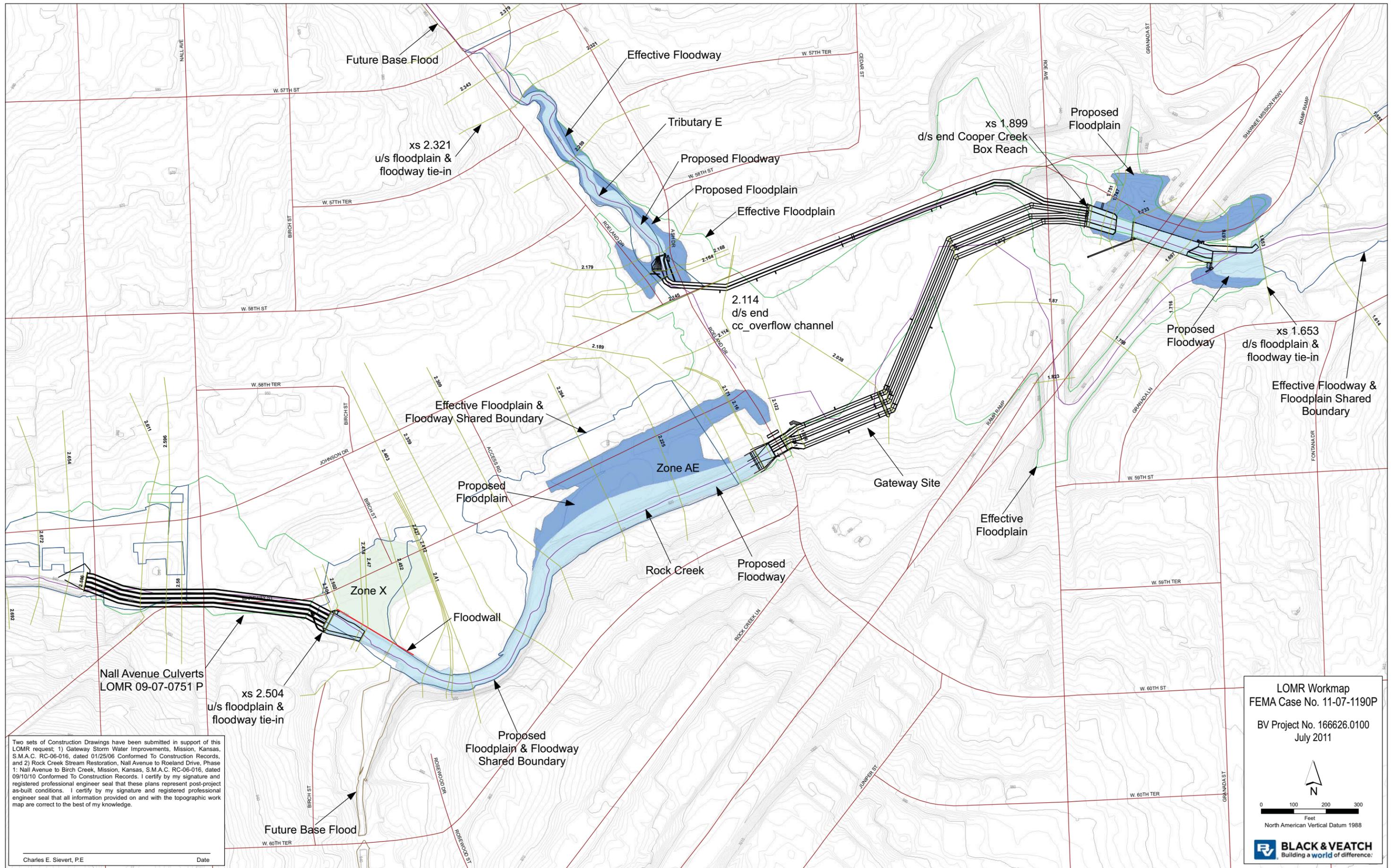
MAP NUMBER
20091C0023G

MAP REVISED
AUGUST 3, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov





Two sets of Construction Drawings have been submitted in support of this LOMR request: 1) Gateway Storm Water Improvements, Mission, Kansas, S.M.A.C. RC-06-016, dated 01/25/06 Conformed To Construction Records, and 2) Rock Creek Stream Restoration, Nail Avenue to Roeland Drive, Phase 1: Nail Avenue to Birch Creek, Mission, Kansas, S.M.A.C. RC-06-016, dated 09/10/10 Conformed To Construction Records. I certify by my signature and registered professional engineer seal that these plans represent post-project as-built conditions. I certify by my signature and registered professional engineer seal that all information provided on and with the topographic work map are correct to the best of my knowledge.

Charles E. Sievert, P.E. Date

LOMR Workmap
 FEMA Case No. 11-07-1190P
 BV Project No. 166626.0100
 July 2011

0 100 200 300
 Feet
 North American Vertical Datum 1988

BLACK & VEATCH
 Building a world of difference.

RESOLUTION NO. 862

A RESOLUTION ESTABLISHING MUNICIPAL FLOOD CONTROL STRATEGIES FOR CAPITAL INFRASTRUCTURE IMPROVEMENTS WITHIN THE ROCK CREEK CHANNEL IMPROVEMENT AREA BETWEEN NALL AND METCALF AVENUES

WHEREAS, Rock Creek is a waterway that flows through the core of the commercial area of the City of Mission, and Rock Creek's extreme flooding events in the area pose a significant risk to life and property.

WHEREAS, Rock Creek's regulatory FEMA floodplain is a detriment to reinvestment, requires continued maintenance of existing structures within the floodplain, and has created the need for a flood control project to abate areas from the Rock Creek Flood Plain.

WHEREAS, the Rock Creek Flood Control project has started and multiple phases of the project are complete.

WHEREAS, the City desires to pursue future improvements to the Rock Creek Channel that yield the greatest possible benefit relative to capital infrastructure investments made in the area.

WHEREAS, at the March 7, 2012 Community Development Committee meeting, the Committee held a "Stormwater Safari" and reviewed the findings of the "*Rock Creek Cost Benefit Report*", prepared by Black & Veatch. In this report, various options for future improvement strategies to the Rock Creek Channel were studied.

WHEREAS, four options were presented in the study and each option addresses a distinct set of goals. Each option was evaluated with a probable cost of such improvement, benefits, and the possibility of leveraging outside funding for the project.

WHEREAS, Option 1 includes removal of all buildings from the floodplain by purchasing and demolishing structures in the floodplain along Rock Creek between Lamar Avenue and Maple Street and the Cost of this option has been estimated at \$7,675,000. In this option, benefits are limited to elimination of all structures from the floodplain, and no major improvements are conducted to the channel.

WHEREAS, Option 2 includes building on Option 1 and incorporating stabilization strategies and aesthetic improvements to the channel. Costs of this option has been estimated at approximately \$14,991,000 to \$17,265,000. In this option, all structures are eventually removed from the floodplain, and some strategic channel stabilization and aesthetic enhancements are performed. However, the FEMA regulatory floodplain continues to exist in portions of downtown Mission.

WHEREAS, Option 3 includes purchase of some properties (but not as many as in Options 1 and 2), mitigation of street flooding occurring on Johnson Drive and Nall Avenue,

removing some structures from the floodplain by including the Johnson Drive interceptor project and additional measures that reduce flood elevations of the main channel. Costs of this option has been estimated at \$28,082,000. In this option, some structures are removed from regulatory floodplain and major street flooding is mitigated.

WHEREAS, Option 4 includes purchase of some properties (but not as many as in Options 1 and 2), and elimination of all Rock Creek FEMA Flood Plain by constructing interceptor and RCB improvements along Rock Creek between Maple Street and Lamar Avenue. Costs of this option has been estimated at \$31,893,000. In this option, all regulatory floodplain in the area is mitigated, although this only occurs once all improvements are completed (not incrementally).

WHEREAS, pursuit of these optional strategies will require various level of funding commitment from the City of Mission, Johnson County SMAC Program, and other funding partners.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF MISSION, KANSAS:

Section 1. The City of Mission will conduct improvements to the Rock Creek channel as described in Option 4 above.

Section 2. Option 4 includes elimination of all Rock Creek FEMA Flood Plain by constructing interceptor and RCB improvements along Rock Creek between Maple Street and Lamar Avenue. Costs of all improvements related to this option have been estimated at \$31,893,000.

Section 3. Entire project does not have to be completed in one phase, and as such, the entire benefit of this improvement strategy may be delayed until entire project has been completed.

Section 4. This option has an immediate impact to the 2013-2014 Johnson Drive Rehabilitation Project, due to the need of constructing the Johnson Drive Interceptor. Given the currently estimated additional cost of this project element (\$2.254 million), the City is committed to increasing funding for this project in an equivalent amount.

Section 5. Options for funding include an increase in the City's **Stormwater Utility Fees (ranging from approximately \$25/month/ERU [one year only], to \$9/month/ERU [over 3 years], to \$6/month/ERU [extended over 5 years]. Alternatively, funding could also be dedicated from an increase in the City's property tax mill levy (ranging from approximately 19 mills [one year only], to 7 mills [over 3 years], to 4 mills [extended over 5 years]. These and other funding options will be considered as as part of the 2013 Budget Discussions.**

Section 6. The City will pursue additional funding opportunities for completion of the overall drainage system described in Option 4.

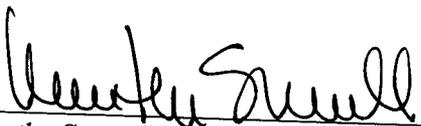
THIS RESOLUTION IS PASSED AND APPROVED BY THE GOVERNING BODY OF THE CITY OF MISSION, this 20th day of June 2012.

THIS RESOLUTION IS APPROVED BY THE MAYOR this 20th day of June 2012.



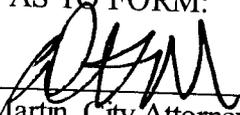
Laura McConnell, Mayor

ATTEST:

By 

Martha Sunrall, City Clerk

APPROVED AS TO FORM:

By 

David K. Martin, City Attorney