
City of Tulsa
Repetitive Loss Area Analysis
North Tulsa Basins

August 18, 2026



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Introduction

The National Flood Insurance Program (NFIP) is a federal program administered by the Federal Emergency Management Agency (FEMA) that provides flood insurance to property owners in participating communities. In exchange, communities agree to adopt and enforce floodplain management regulations designed to reduce future flood risk. These regulations establish minimum standards for development in flood-prone areas and are intended to minimize damage to structures and infrastructure over time. The City of Tulsa has adopted its floodplain management regulations in Title 11A of the City's Code of Ordinances.

To encourage communities to go beyond these minimum requirements, FEMA established the Community Rating System (CRS). The CRS is a voluntary program that provides flood insurance premium discounts to policyholders in communities that implement additional floodplain management, public outreach, and hazard mitigation activities.

Over time, the NFIP has continually faced the job of balancing flood claim payments with insurance premium affordability, particularly while some properties flood more frequently than others. A subset of properties that cause a disproportionate impact to this balance are repetitive loss properties. FEMA defines repetitive loss properties as any property that has been paid two or more flood insurance claims of \$1,000 or more in a 10-year period. These repetitive loss properties account for approximately 25 to 30 percent of the NFIP's total claim payments, or about \$200 million annually, while representing only 1 percent of NFIP-insured properties nationwide. To aid in managing this issue, one of the requirements of the CRS is that communities identify all repetitive loss properties in their jurisdiction and work with the owners in finding ways to reduce or eliminate future flood damage. This initiative has been very successful in reducing flood losses and claims.

Using NFIP repetitive loss data, communities must analyze and map the surrounding areas where similar flooding conditions may exist. These areas are referred to as Repetitive Loss Areas (RLAs). For each RLA, the community is required to follow a 5-step process: notify affected property owners, assess potential flood risks, and develop strategies to reduce or eliminate future flood damage. As a CRS Class 1 Community, the City of Tulsa is required to update these reports in time for its program verification cycle. The updates must review the flooding and building conditions and modify the repetitive loss areas and their analyses accordingly. This 2026 update to the repetitive loss area analysis is intended to fill this verification requirement.

Background

The City of Tulsa's flooding history dates back to before statehood and has grown with the City. In the post-World War II era, the City experienced rapid development and expansion into what has become the Mingo and Joe Creek watershed. Most of this development occurred in the low-lying floodplains of these creeks which resulted in increased flood risk.

Tulsa's rapid development during this time was not singular, many communities across the country were experiencing urbanization and increased flood loss. In response, the U.S.

Congress established the National Flood Insurance Program in 1968. The City of Tulsa joined the NFIP in 1974.

By the 1980s, Tulsa had been experiencing floods in rapid succession, with nine floods occurring over 15 years¹. Two specific storms contributed largely to the number of repetitive loss properties in the City of Tulsa: the June 1979 and May 1984 floods. As of this 2026 update, the 1984 flood is still maintained as the City's Flood of Record.

Many of the City's repetitive loss properties filed claims in 1979. Significant flooding that year occurred in the Little Joe Creek and Dirty Butter Creek watersheds². According to a June 1979 National Oceanic and Atmospheric Administration (NOAA) publication titled *Storm Data and Unusual Weather Phenomena*, four to six inches of rain fell over a two-hour period in South Tulsa accompanied by high winds³—causing damage to dozens of buildings. The impact of the storm was felt the most in the Joe Creek watershed with Little Joe Creek overtopping its banks.

Numerous repetitive loss properties in the City of Tulsa list the May 1984 storm as their most recent flood insurance claim. The creeks that were the most heavily impacted were Mingo Creek, Bigheart Creek, Harlow Creek, Flatrock Creek, Dirty Butter Creek, Coal Creek, Little Joe Creek, and Haikey Creek. A slow-moving storm caused approximately six to fifteen inches of rain to fall over an eight-hour period, occurring primarily overnight. The largest rainfall totals occurred in the Mingo Creek watershed⁴.

The 1984 storm was severe, causing 14 fatalities and injuries to hundreds of people. The impacts on infrastructure were significant, with more than 5,000 buildings affected and total losses estimated at approximately \$180 million⁵ (about \$575 million in 2026 dollars). Following the event, President Ronald Reagan issued a federal disaster declaration.

After the 1984 flood, the City created a Flood Hazard Mitigation Team to guide recovery and long-term mitigation efforts. The City has since worked to acquire flood-prone properties, implement major flood control projects, and develop basin-wide master drainage plans.

The City's ongoing investment in mitigating flood risk has resulted in a comprehensive floodplain management program. At the turn of the century, FEMA classified Tulsa as first in the nation for its floodplain management program, leading to the lowest flood insurance premiums for residents in the US. The City has continued to improve their program, joining the NFIP's Community Rating System (CRS) in 1991. As a result, Tulsa has been awarded Class I, which grants its residents a 45 percent discount on the cost of NFIP flood insurance for structures.

¹ <https://www.cityoftulsa.org/floodcontrol>

² United States Army Corps of Engineers, Southwestern Division, Tulsa District. *Tulsa Urban Study: Flooding Overview Report*. October 1982.

³ National Oceanic and Atmospheric Administration (NOAA), Environmental Data and Information Service, National Climatic Center. *Stormwater Data Volume 21, No.6*. Asheville, NC, June 1979.

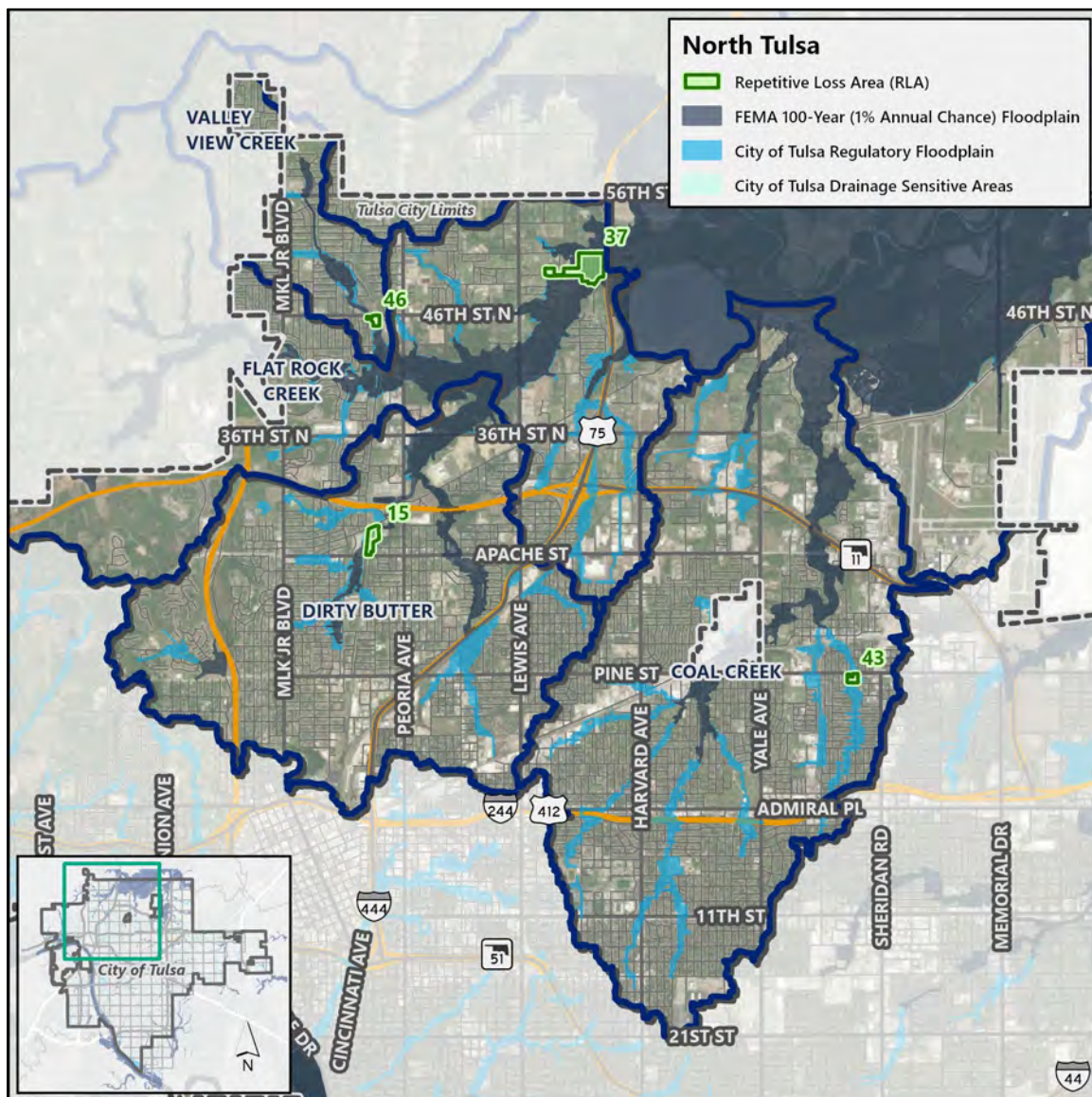
⁴ National Weather Service. *Tulsa Memorial Day Flood of May 26-27, 1984*.
https://www.weather.gov/tsa/1984may26_tulsamemorialdayflood

⁵ United States Army Corps of Engineers, Southwestern Division, Tulsa District. *Flood of May 27, 1984*. May 1985.

Location and Drainage

The North Tulsa basin group is located along the tributaries of Bird Creek with much of the downstream contributing drainage area located outside of Tulsa City Limits, specifically much of Bird Creek and Flat Rock Creek. Most of this area is covered with a mix of industrial, commercial, and residential land use with large swaths of open space along Bird Creek near Mohawk Park. This basin group is covered by council districts 1, 3 and 4.

Figure 1: North Tulsa



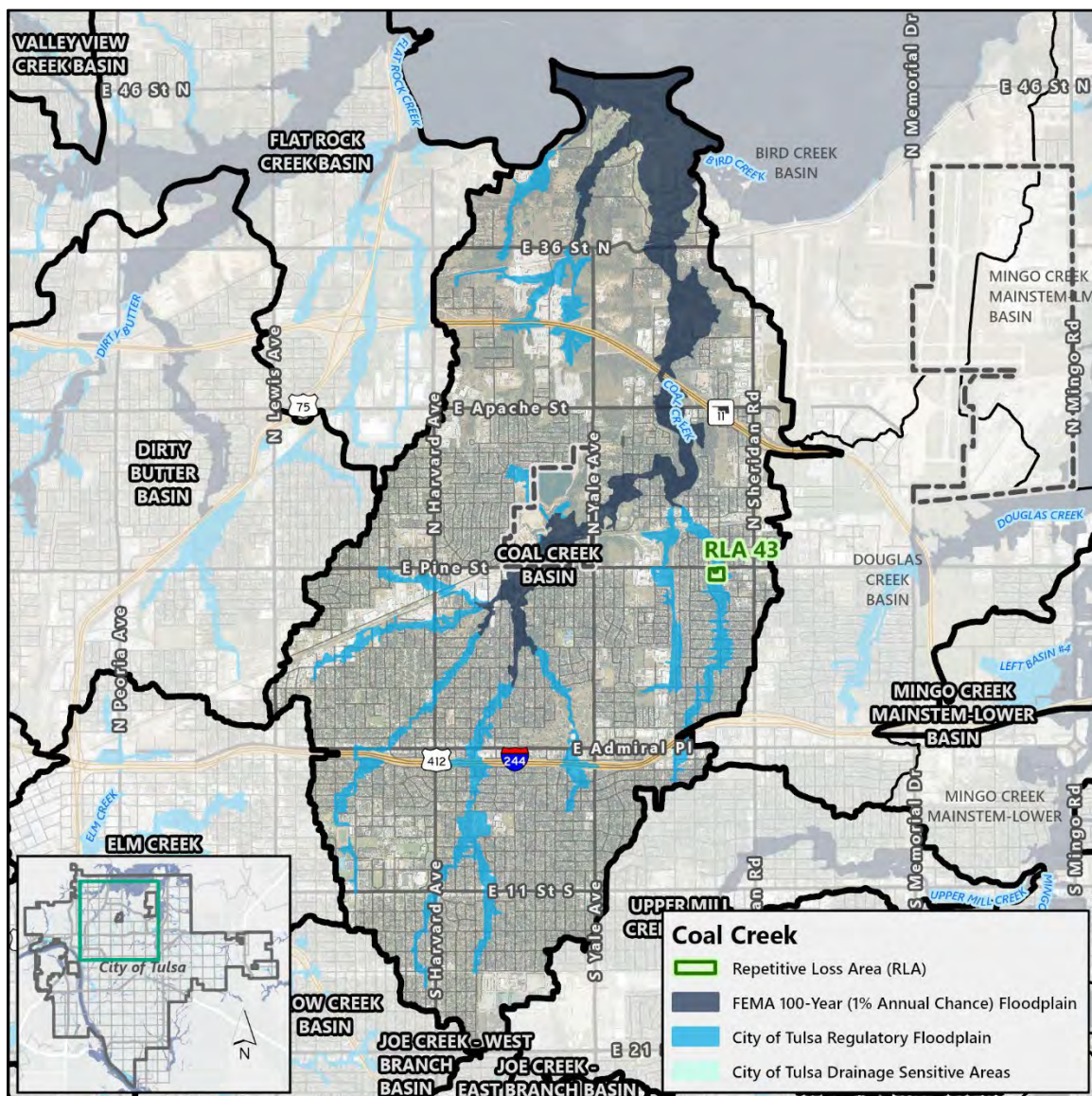
The North Tulsa Basin Group contains five subbasins: Bird Creek, Coal Creek, Dirty Butter Creek, Flat Rock Creek, and Valley View Creek and four repetitive loss areas. The creeks within the North Tulsa Basins' floodplains are located within Special Flood Hazard Area and the City Regulatory floodplain. This area historically was subject to a mix of overbank flooding and

overland flooding. There are four basins containing ten unmitigated repetitive loss properties. The unmitigated repetitive loss properties are spread over four areas.

Coal Creek

Coal Creek is located in North Central Tulsa. This creek is a right bank tributary to Bird Creek, it extends approximately 6 miles and has a contributing drainage area of approximately 11 square miles. The watershed is a mix of residential, industrial and commercial land use. The basin has more open space as you move further north. The creek generally flows north-northeast until its confluence with Bird Creek near the intersection of Mohawk Blvd. and Creek Dr. Coal Creek's mainstem is designated as FEMA Zone AE with Floodway, while the City of Tulsa regulatory floodplain also encompasses the mainstem and several tributaries. The Coal Creek basin contains one unmitigated RLA.

Figure 2: Coal Creek Overview



RLA 43

Area Specific Flooding

Repetitive Loss Area 43, located in the Coal Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of nine structures on eleven properties located at the intersection of E. Pine St. and N. Kingston Pl. The properties were developed between 1948 and 1955, with the exception of one building developed in 2011. All eleven properties are located in the City regulatory floodplain

Drainage conditions in this RLA indicate that historic flooding is due to overland flow and storm sewer backup. The terrain on which these properties are situated in what was the bed of Coal Creek which is now primarily conveyed by storm sewer- denoted as RB1. The land on which these properties reside is generally sloped inwards from east and west to the center of the RLA with grading toward the center of the area along the storm sewer line and north to promote drainage toward E. Pine St.

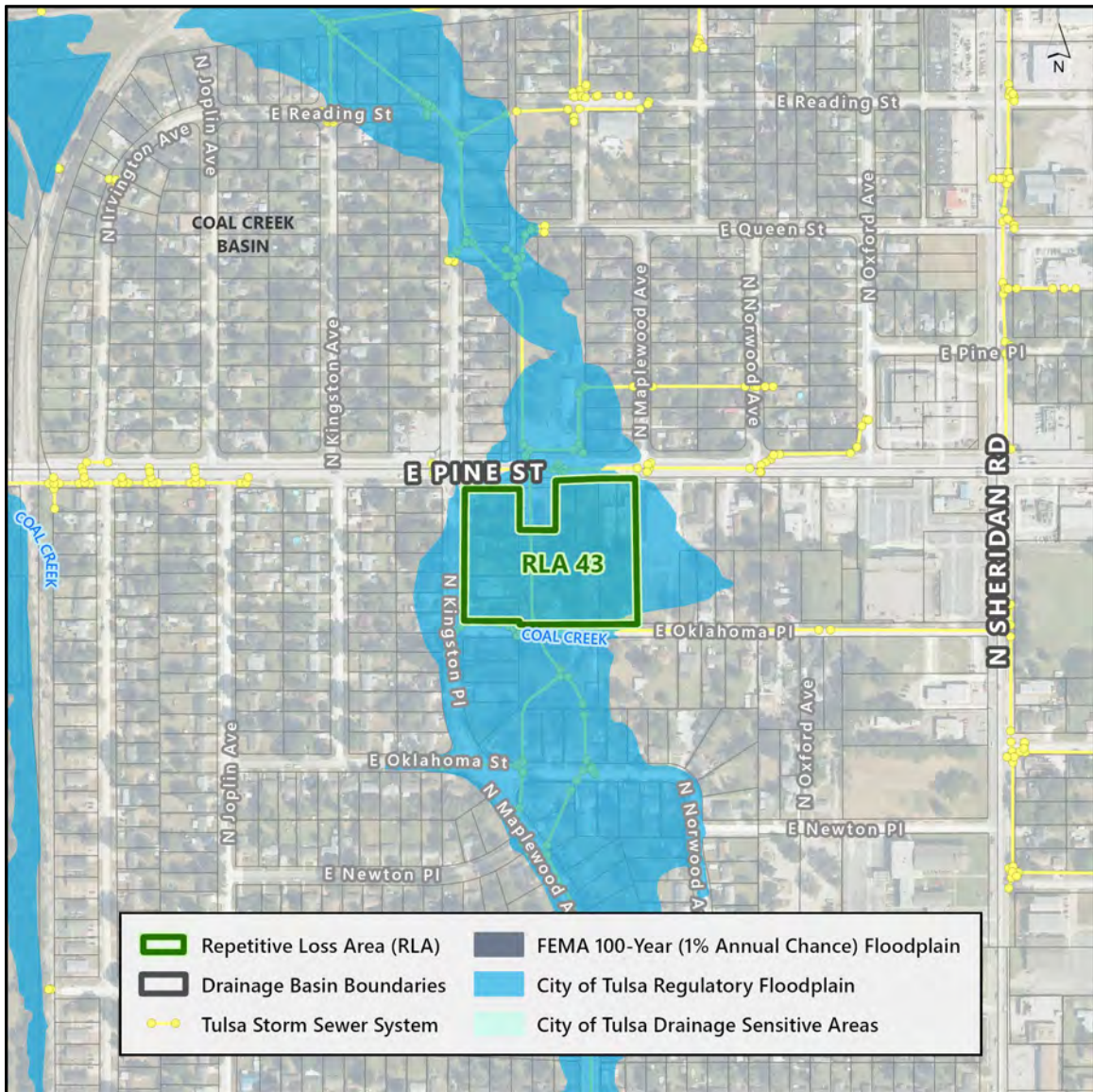
This area is located in Problem Area 10 in the Coal Creek Master Drainage Plan updated in 2018. The storm sewer capacity ranges from 1 to 25-year event, which allows flooding of overland up to three feet along the roadways and yards in this neighborhood. The City regulatory water surface elevations ranging from 669.6 to 670. The land on which the structures reside is generally situated at an elevation of 668 to 670 feet.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The City has purchased repetitively flooded structures along the Frisco Railroad, but these efforts have not mitigated repetitive flooding in this RLA. The most recent claim was filed in 2008.

Figure 3: RLA 43



Claims Data

FLOOD INSURANCE DATA There are two repetitive loss properties in this RLA. Two properties in the RLA have carried flood insurance and made seven damage claims to the NFIP, six of which were paid, totaling \$102,268. The last claim for this RLA was filed in 2008. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Coal Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0241L, October 16, 2012
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, March 2021
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Coal Creek Master Drainage Plan, McLaughlin Water Engineers, 1987
- Coal Creek Master Drainage Plan, Swift Water Resources, 2018
- Repetitive Loss Area #43, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are a mix of residential and commercial buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Crawl Space	1950	Avg
Property 2	Residential	Crawl Space	1950	Avg
Property 3	Residential	Crawl Space	1955	Avg
Property 4	Residential	Crawl Space	1955	Avg
Property 5	Residential	Crawl Space	1948	Avg
Property 6	Residential	Crawl Space	1950	Avg
Property 7	Residential	Crawl Space	1951	Avg
Property 8	Residential	Crawl Space	1951	Avg
Property 9	Vacant			
Property 10	Commercial		2011	Fair
Property 11	Vacant			

CONCLUSIONS Based on flood data, the Coal Creek Master Drainage Plan, site surveys and feedback from residents and homeowners, the causes of damage have been overland flow and storm sewer backup. All eleven properties in the RLA are within the City's regulatory floodplain. The 2018 MDP proposed floodplain development management and upstream detention as a solution to the flooding in this RLA.

RLA 43



Google Earth

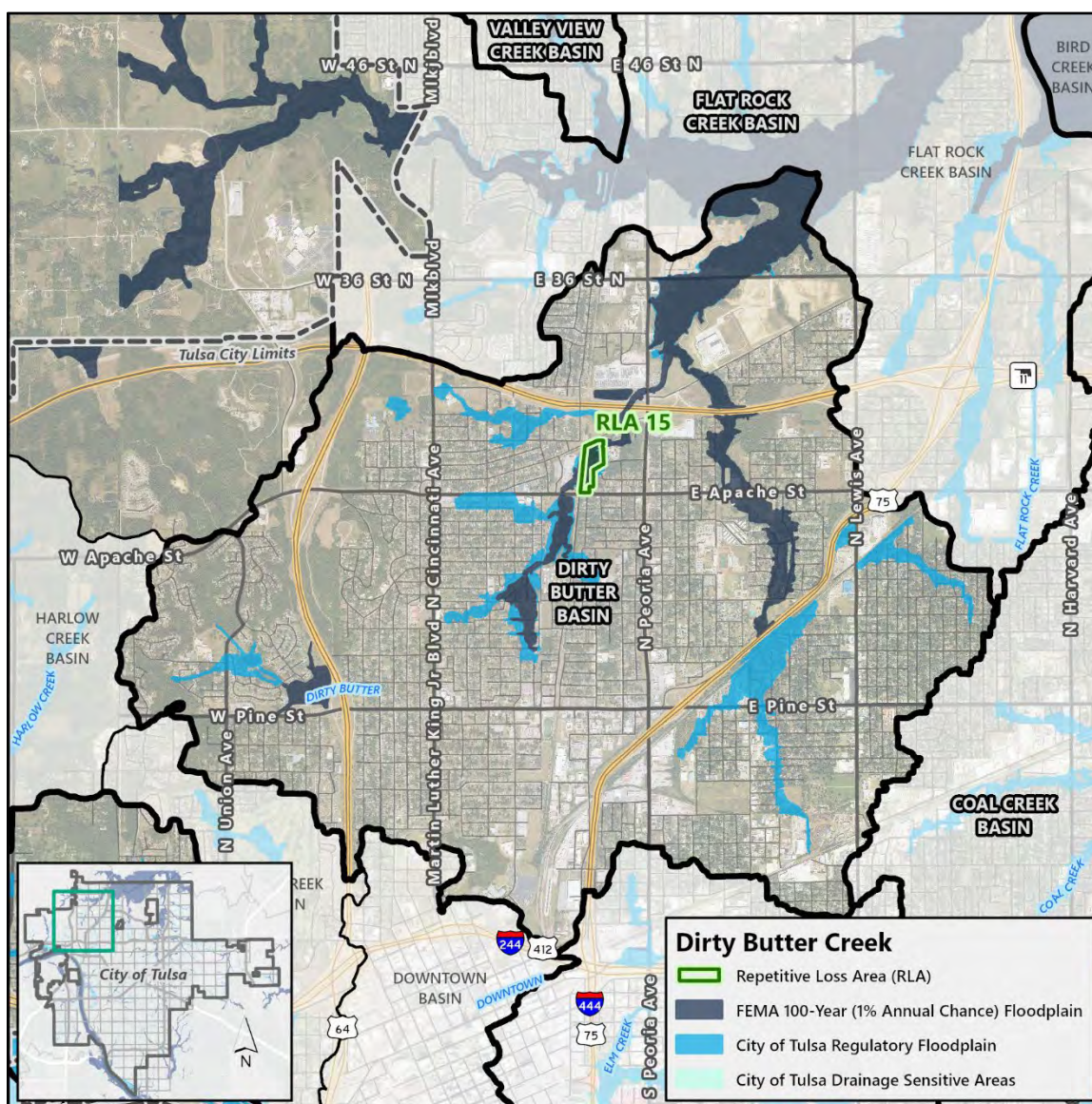
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7.27 ft

Dirty Butter Creek

Dirty Butter Creek is located in North Tulsa. This creek is a tributary of Flat Rock Creek and Bird Creek; it extends approximately 5 miles and has a contributing drainage area of 8.5 square miles. The watershed is a mix of residential and commercial land use. The creek generally flows east-northeast until its confluence with Flat Rock Creek near the intersection of E. 41st St. N. and N. Lewis Ave. Much of Dirty Butter Creek and one of its tributaries are designated as FEMA Zone AE with Floodway. The City of Tulsa regulatory floodplain of Dirty Butter creek extends further up the main channel and tributaries. The Dirty Butter Creek basin contains one unmitigated RLA.

Figure 4: Dirty Butter Creek Overview



RLA 15

Area Specific Flooding

Repetitive Loss Area 15, located in the Dirty Butter Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of four properties located near the intersection of N. Peoria Ave. and E. Apache St, along the main channel of Dirty Butter Creek, in a primarily residential and industrial area. The properties were developed between 1920 and 1972. The terrain on which the buildings are located is in the FEMA 100-year floodplain which touches all of the RLA's four structures. Two properties are within the Floodway, and all of the properties are located in the City of Tulsa regulatory floodplain.

Drainage conditions in this RLA indicate that flooding is likely caused by overland flow and riverine flooding from Dirty Butter Creek. The overland flow is likely due to the inadequate drainage to the creek and a lack of storm sewer to convey sheet flow.

The Master Drainage Plan for this reach of Dirty Butter Creek identified acquisition, floodproofing, bridge enlargement and detention as the most cost-effective solutions for flooding in this RLA. The City of Tulsa has added improved the detention facility upstream of the RLA, channelized portions of the creek downstream, and enlarged conduits beneath Mohawk Blvd., Apache St., the Gilcrease Expressway and N. Peoria Ave.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

Improvements were made to the Dirty Butter Creek based on the Dirty Butter Creek master Drainage Plan. As of this 2026 update, some acquisition, detention, channelization and roadway improvements have been made. Despite these improvements, the structures in this RLA remain subject to the 100-year flood.

Claims Data

FLOOD INSURANCE DATA There are two repetitive loss properties in this RLA. Three properties have carried flood insurance and made nine damage claims to the NFIP. All of these claims were paid and totaled \$423,633. The last claim for this RLA was filed in 1986. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this Plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Dirty Butter Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0228L, October 16, 2012
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, March 2021
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Dirty Butter Creek Master Drainage Plan, May 1987
- Repetitive Loss Area #15, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the acquisition and floodproofing measures recommended in the 1987 Master Drainage Plan.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are all commercial buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Commercial	Slab	1970	Fair
Property 2	Commercial	Slab	1965	Very Poor
Property 3	Commercial	Slab	1920	Unsound
Property 4	Commercial	Slab	1972	Fair +

CONCLUSIONS Based on flood data, the Dirty Butter Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overbank flooding. All four properties in the RLA are within the 100-year floodplain and three are in or touched by the floodway. There have been improvements made to upstream detention, but this has not mitigated the RLA. The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the acquisition and floodproofing measures recommended in the 1987 Master Drainage Plan.

RLA 15



Google Earth

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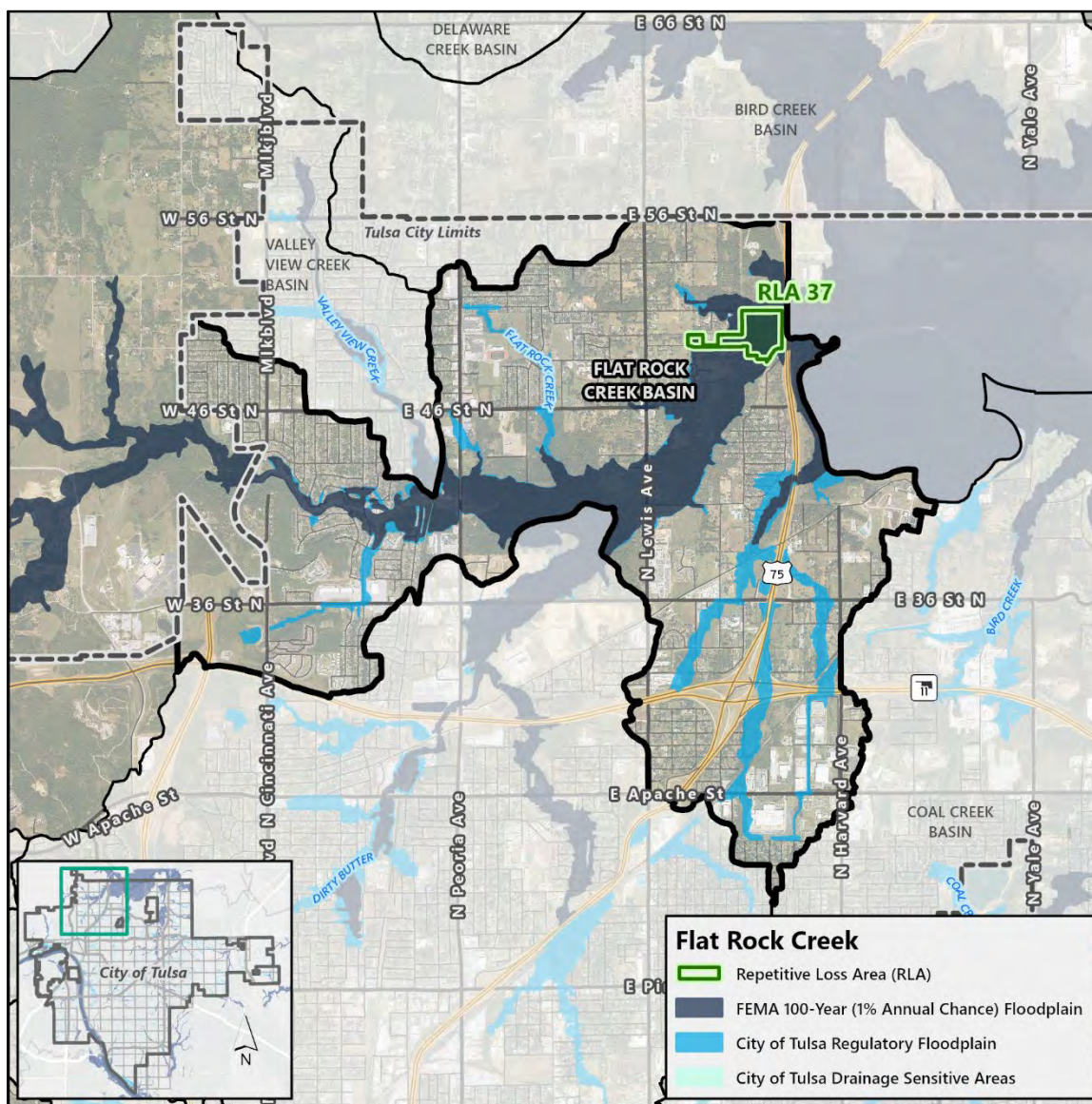
9.09 ft



Flat Rock Creek

Flat Rock Creek is located in North Tulsa, near Mohawk Park. This creek is a tributary of Bird Creek; it extends approximately 11 miles and has a contributing drainage area of 14 square miles. The watershed is a mix of residential, industrial and commercial land use with more open space further east. The creek originates near Osage Hills; 36th St. N. and. 41st W. Ave and generally flows northeast until its confluence with Bird Creek near the intersection of E. 56th St. N. and N. Yale Ave. Flat Rock Creek is designated as FEMA Zone AE with floodway. The City of Tulsa regulatory floodplain encompasses the main channel and several tributaries.

Figure 6: Flat Rock Creek Overview



Flat Rock Creek's mainstem has several tributaries including Valley View and Dirty Butter Creek. The confluence of Valley View with Flat Rock Creek is located near N. Hartford Ave and

E. 41st Pl. N. Valley View Creek has a contributing drainage area of 2.3 square miles. The confluence of Flat Rock Creek and Dirty Butter is further downstream, located near N. Lewis Ave and E. 41st St. N. Dirty Butter Creek has a contributing drainage area of 8.5 square miles. The Flat Rock Creek basin contains one unmitigated RLA.

RLA 37

Area Specific Flooding

Repetitive Loss Area 37, located in the Flat Rock Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of eight structures on thirteen properties. The properties were developed between 1922 and 1962. This RLA is located at E. 51st St. N. and US Highway 75 on the north side of Flat Rock Creek. The terrain on which the buildings are located is in the FEMA Special Flood Hazard Area (SFHA), some within the floodway (no structures), and the City of Tulsa regulatory floodplain.

Drainage conditions in this RLA indicate that flooding is due primarily to bank overtopping along Flat Rock Creek. The neighborhood does not have storm sewer, only roadside ditches to convey runoff to the creek which could contribute to flooding as well. The floodplain is typically flat where these structures are located. The properties lie within the 100-year floodplain of Flat Rock Creek where the water surface elevation ranges from 604.7 and 606.8 feet. The finished floor elevations of these structures range from 603.1 to 603.9 feet. There are three unmitigated repetitive loss properties in this area and a mitigated repetitive loss property.

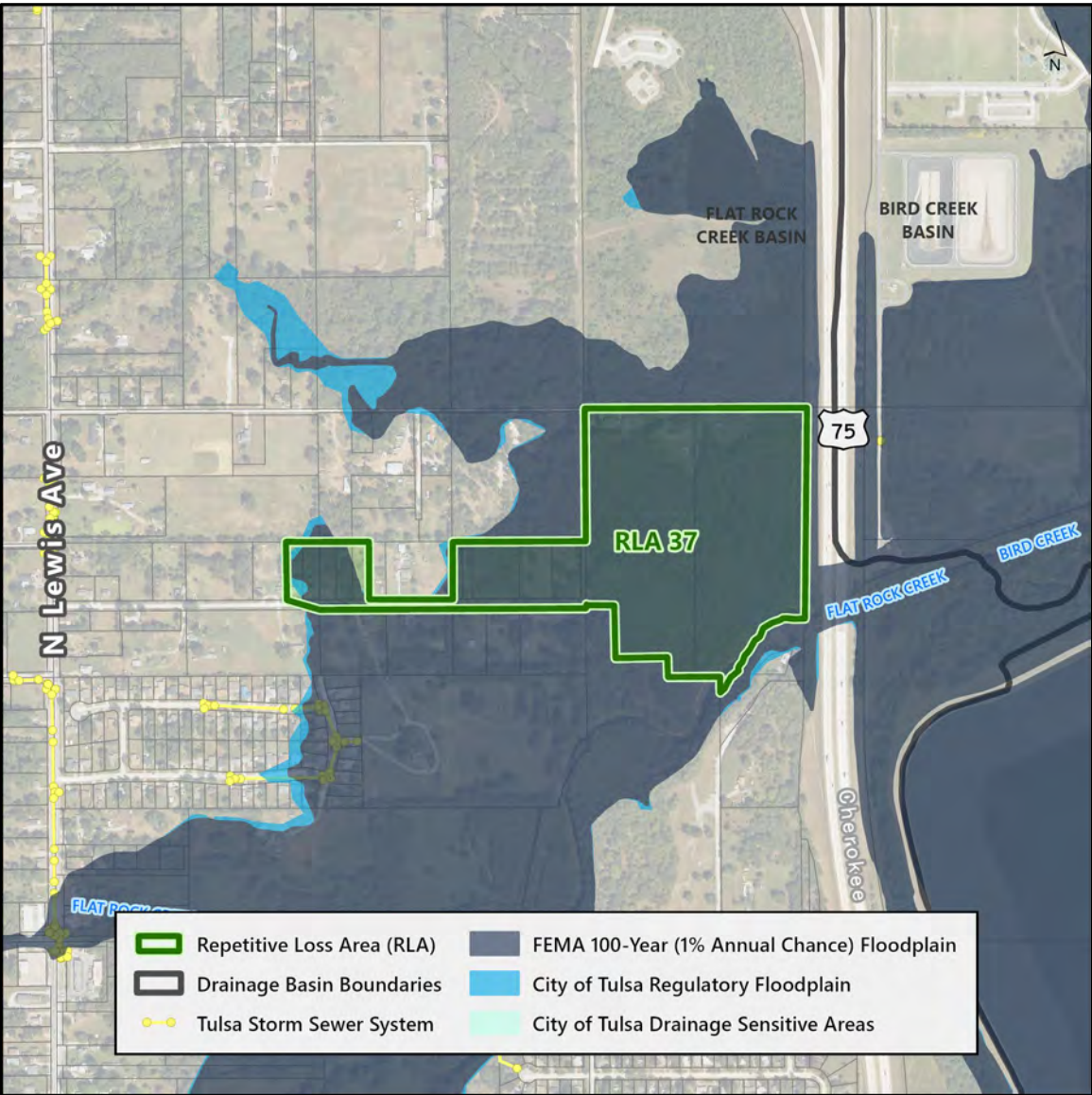
This RLA was included in the Flat Rock Creek Master Drainage Plan which identified acquisition and bridge enlargements for improved conveyance as the most cost-effective solutions in this area. Bridge enlargements at US Highway 75 have been completed but did not remove these structures from the 100-year floodplain.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

In accordance with the Flat Rock Creek MDP, the bridge at US Highway 75 was enlarged, increasing conveyance along this reach. Voluntary acquisition was also partially completed, several properties in the RLA rejected offers from the City. This project did not entirely remove these structures from the 100-year floodplain and therefore did not mitigate the area.

Figure 7: RLA 37



Claims Data

FLOOD INSURANCE DATA There are five repetitive loss properties in this RLA. Nine properties in this RLA have carried flood insurance and made twenty-eight damage claims to the NFIP. Twenty-four of the claims were paid and total \$221,574. Most of the claims were made in the 1980s, the last claim for this RLA was filed in 2000. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this Plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Flat Rock Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

FEMA Flood Map Panel: 40143C0227L, October 16, 2012

- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, March 2021
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Water and Sewer
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Flat Rock Creek Master Drainage Plan, May 1987
- Repetitive Loss Area #37, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are a mix of residential and commercial buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Residential	Crawl Space	1940	Unsound
Property 2	Residential	Crawl Space	1945	Fair +
Property 3	Vacant			
Property 4	Vacant			
Property 5	Vacant			
Property 6	Vacant			
Property 7	Residential	Crawl Space	1962	Fair
Property 8	Residential	Crawl Space	1955	Avg
Property 9	Residential	Crawl Space	1922	Fair
Property 10	Residential	Crawl Space	1960	Fair
Property 11	Residential	Slab	1955	Fair
Property 12	Residential	Crawl Space	1945	Fair
Property 13	Vacant			

CONCLUSIONS Based on flood data, the Flat Rock Creek Master Drainage Plan, site surveys and feedback from residents and homeowners, the causes of damage have been overbank flooding and overland flow. The MDP identified acquisition and improved conveyance as solutions to mitigate flooding in this RLA. The City has improved the conveyance through the

US Highway 75 bridge and partially completed acquisition of flooded properties, but those remaining are still at risk. All thirteen properties in the RLA are within the 100-year floodplain and two are in the floodway.

RLA 37



Google Earth

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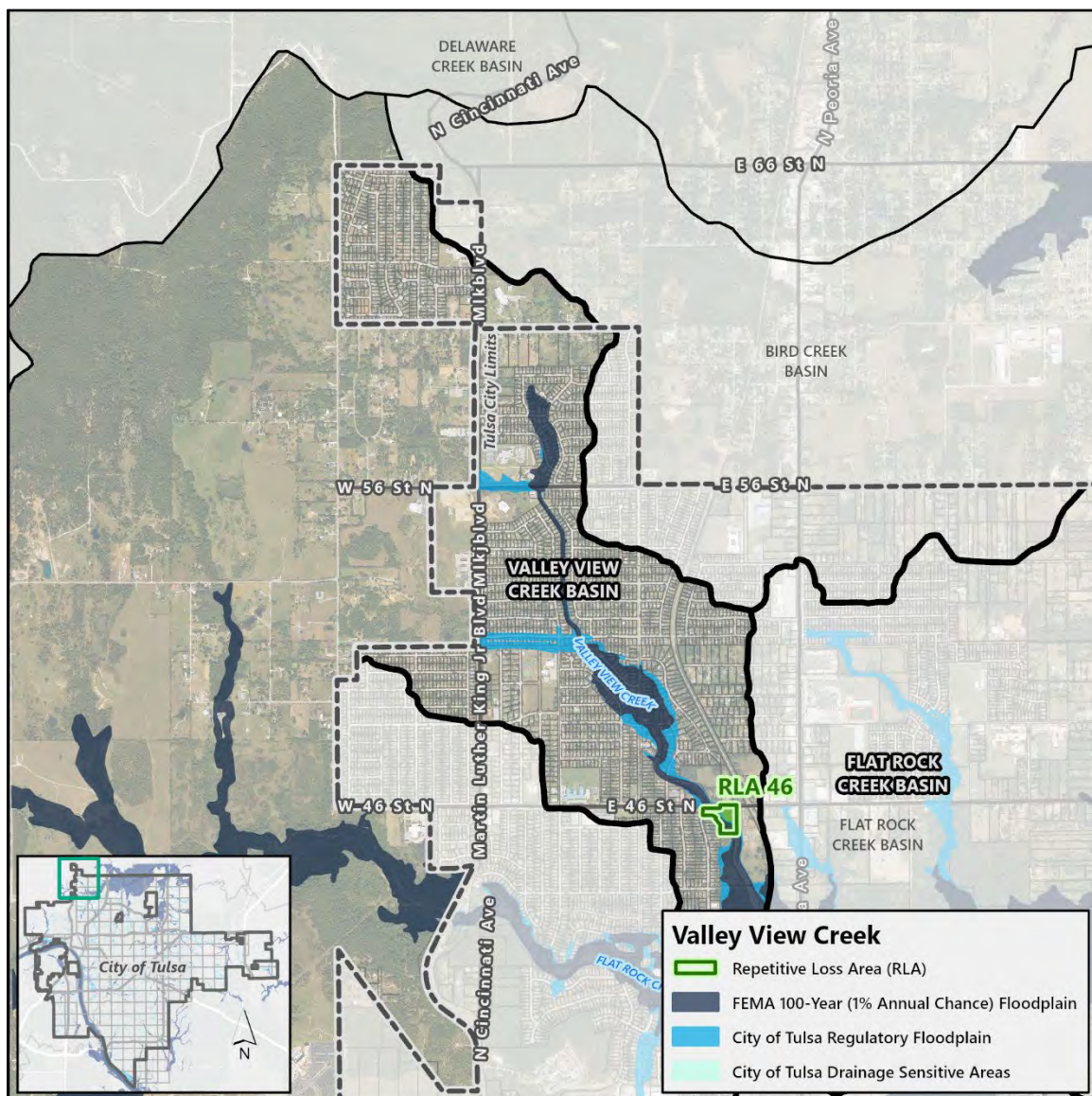
6.78 ft



Valley View Creek

Valley View Creek is located in North Tulsa running through the Chamberlain and North Kenosha neighborhoods. This creek is a tributary of Flat Rock Creek; it extends approximately 2.5 miles and has a contributing drainage area of 2.3 square miles. The watershed is primarily residential with some open space areas scattered throughout, including Chamberlain Park. The creek originates near city limits at E. 59th Pl. N. and flows south southeast to its confluence with Flat Rock Creek near E. 42nd St. North and N. Peoria Ave. Valley View Creek is designated as FEMA Zone AE with floodway, it also resides in the City of Tulsa regulatory floodplain. The Valley View Creek basin contains one unmitigated RLA.

Figure 8: Valley View Creek Overview



RLA 46

Area Specific Flooding

Repetitive Loss Area 46, located in the Valley View Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of five structures on three property lots located directly east of the intersection of E. 46th St. N. and Kenosha Ave. The properties are situated on either side of Valley View Creek. The properties were developed between 1950 and 1970. The land is sloped downward from the east and west toward the creek.

Drainage conditions in this RLA indicate that flooding is caused by riverine flooding and overland flow. The terrain slopes allow for water to drain across these properties as it enters the channel, but the grading is not entirely consistent to provide positive drainage away from the structures, therefore increasing the potential for flooding to these slab-on-grade structures. Valley View Creek is concrete-lined through this reach, the RLA is located near the confluence with Flat Rock Creek. One structure is located in this City's regulatory floodplain, which is shown to overtop E. 46th St. N. on the north, increasing flooding potential for the structures south of the roadway.

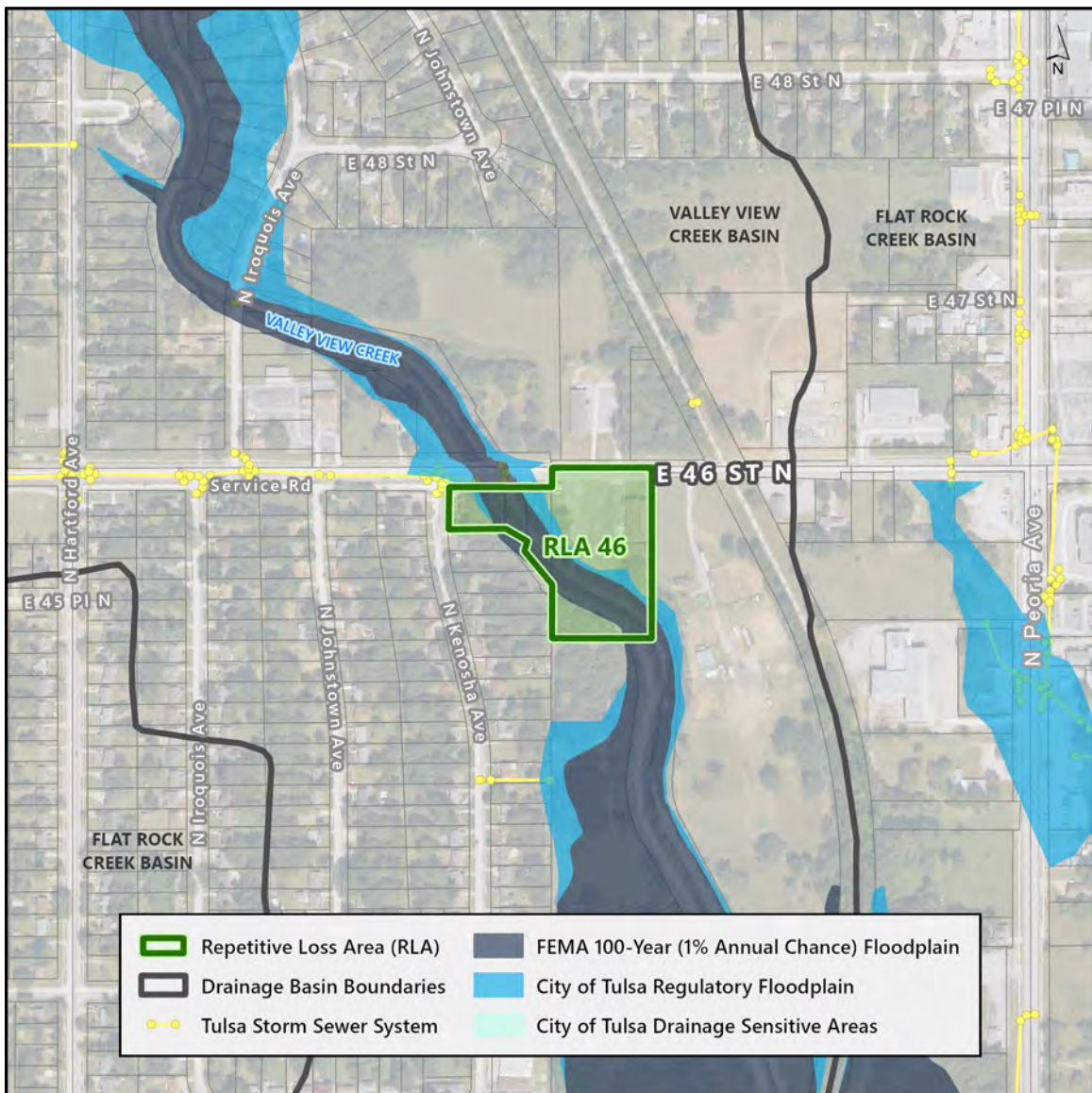
Valley View Creek flooding problems including those in this RLA were addressed in the Flat Rock Creek Master Drainage Plan which recommended channel improvements and roadway structure improvements to increase conveyance in the channel. Flood proofing was also recommended.

The general location of this RLA is shown on the map below. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

Improvements

The improvements along Valley View Creek were done in accordance with the Flat Rock Creek MDP. Valley View Creek was channelized with the addition of concrete lining through this reach along with an increased roadway structure under E. 46th St. N. and further downstream at N. Peoria Ave. These improvements worked to increase conveyance at the confluence of Valley View Creek and Flat Rock Creek. Although these improvements reduced overbank flooding risk, overland flow remains a threat, with the most recent flood claim filed in 2000.

Figure 9: RLA 46



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. One property in the RLA has carried flood insurance and made two damage claims to the NFIP totaling \$3,563. The last claim for this RLA was filed in 2000. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, neither the repetitive loss property nor specific claim data are detailed in this Plan.

Research And Analysis

The original analysis of this RLA was conducted in 2017 by the Project Team through interviews with City officials, research into Stormwater Design files, including the Flat Rock Creek Master Drainage Plan, review of the City's extensive flood history documentation, assessment of insurance claims, visits to the RLA, interviews with homeowners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any. For this 2026 review, additional claims data, updated topography, 311 citizen call logs, and a review of the City's CIP prioritization were used to update this analysis.

AGENCIES AND ORGANIZATIONS During the course of the 2017 RLA analysis and plan development, the Project Team solicited input from the City of Tulsa Stormwater Design, the Communications Department, and the Working in Neighborhoods Department (WIN), Indian Nations Council of Governments (INCOG), US Army Corps of Engineers (USACE), City of Tulsa Emergency Management, and Tulsa County Emergency Management. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the NFIP's Community Rating System (CRS). In this 2026 update, the Project Team worked with City agencies to verify the status of the repetitive loss properties.

PLANS, STUDIES AND DOCUMENTS The following City of Tulsa and FEMA documents were used in the analysis:

- FEMA Flood Map Panel: 40143C0226L, October 16, 2012
- Regulatory Floodplain Map Atlas, Tulsa Engineering Services, March 2021
- City of Tulsa Stormwater Management Plan
- Stormwater Management Criteria Manual, June 2019
- Stormwater Capital Improvements List, City of Tulsa, Engineering Services
- 2024 City of Tulsa Hazard Mitigation Plan Update, Freese & Nichols, 2024
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Flat Rock Creek Master Drainage Plan, May 1987
- Guidebook to Conducting Repetitive Loss Area Analyses, UNO and FEMA
- Repetitive Loss Area #46, Flanagan & Associates, Swift Water Resources, 2017

CAPITAL IMPROVEMENTS PLANS No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in this Repetitive Loss Area.

FIELD SURVEYS AND SITE VISITS In 2017, site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns. During this 5-year update, these areas were reviewed using GIS data and aerial imagery along with site visits.

REVIEW DRAINAGE PATTERNS The Project Team examined aerial topography maps, master drainage plans, storm sewer plans, City Customer Care Center complaints and comments, and conducted field checks to determine area drainage patterns and identify flooding problem areas. The results of the research and analysis are described in the following paragraphs and summarized in the table below.

STRUCTURES The Project Team made a number of visits to this RLA to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

STRUCTURE TYPE The structures are a mix of residential and commercial buildings.

FOUNDATION TYPE The type of foundation was determined by field investigation and query of Tulsa County Assessor records.

CONDITION OF STRUCTURES The condition of the residences in the RLA was determined by field investigation and the County Assessor's records. These findings are summarized in the following table.

Alias	Structure Type	Foundation Type	Year Built	Condition
Property 1	Commercial	Slab	1970	Avg
Property 2	Commercial	Slab	1955	Avg
Property 3	Vacant			
Property 4	Residential	Crawl Space	1952	Avg

CONCLUSIONS Flooding concerns within this RLA are a result of overbank flooding from Valley View Creek as well as overland flow. The improvements made to the crossing at N. Peoria Ave. on Flat Rock Creek improved conveyance, but properties are still subject to potential flooding from floods greater than the 100-year frequency. This area is mentioned in the Flat Rock Creek MDP which included channel improvements and increased structure size under E. 46th St. N. and flood proofing determined to be the most cost effective solutions. The channel and roadway structure improvements have been completed, leaving flood proofing for the commercial buildings. Despite these improvements, one structure remains in the FEMA regulatory floodway.

RLA 46



Google Earth

© 2026 Google

6.93 ft



Notifications

ANNUAL FLOODPLAIN NOTIFICATION Each year the City notifies all homeowners and residents living in a 100-year floodplain that their properties are subject to flooding and informs them of what steps they can take to protect their residences and families, including the purchase of flood insurance.

ANNUAL REPETITIVE LOSS AREA NOTIFICATION Residents in Repetitive Loss Areas are notified annually that their homes are located in a Repetitive Loss Area and are potentially subject to flood damage from overland flow and storm sewer back-up.

PROPERTY OWNERS/RESIDENTS NOTIFICATION In 2017, property owners and residents/occupants were advised of the Repetitive Loss Area study and analysis by letter, were sent a questionnaire soliciting information and input, and asked to contact the City for more information or a copy of the completed RLA Plan.

PUBLIC PARTICIPATION AND INVOLVEMENT City Staff/Consultants interviewed homeowners to brief them on the Repetitive Loss Area Analysis Study/Plan, receive their input, and discuss possible mitigation measures.

PROPERTY OWNER RESPONSE TO NOTIFICATIONS

- Coal Creek: There were no responses to notifications sent to this property during the 2017 study. Unrelated to the 2017 notification, in 2024, the City received a complaint about continued street flooding within this area.
- Dirty Butter Creek: There were no responses to notifications sent to this property during the 2017 study. As of this 2026 update there have been no additional reports of flooding in this RLA.
- Flat Rock: There were no responses to notifications sent to this property during the 2017 study. As of this 2026 update there have been no additional reports of flooding in this RLA.
- Valley View: There were no responses to notifications sent to this property during the 2017 study. As of this 2026 update there have been no additional reports of flooding in this RLA.

Mitigation Measures

Overview

The 2018 Coal Creek Master Drainage Plan identifies the most cost-effective structural solutions (floodplain development management and stormwater detention ponds) for the RLA 43. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The Master Drainage Plan for this reach of Dirty Butter Creek identified acquisition, floodproofing, bridge enlargement and detention as the most cost-effective solutions for flooding in this RLA 15. The City of Tulsa has added improved the detention facility upstream of the RLA, channelized portions of the creek downstream, and enlarged conduits beneath Mohawk Blvd., Apache St., the Gilcrease Expressway and N. Peoria Ave. The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the acquisition and floodproofing measures recommended in the 1987 Master Drainage Plan.

The Master Drainage Plan for Flat Rock Creek identified acquisition and bridge enlargements along US Highway 75 as the most cost-effective solutions along RLA 37. The City has improved the conveyance through the US Highway 75 bridge and partially completed acquisition of flooded properties, but those remaining are still at risk. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The Flat Rock Creek Master Drainage Plan identifies floodproofing as the most cost-effective solution for flooding in RLA 46. There are presently no funded Capital Improvement Projects for future flood control projects that would benefit this area.

Individual Mitigation Measures: What You Can Do

Individual property protection actions are usually undertaken by property owners on a lot-by-lot, building-by-building basis, and include private floodproofing, moving mechanical equipment above flood levels, installing French drains and minor site grading to move local drainage to the street, sanitary sewer backup protection, and flood insurance.

The City of Tulsa is willing to have a stormwater engineer do a site visit to assist you in analyzing your specific drainage problems and discuss potential solutions. Contact the Customer Care Center at 311 or (918) 596-7777.

KNOW AND UNDERSTAND YOUR FLOOD RISK As stated above, being located in a Repetitive Loss Area does *not* mean a property will flood. Nevertheless, it is important that residents and property owners in flood hazard areas know and understand their flood risk and take what steps they can to protect their homes, families and possessions. City staff are available to explain the local flood risk, interpret floodplain maps, and determine if an area or property has drainage problems or a history of prior flooding. Staff can also discuss the ways a specific property can be protected from flooding. An Elevation Certificate can help define a property's flood risk under various rainfall scenarios (e.g., in a 10-year, 50-year, 100-year, or 300-year

storm). You can receive a free flood zone determination by contacting the City with the correct legal description and street address, or the Tax Assessor/Parcel Number of the property.

The City maintains their Regulatory Floodplain map atlas on their website:
cityoftulsa.org/government/departments/water-and-sewer/flood-control

MAKE A DISASTER PREPAREDNESS PLAN It is always a good idea for residents and property owners in flood hazard zones to prepare a disaster preparedness and response plan that addresses all the steps and details that will demand attention once a flood watch or warning is issued. A Building Permit is required to install a safe room in a flood-prone area.

CREATE BERMS, SWALES OR REDIRECTED DRAINAGE Flood waters can be diverted away from properties using berms, brick planter boxes and swales, but these may not be done in ways that cause damage to other properties. Owners and residents can request a meeting with a City Engineer to discuss the best ways to solve existing drainage problems, and whether a Building Permit will be required. Contact the Customer Care Center at 311 or (918) 596-7777.

INSTALL LOCAL, PROPERTY-SPECIFIC PAVING, PLANTINGS AND CATCHMENT BASINS City Engineering staff can explain the natural functions of floodplains and how they act to slow and purify urban runoff and reduce flooding. Staff can also suggest low-impact development projects which imitate natural floodplain functions by slowing runoff and filtering out impurities. These include such things as rain gardens, catchment basins and pervious paving materials.

ACQUISITION The City of Tulsa has a repetitive loss acquisition program to purchase repeatedly flooded properties. This voluntary program offers owners who are in this situation a way out. The City applies to FEMA for funds using the Hazard Mitigation Grant Program. Once the grant is awarded, the property is appraised as if it were not a flooded property and the offer for the property is based on this appraisal. In addition to getting the best possible price, the owner receives moving expenses, a \$1,000 stipend for purchasing a home outside the floodplain, and a 30-day rent free period after closing in which to move. All closing costs and other fees are paid by the City. Once the owner has moved out, the home is demolished and restored as open space to protect the natural and beneficial function of the floodplain. If you would like more information about this program contact the Customer Care Center at 311 or [\(918\) 596-7777](tel:9185967777). Acquisition is usually not feasible or cost

effective for areas of shallow flooding. If a property is located in a FEMA Floodway or Special Flood Hazard Area, demolition, acquisition and relocation may be feasible and cost-effective.

ELEVATE DAMAGE-PRONE COMPONENTS Critical items such as furnace or air



This platform and wall protect the home and air conditioning equipment from shallow flooding.

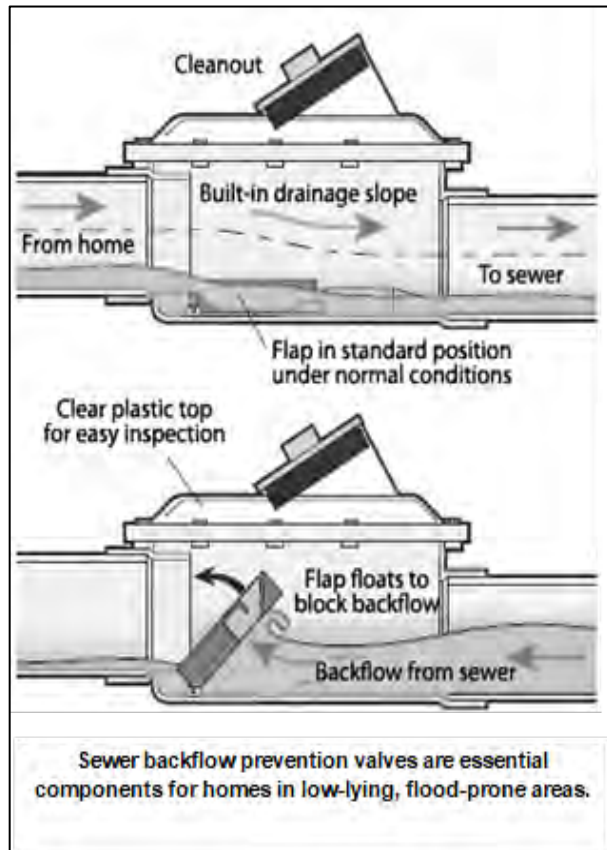
conditioning units should be elevated to avoid flood damage. This should be done for components that are in the wet floodproofed area of the building as well as for units that are outside of the structure but subject to shallow flooding.

ELEVATE YOUR

STRUCTURE Elevating the structure is only suitable for areas of shallow flooding and is usually not feasible or cost-effective for masonry homes built on concrete slabs. It can sometimes be cost-effective for wood frame buildings on crawlspaces. None of the buildings in these RLAs are a candidate for elevation.

DRY FLOODPROOF YOUR STRUCTURE This can include actions that seal a structure and prevent floodwater from entering. This method is best in areas where flood depths are no more than two or three feet. Buildings can be made watertight by sealing the walls with waterproof coatings, impermeable membranes, or additional layers of masonry or concrete. Doors, windows, and other openings below the base flood elevation must also be equipped with permanent or removable shields, and backflow valves must be installed in sewer lines and drains. Dry floodproofing needs to be designed by an engineer to ensure the structure can resist the force of the water.

WET FLOODPROOF YOUR BUILDING Wet floodproofing allows water to enter a structure, while removing, protecting or elevating items that can be damaged, such as air conditioning equipment. This is often used on structures with crawl spaces and shallow flood depths. The City does not allow basements in flood-prone areas, or the wet floodproofing of basements.



WET FLOODPROOF YOUR GARAGE The garage, with its slab-on-grade construction, is one of the most vulnerable areas of your home to overland flow flooding. Remove, relocate, protect or elevate items that can be damaged from flooding.

CORRECT SANITARY SEWER BACKUP PROBLEMS. Sanitary Sewer backup can be a problem in low-lying, flood-prone areas. The installation of backflow prevention valves on your sanitary sewer lines is highly recommended.

PURCHASE AND MAINTAIN FLOOD INSURANCE Flood Insurance is available and recommended for the structure and contents for all properties in Tulsa. A large percentage of all flood claims are for properties that are outside the FEMA floodplain. Because of the City of Tulsa's sustained efforts to reduce flooding, you are entitled to a discount on your flood insurance. A property does not have to be in a

floodplain to qualify for flood insurance.

MAINTAIN NEARBY STREAMS, DITCHES, AND STORM DRAINS Local flooding can often be caused by brush and other debris blocking drainage ways and culverts. Residents and property owners should do their part in keeping inlets and drainage ways clear of brush and debris. Do not attempt to clear debris during a flood event.

Repetitive Loss Area Mitigation Measures: What the City Can Do

The City of Tulsa is actively committed to the following floodplain management activities:

- Preventative activities to keep flood problems from getting worse.
- Natural resource protection activities to preserve or restore natural areas or the natural functions of floodplain and watershed areas.
- Emergency services measures taken during an emergency to minimize its impact.
- Structural projects to keep flood waters away from properties.
- Public information activities to advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of local floodplains.

As funding becomes available for this Repetitive Loss Area, the City will undertake a more detailed mini-master drainage plan to identify alternative solutions to the flooding problems and recommend a public works project. The actual construction of any public works project may require the acquisition of properties and/or drainage easements. The City will continue to

fulfill its maintenance responsibility for channels, drainageways, and storm sewer inlets and pipes. At this time, the City has identified the following actions which may be appropriate for these RLAs.

- Extend and/or improve the storm sewer system to better collect storm water runoff.
- Create overland flow paths to allow better drainage of ponded water to the Creek. This solution is recommended in areas where ponded water could be relieved with a swale or channel.
- Create berms or swales to direct runoff away from residential properties. This solution is used to divert flowing waters away from structures and can only be used within the City's property or right of way.
- Construct upstream detention.
- Acquire flood prone properties on a voluntary basis. This solution is only recommended for residential properties.

Funding

The City will investigate the availability of funding for the public works actions listed above. Funding for ongoing City maintenance responsibilities is provided by the Stormwater Utility Fee. Funding for a public works project is dependent on several factors, including the prioritized ranking of the project with other Capital Improvement projects, inclusion in future street maintenance projects, being part of a project in a Bond Issue, etc. In the case that the nature of the flooding problems is localized, and minor damage is involved, the funding for needed improvements will have to be borne by the individual homeowner. Another potential funding source is FEMA's Hazard Mitigation Grant Program (HMGP), which can be implemented after a Presidential Major Disaster Declaration in the State.

Recommendations

COAL CREEK

Overland flooding has continued to threaten properties in RLA 43. The storm sewer system along this RLA is undersized for the 100-year storm causing inundation of roadways, yard flooding and potential structural flooding. The 2018 Coal Creek MDP recommended upstream detention as a solution to flooding along this reach, along with floodplain management. Storm sewer improvements were considered costly but were reviewed in addition to mitigation through voluntary acquisition are recommended. A local solution would be to create overland flow paths to better allow drainage of ponding water.

DIRTY BUTTER CREEK

Overbank and overland flooding have continued to threaten properties in RLA 15. Despite the installation of detention facilities upstream on Dirty Butter Creek, overbank flooding continues to be a concern for the 100-year flood event in this RLA. Acquisition and floodproofing are the most cost-effective options for the four properties and five structures located in this area, especially for the three properties in the floodway. The City of Tulsa has planned a Capital Improvement Project that would benefit this RLA by implementing the acquisition and floodproofing measures recommended in the 1987 Master Drainage Plan.

FLAT ROCK CREEK

Overbank and overland flooding have continued to threaten properties in RLA 37. The MDP recommended acquiring the flooded structures and improving the crossing at US Highway 75 to improve conveyance. The capacity improvements have been completed, and the acquisition effort has been partially completed. The 2017 RLAA reports that homeowners in the area have rejected offers of voluntary acquisition and therefore remain at risk of flooding. Local solutions include creating overland flow paths and implementing berms/swales to better allow drainage of ponding water

VALLEY VIEW CREEK

Overbank and overland flooding have continued to threaten the properties in RLA 46. Several MDP projects have been carried out with positive impacts to the conveyance along this reach. Though structures remain within the FEMA and City regulatory floodplain. The overland flooding risk also remains due to inconsistent drainage patterns across several of the properties allowing for increased potential of ponding. A local solution would be to create overland flow paths to better allow drainage of ponding water and flood proofing as appropriate.

Property owners are encouraged to maintain flood insurance. The City of Tulsa is a Community Rating System (CRS) Class I Community, and all homeowners qualify for up to a 45% discount on their flood insurance premiums. Homeowners are also encouraged to undertake individual mitigation measures to reduce their risk of overland flooding. The City of Tulsa is ready to assist in this effort with professional advice