
City of Tulsa

Repetitive Loss Area Analysis

Lower Middle Mingo Creek 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.

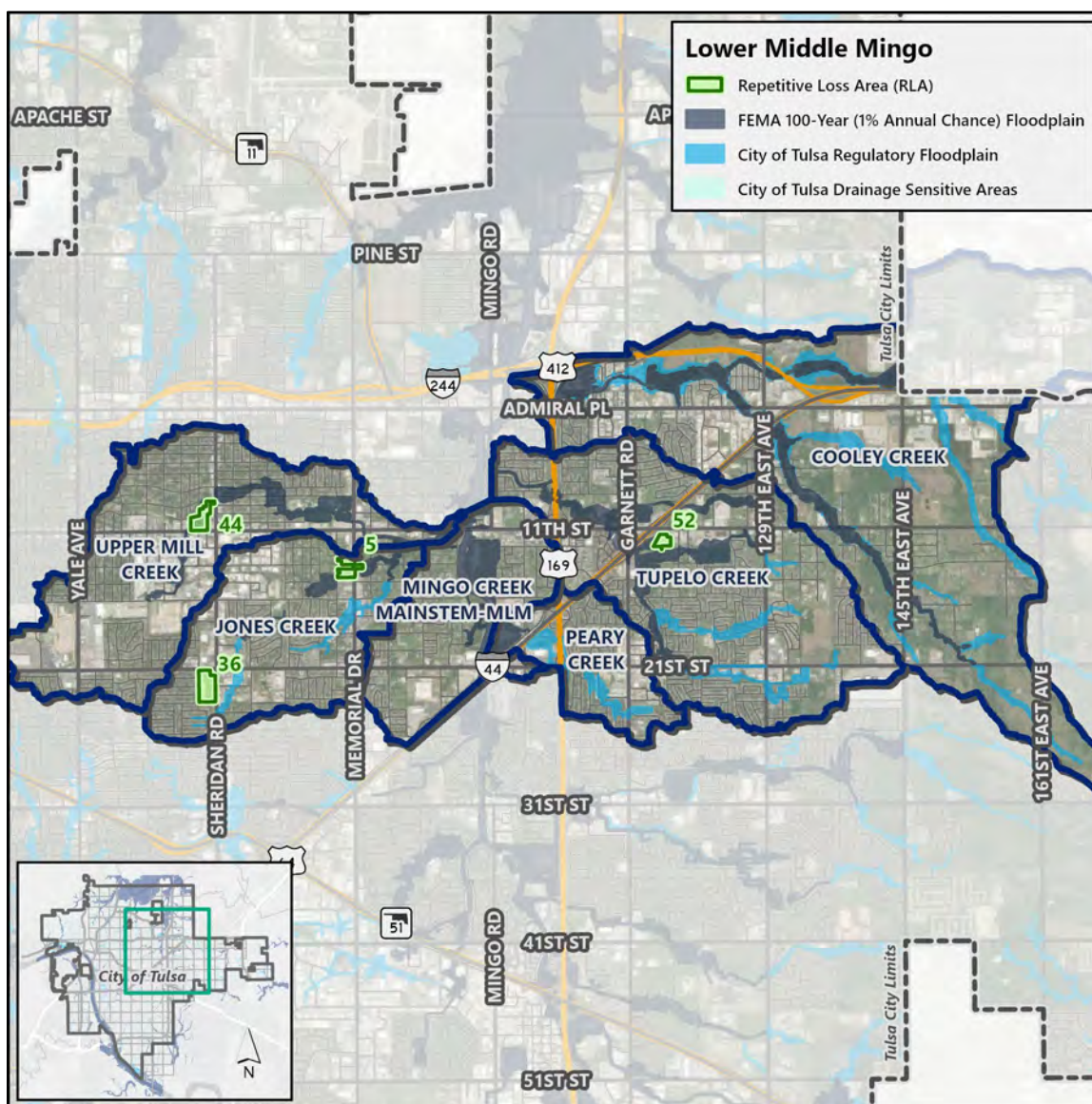
⁴ National Weather Service. *Tulsa Memorial Day Flood of May 26-27, 1984*.
https://www.weather.gov/tsa/1984may26_tulsamemorialdayflood

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

Location and Drainage

The Lower Middle Mingo Creek basin group is located along the tributaries of the Mingo Creek between US Highway 412 and E. 31st St. S. Most of this area is covered with residential and commercial or industrial land use. Specifically, Upper Mill Creek and Jones Creek contain the highest concentration of commercial development. The eastern subbasins contain the majority of the open space, specifically within Cooley Creek's drainage area. This basin group is covered by council districts 3, 5 and 6.

Figure 1: Lower Middle Mingo Creek

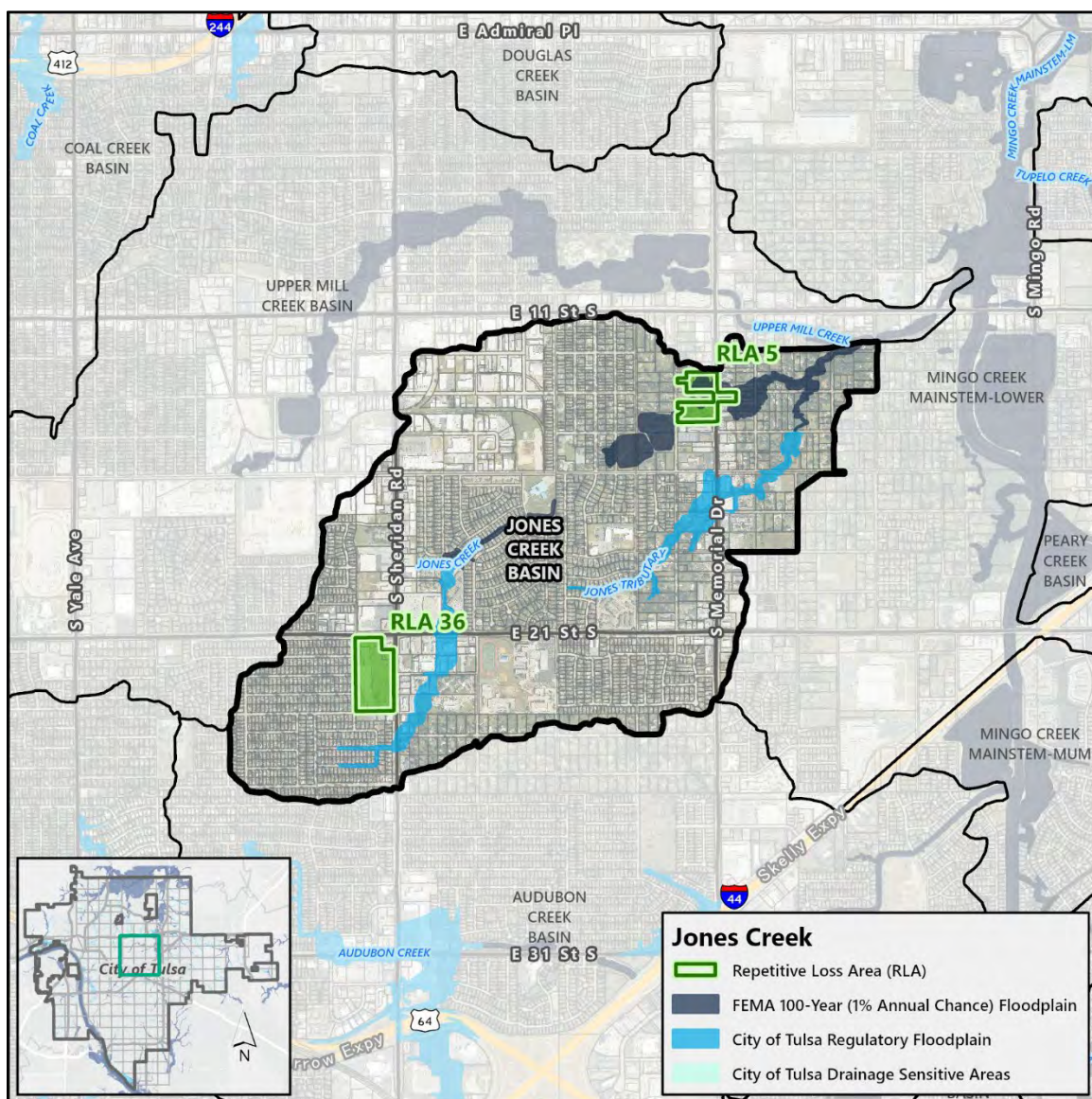


The Lower Middle Mingo Creek Basin Group contains six subbasins: Cooley Creek, Jones Creek, Mingo Creek Lower Middle Mainstem, Peary Creek, Tupelo Creek, and Upper Mill Creek, and three repetitive loss areas. The creeks within the Lower Middle Mingo Creek Basins' floodplains are located within Special Flood Hazard Area and the City Regulatory floodplain. This area historically was subject to a mix of overbank flooding and overland flooding. There are two basins containing three unmitigated repetitive loss properties. The unmitigated repetitive loss properties are spread over three areas.

Jones Creek

Jones Creek is located in Central Tulsa. This creek is a tributary of Upper Mill Creek; its mainstem extends approximately 1.7 miles, its studied tributary extends 1.2 miles the creeks have a contributing drainage area of 1.86 square miles. The watershed is a mix of residential, commercial, and industrial land use. The commercial and industrial developments are concentrated along S. Sheridan Rd and S. Memorial Dr. the largest concentration of industrial area is at the northwest end of the basin along its shared boundary with Upper Mill Creek. The mainstem originates near E. 24th Pl. and S. Irvington Ave., the tributary originates near E. 20th St. and S. 74th E. Ave. Jones Creek flows general northeast until its confluence with Upper Mill Creek near E. 12th St. and S. 79th E. Ave.

Figure 2: Jones Creek Overview



Much of Jones Creek's mainstem and tributary are designated as FEMA Zone AE with Floodway, as well as City of Tulsa regulatory floodplain, the City regulatory floodplain extends the study to the 40-acre drainage limit. As described in the background section of this report, there were two historic floods that had major impacts along Mingo Creek, one in 1979 and one in 1984. The impacts caused loss of life and damage to property, largely due to the development practices in the region not accounting for floodplain management of the creek and its tributaries. The damage from these floods prompted the City to improve the hydraulic conditions along Mingo Creek to ensure improved public safety. The Mingo Creek Project, completed in coordination with USACE, included channelization of 9 miles of Mingo Creek, increased capacity of roadway crossings and storm sewer systems, 23 detention facilities, and sediment removal. The Jones Creek basin contains two unmitigated RLAs.

RLA 5

Area Specific Flooding

Repetitive Loss Area 5, located in the Jones Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of eighteen buildings on three properties near the intersection of E. 12th St. and S. Memorial Dr. The properties were mostly developed between 1938 and 1990 along Jones Creek. All three properties are located in the FEMA SFHA and City regulatory floodplain, but only seven structures of the eighteen actually lie within the flood zone.

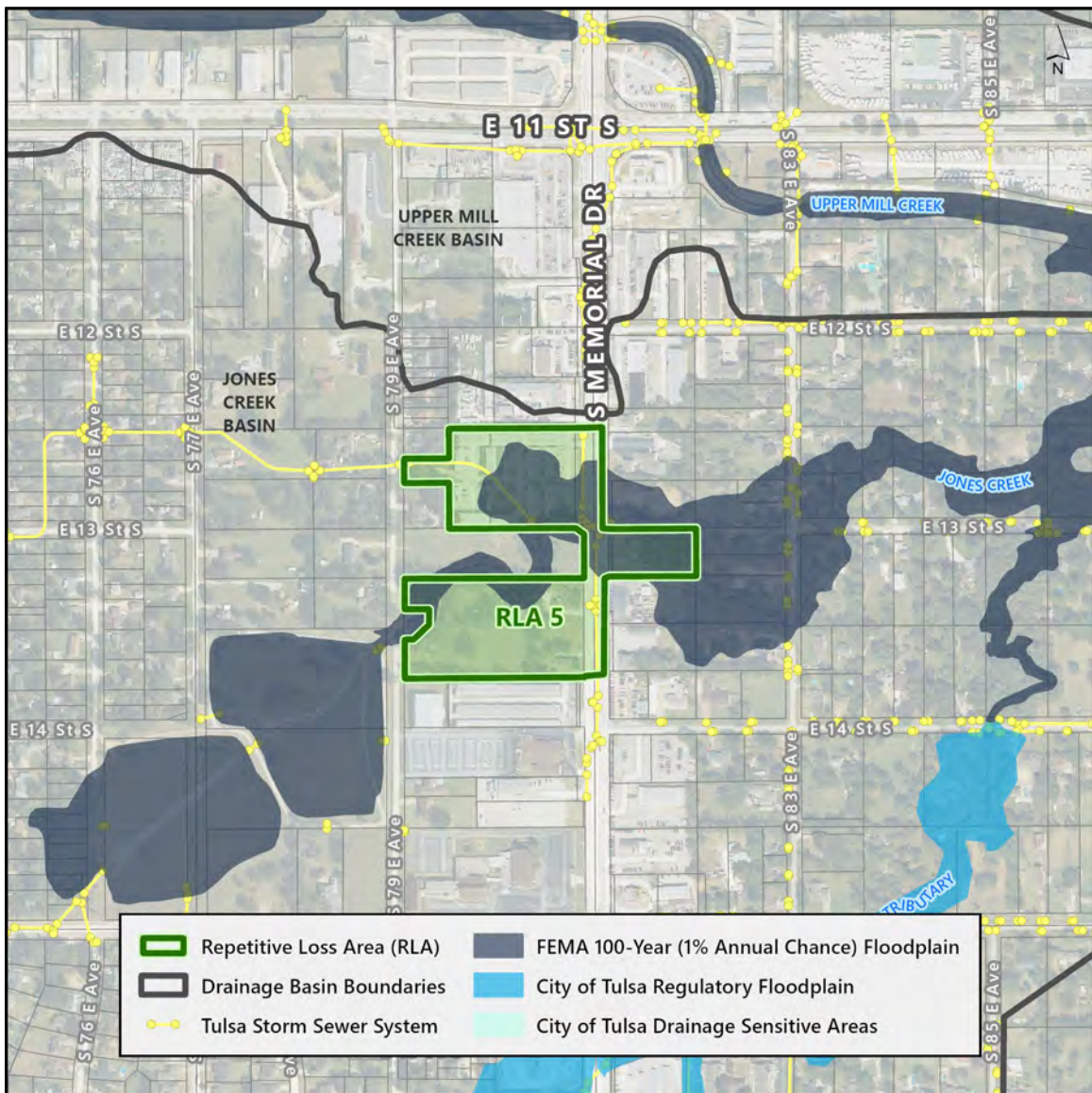
Drainage conditions in this RLA indicate that flooding is due to riverine flooding, overland flow, and storm sewer backup. The overbank flooding is largely due to lack of conveyance along the mainstem, and backup at S. Memorial Dr. In events such as the 100-year storm, this structure causes backup which floods the low-lying terrain along the creek within this RLA. The roadway also overtops contributing to increased flooding downstream. The Holiday Manor apartment complex is more susceptible to overland flow from adjacent properties and storm sewer backup than overbank flooding. The terrain on which this property is located, is relatively flat with inadequate storm sewer capacity, leading to higher potential for ponding and ultimately flooding of these slab-on-grade structures. This area was evaluated in the Lower Middle Mingo Creek Master Drainage Plan which recommended upstream detention and increase culvert capacity at S. Memorial Dr.

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 Master Drainage Plan for the basin identified upstream detention as a solution to reduce flooding in this area. This project was completed, two facilities and storm sewer improvements along E. 15th St., in addition to increased culvert capacity at S Memorial Dr. have reduced this RLA's susceptibility to overbank flooding. The structures that remain in the SFHA have finished floor elevations above the BFE. There have been no flood claims filed since these improvements were completed.

Figure 3: RLA 5



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Fourteen structures have carried flood insurance and made nineteen damage claims to the NFIP, fifteen of which were paid, totaling \$454,457. The last claim for this RLA was filed in 1984. 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 Lower Mingo 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: 40143C0244L, 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
- "The Effects of Urbanization on the Mingo Creek Watershed," Tim Mars, 1984
- Upper Mill, Audubon, and Jones Creek Master Drainage Plan, FHC, Inc., 1993
- Lower Middle Mingo Creek Master Drainage Plan, 1980
- Repetitive Loss Area #5, 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 commercial and residential 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	Avg
Property 2	Residential	Crawl Space	1950	Avg
Property 3	Residential	Crawl Space	1950	Avg
Property 4	Multiple Unit	Slab	1970	Fair
Property 5	Multiple Unit	Slab	1970	Fair
Property 6	Multiple Unit	Slab	1970	Fair
Property 7	Multiple Unit	Slab	1970	Fair
Property 8	Multiple Unit	Slab	1970	Fair
Property 9	Multiple Unit	Slab	1970	Fair
Property 10	Multiple Unit	Slab	1970	Fair
Property 11	Multiple Unit	Slab	1970	Fair
Property 12	Multiple Unit	Slab	1970	Fair
Property 13	Multiple Unit	Slab	1970	Fair
Property 14	Multiple Unit	Slab	1970	Fair
Property 15	Multiple Unit	Slab	1970	Fair

Property 16	Multiple Unit	Slab	1970	Fair
Property 17	Multiple Unit	Slab	1970	Fair
Property 18	Residential	Slab	1938	Avg

CONCLUSIONS Based on flood data, the Lower Middle Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overbank, overland flooding and storm sewer backup. In 1990s and early 2000's, the City improved the storm sewer system along E. 15th St., installed two detention ponds just upstream of this RLA, and increased the capacity of the roadway structure at S. Memorial Dr. These improvements have largely reduced riverine flooding in the area, though seven structures remain in the Jones Creek SFHA. These structures all have a finished floor elevation above the BFE and therefore, in the 100-year event, they should only be subject to nuisance street and yard flooding. The overland flooding within the Holiday Manor apartments likely remains due to runoff from the west passing through these properties, relatively flat terrain, and inadequate storm sewer capacity. Because these properties have been mitigated from overbank flooding during the 100-year event. Localized flooding concerns can be addressed through individual mitigation actions, see the Mitigation Measures section for details.

RLA 5



Google Earth

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6.97 ft



RLA 36

Area Specific Flooding

Repetitive Loss Area 36, located in the Jones Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of five buildings on two properties near the intersection of E. 21st St. and S. Sheridan Rd. The properties were mostly developed between 1965 and 1989; one property was developed in 2004. These structures are located outside of the floodplain.

Drainage conditions in this RLA indicate that flooding is due to overland flow, storm sewer backup, and high impervious area leading to excess runoff. The terrain on which the shopping center that makes up this RLA is situated is relatively flat, sloping toward the east, away from the shopping center toward Sheridan Rd. and west toward the storm sewer system along Maplewood Ave. Although there are relatively well-defined drainage paths along the parking lot to convey the flood water to the storm sewer inlets, the shopping center is located fourteen feet lower than 21st St. to the north. Water can enter the shopping center via the driveway and collects in the sump of the storm sewer system. The slab-on-grade structures are not well elevated above the surrounding terrain and are therefore susceptible to ponding from storm sewer backup.

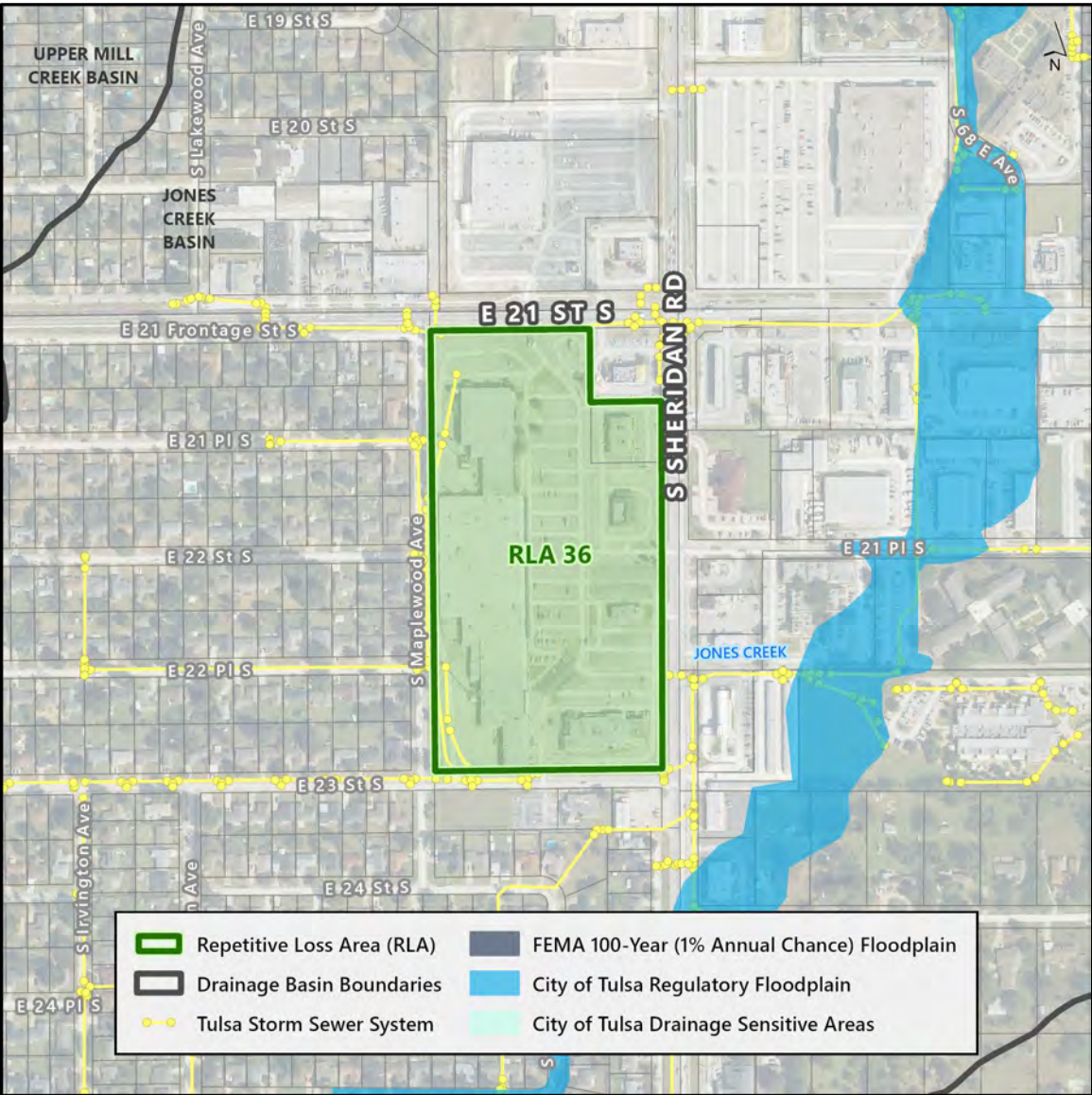
This area is evaluated in the Upper Mill, Audubon, and Jones Creek Master Drainage Plan. Specifically, it is analyzed in problem area 8. This MDP proposed increased storm sewer capacity along S. Sheridan Rd. This MDP did not address the local storm sewer along Maplewood Ave.

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

In 2003, the City installed additional storm sewer inlets along Maplewood Ave. at the lower ends of E. 21st Pl., E. 22nd St. and E. 22nd Pl. These improvements likely have alleviated the flooding problems for the RLA. This repetitive loss property has not appeared on the NFIP list since 2018.

Figure 4: RLA 36



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. One property has carried flood insurance and made two damage claims to the NFIP, both of which were paid, totaling \$5,827. The last claim for this RLA was filed in 1995. 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 Upper Mill, Audubon, and Jones 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: 40143C0243L and 40143C0244L, 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
- "The Effects of Urbanization on the Mingo Creek Watershed," Tim Mars, 1984
- Upper Mill, Audubon, and Jones Creek Master Drainage Plan, FHC, Inc., 1993
- Repetitive Loss Area #36, 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 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	2004	Good
Property 2	Commercial	Slab	1983	Avg
Property 3	Commercial	Slab	1865	Avg
Property 4	Commercial	Slab	1984	Avg
Property 5	Commercial	Slab	1989	Avg

CONCLUSIONS Based on flood data, the Upper Mill, Audubon, Jones Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding and storm sewer backup. In 2003, the City improved the storm sewer system along the east side of this RLA, which likely had positive impacts on flooding conditions in the RLA. The MDP recommended increasing the storm sewer capacity west of this RLA, this project has been deferred. Overland flow may still threaten these on-grade structures. To manage localized flooding issues, individual mitigation actions as described in the Mitigation Measures section of this report can be taken.

RLA 36



Google Earth

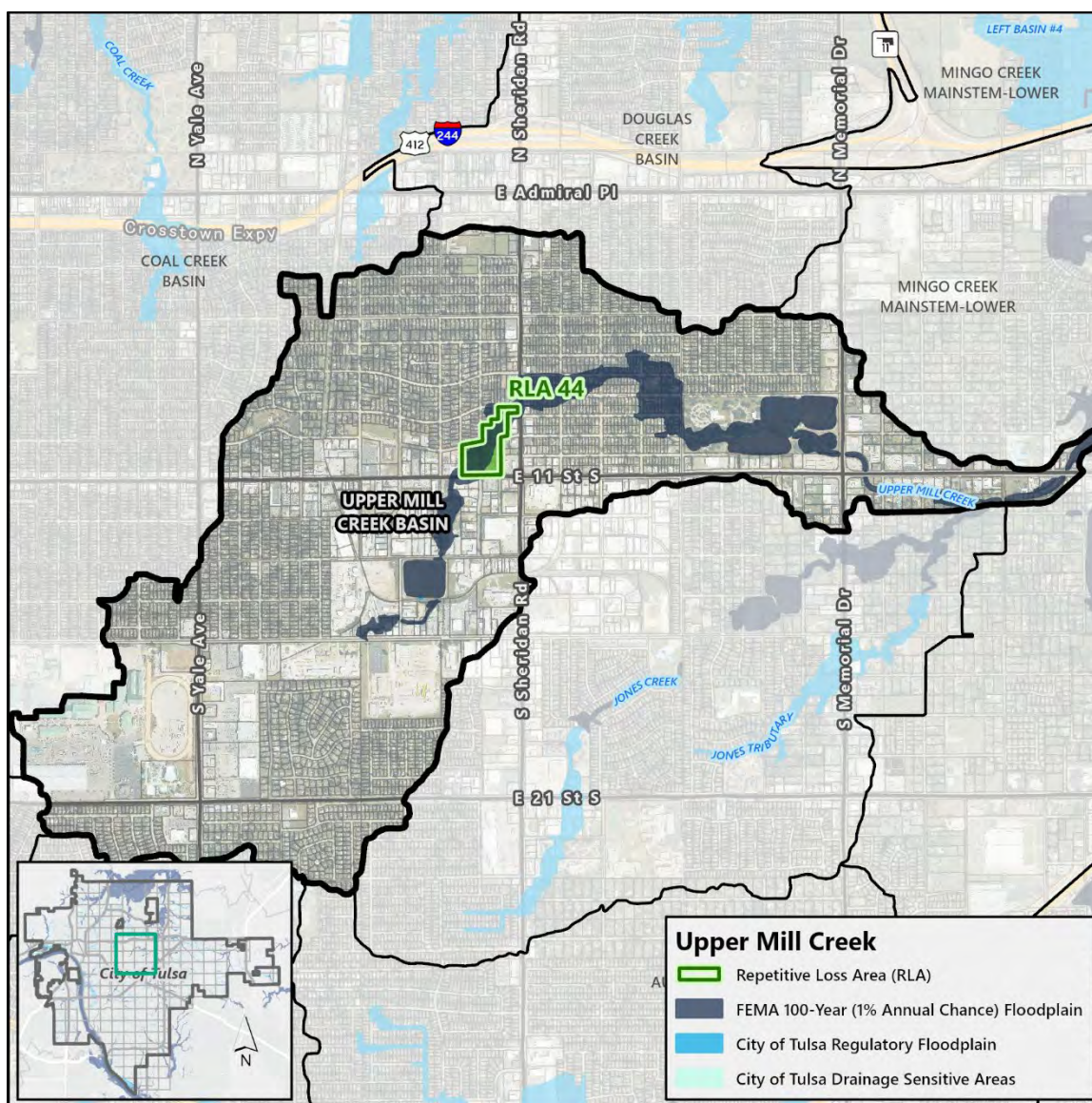
© 2026 Google

8.33 ft

Upper Mill Creek

Upper Mill Creek is located in Central Tulsa. This creek is a tributary of Mingo Creek; it extends approximately 3.78 miles and has a contributing drainage area of 2.69 square miles. An additional 1.86 square miles of drainage from Jones Creek combine with Upper Mill Creek at E. 12th St. and S. 79th E. Ave. The watershed is a mix of residential, commercial, and industrial land use. Dedicated open space is limited to McClure Park. The commercial development is concentrated around E. 11th St. and S. Sheridan Rd.

Figure 5: Upper Mill Creek Overview



The creek has two branches at the upper end of its drainage basin; one originates near E. 21st St. and S. Yale Ave, and is primarily conveyed by storm sewer until its confluence with the other branch near E. 15th St. The second branch is also entirely conveyed by storm sewer and

originates near E. 21st Pl. and S. Hudson Pl. Upper Mill Creek generally flows east-northeast until its confluence with Mingo Creek near the intersection of E. 11th St. and S. 91st E. Ave.

Much of Mill Creek's is designated as FEMA Zone AE with Floodway, as well as City of Tulsa regulatory floodplain. As with Jones Creek, Upper Mill Creek also experiences devastating flooding during the 1979 and 1984 floods. The Upper Mill Creek basin contains one unmitigated RLA.

RLA 44

Area Specific Flooding

Repetitive Loss Area 44, located in the Upper Mill Creek watershed, was established in 2017. This Repetitive Loss Area is comprised of twenty buildings on nine properties near the intersection of E. 8th St. and S. Sheridan Rd. The properties were mostly developed between 1967 and 1968; two were developed in 2011. All of the properties are located in the FEMA SFHA and City regulatory floodplain, with the exception of one structure. Ten structures are located in the floodway. This area was heavily impacted by the storm in 1884 that is detailed at the beginning of this report.

Drainage conditions in this RLA indicate that flooding is due to overland flow, and storm sewer backup. The terrain on which these structures are located is along the historic swale of the Upper Mill Creek channel. This creek is now conveyed via storm sewer through this reach, from E. 11th St to S. 73rd E. Ave., where the storm sewer outfalls at McClure Park. The storm sewer along this reach is undersized for the 100-year event. The combination of these factors leads to ponding that threatens the slab-on-grade structures.

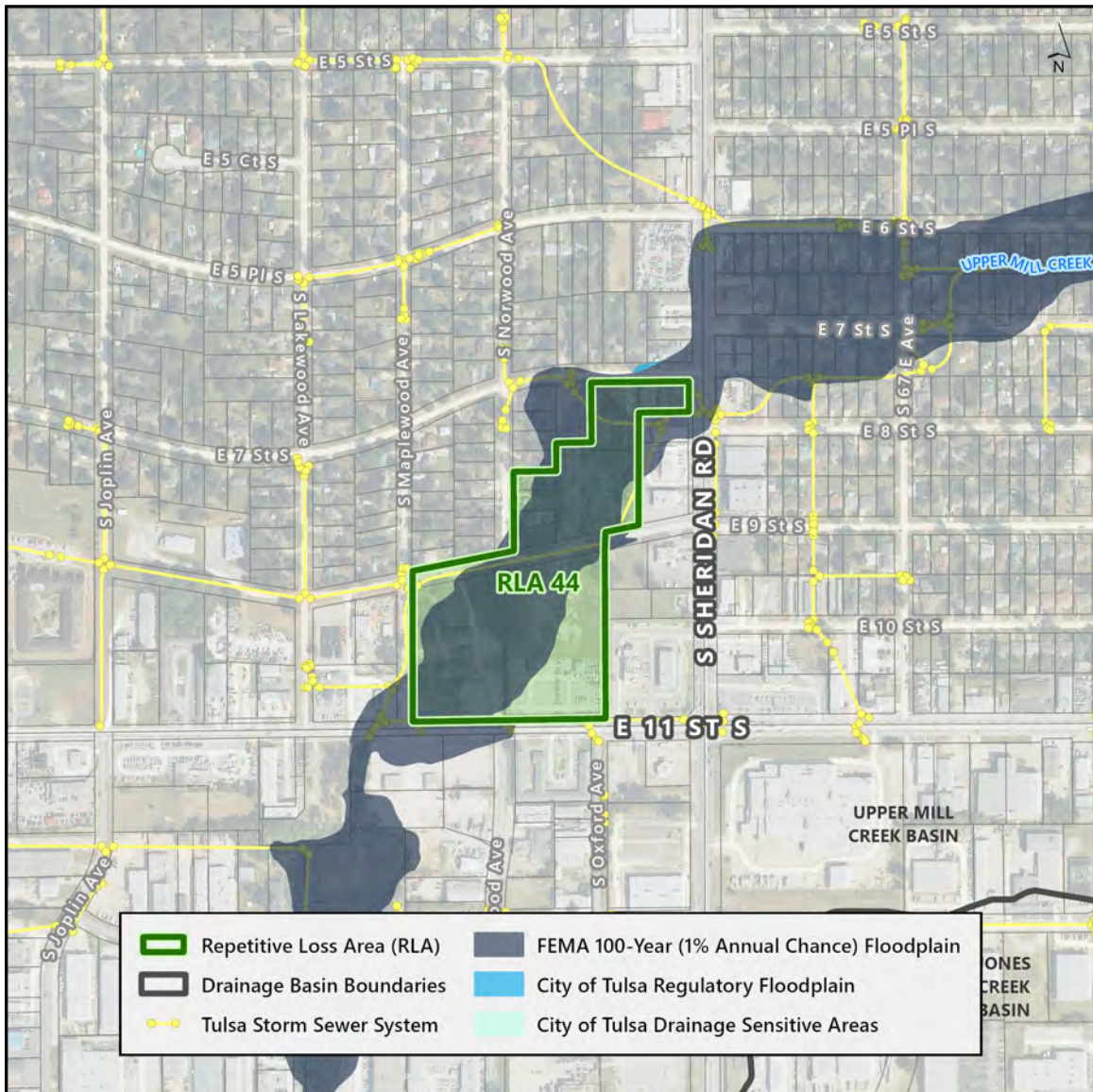
This area was evaluated in the Upper Mill, Audubon, Jones Creek Master Drainage Plan in problem areas 6, 7, and 8. The plan cited undersized storm sewer systems and inconsistent drainage paths along the swale that was Upper Mill Creek leading to several feet of flooding in some instances. The recommendation is storm sewer improvement and diversion.

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 Master Drainage Plan for the basin identified storm sewer diversion as an action to mitigate flooding in this RLA. It appears some work has been done on the system but not to the extent that would benefit these structures significantly. The Pipe Yard detention facility was also constructed as part of the Mingo Creek project. The MDP references this pond as working in tandem with the storm sewer diversion to mitigate flooding along this reach.

Figure 6: RLA 44



Claims Data

FLOOD INSURANCE DATA There is one repetitive loss property in this RLA. Eight properties have carried flood insurance and made twenty-three damage claims to the NFIP, sixteen of which were paid, totaling \$112,659. The last claim for this RLA was filed in 2007. 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 Upper Mill, Audubon, and Jones 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.

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- "The Effects of Urbanization on the Mingo Creek Watershed," Tim Mars, 1984
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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.

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STRUCTURE TYPE The structures are a mix of commercial and residential 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	1958	Fair
Property 2	Multiple Unit	Slab	1968	Avg
Property 3	Multiple Unit	Slab	1968	Avg
Property 4	Multiple Unit	Slab	1968	Avg
Property 5	Residential	Crawl Space	1947	Avg +
Property 6	Multiple Unit	Slab	1968	Avg
Property 7	Multiple Unit	Slab	1968	Avg
Property 8	Multiple Unit	Slab	1968	Avg
Property 9	Multiple Unit	Slab	1968	Avg
Property 10	Multiple Unit	Slab	1968	Avg
Property 11	Multiple Unit	Slab	1968	Avg
Property 12	Multiple Unit	Slab	1968	Avg
Property 13	Residential	Crawl Space	1947	Avg +
Property 14	Residential	Crawl Space	1947	Avg +
Property 15	Residential	Crawl Space	1947	Avg +
Property 16	Commercial	Slab	1965	Avg
Property 17	Commercial	Slab	1965	Avg

Property 18	Commercial	Slab	1965	Avg
Property 19	Commercial	Slab	2011	Avg
Property 20	Commercial	Slab	2011	Avg

CONCLUSIONS Based on flood data, the Upper Mill, Audubon, and Jones Creek Master Drainage Plan, site surveys and discussions with City officials, the causes of damage have been overland flooding and storm sewer backup. Mill Creek is primarily conveyed by storm sewer through this reach, which has the capacity to carry approximately 50% of the 100-year flow. The properties between E. 11th St. and McClure Park are constructed along the swale of the former creek bed. Drainage patterns are inconsistent which leads to ponding and ultimately flooding of structures, threatening the slab-on-grade structures the most. The MDP recommended storm sewer diversion and upstream detention in tandem to contain the 100-year flow. The upstream pond was constructed, and some downstream storm sewer was improved but the efforts have not been enough to mitigate flooding. For more frequent storms and localized flooding, individual protection measures can be taken, see the Mitigation Measures section.

RLA 44



Google Earth

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7.21 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

- Jones Creek: In 2017, there were no comments concerning flooding from property owners in response to notification from RLA 36. In RLA 5, there were two comments concerning flooding, specifically erosion near the outfall of the storm sewer system running through the apartment complex and as well as felled trees disrupting flow in the creek. There have been no additional comments as of this 2026 update.
- Upper Mill Creek: Residents of the apartment units have notified the City on several occasions that the properties are prone to flooding and have experienced damage from the 1974 and 1976 floods up to 2007. In 2007, some structures experienced several feet of flooding. One homeowner in the RLA stated that runoff is coming from the neighboring apartment complex and flooding their garden and garage. There is no drainage to handle this runoff. There have been no additional complaints as of this 2026 update.

Mitigation Measures

Overview

The Lower Middle Mingo Creek Master Drainage Plan identifies the most cost-effective structural solutions for this portion of Jones Creek. RLA 5 is included in this report, the plan recommends increased culvert capacity at S. Memorial Dr. and upstream detention. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The Upper Mill, Audubon, Jones Creek Master Drainage Plan identifies the most cost-effective structural solutions for this portion of Jones Creek. RLA 36 is included in this report, the plan recommends increasing storm sewer capacity just east of this area. There are presently no funded Capital Improvement Projects for future flood control projects in this area.

The Upper Mill, Audubon, Jones Creek Master Drainage Plan identifies the most cost-effective structural solutions for this portion of Mill Creek. RLA 44 is included in this report, the plan recommends upstream detention and storm sewer diversion to mitigate flooding in this area. There are presently no funded Capital Improvement Projects for future flood control projects in 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:

<https://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



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

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. 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.

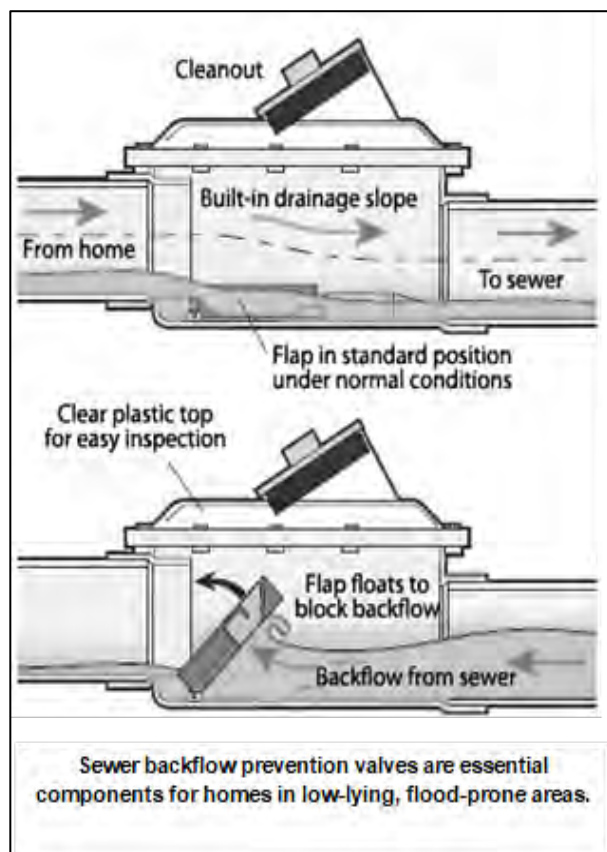
ELEVATE DAMAGE-PRONE COMPONENTS Critical items such as furnace or air conditioning units should be elevated to avoid flood damage. This should be done for

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

JONES CREEK

Overbank flooding, overland flooding, and storm sewer backup continue to threaten RLA 5. In accordance with the MDP, upstream detention and increased culvert capacity at S. Memorial Dr. have provided some relief to the structures within the SFHA, though it has not entirely reduced the overbank flooding. The structures remaining in the SFHA have finished floor elevations above the BFE. They remain at risk of flooding events greater than the 100-year storm. Overland flow and storm sewer backup likely still present a threat to the slab-on-grade structures in this area, though no flooding claims have been made since 1985. If localized flooding does continue to threaten these slab-on-grade structures, individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

Overland flooding and storm sewer back-up have historically threatened the properties in RLA 36. This area is included in the MDP with recommended storm sewer improvements. In 2003, the City improved the storm sewer along Maplewood Ave. and reduced flooding potential in this area. The repetitive loss property has not been included in the annual NFIP list received by the City since 2018. There haven't been any complaints about flooding since the last claim made in 1995. If localized flooding does continue to threaten these slab-on-grade structures, individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing as appropriate.

UPPER MILL CREEK

Overland flooding and storm sewer backup have historically threatened the properties in RLA 44. This area is included in the MDP with recommended storm sewer improvements and upstream detention. The upstream detention was constructed as part of the Mingo Creek flood control project, but without the storm sewer diversions the effort did not mitigate flooding along this reach. The structures in this area are built along the swale of the historic Mill Creek and are primarily slab-on-grade. The storm sewer capacity is not enough to convey the 100-year event, and the overflow reaches depths of several feet in the area.

In smaller events than the 100-year storm, localized flooding from overland flow can remain a threat to these properties. Individual mitigation actions can be taken to reduce overland flooding risk. Local solutions would include elevating utilities, creating overland flow paths to better allow drainage of ponding water, and floodproofing 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.