

## Repetitive Loss Area #9

**Mingo Creek  
E. 54<sup>th</sup> St. & S. 101<sup>st</sup> E. Ave. Area**



August 17, 2017





## ENGINEERING SERVICES

August 17, 2017

Dear Resident/Property Owner:

Once considered the most flood-prone city in America, Tulsa has worked hard to reduce or eliminate flooding of its homes and neighborhoods. The City joined the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) in 1974 and through decades of effort is now recognized as a national leader in flood hazard mitigation. As a result, property owners in Tulsa receive as much as 40% discount on their flood insurance.

A key component of the NFIP has been its focus on Repetitive Loss Properties, which make up only 1 percent of insured properties, but account for over 30 percent of flood insurance claims payments. A Repetitive Loss Property is defined by FEMA as any property that has been paid two or more flood insurance claims of \$1,000 or more in a 10-year time period.

The NFIP recently expanded its flood hazard mitigation program to include the identification of "Repetitive Loss Areas" (RLA)—those properties near an existing Repetitive Loss Property that may be subject to the same general flooding conditions. In most instances, 95% of the properties in an RLA will never have experienced flooding—especially if the cause of damage is shallow, overland flow due to local drainage conditions. Once the City has identified an RLA, we are required to contact the owners and residents of the area and work together to develop a plan to reduce or eliminate flooding in the neighborhood.

Your property has been identified as being in a Repetitive Loss Area. We want to re-emphasize that this does not mean your property has flooded or is even likely to flood—only that it is in the same area, and in a similar geographical situation, as an existing Repetitive Loss Property.

You can protect your property from flooding. We would like to invite you to participate in our flood prevention and mitigation efforts for your neighborhood. We need your input. What can we do, working together, to eliminate potential flood losses in your area? We look forward to hearing from you.

To learn more about your risk of flooding visit [www.floodsmart.gov](http://www.floodsmart.gov) or contact the City of Tulsa Customer Care Center at (918) 596-7777.

Sincerely,

**CITY OF TULSA, ENGINEERING SERVICES**

Bill Robison, P.E., CFM  
Senior Special Projects Engineer  
Stormwater Project Coordination



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# Acknowledgements

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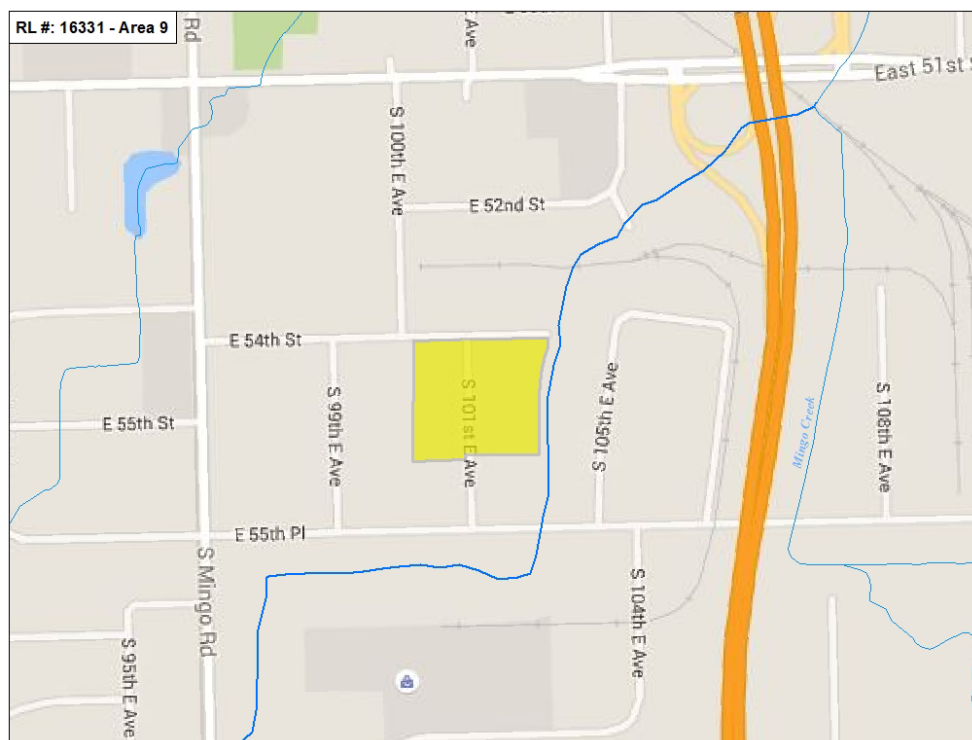


# Repetitive Loss Area #9

## Mingo Creek E. 54th St. & S. 101<sup>st</sup> E. Ave. Area

### Overview

Repetitive Loss Area (RLA) #9 is comprised of 13 commercial buildings on six property lots in the Mingo Creek drainage. The RLA is located on the left bank of Mingo Creek mainstem at E. 54<sup>th</sup> St. and S. 101<sup>st</sup> E. Ave., in the Tulsa Southeast Industrial District. The properties are situated on level terrain within the creek's traditional 100-year floodplain. Prior to the Mingo Creek flood control improvements in the 1980s and 1990s, the 100-year floodplain in this reach of the creek was at between 671.7 and 672.8 feet in elevation, while the first-finished-floor elevations of six of the buildings in the RLA were between 671.3 and 672.5 feet, slightly below the level of 100-year storm. Flood damage has primarily been due to overland flow and backup flooding behind inadequate drainage structures. Three properties in the RLA have made five flood damage claims, four of which were approved, for a total of \$18,644. The repetitive loss property made claims for structural damage in June 1979 (\$1,572) and May 1984 (\$9,200). Even after the Mingo Creek improvements, three buildings in the RLA remain within both FEMA's and the City's regulatory floodplains. There have been two instances of overland flow flooding in the RLA in 2000 and 2012, but neither event caused damage.



RLA #9 is on the west bank of Mingo Creek mainstem at E. 54<sup>th</sup> St. and S. 101<sup>st</sup> E. Ave.

## **I. Background**

During the post-World War building boom of the 1950s and 1960s, Tulsa expanded rapidly east and south into the basins of Mingo, Joe and Fred creeks. Because of the city's climate and the broad floodplains along these streams, this growth brought with it an increased risk of flooding. And indeed, by the mid-1980s floods were occurring almost yearly and flooding had become Tulsa's most destructive natural hazard. One researcher at the time declared Tulsa "the most flood-prone community in the nation."

Tulsa was not unique in its rapid post-war development and attendant risks. Cities across America were experiencing similar problems as they spread out into prosperous subdivisions. In response, the U.S. Congress created the National Flood Insurance Program (NFIP) in 1968 to help property owners protect themselves from flood losses. The NFIP offered flood insurance to homeowners, renters, and business owners if their community participated in the NFIP and agreed to adopt and enforce ordinances that met or exceeded FEMA requirements for reducing the risk of flooding.

Tulsa joined the NFIP in 1974, and through great effort and considerable expense has significantly reduced its exposure to flooding. As a result, Tulsa has been awarded a Class II rating in the NFIP's Community Rating System (CRS), which grants its residents a 40 percent discount on the cost of flood insurance for structures in the Special Flood Hazard Area (SFHA), also known as the 1% or 100-year floodplain. Since the Biggert-Waters Flood Insurance Reform Act of 2012, many properties have seen a substantial increase in their premiums, making this discount even more important.

For its part, the NFIP is continually faced with the job of paying claims while trying to keep the price of flood insurance at an affordable level. Properties that flood repeatedly—known as "repetitive loss properties," have been a particular problem for the program: Although they make up only 1 percent of insured properties, they account for one-third of all claims payments (about \$200 million per year, or \$4.5 billion to date). A repetitive loss property is defined by FEMA as any property that has been paid two or more flood insurance claims of \$1,000 or more in a 10-year time period.

Consequently, one of the requirements of the CRS is that communities identify all repetitive loss properties in their jurisdiction and work with the owners to find ways to reduce or eliminate future flood damage. This initiative has been very successful in reducing flood losses and claims.

FEMA recently extended its repetitive loss program to include "Repetitive Loss Areas" (RLA). To maintain a Class II rating in the CRS, Tulsa is now required to analyze the area surrounding each of its repetitive loss properties and identify any neighboring properties (including uninsured ones) that may be subject to the same general flooding conditions. This group of nearby properties is then designated an "RLA." The City is required to contact the owners of the properties in the RLA, inform them that they are located in an area subject to flooding, and develop a plan for mitigating or eliminating flooding in the area, much as has been done for the individual repetitive loss properties.

It is important to note that most of the structures in a Repetitive Loss Area—perhaps as many as 80% or 90%—may not have experienced flooding of any kind. What they have in common is being subject to the same general geographical and flood conditions as the nearby repetitive loss property. In addition, the flooding events in question may have had little to do

with overbank flooding from a creek, but perhaps may have been the result of storm sewer backup or overland flow. The location of RLA #9 is shown on the aerial photo/topography map on page 4, below. The map identifies residential properties, County Assessor parcels, floodplains and the existing storm drainage system.

## II. Location

Mingo Creek is a 16-mile-long, right-bank tributary to Bird Creek that drains about 61 square miles of southeast and northeast Tulsa. The creek's mainstem has its headwaters in Tulsa's Woodland Hills area and flows generally east from E. 65<sup>th</sup> St. and S. 78<sup>th</sup> E. Ave., across S. Memorial Blvd. and along the north side of Woodland Hills Mall to E. 58<sup>th</sup> St. and S. Mingo Rd., where it turns north through residential, commercial and industrial developments, generally between Mingo Rd. and US Hwy 169 (Mingo Valley Expressway), to its junction with Bird Creek at the Northside Wastewater Treatment Plant near E. 57<sup>th</sup> St. N.

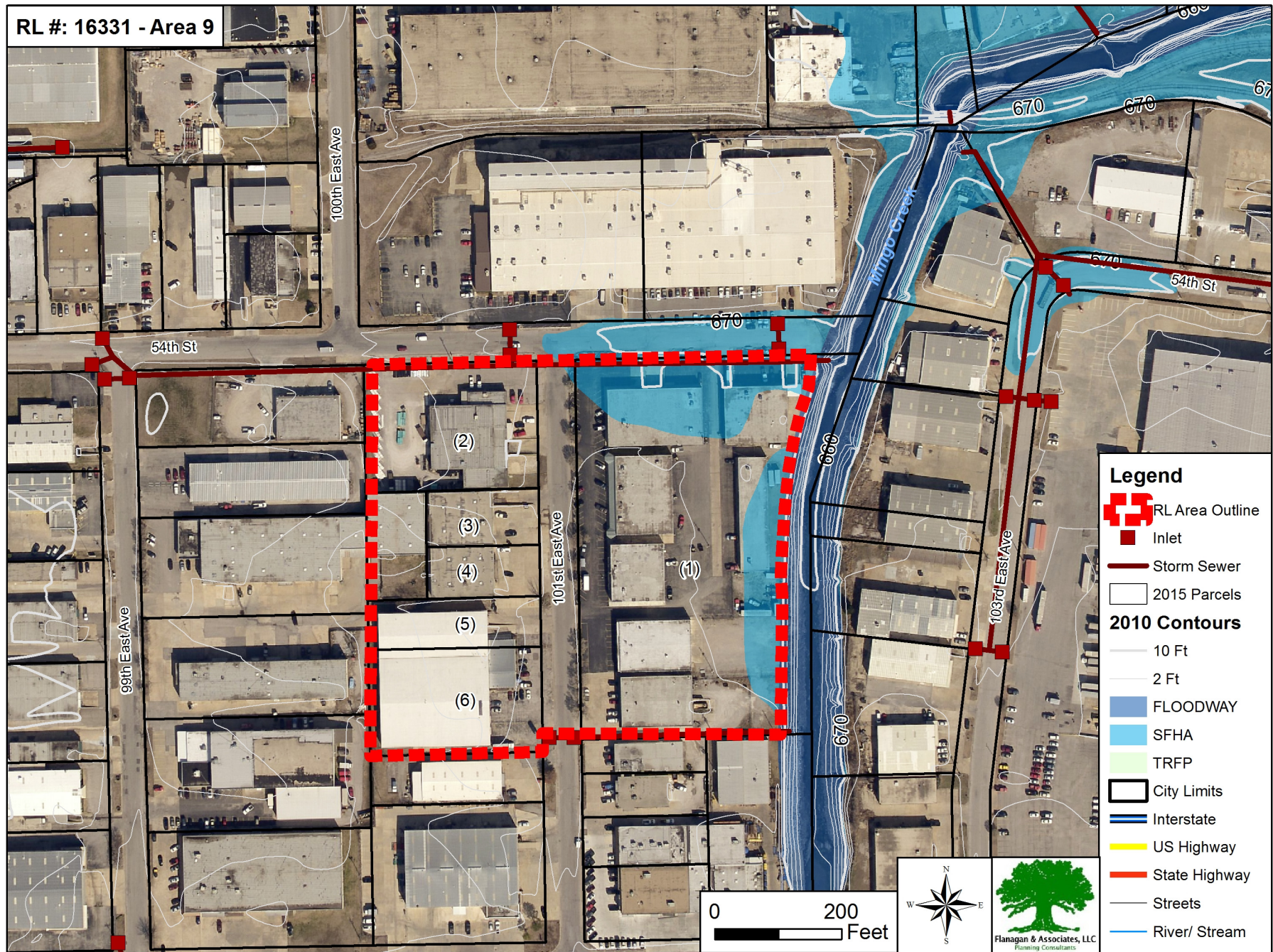
Repetitive Loss Area #9 is located on the west bank of Mingo Creek's mainstem at E. 54<sup>th</sup> St. and S. 101<sup>st</sup> E. Ave., about 1/3-mile east of Mingo Rd. and 1/4-mile west of US Hwy. 169. The RLA is comprised of 13 commercial buildings on six property lots in the Tulsa Southeast Industrial District.

The structures of RLA #9 are all slab-on-grade buildings situated in Mingo Creek's historic floodplain. The terrain is generally level, rising slightly to the southwest from 670 feet to 678 feet in elevation. Prior to improvements on Mingo Creek, the 100-year floodplain in the RLA was from 671.7 to 672.8 feet, while the first-finished-floor elevations of six buildings were between 671.3 and 672.5 feet. Flood damage was primarily due to overland flow and backup flooding behind inadequate drainage structures at the E. 53<sup>rd</sup> St. railroad spur, the MKT railroad, US Hwy 169, and E. 51<sup>st</sup> St. Subsequent channel modifications and conduit enlargements in this reach of the creek have largely eliminated backup flooding in RLA #9.



Looking north on Mingo Creek towards RLA #9 from the E. 55<sup>th</sup> Pl. bridge.

RL #: 16331 - Area 9



### **III. History**

#### ***Development***

The properties in RLA #9 were developed in the Tulsa Southeast Industrial District between 1974 and 1981. The terrain on which the buildings are built is the creek's traditional floodplain and rises gently to the south and west. The buildings closest to Mingo Creek were developed in 1974, and those on the west side of S. 101<sup>st</sup> E. Ave. in 1978.

#### ***Flooding***

The *Upper Mingo Creek Master Drainage Plan, Final Report*, written in March 1988, mentions severe flooding along Mingo Creek in October 1959, May and July 1961, June 1974, May 1976 and May 1984, with the last-named event being the flood of record for the basin. To this list can be added the storm of June 1979, which generated two claims in RLA #9. The record flood of May 1984 generated three claims, two of which were paid and one denied.

The *Master Drainage Plan* mentioned the Tulsa Southeast Industrial District as being one of the districts most exposed to major flooding and identified six properties in RLA #9 which had first-finished-floor elevations below the level of the 100-year flood. According to the *Plan*, the roadways of S. 101<sup>st</sup> E. Ave., S. 102<sup>nd</sup> E. Ave., E. 54<sup>th</sup> St. and E. 55 Pl. would all be inundated by the 100-year flood, largely because of eleven inadequate bridges and culverts in the immediate area.

Four paid claims totaling \$18,644 have been made for flood damage to two properties in the RLA. The repetitive loss property has submitted two claims for structural damage—one for \$1,572 on June 20, 1979 and another for \$9,200 on May 27, 1984, for a total of \$10,772. The other property's claims for flooding on the same dates were for \$324 in 1979 and \$7,548 in 1984. There has been some subsequent flooding from overland flow in 2000 and 2012, but there have been no flood damage claims in the RLA since 1984.

#### ***Improvements***

The Master Drainage Plan for the basin identified the most cost-effective structural solutions (channel improvements, enlarged conduits, and stormwater detention) for Mingo Creek—specifically, two detention facilities upstream from the RLA on the east and west sides of Mingo Rd. near E. 58<sup>th</sup> St., and the enlargement of conduits downstream from the RLA, specifically beneath the E. 53<sup>rd</sup> St. railroad spur, US Hwy 169, the MKT railroad and E. 51<sup>st</sup> St. These changes were made in the 1980s and 1990s as part of the multifaceted Mingo Creek Project, and appear to have largely eliminated backup flooding in RLA #9 for the 100-year flood. Nevertheless, three buildings remain within both FEMA's and the City's regulatory floodplains. Flooding from overland flow could continue to occur in the immediate area due to local drainage issues in the generally level terrain, especially during storms of greater than 100-year magnitude, like the 300-year event of 1984.

### **IV. Research and Analysis**

The analysis of Repetitive Loss Area #9 was conducted by the Project Team through interviews with City officials, research into Engineering Services and Stormwater

Drainage files, including the *Upper Mingo Creek Master Drainage Plan, Interim and Final Reports*, review of the City's extensive flood history documentation, assessment of insurance claims, field trips to the RLA, interviews with home owners and questionnaires mailed to the property owners and occupants soliciting information about prior and existing flooding issues, if any.

### ***Agencies and Organizations***

The City of Tulsa's Storm Drainage & Hazard Mitigation Advisory Board (SDHMAB), which also serves as the City's Hazard Mitigation and CRS Committee, and the CRS Public Participation Involvement & Information Committee (PPI) met monthly during the two-year Repetitive Loss Area Planning process. Each committee was updated on the status of the planning process, discussed issues, and provided guidance. Research and analysis were done in accordance with guidelines from the Federal Emergency Management Agency (FEMA), the National Flood Insurance Program (NFIP) and the Community Rating System (CRS).

Local, State & Federal Agencies and non-profit organizations are represented on the PPI Committee. The RLA plans were discussed at the PPI Committee meetings, and other agencies such as TAEMA were contacted by phone or email. The RLA plans were presented to City Council for adoption; the agenda was made public and furnished to the media. The council meeting is a public meeting and the local media was present at the meeting. In addition the council meetings are aired on our local government network TV channel TGOV.

Participating agencies and organizations involved were: City of Tulsa (CoT) Storm Drainage & Hazard Mitigation Advisory Board, CRS PPI Committee, CoT Communications Department, CoT Development Services, Working in Neighborhoods, CoT Engineering Services, CoT Finance Department, CoT Legal Department, CoT Streets & Stormwater, CoT Water & Sewer Department, Child Care Resource Center, Indian Nations Council of Governments, Tulsa Area Emergency Management Agency (TAEMA), Disaster Resilience Network, Metropolitan Environmental Trust, Oklahoma Insurance Department, Tulsa Association of Realtors, U.S. Army Corps of Engineers.

### ***Plans, Studies and Documents***

The following City of Tulsa and FEMA documents were used in the analysis:

- *Mainstream Channel and Detention Sites, Mingo Creek, Tulsa, Oklahoma*, January 2003, US Army Corps of Engineers
- *Flood Insurance Rate Map*, City of Tulsa, October 16, 2012
- FEMA Regulatory Flood Map 40143C0378L
- *Regulatory Floodplain Map Atlas*, Tulsa Engineering Services, October, 2016
- *2014 City of Tulsa Hazard Mitigation Plan Update*, Flanagan & Assoc., 2014
- *City of Tulsa Stormwater Management Plan*
- *Stormwater Design Criteria Manual: Critical Neighborhood Flood Control Projects*
- *Stormwater Capital Improvements List*, City of Tulsa, Engineering Services
- *Upper Mingo Creek Master Drainage Plan, Interim Report*, March 1987

- *Upper Mingo Creek Master Drainage Plan, Final Report*, March 1988
- Mars, Tim. “The Effects of Urbanization on the Mingo Creek Watershed,” 1984
- *Guidebook to Conducting Repetitive Loss Area Analyses*, UNO and FEMA



Looking south (upstream) along Mingo Creek from E. 54<sup>th</sup> St. and RLA #9.

### ***Capital Improvements Plans***

No City of Tulsa Capital Improvements are currently planned that could have a positive impact on the flooding problems in Repetitive Loss Area # 16. There are storm sewer improvement and regional detention facilities on the existing CIPs for Little Joe Creek along with Master Drainage Plan recommendations that are not yet on the CIPs. None are presently funded.

### ***Flood Insurance Data***

None of the properties in RLA #9 currently carries flood insurance.

### ***Claims Data.***

As stated above, one property in RLA #9, the repetitive loss property, has submitted two claims for structural flood damage—one for \$1,572 on June 20, 1979 and another for \$9,200 on May 27, 1984, for a total of \$10,772. Another property has submitted two claims for the same events, totaling \$7,872: one on June 20, 1979 for \$324 and a second on May 27, 1984 for \$7,548. A third property in the RLA submitted a damage claim for May 27, 1984 that was denied. There have been no flood damage claims in the RLA since 1984.

### ***Field Surveys and Site Visits***

Site visits were conducted during the study, primarily to confirm foundation type and view local on-site overland flow drainage patterns.

### ***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 visits to RLA #8 to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

***Structure Type.***

The structures in RLA #9 are comprised of 11 commercial and two light industrial buildings on six property lots.

***Foundation Type.***

The type of foundation was determined by field investigation and query of Tulsa County Assessor records. The structures are all built on concrete slabs.

***Condition of Structures.***

The condition of the structures in the RLA was determined by field investigation and a search of the County Assessor’s records. The structures were considered to be in Average to Good condition. These findings are summarized in the following table.

**Properties in the RLA**

Address	Structure Type	Year Built	Foundation Type	Building Condition	Flood plain
Property 1	7 Commercial	1974-1981	Slab	Average	Mingo Creek
Property 2	Commercial	1978	Slab	Average	Mingo Creek
Property 3	Commercial	1978	Slab	Good	Mingo Creek
Property 4	Commercial	1978	Slab	Good	Mingo Creek
Property 5	Commercial	1976	Slab	Good	Mingo Creek
Property 6	2 Commercial	1976	Slab	Good	Mingo Creek

***Notification***

**Annual Floodplain Notification.** Each year, in March, the City of Tulsa notifies all property owners and occupants within a 100-year floodplain that their properties are subject to flooding and informs them of what steps they can take to protect their buildings, contents and employees, including the purchase of flood insurance.

**Annual Repetitive Loss Area Notification.** Property owners and occupants in Repetitive Loss Area #9 are notified annually that their structures are located in a Repetitive Loss Area, and are potentially subject to flood damage from overland flow.

**Property Owners/Residents Notification.** Property owners and 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.** There have been four comments concerning flooding from property owners in response to notification. One property owner stated that overland flow from neighboring lots is draining across his property. A second owner said his property flooded in 2000 from flow diverted from an adjacent property. He has since regraded the yard and put in French drains. A third owner remarked that his structure was flooded in 2012 because of overland flow. A fourth stated that his property has not flooded since purchase in 1990.

### ***Conclusions***

RLA #9 has experienced flood damage from overland flow and from backup flooding behind undersized bridges and conduits at the MKT railroad, E. 51<sup>st</sup> St. and US Hwy 169. Flooding was particularly severe during the flood of record on May 27, 1984. Significant changes have been made in this reach of Mingo Creek by the City of Tulsa and the US Army Corps of Engineers as part of the Mingo Creek Project in the 1980s and 1990s. Detention facilities were put in place upstream of the RLA, and bridges and conduits enlarged downstream. These measures have significantly reduced, if not eliminated, backup and overbank flooding along this reach of Mingo Creek. Three buildings in RLA #9 remain within both FEMA's and the City of Tulsa's regulatory floodplains. Occasional overland flow flooding has continued due to local site drainage issues.

## **V. Mitigation Measures**

### ***Overview***

The massive Mingo Creek Project undertaken by the City of Tulsa and the US Army Corps of Engineers in the wake of the devastating flood of May 27, 1984 has largely eliminated overbank and backup flooding in this reach of Mingo Creek. What flooding remains is due to overland flow in the generally level terrain of the floodplain. Three properties in the RLA remain within both FEMA's and the City's regulatory floodplains, and all 13 buildings are either within or touched by FEMA's 500-year floodplain. While enormous progress has been made in reducing or eliminating flooding in this reach of Mingo Creek, three properties remain at some risk of shallow flooding during 100-year storms, and all have some vulnerability to storms greater than a 100-year event, like the 300-year storm of 1984.

### ***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, 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



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

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 (918) 596-7777, or go online to [www.cityoftulsa.org/connect/contact-the-city](http://www.cityoftulsa.org/connect/contact-the-city).

**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 property owners in flood hazard areas know and understand their flood risk and take what steps they can to protect their buildings, furnishings and equipment. City staff is 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.

**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 structures using berms, brick planter boxes and swales, but these may not be done in ways that cause damage to other properties. Owners and occupants 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. This may be the most feasible solution for areas with flooding due to overland flow, as is the case with several properties in RLA #9.

**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 with 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. To get more information about this program, contact the Customer Care Center at (918) 596-7777.

Acquisition is usually not feasible or cost effective for areas of shallow flooding, as in RLA #9. However, 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 Your Structure.** Elevating the structure is only suitable for areas of shallow flooding, and is usually not feasible or cost-effective for masonry structures built on concrete slabs. It can sometimes be cost-effective for wood frame buildings on crawlspaces. The structures in RLA #9 are not candidates for elevation.

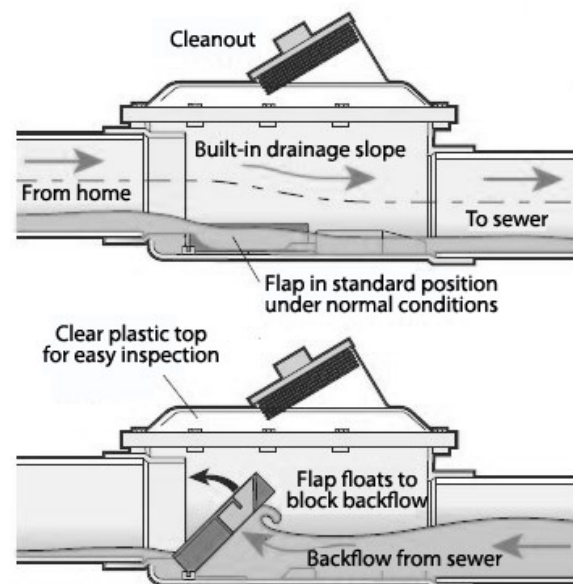
**Dry Floodproof Your Structure.** This can include actions that seal a structure and prevent floodwaters from entering. This method is best in areas where flood depths are no more than two or three feet. Buildings can be made watertight by sealing the walls with waterproof coatings, impermeable membranes, 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 sanitary 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.

**Correct Sewer Backup Problems.** Sewer backup can be a problem in low-lying, flood-prone areas like RLA #9. The installation of backflow prevention valves in sewer lines is recommended.

**Maintain Nearby Streams, Ditches, and Storm Drains.** Local flooding can often be caused by brush and other debris blocking drainage ways and culverts. Culvert blocking by limbs, grass cuttings and other debris could contribute to future flooding in RLA #9. Storm sewer inlets must be regularly inspected and kept free of blockage. Residents and property owners should do their part to keep storm drains and bar ditches clear of brush and debris, and report trees that have fallen into the creek channel and are blocking flow. Do not attempt to clear debris during a flood event.

**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 insurance claims are for properties that are outside the FEMA floodplain. Because of the City of Tulsa's sustained efforts to reduce flooding, you are



Sewer backflow prevention valves are essential components for homes in low-lying, flood-prone areas.

entitled to a discount on your flood insurance. A property does not have to be in a floodplain to qualify for flood insurance.

### ***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 flood 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 are appropriate for RLA #9.

- Extend and/or improve the storm sewer system to better collect storm water runoff.
- Create overland flow path to allow better drainage of ponded water to the Creek.
- Create berms or swales to direct runoff away from residential properties.
- Improve conveyance of Creek to mitigate overbank flooding.
- Acquire flood prone properties on a voluntary basis.
- Improve downstream hydraulic structures (bridges, culverts, etc.) to reduce backwater in the RLA.
- Construct upstream detention to reduce storm water runoff into the RLA.

### **VI. Funding**

Due to the nature of the flooding problems and the localized damages involved in RLA #9, the funding of needed improvements will have to be borne by the individual property owner.

### **VII. Conclusions and Recommendations**

Repetitive Loss Area #9 is comprised of 13 commercial buildings on six property lots in the Tulsa Southeast Industrial District at E. 54<sup>th</sup> St. and S. 101<sup>st</sup> E. Ave. The structures are on the west bank of Mingo Creek mainstem in an area of shallow flooding. Prior to the Mingo Creek flood control project of the 1980s and 1990s, six of the RLA's buildings had first-finished-floor elevations below the level of the 100-year flood. Heavy rainstorms in June 1979 and May 1984 resulted in four paid damage claims from two properties. The subsequent construction of two upstream detention facilities and the enlargement of conduits beneath the 53<sup>rd</sup> St. railroad spur, the MKT railroad, US Hwy

169 and E. 51<sup>st</sup> St. has significantly reduced flooding in the immediate area and removed all but three buildings from FEMA's and the City's regulatory floodplains. Although major backup flooding has been eliminated, there has continued to be occasional flooding from overland flow in the generally level terrain. Three structures in the RLA remain within both FEMA's and the City's regulatory floodplains, and all structures are within FEMA's 500-year floodplain.