

Repetitive Loss Area # 10

Little Joe Creek Tributary E. 49th St. & S. Pittsburg 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 their 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 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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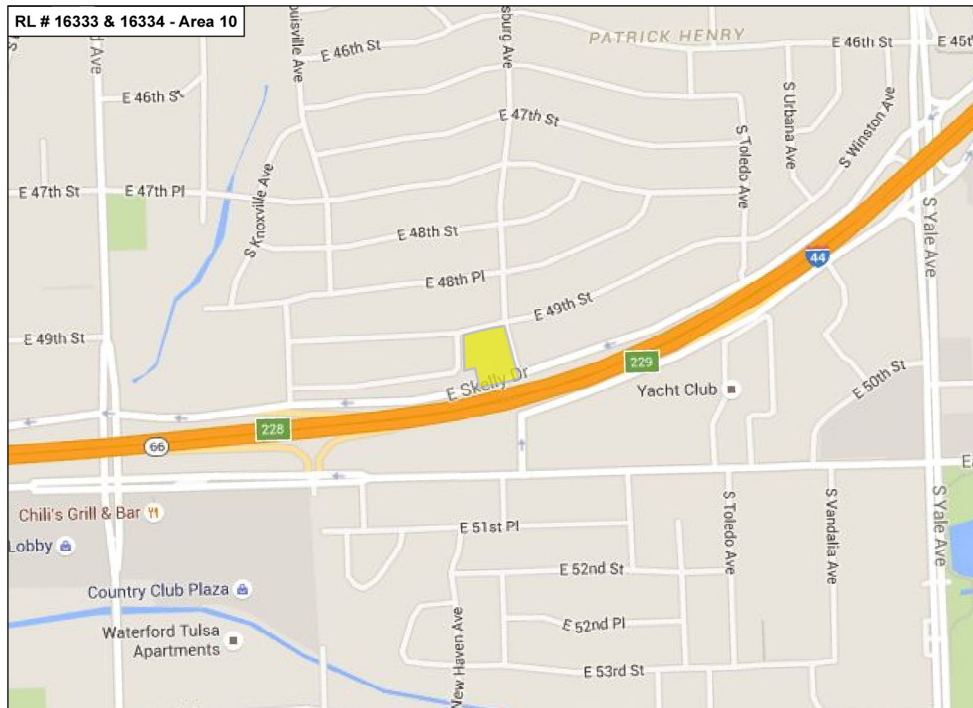
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Repetitive Loss Area # 10

Little Joe Creek Tributary E. 49th St. & S. Pittsburg Ave. Area

Overview

Repetitive Loss Area (RLA) #10 is located in the Little Joe Creek drainage basin between S. Oswego Ave. on the west and S. Pittsburg Ave. on the east, and from E. 49th St. on the north to Skelly Bypass (I-44) on the south. The RLA is about 4.5 miles above Joe Creek's junction with the Arkansas River. There were originally six duplex properties (12 residential units) in the RLA: six ranch-style duplexes in Average condition. The three duplexes south of the private road of S. 49th Place were acquired by the Oklahoma Department of Transportation in 2009-2010 for the widening of I-44, the Skelly By-Pass Expressway and its service road. One of the three Repetitive Loss Properties (16335-4923-25 S. Oswego Ave.) was acquired, and thus mitigated. Three duplexes (two Repetitive Loss Properties, remain in Repetitive Loss Area #10. The duplex units have slab-on-grade foundations, and are in Average condition. Between 1979 and 1994 overland flow and street flooding from storm sewer backup generated ten damage claims from five properties totaling \$41,391: Three in 1979, four in 1984, one in 1986 and two in 1994. The individual claims averaged about \$4,400, and ranged from a low of \$948 to



RLA #10 is located between E. 49th St. on the north and E. Skelly Dr. (I-44) on the south, and from S. Oswego Ave. on the west to Pittsburg Ave. on the east.

a high of \$13,929. Two of the properties that made claims were among those acquired by

the City and removed. Two Repetitive Loss Properties remain in the RLA, both of them slab-on-grade duplexes.

The land in the vicinity of the RLA originally contained a ravine that began at E. 49th St. and S. Pittsburg Ave. and flowed south to join Little Joe Creek near E. 53rd St. and S. Marion Ave. When the area began to develop in the early 1950s, first with home construction and then the completion of the Skelly Bypass in 1956, the northernmost reach of the ravine south to E. 51st Pl. was filled in, and storm water runoff routed along curb cuts and through underground pipes. During exceptionally heavy rains the storm sewers beneath Skelly Bypass were often overwhelmed, causing a shallow lake to form in a depression more or less congruent with the former drainage way. The result was a pocket of eight residences that were subject to repeated flooding. The widening of I-44 in 2009-2010 not only removed three flood-prone properties, it also increased the storm water capacity beneath the freeway, added storm drains at 49th and Pittsburg Ave. and at the intersection of Pittsburg Ave. with the Skelly Bypass access road, as well as eight culverts on the access road itself, directly south of 4919-4921 S. Oswego Ave. These measures appear to have lessened the flooding problem at this location, but the overland flow and slab-on-grade properties remain a concern, especially if the storm drains along 49th Pl. are inadequate to handle peak rainfall events.

The general location of RLA #10 is shown on the map above, and on the more detailed photo/topography map on page 5.

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 and Joe creeks. Because of the city's climate and the broad floodplains along these creeks 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 a 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 has 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 as an RLA. The City is required to contact the owners and residents of the properties in all its RLAs, 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 is being done for the individual Repetitive Loss Properties.

It is important to note that most of the homes in a RLA—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. It should also be stressed that the flooding events in question may have had little or nothing to do with overflow from a creek, but perhaps may have been the result of storm sewer backup or overland flow from a neighbor’s property into a low-lying, slab-on-grade home or garage.

The location of RLA #10 is shown on the aerial photo/topography map on page 5, below. The map identifies properties, County Assessor parcels, floodplains and the existing storm drainage system.

II. Location

Joe Creek is about 6.5 miles in length and drains an area of 13.7 sq. miles in southeast Tulsa. The creek has several tributary branches (East and West Joe Creek, Little Joe and South Joe) that converge near E. 53rd and S. Evanston Ave., at Manion Park, just north of Eisenhower International School, to form lower Joe Creek mainstem. The mainstem and its tributaries have been channelized through much of their lengths.

Little Joe Creek, itself, rises at E. 61st St. and S. 76th E. Ave. and flows north and west for 3.4 miles, and finally joining the Joe Creek mainstem at Manion Park, at E. 53rd St. and S. Evanston Ave.

RLA #10 is about 1/2 mile east of the confluence of the East and West branches of Joe Creek, north of I-44. Of the three properties that make up the RLA, all are situated on the north side of Skelly Dr. (I-44) at an elevation of between 689 and 691 feet. Runoff is carried through storm sewers beneath Skelly Dr. (I-44).

III. History

Development

In its natural, pre-construction condition the tributary branch of Little Joe Creek that impacts RLA #10 rose in the high ground near E. 49th St. and S. Pittsburg Ave. and flowed south to join Little Joe Creek near E. 53rd St. and S. Marion Ave.—a distance of about one-half mile.

The construction of homes in the area and the Skelly Bypass (now I-44) in the early 1950s filled in the upper reach of the original ravine from 49th St. south to E. 51st Pl., and routed storm water runoff through sewers to emerge as a small, intermittent creek on the south side of E. 51st Pl.



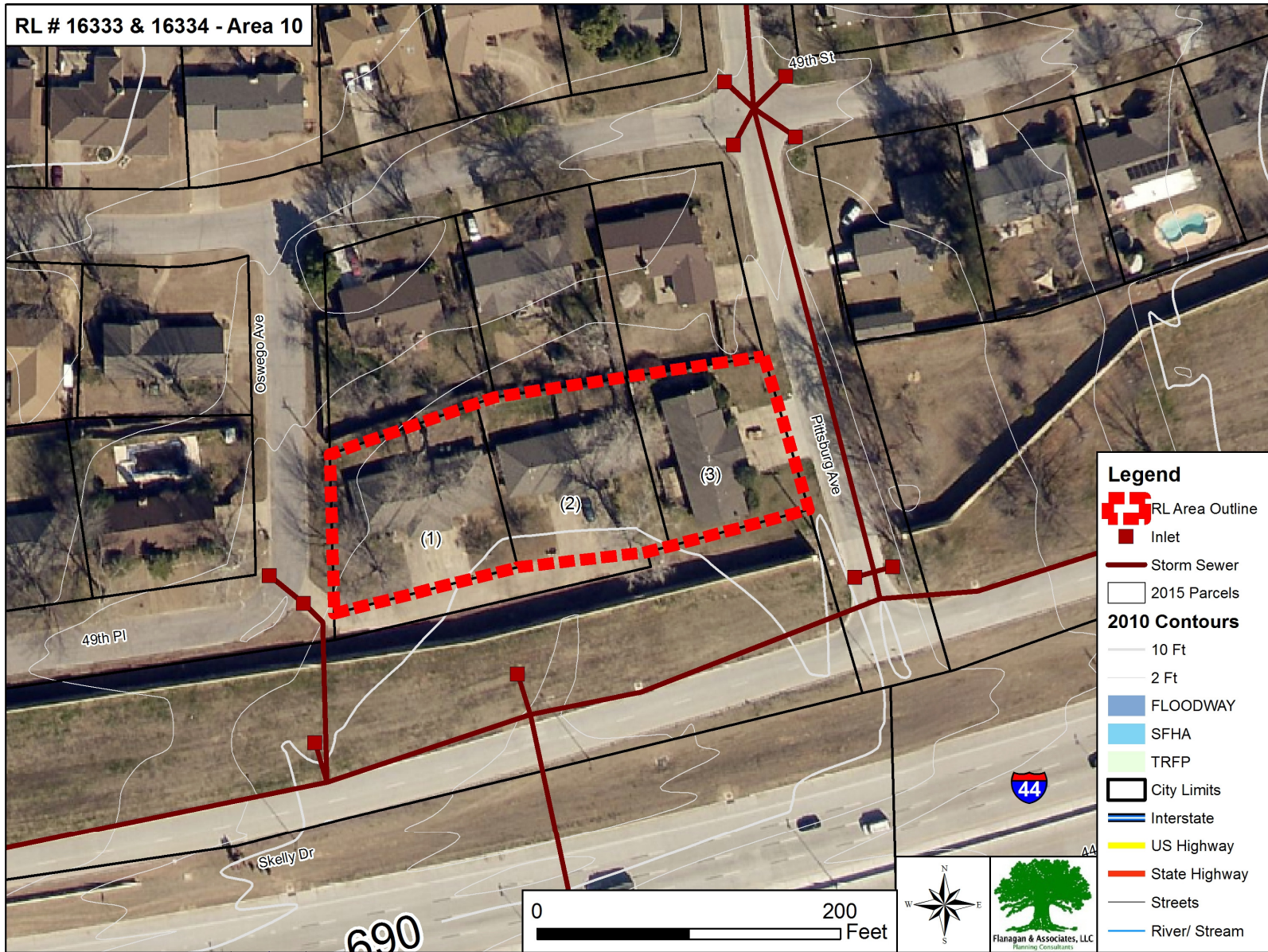
From its beginnings near E. 49th and S. Pittsburg Ave. the Little Joe Creek tributary that impacts RLA #10 is carried underground to emerge at E. 51st Pl. just east of S. Marion Ave.

Flooding

There was significant flooding on Joe Creek in October 1959, May 10-11, 1970 (Mothers Day flood), June 7-9, 1974, May 31, 1976 (Memorial Day flood), June 21, 1979, June 17, 1980, May 27, 1984 (another Memorial Day flood), August 11, 1992, May 7, 1993, July 1994, May 6, 2000 and May 8, 2007. According to newspaper reports, flooding was particularly bad on Joe Creek in 1974 and 1976, although not necessarily along this reach. The storms that resulted in the 10 damage claims in RLA #10 totaling \$44,391 occurred in 1979, 1984, 1986 and 1994.

Improvements

Subsequent improvements to the Joe Creek channel by the City and the US Army Corps of Engineers between 1978 and 1981 improved drainage along Little Joe Creek and its tributaries. The City also enlarged the sewer system within the Joe Creek drainage in the 1990s to solve chronic storm sewer backup problems at numerous locations in the basin. The expansion of I-44 not only removed three flood-prone homes from RLA #10, it also increased drainage beneath the freeway and reduced backup flooding in the area. These measures appear to have solved the flooding problems in RLA #10, as there have been no damage claims since 1994. However, there is still concern by property owners and residents in the neighborhood that there are not enough storm drains, especially along E. 49th Pl. between S. Oswego Ave. and Pittsburg Ave.



IV. Research and Analysis

The analysis of Repetitive Loss Area #10 was conducted by the Project Team through interviews with City officials, research into Engineering Services and Stormwater Drainage files, including the Joe Creek Master Drainage Plan, 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 owner and residents 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:

- *Flood Insurance Rate Map*, City of Tulsa, October 16, 2012
- *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
- *Guidebook to Conducting Repetitive Loss Area Analyses*, UNO and FEMA

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 # 10.

Flood Insurance Data

None of the three properties in the RLA currently carries flood insurance.

Claims Data.

Between 1979 and 1994 overland flow and street flooding from storm sewer backup generated ten damage claims from five of the six properties that were originally in the RLA totaling \$41,391. There were three claims in 1979, four in 1984, one in 1986 and two in 1994. The individual claims averaged about \$4,400, and ranged from a low of \$948 to a high of \$13,929. Two of the remaining six properties accounted for 85 percent of the total—or \$35,388. 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 Properties nor specific claim data are detailed in this Plan.

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 flood 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 RLA #10 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 #10 are three ranch-style duplexes, containing six units.

Foundation Type.

The types of foundations were determined by field investigation and query of Tulsa County Assessor records. The three duplex units have slab-on-grade foundations.

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 duplex units are in Average condition. These findings are summarized in the following table.

Properties in the RLA

Address	Year Built	Structure Type	Foundation Type	Condition
Property 1	1969	Duplex	Slab	Average
Property 2	1969	Duplex	Slab	Average
Property 3	1967	Duplex	Slab	Average

Notification

Annual Floodplain Notification. Each year, in March, 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, businesses and families, including the purchase of flood insurance.

Annual Repetitive Loss Area Notification. Residents and property owners in Repetitive Loss Area #10 are notified annually that their properties 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. 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. A notice will be mailed notifying all of the property owners in the RLA that this draft plan is available online at www.cityoftulsa.org/RLA and will solicit their comments on the draft plan. A public meeting will also be held to explain the process of the study and the findings.

Property Owner Response to Notifications. There have been two contacts from property owners in RLA #10 in earlier years concerning flooding: In 1999 one property owner called to discuss flooding and possible solutions; and in 2007 another expressed concern about the adequacy of storm sewers near the duplex units. As of June 6, 2016, there have been no responses from property owners or residents of RLA #10 to notifications about the Repetitive Loss Area designation.

Conclusions.

There were originally six properties in RLA #10, four of which had made two or more flood damage claims. Three were removed when I-44 was widened in 2010, including two which had made multiple claims. The three remaining properties are slab-on-grade duplexes. Two of the three remaining duplexes have made six flood damage claims for a total of \$35,388. Historically, the flooding in the area has been caused by the low elevation of the homes relative to the rising ground to the north and the Skelly Bypass (I-44) to the south, and inadequate storm drainage beneath I-44, which created a pond-like depression. The City subsequently acquired and removed three properties and increased the number of culverts on the north side of the Bypass and on Pittsburg and Oswego Aves., as well as enlarged the pipes under I-44. There have been no flood claims since

1994. Nevertheless, local property owners remain concerned about the flood hazard and have suggested that additional curbing and storm drains are needed to protect the duplexes on E. 49th Pl.

Based on flood data, site surveys and feedback from residents and property owners, the remaining drainage problems are due to the slab-on-grade construction of the duplexes and overland flow into the bowl-like low area along E. 49th Pl. between S. Oswego and S Pittsburg Aves.

V. Mitigation Measures

Overview

The Master Drainage Plan for Joe Creek identifies the most cost-effective structural solutions (channel improvements, enlarged inlets and storm sewers, stormwater detention ponds) for the area. The Non-Structural Plan identifies buildings where a structural solution is not cost-effective, and acquisition is the recommended solution. There are presently no funded Capital Improvement Projects for future flood control projects in this area. The *Joe Creek Master Drainage Plan* is in the process of being updated, and additional structural and non-structural solutions may be identified.

Individual Flood Protection 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 (918) 596-7777, or go online to 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 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 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



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

receive a free flood zone determination by contacting the City with the correct address and legal description 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 residences 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 (918) 596-2100. This may be the most feasible solution for areas with flooding due to overland flow, as in RLA #10.

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 (918) 596-7777.

Acquisition is usually not feasible or cost effective for areas of shallow flooding, as in RLA #10. 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 homes built on concrete slabs. It can sometimes be cost-effective for wood frame buildings on crawlspaces. None of the structures in RLA #10 is a candidate 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 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.

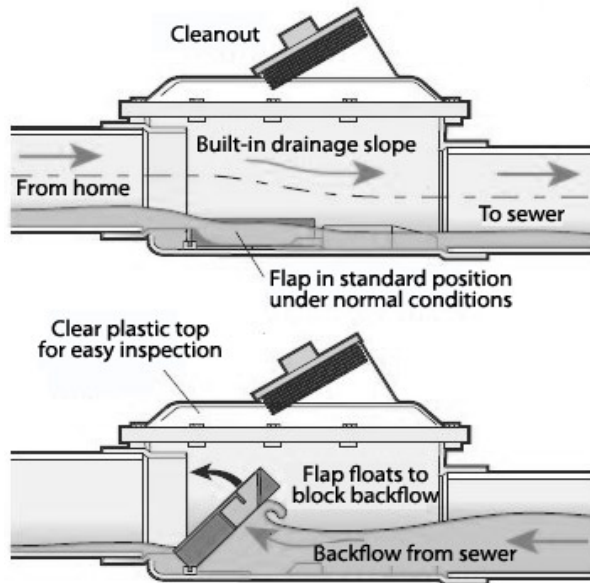
Wet Floodproof Your Garage. The garage, with its slab-on-grade construction, is one of the most vulnerable areas of your home to overland flow flooding. Remove, relocate, protect or elevate items that can be damaged from flooding.

Elevate Damage-Prone Components such as furnace or air conditioning units. 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.

Maintain Nearby Streams, Ditches, and Storm Drains. Local flooding can often be caused by brush and other debris blocking drainage ways and culverts. Although this is not a major problem for Little Joe Creek itself, debris can block bar ditches and storm sewer inlets and must be kept free of debris. Residents and property owners should do their part in keeping inlets and drainage ways clear of brush and debris.

Correct Sanitary Sewer Backup Problems. Sanitary Sewer backup can be a problem in low-lying, flood-prone areas like RLA #10. The installation of backflow prevention valves on sanitary sewer lines is 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 insurance claims are for properties that are outside the FEMA floodplain. Because of the City of Tulsa's sustained efforts to reduce flooding, residents are entitled to a discount on flood insurance. A property does not have to be in a floodplain to qualify for flood insurance.



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

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 RLA #10.

- Extend and/or improve the storm sewer system to better collect storm water runoff.
- Acquire flood prone properties on a voluntary basis.

VI. Funding

Due to the nature of the flooding problems and the localized, minor damages involved in RLA #10, the funding of needed individual improvements will have to be borne by the homeowner. 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 in this RLA is dependent of 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. The City will increase the storm sewer capacity with any future street projects in the area. 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.

VII. Conclusions and Recommendations

RLA #10 is situated in a shallow bowl-like depression on the north side of I-44 that has been subject to repeated flooding from overland flow and storm sewer backup. As a result of the widening of I-44, the acquisition and removal of three properties by the City, and the increased number and size of storm drains in the neighborhood, most, if not all, of the flood issues in the RLA have been addressed. However, two Repetitive Loss Properties in the RLA remain exposed to flood damage from overland flow in the generally level terrain. Local residents would like to have additional curbing and storm drains along E. 49th Pl. between S. Oswego Ave. and S. Pittsburg Ave. Property owners are encouraged to maintain flood insurance. Because the City of Tulsa is a CRS Class II Community, residents and property owners will receive as much as 40% discount on their 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.