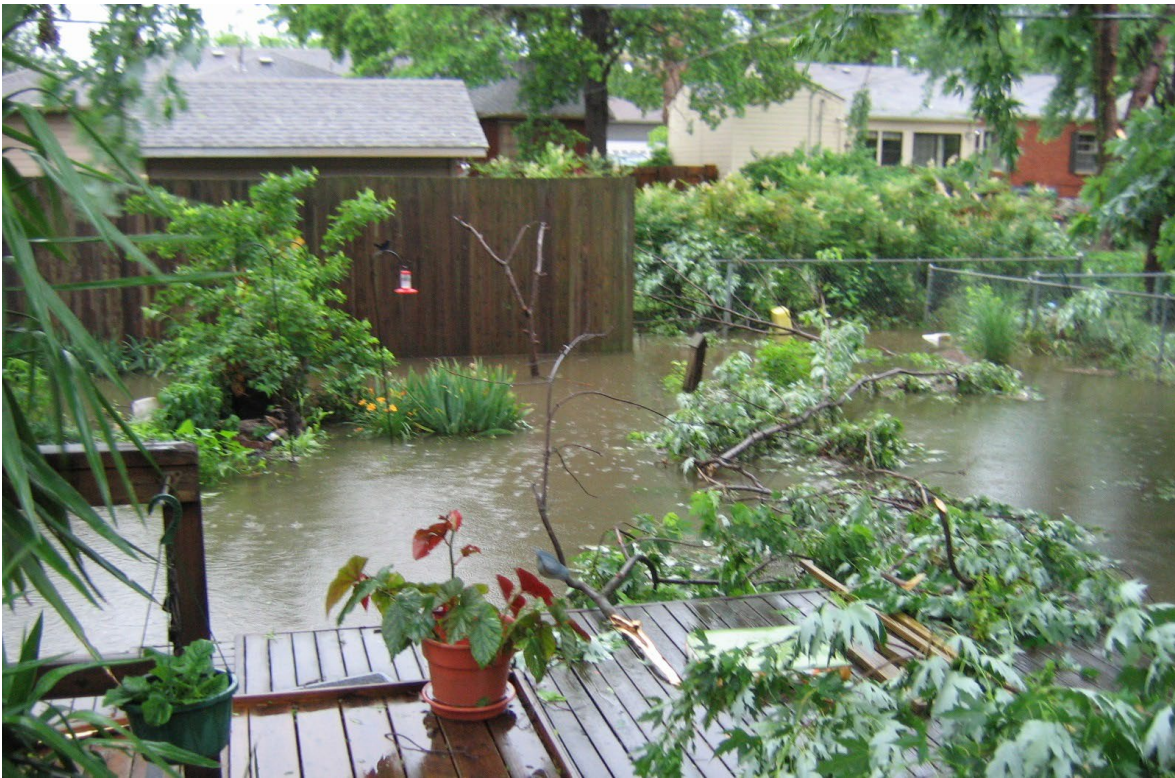


## Repetitive Loss Area # 13

Little Joe Creek  
S. Hudson Ave. & E. 54<sup>th</sup> St. Area



Repetitive Loss Area # 13

August 3, 2022

## Overview

Repetitive Loss Area #13 is located on Little Joe Creek from South Hudson Avenue up stream (east) to about South Irvington Avenue and between East 54<sup>th</sup> Street and about East 56<sup>th</sup> Street. There are 11 parcels in this area, all of which are single-family residences. The houses were all built in the 1960's, between 1962 and 1966. There is one repetitive loss property (3 claims) in the RLA.

Table 1  
Historical Claims Information

Name	Date(s) of Flooding	Corresponding Claims Amounts
RLA 13	6/20/1979	\$5,866
	5/12/1981	\$215
	5/26/1984	\$7,286

The primary cause of flooding in this RLA is overbank flooding from Little Joe Creek. In addition, overland sheet flow contributed to by upstream neighborhood properties may also cause flooding into low-lying, slab-on-grade structures.

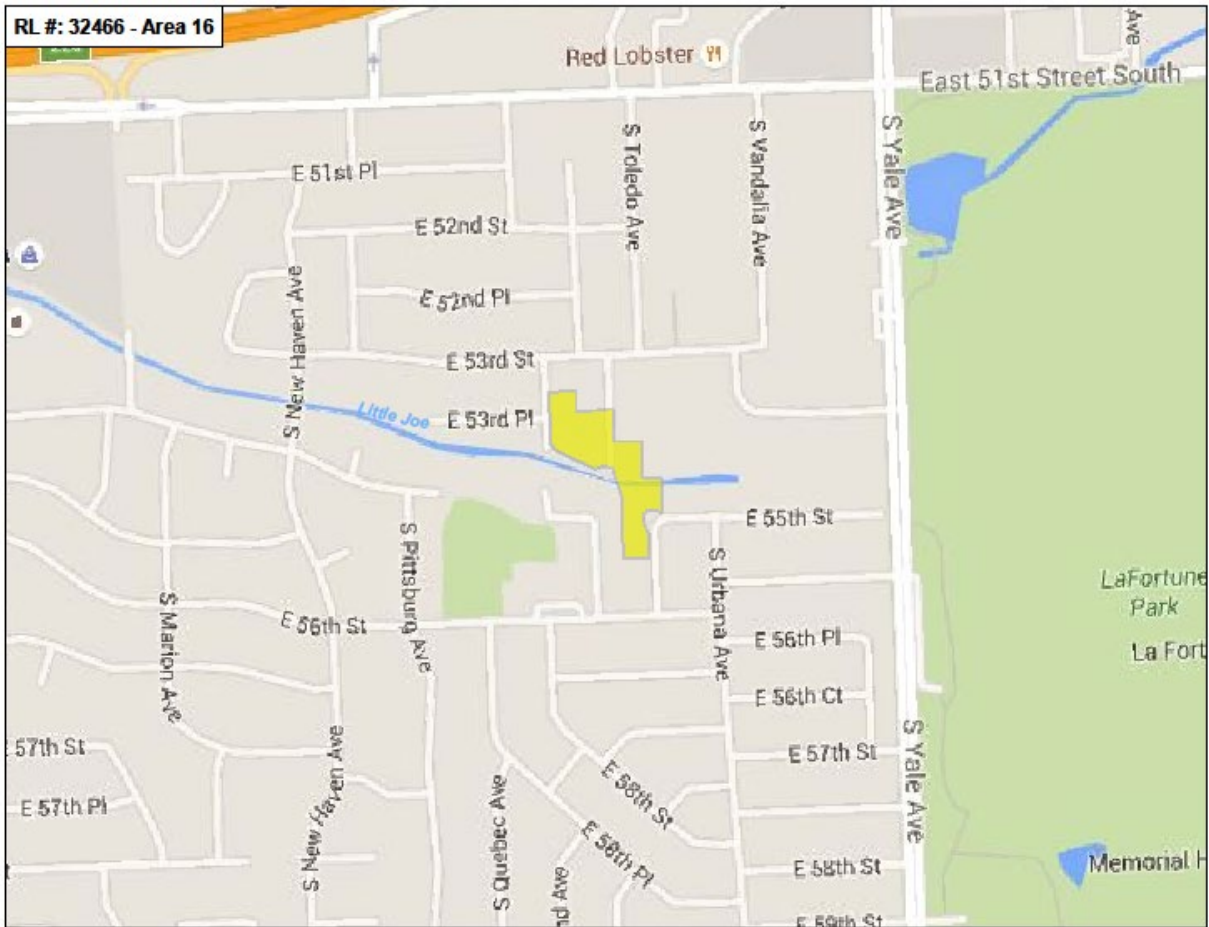
### I. Background

During the building boom of the 1960s, Tulsa expanded east into the Little Joe Creek drainage basin and RLA 13 was fully developed as part of the Park Plaza 2<sup>nd</sup> Addition subdivision. Because of the city's climate and topography this growth brought with it an increased risk of flooding. 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 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 1 rating in the NFIP's Community Rating System (CRS), which grants its residents a 45 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. In the decades since its inception, the NFIP has struggled to balance insurance premiums with flood claims. Key to rectifying this balance is addressing the outsized impact of repetitive loss properties. Repetitive loss properties constitute only 1% of premium holders but draw 33% of insurance claims (about \$200 million a year).

In light of the amount of flood claims that repetitive loss properties cause, FEMA CRS calls for an analysis of “Repetitive Loss Areas” (RLAs). The City of Tulsa must conduct an analysis of a designated area surrounding each of its repetitive loss properties and



RLA #13 is located in the general area of South Hudson Avenue and East 54<sup>th</sup> Street.

identify any nearby properties (including uninsured properties) that may be prone to flooding. This group of properties is then designated as an RLA.

As part of this analysis, the City contacts the owners of the properties in the RLA to inform them that they are located in an area subject to flooding. The City also conducts desktop research and other analyses to develop a plan for mitigating or eliminating flooding in these areas.

Flooding in an RLA may result from overflow from water sources, the built environment, or a combination of sources. It is important to note that many, if not most, properties in an RLA will not flood. Instead, all properties share similar geographic and flood (hydraulic and hydrologic) characteristics as the repetitive loss properties. 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 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.

## II History

**General:** There are 11 parcels in this RLA, all of which were constructed between 1962 and 1966.

**Flood History:** Floods affecting RLA 13 occurred in 1979, 1981, and 1984 according to the NFIP claim data. All three of the claims appear to be a result of overland flooding of Little Joe Creek, or from local drainage trying to make its way to the creek.

**Improvements:** There have been no recent upstream drainage improvements in the Little Joe Creek basin that would affect the frequency of flooding at this RLA. The existing concrete lined channel and the existing 66” RCP storm sewer (that drains the southern area along South Hudson Place) may be inadequate to handle large storm events.

### II. Location and Drainage.

Little Joe Creek has a drainage area of about 1.43 square miles upstream of this RLA. The drainage basin headwater is at a point near East 61<sup>st</sup> Street and South Memorial Drive. The entire drainage basin is fully developed with predominantly residential ¼ acre lots and a little commercial/retail development along the arterial streets. The contributing drainage area immediately to the south of RLA 13 is 124 acres and is drained by an existing 66” RCP storm sewer. This storm sewer may be undersized and/or have inadequate curb inlets to feed the line to capacity. Overflow from this storm sewer would flow to the north, toward the main channel, and may contribute to flooding of low lying slab on grade structures.

There have been calls to the Mayor’s Action Hotline about standing water in the streets and flooding in garages in RLA 13.

The Little Joe Creek flow rates from the Flood Insurance Study at South Hudson Avenue are shown in Table 1.

Table 1  
Flow rates on Little Joe Creek at South Hudson Avenue

	Flow 50% (2-year) (cfs)	Flow 20% (5-year) (cfs)	Flow 10% (10-year) (cfs)	Flow 2% (50-year) (cfs)	Flow 1% (100-year) (cfs)	Flow 0.2% (500-year) (cfs)
Total Computed Flow (cfs)	1,219	2,171	2,715	3,547	3,939	4,558

### III. Research and Analysis

Staff at the City of Tulsa Engineering department directed the research and analysis effort on this project. These city staff and private consultants at Meshek and Associates formed part of the core group in this project, hereby titled “the project team.” The project team conducted this analysis using verbal and written reports from property owners, by consulting city data sources, and using external data sources from public and private

entities. In addition, members of the project team conducted site-specific analyses of the properties for the analysis.

### **City Department and External Stakeholders**

During the course of the RLA analysis process, the project team solicited input from internal City departments including the engineering department, the emergency management department, and the City Council. The project team also contacted and gathered building data from the Tulsa County Assessors' Office. The project team also communicated with state and federal stakeholders, especially FEMA, during this process.

### **Public Meeting and Adoption**

The project team will mail residents and property owners in the RLA a letter, requesting their feedback on a questionnaire and their attendance at a public meeting (see notification section for more information). This meeting will be made available to the public. The repetitive loss area analyses were adopted by the City Council following the completion of this analysis. The meeting minutes and the City meeting will be made available to the public.

### **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, April 2013
- *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

### **Flood Insurance Data**

Six of the 11 properties in the RLA have carried flood insurance or made flood damage claims to the NFIP. 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.

**Claims Data:** One property in RLA 13 has made a total of 3 flood damage claims: in 1979, 1981, and 1984 and received total payments of \$13,367. A second property made one claim in 1979 and received a payment of \$262.

### **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, 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 and Structure Type**



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

**Structure Type:** All 11 of the structures in RLA 13 are single-family residences.

**Foundation Type:** The type of foundation was determined by field investigation and query of Tulsa County Assessor records. All of the 11 structures are slab on grade.

**Condition of Structures:** The condition of the residences in the RLA was determined by field investigation and the County Assessor’s records. The structures were all considered to be in Average Plus condition. These findings are summarized in the following table.

**Properties in the RLA**

Address	Structure Type	Foundation Type	Condition
Property 1	Single Family Res.	Slab on grade	Average +
Property 2	Single Family Res.	Slab on grade	Average +
Property 3	Single Family Res.	Slab on grade	Average +
Property 4	Single Family Res.	Slab on grade	Average +
Property 5	Single Family Res.	Slab on grade	Average +
Property 6	Single Family Res.	Slab on grade	Average +
Property 7	Single Family Res.	Slab on grade	Average +
Property 8	Single Family Res.	Slab on grade	Average +
Property 9	Single Family Res.	Slab on grade	Average +
Property 10	Single Family Res.	Slab on grade	Average +
Property 11	Single Family Res.	Slab on grade	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 and families, including the purchase of flood insurance.

**Annual Repetitive Loss Area Notification:** Residents in Repetitive Loss Area 13 will be notified annually that their homes are located in a Repetitive Loss Area and are potentially subject to flood damage from overland flow and sewer back-up.

**Property Owners/Residents Notification:** Property owners and residents/occupants will be: advised of the Repetitive Loss Area study and analysis by letter; 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 will interview homeowners and a public meeting will held with Repetitive Loss Area residents to brief them on the Study/Plan, receive their input, and discuss possible mitigation measures.

## Property Owner Response to Notifications

In addition to the 4 flood insurance claims, there have been 2 calls to the Mayors Action Center concerning street flooding in RLA 13. Both calls were concerning the May 8, 2000 flood and reported water standing in the cul-de-sac on South Hudson Place at the south side of this RLA. One caller said there was 4" of water in their garage.

## IV. Mitigation Measures

### Solutions

The Master Drainage Plan for Little Joe Creek identifies the most cost-effective structural solutions (channel improvements, enlarged inlets and storm sewers, stormwater detention ponds, etc.) for the entire drainage basin. The Non-Structural Plan identifies buildings where a structural solution is not cost-effective, and floodproofing is the recommended solution. The MDP recommended plan to alleviate flooding in RLA 13 is to increase the size of the existing culvert under South Hudson Avenue thereby reducing the backwater effect and lowering the upstream (east) flood elevations along Little Joe Creek.

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, sewer backup protection, and flood insurance. Dry floodproofing is not recommended for residential structures.

### Individual Flood Protection Measures

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 give recommendations. Contact the Customer Care Center at (918) 596-2100.

### 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 500-year storm). To receive a free flood zone determination by mail, contact the Customer Care Center at (918) 596-2100 with the correct address or legal description of the property.



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

It is always a good idea for residents and property owners in flood hazard zones to prepare a disaster preparedness and response plan that thinks through 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.

**Berms or Redirected Drainage:** Flood waters can be diverted away from your residence 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.

**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 is a voluntary program where owners who are in this situation have 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) 596-2100.

**Elevation:** 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 homes in RLA 13 are a candidate for elevation.

**Dry Floodproofing** includes 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 is only allowed on non-residential structures, so is not appropriate for the homes in RLA 13.

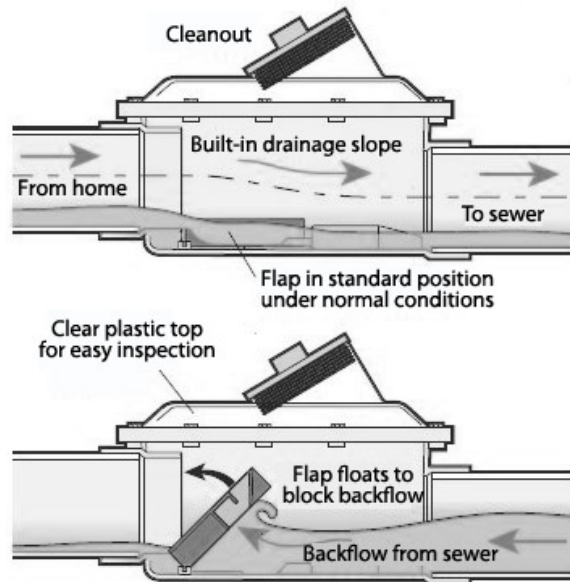
**Wet Floodproofing** allows water to enter a structure, while removing, protecting, or elevating items that can be damaged, such as air conditioning equipment. This is often used on structures with crawl spaces and shallow flood depths. The City does not allow basements in flood-prone areas, or the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



**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 the main channel of 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 Sewer Backup Problems:** Sewer backup can be a problem in low-lying, flood-prone areas. The installation of backflow prevention valves on your sewer lines is recommended.

**Purchase and Maintain Flood Insurance:** Flood Insurance is available for all properties in Tulsa and is especially recommended for properties in flood-prone areas. Flood insurance for your structure and contents is recommended, whether or not you are in a floodway or SFHA. Thirty percent 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 entitled to a 45% discount on your 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.**

## V. Funding

The costs of most individual flooding prevention activities will be borne partially or exclusively by the property owner or resident. This is contingent on several factors including the type of structure flooded, recurrence and severity of damages, and the availability of funding from federal sources.

The City funds direct and indirect flood prevention and mitigation projects through a variety of sources, most specifically through the stormwater utility fee. In addition, some of the City's capital improvements projects may include flood or stormwater reduction benefits. Another potential funding source are federal grant programs, especially FEMA's grant program.

Based on an analysis of the City's Capital Improvements projects and annual budgets, the City has not allocated funding to mitigate this RLA, as of this writing. As funding becomes available for an RLA, the City will undertake a more detailed and localized drainage plan to identify alternative solutions to flooding problems. From this analysis, the City will produce project recommendations that are aligned with the recommendations listed in the individual RLAs.

## VII. Conclusions

The flooding in RLA 13 is caused by overflow of the existing concrete lined channel along Little Joe Creek upstream (east) of South Hudson Avenue. As laid out in the Master Drainage Plan, the recommended plan to alleviate flooding in RLA 13 is to increase the size of the existing culvert under South Hudson Avenue thereby reducing the backwater effect and lowering the upstream (east) flood elevations along Little Joe Creek. In addition, overland sheet flow contributed to by upstream neighborhood properties may also cause flooding into low-lying, slab-on-grade structures. Capital Improvement funding is not currently budgeted for this RLA.

Homeowners should be encouraged to maintain flood insurance. Some of the parcels in RLA 13 are within the NFIP Special Flood Hazard Area (SFHA), however, since the City of Tulsa is a CRS Class I Community, homeowners will receive an additional 45% discount on their insurance premiums.

### **VIII. Recommendations**

- You are encouraged to obtain and keep a flood insurance policy on your home and contents. **If eligible, you should obtain a Preferred Risk Policy.**
- The City of Tulsa Engineering Services Department staff is available to advise you about yard drainage improvements that can protect homes from overland flow flooding, storm sewer backup and other local drainage problems.