

Repetitive Loss Area # 36

Jones Creek E. 21st St. & S. Sheridan 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 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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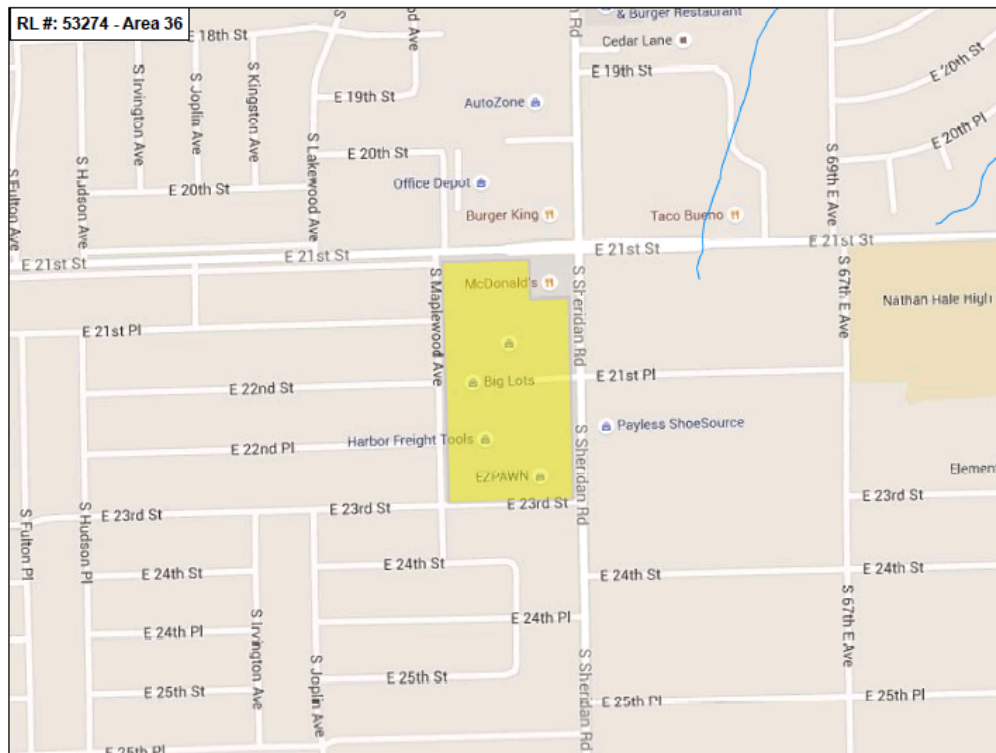
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Repetitive Loss Area # 36

Jones Creek E. 21st St. & S. Sheridan Ave. Area

Overview

Repetitive Loss Area #36 is comprised of one property lot in the Jones Creek drainage containing five structures, all of them commercial buildings. The RLA, a shopping center, reaches from E. 21st St. and S. Sheridan Rd. in the northeast to E. 23rd St. and S. Maplewood Ave. in the southwest. In this upper reach of Jones Creek, the stream is carried in storm sewers in a northeasterly direction from its origins at about E. 25th St. and S. Joplin Ave. to E. 21st St. and S. 68th E. Ave., where it emerges briefly into an open channel. According to both FEMA's and the City of Tulsa's flood hazard maps, none of the structures in RLA #36 is within or touched by Jones Creek's 100-year floodplain, which is between 300 and 500 ft. east of Sheridan Rd. There is one repetitive loss property in the RLA, which made claims in 1984 and 1995 for a total of \$5,827. Flood damage has been due to inadequate storm sewer capacity and overland flow down E. 21st Pl. and E. 22nd St. from the high ground along S. Hudson Pl. Runoff converges at S. Maplewood Ave., on the west side of RLA #36, where the western-most building in the shopping center acts as an impediment to further flow and the storm sewers are often overwhelmed. There have been no flood claims in the RLA since 1995.



RLA #36 is located southwest of the corner of E. 21st St. and S. Sheridan Rd.

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 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 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 #36 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

Jones Creek is a 4-mile-long, left-bank tributary to Mingo Creek that drains about 2 square miles of east Tulsa. The creek rises in the high ground near E. 25th St. and Joplin Ave. and flows generally east-northeast through residential, commercial and industrial neighborhoods to join Mill Creek at about E. 12th St. and 87th E. Ave. En route, the mainstem is joined by a northern, left bank tributary (Mingo LB7-2 L) just west of Memorial Blvd. and by a right bank tributary (Mingo LB7-2R) at about E. 13th St. and S. 85th E. Ave.



RLA #36 is located in the Jones Creek drainage, immediately southwest of the intersection of E. 21st St. and S. Sheridan Rd.

Repetitive Loss Area #36 is comprised of a shopping center on one property lot containing five structures, all of them commercial buildings. Jones Creek mainstem in the immediate neighborhood of the RLA is carried in storm sewers in a northeasterly direction until it emerges briefly into an open channel at E. 21st St. and S. 68th E. Ave. The regulatory floodplain of Jones Creek is between 300 and 500 ft. east of the RLA. Flood damage in RLA #36 has been due to undersized storm sewers and overland flow down E. 21st Pl. and E. 22nd St. from the high ground along S. Hudson Pl. The runoff converges at S. Maplewood Ave., at the rear of the shopping center's largest building, which acts as an impediment to further flow.

III. History

Development

The buildings in RLA #36 were developed on unplatted land between 1965 and 1989. The terrain immediately west of the RLA rises from an elevation of 720 ft. at S. Maplewood Ave. to 780 ft. along S. Hudson Pl. The land on which the shopping center was built was leveled to accommodate the structures and parking lots, but still slopes gently to the east southeast towards the former channel of Jones Creek mainstem. None of the RLA's five structures is within either the 100-year or 500-year floodplains, as shown on the detailed topographical map on page 4, below.



Flooding

The structures in RLA #36 are situated at an elevation of between 712 and 730 feet. West of S. Maplewood Ave. the ground rises to an elevation of 780 feet along S. Hudson Pl. between E. 21st St. and E. 26th St. During very heavy rainstorms, water runs to the east off of this high ground down E. 21st Pl., E. 22nd St. and E. 22nd Pl. towards Maplewood Ave., Sheridan Rd. and the former Jones Creek channel. Due in part to inadequate storm sewers, this overland flow runoff converges at Maplewood Ave. and backs up behind the shopping center's largest building, causing structural damage.

Improvements

In the late 1990s, the City of Tulsa 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, along with some protective berms on the east side of Maplewood Ave., appear to have alleviated the flooding problems for the RLA, as there have been no claims since 1995.



Property 1 in RLA #36 backs onto S. Maplewood Ave. and acts as a barrier to overland flow runoff coming down E. 21st Pl. and E. 22nd St. from the high ground along S. Fulton Pl.

IV. Research and Analysis

The analysis of Repetitive Loss Area #36 was conducted by the Project Team through interviews with City officials, research into Engineering Services and Stormwater Drainage files, including the *Mingo Creek Master Drainage Plan, Tributaries LB7, RB6 and RB7*, 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:

- *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
- *Mingo Creek Master Drainage Plan, Tributaries LB7, RB6 and RB7*, Mansur, Daubert, Williams, August 1980
- “The Effects of Urbanization on the Mingo Creek Watershed,” Tim Mars, 1984.
- *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 # 36.

Flood Insurance Data

None of the properties of RLA #36 currently carries flood insurance. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims information to the public, neither the repetitive loss properties nor address-specific claims data are detailed in this Plan.

Claims Data.

One property in RLA #36, the Repetitive Loss Property, has made two claims for flood damage totaling \$5,827. The first was on May 27, 1984 for \$2,030, and the second on February 28, 1995 for \$3,796.

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 a number of visits to RLA #36 to determine the situation and condition of the structures. Visual analysis was verified by queries of Tulsa County Assessor data.

Structure Type.

There are five structures in RLA #36, all commercial properties. The largest structure, Property 1, backs along S. Maplewood Ave., is 160,409 sq. ft. in area, and contains the Repetitive Loss Property.

Foundation Type.

The type of foundation was determined by field investigation and query of Tulsa County Assessor records. All five commercial buildings 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 structures were considered to be in Average condition. These findings are summarized in the following table.

Properties in the RLA

Address	Structure Type	Year Built	Foundation Type	Building Condition	Basin
Property 1	Commercial	1965	Slab	Average	Jones Creek
Property 2	Commercial	1965	Slab	Average	Jones Creek
Property 3	Commercial	1984	Slab	Average	Jones Creek
Property 4	Commercial	1983	Slab	Average	Jones Creek
Property 5	Commercial	1989	Slab	Average	Jones 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 #36 are notified annually that their structures are located in a Repetitive Loss Area, and are potentially subject to flood damage from storm sewer backup, street flooding and 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 no comments concerning flooding from property owners in response to notification.

Conclusions

Flooding in RLA #36 has been due to inadequate storm sewer capacity and overland flow. During heavy rainstorms, runoff from the high ground along S. Hudson Pl. would flow eastward down E. 21st Pl. and E. 22nd St. to converge at S. Maplewood Ave., where it was blocked by Property 1, which acted as a barrier to the overland flow. In the late 1990s the City of Tulsa enlarged the capacity of the storm sewers in this area and installed additional inlets along Maplewood Ave. These measures appear to have solved the immediate flooding problems in RLA #36, as there have been no claims since 1995.

V. Mitigation Measures

Overview

As stated above, in the late 1990s the City of Tulsa added storm sewer inlets along S. Maplewood Ave. at E. 21st Pl., E. 22nd St. and E. 22nd Pl. In addition some sidewalk berms have been installed on the east side of S. Maplewood Ave. between E. 21st Pl. and E. 23rd St. These measures have largely resolved the flooding issues for RLA #36. However, as cautioned by the master drainage plan for Mingo Creek and other Tulsa basins, 300-year storms, like those of 1984, are likely to cause overland flow flooding in areas like RLA #36.

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, 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 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.

It is always a good idea for people in flood hazard zones to have a disaster preparedness and response plan that lists 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.

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.



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

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. 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 #36.

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 or commercial properties, as in RLA #36.

Elevate Your Structure. Elevating the structure is only suitable for areas of shallow flooding, and is usually not feasible or cost-effective for commercial masonry structures built on concrete slabs, as in RLA #36. It can sometimes be cost-effective for wood frame buildings on crawlspaces.

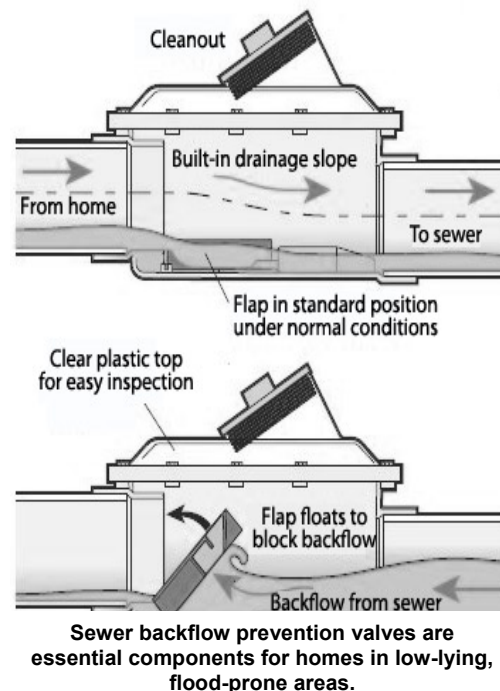
Dry Floodproof Your Structure. This can include actions that seal a structure and prevent floodwaters from entering. This method is best in areas where flood depths are no more than two or three feet. Buildings can be made watertight by sealing the walls with waterproof coatings, impermeable membranes,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

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, elevate, or otherwise protect items that can be damaged from flooding.

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.

Maintain Nearby Streams, Ditches, and Storm Drains. Local flooding can often be caused by brush and other debris blocking drainage ways and culverts, 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. Do not attempt to clear debris during a flood event.

Correct Sanitary Sewer Backup Problems. Sanitary sewer backup can be a cause of home damage in low-lying, flood-prone areas like RLA #36. 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 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 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 may be appropriate for RLA #36.

- 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.

VI. Funding

Due to the nature of the flooding problems and the localized damages involved in RLA #36, the funding of needed improvements will have to be borne by the individual property owner.

VII. Conclusions and Recommendations

Repetitive Loss Area #36 is comprised of one property lot in the Jones Creek drainage, a shopping center that contains five commercial structures. One property—the Repetitive Loss Property—submitted claims for structural damage in 1984 and 1995. Damage was due to runoff from the high ground along S. Hudson Pl. flowing eastward down E. 21st Pl. and E. 22nd St. to converge at the rear of the shopping center's largest building, which

backs onto S. Maplewood Ave. The berming and additional storm sewer inlets installed by the City of Tulsa along S. Maplewood Ave. between E. 21st Pl. and E. 23rd St. appear to have stopped overland flow flooding at this location. Nevertheless, future 300-year storms, like that of 1984, are likely to cause flooding in the RLA.

Property owners are encouraged to maintain flood insurance. The City of Tulsa is a Community Rating System (CRS) Class II Community, and all property owners qualify for up to a 40% discount on their flood insurance premiums. Property owners 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 advice.