



CITY OF  
**Tulsa**  
A New Kind of Energy.

## Repetitive Loss Area #51

Perryman Creek  
E. 59<sup>th</sup> St. & S. Utica Ave. Area



August 17, 2017



**SWIFT** WATER RESOURCES ENGINEERING, LLC  
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Bill Robison, P.E., CFM  
Engineering Services





## 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 #51

## Perryman Creek E. 59<sup>th</sup> St. & S. Utica Ave. Area

### Overview

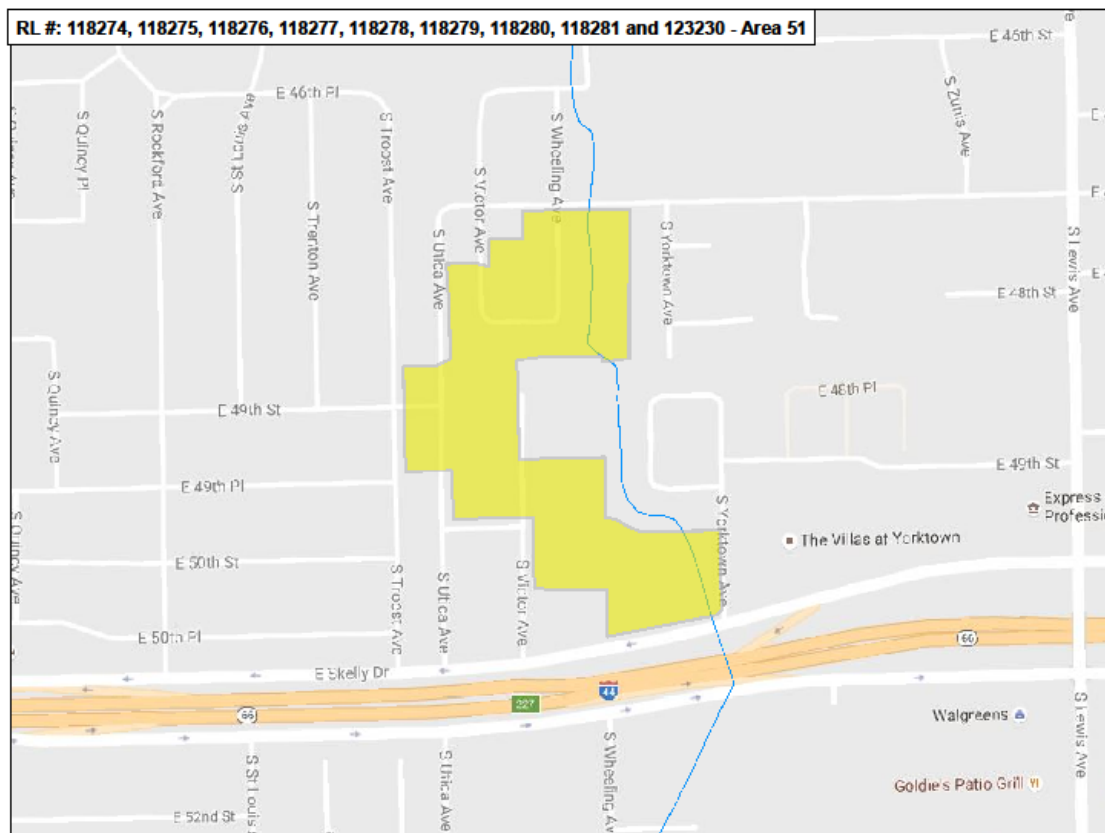
Repetitive Loss Area (RLA) #51 is located in the Perryman Ditch drainage, in the Bolewood South area of south central Tulsa, between E. 47<sup>th</sup> St. in the north and I-44 (Skelly Dr.) in the south, and from S. Utica Ave. on the west to S. Yorktown Ave. on the east. There are 40 commercial and residential structures and 92 addresses in the RLA. Twenty-nine properties in the RLA have made 56 paid flood damage claims totaling \$597,547. The flood events occurred in May 1984, July 1994, May 2000, May 2002 and May 2003. Individual claims ranged from a low of \$407 to a high of \$64,900. Nine structures are Repetitive Loss properties. The cause of flooding has been undersized storm sewers, overland flow in the generally level terrain of the floodplain, and the slab-on-grade construction of some of the buildings. All of the structures in the RLA are within the City of Tulsa's and FEMA's 100-year floodplains, in an area of shallow flooding. The location of RLA #51 is shown on the map on page 2, and a more detailed aerial photo/topography map on page 4. The detailed map identifies residential properties, County Assessor parcels, floodplains and the existing storm sewers and inlets system.

### 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, Haikey and Perryman Ditch creeks. Because of the city's climate and the broad floodplains in these basins, 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.



**RLA #51 is located in the Perryman Ditch drainage between E. 47<sup>th</sup> St. on the north and I-44 on the south, and from S. Utica Ave. on the west to S. Yorktown Ave. on the east.**

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 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 in finding 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 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 homes in an 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 #51 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 sewers and inlets systems.

## II. Location

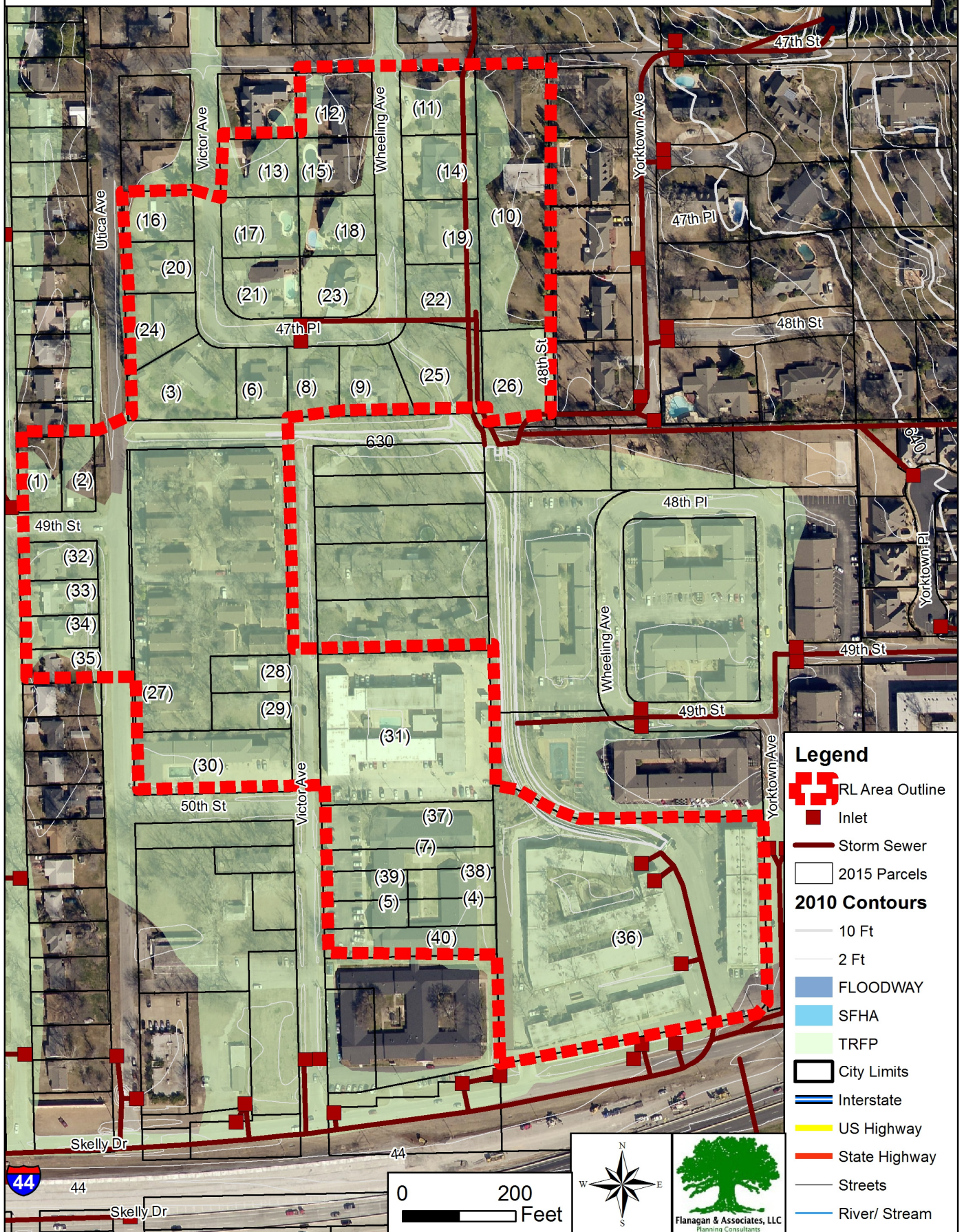
Perryman Ditch is a 2.5-mile-long, left bank tributary to the Arkansas River that drains an area of about 4 sq. miles in south central Tulsa. It rises just east of E. 40<sup>th</sup> St. and S. Lewis Ave. and flows generally south through upscale neighborhoods with elegant homes until it enters storm sewers and at the Skelly Bypass (I-44) turns east through major conduits to the Arkansas River.



Looking out over South Bolewood and RLA #51 from the west, with E. 47<sup>th</sup> on the left of the picture and I-44 on the right.

The 40 commercial and residential structures of RLA #51 are in the South Bolewood area from E. 47<sup>th</sup> St. south to Skelly Dr. and I-44, and from S. Utica Ave. east to S. Yorktown Ave. The buildings are situated in the Perryman Ditch drainage at an elevation of between 632 and 635 feet. All of the structures in the RLA are within both FEMA’s and the City’s 100-year floodplains.

RL #: 118274, 118275, 118276, 118277, 118278, 118279, 118280, 118281 and 123230 - Area 51



### **III. History**

#### ***Development***

The properties in RLA #51 were developed from the late 1940s through the 1970s. The area is predominantly multi-family residential, with a mixture of single-family residences and commercial buildings.

#### ***Flooding***

The flood events for which claims have been paid occurred in May 27, 1984, July 14, 1994, May 2000, May 28, 2002 and May 16, 2003. Flooding was due to the flat topography of the Bolewood South area, the inadequate channel conveyance system, poor internal drainage, and the slab-on-grade construction of many of the buildings.

#### ***Improvements***

RL Area #51, Perryman Ditch-E. 57th St. & S. Utica Ave., area, is located in the shallow City of Tulsa Regulatory Floodplain area of Upper Perryman Ditch, in south Tulsa. The area is very flat, and subject to frequent shallow street and overland drainage flooding. The Perryman Ditch channel in the area was grass-lined and of inadequate size to convey the storm drainage. In addition, the conveyance system under I-44 Expressway was inadequate to pass the stormwater, and caused backup on the north side of the expressway in the Repetitive Loss Area. In recent years the Perryman Ditch channel in the RL Area has been improved, and frequently flooded flood-prone property has been acquired by the City of Tulsa.

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

The analysis of Repetitive Loss Area #51 was conducted by the Project Team through interviews with City officials, research into Engineering Services and Stormwater Drainage files, including the *Perryman Ditch Master Drainage Plan, Interim report, July, 1988*, and the *Perryman Ditch Floodplain Study*, Swift Water Resources Engineers, LLC, October 2010. The review also included 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 residences soliciting information about prior and existing flooding issues.

#### ***Agencies & 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:

- FEMA Flood Map 40143C0369L
- *Flood Insurance Rate Map*, City of Tulsa, October 16, 2012
- *Regulatory Floodplain Map Atlas*, Tulsa Engineering Services, October 2016
- *Perryman Ditch Basin Drainage Study, Final Report*, Turner, Collie & Braden, March 1990
- *Perryman Ditch Master Drainage Plan, Interim Report*, Turner, Collie & Braden, July 1988
- *Perryman Ditch Floodplain Study*, Swift Water Resources Engineers, LLC, October 2010
- *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***

Recommended Stormwater Capital Improvements projects for the Perryman Ditch area include: Rockford Avenue & 49<sup>th</sup> St. Storm Sewer; Yorktown Ave. & 48<sup>th</sup> Place Storm Sewer; 49<sup>th</sup> Street Storm Sewer; and the Rockford Ave. 46<sup>th</sup> to 49<sup>th</sup> Storm Sewer. The Stormwater Design Critical Neighborhood Flood Control Projects list includes: 2411 E. 49<sup>th</sup> Ditch and Pipe.

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

Seven of the 40 structures in the RLA currently carry flood insurance on their properties. Because the Privacy Act of 1974 (5 USC 522a) restricts the release of flood insurance policy and claims data to the public, this document does not identify the Repetitive Loss properties or claims data for any individual property.

***Claims Data.***

According to flood insurance claims data, 29 properties in RLA #51 have made 56 paid damage claims for a total of \$597,547. The claims were primarily for minor structural and contents damage due to overland flow and local drainage problems. The paid claims averaged \$10,670, and ranged from a low of \$407 to a high of \$64,900. One property has made five claims, ten have made four claims each, two properties have made three each, and 14 have made single claims. There are nine Repetitive Loss properties in the RLA.

***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.



**Overland flow drains to Perryman Ditch from the corner of S. Wheeling Ave. and E. 47<sup>th</sup> Pl.**

***Structures***

The Project Team made visits to RLA #51 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 #51 consist of single-family residences, condominiums, multi-family units, and commercial buildings.

***Foundation Type.***

The type of foundation was determined by field investigation and query of Tulsa County Assessor records. Fourteen of the properties have crawl spaces and 26 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 range from Fair to Very Good condition. These findings are summarized in the following table.

## Properties in the RLA

Address	Structure Type	Foundation Type	Year Built	Condition
Property 1	Single-Family Residential	Crawlspace	1950	Good +
Property 2	Single-Family Residential	Crawlspace	1950	Good +
Property 3	Single-Family Residential	Slab on Grade	1974	Good
Property 4	Commercial	Slab on Grade		
Property 5	Commercial	Slab on Grade		
Property 6	Single-Family Residential	Slab on Grade	1976	Average
Property 7	Commercial	Slab on Grade		
Property 8	Single-Family Residential	Crawlspace	1968	Good
Property 9	Single-Family Residential	Slab on Grade	1965	Good
Property 10	Single-Family Residential	Crawlspace	1960	Excellent
Property 11	Single-Family Residential	Slab on Grade	1947	Good
Property 12	Single-Family Residential	Slab on Grade	1968	Good
Property 13	Single-Family Residential	Crawlspace	1968	Average
Property 14	Single-Family Residential	Slab on Grade	1965	Good
Property 15	Single-Family Residential	Slab on Grade	1967	Good
Property 16	Single-Family Residential	Slab on Grade	1968	Good
Property 17	Single-Family Residential	Slab on Grade	1968	Good
Property 18	Single-Family Residential	Slab on Grade	1971	Very Good
Property 19	Single-Family Residential	Slab on Grade	1965	Good
Property 20	Single-Family Residential	Slab on Grade	1965	Good
Property 21	Single-Family Residential	Slab on Grade	1971	Good +
Property 22	Single-Family Residential	Slab on Grade	1966	Good
Property 23	Single-Family Residential	Slab on Grade	1974	Good
Property 24	Single-Family Residential	Crawlspace	1966	Average
Property 25	Single-Family Residential	Crawlspace		Average
Property 26	Single-Family Residential	Crawlspace		Average
Property 27	Condominium	Slab on Grade	1973	Good
Property 28	Single-Family Residential	Crawlspace	1960	Average
Property 29	Single-Family Residential	Crawlspace	1962	Average
Property 30	Multi-Family Residential	Slab on Grade	1963	Fair
Property 31	Multi-Family Residential	Slab on Grade	1963	Average
Property 32	Single-Family Residential	Crawlspace	1950	Good +
Property 33	Single-Family Residential	Crawlspace	1950	Good +
Property 34	Single-Family Residential	Crawlspace	1950	Good +
Property 35	Single-Family Residential	Crawlspace	1950	Good +
Property 36	Multi-Family Residential	Slab on Grade	1966	Fair
Property 37	Commercial	Slab on Grade		
Property 38	Commercial	Slab on Grade		
Property 39	Commercial	Slab on Grade		
Property 40	Commercial	Slab on Grade		



### ***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.** Property owners and residents in Repetitive Loss Area #51 are notified annually that their properties are in a Repetitive Loss Area, and are potentially subject to damage from storm sewer backup and overland flow.

**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.

**Property Owner Response to Notifications.** There have been ten responses from property owners and residents in RLA #51 concerning flooding problems. Six property owners said they have had no flooding since purchasing their properties (once since 2002 and the other five since between 2012 and 2015); another said their property flooded in the 1980s, but hasn't since; another reported yard flooding in 2015 and 2016; and two others said their properties had flooded in the past, but believe that the enlarged conduit under I-44 and conveyance to the river has solved the problem.

### ***Conclusions***

Flooding in the Bolwood South area has been largely due to the flat topography of the area, inadequate conveyance systems, poor internal drainage, and the slab-on-grade construction of the buildings. The *Master Drainage Plan* for the Bolewood South area recommended the redesign of selected segments of the storm sewer system to provide flood protection of structures, but with allowance for nuisance flooding of streets and yards. The *Final Plan* recommended a triple 12' x 12' box culvert under and along I-44, which was later put in during a widening of the expressway by Oklahoma Department of Transportation. The *Plan* did not recommend acquisition or detention, but the floodproofing of 12 structures. The adopted *Plan* accepted that a residual floodplain would exist at certain locations within the area, but would mainly result in temporary inconvenience during severe storm events and some possible damage to streets and yards.

## **V. Mitigation Measures**

### ***Overview***

The Master Drainage Plan for this reach of Perryman Ditch identified floodproofing and storm drainage improvements as the most cost-effective solutions for flooding in RLA #51. The City and the Oklahoma Department of Transportation installed a triple 12' x 12' box culvert under and along I-44, which has very significantly reduced flooding in the Bolewood South area.

### ***Individual Mitigation Measures: What You Can Do***

Individual property protection actions are usually undertaken by property owners on a lot-by-lot, building-by-building basis, and include private floodproofing, moving mechanical equipment above flood levels, installing French drains and minor site grading to move local drainage to the street, sanitary sewer backup protection, and flood insurance.

The City of Tulsa is willing to have a stormwater engineer do a site visit to assist you in analyzing your specific drainage problems and discuss potential solutions. Contact the Customer Care Center at (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 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 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 your property 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. This may be the most feasible solution for areas with shallow flooding due to storm sewer backup and overland flow, as in RLA #51.



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

**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. If a property is located in a FEMA Floodway or Special Flood Hazard Area, demolition, acquisition and relocation may be a cost-effective option. Acquisition may be an option for some properties in RLA #51.

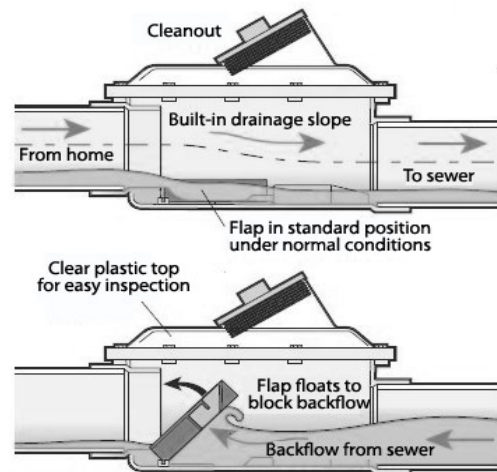
**Elevate Your Structure.** Elevating the structure is only suitable for areas of shallow flooding, and is usually not feasible or cost-effective for masonry homes built on concrete slabs. It can sometimes be cost-effective for wood frame buildings on crawlspaces. Most of the single-family homes on crawl spaces in RLA #51 already have their first floor elevations above the level of the 100-year storm. There may be some homes in RLA #51 that could be candidates for elevation.

**Correct Sanitary Sewer Backup Problems.**

Sanitary sewer backup can be a cause of home damage in low-lying, flood-prone areas like RLA #51. The installation of backflow prevention valves on your sanitary sewer lines is highly recommended.

**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 flood-proofing needs to be designed by an engineer to ensure the structure can resist the force of the water.

**Wet Floodproof Your Building.** Wet flood-proofing allows water to enter a structure, while removing, protecting or elevating items that can be damaged, such as air



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

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 a home to overland flow flooding. Remove, relocate, elevate, or otherwise protect 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. Drainage way blocking on Perryman Ditch will increase overland flow flooding. Bar ditches and storm sewer inlets must be kept clear of debris. Residents and property owners should do their part in maintaining the channel. Do not attempt to clear debris from the creek 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 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 for RLA #51.

- Rockford Avenue & 49<sup>th</sup> St. Storm Sewer
- Yorktown Ave. & 48<sup>th</sup> Place Storm Sewer

- 49<sup>th</sup> Street Storm Sewer
- Rockford Ave. 46<sup>th</sup> to 49<sup>th</sup> Storm Sewer
- 2411 E. 49<sup>th</sup> Ditch and Pipe

## **VI. Funding**

Projects identified in the City’s Capital Improvements Program are due to be funded in future Capital Improvements Bond Issues. Stormwater Design Projects are to be funded by the Storm Drainage Utility Small Projects Fee. Due to the nature of the flooding problems and the localized minor damages incurred, funding the needed individual improvements to protect the property resides with the individual 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 Bond Issue project, etc. The City will investigate the possibility of increasing 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**

Due to the improved conveyance box culvert of the Upper Perryman Ditch to the Arkansas River, conveyance to the river is no longer a major problem. The internal drainage system—getting the local drainage to the I-44 box, remains the most important problem. This issue, however has been studied, and the recommended local storm sewer improvements have been identified for funding in the City’s Capital Improvements Program, listed above.

Homeowners are encouraged to maintain flood insurance. The City of Tulsa is a Community Rating System (CRS) Class II Community, because the area is not in the NFIP Special Flood Hazard Area (SFHA) the cost in flood insurance is low. In addition, because the City of Tulsa is a CRS Class 2 Community, homeowners not in the SFHA receive a 10% discount.

Homeowners are also encouraged to undertake individual mitigation measures to reduce their risk of overland flow and overbank flooding. The City of Tulsa is ready to assist in this effort with professional advice.