



## Opening the LID on Building Stormwater Smart

For many years, the guiding philosophy for stormwater design and construction has been to pipe it, get it underground, and move the water away as quickly as possible. However, over the last ten years, there has been a realization that this may not really be the most sustainable way of addressing runoff because it requires larger pipes and channels to convey this runoff, the channels are subject to erosion from the higher flows, and it does not address water quality. Enter **Low Impact Development**, or **LID**, a new wave in stormwater design.

LID reflects a return to designing with what **Mother Nature** provides, and seeks to implement a more integrated design process that addresses both the quantity **AND** quality of runoff coming from a site. In North Texas, LID is commonly referred to as Integrated Stormwater Management (iSWM). Integrated SWM design methods focus on limiting the amount of runoff that comes off of a site by limiting or reducing the amount of hard surfaces (or pavement) on a site, protecting and enhancing existing vegetation, and providing other measures such as rain barrels or rain gardens to provide onsite storage. This in turn reduces the amount of runoff coming from a site, which helps to reduce the size and costs for related storm drainage construction, and reduces the potential for erosion in the receiving waterways. In addition, less runoff means less potential for stormwater to carry pollutants in its pathway into the Dallas streams and waterways.

LID practices can be adapted to a wide range of land uses, from roadways and high density urban areas (like downtown Dallas), to shopping centers and commercial sites, to new or existing residential communities. These methods can range from an individual rain barrel or rain garden, to permeable sidewalks and paving materials, to constructed wetlands and bioswales. There are several websites and organizations that provide good information on LID practices that have worked in a variety of conditions across the United States.

The City of Dallas, along with the North Texas Land/Water Sustainability Forum (NTLWSF), and the Cities of Fort Worth, Irving and Arlington sponsored the North Texas LID Design Competition this fall. There were 20 integrated design teams competing, representing the ‘best and the brightest’ from 55 top design firms located in North Texas and around the country. The purpose of this contest was to show how LID can be used in North Texas on “normal” projects such as a city roadway project or a multi-use site design. We also hoped to find ways of building smarter with respect to how we address stormwater runoff.

*For more information about LID and to view the presentations from the design competition finalists, check out the Texas Land/Water Sustainability Forum’s website at [lwsforum.org](http://lwsforum.org). The Integrated Stormwater Management (iSWM) Manual can be found at [iswm.nctcog.org](http://iswm.nctcog.org).*

### My Connection with the Trinity River:

#### The Mary Zackary Story

*Mary Zackary is a Senior Project Manager with the City of Dallas Trinity Watershed Management Department. She is currently working on the recreation portion of the Trinity River Corridor Project. The Trinity River Corridor Project is one of the most monumental public works and economic development projects ever attempted. As flood protection, recreation, environmental restoration, economic development, and major transportation components converge along the Trinity River, residents and visitors from around the world will experience a new and exciting destination within the City of Dallas.*



Mary Zackary

What is your connection to the Trinity River? My connection to the Trinity River is mostly through my job with the City of Dallas. I have been with the City of Dallas for over 23 years with approximately half my years working specifically on the Trinity River as an engineer and project manager. In this role, I have been exposed to nearly every part of the 20 mile stretch of the Trinity River from Royal Lane where it is in the Elm Fork down to the confluence where the Elm Fork joins the West Fork and becomes the river as we know it – the Trinity River – channeling its way down through the city limits, all the way down to just south of IH 20. I have canoed the Trinity River from Sylvan Avenue, before the first boat ramp was installed, to Dowdy Ferry Road Bridge south of IH 20. I have seen the beauty of the Great Trinity Forest and the Trinity River from the river, the land, and the sky.

What do you think of when you hear someone say, “The Trinity River”?

When I hear someone say “The Trinity River”, I first think of all of the wonderful things the river offers. It provides habitat for wildlife including all kinds of birds,

*Continued on page 2*

#### This Issue:

Opening the LID	(page 1)	Ask Trinity Trudy	(page 3)
Mary Zackary Story	(page 1)	Just For Kids	(page 3)
Picture This!	(page 2)	Volunteer Spotlight	(page 4)
		Contact Us	(page 4)

## Mary Zackary Story *Continued from page 1*

turtles, coyotes, and bobcats. I have seen Great Blue Herons, Egrets, and a family of Turkey Vultures sunning their wings. I caught a glimpse of a bobcat and her cub. I have run across venomous and non-venomous snakes, but it is the spiders that scare me the most.

North Texas is a vast watershed and the river and levee corridor provide safe passage of the rains and at times, flood waters. As part of the Trinity River Corridor Project, we are acquiring lands within the 100-year flood plain to reserve them for water storage during rain events. This natural storage system reduces the costs of drainage systems that have to be installed to safely transport the water away from development.

How has your view of the Trinity River changed since you started working on the Trinity River?

My view of the Trinity River has changed greatly over the years. I have grown to appreciate that the river is a valuable resource for Dallas and it provides us with this opportunity to develop parks along its edges.

Many don't view it as an actual river, but under flood conditions, it has the strength to move large items as if they were feather-weight toys. After a recent flood event, the Santa Fe Trestle Trail area, off of 8th Street and the DART Rail Station, was piled with pallets of lumber that had been transported hundreds of feet down the the river and across the floodway. The pallets washed in from a construction site over a mile away.

How do you think the projects along the Trinity River, like the Dallas Wave and Santa Fe Trestle Trail have changed people's ideas of the Trinity River?

These projects are bringing the river to life for people – they are seeing it as a destination. These beautiful projects exemplify the progress that is being made within the corridor and in time, they will become zones of recreation of all types – biking, hiking, jogging, kayaking, canoeing, and general relaxation surrounded by beautiful views.

I believe that providing exciting outdoor amenities adjacent to the river, that are as diverse as the people that live in the city,

will expose more people to what truly is a wonderful place to be and an important water resource. Not only are we working on building trails and rivers, we are also developing park sites along the Trinity.

What do you want people to know about the Trinity River?

The Trinity River is a multi-faceted environment. The river not only transports rain water through our city, but it has a distinct future for recreation. The projects in place at this time and the upcoming construction plans will definitely draw large groups of people down to the river. They may come to the river for a concert, to hike, bike, bird watch, fly a kite, or canoe – but they will come by the hundreds and be amazed and excited about the fact that a vast network of recreational options are available to them. The other thing that I want people to know is that it is up to all of us to keep trash out of the river. When a piece of paper falls – pick it up! If you do not pick it up, there is a good chance it will end up in the river.

This is a continuation in a series of articles that features local Dallasites and their connection to the Trinity River. If you or someone you know wants to be considered as an interview subject in this series, contact us at 214.948.4022 or email [stormwater@dallascityhall.com](mailto:stormwater@dallascityhall.com).

## Picture This!

The Stormwater team is growing. The **Closed Circuit TV (CCTV)** team rejoined Stormwater Management in October 2011.

Stormwater Management would like to welcome the CCTV team back to the Stormwater family. CCTV and Stormwater have worked closely together over the years to determine the health of the storm drain system in the City of Dallas.

Like the Stormwater team, CCTV is a **small** team with an **important** job covering a **large** area. The CCTV team is charged with conducting camera inspections of all of the storm drain lines in the City.

The primary functions of CCTV are to:

- Inventory existing storm drain lines. CCTV sends a camera into the storm drain lines to inventory the existing lines and determine if the lines need to be maintained to improve drainage in the area.
- Inspect newly constructed storm drain lines. For new construction sites, CCTV sends a camera into the storm drain lines to ensure that the lines are properly installed to the pre-existing system.
- Inspect storm drain inlets and locate storm drain lines throughout the City.
- Update the storm drain map. The information and video that CCTV collects is vitally important to the Stormwater team. Stormwater is currently working with the Geographic Information Systems (GIS) team to connect the video from CCTV to the storm drain mapping program used in the field. By adding the video to the current mapping system it helps the GIS team update the map so that the GIS system is accurate as possible.
- Respond to citizen concerns about possible storm drain issues. The ability to send a camera into the storm drain line enables the CCTV team to respond to the concerns in a timely manner without having to dig a hole to see the storm drain lines.



*CCTV Team*

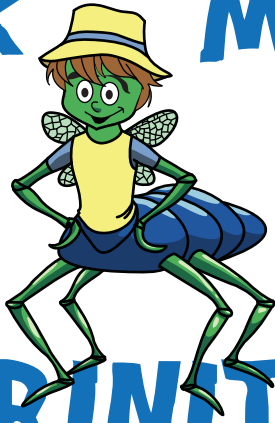


*An example of camera used by CCTV*

CCTV's capabilities to record the storm drain lines have proven to be a valuable asset in assisting the Stormwater team in investigating illegal connections and illicit discharges into the storm drain system.

The Stormwater Management team is proud to welcome the CCTV team to the Stormwater family and look forward to working with them to continually improve the storm drain system in the City of Dallas.

# ASK ME,



# TRINITY TRUDY

**Why doesn't the City put grates or some form of protection in front of ALL of the storm drain inlets to prevent trash from getting in the inlets?**

Great question! There are multiple parts to the answer. First, another name for a storm drain inlet is "Catch Basin." This name is used because the inlets are designed to serve as a trap for trash and floatables and "catch" the materials before they get into the storm sewers, creeks, and rivers.

Secondly, if you look around the City, there are many different types of storm drain inlets. Some of them have grates to prevent larger pieces of trash and debris from entering into the drains. However, if these grates get plugged, then the water ponds in the street and can cause local flooding. These grates do not prevent some pollutants like used motor oil or lawn waste from entering the drain.

The City has installed additional inlet protection on some of the inlets that are located in areas with higher pedestrian traffic, like the zoo, to see how well the protections work and to assess how easy they are to maintain. However, there are currently over 70,000 inlets across the City, and it is anticipated to be very expensive to install and maintain this type of protection for all of the inlets.

The best way to prevent trash from getting into the inlets is to pick it up as we go.

**Remember – whatever you throw, will go with the flow!**

*If you have a stormwater question for Trinity Trudy, email her at [stormwater@dallascityhall.com](mailto:stormwater@dallascityhall.com). Look for her response in future issues of "Inside the Inlet."*

## JUST FOR KIDS . . .

### BIG and small

### The Number Tree

The numbers that make up the tree in the picture are following a certain rule. Figuring out that rule will show what number should go in the circle with the question mark. To start, read the puzzle from right to left and then follow the arrows. Start from the top and work down. The first two numbers follow the rule that gives you the answer.

*Answer: The number 15*

*For more stormwater fun, games, and activities, visit our kid's website at [trinity-trudy.org](http://trinity-trudy.org).*



## A Farewell to Harry Christle



Stormwater Management says goodbye to an Outreach Team member, Mr. Harry Christle.

Harry began his career with the City of Dallas in August 2004 as a Code Inspector.

In 2011, he joined the Stormwater Management Outreach Team as an Environmental Coordinator. As a member of the Outreach Team, Harry educated the citizens of Dallas on the importance of stormwater pollution prevention. He also conducted consultations on construction sites with site superintendents and project managers to aid each construction site in achieving stormwater permit compliance.

Harry made a lot of friends during his time with Stormwater Management; friends that he will miss and friends that will miss him.

## City of Dallas Stormwater Outreach Leadership

**Elizabeth "Liz" Fernandez, P.E.**  
Director  
Trinity Watershed Management

**Sarah Standifer**  
Assistant Director  
Trinity Watershed Management

**Susan Alvarez, P.E., CFM**  
Senior Program Manager

**Sonya Batts**  
Outreach Program Coordinator

### FYI Readers:

Stormwater Management is here to serve and meet the needs of our valued readers. For additional information regarding the following:

- General stormwater information
- Construction and Industrial workshops
- Presentations about stormwater pollution prevention or permitting requirements

### Contact us at . . .

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**Fact:** Yard waste washed down our storm drainage system is a form of pollution and accounts for a fifth of all garbage generated in the U.S. each year.

Yard waste decomposes in local creeks, lakes and the Trinity River causing algae to grow.

Too much algae lowers the amount of oxygen in the water which may suffocate aquatic and plant life.

**Did you know . . .** Sweeping or blowing yard waste into the street and storm drainage system could cost you up to \$2000?

#### TIPS:

- Sweep or blow clippings from your sidewalk, driveway, and street back onto your yard. Yard clippings act as a natural fertilizer.
- Rake or blow and collect your fallen leaves from your yard, sidewalk, driveway, and street; then bag and place for collection during your bulk waste collection week.
- Compost your clippings and leaves; they serve as a natural fertilizer.

## Volunteer Spotlight

*An interview with Kristina Tippie*



Brother and sister, Devon and Kyera Tippie, marking and inspecting a storm drain in their neighborhood.

**What motivated you to want to mark the storm drains in your neighborhood?**

Well for starters, none of the inlets in our area were marked. It seemed like a great opportunity to get my kids involved to teach them the importance of the storm drains and stormwater pollution prevention.

**Why do you care about preventing stormwater pollution in Dallas?**

I realize that as a parent, I have a huge affect on the future of my children, and I want to teach them early that preventing pollution starts with them! We love fish and want to save them.

**What would you like for our readers to know about the storm drain marking program?**

I think it is a wonderful opportunity to get personally involved in not only helping your neighborhood, but also helping to promote how important our storm drain system is to the creeks, lakes, and rivers. It is also a program that you can get your kids involved in.

Stormwater Management extends a big **THANK YOU** to Kristina Tippie and her family for their participation in spreading our message.

To inquire about marking storm drain inlets in your neighborhood, contact an Outreach team member at 214-948-4022 or email us at [stormwater@dallascityhall.com](mailto:stormwater@dallascityhall.com).