Texas Commission on Environmental Quality
Nonpoint Source Program

Upper Trinity River/Dallas TMDL Implementation: Urban Stormwater BMP Design

Water Body	White Rock Lake (Seg 0827), Upper Trinity River (Seg 0805)
Location	Dallas County
River Basin	Trinity River (8)
Contractor	Texas AgriLife Research
Project Period	May 12, 2010 to August 31, 2015
Project (1), (2)	$1,074,000 (Federal 60% and Local 40%)

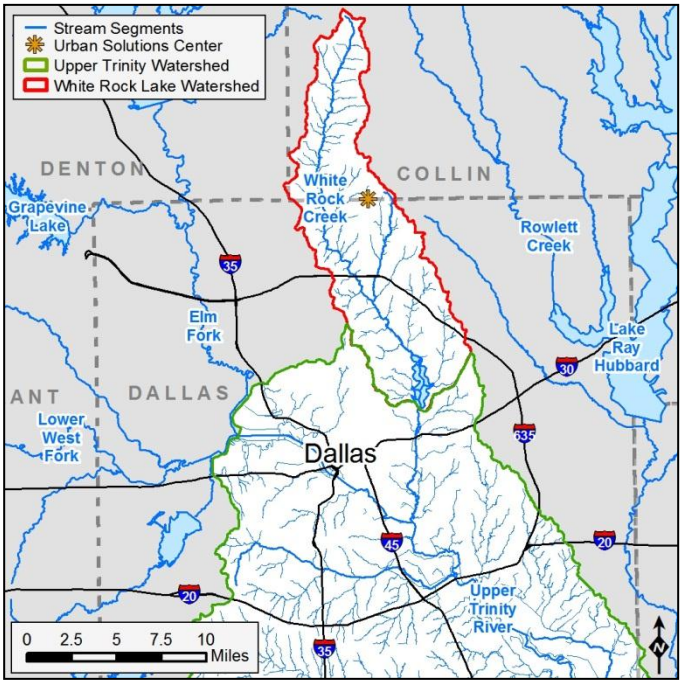
Low Impact Development (LID)

LID is a comprehensive approach to site planning, design, and pollution prevention strategies that, when combined, create a more economically sustainable and ecologically functional landscape. LID works with nature to manage storm water as close to its source as possible. This approach treats storm water as a resource, rather than a waste product, and integrates hydrologic and water quality functions into all aspects of the urban landscape and infrastructure. The result is functional and appealing site drainage which restores the ecological integrity of receiving waters, promotes the natural movement of water within an ecosystem or watershed, and reduces construction, maintenance, and inspection costs. Examples of LID management approaches and technologies include rain gardens, porous pavements, green roofs, and rainwater harvesting for later use.

Project Description

While recent studies have evaluated the effectiveness of LID practices in various regions of the United States, there is still a great need to evaluate practices in the field and to collect quantitative data to assess performance. There is also very little data on the potential impact of the adoption of LID practices at a watershed level.

The goal of this project is to improve the quality and reduce the total and peak flows of storm water from a site typical of commercial development in the Upper Trinity and White Rock Lake watersheds. Texas AgriLife has designed and built several LID BMP's at the Texas AgriLife Research and Extension Center in Dallas, and is measuring their effectiveness in reducing stormwater runoff volume and pollutant loads. These best management practices (BMPs) provide examples of how LID can be integrated in new buildings and developments or retrofitted to existing developments. The five LID BMPs in this study are permeable pavements, bioretention, rainwater harvesting, green roofs, and detention ponds.



Current Status

Construction of the BMPs has been completed under the initial contract. Additional stormwater sampling and data analysis is complete and workshops were held. This project is now closed.

More Information
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Project Highlights

- 05/12/2010 – The contract was signed. ($650,036; federal).
- 07/30/2010 – The BMP performance monitoring plan was accepted.
- 02/28/2011 – The quality assurance project plan (QAPP) was submitted to TCEQ.
- 03/15/2011 – The BMP engineering conferences were completed.
- 04/08/2011 – The draft LID training materials were submitted to TCEQ.
- 04/12/2011 – The BMP draft engineering plans were reviewed.
- 06/09/2011 – The BMP final engineering plans were approved.
- 10/25/2011 – The QAPP for monitoring BMP performance was approved.
- 03/01/2012 – The Rainwater Harvesting (RWH) systems including irrigation were completed.
- 03/01/2012 – Test runs of the monitoring systems for the RWH BMPs were being conducted.
- 05/31/2012 – The engineering plans for BMPs received.
- 11/07/2012 – The QAPP Update for monitoring BMP performance was approved.
- 12/05/2012 – Interlocking permeable pavers installation workshop held.
- 03/13/2012 – The construction of the BMPs is completed (with exception of permeable pavers); site visit conducted. Installation complete for 3/5 pavements: (1) grass pavers; (2) permeable interlocking pavers; (3) control-impervious pavers. Certified installers for pervious concrete & pervious asphalt still need to be found.
- 01/05/2013 – Workshop on Permeable Pavers held.
- 01/14/2013 – Workshop on Bioretention held.
- 04/01/2013 – The final As-Built BMP designs were submitted and approved.
- 04/30/2013 – Samples were collected after a rainfall event. Data was submitted to TCEQ.
- 08/14/2013 – Detention Pond workshop (#1) with NCTCOG held.
- 08/21/2013 – Green Roof & Rainwater Harvesting workshops held.
- 08/29/2013 – Detention Pond workshop (#2) with NCTCOG held.
- 10/07/2013 – Samples collected after 7 rain events. Data sent to TCEQ. Data analysis on-going.
- 11/07/2013 – Updated QAPP approved.
- Fall 2013 thru Summer 2014 – Rainfall event sampling and data analysis on-going.
- 12/2013 thru 02/2014 – Sampling event for all constructed BMPs. Data submitted to TCEQ.
- 03/2014 thru 05/2014 – Six sampling events were monitored for data at all BMPs.
- 06/2014 thru 08/2014 – Five sampling events were monitored for data at all BMPs.
- 07/2014 thru 08/2014 – Project was presented at the 16th Annual EPA Region 6 Stormwater Conference.
- 08/2014 – Initial contract closed.
- 09/1/2014 – New Contract signed.
- Rainfall event sampling and data analysis on-going until 08/2015.
- 07/2015 – Presented educational material at the 2015 Rain Garden and Detention Pond workshop.
- 8/1/2015 – Final report approved.
- 8/31/2015 - Contract closed.