

**Effect of Roof Material on Water Quality for Rainwater Harvesting Systems –
Quarterly Report to the Texas Water Development Board (TWDB)**

September 30, 2010

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The main objective of this research is to provide recommendations to the rainwater harvesting community in Texas regarding the selection of roofing material for rainwater harvesting and to support these recommendations with scientific data. In Task 5, we will sample harvested rainwater from our five pilot-scale roofs at the Lady Bird Johnson Wildflower Center and from a coated full-scale roof. In Task 6, we will examine the microbial composition of harvested rainwater from the five pilot-scale roofs. In Task 7, we will examine the impact of roofing material age on the harvested rainwater quality via lab-scale experiments. In Task 8, we will prepare and submit a final report on the research. The following is a summary of our quarterly progress.

Task 5. Additional sampling of pilot- and full-scale roofs (*currently underway and on schedule*)

The five -scale roofs were sampled for 3 rain events: June 30, 2010, July 8, 2010, and September 22, 2010. The full-scale Kynar-coated Galvalume® roof was sampled for 2 rain events: September 7, 2010 and September 24, 2010.

Each roof was equipped with a sampling device consisting of three sequentially filled tanks (i.e., first-flush, tank 1, tank 2). The harvested rainwater and ambient rainwater collected at each site are being analyzed for pH, conductivity, dissolved organic carbon (DOC), total solids, turbidity, selected metals, nitrite/nitrate, and total and fecal coliform. Most of the analyses have been finished, with the exception of DOC and metals. Once the DOC and metals analyses are done, this task will be complete.

Task 7. Lab-scale studies of roofing materials (*currently underway and on schedule*)

We have purchased a ultraviolet light and are installing it in a wooden box in the laboratory. The box will hold the coupons for the ultraviolet light exposure. In addition to the ultraviolet light, we are investigating other ways to artificially age the roofing coupons. In particular, we are working with the materials group in the Civil, Architectural, and Environmental Engineering department at the University of Texas at Austin to identify equipment that they use for aging pavement materials.

Acknowledgements

We are grateful to the Texas Water Development Board (TWDB) for funding this work and to Sanjeev Kalaswad and Jorge Arroyo for their input on this project. We thank Steve Windhager and Mark Simmons for giving us access to the cool and green roofs at the Lady Bird Johnson Wildflower Center. We also thank the many students who have worked on this project: Bryant Chambers, Sarah Fakhreddine, Amy Gao, Tara Gloyna, Sarah Keithley, Carolina Mendez, and Litta Untung.