

*[SYNOPSIS WRITTEN AND DISTRIBUTED BY DOV WEITMAN, CHIEF, NONPOINT SOURCE CONTROL BRANCH, EPA]*

## **RE: "Amazing Houston LID Competition"**

I want to let all of you know about an incredible, energizing experience I had last week in Houston. I participated as a member of the Jury Panel for the Finals Event in the Houston Land/Water Sustainability Forum's Low Impact Development Competition on January 27. The bottom line is they just implemented an amazing consciousness-raising process that has hundreds (at least) of developers, civil engineers, architects, landscape architects, etc., thinking differently about stormwater than they did 6 months ago. And the way they did it seems to me to be replicable in cities across the country. I hope you'll read on, follow up on a couple of the links, and think about what you could do in a particular city or state.

First, as general background, here is the Forum's Mission Statement:

**Our mission is to enhance, enable and integrate sustainable use of land and water for the Houston area's continued growth and economic vitality.**

**Across this country and the world, new ideas, methods, materials and technologies aimed at positively impacting the sustainability of land and water resources have been widely adopted, some are even being developed right here in Houston. This forum has been formed to provide exposure to the full range of these practices, to encourage their adoption, their adaptation where needed for the conditions found in our community—and to foster creativity in both the development of new solutions and the regulatory infrastructure that enables them.**

**Maintaining the pace of growth and development in the greater Houston area requires that those with a vested interest adopt new ideas and employ new methods that will insure that growth can be sustained. The forum seeks to engage the broadest possible range of constituent groups, in a collaborative effort that focuses on practical application rather than abstract theory in the exploration of incremental answers to some of the Houston area's most significant land/water sustainability issues.**

As you can see, this is not an LID forum or WQ forum. But the Forum (which consists largely of organizations and people concerned with boosting Houston's economic growth and sustainability, including businesses, nonprofits and local government) had the vision to recognize the role that LID can play in the Houston area's growth and economic vitality. They decided that a competition to develop the best LID project(s) would be a great way to publicize the issue and increase the comfort of professionals to propose LID projects to their clients. They expressed their goal as follows: **"Our goal in this competition is to dramatically accelerate the adoption, adaptation and implementation of Low Impact Development and other sustainable development practices in the Houston area."**

They implemented the entire process in 5 months. They launched it in September 1, implemented a semi-final process, and then held the "finals" on January 27. They identified 3 actual projects that will be implemented in Houston or Harris County (where Houston is located), and solicited the submission of proposed LID plans for one or more of these projects. Contest rules required that each applicant include a licensed civil engineer, architect, and landscape architect on their team. In the vast majority

of cases, 3 or four firms would partner (e.g., a civil engineering firm, landscape architecture firm, and a developer). At the other end of the spectrum, at least one submittal was submitted by a single large company (AECOM) that had all of the required licensed professional staff in-house. A few teams included a partner from outside of Texas, but the vast majority of participants were from Texas, and most of those were based in the Houston area.

It is notable that, to date, Houston doesn't have many LID projects. There are a few green roofs (it seems like all of them are on medical facility buildings -- don't ask me why, maybe doctors are moved by the air pollution reduction benefits). **Most of the participants in this competition did not have experience designing or implementing LID projects, so the whole concept, and what it can accomplish, was a total eye-opener for many participants.** What brought them to the table was civic pride (I learned that there is a lot of that in Houston); the competitive urge; enhanced reputation; a hope to be hired to participate in implementation of the project; and \$15,000 in prize money to the winners in each of the 3 categories, provided by American Society of Civil Engineers; Architecture Center Houston Foundation; and Mischer Investments (a development company). (Houston's chapter of American Institute of Architects, and numerous other organizations, also participated.)

The three projects were:

1. Green Roadway: A re-development of a mile-long road/highway (expanding 2-lane to 4-lane of a road that has historic significance as well as proximity to a major tank farm near the water)
2. Urban Re-development: About 6 blocks of a street in East Houston that is intended to be a major redevelopment (complete with a large stadium, residences, shopping, restaurants, etc.) and provide a model for applying smart growth principles to redevelopment
3. Suburban Residential: A new square-mile development in Harris County

Much more detail on the structure of and rules pertaining to the competition is available at <http://www.houstonlwsforum.org/designCompetition/program.html#Judging>. I'll just mention a couple of key points about the rules: Applicants had to demonstrate that the hydrograph for their LID proposal matched or was below the conventional development option for the 5-year, 10-year, and 100-year storm. In addition, they were required to rely principally on LID to handle the stormwater. Thus, while some of us might prefer to have seen a matching of hydrographs for e.g., the one and/or two-year storms, their rules did have the effect of "forcing" reliance on LID approaches, and indeed a few proposals completely eliminated traditional infrastructure. There was provision for some non-LID storage of excess water in large storms for at least the suburban development (contest rules required identification of an outlet), whereas the green roadway designs typically handled all water without any auxiliary storage. (I believe Houston's 90th percentile storm event is 1.8 inches, but I'm prepared to be corrected on this one. I couldn't quickly find out its 95th percentile.)

Another rule was that the LID alternative could not be more expensive than the conventional stormwater treatment alternative. More on that below.

22 teams entered the competition. These teams comprised 49 firms, and many firms had multiple participants in the projects. Indeed, when the three winning teams came up to the stage at the end of the evening to be awarded their prizes (big fake checks pending the real ones), they generally had more than 10 participants. I would estimate that there were 300-400 people in the room at the final presentation, and not all participants were present.

### **The Bottom Lines**

1. Many of the participants (and apparently some of their CEO's) were blown away by the results of their own analyses, in particular the following:

a. LID can practices can in fact manage all or most storm events on site and can in fact replace traditional infrastructure.

b. LID is cheaper than or as cheap as the conventional alternative and provides so many attractive features that it is a "no-brainer" (in the words of one engineer in his presentation). The main savings identified were the elimination or reduction of pipe and pavement. One presenter also noted the savings in long-term maintenance -- i.e., no need to inspect and to pull up and replace aging pipes. The co-presenter for the winning submission in the suburban development category (who also participated on one of the green roadway submissions) told me later that he had never worked on LID before, and when his firm asked him to participate on the project he figured, OK, sounds interesting. And now that he's been through the project analysis and saw the cost savings, he appears to be a total evangelist for it.

2. Almost all of the teams "got" the aesthetic aspects of the project. Whether it was the green roadway, urban re-development, or suburban development, there were tons of green and colorful flowers thrown in and just great efforts to link the project to its setting. (One presenter in the Green Roadways competition proudly noted that their design would assure color in all seasons.) The winner of the suburban development competition placed so many rain gardens that the presenter stated that every property has a rain garden within close view of the front or rear of the house. The presenter also pointed out that one advantage of distributed LID practices is that it spreads the amenities throughout the development

3. Apparently, some CEO's/managers participated with the idea that was a good thing to do civically but it was not going to be a big deal and change the way they do business. After the work was done and their staff came to them to show the cost savings and aesthetic benefits, that was a real wake-up call. Several companies have already instructed their staff to promote future projects based on LID to their clients.

4. One fascinating thing: Among the 9 finalist presentations I saw and materials I read, nobody once mentioned the benefits that LID provide to protecting stream structure. I guess that's just not something they think about when they look at the Houston Ship Channel! There was some recognition and discussion of pollutant reduction in several presentations; pride in reducing water use by X% by collecting and reusing rainfall; and lots of good feelings about saving on stormwater infrastructure. Even

the suburban residential development presentations, which do have a small stream in the neighborhood (Ventana Run), never discussed hydrologic impacts on the water body. What this says to me is that you don't need to fully appreciate all of the water quality benefits of LID to be in favor of it.

5. The 9 finalist projects that I saw did not include any green roofs, and I don't know if any of the other projects included green roofs. What I saw primarily was a lot of bio-infiltration/rain gardens and some pervious pavement (at least one project was very heavily reliant on the latter).

6. Both of the urban re-development projects that made it to the final competition were very creative and showed how to integrate LID into the broader redevelopment framework (large sidewalks and a plaza designed to promote public use of the space also served as useful areas for infiltration).

7. One jury panelist, a landscape architect whose work focuses on office parks, told me that her clients are very interested in "green development" because they want to attract young talent, and that's what those prospective employees want.

#### **Next Steps:**

1. It will take a few months, but 2 gigabytes worth of presentations, data, graphs, etc., will be made available on their web site cited above. Please note the information that we will have access to will provide:

a. A large number of cost comparisons between LID and conventional stormwater solutions applied in 3 different types of real-life settings.

b. Lots of creative LID designs that show how to integrate LID into smart growth designs and into highway designs, both of which are greatly needed, as well as new residential developments.

c. References to Houston-based firms who now have some experience designing such projects.

2. Some information may become available sooner. I'll keep you posted.

3. This process can be replicated anywhere: New York City, Los Angeles, Boston, Miami, you name it. It's a simple yet amazing idea. We keep talking about how to get the word out on the effectiveness of LID as well as the costs savings and benefits that it provides. Here's a way to encourage the industry to convince itself rather than have us do it! I hope that we all can think of ways to use this example to think of and implement processes that can be used effectively to promote LID.

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#### **Attachment A**

[The following is the email that announced the 9 semi-finalists in the competition – you can see how there generally were several firms participating per team. I have ID'd the final winners with \*\*.

I'd like to thank each and every member of every submitting team that competed in the Houston Land/Water Sustainability Forum's Low Impact Development Design Competition. There were

more than 225 design professionals involved in 22 submitting teams, representing 48 firms. Although predominantly local, we had team members participating from North Carolina, Georgia, Illinois, Colorado, California, as well as elsewhere in Texas, including Austin, San Antonio and College Station.