Municipal Survey of Low Impact Development Implementation

**RESPONSE DOCUMENT**

By: Colin Highlands

The purpose of this survey is to gage the status of low-impact development implementation among municipal storm water engineers, MS4 operators and others dealing with storm water at the municipal level. There are no wrong answers. Your time and responses are greatly appreciated.

# What is Low Impact Development?

Low Impact Development LID is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product. There are many practices that have been used to adhere to these principles such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements (EPA, 2009).

**Begin Survey**

Sample Size: 5

Response Rate: 25%

What is your position title?

1. City Engineer
2. Town Engineer
3. County Engineer
4. MS4 Operator
5. City Engineer

**LID Status in Your Community**

1. Has your division formally adopted LID principals? Meaning, does your division have an agreement, memorandum of understanding, division policy, ordinance etc. to abide by.
   1. Yes
   2. No - 5
   3. N/A
2. If your division does not have a formal policy in place for LID, does staff abide by LID principals anyway?
3. Always
4. Sometimes - 5
5. Never
6. N/A
7. If you have a political governing body such as a city council or board, have they ratified regulations or ordinances that incorporate LID principals?
   1. Yes
   2. No - 4
   3. Don’t Know - 1
   4. N/A
8. If your division or municipality has not formally adopted LID principals, whether through ordinance, rules, or policies, does your division or municipality have plans to adopt LID principals in the future? If so, through what means e.g. division policy, ordinance etc.
9. Yes
10. No - 4
11. Maybe – 1 – Division policy
12. N/A

**Barriers to Implementing LID Practices**

1. What, if any, obstacles have hindered the implementation of LID practices in your community. For example, staff time, funding, lack of training, lack of support etc. Please explain.

Responses are recorded as written by the participants

* A reduction in staff resources and thus availability to go above and beyond.
* Conflicting vision among division employees and council
* LID is not a priority when the city’s financial situation is in dire straits.
* Difficulty complying with regulatory mandates such as NPDES let alone implement LID practices.
* Significant time and effort spent on updating ordinances. We have to not only change the ordinance but educate the council on LID practices before approval.
* Perception that LID is not proven to work any better than regular practices
* Public lacks knowledge of LID principals and therefore they do not request these practices of their public officials.
* Different development criteria in each locality
* Developers prefer low cost, easy to install alternatives
* Curb and gutter requirements
* Zoning ordinances inhibitive to LID
* Clayey soils
* Maintenance after the initial construction. Manpower and funding.
* Unwillingness of engineers and developers’ to change current practices
* Design specifications and calculations are inconsistent.
* Lack of acceptance for LID practices
* Cost differences between LID and regular practices are too great.
* Poor administrator and council knowledge of LID principals and practices.
* Lack of understanding pollutant removal efficiency and cost of effectiveness of LID practices.
* A need for more information on which methods are suitable for specific conditions.
* LID is more expensive
* Construction materials for LID can be more expensive. For example, the availability of LID materials can be scarcer. As a result, more time must be spent looking for a vender and more costly shipping. Especially in rural areas.
* Lack of training to conduct proper long-term maintenance.
* Inspectors, permit reviewers, and enforcement staff lack knowledge of LID practices.
* Engineers are sometimes fearful to suggest or sign-off on LID practices because they think those practices are unproven and untested.
* Getting approval for retrofits is challenging.
* Perception that LID practices are more difficult to construct.
* We cannot ensure private LID practices are maintained and working as they should.
* Voluntary approaches to LID implementation are probably less effective than mandating through ordinances or rules.

1. What could municipalities do to facilitate LID implementation within the government and for homeowners.?

* Since staff time and resources are limited, reorganize the division of labor to accommodate LID implementation.
* Apply for grants to fund voluntary approaches to LID implementation.
* State or Federal government should consider creating a toolkit that includes LID designs that can be submitted for permit review.
* Tutorials on LID specifications and the applicability for the various practices.
* Private property owner education
* A dedicated position in government or nonprofit sectors that focuses on facilitating the use of LID principals. Someone people can call.
* Training and certification for government employees working on LID principals. Incentives for these people to participate.
* Public official education
* Documentation on how LID is better than other approaches
* Demonstration projects

Municipal LID Survey Conclusions

**Purpose**

The purpose of this survey was to determine the motivation of municipal engineers to either implement or promote BMP implementation. In the survey I was careful how I framed the topic. For example, I refrained from using BMP, an approach that is somewhat subjective. Questions such as, “Have you implemented BMPs at your facility,” will raise more questions in the participants mind than answers. If we are to determine motivations, a broader concept is needed that can capture the ideals of BMP’s. For this reason, low impact development or LID was chosen as a proxy for BMP. LID encompasses BMP practices but is less specific so the survey results will reflect general motivations for going above and beyond the status quo in storm water practices.

A second purpose of this survey was to test the format, procedure, and response rate utilizing an electronic PDF approach by choosing participants from outside my watershed. The results will help me fine-tune my approach when I conduct a local survey.

**About the Survey Document**

I created a template in Word, saved in PDF format, and then utilized the Form feature in Adobe Acrobat 8 to transform the document into a functional electronic survey. The Adobe program compiled the survey results for me.

**Survey Results Conclusion**

The number qualitative responses were far greater than imagined. This may be due to the increased exposure of LID in the field of engineering. As a society, LID implementation is still in the education phase and we can expect strong opinions as to its potential and questions about its functionality. Despite the success of the qualitative questions, these responses came from only 5 individuals. The response rate would have to increase before I would utilize these results internally as an indicator of engineer motivations. Never would this type of survey be used to make inferences about the population. A more rigorous survey design would be required for such results.

Below are general themes from the responses:

* A lack of resources exists to implement LID, or anything above and beyond for that matter.
* There are concerns about the effectiveness of LID over other practices
* More information is needed on cost effectiveness and pollutant removal efficiency over common practices.
* Resources are needed to educate a whole range of groups such as councils, government employees, and homeowners.
* Demonstration projects may be helpful and could be used to get council members on board.
* Long-term maintenance costs are a concern
* The norm is not LID, therefore it is more difficult persuade those who would benefit from these practices.