WINDHAM
REGIONAL
COMMISSION

Low Impact Development:

What are the barriers to Low Impact Development in the Windham Region, and how might they be overcome?

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Introduction

Impermeable surfaces like roofs, parking lots, and sidewalks can prevent water from being absorbed into the ground, where natural filtration and groundwater recharge take place. Runoff flowing over these surfaces can also carry contaminants into streams and rivers, affecting water quality. Since land development is a necessary part of economic and community development, what can we do to protect the quality of our water?

One possible answer is a set of storm water management techniques known as "low impact development" (LID). LID seeks to capture and process storm water where it falls by mimicking, as closely as possible, the natural topography and drainage of a site. Examples of techniques include rain gardens, rain barrels, and green roofs. It can be implemented at the site level, or at larger scales, like housing developments or shopping centers.

The research that follows was funded by American Recovery and Reinvestment Act Clean Water Act (604B) grant from the Vermont Department of Environmental Conservation. With these funds, this project sought to understand what barriers exist to implementing low impact development in the Windham Region. It also sought to learn what tools and strategies could be used to overcome these barriers. A series of focus groups, interviews, and a survey revealed that there *are* barriers – real and perceived – to implementing LID. These barriers, along with possible solutions generated by focus group participants, survey takers, and interviewees, are summarized below.

Barrier #1: Regulation

Participants discussed regulatory barriers that exist at the state and local levels, and made the following points:

- Regulations currently lack the "carrots and sticks" (requirements and incentives) and flexibility that engineers, developers, homeowners, and others need before LID can become a practical option.
- Current state regulations for redevelopment only require storm water permits for sites over 1 acre in size. Regulations allow, but do not compel, the use of LID.
- Several design professionals said that it is easier and more reliable (and so less risky) to obtain storm water permits for tried-and-true methods of storm water management.
- Town officials are concerned that regulation, even regulation that promotes a beneficial strategy like LID, could be discouraging to potential businesses and other development. On

the other hand, if a town's water is dirty, that can discourage investors as well. Town officials are caught balancing these demands when making decisions about whether to promote techniques like LID through regulation.

- At the homeowner level, there was a general consensus that education, followed swiftly by encouragement and incentives, would be the best approach (as opposed to regulation).

Barrier #2: Cost

The costs of LID, both real and perceived, came up in nearly every forum. Specific points included:

- Cost remains a primary consideration for town officials, engineers, developers, and homeowners alike.[1]

- The longer-term benefits of LID are recognized as important, but can be difficult to measure when estimating the cost of a project. These benefits may include cleaner water, higher property values, and a better environment for economic development.
- LID is seen as too costly up front, and there are concerns that it generally requires more maintenance than traditional (engineered) systems, like drains and sewers.
- The idea of "cost" was used as a shorthand for intangibles like uncertainty, risk, and reliability – especially for engineering, design, and development professionals, who are serving clients but also trying to run profitable businesses.

Barrier #3: Public awareness about water quality and LID

Awareness about LID techniques among town officials and the general public is limited, and was cited as one of the barriers to its use. Discussions indicated that there are several aspects of "awareness:"

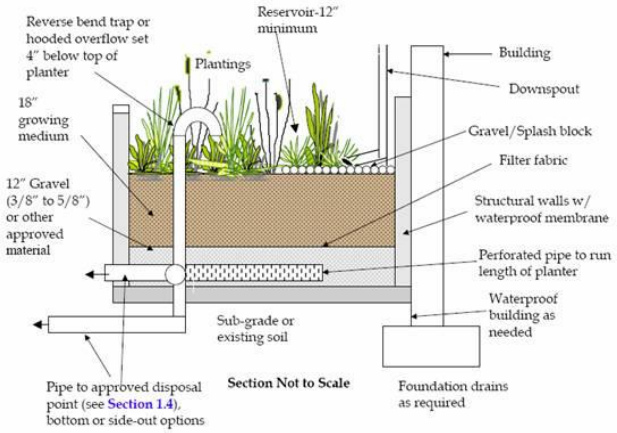
- Because pollution from storm water is a cumulative problem, it can be hard for individuals to see their role in both the problem and the solution.
- Another aspect of "awareness" is whether people see storm water management as relevant to their town or property. Storm water flows across individual property boundaries until it becomes part of a larger system, so individual contributions to water quality, whether positive or negative, are not always obvious.
- Even when people are aware, there are few incentives to move from awareness to action and implement LID.

[1] Supplemental research for this brief found studies by the EPA suggesting that LID can actually cost less over the life cycle of a project.

Barrier #4: Getting from LID in concept to LID in practice

There is a wide gap between the concept of LID and the on-the-ground technical specifications, including maintenance requirements. For example:

- LID standards are easy to embrace from an "environmental values" or "green" perspective, but there is a disconnect between those values and the actual, technical work of building LID systems (e.g., selecting and layering soils, choosing and caring for plants, and designing the flow of water through the site).
- A full understanding of the technical aspects of LID is especially important when town maintenance crews are being asked to maintain LID infrastructure.
- A lack of access to data showing how systems will work in various climates, how they respond in various weather conditions, and how much systems cost over time, will keep towns, engineers, developers, and others from fully pursuing LID. However, focus group participants pointed out that data does exist: the University of New Hampshire's Stormwater Center field tests many LID techniques and technologies.



Overcoming the barriers to LID

The interviewees, focus group participants, and survey takers generated a creative list of tools and strategies for addressing the barriers to LID. In general, the suggestions fall into four main categories: education, case studies and examples, incentives, and changes in regulations.

Education

- Ideas included educational campaigns of various sizes for homeowners, planning commissions, other town officials, design professionals (engineers, landscape architects, architects), road foremen/commissioners, public works employees, and even State employees.
- Some felt strongly that the best place to focus educational efforts would be with the professionals who design development and redevelopment projects. In addition, there was agreement that education, especially of professionals, would be most effective if it utilized data, case studies, and peer experience.
- One approach to professional education could be through providing educational "credits" that would help people maintain certain professional certifications (like LEED or AICP). For example, credits could be earned by potential LID practitioners (engineers, landscape architects, forestry professionals, developers, and others) who attend training sessions on low impact development.

Case studies and examples

- Many websites, handouts, and booklets about LID already exist. The message received during this research is that resources with direct relevance to the Windham Region, presented personally, would be of greatest value.
- Case studies relevant to the local area, demonstration projects, field trips, and signage were just a few of the things suggested to help people learn about LID in a hands-on way.

Incentives

- There was agreement that there must be incentives to help move LID from theory into practice.
- Incentives would need to be structured differently for different groups. Homeowners would probably be most encouraged by grants and/or technical support. Developers and engineers, on the other hand, would be encouraged by incentives like expedited permit processing, reduced application fees, or extra benefits on their site (like density bonuses, where applicable).

Changes in regulations

- In the focus group of development professionals (engineers, landscape architects, and public works employees), there was a sense that state regulations need to change. One change suggested was making the regulations need to be more accommodating and flexible, by using tools like performance standards. By contrast, some interviewees stated that the regulations should be more stringent.
- There was general agreement that regulations must not lose sight of the fact that a major goal of managing storm water is cleaner water. There needs to be a variety of ways to accomplish this. Practitioners felt that this must include space for innovation, and have built-in reliability.
- Many who work as developers and engineers rely on a predictable process in order to run their businesses, and this is another aspect of regulation to address in the long term. For practitioners interested in using LID techniques, predictability of permitting is needed to reduce risk, unpredictability, and cost.
- A general conclusion was that it is probably most effective to promote LID in larger scale developments, through strengthened state regulations and more stringent storm water requirements for larger-scale commercial and residential developments.

Turning ideas into action: the Windham Regional Commission's next steps

There are many barriers to low impact development, but fortunately there are also dozens of strategies and tools that could *encourage* LID. (A compiled list of the strategies and tools generated by participants in this research is attached to this brief, starting on page 6.)

To start encouraging LID in the Windham Region, the Windham Regional Commission is focusing on educational outreach targeted at homeowners. [As shown in the attached list, many research participants suggested that regulatory, legislative, and even cultural changes were needed to make LID more prevalent. However, with the scope of this grant and the sphere of WRC's influence, WRC has decided to focus on the homeowner level. The WRC hopes that

starting with individuals could be a way to generate interest and lead to visible projects, which could then lay the groundwork for larger shifts in policy, regulation, and (perhaps) culture.

To complete this grant project and encourage LID in the Windham Region, WRC will:

1) *Develop an outreach and education plan*: The goal of this plan will be to increase awareness of storm water as an issue, and present simple LID techniques as a solution. The WRC will reach out to educators in the region for advice on the development of this plan. The plan will include the tasks to be undertaken as part of this grant, as well as outreach that could be pursued if additional grant funds are received.
2) *Develop a checklist and brochure for homeowners:* This will be a simple publication designed to help homeowners identify where they might use LID techniques on their own properties. The brochure will also aim to demystify the process for using these techniques by providing local examples.

Tools and strategies for promoting low impact development

The following list summarizes the suggestions stemming from the interviews, focus groups, and survey responses.

General

- Use community events as a chance to celebrate small successes.
- Demonstration projects that people drive by and see, like the Dummerston Rain Garden
- Provide incentives for homeowners and developers
- Show that this will work in Vermont's climate
- Use problems with water quality and floods as a way to raise awareness about LID
- Get people speaking the same language about what is important: clean water, clean air really resonates with people.
- Create programs to promote LID that have very specific information and goals, to make it easier for people to be involved.
- Help people make connections between the choices we are making now, and the kind of places those steps create over time.
- Find easy ways to introduce LID into existing landscapes.
- Create sample guidelines to make LID easier.
- Focus on the green aspect, the landscaping aspect – people like that.
- Promote native plants
- Highlight the region's "best practices" in a brochure.
- Develop a checklist of questions to ask when a project comes up – something that helps a developer, redeveloper or client walk through the possibilities that might be available on their specific site. Ask questions in order to help people feel more comfortable about innovating.
- Give people good reasons to implement LID – get people excited in the technique, but give them information to show them clearly why it's justified.
- Find way to be a non-intrusive resource – people don't like preaching
- Provide good answers to technical and economic questions
- Communicate about good projects that have already been done. Get engineers to give examples and talk about how they accomplished it.
- Find out what engineering and construction professionals need to do this, and help them
- Look at "Building Better Roads" grants
- Look at ANR River Corrective Management Planning incentives, which lower the match required of towns when they use Best Management practices – is something similar possible to encourage LID?
- Have a fundraiser at a school to sell rain barrels

Education - general

- Educate homeowners about LID techniques, especially approachable ones that are aesthetically pleasing, like rain gardens and rain barrels.
- Put up informational signs at LID sites (new co-op site, Brattleboro Farmers Market)
- Site visits for town officials to view projects that use low impact development techniques

- Develop partnerships between interested businesses, planning organizations, conservation groups (including the Conservation District). Combine efforts with education about water quality issues.
- Relate water quality through LID to best agriculture management practices
- Visit homeowners groups, conservation commissions, and service organizations (like the Rotary) to tell them about LID.
- Connect storm water issues with land use patterns – consider how different land use patterns require different types of treatments.

Professionals who have the opportunity to promote LID

- Have the Conservation District work with developers on LID techniques
    - Could include siting of houses as well as other LID techniques
- Take local engineers on a tour – where LID techniques are set up.
    - Promote peer education: here's what we've done, here are the results.
    - Provide a data sheet for all projects to give a realistic idea about the feasibility.
    - Drive to UNH Stormwater Center to see test projects
- Develop education sessions/workshops for municipal officials and public works directors that include specific case studies, the pros and cons of LID, and plenty of time for discussion.
- Provide education in a way that allows professionals to share what they have done, rather than lecturing them about what they should do.
- Educate state officials and contractors/architects
- Monitor existing systems to learn about what is working, and to collect data

Town level tools and strategies

- Educate town officials about LID techniques
- Provide sample bylaws and ordinances that towns can use – that are legitimate and approachable, not just super technical.
- Require development and redevelopment to include LID techniques
- Find ways to help towns "lead by example" using LID techniques in public spaces.
- Put together a "Planning Commission Road Show" to brief planning commissions on LID
- Work with highway crews and road commissioners – could have a high impact with these groups. Some road improvements are fairly simple but could have huge positive impacts on water quality
    - Provide good examples as case studies
    - Have a "Cleanest Road" competition between road crews (borrowing from the idea of the Road-eo and the Roads Scholars competitions).
- Help towns who want to include LID in their Town Plans, especially for larger developments, which may be politically easier to pass.
- Provide support for integrating LID into zoning
- Develop a storm water utility

Private sector

- Create an "accreditation" program for businesses who use good, low impact storm water management practices – provide an opportunity for bragging rights.
- Involve a local nursery in a demonstration project.

Regulation, government, and incentives

- Make LID a requirement – redefine what is "conventional" so that LID becomes the norm.
- Give homeowners money to install LID
- State regulations must be stronger to promote LID, but it cannot be an unfunded mandate.
- Strengthen state regulation
- Set performance standards for storm water management so that design professionals have more flexibility about how they design storm water management systems – focus more on the purpose and outcomes of storm water management rather than the specific techniques used.
- Provide more cross training to ANR employees
- Continue encouraging the state to change its regulations and [storm water] manual

Focus group summaries

Focus Group #1: August 3, 2010, 7:30am-9:00am

Attendees: various professionals, including engineers, real estate professionals, a landscape architect, and a representative from one of the region's ski areas.

Agenda

- Welcome and introductions (10 minutes)
- An overview of LID (10-15 minutes)
- Discussion: What are the barriers to using LID techniques in your work? (30 minutes)
- Discussion: How could we overcome these barriers? (30 minutes)
- Wrap up (5 minutes)

Barriers:

- VT Regulation
- Maintenance of systems
- LID is one of many design concepts that work. What makes it the primary one to use?
- If you do not have to have - if regulations say you may not, no push to do it.
- Need to meet established requirements for least cost.
- Time frame cost of meeting VT law.
- End user doesn't care what kinds of techniques are used (conventional vs. LID)
- There aren't *any* systems that are no maintenance
- LID = huge maintenance. Every year - clean catch designs.
- Frost Heaves, "Orphan Systems"
- Tools must be site dependent & rules very specific, which doesn't allow for appropriate, site-specific solutions.
- The regulators do not have flexibility do to the law [include LID as options]
- Too much energy is focused on the regulations/laws
- Lost sight of what you need to do to handle storm water
- Totality of whole design process divided into "silos" – different groups not talking
- No one is looking at project entirety (net results for storm water management)
- How can you be so specific for a rain garden?
- Be careful where you place bio retention could up with too high of a nutrient load.
- Individual regulators not able to be flexible
- Uncertainty increases cost of a decision
- Difficult to implement on compact development sites
- Projects that do not need permits do not need to meet standards.

Opportunities:

- Seattle found that LID for some of its municipal projects is cheaper.
- Permeable pavement is one of the better treatments
- Best systems are the ones that the owner does not know are there
- Site specific solutions
- Technology has improved since manual (2002) was improved.
- * Educate Homeowners
- Massachusetts: all new houses must retain on site.

- NH is doing research (UNH Stormwater Center)
- Flexibility in the "rules"- law. (? Performance)
- LID is encompassing of so many departments.
- Didn't need a permit
- Easier dealing with projects less than an acre or ten acres in Brattleboro
- Cross training ANR Employees
- Focus on purpose of storm water management
- Flexibility need to be increased and rules/regulations changes.
- Site specific design should be primary driver –then consider rules ("performance based")
- Certainty could decrease cost
- Storm water utility
- Make connection with land use patterns

Notes from brainstorming on the easel:

- Continue to encourage state to change regulations and manual (VANR)
    - Pete LaFlam - What has to be done?
    - David Deen - Is this something for PPLC? Or VAPDA?
- Monitor existing systems: To learn how they are working
    - Especially commercial
- Highlight existing systems
    - Possible storm water utility
    - Provide funding- eliminate the TISK – LID
    - Need incentives
- Assist towns
    - To regulations through zoning
    - Educate communities on the issue.

Focus Group Summary #2: ,August 4, 2010, 5:30pm-7:00pm

Attendees: regional conservation commissioners and others involved in environmental/ watershed protection

Agenda

- Welcome and introductions (10 minutes)
- An overview of LID (10-15 minutes)
- Discussion: Based on your experience, what do you think are the barriers to using LID techniques? (30 minutes)
- Discussion: How could we overcome these barriers? What can the Windham Regional Commission act on now? (30 minutes)
- Wrap up (5 minutes)

Barriers: Town Projects

- Climate appropriateness
- Cost
- Treatment before waterway stuff cleaned out must go somewhere (microbes?)
- County topography such as H_20 moving quickly downhill - erosion snow ball effect not always development – probably majority of sedimentation in streams this tiny problem remains.

- A question that would come up "So what, we're rural." Relevance on large lots? Perception of problem.

Better Back Roads:

- There are still roads, driveways culverts
- Failed septic seeping to river
- (Flooded Basements?)
- Stormwater doc (state) pretty thoughtful individual D.P.S for impaired streams
- Town planning processes generate a lot of projects. To make it easy - bylaws, ordinances, education to road commissions (also, provide $$$?).
- Who knows about LID?
- Jan 2011 "There will be new legislation and incentives."
- Historic use vs. future development - suggesting this be better for the future (Grandfather from effective date forward – discussion compared this to change in septic laws)
- Grandfathered "rights"
- If a single landowner's practice is harmful, easy to identify the source
    - Non-point source pollution is the problem
    - Causality – whose positive or negative changes make a difference?
    - Collective responsibility (?)

Barrier: Cumulative nature of problem

- Individual contribution not apparent.
- Enforcement when you know polluter
- Town officials "being neighborly"
- Insufficient funds & commitment
- Maintenance "I have to maintain my septic system…"
- Agency rules must come back to committee
- Access for flexibility requires time & money
- Mandates trump creativity

<u>Solutions:</u>

- Education-microbes? Bio-remediation
- Building Better Roads Grants (BBR)
- ANR River Corrective Management Planning incentives lower the match when people use Best Management practices.
    - FEMA Incentives

Educate re: roads

- Highway crew, road commission
- Money it requires to do it
- Responsibility - to keep H20 clean
- Pet waste (education worked well on that issue)
- Education on Waste Manure Management
- Farmer Manure Silage
- Roads - some improvements are fairly simple.
- Acceptable AG Practices,
    - Horses, dairy farm

<u>WRC role / solutions</u>

Better Back Roads resources (grants, education)

- RC& D Ken Haffner (south)

- Meeting on Better Back Roads (education)
- Training for HWY crews
- Road crews: what works & what doesn't
    - Show good examples.
- Road crew competition w/reward Road-eo, Roads Scholars
- Public organization working for public purpose (visibility)
- Large developments. Politically easier than town plan. State regulations could support.

- Grandfathering as a starting point
- Incentives for Best Management Practices - towns, even homeowners
- School rain barrel fundraiser
- (Dummerston) such as Mary Ellen Copland - ask about maintenance.

- Education on this technique
    - Table top display, for starters? Diorama ("Wise on Weeds" as an example of something similar done with invasive plants)
    - Homeowners groups, conservation commission, service organizations (Rotary)
    - Stencils on drains. (fish goes to river)
    - …but need to take it beyond education, especially for individuals

- Moving from awareness to action?
    - Incentives
    - Regulation (especially State, to avoid neighbor conflict.
- Value of an intermediary.

Lowest driver policy on storm water.

- Feedback loop to legislature- making a case for flexibility verse asking for exception
- Leave room for innovation
- Technical advisory committee
    1. Set goals
    2. Tell legislators how to get them.

- Road crew & LID
- Sample language for town plans, village development
- Examples: what it means, is how it affects different user groups. Individual landowners' developments.

- Supporting Volunteers
    - Training for Conservation Commissions?
    - "Steps you can take…" handout or resource
    - Compile info – best of best – so as not to reinvent the wheel

- More processing of existing data (Graduate interns?)
    - Expert
    - Longitudinal data analysis (analyze & find data gaps)
    - The "so what?" of the data (relevance)

- Nitrogen is an upcoming issue…
    - "EPA Cares" grant
- Little Orange Book (forestry guide) equivalent - Home Owner, same as applicant.

Copy of online survey administered using SurveyMonkey

This survey was made available to Windham Regional Commissioners and the region's Conservation Commissioners. It was primarily intended to collect data online, but since not all Commissioners use computers, WRC also provided paper copies. Thirty-four people took the survey online, with 29 of those people completing the entire survey. Two respondents sent back paper copies. The content of the survey, and the responses, are below. Percentages are based on the total number of survey takers who answered a given question, not on the overall number of survey takers.

Survey: the barriers to Low Impact Development

The Windham Regional Commission received grant funds from the State of Vermont to study the barriers to implementing Low Impact Development in the Windham Region.

Low Impact Development (LID) is a storm water management technique meant to offset the impacts of development. It is different from "engineered" approaches like culverts and sewers, because LID attempts to a) maintain natural drainage patterns and b) retain more storm water where it falls. By keeping water where it falls, LID aims to reduce runoff -- and stream pollution. Rain gardens, rain barrels, permeable pavement, and green roofs are all examples of Low Impact Development.

We would like to know about your thoughts on the barriers to Low Impact Development in the Windham Region. We'd also like to know your thoughts on the tools and strategies that might be used to overcome these barriers. All responses will be kept anonymous.

Knowledge about low impact development

1. Which of the following Low Impact Development techniques have you heard of? *(35 answered question)*

- ☐ Rain gardens **62.9%**
- ☐ Rain barrels **85.7%**
- ☐ Green roofs **74.3%**
- ☐ Permeable pavement **71.4%**
- ☐ Bioswales **28.6%**
- ☐ Other techniques not listed here **5.7%**

2. If you checked "other techniques not listed here," please list the techniques you have in mind.

- "Gravel driveways"
- "Tiered sedimentation basins"
- "Haven't heard of rain gardens, but they sound interesting."

Barriers to Low Impact Development for towns

3. What do you think are the barriers for TOWNS who want to encourage Low Impact Development techniques? (This refers to encouraging Low Impact Development techniques in both town projects and developments that happen in the town.) *(33 answered question)*

- ☐ Lack of awareness about Low Impact Development **75.8%**
- ☐ Concern that Low Impact Development costs more than conventional development **57.6%**
- ☐ Few town infrastructure projects (parking, street and sidewalk upgrades, etc.) in which towns can use these techniques **42.4%**
- ☐ Lack of regulations that require or encourage Low Impact Development **45.5%**
- ☐ Lack of sample language to write bylaws and/or ordinances that encourage Low Impact Development **39.4%**
- ☐ Town knows about Low Impact Development, but does not see it as useful **6.1%**
- ☐ Other barriers not listed here 15.2%

4. If you selected "other barriers not listed here," please provide details here. Feel free to include any other comments as well.

- "This is just to elaborate on 'lack of regulations.' I'm not sure if you are picturing large commercial developments, which are easier to regulate, or private individuals building houses for themselves, which is the primary type of development in our town. Because this is the type of development that people have in mind when they consider proposed changes to the town plan, they are very unreceptive to any regulations that tell people how they have to build something."
- "State license approval folks who are traditional in looking at resolving storm water issues. Need to be educated."
- "Our cold climate will not work with rain barrels, rain gardens, or a green roof."
- "Towns are pressed for time and do not have the resources to track the many and varied development techniques, so they revert to the tried and true."
- "I think LID would be perceived as another limitation to development."

Barriers to Low Impact Development for home owners

5. What do you think are the barriers for HOME OWNERS who want to use Low Impact Development techniques? *(33 answered question)*

- ☐ Lack of awareness about Low Impact Development **93.9%**
- ☐ Concern that Low Impact Development costs more than conventional development **54.5%**
- ☐ Perception that storm water management isn't an issue for individual property owners **78.8%**
- ☐ Home owners know about Low Impact Development, but do not see it as useful **3%**

☐ Other barriers not listed here **9.1%**

6. If you selected "other barriers not listed here," please provide details here. Feel free to include any other comments as well.

- "I don't think there are any barriers per se for those who WANT to use LID. I think the problem is that the benefits of LID are public; thus there is little incentive for private individuals to invest in these techniques."
- "Homeowners follow their contractors and architects, and unless the techniques are suggested they will assume the traditional way is the only way to go.
- "Same as previous cold winters."

Regulatory barriers

7. In your experience, are there any regulatory barriers (state or local) that discourage Low Impact Development? What are they? Feel free to share examples from your own experience.

- "N/A"
- "No regulatory barriers but lack of encouragement and/or financial incentives from towns to institute LID techniques on your own property."
- "None that I am aware of."
- "Ignorance and not a conventional method."
- "State regulators have looked at storm water mitigation traditionally. Engineers who have worked with them assume they will only consider traditional approaches, and are under pressure to get through the permitting process as quickly as possible, so take the easiest pathway."
- "Not that I know of."
- "This has not been an issue in our town, but perhaps it should be."
- "No"
- "No personal experience."
- "There is no town sewage, there is no town water. There is a health officer. Awareness of 'low impact development' is low. There are no regulations that might discourage local builders and the continuing division of land into small parcels. Although 'planned unit development' is mentioned in the town plan, it is rarely put into practice. One experience that comes to mind is a gift to the town of 100 acres from the developers who had divided the parcel into 100 lots, each with its own water and sewage, apparently without realizing that a large beaver pond exists in the midst of the proposed lots. After selling what they could from the fringes of their property, they gifted the remainder to the Town. I believe the tax map of the town will show the existence of many such properties where the developer did not become discouraged."

Overcoming the barriers to Low Impact Development

8. What do you think are the best ways to encourage more Low Impact Development? *(32 answered this question.)*

- ☐ Nothing - I think people will figure it out on their own. **0.0%**
- ☐ Educating homeowners about Low Impact Development techniques **81.3%**
- ☐ Educating town officials about Low Impact Development techniques **87.5%**
- ☐ Providing sample bylaws and ordinances that towns can use **65.5%**
- ☐ Requiring development and redevelopment applications to include LID techniques **21.9%**
- ☐ Demonstration projects at public facilities (schools, public buildings) **68.8%**
- ☐ Demonstration projects on private properties **56.3%**
- ☐ I don't think that it should be encouraged. **0.0%**
- ☐ Other **9.4%**

9. If you selected "other" above, please provide details here. Feel free to include any other comments as well.

- "Just to elaborate, I doubt that education is the sticking point. It may be needed; but education by itself doesn't provide any incentive for people to do it. It probably has to be required. This requirement should probably come from the state, for two reasons. First, it is difficult for the town to get such regulations past the public during the public hearing process for town plan revisions. Second, the benefits of proper hydrological management are felt beyond the town limits-- just as the ill effects of poor management are."
- "Educating state officials and contractors/architects"
- "We have to show that this will work in our climate"

Other comments

10. Is there anything else you'd like Windham Regional Commission staff to know as we research Low Impact Development in the Windham Region? Please feel free to share examples of good (or not so good) Low Impact Development projects you are familiar with. Please also feel free to pose questions in the box below.

- "Not that I can think of right now. Thanks for asking."
- "People have collect roof runoff in rain barrels forever. Green roofs are part of many cultures. We should extend these common sense techniques to today's homeowner and gardener as well as commercial developers and municipal "facilities developers and managers." I don't know of any projects in Windham Region."
- "I can readily imagine towns people being up in arms and complaining that all the water that runs off their roofs just disappears into the ground in their yard and that this isn't an issue. Why, they will want to know, should they be made to invest in some new roof? If the target for this kind of legislation is large commercial buildings that tend to be surrounded by parking areas, this should be made clear. Our town is mostly residential and wooded. Things that we put in the town plan with large developments in mind are invariable interpreted as being intended to apply to each person's house, and are shot down on that basis."

- "I think that although a good idea... LID would be difficult for many towns to effectively oversee and enforce. Without a larger body (State DEC or other agency) to keep track of projects and monitor their effectiveness towns will be reluctant to enact bylaws requiring LID."
- "I hope you will be able to continue with this project to educate the BROAD community about L.I.D."
- "I think many people would be open to learning more and possibly including this in a building project. Education--both "how to do it" and a sense of benefits--seems to be the key."
- "Perhaps LID would work "seasonally""
- "I believe that much of the encouragement for LID should come at the State level where storm water and runoff regulations are already in place."
- "Is it necessary and if so, why?"
- "Highway Foreman meetings on this subject would help communities progress towards making this second nature when working with highways and byways."

Thank you!

Thank you for taking the time to complete this survey.

If you have any additional thoughts or questions about Low Impact Development, please contact Kate McCarthy at (802) 257-4547, x. 108 or mccarthy@sover.net.

We would also appreciate receiving any photos of Low Impact Development that you would be willing to share. You can e-mail them to Kate at the address above, or send them by post to the Windham Regional Commission, 139 Main St., Suite 505, Brattleboro, VT, 05301.