Summary of Survey Results
RI Stormwater Design and Installation Standards Manual:
Part #1 Manual Overview
January 13, 2011

Of the 193 attendees, 102 returned a completed survey, giving a 53% response rate. Overall the participants of the workshop felt that the material presented was highly relevant to their work and would be useful for them. They also indicated that the exercises were generally useful, that they planned to share the information with others, and that they are better prepared to use the new standards.

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<th>Strongly Disagree</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Strongly Agree</th>
<th>Mean</th>
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<td>4. This workshop was relevant and practical for my work.</td>
<td>0%</td>
<td>2.9%</td>
<td>12.8%</td>
<td>39.2%</td>
<td>45.1%</td>
<td>4.15</td>
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<td>5. I will be able to use what I learned in this workshop.</td>
<td>0%</td>
<td>2%</td>
<td>12.8%</td>
<td>56.9%</td>
<td>28.4%</td>
<td>4.11</td>
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<td>6. The exercises were useful.</td>
<td>1%</td>
<td>5.9%</td>
<td>34.7%</td>
<td>47.5%</td>
<td>10.9%</td>
<td>3.7</td>
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<td>7. I plan to share the information I learned with others.</td>
<td>2%</td>
<td>2%</td>
<td>12.9%</td>
<td>55.5%</td>
<td>27.7%</td>
<td>4.11</td>
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<td>8. I feel better prepared to use the new standards.</td>
<td>1%</td>
<td>2.9%</td>
<td>29.4%</td>
<td>48%</td>
<td>18.6%</td>
<td>3.8</td>
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9. What was the most useful part of the program?

There were 85 responses to this question. Many people thought that the exercises were one of the most useful parts of the program (36% of respondents). The LID site planning and design strategies were also a component of the program thought to be useful by 13% of respondents. In addition, 35% of respondents found the overview of the standards and how to use the manual helpful.

Actual Responses:
- Basic overview and comparison to old regulations
- Example of LID practices
- Excellent info form the presentations/Exercise was well received
- 11 STDS, Photos, BMPs
- Examples of LID
- LID site planning and design strategies
- Review of standards
- Outline of regulations
- The instructors showing (visually) examples of BMPs and “problems.”
- Overview of manual and design exercises
- The exercises were helpful to let me know just how complicated these standards are to understand and implement
- Overview of new requirements and interaction on group activities
- Exercises
- Going over the steps of design and planning and going over where to find certain information
- The facility was excellent, great visual and audio technology
- Going over the answers to the group exercises
- Advantages of LID and incorporation of new BMPs
- Going through exercises
- Getting the general outlines and the group exercises were helpful
- The general info regarding the 11 standards and checklist reviews
- LID examples/photographs and discussion of comparative methods
- The overview of the 11 standards and a summary of how they apply to development
- The site planning and design strategies
- Design exercises: good for the review of regulations although there were gray areas
- Permit application procedures and minimum design standards
- Design exercises provided ideas to promote projects requirement regulatory approval and permit application procedures and requirements
- Group exercises
- Group exercises
- Design exercises
- How to use the manual
- Example applications and exercises
- LID site planning
- Rain gardens/bioretention
- Permitting
- Explanations of how sections of manual is cross related
- Regulatory portion of program, discussion of funding for O/M of system – no answer regarding supporting this or enforcement of failure to maintain.
- The overview of the manual (morning session), DEM permitting and compliance (afternoon)
- Good overview and focus on explaining standards. At the beginning it would be good to use full terms rather than acronyms
- The two design exercises/using the manual
- The exercises were chaotic but actually a very good, if quick, way to get into the manual
- Group exercises, LID design lecture – site planning and design strategies
- Clarification of drainage
- Discussion, Q and A, exercises
- Permit application procedures
- Description of sections of manual. Examples of how to apply
- Explanation of standards
- I am not a designer but found the review of information of the standards and planning strategies helpful. Understanding the application procedures and requirements was also helpful.
- Basic understanding of changes from previous manual and regulations. Useful for designer plan reviews and planning board functions.
- Exercises
- Example of projects
- The examples (problems), LID site planning and site design, single family design options.
- Broad presentation, examples
- Standards review
- Design examples
- Exercises
- Steps on how to use the revised manual. Appendix A by Michelle West.
- General overview and flows of manual
- Workshop was interesting but not that suitable to my duties
- The review of the standards and the single family section as it got more into landscape related aspects.
- Group exercises
- Explanation of the sections
- Overview of the minimum standards
- Slide presentation/examples
- Minimum standards and performance criteria section
- Design exercises
- Exercises
- Regulatory impact
- Understanding manual and basis for manual
- Standards overview
- Group exercises, LID example comparisons
- Examples used for LID and explanations
- Design exercises, slides with references to standards and where to find specific information
- Comparing LID sites were useful since it gave real world examples through pictures – the images used were informative.
- Reviewing each standards and referencing the chapters and/or appendices that relate to each. Design exercises
- Exercises and use of the manual
- Exercises, BMP
- Group exercises once we went through them
- Exercises
- Rain garden, impervious pavement
- Design exercises
- Review of actual standards and criteria in mew manual and discussions/explanations of each. Permitting application useful but needed more time to discuss more in depth
- The overview of changes
- The morning session and exercises
- The design exercises
- Examples and lecture

10. What was the least useful part of the program?

There were 66 responses to this question. Many people did not believe that the overview of the manual was necessary, while other people thought the review of the manual could have been more specific. The basis for the differing opinions seemed to be dependent upon the attendees experience with the manual and attendance at prior manual reviews. 36% of respondents believed that the design exercises were not useful or could have been improved.

Actual Responses:
- It would help to identify which segments of the program are intended to provide a review of basic concepts and not require attendance for MS4 credit
at those segments. Include website links on the slides for all web sites mentioned in talk (i.e. cold water fisheries)
- Redevelopment exercise
- The exercises: did not speak to linear projects
- Design exercises
- Use of manual not very useful
- Permit procedures – but not totally useless
- Review of manual too quick. Need flow chart on use of manual
- 1) Overview. 2) Minimum standards and performance criteria, 3) steps on how to use the revised manual – all of these are clear in the manual itself and also repetitive from previous workshops. Not needed.
- Design examples
- Detailed description of how arriving at the 11 standards (I attended the previous introduction to the draft SW manual)
- The group exercises. Without having a copy of the new design manual along with a better understanding of manual requirements, the exercises were not as useful as they could be.
- Second sample exercise was more confusing, harder to follow. It would be helpful to have an example of 1 or 2 options that could have been used.
- The 2, 20 minute quizzes
- Not the least useful, but could be improved: the examples should have one “good” example of LID and BMPs.
- Group activity
- Doing example problems with limited time. Would have been beneficial to reference the sections to help answer the questions when going over example problems.
- Morning overview
- Group exercises
- The “quick” reference to the 9 standards without much of a discussion about the text and subtext that is included in the SWMM
- Design exercises
- Design example
- Steps on how to use the revised manual
- Design example exercises
- The attendees trying to out-do the presenters!
- Review of how to use the manual
- The overview
- Elementary introduction
- Exercises were difficult to follow in this setting
- Group exercises – not enough information to answer questions
- Overview of why manual was updated
- Russ’s introduction. This in my third seminar – let’s get to it!
- More group worked would be helpful
- Introduction
- Felt that the review of the new manual could have went into what each chapter was about instead of where to find each standard. If done by standard should have been grouped together and not spaced out throughout chapters so somewhat confusing.
- The exercises and the amount of materials and examples provided
- General history overview
- Example exercises
- Exercises – could have spent time going over manual
- Morning overview
- Exercises
- Class participation was difficult without having the manual bound
- How to use the revised manual. Interrelationship of standards and design criteria with manual sections and appendices is somewhat confusing.
- Spending too much time on LID techniques – most of us understand how/where to use them. Would have like more time understanding the manual itself.
- Waiting 20 minutes for group to go over the exercises
- The design review exercises. Would have been better to do more comparison slides – “this is not good because of______, this is better because ________.”
- Most of the program was a repeat of past programs. Most of the program dealt with design. Need more discussion on existing issues such as old existing problems, or maintenance issues.
- Mr. Clayton had a hard time sticking to the schedule, thankfully, Ms. West was very efficient.
- The examples
- How to use the manual – it was too general and slides on screen too long, that is – slide content was too general and not informative to participants knowledge; slides.
- Background information
- The review exercises since this information could be figured out when applying them to an actual project in the office.
- Length of presentation, ½ day better. Examples need to be simpler.
- Steps to use revised manual.
- Review of old manual
- Lunch break too long
- Group design exercises. As a municipal official I do not get into design.
- For me, because this was a broad based review including design the design standards were less useful. The installation criterion was good because of the field applicability (real world situations).
- Single family and small lot design options
- Exercises not enough information no site plan in packages.
- Steps to use – too much information presented in too short a time. Nevertheless, Michelle did a very nice job presenting the information.
- Manual sections.
- Legal issues
- How to use the manual – definitely necessary but learned more about how to use it when flipping through for the answers in the exercises.
- Lack of background information on the exercises.
- Example 1 could be tweaked. I would not refer to the housing as affordable. It eliminates question in a way that suggests the design itself is ok, when it is too dense and a poor sample of LID – I would never refer to that design/features as an exemplary LID.
- It would have been useful to have one example that meets most of the manual requirements – certainly a project that met LEED criteria would have been relevant.

11. What changes would you suggest overall or considering any of the following? Information covered; Presentation formats; Workshop logistics

**Information covered:**
Some attendees mentioned that the regulatory component could have been covered in more depth with a thorough discussion on permitting and enforcement. Some responses suggested that there was not enough time devoted to how to use the
manual. However, answers to previous questions indicate that others thought there was too much time spent on the manual overview.

**Actual Responses:**

- Indicate which municipalities are applying these standards
- More regulatory issue coverage
- 7 responses → Good
- Smaller bites
- Less between the old vs. new regulations
- More discussion needed on maintenance
- Provide more details about site discussed
- Less specific LID, more on manual
- Detail how physical changes effect the day to day design and permitting – overall too broad.
- Go slowly and provide more background information
- Need more information on enforcement, etc.
- More discussion of specific pre treatment BMPs
- More step by step using the manual
- More Q & A
- Need copy of plans; hard to see on screen. Have a project from start to finish example explained.
- Include larger scale/commercial designs. The seminar was focuses on small scale and/or single – family/residential development.
- More explanation of where to find things in the manual. The activities threw us into that but I wish I had more background first.
- More detail
- Covered most of manual. Not Chapter 6 or 7. Not enough time on permitting
- In beginning information was too basic
- Use more typical subdivision rather than comp permit.
- More in depth review of requirements/calculations. I know this will be addressed in March seminar
- More in depth coverage of the standards and regulatory items
- More relevant exercises
- Put time to go through a step by step process of an example project starting from scratch (the very beginning)
- Include case law on subject of LID – any case law on O & M issues?
- Linear projects/Highways
- Eliminate morning ppt.
- Non roof QPA >15’ to OWTS seems to conflict with OWTS regulations of 25’ or 50’.
- No story time or standup comedy act – stick to the subject

**Presentation formats:**
The answers varied a great deal. Some consistent responses mentioned that hard copies of the slide show would have been helpful prior to the workshop that people could download themselves. Some responses mentioned the slides were too wordy, while others would have liked more information with the slides.

**Actual Responses:**

- All good. Hard to present all of this information, you all did a great job
- Fairly well balanced, lots of material in a short time
- Review of manual, slides should reference section of manual
- Sample prints hard to read
- Not enough time to complete exercises. Room not made for group activity. More room for debate/discussion
- Use both screen views to show multiple (different) topics, e.g. Compare new/old regulations, or existing and proposed site plans
- The split screen is distracting
- 5 responses of Good
- It seems there is an opportunity to at least marginally improve the presentation of the standards (1-9), by showing/using a “Table Reference” or “Flowchart.” This may help first time students (like myself) to learn about the SWMM requirement.
- Excellent
- Good PowerPoint’s
- Give attendees handout of slides prior to presentation
- Provide hard copies to follow along with - leave margin for notes
- Too fast in exercise section
- More hands on design
- It would be helpful to receive copies of the slideshow for the class to take notes and refer to specific topics discussed
- Some slides difficult to see – too much information
- Reduce or eliminate group exercises, I think this information could be presented more efficiently/effectively as a lecture with Q & A
- Design/Draft flow chart for redevelopment, etc
- More examples
- Example projects hard to use
- Create better links within the manual presentation (i.e. Chapter 5 and appendix A)
- Slides were great
- More information with the examples

Workshop logistics:
Again the answers varied however there were some consistent responses. Some responses mentioned that the lights over the screen could be turned down so as to see the slides better. Food was thought to be too far and difficult to get to in one hour. In addition, the unbound manual and small workspace made use of the manual difficult for some attendees. There were also more responses regarding the printing of the slide shows prior to workshop.

Actual Responses:
- Good (5)
- Lower slides on screen
- Turn down overhead lights a bit – slides appeared washed out
- Ability to purchase manual at RIDEM or URI in advance – was only aware that we could download and print it
- Have food closer
- Half day workshop
- Lunch could be shorter (1/2 hr or 45 min)
- Plan sales area so that line does not interfere with egress from lecture hall or coffee line
- Ok considering 300 people were in attendance
- Too long a distance to nearest lunch spot
- The manual was not bound so it was very hard to use during class example
- Need a desk to use the manual
- Larger workspace
- Try to use CCRI. It is closer for everyone
- Less snow! Not enough time to walk and get lunch in one hour
- Excellent
- Dim the lights so the audience can view the screen better
- More time would have been required to cover all in more/better detail. However, I understand that not everyone has more than 2 days to spare for this purpose.
- I liked the seating arrangement. It was easy to view the presenter and the slides from any seat in the room.
- None - just more detailed training and updates as manual issues arise.
- Slide show handout so you can add notes next to each slide
- Smaller group breakout on exercises
- Short amount of time to have lunch at retail on campus
- Include plans (11 x 17) as handouts for exercises
- A handout of the slides should have been given to all attendees so the presentation could have been followed more closely (less writing) and notes could have been added to each slide. This should be emailed to each attendee in PDF format

12. How do you plan to use the information presented today, and is there anything you will do differently?

Many people plan on reviewing and reading the manual again or for the first time to become more familiar with it. Attendees will use the information in a variety of ways. Some will use it with permit applications and town review procedures. Many people will be taking the information back to their offices and presenting it to coworkers. Others plan on utilizing the manual for new design projects.

**Actual Responses:**
- As a landscaper and marketing consultant in the building industry, I feel like I have a better understanding of the whole process. I will be creating more rain gardens, etc., this year and will be better able to cross refer my builders/landscapers clients.
- Assist in project planning and design review
- Read manual again
- Study the new manual to see how it pertains to linear/roadway projects
- I plan on reviewing current planning review regulations and suggest that we change the (?) to incorporate LID practices
- Go over the information in manual again
- I will be using the town’s planning review process
- Mostly for SFD within CRMC jurisdiction
- Use in review soil erosion permits
- In strategies form preparing permit applications and stormwater management plans
- Information will be used to train co-workers and site design
- I will use this information to make a presentation to my office for aid in submitting future DEM/CRMC applications
- To make sure town regulations are not working at cross-purposes with LID manual
- Since this presentation is an overview, the only plan is to review the manual at this time
- Will use slides as a handy reference. One questioner mentioned a flow chart. I will likely try to make a few flowcharts for my own use/staff use.
- Will use manual in conjunction with new plan reviews for proposal projects
- Will utilize what we have gone over in town with the planner & public works director in utilizing my role in the process
- Not applicable to my job
- Consider new requirements and LID ideas for all projects reviewed and those proposed by town. Pass along information to others.
- Start designing projects based on new regulations
- I will work with planning department to require additional LID measures on future developments. It would be useful to have educational material for planning, zoning, and building officials outlining how/where/why LIDs are implemented.
- Using designs for creative solutions to drainage problems for clients.
- Win projects based on the “economic” implementation of LID to the MEP. Write more exclusions into scopes for professional services.
- Use it in my next design where applicable and try to find more LID uses
- Yes, looking at projects
- Parking lot designs, site redevelopment projects, new site work design
- RIDOT projects and site design
- I will try to convince my superiors that the new concepts are worth investigation and inclusion in projects.
- Dissemination to personnel involved with regulatory reviews
- Hold developers to these standards
- I will use it to apply for federal coastal zone consistency determinations for projects on Navy property.
- Promote retrofit infiltration. Assure that municipal reviews are based on these practices.
- I will be applying these to commercial designs
- Apply to future projects. Every project will require a closer eye for SWM and LID
- Start considering more fully for all projects and not just difficult ones
- Use daily in site design, we will continue to use topics in this manual and strive to conform to LID requirements.
- Hopefully be able to apply this to projects. Read the manual before next Thursday
- I will teach/introduce this information to my students
- When working in field I will be that much more prepared to use/speak to the manual.
- Recent landscape architecture grad hoping to get full time LA work
- Carefully consider new standard and SW of a property for personal purchase and home development and construction plans, house design
- Distribute to others at company. Look for how roadway project can conform to new requirements.
- Monitor and manage small and large scale projects and try to make sure the proper procedures are being followed to mitigate impacts
- To review subdivision storm water designs to comply with new manual
- Will need to incorporate into our own procedures
- Will apply standards to review of proposed developments
- Evaluate proposed development plans for compliance with manual
- Plan reviews, implementation of stormwater regulations
- Town has tech review comm. That will be addressing a redevelopment tomorrow. Have been pushing new manual to developers, etc.
- As part of some pre-construction design meeting this information can help me better understand some of the ideas and allow me to offer some better insight (even though my comments will be ignored)
- I plan to look at how bioretention and rain gardens can be incorporated into roadway projects
- In reviewing plans as a regulator and in designing sites for new construction
- For planning and design of restoration and development projects. See to incorporate more LID more often, think outside of the box of traditional SW management.
- Apply to future development projects that I review
- I plan to study the manual and acquire how to use the manual by using it on actual projects
- Better understanding of manual will help in design and permitting
- Information presented will make it easier to find information in the manual for future designs
- Inform staff and clients on impacts to projects going forward
- For designs, try to implement LID
- I will spend more time in the planning/layout stage of design
- Review of plans
- I plan to use this information to help when I have to look over any LID designs and SWPP documents
- Consideration of more BMP techniques
- Site design
- Project dependent. As a highway engineer, quite often there is little opportunity to implement many of the LID requirements
- I plan to distribute information to engineers at work and meet with coworkers to discuss workshop.
- In practice
- It was an excellent educational experience as I learned a great deal and will use this material in my Phase II stormwater requirement program for the city of Central Falls.
- Use when reviewing plans
- I plan to relay the information to my coworker and reference the slide show to ensure that I’m meeting the new requirements.
- Develop new design concepts for future projects
- Primarily, since I rarely do/review SWM calculations/designs, I will most likely plan to use the info only as a reference, and/or to explain/remind coworkers about the requirements. There is nothing I will do differently
- Need to become more familiar with the manual in order to answer this question
- Always looking for new ways to implement LID in our town
- When position requires municipal review and approval of projects.
- Will use manual a reference when reviewing permit applications and design plans. In being only 1 ½ years out of school, I plan to read through the manual to become familiar with design and calculations, procedures and practices.
- Use manual to push developers to employ such innovative techniques.

13. Do you intend to attend the workshops on BMP sizing and design calculations (March 22) and BMP construction and maintenance specifications (March 24)?

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13. Do you intend to attend the workshops on BMP sizing and design calculations (March 22) and BMP construction and maintenance specifications (March 24)?

| 47.9% | 39.8% | 12.2% |

14. If Yes or Maybe, are there specific topics you would like to see covered?

Of the 86 ‘yes’ or ‘maybe’ responses, approximately 46% of respondents indicated one or more specific topics they would like to see covered in future trainings. Many indicated a desire to obtain more detailed information about the entire BMP design process, including site assessment and design. Respondents also requested design specifications for BMP design, installation, operation and maintenance.

**Actual Responses:**
- Stormwater structure installation and operation (6)
- Project examples (4)
- System design (4)
- Inspection of construction site BMP’s (2), including temporary stormwater and erosion controls (2)
- Retro-fitting existing infrastructure (2)
- Soil types and amendment options (2)
- BMP’s for roadway projects; in particular, urban areas
- Site evaluation for BMP selection
- Material specifications for infiltration practices; method specifications for all major projects (construction related); LUPPHL specifications
- Implementation of BMP’s in developed areas
- Certifications that may be required for BMP installation, operation and maintenance
- Municipal requirements for Phase II compliance
- Full-site design (commercial and non-redevelopment); gravel system design
- Workflow chart or table for what BMP’s work for given parameters
- Proper installation methods and techniques; important aspects of installation which require specific inspection by regulating agencies
- Construction and maintenance specifications
- Example of document complying with standards 7, 10 and 11
- Design and detail specifications of green streets, green parking lots, green roofs
- BMP sizing and design from site plan to finished product; BMP construction and maintenance (2); sequence of photos showing different steps would be useful
- Design of flow splitters; CN for small storms
- Mounding; soil testing requirements; cold weather design
- How are state projects (roadways), vortechs and aquaswirls permitted?
- Walk-through of calculating various design criteria (Cpv, etc.)
- Gravel wetlands; standards as applied to roadway projects
- Would like RIDEM to provide transparency on the types of projects/project design that would be better received/quickly approved
- Realistic BMP applications
- Parking lots and associated roadways and access ways (2); tie-ins to existing drainage systems
- QPA’s; theory behind equations being utilized; groundwater mounding
- Large commercial and industrial developments; Table 5.5 runoff curve number for porous pavement design explanation
- Effectiveness – designing and measuring; appropriate placing of types
- Detailed examples of real world scenarios; if exercises are part of workshop, provide sufficient information to do questions
- How the regulations apply to highway projects; reconstruction of existing highways
- Infill lots
- Design on real world sites without perfect soils
- More landscape related information
- Site design
- Mosquito control; enforcement – how do you keep them from being removed or destroyed?
- Since maintenance is especially an issue at state operated facilities, could BMP’s be listed with the least amount of maintenance?
- Cost of construction (relative to formal closed drainage); cost and schedule of maintenance; maintenance inspection (when it has failed and how to prevent failure)
- Funding and ownership

15. With future training, are you interested in gaining certification in stormwater system design, installation or maintenance based on testing requirements.

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<th>Yes</th>
<th>Maybe</th>
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<td>55.4%</td>
<td>13.3%</td>
<td>31.3%</td>
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Approximately 55% of respondents indicated that they are interested in gaining certification, while 13% of respondents said ‘maybe’. 31% of respondents were not interested in certification.

**Actual Responses:**
- Yes; without certification system, this program may not be immediately successful; need program similar to the OWTC at URI
- Yes; published list on website of all those with certification
- Yes; design
- Yes, but only if landscape architects can be certified and are required to stamp vegetative mitigation plans for this work
- No; but if I were tasked with stormwater management design primarily, maybe
- Depends on time constraints, cost, and at work requirements/demands
- A refresher course (2-3 years) requirement may be ok but not to a point where it is a requirement for licensure
- Would like to use manual training sessions to achieve LEED CEUs
- APWA may have stormwater manager training/certification; currently investigating options for municipal employers

16. FOR MUNICIPAL STAFF / OTHER MS4s:
a. Are there specific topics you would like to see covered in future training or educational materials to implement the revised standards in your community?

There were 23 responses to this question. Some respondents were interested in obtaining more information about design standards that can be implemented as part of subdivision regulations. Others were interested in a suite of materials to pass along to installation contractors to assure that designs were installed and maintained properly.

**Actual Responses:**
- Methods of complying with TMDL regulations in heavily developed areas
- “Let us sit with you during project review as a practice session”
- Handling infiltration up-gradient of a LUHPPL
- Development of single-family lots
- More time to complete exercises
- Any and all information would help
- Retro-fitting existing infrastructure
- Proper installation methods and techniques; important aspects of installation which require specific inspection by regulating agencies
- Information that needs to be communicated explicitly to construction contractors
- “In Central Falls, we are not in the MS4 category as we have a common sewer/storm drain system. This should be discussed.”
- More MS4 information
- Board/Commission-focused training/educational materials
- Commissioning an installation – does it work as planned?
- Redevelopment; parking lots
- Apply CRMC/RIDEM regulations
- Are there exceptions for military/anti-terrorism force protection for National Guard?
- Assistance getting officials on board; how do we enforce this?
- How to deal (legally and maintenance-wise) with LID on private property, especially on house lots; need way to educate homeowners about what must be on their property, especially if it was part of the overall subdivision drainage design
- Revised standards will be required on all new projects as a matter of University Policy through our Capital Projects Group
- Design standards to implement as part of subdivision regulations (e.g. cul-de-sac design) and subdivision regulatory language supporting LID
- More focus on filing reports in new software; how to make residents care about standards through outreach; curriculum for schools
- Operation and maintenance for LID structures
- Examples of case law decisions on LID issues; perhaps California or foreign countries would offer cases; developing standing committee

b. What information do board, council and commission members need on either the stormwater standards manual or Phase II minimum measures?

Out of 22 responses to this question, approximately 1/3 of respondents indicated a desire to obtain a simplified version of the new standards to pass along to board, council or commission members, including information about the reason for the updates and effects the manual has on existing municipal regulations.
Actual Responses:
- Simplified overview of standards (7)
- Executive summary letter
- Description of change from historic practices
- Effects the manual has on existing municipal regulations
  - Zoning (setbacks, cluster development)
  - Fire department (road widths)
  - Land development regulations
- Increase in maintenance of BMP’s and additional costs
- Discussion about whether or not Central Falls should have to comply to MS4 requirements as we do not have a separate storm drain system
- Who/What/Where/Why/When of meeting Phase II for stormwater for new and redevelopment projects
- Brief outline and notice directly stating that standards are now in force
- Comprehensive list of proposed municipal participation in this program in laymen’s terms
- A “down and dirty” checklist would be helpful; reminder that RIDEM still has jurisdiction
- Reason for update (i.e. what is being protected, standards implement low cost, natural approaches to meet objectives)
- Forget Phase II education for the boards, etc. – they need to know the new stormwater manual because so much of it affects design, especially for subdivisions and roads. Specifically, the techniques, why road widths are reduced, why cluster development is encouraged, why more landscaping is required, etc., especially if they are going to amend the zoning or subdivision regulations.
- URI Capital Planning and Projects Groups were sent new standards; all designers and consultant will be required to adhere to standards
- Fact Sheet/Information brochure; working meeting (not PB meeting) to discuss what boards can do to encourage implementing manual/LID into future development projects.
- SSM → LID implementation on smaller lots; Phase II → new councils and boards may not even be aware of Phase II program, stress to them that its mandatory and extensive
- What are the legal ramifications regarding implementation of each document? Phase II seems to be more of a mandate while LID is more of a guide that won’t affect existing wetlands permitting

c. What is the best way to provide information to these local boards?
(Number in order of preference or simply check most useful)

Out of 36 total responses to this question, respondents were fairly evenly divided on the usefulness of the methods for providing information, with workshops scheduled separately seen as the least useful. Numbers in parentheses indicate the number of respondents who selected that method as useful.

Letters, factsheets and other information distributed via town staff (17)

Electronic newsletters or emails sent directly to board members (19)

Presentations at regularly scheduled meetings (17)

Workshops scheduled separately (13)
Other (please describe):

- Can you make a video?
- Replace board members with well-trained monkeys
- Not being a municipality, info is sent to Director of Facilities
- As a former PB chair and current member, materials are more likely to be reviewed if received in meeting material package

17. FOR DOT STAFF: A separate training in use of LID methods for road/highway projects is being planned. Are there specific topics that you would like to see covered?

- Yes. Very interested in this topic. Please include suburban and urban locations.
- Roadway runoff collection and disposal
- LID for roundabouts and also road redesigns and/or widening
- Storm collection
- Low maintenance LID methods
- Retrofitting existing systems. Expansion improvements projects. Redevelopment applicability.
- Volume storage; water quality; vortechs, aquaswirl; porous pavement
- Yes, in the bigger project how to implement the standards. Many guidelines so far seem to work better for individual lots and subdivisions. A huge factor is maintenance. Will these standards be able to be maintained by DOT staff? If not how will it get done?
- Anything related to transport design would be of interest. However! Transport is a very different animal as compared to site design. The goal of transport is to move people/things safely and efficiently. This sometimes requires space.
- Elements to include in contracts with construction contractors to ensure compliance with stormwater standards during construction operations. New BMP maintenance procedures for DOT Maintenance personnel/supervisors; enforcement criteria to ensure maintenance is performed
- Offsite improvements where existing road/bridge geometry and available land area do not allow compliance onsite
- BMP types for urban highways/linear ROW; O/M procedures and funding constraints
- Use of full sections for LID measures. GW quality protection along roadways.
- Retrofitting existing systems (flow splitters with small TRT areas along a linear system); LID in narrow row with steep slopes; using sidewalk areas for treatment; permeable pavement uses in highway/road applications (i.e. break down lanes) in cold weather climates

18. Finally (whew!) has your organization been involved with any project using innovative stormwater management techniques? If so, we would like to highlight your work in future outreach. Please describe below or simply provide contact info and we will follow up.

Approximately 30% of survey respondents offered one or more project examples of innovative stormwater management techniques that have been built, are in the design phase, or planned.
Actual Responses:
- Middletown: gravel method being designed for two-mile corner reconstruction (2)
- URI: CBLS building rain garden and retention ponds for roof drains and runoff (2)
- North Kingstown: Quonset development plans used draft standards (2)
- Tiverton: Delia Lane (1.5 years ago)
- Stillwater Mill; 2 porous lots, two UICs, geothermal wells
- Forested detention areas; VWTS
- Porous pavement within auto sales parking lot
- Residential projects using infiltration and rain gardens to address roof drains and sump pumps out falling to coastal areas
- North Smithfield: Dowling Village (HWG, review engineer)
- Navy: LID parking lots (Willicom Monaco, US Navy Planner)
- Narragansett: Narrow River stormwater abatement project (Fuss & O’Neill, Inc.) with subsurface infiltration, sand filter, proprietary pretreatment, et al.
- Johnston: Stormwater management system on Hartford Ave (Anita Marshall, RIDOT)
- Smithfield: Fidelity Investments Regional Campus (Chris Beaulieu, VHB, 401-457-2006)
- South Kingstown: Proposed bioretention area within cul-de-sac 3-4 years ago at Southwinds Condominiums; East Providence: Proposing rain gardens with diversion structures along a drainage trunk line to treat first inch of runoff at Village at the Waterfront
- Porous pavement, bioretention basins and roof runoff collection systems with reuse in toilet flushing and irrigation; (Jan Greenwood, Woodland & Curran, 401-273-1007)
- Infiltration (Cultec) and infiltration basins (Bryant Associates, Inc.)
- Bioretention parking lots and walkways; roof system with LID
- Parking lots and courtyards
- LEED certification on luxury kennel facility
- Rain garden at elementary school
- In progress now: Easton’s Bay project; expect possible design/construction next year in partnership with RIDEM
- Town? installed porous pavement parking lot in November (DEM Demonstration Project with Betsy Dake)
- Use LID practices for clearing projects and roadway maintenance; selective clearing for invasive management and native restoration; use equipment sized for the task to reduce compaction; stress importance of roadway grading and edge clearing to maintain swales and low points
- mgray@jamestownri.net
- whall@middletownri.com
- neoj@centralfallsri.us (Joe Nield, Central Falls DPW Director)
- wsmithcec@aol.com; 401-592-0177
Any final thoughts?

Actual Responses:
- If you want public works employees to come to the maintenance training, it needs to be short and to the point; they can’t be here all day. Are you going to offer (or team up with T2) a short workshop for public works employees?
- All manual-related workshops have been very informative
- There was clearly no research or thought given to the exercises. The first example detail did not accurately describe the area for the pervious parallel parking. The second example clearance limits clearly were wrong, as the tree line goes through a septic system.
- Exercises were good, but either allocate more time for them or walk group through them to allow more time for details.
- Well-versed presenters (2)
- Consider an addendum that correlates manual standards to both USGBC LEED Sustainable Sites criteria and ASLA/EPA/Lady Bird Johnson Center’s Sustainable Sites Guidelines
- More information about budget and maintenance (2) of systems
- No mention of aesthetics; too many acronyms; mention smaller building footprints as stormwater mitigation
- What is the plan for enforcing maintenance requirements for BMPs? How many staff at DEM will be doing this job for what percent of their workday? At CRMC? How will amendments be handled? Will they be compiled over a longer time and incorporated all at once, or are they expected to be incorporated frequently as needed?
- Who will train contractors and oversee their practices in the field to ensure they comply with all the requirements developed throughout the design?
- Set-up mechanism so all designers can see common RIDEM comments and solutions to applications to avoid submitting the same mistake.
- Q&A session should be recorded by a stenographer and passed along to all attendees
- Develops use LID (narrow roads) only to increase number of units in affordable housing projects
- Make sure that RIDEM and CRMC staff understand that time is money, and economy is tight. New investors in RI’s economy will scare easily. Reviews should be clear, concise and thorough the first time without the addition of new comments at subsequent reviews to keep projects on schedule.
- Please coordinate workshop schedule with RIPTA schedule to encourage use of bus service
- Create an online permit guide with links to resource to find required information
- Create an index at the end of the manual
- Are the future workshops labeled as ‘landscaper’ trainings actually for landscapers only, or for landscape architects and others as well? Landscapers and landscape architects are not the same…