

Low Impact Development: More Than Just a Good Idea

Stormwater Standards in the Mass. Wetlands Protection regulations

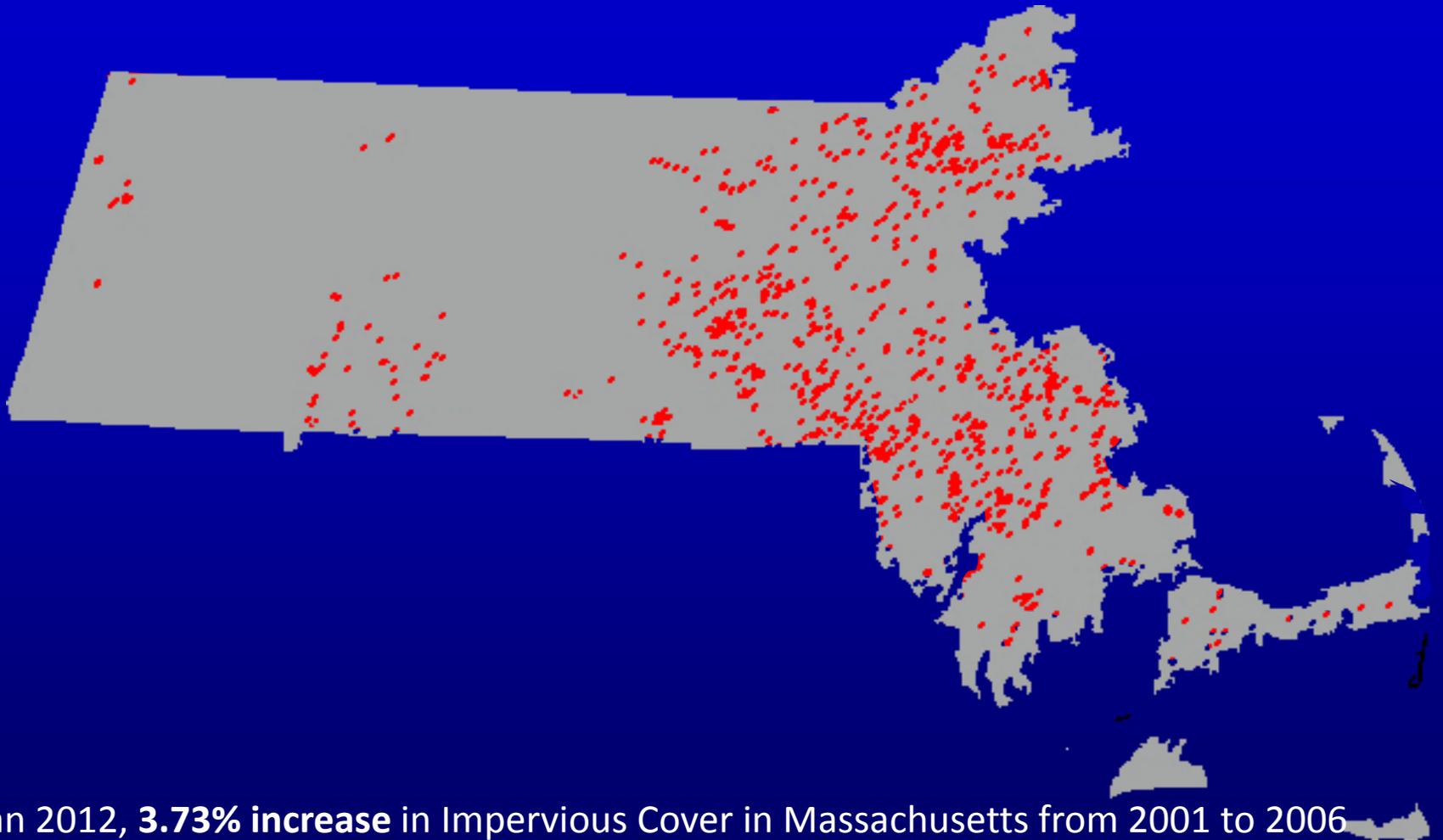
Holyoke, MA
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Thomas Maguire
MassDEP Wetlands Program
(617) 292-5602
thomas.maguire@state.ma.us



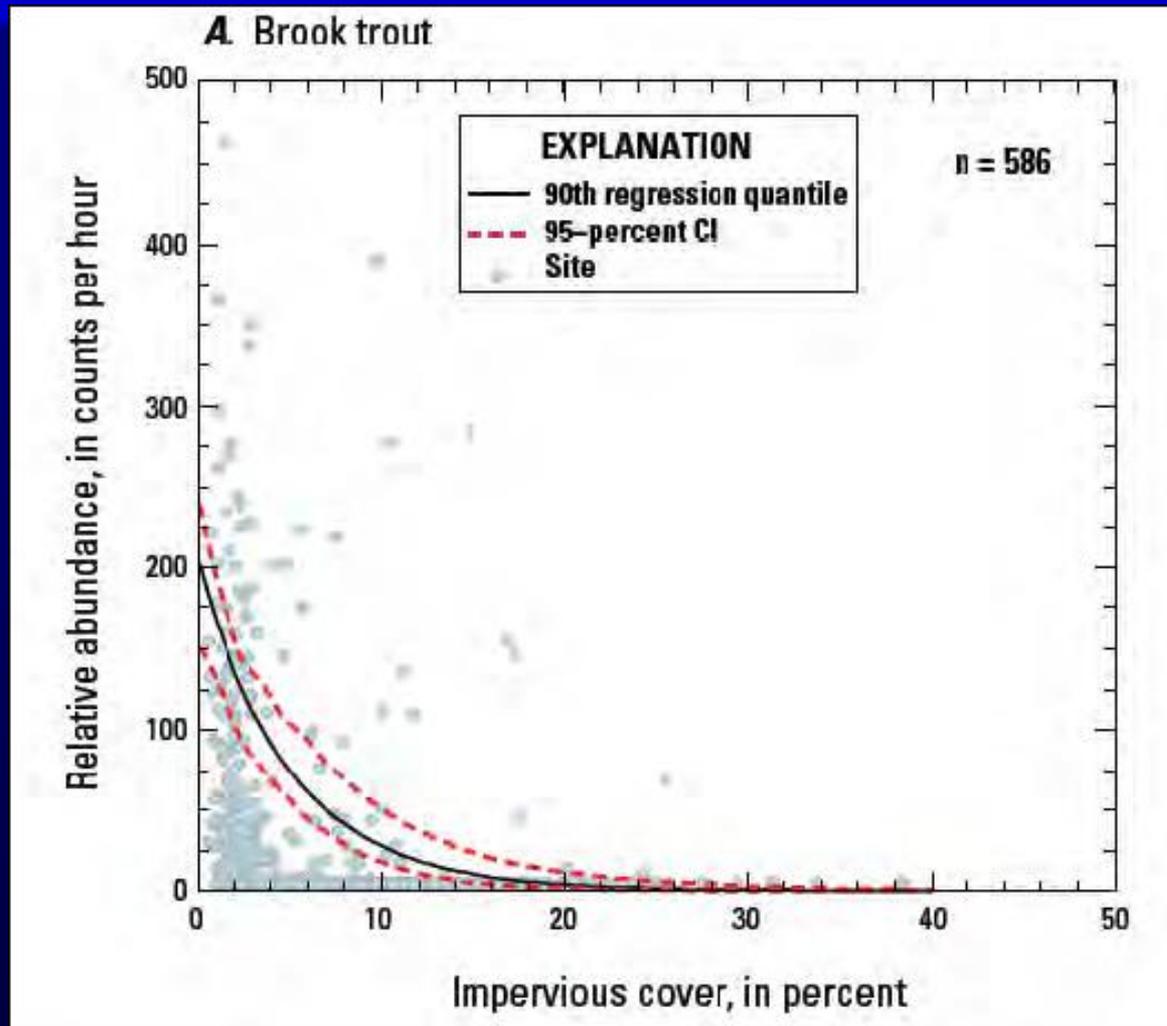
Impervious Area Increase 2001-2006



Xian 2012, **3.73%** increase in Impervious Cover in Massachusetts from 2001 to 2006

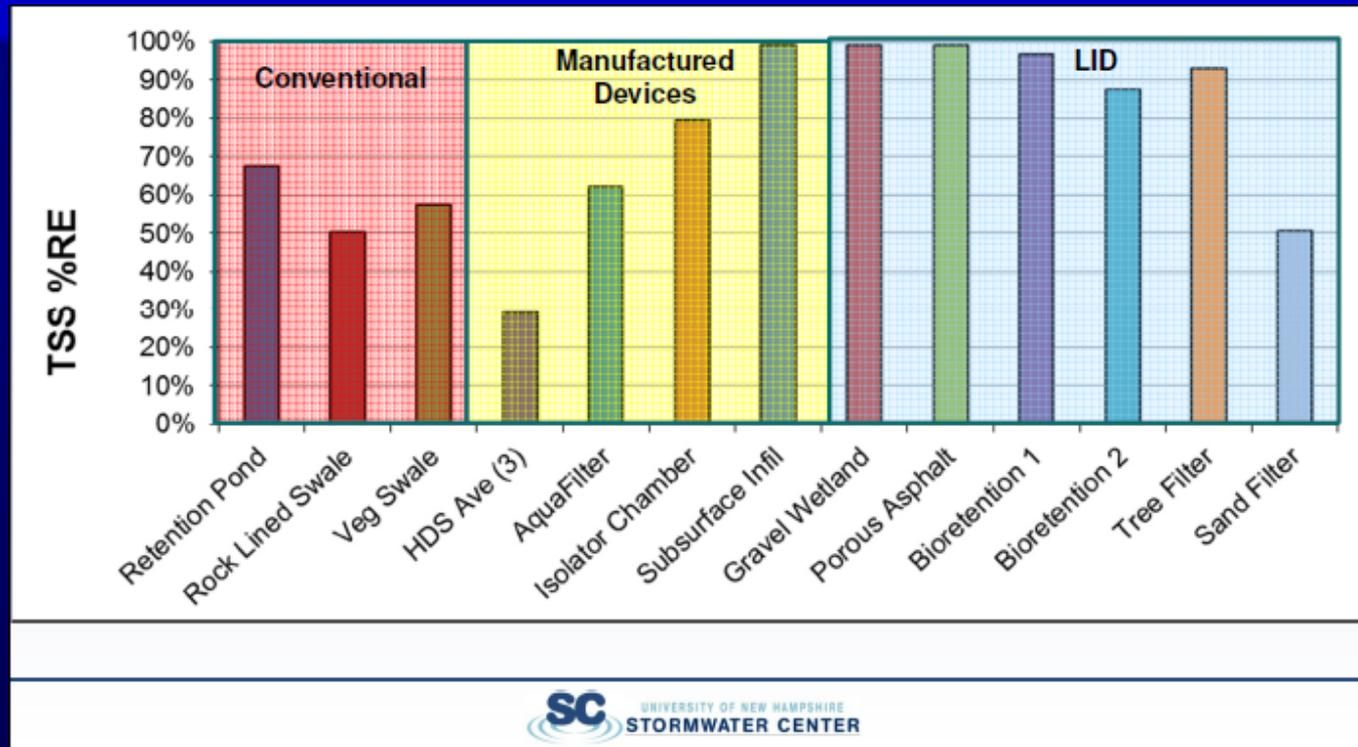
See: http://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=506291

I.A. Effect on Cold Water Fishery in Massachusetts



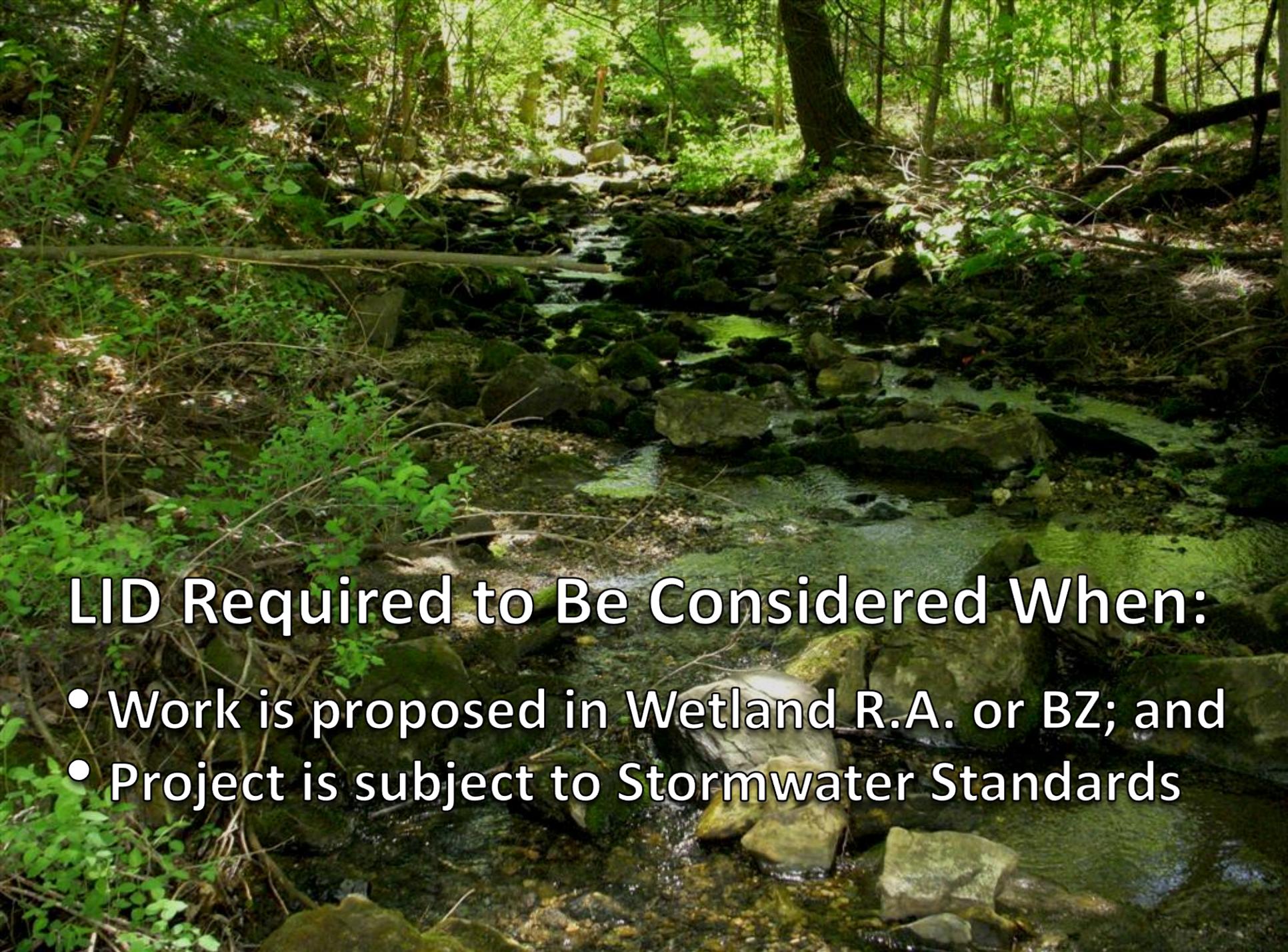
Armstrong, Richards, and Levin 2011, SIR 2011-5193, USGS
See: <http://pubs.usgs.gov/sir/2011/5193/>

UNH Stormwater Center Findings



- 1) LID consistently high removal efficiencies and
- 2) promotes resiliency with climate change

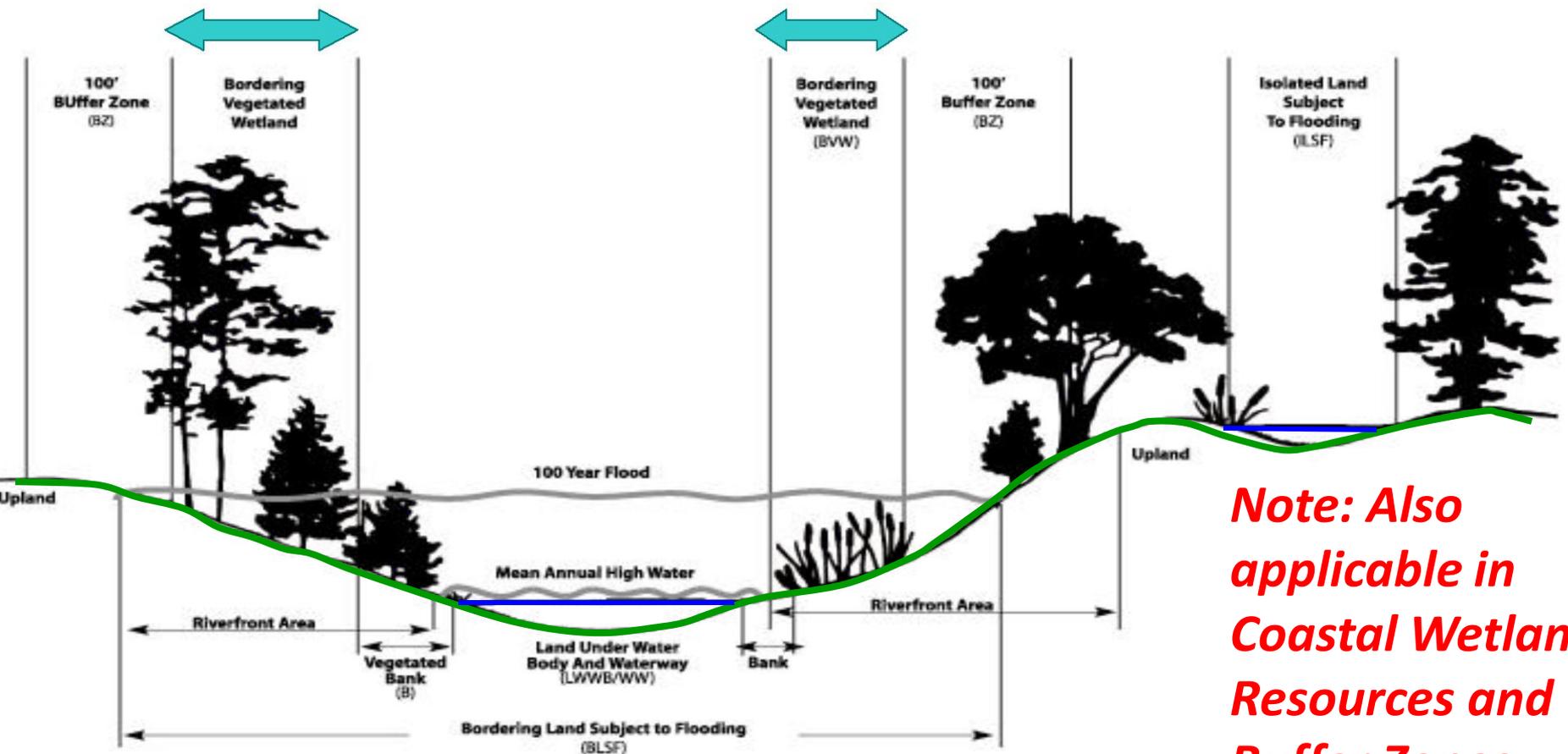
See: <http://www.unh.edu/unhsc/sites/unh.edu.unhsc/files/presentations/Research%20Outcomes%20on%20the%20Efficacy%20of%20LID%20Technologies.pdf>



LID Required to Be Considered When:

- Work is proposed in Wetland R.A. or BZ; and
- Project is subject to Stormwater Standards

Inland Wetland Resource Areas and Buffer Zones



Note: Also applicable in Coastal Wetland Resources and Buffer Zones

MassDEP LID Requirements

Wetland regs: 310 CMR 10.05(6)(n)

When proposing a development or redevelopment project subject to the Stormwater Management Standards, proponents ***shall consider*** environmentally sensitive site design that incorporates ***low impact development techniques*** in addition to stormwater best management practices.

MassDEP LID Definition

Wetland regulations, 310 CMR 10.04:

Low impact development techniques mean innovative stormwater management systems that are modeled after natural hydrologic features. Low impact development techniques manage rainfall at the source using uniformly distributed decentralized micro-scale controls. Low impact development techniques use small cost-effective landscape features located at the lot level.

MassDEP ESSD Definition

Wetland regulations, 310 CMR 10.04:

Environmentally sensitive site design means design that incorporates *low impact development* techniques to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting stormwater sheet flow paths and treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat.



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
 - Credit 1
 - Credit 2
 - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens) **DEP Credit: 90% TSS w/PT**
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs) **DEP Credit: 80% TSS w/PT**
- Treebox Filter **DEP Credit: 80% TSS w/PT**

Massachusetts Stormwater Handbook

LOW IMPACT DEVELOPMENT SITE DESIGN CREDITS

AVAILABLE CREDITS:

- CREDIT 1. Environmentally Sensitive Development
- CREDIT 2. Rooftop Runoff Directed to Qualifying Pervious Area
- CREDIT 3. Roadway, Driveway or Parking Lot Runoff Directed to Qualifying Pervious Area

“Qualifying Pervious Areas” are defined as natural or landscaped vegetated areas fully stabilized, with runoff characteristics at or lower than the NRCS Runoff Curve Numbers in the table set forth below. The Qualifying Pervious Area may be located in the outer 50-foot portion of a wetland buffer zone. However, it must not be located in the inner 50-foot portion of a wetland buffer zone (that portion of the buffer zone immediately adjacent to a wetland).

Maximum NRCS Runoff Curve Numbers for Qualifying Pervious Area

Cover Type	HSG A	HSG B	HSG C
Natural: Woods Good Condition	30	55	70
Natural: Brush Good Condition	30	48	65

Summary

- **MassDEP Wetland/401 regulations require LID to be considered**