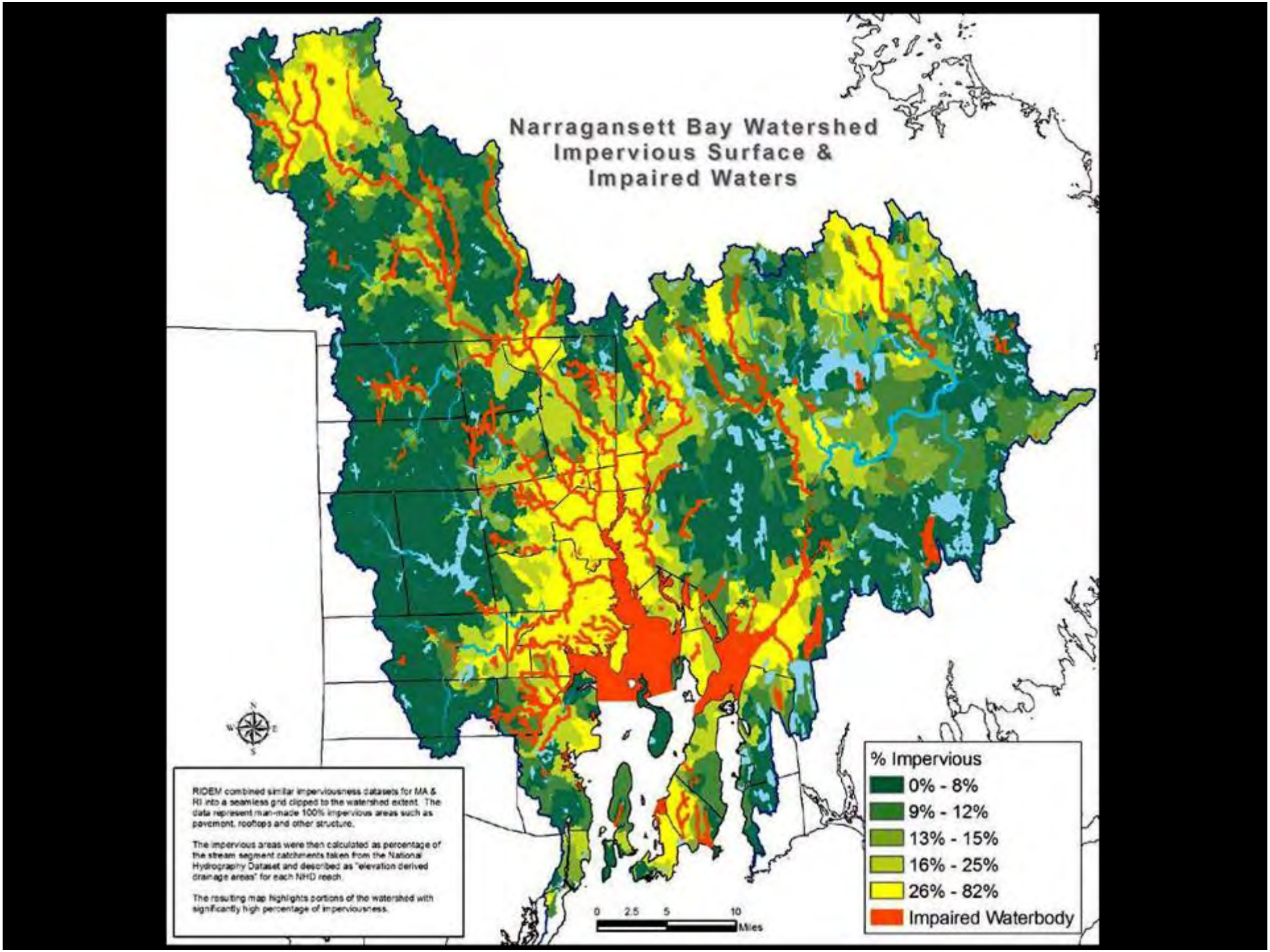

STATE OF RHODE ISLAND
COASTAL RESOURCES MANAGEMENT COUNCIL
Implementing the New RI Stormwater Management Manual
Coastal Education Series - March 8, 2011


Nonpoint Source Pollution
Polluted Runoff is the #1 Water Quality Problem in the U.S.*
* USEPA


Narragansett Bay Watershed
Impervious Surface &
Impaired Waters
RIDEM combined similar imperviousness datasets for MA & RI into a seamless grid clipped to the watershed extent. The data represent man-made 100% impervious areas such as pavement, rooftops and other structure.
The impervious areas were then calculated as percentage of the stream segment catchments taken from the National Hydrography Dataset and described as "elevation derived drainage areas" for each NHD reach.
The resulting map highlights portions of the watershed with significantly high percentage of imperviousness.
0 2.5 5 10
Miles
% Impervious
0% - 8%
9% - 12%
13% - 15%
16% - 25%
26% - 82%
Impaired Waterbody

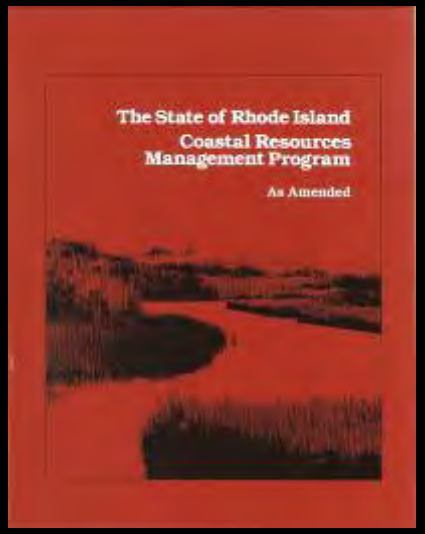
Coastal Zone Management Act - 1990 Amendments

16 U.S.C. § 1455b. Protecting Coastal Waters

Subsection (g)(5)

“For purposes of this subsection, the term "management measures" means economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives.”

Section 300.6



RI Coastal Nonpoint Pollution Control Plan – July 1995

Coastal Nonpoint Pollution Control Program

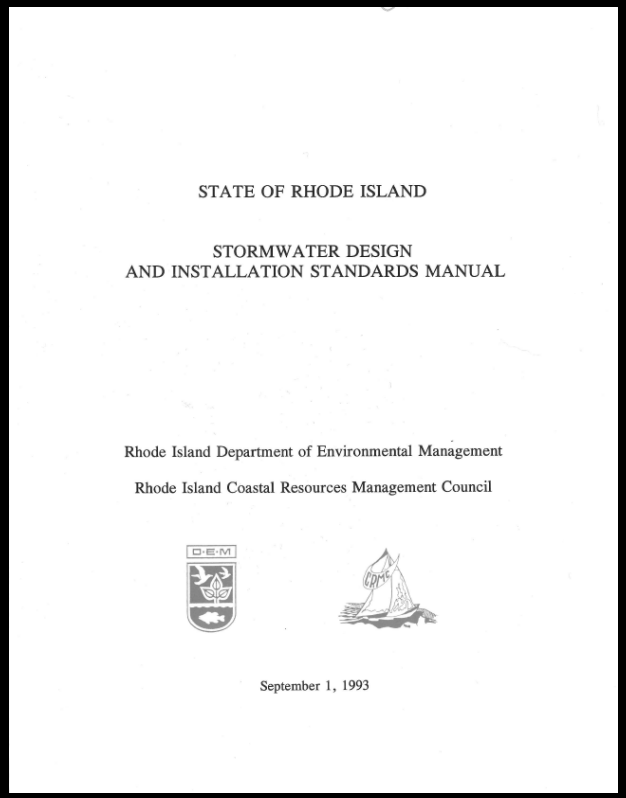
New Development

1) By design or performance:
   a) After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80%. For the purposes of this measure, an 80% TSS reduction is to be determined on an average annual basis*, or
   b) Reduce the postdevelopment loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings, and
2) To the extent practicable, maintain postdevelopment peak runoff rate and average volume at levels that are similar to predevelopment levels.

*Based on the average annual TSS loadings from all storms less than or equal to the 2-year/24-hour storm. TSS loadings from storms greater than the 2-year/24-hour storm are not expected to be included in the calculation of the average annual TSS loadings.

CRMC
Coastal Resources Management Council

1993
Stormwater Rules



STATE OF RHODE ISLAND

STORMWATER DESIGN
AND INSTALLATION STANDARDS MANUAL

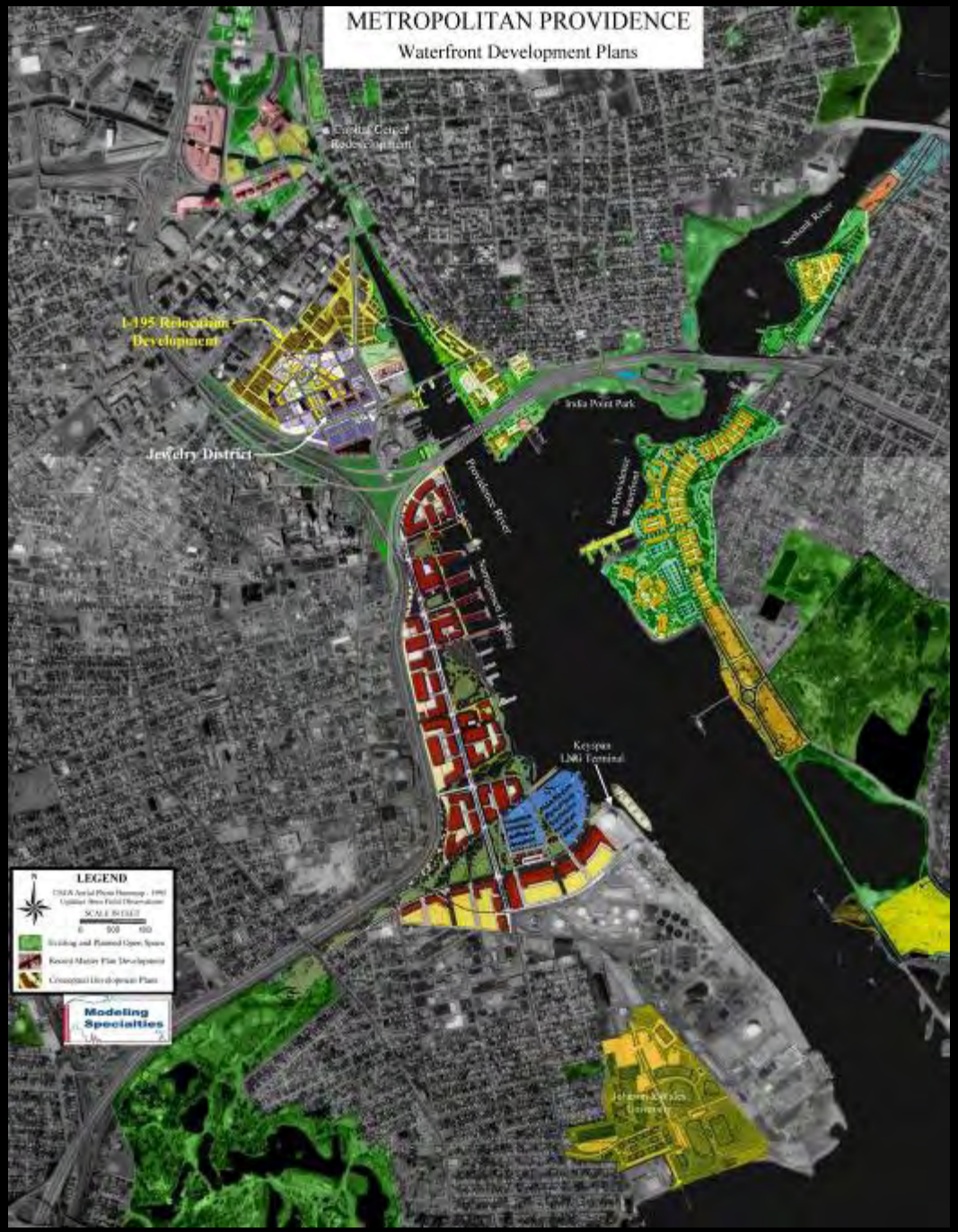
Rhode Island Department of Environmental Management

Rhode Island Coastal Resources Management Council

September 1, 1993

Typical detention pond design

CRMC
COASTAL RESOURCES MANAGEMENT COUNCIL



Metro Bay Region Proposed Redevelopment

Urban Coastal Greenways Policy

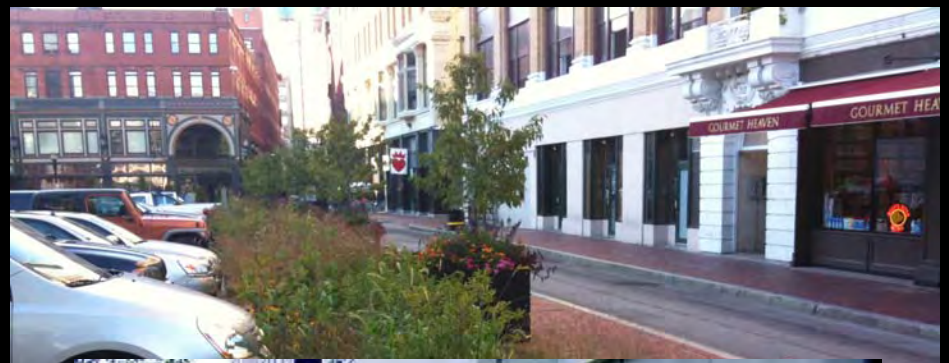
For the Metro Bay Region

Cranston, East Providence, Pawtucket, and Providence

An Amendment to the Providence Harbor
Special Area Management Plan

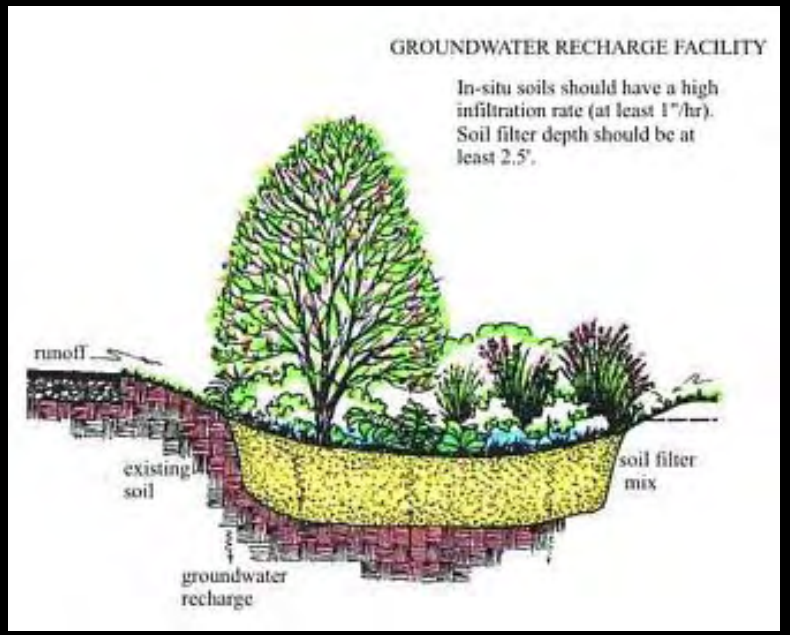
Adopted by the RI Coastal Resources Management Council
on October 10, 2006
As Amended August 28, 2007

C R M C

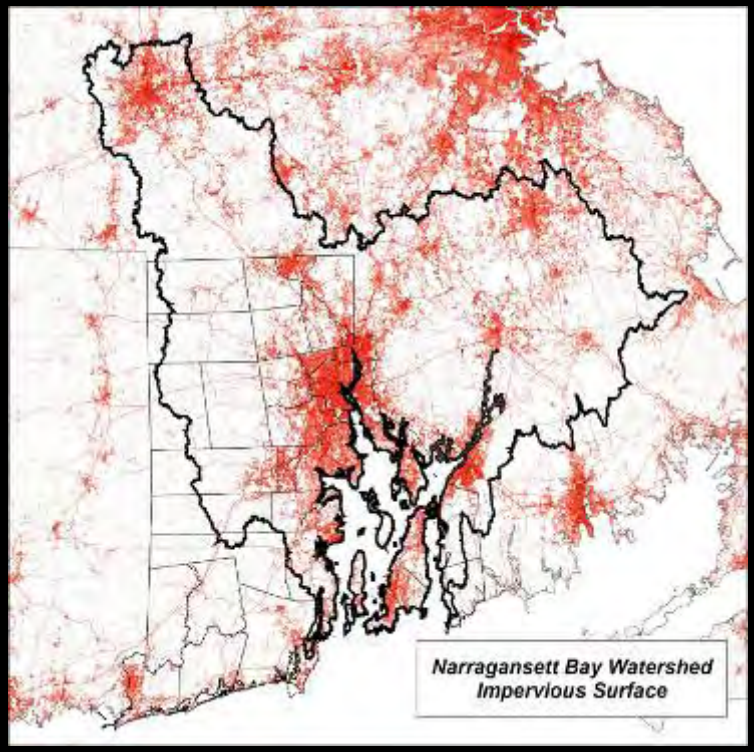


Why use LID methods to manage stormwater runoff?

1. LID site designs generate lower volumes of runoff
2. LID designs infiltrate higher recharge volumes
3. LID designs are more resilient to impacts from extreme storms modified by climate change
4. LID designs generally have higher pollutant removal capabilities



Flooding is Increasing as a Result of Urbanization and Climate Change



Pawtuxet River Historical Crests

Rank	Height	Date
1	20.79 ft	3/31/2010
2	14.98 ft	3/15/2010
3	14.50 ft	6/7/1982
4	13.68 ft	10/15/2005
5	13.26 ft	1/26/1979
6	13.11 ft	4/25/1983
7	12.57 ft	6/8/2006
8	12.40 ft	4/17/2007
9	11.88 ft	3/25/2010
10	11.86 ft	3/31/2001

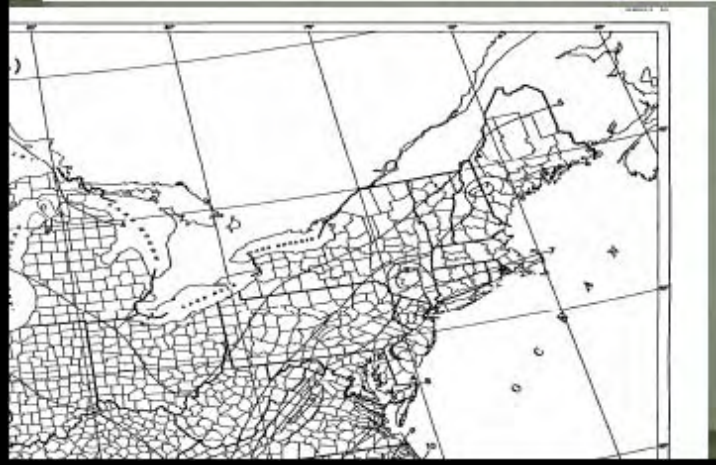
Source: www.water.weather.gov/ahps

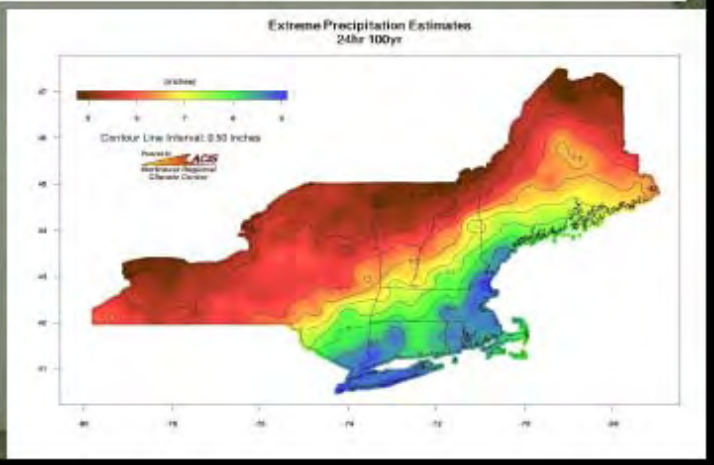
Climate Change is Impacting the Way We Must Manage Stormwater Now and in the Future

Frequency

Most significant in the 25 to 100 yr recurrence interval.

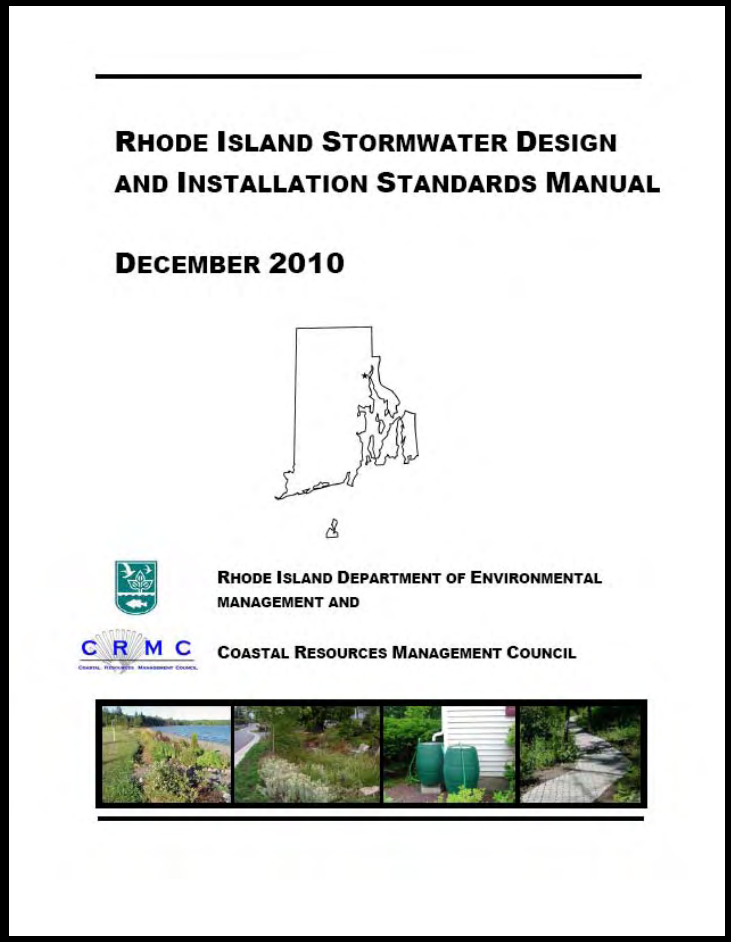
1 Day Return period	TP-40 from 1961	NRCC Draft 2010 http://www.precip.net
Event in years	Inches in 24 hours	Inches in 24 hours
2	3.25	3.26
10	4.75	4.86
25	5.50	6.15
50	6.15	7.30
100	7.00	8.70





Graphic Courtesy of David Vallee NWS/Northeast River Forecast Center

New State Stormwater Management Requirements

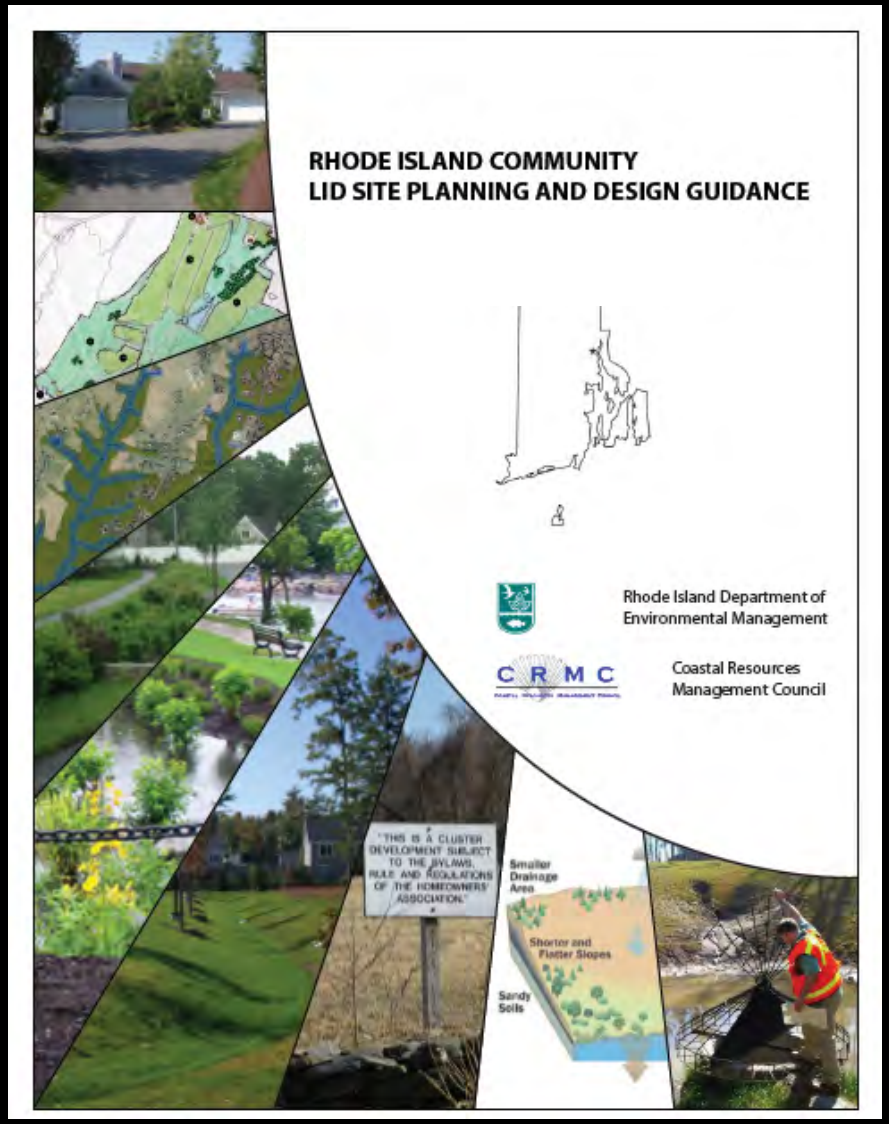


"Smart Development for a Cleaner Bay Act" RIGL § 45-61.2

- Maintain groundwater recharge ∴ infiltration
- Control post-development peak discharges
- Use Low Impact Development techniques

Implementation through CRMP Section 300.6

RI Community LID Site Planning and Design Guidance Manual – 2011



Past Stormwater Management Practices

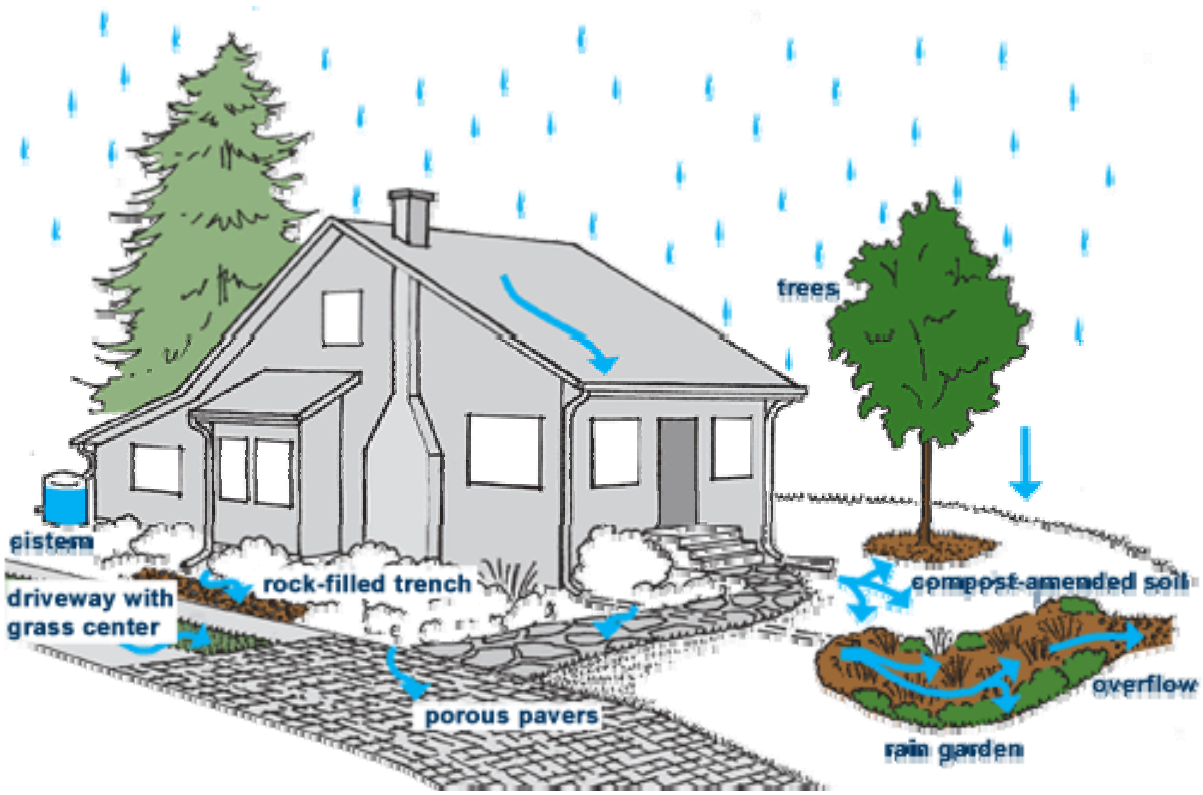

AVOID
REDUCE MANAGE


6

Comparison of Conventional vs. LID Site Planning

Managing Stormwater Runoff on Single-family Residential Sites

Typical



Low Impact Development

North Kingstown Town Hall
Rain Garden Demonstration Project

Photo: URI Cooperative Extension

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