

*Coastal Resilience through Community
Engagement Webinar Series*



Courtesy Jeannette Falvey, U.S. EPA

Part 1: The CRS Green Guide and Natural & Beneficial Functions of Floodplains

October 30, 2017
1:00–2:30pm CT



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Today's Moderator



Chad Berginnis, CFM
Executive Director, ASFPM



Courtesy Jeannette Falvey, U.S. EPA



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Thanks to our funders!



Funding for this project is provided by the Department of the Interior through a grant from the National Fish and Wildlife Foundation's Hurricane Sandy Coastal Resiliency Competitive Grant Program.

Coastal Resilience through Community Engagement Webinar Series

The CRS Green Guide and Natural & Beneficial Functions of Floodplains



Robyn Wiseman, CFM
Research Scientist
ASFPM



Rebecca Pfeiffer, CFM
ASFPM Natural & Beneficial
Funct. Cmte. Chair



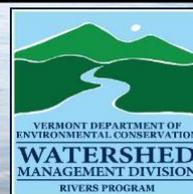
Dennis Dixon, CFM
Project Manager
Pierce County, WA

Poll Question:

How familiar are you with the concept of natural and beneficial floodplain functions?

- o Very Familiar – I have been incorporating these concepts into my work for several years;
- o Somewhat Familiar – I've heard the term, but have not really made this a part of my work; or
- o Not at all familiar – I haven't heard the term before, or am not sure what the term means

The Importance of Protecting Natural Ecosystem Assets for Flood Hazard Protection



Presented by:
Rebecca Pfeiffer, CFM
Vermont Rivers Program/ASFPM NBF Committee Co-Chair

CREDIT POINTS	CLASS	PREMIUM REDUCTION SFHA*	PREMIUM REDUCTION NON-SFHA**
4,500+	1	45%	10%
4,000 – 4,499	2	40%	10%
3,500 – 3,999	3	35%	10%
3,000 – 3,499	4	30%	10%
2,500 – 2,999	5	25%	10%
2,000 – 2,499	6	20%	10%
1,500 – 1,999	7	15%	5%
1,000 – 1,499	8	10%	5%
500 – 999	9	5%	5%
0 – 499	10	0	0

*Special Flood Hazard Area

CRS Emphasizes *Avoidance* Strategies and *Protection* of Naturally Functioning Floodplains

300 Series: Public Information Activities		Max	Page	400 Series: Mapping and Regulations		Max	Page
310 (Elevation Certificates)				410 (Floodplain Mapping)			
a	EC	38	310-12	a	NS	500	410-8
b	ECPO	48	310-13	b	LEV	N/A	410-14
c	ECPR	30	310-15	c	SR	60	410-16
320 (Map Information Service)				d	HSS	200	410-18
a	M1	30	320-8	e	FWS	140	410-21
b	M2	20	320-10	f	MPSH	100	410-24
c	M3	20	320-11	420 (Open Space Preservation)			
d	M4	20	320-11	a	OSP	1,450	420-3
e	M5	20	320-13	b	DR	50	420-12
f	M6	20	320-14	c	NFOS	350	420-14
g	M7	20	320-15	d	SHOS	150	420-19
330 (Outreach Projects)				e	CEOS	750	420-20
a	OP	200	330-6	f	OSI	250	420-21
b	FRP	50	330-9	g	LZ	600	420-28
c	PPI	N/A	330-14	h	NSP	120	420-30
d	STK	50	330-20	430 (Higher Regulatory Standards)			
340 (Hazard Disclosure)				a	DL	1,330	430-6
a	DFH	35	340-3	b	FRB	80	430-16
b	ODR	25	340-5	c	FDN	80	430-18
c	REB	12	340-7	d	CSI	90	430-18
d	DOH	8	340-10	e	LSI	20	430-19
350 (Flood Protection Information)				f	PCF	80	430-21
a	LB	10	350-3	g	ENL	240	430-23
b	LPD	10	350-5	h	BC	100	430-26
c	WEB	105	350-7	i	LDP	120	430-30
360 (Flood Protection Assistance)				j	MHP	15	430-31
a	PPA	40	360-4	k	CAZ	500	430-32
b	PPV	45	360-6	l	SHR	100	430-38
c	FAA	15	360-7	m	TSR	50	430-46
d	TNG	10	360-10	n	CER	370	430-48
370 (Flood Insurance Promotion)				o	OHS	100	430-52
a	FIA	15	370-3	p	SMS	20	430-53
b	CP	15	370-6	q	RA	67	430-55
c	CPI	60	370-9				
d	TA	20	370-12				



Floodplains...

...Dissipate water
energy & reduce
flashiness

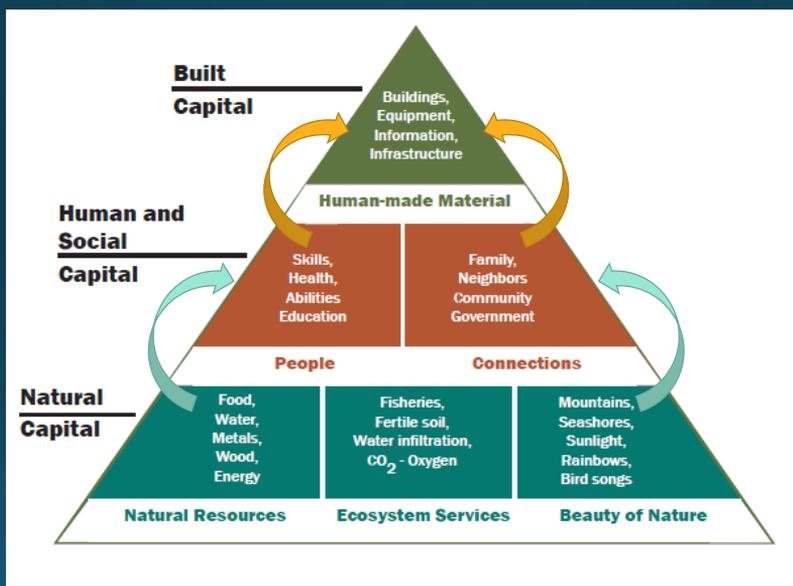


Mad River, Moretown, during and after Irene
Photo Credit: David Cain



Without floodplains: Stream gravel,
sediment & debris keeps moving
downstream

Community Capital



Source: www.sustainablemeasures.com

Valuing our Natural Capital

Final Report

**Evaluating the Costs and Benefits of
 Floodplain Protection Activities in
 Waterbury, Vermont and Willsboro, New
 York, Lake Champlain Basin, U.S.A.**

NEIWPCC Job Code: 984-003-006
 Project Code: L-2013-033
 Prepared by: Roy Schiff
 Milone & MacBroom
 Date Submitted: January 26, 2015
 Date Approved: April 16, 2015

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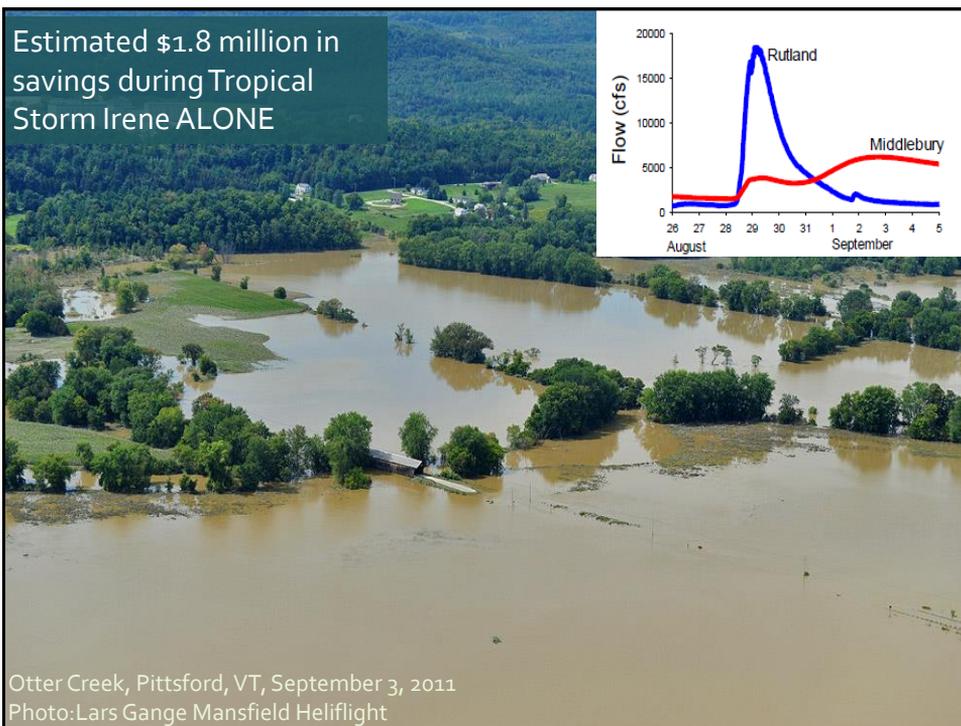
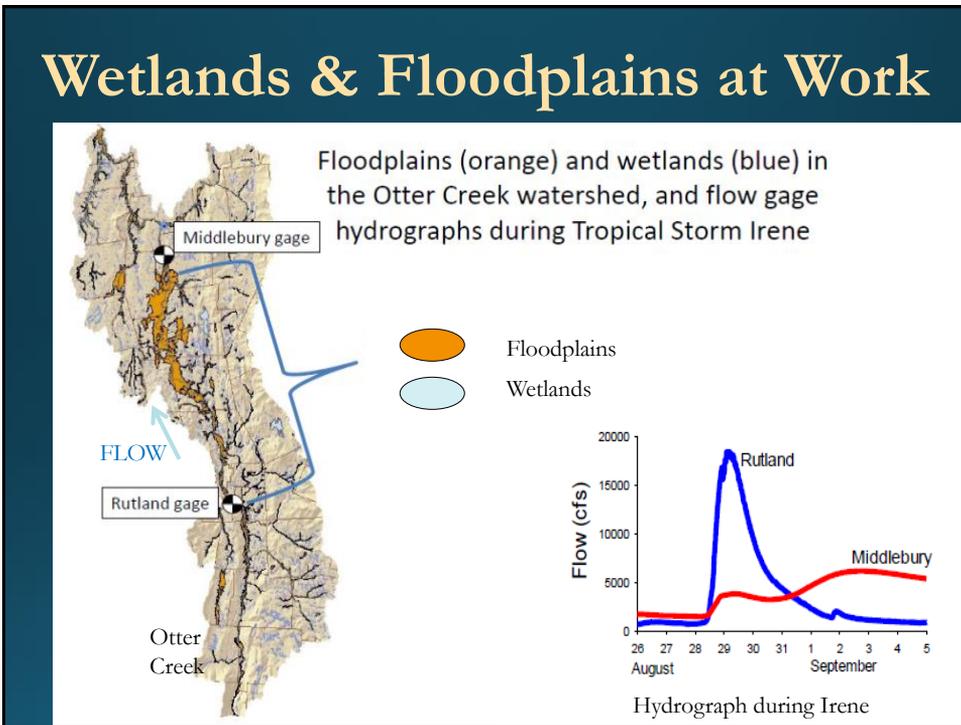
 

WHAT IS YOUR PLANET WORTH?

A Handbook for Understanding Natural Capital
 By Allyson Schrier, Justine Bronfin, and Jennifer Harrison-Cox



September 2013

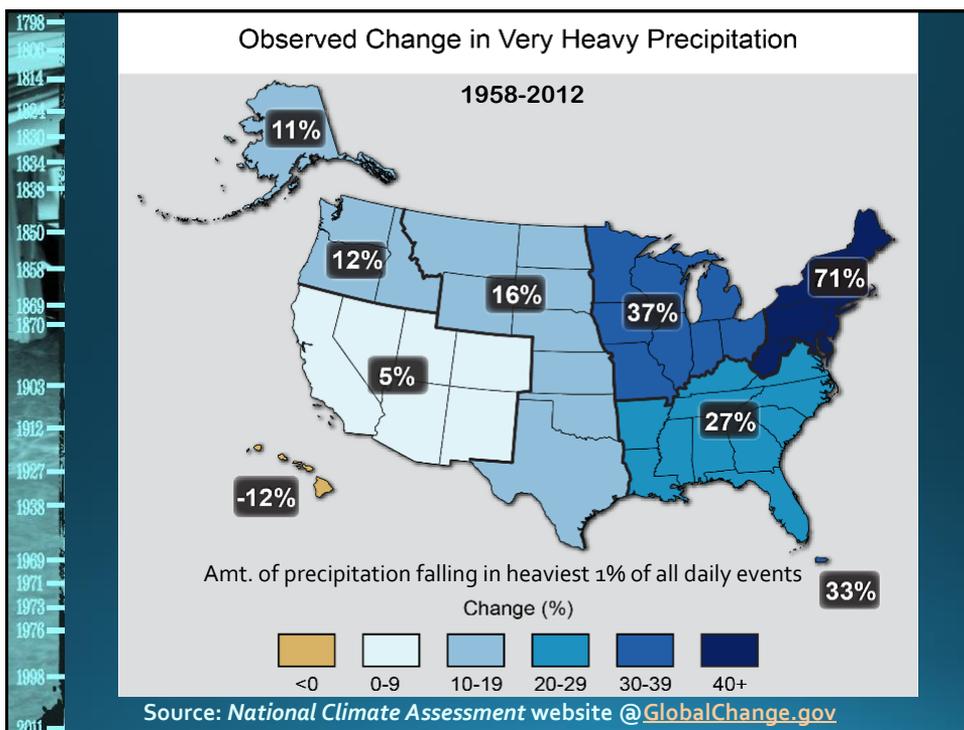


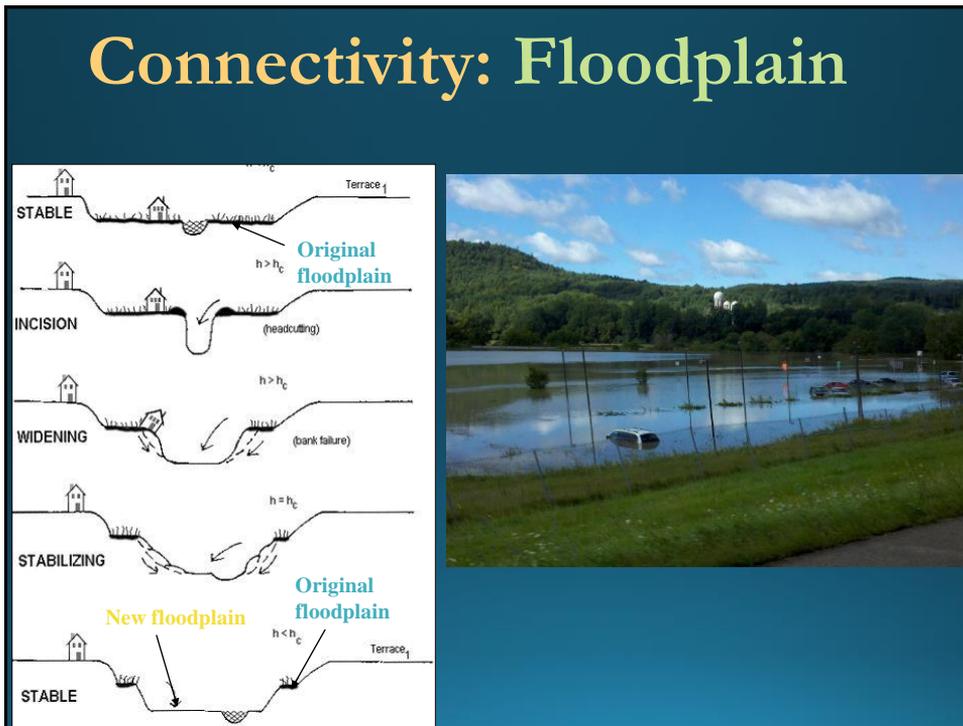
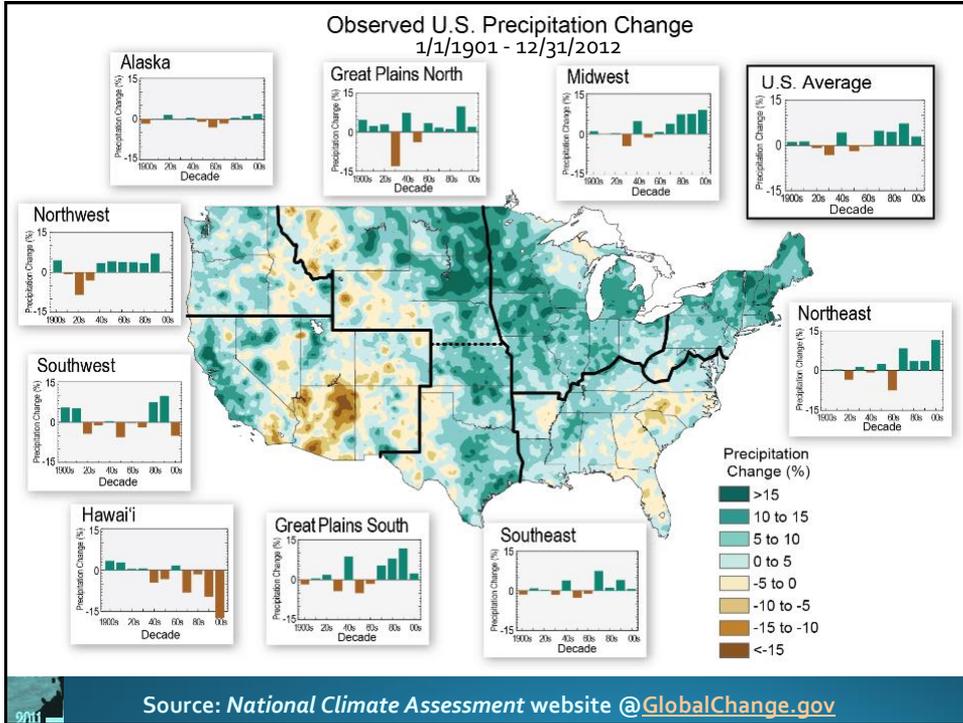
Resilience

A Resilient Landscape has space for dynamic natural processes



A Resilient Community can learn and adapt



Connectivity: Aquatic



Culvert is a barrier



Bankfull Culvert

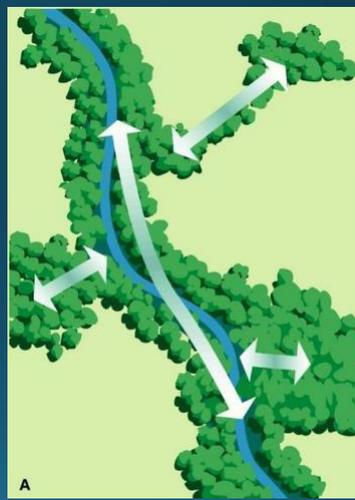
- **More resilient to flooding**
- Allow for aquatic organism passage
- Allow for movement of terrestrial species at normal flow levels



Connectivity: Ecosystem Resiliency



Barriers to movement



Connected corridors

Tools



CRS for Community Resilience Green Guide

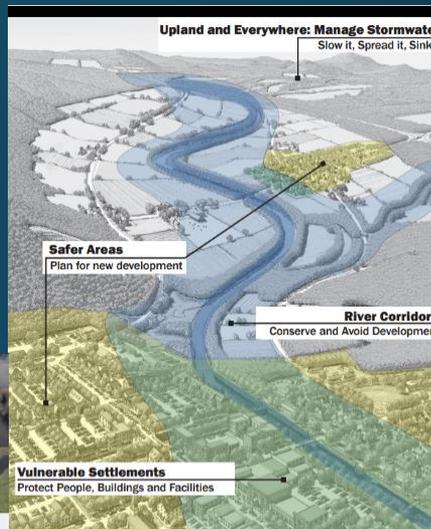
Learn more about the Green elements that enhance the resiliency of your community's natural environment.



Development Limitations and Low-Density Zoning C...

- Pierce County, Washington Success Story

[View page](#)



Upland and Everywhere: Manage Stormwater
Slow It, Spread it, Sink it

Safer Areas
Plan for new development

River Corridors
Conserve and Avoid Development

Vulnerable Settlements
Protect People, Buildings and Facilities

Preparing for Future Flooding
U.S. EPA - Smart Growth Implementation Assistance

VERMONT
April 2013

Community Planning & Zoning



Floodplains By Design



A new video illustrates ways of harnessing floodplains for humans and wildlife. [Watch video >](#)

Easements & Land Conservation



You are Here: Home / Programs / Easements / Agricultural Conservation Easement Program

Programs

- Farm Bill
- Landscape Initiatives
- Financial Assistance
- Technical Assistance
- Easements
 - Farm and Ranch Lands Protection Program
 - Agricultural Conservation Easement Program
 - Grassland Reserve Program
 - Healthy Forests Reserve Program
 - Wetlands Reserve Program
- Landscape Planning
- Alphabetical Listing & Archive

Agricultural Conservation Easement Program



The Agricultural Conservation Easement Program (ACEP) provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements component, NRCS helps American Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance riparian wetlands.



American Rivers

Rivers Connect Us®

EXPLORE OUR WORK



PROTECTING WILD RIVERS

Ensuring our best wild rivers continue to run free.



RESTORING DAMAGED RIVERS

Revitalizing rivers by removing dams and restoring floodplains.

THE VERMONT RIVER CONSERVANCY

Protecting Exceptional Lands Along Our Waters





Water Street Park
 Conceptual Design Plan
 July 28, 2016

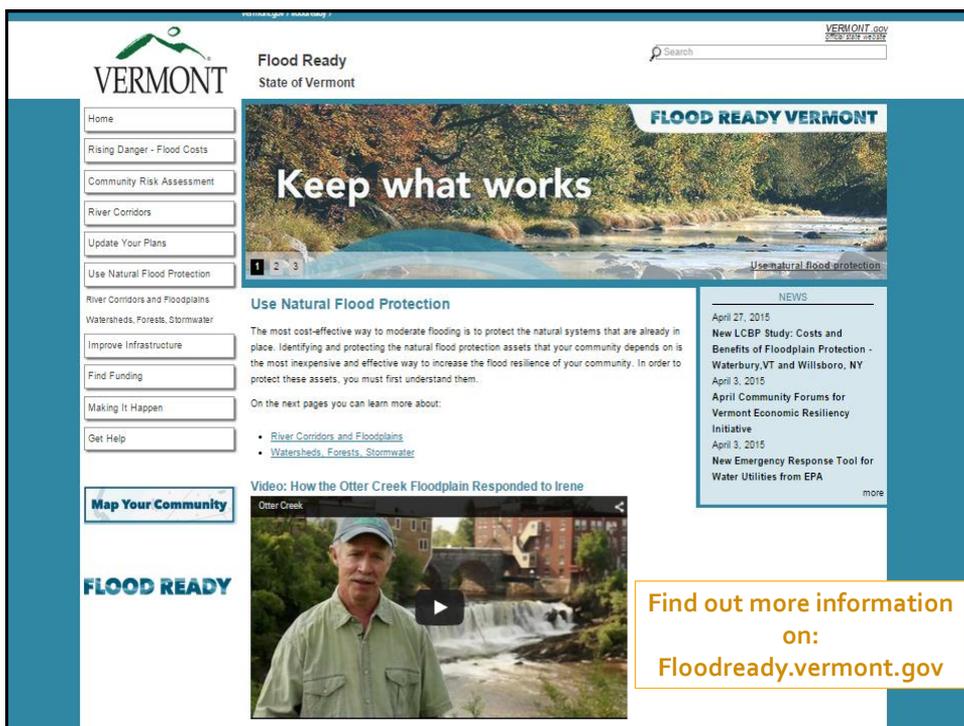
FEMA Hazard Mitigation
 Grants
 For Structure Acquisition



North Branch, Worcester and Middlesex
 Potential River Corridor Easement



Birmingham Buyout
 Program Enhances
 Community's R...
 - Birmingham, Alabama Success Story
[View page](#)



VERMONT
 State of Vermont

Flood Ready
 State of Vermont

Home
 Rising Danger - Flood Costs
 Community Risk Assessment
 River Corridors
 Update Your Plans
 Use Natural Flood Protection

River Corridors and Floodplains
 Watersheds, Forests, Stormwater
 Improve Infrastructure
 Find Funding
 Making It Happen
 Get Help

Map Your Community

FLOOD READY

Keep what works

Use Natural Flood Protection

The most cost-effective way to moderate flooding is to protect the natural systems that are already in place. Identifying and protecting the natural flood protection assets that your community depends on is the most inexpensive and effective way to increase the flood resilience of your community. In order to protect these assets, you must first understand them.

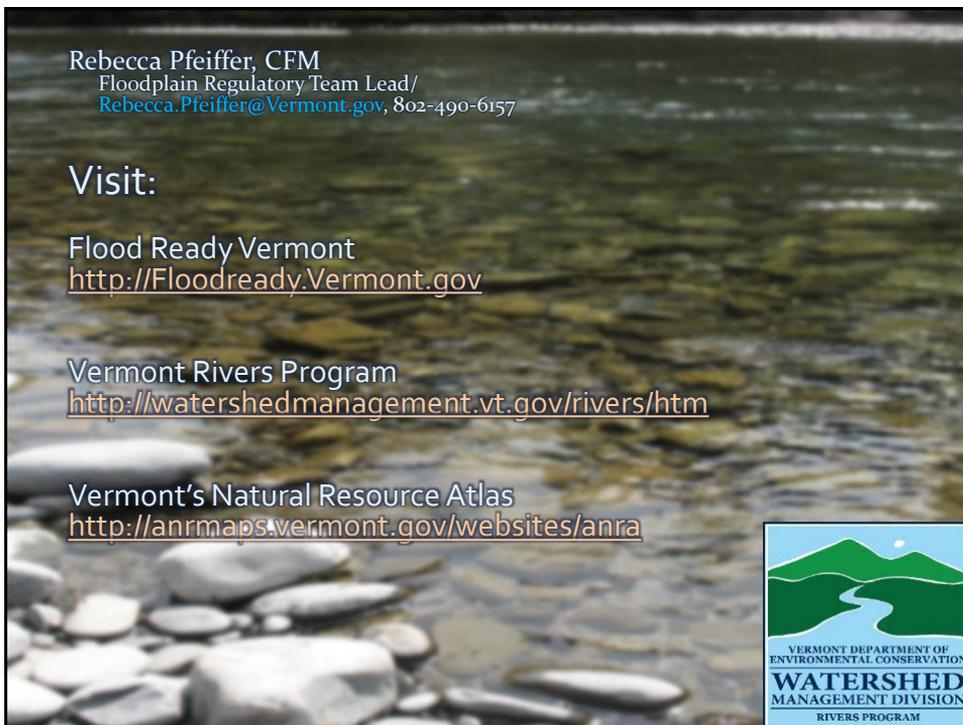
On the next pages you can learn more about:

- River Corridors and Floodplains
- Watersheds, Forests, Stormwater

Video: How the Otter Creek Floodplain Responded to Irene

Find out more information on:
Floodready.vermont.gov

NEWS
 April 27, 2015
 New LCBP Study: Costs and Benefits of Floodplain Protection - Waterbury, VT and Willaboro, NY
 April 3, 2015
 April Community Forums for Vermont Economic Resiliency Initiative
 April 3, 2015
 New Emergency Response Tool for Water Utilities from EPA



Rebecca Pfeiffer, CFM
Floodplain Regulatory Team Lead/
Rebecca.Pfeiffer@Vermont.gov, 802-490-6157

Visit:

Flood Ready Vermont
<http://Floodready.Vermont.gov>

Vermont Rivers Program
<http://watershedmanagement.vt.gov/rivers/htm>

Vermont's Natural Resource Atlas
<http://anrmaps.vermont.gov/websites/anra>

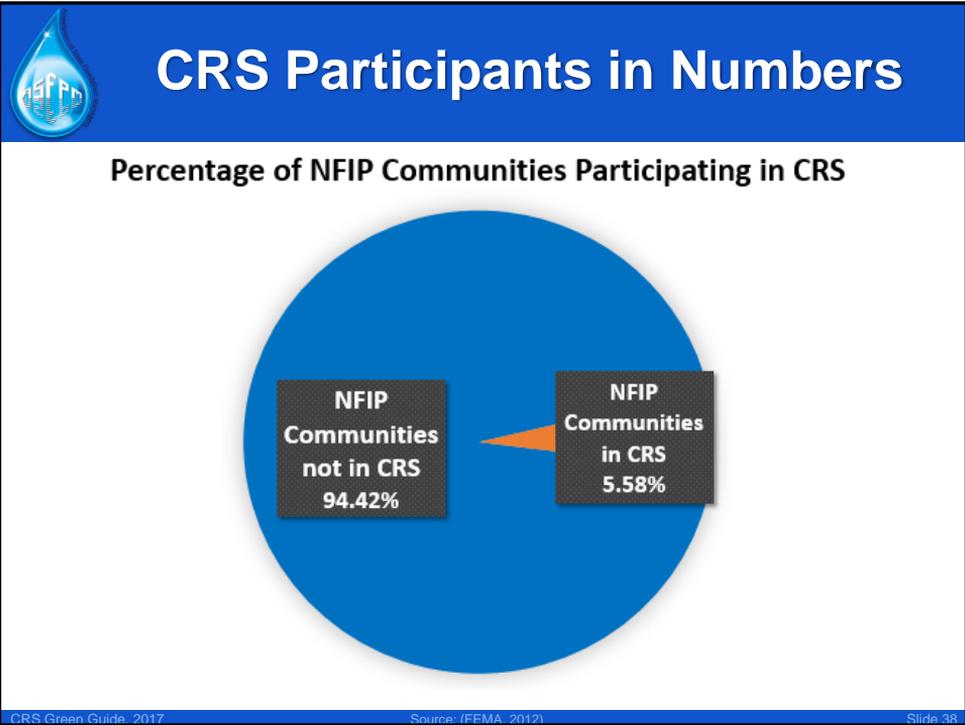


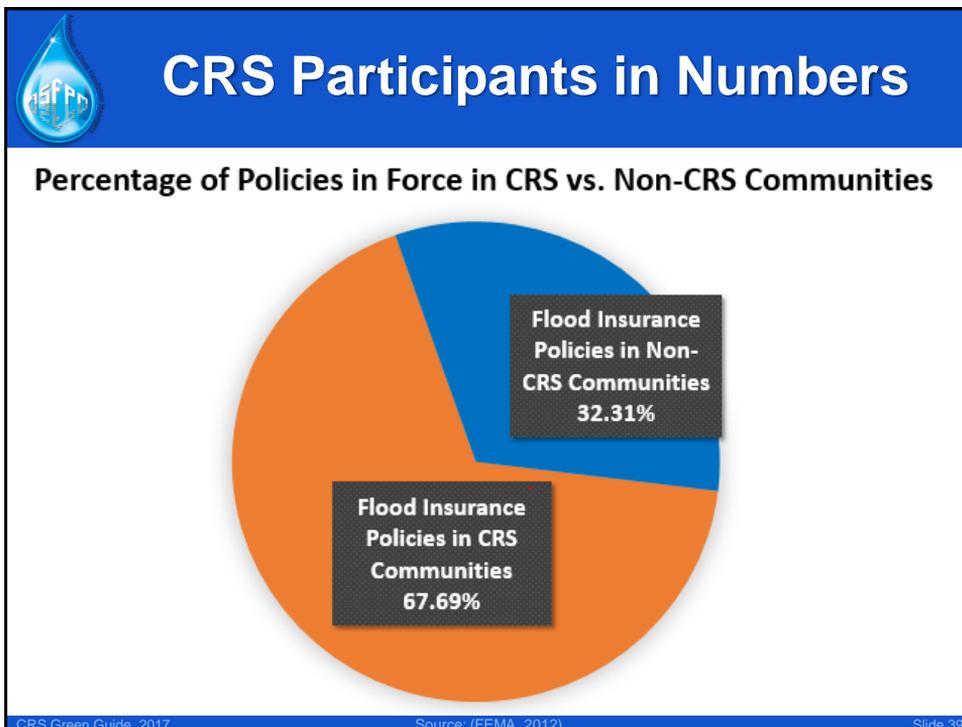
**Why use the Green
Guide?**

**CRS for Community
Resilience**

About the NFIP and CRS

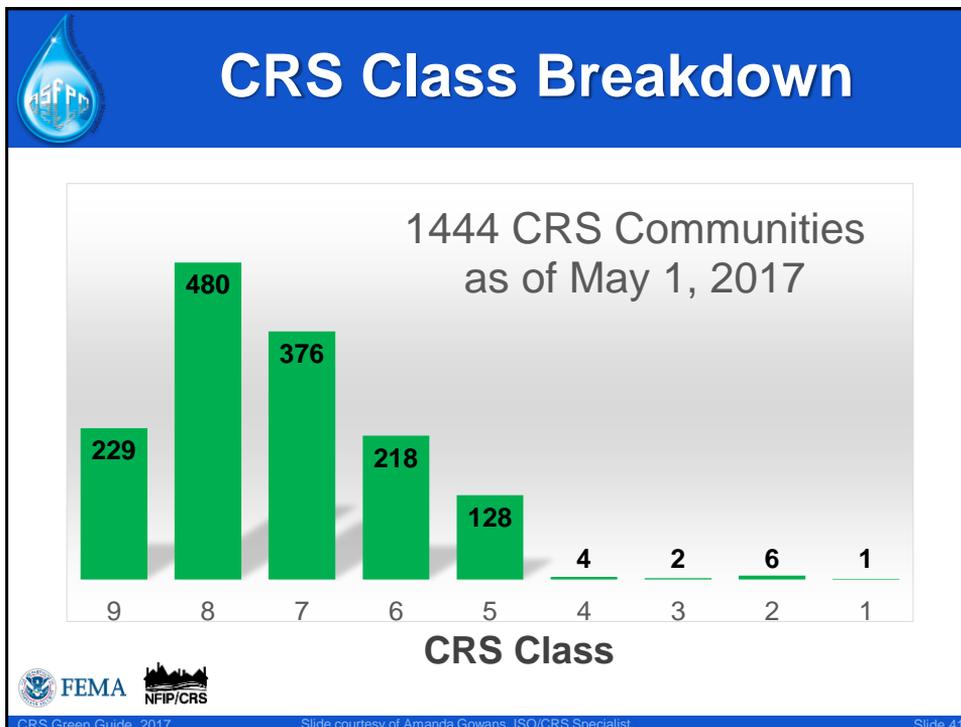
CRS Green Guide, 2017 Image Credit: AlexiusHoratius, via the Wikimedia Commons Slide 37





CRS Class Breakdown

CRS Class	Points Required	SFHA Discount	Non-SFHA Discount	PRP Discount
1	4,500	45%	10%	0%
2	4,000	40%	10%	0%
3	3,500	35%	10%	0%
4	3,000	30%	10%	0%
5	2,500	25%	10%	0%
6	2,000	20%	10%	0%
7	1,500	15%	5%	0%
8	1,000	10%	5%	0%
9	500	5%	5%	0%
10	< 500	0%	0%	0%



Natural and Beneficial Functions (NBF)

- **Creation of habitat for fish, fowl and wildlife, including many endangered species**
- **Enhanced air and water quality**
- **Groundwater recharge**
- **Restoration of natural ecosystems and ecosystem services**
- **More sustainable environment in your community**
- **Creation or enhancement of recreation opportunities**

CRS Green Guide, 2017 Image Credit: Fernando Flores, via the Wikimedia Commons Slide 42



Natural and Beneficial Functions

Class 4 Status

→



Class 1 Status

→



CRS Green Guide, 2017
Image Credit: Fernando Flores, via the Wikimedia Commons
Slide 43

300 Series Public Information Activities	412 Series Regulations	500 Series Flood Damage Reduction Activities
312.a: Maintaining Elevation Certificates	412.e: More-restrictive floodway standard	512.a: Floodplain management planning
312.b: Maintaining Elevation Certificates for post-FIRM buildings	412.f: Mapping of SFHA	512.b: Repetitive loss area analysis
312.c: Maintaining Elevation Certificates for pre-FIRM buildings	422.a: Open space preservations	512.c: Natural floodplain functions plan
322.a: Basic FIRM information	422.b: Deed restrictions	522.a: Buildings acquired or relocated
322.b: Additional FIRM information	422.c: Natural functions open space	522.b: Buildings on the repetitive loss list
322.c: Other flood problems not shown on the FIRM	422.d: SFHA open space	522.c: Severe Repetitive Loss properties
322.d: Flood depth data	422.e: Coastal erosion open space	522.d: Critical facilities
322.e: Special flood-related hazards	422.f: Open space incentives	522.e: Buildings located in the V or coastal A Zone
322.g: Natural floodplain functions	422.g: Low density zoning	532.a: Flood protection project technique used
332.a: Outreach Projects	422.h: Natural shoreline protection	532.b: Flood protection improvement
332.b: Flood response preparations	432.a: Development Limitations	532.c: Protected buildings
332.c: Program for Public Information	432.b: Freeboard	542.a: Channel debris removal
332.d: Stakeholder delivery	432.c: Foundation protection	542.b: Problem site maintenance
342.a: Disclosure of flood hazard	432.d: Cumulative substantial improvements	542.c: Capital improvement program
342.b: Other disclosure requirements	432.e: Lower substantial improvements	542.d: Stream dumping regulations
342.c: Real estate agents' brochure	432.f: Protection of critical facilities	542.e: Storage basin maintenance
342.d: Disclosure of other hazards	432.g: Enclosure limits	
352.a: Flood protection library	432.h: Building code	600 Series Warning and Response
352.b: Locally pertinent documents	432.i: Local drainage protection	612.a: Flood threat recognition system
352.c: Flood protection website	432.j: Manufactured home parks	612.b: Emergency warning dissemination
362.a: Property protection advice	432.k: Coastal A Zones	612.c: Flood response operations
362.b: Protection advice provided after site visit	432.l: SFHA regulations	612.d: Critical facilities planning
362.c: Financial assistance advice	432.m: Tsunami hazard regulations	612.e: StormReady community
362.d: Advisor training	432.n: Coastal erosion hazard regulations	612.f: TsunamiReady community
372.a: Flood insurance coverage assessment	432.o: Other higher standard	622.a: Levee maintenance
372.b: Coverage improvement plan	432.p: State-mandated regulatory standards	622.b: Levee failure threat recognition system
372.c: Coverage improvement plan implementation	432.q: Regulations administration	622.c: Levee failure warning
372.d: Technical assistance	442.a: Additional map data	622.d: Levee failure response operations
400 Series Mapping and Regulations	442.b: FIRM maintenance	622.e: Levee failure critical facilities planning
412.a: New study	442.c: Benchmark maintenance	632.a: State dam safety program
412.b: Leverage	442.d: Erosion data maintenance	632.b: Dam failure threat recognition system
412.c: State review	452.a: Storm water management regulations	632.c: Dam failure warning
412.d: Higher study standards	452.b: Watershed master plan	632.d: Dam failure response operations
	452.c: Erosion and sedimentation control regulations	632.e: Dam failure critical facilities planning
	452.d: Water quality regulations	

300 Series	412.e. More-restrictive floodway standard	500 Series
Public Information Activities	412.f. Mapping of SFHA	Flood Damage Reduction Activities
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412.c: State review	452.d: Water quality regulations	632.d: Dam failure response operations
412.d: Higher study standards		632.e: Dam failure critical facilities planning

Element Name	Possible Points	Element Name	Possible Points
322.g. Natural Floodplain Functions	20	432.a. Development Limitations	1,330
332.a. Outreach Projects	200	432.l. SFRH Regulations, Inland	100
332.d. Stakeholder Delivery	50	432.m. SFHR Regulations, Coastal	370
412.e. More Restrictive Floodway Standard	140	442.d. Erosion Data Maintenance	20
422.a. Open Space Preservation	1,450	452.a. Stormwater Management Regulations	380
422.b. Deed Restrictions	50	452.b. Watershed Master Plan	315
422.c. Natural Functions Open Space	350	452.c. Erosion and Sediment Control Regulations	40
422.d. SFRH Open Space	150	452.d. Water Quality Regulations	20
422.e. Coastal Erosion Open Space	750	512.c. Natural Floodplain Functions Plan	100
422.f. Open Space Incentives	250	Activity 520	2,250
422.g. Low Density Zoning	600	542.c. Capital Improvement Program	70
422.h. Natural Shoreline Protection	120		

Why use the Green Guide?

- Receive stackable credits
- How to earn credit for state requirements
- Tips on documenting and calculating credits
- Best practices and success stories from *actual* communities

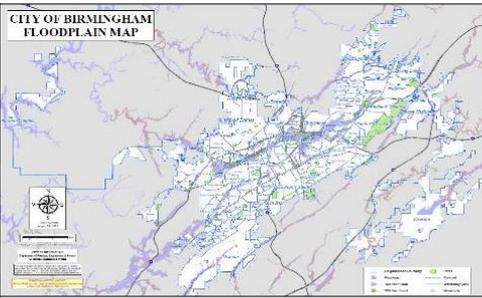
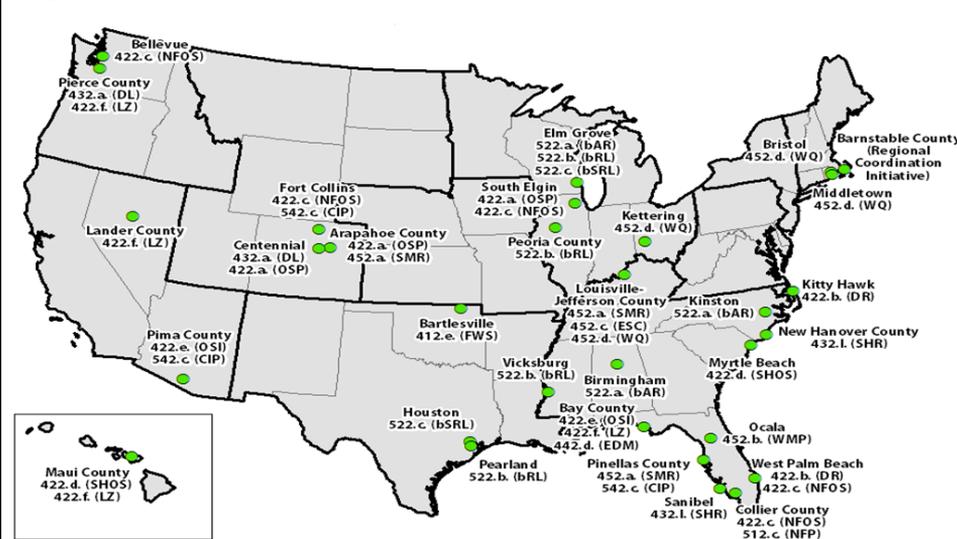



Image Credits: (left) Putnevics via Flickr Creative Commons; (right) Map via Birmingham Dept of Planning, Engineering & Permits GIS. Slide 47

Best Practices and Success Stories



CRS Green Guide, 2017 Updated 24 January 2017 by Jason Hochschild @ ASFPM Slide 48

Existing Activities Eligible for Credit

- **State Requirements**
 - Mandatory freeboard
 - Zero-rise floodplain standards
 - Coastal management
- **Local regulations, plans and permits!**
 - Erosion and sediment control
 - Water quality
- **Low density zoning**



CRS Green Guide, 2017 Image from Louisville MSD. Slide 49

Receive Stackable Credits

Many of the credits earned for implementing measures that support natural and beneficial floodplain functions earn credit under several categories!



Stackable Credit:
Earning credit for multiple elements by completing and documenting one task (or several related tasks)

Image: Flood waters of the Illinois River at Cooper Park, East Peoria, IL

CRS Green Guide, 2017 Image Credit: Arthur Greenberg via the Wikimedia Commons. Slide 50



Activities and Elements

- Explain technical information in plain language
- Overview of relevant impact adjustments
- Detailed Element profiles for each of the 25 Green Elements with natural and beneficial functions!

Impact Adjustment:
Ratio used to adjust the amount of credit your community receives for implementing an element

Usually calculated by taking area of regulatory floodplain affected by element divided by overall regulatory floodplain

CRS Green Guide, 2017 Slide 51



Tips on Documenting and Calculating Credits

- Each element profile outlines the difficulty level for implementation AND documentation.
- Difficulty levels verified by experts in the field.

Low **Medium** **High**

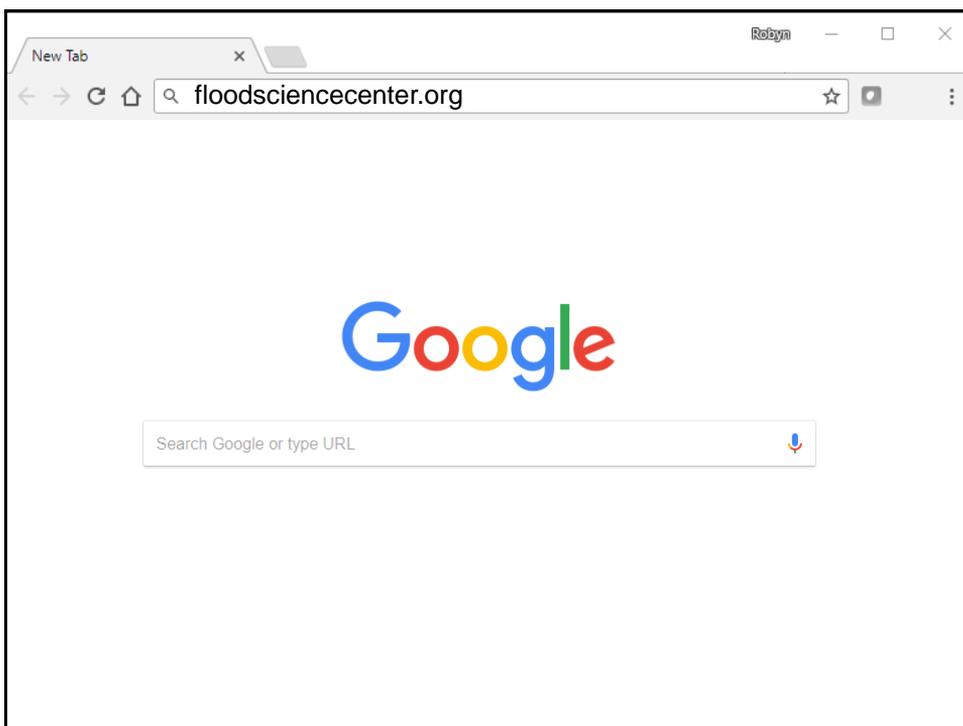


CRS Green Guide, 2017 Icons by Diablo Tim from The Noun Project Slide 52



Quick Demo of the Green Guide

Walk-through of our site



The screenshot shows the homepage of the ASFPM Flood Science Center. The header includes the Association of State Floodplain Managers logo and the text 'ASFPM FLOOD SCIENCE CENTER'. A navigation menu contains 'Flood Science Center', 'Research Services', 'Flood Science Resources', and 'About the Flood Science Center'. The main content area features a large title 'ASFPM Flood Science Center' and a welcome message: 'Welcome to the Association of State Floodplain Managers Flood Science Center. The Flood Science Center strives to apply and analyze technical, biologic, social and economic aspects of flood science to promote education, policies and activities that mitigate current and future flood losses, abate costs and human suffering caused by flooding and to protect the natural and beneficial functions of floodplains--all without causing adverse impacts.' Below this is a paragraph about collaborative relationships and a list of recent products. A photograph of a wetland at sunset is shown on the right with the caption 'IMAGE COURTESY OF PALM BEACH COUNTY, FL.' Navigation arrows are visible at the bottom right.

The screenshot shows a page titled 'CRS for Community Resilience' on the ASFPM Flood Science Center website. The header includes the ASFPM logo and navigation links: 'Green Guide', 'Element Profiles', 'Success Stories', 'Resources', 'Workshops', 'Webinars', and 'About'. The main content area has a title 'CRS for Community Resilience' and a goal statement: 'The goal of CRS for Community Resilience is to increase the number of communities making voluntary, effective measures to increase flood resilience. This project promotes CRS participation, provides guidance on actions that increase a community's rating, and works directly with communities to increase their resiliency through the CRS process.' It lists two aims: '1. Get more communities to participate in the CRS, and 2. Increase resiliency by having a road map to undertake activities that strengthen the natural ecosystems and reduce growing vulnerability to floods'. A call to action asks users to share questions, recommendations, or success stories. On the right, there are logos for the U.S. Department of the Interior, National Fish and Wildlife Foundation (NFWF), and Coastal States Organization (CSO).

The screenshot shows the ASFPM Flood Science Center website. The top navigation bar includes "Association of State Floodplain Managers", "Become a Member", "Jobs", and social media icons. The main header features the ASFPM logo and "ASFPM FLOOD SCIENCE CENTER". A secondary navigation bar lists "CRS for Community Resilience", "Green Guide", "Element Profiles", "Success Stories", "Resources", "Workshops", "Webinars", and "About". The "Green Guide" link is highlighted with a mouse cursor. The main content area is titled "Green Guide" and includes a "CONTENTS" sidebar. A "Disclaimer" section states that the guidebook is intended to be used alongside the CRS Coordinator's Manual. Below this is the "1. Introduction" section, which discusses the purpose of the Green Guide and the benefits of flood risk reduction. A quote from a recent study is also included.

Association of State Floodplain Managers

Become a Member Jobs f t

ASFPM FLOOD SCIENCE CENTER

CRS for Community Resilience

Green Guide Element Profiles Success Stories Resources Workshops Webinars About

Green Guide

CONTENTS

Disclaimer

This guidebook is intended to be used alongside the CRS Coordinator's Manual and is not intended to provide specific guidance regarding earning, scoring, or documenting actions to earn a community CRS credit. The best practices, success stories, and element summaries found in this document represent a fraction of the information available regarding the CRS program. Replication of actions taken by communities featured in this guidebook does not guarantee credit. If you have specific question about the CRS program, please reference the CRS Coordinator's Manual or contact your ISO/CRS Specialist, both of which can be found online at <https://crsresources.org>.

1. Introduction

Who doesn't want to reduce flood insurance premiums for citizens in their communities and do something good for the environment? Through participation in the Community Rating System (CRS) a community can undertake activities (in CRS-speak, a specific action is called an "element") that earn credits which lead to flood insurance premium reductions for a majority of policyholders.

The purpose of the CRS Green Guide is to highlight 25 of the 94 elements in the 2017 CRS Coordinator's Manual, which have beneficial impacts beyond flood risk reduction. The "co-benefits" this Green Guide seeks to feature include but are not limited to protection of the natural and

A recent study estimated that the savings associated with a one point increase in CRS Activity 420 Open

The screenshot shows the ASFPM Flood Science Center website, specifically the "Element Profiles" page. The navigation bar is identical to the previous screenshot. The "Element Profiles" link is highlighted with a mouse cursor. The main content area is titled "Element Profiles" and includes a paragraph explaining that the CRS Green Guide addresses 25 of the 90+ CRS Elements. It then lists two criteria for element summaries: 1. Their current practices are creditable under the CRS, or 2. They can feasibly implement the element (assuming their current practices are not creditable). A detailed description of what each profile includes follows, mentioning "degree of difficulty", "maximum number of points", "overview any relevant impact adjustment", and "tips for success". A photograph of a walking path through a natural area is shown on the right side of the page.

CRS for Community Resilience

Green Guide Element Profiles Success Stories Resources Workshops Webinars About

ASFPM FLOOD SCIENCE CENTER

CRS for Community Resilience

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Element Profiles

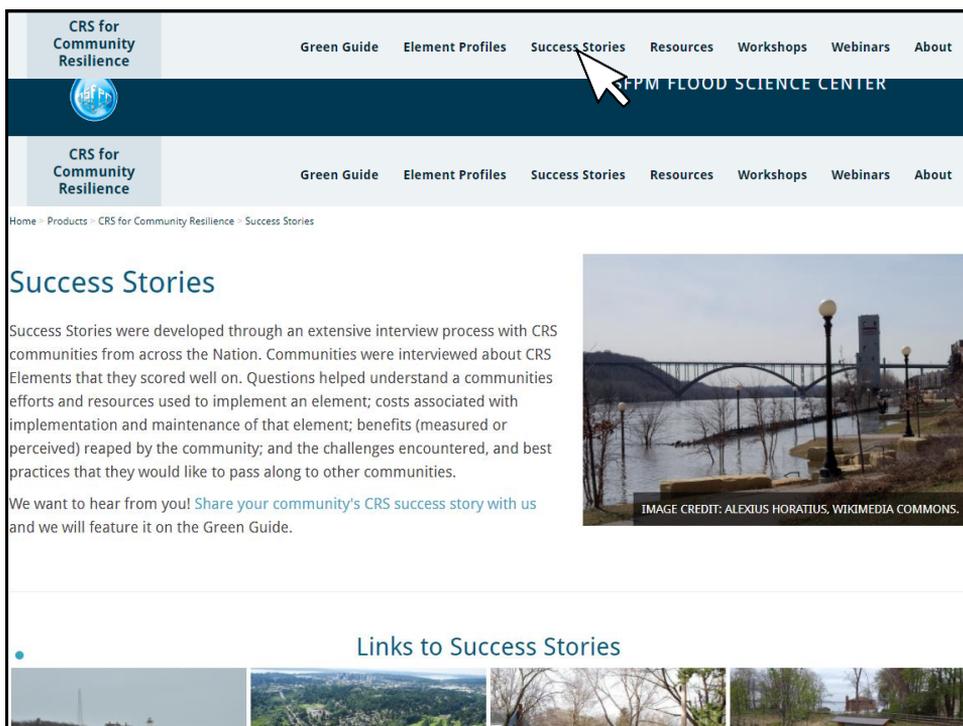
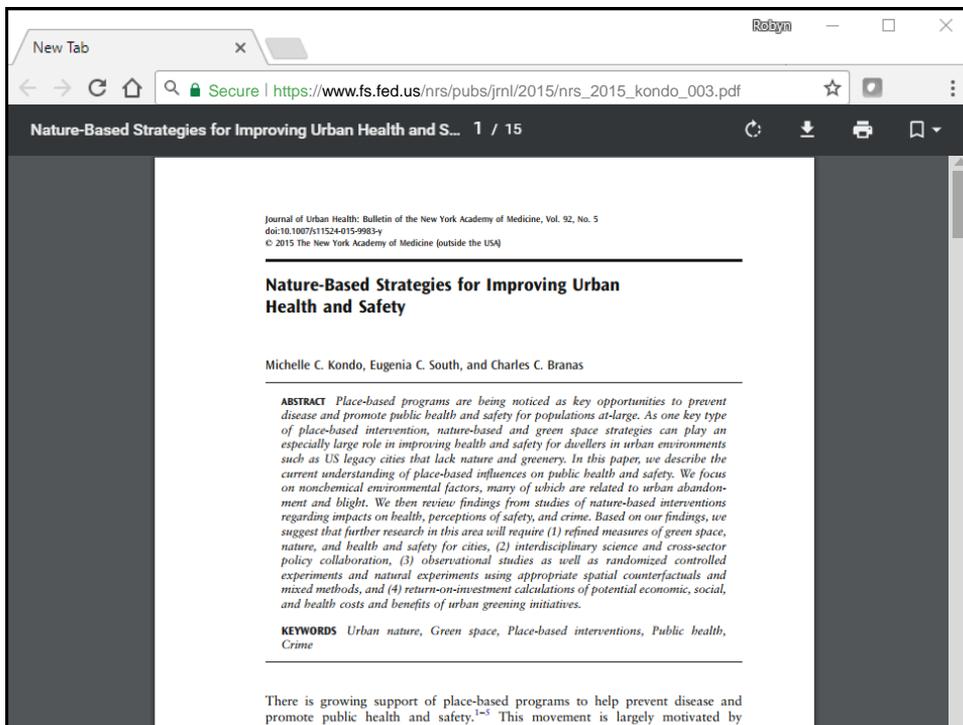
The CRS Green Guide addresses 25 of the 90+ CRS Elements included in the 2017 CRS Coordinator's Manual. The following section provides detailed summaries of each of the 25 CRS Elements.

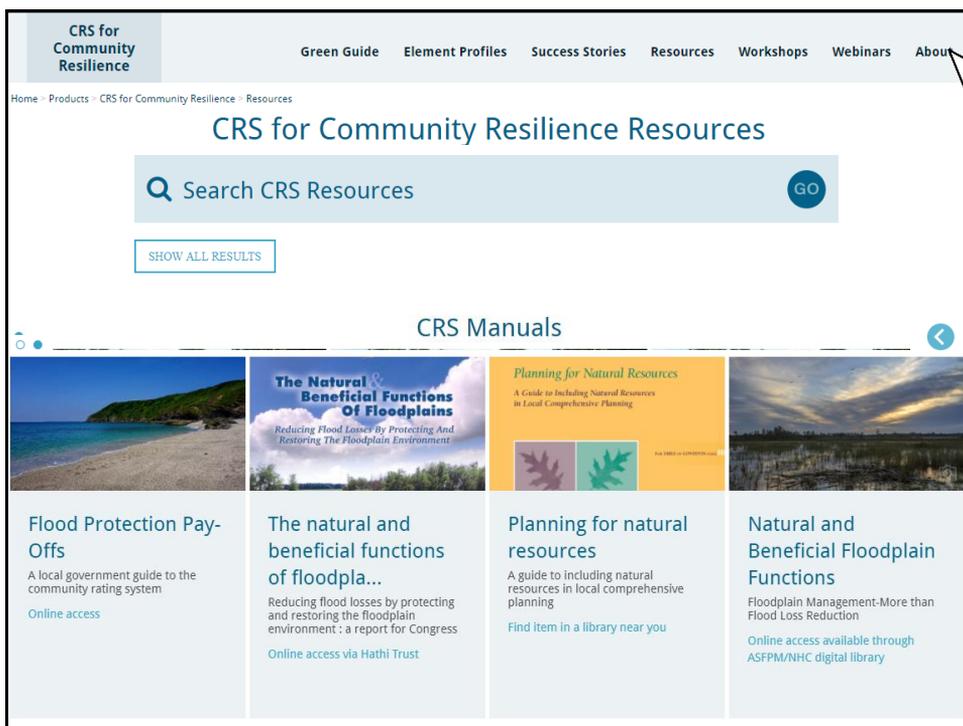
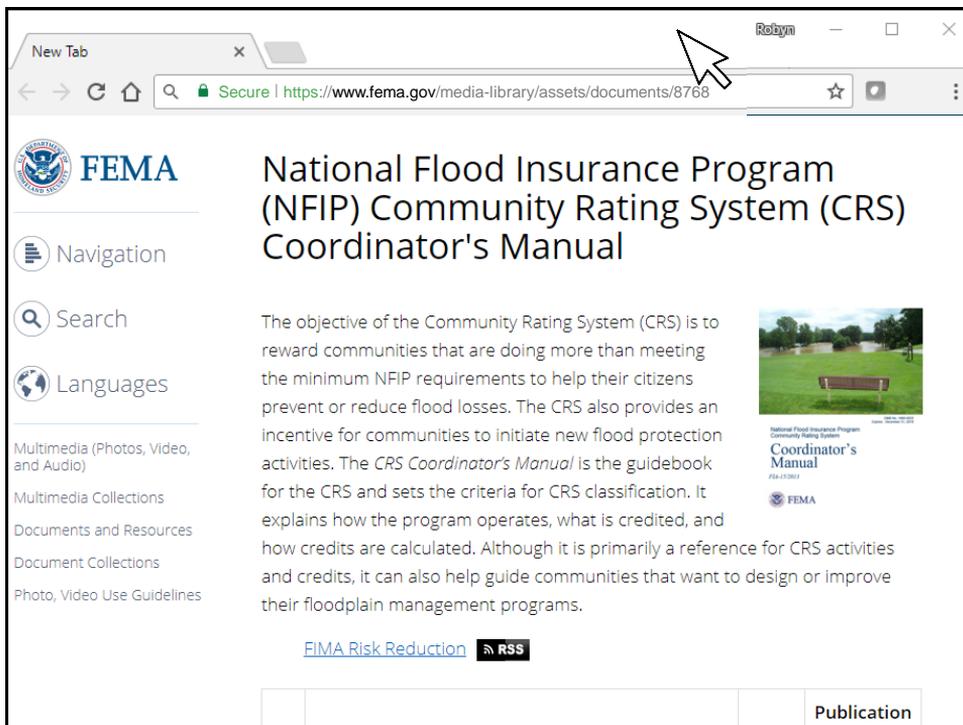
These summaries or "element profiles" include critical information that communities can use to determine if:

1. Their current practices are creditable under the CRS, or
2. They can feasibly implement the element (assuming their current practices are not creditable).

Specifically, each profile includes a summary of the element, the *degree of difficulty* associated with documenting and implementing it, the maximum number of points a community could earn, an overview any relevant *impact adjustment* and how it might impact a community's credit-earning potential, co-benefits associated with the element, as well as a few "tips for success." Most CRS elements discussed in the Green Guide are also associated with a success story that features a community's experience with the element.

WALKING PATH THROUGH NATURAL AREA. COURTESY OF THE







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PIERCE COUNTY
COMMUNITY RATING SYSTEM
SUCCESSSES

Dennis Dixon, CFM
Pierce County Planning & Public Works

Who – Where – Why



10/27/2017 CRS Green Guide Webinar 65

Origin Story



1914
Channelized floodplain

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How did we do it?



2014
Reconnected floodplain

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The rewards



10/27/2017 CRS Green Guide Webinar 68

Best practices

Pierce County

National Flood Insurance Program (NFIP)
Community Rating System (CRS) May 2016

**Class 2
Counties**
King Co.
Pierce Co.
Thurston
Co.

File structure
for
Last
Reverification
submittal
package

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QUESTIONS?

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Coastal Resilience Webinars

Coastal Resilience through Community Engagement Webinars

<https://www.floodsciencecenter.org/products/crs-community-resilience/webinars/>

-OR-

<http://bit.ly/2ys6650>