# CRS for Community Resilience

# CRS Green Guide

## ASFPM Flood Science Center

Robyn Wiseman, robyn@floods.org





# CRS for Community Resilience

## Objectives

1. Increase number of communities participating in the CRS
2. Increase scores of participating communities

## Focus

Specific categories of CRS activities as they relate to:

1. Coastal floodplain ecosystems
2. Future conditions

## Approach

Create a road map to undertake activities that strengthen natural ecosystems and reduce growing vulnerability to floods – which increases community resilience


Image Credit: AlexiusHoratius, via the Wikimedia Commons.

# Partners

## Project Advisory Committee

- Michelle Burnett - RI Floodplain Manager
- Grover Fugate - RI Coastal Program Manager
- Christopher Thoms - OH Floodplain Manager
- Scudder Mackey - OH Coastal Program Manager
- Jennifer Gilbert – NH Floodplain Manager
- Liz Hertz – ME Municipal Planning Program Manager
- Bill Lesser - FEMA CRS Program
- Allison Hardin - Myrtle Beach, SC Planner
- Russell Jackson - NOAA OCM / CRS Task Force
- Todd Davison - NOAA OCM
- Dave Carlton - dkcarlton & associates
- Lori Cary-Kothera - NOAA OCM
- Thomas Ruppert - FL Sea Grant Coastal Planner

## Coastal States Organization

- Mary Munson – SME/Principal Investigator
- Bradley Watson – SME/Principal Investigator
- Kristin Raub – Researcher

## ASFPM

- Chad Berginnis – SME/Principal Investigator
- Jeff Stone – Project Manager
- Bridget Faust – Project Researcher
- Robyn Wiseman – Project Researcher
- Jason Hochschild – Web & Technical Analyst
- Alan Lulloff – SME
- Michele Mihalovich – Technical Editor

# About the NFIP



Image Credit: AlexiusHoratius, via the Wikimedia Commons.

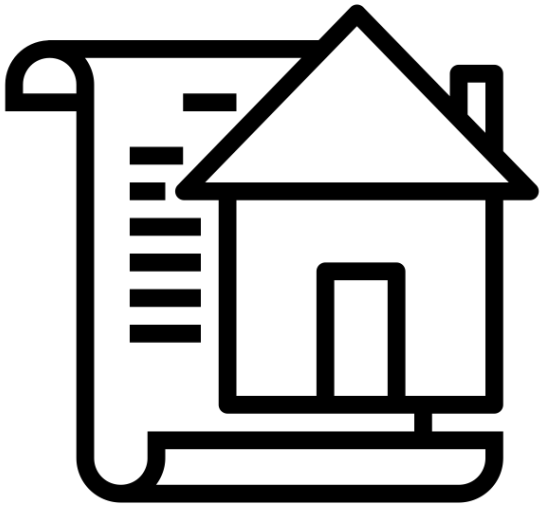
# What is the CRS?

NFIP/CRS

***Community Rating System (CRS): "a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements" (FEMA, 2016).***

Created by lastspark
from Noun Project

Created by Dan Hetteix
from Noun Project



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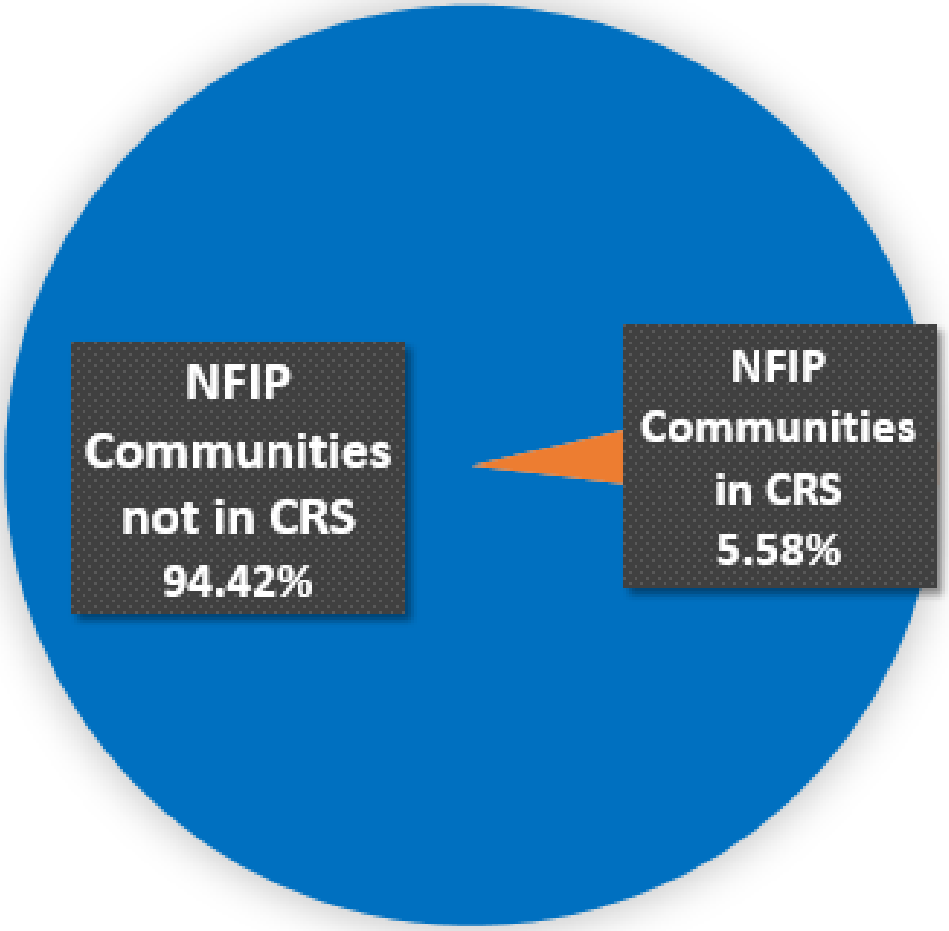
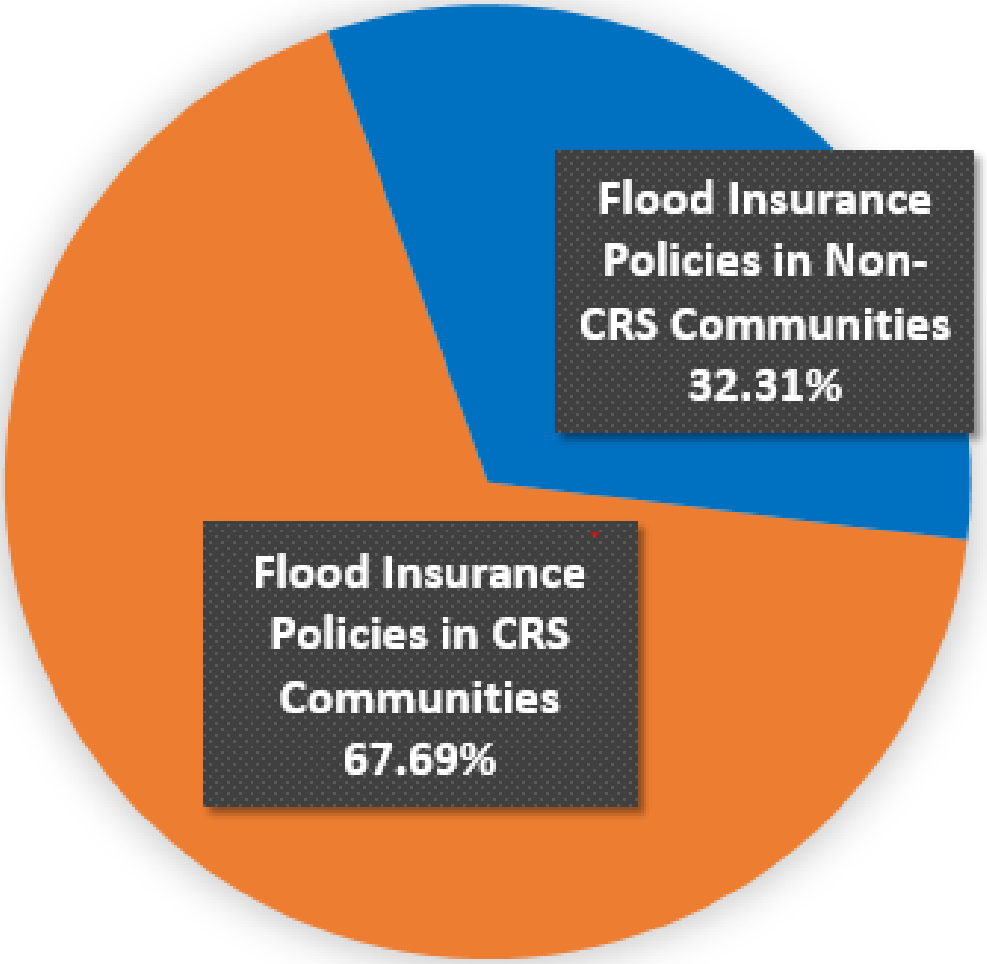
# CRS Participants in Numbers

## Percentage of NFIP Communities Participating in CRS



# CRS Participants in Numbers

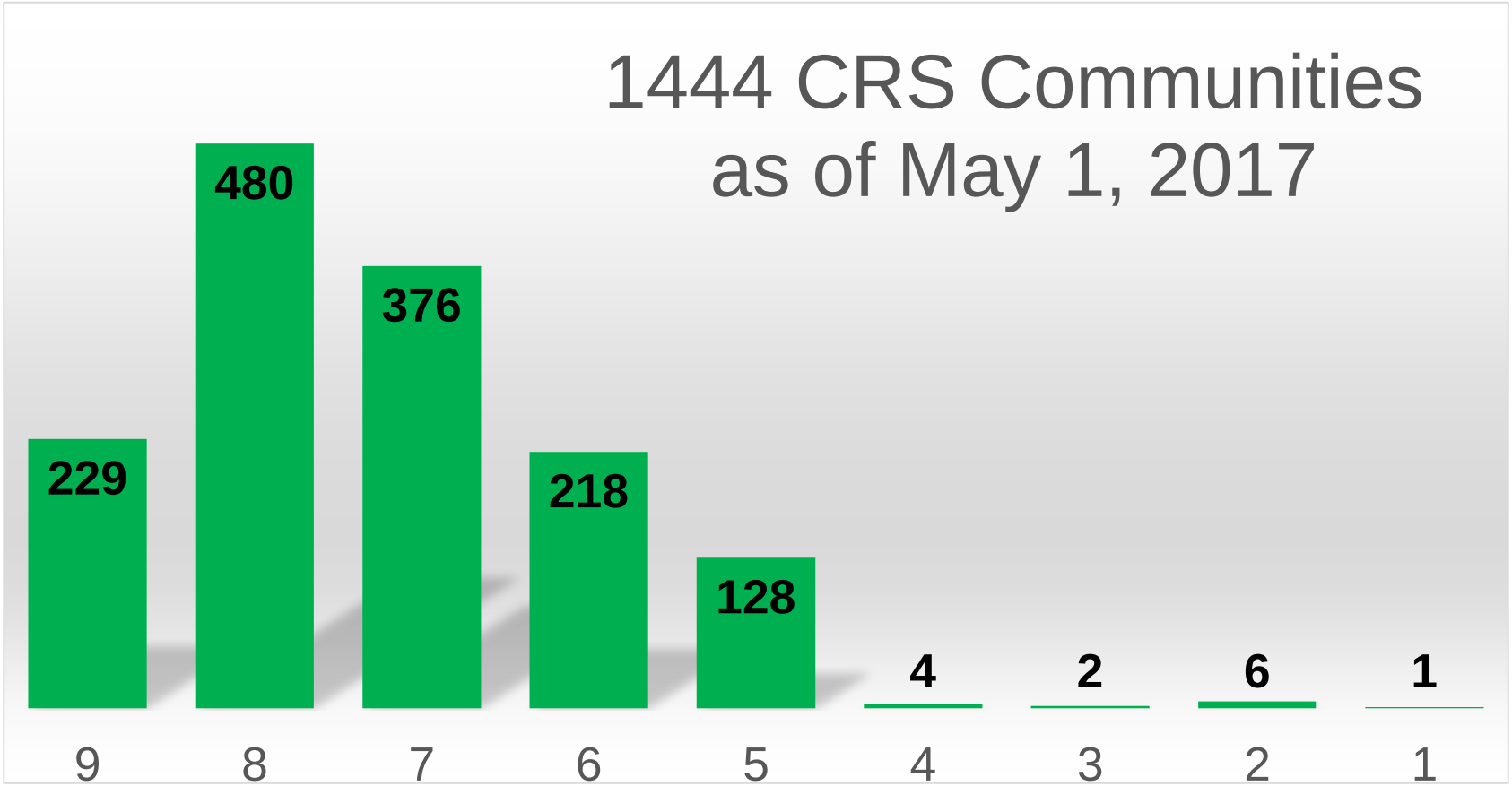
## Percentage of Policies in Force in CRS vs. Non-CRS Communities



# 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% |

# CRS Class Breakdown




FEMA NFIP/CRS

# Natural and Beneficial Functions (NBF)

Class 4 Status

Class 1 Status

No Adverse Impact


Image Credit: Fernando Flores, via the Wikimedia Commons.

# 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

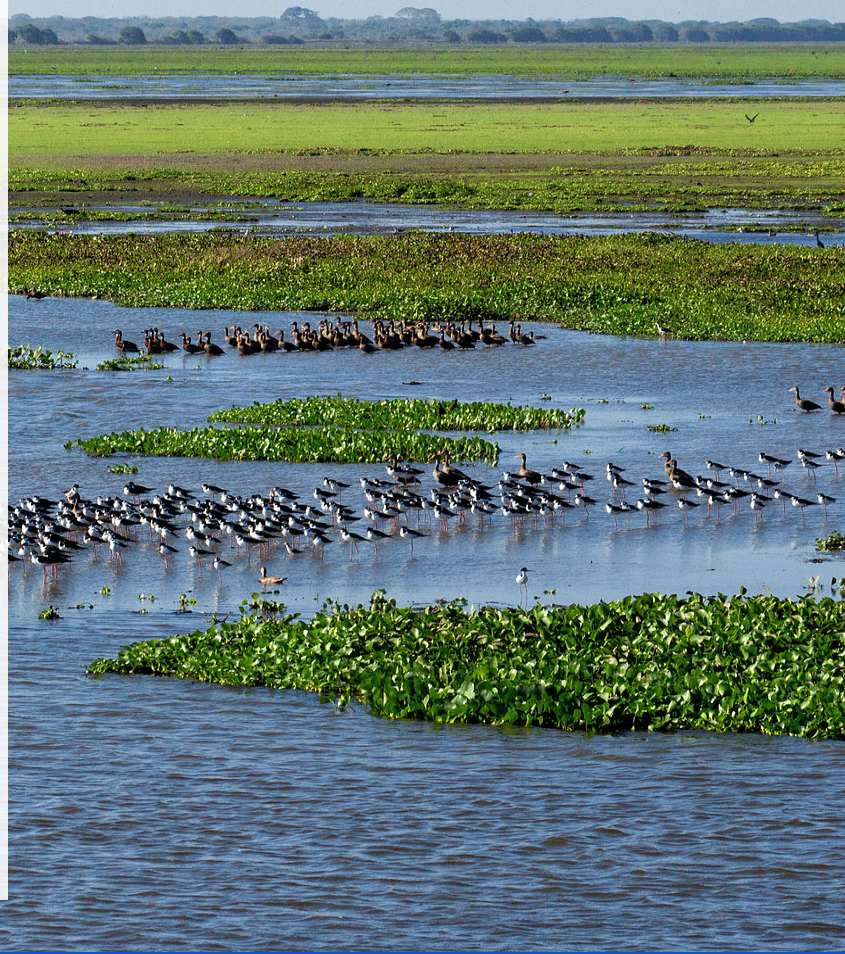



Image Credit: Fernando Flores, via the Wikimedia Commons.

| 300 Series<br>Public Information Activities |
|---|
| 312.a: Maintaining Elevation Certificates |
| 312.b: Maintaining Elevation Certificates for post-FIRM buildings |
| 312.c: Maintaining Elevation Certificates for pre-FIRM buildings |
| 322.a: Basic FIRM information |
| 322.b: Additional FIRM information |
| 322.c: Other flood problems not shown on the FIRM |
| 322.d: Flood depth data |
| 322.e: Special flood-related hazards |
| 322.g: Natural floodplain functions |
| 332.a: Outreach Projects |
| 332.b: Flood response preparations |
| 332.c: Program for Public Information |
| 332.d: Stakeholder delivery |
| 342.a: Disclosure of flood hazard |
| 342.b: Other disclosure requirements |
| 342.c: Real estate agents' brochure |
| 342.d: Disclosure of other hazards |
| 352.a: Flood protection library |
| 352.b: Locally pertinent documents |
| 352.c: Flood protection website |
| 362.a: Property protection advice |
| 362.b: Protection advice provided after site visit |
| 362.c: Financial assistance advice |
| 362.d: Advisor training |
| 372.a: Flood insurance coverage assessment |
| 372.b: Coverage improvement plan |
| 372.c: Coverage improvement plan implementation |
| 372.d: Technical assistance |

| 400 Series<br>Mapping and Regulations |
|---|
| 412.a: New study |
| 412.b: Leverage |
| 412.c: State review |
| 412.d: Higher study standards |
| 412.e: More-restrictive floodway standard |
| 412.f: Mapping of SFHA |
| 422.a: Open space preservations |
| 422.b: Deed restrictions |
| 422.c: Natural functions open space |
| 422.d: SFHA open space |
| 422.e: Coastal erosion open space |
| 422.f: Open space incentives |
| 422.g: Low density zoning |
| 422.h: Natural shoreline protection |
| 432.a: Development Limitations |
| 432.b: Freeboard |
| 432.c: Foundation protection |
| 432.d: Cumulative substantial improvements |
| 432.e: Lower substantial improvements |
| 432.f: Protection of critical facilities |
| 432.g: Enclosure limits |
| 432.h: Building code |
| 432.i: Local drainage protection |
| 432.j: Manufactured home parks |
| 432.k: Coastal A Zones |
| 432.l: SFHA regulations |
| 432.m: Tsunami hazard regulations |
| 432.n: Coastal erosion hazard regulations |
| 432.o: Other higher standard |
| 432.p: State-mandated regulatory standards |
| 432.q: Regulations administration |
| 442.a: Additional map data |
| 442.b: FIRM maintenance |
| 442.c: Benchmark maintenance |
| 442.d: Erosion data maintenance |
| 452.a: Storm water management regulations |
| 452.b: Watershed master plan |
| 452.c: Erosion and sedimentation control regulations |
| 452.d: Water quality regulations |

| 500 Series<br>Flood Damage Reduction Activities |
|---|
| 512.a: Floodplain management planning |
| 512.b: Repetitive loss area analysis |
| 512.c: Natural floodplain functions plan |
| 522.a: Buildings acquired or relocated |
| 522.b: Buildings on the repetitive loss list |
| 522.c: Severe Repetitive Loss properties |
| 522.d: Critical facilities |
| 522.e: Buildings located in the V or coastal A Zone |
| 532.a: Flood protection project technique used |
| 532.b: Flood protection improvement |
| 532.c: Protected buildings |
| 542.a: Channel debris removal |
| 542.b: Problem site maintenance |
| 542.c: Capital improvement program |
| 542.d: Stream dumping regulations |
| 542.e: Storage basin maintenance |

| 600 Series<br>Warning and Response |
|---|
| 612.a: Flood threat recognition system |
| 612.b: Emergency warning dissemination |
| 612.c: Flood response operations |
| 612.d: Critical facilities planning |
| 612.e: StormReady community |
| 612.f: TsunamiReady community |
| 622.a: Levee maintenance |
| 622.b: Levee failure threat recognition system |
| 622.c: Levee failure warning |
| 622.d: Levee failure response operations |
| 622.e: Levee failure critical facilities planning |
| 632.a: State dam safety program |
| 632.b: Dam failure threat recognition system |
| 632.c: Dam failure warning |
| 632.d: Dam failure response operations |
| 632.e: Dam failure critical facilities planning |

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| | 412.f: Mapping of SFHA | |
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| 322.d: Flood depth data | 422.g: Low density zoning | 522.d: Critical facilities |
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| 322.g: Natural floodplain functions | 432.a: Development Limitations | 532.a: Flood protection project technique used |
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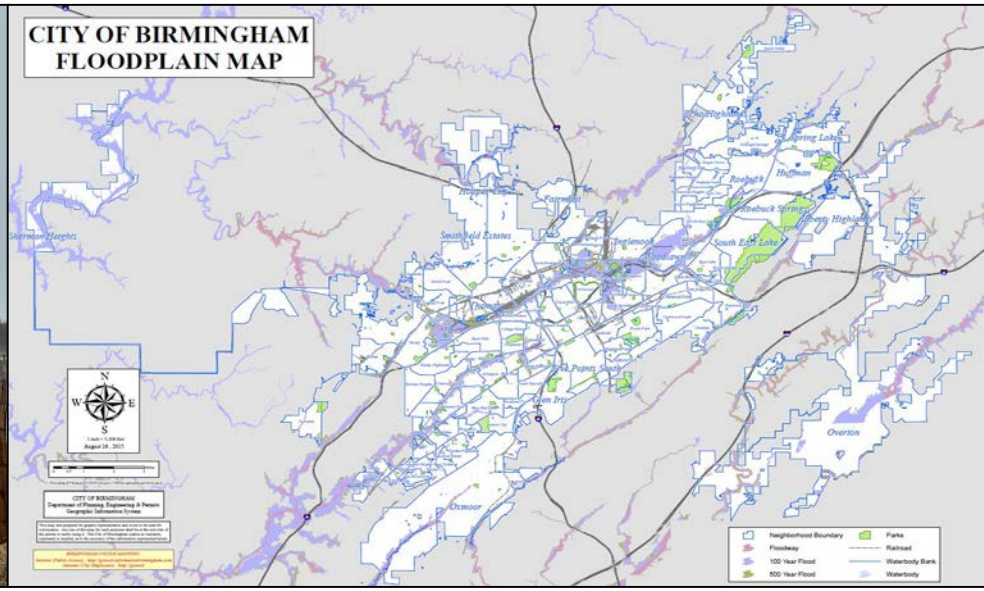
| 412.c: State review | 452.d: Water quality regulations | 632.d: Dam failure response operations |
| 412.d: Higher study standards | | 632.e: Dam failure critical facilities planning |

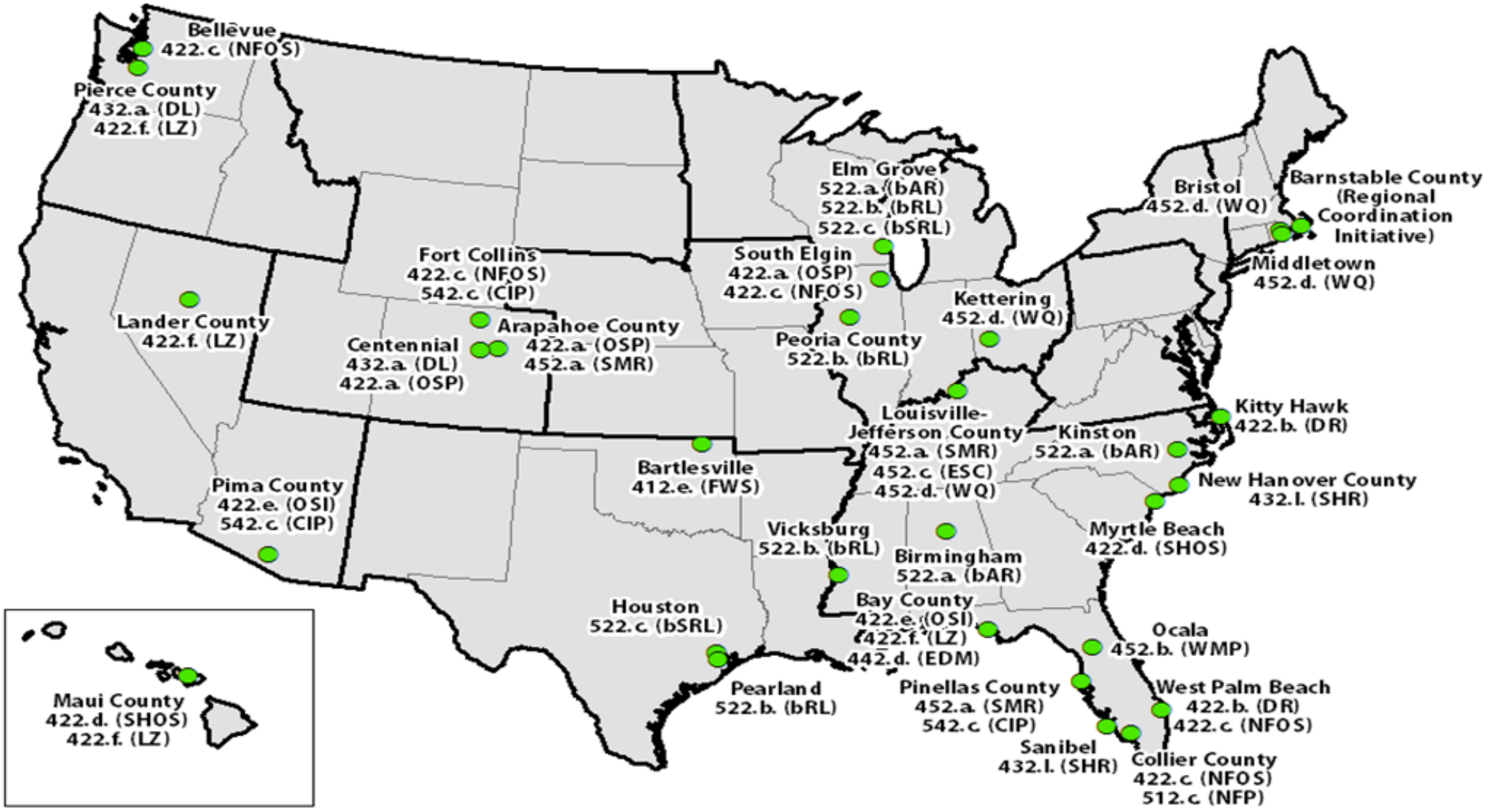
| Element Name | Possible Points | Element Name | Possible Points |
|---|---|---|---|
| 322.g. Natural Floodplain Functions | 20 | 432.a. Development Limitations | 1,330 |
| 332.a. Outreach Projects | 200 | 432.l. SFRH Regulations, Inland | 100 |
| 332.d. Stakeholder Delivery | 50 | 432.m. SFHR Regulations, 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**



# Best Practices and Success Stories



# 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



Image from Louisville MSD.

# Receive Stackable Credits

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

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

**Stackable Credit:**

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


Image Credit: Arthur Greenberg, via the Wikimedia Commons.

# 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***

# 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**

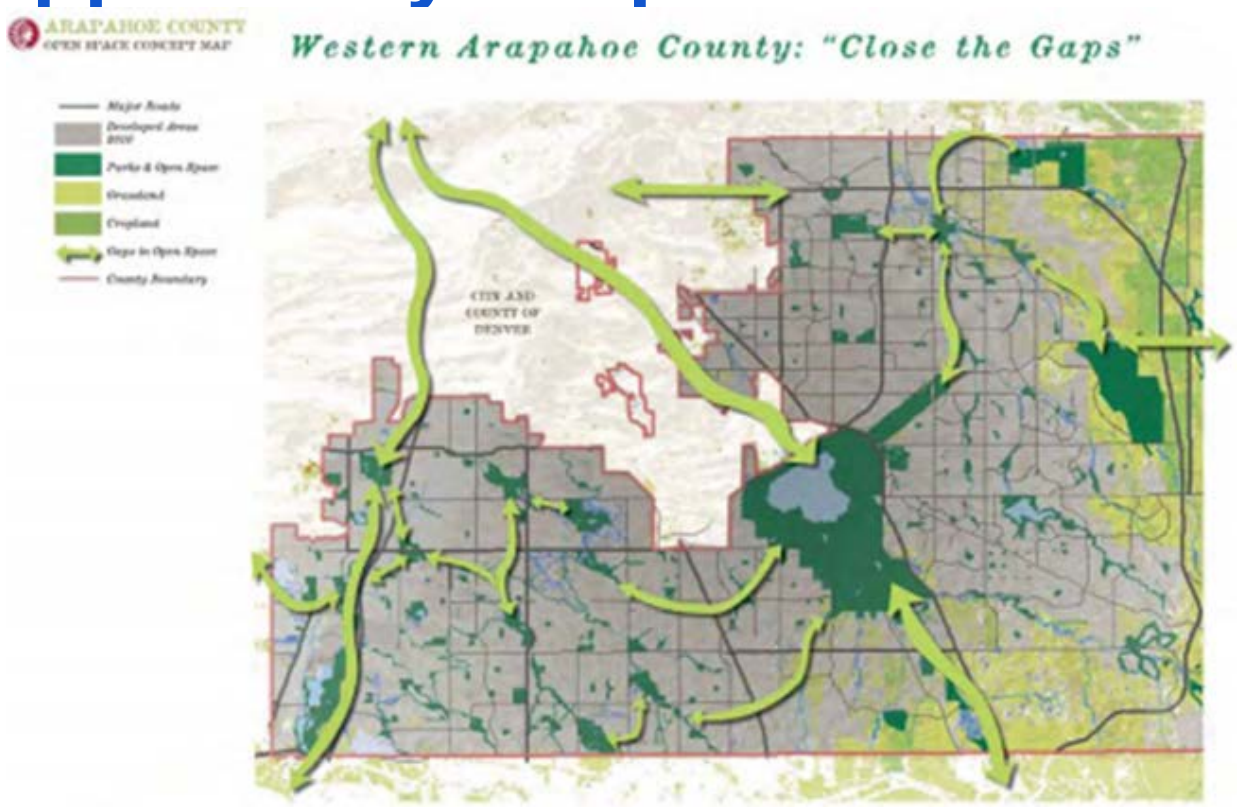
**Medium**

**High**


Icons by Diablo Tim from The Noun Project.

# Be Ready!

**Use existing plans to set a course for action and have funds on hand to take action when the opportunity is ripe.**




Images from Arapahoe County Open Space Master Plan 2010.

# Quick Demo of the Green Guide

## Walk-through of our site

# Our Site

- You can access it through the Flood Science Center website:

**FloodScienceCenter.org**

- Find out more info about resources, webinars and workshops – we will be adding more content soon!
- Green Guide is meant to be a web-enabled resource (there is a printable PDF that will not be updated due to funding constraints)

# CRS for Community Resilience

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.

This project aims to:

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

Have a question, recommendation or CRS success story of your own? Share it with us!

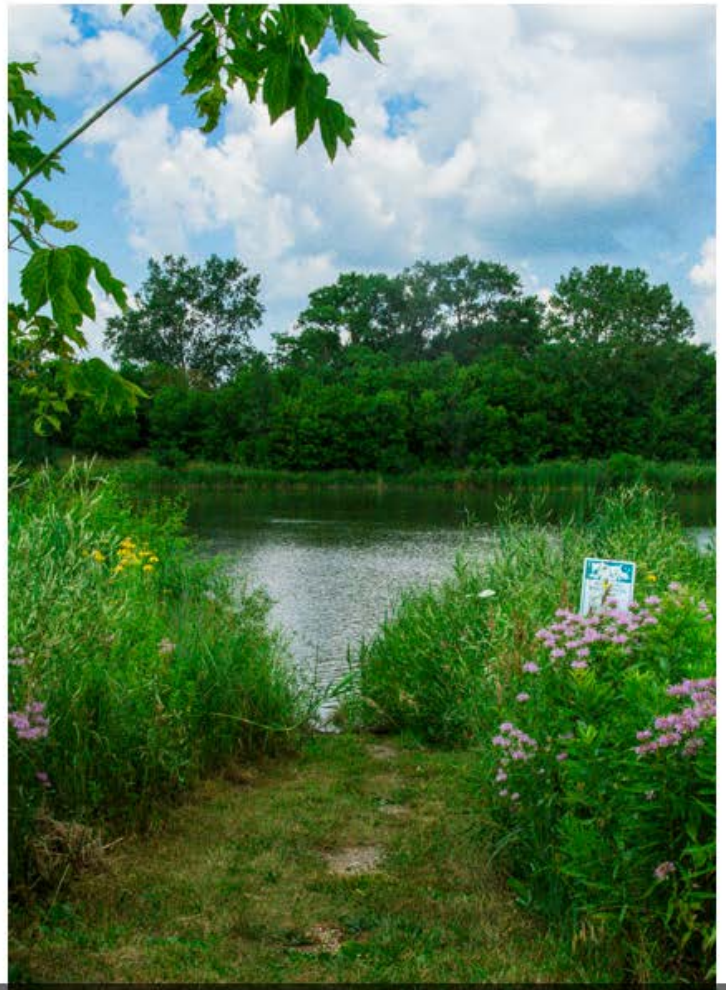
# Element Profiles

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

# Success Stories

Success Stories were developed through an extensive interview process with CRS communities from across the Nation. Communities were interviewed about CRS Elements that they scored well on. Questions helped understand a communities efforts and resources used to implement an element; costs associated with implementation and maintenance of that element; benefits (measured or perceived) reaped by the community; and the challenges encountered, and best practices that they would like to pass along to other communities.

We want to hear from you! Share your community's CRS success story with us and we will feature it on the Green Guide.

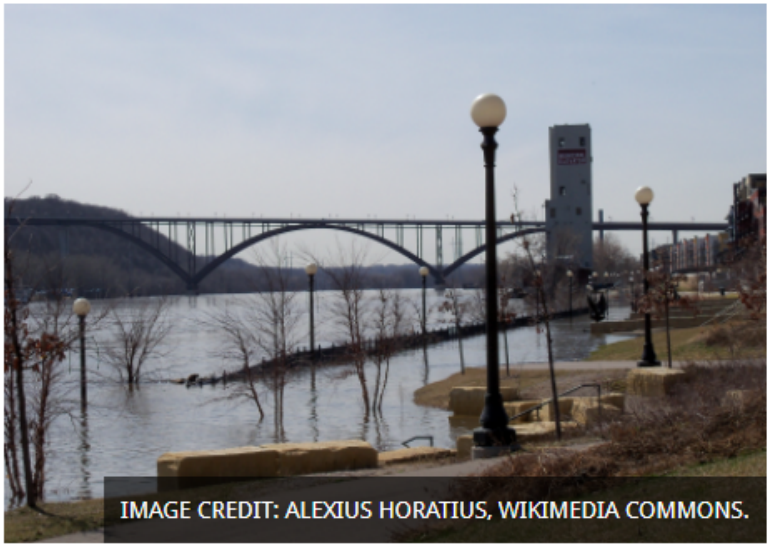


IMAGE CREDIT: ALEXIUS HORATIUS, WIKIMEDIA COMMONS.

## Links to Success Stories

# CRS for Community Resilience Resources

Search CRS Resources GO

SHOW ALL RESULTS

## CRS Manuals


### NFIP CRS Coordinator's Manual 2017

Online access


### NFIP CRS Coordinator's Manual 2013

Online access


### NFIP CRS Coordinator's Manual 2007

Online access

# How to Map Open Space for Community Rating System Credit

*John Rozum & Melissa Rosa*

**NOAA Office for Coastal Management**

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# How We're Participating in CRS

**Tools**

**Partnerships**

**Efforts Underway & Looking Ahead**

# Why Open Space Preservation?

- Earn FEMA CRS credit under Activity 420
- Mitigate flood risk and climate change impacts
- Multiple benefits: water quality, habitat, recreation
- Complement existing CRS tools and resources


# FEMA National Flood Insurance Program
# CRS Activity 420: Open Space Preservation (OSP)

- Communities earn credits for permanently preserved open space
- First five elements provide credit for **parcels** that qualify for:

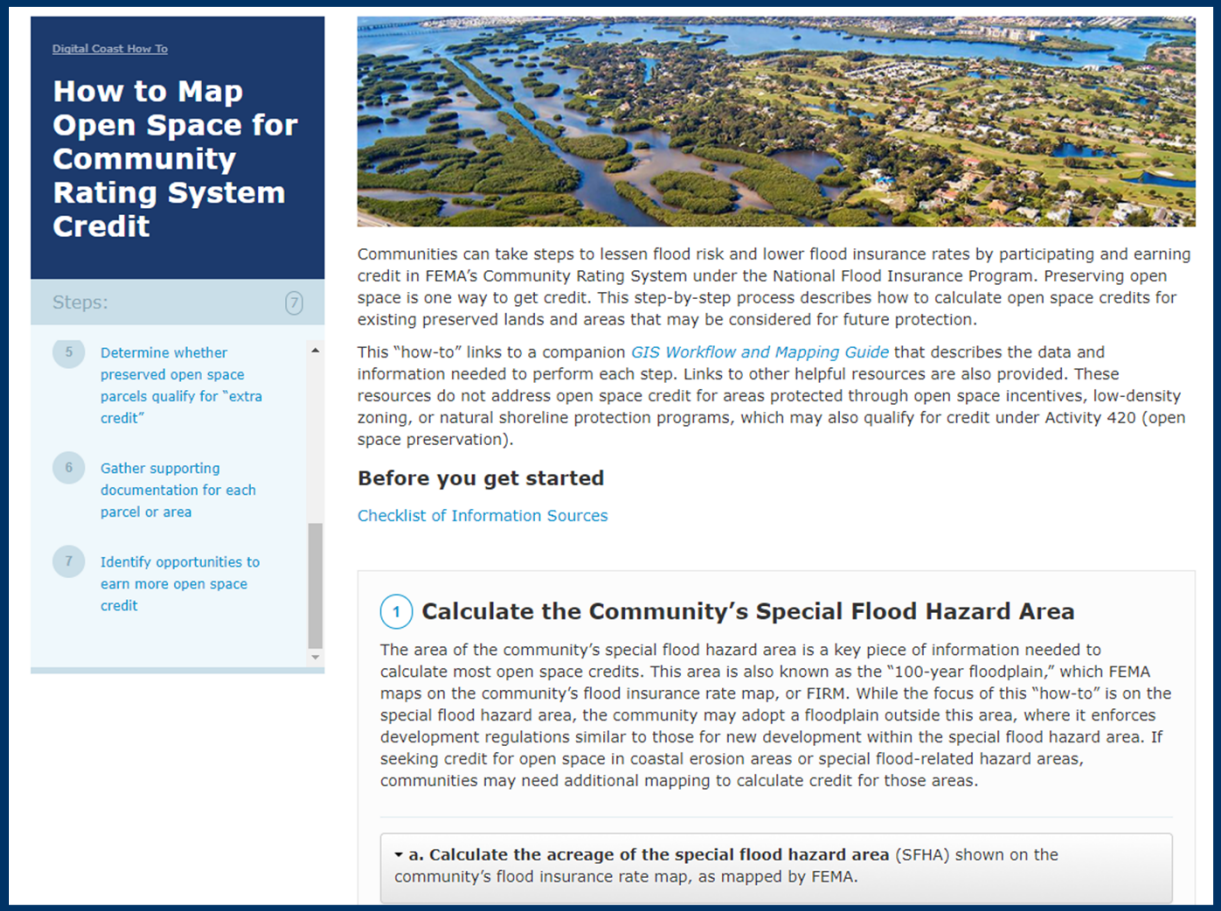
**OSP Credit**

- Open Space Preservation (OSP) – 1450 points

**OSP Extra Credit**

- Deed Restrictions (DR) – 50 points
- Natural functions open space (NFOS) – 350 points
- Special flood-related hazard open space (SHOS) – 150 points
- Coastal erosion open space (CEOS) – 750 points

# How to Map Open Space for Community Rating System Credit



Digital Coast How To

**How to Map Open Space for Community Rating System Credit**

Steps: 7

5 Determine whether preserved open space parcels qualify for "extra credit"

6 Gather supporting documentation for each parcel or area

7 Identify opportunities to earn more open space credit

Communities can take steps to lessen flood risk and lower flood insurance rates by participating and earning credit in FEMA's Community Rating System under the National Flood Insurance Program. Preserving open space is one way to get credit. This step-by-step process describes how to calculate open space credits for existing preserved lands and areas that may be considered for future protection.

This "how-to" links to a companion *GIS Workflow and Mapping Guide* that describes the data and information needed to perform each step. Links to other helpful resources are also provided. These resources do not address open space credit for areas protected through open space incentives, low-density zoning, or natural shoreline protection programs, which may also qualify for credit under Activity 420 (open space preservation).

**Before you get started**

Checklist of Information Sources

**1 Calculate the Community's Special Flood Hazard Area**

The area of the community's special flood hazard area is a key piece of information needed to calculate most open space credits. This area is also known as the "100-year floodplain," which FEMA maps on the community's flood insurance rate map, or FIRM. While the focus of this "how-to" is on the special flood hazard area, the community may adopt a floodplain outside this area, where it enforces development regulations similar to those for new development within the special flood hazard area. If seeking credit for open space in coastal erosion areas or special flood-related hazard areas, communities may need additional mapping to calculate credit for those areas.

▾ **a. Calculate the acreage of the special flood hazard area** (SFHA) shown on the community's flood insurance rate map, as mapped by FEMA.

*https://coast.noaa.gov/digitalcoast/training/crs.html*

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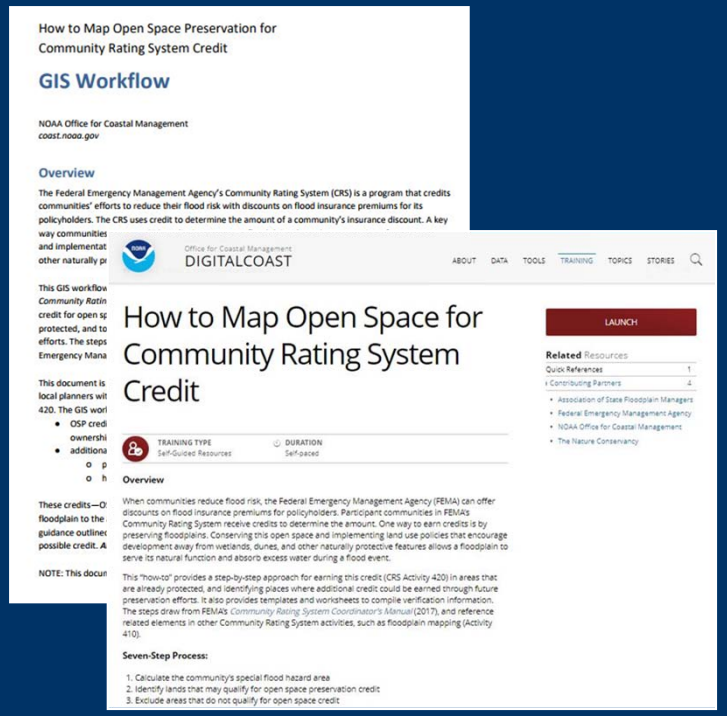
# NOAA How To Map Open Space: Two Companion Products

1. Step-by-step instructional “How To” guide (for planners)

1. GIS workflow (for GIS analysts)

- Supplementary documents
  - Before you get started
  - Worksheet for calculating credits
  - Parcel documentation checklist

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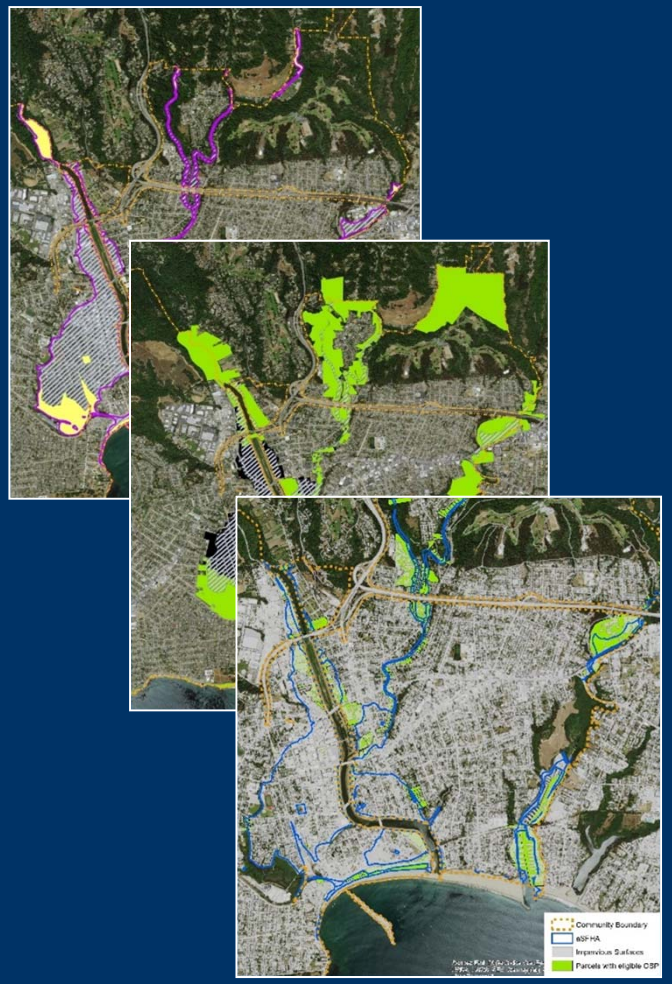
# How To & GIS Workflow Steps

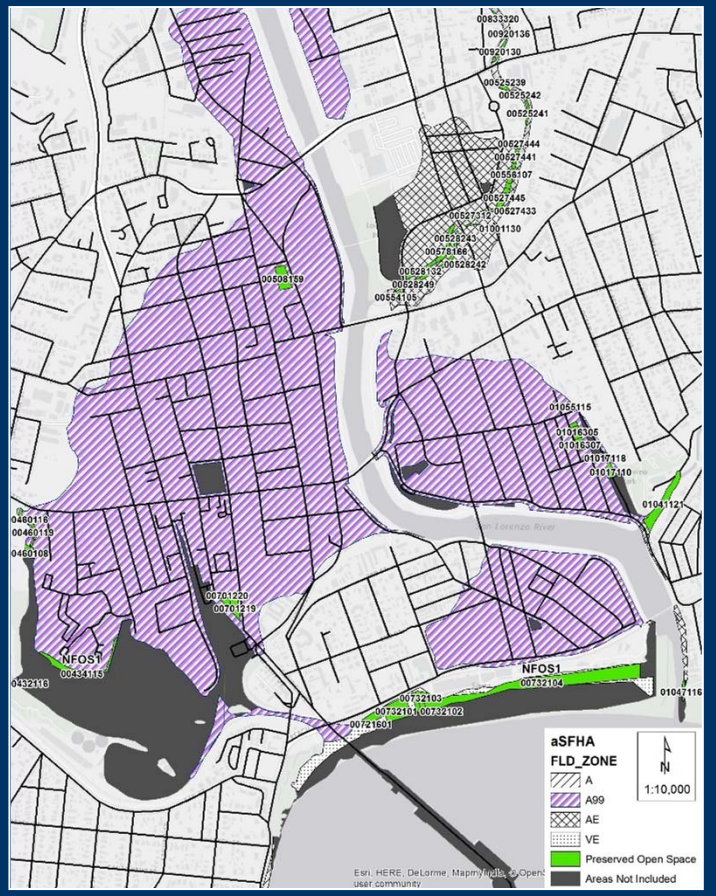
1. Calculate impact adjusted Special Flood Hazard Area (aSFHA)
2. Identify lands that may qualify as open space
3. Exclude areas that do not qualify
4. Calculate the number of possible OSP credits

rOSP = aOSP/aSFHA (x 1,450 points )

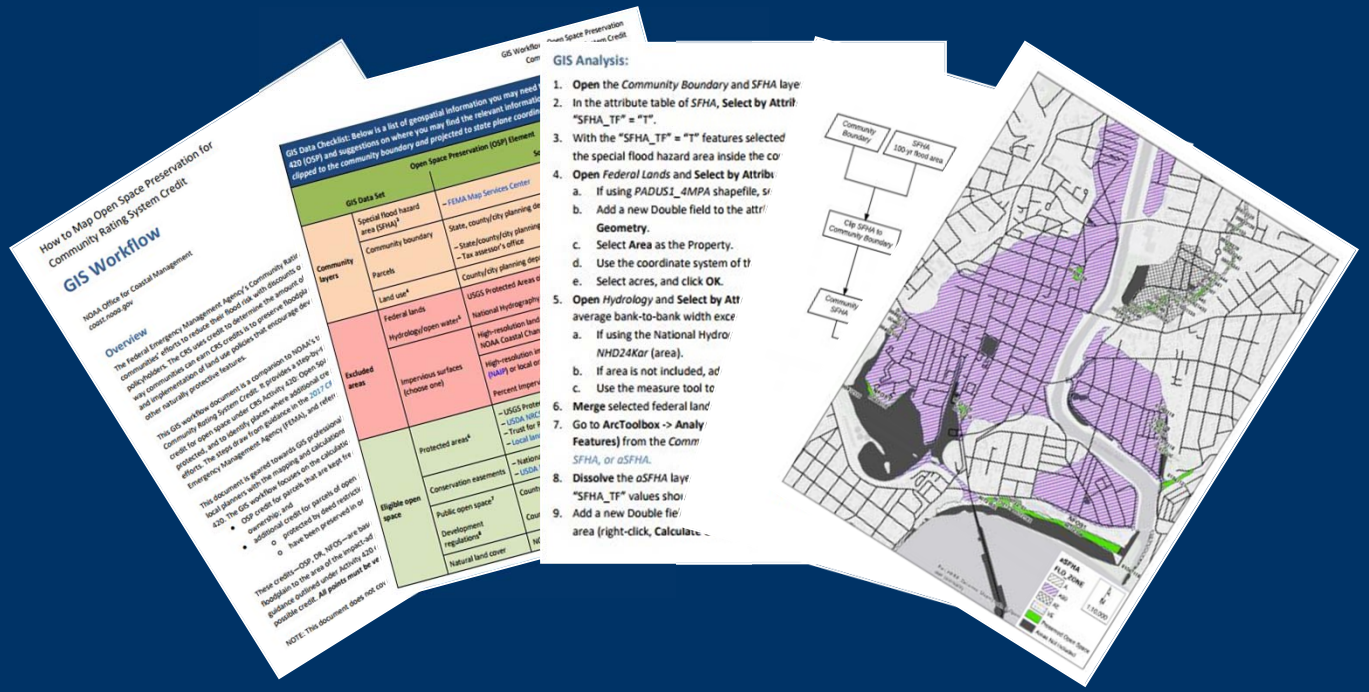


# How To & GIS Workflow Steps

5. Determine if parcels qualify for “extra credit”
6. Gather supporting information for each parcel or area.
7. Identify opportunities to earn more open space credit.



# GIS Workflow and Mapping Guide




- Map eligible open space and calculate CRS credit using GIS
- GIS dataset checklist and workflow diagrams for spatial analysis
- Create GIS output layers (OSP parcels and aSFHA shapefile)

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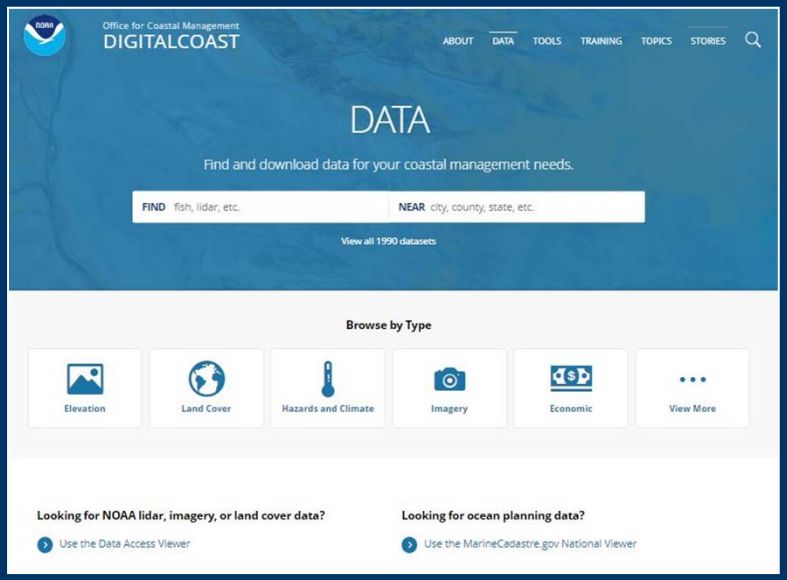
# GIS Dataset Checklist and Sources

- **Community layers**
  - SFHA
  - Parcels, Land Use, Zoning
- **Excluded areas**
  - Federal Lands
  - Open water
  - Impervious surfaces
- **Open spaces areas**
  - Protected areas, conservation easements, land trusts
  - Critical habitat and water/biological resources
  - Land cover



## Step 1: Calculate the adjusted special flood hazard area

- Calculate acreage of SFHA
- Subtract federal lands and water bodies
- Calculate area of **aSFHA**

rOSP = aOSP/**aSFHA** (x 1,450 points )

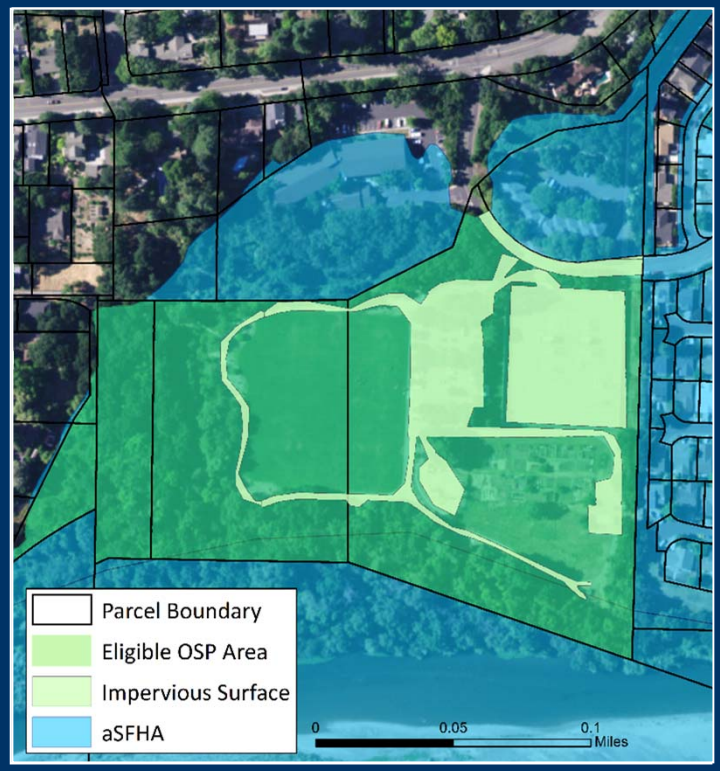

## Step 2: Identify lands that may qualify

- Identify parcels that intersect the aSFHA
- Query aSFHA parcels using land use attributes
- Select aSFHA parcels that qualify as “preserved” open space

## Step 3: Exclude areas that do not qualify for credit

- Calculate area of parcels covered by impervious surfaces

Option 1: Reclass high-resolution land cover
Option 2: Calculate percent impervious
Option 3: Perform image classification
Option 4: Hand digitize impervious surfaces




## Step 4: Calculate possible credit

- Subtract excluded areas
- Sum total qualifying area, **aOSP**
- Calculate impact adjustment ratio

rOSP = **aOSP**/aSFHA (x 1,450 points )

# Step 5: Determine if parcels qualify for “extra credit”

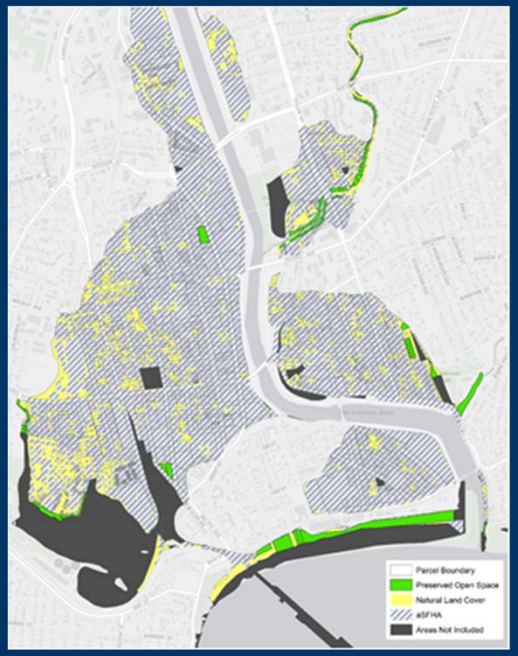
- Select OSP parcels that qualify for Deed Restrictions (DR) and Natural Function Open Space (NFOS)
  - NFOS 1 – Preserved areas in natural state
  - NFOS 3 – Critical fish/wildlife habitat
- Calculate ratio and add to total OSP credit


## Step 6: Gather documentation for each parcel

- Produce the “impact adjustment map”
- Provide list of parcels that may qualify for credit

## Step 7: Identify opportunities to earn more OSP credit

- Identify non-OSP parcels with natural land cover and private ownership




Table

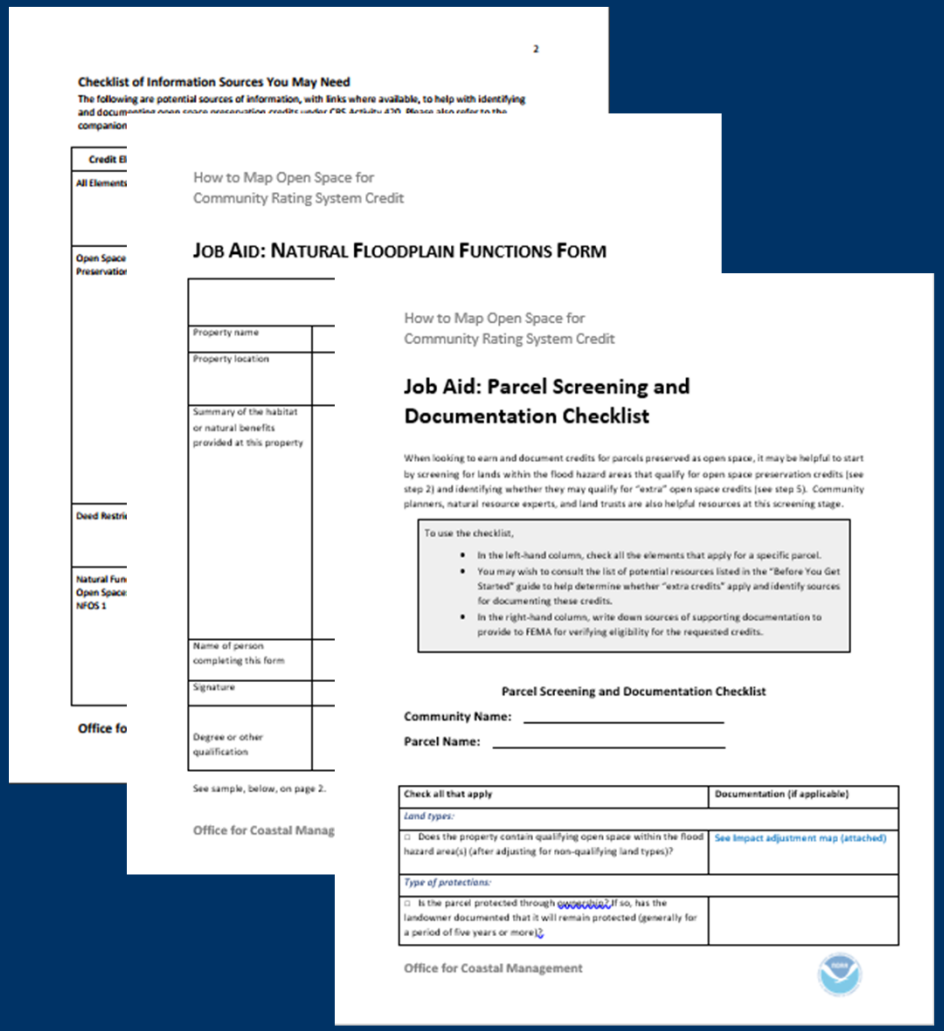
eligible_parcel_FINAL_landuse

| APN | PARCEL_AC | SFHA_AC | IS_AC | aOSP | OSP_pts |
|---|---|---|---|---|---|
| 009-291-44 | 33.9857 | 14.343255 | 4.2989 | 10.04 | 23 |
| 007-321-04 | 13.1752 | 5.402065 | 0.627963 | 4.77 | 11 |
| 002-041-25 | 15.6485 | 3.087818 | 0 | 3.09 | 7 |
| 008-441-41 | 6.79058 | 2.629209 | 0.095926 | 2.53 | 6 |
| 008-311-36 | 5.0353 | 5.035304 | 3.37859 | 1.66 | 4 |
| 008-101-16 | 18.3495 | 1.208326 | 0.003098 | 1.21 | 3 |
| 008-491-16 | 1.63257 | 1.110802 | 0 | 1.11 | 2 |
| 005-281-32 | 1.97216 | 1.972165 | 0.906298 | 1.07 | 2 |
| 008-321-07 | 5.6152 | 3.571353 | 2.50895 | 1.06 | 2 |
| 008-401-40 | 1.21586 | 1.026166 | 0.0025 | 1.02 | 2 |
| 008-611-01 | 4.81594 | 1.018534 | 0 | 1.02 | 2 |
| 007-321-01 | 1.11036 | 1.039565 | 0.097837 | 0.94 | 2 |
| 008-031-29 | 1.12354 | 1.017483 | 0.081035 | 0.94 | 2 |
| 005-781-66 | 2.18124 | 2.181243 | 1.32292 | 0.86 | 2 |
| 008-601-03 | 5.58651 | 5.376742 | 4.58605 | 0.79 | 2 |
| 011-181-02 | 13.7553 | 1.37951 | 0.693212 | 0.69 | 2 |
| 008-301-21 | 0.721737 | 0.708148 | 0.035825 | 0.67 | 2 |
| 010-262-70 | 10.4932 | 1.13247 | 0.55156 | 0.58 | 1 |
| 008-311-38 | 0.701391 | 0.701391 | 0.172416 | 0.53 | 1 |
| 002-301-01 | 49.5063 | 0.467732 | 0 | 0.47 | 1 |
| 008-232-38 | 1.99734 | 1.090025 | 0.624626 | 0.47 | 1 |
| 008-101-25 | 0.733263 | 0.467666 | 0.007012 | 0.46 | 1 |
| 008-491-18 | 0.597284 | 0.456594 | 0 | 0.46 | 1 |
| 002-041-19 | 1.9207 | 0.427443 | 0 | 0.43 | 1 |
| 002-041-08 | 1.98977 | 0.428571 | 0.014964 | 0.41 | 1 |
| 008-341-62 | 12.347 | 0.41252 | 0.013506 | 0.4 | 1 |
| 008-601-07 | 1.16173 | 1.161729 | 0.789671 | 0.37 | 1 |

1 (0 out of 360 Selected)

eligible_parcel_FINAL_landuse

# Job Aids: Ways to make the job easier



How to Map Open Space for Community Rating System Credit

**JOB AID: NATURAL FLOODPLAIN FUNCTIONS FORM**

| | |
|---|---|
| Property name | |
| Property location | |
| Summary of the habitat or natural benefits provided at this property | |
| Name of person completing this form | |
| Signature | |
| Degree or other qualification | |

See sample, below, on page 2.

Office for Coastal Manag

How to Map Open Space for Community Rating System Credit

**Job Aid: Parcel Screening and Documentation Checklist**

When looking to earn and document credits for parcels preserved as open space, it may be helpful to start by screening for lands within the flood hazard areas that qualify for open space preservation credits (see step 2) and identifying whether they may qualify for "extra" open space credits (see step 5). Community planners, natural resource experts, and land trusts are also helpful resources at this screening stage.

To use the checklist,

- In the left-hand column, check all the elements that apply for a specific parcel.
- You may wish to consult the list of potential resources listed in the "Before You Get Started" guide to help determine whether "extra credits" apply and identify sources for documenting these credits.
- In the right-hand column, write down sources of supporting documentation to provide to FEMA for verifying eligibility for the requested credits.

**Parcel Screening and Documentation Checklist**

**Community Name:** _____

**Parcel Name:** _____

| Check all that apply | Documentation (if applicable) |
|---|---|
| *Land types:* | |
| ☐ Does the property contain qualifying open space within the flood hazard area(s) (after adjusting for non-qualifying land types)? | See impact adjustment map (attached) |
| *Type of protections:* | |
| ☐ Is the parcel protected through ~~covenants~~? If so, has the landowner documented that it will remain protected (generally for a period of five years or more)? | |

Office for Coastal Management

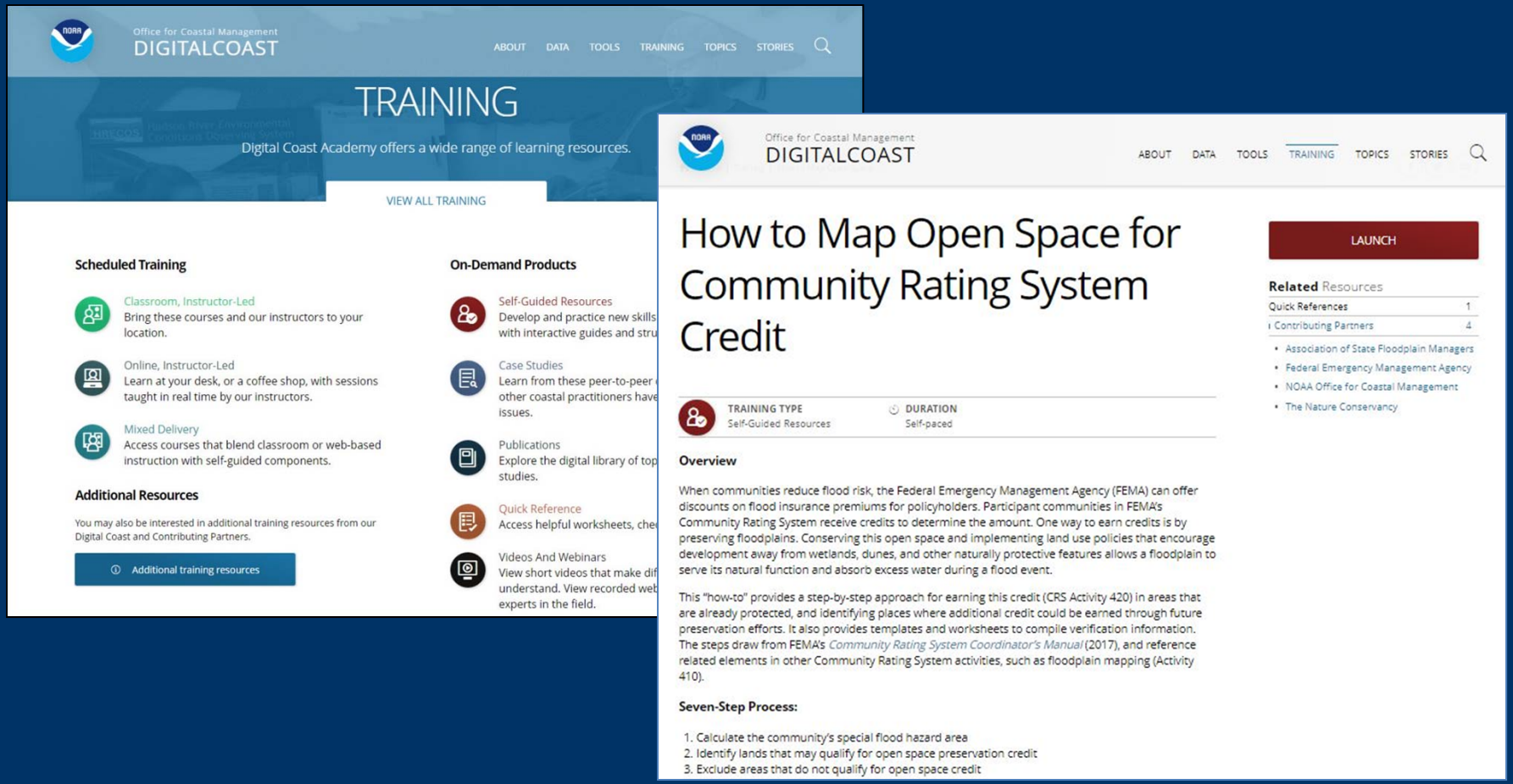
## Excel Worksheet to Calculate Open Space Credit

***TASK – Element 422.a.: Calculate Credit for Preserved Open Space ("OSP")***

| | | |
|---|---|---|
| Fixed Values: | Total area of adjusted SFHA (in acres): | 504.40 |
| | Maximum Open Space Credit for Category (max OSP): | 1450 |

| Parcel # or Name | Total Acreage for Parcel | Area of parcel within SFHA (or regulatory floodplain) that qualifies as protected open space (**aOSP**) | Ratio of parcel's aOSP to total area of SFHA ("impact adjustment ratio") (**rOSP** = aOSP/ aSFHA with max of 1.5) | **Open Space Credit** for Parcel (**cOSP** = rOSP x max OSP credits) | **Tax Parcel ID #(s) or Tax Map, Block, Lot #(s)** |
|---|---|---|---|---|---|
| *e.g. City Parks* | *236.0* | *143.2* | *0.28* | ***411.66*** | *Parcel ID# 54-026-99-0004-001 [or] Block 106.05, Lots 8, 9, and 10* |
| City Parks | 236.0 | 143.2 | 0.28 | **411.66** | Parcel ID# 54-026-99-0004-001 [or] Block 106.05, Lots 8, 9, and 10 |
| Country Club | 73.0 | 55.3 | 0.11 | **158.97** | Parcel #s: 54-017-69-0003-000, 54-017-69-0004-001, and 54-017-69-0005-000 |
| Indian Bend Wash Floodway | 29.1 | 29.1 | 0.06 | **83.65** | Map 16, Block 204.10, Lots 1 and 4 |
| McCormick Creek Floodway | 15.3 | 15.3 | 0.03 | **43.98** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| 0 | 0.0 | 0.0 | 0.00 | **0.00** | |
| Totals: | 353.40 | 242.90 | 0.48 | **698.27** | |

# Where You'll find it




https://coast.noaa.gov/digitalcoast/training/crs.html

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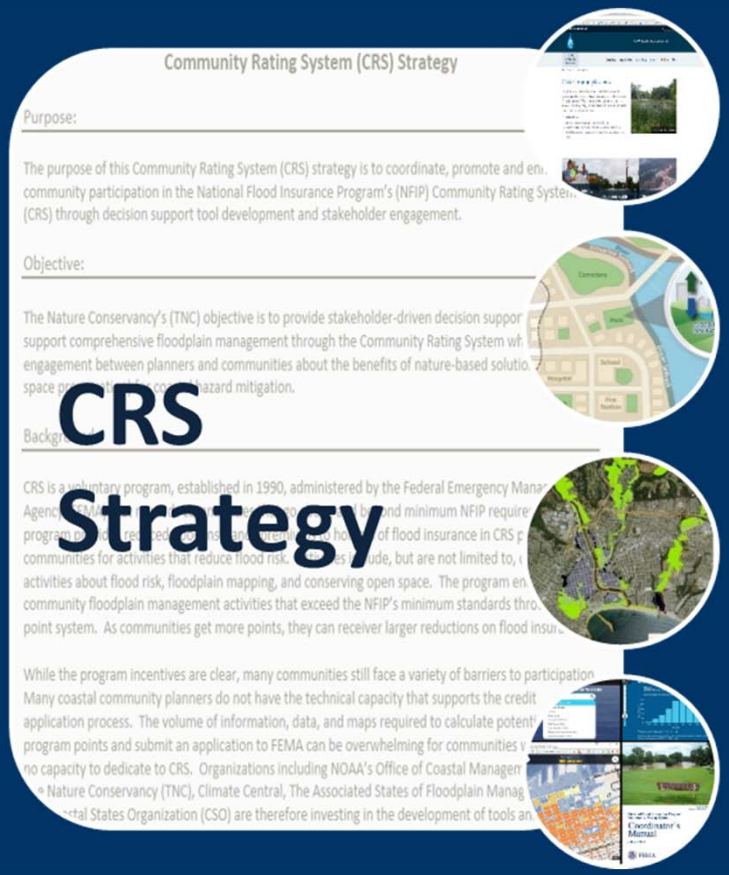
# Digital Coast Partnership & CRS




ASFPM and CSO Green Guide

TNC CRS Explorer

NOAA How To Guide & GIS Workflow

Climate Central's Surging Seas CRS Guide

# Efforts Underway & Looking Ahead

- How To trainings and webinars
- Risk communication aids
- Community pilots and knowledge sharing

# Thank you!

# Questions & Feedback?

*John.Rozum@noaa.gov*

*How To Guide: Elaine.Vaudreuil@noaa.gov*

*GIS Workflow: Melissa.Rosa@noaa.gov*

# Discussion Questions

- Does your city/county planning office have GIS capacity?
- Is it safe to assume communities have access to an ESRI license?
- Would an open source workflow be preferred?
- Are the steps intuitive or confusing?
- How can this be improved?

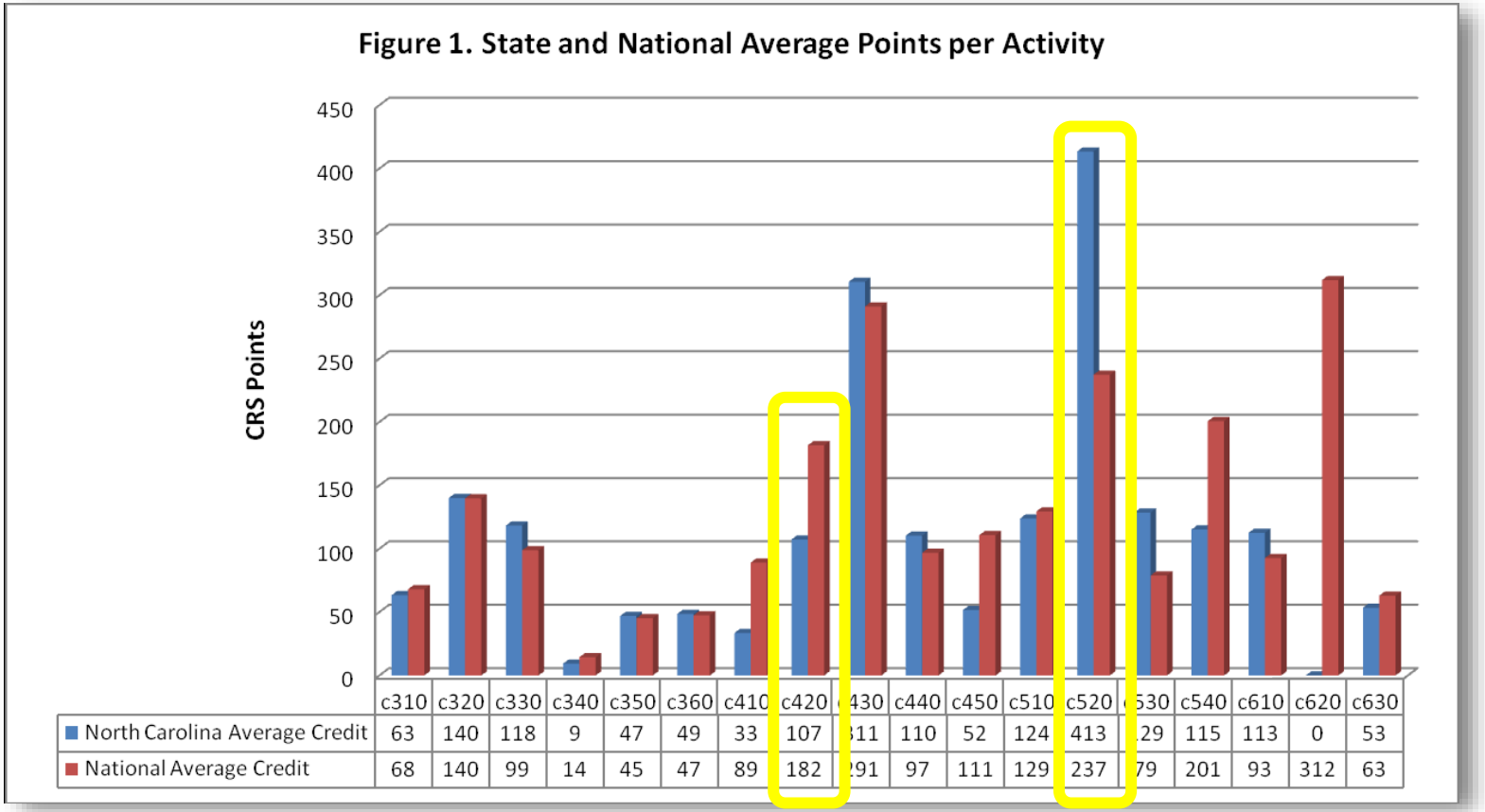
# Improving Community Resilience in North Carolina through the CRS Program

Laura Flessner

GIS Manager

The Nature Conservancy

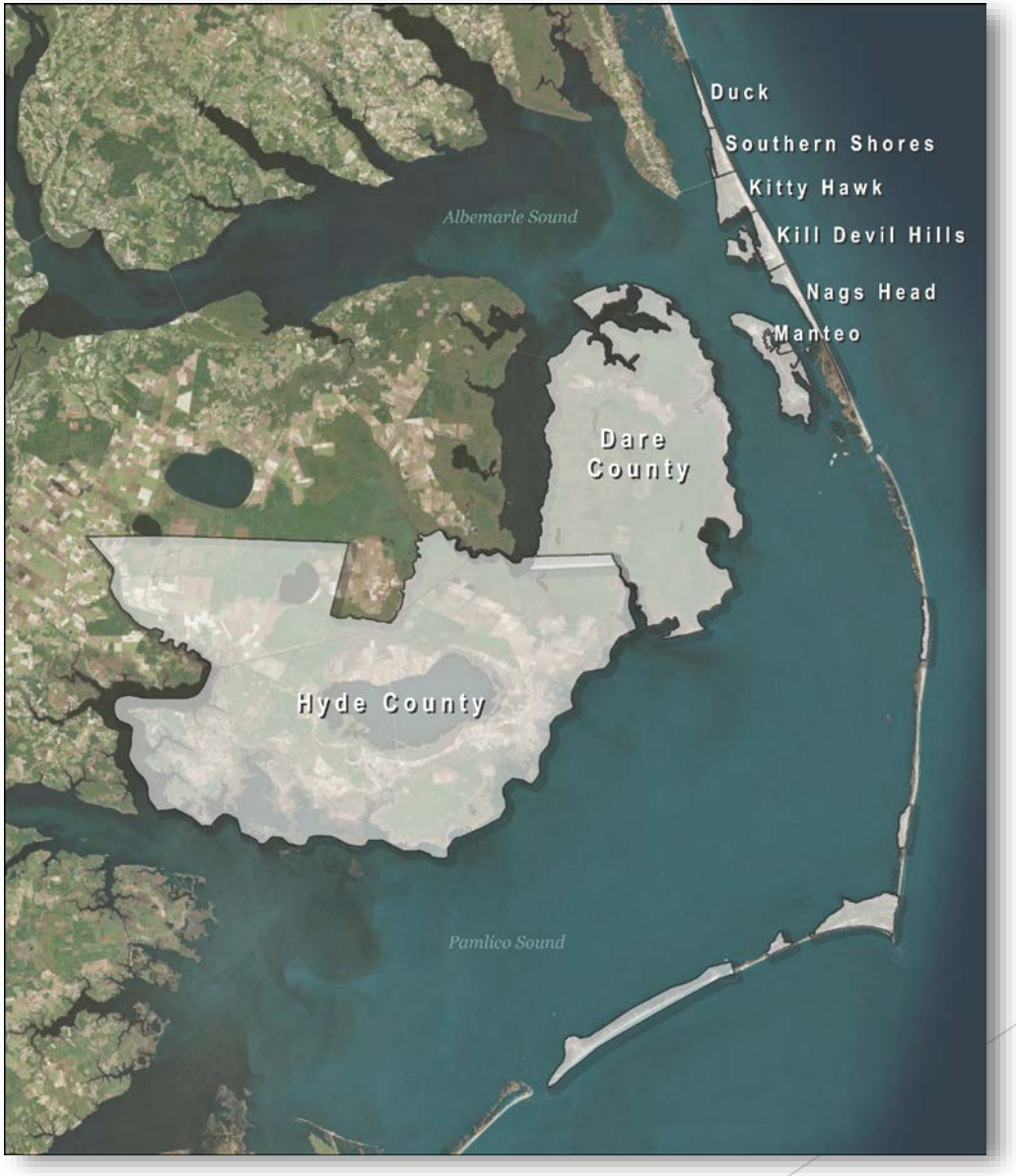
# North Carolina - State CRS Profile (2014)



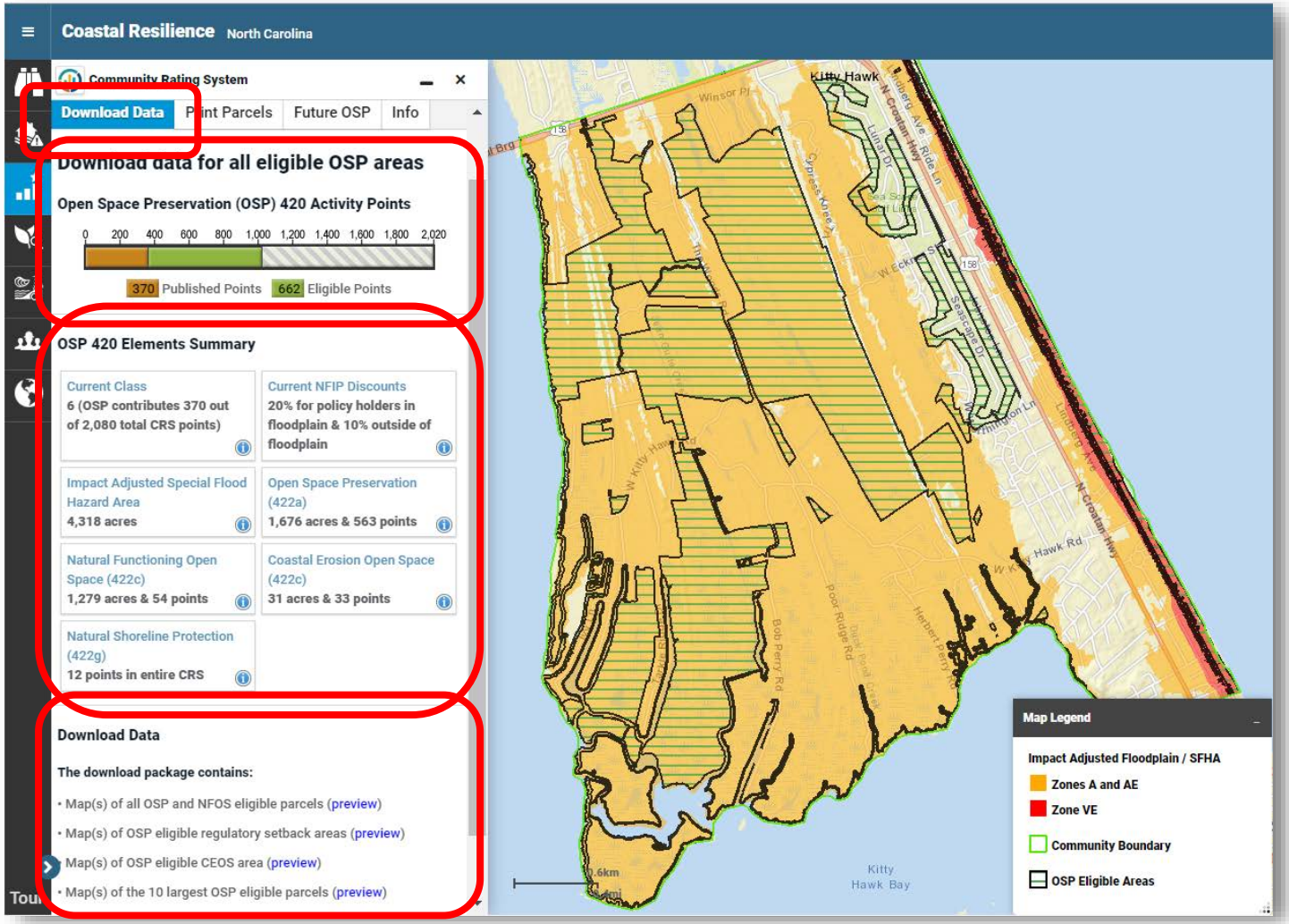

| | c310 | c320 | c330 | c340 | c350 | c360 | c410 | c420 | c430 | c440 | c450 | c510 | c520 | c530 | c540 | c610 | c620 | c630 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North Carolina Average Credit | 63 | 140 | 118 | 9 | 47 | 49 | 33 | 107 | 311 | 110 | 52 | 124 | 413 | 129 | 115 | 113 | 0 | 53 |
| National Average Credit | 68 | 140 | 99 | 14 | 45 | 47 | 89 | 182 | 291 | 97 | 111 | 129 | 237 | 79 | 201 | 93 | 312 | 63 |

# CRS Explorer

# CRS Explorer

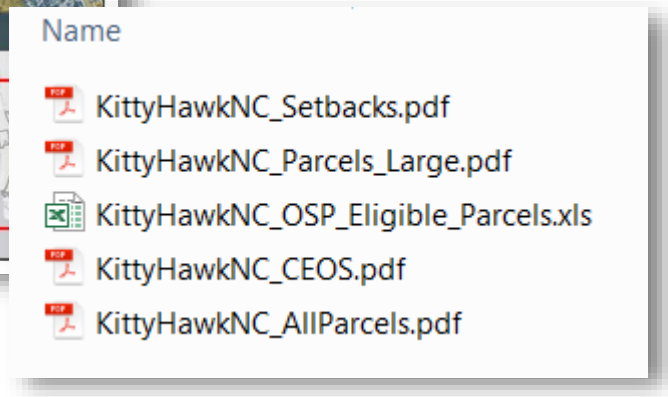


# CRS Explorer – View Current OSP

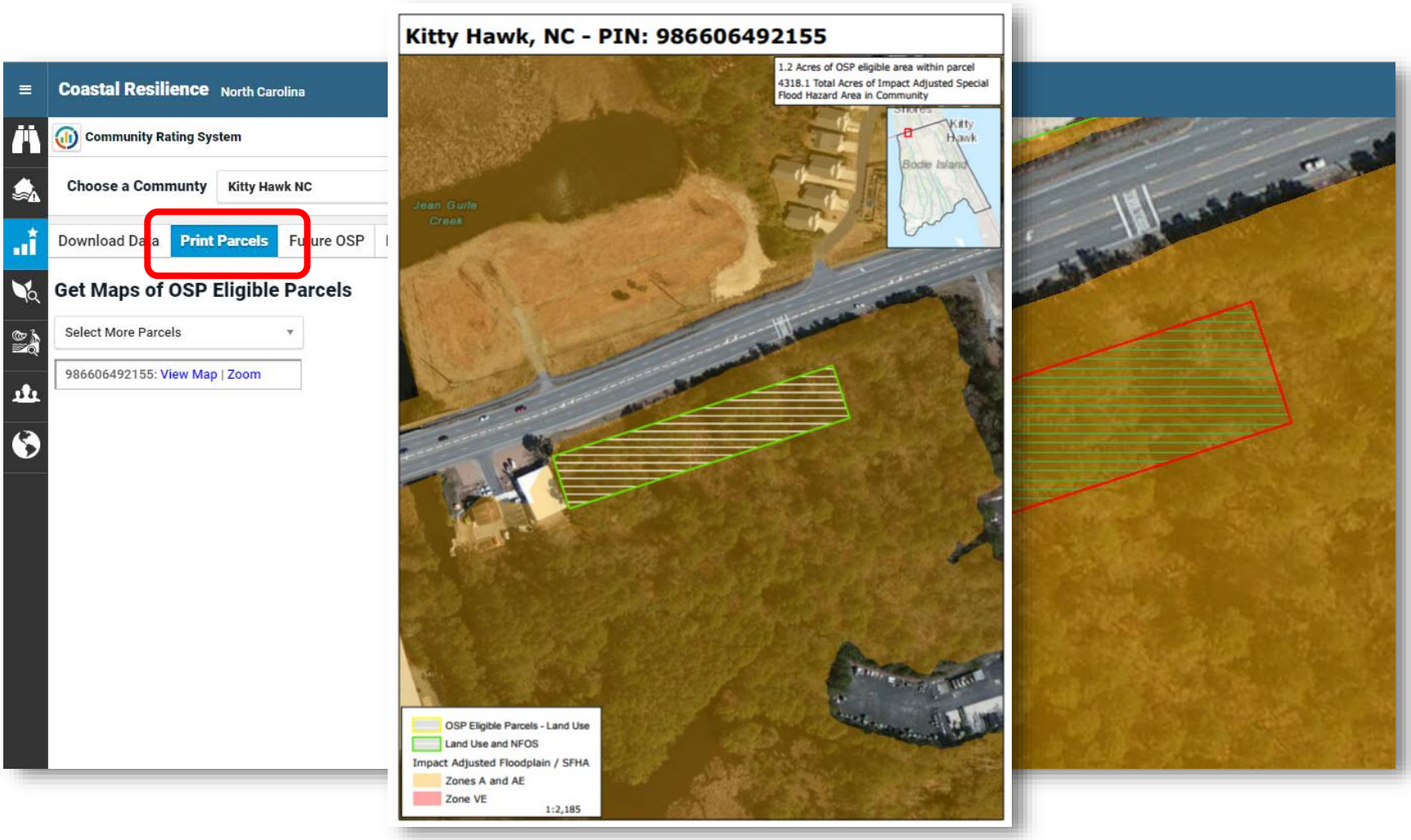


# CRS Explorer – Download Maps & Parcel Table

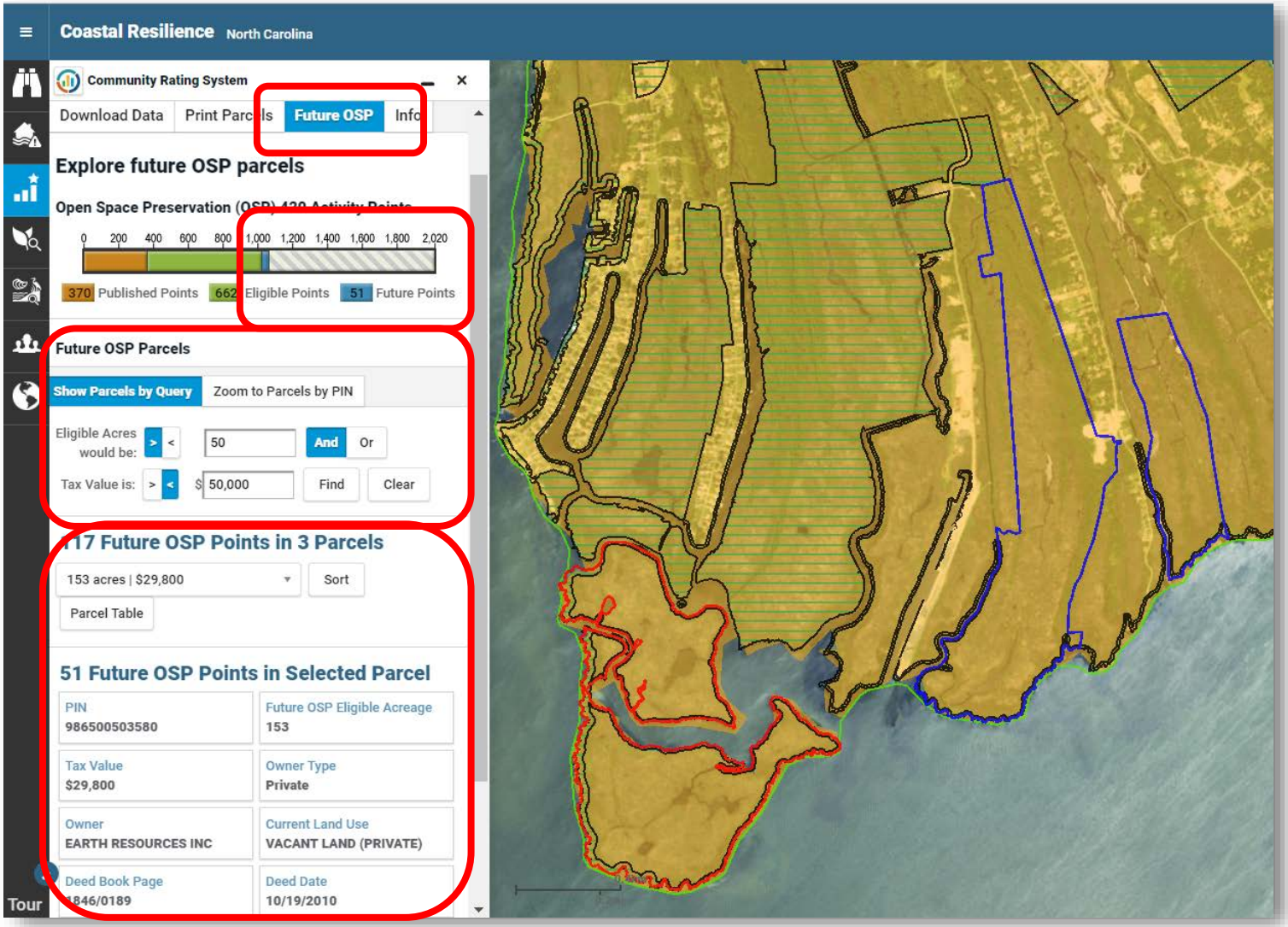




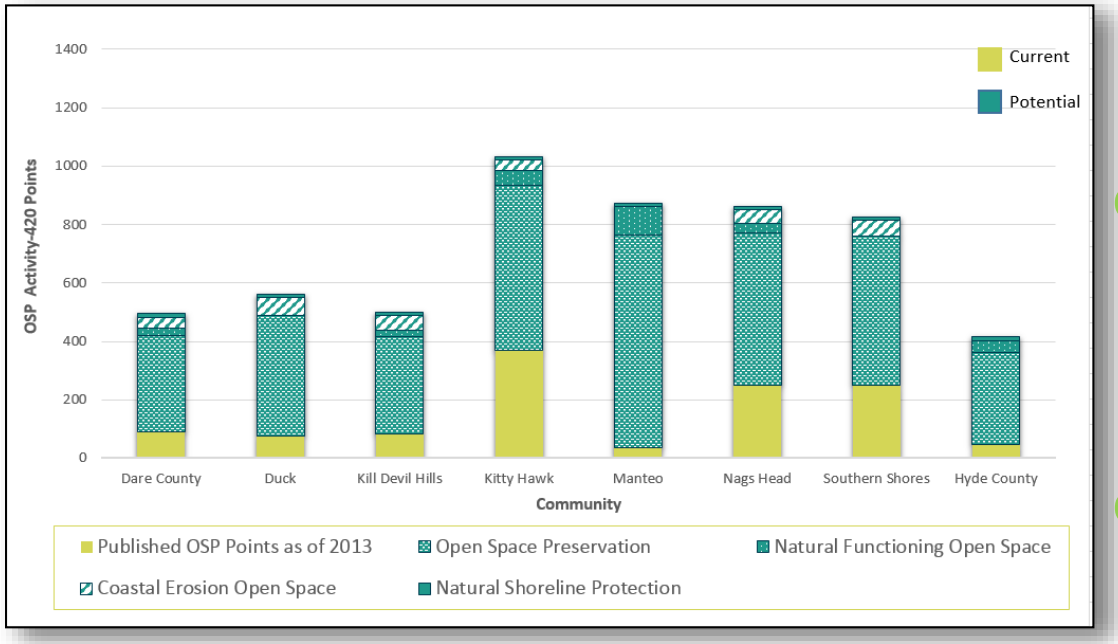
# CRS Explorer – Search Individual Parcels



# CRS Explorer – Explore Future OSP



# Tracking Success




**Kill Devil Hills**

✓ Went from Class 6 to Class 5

✓ 25% discount = **$632,227 savings/yr**

✓ **$141 per policy/yr**

- Identified ave of 546 eligible OSP credits across eight communities.
- So far, 3 communities have been validated and raised at least one class.
- Improved ISO workflow
- Identified additional open space opportunities through the app's "Future" Open Space function.

# How is This Info Being Used?


Comprehensive Planning

Smart Growth

Repetitive Loss Buyouts

# Funding Opportunities

Traditional Easements & Land Acquisition:

- State Parks,
- DOT Mitigation Sites,
- Land trusts
- Wetlands Reserves

Innovative

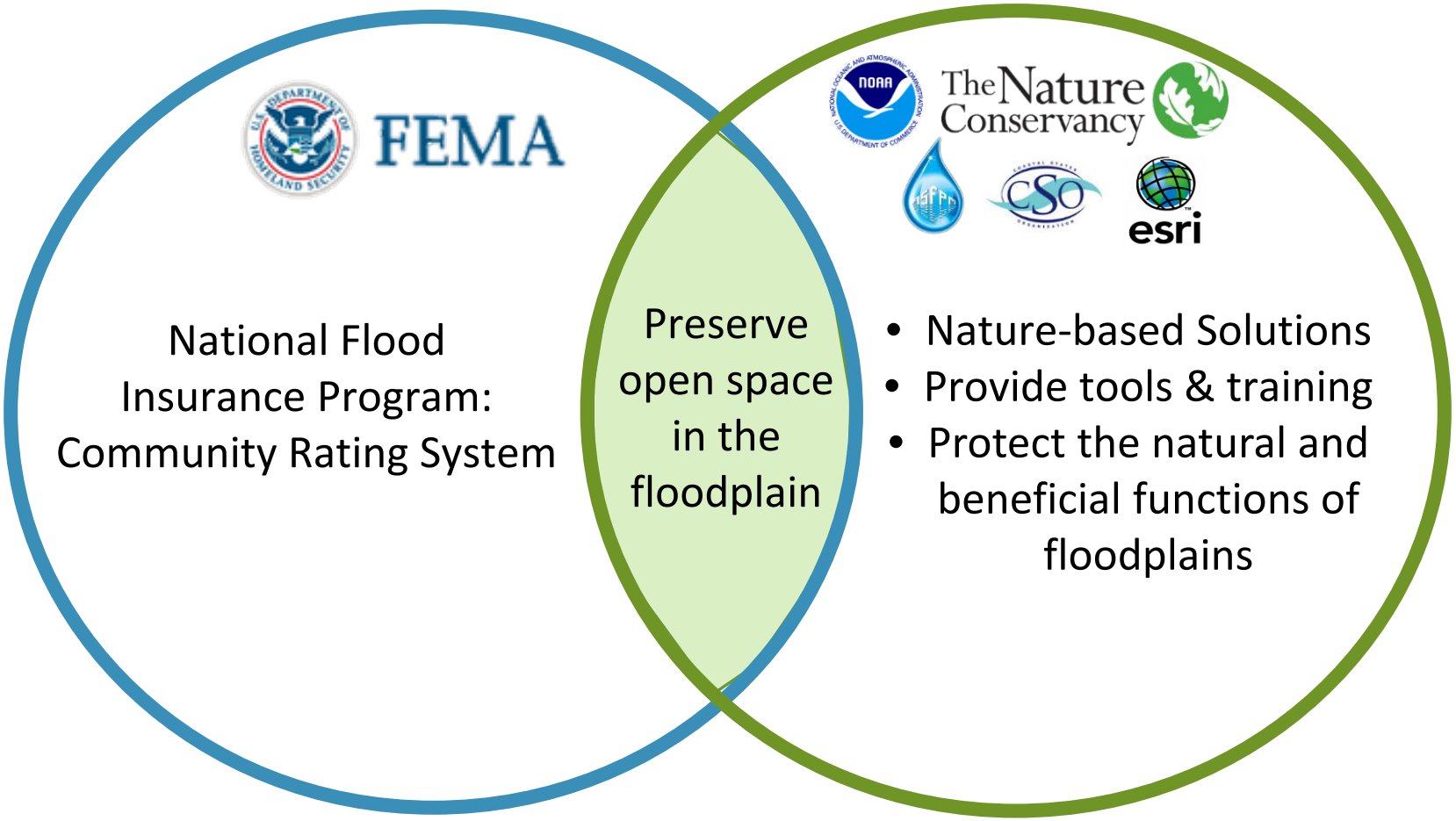
- Community taxes and bonds
- Stormwater Utilities

Grants:

- NOAA OCM
- FEMA's Flood Hazard Mitigation Assistance
- Clean Water Management Trust Fund
- Parks and Recreation Trust Fund
- Land and Water Conservation Fund
- Nat'l Coastal Wetlands Conservation Grant Program

**nrcsolutions.org/funding/**

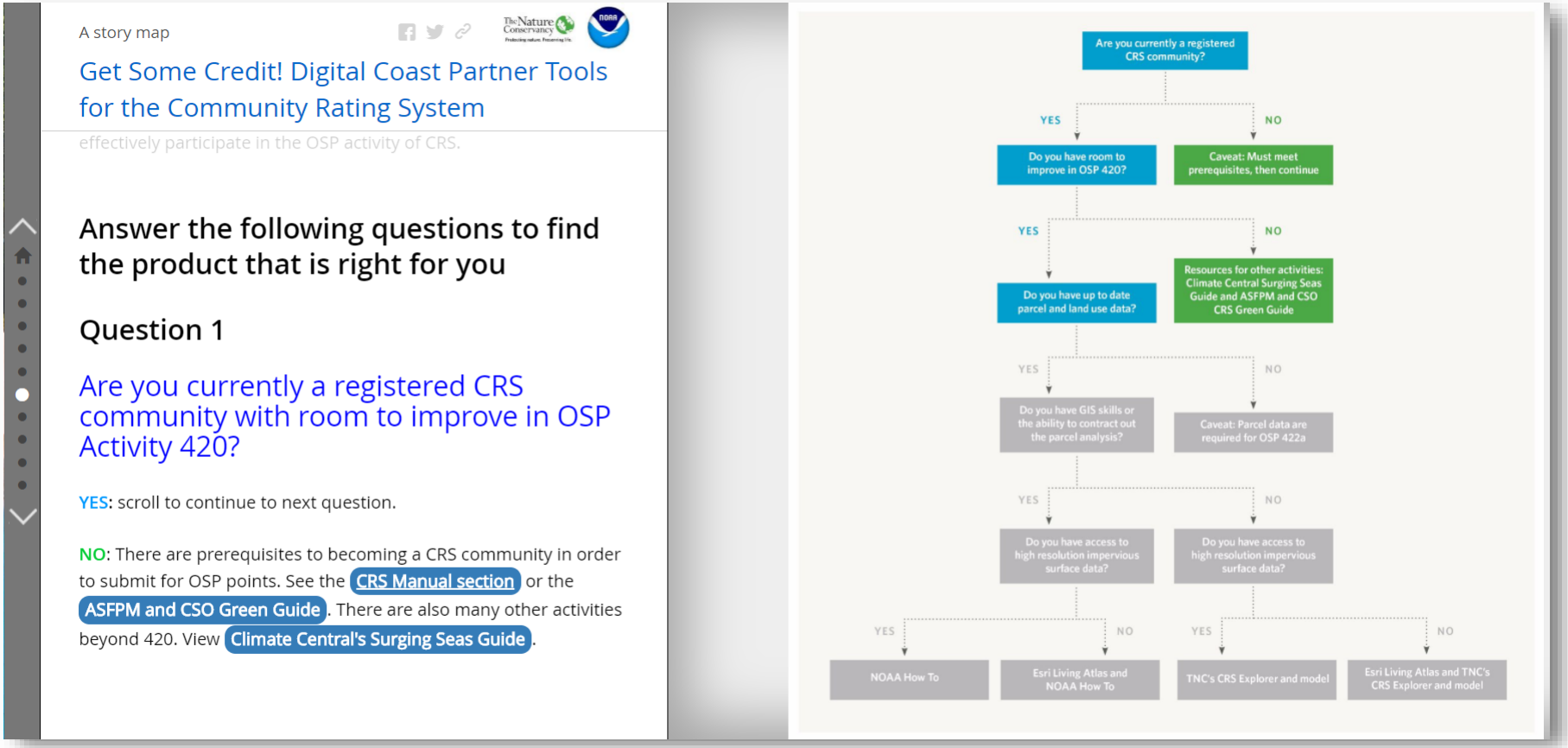
# CRS Strategy



# Suite of CRS Resources

| My Community is: | CRS Tool |
|---|---|
| New to CRS and/or needs best practices for success | Association of State Floodplain Manager's Green Guide |
| Ready to ID land that qualifies for Activity 420 Open Space Preservation (OSP) | NOAA's How to Guide & GIS Workflow ArcGIS Learn Lesson & Living Atlas (screening-level) |
| Looking to explore current or plan for future OSP or communicate OSP benefits | The Nature Conservancy's CRS Explorer |
| Is maxed out for OSP but looking for other areas to increase CRS scores | Climate Central's Surging Seas CRS Guide |

# Find the Right One




**coastalresilience.org/project/open-space/**

# Thank You

**Decision Support Tool**
maps.coastalresilience.org/northcarolina

**Project**
http://coastalresilience.org/project/north-carolina/
coastalresilience.org/project/community-rating-system-explorer
coastalresilience.org/project/open-space/

**Training**
http://media.coastalresilience.org/NC/CRS_Explorer_TryMe/index.html

**Funding**
nrcsolutions.org/funding/

# Q & A

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**Laura Flessner, GIS Manager, TNC**
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