Activity 450

Stormwater Management

Introduction to Activity 450

- **Reward communities for regulating stormwater from development in ways that limit its contribution to flooding and ensure that stormwater does not degrade overall water quality.**
  - **Prevent future development from increasing flood hazards of existing development**
  - **Protect existing hydrologic functions within the watershed**
  - **Maintain and improve water quality**

See Pages 450-1 to 450-3 of the CRS Coordinator's Manual

Image Credit: Tink Tracy via Flickr Commons.

Activity 450 Elements

452.a: Stormwater Management Regulations
380 points
4 sub-elements
Subject to Impact Adjustment

452.b: Watershed Master Plan
315 points

*Subject to Impact Adjustment

452.c: Erosion and Sediment Control Regulations
40 points

*No Impact Adjustment

452.d: Water Quality Regulations
20 points

No Impact Adjustment

Activity 450 Elements

452.a: Stormwater Management Regulations
380 points
4 sub-elements
*Subject to Impact Adjustment

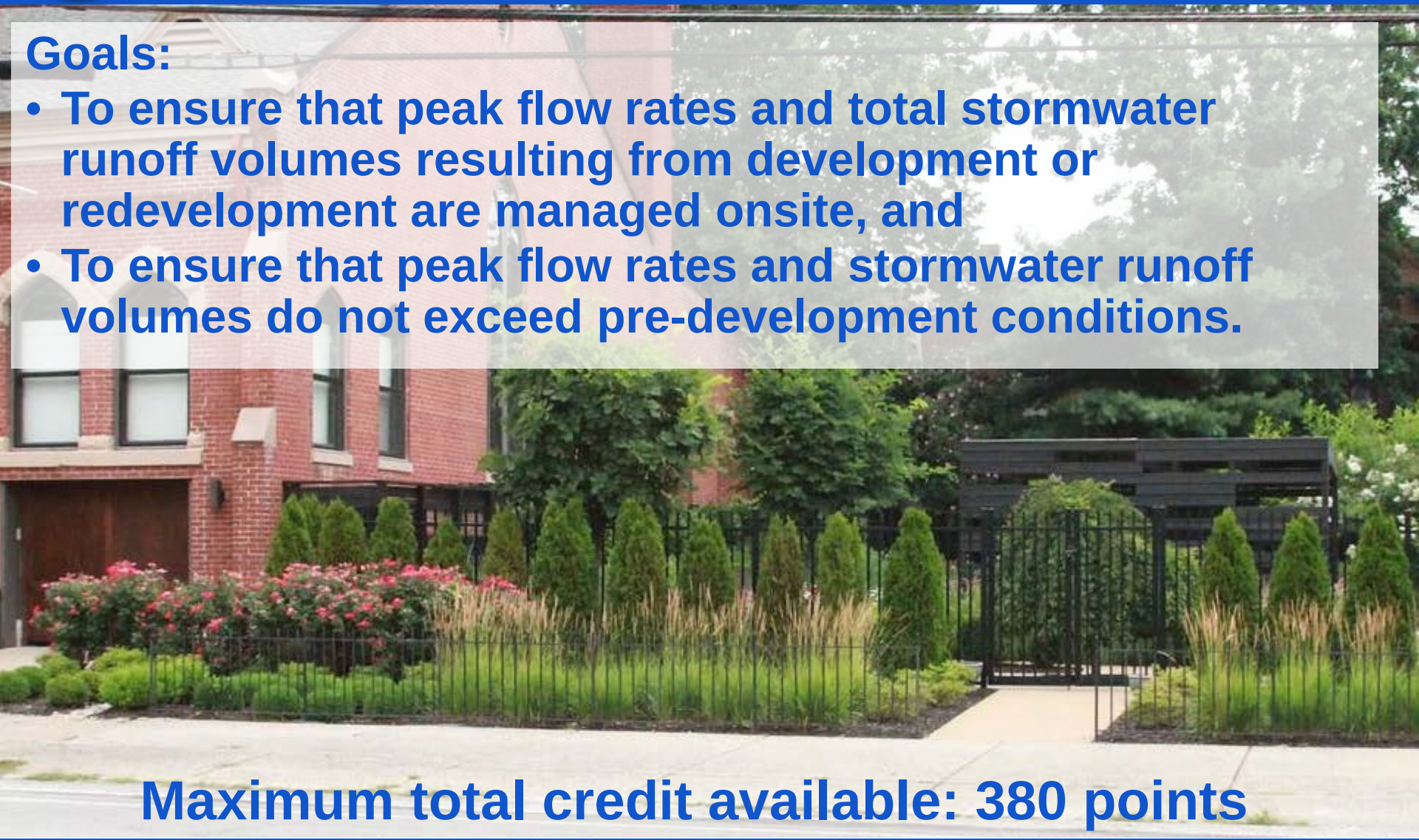
452.b: Watershed Master Plan
315 points
*Subject to Impact Adjustment

452.c: Erosion and Sediment Control Regulations
315 points
*No Impact Adjustment

452.d: Water Quality Regulations
20 points
No Impact Adjustment

755 Total Points

Element 452.a: Stormwater Management Regulations (SMR)



Goals:

- **To ensure that peak flow rates and total stormwater runoff volumes resulting from development or redevelopment are managed onsite, and**
- **To ensure that peak flow rates and stormwater runoff volumes do not exceed pre-development conditions.**

Maximum total credit available: 380 points

Rain Garden Image Credit: Louisville MSD.

452.a: SMR Sub-Elements

(1) Size of development regulated (SZ):

Clearly state the size and type of development that is regulated

At minimum:

"all development is regulated except for parcels of 5 acres or less or increases in impervious area of 20,000 square feet or less" – CRS Coordinators Manual, 2017.

Maximum credit available: 110 points

Green Infrastructure Image Credit: Louisville MSD.

452.a: SMR Sub-Elements

(2) Design storms used in regulations (DS):

Clearly specify the design storm(s) your community requires developers to manage onsite

Tips:

- **At minimum, community must require onsite management of 10-year storm.**
- **75 bonus points available for requiring retention of runoff onsite**

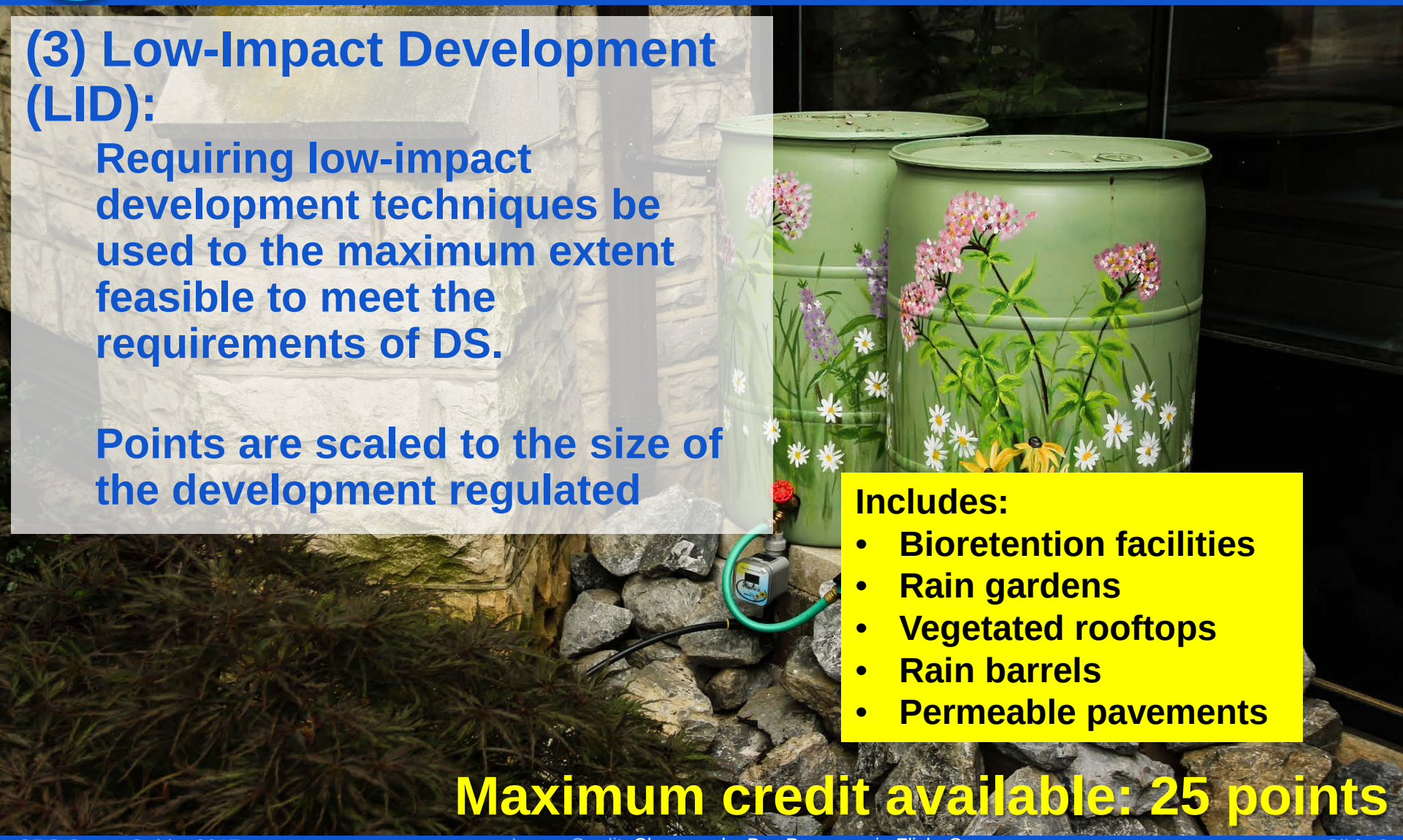
Maximum credit available: 225 points

452.a: SMR Sub-Elements

(3) Low-Impact Development (LID):

Requiring low-impact development techniques be used to the maximum extent feasible to meet the requirements of DS.

Points are scaled to the size of the development regulated



Includes:

- Bioretention facilities
- Rain gardens
- Vegetated rooftops
- Rain barrels
- Permeable pavements

Maximum credit available: 25 points

Image Credit: Chesapeake Bay Program via Flickr Commons.

452.a: SMR Sub-Elements

(4) Public Maintenance of Required Facilities (PUB):

- **Community establishes procedures for stormwater management facilities**
- **Property owners required to follow procedures**
- **Community has the right to inspect and maintain and bill any owners that fail to maintain their facilities**

Maximum credit available: 20 points

Image Credit: Matt Green via Flickr Commons.

Element 452.a: SMR Documentation Difficulty

MEDIUM DEGREE OF DIFFICULTY

- **Provide ISO/CRS Specialist with copies of ordinances and permits**
- **Show the regulations are being enforced**
- **Need an impact adjustment map**

Tip: GIS Expertise helps!

Element 452.a: SMR Implementation Difficulty

MEDIUM DEGREE OF DIFFICULTY

- Implementation and enforcement require staff
- Potential opposition from community
- Must receive credit for SZ and DS in order to get credit for this element overall

Image Credit: Chesapeake Bay Program via Flickr Commons.

Some Good News…

RI Stormwater Design & Installation Standards Manual:

"Peak flow attenuation is required for the 10-year and 100-year, 24-hour Type III design storm events. The primary purpose of this sizing criterion is to prevent an increase in the frequency and magnitude of out-of-bank flooding."
-Page 3-18

"Communities are also required to use LID techniques as the "primary method of stormwater control to the maximum extent practicable."
Page 1-2

Image Credit: Travis Estell via Flickr Commons.

Element 452.b: Watershed Master Plan (WMP)

Goal: Provide your community with a tool to make decisions easier on a watershed level.

"Developing and implementing a plan that analyzes the combined effects of existing and expected development and redevelopment on drainage throughout a watershed that also includes a plan of action to address current and expected problems" –CRS Coordinator's Manual, 2017.

Maximum total credit available: 315 points

Image Credit: Chester County Planning via Flickr Commons.

Element 452.b: Watershed Master Plan (WMP)

Goal: Provide your community with a tool to make decisions easier on a watershed level.

Maximum total credit available: 315 points

Image Credit: Chester County Planning via Flickr Commons.

Element 452.b: WMP Documentation Difficulty

MEDIUM DEGREE OF DIFFICULTY

- **Large documentation requirement**
- **Large amount of data and GIS skills**

Tip: GIS Staff can help!

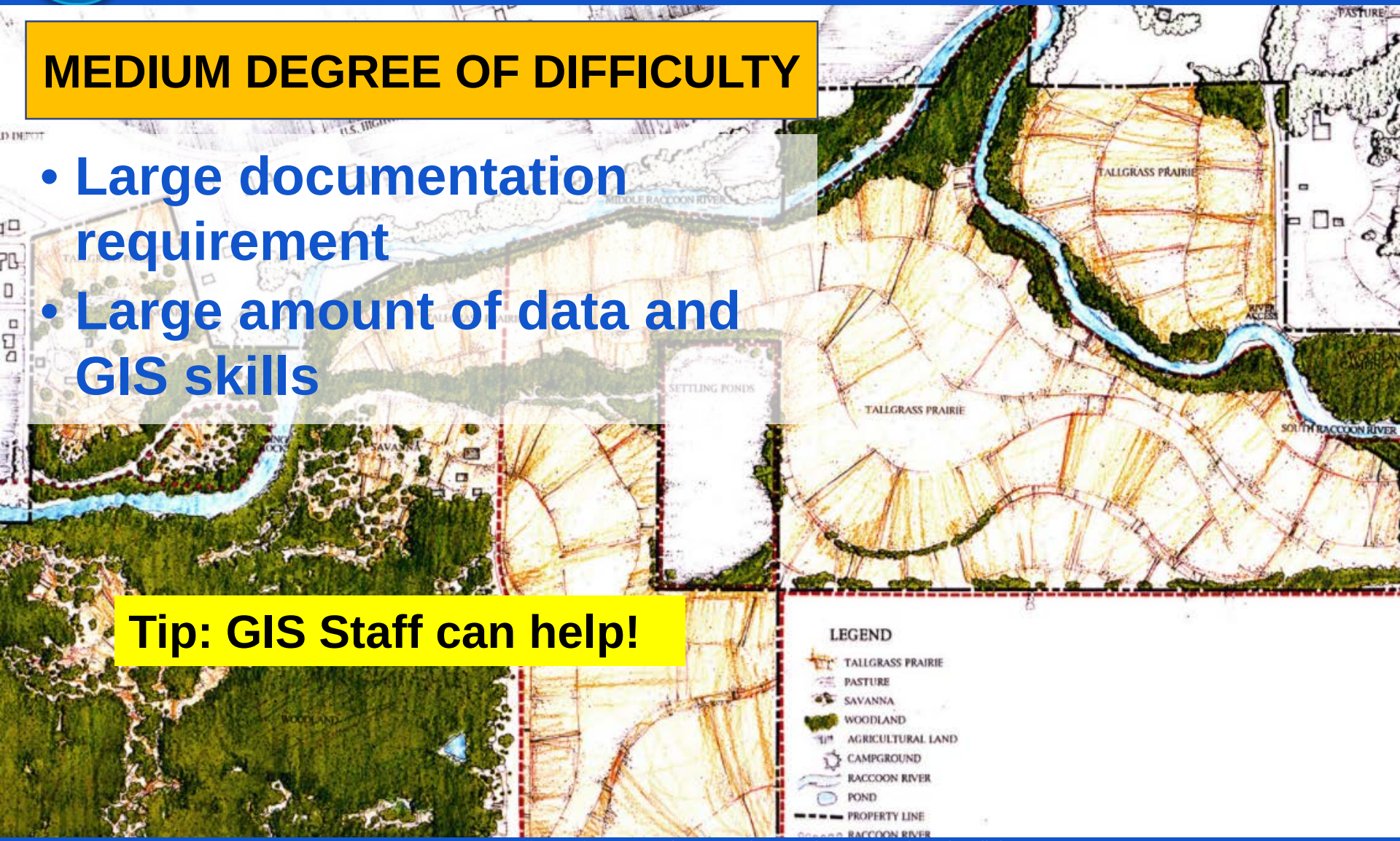


Image Credit: Professor Tucker Hanging Rock Master Plan via Flickr Commons.

Element 452.b: WMP Implementation Difficulty

HIGH DEGREE OF DIFFICULTY

- Most watersheds cross jurisdictional borders
- Collaboration required
- Hydrologic modeling required to calculate runoff conditions
- Coastal communities must incorporate sea level rise

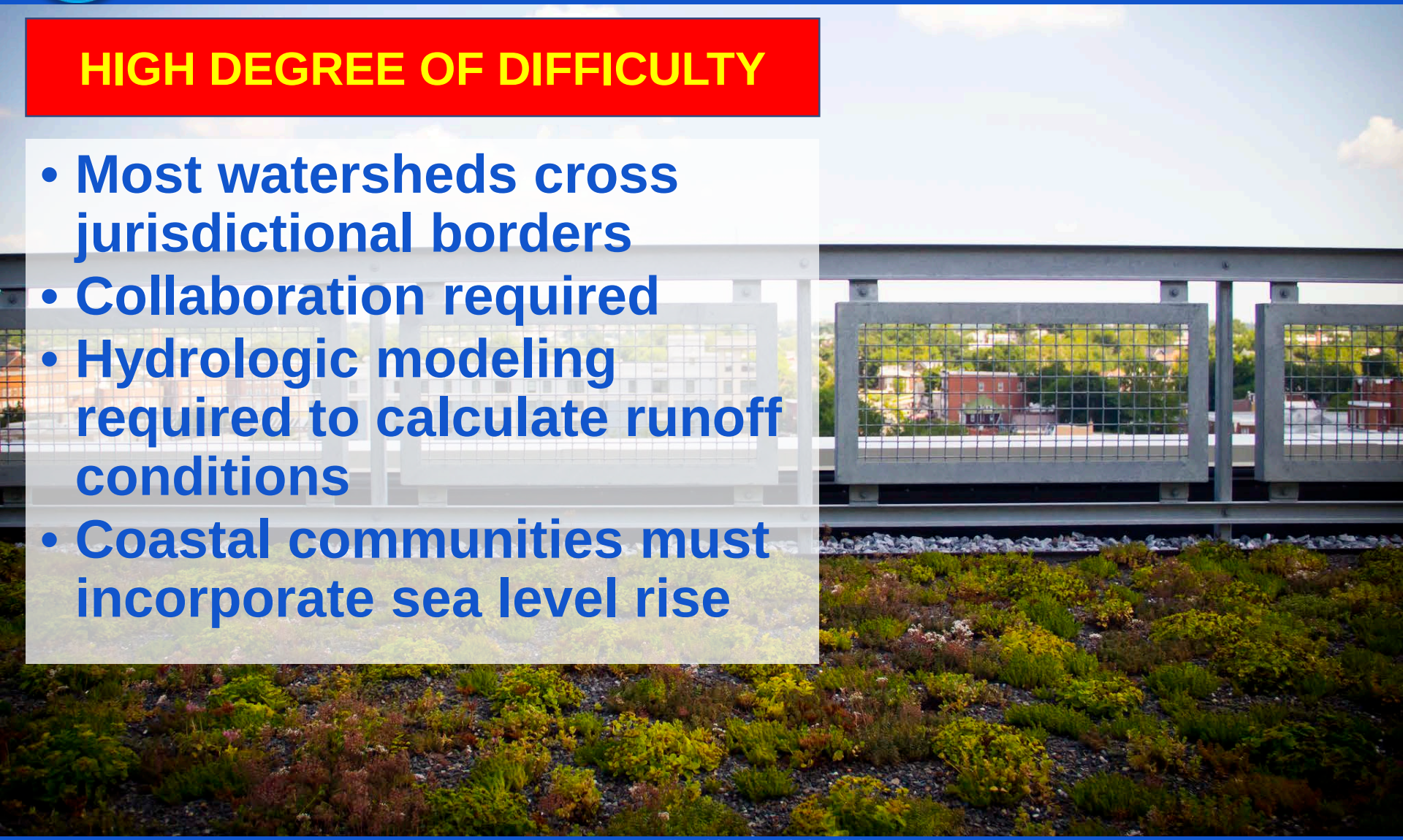
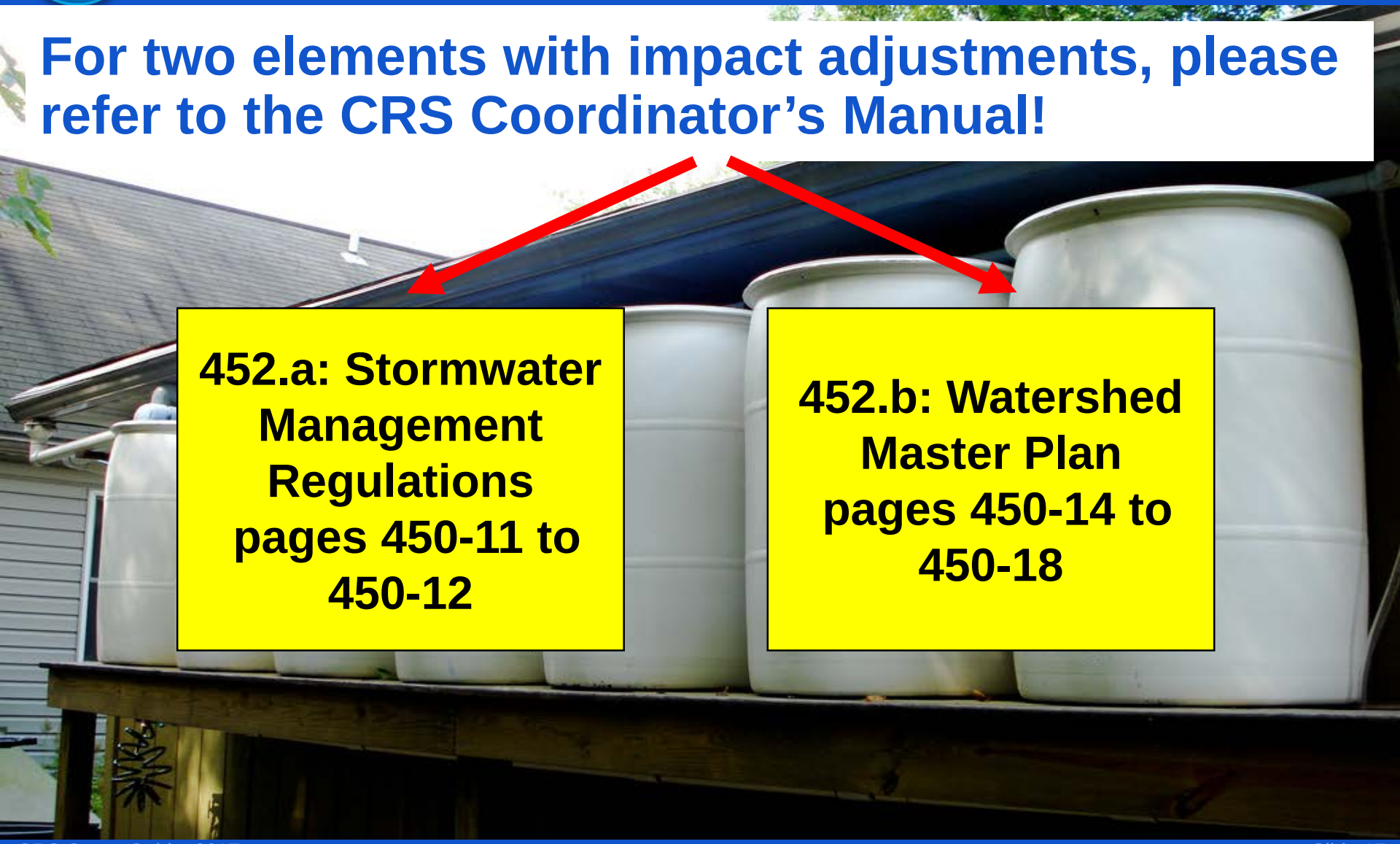


Image Credit: ThisIsBossi via Flickr Commons.

Impact Adjustments

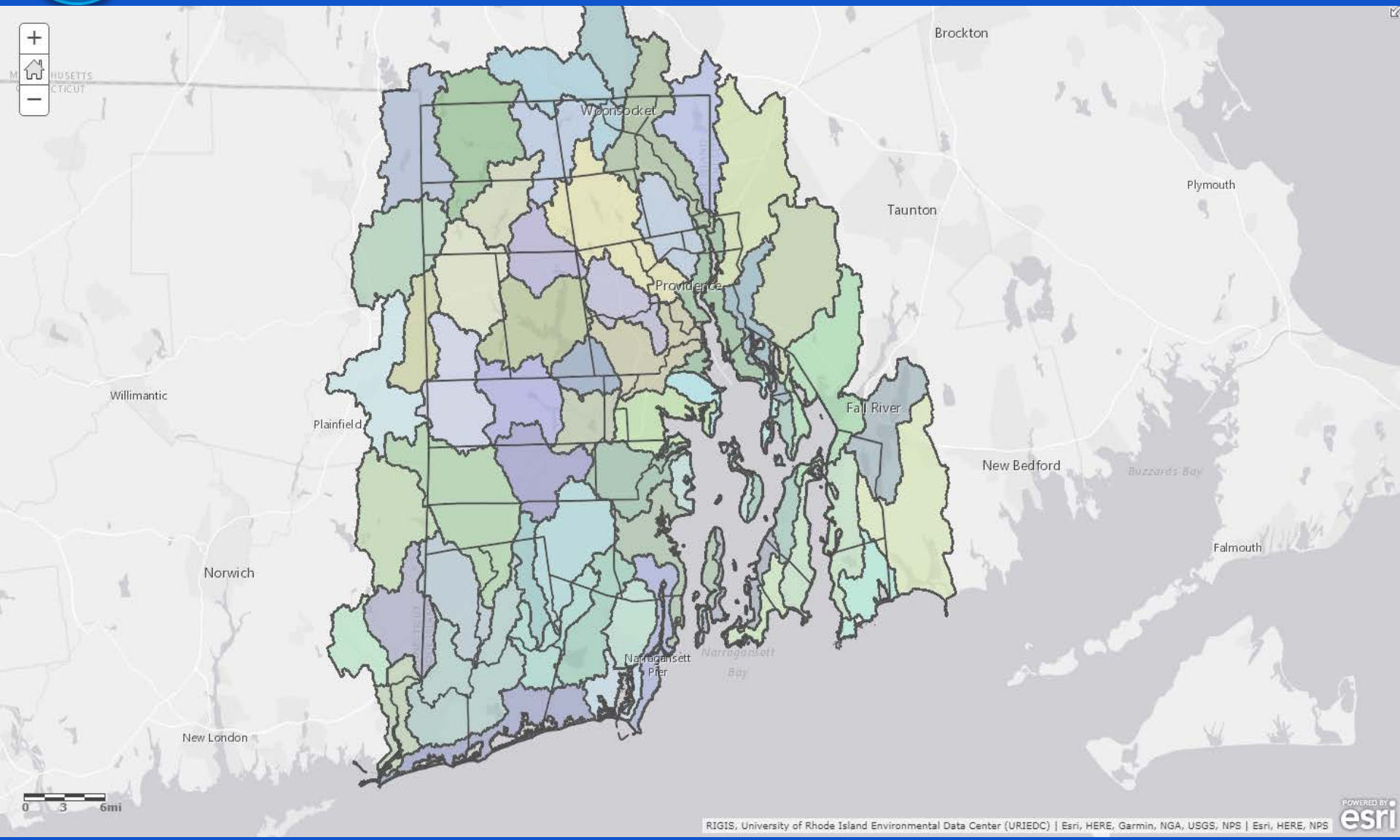
For two elements with impact adjustments, please refer to the CRS Coordinator's Manual!



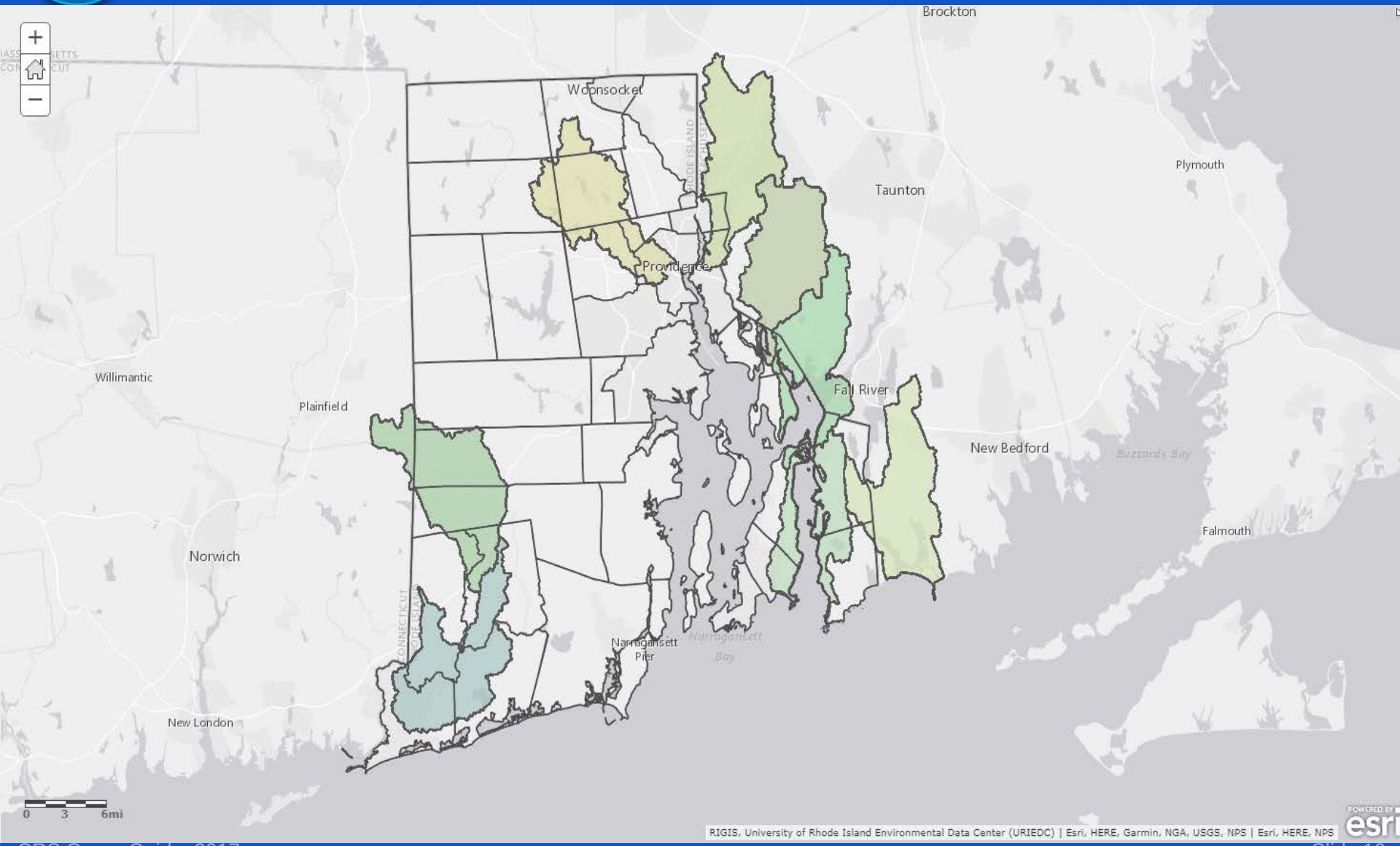
452.a: Stormwater Management Regulations pages 450-11 to 450-12

452.b: Watershed Master Plan pages 450-14 to 450-18

Impact Adjustments



Impact Adjustments



Element 452.c: Erosion and Sediment Control Regulations (ESC)

Goal: To reduce soil erosion from construction sites.

At a minimum, communities must require erosion & sediment control practices for sites that are >=1acre.

Maximum total credit available: 40 points

Image Credit: Green Energy Futures via Flickr Commons.

Element 452.c: ESC Documentation Difficulty

LOW DEGREE OF DIFFICULTY

- **Provide ISO/CRS with copies of ordinances and permits as proof of enforcement**

Image Credit: Chester County Planning via Flickr Commons.

Element 452.c: ESC Implementation Difficulty

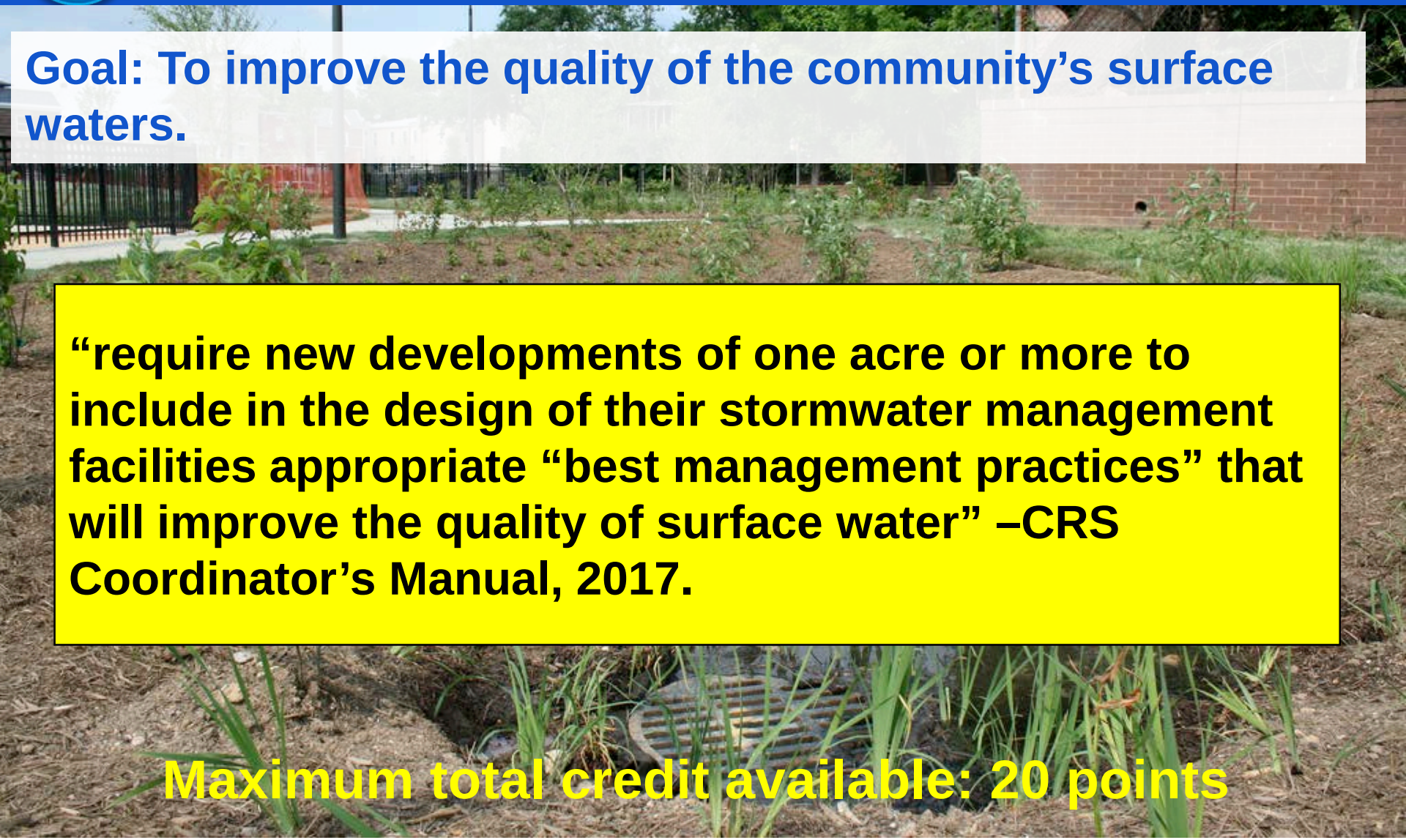
LOW DEGREE OF DIFFICULTY

- **Most development disturbing areas that are >1ac in size must adhere to similar regulations**

Image Credit: CSUF Photos via Flickr Commons.

Element 452.d: Water Quality Regulations (WQ)

Goal: To improve the quality of the community's surface waters.



"require new developments of one acre or more to include in the design of their stormwater management facilities appropriate "best management practices" that will improve the quality of surface water" –CRS Coordinator's Manual, 2017.

Maximum total credit available: 20 points

Image Credit: Eric Fidler via Flickr Commons.

Element 452.d : WQ Documentation Difficulty

LOW DEGREE OF DIFFICULTY

- **Provide ISO/CRS with copies of ordinances and permits as proof of enforcement**

Image Credit: Zachary Graham via Flickr Commons.

Element 452.d: WQ Implementation Difficulty

LOW DEGREE OF DIFFICULTY

- **Most development disturbing areas that are >1ac in size must adhere to similar regulations**

Image Credit: Kitsap County, WA via Flickr Commons.

Activity 450 Tips for Success

1. Use existing resources to implement regulations, codes, and permitting processes
2. Collaborate with other jurisdictions
3. Be creative! Stormwater infrastructure can be an amenity.

Image Credit: Travis Estell via Flickr Commons.

Questions?

Image Credit: Wojtek Ogrodowczyk via Flickr Commons.

Stormwater Management Exercise

Crafting Messages to Generate Buy-in

Purpose of Exercise

Successful implementation of the stormwater management elements of the CRS requires collaboration from many key community-members and the political will to take action.

The purpose of this exercise is to provide you with the opportunity to work together to craft audience-specific ***messages*** that can help you to generate buy-in.

Task: Craft 1-2 short, targeted messages to an audience that you will need to collaborate with in order to implement these elements of the CRS program.

Instructions

1. Discuss **barriers/opposition** to implementing creditable stormwater management regulations or investing in stormwater management planning that you have encountered in your professional experience. **List on your flip chart the barriers/opposition you have encountered and the audience associated with it** (5 minutes)
2. Select **one audience to target** during this exercise (2 minutes)
3. Brainstorm and **list the benefits this audience would reap** if creditable stormwater management regulations were implemented or collaborating to create a stormwater management plan (5 minutes)
4. Craft **1-2 message(s) that speak to these benefits** and attempt to gain buy-in from this audience (5 minutes)
5. Report out on brainstormed messages (3 minutes)

Example

Barriers/Opposition Encountered:

- Developers in my community are opposed to green infrastructure because it is too expensive to design

Targeted Audience:

- The development community

Benefits to Targeted Audience:

- Flood risk reduction, water quality improvement, increase in green space and natural landscapes, reduction of maintenance costs, etc.

Message:

- Developers have a lot to gain from these regulations, green infrastructure can reduce maintenance costs associated with development in the long run because mowing may not be required.