IN PURSUIT OF QUANTIFYING STREAM FUNCTION

A Look Into USACE Stream Mitigation Guidance

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For Going with the Flow

22 March 2019

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AGENDA

- Regulatory Background

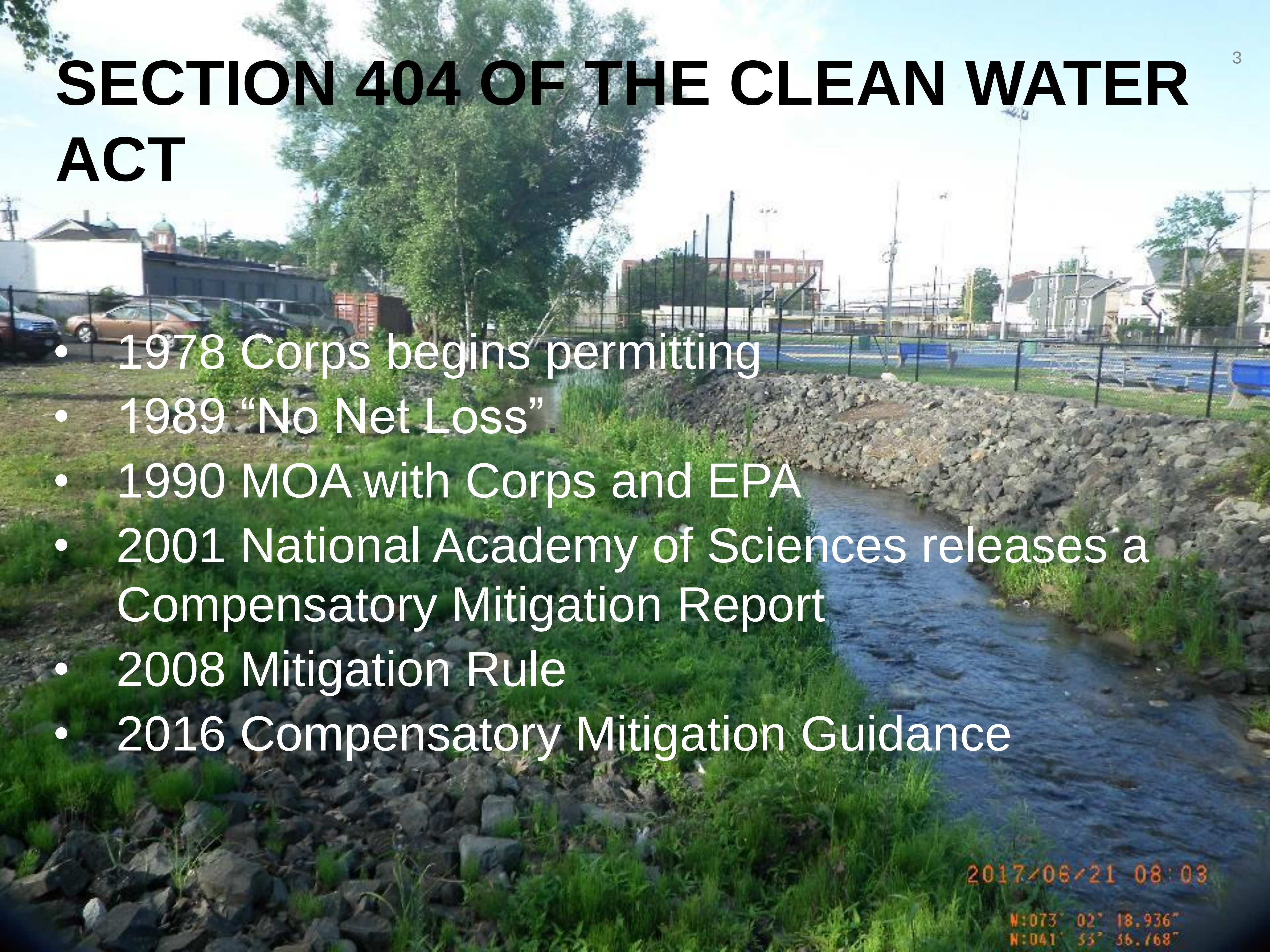
- Stream Visual Assessment Protocol 2.0

- New England District Compensatory Mitigation Guidance

- Questions

SECTION 404 OF THE CLEAN WATER ACT

- 1978 Corps begins permitting
- 1989 “No Net Loss”.
- 1990 MOA with Corps and EPA
- 2001 National Academy of Sciences releases a Compensatory Mitigation Report
- 2008 Mitigation Rule
- 2016 Compensatory Mitigation Guidance



MITIGATION

Avoid → Minimize → Compensate

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BENEFITS OF QUANTIFYING STREAM FUNCTION

- **Document ecological benefits**
- **Assist regulated community**
- **Determine appropriate compensation**

CHOOSING A STREAM ASSESSMENT

- State of Missouri Stream Mitigation Method
- Vermont Stream Geomorphic Assessment
- Hydrogeomorphic(HGM) Functional Stream Assessment
- Virginia's Unified Stream Methodology
- Stream Mechanics Pyramid Function Approach

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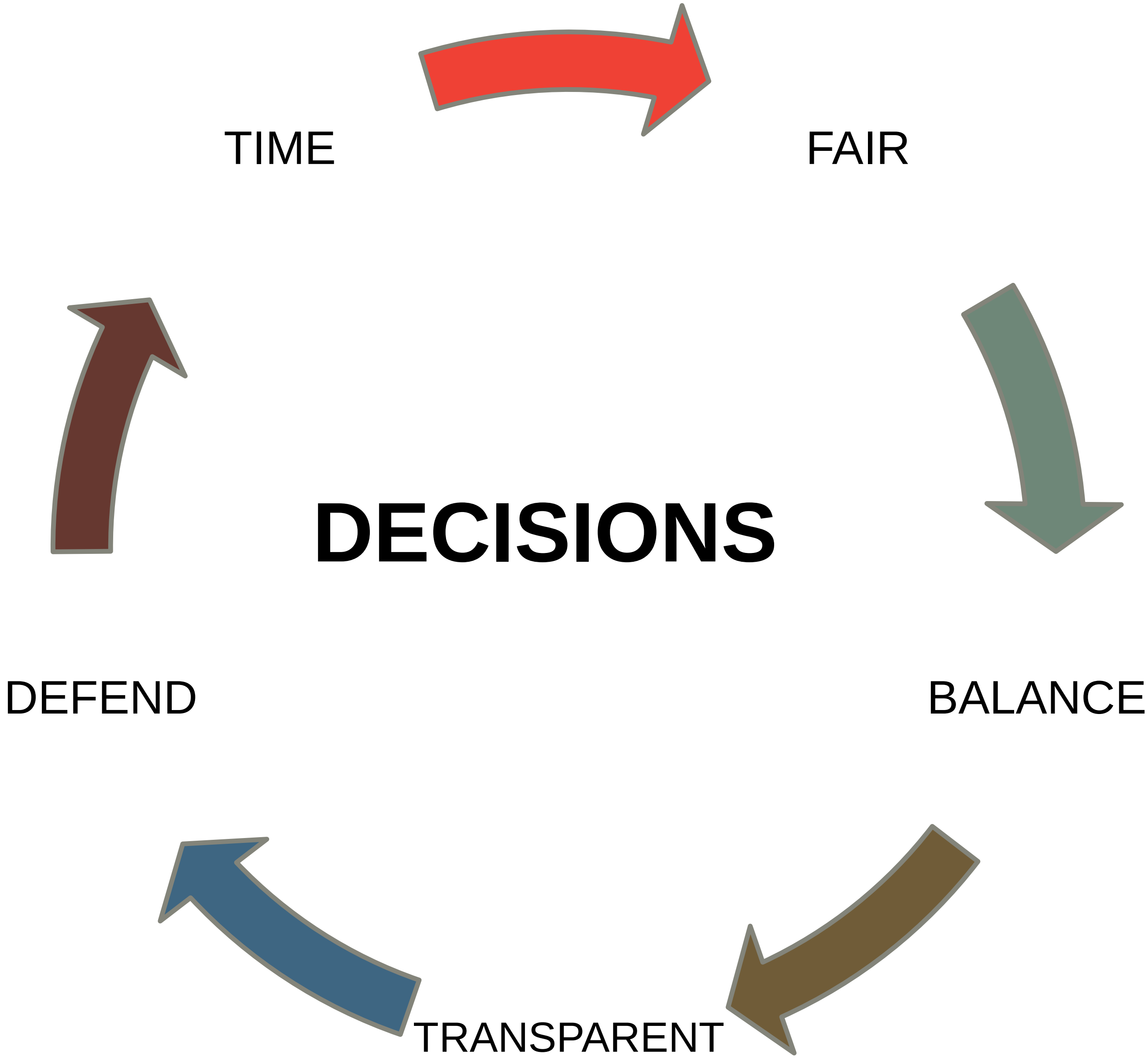

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STREAM VISUAL ASSESSMENT PROTOCOL VERSION 2.0

“SVAP is a national protocol that provides an initial evaluation of the overall condition of wadeable streams, their riparian zones, and their instream habitats…

…the SVAP2 is a qualitative assessment tool to evaluate features that affect overall stream conditions at the property level.”

USDA, NRCS, National Biology Handbook, Subpart B, Part 614

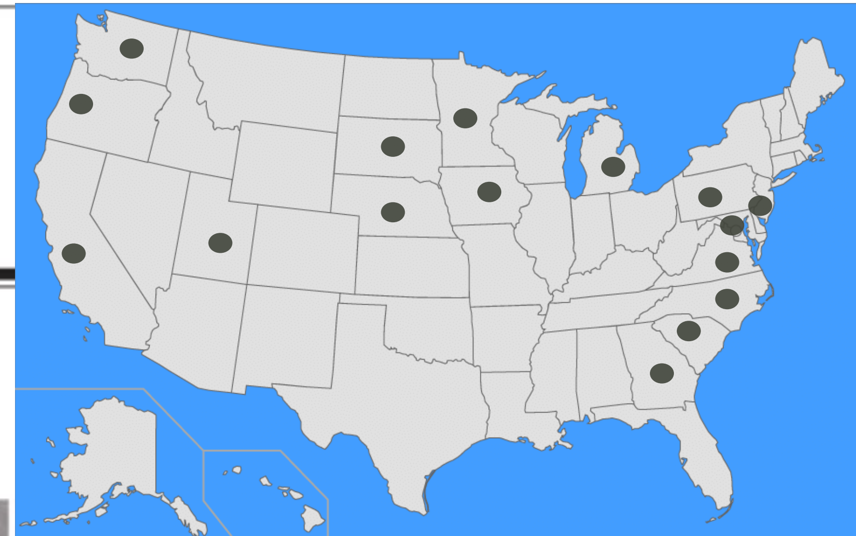
United States
Department of
Agriculture

Natural
Resources
Conservation
Service

National Biology Handbook

Subpart B—Conservation Planning

Part 614 Stream Visual Assessment Protocol Version 2



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Field Testing and Technical Evaluation of the Natural Resource Conservation Service Stream Visual Assessment Protocol Version 2 (SVAP2) in 35 Wadeable Streams throughout New England

US Army Corps of Engineers New England District
US Army Engineer Research and Development Center
2018

Sarah Miller[1], Bruce Pruitt[2], Ruth Ladd[3], Taylor Bell[3] and Kathy Jensen[4]

EXECUTIVE SUMMARY

ERDC Environmental Laboratory (EL), in partnership with the US Army Corps of Engineers New England District ("NAE" or "the District") Regulatory Division, and assisted by The Nature Conservancy - Maine (TNC-ME) providing advance GIS preliminary data collection and site selection, completed an intensive two-week field test with follow-on technical evaluation of the Natural Resources Conservation District (NRCS) 2009 Stream Visual Assessment Protocol Version 2 (SVAP2). A total of 35 field sites were assessed in ME, NH, VT, CT, MA and RI to determine the efficacy of this method in distinguishing stream condition for District Regulatory permit program application in New England. Representatives from the Maine Natural Areas Program (MNAP), Natural Resources Conservation Service (NRCS), New Hampshire Department of Environmental Services (NHDES), and United States Environmental Protection Agency (EPA) also joined in at selected field sites. Numerous additional local and regional organizations served as points of contact to assist with accessing sites. University of New Hampshire joined the team at a number of selected sites in a coordinated effort with their study of low-altitude stream assessment methods incorporating the SVAP2. The results of the field test show that the SVAP2 can be applied to New England streams, with some additional information applied to two of the 16 Elements (Salinity and Waste/Manure). Statistical analysis showed that the SVAP2 can effectively distinguish between our assumed three populations of sites representing good condition (Preserved sites), degraded condition (Proposed Project sites) and trending to good condition (Completed Project sites). Significant narrative changes are recommended for the Salinity element. Recommended modifications or adjustments to other elements involve assessment methods, training or field materials only, with no changes criteria or scoring. The analysis also demonstrated that the SVAP2 can be used to identify reference standards which facilitate development of performance standards and success criteria for compensatory mitigation. Further, the District may consider assessing additional least impacted or minimally disturbed sites to set that end of the scoring criteria for better comparison with mitigation site condition trajectories, identifying restoration and habitat targets for design, and possible future protocol modifications, if warranted. The outcomes of this work will help NAE Regulatory to more efficiently and effectively assess and compare functional value at stream sites associated with actions under Section 404 of the Clean Water Act, including the 2008 Mitigation Rule.

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[3] New England District US Army Corps of Engineers, Regulatory Division, Concord, MA.
[4] The Nature Conservancy - Maine, Conservation and Protection, Brunswick, ME.

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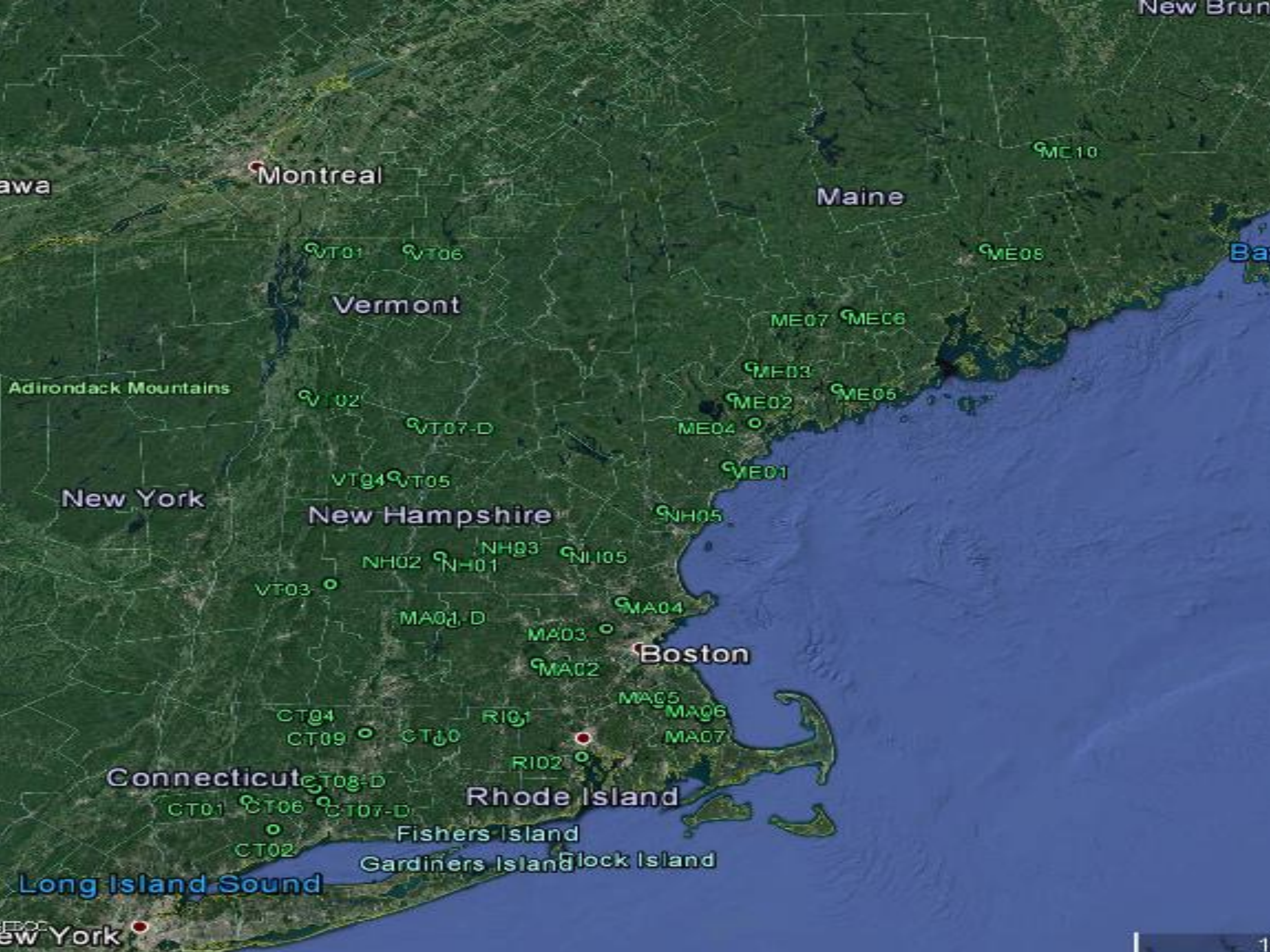

Montreal
Maine
MC10
ME08
VT01
VT06
Vermont
ME07
ME06
ME03
Adirondack Mountains
VT02
ME02
ME05
VT07-D
ME04
ME01
VT04
VT05
New York
New Hampshire
NH05
NH03
NH02
NH01
NH05
VT03
MA04
MA01-D
MA03
Boston
MA02
MA05
MA06
CT04
RI01
CT09
CT10
MA07
RI02
Connecticut
CT08-D
Rhode Island
CT01
CT06
CT07-D
Fishers Island
CT02
Gardiners Island
Block Island
Long Island Sound

ELEMENTS

1. CHANNEL CONDITION
2. HYDROLOGIC ALTERATION
3. BANK CONDITION

4-5. RIPARIAN AREA QUANITY/QUALITY

6. CANOPY COVER
7. WATER APPEARANCE
8. NUTRIENT ENHANCEMENT

ELEMENTS CONTINUED

9. MANURE OR HUMAN WASTE
10. POOLS
11. BARRIES TO MOVEMENT
12. FISH HABITAT COMPLEXITY
13-14. AQUATIC INVERTEBRATE HABITAT/COMMUNITY
15. RIFFLE EMBEDDEDNESS
16. SALINITY

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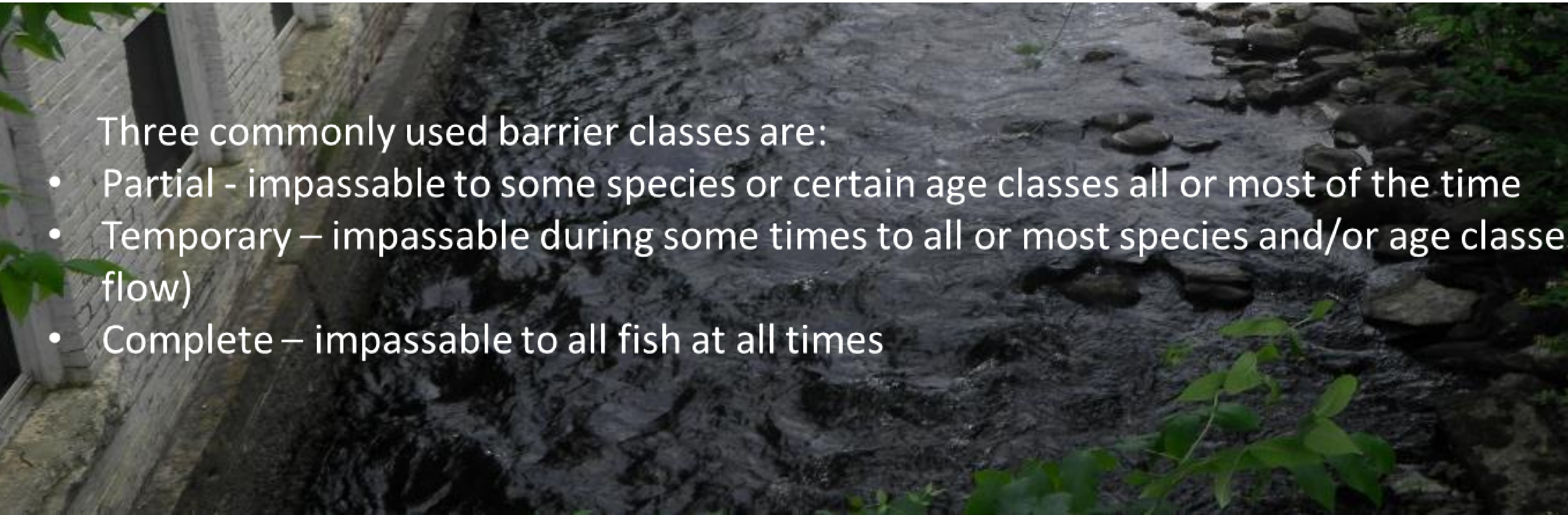
Element 11: Barriers to aquatic species movement

No artificial barriers that prohibit movement of aquatic organisms during any time of the year	Physical structures, water withdrawals and/ or water quality season-ally restrict movement of aquatic species	Physical structures, water withdrawals and/ or water quality restrict movement of aquatic species throughout the year	Physical structures, water withdrawals and/ or water quality prohibit movement of aquatic species
10	9 8 7	6 5 4 3	2 1 0



Three commonly used barrier classes are:

- Partial - impassable to some species or certain age classes all or most of the time
- Temporary – impassable during some times to all or most species and/or age classe flow)
- Complete – impassable to all fish at all times

$$\frac{\text{SUM OF ALL ELEMENTS}}{\text{TOTAL ELEMENTS SCORED}} = \text{OVERALL SCORE}$$

A. Sum of all elements scored		
B. Number of elements scored		

Overall score: A/B ________

1 to 2.9	Severely Degraded
3 to 4.9	Poor
5 to 6.9	Fair
7 to 8.9	Good
9 to 10	Excellent

1 to 2.9 Severely Degraded (list elements)

____

3 to 4.9 Poor (list elements)

____

9 to 10 Excellent (list elements)

____

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Poor – 4.9 out of 10


Take control of your life
Addictions Service
Fair – 5.8 out of 10
2017/06/20 15:23


Good – 8.6 out of 10
2010/01/04 18:27


Excellent - 9.0 out of 10
2010/01/02 17:42

Excellent 9.4 out of 10

CULVERT 200 LINEAR FEET OF "GOOD" STREAM

600 Stream Units

Culverting of a good stream has a multiplier of 3, So 200 lf x 3 = 600 Stream Units*.

*Current Guidance

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COMPENSATORY MITIGATION

In Lieu Fee in NH: 200lf x $600/lf = $120,000

COMPENSATORY MITIGATION

Generate 600 Stream Credits through permittee responsible mitigation

Severely Degraded	Poor	Fair	Good	Excellent

- Remove a dam that impounds at least 240 lf of a "Good" stream
- Reestablish 3000 lf of riparian buffer of a "Poor" stream

- *Current Guidance

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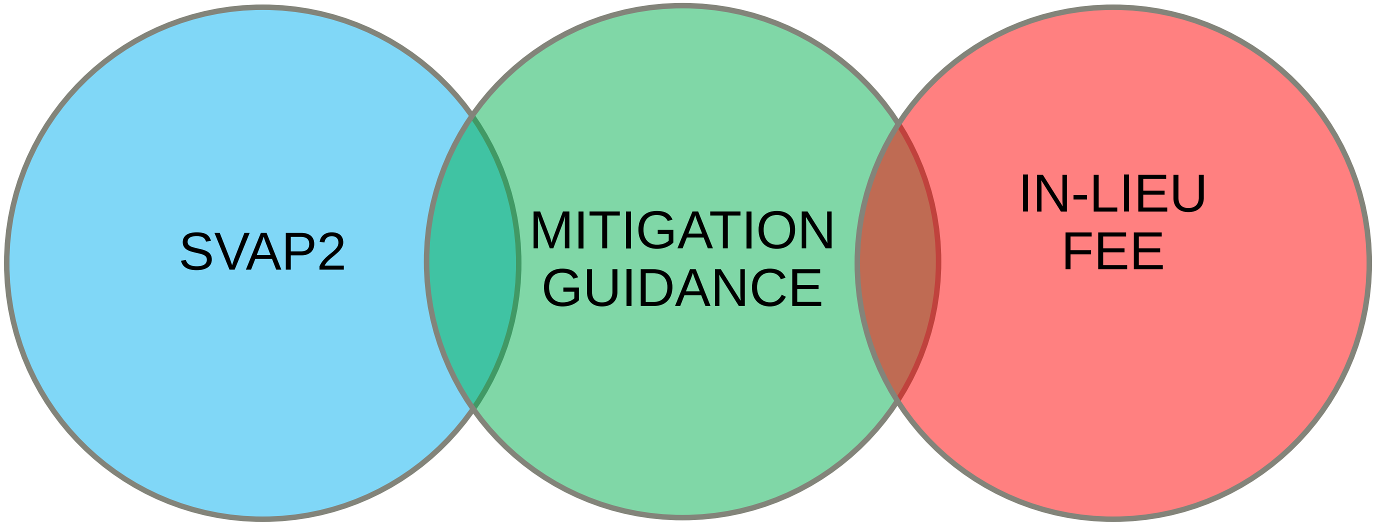
CURRENT MITIGATION GUIDANCE



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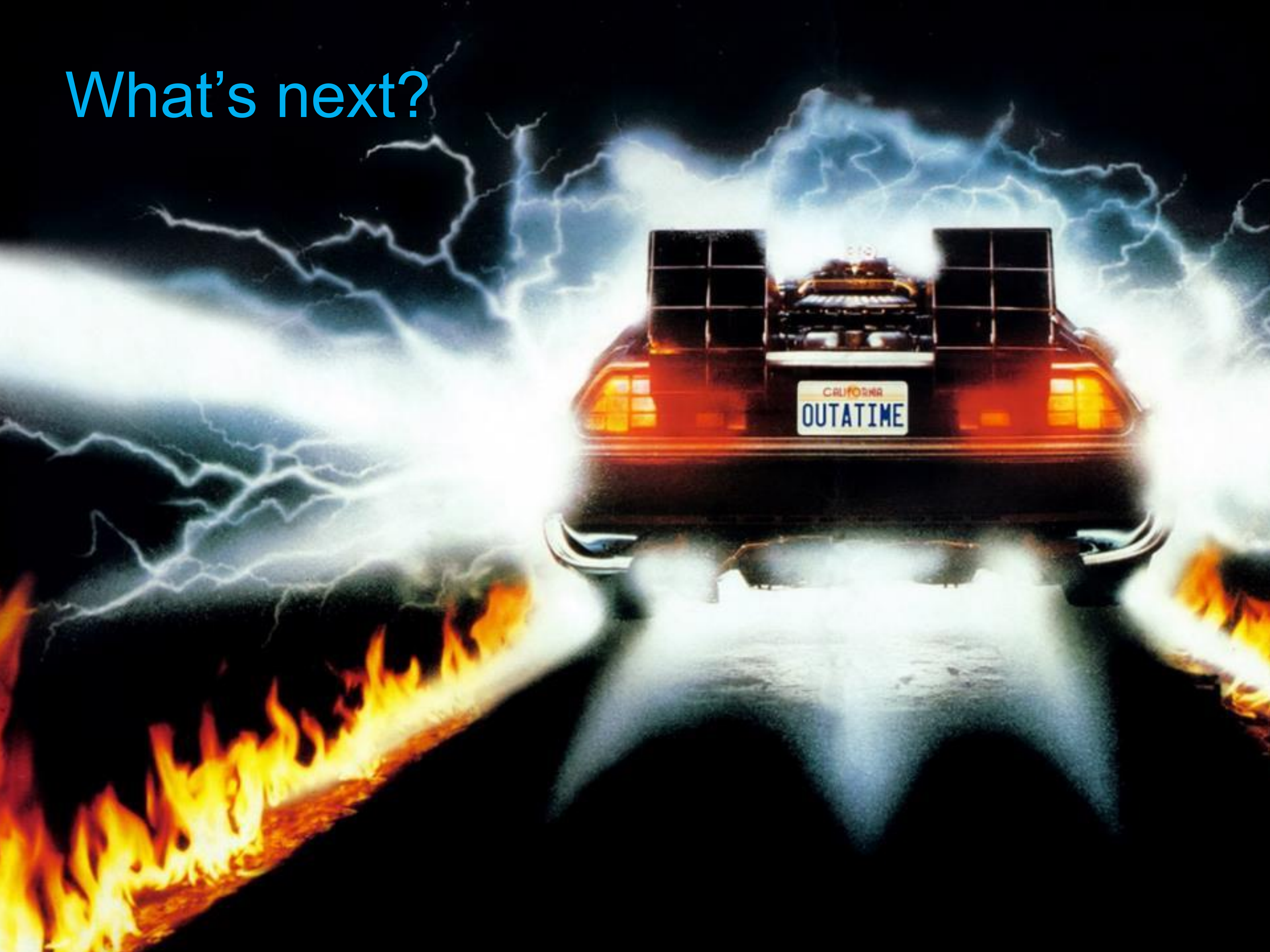
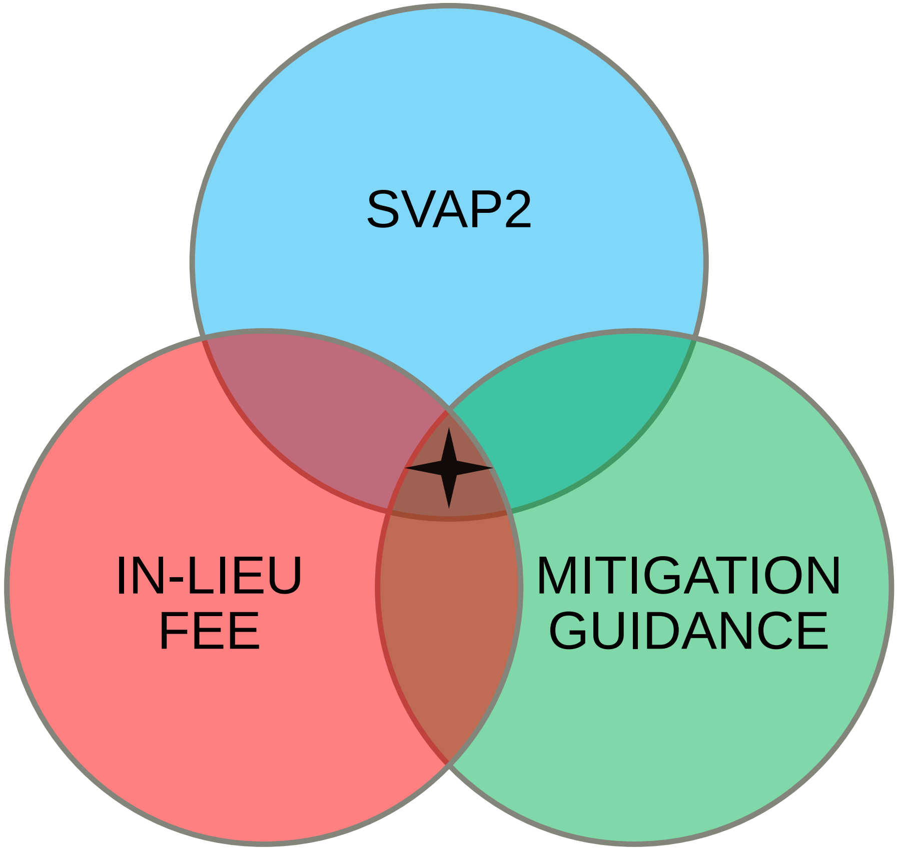
What's next?



PROPOSED GUIDANCE



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Rehabilitation of the stream, riparian area, and/or floodplain[11], resulting in improvement of channel condition (e.g., poor to good):	0.5
1 step	1.0
2 steps	2.0
3 steps	

UTILIZE SVAP2 FOR CREDIT GENERATION

Not too concerned with how you restore the stream, more focused on the overall rehabilitation.

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In Lieu Fee Rates for NH/MA/CT

	MULTIPLIER FOR ILF CREDIT PRICE PER LINEAR FOOT				
For impacts to both banks and the streambed (if just to one or two of these, prorate)	0.25	0.50	0.75	1.0	1.5

REDUCE RATE FOR STREAMS IN "FAIR, "POOR", "SEVERELY DEGRADED" CONDITION.

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QUESTIONS?