

Sustainable Water Management Initiative Advisory Committee

Presentation Title:	<u>Streamflow Criteria:</u> A look at approaches that have been discussed and possible implementation
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Date of Presentation:	October 26, 2010

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SWMI Streamflow Criteria

October 26, 2010

A look at approaches that have been
discussed and possible implementation

General Comments on SWMI

- Categorization presented by DFG represents a strong scientific foundation.
- Two-month timeframe too short to develop meaningful, science-based criteria.
- EEA should extend the timeline to allow full development of the package.
- EEA should adopt categorization and a statement of how safe yield and streamflow criteria are linked and are to be used together.
- The State should define SY and SFC in a way that is protective of Wild and Scenic Rivers

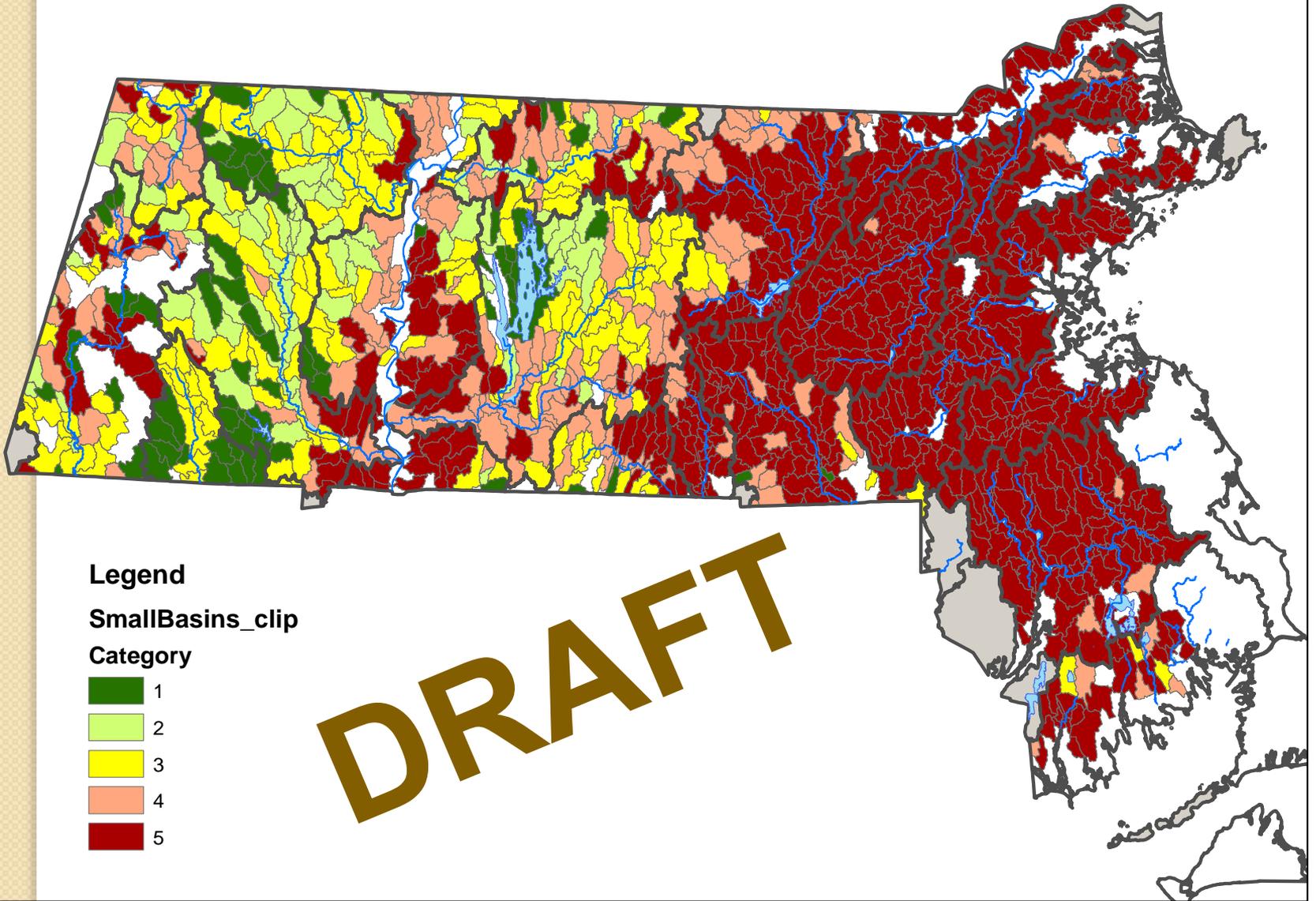
DFG Stream Categorization Based on Fluvial Fish Abundance

- Basin characteristics (at 1,429 nested subbasin scale)
- Percent Alteration of August Median Flow
- Percent Impervious Cover

Stream Category	Biological Response of Fluvial Fish Communities Percent Alteration of August Median Flow	
1	0 – 5%	Near Natural (relatively unimpacted)
2	6 – 13%	Minor Alteration (intact communities of good quality)
3	14 – 32%	Moderate to considerable changes in structure (Species diversity altered by loss of sensitive species)
4	33 – 60%	Major Alteration in structure and function
5	> 60%	Severe Alteration in structure and function

Based on Quantile Regression and General Linear Modeling equations

DFG Stream Categories DRAFT



Comments on the Model

- Excellent work. The scientific basis for SWM has never been stronger.
- Can SYE sufficiently predict that conditions are improving, worsening or unchanged?
- USGS report indicates that: the models has low to moderate correlation between observed and predicted values, and it under-predicts the relative abundance of fluvial fish. This raises the questions about the propriety of using the study for the purpose of criteria setting.
- USGS report lacks predictive capability for use in setting criteria limiting flow alteration. Limitations of study should not be ignored or study should not be misused.

Comments on the Model (contd.)

- There should be a robust discussion about the difference between correlation and cause and effect with respect to the criteria.
- The model needs further validation.
- Establishing an exclusive link between streamflow criteria and WMA permits will overstate the relationship between them

Comments on Goals

- Distinguish categories from goals and criteria
- Need specific flow criteria that can define operations for water withdrawal and diversions and for clear goals
- Goals should be assigned regardless of current conditions
- Should be clear how goals and transition periods will be developed.
- How will criteria be implemented in WMA permits?
- Identify the right mix of uses to be balanced in goal setting; and the right mix of sensitive species.

Comments on Habitat Protection/Restoration

- What are expectations for improvements?
- How would results be measured?
- Restoration goals lacking for Cat. 2 and 3
- The floor for streamflow goals and criteria should be those proposed for Cat. 3.
- Improve streams in Cat. 4 and 5 to Cat. 3.
- How will changes in one subbasin affect conditions in downstream subbasins?

Comments on Water Supply Protection/Human Use

- Are Category I subbasins going to be off limits to development?
- Subbasins dominated by existing water supplies should be given a special designation.
- Existing water withdrawal volumes should be protected.
- Instead of “protect existing water use”, say “provide high quality source water for drinking water and other uses allowed under the WMA.”
- Achieving improved categories should never be predicated on making a water supply less reliable or able to serve.

Comments on: Impervious Cover

- Impervious cover (urbanization) has a much greater impact on fluvial fish abundance than water withdrawals.
- Committee needs to address impervious cover; consider NPDES permits, and wetlands and stormwater regulations.

Comments on: Implementation

- Tools should include water conservation, cessation of withdrawals, and resort to MWRA.
- Need incentive programs like Go With the Flow.
- Need to consider cost/benefits

Comments on: Application of Criteria

- The criteria should be piloted using a variety of scenarios

Potential Approach to Goal Classes

- Basin characteristics (1,429 subbasins scale)
- Uses DFG Classification as overall framework (fluvial fish abundance, indicator species)
- August flow alteration – addressed through Water Management Act
- Impervious cover – addressed through NPDES, wetlands regs, SW regs

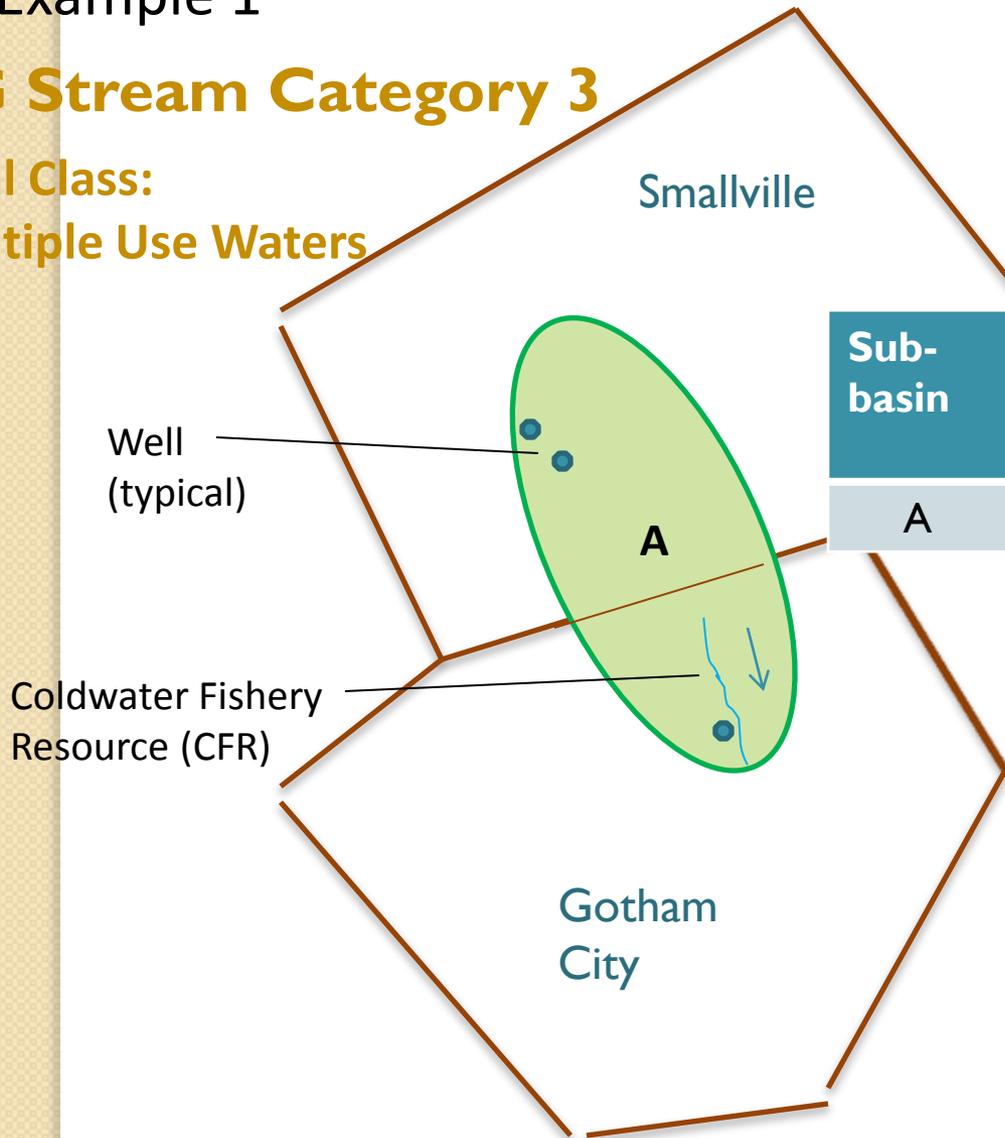
Goal Class	Hydrologic Alteration
1	Very high value waters (ex., stream Categories 1 and 2) Possible certain coldwater fishery resources
2	High value waters (ex., streams not in Goal Class 1 or 3)
3	Multiple use waters (ex., waters below large water withdrawals and impoundments, potential productive aquifers [PPA] underlying rivers and streams)

Further minimize and mitigate protection measures to be determined

Example 1

DFG Stream Category 3

Goal Class:
Multiple Use Waters



MWI Data				DFG
Sub-basin	Sq. Mi.	% Flow Alt	% Imp Cov	Stream Category
A	8.5	-4%	3%	3

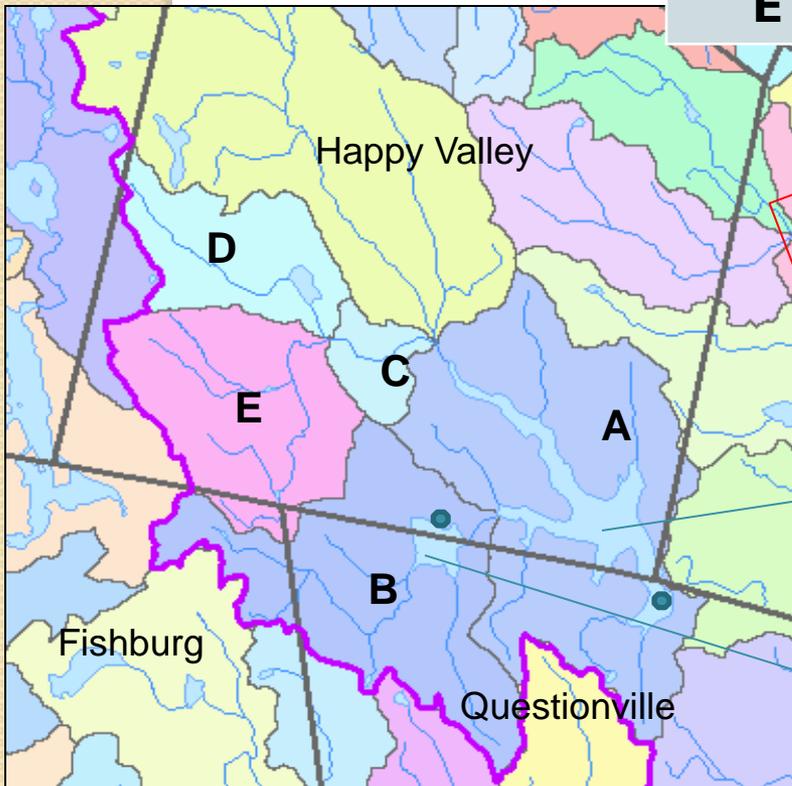
Example 2

Stream Category I

Goal Class:
Very high valued waters

MWI, DFG data (coldwater fish in all 5 subbasins)

Subbasin	Sq. Mi.	% Flow Alt	% Imp Cov	DFG Stream Category
A	12	⊘	.03	⊘ I
B	8	⊘	-0.2	⊘ I
C	1		0.3	I
D	4		0.6	I
E	6		1.2	I



August Flow Alteration applies only to groundwater withdrawals

Aidan-Cole Reservoir

Ian McCann Reservoir

Subbasin	Goal Class
A	3 – WS
B	3 – WS
C	I – F
D	I – F
E	I – F

Goal Class 3 – WS designation includes stream segments below impoundments

Example 3

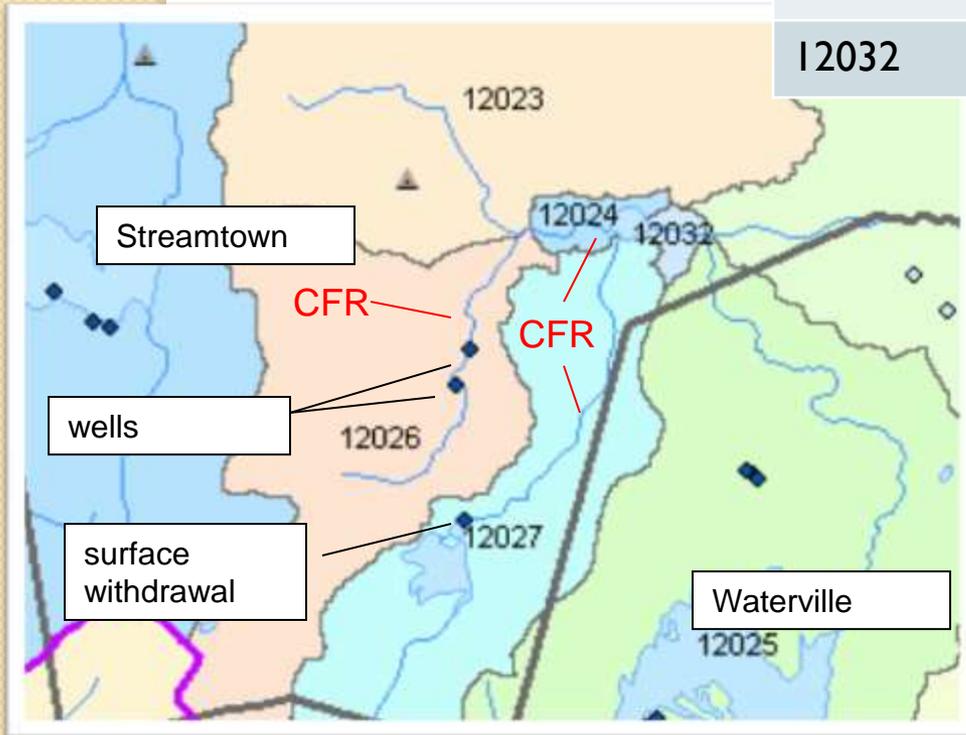
Stream Category 5

Goal Class:
Multiple Use Waters

MWI Data

Subbasin	Sq. Mi.	% Flow Alt	% Imp Cov	DFG Category
12023	4	4	23	5
12024	0.2	-20	19	5
12026	3	-55	14	5
12027	2.5		12	5
12032	0.1	-14	17	5

DFG



Goal Class

Subbasin	Goal Class	WS	PPA	Sensitive Receptor
12023	3		X	
12024	2			CFR
12026	3	WS	X	CFR
12027	3	WS	X	CFR
12032	2			

CFR - coldwater fisheries resource
 WS - water supply
 PPA - potentially productive aquifer, as sand and gravel, valley-filled aquifers of high and medium productivity

Comments on: Site-Specific Studies

- Criteria developed by site-specific empirical studies should take precedence over those developed by the model.
- Fish studies should be conducted on regular basis to assess changes and causes of changes.
- What would be study's scope; what would it need to demonstrate?
- Who will do the site specific studies?

Over-arching Questions

- How to set goals and classes?
- How to establish flow alteration and impervious cover criteria?
- How to implement criteria, including strengthening programs addressing impervious cover.