Beyond the Sustainable Water Management Initiative: Practical Implementation

Water Management In Massachusetts

Massachusetts Association of Conservation Commissions Annual Conference
February 28, 2015

Water Management Act Purpose

Chapter 21G, Section 7: Reasonable protection of…

- Public drinking water supplies
- Navigation
- Hydropower resources
- Fish and wildlife
- Water quality
- Water-based recreation
- Wastewater treatment capacity
- Agriculture
- Waste assimilation capacity
- Reasonable conservation practices consistent with efficient utilization of water
- Groundwater recharge areas
- Flood plains
- Wetland habitat
- Reasonable economic development and creation of jobs

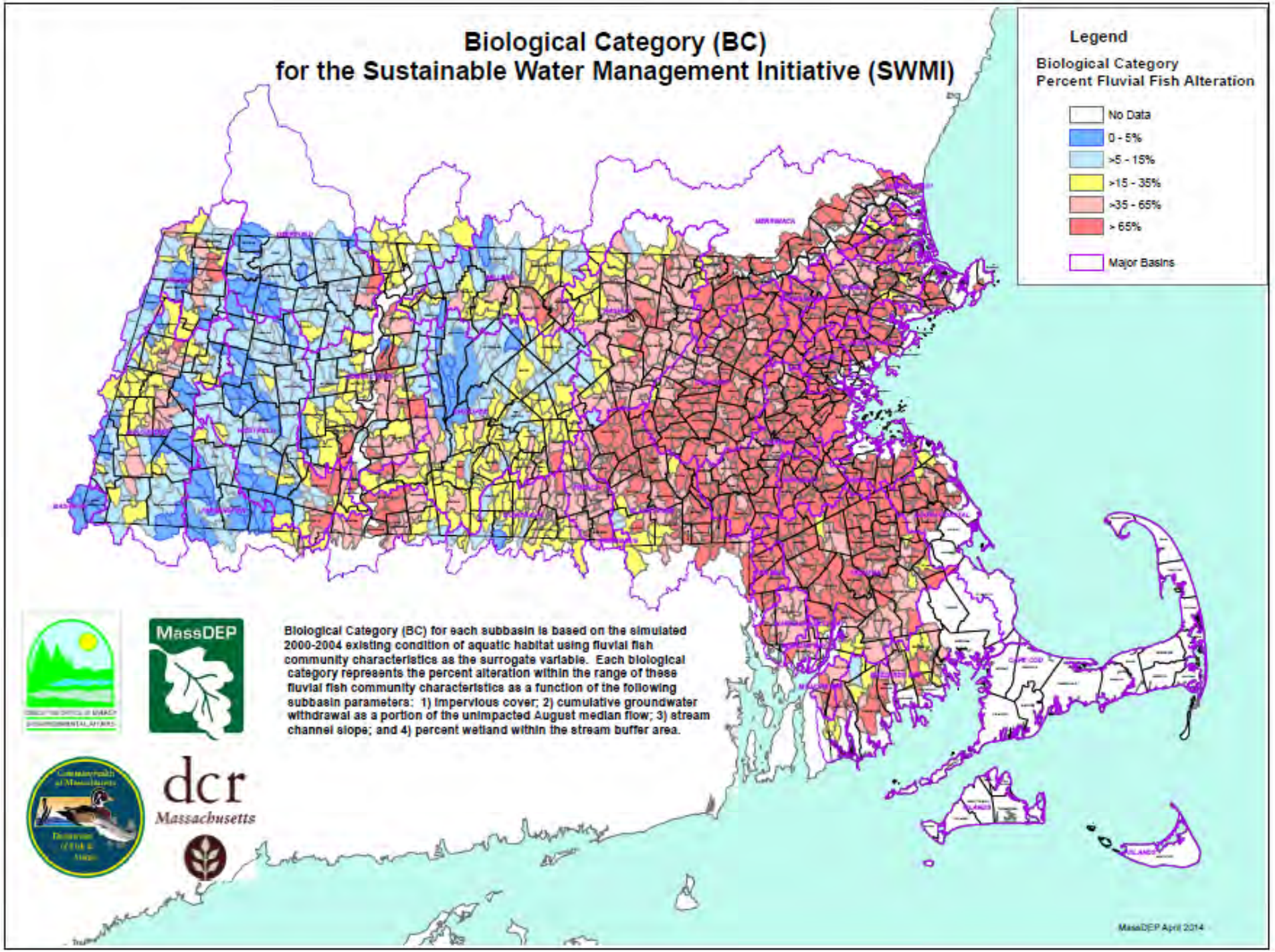
Revised Water Management Act Regulations November 7, 2014

- Followed a five year stakeholder process, the Sustainable Water Management Initiative (SMWI)
- Balance between competing water needs and the preservation of water resources
- Effects only those with permits, does not further regulate registered-only users
- Incorporates SWMI deliberations and new science into the regulations
- Partnership between MassDEP and other Office of Energy and Environmental Affairs (EEA) agencies

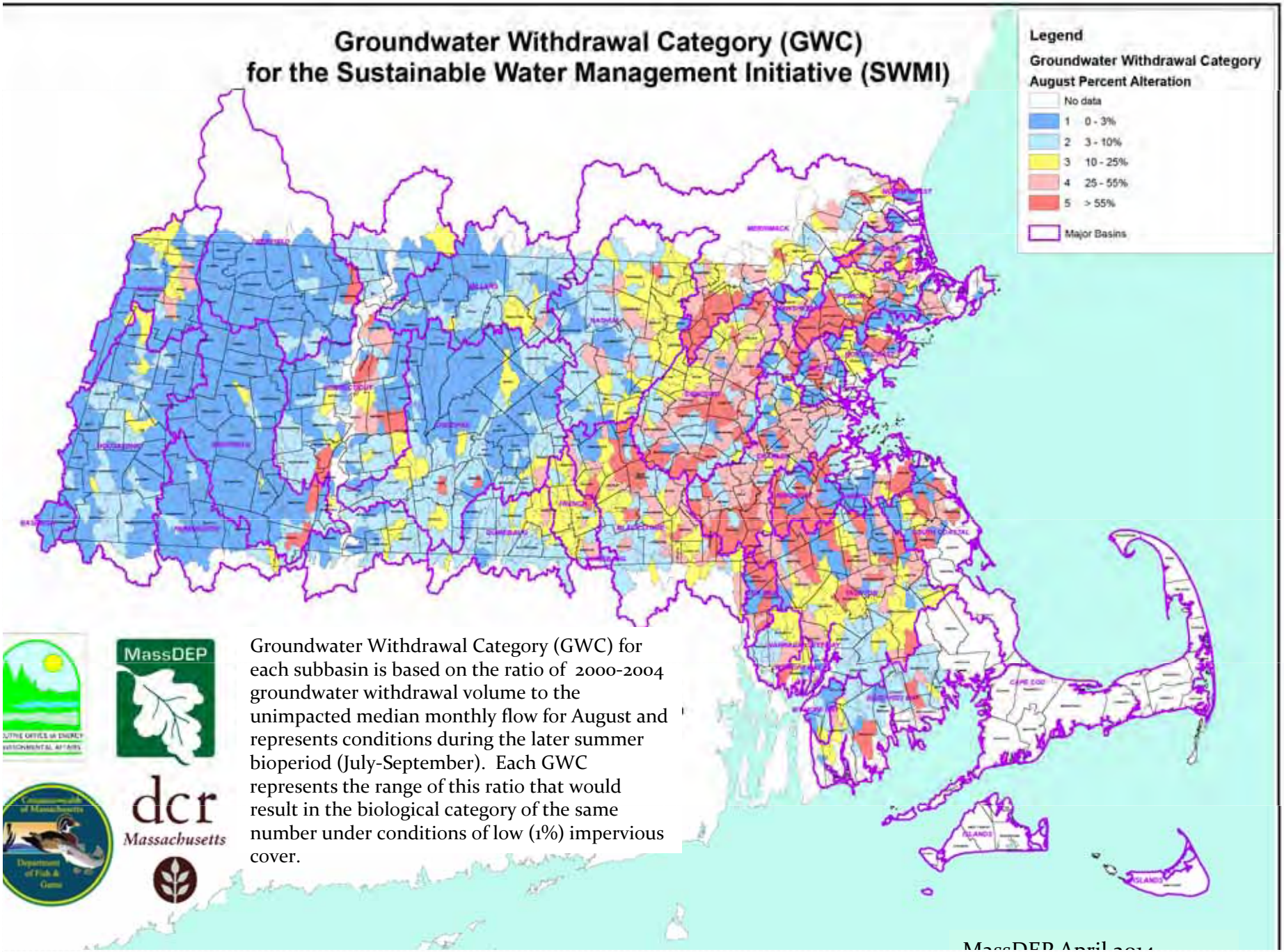
Science Behind WMA Regulations

- Five Biological (BC) and Groundwater Categories (GWC) (1=least impacted, 5 = most impacted)
  - Categories use fluvial fish as surrogate for healthy aquatic habitat,
  - Impervious cover and August groundwater withdrawals used to estimate impacts
- Streamflow Criteria mark the boundaries between categories (310 CMR 36.14)

Biological Category (BC)
for the Sustainable Water Management Initiative (SWMI)



Groundwater Withdrawal Category (GWC) for the Sustainable Water Management Initiative (SWMI)



Groundwater Withdrawal Category (GWC) for each subbasin is based on the ratio of 2000-2004 groundwater withdrawal volume to the unimpacted median monthly flow for August and represents conditions during the later summer bioperiod (July-September). Each GWC represents the range of this ratio that would result in the biological category of the same number under conditions of low (1%) impervious cover.

MassDEP

dcr
Massachusetts

MassDEP April 2014

SWMI Influence on WMA Regulations

- New methodology for determining Basin Safe Yield
- Baseline withdrawals for all permittees
- Protects Coldwater Fishery Resources
- Creates permit review categories, or tiers
- Minimization requirements for permittees in August net groundwater depleted sub-basins
- Mitigation is required for permittees who withdrawal over baseline

WMA:
Universe of Uses in Massachusetts

Registrations (~850)

- Water rights based on prior use (1981-1985)
- Minimal conditions without regulation change
- ~85% of state's authorized volume
- Not subject to Safe Yield limitation

Permits (~350)

- New sources or additional volumes after registration period
- 20-year renewal on basin schedule with 5-year reviews
- Subject to conditions
- ~15% of state's authorized volume (but conditions touch ~ 50% of water)
- Cannot permit volumes above Safe Yield

WMA: Permitting Process

- Determine permit allocation: Water Needs Forecast
- Standard conservation conditions for all permits
- Permit requirements based on the following:
  - Are permitted sources impacting coldwater fishery resource?
  - Are any permitted sources in an August net groundwater depleted sub-basin?
  - Will annual withdrawals exceed baseline?
  - Will a BC or GWC category change based on withdrawals?

River Basin Permitting Dates

Basins previously permitted to be adjusted at next 5-Year Review

Water Source	Outreach Meeting	Projected 5- Year Review Issuance
Hudson	November 2017	August 2018
Blackstone	April 2016	February 2017
Charles	April 2016	February 2017
North Coastal	March 24, 2015	February 2016

** Basins with Permit applications already on File*

Water Source	Outreach Meeting	Permit Renewal Dates
South Coastal *	**October 30, 2014**	August 2015
Cape Cod*	**January 20, 2015**	November 2015
Ipswich*	**March 24, 2015**	January 2016
Boston Harbor* /Taunton*	**April 23, 2015**	February 2016
Islands *	May 2015	February 2016
Deerfield	**February 10, 2015**	February 2016
Housatonic	**February 10, 2015**	May 2016
Buzzards Bays	**February 24, 2015**	May 2016
Concord	May 2015	August 2016
Ten Mile	August 2015	August 2016
Westfield	August 2015	November 2016
Millers	November 2016	February 2017
Chicopee	February 2016	May 2017
Quinebaug	May 2016	August 2017
Connecticut	August 2016	November 2017
Nashua	November 2016	February 2018
French	February 2017	May 2018
Shawsheen	May 2017	August 2018
Merrimack	August 2017	November 2018
Parker	November 2017	February 2019
Narragansett	February 2018	May 2019

Working Together:
Permit Renewal Process

Months before permit expires	Activity
20 months	Start Basin Planning Process •Draft water needs forecasts developed, •consultations upon request
16 months	Basin Outreach Meeting
12 months	Permit Filing Deadline •Public Comment Period •consultations as necessary
9 months	Orders to Complete Issued by DEP
6 months	Response to Orders to Complete Due
3 months	Draft Permit Issued for Comment

Water Needs Forecasts (WNF)

- Applications for WMA Permits require a forecast of water needs for the permit term
- DCR develops forecast for Public Water Suppliers based on Annual Statistical Reports
- WRC Method:
  - Population and Employment forecasts
  - 65/10 and Current Trends scenarios
  - + 5% Buffer
  - At least 3 years of reliable data
  - Temporary allocation where necessary

- URL: www.mass.gov/eea/wnf-method

WMA: Standard Permit Conditions

1. Efficiency Requirements
   - 65 residential gallons per capita day (RGPCD)
   - 10% unaccounted-for-water (UAW)
   - BMPs (leak detection & repair, metering, pricing, public education etc.)
2. Seasonal limits on nonessential outdoor water use

Nonessential Outdoor Water Use Restrictions

Non-Essential: Uses not required for health or safety reasons, by regulation, for production of food or fiber, for maintenance of livestock, or to meet the core function of a business

RGPCD for prior year	Calendar		STREAMFLOW		
	May 1 to Sept 30	7 day Low-Flow Trigger	Flow above ABF	Flow below ABF	7 day Low-Flow Trigger
< 65 →	7 days *	1 day *	7 days	7 days*	1 day*
>65 →	2 days *	1 day*	7 days	2 days*	1 day*

* No watering 9 am to 5 pm on any day

ABF= Aquatic Base Flow
7 Day Low Flow calculated from period of record flows from a local USGS stream gage

Surface water PWSs with a Summer Management Plan with environmental considerations approved by DEP may vary from above requirements

Industry Specific Conditions

WMA requires that all applications contain the conservation measures instituted, or to be instituted by the applicant.

Standard requirements include but are not limited too:

- Seasonal Demand Management Plans
- Water Audits
- Water Conservation strategy that addresses:
  - Demand management
  - Leak detection & repair
  - Employee awareness and education program

Cranberry Standard Conditions

NRCS Certified Conservation Farm Plan required

- Implement BMPs in accordance with UMASS Cranberry Experiment Station as applicable. BMPs include:
  - Nutrient Management
  - Sprinkler System Design & Use
  - Water Control Structures
  - Water Resource Protection and Enhancement

http://www.umass.edu/cranberry/pubs/bmps.html

Golf Standard Conditions

All permitted golf courses will be required to:

- have a conservation program that includes
  - metering,
  - irrigation system maintenance,
  - turf management, and
  - education;
- limit nonessential irrigation during drought;
- optimize withdrawals to protect cold water fisheries; and
- minimize impacts if the golf course is in a groundwater depleted subbasin.

New or expanding golf courses may also be required to:

- mitigate irrigation impacts; and
- show that there is no alternative source that is less environmentally harmful.

New Permit Requirements

- CFR Consult for withdrawals in subbasins with Coldwater Fishery Resources (CFRs)
- Minimization for groundwater withdrawals in "≥25% August Net Groundwater Depleted" Subbasins
- Mitigation commensurate with impact, for requests above baseline, in consultation with agencies
- Show no feasible* alternative for requests that change a category

*Cost is a component of what is deemed feasible.

Coldwater Fishery Resources

CFRs are light blue

CFRs are considered a particularly sensitive receptor warranting protection.

Minimization

Required* in subbasins defined as having an August net groundwater depletion (NGD) of 25% or more by MA Water Indicator Study data.

(NGD= *Aug unaffected flow – Aug GW withdrawals + Aug GW returns)*

Minimization Requirements (to the greatest extent feasible):

- Desktop Optimization
- Water Releases and Returns
- Additional Conservation Measures

***Permittees may avoid Minimization through:**

1. **Data refinement- showing August NGD is less than 25%, or**
2. **By conducting a Site-Specific Fish Community Assessment**

Nonessential Outdoor Water Use Restrictions

Minimization Requirements

Non-Essential: Uses not required for health or safety reasons, by regulation, for production of food or fiber, for maintenance of livestock, or to meet the core function of a business

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Mitigation

Mitigation Standard:

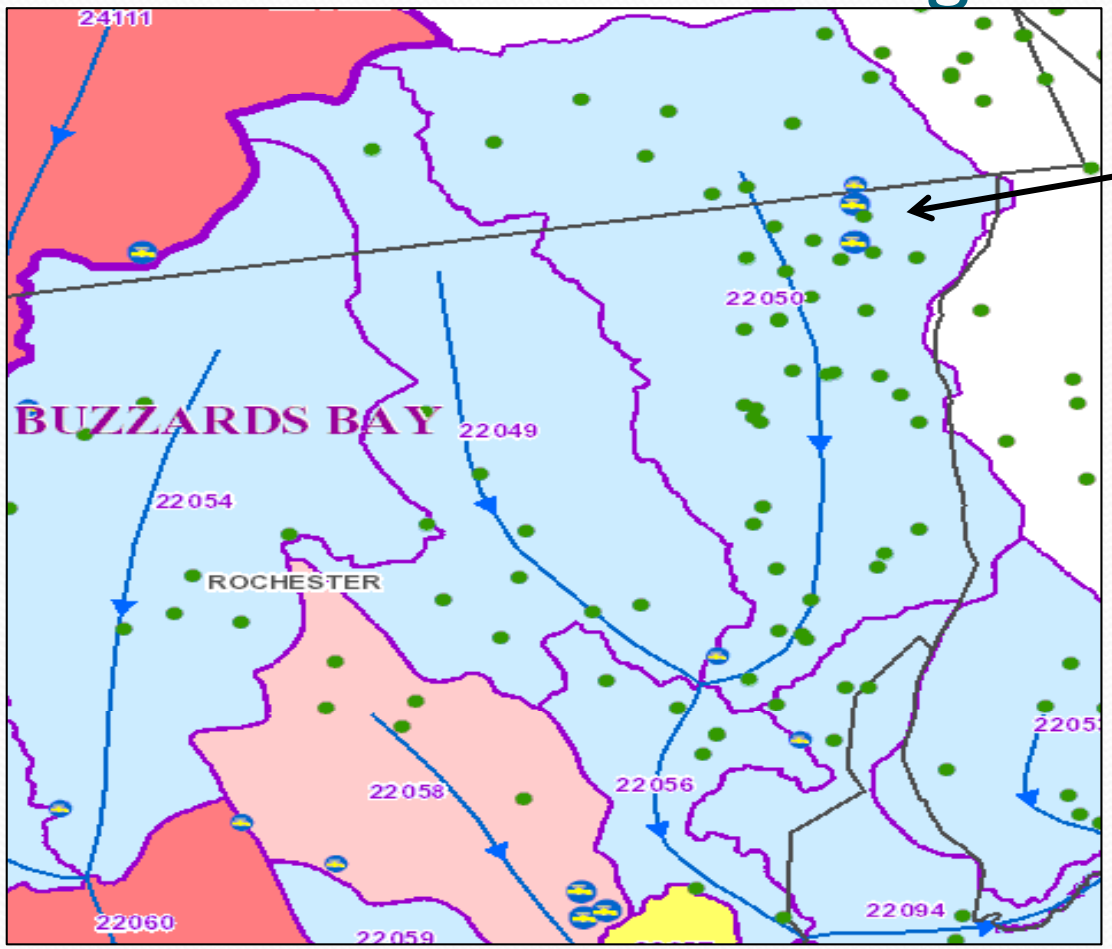
- "commensurate with impact", defined as:
  - volume of increase over baseline
  - does the increase cause a category change?
- considers cost and efficacy

Baseline is the largest of the following:

- 2003 – 2005 water use + 5%
- 2005 water use +5 %
- the community's registered volume
- Volume must be in compliance

Permit Tiers		Mitigation Requirements
Tier 1 = No increase above baseline	→	no mitigation
Tier 2 = Increase but no category change	→	commensurate mitigation
Tier 3 = Increase and category change	→	commensurate mitigation (2:1 if indirect mitigation) show no feasible alternative

Tier 3 Assessment- Additional Volumes before GWC or BC changes



Town X wells

Volumes Remaining in Subbasin 22050 from DEP Permitting Tool

Additional GW Withdrawal Volume to Cause a Change in Existing GWC and BC:	
To Change GWC (mgd):	0.123
To Change BC (mgd):	0.3712

Mitigation Plan Development

Action hierarchy

1st: Demand Management to stay below baseline

2nd: Direct/quantifiable mitigation

3rd: Indirect/non-quantifiable mitigation

Location hierarchy (where a choice exists)

1st: same subbasin as withdrawals (considering water quality)

2nd upstream from the subbasin of withdrawals (considering water quality)

3rd: same major basin as withdrawals

4th: different major basin

Take cost and feasibility into account

Direct Mitigation

Can be volumetrically calculated.

Eligible Activities:

1. Infiltration and inflow improvements
2. Stormwater recharge (directly connected impervious area redevelop to recharge)
3. Surface water releases

Indirect Mitigation Activities

Qualitative Credit System

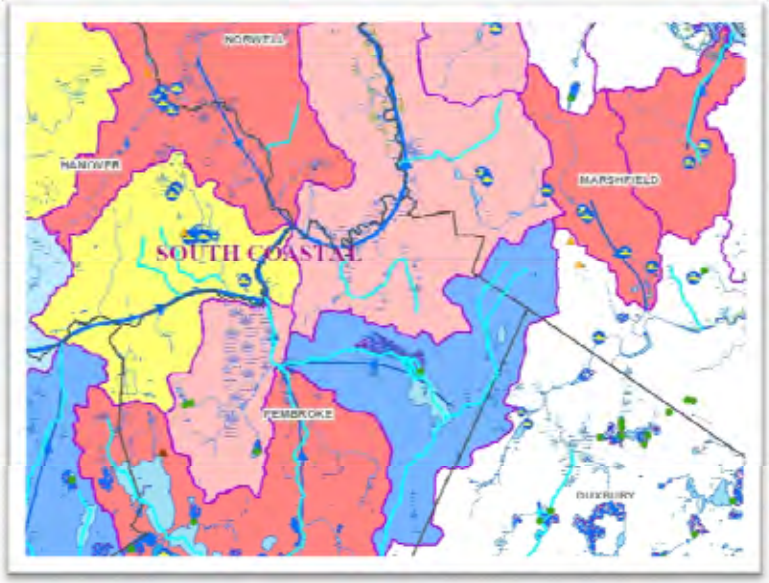
- Acquire property in Zone I or II, or for other resource protection
- Culvert replacements meeting crossing standards
- Stream bank/channel/buffer restoration
- Private well bylaw
- Stormwater utility, bylaw with recharge or implement MS4
- Remove Dam/flow barrier
- Infiltration/Inflow removal program
- Install & maintain fish ladder
- Contribute to a restoration fund

Mitigation Plan Timing

- Mitigation Plan is a live document
- Must be submitted at start of permit, can be phased-in based on use
- Retroactive credits (since 2005) considered if activity/benefit still in effect
- Volumes over Baseline must be mitigated prior to withdrawal (with allowances if withdrawals are already over baseline)

Assistance for Permittees

- Interactive Maps
- Permitting Tool
- Community Specific Summary Sheet
- Grant Funding



Permit Requirements*	
CFR Consult?	Yes/no
Minimization required?	Yes/no
Estimated renewal request in mgd	1.47
Baseline (BL) in mgd	1.54
Projected increase above BL in mgd	-0.07
Estimated Permit Tier	1
Mitigation Required?	no

DEP Permitting Tool

Find by Subbasin ID: 22002 | Find by PWS System Name: | Click to use pull downs and to View All Subbasins | All Water Use Points in Subbasin Report | Calculation Tool Report

Find by PWSID: | Find PWS by Town Name:

Click on "X" in upper right of this form to close this window and return to main page.

Double Click on Sub Basin ID to view water use volumes

Subbasin Characteristics

Sub Basin ID:	Major Basin:	HUC12 Name:
22002	Buzzards Bay	Buzzards Bay-Mishaum Point to Gooseberry Neck

Subbasin Cumulative Data (includes this subbasin and all upstream contributing subbasins)

Subbasin Information		August Wastewater Discharges (mgd)		August Groundwater Withdrawals (mgd)		Additional GW Withdrawal Volume to Cause a Change in Existing GWC and BC:	
Area (Square Miles):	14.96	Ground Water Discharge:	0.000	PWS and Commercial Wells:	0.000	To Change GWC (mgd):	0.191
Impervious Cover (%):	15.6	Septic Systems:	+ 0.157	Private Wells:	+ 0.082	To Change BC (mgd):	0
Surface water withdrawals exist in or upstream of subbasin:	NO	Total Subsurface Discharge:	= 0.157	Total Groundwater Withdrawals:	= 0.082		
		Surface Water (NPDES):	0.000				

Individual Subbasin Data (only includes this subbasin)

Coldwater Fisheries Resource Exist: No

Net Groundwater Depletion (NGD)

Net Groundwater Depletion (%): -2.7

Positive value indicates depleted.
Negative value indicates surcharged.

Unaffected streamflow, Ground Water withdrawals, Groundwater Withdrawal Category (GWC) and Biologic Category (BC).

Estimated August Condition			Proposed Changes to existing GW Withdrawal			Existing vs. Proposed	
			Change (+/-) to existing GW Withdrawal (mgd)	0		Calculate / Clear	
Unaffected Streamflow (mgd)*		2.732	Unaffected Streamflow(mgd)		2.732		
GW Withdrawals (mgd)**	-	0.082	Proposed Total GW Withdrawal (mgd)	-	0.082		
(Unaffected Streamflow) - (GW Withdrawals)	=	2.650	(Unaffected Streamflow) - (Prop. GW Withdrawal)	=	2.650		
(GW Withdrawals) / (Unaffected Streamflow)	=	3.0%	(Proposed GW Withdrawal) / (Unaffected Streamflow)	=	3.0%	0.0%	Percent Difference
Groundwater Withdrawal Category (1-5)	GWC:	2	Proposed Groundwater Withdrawal Category (1-5)		2	NO	Change in GWC?
Biologic Category (1-5)	BC:	5	Proposed Biologic Category (1-5)		5	NO	Change in BC?

Working Together - Program Implementation

- Permit application forms, Guidance and worksheets (ongoing)
- Financial assistance (Annual Grant Program)
  - Eligible planning projects:
    - Optimization
    - Outdoor water use restrictions
    - Implementation of reasonable water conservation
      - NEWWA and MWWA Toolbox of BMPs
  - Eligible implementation projects:
    - Demand management (water audits, soil moisture sensors etc..)
    - Mitigation projects designed to improve flow impacts

      ex. dam removal, culvert replacement, etc.

2015 SWMI Grants

- Auburn: Stormwater Improvements - $74,100
- Franklin: Stormwater Improvements - $119,000
- Halifax: Electronic Control Feasibility - $57,450
- Kingston: Stormwater Improvements - $43,000
- Lincoln: Minimization and Mitigation Planning - $59,900
- Littleton: Demand Management - $47,542
- Medway: Targeted Leak Detection - $14,566
- Norwell: Third Herring Brook Improvements - $59,910
- Shrewsbury: Alternate Water Supply Study - $29,029
- Westborough: Minimization and Basin-Wide Training - $73,052
- Westford: Demand Management, Rebates and Municipal Retrofits - $78,942
- Wrentham: Permitting Tools - $98,316

Water Resources Management Advisory Committee

- Provide advice and consultation to the Department

- Committee of at least 11 members appointed by Governor. Reps include: MMA, AIM, watershed association, water works industry, agriculture, consumer organization, well drillers association, environment, regional planning agency, and two public members.

- Plan to meet every other month in 2015 to amongst other activities review Guidance Document revisions

Information, Questions, or Feedback

- MassDEP Water Management Act Program Webpage: http://www.mass.gov/eea/agencies/massdep/water/watersheds/water-management-act-program.html

- Massachusetts Sustainable Water Management Initiative (SWMI), Framework Summary, November 28, 2012 at :
  http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf

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