# Buzzards Bay

## Permit Renewal Meeting

February 24, 2015
MassDEP's Lakeville Office

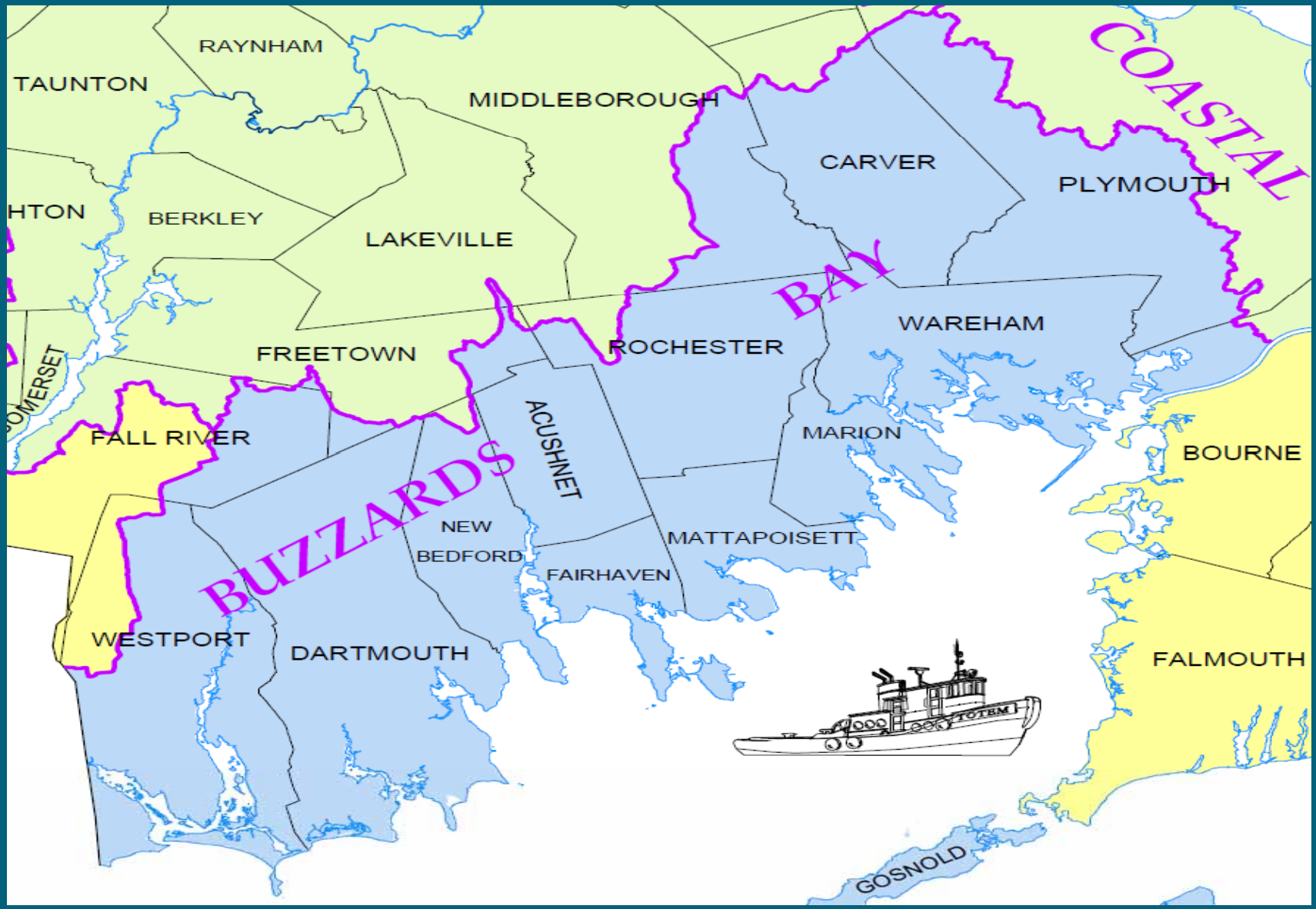
MA Executive Office of Energy and Environmental Affairs
Department of Conservation and Recreation
Department of Environmental Protection
Department of Fish and Game

# Buzzards Bay Outreach Meeting

## Agenda

- Introductions
- WMA Permit Process
- Buzzards Bay Specifics
- Questions & Answers
- Informal Agency Consultations

# Buzzards Bay Basin



# Meeting Purpose- Part One

- Explain the WMA permit renewal process, including:
  - WMA Purpose
  - Permit Renewal Schedule
  - Water Needs Forecasts
  - Safe Yield
  - Permit Conditions
  - New Permit Requirements

# Meeting Purpose- Part Two

- Review Buzzards Bay data and requirements, including:
  - Water Use
  - Baselines
  - Water Use Restrictions
  - Coldwater Fisheries Resources (CFRs) and Requirements

# 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

# Buzzards Bay Renewal Schedule

| Timeline | Activity | Notes |
|---|---|---|
| Winter 2015 | Draft new Water Needs Forecasts (WNF) where applicable | DCR in consultation with PWS |
| February 24, 2015 | Outreach meeting and DRAFT WNF | |
| Feb. - Nov. 2015 | Consultation meetings | As necessary |
| Mar. 31 – May 31 2015 | Permit application filing period | |
| August 2015 | DEP issues Order to Compete (OTC) where necessary | |
| November 2015 | OTC response due back | |
| December 2015 – January 2016 | DEP reviews responses | Mtgs. as necessary |
| February 2016 | Draft permit issued and public comment period | |
| May 31, 2016 | Issue final permit* | |

* Permits may be appealed for up to 21 days after permit issuance. Permits under appeal are not considered final permits.

# Safe Yield

55% of Annual Drought Basin Yield + Reservoir Storage

- New methodology determines maximum withdrawal volumes on annual basis and major basin scale.
- Buzzards Bay Basin safe yield calculated with multiple methods.*

*For more detailed description, see the Sustainable Water Management Initiative Framework Summary (November 28, 2012)

| Basin | Safe Yield | Total Annual Authorized Withdrawals* | Total Annualized Registered Volume * | 2013 Reported Use * |
|---|---|---|---|---|
| Buzzards Bay | 148 MGD | 85.85 MGD (65+ MGD is Cranberry use) | 74.57 MGD | 76.78 MGD |

* Withdrawal volume calculated based on 365 days

# Water Needs Forecasts (WNF)

- Applications for WMA Permits require a forecast of water needs for the permit term
- DCR develops forecast
- 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

# Steps in Developing a Water Needs Forecast

- DCR complies and analyzes data
- Public Notices: *Environmental Monitor*; status report to WRC
- DCR develops draft forecast; discussions with water supplier
- Basin-wide public meeting (this meeting)
- PWS includes forecast in WMA permit application

***General Timeframe: 2 months-***
***All complete in this basin***

# Data from Water Supplier

1. Water-use data based on actual metering for 3 to 5 years (from ASRs):
   - Residential
   - Industrial, Commercial, Municipal (Nonresidential)
   - Treatment plant losses (if any)
   - UAW
2. Population served by water system (including out of town and seasonal)
3. Anticipated significant changes in water use (large projects not captured in projections)

# Data Obtained by DCR

| Data | Sources |
|---|---|
| Current Town-wide Population | U.S. Census, Planning Office |
| Population Projections | Regional Planning Agency |
| Current Employment | Regional Planning Agency |
| Employment Projections | Regional Planning Agency |

# WMA 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**:

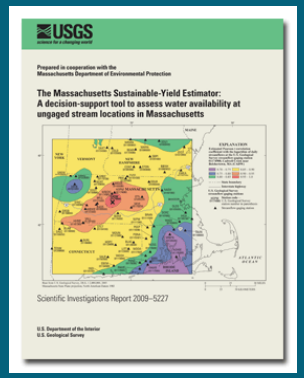
- have a conservation program that includes
  - metering,
  - irrigation system maintenance,
  - turf management, and
  - education;
- limit nonessential irrigation during drought;
- optimize withdrawals to protect cold water fisheries; and
- minimize impacts if the golf course is in a groundwater depleted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

# Science and Policy Informing WMA Permit Requirements

- USGS Studies: August withdrawals and impervious cover have significant impact on fluvial fish



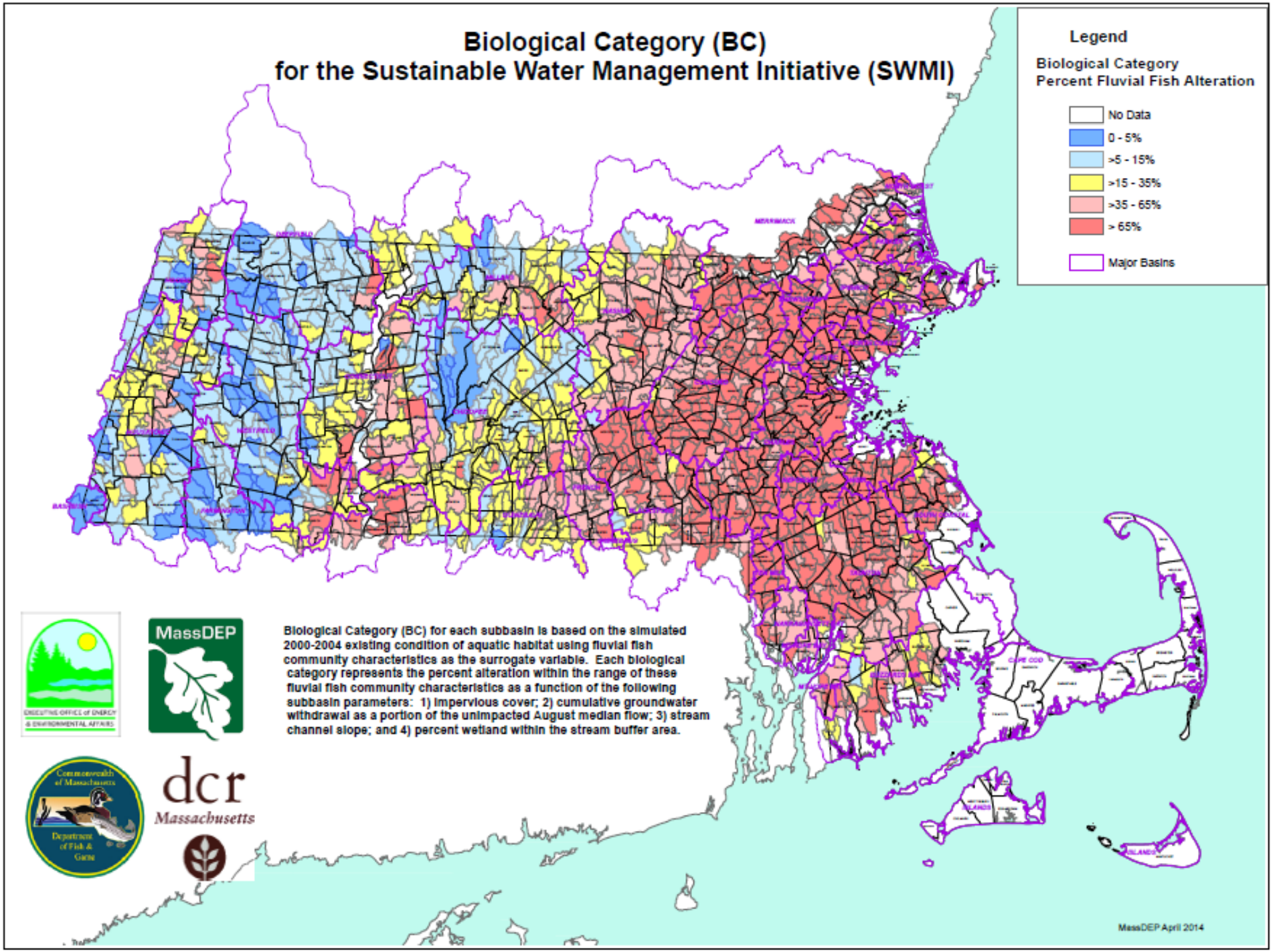

SYE


MWI


Fish and Habitat

- SWMI Advisory and Technical Committees helped us develop policy from science
- Five Biological and Groundwater Categories (1=least impact, 5 = most impact)
  - Categories use fluvial fish as surrogate for healthy aquatic habitat,
  - Impervious cover and August groundwater withdrawals used to represent impacts
- Streamflow Criteria mark the boundaries between categories (310 CMR 36.14)

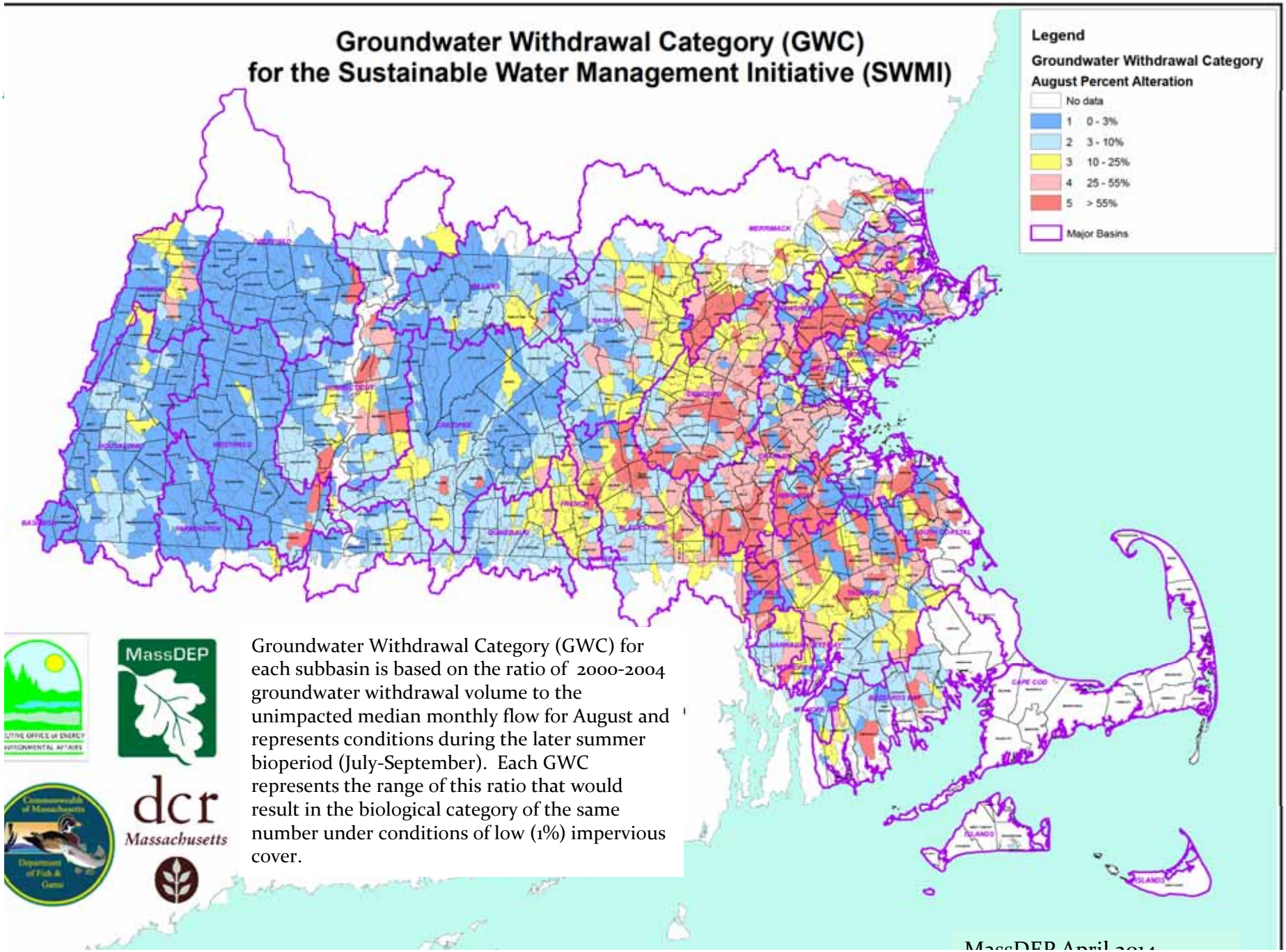
# Biological Category (BC)
# for the Sustainable Water Management Initiative (SWMI)




Biological Category (BC) for each subbasin is based on the simulated 2000-2004 existing condition of aquatic habitat using fluvial fish community characteristics as the surrogate variable. Each biological category represents the percent alteration within the range of these fluvial fish community characteristics as a function of the following subbasin parameters: 1) impervious cover; 2) cumulative groundwater withdrawal as a portion of the unimpacted August median flow; 3) stream channel slope; and 4) percent wetland within the stream buffer area.

MassDEP April 2014

# 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

# 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

*Those with only registrations are not subject to these requirements

# Coldwater Fisheries Resource (CFR) Consult

- Basin meeting serves as the preliminary consult
- Goal: Reduce impacts to CFRs through optimization
- Optimization template will be provided

# 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)*

<u>Minimization Requirements (to the greatest extent feasible):</u>

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

**<u>*Permittees may avoid Minimization through:</u>**

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

# 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
- Must be in compliance with volume authorized in 2005

| 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<br>(2:1 if indirect mitigation)<br>show no feasible alternative |

# 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

- Private well Bylaw
- Culvert replacements meeting crossing standards
- Stream bank/channel/buffer restoration
- Remove dam/flow barrier
- Stormwater utility, bylaw with recharge or implement MS4*

*must result in increased recharge to get credit

- Acquire property in Zone I or II, or for other resource protection
- Infiltration/Inflow removal program
- Install & maintain fish ladder

# 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

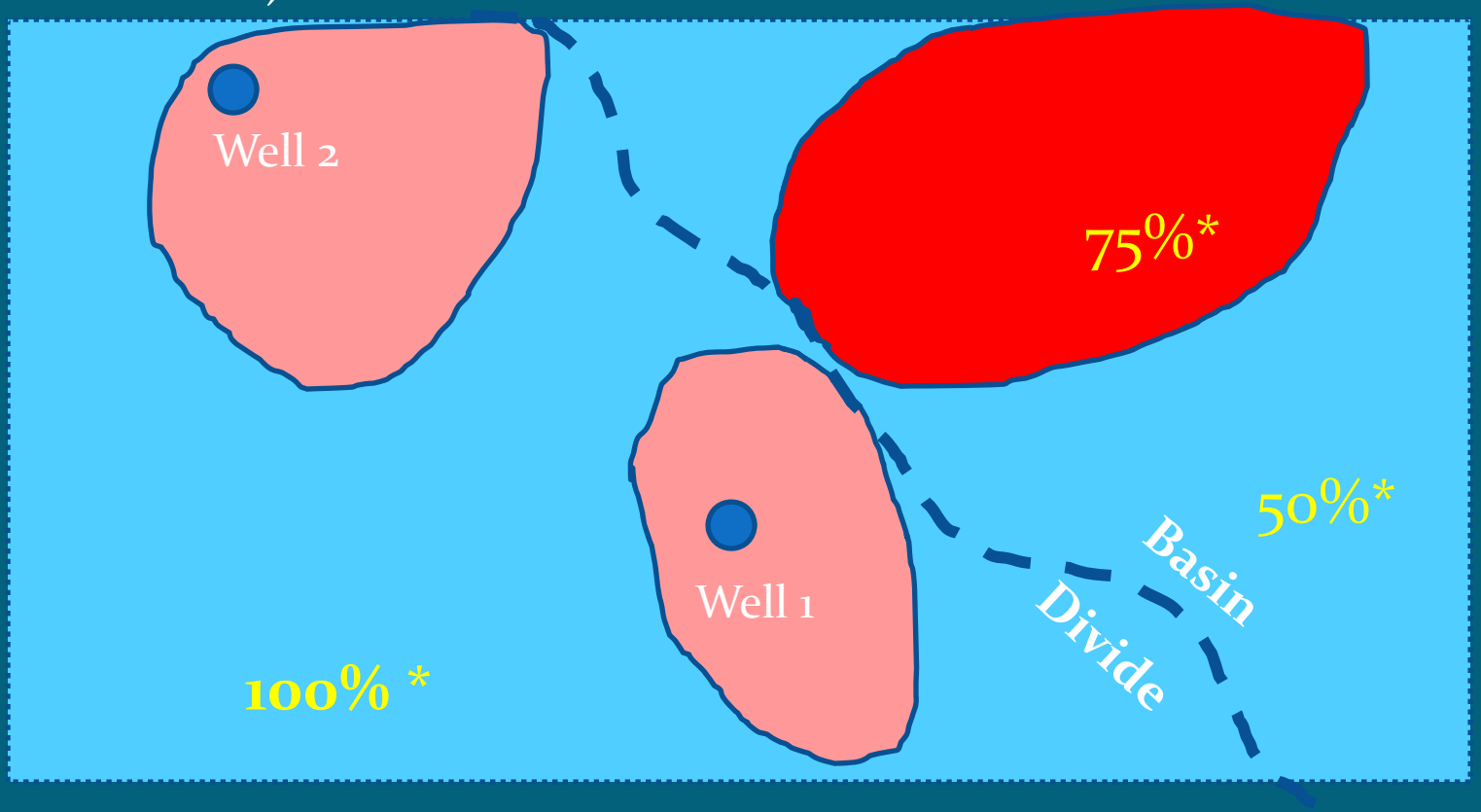
# Mitigation Plan Timing

- 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)

# Mitigation Adjustments

Withdrawal location(s) and wastewater returns may result in adjustments in mitigation volumes and credits

- Wastewater Adjustment (* also adjusted by consumptive use factor)
- Location Adjustment Factor



# Buzzards Bay Basin Specifics

- Who withdraws & how much?
- What are my water use restriction triggers?
- Who needs to minimize?
- Who has Cold Water Fishery Resources?
- What is my baseline?
- Do I need to mitigate?  Projected Tier?
- What mitigation options exist?

# Total Buzzards Bay Water Use

| Use Type | Registered Users | Permitted Users | Registered Volumes (mgd) | Permitted Volumes (mgd) |
|---|---|---|---|---|
| PWS | 9 | 11 | 5.95 | 7.25 |
| INDUST | 3 | 1 | 0.36 | 0.33 |
| GOLF | 0 | 4 | 0 | 0.61 |
| AGRI | 1 | 0 | 0.03 | 0 |
| Cranberry | 186 | 21 | 61.27 | 3.13 |
| Total | 199 | 37 | 67.61 | 11.32 |

# Permitted Buzzards Bay Users (Non-Cranberry)

| Name | Registration Volume (mgd) | Permit Volume (mgd) | Total Authorized Volume (mgd) |
|---|---|---|---|
| ADM Agawam Development CO | 0 | 0.26 | 0.26 |
| Buzzards Bay Water District | 0.37 | 0.16 | 0.53 |
| Dartmouth Water Department | 1.16 | 2.11 | 3.27 |
| Fairhaven Water Department | 1.07 | 0.69 | 1.76 |
| Marion Water Department | 0.56 | 0.18 | 0.74 |
| Mattapoisett Water & Sewer | 0.42 | 0.39 | 0.81 |
| Onset Fire District | 0.5 | 0.64 | 1.14 |
| Plymouth DPW Water Div | 0 | 1.59 | 1.59 |
| Plymouth Water Company | 0 | 0.22 | 0.22 |
| South Meadow Village | 0 | 0.19 | 0.19 |
| Wareham Fire District | 1.31 | 0.64 | 1.95 |
| Acushnet River Valley GC | 0 | 0.1 | 0.1 |
| Atlantic Country Club | 0 | 0.13 | 0.13 |
| Bay Club Members LLC | 0 | 0.19 | 0.19 |
| Country Club of New Bedford | 0 | 0.19 | 0.19 |
| SEMASS Partnership | 0 | 0.33 | 0.33 |

# Permitted Buzzards Bay Cranberry Users

## Part 1

| Name | Registration Volume (mgd) | Permit Volume (mgd) | Total Authorized Volume (mgd) |
|---|---|---|---|
| AD Makepeace Company | 12.63 | 0.73 | 13.36 |
| Agawam Cranberry CO | 0.56 | 0.06 | 0.62 |
| Anthony Polillio III | 0 | 0.1 | 0.1 |
| Carver-Middleboro Cran | 0.33 | 0.16 | 0.49 |
| Cedar Meadow Cran | 0.1 | 0.13 | 0.23 |
| Decas Cranberry CO Inc | 3.26 | 0.15 | 3.41 |
| Edgewood Bogs LLC | 1.42 | 0.02 | 1.44 |
| Erickson Bogs | 0.23 | 0.14 | 0.37 |
| Gilmore Cranberry CO Inc | 0.57 | 0.13 | 0.7 |
| Great Bear Farms Inc | 0.3 | 0.18 | 0.48 |

# Permitted Buzzards Bay Cranberry Users

## Part 2

| Name | Registration Volume (mgd) | Permit Volume (mgd) | Total Authorized Volume (mgd) |
|---|---|---|---|
| GRTR New Bedford REG Refuse | 0.24 | 0.1 | 0.34 |
| Hartley Rhodes Inc | 0 | 0.07 | 0.07 |
| Kenneth and Bettygene Harju | 1.03 | 0.04 | 1.07 |
| King Fisher Corp | 0 | 0.11 | 0.11 |
| Moniz Estates/Properties | 0 | 0.14 | 0.14 |
| Oiva Hannula & Sons Inc | 1.03 | 0.38 | 1.41 |
| Pine Hill Farm | 0 | 0.06 | 0.06 |
| Ring Road Realty Trust Cran | 0 | 0.12 | 0.12 |
| Rock Village Farm LLC | 0.15 | 0.07 | 0.22 |
| Wenham Pond Cranberry CO | 0.3 | 0.15 | 0.45 |
| Willows Cranberries | 0.11 | 0.09 | 0.2 |

# Buzzards Bay PWS Baseline Volumes

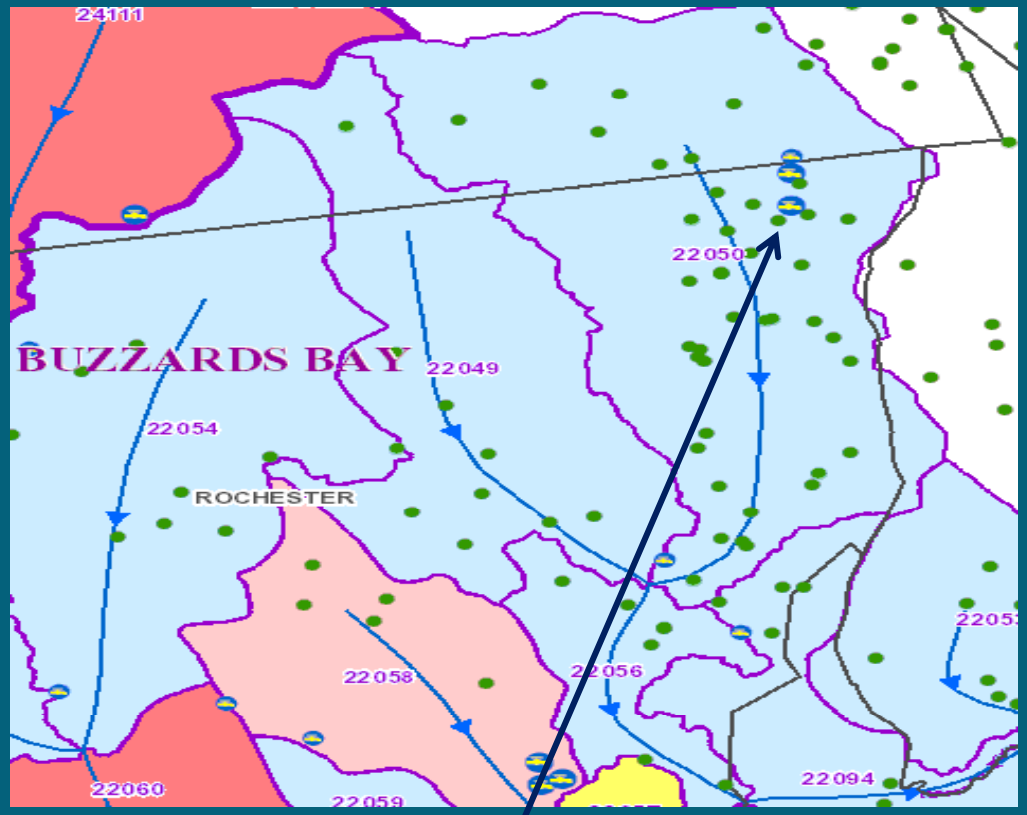
| PWS | Baseline Volume (mgd) | Current Total Allocation (mgd) | Reported Use 2011 (mgd) | Reported Use 2012 (mgd) | Reported Use 2013 (mgd) |
|---|---|---|---|---|---|
| ADM Agawam Development | 0 | 0.26 | 0 | 0 | 0 |
| Buzzards Bay Water District | 0.53 | 0.53 | 0.46 | 0.44 | 0.45 |
| Dartmouth Water Department | 2.79 | 3.27 | 2.26 | 2.17 | 2.28 |
| Fairhaven Water Department | 1.43 | 1.76 | 1.29 | 1.26 | 1.26 |
| Marion Water Department | 0.70 | 0.74 | 0.5 | 0.33 | 0.53 |
| Mattapoisett Water & Sewer | 0.56 | 0.81 | 0.86 | 0.75 | 0.64 |
| Onset Fire District | 0.66 | 1.14 | 0.51 | 0.45 | 0.46 |
| Plymouth DPW Water Div | 0.8 | 1.59 | 0.66 | 0.74 | 0.68 |
| Plymouth Water Company | 0.22 | 0.22 | 0.25 | 0.25 | 0.26 |
| South Meadow Village | 0.1 | 0.19 | 0.1 | 0.09 | 0.1 |
| Wareham Fire District | 1.77 | 1.95 | 1.64 | 1.69 | 1.65 |

# Buzzards Bay Non-PWS (Non-Cranberry) Baselines

| PWS | Baseline Volume (mgd) | Current Total Allocation (mgd) | Reported Use 2011 (mgd) | Reported Use 2012 (mgd) | Reported Use 2013 (mgd) |
|---|---|---|---|---|---|
| Acushnet River Valley GC | 0.1 | 0.1 | 0.07 | 0.08 | 0.08 |
| Atlantic Country Club | 0.11 | 0.132 | 0.08 | 0.08 | 0.08 |
| Bay Club Members LLC | 0.18 | 0.189 | 0.04 | NR | 0.08 |
| Country Club of New Bedford | 0.08 | 0.189 | 0.08 | 0.08 | 0.07 |
| SEMASS Partnership | 0.294 | 0.33 | * | * | * |

* Additional data to be reviewed

# Additional Volumes before GWC or BC changes




SEMASS

| Sub-basin | MGD to change GWC | MGD to Change BC |
|---|---|---|
| 22050 | 0.123 | 0.3712 |

# Nonessential Water Use Triggers

| Trigger location | May- June Trigger Value | July – Sept. Trigger Value | 7 Day Low Flow Trigger Value | PWSs assigned |
|---|---|---|---|---|
| 01105933- Paskamanset R near S. Dartmouth, MA | 32 cfs | 11 cfs | 1.4 cfs | Dartmouth, Fairhaven, Marion, Mattapoisett |
| USGS Well PWW 22 (Plymouth) | Below 25% percentile for each month | | | ADM Agawam, Buzzards Bay WD, Plymouth, Plymouth Water Co., South Meadow Village, Onset, Wareham |

# Online SWMI Interactive Maps

- GIS map provides an interactive graphic display that includes:
  - GWC & BC
  - August Net groundwater depletion
  - Water use points
  - Cold Water Fishery Resources
  - Aquifers and more

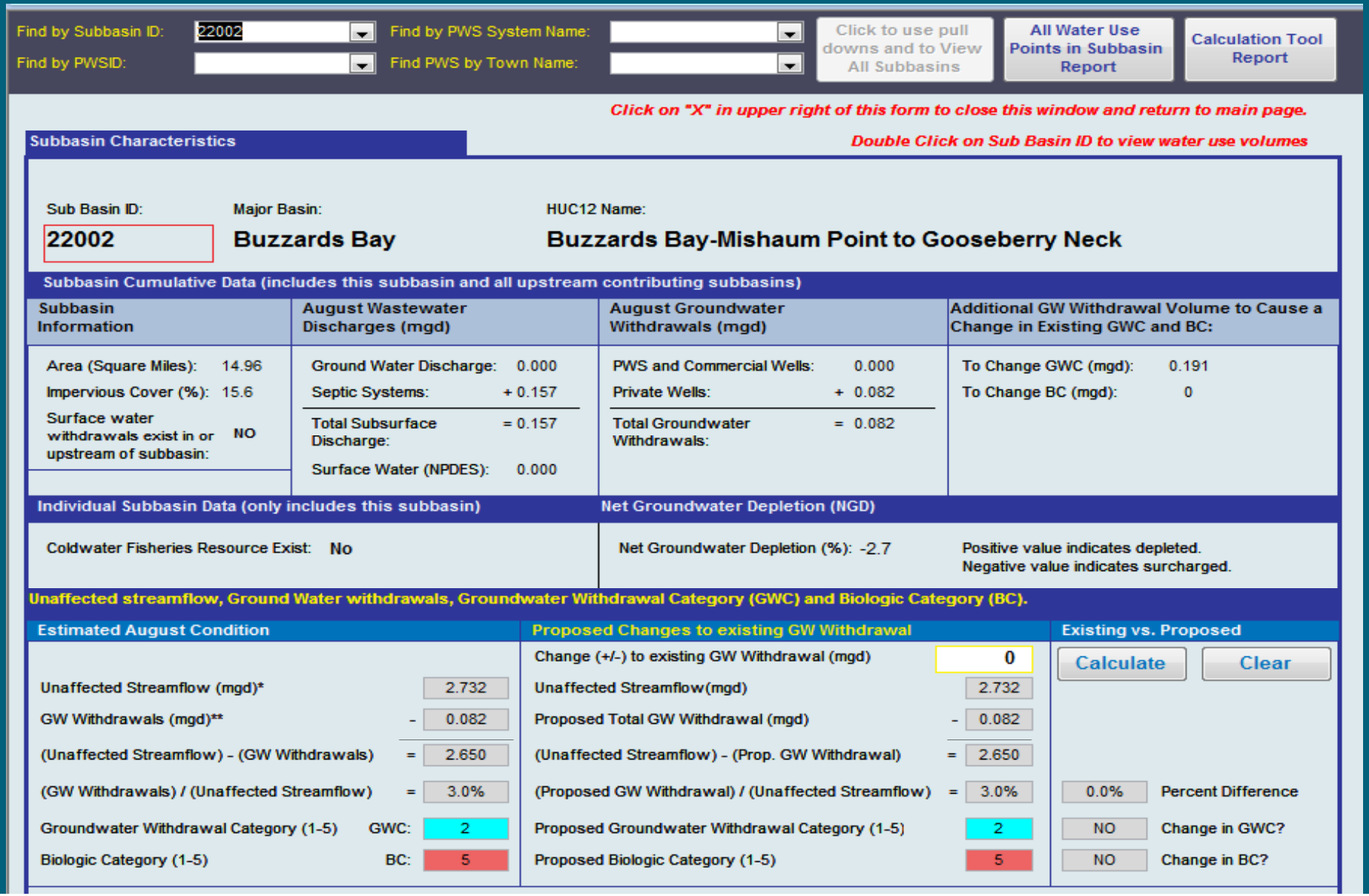
- Map is at

http://www.mass.gov/eea/agencies/massdep/water/watersheds/sustainable-water-management-initiative-swmi.html

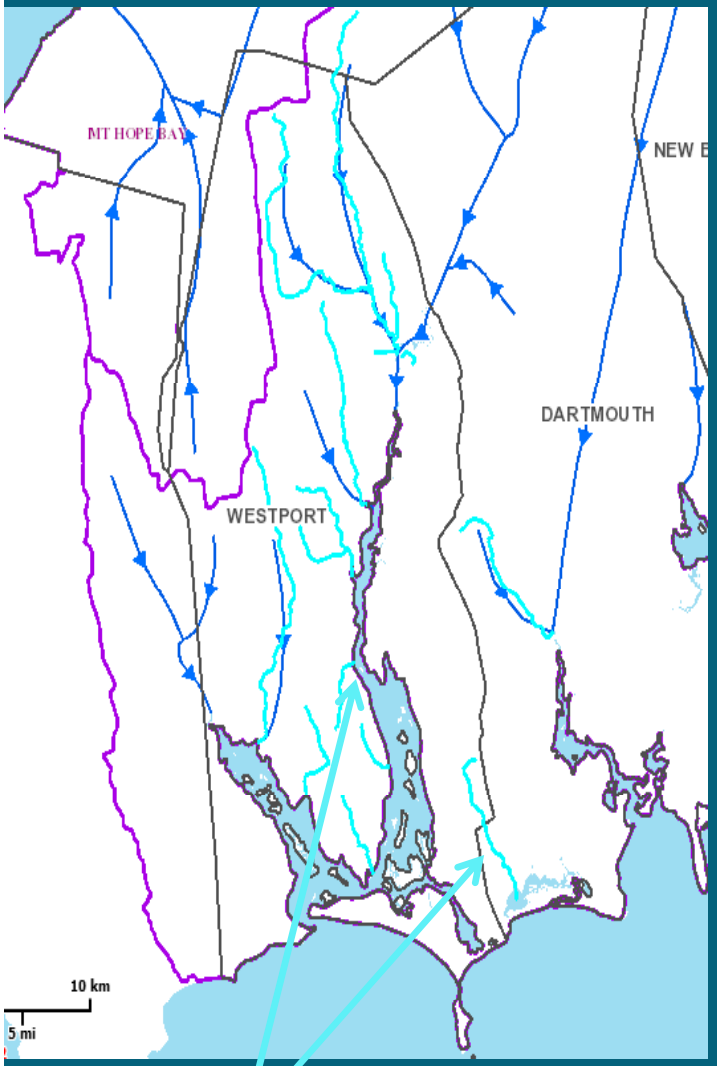
# DEP Permitting Tool

- Displays  data and equations to determine BC, GWC, August NGD for 1400 subbasins.
- User may increase or decrease water use and see resulting change in above values.
- Two main views:
  - PWS information includes: recent usage, baseline volumes, projected usage, sources, and other users
  - Subbasin information includes: cumulative area, % of impervious cover, streamflow values, etc.

# DEP Permitting Tool



# Buzzards Bay Coldwater Fishery Resources




CFRs are light blue


CFRs are light blue

CFRs are considered a particularly sensitive receptor warranting protection.

**Permit Holders needing to consult over CFRs**

Onset Water District

# Summary Info for Non-Cranberry Permits

| Buzzards Bay Permits | CFR present | Minimization required | Projected Permit Tier | Alternative analysis |
|---|---|---|---|---|
| ADM Agawam Development | Yes | No | 2 | No |
| Buzzards Bay Water District | No | No | 1 or 2 | No |
| Dartmouth Water Department | No | Yes | 1 | No |
| Fairhaven Water Department | No | Yes | 2 | No |
| Marion Water Department | No | Yes | 1 | No |
| Mattapoisett Water & Sewer | No | Yes | 2 | No |
| Onset Fire District | Yes | No | 1 | No |
| Plymouth DPW Water DIV | No | No | 1 | No |
| Plymouth Water Company | No | No | 1 or 2 | No |
| South Meadow Village | No | No | 1 or 2 | No |
| Wareham Fire District | No | No | 1 or 2 | No |
| Acushnet River Valley | No | No | 1 | No |
| Atlantic Country Club | No | No | 2 | No |
| Bay Club Members LLC | No | No | 1 | No |
| Country Club of New Bedford | No | Yes | 2 | No |
| SEMASS Partnership | No | No | Unknown | ? |

*** Consultation with DFG will be required**

# Permit Reviews

| Non-Cranberry Permit Holder | Reviewer |
|---|---|
| Acushnet River Valley Golf Club | Chen |
| ADM Agawam Development | Connors |
| Atlantic Country Club | Connors |
| Bay Club Members LLC | McCann |
| Buzzards Bay Water District | Butler |
| Country Club of New Bedford | D'Urso |
| Dartmouth Water Department | Connors |
| Fairhaven Water Department | D'Urso |
| Marion Water Department | Chen |
| Mattapoisett Water & Sewer | D'Urso |
| Onset Fire District | Friend |
| Plymouth DPW Water Division | McCann |
| Plymouth Water Company | Connors |
| SEMASS Partnership | Connors |
| South Meadow Village | Butler |
| Wareham Fire District | McCann |

| Cranberry Permit Holder | Reviewer |
|---|---|
| All Cranberry Permits | Mclaughlin |

# DEP Reviewers

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|---|---|---|
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# Community-Specific One-Page Summary Sheet

- Includes 6 summary tables:

1) Reported Use 2009-13
2) Performance Standards
3) WNF Scenarios
4) Permit Data
5) Subbasin Data
6) Streamflow Triggers

example

| 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 |

*includes comments to explain data sources and decisions

# WMA Regulations and Permit Assistance

- Regulation (Promulgated November 7, 2014) and Policy Development (Ongoing)
- Permit application forms and worksheets (Winter 2015)
- 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.

# Further information

- MassDEP Technical Resources webpage at:
  http://www.mass.gov/eea/waste-mgnt-recycling/water-resources/preserving-water-resources/sustainable-water-management/

- MassDEP SWMI webpage at:
  http://www.mass.gov/dep/water/resources/swmi.htm

- 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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