

Wastewater Management Program

Proposed Regulation Changes to the
Groundwater Discharge Program and
the Reclaimed Water Program



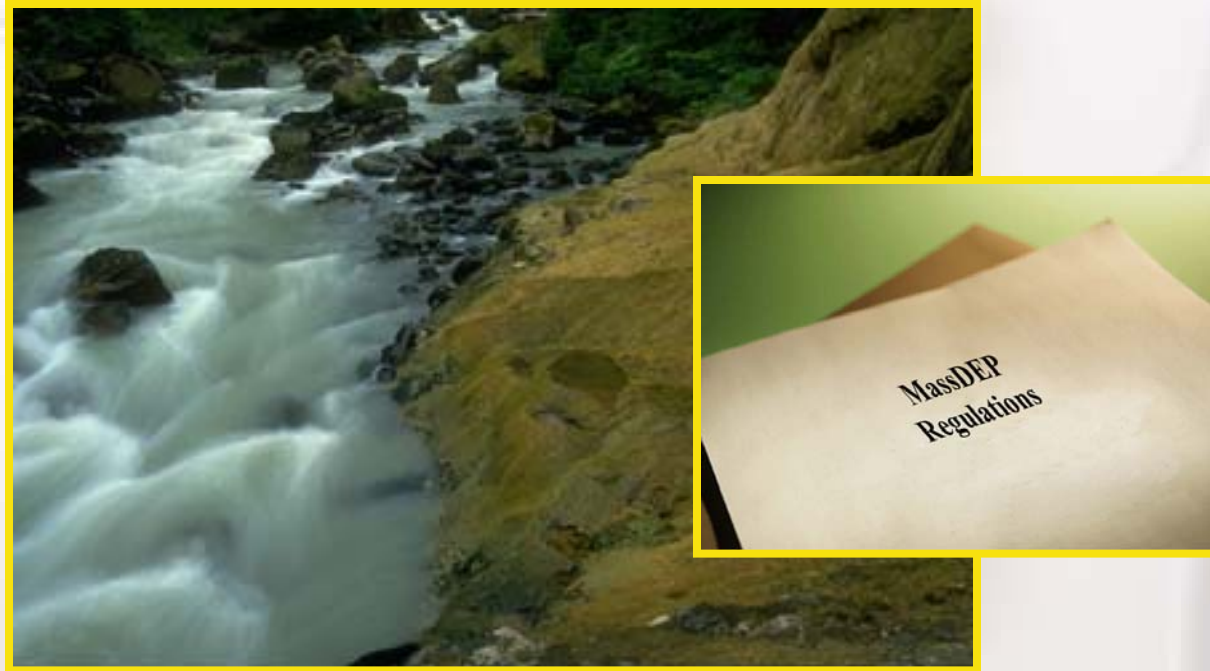
Proposed Regulatory Changes

- 314 CMR 5.00 – Groundwater Discharge Permits (revise)
- 314 CMR 6.00 – Groundwater Quality Standards (rescind)
- 314 CMR 20.00 – Reclaimed Water Permits (new)
- 314 CMR 2.00 – Permit Procedures
- 314 CMR 12.00 – Operation & Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers



MassDEP

Groundwater Permit Program Regulation Revisions Overview



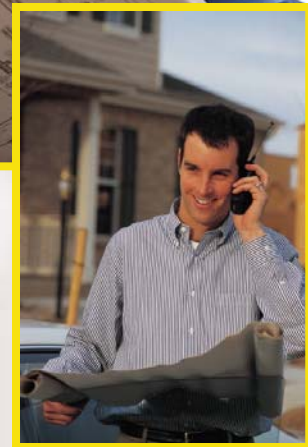
Introduction

- Streamline permit process
- Early emphasis on Hydrogeologic study
- Zone II standards
- Use of general permits
- Expanded list – activities not requiring a permit
- Standard financial assurance documents



Groundwater Advisory Task Force

- Hydrogeologists
- Engineers
- Local officials
- Environmental groups
- Development community
- MassDEP staff



Permit Streamlining

Reduced Time Frames

- MassDEP review time reduced
- Permittee response time reduced
- Eliminate permit bottlenecks
- Certifications
 1. Engineers report
 2. Plans & specifications
 3. Equipment vendor



Permit Streamlining

Hydrogeologic Study

- Most critical piece
- Early MassDEP involvement
- Expedited review
- Accepted time frames
- MassDEP approval – proponent knows the acceptable flow
- Public notice



Permit Streamlining

General Permits

- Simplified submittal
- Expedited review process
- Appeal rights only if aggrieved party
- Examples (subject to eligibility)
 1. WWTP \leq 50,000 gpd
 2. Carwashes
 3. Laundromats



Permit Streamlining

Revised Timelines

MassDEP Task	Application Without Deficiencies (days)	Application With Deficiencies (days)
Existing Permit Review including hydrogeologic review	320	520
Proposed Hydrogeologic/General Permit	111	162
Proposed Hydrogeologic/Individual Permit	186	267



Permit Streamlining Administrative Renewal

- Eliminate backlog
- Extend existing permit for up to 5 years
- More stringent permit requirements not necessary
- Engineer certification on WWTP operation



Permit Streamlining

Other Provisions

- Eliminate 314 CMR 6.00 – groundwater quality standards
- Eliminate classification system
- All groundwater is drinking water unless otherwise determined
- Water quality based effluent limits consistent with drinking water standards



Effluent Limits Within a Zone II/IWPA

- No discharge allowed in Zone I or 6-month travel time, whichever is greater
- More stringent standards than typical discharge



Effluent Limits Within a Zone II/IWPA

Parameter	Zone II/IWPA* within 2-year travel time	Zone II/IWPA outside 2-Yr.Travel Time
Total Nitrogen	5	10
TSS (mg/l)	5	5
Turbidity (NTU)	2	2
BOD (mg/l)	10	10
TOC (mg/l)	1	3
Fecal coliform	Median of ND	200
Virus	5-log reduction of MS2 or poliovirus	No standard

** No discharge allowed in Zone I or 6-month travel time, whichever is greater*



Activities Not Requiring A Groundwater Discharge Permit

- Expanded list
- Examples
 1. <10,000 gpd in accordance w/Title 5
 2. Ground source heat pump
 3. Non-contact cooling water <40 D Celsius and < 15,000 gpd



Financial Assurance Mechanisms (FAMs)

- Major permit bottleneck
- Only PSTF that treat sewage from a residential use or other designated use will require an immediate repair and replacement account and capital reserve account
- MassDEP developing standard documents that will significantly reduce review time



Examples of Uses Requiring FAMs

- Apartments
- Condominiums
- Single or multi-family homes
- Hospitals
- Nursing homes
- Assisted living facilities



Groundwater Permit Regulation

Other Proposed Revisions

- Eliminate prohibition of groundwater discharge when a sewer is available
- Incorporate policies/guidance
- Seasonal facilities

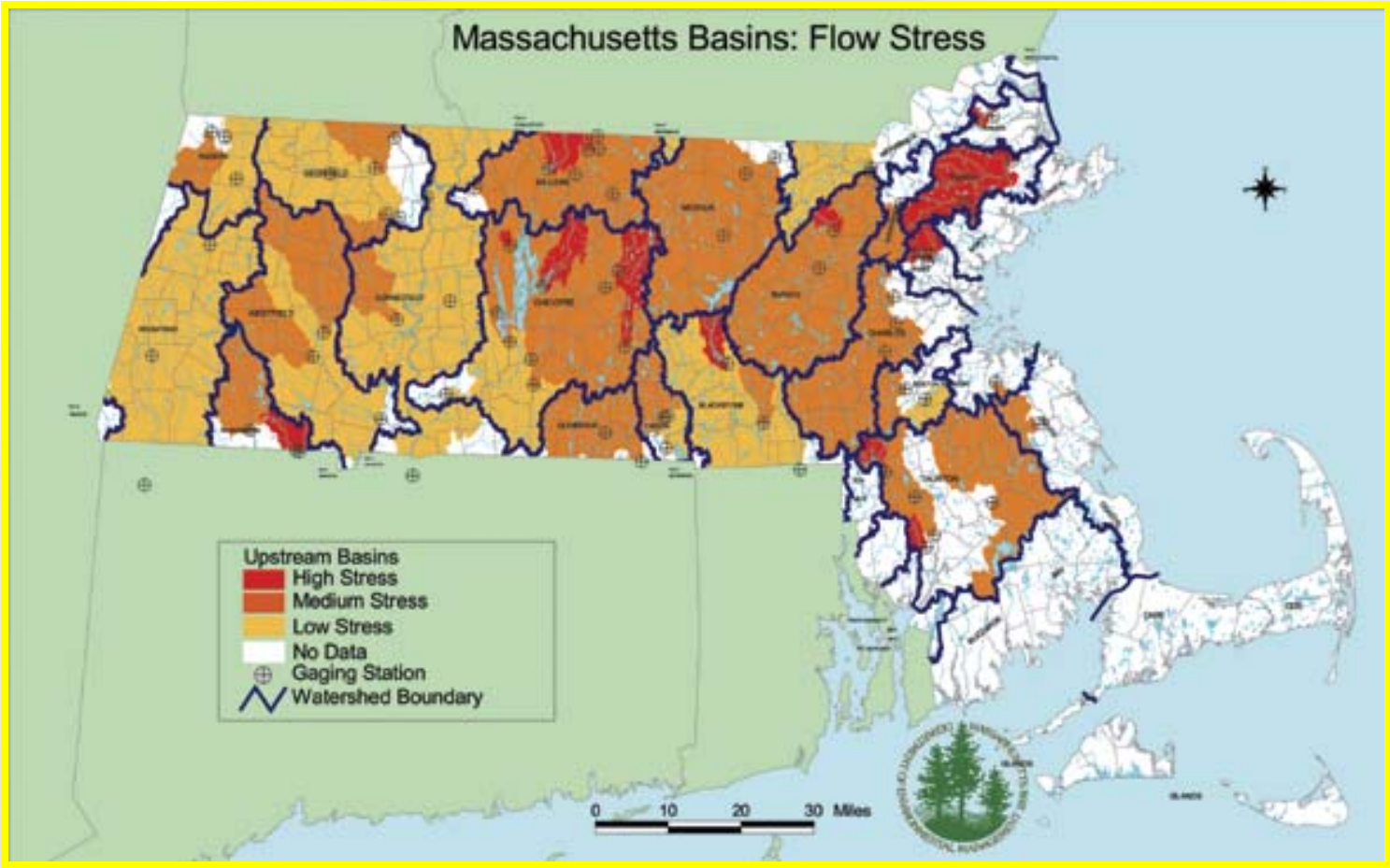


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Reclaimed Water Program Regulation Revisions Overview



Stressed Basins



National Water Use

- 32% agricultural, recreational, commercial, and industrial use
- 28% toilet flushing
- 23% bathing
- 14% for laundry and dishwashing
- 3% drinking and cooking



Reclaimed Water Use Goals

- Reduce stress on over-used water resource areas
- Provide a safe and affordable water source for uses other than directly potable
- Increase public awareness and promote acceptance
- Promote advancement of new technology



2000 Interim Guidelines: Allowable Uses

- Golf courses – spray irrigation
- Landscaping – nurseries
- Toilet flushing
- Artificially recharging aquifers



Existing Standards for Reclaimed Water

Parameter	Urban Reuse	Toilet Reuse	Aquifer Recharge
BOD (mg/l)	10	30	10 or 30
TSS (mg/l)	5	10	5 or 10
Turbidity (NTU)	2	5	2 or 5
Total Nitrogen (mg/l)	10	10	10
Fecal Coliform (colonies/100 ml)	Median of ND not to exceed 14	100	Median of ND or 200



Pilot Program

- Evaluate uses not specifically listed in guideline
 - Drip irrigation
 - Powerplant process and cooling water
 - Automated car wash



Challenges

- **Balancing Act**
 - **Cost – WWTP & Monitoring**
 - **Public Health**
- **Public Perception**
- **Public apathy**
- **Victim of our own technology**
 - **Analysis of emerging pollutants**



New Program

- MassDEP developing new regulations
 - 2003: Study by CH2M HILL
 - 2004: EPA Water Reuse Guidelines
 - 2005-2007: Task force
 - Our Experience



MassDEP Task Force

- Local officials
- Consultants
- Environmental groups
- Industry representatives
- MassDEP personnel



Proposed New Uses

- Irrigation of fields, playgrounds, and ballparks
- Residential irrigation
- Crop irrigation
- Powerplants
- Industrial Uses



Proposed New Classification System

Parameter	Class A	Class B	Class C
BOD (mg/L)	10	30	30
TSS (mg/L)	5	10	30
Turbidity (NTU)	2	NA	NA
Total Nitrogen (mg/L)	10	10	10
Fecal Coliform (colonies/100 ml)	Median of ND not to exceed 14	Median of 14 not to exceed 100	Median of 200 not to exceed 800



Proposed New Classification System

Class A

- Landscape irrigation with unrestricted access - golf courses, parks, playgrounds, ballfields, highway rest areas, non-residential developments, residential and mixed use developments
- Cooling water with mist or aerosol
- Agricultural use in direct contact with crop
- Toilet flushing
- Commercial laundries and carwashes
- Industrial process water with direct contact
- Creation of a new wetland and recreational impoundment



Proposed New Classification System

Class B

- Landscape irrigation with restricted access – nurseries and sod farms, highway medians and shoulders
- Cooling water without mist or aerosol
- Agricultural use such as pasture land and unprocessed food crops without direct contact with edible portion of crop
- Dust control, street cleaning, soil compaction, mixing aggregate



Proposed New Classification System C

Class C

- Industrial process water without direct contact
- Industrial boiler feed
- Agricultural use in orchards and vineyards without direct contact with edible portion of crop, and processed food crops
- Silviculture



Landscape Irrigation

What Other States Have Found

- Landscape irrigation with reclaimed water is widespread in the U.S.
- No instances of illness or disease from pathogens or contaminants from the use of reclaimed water in more than 1,600 sites that irrigate, parks, playgrounds, or schoolyards with reclaimed water
- Risks are no different than risks using potable water



Number of Park, Playground, and Schoolyard Sites Irrigated With Reclaimed Water

State	Parks & Playgrounds	School Grounds
Arizona	87	60
California	409	295
Colorado	33*	9
Florida	486	213
Nevada	16	4

** Some cities that use reclaimed water at multiple sites did not provide the total number of sites; actual number of sites is higher.*

Chart information from the Water Reuse Foundation: Irrigation of Parks, Playgrounds, and Schoolyards with Reclaimed Water, 2005, pg.6, Table 2



Examples of State Reuse Criteria for Landscape Irrigation

State	Water Quality Limits
Arizona	<ul style="list-style-type: none"> •ND fecal coli/100mL •2 NTU turbidity
California	<ul style="list-style-type: none"> •2.2 total coli/100mL •2 NTU turbidity
Colorado	<ul style="list-style-type: none"> •126 E.coli/100mL •3 NTU turbidity
Florida	<ul style="list-style-type: none"> •ND fecal coli/100mL •20 mg/L BOD •5 mg/L TSS
Nevada	<ul style="list-style-type: none"> •2.2 fecal coli/100mL

Chart information from the Water Reuse Foundation: Irrigation of Parks, Playgrounds, and Schoolyards with Reclaimed Water, 2005, pg.24 Table 5



Proposed MA Reuse Criteria

EPA	<ul style="list-style-type: none">• ND fecal coli/100mL• 2 NTU Turbidity
Proposed MA Criteria “Class A”	<ul style="list-style-type: none">• ND fecal coli/100 mL• 2 NTU Turbidity



Proposed Aquifer Recharge Standards

- Included in proposed revisions to groundwater regulations – 314 CMR 5.00
- Zone II or IWPA standards



Artificial Aquifer Recharge Proposed Standards

Parameter	Zone II/IWPA* within 2-year travel time	Zone II/IWPA outside 2-Yr.Travel Time
Total Nitrogen	5	10
TSS (mg/l)	5	5
Turbidity (NTU)	2	2
BOD (mg/l)	10	10
TOC (mg/l)	1	3
Fecal coliform	Median of ND	200
Virus	5-log reduction of MS2 or poliovirus	No standard

** No discharge allowed in Zone I or 6-month travel time, whichever is greater*



Proposed Reclaimed Water Regulations

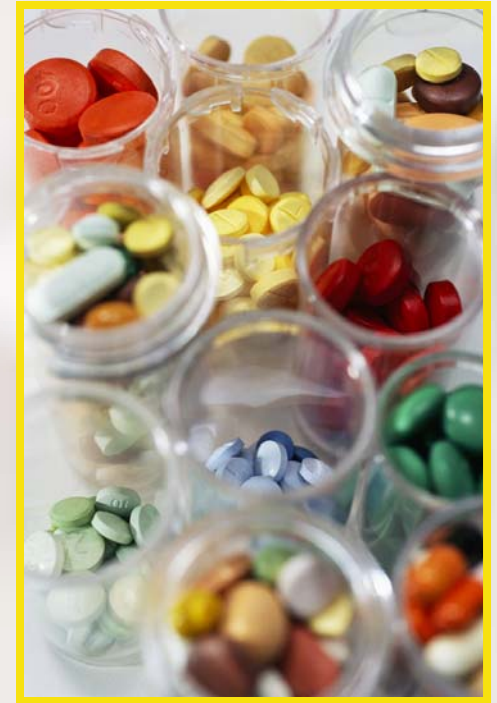
Other Issues

- Toilet Reuse now Class A although “grandfather” existing permittees
- Crop Irrigation standards dependent on extent of contact between crop and water
- Surface vs. subsurface drip irrigation
- Monitoring requirements not in regulations



Emerging Contaminants

- Existence of trace levels of natural and synthetic compounds in aquatic environments
 - Pharmaceuticals
 - Personal Care Products
 - Disinfection By-Products
 - Endocrine Disruptors



Issues

- New Analytical Techniques
- Impact of Low Dose
- Singular compounds vs. “Cocktails”



Recommendations

- Treatment Appropriate to End Use
- Proposed TOC Standard
- MassDEP Research
 - U-Mass/Earth Tech Study – Treatment Effectiveness of Selected Compounds
 - USGS Study of Merrimac River – Source Water Quality



MassDEP

Permit Procedures Regulation Revisions Overview



Proposed Revisions

- Incorporate procedures for general permits for both surface and groundwater permit programs
- Incorporate procedures to issue permits for new reclaimed water regulations
- Provides for stays for certain NPDES permits
- Update inspection requirements for non-public permittees



MassDEP

Operation & Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers Regulation Revisions Overview



Proposed Revisions

- Strengthen ability to take enforcement action against contract operators for improper operation of treatment facilities
- Guidance on what the permittee should expect from the contract operator



MassDEP Contacts

David Ferris

t: 617.654.6514

email: david.ferris@state.ma.us

Alan Slater

t: 617.292.5749

email: alan.slater@state.ma.us

1 Winter Street

Boston, MA 02108

