



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. HOWLES
Secretary

LAURIE BURT
Commissioner

February 26, 2010

Town of Hopedale
Attn: Eugene Phillips, Town Coordinator
P.O. Box 7
Hopedale, MA 01747

Town: Hopedale
PWS Number: 2138000
Program: Water Management Act (WMA)
WMA Permit # 9P4-2-12-138.01
Action: Final 20 Year Permit Renewal

Dear Mr. Phillips:

Please find the attached documents;

- Findings of Fact in Support of the Final WMA Permit Renewal Decision; and
- Final Water Management Act Permit 9P4-2-12-138.01 for the Town of Hopedale in the Blackstone River Basin.

The signature on this cover letter indicates formal issuance of the attached document. If you have any questions regarding the permit, please contact Barbara Kiekham of my staff at (508) 767-2724.

Sincerely,

Marielle Stone
Section Chief
Drinking Water Program

cc: Tim Watson, Hopedale Water Department, P.O. Box 7, Hopedale, MA 01747
cc: MassAudubon
Blackstone Headwaters Coalition
Blackstone River Watershed Association
Massachusetts Water Works Association
Duane LeVangie, MassDEP-WMA-Boston

Enclosure: February 25, 2010 Summary of changes to the Final Renewed Water Management Permit

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Communication for Non-English Speaking Parties (310 CMR 1.03(5)(a))

English

This document is important and should be translated immediately.

Spanish

Este documento es importante y se debe traducir inmediatamente.

Portuguese

Este original é importante e deve ser traduzido imediatamente.

Italian

Questo documento è importante e dovrebbe essere tradotto immediatamente.

Greek

Αυτό το έγγραφο είναι σημαντικό και πρέπει να μεταφραστεί αμέσως.

French

Ce document est important et devrait être traduit immédiatement.

Chinese (traditional)

這份文件重要和應該立刻被翻譯。
这个文件重要和应该立刻被翻译。

February 25, 2010 Summary of changes to the Final Renewed Water Management Permit

1. Findings of Fact, Safe Yield Permit Factor, last paragraph changed to:

This permit is issued under the Interim Safe Yield methodology adopted by MassDEP on December 14, 2009. Under MGL c 21G, §11 MassDEP cannot issue permits when the combined existing, permitted, and proposed withdrawal volumes exceed the safe yield of the water source. If MassDEP determines that the Long-Term Safe Yield is less than the Interim Safe Yield calculated for this basin, the volumes authorized in all Water Management permits in this basin shall be reviewed and the permitted volumes adjusted accordingly. The final Long-Term Safe Yield for the Blackstone River Basin will be developed by November 3, 2010. Permit review in accordance with the Long-Term Safe Yield shall be no later than the 5-year review in 2014. Access to water volumes authorized beyond Period One (Years 2-5) of this permit is contingent upon all permitted withdrawals in the basin being within the Long-Term Safe Yield, and on MassDEP completing a 5-year review modification or a permit amendment incorporating the Long-Term Safe Yield determination.

2. Findings of Fact, Additional section added entitled "Response to Comments"
3. Permit, Special Condition, Seasonal Limits on Nonessential Outdoor Water Use, deleted:

To the extent feasible, all summer outdoor water use should take place before 9 am and after 5 pm when evaporation and evapotranspiration rates are lower.

4. Permit, Special Condition, Seasonal Limits on Nonessential Outdoor Water Use, in Table, Section for Permittees not meeting 65 RGPCD time language added to 1. b) :

b) Nonessential outdoor water use is allowed ONE DAY per week before 9 am and after 5 pm; whenever a Drought Advisory or higher is declared by the Massachusetts Drought Management Task Force.

5. Permit, General Conditions, deleted:

No withdrawal in excess of 100,000 gallons per day over the registered volume (if any) shall be made following the expiration of this permit, unless before that date MassDEP has received a renewal permit application pursuant to 310 CMR 36.00.

6. Appendix A, Section MassDEP RGPCD Functional Equivalence Plan, first paragraph changed to:

MassDEP RGPCD Functional Equivalence Plan

In order to be considered functionally equivalent with the RGPCD performance standard, the permittee must be in compliance with the permit Special Condition, Seasonal Limits on Nonessential Outdoor Water Use, and must adopt and implement the MassDEP RGPCD Functional Equivalence Plan that requires all the following residential conservation programs:



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**Findings of Fact in Support of the FINAL Permit Decision
Town of Hopedale, Water Management Permit 9P4-2-12-138.01**

The Massachusetts Department of Environmental Protection (MassDEP) has completed its review of the Water Management Act (WMA) 20 Year Permit Renewal application for the Town of Hopedale (Hopedale) in the Blackstone River Basin pursuant to the Water Management Act, MGL c 21G. As a result of the review and of general comments received on the Draft Permit issued January 29, 2010, MassDEP hereby issues this Final Water Management Act Permit #9P4-2-12-138.01 (the "Permit") in accordance with the Water Management Act (the "Act").

MassDEP makes the following Findings of Fact in support of the attached permit renewal, and includes herewith its reasons for approving the Permit and for the conditions of approval imposed, as required by MGL c 21G, §11 and the "Massachusetts Water Resources Management Program", 310 CMR 36.00 ("the Regulations").

Hopedale's Water Withdrawal History

Hopedale holds a registration statement (2-12-138.02) for an average annual daily withdrawal volume of 0.41 million gallons per day (MGD) from the Mill Street Well (2138000-01G) and Greene Street Gravel Pack Wells (2138000-02G, -03G, and -04G). Hopedale was issued a Water Management Act permit on June 5, 2007 in order to add the Greene Street Bedrock Wells as approved sources. Hopedale is currently pursuing permitting and pilot testing of the water treatment plant for these wells. The original permit expired on February 28, 2009, however an interim permit was issued authorizing the continued withdrawal of the previously permitted volume. Hopedale's reported withdrawal volumes for 2008, 2007 and 2006 were 0.38 MGD, 0.37 MGD and 0.35 MGD, respectively.

The Water Management Act

Permit Factors

The Act requires that MassDEP issue permits that balance a variety of factors including:

- Reasonable protection of existing water uses, land values, investments and enterprises;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

This information is available in alternate format. For Daniel M. Evans, ADA Coordinator at (617) 554-8853 or (508) 866-530-7422 or 617-554-6868.
<http://www.mass.gov/dep> • Phone (508) 792-7650 • Fax (508) 792-7823

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Safe Yield Permit Factor

Among the minimum permit factors Section 7 requires is a determination by MassDEP that permitted water withdrawals are within the safe yield of the water source from which they made. Section 2 of the Act defines "safe yield" as: "the maximum dependable withdrawal that can be made continuously from a water source including ground or surface water during a period of years in which the probable driest period or period of greatest water deficiency is likely to occur; provided however, that such dependability is relative and is a function of storage and drought probability".

For the purposes of the Water Management Program, MassDEP considers a water source to be any one of Massachusetts' 27 major river basins. A map of the 27 major river basins has been developed by the Department of Conservation and Recreation and can be viewed at: <http://www.mass.gov/dcr/waterSupply/inthebasin/basins.jpg>

On December 14, 2009, MassDEP, with the assistance and concurrence of a group of stakeholders, identified a methodology for determining an Interim Safe Yield while a final Long-Term Safe Yield is developed. The Interim Safe Yield methodology is described at: <http://www.mass.gov/dep/water/resources/watercon.htm#management>.

This permit is issued under the Interim Safe Yield methodology adopted by MassDEP on December 14, 2009. Under MGL, c 21G, §11 MassDEP cannot issue permits when the combined existing, permitted, and proposed withdrawal volumes exceed the safe yield of the water source. If MassDEP determines that the Long-Term Safe Yield is less than the Interim Safe Yield calculated for this basin, the volumes authorized in all Water Management permits in this basin shall be reviewed and the permitted volumes adjusted accordingly. The final Long-Term Safe Yield for the Blackstone River Basin will be developed by November 3, 2010. Permit review in accordance with the Long-Term Safe Yield shall be no later than the 5-year review in 2014. Access to water volumes authorized beyond Period One (Years 2-5) of this permit is contingent upon all permitted withdrawals in the basin being within the Long-Term Safe Yield, and on MassDEP completing a 5-year review modification or a permit amendment incorporating the Long-Term Safe Yield determination.

Findings of Fact for the Performance Standards

MassDEP has determined that there is documented evidence that water withdrawals and an increase in development and impervious area, combined with the out-of-basin export of wastewater, substantially contribute to low flow in the Commonwealth. These low flows impact the ability of rivers and tributaries to adequately serve all of the competing uses described in the Act. To better achieve the balance of competing water uses mandated by the Act, the MassDEP refers to the Water Conservation Standards adopted by the Water Resources Commission.

Specific performance standards are applied to new Water Management permits and to existing permits at the time they are amended, during 5-year permit review, or permit renewal. Consistent with Section 3 of the Act, the performance standards of 65 residential gallons per capita day or less and 10% or less of unaccounted for water, summer limits on withdrawals, and efforts to offset the impacts of increasing withdrawal volumes are based on the Massachusetts Water Conservation Standards approved by the Water Resources Commission in July 2006. These standards can be found at: http://www.mass.gov/Boea/docs/ecw/water/water_conservation_standards.pdf

MassDEP believes these standards are reasonable based on studies and data developed throughout the country, the 1996 AWWA Leak Detection and Water Accountability Committee report on water accountability (AWWA Journal; July 1996; pp. 108-111), and the fact that the average values in 2008 for Massachusetts were 62 RGPCD, and 14% UAW. While these performance standards represent the minimum standards required for compliance with the Permit, MassDEP believes that through the implementation of all the terms and conditions of Water Management permits, municipalities can meet the performance standards for RGPCD and UAW.

Hopedale will be required to meet the 65 residential gallons per capita day (RGPCD) and 10% unaccounted-for-water (UAW) performance standards for calendar year 2011. MassDEP will consider any permittee that has been unable to meet the 65 RGPCD or 10% UAW performance standard within 5 years of receiving its permit to be achieving functionally equivalent compliance with the performance standards, if they:

- are complying with the Water Conservation requirements included in the permit,
- have implemented the required limits on nonessential outdoor water use, and
- are making demonstrable efforts to finance, implement and enforce a MassDEP-approved compliance plan.

Because circumstances vary, a permittee may present an analysis of the cost effectiveness of implementing certain conservation measures required by MassDEP and offer alternative measures. The analysis must explicitly consider environmental impacts and must produce environmental benefits. MassDEP will allow permittees to:

- Document economic hardship and present an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship;
- Present reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard; and
- Propose specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP Functional Equivalence Plan(s) (See Appendix A & B).

MassDEP will review permittees' detailed, written cost effectiveness analysis to determine whether unique circumstances make specific Best Management Practices (BMPs) less cost-effective than alternatives, or not feasible for a particular PWS when developing the compliance plan.

Findings of Fact for Special Permit Conditions

In issuing permits, MassDEP looks primarily at site-specific impacts and other issues specific to the system, such as impacts to nearby streams, wetlands, or other water users, justification of long-term demand projections and the capacity of permitted withdrawal points. The conditions are intended to ensure the efficient use of water and to mitigate the potential impact of withdrawals.

The summary of permit conditions, as part of MassDEP's findings of fact, is not intended to, and should not be construed as, modifying any of the Permit conditions. In the event of any ambiguity between the summary and the actual permit conditions, the Permit language shall be controlling.

The existing permit included a condition that Hopedale complete Zone II delineations for all permitted sources. MassDEP records indicate that all of Hopedale's sources have approved Zone II delineations. Additionally MassDEP records indicate that Hopedale has adopted ground water supply protection controls in compliance with 310 CMR 22.21(2) through its Board of Health. Public Water Systems are required to obtain MassDEP approval of Zone II delineations and to complete any necessary updates to ground water supply protection during the new source approval process and prior to activating any new sources; therefore these conditions have been removed as Water Management permit conditions.

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume, reflects the registered withdrawal volume of 0.41 MGD (149.65 MGY) with no permitted increase through the permit expiration date, February 28, 2029. MassDEP uses raw water volumes to assess compliance with the authorized volume.

Special Condition 2, Maximum Authorized Daily Withdrawals from each Withdrawal Point, reflects the maximum daily withdrawal rates by source, according to MassDEP approved Zone II rates. The Greene Street Gravel Pack Wells are identified with three PWS Source ID Codes: 2138000-02G for the original Greene Street Well, 2138000-03G for Greene Street Well 3-94 and 2138000-04G for Greene Street Well 2-94, as they are replacement wells that are able to operate independently and are not satellite wells. The Permit includes the combined Zone II approved rate of 0.25 MGD for the Greene Street Gravel Pack Wells (2138000-02G, -03G and -04G) and will include the Zone II rate for Greene Street Bedrock Well #2 and #3 (2138000-0A) and 2138000-0BG) when approved. The metered withdrawal for the Greene Street Gravel Pack Wells may be reported as a single volume on the Annual Statistical Reports.

Special Condition 3, Performance Standard for Residential Gallons Per Capita Day Water Use, discussed previously. In 2008 the RGPCD for Hopedale was 52.8 gallons as determined by MassDEP from information submitted in the 2008 Annual Statistical Report.

Special Condition 4, Performance Standard for Unaccounted for Water (UAW), discussed previously. In 2008 the percentage of unaccounted for water for Hopedale was 9.8% as determined by MassDEP from information submitted in the 2008 Annual Statistical Report.

Special Condition 5, Seasonal Limits on Nonessential Outdoor Water Use is based upon Hopedale's Residential Gallons per Capita Day (RGPCD) for the preceding year, and will be implemented according to either: 1) calendar triggered restrictions; or 2) streamflow triggered restrictions.

1. **Calendar triggered restrictions:** Restrictions shall be implemented from May 1st through September 30th. Many public water suppliers will find this option easier to implement and enforce than the streamflow triggered approach.

2. **Streamflow triggered restrictions:** Restrictions shall be implemented at those times when streamflow falls below designated flow triggers measured at an assigned, web-based, real-time U.S. Geologic Survey (USGS) stream gage from May 1st through September 30th. At a minimum, restrictions shall commence when streamflow falls below the trigger for three consecutive days. Once implemented, the restrictions shall remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven consecutive days.

The basis for streamflow triggers is derived from Aquatic Base Flow (ABF) values calculated by the Sustainable Yield Estimator (SYE)¹ for simulated natural flow applied to the assigned local USGS stream gage. The two-tiered trigger values are based on flow levels that are protective of aquatic habitat for fish spawning during the spring bioperiod, designated with the June ABF; and protective flows for fish rearing and growth during the summer bioperiod, designated with the August ABF trigger. Protective flow levels are derived from index gage flow data which represent the least altered stream flows in Massachusetts, and are further described in the Department of Conservation and Recreation (DCR)² and USGS Index Reports³.

If Blackstone selects the streamflow approach, it has been assigned the USGS local stream gage of #01112500 – Blackstone River at Woonsocket, RI. The June ABF estimated using SYE is 0.96 cfsm and the August ABF value is 0.38 cfsm. These cfsm units translate to your local gage streamflow triggers as 398 cubic feet per second (cfs) for May and June, and 157 cfs for July, August and September.

Should the reliability of flow measurement at the Blackstone River gage be so impaired as to question its accuracy, Hopedale may request MassDEP's review and approval to transfer to another gage to trigger restrictions. MassDEP reserves the right to require use of a different gage.

Drought triggered restrictions are incorporated into the seasonal limits on outdoor water use as outlined in Special Condition 5. Times of low streamflow and drought do not always coincide, but both low streamflow and drought conditions can have adverse effects on water supplies, natural resources and aquatic life. Please note that many communities impose drought-based outdoor water use restrictions before the Massachusetts Drought Management Task Force declares a Drought Advisory because drought conditions can begin to impact local water supplies before a regional advisory is declared.

Special Condition 6, Requirement to Report Raw and Finished Water Volumes, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Special Condition 7, Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the Water Resources Commission in July 2006.

¹ Archfield, S.A., Vogel, R.M., Stoeves, P.A., Brandt, S.L., Weiskel, P.K., and Garabedian, S.P., 2010, The Massachusetts Sustainable-Yield Estimator: A decision-support tool to assess water availability at ungaged stream locations in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2009-5227, 41 p. plus CD-ROM. See <http://pubs.usgs.gov/sir/2009/5227/>

² Massachusetts Department of Conservation and Recreation (DCR), 2008 Index Streamflows for Massachusetts, May 2008, Prepared by Office of Water Resources for the Massachusetts Water Resources Commission, 45 p., plus CD-ROM.

³ Armstrong, D.S., Parker, G.W., and Richards, T.A., 2008, Characteristics and classification of least altered streamflows in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2007-5291, 113 p., plus CD-ROM.

Response to Comments

A draft Water Management Permit was issued on January 29, 2010. The Town of Hopedale did not submit comments on the draft permit. Comments were received from the Charles River Watershed Association, Massachusetts Audubon, and the Ipswich River Watershed Association. While the comments addressed a wide range of concerns, many of the comments refer to larger statewide policy questions or issues that had been previously discussed by the Water Resources Management Advisory Committee. MassDEP anticipates that a number of the issues mentioned will be discussed by the Executive Office of Energy and Environmental Affairs' Sustainable Water Management Initiative over the current year. Permit reviews that incorporate the outcome of the Sustainable Water Management Initiative shall be no later than the 5-Year Review in 2014. Permit modifications as appropriate shall be made at that time. MassDEP did modify the final permit primarily to clarify its position on several issues, including, its position regarding allocation volumes should they exceed the final Long-Term Safe Yield as outlined in Special Condition #1.