



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

February 14, 2020

Mr. William Fitzgerald
Department of Public Works
345 Main Street
Avon, MA 02061

RE: Town of Avon
PWS Number: 4018000
WMA Permit 9P-4-25-018.01
Action: FINAL Renewed Permit

Dear Mr. Fitzgerald:

Please find the attached documents:

- FINAL Findings of Fact in Support of the Renewed Permit #9P-4-25-018.01; and
- FINAL Water Management Act Permit #9P-4-25-018.01 (Taunton River Basin) for the Town of Avon.

The signature on this cover letter indicates formal issuance of the attached document. If you have any questions regarding this information, please contact Duane LeVangie at (617) 292-5706 or via e-mail at duane.levangie@mass.gov.

Very truly yours,

Duane LeVangie
Water Management Program Chief
Bureau of Water Resources

Y:\DWPWMA\PermitRenewals\Taunton River\Avon- FINAL Permit 9P42501801-2020-2-14

Ecc: Jen Pederson, MWWA
Michelle Craddock, DFW
Julia Blatt, Massachusetts Rivers Alliance
Jim McLaughlin, MassDEP-SERO
Patti Kellogg, MassDEP-SERO
Sara Cohen, DCR
Taunton River Watershed Alliance

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
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Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751
Communication For Non-English -Speaking Parties - 310 CMR 1.03(5)(a)



1 English:

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.



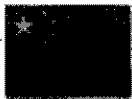
2 Español (Spanish):

Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.



3 Português (Portuguese):

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4(a) 中國（傳統）(Chinese (Traditional)):

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與 MassDEP 的多樣性總監聯繫。



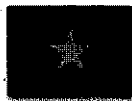
4(b) 中国（简体中文）(Chinese (Simplified)):

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5 Ayisyen (franse kreyòl) (Haitian) (French Creole):

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.



6 Việt (Vietnamese):

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.



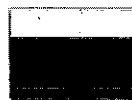
7 ព្រះរាជាណាចក្រកម្ពុជា (Kmer (Cambodian)):

ឯកសារនេះមានសារៈសំខាន់ណាស់សម្រាប់ការបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះ សូមទំនាក់ទំនងជាមួយ អគ្គនាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយនាងក្រោម។



8 Kriolu Kabuverdianu (Cape Verdean):

Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.



9 Русский язык (Russian):

Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.



10 العربية (Arabic):

هذه الوثيقة الهامة وينبغي أن تترجم على الفور. إذا كنت بحاجة إلى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في MassDEP على أرقام الهواتف المدرجة أدناه.

**11 한국어 (Korean):**

이 문서는 중요하고 즉시 번역해야 합니다. 당산이 번역이 문서가 필요하다면 아래의 전화 번호로 MassDEP 의 다양성 감독에 문의하시기 바랍니다.

**12 հայերեն (Armenian):**

Այս փաստաթուղթը շատ կարևոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորև.

**13 فارسی (Farsi (Persian)):**

این سند مهم است و باید فوراً ترجمه شده است.
اگر شما نیاز به این سند ترجمه شده، لطفاً با ما تماس تنوع مدیر MassDEP در شماره تلفن های ذکر شده در زیر.

**14 Français (French):**

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**15 Deutsch (German):**

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.

**16 Ελληνική (Greek):**

Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.

**17 Italiano (Italian):**

Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.

**18 Język Polski (Polish):**

Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.

**19 हिन्दी (Hindi):**

यह दस्तावेज महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.



Department of Environmental Protection

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Findings of Fact in Support of FINAL Water Management Permit # 9P-4-25-018.01 Town of Avon

The Department of Environmental Protection (the Department or MassDEP) makes the following Findings of Fact in support of the attached FINAL Water Management Act (WMA) Permit #9P-4-25-018.01 and includes herewith its reasons for issuing the FINAL Permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this permit is in response to a WMA permit renewal application by the Town of Avon (the Town or Avon).

The Department adopted revised Water Management Regulations at 310 CMR 36.00 on November 7, 2014, (described in greater detail below). Since that time, the Department has been working closely with each Water Management Act permittee to fully consider all aspects of their individual situations and ensure thoughtful and implementable permits.

The Town of Avon Withdrawal Summary

On June 1, 1991 the Department issued Avon its first WMA permit for the Trout Brook Wellfield, #9P-4-25-018.01. In 2005, after completing a five-year compliance review, the Department modified the Town's WMA Permit.

This WMA Permit authorizes the Town to withdraw from the Trout Brook Wellfield an annual average daily volume of 0.16 million gallons per day (MGD), the same volume authorized by the 2005 Modified WMA Permit. This permitted volume is in addition to the 0.45 MGD that the Town is authorized to withdraw by its WMA registration #4-25-018.01. The Town's total authorized average daily withdrawal volume from the Taunton River Basin is 0.61 MGD.

The Permit Extensions

The original permit issued in 1991 had an expiration date of 2010. In 2009, the Department issued Avon an interim permit which extended the expiration date until February 28, 2011. In 2010, the interim permit was extended for two years to February 28, 2013, by Section 173 of Chapter 240 of the Acts of 2010, the Permit Extension Act. In 2012, the Permit Extension Act was amended by chapter 238 of the Acts of 2012, and the permit was extended an additional two years to February 28, 2015. Pursuant to M.G.L. c. 30A, Section 13, and 310 CMR 26.18(7), the permit continued in force until the date the Department issues this permit. The expiration date for all permits going forward in the Taunton River Basin will be February 28, 2030, in accordance with the staggered permitting schedule set forth in the regulations.

The Water Management Act (M.G.L. c. 21G)

The Water Management Act (Act) requires the Department to issue permits that balance a variety of factors including without limitation:

- Impact of the withdrawal on other water sources;
- Water available within the safe yield of the water source;
- Reasonable protection of existing water uses, land values, investments and enterprises;
- Proposed use of the water and other existing or projected uses of water from the water source;
- Municipal and Massachusetts Water Resources Commission (WRC) water resource management plans;
- 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.

Water Management Regulation Revisions

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (<http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf>) was released.

On November 7, 2014, the Department adopted revised Water Management Regulations at 310 CMR 36.00 that incorporate elements of the SWMI framework and the Water Conservation Standards adopted by the Massachusetts WRC. The regulations reflect a carefully developed balance to protect the health of Massachusetts' water bodies while meeting the needs of businesses and communities for water.

Without limitation, the Department has incorporated the following into Water Management permitting:

- Safe yield determinations for the major river basins based on a new methodology developed through SWMI (see the Safe Yield in the Taunton River Basin section of this document or for more information on the Safe Yield methodology, go to the November 28, 2012 SWMI Framework Summary and Appendices);
- Water needs forecasts for public water suppliers developed by the Department of Conservation and Recreation, Office of Water Resources (DCR), using a methodology reviewed and approved by the Massachusetts WRC;
- Water supply protection measures for public water supplies including Zone II delineations for groundwater sources and wellhead and surface water protection measures as required by Massachusetts Drinking Water Regulations (310 CMR 22.00);
- Water conservation standards reviewed and approved by the WRC in July 2018 (<https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/>) including without limitation;
 - performance standard of 65 residential gallons per capita day or less;
 - performance standard of 10% or less unaccounted for water;
 - seasonal limits on nonessential outdoor water use; and

- a water conservation program that includes leak detection and repair, full metering of the system and proper maintenance of the meters, periodic review of pricing, and education and outreach to residents and industrial and commercial water users; and
- Environmental protections developed through SWMI, including without limitation:
 - protection for coldwater fish resources;
 - minimization of withdrawal impacts in areas stressed by groundwater use; and
 - mitigation of the impacts of increasing withdrawals.

Safe Yield in the Taunton River Basin

This permit is being issued under the safe yield methodology adopted by the Department on November 7, 2014 and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the Safe Yield calculation for the Taunton River Basin is 134.42 million gallons per day (MGD), and total registered and permitted withdrawals are 92.45 MGD. The renewed permit will not increase the volume of withdrawals from the Taunton River Basin and thus will not cause an exceedance of the Basin's safe yield.

Findings of Fact for Permit Conditions in Avon's Water Management Act Permit

The Findings of Fact for the special conditions included in the permit generally describe the rationale and background for each special condition in the FINAL permit. This summary of permit special conditions is not intended to, and should not be construed as, modifying any of the permit special conditions. In the event of any ambiguity between this summary and the actual permit conditions, the permit language shall control.

Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume, specifies the authorized annual average withdrawal volume for each period during the life of this permit. The withdrawal volumes set forth in this permit maintain the total authorized volume of 0.61 MGD set forth in the 2005 Modified WMA Permit.

Table 1 Avon's 2014-2018 Actual Water Withdrawals

Average Actual Withdrawals (MGD)	2014	2015	2016	2017	2018
	0.35	0.35	0.35	0.35	0.34

As shown in Table 1 the total authorized volume set forth in Special Condition 1 of this Final permit is substantially more than the Town's recent actual annual average daily withdrawal volumes.

The Department bases public water supply permits on the Department of Conservation and Recreation (DCR) Office of Water Resources water needs forecasts (WNF). In a November 2, 2009 letter to the Town, the DCR provided a final WNF for Avon. This WNF is for Avon's total raw water withdrawal and was prepared based on two separate assumptions, the first being that Avon meets the performance standards of 65 Residential Gallons per Capita Day (RGPCD) and 10% Unaccounted for Water (UAW), and the second assumes that Avon's RGPCD and UAW continue based on the trends of RGPCD and UAW at the time that DCR prepared the WNF. DCR's WNF set forth in Table 2 below.

Table 2 Avon System-Wide WNF of Average Daily Withdrawal Rates (MGD)

Permit Period	WNF assuming RGPCD 65/UAW 10%	WNF assuming current trend RGPCD/UAW
2015-2020	0.61	0.52
2020-2025	0.62	0.53
2025-2030	0.64	0.54
With 5% Buffer	0.67	0.57

It is the Department's policy to issue permits that result in a total authorized volume that does not exceed the DCR WNF volumes based on the assumption that the public water supplier (PWS) is in compliance with the RGPCD and UAW performance standards. As shown in Table 2, the total authorized volume of 0.61 MGD set forth in Special Condition 1 does not exceed that forecast.

Special Condition 2, Maximum Daily Withdrawals from Groundwater Withdrawal Points, reflects the Department approved Zone II maximum daily pumping rate for Avon's permitted source based on a prolonged pumping test. Withdrawals in excess of the maximum daily rate require the prior approval of the Department.

Special Condition 3, Zone II Delineations, Avon's permitted source has an approved Zone II delineated. No further Zone II work is required as a condition of this permit.

Special Condition 4, Wellhead Protection, requirements have been met and are up to date as of the issuance of this permit.

Special Condition 5, Performance Standard for Residential Gallons Per Capita Day (RGPCD) Water Use, for all public water suppliers (PWSs) is 65. As shown in Table 3, Avon has met this Performance Standard for the years 2014 thru 2018.

Table 3 Residential Gallons Per Capita Day Water Use

Year	2018	2017	2016	2015	2014
RGPCD	52	51	53	52	53

Special Condition 6, Performance Standard for Unaccounted for Water (UAW), for all PWSs is 10%. Avon is required to meet 10% or less UAW for 2 of the 3 most recent years throughout the permit period. Although the Town conducted a water audit in both 2015 and 2018, Avon's UAW exceeded 10% every year from 2014 through 2018 (see Table 4). Since Avon has missed the UAW Standard for 2 of the last 3 years, Avon will need to submit a formal water loss control program to MassDEP by July 31, 2020. The formal water loss control program shall be based on the recommendations of the most recent water audit and meet the requirements for a water loss control program set forth in Appendix B Functional Equivalence with the 10% UAW Performance Standard. Avon shall continue to develop, submit, and implement the formal water loss control program until UAW, as reported on the Annual Statistical Report and approved by MassDEP, is below 10% and the water audit data validity score is at least Level III (51-70) for four consecutive years

Year	2018	2017	2016	2015	2014
UAW	14.6%	14.4%	14.8%	12.4%	9.3%

¹ Based on DCR WNF letter of November 2, 2009, using 2006-2008 Annual Statistical Reports.

Special Condition 7, Seasonal Limits on Nonessential Outdoor Water Use, reflects the restrictions on nonessential outdoor water use from May 1st through September 30th. The options outlined in Special Condition 7 are based on whether reported RGPCD for the previous year was in compliance with the RGPCD Performance Standard (see Special Condition 5, Performance Standard for RGPCD). In addition, outdoor water use by suppliers, like Avon, with wells in August net groundwater depleted subbasins² is limited to 1 or 2 days per week to minimize withdrawals from depleted subbasins.

Each year Avon may choose one of two options for implementing nonessential outdoor watering restrictions.

- **Calendar triggered restrictions** are in place from May 1st through September 30th. Many public water suppliers find this option easier to implement and enforce than the streamflow triggered approach
- **Streamflow triggered restrictions** are 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 commence when streamflow falls below the trigger for three consecutive days. Once implemented, the restrictions remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven consecutive days.

If Avon selects the streamflow trigger approach, it has been assigned USGS stream gage 01108000 Taunton River near Bridgewater, MA. The May-June streamflow trigger is 265 cubic feet per second (cfs), and the July-September streamflow trigger is 119 cfs. Should the reliability of flow measurement at the Taunton River gage be so impaired as to question its accuracy, Avon may request that the Department review and approve the transfer to another gage that will trigger restrictions. The Department reserves the right to require use of a different gage.

- **The 7-Day Low Flow Trigger**, at which restrictions increase, is incorporated into both Calendar and Streamflow Triggered restrictions in order to provide additional protection to streamflows when flows are very low. The 7-day low flow trigger for Avon is 47 cfs.

Avon may choose to implement limits on nonessential outdoor water use that are stricter than those required by the permit.

Special Condition 8, Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the Water Resources Commission in July 2018 (<https://www.mass.gov/doc/massachusetts-water-conservation-standards-2/>).

Special Condition 8 requires Avon to come into compliance with these standards by developing and implementing a water conservation education and outreach plan. Special Condition 8 also requires Avon to develop plans and schedules for achieving 100% metering and for establishing full cost pricing of its public water system and to implement the plans and schedules as approved by the Department.

² Subbasins used for WMA permitting are the 1,395 subbasins delineated by the U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins* (Weiskel et al., 2010, USGS SIR 2009-5272). The Water Management Regulations, 310 CMR 36.03, define August net groundwater depletion (NGD) to mean the unimpeded median flow for August minus 2000-2004 groundwater withdrawals plus 2000-2004 groundwater returns described by U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover and Water Quality for Massachusetts Stream Basins*. A subbasin is groundwater depleted if it has an August NGD of greater than 25%. All of Avon's Taunton River Basin groundwater sources are in subbasin 24006, a subbasin with an August NGD of 43.6%, a groundwater depleted subbasin.

Special Condition 9, Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins, requires permittees with permitted groundwater sources in subbasins with a net groundwater depletion of 25% or more during August to minimize their withdrawal impacts on those subbasins to the greatest extent feasible, through optimization of groundwater source use, surface water releases to improve streamflows, outdoor water use restrictions and water conservation programs that go beyond the standard Water Management Act permit requirements.

Based on Department records and information submitted by Avon, the Department finds that minimization requirements will be met as follows:

- All of Avon's groundwater sources are in Subbasin 24006, a subbasin with an August net groundwater depletion (NGD) of 43.6%.³ It is therefore not feasible for Avon to shift its withdrawals to a less groundwater depleted subbasin.
- Avon has no surface water supplies and, therefore, cannot make releases to improve streamflow.
- The limits on nonessential outdoor water use set forth in Special Condition 7 are restrictions developed to minimize withdrawals in August net groundwater depleted subbasins.
- Avon outlined conservation measures that go beyond standard the Water Management Act permit requirements. The implementation of those measures is required in **Special Condition 9**.

Special Condition 10, Mitigation of Impacts for Withdrawals that Exceed Baseline, requires mitigation, where feasible, for withdrawals over a baseline volume. Baseline withdrawal means the volume of water withdrawn during calendar year 2005 plus 5%, or the average annual volume withdrawn from 2003 through 2005 plus 5%, whichever is greater provided that:

- (a) baseline cannot be less than a permittee's registered volume;
- (b) baseline cannot be greater than the permittee's authorized volume for 2005; and
- (c) if, during the period from 2003 to 2005, the permittee's withdrawals from the water source were interrupted due to contamination of the source or construction of a treatment plant, the Department will use best available data to establish a baseline volume from the water source.

The calculated baseline volume for Avon is 200.75 million gallons per year (MGY) or 0.5 MGD which is the 2005 authorized volume. This permit authorizes Avon to withdraw up to 0.61 MGD, 0.06 MGD above its baseline. A wastewater adjustment is applied to the volume required to be mitigated for systems where the water withdrawn is returned to the ground as wastewater within the same major basin as the withdrawal. 100% of Avon's wastewater is discharged to the Taunton River Basin through private septic systems and permitted groundwater discharges. After adjusting for this wastewater return, Avon's required mitigation volume is 15% of 0.06 MGD (the volume over baseline) or 0.009 MGD (9,000 gallons per day). As a result, Avon is required to prepare a plan to mitigate 9,000 gallons per day and to implement that plan before it withdraws more than its baseline volume.

The required mitigation plan may include direct and/or indirect mitigation activities. Pursuant to 310 CMR 26.22(6), permittees shall first evaluate direct mitigation activities which include infiltration and inflow removal from sewer systems, surface water releases or stormwater recharge. Direct mitigation activities can be volumetrically quantified and compared to the permittee's mitigation volume, whereas indirect mitigation activities will improve streamflow or fluvial habitat but cannot be volumetrically quantified. Accordingly, MassDEP assigns mitigation credits for eligible indirect mitigation activities. Each mitigation credit may be used to mitigate 10,000 gallons per day. To satisfy its requirement to mitigate 9,000 gallons per day solely

³ See footnote 2.

through indirect mitigation, Avon is required to propose indirect mitigation activities that are eligible for a least one mitigation credit.

Avon submitted the required mitigation plan. The Town did not propose any inflow and infiltration removal or surface water releases since it does not have a sewer system or control any surface water impoundments. The Town did not identify any existing eligible stormwater infiltration projects. Instead, Avon relied on indirect mitigation activities. Avon identified that it currently implements bylaws that potentially qualify as eligible indirect mitigation activities including its wetland protection bylaw and its zoning bylaw that requires the use of low impact design strategies in the Village Overlay District and prohibits the storage of commercial fertilizers and soil conditioners within the Water Supply Protection District.

MassDEP reviewed Article X of the General Bylaws of the Town of Avon, as revised June 2016, entitled Wetlands Protection (the Wetlands Bylaw) and has determined that the Wetlands Bylaw is eligible for three mitigation credits. The Wetlands Bylaw clearly defines the areas subject to jurisdiction under the bylaw, includes a fee schedule, authorizes the imposition of fines for violations and provides authority for enforcement. Although the Wetlands Bylaw provides for the Avon Conservation Commission to promulgate regulations, the Wetlands Bylaw expressly provides that the failure to promulgate regulations shall not act to suspend or invalidate the effect of the bylaw. Moreover, the Wetlands Bylaw extends jurisdiction to land within 100 feet of a resource area and thus covers areas that are not bordered by a surface area water and thus to areas not subject to jurisdiction under the state Wetlands Protection Act.

The renewed permit requires the continued implementation of the Wetland Bylaw. Should there be any changes to the Wetland Bylaw during the life of the renewed permit, Avon is required to contact the Department about the changes so that it may evaluate the impact of the changes on Avon's mitigation requirements.

Special Condition 11, Reporting Requirements, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

Coldwater Fish Resource Protection was incorporated into the Water Management Regulation in November 2014. Coldwater Fish Resource protection is not a condition of this permit because Avon's withdrawals do not impact any waters that the Massachusetts Division of Fisheries and Wildlife has identified as supporting coldwater fish at this time.



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FINAL WATER WITHDRAWAL PERMIT

#9P4-25-018-01

Avon Water Department

This permit is issued pursuant to the Massachusetts Water Management Act (WMA) for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property beyond the right to withdraw the volume of water for which it is issued.

PERMIT NUMBER: 9P-4-25-018.01

RIVER BASIN: Taunton River

PERMITTEE: Town of Avon

EFFECTIVE DATE: February 14, 2020

EXPIRATION DATE: February 28, 2030

NUMBER OF WITHDRAWAL POINTS:

Groundwater: 1

Surface Water: 0

USE: Public Water Supply

DAYS OF OPERATION: 365

WITHDRAWAL POINT IDENTIFICATION

<u>Source Name</u>	<u>Source Code</u>
Trout Brook Wellfield	4018000-06G

SPECIAL CONDITIONS

1. Maximum Authorized Annual Average Withdrawal Volume

This permit authorizes the Town of Avon to withdraw water from the Taunton River Basin at the rate described below (Table 1). The volume reflected by this rate is in addition to the 0.45 million gallons per day (MGD) previously authorized to Avon under Water Management Act (WMA) Registration #4-25-018.01 for withdrawal from the Taunton River Basin. The permitted volume is expressed both as an annual average daily withdrawal rate, MGD, and as a total annual withdrawal volume, million gallons per year (MGY), for each permit period over the term of this permit.

The Department of Environmental Protection (MassDEP) bases these withdrawal volumes on the raw water withdrawn from the authorized withdrawal points and will use the raw water amount to assess compliance with the registered and permitted withdrawal volumes.

Table 1: Maximum Authorized Withdrawal Volumes

Permit Periods	Total Raw Water Withdrawal Volumes			
	Permit		Permit + Registration	
	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
2/14/2020 to 02/28/2025	0.16	58.40	$0.16+0.45=0.61$	222.65
03/01/2025 to 02/28/2030	0.16	58.40	$0.16+0.45=0.61$	222.65

2. Maximum Authorized Daily Withdrawals from Groundwater Withdrawal Points

Withdrawals from permitted withdrawal points are not to exceed the approved maximum daily volumes listed below without specific advance written approval from MassDEP (Table 2). The authorized maximum daily volume is the approved rate of each source. In no event shall the combined withdrawals from the individual withdrawal points exceed the withdrawal volumes authorized above in Special Condition 1.

Table 2: Maximum Daily Withdrawal Volumes

Source Name	PWS Source Code ID	Maximum Daily Rate (MGD)
Trout Brook Wellfield	4018000-06G	0.32

3. Zone II Delineation

MassDEP records show that Avon has approved Zone II delineations for all of its sources including the Trout Brook Wellfield. Therefore, no further Zone II delineation work is required.

4. Wellhead Protection

MassDEP records show that Avon has implemented municipal controls that comply with the Wellhead Protection Regulations, 310 CMR 22.21(2) for all its sources.

5. Performance Standard for Residential Gallons Per Capita Day Water Use

The Town of Avon's Performance Standard for residential gallons per capita day (RGPCD) is 65 gallons or less. Avon has been in compliance with this Performance Standard since 2014. If, at any time Avon

does not meet the RGPCD Performance Standard, it shall comply with the functional equivalence requirements set forth in Appendix A.

6. Performance Standard for Unaccounted for Water

The Town of Avon's Performance Standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawal for 2 of the most recent 3 years throughout the permit period. Avon has failed to meet that standard for the years 2014 through 2018 although it conducted a Water Audit in both 2015 and 2018.

On or before July 31, 2020, and each year thereafter that Avon fails to meet the 10% or less standard for the most recent 2 out of 3 years, Avon shall submit a formal water loss control program to MassDEP. The formal water loss control program shall be based on the recommendations of the most recent water audit and meet the requirements for a water loss control program set forth in Appendix B Functional Equivalence with the 10% UAW Performance Standard. At a minimum, the formal water loss control program shall include an annual M36 top down water audit, a component analysis to identify causes of real and apparent water loss, a program to control losses based on the component analysis and an implementation schedule. Avon shall continue to develop, submit, and implement the formal water loss control program until UAW as reported on the Annual Statistical Report and approved by MassDEP is below 10% and the water audit data validity score is at least Level III (51-70) for four consecutive years.

MassDEP may require Avon to include additional water loss control measures in its formal water loss control program if it determines that Avon is not making sufficient progress in achieving the UAW Performance Standard. Compliance with the water loss control program requirements set forth herein shall be reported to MassDEP upon request.

Nothing in the permit shall prevent a permittee who meets the 10% performance standard from developing and implementing a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs*. Permittees implementing a water loss control program based on AWWA M36 annual water audits and guidance shall continue to report UAW annually as required in the Annual Statistical Report for public water suppliers.

7. Seasonal Limits on Nonessential Outdoor Water Use

Avon shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th as outlined in Table 3 below. 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.

Table 3: Seasonal Limits on Nonessential Outdoor Water Use

Restrictions if Avon has met the 65 RGPCD Standard for the preceding year RGPCD \leq 65 as reported in the ASR and accepted by MassDEP	
Calendar Triggered Restrictions	<p>Nonessential outdoor water use is restricted to:</p> <ul style="list-style-type: none">a) two (2) days per week before 9 am and after 5 pm; andb) one (1) day per week before 9 am and after 5 pm <p>when USGS stream gage 01108000 – Taunton River, near Bridgewater, MA falls below 7-day the low-flow statistic 47 cfs for three (3) consecutive days.</p> <p>Once streamflow triggered restrictions are implemented, they shall remain in place until streamflow at the gage meets or exceeds 47 cfs for seven (7) consecutive days.</p>

Streamflow Triggered Restrictions	<p>Nonessential outdoor water use is restricted to:</p> <ul style="list-style-type: none"> a) two (2) days per week before 9 am and after 5 pm when USGS stream gage 01108000 – Taunton River near Bridgewater, MA falls below: <ul style="list-style-type: none"> • May 1 – June 30: 265 cfs for three (3) consecutive days • July 1 – September 30: 119 cfs for three (3) consecutive days b) one (1) day per week before 9 am and after 5 pm when USGS stream gage 01108000 – Taunton River near Bridgewater, MA falls below the 7-day low-flow statistic 47 cfs for three (3) consecutive days. <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>
Restrictions if Avon has not met the 65 RGPCD standard for the preceding year RGPCD > 65 as reported in the ASR and accepted by MassDEP	
Calendar Triggered Restrictions	<p>Nonessential outdoor water use is restricted to one (1) day per week before 9 am and 5 pm.</p>
Streamflow Triggered Restrictions	<p>Nonessential outdoor water use is restricted to one (1) day per week before 9 am and after 5 pm when USGS stream gage 01108000 – Taunton River near Bridgewater, MA falls below:</p> <ul style="list-style-type: none"> • May 1 – June 30: 265 cfs for three (3) consecutive days • July 1 – September 30: 119 cfs for three (3) consecutive days <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>

Instructions for Accessing Streamflow Website Information	
<p>If Avon chooses Streamflow Triggered Restrictions, Avon shall be responsible for tracking streamflows and drought advisories and recording and reporting to MassDEP when restrictions are implemented.</p>	
<p>Streamflow information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts streamflows in real time, i.e., the most recent, usually quarterly hourly, reading made at each USGS stream gage.</p>	
<p>Seasonal Limits on Nonessential Outdoor Water Use are implemented when the mean daily streamflow falls below the designated trigger. The mean daily flow is not calculated until after midnight each day when the USGS computes the hourly data into a mean daily streamflow. As a result, permittees must use the mean daily streamflow from the preceding day when tracking streamflows.</p>	
<p>Mean daily streamflow gage readings are available at the USGS NWIS Web Interface at http://waterdata.usgs.gov/ma/nwis/current/?type=flow.</p> <ul style="list-style-type: none"> • Scroll down to 01108000 – Taunton River near Bridgewater, MA. • Click on the gage number. • Scroll down to “Provisional Date Subject to Revision – Available data for this site” and click on the drop-down menu. • Click on “Time-series: Daily data” and hit GO. • Scroll down to the “Available Parameters” box. Within the box, be sure “00060 Discharge (Mean)” is checked, then, under “Output Format” click “Table” and hit GO. 	

Instructions for Accessing Streamflow Website Information

- Scroll down to “Daily Mean Discharge, cubic feet per second” table and find the current date on the table.
- Compare the cubic feet per second (cfs) measurement shown on the table to the cfs shown under Streamflow Triggered Restrictions above.

Avon shall document compliance with the Seasonal Nonessential Outdoor Water Use Restrictions annually in its Annual Statistical Report (ASR) and indicate whether it anticipates implementing calendar triggered restrictions or streamflow triggered restrictions during the next year.

Restricted Nonessential Outdoor Water Uses

Nonessential outdoor water uses that are subject to mandatory restrictions include:

- irrigation of lawns via sprinklers or automatic irrigation systems;
- filling swimming pools;
- washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing of exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, pavement or cement.

The following uses may be allowed when mandatory restrictions are in place:

- irrigation to establish a new lawn and new plantings during the months of May and September;
- irrigation of public parks and recreational fields before 9 am and after 5 pm;
- irrigation of gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation systems; and
- irrigation of lawns by means of a hand-held hose.

Water uses NOT subject to mandatory restrictions are those required:

- for health or safety reasons;
- by regulation;
- for the production of food and fiber;
- for the maintenance of livestock; or
- to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees, greens, and minimal fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

Public Notice of Seasonal Nonessential Outdoor Water Use Restrictions

Avon shall notify its customers of the restrictions and the consequences of failing to adhere to the restrictions.

- For calendar-triggered restrictions, customers shall be notified by April 15th each year.
- For streamflow-triggered restrictions, when streamflow at the assigned USGS local stream gage falls below a streamflow trigger for three consecutive days, customers shall be notified as soon as possible, but within three days of implementing the restrictions.

Notice that restrictions have been put in place shall be filed each year with MassDEP within 14 days of the restriction’s effective date. Filing shall be in writing on the form “Notification of Water Use Restrictions” available on MassDEP’s website.

Nothing in the permit shall prevent Avon from implementing water use restrictions that are more stringent than those set forth in this permit.

8. Water Conservation Requirements

At a minimum, Avon shall implement the following conservation measures forthwith. Compliance with the water conservation requirements shall be reported to MassDEP upon request, unless otherwise noted below.

Table 4: Minimum Water Conservation Requirements	
System Water Audits and Leak Detection	
1.	At a minimum, conduct a full leak detection survey every three years.
2.	Conduct leak detection of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, submit to the Department a report detailing the survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3.	Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
4.	Avon shall have repair reports available for inspection by MassDEP. Avon shall establish a schedule for repairing leaks that is at least as stringent as the following: <ul style="list-style-type: none">• Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection.• Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible.• Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other roadwork is being performed on the roadway. Leaks shall be repaired in accordance with Avon's priority schedule including leaks up to the property line, curb stop or service meter, as applicable. Avon shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.
Metering	
1.	Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2.	Avon reports its system is not 100% metered. By July 31, 2020 Avon shall submit to MassDEP for its review and approval a plan and schedule for ensuring that the remaining unmetered users are metered. Thereafter, Avon shall implement the plan and schedule as approved by MassDEP. Avon shall also ensure all water distribution system users have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in AWWA Manual M6 – Water Meters.
3.	Avon shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by its customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections. The plan shall include placement of sufficient funds in the annual budget to calibrate, repair, or replace meters as necessary.
Pricing	
1.	Establish a water pricing structure that includes the full cost of operating the water supply system.

Table 4: Minimum Water Conservation Requirements

Full cost pricing recovers all costs as applicable, including:

- pumping and distribution equipment cost, repair and maintenance;
- water treatment;
- electricity;
- capital investment, including planning, design and construction;
- land purchase and protection;
- debt service;
- administrative costs including systems management, billing, accounting, customer service, service studies, rate analyses and long-range planning;
- conservation program including audits, leak detection equipment, service and repair, meter replacement program, automated meter reading installation and maintenance, conservation devices, rebate program, public education program;
- regulatory compliance; and
- staff salaries, benefits training and professional development.

2. Avon reports using an increasing block rate structure and shall continue to do so.

3. If billing frequency is less than quarterly (i.e. annual or biannual), implement quarterly or more frequent meter reading and billing as soon as practicable.

Residential and Public Sector Conservation

1. Avon shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.

2. Avon reports metering water used by contractors using fire hydrants for pipe flushing and construction and shall continue to do so.

3. Avon reports that it has installed water savings devices in all municipal buildings. Avon shall ensure that water conserving fixtures are incorporated into existing municipal buildings as they are renovated and into the design of all new municipal capital projects. Avon shall also ensure that water conserving landscaping practices are incorporated into the design, construction management, and operation of public parks, playing fields and other facilities.

Industrial and Commercial Water Conservation

1. Avon shall ensure water conservation practices are included in all development proposals, particularly low flow devices and water-wise landscaping practices.

Public Education and Outreach

1. By July 31, 2020 Avon shall submit to MassDEP a plan and schedule for the development and implementation of a water conservation education and outreach plan designed to educate the Town's water customers on ways to conserve water. Without limitation, the plan may include the following actions:

- Include in bill stuffers and/or bills, a work sheet to enable customers to track water use and conservation efforts and estimate the dollar savings;
- Public space advertising/media stories on successes (and failures);
- Conservation information centers perhaps run jointly with electric or gas company;
- Speakers for community organizations;
- Public service announcements; radio/T.V./audio-visual presentations;
- Joint advertising with hardware stores to promote conservation devices;
- Use of civic and professional organization resources;
- Special events such as Conservation Fairs;

Table 4: Minimum Water Conservation Requirements

- | |
|---|
| <ul style="list-style-type: none">• Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and• Provide multilingual materials as needed. |
| 2. Thereafter, Avon shall develop and implement the water conservation education and outreach plan and schedule as approved by MassDEP. Upon request of MassDEP, Avon shall report on its public education and outreach efforts. |

9. Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins

Avon shall minimize the impacts of its groundwater withdrawals from sources in Subbasin 24006, as follows:

- Implementation of a Town by-law prohibiting automatic irrigation systems connecting to the town's water distribution system;
- Continue evaluating rate structure every year;
- Continue to contact customers with high use or a significant increase in use and investigate and address the cause; and
- Continue to utilize the automatic remote meter reading system to read the meters twice a year.

Compliance with the above minimization measures shall be reported to MassDEP upon request.

10. Mitigation of Impacts for Withdrawals that Exceed Baseline

Avon is required to mitigate 9,000 gallons per day for its permitted withdrawals over the baseline. To meet this requirement through indirect mitigation activities, Avon shall continue to implement Article X of the General Bylaws of the Town of Avon as revised June 2016 entitled Wetlands Protection (the Wetlands Bylaw). In the event that the Wetlands Bylaw is modified, Avon shall notify the Department in writing within thirty days of the modification. The notice shall provide the text and reasons for the change.

11. Reporting Requirements

Avon shall report annually as required by completing the electronic Annual Statistical Report (eASR) for public water suppliers and shall provide other reporting as specified in the Special Conditions above.

General Permit Conditions (applicable to all Permittees)

1. **Duty to Comply** The Permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.
2. **Operation and Maintenance** The Permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.
3. **Entry and Inspections** The Permittee or the Permittee's agent shall allow personnel or authorized agents or employees of MassDEP to enter and examine any property, inspect and monitor the withdrawal, and inspect and copy any relevant records, for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.
4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by MassDEP pursuant to M.G.L. c. 21G, §§ 15-17, M.G.L. c. 111, § 160, or any other enabling authority.

5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until MassDEP approves such transfer in writing, pursuant to a transfer application on forms provided by MassDEP requesting such approval and received by MassDEP at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.
6. **Duty to Report** The Permittee shall submit annually, on a form provided by MassDEP, a certified statement of the withdrawal. Such report is to be received by MassDEP by the date specified by MassDEP. Such report must be mailed or hand delivered to the address specified on the report form.
7. **Duty to Maintain Records** The Permittee shall be responsible for maintaining withdrawal records as specified by this permit.
8. **Metering** Withdrawal points shall be metered. Meters shall be calibrated annually. Meter shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.
9. **Amendment, Suspension or Termination** The Department may amend, suspend or terminate this permit in accordance with M.G.L. c. 21G or 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of MassDEP. Any person aggrieved by this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail and received by MassDEP within twenty-one (21) days of the date of receipt of this permit.

No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the community in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to MassDEP.

CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of MassDEP is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of his permit.

FILING FEE AND ADDRESS

The hearing request, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of \$100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

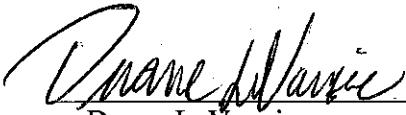
The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

EXEMPTIONS

The filing fee is not required if the appellant is a municipality (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

MassDEP may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of MassDEP that the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.



Duane LeVangie
Water Management Program Chief
Bureau of Water Resources


Date

Appendix A – Functional Equivalence with the 65 Residential Gallons Per Capita Day Performance Standard

MassDEP will consider public water supply permittees who cannot meet the 65 RGPCD performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling residential water use as described below.

If the permittee fails to document compliance with the RGPCD performance standard in its Annual Statistical Report (ASR), or in any ASR thereafter, then the permittee must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall include, at a minimum:

1. A description of the actions taken during the prior calendar year to meet the performance standard;
2. An analysis of the cause of the failure to meet the performance standard;
3. A description of the actions that will be taken to meet the performance standard which must include, at a minimum, at least one of the following:
 - a) a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
 - b) a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets), or
 - c) the adoption and enforcement of an ordinance, by-law or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems;and may include, without limitation, the following:
 - d) the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
 - e) a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
 - f) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction include water saving devices and low water use appliances;
 - g) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of topsoil with a high water- retention rate;
 - h) the implementation of a program to encourage the use of cisterns or rain barrels for outside watering;
 - i) the implementation of monthly or quarterly billing.
4. A schedule for implementation; and
5. An analysis of how the planned actions will address the specific circumstances that resulted in the failure to meet the performance standard.

If the permittee is already implementing one or more of these programs, it must include in its RGPCD plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

RGPCD plans may be amended to revise the actions that will be taken to meet the performance standard. Amended RGPCD plans must include the information set forth above.

If a RGPCD plan is required, the permittee must:

1. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD plan annually at the time it files its ASR, and
2. continue to implement the RGPCD plan until it complies with the performance standard and such compliance is documented in the permittee's ASR for the calendar year in which the standard is met.

Appendix B – Functional Equivalence: 10% Unaccounted for Water Performance Standard

MassDEP will consider PWS permittees who cannot meet the 10% UAW performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling water loss. The water loss control program will be based on annual water audits and guidance as described in the AWWA/IWA *Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs* (AWWA M36).

If the permittee fails to document compliance with the Unaccounted for Water performance standard (UAW of 10% or less for 2 of the 3 most recent years throughout the permit period), then the permittee shall develop and implement a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs* within 5 full calendar years of failing to meet the standard as follows:

1. Conduct an annual “top down” water audit, calculate the data validity level/score using AWWA Water Loss Control Committee’s Free Water Audit Software, and submit the AWWA WLCC Free Water Audit Software: Reporting Worksheet and data validity score annually with its Annual Statistical Report (ASR).
 - If a PWS’s data validity level/score is less than Level III (51-70), steps recommended through the audit(s) shall be taken to improve the reliability of the data prior to developing a long-term program to reduce real and apparent water losses.
 - Data with a validity score of 50 or less are considered too weak to be used to develop a component analysis or for infrastructure planning and maintenance.
 - Developing data with an acceptably strong validity score can be a multi-year process.
2. When the data validity score meets the Level III (51-70) requirement, conduct a component analysis to identify causes of real and apparent water loss and develop a program to control losses based on the results of the component analysis.
3. Within 5 full calendar years of failing to meet the standard, submit the component analysis and water loss control program with a proposed implementation schedule to the Department.
4. Continued implementation will be a condition of the permit in place of meeting the 10% UAW performance standard.
5. Upon request of the Department, the permittee shall report on its implementation of the water loss control program.

A PWS permittee may choose to discontinue the water loss program implementation if UAW, as reported on the ASR and approved by the Department, is below 10% for four consecutive years, and the water audit data validity scores are at least Level III (51-70) for the same four years.

NOTE FOR SMALL SYSTEMS: For small systems with less than 3,000 service connections or a service connection density of less than 16 connections per mile of pipeline, the Unavoidable Annual Real Loss (UARL) calculation and the Infrastructure Leak Index (ILI) developed as the final steps of the top down water audit may not result in valid performance indicators, and may not be comparable to the UARL and ILI calculations for larger systems.

However, these small systems can benefit from developing reliable data and conducting an annual top down water audit. Small systems can rely on the real losses (gallons per mile of main per day) performance indicator developed in the water audit as a measure of real water loss when developing a water loss control program. The M36 Manual discusses the audit process for small systems, and includes

a chapter to guide small systems in understanding the results of their audits and in developing a water loss control program (*Manual of Water Supply Practices – M36, Fourth Edition, Chapter 9: Considerations for Small Systems*, pp. 293-305).

MassDEP UAW Water Loss Control Measures: If the permittee is required to develop a Functional Equivalence Plan for the 10% Unaccounted for Water Performance Standard, and the permittee does not have a MassDEP-approved Water Loss Control Program in place within 5 full calendar years of failing to meet the standard, the permittee will be required to implement the MassDEP UAW Water Loss Control Measures outlined below:

- An annual water audit and leak detection survey, as described in the AWWA M36 Manual, of the entire system.
 - Within one year, repair 75% (by water volume) of all leaks detected in the survey that are under the control of the public water system;
 - Thereafter, repair leaks as necessary to reduce permittee's UAW to 10% or the minimum level possible.
- Meter inspection and, as appropriate, repair, replace and calibrate water meters:
 - Large Meters (2" or greater) – within one year
 - Medium Meters (1" or greater and less than 2") – within 2 years
 - Small Meters (less than 1") - within three years
 - Thereafter, calibrate and or replace all meters according to type and specification.
- Bill at least quarterly within three years.
- Water pricing structure sufficient to pay the full cost of operating the system.

Hardship - A permittee may present an analysis of the cost-effectiveness of implementing certain conservation measures included in the MassDEP UAW Water Loss Control Measures and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits.

A permittee's hardship analysis shall:

- 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 UAW Water Loss Control Measures.

MassDEP will review a permittee's detailed, written analysis to determine whether unique circumstances make specific Best Management Practices (BMPs) less cost-effective than alternatives, or infeasible for the permittee.