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General Permit for Designated Discharges in the Charles River Watershed in Milford Franklin and Bellingham

Antidegradation Review and Determination

Introduction

On November 12, 2008, EPA Region 1 issued a Record of Decision in connection with its preliminary determination that stormwater discharges from certain large impervious surfaces within the towns of Franklin, Milford and Bellingham in the Charles River Basin warranted coverage under a National Pollutant Discharge Elimination System (NPDES) Permit. As grounds for this determination, EPA Region 1 cited the excessive aquatic plant growth that regularly occurs in the Charles River system during warm weather. As documented in the Final Total Maximum Daily Load for Nutrients in the Lower Charles River (the Lower Charles Phosphorus TMDL) approved by EPA Region 1 on October 17, 2007, this excessive plant growth in the Charles River system is the result of excess phosphorus from a variety of sources. The land use analysis set forth in the Lower Charles Phosphorus TMDL indicates that stormwater discharges from land uses associated with large impervious surfaces are a significant phosphorus source.

To address this significant phosphorus source, EPA Region 1 is issuing a General Permit for Designated Discharges in the Charles River Watershed in Milford, Bellingham and Franklin (the RDA Permit). The RDA Permit regulates certain discharges from designated discharge sites in Milford, Bellingham and Franklin to waters of the United States. The term designated discharge (DD) site includes stormwater discharges from two or more acres of impervious surfaces that are located on a single lot. The term DD site also includes two or more acres of impervious surfaces that are located on two or more contiguous lots, provided that: (1) the contiguous lots are owned by the same person; or (2) if the two contiguous lots are owned by different persons, the footprint of the same building or structural stormwater control measure spans the two contiguous lots. [1]

The Massachusetts Department of Environmental Protection (the Department) has reviewed the RDA Permit and accompanying Fact Sheet and determined that to the extent any discharge of stormwater from a DD site authorized under the RDA Permit would result in the discharge of stormwater from a DD site to a surface water of the Commonwealth, existing uses of that water would be maintained and protected. Additionally, the Department has determined that to the extent any discharge authorized under the RDA Permit would result in a new or increased discharge to a High Quality Water, the discharge would be insignificant as it would not have the potential to impair any existing or designated use or cause any significant lowering of water quality. Further, the RDA Permit does not authorize any new or increased discharges from a DD site to an Outstanding Resource Water (ORW) or to a Special Resource Water (SRW).

[1] When measuring impervious surfaces to determine if they meet the two acre threshold, the impervious surfaces associated with the following land uses are excluded: sporting and recreational camps, recreational vehicle parks and campsites, manufactured housing communities, detached single family homes located on individual lots, stand-alone multi-family houses with four or fewer units, and any property owned by a local government unit, the Commonwealth of Massachusetts, or the federal government where the property discharges wholly into a municipal separate storm system (MS4) with a valid National Pollutant Discharge Elimination System (NPDES) Permit.

Accordingly, the RDA Permit is consistent with the antidegradation provisions of the Massachusetts Surface Water Quality Standards set forth in 314 CMR 4.04.

Technology-Based Review

All NPDES Permits are required to contain technology-based limits. Since EPA has not promulgated effluent guidelines for stormwater discharges from large impervious surfaces, the RDA Permit contains permit limits based on the best professional judgment (BPJ) of the permit writer. The BPJ limits in the RDA Permit are in the form of non-numeric control measures or best management practices (BMPs). Due to the variability of the pollutant loadings associated with stormwater, use of BMPs is the most appropriate method for regulating stormwater discharges. With respect to non-conventional pollutants such as phosphorus, Section 301(b)(2)(A) of the Federal Clean Water Act requires that permits contain effluent limitations representing Best Available Technology (BAT). The structural and non-structural BMPs required by the RDA Permit represent BAT for the non-conventional pollutants associated with the stormwater discharges regulated by the RDA Permit.

Determination of Applicability of Specific Antidegradation Provisions

The Massachusetts antidegradation requirements, set forth in the Massachusetts Surface Water Quality Standards at 314 CMR 4.04(1), require that in all cases the existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. The Massachusetts Surface Water Quality Standards, 314 CMR 4.02, define existing uses to mean those designated uses and any other uses that do not impair the designated uses that are actually attained in a water body on or after November 28, 1975 except that in no case shall assimilation or transport of pollutants be considered an existing use.

The Massachusetts Surface Water Quality Standards, 314 CMR 4.06, classify the following surface waters in Milford, Bellingham and Franklin as Class A waters: the Charles River from its source to Dilla Street and tributaries thereto, tributaries to Echo Lake to the lake outlet, and Louisa Lake and its tributaries. The Massachusetts Surface Water Quality Standards classify the remainder of the surface waters within the portion of the Charles River Basin located in Franklin, Milford and Bellingham as Class B Waters.

Class A waters include waters designated as a source of public water supply and their tributaries. Class A waters are designated as excellent habitat for fish and other aquatic life and wildlife including for their reproduction, migration, growth and other critical functions. Class A waters are also designated for primary and secondary contact recreation[2], even if not allowed. Class A waters have excellent aesthetic value. Class A

[2] The Massachusetts Surface Water Quality Standards, 314 CMR 4.02, define primary contact recreation to mean any recreation or other water use in which there is prolonged and intimate contact with a significant risk of ingestion of water. These include, but are not limited to, wading, swimming, diving, surfing, and water skiing. The Massachusetts Surface Water Quality Standards, 314 CMR 4.02, define secondary contact recreation to mean any recreation or other water use in which contact with the water is either incidental or accidental. These include, but are not limited to, fishing, including human consumption of fish, boating, and limited contact incident to shoreline activities. Where designated secondary contact recreation also includes shellfishing, secondary contact recreation includes human consumption of shellfish.

waters are protected as Outstanding Resource Waters. 314 CMR 4.05(3)(a). See 314 CMR 4.04(3)[3]

Class B waters are designated as habitat for fish, other aquatic life and wildlife including for their reproduction, migration, growth, and other critical functions, and for primary and secondary contact recreation. Where designated in 314 CMR 4.06, Class B waters shall be suitable as a source of public water supply with appropriate treatment. Class B waters shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. Class B waters shall have consistently good aesthetic value. 314 CMR 4.04(3)(b)

According to the 2008 Massachusetts Integrated List of Waters, several assessed surface waters in the Charles River Basin in Franklin, Milford, and Bellingham have been determined to be impaired by the following pollutants: *Esherichica coli,* mercury in fish tissue, DDT, nutrient/eutrophication, biological indicators, low dissolved oxygen/dissolved oxygen saturation, excess algal growth, organic enrichment (sewage) and total phosphorus. Many of these impairments are related including nutrient/eutrophication, total phosphorus, low dissolved oxygen, dissolved oxygen saturation, and excessive algal growth. With the exception of the pollutants referenced in this paragraph, the surface waters of the Charles River Basin in Franklin, Bellingham and Milford are presumed to be High Quality Waters. [4] High Quality Waters are given special protection under the Massachusetts Surface Water Quality Standards, 314 CMR 4.04(2).

<u>Impact of Pollution on the Existing and Designated Uses of the Waters of the Charles River Basin in Franklin, Bellingham and Milford.</u>

Increased nutrient loads contribute to excessive algal growth. Regular occurrences of severe algal blooms during the summer reduce water clarity and contribute to anoxic bottom waters that do not support aquatic life. Excessive algal growth can affect both aquatic life and recreational water uses.

Algal blooms and other water quality parameters (nutrients, water clarity, chlorophyll-a, and low or high dissolved oxygen) indicate that the Charles River is undergoing cultural eutrophication.[5] Algal blooms degrade the aesthetic quality of the river, reduce water clarity and impair both primary and secondary contact recreational uses such as boating and swimming. Eutrophication also affects aquatic life by altering dissolved oxygen levels and producing species that are of little food value or in some cases toxic. Of particular concern is the potential presence of cyanobacteria, a toxic species that has been consistently observed in the Lower Charles.

[3] The Massachusetts Surface Water Quality Standards, 314 CMR 4.04(3), also provide added protection to waters classified as Special Resource Waters. To date, the Department has not classified any surface waters as Special Resource Waters.

[4] The Massachusetts Surface Water Quality Standards, 314 CMR 4.04(2), define High Quality Waters to mean waters whose quality exceeds the minimum levels necessary to support the national goal uses, low flow waters, and other waters whose quality cannot be adequately described or protected by traditional uses.

[5] Cultural eutrophication is the process of producing excessive plant life because of excessive pollutant inputs from human activities.

Excessive levels of mercury have also been found in the tissue of the fish found in various surface waters in the Charles River Basin in Milford, Bellingham and Franklin.[6] Excessive levels of DDT have been found in fish in Box Pond in Bellingham. In response to these findings, the Department of Public Health has issued a number of advisories for fish found in various surface waters within the Charles River Basin in Milford, Bellingham and Franklin.[7]

Excessive concentrations of *Esherichica coli* have been found in segments of the Charles River Basin in Franklin, Bellingham and Milford after storm events. These bacteria impair the use of these segments for primary contact recreation such as swimming.

Tier 1 Review of Discharges from All DD Sites

The Massachusetts Surface Water Quality Standards, 314 CMR 4.04(1), provide:

> In all cases existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

The RDA Permit prohibits discharges that cause or contribute to violations of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00. Because it applies to all pollutants discharged from a DD site, this provision assures that existing and designated uses and the level of water quality necessary to protect existing and designated uses will be maintained and protected.

Discharges from Existing DD Sites

With respect to existing impervious surfaces, the RDA Permit requires RDA Permittees to develop and implement a stormwater management plan (SMP) for the implementation of the measures required to meet certain baseline performance standards. The baseline performance standards include pollution prevention and source control measures aimed at decreasing stormwater pollutants to below their pre-permit levels. The baseline performance standards include the following: sweeping of paved surfaces at least twice a year; proper management of snow and deicing chemicals; proper management of solid waste and hazardous materials; stabilization of exposed soil areas; proper management of landscaped areas; proper operation and maintenance of on-site structural stormwater BMPs; illicit discharge detection and elimination; and maintenance of a logbook

[6] Atmospheric deposition is the source of the mercury found in fish tissue.

[7] Due to excessive levels of mercury in fish tissue, the Department of Public Health has issued fish advisories for the following surfaces waters in the Charles River Basin in Franklin, Bellingham and Milford: Beaver Pond (Large Mouth Bass and Chain Pickerel), Cedar Swamp Pond (all species) Charles River (all species) and Populatic Pond (all species). Due to excessive levels of DDT in fish tissue, the Department of Public Health has also issued a fish advisory for white sucker in Box Pond.

documenting implementation of the required pollution prevention and source control measures. For portions of DD sites devoted to non-residential uses, the RDA Permit requires additional source control and pollution prevention measures including the proper storage of materials, products and equipment and measures to prevent the discharge of water from the washing of materials, product and equipment to a stormwater management system or water of the United States.

On October 17, 2007, EPA approved the Lower Charles Phosphorus TMDL. The Lower Charles Phosphorus TMDL addresses the severe water quality impairments that result from the excessive growth of algae caused by the over abundance of phosphorus found in discharges to the Charles River system. The Lower Charles Phosphorus TMDL establishes waste load reductions for various phosphorus sources throughout the entire Charles River watershed including land uses associated with large impervious surfaces. Consistent with the Lower Charles Phosphorus TMDL, the RDA Permit requires the development and implementation of a Phosphorus Reduction Plan (PRP) for achieving a 65% reduction in the phosphorus loadings from stormwater discharges from DD sites. To achieve the 65% reduction in phosphorus loadings, an RDA Permittee is required to develop a PRP that provides for the implementation of enhanced non-structural BMPs, on-site structural BMPs, and/or participation in a certified Municipal Phosphorus Plan (MPP).

The 2010 General Municipal Separate Storm Sewer System (MS4) Permit for the North Coastal Basin of Massachusetts (the 2010 North Coastal MS4 Permit) requires that all MS4s in the Charles River Basin including Franklin, Milford, and Bellingham develop a MPP. MS4 Permittees are expected to develop a MPP that optimizes the location, types and sizing of structural BMPs at both privately-owned and publicly-owned sites including DD sites.

By giving RDA Permittees the option of participating in a certified MPP instead of or in addition to installing on-site structural BMPs, the RDA Permit gives RDA Permittees the opportunity to take advantage of any technical efficiencies and cost savings achieved by the MPP. By requiring RDA Permittees to assess the feasibility of on-site structural BMPs and enhanced non-structural BMPs, the RDA Permit ensures that RDA Permittees can achieve the required phosphorus reductions even if the MS4 Permittee does not develop a certified MPP as required by the 2010 North Coastal MS4 Permit. Moreover, the RDA Permit requires that every RDA Permittee develop and implement a PRP unless the stormwater discharges from the DD site are insignificant. To this end, the RDA Permit allows RDA Permittees to avoid the PRP requirement, if and only if, structural BMPs that capture and do not discharge a volume of runoff equivalent to the one inch depth are implemented on-site.

On January 17, 2007, EPA approved the Final Pathogen TMDL for the Charles River Watershed (the Pathogen TMDL). The Pathogen TMDL identified stormwater runoff as a significant source of pathogens. Infiltration practices are highly effective at removing both phosphorus and bacteria from stormwater runoff. The RDA Permit therefore requires RDA Permittees to develop a PRP that calls for the implementation of infiltration BMPs where feasible. Where infiltration BMPS are not feasible, the RDA Permit requires a PRP that provides for the implementation of other BMPs capable of removing both phosphorus and bacteria such as filtering BMPs.

By implementing the baseline measures specified in the SMP and the phosphorus reduction measures set forth in the PRP, RDA Permittees will reduce the discharge of all pollutants to the Charles River below pre-permit levels while achieving the reductions in

phosphorus and pathogens called for in both the Lower Charles Phosphorus TMDL and the Pathogen TMDL. More specifically, implementation of pollution prevention, source control, illicit discharge detection and elimination, proper operation and maintenance of structural stormwater BMPs together with additional measures aimed at reducing phosphorus loadings including enhanced non-structural BMPs, on-site structural BMPs, and participation in a certified MPP will assure that compliance with the Massachusetts Surface Water Quality Standards will be achieved and maintained and that existing and designated uses will be maintained and protected.

Increased Discharges from a DD Site

The RDA Permit defines an increased discharge as one that commences after the effective date of the RDA Permit and results from the creation of new impervious surface. The RDA Permit assures that increased discharges from DD Sites do not cause or contribute to violations of the Massachusetts Surface Water Quality Standards. With respect to pollutants other than phosphorus or bacteria that cause surface waters in the Charles River Basin to violate the Massachusetts Surface Water Quality Standards, the RDA Permit requires that the RDA Permittee enhance or add BMPs and/or secure offsets through the certified MPP or otherwise such that the net result is a decrease in pollutant load. The requirement to produce a net decrease in loads introduces a margin of safety that assures the effectiveness of the necessary additional control measures or offsets.

The RDA Permit provides that increased discharges of stormwater with phosphorus and/or bacteria must be controlled so that the waste load reductions required by the Lower Charles Phosphorus TMDL and the Pathogen TMDL are achieved. The RDA Permit also provides that any increased load must be controlled to achieve a net reduction in phosphorus and bacteria loadings from the increased discharge by enhancing or adding BMPs or by securing offsets through the certified MPP or otherwise.

The RDA Permit requirements for increased discharges ensure that the loadings of all pollutants are reduced and that the waste load reductions for phosphorus and bacteria set forth in the Lower Charles Phosphorus TMDL and the Pathogen TMDL are achieved. These requirements therefore assure that compliance with the Massachusetts Surface Water Quality Standards will be achieved and maintained and that existing and designated uses will be maintained and protected.

Discharges from New DD Sites

The RDA Permit defines a new discharge to be a discharge from an entirely new impervious surface that meets the definition of a DD site and that commences after the effective date of the RDA Permit. The RDA Permit provides that new discharges of pollutants other than phosphorus and bacteria for which the Charles River is impaired are not authorized by the RDA Permit unless the discharger is able to offset the discharge by a ratio that is greater than one to one. A person who creates new impervious surfaces of two or more acres after the effective date of the RDA Permit may avoid the offset requirement only if s/he ensures that the new discharge does not cause or contribute to a violation of the Massachusetts Surface Water Quality Standards, by capturing (and not discharging) all runoff on-site, by preventing exposure of stormwater runoff to the pollutant of concern, or by assuring that the discharge is meeting in stream water quality standards at the point of discharge.

The RDA Permit provides that new discharges with phosphorus or bacteria are not authorized under the RDA Permit unless the RDA Permittee submits documentation before the effective date of the authorization that:

> There are sufficient remaining pollutant allocation in all applicable TMDLs; and
>
> The existing discharges to the water body are subject to compliance schedules designed to bring the water body into attainment with the water quality standards.

The RDA Permit also requires that the RDA Permittee receive an affirmative determination before the effective date of the authorization that the requirements set forth above have been met. As an alternative to meeting the requirements set forth above, the RDA Permit allows an RDA Permittee to offset the discharge of bacteria and phosphorus.

The RDA Permit requirement for new discharges ensure that no new discharges increase the concentration or amount of any pollutant and that the waste load reductions for phosphorus and bacteria set forth in the Lower Charles Phosphorus TMDL and the Pathogen TMDL are achieved. These requirements therefore assure that compliance with the Massachusetts Surface Water Quality Standards is achieved and maintained and that existing designated uses are maintained and protected.

Tier 2 Review of New or Increased Discharges to High Quality Waters

The segments of the Charles River located in Franklin, Bellingham and Milford are presumed to be High Quality Waters for pollutants that the Department has not determined are resulting in a violation of the Water Quality Standards. The Massachusetts Surface Water Quality Standards, 314 CMR 4.04 (2), provides that High Quality Waters:

> shall be protected and maintained for their existing level of quality unless limited degradation by a new or increased discharge is authorized by the Department pursuant to 314 CMR 4.04(5). Limited degradation also may be allowed by the Department where it determines that a new or increased discharge is insignificant because it does not have the potential to impair any existing or designated water use and does not have the potential to cause any significant lowering of water quality.

Consistent with 314 CMR 4.04(2), the RDA Permit provides additional protections for High Quality Waters. More specially, the RDA Permittee must demonstrate 60 days prior to commencing a new or increased discharge to a High Quality Water that the discharge does not have the potential to cause any significant lowering of water quality by documenting one or more of the following:

> The discharge is not significant because it is de minimis as defined by state policy[8];
>
> The discharge is not significant because it is temporary in nature and that upon completion of the discharge period the existing water uses and water quality will be equal to or better than that existing prior to the commencement of the discharge;

[8] New or increased loadings of a pollutant that use less than 10% of the unused loading capacity of a receiving water are deemed insignificant.

The discharge does not cause a significant lowering of water quality because the effluent will be of a quality equal to or better than the existing water quality of the receiving water; or

Stormwater controls are designed such that there is no discharge of stormwater from the volume associated with a 1 inch storm event.

If the RDA Permittee cannot demonstrate that a new or increased discharge to a High Quality Water meets the requirements set forth above, the RDA Permit provides that the RDA Permittee may seek an authorization for the discharge pursuant to 314 CMR 4.04(5).

The RDA Permit requirements applicable to new and increased discharges to High Quality Waters set forth above ensure that such discharges will not cause any significant lowering of water quality as required by the Massachusetts Surface Water Quality Standards, 314 CMR 4.04(2). In particular, capturing the discharge of stormwater runoff from DD sites in storms up to and including the 1 inch storm event will eliminate discharges of stormwater runoff from 90% of the storms expected in a typical year. By reducing the volume of stormwater runoff and the discharge of any and all pollutants that come into contact with the stormwater runoff, such controls ensure that stormwater discharges to High Quality Waters do not have the potential to impair any existing or designated uses and do not have the potential to cause any significant lowering of water quality.

Tier 21/2 and Tier 3 Review of Discharges to Outstanding Resource Waters (ORWs) and Special Resource Waters (SRWs)

The Massachusetts Surface Water Quality Standards, 314 CMR 4.04(3)(a), provide that an existing discharge not connected to a Publicly Owned Treatment Works (POTW) shall be provided with the highest and best practical method of waste treatment determined by the Department as necessary to protect and maintain the Outstanding Resource Water. The Department has determined that the non-structural and structural BMPs required by the RDA Permit represent the highest and best practical method of treatment necessary to protect and maintain the ORWs located within the Charles River Basin in Franklin, Bellingham and Milford. Accordingly, the RDA Permit is consistent with the anti-degradation requirements for existing discharges to ORWs set forth in 314 CMR 4.04(3)(a).

The Massachusetts Surface Water Quality Standards, 314 CMR 4.04(3)(b).provide that a new or increased discharge to an ORW is prohibited unless the Department determines the discharge is for the express purpose and intent of maintaining or enhancing the resource for its designated use and an authorization is granted as provided in 314 CMR 4.04(5) or the discharge is dredge or fill materials for qualifying activities in limited circumstances after an alternatives analysis which considers the ORW designation and further minimization of adverse impacts. The RDA Permit expressly provides that new or increased discharges to ORWs are not authorized by the RDA Permit. Where a RDA Permittee intends to commence or increase a discharge to an ORW, an individual permit must be obtained. The RDA Permit is consistent with the anti-degradation requirements applicable to new or increased discharges to ORWs set forth in 314 CMR 4.04(3)(b).

The Massachusetts Surface Water Quality Standards provide that no new or increased discharge and no new or increased discharge to a tributary to a SRW that would result in

lower water quality in the SRW may be allowed except where the discharge results in temporary and short term changes in the quality of the SRW provided the discharge does not permanently lower water quality or result in water quality lower than necessary to protect uses and an authorization is granted to 314 CMR 4.04(5).

To date, the Department has not classified any surface waters of the Commonwealth as an SRW. Moreover, the RDA Permit expressly provides that it does not authorize any new or increased discharges to an SRW. The RDA Permit is therefore consistent with the anti-degradation provisions of the Massachusetts Surface Water Quality Standards applicable to new or increased discharges to SRWs set forth in 314 CMR 4.04(4).

Conclusion and Requirements

The RDA Permit ensures that existing discharges of all pollutants to the surface waters located in the section of the Charles River Basin located in Franklin, Milford and Bellingham will be reduced to below pre-permit levels while achieving the reductions in phosphorus and pathogens called for in both the Lower Charles Phosphorus TMDL and the Pathogen TMDL. The RDA Permit also ensures that new or increased discharges do not cause or contribute to increased pollutant loadings or violations of the Massachusetts Surface Water Quality Standards. The requirements of the RDA Permit for existing discharges, increased discharges and new discharges are consistent with Lower Charles Phosphorus TMDL and the Pathogen TMDL To the extent any discharge authorized under the RDA Permit results in a new or increased discharge to a High Quality Water, the RDA Permit requires that the discharge shall not have the potential to impair any existing or designated use or cause any significant lowering of water quality. Further, the RDA Permit does not authorize any new or increased discharges to an ORW or SRW. In sum, the RDA Permit ensures that existing and designated uses of the surface waters located within the section of the Charles River Basin located in Franklin, Milford and Bellingham will be maintained and protected and that compliance with the Massachusetts Surface Water Quality Standards will be achieved and maintained. Accordingly, the Permit is consistent with the antidegradation provisions of the Massachusetts Surface Water Quality Standards set forth in 314 CMR 4.04.

Signed:_____

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Date:_____