



TOWN OF MEDFIELD

Office of

BOARD OF HEALTH

MEDFIELD, MASSACHUSETTS 02052

MEDFIELD BOARD OF HEALTH

Regulations for Storm Water and Runoff Management **April 1991 - Amended January 2000**

These regulations for storm water management are intended to protect the public and environmental health by providing adequate protection against pollutants, flooding, siltation, and other drainage problems.

The following activities shall not be conducted without written approval of the Medfield Board of Health under these regulations.

1. Any use requiring subdivision plan approval.
2. The construction, extension, or alteration of any subdivision or of any structure or project requiring site plan approval, or a special permit in the Flood Plain, Watershed Protection, or Aquifer Protection Districts.

The storm water management design shall include a control strategy and plan for Source Control and Best Management Practice (BMP) for any particular development or project and shall accomplish the following goals.

- A. Reproduce, as nearly as possible, the hydrological conditions in the ground and surface waters prior to development.
- B. Reduce storm water pollution to the "Maximum Extent Possible" (MEP) using Best Management Practices (BMPs).
- C. Have an acceptable future maintenance burden.
- D. Have a neutral effect on the natural and human environment.
- E. Be appropriate for the site, given physical restraints.
- F. Provide a sufficient level of health and environmental protection during the construction phase.

An acceptable storm water management plan shall

1. Capture and treat the "FIRST FLUSH" of storm, usually the runoff from the first 2 inches of precipitation for a small land area or other value as may be designated by the Board of Health.

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2. Not cause an increase or decrease in either the total volume of runoff discharged offsite, or total rate of runoff discharged offsite, as compared with the respective discharge offsite prior to the development. Such condition shall be required for storms of 1, 10, 50, and 100 year frequency events.
3. Include source controls and design of BMPs and Infiltration and Detention structures in accordance with procedures acceptable to the Board of Health such as are described in the following publications.
 - a. "Controlling Urban Runoff - A Practical Manual for Planning and Designing urban BMP's - Department of Environmental Programs - Metropolitan Washington Council of Governments"
 - b. "Storm Water Detention for Drainage, Water Quality, and CSO Management" - Peter Stahre and Ben Urbonas - Prentice Hall - 1990
 - c. ASCE Publications entitled "Design of Urban Runoff Quality Controls", 1988 and "Urban Runoff Quality - Impact and Quality Enhancement Technology", 1986
 - d. "Urban Surface Water Management" - Stuart G. Welsh - John Wiley & Sons Inc. - 1989
 - e. "Underground Disposal of Storm Water Runoff - Design Guidelines Manual" February 1980 of the Federal Highway Administration - Department of Transportation
 - f. "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, March 1997.
 - g. "Stormwater Management - Volume Two - Stormwater Technical Handbook - March 1997" prepared by MA DEP and MA CZM.
4. In cases where runoff infiltration cannot, in the opinion of the Board of Health, be appropriately implemented because of the possibility of contamination of water supply, or because of extremely poor infiltrative and permeability characteristics of the soil, the requirement as regards volume may be waived by the Board of Health, provided the applicant provides such additional preventive measures as may be approved by the Board of Health, to attenuate runoff contamination and to prevent any increase in elevation or duration of downstream flood elevations. Such additional measures may be, but are not

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restricted to, the use of extended detention, the construction of compensatory flood storage facilities and/or the creation of additional wetlands.

Poor infiltrative and permeability conditions are defined as a soil permeability of less than 1×10^{-4} centimeters per second. Unless, in the opinion of the Board of Health, such testing is not applicable for a particular site, all permeability tests shall be in-situ field bore hole tests for permeabilities in the acceptable range as specified above. If permeability testing is desired to be performed in soils of lesser permeability, laboratory tests for hydraulic conductivity shall be performed on undisturbed samples by the Falling Head Permeability Test using flexible membrane triaxial test cells with back pressure (Army Corps of Engineering Manual EM 1110-2-1906 Appendix VII).

5. If detention or retention ponds are utilized, slopes shall be no steeper than 4 horizontal to 1 vertical. Maximum design water depth shall not exceed three (3) feet except in permanent ponds. Minimum bottom slope for "dry" detention areas shall be two (2) percent. A safety bench, a minimum of 10 feet wide shall be provided. Detention or retention areas shall not be constructed within existing stream bed or wetland areas.
6. Not result in channelization of surface runoff offsite without the written consent of the owner of the land affected, in the form of a permanent grant of easement, recorded at the Registry of Deeds.
7. Include hydrologic and hydraulic calculations and data to support the proposed design for the runoff drainage system. Both volume and flow rate of runoff, before and after development, must be clearly stated and shall be in accordance with the specifications previously designated herein. Calculations shall be performed using the most recent procedures of the U.S.D.A. Soil Conservation Service such as are described in National Engineering handbook-Section 4-Hydrology (SCS 1985),, TR-20 "Computer Program for Project Formulation-Hydrology" (SCS 1983), and Technical Release No. 55 "Urban Hydrology for Small Watersheds" (SCS 1986). Structure design shall comply with the standards of USDA SCS Publication TR-60 for containments for detention and retention areas or other designated references. Additional design guidelines may be on file with the Board of Health.
8. Provide evidence to demonstrate clearly to the Board of Health that there will be no adverse effect upon the ground and surface waters.

A TRUE COPY ATTEST

Carol A. Mayer
TOWN CLERK OF MEDFIELD, MA

24 HOUR RAINFALL

Prepared By William R. Domey, P.E.

An updated Atlas of Precipitation has been published by the Northeast Regional Climate Center at Cornell University that provides more accurate data for the 24 Hour Rainfall and precipitation of other storm events than the National Weather Service TP40 - *Rainfall Frequency of the United States* (Hershfield 1961) which has been used widely to calculate stormwater runoff rates and volumes in Massachusetts. The updated atlas should be used instead since it is scientifically sound and up to date. Otherwise, structures for stormwater infiltration, retention, detention, and other BMP's may be incorrectly and/or undersized for real storm events.

The new Atlas:

Utilizes the advances in statistics methodology and computing power since 1961.

Provides results determined from data of stations having an average length of record of 51.3 years as compared to the data of TP40, which had an average length of record of 22.6 years.

Recognizes that the frequency of heavy rain events has increased since 1961. TP40 encompasses a relatively dry period compared to the past 40 years.

Provides empirical adjustment factors to transform precipitation amounts pertaining to calendar day observations to maximum precipitation regardless of time of observation.

Analysis of the 1993 Northeast Regional Climate Center Atlas for Southwest Middlesex and Western Norfolk Counties, corrected for the 24-Hour Storm, results in the following rainfall values.

<u>24-Hour Storm</u>	<u>Rainfall (inches)</u>
1	2.6
2	3.25
5	4.1
10	4.9
25	6.1
50	7.3
100	8.5

The title of the new atlas is *Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada*, Cornell University, Ithaca, New York, Publication No. RR 93-5, September 1993. Telephone (607) 255-1751. A second publication entitled *Atlas of Short-Duration Precipitation Extremes for the Northeastern United States and Southwestern Canada*, Publication No. RR 95-1, March 1995, is also available.

LEGAL NOTICE

Board of Health

Town of Medfield

Regulations for Stormwater and Runoff Management

The Board of Health of the Town of Medfield, Commonwealth of Massachusetts, acting in accordance with Chapter 111, Section 31 of the General Laws and amendments and additions thereto, and by any other power hereto enabling, and acting thereunder, has, in the interest of, and for the preservation of the Public Health, duly intended its Regulations for Storm Water and Runoff Management dated April 1991. Copies of the Regulation and its amendment are on file and available at the office of the Board of Health during regular business hours and are effective upon the date of this publication.

MEDFIELD BOARD OF HEALTH

Nancy Silva, Ph.D., MPH, Chairperson

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Medfield Press

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