

§ 198-31.1 Stormwater management.

[Added 5-1-1999 ATM by Art. 9; amended 6-12-2021ATM by Art. 37]

A. This section is repealed and replaced by Chapter 194 Stormwater Management

~~This section shall apply to all new special permits subject to § 198-29 for additions or renovations which increase the impervious area of property applied for after January 12, 1999, as provided for in MGL c. 40A, § 6. Further this section shall also apply to such special permits granted prior to January 12, 1999, as provided for in MGL c. 40A, § 6, if the building permits authorized under such special permit are not issued prior to November 1, 1999. No lot created after May 1, 1999, may be built upon without compliance with this section. The requirements of this section may be met for lots created after May 1, 1999, by approval of a subdivision plan that includes a stormwater management plan, as described herein, by the Fairhaven Planning Board. This section shall also apply to all new special permits subject to § 198-29 that disturb one or more acres of land regardless of whether they increase the impervious area of a property.~~

~~A. Standards.~~

~~(1) Stormwater management for each development shall be designed consistent with or more stringent than the requirements of the Massachusetts Stormwater Handbook, shall comply with Chapter 194, Stormwater Management, Illicit Discharge, Soil Erosion, Sediment Control Bylaw and adhere to the standards and requirements of regulations issued thereunder and shall accomplish the following:~~

~~(a) Flooding. The design and construction of each subdivision or special permit project shall be done in a manner such that post development runoff will not exacerbate or create flooding conditions, or alter surface water flow paths, resulting in impacts to adjacent properties to the site during the two, ten, twenty five and one hundred year twenty four hour storm events.~~

~~[1] No increase will be allowed in the peak rate of runoff off of the site for any of the above design storms.~~

~~[2] No increase will be allowed in the volume of runoff off of the site up to the ten year, twenty four hour design storm.~~

~~(b) Water quality. The first flush of stormwater runoff shall be treated prior to discharge off of the site. The treatment system(s) shall be designed to accommodate the first flush from the entire development site.~~

~~[1] Treatment shall be provided to achieve a minimum removal 80% of total suspended solids (TSS) from the first flush.~~

~~[2] Any development in Nasketucket River Basin Zoning Overlay District shall incorporate physical treatment processes to remove nitrogen at an efficiency rate of 30% or greater and remove phosphorous at a design rate of 50% or greater.~~

~~(c) Reproduce, as nearly as possible, the hydrologic conditions in the ground and surface waters prior to the development.~~

~~(d) Reduce stormwater pollution to the maximum extent possible using best management practices (BMPs).~~

~~(e) Have a long term maintenance plan.~~

~~(2) The Planning Board is authorized to vary from these standards due to topographic features of the lot.~~

~~B. Submittal requirements.~~

~~(1) It shall be the responsibility of the applicant for all subdivisions greater than three lots and for all special~~

~~permits for new construction, and for special permits for additions or renovations which increase the impervious area of a property requiring approval of the Planning Board to submit 10 copies of a stormwater management plan (SMP) detailing the existing environmental and hydrological conditions of the site, proposed alterations of the site, and all proposed components of the drainage system and any measures for the detention, retention or infiltration of water, for the protection of water quality and protection from flooding. The SMP shall contain sufficient information for the Planning Board to evaluate the effectiveness and acceptability of those measures proposed by the applicant for controlling flooding and pollution from stormwater runoff. The SMP shall contain maps, charts, graphs, tables, photographs, narrative descriptions, calculations, plans showing construction details of all systems and structures, and citations to supporting references, as appropriate, to communicate the information as required by this section. Stormwater management systems for new development and redevelopment projects shall meet minimum requirements of the General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts (MS4 permit), including:~~

- ~~(a) New development projects shall provide removal of 90% of the average annual (not per storm) load of total suspended solids (TSS) generated from the total post construction impervious area on the site and 60% of the average annual not per storm) load of total phosphorus (TP) generated from the total post construction impervious surface area on the site. Average annual pollutant removal requirements are achieved through one of the following methods:
  - ~~[1] Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, any federally or state approved BMP design guidance or performance standards (e.g., state stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or~~
  - ~~[2] Retain the volume of runoff equivalent to, or greater than, 1.0 inch multiplied by the total post construction impervious surface area on the site; or~~
  - ~~[3] Meeting a combination of retention and treatment that achieves the above standards.~~~~
- ~~(b) Redevelopment projects shall provide removal of 80% of the average annual (not per storm) post construction load of total suspended solids (TSS) generated from the total post construction impervious area on the site and 50% of the average annual (not per storm) load of total phosphorus (TP) generated from the total post construction impervious surface area on the site.
  - ~~[1] Average annual pollutant removal requirements are achieved through one of the following methods
    - ~~[a] Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, any federally or state approved BMP design guidance or performance standards (e.g., state stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or~~
    - ~~[b] Retaining the volume of runoff equivalent to, or greater than, 0.80 inch multiplied by the total post construction impervious surface area on the site; or~~
    - ~~[c] Meeting a combination of retention and treatment that achieves the above standards.~~~~
  - ~~[2] Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways (including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects) shall improve existing~~~~

~~conditions unless infeasible and are exempt from Subsection **B(1)(b)**. Roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width shall meet the requirements of Subsection **B(1)(b)**.~~

~~(2) The submittal of a stormwater management plan shall include an order of conditions or a determination of nonapplicability from the Fairhaven Conservation Commission issued under the Fairhaven Wetlands Bylaw.~~

~~(a) Site characteristic information to be included in the stormwater management plan (SMP).~~

~~{1} Predevelopment conditions shall include:~~

~~{a} The existing watersheds on the property, as well as upgradient areas contributing runoff to the property;~~

~~{b} Location of all surface waters and wetlands on the site or on lots adjacent to the site;~~

~~{c} The delineation of the one-hundred-year flood elevation as indicated on the Federal Emergency Management Act (FEMA) maps. If FEMA maps do not exist or if the waterbody or watercourse one-hundred-year flood elevation is not indicated on the map, the elevation shall be calculated utilizing an appropriate methodology such as NRCS TR-55 or TR-20 or HEC2. (Note: The floodplain location determined by the FEMA maps are approximate. When a specific elevation is given, the location of the floodplain shall correspond to that elevation.);~~

~~{d} The principal vegetation types sufficient to determine an appropriate curve number;~~

~~{e} The topography described at one-foot intervals; areas of steep slopes over 15% shall be highlighted;~~

~~{f} The soil types on the site and the hydrological soil groups based on the most current Natural Resource Conservation Service soils map of the site (available at the NRCS office in Wareham);~~

~~{g} The location of any public or private water supplies within 150 feet of the property as well as on the property;~~

~~{h} Soil logs signed by a DEP certified soil evaluator for each proposed stormwater control system site. (Documentation should be for a minimum of four feet below the bottom of the stormwater system and be submitted for both flood control stormwater systems and pollution reduction stormwater systems.);~~

~~{i} Maximum groundwater levels as observed in the soil at the proposed stormwater control system locations;~~

~~{j} The flow path(s), design points for each watershed; and~~

~~{k} Areas of ponding or swamping.~~

~~{2} Postdevelopment conditions shall include:~~

~~{a} Changes in topography at one-foot intervals;~~

~~{b} Areas where vegetation will be cleared or otherwise altered. (For residential development assume 90% of all area excepting buildings to be managed turf.);~~

~~{c} The proposed watersheds on the property, as well as upgradient areas contributing runoff to the property;~~

~~{d} The proposed development layout including: locations of roadways, common parking areas, and~~

~~undisturbed lands; and locations of drainage systems and stormwater treatment facilities;~~

~~[e] Areas to be utilized in overland flow, i.e., grass swales and filter strips, showing: proposed vegetation; the soil susceptibility to erosion (using the NRCS classification);~~

~~[f] The flow path(s) for the two , ten , twenty five and one hundred year twenty four hour storm event; and~~

~~[g] Design points for each watershed.~~

~~(b) Water quantity/duration/quality information to be submitted in the SMP.~~

~~[1] Predevelopment conditions in narrative form or calculations shall include: peak discharge rate, based on the two , ten , twenty five and one hundred year twenty four hour storm event using NRCS TR 55 or TR 20; and volume of the surface runoff for ten year twenty four hour storm event using NRCS TR 55 or TR 20.~~

~~[2] Post development conditions in narrative form or calculations shall include: peak discharge rate, based on the two , ten , twenty five and one hundred year twenty four hour storm event using NRCS TR 55 or TR 20; volume of the surface runoff for the ten year twenty four hour storm event using NRCS TR 55 or TR 20; design point(s) for each watershed; detention/retention time, discharge rate, and approximate time of concentration through the BMP for the water quality storm; a description of and calculations for the proposed outlet structure(s); both the principle outlet and emergency spillway; and a discussion regarding whether the proposed stormwater system meets or exceeds the established performance standards as well as an evaluation of the pollutant removal efficiency of each proposed treatment facility or group of facilities.~~

~~C. Design standards. The design, construction and maintenance of the stormwater system, and the submittal of information to evaluate the system, shall be consistent with the standards and specifications set out below.~~

~~(1) Performance standards and design specifications.~~

~~(a) Control of stormwater runoff shall meet the design criteria for both flood (volume and peak discharge) control and nonpoint source pollution reduction as indicated in Subsection A above. All assumptions, methodologies and procedures used to design stormwater systems shall accompany the design.~~

~~(b) Stormwater design methodology considerations for stormwater management.~~

~~[1] Runoff calculations for flood control shall be provided utilizing the rational formula, the NRCS TR 20 or TR 55, as appropriate for the site. The appropriate methodology shall be determined from the restrictions on each method described in Basic Hydrological Calculations for Conservation Commissioners Runoff, Land Subject to Flooding, and Flow in Pipes and Channels, (1987). The Rational Method cannot be used to determine volume.~~

~~[2] The appropriate pre and postdevelopment worksheets as shown in Basic Hydrological Calculations for Conservation Commissioners Runoff, Land Subject to Flooding, and Flow in Pipes and Channels, (1987), shall be submitted with the subdivision plan or special permit application.~~

~~[3] The flow length for predevelopment sheet flow to determine the time of concentration (Tc) or travel time (Tt) shall not exceed 50 feet.~~

~~[4] Design points.~~

~~[a] The design points shall be at the:~~

~~{i}—Edge of wetlands;~~

~~{ii}—Property line; or~~

~~{iii}—Existing storm drain system.~~

~~{b}—For each predevelopment design point there shall be a corresponding postdevelopment design point.~~

~~(2) General standards and specifications. The design, construction and maintenance of stormwater systems shall be consistent with the following:~~

~~(a) Discharging runoff without treatment directly into rivers, streams, watercourses or wetlands is prohibited.~~

~~(b) Natural watercourses shall not be dredged, cleared of vegetation, deepened, widened, straightened, stabilized or otherwise altered.~~

~~(c) Land outside the parcel subject to development review shall not be used in the stormwater management plan (i.e., the location of the detention pond) unless a recordable easement has been granted for such use and a copy of the easement has been submitted to the Planning Board as part of the SMP.~~

~~(d) The site shall be graded so that surface water shall be directed into the stormwater management system.~~

~~(e) Intermittent watercourses such as swabs shall be vegetated.~~

~~(f) Prior to discharging any stormwater runoff into a stormwater system, the following conditions must also be met:~~

~~{1}—The system shall be installed according to applicable standards and specifications of this section;~~

~~{2}—All components of the system shall be stabilized; and~~

~~{3}—All upland areas contributing stormwater runoff to the system shall be stabilized (nonerosive).~~

~~(g) All basins/ponds designed for stormwater runoff control shall:~~

~~{1}—Be designed in accordance with current NRCS standards and specifications unless otherwise indicated in Subsection C(4), Specific standards and specifications below;~~

~~{2}—Have a two stage design when pollution reduction and flood control are incorporated into one stormwater management system. The upper stage shall provide enough storage to control the postdevelopment peak discharge rates for the two-, ten-, twenty-five and one-hundred-year, twenty-four hour storm events to the predevelopment levels; the lower stage shall provide enough storage to meet the pollution removal efficiencies as described Subsection C(4), Specific standards and specifications below;~~

~~{3}—Have energy dissipaters at the outlets of all inflow and outflow pipes;~~

~~{4}—Have outflow pipes designed to minimize clogging (i.e., through the use of trash racks);~~

~~{5}—Have an emergency spillway to allow for the passage of water without damage to the water quality structure for storms greater than their largest design capacity;~~

~~{6}—Have side slopes at a no steeper than a four horizontal to one vertical grade unless otherwise called for by the Fairhaven Conservation Commission to minimize a stormwater system's impact on wetland or~~

~~bordering wetland resource areas (Side slopes must be stabilized and planted with vegetation to prevent erosion. A ten-foot wide bench at 0% slope shall surround any permanent pool.); and~~

~~[7] Except for the sediment forebay, shall have no permanent pool depth in excess of 2 1/2 feet.~~

~~(h) All water quality stormwater systems shall be designed in accordance with the runoff volume indicated in Subsection A above. Runoff greater than this design criteria shall be controlled using the peak discharge/volume control criteria in Subsection A above.~~

~~(i) Infiltration basins using redundant sediment removal techniques (i.e., sediment forebay, grassed swale and filter fabric) may be designed and utilized to act as stormwater systems for both water quality and volume control, provided all other standards and specifications are met.~~

~~(j) Volume control structures shall not be placed upgradient of any pollution stormwater system.~~

~~[1] Volume control shall be by infiltration;~~

~~[2] Infiltration areas designed and constructed to control the volume of runoff shall be located in areas with a NRCS hydrological soil group of A, B or C;~~

~~[3] Infiltration for volume control shall be designed and constructed with the bottom of the infiltration area at or above the maximum high groundwater elevation; and~~

~~[4] The calculations to determine the size of the volume control structure shall assume the surface of the structure to be impervious;~~

~~(k) Forebays.~~

~~[1] All water quality basin/ponds shall have a sediment forebay. These forebays shall:~~

~~[a] Consist of a separate cell;~~

~~[b] Be sized to contain 0.25 inches per impervious acre of contributing drainage;~~

~~[c] Be less than a twelve-foot distance from the bank to the center of the forebay;~~

~~[d] Be four feet deep; and~~

~~[e] Have nonerosive exit velocities for the two-year design storm.~~

~~[2] If the water quality basin is to be deeded to the town, the forebay shall be constructed to meet Board of Public Works requirements.~~

~~[3] The forebays may have a headwall depending on the Board of Public Works recommendations.~~

~~(l) Where stormwater basins are designed with a permanent pool depth, a post and rail fence with pressure-treated or locust posts, with a backing of plastic coated wire fencing shall be used when the basin is in close proximity to residential units, and shall further inhibit access by a planting of thick shrubs such as rugosa rose (*Rosa rugosa*) surrounding the basin.~~

~~(m) All water quality stormwater systems shall be designed to accept a return storm of 0.5 inches off the impervious area 11 days after the water quality storm.~~

~~(n) Conveyance of stormwater:~~

~~[1] The entire drainage system of storm drainage lines shall be capable of conveying the twenty-five year~~

storm, including catch basins, manholes and culverts.

- ~~[2]—Water velocities in pipes and gutters shall be between two and 10 feet per second. Water velocities in nonpaved areas (e.g., swales, ditches) shall not be more than published values for maximum permissible velocities based on surface cover type and soil types.~~
- ~~[3]—Water velocities in catch basins shall not exceed 0.5 feet per second. Catch basins shall be designed (inlet capacity and spacing) such that the flow in the gutter during a twenty-five-year design storm is not more than three feet in width as calculated utilizing methodologies described in "Drainage of Highway Pavements, Hydraulic Engineering Circular No. 12" as published by the United States Department of Transportation, Federal Highway Administration. In any event, water shall not be allowed to run for more than 300 feet on paved surfaces.~~
- ~~[4]—Catch basins shall be constructed of at least six inches precast reinforced concrete. Catch basin grates shall be in the gutter to facilitate snow removal.~~
- ~~[5]—The standard depth of catch basins shall be a minimum 2.5 feet below the invert of the outlet. Manholes shall be constructed at each junction point of storm drain lines. Catch basins shall not serve as manholes.~~
- ~~[6]—Storm drains shall be of at least 12 inches diameter inside, with at least 24 inches of cover, and shall be of reinforced concrete Class IV pipe if having less than 48 inches of cover within a street right-of-way. Aluminum pipe of at least comparable strength may be substituted in appropriate locations if approved by the Fairhaven Board of Public Works (BPW). All drain pipes except subdrains shall be reinforced concrete or ADS. Waivers from these standards shall be allowed upon recommendation of the Board of Public Works.~~
- ~~[7]—Easements and provisions for vehicular access shall be provided along the entire length of storm drain lines.~~
- ~~(o) Cross culverts.~~
  - ~~[1]—Culverts and stormwater outlet structures shall have reinforced concrete headwalls designed in accordance with good practice.~~
  - ~~[2]—At cross culverts (where a roadway bisects a stream or manmade watercourse), drainage easements shall be established upgradient of the culvert and delineated on the definitive plan based on the projected one-hundred-year headwater elevation.~~
- ~~(3) Selecting a water quality BMP. Three designs for water quality BMPs, micropool extended detention basins, wet extended detention ponds, and infiltration basins are listed in Subsection C(4), Specific standards and specifications below. One of these BMPs may be appropriate for the site:~~
  - ~~(a) Micropool extended detention basins (EDB) with a forty-eight hour detention time will not adequately remove bacteria. No EDB proposed within 1,000 feet of a sensitive receptor for bacteria shall be approved. In Fairhaven, these areas are:
    - ~~[1]—All coastal waters excluding inner New Bedford Harbor.~~
    - ~~[2]—Zone 2 of public water supply wells at Mill Pond pumping station.~~~~
  - ~~(b) Due to the high failure rate of conventional infiltration practices (including porous pavement), they are not an accepted method of stormwater management unless redundant pretreatment for sediment removal is utilized. No underground infiltration practices, such as leaching catch basins, shall be allowed.~~
  - ~~(c) Oil/grit separators are not needed for the type of pollutants associated with subdivisions. They shall not~~

be approved for residential subdivisions. Oil/grit separators may be required for special permits granted by the Planning Board.

- ~~(d) Other water quality BMPs may be approved, provided that the pollutant removal rate meets or exceeds the requirements of Subsection A above.~~
- ~~(4) Specific standards and specifications for water quality BMP's.~~
- ~~(a) Micropool extended detention basin (EDB). In order to provide an estimated removal efficiency of 80% for suspended solids, 30% total phosphorus, and 15% total nitrogen, EDBs shall be designed in accordance with Subsection C(1), Performance standards and design specifications, plus the specific criteria stated below. The design of EDBs shall include:
  - ~~[1] Minimum contributing watershed area of 10 acres;~~
  - ~~[2] A minimum of forty eight hour detention time for the water quality storm;~~
  - ~~[3] A sediment forebay at the inlet;~~
  - ~~[4] A micropool located near the outlet structure to reduce resuspension of sediments;~~
  - ~~[5] A minimum of 3:1 length to width ratio with the inlet structure placed a maximum distance from the outlet structure; and~~
  - ~~[6] The establishment of, and the methodology with which to maintain, wetland vegetation on the bottom of the basin.~~~~
- ~~(b) Wet extended detention ponds/basins (WP). The minimum design criteria below plus Subsection C(1), Performance standards and design specifications, will provide an estimated removal efficiency of 80% for suspended solids, 65% total phosphorus, and 40% total nitrogen. The design of WPs shall include:
  - ~~[1] A minimum contributing watershed of 25 acres, or measures to maintain a permanent pool of water;~~
  - ~~[2] A permanent pool volume within the permanent pool equal to 40% of the water quality (first flush) volume;~~
  - ~~[3] A sediment forebay volume of 13% of the water quality (first flush) volume;~~
  - ~~[4] An extended detention storage volume of 47% of the water quality (first flush) volume;~~
  - ~~[5] A detention time for the water quality (first flush) volume of 48 hours;~~
  - ~~[6] A maximum depth of 2.5 feet;~~
  - ~~[7] A marsh component to be established along the pond edges;~~
  - ~~[8] A minimum of 3:1 length to width ratio with the inlet structure placed at a maximum distance from the outlet structure.~~~~
- ~~(c) Infiltration basin (IB). A design based on both the minimum design criteria for IBs listed below and the design criteria in Subsection C(1), Performance standards and design specifications, will provide an estimated removal efficiency of 80% for suspended solids and 90% for bacteria. The design of IBs shall include:
  - ~~[1] Three redundant pretreatment mechanisms (such as a sediment forebay or detention pond) adequate to~~~~



~~remove and store 80% of the TSS.~~

~~{2} Adequate volume to infiltrate the first flush of runoff.~~

~~{3} Compliance with the specifications found in the State of Rhode Island Stormwater Design & Installation Manual, September 1993, when not specified elsewhere in this section.~~

~~{a} Section 6.3(a), (b)(1)(2)(4), Site Suitability, utilizing the Bristol County Soil Survey, or more recent unpublished updates available at the NRCS office in Wareham.~~

~~{b} Section 6.4 Infiltration Rates.~~

~~{c} Section 6.6 (a through i) Design Requirements.~~

~~{d} Section 6.7(a)(1-11) Separation Distances.~~

~~D. Inspection and maintenance.~~

~~(1) After the stormwater management system has been constructed and before the performance guaranty for the development has been released, the applicant shall submit an "as built" plan detailing the actual stormwater management system as installed. The consulting engineer for the Town shall inspect the system to confirm its as built features. This engineer shall also evaluate the effectiveness of the system in an actual storm. If the system is found to be inadequate by virtue of physical evidence of operational failure, even though it was built as called for in the definitive plan, it shall be corrected before the performance guaranty is released. Examples of inadequacy shall be considered but not limited to: errors in the infiltrative capability, errors in the maximum groundwater elevation, failure to properly define or construct flow paths, or erosive discharges from basins. The cost of having the town's consulting engineer review and evaluate the as built plans and the stormwater management system shall be borne by the developer.~~

~~(2) All stormwater management systems shall be maintained in accordance with the following regulations.~~

~~(a) The applicant shall submit 10 copies of a maintenance plan for stormwater management. Maintenance plans for each basin include a maintenance schedule, an outline of responsible parties and owners, all pertinent agreements to be executed to ensure proper maintenance and an estimate of future yearly maintenance costs.~~

~~(b) To facilitate maintenance, each water quality basin/pond shall be constructed with:~~

~~{1} Direct maintenance access by heavy equipment to the forebay;~~

~~{2} A hardened bottom in the forebay made of stone or concrete to make sediment removal easier; and~~

~~{3} A fixed sediment depth marker installed in the forebay to measure sediment deposition over time.~~

~~(c) Routine maintenance and inspections shall conform to the following:~~

~~{1} Stormwater management systems shall be inspected annually and cleared of debris, sediment and vegetation when they affect the functioning and/or design capacity of the facility;~~

~~{2} Where lack of maintenance is causing or contributing to a water quality problem, immediate action shall be taken by the property owner to correct the problem within 14 days of written notice by the Planning Board;~~

~~{3} All actions required to maintain the stormwater management system for the purpose it was designed and~~

~~constructed must be performed within 30 days following the maintenance inspection;~~

~~[4] Accumulated sediment shall be excavated as needed or at the request of Planning Board; and~~

~~[5] Any vegetation uprooted by sediment removal shall be replaced.~~

~~(d) To ensure future maintenance and avoid undue costs to the town:~~

~~[1] Each basin design shall have a design life of 20 years, as documented in a peer review publication, third party testing or other independent means.~~

~~[2] The applicant shall provide cost estimates per year for future maintenance of the stormwater conveyance and detention/infiltration system. This cost estimate shall include semiannual sediment removal from all catch basins and street sweeping, and cleaning of sediment forebays and detention ponds when necessary. The Board of Public Works shall be required to approve all cost estimates prior to Planning Board approval.~~

~~[3] The applicant shall provide to the Planning Board assurances that there is in place a mechanism such as a bond, letter of credit, escrow account or similar security to ensure the maintenance, inspection and repair of the stormwater system for a period of at least 20 years.~~

## § 322-26 Stormwater management.

A. This section is repealed and replaced by Chapter 194 Stormwater Management

~~A. Stormwater management for each development shall accomplish the following:~~

~~(1) Reproduce, as nearly as possible, the hydrologic conditions in the groundwater and surface water prior to the development;~~

~~(2) Reduce stormwater pollution to the maximum extent possible using best management practices (BMPs);~~

~~(3) Have a long term maintenance plan acceptable to the Board and BPW;~~

~~(4) Be appropriate for the site given physical constraints.~~

~~B. Submittal requirements. It shall be the responsibility of the applicant to submit a stormwater management plan (SMP) for all subdivisions greater than three lots detailing the existing environmental and hydrological conditions of the site, proposed alterations of the site, and all proposed components of the drainage system and any measures for the detention, retention, or infiltration of water for the protection of water quality and protection from flooding. The SMP shall contain sufficient information for the Planning Board to evaluate the effectiveness and acceptability of those measures proposed by the applicant for controlling flooding and pollution from stormwater runoff. The SMP shall contain maps, charts, graphs, tables, photographs, narrative descriptions, calculations, plans showing construction details of all systems and structures, and citations to supporting references, as appropriate, to communicate the information as required by these regulations. (See Appendix B for a list of required information.) The Planning Board reserves the right to require a SMP on subdivisions of three lots or less if deemed necessary for flood control or pollutant removal. The applicant shall submit a brief written description of how the SMP complies with Department of Environmental Protection (DEP) Stormwater Management Regulations.~~

~~(1) For subdivisions of three lots or less, the applicant's engineer shall submit documentation, stamp and certify that the design meets the DEP Stormwater Management Regulations.~~

~~C. Design standards. The design, construction, and maintenance of the best management practices (BMPs), and the submittal of information to evaluate the BMPs, shall be consistent with Department of Environmental Protection (DEP) Stormwater Management Regulations and the standards and specifications of Appendix A of the "Rules and Regulations Governing the Subdivision of Land, Fairhaven, Massachusetts."~~

~~D. BMP location. Stormwater basins and/or ponds shall be located only on a common parcel used for service and utilities. Said BMP parcel shall not be required to meet minimum zoning requirements for lot size or frontage. However, at a minimum, a twenty-foot right-of-way shall exist between the BMP parcel and the roadway. This common lot shall be conveyed to the Town of Fairhaven at time of street acceptance.~~

~~E. The applicant shall submit an erosion and sediment control plan.~~

~~(1) The erosion and sediment control plan should include a written description of the plan as well as an emergency response outline (including response phone numbers) and a maintenance schedule. The plan shall meet the following objectives and criteria:~~

~~(a) Keep disturbed areas small: No more than 60 feet in width and 100 feet in length of a single lot, or five acres of the overall tract at one time. Said plan shall identify design issues and methods employed to address such items as topography, soils, vegetation, steep slopes, wetlands and water bodies.~~

~~(b) Stabilize and protect disturbed areas quickly: Exposed areas and stockpiles shall be revegetated within 40 days of being exposed. The Board, depending on weather conditions, may require slope and stockpile stabilization sooner. Methods for stabilizing disturbed areas include mechanical, structural and vegetative. In some cases, some or all of these methods should be combined in order to retard erosion. These methods shall be identified in the erosion and sedimentation control plan.~~

~~(c) Keep stormwater runoff velocities low: Velocities of runoff should be in the range of two to 10 feet per second. The removal of the existing vegetative cover during the development and the resulting increase in impermeable surface area after development will increase both the volume and velocity of runoff. These increases must be taken into account when providing for erosion control.~~

~~(d) Protect disturbed areas from stormwater runoff: Conservation measures can be utilized to prevent water from entering and running over the disturbed area. Diversions and other control practices to intercept runoff from higher elevations, store or divert it away from vulnerable areas, and direct it towards stabilized outlets should be utilized. Selected measures should be identified on the plan and in text.~~

~~(e) Retain sediment within site area: The best way to control sediment is to prevent erosion; however, sediment can be retained by two methods:~~

~~[1] Filtering runoff as it flows and detaining sediment; or~~

~~[2] Detain runoff for a period of time so that the soil particles settle out.~~

~~F. Conveyance of stormwater.~~

~~(1) The entire drainage system of storm drainage lines shall be capable of conveying the twenty-five-year storm, including catch basins, manholes and culverts.~~

~~(2) Water velocities in pipes and gutters shall be between two and 10 feet per second. Water velocities in nonpaved areas (e.g. swales, ditches) shall not be more than published values for maximum permissible~~

velocities based on surface cover type and soil types.

- ~~(3) Water velocities in catch basins shall not exceed 1/2 foot per second. Catch basins shall be designed (inlet capacity and spacing) such that the flow in the gutter during a twenty five year design storm is not more than three feet in width as calculated utilizing methodologies described in "Drainage of Highway Pavements, Hydraulic Engineering Circular No. 12," as published by the U.S. Department of Transportation, Federal Highway Administration. In any event, water shall not be allowed to run for more than 300 feet on paved surfaces.~~
- ~~(4) Catch basins shall be Scituate Rays precast or approved equal. Catch basin grates shall be Lebaron Grate, Heavy Duty LF 246, or approved equal. Catch basin grates shall be in the gutter to facilitate snow removal.~~
- ~~(5) Manholes shall be Scituate Rays precast or approved equal. Manhole covers shall be Lebaron Grate, Heavy Duty LA 246, or approved equal.~~
- ~~(6) The standard depth of catch basins shall be a minimum four feet below the invert of the outlet. Manholes shall be constructed at each junction point of storm drain lines. Catch basins shall not serve as manholes.~~
- ~~(7) Storm drains shall be of at least 12 inches in diameter inside, with at least 24 inches of cover, and shall be of reinforced concrete Class IV pipe if having less than forty eight inch cover within a street right-of-way. Aluminum pipe of at least comparable strength may be substituted in appropriate locations if approved by the Fairhaven Board of Public Works (BPW). All drain pipes except subdrains shall be reinforced concrete or ductile iron. Waivers from these standards shall be allowed upon recommendation of the BPW.~~
- ~~(8) Easements and provisions for vehicular access shall be provided along the entire length of storm drain lines.~~
- ~~(9) Roof drains; cellar drains or any other private non preexisting drainage systems shall not be allowed to connect to the Town's existing drainage system, unless written approval from the BPW is obtained.~~
- ~~(10) On-site infiltration measures shall be used to approximate the parcel's pre-development recharge.~~
- ~~(11) The drainage system shall remove 80% of the average annual post-development load of total suspended solids (TSS).~~
- ~~(12) Stormwater shall pass through an oil separator manhole prior to release to an outfall.~~
- ~~(13) Drainage outfalls shall not discharge untreated stormwater directly to or cause erosion in wetlands or water bodies. A thirty foot buffer zone of existing vegetation shall be retained between all point source discharges of stormwater and surface waters and wetlands. However, the provision of this section shall not prohibit the selective clearing of trees and shrubs, the establishment of new vegetation better suited to the proposed conditions, or the discharge of stormwater across such buffer areas as any of these actions may be permitted by the Conservation Commission under the order of conditions.~~
- ~~(14) Erosion and sedimentation controls (as identified on the approved plans) shall be used during all construction phases.~~
- ~~(15) Post-development peak discharge rates shall not exceed pre-development rates.~~
- ~~(16) No increase in stormwater runoff over pre-development conditions shall be permitted for all storms up to the one hundred year event.~~

- ~~G.—Cross culverts. Culverts and stormwater outlet structures shall have reinforced concrete headwalls designed in accordance with good practice. At cross culverts (where a roadway bisects a stream or man-made watercourse), drainage easements shall be established up gradient of the culvert and delineated on the definitive plan based on the projected one hundred year headwater elevation.~~
- ~~H.—Inspection. After the stormwater management system has been constructed and before the performance guarantee for the development has been released, the applicant shall submit an as-built plan detailing the actual stormwater management system as installed. The consulting engineer for the Planning Board and/or the BPW shall inspect the system to confirm its as-built features. This engineer shall also evaluate the effectiveness of the system in an actual storm. If the system is found to be inadequate by virtue of physical evidence of operational failure, even though it was built as called for in the definitive plan, it shall be corrected before the performance guarantee is released. Examples of inadequacy shall be considered but not limited to: errors in the infiltrative capability, errors in the maximum groundwater elevation, failure to properly define or construct flow paths, or erosive discharges from basins. The cost of having the Planning Board's and/or the BPW's consulting engineer review and evaluate the as-built plans and the stormwater management system shall be borne by the developer.~~
- ~~I.—Maintenance. All stormwater management systems shall be maintained in accordance with these regulations and Appendix A. The applicant shall submit a maintenance plan for the stormwater management system. The proponent shall provide copies of the stormwater management plan to the Planning Board (10 copies). The applicant shall be required to arrange for maintenance and inspection, at no cost to homeowners, for a twenty-year period by one of the following methods:~~
- ~~(1)——Secured prepayment. The applicant shall submit to the Planning Board a determination of the anticipated cost of maintenance, inspection, and repair of the stormwater management system for a twenty-year period. That determination must be reviewed and approved by the Board of Public Works, or the consulting engineer for the Planning Board. The applicant shall establish a method of securing the anticipated cost in the form of a cash payment, or similar security made payable to the Town of Fairhaven for its cost in maintaining, inspecting, or repairing the stormwater management system. For systems not owned by the Town, the applicant shall establish a homeowners' association to be responsible for the maintenance and repair. The applicant shall also grant an easement to the Town allowing it to enter on the property as necessary to inspect, repair, or maintain the system. In the event the Town has to maintain or repair a private facility, said cost shall be assessed by the Town to the owners within the subdivision. The security documents and easement shall be in a form satisfactory to the Planning Board.~~