

1 **DRAFT Proposed Stormwater Management Regulations for the Town of Brewster,**
2 **Massachusetts**

3 *These proposed Stormwater Management Regulations were prepared by the Horsley Witten*
4 *Group, Inc. (HW) for the Town of Brewster as part of Phase III of the Town’s Integrated Water*
5 *Resource Management Plan (IWRMP). These regulations were created to implement the*
6 *proposed Stormwater Management Bylaw, also prepared by HW as part of Phase III of the*
7 *IWRMP. These Stormwater Management Regulations have been tailored to local conditions and*
8 *updated to include current policies, technologies and issues.*

9
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1 **1.0 PURPOSE**

2 The purpose of these Regulations is to minimize damage to public and private property and
3 infrastructure; safeguard the public health, safety, environment and general welfare; protect
4 aquatic resources and wildlife habitat; and conserve groundwater supplies by establishing
5 minimum stormwater management requirements and procedures for new development,
6 redevelopment, and other land disturbing activities as more specifically addressed in the
7 Stormwater Management Bylaw of the Town of Brewster.

8
9 **2.0 DEFINITIONS**

10 The following terms are defined for the purposes of this Bylaw:

11 ALTER: Any activity, which will measurably change the ability of a ground surface area to
12 absorb water, increase polluted runoff, and/or change the existing surface drainage patterns. The
13 term “alter” shall include “alteration,” “disturb” and “disturbance,” and “clearing.”

14 APPLICANT: A property owner or agent of a property owner who has filed an application for a
15 Stormwater Management Permit (SMP).

16 BEST MANAGEMENT PRACTICE (BMP): Structural, non-structural and managerial
17 techniques that are recognized to be the most effective and practical means to prevent and/or
18 reduce increases in stormwater volumes and flows, reduce point source and nonpoint source
19 pollution, and promote stormwater quality and protection of the environment. “Structural”
20 BMPs are devices that are engineered and constructed to provide temporary storage and
21 treatment of stormwater runoff. “Nonstructural” BMPs use natural measures to reduce pollution
22 levels, do not require extensive construction efforts, and/or promote pollutant reduction by
23 eliminating the pollutant source.

24 CERTIFICATE OF COMPLETION (COC): A document issued by the Planning Board after all
25 construction activities have been completed which states that all conditions of an issued SMP
26 have been met and that a project has been completed in compliance with the conditions set forth
27 in a SMP.

28 CONVEYANCE: Any structure or device, including pipes, drains, culverts, curb breaks, paved
29 swales or man-made swales of all types designed or utilized to move or direct stormwater runoff
30 or existing water flow.

31 DEVELOPER: A person who undertakes or proposes to undertake development activities.

32 DISTURBANCE: Any activity that causes a temporary or permanent change in the position or
33 location of soil, vegetation, impervious cover, or other land surface.

34 DIRECTLY CONNECTED IMPERVIOUS AREA: The portion of on-site impervious area with a
35 direct hydraulic connection to Brewster’s MS4 or a waterbody via continuous paved surfaces, gutters,
36 drain pipes, or other conventional conveyance and detention structures that do not reduce runoff volume.
37 Includes terms such as “effective” impervious cover.

38 DRAINAGE EASEMENT: A legal right granted by a land owner to a grantee allowing the use
39 of private land for stormwater management purposes.

40 EROSION CONTROL: The prevention or reduction of the movement of soil particles or rock
41 fragments due to stormwater runoff.

1 EROSION AND SEDIMENT CONTROL PLAN: A plan that shows the location and
2 construction detail(s) of the erosion and sediment reduction controls to be utilized for a
3 construction site.

4 FLOODING: A local and temporary inundation or a rise in the surface of a body of water, such
5 that it covers land not usually under water.

6 GRADING: Changing the level or shape of the ground surface.

7 GROUNDWATER: All water beneath any land surface including water in the soil and bedrock
8 beneath water bodies.

9 HOTSPOT: Land uses or activities with higher potential for pollutant loading, such as auto
10 salvage yards, auto fueling facilities, fleet storage yards, commercial parking lots with high
11 intensity use, road salt storage areas, commercial nurseries and landscaping, outdoor storage and
12 loading areas of hazardous substances, or marinas.

13 IMPERVIOUS COVER: Any material or structure on or above the ground that prevents water
14 from infiltrating through the underlying soil. Impervious cover includes, without limitation,
15 paved parking lots, roads, sidewalks, driveways, patios, roof tops, and swimming pools. Gravel
16 and dirt surfaced roads and parking areas that can become compacted by vehicles and heavy
17 equipment are considered impervious. Permeable pavers and porous pavements designed to
18 prevent compaction are not considered impervious. The term “impervious cover” shall include
19 “impervious area” and “impervious surface.”

20 *Concern has been raised regarding the inclusion of gravel or unpaved surfaces in the definition*
21 *of impervious and whether this will cause undue confusion since unpaved surfaces have been*
22 *promoted in Town. Standard engineering practice is to count unpaved roads and parking lots as*
23 *impervious for hydrologic calculations.*

24 INFILTRATION: The act of conveying surface water into the ground to permit groundwater
25 recharge and the reduction of surface runoff from a project site.

26 LOW IMPACT DEVELOPMENT (LID): An approach to land development design and
27 stormwater management that attempts to mimic the natural hydrology of the site by avoiding,
28 reducing and mitigating impacts with natural, non-structural and structural measures.

29 MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS (MSWMS): The latest
30 version as may be amended of the Stormwater Management Standards and accompanying
31 Stormwater Handbook issued by the Massachusetts Department of Environmental Protection
32 pursuant to authority under the Wetlands Protection Act, M.G.L. c. 131, § 40, and the
33 Massachusetts Clean Waters Act, M.G.L. c. 21, §§26-53. The Stormwater Management
34 Standards are incorporated in the Wetlands Protection Act Regulations, 310 CMR 10.05(6)(k)
35 and the Water Quality Certification Regulations, 314 CMR 9.06(6)(a).

36 MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or MUNICIPAL STORM
37 DRAIN SYSTEM: The system of conveyances designed or used for collecting or conveying
38 stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm
39 drain, pumping facility, retention or detention basin, natural or man-made or altered drainage
40 channel, reservoir, and other drainage structure that together comprise the storm drainage system
41 owned or operated by the Town of Brewster.

- 1 NEW DEVELOPMENT: Any construction or land disturbance on a lot, or portion of a lot, that is
2 currently in a vegetated state.
- 3 NONPOINT SOURCE POLLUTION: Pollution from many diffuse sources caused by rainfall,
4 snowmelt, or other method of pollutant transport moving over and through the ground. As the
5 runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing
6 them into water resource areas.
- 7 OPERATION AND MAINTENANCE PLAN (“O&M Plan”): A plan that defines the functional,
8 financial and organizational mechanisms for the ongoing operation and maintenance of a
9 stormwater management system to insure that it continues to function as designed.
- 10 OWNER: A person with a legal or equitable interest in a property.
- 11 PERSON: Any individual, group of individuals, association, partnership, corporation, company,
12 business organization, trust, estate, the Commonwealth or political subdivision thereof to the
13 extent subject to Town Bylaws, administrative agency, public or quasi-public corporation or
14 body, the Town of Brewster, and any other legal entity, its legal representatives, agents, or
15 assigns.
- 16 PRE-DEVELOPMENT: The conditions that exist prior to the proposed development. Where
17 phased development or plan approval occurs (e.g., preliminary grading, roads, and utilities, etc.),
18 the existing conditions at the time prior to the first plan submission shall establish pre-
19 development conditions.
- 20 POINT SOURCE: Any discernible, confined, and discrete conveyance, including but not limited
21 to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which
22 pollutants are or may be discharged.
- 23 POST-DEVELOPMENT or POST-CONSTRUCTION: The conditions that reasonably may be
24 expected or anticipated to exist after completion of the proposed development activity in
25 accordance with approved plans on a specific site or tract of land. Post-development refers to the
26 phase of a new development or redevelopment project after completion, and does not refer to the
27 construction phase of a project.
- 28 RECHARGE: The replenishment of groundwater reserves.
- 29 RECORD DRAWING: Drawings that completely record and document applicable aspects and
30 features of the conditions of a project following construction using Stormwater Management
31 Plans derived from a Stormwater Management Permit.
- 32 REDEVELOPMENT: Any construction, alteration, improvement, repaving, or resurfacing on a
33 site that contains impervious cover, provided the activity does not increase net impervious cover.
- 34 RESOURCE AREA: Any area protected under including without limitation: the Massachusetts
35 Wetlands Protection Act, Massachusetts Rivers Act, or Town of Brewster Wetlands Protection
36 Bylaw.
- 37 *Are there other non-wetland resources areas that should be referenced here?*
- 38 REVIEWING AGENT: Any Town employee, board or agent delegated in writing by the
39 Planning Board to administer, implement and enforce the Stormwater Management Bylaw.

1 RUNOFF: Rainfall or snowmelt water flowing over the ground surface or other surface (e.g.,
2 rooftop).

3 SEDIMENTATION: A process of depositing material that has been suspended and transported
4 in water.

5 SLOPE: The incline of a ground surface expressed as a ratio of horizontal distance to vertical
6 distance (e.g. a 4:1 slope). It can also be expressed as a percentage of the vertical rise divided by
7 the horizontal distance (e.g. a twenty-five (25) percent slope).

8 SITE: The entire parcel of land being developed, redeveloped, or otherwise altered or disturbed.

9 STORMWATER MANAGEMENT PRACTICE: Engineered structures and non-structural (e.g.,
10 site design, vegetation) measures used to control discharge volumes, manage peak flow rates,
11 filter, infiltrate, reuse, or prevent pollutants from coming into contact with stormwater.

12 STORMWATER MANAGEMENT PERMIT (SMP): A permit issued by the Planning Board,
13 after review of an application, plans, calculations, and other supporting documents, which is
14 designed to protect the environment of the Town from the deleterious effects of uncontrolled and
15 untreated stormwater runoff.

16 STOP WORK ORDER: An order issued which requires that all construction activity or land
17 disturbance on a site be stopped.

18 TSS: Total Suspended Solids.

19 WATER QUALITY VOLUME (WQv): The storage needed to capture a specified average
20 annual stormwater runoff volume for treatment. Numerically (WQv) will vary as a function of
21 drainage area or impervious area.

22 Terms not defined shall be construed according to their customary and usual meaning, unless the
23 context indicates a special or technical meaning. Words used in the present tense include the
24 future; words in the singular number include the plural and words in the plural number include
25 the singular; and the word "shall" is mandatory and not directory. Additional definitions may be
26 adopted by separate regulation.

27

28 **3.0 AUTHORITY**

- 29 A. The Regulations contained herein have been adopted by the Planning Board in
30 accordance with the Town of Brewster Stormwater Management Bylaw.
- 31 B. These Stormwater Regulations may be periodically amended by the Planning Board in
32 accordance with the procedures outlined in Section 999-4 of the Town of Brewster
33 Stormwater Management Bylaw.

34

35 **4.0 ADMINISTRATION**

36 The Planning Board shall administer these Regulations and may designate any other authorized
37 Town employee, board, commission, committee or agent for the purposes of reviewing
38 stormwater submittals and issuing stormwater permits. The Planning Board designee shall be
39 defined as the "Reviewing Agent." The Reviewing Agent shall be considered the Planning
40 Board for the purposes of compliance with sections 999-5 through 999-10 of the Bylaw.

1 *This draft includes a designated “reviewing agent,” which may not be necessary.*

2
3 If a portion of a project or activity meets the Applicability section of the Stormwater
4 Management Bylaw and it is within the specific jurisdiction of the Conservation Commission,
5 then the entire project and all related projects required as a result of the activity proposed by the
6 applicant shall be designated to the jurisdiction of the Conservation Commission without further
7 action needed by the Planning Board. The specific application submission requirements, public
8 notices, and fee requirements of the Conservation Commission shall govern. The Planning
9 Board reserves the right to retain review and approval authority for any application.

10 *This section will need to be revised once it is determined how the Planning Board and*
11 *Conservation Commission will share/not share administration of the proposed stormwater*
12 *regulations under this Bylaw within wetland jurisdiction. How do we keep track of permits if*
13 *being issued from more than one entity? How does this reflect the proposed administrative*
14 *process associated with Single and Two-family residential projects that will be done through*
15 *Building Permits?*

16
17 When a Reviewing Agent is designated by the Planning Board, as outlined above, the applicant
18 shall submit all SMP application submittals in compliance with these Regulations to the
19 Reviewing Agent.

20 The Reviewing Agent will review the submittal for compliance with the standards and
21 requirements of these Regulations as part of its public hearing process on the proposed project.
22 If the proposed project complies with these Regulations, the Reviewing Agent shall grant a SMP,
23 in addition to any other approval or permit it may grant.

24 The Reviewing Agent shall notify the Planning Board of all Stormwater Management Permits
25 (“SMPs”) it approves. Both the Planning Board and the Reviewing Agent shall have authority to
26 enforce the Stormwater Management Bylaw and these Regulations.

27 28 **5.0 APPLICABILITY**

29 These Regulations apply to all activities subject to Section 999-5, Applicability, of the
30 Stormwater Management Bylaw. Projects and/or activities that are not currently under the
31 regulatory jurisdiction of any of the Town of Brewster boards, commissions or departments, but
32 that are still subject the Town of Brewster Stormwater Management Bylaw, must obtain a SMP
33 from the Planning Board or its designated Reviewing Agent in accordance with the permit
34 procedures and requirements defined in Sections 6.0 and 7.0 of these Regulations.

35 No work may commence without written approval of the Planning Board or its designee,
36 confirming that the project or activity is in compliance with the Performance Standards and
37 Design Criteria in Section 8.0 of these Regulations.

- 1 c. Payment of Consultant Services Fees (if applicable) pursuant to Section 6.0E of
2 these Stormwater Management Regulations.
- 3 2. For the Final Plan:
- 4 a. A completed current SMP Application Form (provided in Appendix B and also
5 available from the Planning Board office or the Town of Brewster website) with
6 original signatures of all owners;
- 7 b. Stormwater Management Final Plan and supporting information in accordance
8 with the current “Checklist for Final Stormwater Management Plan” as provided
9 in Appendix C;
- 10 c. Erosion and Sediment Control Plan in accordance with the current “Checklist for
11 Erosion and Sediment Control Plan” as provided in Appendix D;
- 12 d. Operation and Maintenance Plan in accordance the current “Requirements for
13 Operations and Maintenance Plan” as provided in Appendix E; and
- 14 e. Payment of the Application and Consultant Services Fees pursuant to Section
15 6.0E of these Stormwater Management Regulations.

16 D. Entry

17 Filing an application for a SMP grants the Planning Board, its Reviewing Agent, or
18 designee as specified per Section 4.0 of these Regulations, permission to enter the site
19 throughout the term of the permit to verify the information in the application and to
20 inspect for compliance with the resulting permit.

21 E. Fees

22 The Planning Board or designated Reviewing Agent shall obtain with each submission an
23 Application Fee established by the Planning Board to cover expenses connected with the
24 review of the SMP and a technical review fee sufficient to cover professional review
25 services for the project, if needed. Applicants must pay review fees before the review
26 process may begin.

27 1. Rules

- 28 a. Application fees are payable at the time of application and are non-refundable.
- 29 b. The Planning Board shall calculate application fees in accordance with the fee
30 schedule below.
- 31 c. These application fees are in addition to any other local or state fees that may be
32 charged under any other law, or local bylaw or regulation.
- 33 d. The fee schedule may be revised from time to time.

34 2. Application Fees

- 35 a. Concept Plan: There is no application fee for the Concept Plan.
- 36 b. Final Plan: A non-refundable application fee of \$400.00 shall be due and payable
37 to the Town of Brewster at the time an application is filed.

- 1 c. Revised Plan: A non-refundable fee of \$300.00 shall be due and payable to the
2 Town of Brewster at the time any plan revisions beyond second submission (i.e.,
3 one (1) plan revision shall be included in the initial application fee).

4 *The additional fee for the SMP review was not unanimously agreed upon by CWPC. Note that*
5 *as proposed, the Concept Plan would be reviewed as part of the established Staff Review process*
6 *when Staff Review is also required. Staff Review is currently free, and is advertised as such. An*
7 *alternative fee structure discussed included basing fee on % of land value up to a maximum*
8 *amount.*

9
10 3. Consultant Services Fees

- 11 a. In addition to the above fees, the Planning Board or its designated Reviewing
12 Agent is authorized to require an applicant to pay a fee for the reasonable costs
13 and expenses for specific expert engineering and other consultant services deemed
14 necessary by the Planning Board or its designated Reviewing Agent to assist the
15 Planning Board with the final action on the application and for inspections of
16 stormwater management systems during construction and post-construction.
17 Payment may be required at any point in the deliberations prior to a final decision.

18 *Note that as proposed a consultant fee is not specified. Some members of CWPC were not*
19 *enthusiastic about a consultant fee; however this language offers the Town the flexibility to*
20 *request this service.*

- 21
22 b. Such fee shall be held in escrow, to be used to engage independent consultants
23 should the Reviewing Agent determine this to be necessary, based on the
24 characteristics or complexity of the issues raised by the application. Such fee
25 shall be governed and administered in accordance with M.G.L.,c.44, § 53G or §
26 53E1/2.

- 27 c. The Planning Board may request additional Consultant Service Fees if the
28 necessary review or inspection requires a larger expenditure than originally
29 anticipated, or if new information requires additional consultant services. Failure
30 by the applicant to pay the Consultant Services Fee specified by the Planning
31 Board within ten (10) business days of the request for payment shall be cause for
32 the Planning Board to determine that the application is administratively
33 incomplete.

- 34 d. The services for which a fee may be utilized include, but are not limited to,
35 resource area, hydrogeologic and drainage analysis; analysis of impacts on
36 regulated resource areas; general compliance with the stormwater management
37 requirements of these stormwater regulations; presentation at hearings; and
38 construction and post-construction inspection services.

- 39 e. The consultant shall be chosen by, and report only to, the Planning Board or its
40 designated Reviewing Agent. The Planning Board shall give written notice to the
41 applicant of the selection of an outside consultant, which notice shall state the
42 identity of the consultant, the amount of the fee to be charged to the applicant, and

1 a request for payment of said fee in its entirety. Such notice shall be deemed to
2 have been given on the date it is mailed or delivered. No such costs or expenses
3 shall be incurred by the applicant if the application or request is withdrawn within
4 five (5) days of the date notice is given. The Consultant Services Fee must be
5 received in its entirety prior to the initiation of consulting services.

- 6 f. Subject to applicable law, the Planning Board shall return any unused portion of
7 any fees collected to the applicant within forty-five (45) calendar days of a
8 written request by the applicant, unless the Planning Board decides in a public
9 meeting that other action is necessary.

10 *If the Town anticipates a scenario where it would take over inspection, maintenance, ownership*
11 *of a private stormwater facility, do you want a placeholder provision to allow for the collection*
12 *of annual maintenance fee from owner?*

13
14 4. Revision of Fee Schedules and Regulations Governing Fees

- 15 a. The Planning Board may review and revise its Regulations and fee schedules
16 periodically as it sees fit.
17 b. Amendments shall be preceded by an advertised public hearing.
18 c. A copy of any amendment will be filed with the Town Clerk within ten (10)
19 calendar days after final action is taken.

20 F. Public Hearings

- 21 1. The Planning Board shall hold a public hearing for projects or activities that require
22 issuance of a SMP, in accordance with the Board's own regulations and procedures.
23 For projects or activities that require issuance of a SMP in addition to other approvals
24 or permits requiring the Planning Board, shall hold one public hearing on all
25 jurisdictional project aspects in accordance with its own regulations and procedures.
26 2. For projects requiring a SMP that have been designated to the jurisdiction of the
27 Conservation Commission in accordance with Section 4.0 of these Regulations, the
28 Conservation Commission shall hold one public hearing on all jurisdictional project
29 aspects in accordance with its own regulations and procedures.

30 G. Actions

- 31 1. The Planning Board's or its designated Reviewing Agent's action on a Stormwater
32 Management Concept Plan application, rendered in writing, shall consist of one of the
33 following:
34 a. Approval based upon determination that the proposed concept plan the project
35 meets the Standards in Section 7.0 of these Regulations or adequately protects
36 water resources, as set forth in the Bylaw and these Regulations. Concept Plan
37 Approval shall not obligate the Planning Board to approve the Final Plan
38 application;
39 b. Approval subject to any modifications or restrictions required by the Planning
40 Board or its designated Reviewing Agent to ensure that the project meets the

1 Standards in Section 7.0 of these Regulations or adequately protects water
2 resources, as set forth in the Bylaw and these Regulations. Concept Plan
3 Approval shall not obligate the Planning Board to approve the Final Plan
4 application; or

5 c. Disapproval based upon a determination that the proposed plan, as submitted,
6 does not meet the Standards in Section 7.0 of these Regulations or adequately
7 protect water resources, as set forth in the Bylaw and these Regulations.

8 2. The Planning Board's or its designated Reviewing Agent's action on a SMP and Final
9 Stormwater Management Plan, rendered in writing, shall consist of one of the
10 following:

11 a. Approval based upon determination that the proposed plan meets the Standards in
12 Section 7.0 of these Regulations and will adequately protect water resources, as
13 set forth in the Bylaw and these Regulations;

14 b. Approval subject to any conditions, modifications or restrictions required by the
15 Planning Board or its designated Reviewing Agent to ensure that the project
16 meets the Standards in Section 7.0 of these Regulations and adequately protects
17 water resources, set forth in the Bylaw and these Regulations; or

18 c. Disapproval based upon a determination that the proposed plan, as submitted,
19 does not meet the Standards in Section 7.0 of these Regulations or adequately
20 protect water resources, as set forth in the Bylaw and these Regulations.

21 H. Deadline for Action

22 Failure of the Planning Board or its designated Reviewing Agent to take final action upon
23 an application within ninety (90) calendar days of closing the public hearing shall be
24 deemed to be approval of said application, unless extension of said deadline date is
25 mutually agreed upon in writing by the Reviewing Agent and the applicant. Upon
26 certification by the Town Clerk that the allowed time has passed without Planning Board
27 action, the Planning Board or its designated Reviewing Agent must issue a SMP.

28 Notwithstanding, if the Conservation Commission is the designated Reviewing Agent,
29 the timeframe for issuance of a SMP by the Conservation Commission shall be in
30 accordance with its own regulations and procedures.

31 I. Plan Modifications

32 The permittee must notify the Planning Board in writing of any drainage change or
33 alteration in the system authorized in a SMP before any change or alteration is made. If
34 the Planning Board determines that the change or alteration is significant, based on the
35 Stormwater Management Standards in Section 7.0 of these Regulations and accepted
36 construction practices, the Planning Board may require that an amended application be
37 filed. No work associated with the proposed modification shall be performed until the
38 Planning Board approves, by majority vote, the modifications at a public meeting and
39 notifies the applicant in writing as such.

40

1 J. Appeals of Actions of the Planning Board

2 A decision of the Planning Board or its designated Reviewing Agent on a SMP shall be
3 final. Further relief of a decision by the Planning Board or its designated Reviewing
4 Agent made under these Regulations shall be reviewable in the Superior Court in an
5 action filed within **twenty (20) calendar days** thereof, in accordance with M.G.L. Ch 249.
6 § 4. An appeal of an action by a board, commission or department that has current
7 regulatory authority for a project and/or activity shall be conducted under the applicable
8 appeal provisions of said board, commission and/or department of the Town of Brewster.
9 Such an appeal shall result in revocation of the written approval as described under
10 Section **6.0C** of these Regulations, until such time as the appeal process of the applicable
11 board, commission and/or department has been resolved. No project activities shall
12 commence until subsequent written approval has been granted.

13 K. Project Completion

14 The Planning Board has the authority to require, at the completion of the project, the
15 submission of Record Drawing(s) of all structural controls and treatment best
16 management practices (BMPs) required for the site as required in Section **8.0** as well as
17 other project completion documentation requirements of Section **12.0** of these
18 Regulations. The Planning Board will issue a letter certifying completion upon review
19 and approval of the final inspection reports and/or upon otherwise determining that all
20 work of the permit has been satisfactorily completed in conformance with the Bylaw.

21
22 **7.0 STORM WATER MANAGEMNET PERMIT (SMP) REQUIREMENTS**

23 The SMP Application shall include the following elements:

24 A. Post-Construction Stormwater Management Plan

- 25 1. Stormwater Management Plans shall contain sufficient information for the Planning
26 Board to evaluate the environmental impact, effectiveness, and acceptability of the
27 measures proposed by the applicant for reducing adverse impacts from stormwater
28 runoff. This plan shall be in accordance with the criteria established in these
29 Stormwater Management Regulations and must be submitted with the stamps and
30 signatures of a professional engineer and a professional land surveyor, both of whom
31 must be licensed in the Commonwealth of Massachusetts.
- 32 2. An optional Stormwater Management Concept Plan, if elected by the Applicant, shall
33 include each item, as applicable, specified in the current “Checklist for Concept
34 Stormwater Management Plan” as provided in Appendix **C** of these Regulations.
- 35 3. The Final Stormwater Management Plan shall include each item, as applicable,
36 specified in the current “Checklist for Final Stormwater Management Plan” as
37 provided in Appendix **D** of these Regulations. All items must be submitted at the
38 time of filing to be considered a complete application.

39 B. Erosion and Sediment Control Plan

- 40 1. An Erosion and Sediment Control Plan is required at the time of application for all
41 SMP projects. The plan shall be designed to ensure compliance with the Stormwater

1 Management Bylaw, these Regulations, and if applicable, the NPDES General Permit
2 for Storm Water Discharges from Construction Activities (General Permit). In
3 addition, the plan shall ensure that the Massachusetts Surface Water Quality
4 Standards (314 CMR 4.00) are met for all seasons.

- 5 2. If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES
6 General Permit, then the permittee is required to submit a complete copy of the
7 SWPPP (including the signed Notice of Intent and approval letter) before
8 development.
- 9 3. The Erosion and Sediment Control Plan shall contain sufficient information to
10 describe the nature and purpose of the proposed development, pertinent conditions of
11 the site and the adjacent areas, and proposed erosion and sedimentation controls.
12 This plan shall be in accordance with the criteria established in these Stormwater
13 Management Regulations.
- 14 4. For larger developments where construction phasing occurs, the Erosion and
15 Sediment Control Plan shall be updated as needed based on changing conditions at
16 the site.
- 17 5. Required contents of the Erosion and Sediment Control Plan are provided in
18 Appendix F of these Regulations.
- 19 6. The Erosion and Sediment Control Plan shall be kept on-site during construction, and
20 accessible to the Planning Board or its designated Reviewing Agent if requested.

21 C. Operation and Maintenance Plan

- 22 1. An Operation and Maintenance Plan (O&M Plan) is required at the time of
23 application for all SMP projects. The O&M Plan shall be designed to ensure
24 compliance with the SMP, the Stormwater Management Bylaw and these Regulations
25 and to ensure that the Massachusetts Surface Water Quality Standards, 314, CMR
26 4.00 are met in all seasons and throughout the life of the system.
- 27 2. The O&M Plan shall include each item, as applicable, specified in the current
28 “Checklist for Operations and Maintenance Plan” as provided in Appendix E of these
29 Regulations and shall remain on file with the Planning Board or its designated
30 Reviewing Agent and shall be an ongoing requirement. To ensure that all BMPs
31 continue to function as designed, a final O&M Plan shall be submitted prior to
32 issuance of a Certificate of Completion and reflect any modifications made during the
33 permitting process and the site specific conditions.
- 34 3. The O&M Plan shall apply to the entire project site, not just the area of land being
35 altered.

36 D. Illicit Connection and Discharge Elimination Statement

37 The Final SMP Application must include a statement or other documentation
38 demonstrating compliance with the Town of Brewster Chapter 115, Illicit Connection and
39 Discharges Bylaw.

1 *This would not necessarily be required for the Concept Plan, but should be included in the final*
2 *SMP. Depending on what the Town needs to see, this could be a simple statement or check box*
3 *added to the Application form showing compliance.*

5 **8.0 PERFORMANCE STANDARDS AND DESIGN CRITERIA**

6 Applications for SMPs shall meet or exceed the performance standards and design criteria
7 contained within this Section. These standards and criteria shall be used by the Planning Board
8 or its designated Reviewing Agent in review of a SMP application submittal under the Town of
9 Brewster Stormwater Management Bylaw.

10 A. Erosion and Sediment Control Performance Standards and Design Criteria

- 11 1. At a minimum, the Erosion and Sediment Control Plan shall comply with the
12 performance standards of the most recent version of the Massachusetts Erosion and
13 Sedimentation Control Guidelines for Urban and Suburban Areas: A Guide for
14 Planners, Designers, and Municipal Officials (“Guidelines”) published by the
15 Massachusetts Executive Office of Energy and Environmental Affairs (EEA), as well
16 as the general construction performance standards and design criteria in Section
17 **8.0A.2**. Where there is a conflict between the performance standards and design
18 criteria contained within these Regulations and the Guidelines, the more stringent
19 performance standard and design criteria shall apply.
- 20 2. General performance standards and criteria – The following shall be applicable to all
21 Erosion and Sediment Control Plans, unless otherwise provided for in these
22 stormwater regulations.
 - 23 a. Existing site conditions, including soils, topography, hydrology, and vegetative
24 cover (including but not limited to existing trees and groundcover) shall be
25 preserved to the maximum extent practicable. Clearing and grading increase the
26 velocity and volume of runoff, and associated sedimentation, and therefore, shall
27 only be performed within areas necessary to build the project, including but not
28 limited to: structures, utilities, roads, recreational amenities, post-construction
29 stormwater management facilities, and related infrastructure.
 - 30 b. The area of alteration shall be minimized, and sensitive areas, including wetland
31 areas and buffers, shall be protected. Prior to any land disturbance activities
32 commencing on the site, the developer shall physically mark limits of no land
33 alteration on the site with tape, signs, erosion and sediment control measures, or
34 fencing, so that areas to be protected are visible to workers. The physical markers
35 shall be inspected daily.
 - 36 c. Perimeter control measures (e.g., silt fences, filter socks, stabilized construction
37 entrances) shall be installed prior to extensive clearing and grading and remaining
38 erosion control measures will be installed to stabilize and protect the site during
39 construction. Where practicable, a phased clearing approach should be used to
40 reduce the extent of erosion and sediment control measures required at one time.
 - 41 d. The angle of graded slopes and fills shall be no greater than 2:1. Slopes greater
42 than 3:1 shall be protected from erosion by limiting clearing of these areas or,

1 where grading is unavoidable, by preventing upland runoff from flowing down a
2 steep slope and through immediate stabilization to prevent gullyng.

- 3 e. All construction shall be properly sequenced to reduce project impacts, and avoid
4 compacting soil during construction, particularly in locations identified for
5 stormwater infiltration practices.
- 6 f. Exposed soils should be temporarily stabilized within seven (7) days of clearing
7 or inactivity where non-vegetative stabilization techniques are preferred and
8 within fourteen (14) days of clearing or inactivity where seeding is used for
9 establishing vegetative cover. Slopes left exposed must immediately be stabilized
10 in conjunction with other measures sufficient to prevent erosion.
- 11 g. Erosion and sediment control measures shall be installed and maintained in
12 accordance with the manufacturer's specifications and good engineering practices
13 to ensure they perform as intended.
- 14 h. Erosion and sediment control measures shall be visually inspected on a daily basis
15 to ensure that they are functioning properly. Formal, documented inspections
16 must be conducted in accordance with Section 10.0B of these Regulations.
- 17 i. Sediment trapping and settling devices shall be designed to retain one inch of
18 stormwater runoff from the contributing drainage area. Basins and traps shall not
19 be converted to permanent stormwater management practices designed for
20 infiltration unless otherwise approved by the Planning Board if the infiltration
21 capacity of the underlying soils will be adequately protected from sedimentation
22 and compaction during construction activities, accumulated surface and
23 subsurface sediments are removed, and that permanent practices are over-
24 excavated and backfilled with new engineered media to ensure proper infiltration
25 where necessary.
- 26 j. An adequate supply of additional erosion and sediment control materials shall be
27 kept on site to repair or replace failing erosion and sediment control measures,
28 including replacement erosion and sediment control blanket and at least 100 feet
29 of silt fence, silt sock or equivalent.
- 30 k. On and off-site material storage areas, including construction and waste materials,
31 shall be properly protected and managed.
- 32 l. Soil stockpiles must be located outside of jurisdictional wetland areas, including
33 buffer areas, in areas where they will not disturb other sensitive resources, and at
34 a sufficient distance from steep slopes to protect sensitive resources from
35 sedimentation to the greatest extent practicable. Soil stockpiles must be stabilized
36 or covered at the end of each workday and be surrounded by appropriate sediment
37 barriers. Stockpile side slopes shall not be greater than 2:1.
- 38 m. Total truck trips on and off site should be minimized to the greatest extent
39 practicable. Any sediment tracked off-site during construction shall be removed
40 on a daily basis.

- 1 n. Projects must comply with applicable Federal, State, and local laws and
2 regulations including waste disposal, sanitary sewer or septic system regulations,
3 and air quality requirements, including dust and debris control.
- 4 o. Any area of bare earth exposed through building or site development or
5 demolition must be permanently stabilized through replanting, paving or other
6 means of eliminating wind or water erosion prior to building occupancy or project
7 closeout. Permanent seeding shall be undertaken in the spring from March
8 through May, and in late summer and early fall from August to October 15.
9 During the peak summer months and in the fall after October 15, when seeding is
10 found to be impractical, appropriate temporary mulch shall be applied.
11 Permanent seeding may be undertaken during the summer if installation plans
12 provide for adequate mulching and watering.
- 13 p. Temporary erosion and sediment control measures shall not be removed until
14 exposed soils in all contributory drainage areas are permanently stabilized.
- 15 q. All temporary erosion and sediment control measures shall be removed after final
16 site stabilization and once permanent stormwater management practices are in
17 place. Disturbed soil areas resulting from the removal of temporary measures
18 shall be stabilized immediately.

19 B. Post-Development Stormwater Management Performance Standards and Design Criteria

- 20 1. At a minimum, the Stormwater Management Plan shall comply with the
21 Massachusetts Stormwater Management Standards (MSWMS) provided in the most
22 recent version of the MassDEP Stormwater Management Handbook, as well as the
23 standards provided in Section 8.0A.2 of these Regulations. Where there is a conflict
24 between these Regulations and the MSWMS, the more stringent shall apply.
- 25 2. The following General Performance Standards and Criteria shall be applicable to all
26 Stormwater Management Plans, unless otherwise provided for in these Regulations:
 - 27 a. No Unmanaged Discharges – All stormwater runoff generated from land
28 development and land use conversion activities shall not cause erosion to or
29 discharge unmanaged stormwater runoff directly to, a wetland, local waterbody,
30 municipal drainage system, or abutting property. The term, “management” used
31 here refers to the remaining performance standards.
 - 32 b. Site Design Criteria – The use of Low Impact Development (LID) measures is
33 required to the maximum extent practicable for new development in order to
34 mimic natural hydrology by minimizing clearing and grading, promoting
35 recharge, reducing runoff volumes, and minimizing reliance on structural
36 stormwater management measures. The Site Design Criteria require that the site
37 planning process shall be documented and shall include the following steps.
 - 38 i. Identify and map the critical resources at the site as listed in the Stormwater
39 Management Plan Checklist (Appendix C and D).
 - 40 ii. Delineate potential building envelopes avoiding critical resource areas and
41 regulated buffer zones;

- 1 iii. Document efforts to work with the natural topography on-site to minimize
2 clearing and grading. Include cut and fill calculations and a discussion of re-
3 using any topsoil on-site as applicable.
- 4 iv. Document area and percent of natural open space provided on-site, which
5 does not include areas that must be protected in accordance with federal, state
6 or local laws or regulations (e.g., Massachusetts Wetlands Protection Act);
- 7 v. Develop methods to minimize impervious surfaces, and document percent of
8 impervious surfaces proposed on-site;
- 9 vi. Develop methods to disconnect impervious surfaces and document percent of
10 directly connected impervious area proposed on-site; and

11 *A specific requirement of the draft MS4 permit is for each jurisdiction to track and report the*
12 *change in directly connected impervious area (DCIA) on an annual basis. This provision*
13 *provides a mechanism for DCIA accounting to assist the Town.*

- 14
- 15 vii. Document how each of the applicable Site Design Features listed in the
16 Stormwater Management Plan Checklist (Appendix C and D) were considered
17 and incorporated into the site design, as practicable.
- 18 c. Recharge – Annual groundwater recharge rates shall be maintained by promoting
19 infiltration through the use of structural and non-structural methods. At a
20 minimum, annual recharge from the post-development site shall approximate the
21 annual recharge from pre-development site conditions.
 - 22 i. Sites subject to the Town of Brewster Water Quality Protection Bylaw shall
23 be required to recharge all runoff from impervious surfaces and/or direct
24 runoff to a pervious area, may be subject to pretreatment requirements, and
25 may be required to use pre-approved BMPs.

26 *It should be determined if the Town wants to move the WQP standards here, duplicate, or*
27 *reference the WQP bylaw here. Does the Town want to keep the specific BMP list in the WQP*
28 *bylaw?*

- 29
- 30 ii. The required recharge volume shall be determined using the methods
31 prescribed in the latest version of the MSWMS. The recharge requirements
32 shall apply to all activities within the jurisdiction of these stormwater
33 regulations except as noted, and unless specifically waived by the Planning
34 Board. The recharge criterion is not required for any portion of a site
35 designated as a stormwater pollution hotspot. In addition, the Planning Board
36 may relax or eliminate the recharge requirement at its discretion, if the site is
37 situated on unsuitable soils or is in an area with documentation of prior
38 contaminated soils.
- 39 d. Water Quality Treatment -- The prescribed water quality volume required in the
40 sizing of a stormwater practice shall be equivalent to 1.0 inch of rainfall times the
41 total impervious cover within the drainage area.

- 1 i. Structural best management practices (BMPs) must be designed to remove the
2 following average annual post-development pollutant loading in accordance
3 with the methods and procedures outlined in the latest edition of the
4 MSWMS: Total suspended solids (TSS): 80%; Total phosphorus (TP): 30%;
5 Total nitrogen (TN): 30%; and Bacteria: 60%

6 *We recommend keeping the 80% TSS for now until the MSWMS is updated. A 85% TSS*
7 *reduction would be difficult to meet given the removal efficiencies assigned to various BMPs in*
8 *the current MSWMS. It may not be legal to assign a higher removal efficiency to BMPs than*
9 *what is currently listed. Better data is available and will hopefully be included in an updated*
10 *state manual.*

- 11
12 ii. Development and redevelopment within a Zone I, Zone II and/or the DCPC
13 area shall also meet a 5 parts per million (ppm) total nitrogen loading standard
14 per the requirements of the Town of Brewster Water Quality Protection
15 Bylaw.
- 16 iii. The allowable BMPs and associated TSS, TP, TN and bacteria removal rates
17 are provided in Appendix G. It is presumed that a BMP provides the removal
18 rate listed in Appendix G and complies with this performance goal if it is:
- 19 (i) Sized to capture the prescribed water quality volume;
20 (ii) Designed according to the specific performance criteria outlined in the
21 MASWMS;
22 (iii) Constructed properly; and
23 (iv) Maintained regularly.
- 24 iv. Conventional detention basins shall not be used to meet water quality
25 requirements.

26 *This restriction is to require additional use of LID practices and improve water quality treatment*
27 *through higher performing or vegetative designs.*

- 28
29 v. All leaching catch basins shall incorporate pre-treatment in order to reduce the
30 maintenance burden and improve nitrogen removal.
- 31 vi. For other structural stormwater controls not included in the MSWMS, or for
32 which pollutant removal rates have not been provided, the effectiveness and
33 pollutant removal of the structural control must be documented through prior
34 studies, literature reviews, or other means and receive approval from the
35 Planning Board before being included in the design of a stormwater
36 management system.
- 37 e. Channel Protection – Protection of channels from bank and bed erosion and
38 degradation shall be supplied by providing 24-hour extended detention of the
39 post-development 1-year, 24-hour return frequency storm event runoff volume.

- 1 i. Given practical limitations on minimum orifice or weir sizes, as well as flow
2 and receiving water considerations, the requirement shall be waived for:
3 (i) Small sites (i.e., sites requiring less than 1–inch orifice);
4 (ii) Sites with post-development discharges less than 2 cfs;
5 (iii) Direct discharges to 4th order or greater rivers, lakes, reservoirs, and
6 waters subject to tidal action where the development area is less than five
7 percent (5%) of the watershed area upstream of the development site; and
8 (iv) Indirect discharges to an existing drainage network with adequate capacity
9 to accommodate the flows from the site where the ultimate discharge is to
10 a 4th order or greater stream, lake, or reservoir.

11 *Are there any large streams? These last two waivers referring to 4th order streams may not be*
12 *applicable in Brewster.*

- 13
14 f. Flooding Protection – Downstream flood, property, and public safety protection
15 shall be provided by attenuating the post-development peak discharge rates for the
16 10-year and 100-year 24-hour return frequency storm events to the pre-
17 development rates.
- 18 g. Conveyance Criteria – The proposed stormwater conveyance system shall, at
19 minimum, accommodate the runoff from a 25–year storm event. The discharge
20 from any stormwater facility must be conveyed through properly constructed
21 water courses to provide for non–erosive flows during all storm events. Rip–rap
22 (or other approved energy dissipaters) shall be placed at all flared–end sections,
23 pipe outlets, overflow weirs, drainage swales, and any other location at the
24 discretion of the Planning Board. Rip–rap shall be sized such that the stones will
25 be able to resist movement due to discharge velocity.
- 26 i. If a closed drainage system is proposed, a catchbasin–to–manhole system is
27 required rather than a catchbasin–to–catchbasin system. Manholes shall be
28 provided at changes in direction and wherever there is a change in pipe size.
29 Catchbasins shall be located on both sides of the roadway on continuous
30 grades at intervals of not more than three hundred (300) feet, at low points,
31 and at the corners of intersecting streets. Intervals of less than three hundred
32 (300) feet may be required on steep grades. The Planning Board may ask for
33 an inlet capacity analysis on a case–by–case basis.

34 *In some cases, like on a steep slope, you may want to ask the applicant to show that the inlet will*
35 *actually capture concentrated flow. This was a special addition the City of Attleboro regulations*
36 *per DPW request and may or may not be needed in Brewster.*

- 37
38 ii. All drain lines to be connected to the municipal drain line shall be constructed
39 by way of a drain manhole being installed between the existing drain line and
40 the proposed drain line(s).

41

- 1 3. Site-specific performance standards and design criteria apply to the following:
- 2 a. Single and two-family residential projects are required to meet the Section 8.B2
- 3 performance standards pursuant to the Stormwater Guidelines for Small Sites
- 4 (Appendix H).
- 5 b. Small multi-family and non-residential development projects disturbing less than
- 6 2,500 square feet are required to meet the Section 8.B2 performance standards
- 7 pursuant to the Stormwater Guidelines for Small Sites (Appendix H).

8 *Pending resolution of applicability and level of guidance discussions for SFR, these criteria will*

9 *need to be modified to be consistent with the Bylaw.*

- 10
- 11 c. Redevelopment projects shall, at a minimum, comply with one of the following:
- 12 i. Reduce the total impervious cover by forty (40) percent from existing
- 13 conditions;
- 14 ii. Where site conditions prevent a reduction in impervious cover, implement
- 15 stormwater controls that provide water quality treatment and recharge for at
- 16 least forty (40) percent of the site's impervious cover;
- 17 iii. Implement a combination of impervious cover reduction and area treated with
- 18 stormwater controls that shall equal or exceed forty (40) percent of the site's
- 19 impervious cover; or
- 20 iv. Where on-site options for reducing impervious cover by at least forty (40)
- 21 percent or implementing stormwater controls that provide water quality
- 22 treatment and recharge equal to or exceeding forty (40) percent of the site's
- 23 impervious cover are infeasible, off-site improvements that achieve these
- 24 goals may be implemented to comply with the requirements of (i), (ii) or (iii)
- 25 above.
- 26 d. Critical Areas – Stormwater discharges to critical areas with sensitive resources,
- 27 including, but not limited to, those with Total Maximum Daily Loads (TMDLs) or
- 28 those within the jurisdiction of the Town of Brewster Water Quality Protection
- 29 Bylaw, may be subject to additional water quality criteria, such as enhanced
- 30 nutrient removal or recharge, or may need to utilize or restrict certain stormwater
- 31 management practices at the discretion of the Planning Board. The Planning
- 32 Board may designate critical areas on a case-by-case basis based on information
- 33 brought during the hearing and will do this within fourteen (14) days of opening a
- 34 public hearing.
- 35 e. Stormwater Pollution Hotspots – Stormwater discharges from land uses or
- 36 activities with higher potential pollutant loadings, known as “hotspots,” as defined
- 37 in the most recent version of the MSWMS and herein these stormwater
- 38 regulations, require the use of specific stormwater management BMPs as
- 39 specified in the most recent version of the MSWMS. The use of infiltration
- 40 practices without adequate pretreatment is prohibited.

1 4. For facility sizing criteria, the basis for hydrologic and hydraulic evaluation of
2 development sites are as follows:

3 *Most jurisdictions choose to include specific methodologies for hydrologic design because the*
4 *MSWMS is not specific or provides options.*

- 5 i. Impervious cover is measured from the site plan and includes any material or
6 structure on or above the ground that prevents water from infiltrating through
7 the underlying soil. Alternative surfaces (e.g., porous pavement, grass pavers,
8 etc.) are encouraged for low-traffic sidewalks and parking lots, and these
9 areas may be removed from the total impervious area calculations when
10 designing the stormwater system for recharge and water quality criteria only.
11 General design guidance is included in the MASWMS, but there is not one set
12 of required design criteria since alternative paving technology is still evolving
13 and improving. Thus, the applicant shall submit specifications for any
14 proposed alternative surfaces, which shall be reviewed by the Planning Board
15 on a case-by-case basis.
- 16 ii. Off-site areas draining to the site shall be included in the hydrologic and
17 hydraulic analyses.
- 18 iii. The models TR-55 and TR-20 (or approved equivalent) shall be used for
19 sizing stormwater practices.
- 20 iv. The length of sheet flow used in the TR-55 method for time of concentration
21 calculations is limited to no more than 100 feet for pre-development
22 conditions and fifty (50) feet for post-development conditions.
- 23 v. For purposes of computing runoff, all pervious lands in the site prior to
24 development shall be assumed to be in good condition regardless of
25 conditions existing at the time of computation.
- 26 vi. Detention time for the Channel Protection volume is defined as the center of
27 mass of the inflow hydrograph and the center of mass of the outflow
28 hydrograph.
- 29 vii. The Rational Method will be used for drainage conveyance calculations
30 needed to size components of the selected drainage conveyance system.
- 31 viii. The specified design storms shall be defined as 24-hour, Type III
32 distribution design storm events using the rainfall amounts specified for the
33 Town of Brewster in the Northeast Regional Climate Center Extreme
34 Precipitation estimates data provided via the Extreme Precipitation in New
35 York and New England: An Interactive Web Tool for Extreme Precipitation
36 Analysis (<http://precip.eas.cornell.edu/>), as amended.

37 *Cornell has updated rainfall data that reflects a longer period of record than TP-40. This gets at*
38 *changes in rainfall intensity and better volumes over last 40 years.*

- 39 ix. These stormwater management criteria shall apply to the land development as
40 a whole. Individual lots in new developments shall not be considered separate
41 land development projects, but rather the entire development shall be
42 considered a single land development project. Hydrologic parameters shall

1 reflect the ultimate land development and shall be used in all engineering
2 calculations.

3
4 **9.0 CRITERIA FOR CONNECTIONS TO THE MUNICIPAL SEPARATE STORM**
5 **SEWER SYSTEM (MS4)**

6 Criteria for connections to the municipal separate storm sewer system (MS4) shall be governed
7 by Chapter 115, Illicit Connections and Discharges, of the Town of Brewster Code.

8
9 **10.0 INSPECTIONS**

10 A. Construction Commencement

11 1. Pre-Construction Meeting

12 The Planning Board or its designated Reviewing Agent may require a pre-
13 construction meeting prior to starting clearing, excavation, construction or land
14 altering activity by the permittee. The applicant's technical representative, the
15 general contractor or any other person with authority to make changes to the project,
16 shall meet with the Planning Board or its representative to review construction
17 sequencing and the permitted plans and their implementation.

18 2. Notice of Construction Commencement

19 The applicant must notify the Planning Board or its designated Reviewing Agent two
20 (2) business days prior to the commencement of construction. In addition, the
21 applicant must notify the Planning Board or its designated Reviewing Agent two (2)
22 business days prior to construction of critical components of any stormwater
23 management facility.

24 3. A copy of the approved and signed plans and permits for a SMP shall be kept on the
25 construction site at all times.

26 4. The Planning Board or its designee shall be granted the right to enter the property at
27 reasonable times and in a reasonable manner for the purpose of inspection. The
28 Planning Board, its agents, officers, and employees shall have authority to enter upon
29 privately owned land for the purpose of performing their duties under this Regulation
30 and may make or cause to be made such examinations, surveys, or sampling as the
31 Planning Board or its designated Reviewing Agent deems necessary, subject to the
32 constitutions and laws of the United States and the Commonwealth.

33 B. Erosion and Sediment Control Inspections

34 1. To ensure erosion control practices are in accordance with the filed Erosion and
35 Sediment Control Plan, erosion control inspections will be conducted by the site
36 owner or an authorized representative at least once every fourteen (14) calendar days
37 and within 24 hours of the end of a storm event of 0.5 inches or greater, from the start
38 of construction until the site is permanently stabilized. Inspection frequency may be
39 reduced to at least once a month if the site is temporarily stabilized, runoff is unlikely
40 due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen),

- 1 or if construction is occurring during seasonal dry periods. The permittee is required
2 to notify the Planning Board or its designated Reviewing Agent of any change in
3 inspection frequency, including termination of inspections due to site stabilization.
- 4 2. Inspections must include all areas of the site disturbed by construction activity and
5 areas used for storage of materials that are exposed to precipitation. Inspectors must
6 look for evidence of, or the potential for, pollutants entering the stormwater
7 conveyance system. Sedimentation and erosion control measures identified in the
8 Erosion and Sediment Control Plan must be observed to ensure proper operation.
9 Discharge locations must be inspected to ascertain whether erosion control measures
10 are effective in preventing significant impacts, where accessible. Where discharge
11 locations are inaccessible, nearby downstream locations must be inspected to the
12 extent that such inspections are practicable. Locations where vehicles enter or exit
13 the site must be inspected for evidence of off-site sediment tracking.
- 14 3. For each inspection required by the Planning Board or its designated Reviewing
15 Agent, an inspection form must be completed by the site owner or an authorized
16 representative with the following information, at a minimum:
- 17 a. The inspection date;
- 18 b. Names, titles, and qualifications of personnel making the inspection;
- 19 c. Weather information and a description of any discharges occurring at the time of
20 the inspection;
- 21 d. Weather information for the period since the last inspection (or since
22 commencement of construction activity if the first inspection) including a best
23 estimate of the beginning of each storm event, duration of each storm event,
24 approximate amount of rainfall for each storm event (in inches), and whether any
25 discharges occurred;
- 26 e. Location(s) of discharges of sediment or other pollutants from the site;
- 27 f. Location(s) of BMPs that need to be maintained;
- 28 g. Location(s) of BMPs that failed to operate as designed or proved inadequate for a
29 particular location;
- 30 h. Location(s) where additional BMPs are needed that did not exist at the time of
31 inspection;
- 32 i. Corrective action required including any changes to the Erosion and Sediment
33 Control Plan necessary and implementation dates;
- 34 j. Documentation to confirm/verify adequate repair/replacement to address former
35 corrective actions; and
- 36 k. Photographs to document conditions before, during, and after the inspection.
- 37 4. If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES
38 General Permit for Storm Water Discharges from Construction Activities
39 (Construction General Permit), then the permittee is required to submit all Inspection
40 Reports to the Planning Board or its designated Reviewing Agent upon request. If the

1 Inspection Reports meet the requirements of the Construction General Permit, it will
2 be considered equivalent to the Erosion Control Inspection as described above.

- 3 5. A record of each inspection and of any actions taken must be retained for at least
4 three (3) years from the date of completion of the project. The inspection reports
5 must identify any incidents of non-compliance with the permit conditions. Where a
6 report does not identify any incidents of non-compliance, the report must contain a
7 certification that the construction project or site is in compliance with this permit.
- 8 6. All erosion and sediment control measures and other protective measures identified in
9 the Erosion and Sediment Control Plan must be maintained in effective operating
10 condition. If site inspections identify BMPs that are not operating effectively,
11 maintenance shall be performed before the next storm event or no longer than seven
12 days from the date of inspection, whichever is sooner, in order to maintain the
13 continued effectiveness of stormwater controls.

14 C. Construction Inspections

- 15 1. At their discretion, the Planning Board or its designated Reviewing Agent, may
16 require periodic inspections of the stormwater management system construction by a
17 Professional Engineer or other qualified personnel to ensure compliance with the
18 conditions of the SMP, and overall effectiveness and functioning of the system.
- 19 2. All inspections performed by the applicant or their designee shall be documented and
20 written reports prepared that contain the following information:
 - 21 a. The date and location of the inspection;
 - 22 b. Names, titles, and qualifications of personnel making the inspection;
 - 23 c. Whether construction is in compliance with the approved Stormwater
24 Management Plan;
 - 25 d. Variations from the approved construction specifications; and
 - 26 e. Any other variations or violations of the conditions of the approved Stormwater
27 Management Plan.
- 28 3. The Planning Board or its designee may inspect the project site at the following
29 stages, at a minimum:
 - 30 a. Initial Site Inspection: Prior to approval of any plan.
 - 31 b. Erosion and Sediment Control Inspection: to ensure erosion and sediment control
32 practices are in accord with the approved plan.
 - 33 c. Stormwater Management System Inspection: An inspection of the completed
34 stormwater management system, prior to backfilling of any underground drainage
35 or stormwater conveyance structures.
 - 36 d. Final Inspection:
 - 37 i. After the stormwater management system has been constructed and before the
38 surety has been released, applicants may be required to submit a Record
39 Drawing(s) certified by a Massachusetts–licensed Professional Engineer and
40 Massachusetts–licensed Professional Land Surveyor for any stormwater

1 management facilities or practices constructed in compliance with a SMP
2 issued for the project.

- 3 ii. The Planning Board, or designee, shall have the right to inspect the system to
4 confirm the features in the Record Drawings. This inspector may also
5 evaluate the effectiveness of the system in an actual storm. If the inspector
6 finds the system to be adequate, he shall so report to the Planning Board
7 which will issue a Certificate of Completion. Record Drawings shall be full-
8 size plans which reflect the conditions of a project following construction,
9 including all final grades, developed by a Massachusetts-licensed professional
10 engineer and Massachusetts-licensed professional land surveyor. All changes
11 to the approved project design should be recorded in red ink and initialed by a
12 Massachusetts-licensed professional engineer and Massachusetts-licensed
13 professional land surveyor on plans to define changes made. All work
14 deleted, corrections in elevations, and changes in materials should also be
15 shown on the Record Drawings in red ink.

16 4. System Requiring Corrective Actions:

- 17 a. If the system is found to be inadequate by virtue of physical evidence of
18 operational failure, the applicant shall correct it before the Certificate of
19 Completion is released. If the applicant fails to act, the Planning Board may use
20 the surety bond to complete the work.
- 21 b. If the Planning Board determines that there is a failure to comply with the plan,
22 the property owner shall be notified in writing of the nature of the violation and
23 the required corrective actions. A “Stop Work Order” shall be issued until any
24 violations are corrected and all work previously completed has received approval
25 by the Planning Board.

26 D. Post-Construction Inspection and Maintenance

27 1. Maintenance Responsibility:

- 28 a. The owner of stormwater management facilities and designated responsible
29 parties included in the SMP and Maintenance Agreement are responsible for
30 conducting ongoing inspections to document maintenance and repair needs and
31 ensure compliance with the requirements of the operation and maintenance
32 agreement, the plan, and these Stormwater Management Regulations.
- 33 b. The owner of the property on which work has been done pursuant to these
34 Stormwater Management Regulations for private stormwater management
35 facilities, or any other person or agent in control of such property, shall maintain
36 in good condition and promptly repair and restore all grade surfaces, walls, drains,
37 dams and structures, vegetation, erosion and sedimentation controls, and other
38 protective devices. Such repairs or restoration and maintenance shall be in
39 accordance with the approved plans.

40 2. Maintenance Inspections

- 41 a. All stormwater management facilities must undergo inspections to document
42 maintenance and repair needs and ensure compliance with the requirements of

1 these Stormwater Management Regulations and accomplishment of its purposes
2 as specified in the O&M Plan and Maintenance Agreement described under
3 Section 7.0C of these Stormwater Management Regulations

- 4 b. At a minimum, inspections shall occur during the first year of operation, and at
5 least every two (2) years thereafter or more frequently as deemed necessary. In
6 addition, a Maintenance Agreement as specified under Section 7.0C of these
7 Stormwater Management Regulations shall be executed for privately-owned
8 stormwater management systems that specifies the Responsible Party for
9 conducting long-term inspections.
- 10 c. Inspection reports shall be submitted to and maintained by the Planning Board or
11 its designated Reviewing Agent for all stormwater management systems within
12 one (1) month following an inspection. Inspection reports for stormwater
13 management systems shall include:
 - 14 i. The date of inspection;
 - 15 ii. Name of inspector;
 - 16 iii. The condition of each BMP, including components such as:
 - 17 (i) Pretreatment devices
 - 18 (ii) Vegetation or filter media
 - 19 (iii) Fences or other safety devices
 - 20 (iv) Spillways, valves, or other control structures
 - 21 (v) Embankments, slopes, and safety benches
 - 22 (vi) Reservoir or treatment areas
 - 23 (vii) Inlet and outlet channels and structures
 - 24 (viii) Underground drainage
 - 25 (ix) Sediment and debris accumulation in storage and forebay areas (including
26 catch basins)
 - 27 (x) Any nonstructural practices
 - 28 (xi) Any other item that could affect the proper function of the stormwater
29 management system; and
 - 30 iv. Description of the need for maintenance.

- 31 3. Right-of-Entry for Inspection – The terms of the inspection and maintenance
32 agreement as specified in Section 7.0C of these stormwater management regulations
33 shall provide for the Planning Board or its designee to enter the property at reasonable
34 times and in a reasonable manner for the purpose of inspection. The Planning Board,
35 its agents, officers, and employees shall have authority to enter upon privately owned
36 land for the purpose of performing their duties under these Stormwater Management
37 Regulations and may make or cause to be made such examinations, surveys, or
38 sampling as the Planning Board deems necessary, subject to the constitutions and
39 laws of the United States and the Commonwealth.

- 1 4. Records of Maintenance and Repair Activities – Parties responsible for the operation
2 and maintenance of a stormwater management facility shall provide records of all
3 maintenance and repairs to the Planning Board, upon request. Parties responsible for
4 the operation and maintenance of a management facility shall make available all
5 records of the installation and of all maintenance and repairs, and shall retain the
6 records for at least three (3) years following final inspections and/or repairs. These
7 records shall be made available to the Planning Board during inspection of the facility
8 and at other reasonable times upon request.
- 9 5. Failure to Maintain – If responsible party fails or refuses to meet the requirements of
10 the O&M Plan, the Planning Board or its designee, after sixty (60) days written notice
11 (except, that in the event the violation constitutes an immediate danger to public
12 health or public safety, 24–hours notice shall be sufficient), may correct a violation of
13 the approved plans or maintenance requirements by performing the necessary work to
14 place the facility or practice in proper working condition. After notification is
15 provided to the owner, the parties responsible for carrying out the maintenance plan
16 shall have thirty (30) days or other time frame mutually agreed to between the
17 Planning Board or its designee and the parties responsible for carrying out the
18 maintenance plan to correct the deficiencies. The Planning Board or its designee
19 shall then conduct a subsequent inspection to ensure completion of repairs.

20 11.0 SURETY

21 Prior to the start of land disturbance or construction activity, the Planning Board may require the
22 applicant to post a surety bond, irrevocable letter of credit, cash, or other acceptable security,
23 when deemed appropriate. The form of the surety shall be approved by the Town Treasurer, and
24 be in an amount deemed sufficient by the Planning Board to ensure that the work will be
25 completed in accordance with the SMP. If the project is phased, the Planning Board may release
26 part of the surety as each phase is completed in compliance with the SMP, but the surety may not
27 be fully released until the Planning Board has received the final inspection report as required by
28 Section 10.0 of these Stormwater Management Regulations and has issued a Certificate of
29 Completion.

30 *There were comments from CWPC on whether or not this surety statement protected the Town*
31 *adequately from failing BMPs.*

32

1 **12.0 CERTIFICATE OF COMPLETION**

- 2 A. Within ninety (90) days of completion of construction, the Planning Board may require
3 the submission of Record Drawing(s) prepared by a Massachusetts–licensed professional
4 engineer and Massachusetts–licensed Professional land surveyor, certifying that the
5 completed project is in accordance with the approved plans and specifications.
6 Furthermore, the Planning Board may require construction inspection reports sufficient to
7 adequately document compliance, when necessary.
- 8 B. The Planning Board will issue a Certificate of Completion upon determining that all work
9 of the SMP has been satisfactorily completed in conformance with the approved plan.

10
11 **13.0 PROJECT DELAY**

12 Should a development activity associated with an approved plan in accordance with these
13 Regulations not begin within 12 months following permit issuance, the Planning Board or its
14 designated Reviewing Agent may evaluate the existing stormwater management plan to
15 determine whether the plan still satisfies local program requirements and to verify that all design
16 factors are still valid. If the Reviewing Agent finds the previously filed plan to be inadequate, a
17 modified plan shall be submitted and approved prior to the commencement of development
18 activities. If the project associated with an approved SMP granted under the Bylaw has not been
19 substantially completed within three (3) years of permit issuance, a new permit or a permit
20 extension will be required by the Planning Board or its designated Reviewing Agent.

21
22 **14.0 WAIVERS**

- 23 A. The Planning Board or its designated Reviewing Agent may in its discretion and after due
24 consideration decide to waive and exempt strict compliance with any requirement of the
25 Town of Brewster Stormwater Management Bylaw and these Regulations, where it
26 makes a written finding that such action is:
- 27 1. Allowed by federal, state and local statutes and/or;
 - 28 2. In the public interest; and
 - 29 3. Consistent with the purpose and intent of the Town of Brewster Stormwater
30 Management Bylaw.

31 *The draft Stormwater Regulations do not specify an off-site mitigation option, which was*
32 *included under the Section 179-66. Site Plan standards for Site Plan Review. However, if this is*
33 *important to the Town, necessary for redevelopment projects, or could provide more flexibility*
34 *when requiring higher levels of treatment for TMDL compliance, we recommend incorporating*
35 *such a provision here.*
36

- 37 B. Any applicant shall submit a written request to be granted such a waiver. Such a request
38 shall be accompanied by an explanation or documentation supporting the waiver request
39 and demonstrating that strict application of the Stormwater Management Bylaw does not
40 further the purposes or objectives of the Stormwater Management Bylaw.

- 1 C. All waivers requested shall be discussed and voted on at the public hearing for the
2 project.
- 3 D. If in the Planning Board’s opinion, additional time or information is required for review
4 of a waiver request, the Planning Board may continue a hearing to a date announced at
5 the meeting. In the event, the applicant objects to a continuance, or fails to provide
6 requested information, the waiver request shall be denied “without prejudice” by the
7 Planning Board.
- 8 E. Waivers described herein shall not constitute an exemption from any applicable federal or
9 state permitting requirements.

10

11 **15.0 ENFORCEMENT**

12 Enforcement powers of the Planning Board are granted in the Stormwater Management Bylaw,
13 Section 999-7.

- 14 A. The Planning Board, its designated Reviewing Agent or an authorized agent of the
15 Planning Board shall enforce the Bylaw, Regulations, orders, violation notices, and
16 enforcement orders, and may pursue all civil, criminal and non-criminal remedies for
17 such violations.
- 18 B. Notices and Orders
- 19 1. The Planning Board, its designated Reviewing Agent or an authorized agent of the
20 Planning Board may issue a written notice of violation or enforcement order to
21 enforce the provisions of the Bylaw or the Regulations there under, which may
22 include requirements to:
- 23 a. Cease and desist from construction or land alteration activity until there is
24 compliance with the Bylaw and the SMP;
- 25 b. Repair, maintain; or replace the stormwater management system or portions
26 thereof in accordance with the O&M Plan;
- 27 c. Perform monitoring, analyses, and reporting;
- 28 d. Fix adverse impact resulting directly or indirectly from malfunction of the
29 stormwater management system.
- 30 2. If the Planning Board, its designated Reviewing Agent or an authorized agent of the
31 Planning Board determines that abatement or remediation of adverse impacts is
32 required, the order may set forth a deadline by which such abatement or remediation
33 must be completed. Said order may further advise that, should the violator or
34 property owner fail to abate or perform remediation within the specified deadline, the
35 Planning Board, its designed Reviewing Agent or an authorized agent of the Planning
36 Board may, at its option, undertake such work, and the property owner shall
37 reimburse the Planning Board, its designed Reviewing Agent or an authorized agent
38 of the Planning Board for expenses incurred.
- 39 3. Within thirty (30) calendar days after completing all measures necessary to abate the
40 violation or to perform remediation, the violator and the property owner shall be

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APPENDICES

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APPENDIX A
INSTRUCTIONS FOR COMPLETING STORMWATER
MANAGEMENT PERMIT (SMP) APPLICATION

1 Planning Board
2 2198 Main Street
3 Brewster, Massachusetts
4 02631-1898
5 (508) 896-3701 x 1233
6 FAX (508) 896-8089
7 brewplan@brewster.ma.us
8

9 **Instructions for Filing Stormwater Management Permit (SMP) Application**
10

11 The applicant shall file with the Planning Board an original and twelve (12) copies of a
12 completed application package for a SMP. One must include the original signatures of the
13 applicant and property owner. The applicant must certify that the application is complete. If a
14 submitted application does not include all of the required information as listed in the plan
15 checklists, the application will be deemed incomplete and will not be processed. The SMP
16 Application package may be submitted in two stages—an optional Concept Plan and the required
17 Final Plan. The Concept Plan is an optional application that enables the applicant to determine
18 the feasibility of the site design concept before detailed engineering design is performed. Denial
19 of a Concept Plan shall not preclude the applicant from proceeding with a Final Plan, nor shall
20 approval of a concept plan obligate the Planning Board to approve a Final Plan. An applicant
21 may choose to skip the Concept Plan step at his/her own discretion and proceed directly with a
22 Final Plan application. The following are the application filing requirements:
23

24 *Once the SMP process is finalized between Planning Board and Con Com, this introductory*
25 *paragraph may need to be updated. Consider including the flow chart.*

26
27 **For the Concept Plan (OPTIONAL):**

- 28 1. A completed current SMP Application Form (provided in Appendix **B** and also
29 available from the Planning Board office or the Town of Brewster website) with
30 original signatures of all owners;
- 31 2. Stormwater Management Concept Plan and supporting information in accordance
32 with the current “Checklist for Stormwater Management Concept Plan” as provided
33 in Appendix **C**; and
- 34 3. Payment of Consultant Services Fees (if applicable) pursuant to Section **6.0E** of the
35 Stormwater Management Regulations.

36 **For the Final Plan:**

- 37 1. A completed current SMP Application Form (provided in Appendix **B** and also
38 available from the Planning Board office or the Town of Brewster website) with
39 original signatures of all owners;
- 40 2. Stormwater Management Final Plan and supporting information in accordance with
41 the current “Checklist for Final Stormwater Management Plan” as provided in
42 Appendix **D**;
- 43 3. Erosion and Sediment Control Plan in accordance with the current “Checklist for
44 Erosion and Sediment Control Plan” as provided in Appendix **E**;

- 1 4. Operation and Maintenance Plan in with the current “Requirements for Operation and
- 2 Maintenance Plan” as provided in Appendix F;
- 3 5. Statement of Compliance with Town of Brewster Code Chapter 115, Illicit
- 4 Connection and Discharge Bylaw; and
- 5 6. Payment of the Application and Consultant Services Fees pursuant to Section 6.0E. of
- 6 the Stormwater Management Regulations.

7

8 **Additional Information**

9 The Planning Board reserves the right to require additional information during the course of the

10 public hearing.

11

12 **Public Hearing Schedule**

13 After a SMP application and all other associated permit applications under the jurisdiction of the

14 Planning Board, including but not limited to Site Plan Review, are certified as complete, the

15 Planning Board will schedule a hearing within 65 days.

16

17 For projects requiring a SMP that are also otherwise under the jurisdiction of the Planning Board,

18 the Planning Board shall hold one public hearing on all jurisdictional project aspects in

19 accordance with its own regulations and procedures.

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APPENDIX B
STORMWATER MANAGEMENT PERMIT (SMP)
APPLICATION

1 Planning Board
2 2198 Main Street
3 Brewster, Massachusetts
4 02631-1898
5 (508) 896-3701 x 1233
6 FAX (508) 896-8089
7 brewplan@ brewster.ma.us
8

Please check one: <input type="checkbox"/> Concept Plan <input type="checkbox"/> Final Plan

9 **Stormwater Management Permit (SMP) Application**
10 Pursuant to Chapter 999 of the Town of Brewster General Bylaws
11

12 (PRINT OR TYPE)

- 13
14
- 15 1. Name of Applicant: _____
16 Address: _____
17 Telephone Number: _____
18 E-mail Address: _____
19
- 20 2. Name of Property Owner: _____
21 Address: _____
22 Telephone Number: _____
23
- 24 3. Name of Representative: _____
25 Address: _____
26 Telephone Number: _____
27
- 28 4. Project Street Location: _____
29 Assessor's Plat(s) and Lot(s): _____
30
- 31 5. Deed/Property Recorded In: _____
32 Registry Book and Page: _____
33
- 34 6. This application ___ **does** / ___ **does not** fall under the jurisdiction of the Planning Board
35 under the Town of Brewster's Chapter 179, Zoning.
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**APPENDIX C
CHECKLIST FOR
STORMWATER MANAGEMENT CONCEPT PLAN**

1
2 Planning Board
3 2198 Main Street
4 Brewster, Massachusetts
5 02631-1898
6 (508) 896-3701 x 1233
7 FAX (508) 896-8089
8 brewplan@ brewster.ma.us
9

10 **Checklist for Stormwater Management Concept Plan**

11
12 **PREPARATION AND REVIEW**

13
14 The following shall be submitted to the Planning Board with every stormwater management
15 permit Concept Plan application. Please check each box to indicate that you have included the
16 information with your application, detailing where in the plans or reports the information can be
17 found, and sign the statement at the end of this checklist. The application will not be accepted by
18 the Planning Board for processing unless: (a) the engineer signs and stamps the certification at
19 the end of this checklist and (b) all portions of this checklist are filled out and accompany the
20 application at the time of submittal.
21

- 22 Applicant contact information
- 23 Name, legal address, email address and telephone number of project owner
- 24 Common address and legal description of site
- 25 Locus Map
- 26 Existing zoning and land use(s) at the site
- 27 Proposed Land Use(s)
- 28 General Project Narrative
- 29 Existing and proposed mapping and plans (scale not greater than 1"=100') which
30 conceptually illustrate at a minimum:
- 31 Existing topography (2-foot contours recommended) (**see sheet(s) # _____**)
- 32 Perennial and intermittent streams (**see sheet(s) # _____ or indicate N/A**)
- 33 Mapping of predominant soils from USDA soil surveys (**see sheet(s) # _____**)
- 34 Boundaries of existing predominant vegetation and proposed limits of clearing (**see**
35 **sheet(s) # _____**)
- 36 Location and boundaries of resource protection areas such as wetlands, ponds, coastal
37 waters, and setbacks (e.g., buffers, water supply wells, septic systems) (**see sheet(s) #**
38 **_____ or indicate N/A**)

- 1 Location of floodplain/floodway limits and relationship of site to upstream and
2 downstream properties and drainages (**see sheet(s) # _____ or indicate N/A**)
- 3 Location of existing and proposed roads, buildings, and other structures (**see sheet(s)**
4 **# _____**)
- 5 Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements (**see**
6 **sheet(s) # _____**)
- 7 Location of existing and proposed conveyance systems such as grass channels,
8 swales, and storm drains (**see sheet(s) # _____**)
- 9 Existing and proposed catchment areas and drainage flow paths (**see sheet(s) #**
10 **_____**)
- 11 Preliminary location and dimensions of channel modifications, such as bridge or
12 culvert crossings (**see sheet(s) # _____ or indicate N/A**)
- 13 Preliminary location, size, and limits of disturbance of proposed stormwater treatment
14 practices (type of practice, depth, area) (**see sheet(s) # _____**)
- 15 Site Design Features that document the following:
- 16 Mapped steep slopes greater than 15% and forest stands exceeding 10,000 square feet
17 in area (**see sheet(s) # _____ or indicate N/A**)
- 18 Delineated building envelopes that avoid steep slopes, forest stands and floodplains,
19 and provide applicable buffers from wetland resource areas (**see sheet(s) # _____**)
- 20 Identification of natural open space provided on-site, and calculation of percent
21 natural open space provided (**see sheet(s) # _____**)
- 22 Methods used to minimize impervious area and calculated total percent impervious
23 onsite (refer to the latest edition of the MASWMS for more information on available
24 methods) (**see page(s) # _____ of narrative or stormwater report**)
- 25 Methods used to disconnect impervious surfaces and calculated percent of “directly
26 connected” impervious area (refer to the latest edition of the MASWMS for more
27 information on available methods) (**see page(s) # _____ of narrative or**
28 **stormwater report**)
- 29 Preliminary selection and rationale for structural stormwater management practices (**see**
30 **page(s) # _____ of narrative or stormwater report**)
- 31 Preliminary sizing calculations for proposed stormwater treatment practices, including
32 contributing drainage areas and storage (**see page(s) # _____ of narrative or stormwater**
33 **report**)
- 34 Preliminary landscaping narrative or stormwater report for stormwater treatment practices
35 and any site reforestation or revegetation (**see page(s) # _____ of narrative or stormwater**
36 **report**)

1 Preliminary erosion and sediment control narrative or stormwater report that at a minimum
2 meets the requirements outlined in these Regulations and the Massachusetts Stormwater
3 Standard #8 (see page(s) # _____ of narrative or stormwater report)

4 Identification of all anticipated applicable local, state and federal permits (see page(s) #
5 _____ of narrative or stormwater report)

6 Identification of all anticipated legal agreements (e.g., off-site easements, covenants, land
7 trusts) (see page(s) # _____ of narrative or stormwater report)

8 **I attest, as the project engineer, that to the best of my knowledge, all items required above**
9 **are included as part of this stormwater management Concept Plan application filing.**

10

11 Signature: _____

12 Date: _____

13

14 Printed Name: _____

15 Title: _____

16 Company: _____

17 Telephone #: _____

18 E-Mail Address: _____

19

20

21 STAMP:

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**APPENDIX D
CHECKLIST FOR
FINAL STORMWATER MANAGEMENT PLAN**

1 Planning Board
2 2198 Main Street
3 Brewster, Massachusetts
4 02631-1898
5 (508) 896-3701 x 1233
6 FAX (508) 896-8089
7 brewplan@ brewster.ma.us
8

9 **Checklist for Final Stormwater Management Plan**

10
11
12 **PREPARATION AND REVIEW**
13

14 The following shall be submitted to the Planning Board with every stormwater management
15 permit Final Plan application. Please check each box to indicate that you have included the
16 information with your application, detailing where in the plans or reports the information can be
17 found, and sign the statement at the end of this checklist. The application will not be accepted by
18 the Planning Board for processing unless: (a) the engineer signs and stamps the certification at
19 the end of this checklist and (b) all portions of this checklist are filled out and accompany the
20 application at the time of submittal.
21

- 22 Applicant contact information
- 23 Name, legal address, email address, and telephone number of project owner
- 24 Common address and legal description of site
- 25 Signature and stamp of licensed engineer/surveyor and design/owner certification
- 26 Locus Map
- 27 Existing zoning and land use(s) at the site
- 28 Proposed Land Use(s)
- 29 Detailed Project Narrative
- 30 Existing and proposed mapping and plans (recommended scale of 1"=40' or greater detail)
31 which define at a minimum:
- 32 Existing and proposed topography (min. of 2-foot contour interval) (**see sheet(s) #**
33 **_____**)
- 34 Existing and proposed watershed delineations (**see sheet(s) # _____**)
- 35 Perennial and intermittent streams (**see sheet(s) # _____ or indicate N/A**)
- 36 Mapping of predominant soils from USDA soil surveys as well as location of site-
37 specific borings and/or test pits (**see sheet(s) # _____**)

- 1 Boundaries of existing predominant vegetation and proposed limits of clearing (see
2 **sheet(s) # _____**)
- 3 Location and boundaries of resource protection areas such as wetlands, ponds, coastal
4 waters and setbacks (e.g., stream buffers, drinking water well setbacks, septic
5 setbacks) (**see sheet(s) # _____**)
- 6 Location of existing and proposed roads, buildings, and other structures (**see sheet(s)**
7 **# _____**)
- 8 Location of existing and proposed utilities (e.g., water, sewer, gas, electric) and
9 easements (**see sheet(s) # _____**)
- 10 Location of existing and proposed conveyance systems such as grass channels,
11 swales, and storm drains (**see sheet(s) # _____**)
- 12 Drainage flow paths (**see sheet(s) # _____**)
- 13 Location of floodplain/floodway limits and relationship of site to upstream and
14 downstream properties and drainages (**see sheet(s) # _____ or indicate N/A**)
- 15 Location and dimensions of proposed channel modifications, such as bridge or culvert
16 crossings (**see sheet(s) # _____ or indicate N/A**)
- 17 Soils information from test pits or borings at the location of proposed stormwater
18 management facilities, including but not limited to soil descriptions, depth to seasonal high
19 groundwater, depth to bedrock, and estimated hydraulic conductivity. Soils information will
20 be based on site test pits or borings logged by a Massachusetts certified Soil Evaluator, or a
21 Massachusetts Licensed Professional Engineer (**see sheet(s) # _____ and/or page(s)**
22 **# _____ of narrative or stormwater report**)
- 23 Site Design Features that document the following:
- 24 Mapped steep slopes greater than 15% and forest stands exceeding 10,000 square feet
25 in area (**see sheet(s) # _____ or indicate N/A**)
- 26 Delineated building envelopes that avoid steep slopes, forest stands and floodplains,
27 and provide applicable buffers from wetland resource areas (**see sheet(s) # _____**
28 **or indicate N/A**)
- 29 Identification of natural open space provided on-site and calculation of percent
30 natural open space provided (**see sheet(s) # _____**)
- 31 Methods used to minimize impervious area and calculated total percent impervious
32 onsite (refer to the latest edition of the MASWMS for more information on available
33 methods) (**see page(s) # _____ of narrative**)
- 34 Methods used to disconnect impervious surfaces and calculated percent of “directly
35 connected” impervious area (refer to the latest edition of the MASWMS for more
36 information on available methods) (**see page(s) # _____ of narrative**)
37

- 1 Representative cross-section and profile drawings, notes and details of structural stormwater
2 management practices and conveyances (i.e., storm drains, open channels, swales, etc.),
3 which include:
- 4 Locations, cross sections, and profiles of all streams and drainage swales and their
5 method of stabilization (**see sheet(s) # _____**)
- 6 Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.) (**see**
7 **sheet(s) # _____**)
- 8 Design water surface elevations (**see sheet(s) # _____**)
- 9 Structural details of outlet structures, embankments, spillways, stilling basins, grade
10 control structures, conveyance channels, etc. (**see sheet(s) # _____**)
- 11 Logs of borings and/or test pit investigations along with supporting geotechnical
12 report (**see page(s) # _____ of narrative or stormwater report**)
- 13 Hydrologic and hydraulic analysis for all structural components of stormwater system (e.g.,
14 storm drains, open channels, swales, stormwater management practices, etc.) for applicable
15 design storms, including:
- 16 Existing condition analysis for watershed boundaries, curve numbers, time of
17 concentrations, runoff rates, volumes, velocities, and water surface elevations
18 showing methodologies used and supporting calculations (**see page(s) # _____ of**
19 **narrative or stormwater report**)
- 20 Proposed condition analysis for watershed boundaries, curve numbers, time of
21 concentrations, runoff rates, volumes, velocities, water surface elevations, and routing
22 showing the methodologies used and supporting calculations (**see page(s) # _____**
23 **of narrative or stormwater report**)
- 24 Final sizing calculations for structural stormwater management practices including,
25 contributing drainage area, storage, and outlet configuration (**see page(s) # _____**
26 **of narrative or stormwater report**)
- 27 Stage-discharge or outlet rating curves and inflow and outflow hydrographs for
28 storage facilities (e.g., detention, retention or infiltration facilities) (**see page(s) #**
29 **_____ of narrative or stormwater report**)
- 30 Dam breach analysis, where necessary, for earthen embankments over eight (8') feet
31 in height and less than 2,000 feet upstream of a road crossing or structure (**see page(s)**
32 **# _____ of narrative or stormwater report or indicate N/A**)
- 33 Final landscaping plans for structural stormwater management practices and any site
34 reforestation or revegetation, including:
- 35 Location of woody and herbaceous vegetative stabilization (**see sheet(s) # _____**)
- 36 Species, size, planting methods, and maintenance requirements of proposed
37 landscaping (**see sheet(s) # _____ and/or page(s) # _____ of narrative or**
38 **stormwater report**)

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**APPENDIX E
CHECKLIST FOR
EROSION AND SEDIMENT CONTROL PLAN**

1 Planning Board
2 2198 Main Street
3 Brewster, Massachusetts
4 02631-1898
5 (508) 896-3701 x 1233
6 FAX (508) 896-8089
7 brewplan@brewster.ma.us
8

9 **Checklist for Erosion and Sediment Control Plan**

10
11 **PREPARATION AND REVIEW**
12

13
14 The following shall be submitted to the Planning Board with every Erosion and Sediment
15 Control Plan as part of the stormwater management permit Final Plan application. Please check
16 each box to indicate that you have included the information with your application, detailing
17 where in the plans or reports the information can be found, and sign the statement at the end of
18 this checklist. The application will not be accepted by the Planning Board for processing unless:
19 (a) the engineer signs and stamps the certification at the end of this checklist and (b) all portions
20 of this checklist are filled out and accompany the application at the time of submittal.
21

- 22 Applicant contact information
23 Name, legal address, email address and telephone number of project owner
24 Common address and legal description of site
25 Signature and stamp of licensed engineer/surveyor and design/owner certification
26 Locus Map
27 Existing zoning and land use(s) at the site
28 Proposed Land Use(s)
29 Detailed Project Narrative
30 Existing and proposed mapping and plans (recommended scale of 1"=40' or greater detail)
31 which define at a minimum:
32 Existing and proposed topography (min. of 2-foot contour interval) (**see sheet(s) # _____**)
33 Existing and proposed drainage area delineations (**see sheet(s) # _____**)
34 Perennial and intermittent streams (**see sheet(s) # _____ or indicate N/A**)
35 Mapping of predominant soils from USDA soil surveys as well as location of site-
36 specific borings and/or test pits (**see sheet(s) # _____**)
37 Boundaries of existing predominant vegetation and proposed limits of clearing (**see**
38 **sheet(s) # _____**)
39 Location and boundaries of resource protection areas such as wetlands, ponds, coastal
40 waters and setbacks (e.g., stream buffers, drinking water well setbacks, septic
41 setbacks) (**see sheet(s) # _____**)

- 1 Location of existing and proposed roads, buildings, and other structures (**see sheet(s)**
2 # _____)
- 3 Location of existing and proposed utilities (e.g., water, sewer, gas, electric) and
4 easements (**see sheet(s) # _____**)
- 5 Location of existing and proposed conveyance systems such as grass channels,
6 swales, and storm drains (**see sheet(s) # _____**)
- 7 Drainage flow paths (**see sheet(s) # _____**)
- 8 Location of floodplain/floodway limits and relationship of site to upstream and
9 downstream properties and drainages (**see sheet(s) # _____ or indicate N/A**)
- 10 Location and dimensions of proposed channel modifications, such as bridge or culvert
11 crossings (**see sheet(s) # _____ or indicate N/A**)
- 12 Estimates of the total area expected to be disturbed by excavation, grading, or other
13 construction activities, including dedicated off-site borrow and fill areas (**see sheet(s) #**
14 _____ **and/or page(s) # _____ of narrative or stormwater report**)
- 15 Erosion and Sediment Control Measures (**see sheet(s) # _____**)
- 16 Locations of all structural and nonstructural erosion and sediment control measures
17 and Best Management Practices (BMPs) (**see sheet(s) # _____ or indicate N/A**)
- 18 Structural practices to divert flows from exposed soils, retain/detain flows or
19 otherwise limit runoff and the discharge of pollutants from exposed areas of the site.
20 Placement of structural practices in floodplains must be avoided to the degree
21 practicable (**see sheet(s) # _____ and/or page(s) # _____ of narrative or**
22 **stormwater report**)
- 23 Temporary and permanent stabilization practices for the site, including a schedule of
24 when the practices will be implemented and the locations. Site plans should ensure
25 that existing vegetation is preserved where possible and that disturbed portions of the
26 site are stabilized. Use of impervious surfaces for stabilization should be avoided
27 (**see sheet(s) # _____ and/or page(s) # _____ of narrative or stormwater**
28 **report**)
- 29 Locations for storage of materials, waste, vehicles, equipment, soil, snow and other
30 potential pollutants (**see sheet(s) # _____ or indicate N/A**)
- 31 Construction and waste materials expected to be stored on-site with updates as
32 appropriate, including descriptions of controls, and storage practices to minimize
33 exposure of the materials to stormwater, and spill prevention and response practices
34 (**see sheet(s) # _____ and/or page(s) # _____ of narrative or stormwater**
35 **report**)
- 36 Locations of any proposed dewatering facilities (**see sheet(s) # _____ or indicate**
37 **N/A**)
- 38 Measures to minimize, to the extent practicable, off-site vehicle tracking of sediments
39 onto paved surfaces and the generation of dust (**see sheet(s) # _____ and/or**
40 **page(s) # _____ of narrative or stormwater report**)

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**APPENDIX F
REQUIREMENTS FOR
OPERATIONS AND MAINTENANCE PLAN**

1 Planning Board
2 2198 Main Street
3 Brewster, Massachusetts
4 02631-1898
5 (508) 896-3701 x 1233
6 FAX (508) 896-8089
7 brewplan@brewster.ma.us
8

9 **Requirements for Operations and Maintenance Plan**

10
11
12 An Operations and Maintenance Plan shall be submitted to the Planning Board as part of the
13 stormwater management permit Final Plan application.

14
15 **1.0 Minimum Required Contents of the O&M Plan:**

- 16
17 The name(s) and signatures of the owner(s) for all components of the system.
18 A map showing the location of the systems and facilities including, but not limited to
19 easements, catchbasins, manholes/access lids, main line, and stormwater devices.
20 Signed Maintenance Agreements that specify:
21 The names and addresses of the person(s) responsible for operation and maintenance;
22 The person(s) responsible for financing maintenance and emergency repairs;
23 An Inspection and Maintenance Schedule for all temporary erosion and sediment control
24 practices and permanent stormwater management facilities including routine and non-
25 routine maintenance tasks to be performed;
26 A list of easements with the purpose and location of each; and
27 An estimated annual operation and maintenance budget.
28

29 **2.0 Drainage Easement(s)**

- 30 A. Drainage easements shall be provided by the property owner(s) as necessary for:
31 1. Access for facility inspections and maintenance;
32 2. Preservation of stormwater runoff conveyance, infiltration, and treatment areas and
33 facilities, including flood routes for the 100-year storm event; and
34 3. Direct maintenance access by heavy equipment to structures requiring regular
35 maintenance.
36 B. The purpose of each easement shall be specified in the maintenance agreement signed by
37 the property owner.
38 C. Drainage easements are required for all areas used for off-site stormwater control, unless
39 the Planning Board grants a waiver.

1 D. The Planning Board shall record drainage easements with the Barnstable County Registry
2 of Deeds prior to issuance of a Certificate of Completion.

3
4 **3.0 Changes to Operation and Maintenance Plans**

5 A. The owner(s) of the stormwater management system must notify the Planning Board in
6 writing of changes in ownership or assignment of financial responsibility.

7 B. The maintenance schedule in the Maintenance Agreement may be amended to achieve
8 the purposes of these stormwater regulations by mutual agreement of the Planning Board
9 and the Responsible Parties. Amendments must be in writing and signed by all
10 Responsible Parties. Responsible Parties shall include owner(s), persons with financial
11 responsibility, and persons with operational responsibility.

APPENDIX G
MEDIAN POLLUTANT REMOVAL FOR APPROVED
PRACTICES TO MEET WATER QUALITY
TREATMENT CRITERIA

Best Management Practice	Median Pollutant Removal (%) ¹			
	TSS ²	TP ³	TN ⁴	Bacteria
Constructed Wetlands	80	50	35	35
Wet Retention Basins	80	50	30	65
Water Quality Swales	70	55	50	Insufficient data
Sand Filters / Organic Filters	80	30	30	Insufficient data
Bioretention / Rain Gardens	90	60	40	Insufficient data
Infiltration Basins	80	65	55	90
Infiltration Trenches	80	55	55	45

Note: Conventional detention basins shall not be used to meet water quality requirements.

¹ Derived from the 2008 Massachusetts Stormwater Management Standards (MSWMS). Updated values are available, but may not be accepted by DEP until the MSWMS is updated.

² TSS removal rates assume practice is designed according to the latest version of the MSWMS and with appropriate and effective pretreatment system.

³ TP removal rates are median values within the range provided by MSWMS value.

⁴ TN removal rates removal rates are median values within the range provided by MSWMS.

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APPENDIX H
STORMWATER GUIDELINES FOR SMALL SITES

TBD