

Town of Hanson
542 Liberty Street, Hanson, MA 02341

Rules & Regulations Part II

PART II. REGULATIONS FOR INLAND WETLANDS

2.01 General Provisions

- 1) If the Conservation Commission determines that a resource area is significant to an interest identified in the By-law for which no presumption is stated in the Preamble to the applicable section, the Conservation Commission shall impose such conditions as are necessary to contribute to the protection of such interests.
- 2) When the site of a proposed project is subject to a Restriction Order which has been duly recorded under the provisions of M.G.L. Chapter 131, s.40, such project shall conform to both the provisions contained in that Order and to Part II of these regulations.
- 3) Notwithstanding the provisions of Article 3-13, the Conservation Commission may issue an Order of Conditions and impose such conditions as will contribute to the interests identified in the By-law permitting the following limited projects:

a) Work on land to be used primarily and directly in raising of animals, including but not limited to dairy cattle, beef cattle, poultry, sheep, swine, horses, ponies, mules, goats, bees and fur-bearing animals or on land to be used in a related manner which is incidental thereto and represents a customary and necessary use in raising such animals; and work on land to be used primarily and directly in the raising of fruits, vegetables, berries, nuts and other foods for human consumption, feed for animals, tobacco, flowers, sod, trees, nursery or greenhouse products, and ornamental plants and shrubs; or on land to be used in a related manner which is incidental thereto and represents a customary and necessary use in raising such products, provided they are carried out in accordance with the following general conditions and any additional conditions deemed necessary by the Conservation Commission;

- (i) there shall occur no change in the existing topography or the existing soil and surface water levels of the area;
- (ii) all fertilizers, pesticides, herbicides and other such materials shall be used in accordance with all applicable State and Federal laws and regulations governing their use; and
- (iii) all activities shall be undertaken in such a manner as to prevent erosion and siltation of adjacent water bodies and wetlands as specified by the U.S.D.A. Soil Conservation Service, "Guidelines for Soil and Water Conservation". A plan prepared by the U.S.D.A. Soil Conservation Service through a County Conservation District for the improvement of land for agriculture shall be deemed adequate to prevent erosion and siltation.

b) Work on land to be used primarily and directly in the raising of forest products under a planned program to improve the quantity and quality of a continuous crop or on land to be used in a related manner which is incidental thereto and represents a customary and necessary use in raising such products, provided it is carried out in accordance with the following general conditions and any additional conditions deemed necessary by the Conservation Commission.

- (iv) There shall occur no change in the existing topography or the existing soil and surface water levels of the area except for temporary access roads;
- (v) The removal of trees shall occur only during those periods when the ground is sufficiently frozen, dry or otherwise stable to support the equipment used.
- (vi) All activities shall be undertaken in such a manner as to prevent erosion and siltation of adjacent water bodies and wetlands as specified by the U.S.D.A. Soil Conservation Service "Guidelines for Soil and Water Conservation".
- (vii) The placement of slash, branches and limbs resulting from the cutting and removal operations shall not occur within twenty-five (25) feet of the bank of a water body.

c) The construction, reconstruction, operation and maintenance of underground and overhead public utilities, such as electrical distribution or transmission lines, or communication, sewer, water and natural gas lines, may be permitted, in accordance with the following general conditions and any additional conditions deemed necessary by the Conservation Commission.

- (viii) The Conservation Commission may require a reasonable alternative route with fewer adverse effects for a local distribution or connecting line not reviewed by the Energy Facilities Siting Council;
 - (ix) Best available measure shall be used to minimize adverse effects during construction;
 - (x) The surface vegetation and contours of the area shall be substantially restored;
 - (xi) All sewer lines shall be constructed to minimize inflow and leakage.
- d.) The construction and maintenance of a new roadway or driveway of minimum legal and practical width acceptable to the planning board, where reasonable alternative means of access from a public way to an upland area of the same owner is unavailable. Such roadway or driveway shall be constructed in a manner which does not restrict the flow of water.
 - e.) Maintenance and improvement of existing public roadways, but limited to widening less than a single lane, adding shoulders and correcting substandard intersections.
 - f.) The maintenance of beaches and boat launching ramps which existed on the effective date of these regulations.
 - g.) The maintenance, repair and improvement (but not substantial enlargement) of structures, including buildings, piers, towers and headwalls, which existed on the effective date of these regulations.
 - h.) The construction and maintenance of catwalks, footbridges, wharves, docks, piers, boathouses, boat shelters, duck blinds, skeet and trap shooting decks and observation decks; provided however, that such structures are constructed on pilings or posts so as to permit the reasonable unobstructed flowage of water and adequate light to maintain vegetation.
 - i.) The routine maintenance and repair of road drainage structures including culverts and catch basins, drainage easements, ditches, watercourse and artificial water conveyances to insure flow capacities which existed on the effective date of these regulations.
 - j.) No more than 5,000 square feet of wetland alteration will be allowed for a subdivision, including lots, roadways and utilities. These provisions notwithstanding, a creation of any additional limited access projects within an original limited access subdivision shall not be allowed.

2.02 Inland Banks (Naturally Occurring Banks and Beaches)

1) Preamble.

Banks are likely to be significant to wildlife, public or private water supply, to ground water supply, to flood control, to storm damage prevention, to the prevention of pollution and to the protection of fisheries. Where banks are composed of concrete, asphalt or other artificial impervious material, said banks are likely to be significant to flood control and storm damage prevention.

Banks are areas where ground water discharges to the surface and where, under some circumstances, surface water recharges the ground water.

Where banks are partially or totally vegetated, the vegetation serves to maintain the banks' stability, which in turn protects water quality by reducing erosion and siltation.

Banks may also provide shade that moderates water temperatures, as well as providing breeding habitat, escape cover and food, all of which are significant to the protection of fisheries and wildlife. Banks which drop off quickly or overhang the water's edge often contain numerous undercuts which are favorite hiding spots for important game species such as larch mouth bass (*Micropterus salmoides*). Banks act to confine floodwaters during the most frequent storms, preventing the spread of water to adjacent land.

Because banks confine water during such storms to an established channel, they maintain water temperatures and depths necessary for the protection of fisheries. The maintenance of cool water temperatures during warm weather is critical to the survival of important game species such as brook trout (*Salvelinus fontinalis*), rainbow trout (*Salvelinus gairdneri*), and brown trout (*Salmo trutta*). An alteration of a bank that permits water to frequently and consistently spread over a large and more shallow area increases the amount of property which is routinely flooded, as well as elevating water temperature and reducing fish habitat within the main channel, particularly during warm weather.

Land within 100 feet of a bank is likely to be significant to the protection and maintenance of the bank, and therefore to the protection of the interests which these resource areas serve to protect.

2) Definition, Critical Characteristics and Boundary

- a) A Bank is the portion of the land surface which normally abuts and confines a water body and a bordering vegetative wetland and adjacent floodplain; or in the absence of these, it occurs between a water body and an upland. A bank may be partially or totally vegetated or it may be comprised of exposed soil, gravel or stone.
- b) The physical characteristics of a bank as well as its location, as described in the foregoing subsection (2)
- c) Are critical to the protection of the interests specified in Section 3.01 (1)

- d) The upper boundary of a bank is the first observable break in the slope or the mean annual flood level, whichever is higher. The lower boundary of a bank is the mean annual low flow level.
- 3) No activity other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of a bank, or land within 50 feet of any bank, shall be permitted by the Conservation Commission, except for activity which is allowed under a variance from these regulations granted pursuant to Section 4.01.
- 4) Any activity which is allowed under a variance granted pursuant to Section 4.01 of these regulations on a bank or on land within 100 feet of a bank shall not impair the following:
 - a) The physical stability of the bank;
 - b) The water carrying capacity of the existing channel within the bank;
 - c) Ground water and surface water quality;
 - d) The capacity of the bank to provide breeding habitat, escape cover and food for fisheries and wildlife

2.03 Vegetated Wetlands (Wet Meadows, Marshes, Swamps and Bogs)

1) Preamble

Vegetated Wetlands are likely to be significant to wildlife, public or private water supply, to ground water supply, to flood control, to storm damage prevention, to prevention of pollution, to the protection of fisheries, and to the protection of shellfish.

The plant communities, soils and associated low, flat topography of Vegetated Wetlands remove or detain sediments, nutrients, (such as nitrogen and phosphorous) and toxic substances (such as heavy metal compounds) that occur in runoff and flood waters.

Some nutrients and toxic substances are detained for years in plant root systems or in the soils. Others are held by plants during the growing season and released as the plants decay in the fall and winter.

This latter phenomenon delays the impacts of nutrients and toxins until the cold weather period, when such impacts are less likely to reduce water quality.

Vegetated wetlands are areas where ground water discharges to the surface and where, under some circumstances, surface water discharges to the ground water.

The profusion of vegetation and the low, flat topography of Vegetated wetlands slow down and reduce the passage of flood waters during periods of peak flows by providing temporary flood water storage, and by facilitating water removal through evaporation and transpiration. This reduces downstream flood crests and resulting damage to private and public property. During dry periods the water retained in Vegetated wetlands is essential to the maintenance of base flow levels in rivers and streams, which in turn is important to the protection of water quality and water supplies.

Wetlands vegetation provides shade that moderates water temperatures important to fish life. Wetlands flooded by adjacent water bodies and waterways provide food, breeding habitat and cover for fish. Fish populations in the larval state are particularly dependent upon food provided by over bank flooding which occurs during peak flow periods (extreme storms), because most river and stream channels do not provide quantities of the microscopic plant and animal life required.

Vegetated wetlands, together with land within 100 feet of a vegetated wetland, serve to moderate and alleviate thermal shock and pollution resulting from runoff from impervious surfaces which may be detrimental to wildlife, fisheries, and shellfish downstream of the vegetated wetland.

The maintenance of base flows by vegetated wetlands is likely to be significant to the maintenance of a proper salinity ratio in estuarine areas downstream of the vegetated wetland. A proper salinity ration, in turn, is essential to the ability of shellfish to spawn successfully, and to therefore provide for the continuing procreation of shell fisheries.

Land within 100-feet of a Vegetated wetland is likely to be significant to the protection and maintenance of vegetated wetlands, and therefore to the protection of the interests which these resource areas serve to protect.

2) Definition, Critical Characteristics and Boundary

- a) Vegetated wetlands are freshwater wetlands. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. They are areas where the topography is low and flat, and where the soils are annually saturated. The ground and surface water regime and the vegetational community which occur in each type of freshwater wetland are specified in Section 2.03 (2) (c) , below.
- b) The physical characteristics of Vegetated wetlands, as described in the foregoing subsection (2) (a), are critical to the protection of the interests specified in Section 3.03 (1) above.
- c) The boundary of Vegetated wetlands is the line within which 50 percent of more of the vegetational community consists of the wetland plant species identified in Section 3.03 (2) (c) (iv) below. The Town of Hanson uses Soils as well as Vegetation to delineate Wetland boundaries as defined in 310 CMR 10.55.

- i) The term “**Bogs**” as used in this Section shall mean areas where standing or slowly running water is near or at the surface during a normal growing season and where a vegetational community has a significant portion of the ground or water surface covered with sphagnum moss (**Sphagnum spp.**) and where the vegetational community is made of a significant portion of one or more of, but not limited to nor necessarily including all, of the following plants or groups of plants: aster (**Aster nemoralis**), azaleas (**Rhododendron canadense and R. viscosum**), black spruce (**Picea mariana**), bog cotton (**Eriophorum**), cranberry (**Vaccinium macrocarpon**), high-bush blueberry (**Vaccinium corymosom**), larch (**Larix laricina**), laurels (**Kalmia augustifolia** **K. polifolia**), leatherleaf (**Chamaedaphne calyculata**), orchids (**Arethusa, alopogon, Pogonia**), pitcher plants, (**Sarracenia purpurea**), sedges (**Cyperaceae**), sundews (**Droseraceae**), sweet gale (**Myrica gale**), white cedar (**Chamaecyparis thyoides**).
- ii) The term “**Swamps**” as used in this Section, shall mean areas where ground water is at or near the surface of the ground for a significant part of the growing season or where runoff water from surface drainage frequently collects above the soil surface, and where a significant part of the vegetational community is made up of, but not limited to nor necessarily include all of the following plants or groups of plants: alders (**Alnus**), ashes (**Fraxinus**), azaleas (**Rhododendron canadense and R. viscosum**), black alder (**Ilex verticillata**), black spruce (**Picea mariana**), button bush (**Cephalanthus occidentalis**), American or white elm (**Ulmus Americana**), white Hellebore (**Veratrum viride**), Hemlock (**Tsuga caanadensis**), highbush blueberry (**Vaccinium corymosom**), larch (**Larix laricina**), Cowslip (**Caltha palustris**), poison sumac (**Toxicodendron vernix**), red maple (**Acer rubrum**), skunk cabbage (**Symplocarpus foetidus**), sphagnum mosses (**sphagnum**), Spicebush (**Lindera benzoin**), black gum tupelo (**Nyssa sylvatica**), sweet pepper bush (**Clethra alnifolia**), white cedar (**Chamaecyparis thyoides**), willow (**Salicaceae**).
- iii) The term “**Wet meadow**” as used in this Section where ground water is at the surface for a significant part of the growing season and near the surface throughout the year and where a significant part of the vegetational community is composed of various grasses, sedges and rushes; made up of, but not limited to nor necessarily including all, of the following plants or groups of plants: blue flag (**Iris**), vervain (**Verbena**), thoroughwort (**Eupatorium**), dock (**Rumex**), false loosestrife (**Ludwigia**), hydrophilic grasses (**Poaceae**), loosestrife (**Lythrum**), marsh fern (**Dryopteris thelypteris**), rushes (**Junaceae**), sedges (Cyperaceae), sensitive fern (Onoclea sensibilis), smartweed (Polygonum).
- iv) The term “**marshes**” as used in this Section, shall mean areas where a vegetational community exists in standing or running water during the growing season and where a significant part of the vegetational community is composed of, but not limited to nor necessarily including all, of the following plants or groups of plants: arums (**Araceae**), bladder worts (**Utricularia**), bur reeds (**Sparganiaceae**), button bush (**Cephalanthus occidentalis**), cattails (**Typha**), duck weeds (**Lemnaceae**), eelgrass (**Vallisneria**), frog bits (**Hydrocharitaceae**), horsetails (**Equisetaceae**), hydrophilic grasses (**Poaceae**), leatherleaf (**Chamaedaphne calyculata**), pickerel weeds (**Pontedareaceae**), pipeworts (**Eriocaulon**), pond weeds (**Potamogeton**), rushes (**Junaceae**), sedges (**Cyperaceae**), smartweeds (**Polygonum**), sweet gale (**Myrica gale**), water myfoil (**Haloragaceae**), water lilies (**Nymphaeaceae**), water starworts (**Callitrichaceae**), water willow (**Decodon verticillatus**).

3) No activity other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, or altering of a Vegetated wetland, or of land within 50 feet of a Vegetated wetland, shall be permitted by the Conservation Commission, except for activity which is allowed under a variance from these regulations granted pursuant to Section 4.01.

4) Any activity which is allowed under a variance granted pursuant to Section 5.01 of these regulations upon or within 50 feet of a Vegetated wetland shall not impair in any way the Vegetated wetland’s ability to perform any of the functions set forth in Section 3.03 (1).

5) Where a proposed activity involves the removing, filling, dredging or altering of a Bordering Vegetated Wetland, the Conservation Commission shall presume that such area is significant to the interests specified in the By-law. This presumption is rebuttable and may be overcome upon a clear showing that the Bordering Vegetated Wetland does not play a role in the protection of said interests. In the event that the presumption is deemed to have been overcome, the Conservation Commission shall make a written determination to this effect, setting forth its grounds.

6) General Performance Standards

- a) Where the presumption set forth in the By-law is not overcome, any proposed work in the Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.
- b) Notwithstanding the provisions of the By-law, the Conservation Commission may issue an Order of Conditions permitting work which results in the loss of up to 5,000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the Conservation Commission deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:
 - 1.) The surface of the replacement area to be created ("the replacement area") shall be done on a 1.5 to 1 to that of the area lost ("the lost area")
 - 2.) The ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area.
 - 3.) The overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;
 - 4.) The replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;
 - 5.) The replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;
 - 6.) At least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods;
 - 7.) The replacement area shall be provided in a manner which is consistent with all other general performance standards for each resource area in Part III of the By-law regulations.
 - 8.) A performance bond will be provided by the applicant, the amount to be determined by the Conservation Commission and will be held for a period of three years to insure compliance with these regulations.

7) Replication Requirements

A) Plans

The following information shall be provided for the evaluation of proposed replication of Bordering Vegetated Wetlands (BVW). All information needed will be determined on an individual case basis. The information to be supplied shall include a description of the existing conditions of the area under consideration for alteration as well as for any proposed created wetland is to be described according to all parameters below including expected goals and a schedule for a three year scope of monitoring and maintenance.

B) Hydrology

- 1) Brief history of the water/land relationship in the area describing any natural or man-made changes made over time.
- 2) Description of the macrotopography and its relationship to catchment, flood magnitude, storage, estimates of annual average, as well as 2, 10, and 100 year storm flow volume of surface runoff.
- 3) Description of surficial geology and topography as it might relate to surface, channel or standing water.
- 4) Measurement of stream flow velocity, channel morphology and bed load, with seasonal fluctuations for 2, 10, and 100 year storm events (intermittent stream courses and ditches included).
- 5) Include groundwater contribution to stream flow (base flow). Velocity flow through various stations in wetland should be measured.
- 6) Areas of open water should be measured for seasonal variations in depth, size, shape and relationship to wind directions (fetch).
- 7) Accurate field flagging surveyed to plan, at 10 foot intervals, at the boundary of the 100 and 10 year flood elevations. (Elevations to be calculated if FEMA data is unavailable).
- 8) Measurement of seasonal levels of precipitation and statement regarding precipitation water quality.

C) Water Quality

- 1) Water quality assessment statement of existing conditions, seasonal fluctuations interpolation) for standing inflowing and out-flowing water:

Fecal Coliform	Dissolved Oxygen
Fecal Streptococci	Nitrate Nitrogen
Ammonia Nitrogen	Total Phosphorus

Chloride	Total Alkalinity
Conductivity	Temperature
PH	Total suspended solids

D) Vegetation

- 1) Listing of species by both common and scientific names and percentage cover for Bordering Vegetated Wetland. Proposed plantings should include a minimum of two wetland species indigenous to the site.
- 2) Accurate flagging of existing and proposed BVW boundary at 10 foot intervals, using a numbered flag system.
- 3) Plan to accomplish 75% of original cover percentage with 80% survival after 3 complete growing seasons.
- 4) Description of cover type for BVW, differentiation between woody, emergent, submergent and floating vegetation.
- 5) Measurement of stem density for woody species expressed as greater than or less than a given number of stems per meter square for BVW.
- 6) Description of plant vigor by visual determination in the field such as stunted, sparse growth, yellowing, strong, healthy, etc. for BVW.
- 7) General description of surrounding area cover types and density within 100-feet.
- 8) Proposal for stations from which yearly photographs will be taken during monitoring period and submitted to the Commission to demonstrate success.
- 9) Depth of heavy/intense root zone and relationship of roots to saturated soils and water table during growing seasons.

E) Soils

- 1) General description of the geology, topography, physiographic and hydrogeologic setting for each wetland type and surrounding landscape.
- 2) Soils profile morphology (to 3 feet or impervious material including soil color, textures, degree of humification, structure, depth, induration/compaction, special features—mottling, depth to water table bearing capacity), relationship of special features to root zone.
- 3) Relate observed field characteristics to published information or determine for each soil horizon, physical parameters including porosity, hydraulic conductivity, and bulk density.
- 4) Determine chemical parameters including PH, conductivity, total phosphorus, total nitrogen, and organic carbon.
- 5) Include plan for soil type and characteristic replication.
- 6) Plan to toxins testing if preliminary evidence suggests possibility of contamination.

F) Animal Habitat

- 1) Description of slopes or any topographical variations
- 2) Abundance of cavities suitable for burrowing either in open area or within confines or root/soil systems (none, few, many)
- 3) Description (size & number) of mud flats and other exposed areas.
- 4) Amount or number of gravel, rocks, boulders, bedrock, outcroppings and rocks protruding from submerged soils.
- 5) Edible plants on or within 20 feet of BVW (of high wildlife food value for vertebrates).
- 6) Percentage of area shaded by tree canopy or dense shrub layer.
- 7) Percent of ground cover and depth of leaf litter.
- 8) Number and size (diameter at breast height) of standing trees with cavities, as well as diameter of such cavities.
- 9) General description of land within 50 feet of BVW on each adjacent lot, including natural environment, level of development, distance from BVW or man-made structures.
- 10) Percentage of wetland marsh or bog (if any) that is overhung by tree or shrub branches and height or such branches (3 feet, 3 to 6 feet, above 6 feet) including dead trees.
- 11) Number and size of vegetation lying or extending into BVW which is suitable for basking, perching or for cover.
- 12) Identification of any migratory area (area used by wildlife moving from one habitat to another).

G) Performance Standards

To ensure the continuity in wetland ecological systems, the following conditions shall be considered proper wetland replication standards.

- 1) Replacement area shall be created before wetland is filled/alterd and other construction is begun.
- 2) A wetland specialist with at least two years experience with installing wetland replacement areas and a biology background shall supervise the installation.

- 3) The Certificate of Compliance will not be issued for at least two growing seasons after installation
- 4) Written reports shall be submitted at the beginning of each season stating the condition of erosion controls and documenting the vigor and density of growth.
- 5) An "as-built report", along with an "as-built plan" shall be submitted and shall include excavation date and processes, wetland soil depth (planting and re-planting) dates and percentage of cover of individual species.
- 6) A performance bond will be required sufficient to cover expense of a consultant, excavation and re-vegetation.
- 7) 5,000 square feet is the maximum total amount of fill allowed for the entire project area. This clause shall be registered on deeds to individual lots.
- 8) Changes by the applicant may be permitted upon review by the Commission if the project doesn't work.

H) Notwithstanding the provisions of the By-law regulations, the Conservation Commission may issue an Order of Conditions permitting the work which results in the loss of a portion of Bordering Vegetated Wetland when:

- 1) said portion has a surface area of less than 500 square feet
- 2) said portion extends in a distinct linear configuration ("finger-like") into adjacent uplands; and
- 3) in the judgment of the Conservation Commission it is not reasonable to scale down, redesign or otherwise change the proposed work so that it could be completed without loss of said wetland.

I) Notwithstanding the provisions of the By-law Regulations, no project may be permitted which will have an adverse effect on specified habitat sites of rare vertebrate or invertebrate species as identified by the procedures established under the By-law.

2.04 Land Under Water Bodies (Under Any Creek, River, Stream, Pond or Lake

- 1) Preamble

Land under Water bodies and Waterways is likely to be significant to wildlife, public and private water supply, to ground water supply, to flood control, to storm damage prevention of pollution and to the protection of fisheries.

Where Land Under Water Bodies and Waterways is composed of previous material, such land represents a point of exchange between surface and ground water.

The physical nature of Land Under Water Bodies and Waterways is highly variable, ranging from deep organic and fine sedimentary deposits to rocks and bedrock. The organic soils and sediments play an important role in the process of detaining and removing dissolved and particulate nutrients (such as nitrogen and phosphorous) from the surface water above. They also serve as traps for toxic substances (such as heavy metal compounds).

Land Under Water Bodies and Waterways, in conjunction with banks, serves to confine floodwater within a definite channel during the most frequent storms. Filling within this channel blocks flow which in turn causes backwater and overbank flooding during such storms. An alteration of Land Under Water Bodies and Waterways that causes water to frequently spread out over a larger area at a lower depth increases the amount of property which is routinely flooded. Additionally, it results in an elevation of water temperature and a decrease in habitat in the main channel, both of which are detrimental to fisheries, particularly during periods of warm weather and low flows.

Land under rivers, streams and creeks that is composed of gravel allows the circulation of cold, well oxygenated water necessary for the survival of important game fish species such as brook trout (*Salvelinus fontinalis*), rainbow trout (*Salvelinus gairdneri*), brown trout (*Salmo trutta*) and Atlantic salmon (*Salmon salar*). River, stream and creek bottoms with a diverse structure composed of gravel, large and small boulders and rock outcrops provides escape cover and resting areas for the above mentioned game fish species (salmonids). Such bottom type also provides areas for the production of aquatic insects essential to fisheries.

Land within 100 feet of any bank abutting land under a water body is likely to be significant to the protection and maintenance of land under a water body.

- 2) Definition, Critical Characteristics and Boundaries

- a) Land Under Water Bodies is the land beneath any creek, river, stream, pond or lake. Said land may be composed of organic muck or peat, fine sediments, rocks or bedrock.

- b) The physical characteristics and location of Land Under Water Bodies and Waterways specified in the foregoing subsection (20) (a) are critical to the protection of the interests specified in Section 2.04 (1) above.
 - c) The boundary of Land Under Water Bodies is the mean annual low water level.
- 3) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, dredging, or altering of land under a water body shall be permitted by the Conservation Commission except for activity which is allowed under a variance from these regulations granted pursuant to Section 4.01.

4) Performance Standards

Any activity which is allowed under a variance granted pursuant to Section 4.01 of these regulations on land under a water body shall comply with the following regulations;

- a) Any proposed work upon land under a waterbody shall not impair the following:
 - 1) The water carrying capacity within the defined channel which is provided by said land in conjunction with the banks
 - 2) Ground and surface water quality; and
 - 3) The capacity of said land to provide breeding habitat, escape cover and food for fisheries.

2.05 Land Subject to Flooding (Both Bordering and Isolated Areas)

1) Preamble

a) Bordering Land Subject to Flooding:

Bordering Land Subject to Flooding is an area which floods from a rise in a bordering waterway or water body. Such areas are likely to be significant to flood control and storm damage prevention. Bordering Land Subject to Flooding provides a temporary storage area for flood water which has overtopped the bank of the main channel of a creek, river or stream or the basis of a pond or lake. During periods of peak run-off, flood waters are both retained (slowly released through evaporation and percolation) and detained (slowly released through surface discharge) by Bordering Land Subject to Flooding. Over time, incremental filling of these areas causes increases in the extent and level of flooding by eliminating flood storage volume or by restricting flows, thereby causing increases in damage to public and private properties.

b) Isolated Land Subject to Flooding

Isolated Land Subject to Flooding is an isolated depression or a closed basin which serves as a ponding area for run-off or high ground water which has risen above the ground surface. Such areas are likely to be locally significant to flood control and storm damage prevention. In addition, where such areas are underlain by pervious material, they are likely to be significant to public or private water supply and to ground water supply. Where such areas are underlain by pervious material covered by a mat of organic peat and muck, they are also likely to be significant to the prevention of pollution.

Isolated Land Subject to Flooding provides important breeding habitat for amphibians and some rare plants. Isolated Land Subject to Flooding provides a temporary storage area where run-off and high ground water pond and slowly evaporate or percolate into the substrate. Filling causes lateral displacement of the ponded water onto contiguous properties, which may in turn result in damage to said properties. Isolated Land Subject to Flooding, where it is underlain by pervious material, provides a point of exchange between ground and surface waters. Contaminants introduced into said area, such as septic system discharges and road salts, find easy access into the ground water and neighboring wells. Where these conditions occur and a mat of organic peat or muck covers the substrate of the area, said mat serves to detain and remove contaminants which might otherwise enter the ground water and neighboring wells.

- c) Isolated Land Subject to Flooding, where it is a vernal pool habitat, is an essential breeding site for certain amphibians which require isolated areas that are generally flooded for at least two continuous months in the spring and-or summer and are free from fish predators. Most of these amphibians remain near the breeding pool during the remainder of their lifecycle. Many reptiles, birds and mammals also feed here.

2) Definitions, Critical Characteristics and Boundaries

a) Bordering Land Subject to Flooding

- 1) Bordering Land Subject to Flooding is an area with low, flat topography adjacent to and inundated by floodwaters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a Bordering Vegetated Wetland occurs, it extends from such wetland.
- 2) The topography and location of Bordering Land Subject to Flooding specified in the foregoing Sub-section (2) (a) are critical to the protection of the interests specified in Section 2.05 (1) (a) above.
- 3) The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of floodwater which will theoretically result from the statistical 100-year frequency storm. Said boundary shall be that determined by reference to the most recently available flood profile data prepared for the community within which the work is proposed under the National Flood Insurance Program (NFIP, currently administered by the Federal Emergency Management Agency). Said boundary, so determined, shall be presumed accurate. This presumption may be overcome only by credible evidence from a registered professional engineer.

b) Isolated Land Subject to Flooding:

- 1) Isolated Land Subject to Flooding is an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water.

Isolated Land Subject to Flooding may be underlain by pervious material, which in turn may be covered by a mat of organic peat or muck.

- 2) The characteristics specified in the foregoing Sub-section (s) (b) 1 are critical to the protection of the interests specified in Section 2.05 above.
 - 3) The boundary of Isolated Land Subject to Flooding is the perimeter of the largest observed or recorded volume of water confined in said areas.
- 3) No activity, other than the maintenance of an already existing structure, which will result in the building within or upon, removing, filling, dredging, or altering of land subject to flooding shall be permitted by the Conservation Commission, except for activity which is allowed under a variance from these regulations granted pursuant to Section 4.01.
- 4) Any activity which is allowed under a variance granted pursuant to Section 4.01 of these regulations on land subject to flooding shall not result in the following:
- a) Flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area.
 - b) An adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material
 - c) An adverse effect on the capacity of said area to prevent pollution of the ground water, where the area is underlain by pervious material which in turn is covered by a mat of organic peat and muck.
 - d) An impairment of its capacity to provide wildlife habitat where said area is a vernal pool habitat, as determined by procedures contained in 310 C.M.R. 10.60.