

IV. STANDARDS FOR INLAND WETLANDS

Unless otherwise specified herein all Resource Areas and associated Preamble, Definitions, Presumptions and General Performance Standards under the State Wetlands Protection Act shall apply.

All definitions in these Regulations are presumed to be the same as Wetland Protection Act Regulations, unless otherwise noted below (GL. c.131, Section 40, and 310 CMR 10.00, et seq.).

A. Bank (Naturally Occurring and Man-Made Banks and Beaches)

1. Preamble

Banks are likely to be significant to 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 and wildlife habitat. 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 The topography, plant community composition and structure, and soil structure of banks together provide important food, shelter, migratory and overwintering areas, and breeding areas for wildlife. Topography plays a role in determining the suitability of banks to serve as burrowing or feeding habitat. Soil structure also plays a role in determining the suitability for burrowing, hibernation and other cover. Bank topography and soil structure impact the bank's vegetative structure, as well. Bushes and other undergrowth, trees, vegetation extending from the bank into the water, and vegetation growing along the water's edge are also important to a wide variety of wildlife. A number of tubers and berry bushes also grow in banks and serve as important food for wildlife. Finally, banks may provide important shelter for wildlife which needs to move between wetland areas. 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 (*Oncorhynchus mykiss*) 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. Banks are likely to be significant to protection of the following interests: protection of public and private water supply, protection of groundwater, flood control, erosion and sedimentation control, storm damage prevention, protection of water quality, pollution control, protection of wildlife

and fisheries habitat, protection of rare species habitat, protection of agricultural value, protection of aquacultural value and protection of recreation value.

2. Definitions and Critical Characteristics

- a) A Bank is the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, 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 2.a and 2b. are critical to the protection of the interests specified in Section IV.A.1.
- c) The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a Bank is the mean annual low flow level.

3. Presumptions

- a) Where a proposed activity involves the removing, filling, dredging, or altering of a bank, the Commission shall presume that such area is significant to the interests specified in the Preamble above. This presumption is rebuttable and may be overcome upon a clear showing that the bank does not play a role in the protection of said interests. In the event that the presumption is deemed to have been overcome, the Commission shall make a written determination to this effect, setting forth its grounds.
- b) Land within 100 feet of a bank of an intermittent stream and land within 200 feet of a bank of a perennial stream (i.e. Riverfront Area) is likely to be significant to the protection and maintenance of the bank, and therefore to the protection of the interests specified in the Preamble above.

4. General Performance Standards

- (a) Where the presumption set forth in 310 CMR 10.54(3) is not overcome, any proposed work on a Bank shall not impair the following:
 1. the physical stability of the Bank;
 2. the water carrying capacity of the existing channel within the Bank;
 3. ground water and surface water quality;
 4. the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries;
 5. the capacity of the Bank to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. In the case of a bank of a river or an intermittent stream, the impact shall be measured on each side of the stream or river. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.

6. Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.54(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirement of 310 CMR 10.54(4)(a)5., the impact on bank caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures contained in 310 CMR 10.60.
- b) Notwithstanding the provisions of 310 CMR 10.54(4)(a), structures may be permitted in or on a Bank when required to prevent flood damage to facilities, buildings and roads constructed prior to the effective date of 310 CMR 10.51 through 10.60 or constructed pursuant to a Notice of Intent filed prior to the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983), including the renovation or reconstruction (but not substantial enlargement) of such facilities, buildings and roads, provided that the following requirements are met:
 1. The proposed protective structure, renovation or reconstruction is designed and constructed using best practical measures so as to minimize adverse effects on the characteristics and functions of the resource area;
 2. The applicant demonstrates that there is no reasonable method of protecting, renovating or rebuilding the facility in question other than the one proposed. (c) Notwithstanding the provisions of 310 CMR 10.54(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59.
 - a) 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 of land within 50 feet of any bank, shall be permitted by the Commission, except as approved by the Conservation Commission on a case-by-case basis, with the burden of proof upon the applicant, to provide credible information from a competent source, by preponderance of the evidence there will not be an adverse impact to bank.

B. Bordering Vegetated Wetlands (Including but not limited to Wet Meadows, Marshes, Swamps, and Bogs)

1. Preamble

Protection of Wildlife and Fisheries Habitat

Bordering Vegetated Wetlands are presumed to be significant to fish, wildlife and plant habitats.

For vertebrates and invertebrates Bordering Vegetated Wetlands provide food, water, and shelter, especially while migrating and breeding.

Bordering Vegetated Wetlands are presumed to be significant for species habitat, biodiversity, and development of organisms that form the base of the food web, breeding and egg deposition areas (fish, amphibians and reptiles).

Some Bordering Vegetated Wetlands release cooler water to salmonid-bearing streams and rivers.

Protection of Rare Species Habitat

Federal and State listed threatened and endangered species rely directly or indirectly on Bordering Vegetated wetlands for their survival.

Protection of Water Quality, Pollution Control, Erosion and Sedimentation Control

Bordering Vegetated Wetlands provide natural water quality improvement and biogeochemical cycling, provide the conditions needed for the removal of both nitrogen and phosphorus from surface water, improve water/drinking water quality by intercepting surface runoff, removing or retaining inorganic nutrients, processing organic wastes and reducing suspended sediments.

Bordering Vegetated Wetlands reduce environmental problems such as algal blooms, dead zones, and fish kills, that are generally associated with excess nutrients.

Bordering Vegetated Wetlands provide hydrologic cycle roles, including receiving, storing, and releasing water in numerous ways.

Bordering Vegetated Wetlands provide atmospheric maintenance by helping to moderate global climatic conditions, like temperature. Bordering Vegetated Wetlands store carbon within their live and preserved (peat) plant biomass.

Protection of Groundwater & Protection of Public and Private Water Supply

Bordering Vegetated Wetlands provide flood storage, storing and slowly releasing surface water, rain, snow melt, groundwater and flood waters.

Bordering Vegetated Wetlands maintain stream flow during dry periods and replenish groundwater.

Flood Control, Storm Damage Prevention

Vegetation in Bordering Vegetated Wetlands impedes the movement of flood waters and distributes them more slowly over floodplains, counteracting the greatly increased rate and volume of surface water runoff from pavement and buildings

Bordering Vegetated Wetlands protect stream banks against erosion, holding the soil in place with root systems, breaking up the flow of stream or river currents.

Bordering Vegetated Wetlands lower flood heights and reduce erosion downstream and on adjacent lands.

Bordering Vegetated Wetlands reduce flood damage (and related insurance costs), as well as greater protection of human health, safety, and welfare.

Protection of Recreation Value

Bordering Vegetated Wetlands provide opportunities for recreation, education, research and aesthetic appreciation.

Bordering Vegetated Wetlands provide recreational value for hunting, fishing, birdwatching or photographing wildlife. Nature-based tourism involves birds, many of which are wetland dependent.

Bordering Vegetated Wetlands are used for hiking, boating, and other recreational activities, studied in conjunction with environmental programs, excellent research and teaching sites to learn about vegetation, ecological functions and processes, biodiversity,

and plant animal interactions. Artists and writers capture the beauty of wetlands on canvas and paper, or through cameras, and video and sound recorders.

Bordering Vegetated Wetlands provide natural eco/system services and products.

Bordering Vegetated Wetlands provide habitats for commercial fur-bearers like muskrat, beaver, otter, and mink.

Bordering Vegetated Wetlands provide recreation value to migratory bird hunters.

Protection of Agricultural Value

Bordering Vegetated Wetlands produce blueberries, cranberries, mints, and wild rice.

Bordering Vegetated Wetlands produce medicines from wetland soils and plants.

Bordering Vegetated Wetlands reduce flood damage and protect our health and safety, reduce the likelihood of flood damage to homes, businesses, and crops in agricultural areas.

Bordering Vegetated Wetlands reduce or prevent waterlogging of agricultural lands.

Protection of Aquacultural Value & Protection of Recreation Value

Fishing and shell fishing industries harvest wetland-dependent species.

2. Definitions, Critical Characteristics, and Boundary

- a) Bordering Vegetated Wetlands are freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The ground and surface water regime and the vegetational community which occur in each type of freshwater wetland are specified in M.G.L. c. 131, § 40.
- b) The physical characteristics of Bordering Vegetated Wetlands, as described in 310 CMR 10.55(2)(a), are critical to the protection of the interests specified in 310 CMR 10.55(1).
- c) The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. Wetland indicator plants shall include but not necessarily be limited to those plant species identified in the Act. Wetland indicator plants are also those classified in the indicator categories of Facultative, Facultative+, Facultative Wetland-, Facultative Wetland, Facultative Wetland+, or Obligate Wetland in the National List of Plant Species That Occur in Wetlands: Massachusetts (Fish & Wildlife Service, U.S. Department of the Interior, 1988) or plants exhibiting physiological or morphological adaptations to life in saturated or inundated conditions.
 1. Areas containing a predominance of wetland indicator plants are presumed to indicate the presence of saturated or inundated conditions. Therefore, the boundary as determined by 50% or more wetland indicator plants shall be presumed accurate when:
 - a. all dominant species have an indicator status of obligate, facultative wetland+, facultative wetland, or facultative wetland- and the slope is distinct or abrupt between the upland plant community and the wetland plant community;

- b. the area where the work will occur is clearly limited to the buffer zone; or
 - c. the issuing authority determines that sole reliance on wetland indicator plants will yield an accurate delineation.
- 2. When the boundary is not presumed accurate as described in 310 CMR 10.55(2)(c)1.a. through c. or to overcome the presumption, credible evidence shall be submitted by a competent source demonstrating that the boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. The issuing authority must evaluate vegetation and indicators of saturated or inundated conditions if submitted by a credible source, or may require credible evidence of saturated or inundated conditions when determining the boundary. Indicators of saturated or inundated conditions sufficient to support wetland indicator plants shall include one or more of the following:
 - a. groundwater, including the capillary fringe, within a major portion of the root zone;
 - b. observation of prolonged or frequent flowing or standing surface water;
 - c. characteristics of hydric soils.
- 3. Where an area has been disturbed (e.g. by cutting, filling, or cultivation), the boundary is the line within which there are indicators of saturated or inundated conditions sufficient to support a predominance of wetland indicator plants, a predominance of wetland indicator plants, or credible evidence from a competent source that the area supported or would support under undisturbed conditions a predominance of wetland indicator plants prior to the disturbance.
- d. Hydric soils are those soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. For the purposes of these Regulations, “upper part” is defined as 6 inches for Somewhat Poorly Drained Soils. Poorly and very Poorly Drained Soils are presumed to be hydric, unless they have been artificially drained or otherwise altered. In such special cases, the “upper part” shall be defined as within 12 inches of the soil surface. Oxidized rhizospheres and mottling within the “upper part” of the soil as defined above shall be considered as evidence of anaerobic conditions, and the soil shall be considered hydric. Also, for the purposes of the Regulations, wetland plant communities which are dominated by plants, rated as FACW by the Fish and Wildlife Service, and which contain obligate wetland plants, shall be presumed to be located in hydric soils.
- e. The drainage classification of a soil shall be determined as designated in “Delineating Bordering Vegetated Wetlands under the Massachusetts Wetlands Protection Act” (March, 1995). The Commission recognizes however that some hydric soils do not meet these published guidelines, and so reserves the right to make a case-by-case determination of a soil’s drainage classification. These unusual soils include: soils developed in red parent materials, recently deposited sediments, and soils formed in oxygenated groundwater seeps.

- f. In situations where the natural vegetative community may have been destroyed, as for example by lawn or agricultural use, the Commission may determine an area to be a freshwater wetland on the basis of hydric soils alone or, at the request of the applicant or landowner, may defer the determination until the natural vegetation has regrown.
- g. In situations where the Commission determines that the natural vegetative community has been destroyed in violation of the Bylaw, the Commission itself may elect to defer any determination of the presence or absence or (or boundaries of) a freshwater wetland until the natural vegetation has regrown, and until that time may determine the area to be a freshwater wetland on the basis of hydric soils alone.

3. Presumptions

- a. Where a proposed activity involves the removing, filling, dredging, or altering of a freshwater wetland, the Commission shall presume that such an area is significant to the interests specified in the Preamble above (B1). This presumption is rebuttable and may be overcome upon a clear showing that the freshwater 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 Commission shall make a written determination to this effect, setting forth its grounds.
- b. 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 that these resource areas serve to protect.

4. General Performance Standards

- a. Where the presumption set forth in 310 CMR 10.55(3) is not overcome, any proposed work in a Bordering Vegetated Wetland shall not destroy or otherwise impair any portion of said area.
- b. Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:
 - 1. In the Town of Amherst the surface of the replacement area to be created ("the replacement area") shall be double that of the lost area that will be 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; and 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 310 CMR 10.00. In the exercise of this discretion, the issuing authority shall consider the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the extent to which adverse impacts can be avoided, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

7. If the Commission determines that it is unfeasible to create a replacement wetland on site, it may require the applicant to contribute financially to the construction of an offsite replacement area in wetlands under the control of the Commission, the contribution not to exceed the actual cost of the wetland replacement.

- c. Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of a portion of Bordering Vegetated Wetland when;
 - 1. said portion has a surface area 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 issuing authority 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.
- d. Notwithstanding the provisions of 310 CMR 10.55(4)(a),(b) and (c), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.
- e. Any proposed work shall not destroy or otherwise impair any portion of a Bordering Vegetated Wetland that is within an Area of Critical Environmental Concern designated by the Secretary of Energy and Environmental Affairs under M.G.L. c. 21A, § 2(7) and 301 CMR 12.00: Areas of Critical Environmental Concern. 310 CMR 10.55(4)(e):
 - 1. supersedes the provisions of 310 CMR 10.55(4)(b) and (c);
 - 2. shall not apply if the presumption set forth at 310 CMR 10.55(3) is overcome;
 - 3. shall not apply to work proposed under 310 CMR 10.53(3)(1); and
 - 4. shall not apply to maintenance of stormwater detention, retention, or sedimentation ponds, or to maintenance of stormwater energy dissipating structures, that have been constructed in accordance with a valid order of conditions.

- f. These provisions shall not apply to maintenance of stormwater detention, retention, or sedimentation ponds, drainage easements or to maintenance of stormwater emergency dissipating structures, that have been constructed in accordance with a valid Order of Conditions.

C. Isolated Vegetated Wetlands and Vernal Pools (Including but not limited to Wet Meadows, Ponds, Vernal Pools, Woodland Vernal Pool Kettle Holes, Inactive Floodplain Wetlands, Hillside Seeps, Springs, Agricultural Wetlands)

1. Preamble

protection of public and private water supply

Isolated Vegetated Wetlands and Vernal Pools form a point of exchange between ground and surface water, and so are likely to be significant to public and private water supply and to groundwater supply.

protection of groundwater

Isolated Vegetated Wetlands and Vernal Pools serve as recharge and discharge areas, contributing to both local ground-water flow and regional flow.

Seasonal changes in functions may occur, with some wetlands contributing to ground water during high water periods (recharge in the spring) and receiving ground-water inputs during the dry season (late summer) due to high rates of evapotranspiration.

Isolated Vegetated Wetlands and Vernal Pools can be associated with underground networks of fissures and subterranean streams which rapidly move surface causing impacts to ground-water quality.

flood control

Isolated Vegetated Wetlands and Vernal Pools provide surface-water storage functions and provide flood storage within local watersheds.

erosion and sedimentation control

storm damage prevention

Direct precipitation and runoff are major sources of water for Isolated Vegetated Wetlands and Vernal Pools.

protection of water quality

When Isolated Vegetated Wetlands and Vernal Pools are lost, receiving waters and watersheds are more likely to be impacted by contaminants such as nutrients, herbicides, and pesticides.

Water is recharged at topographic highs (wetlands at higher elevations) and discharged to regional lows (e.g., lakes and other wetlands) and eventually to local rivers and streams. Development of adjacent uplands can introduce nutrients from runoff which can alter plant composition.

Isolated Vegetated Wetlands and Vernal Pools provide nutrient transformation and cycling/water-quality maintenance services.

pollution control

Where Isolated Vegetated Wetlands and Vernal Pools are underlain by pervious materials covered by a mat of organic peat and muck which detains and removes contaminants, it is likely to be significant in the prevention of pollution from substance such as herbicides, pesticides, fertilizers, road salts, and septic system discharges.

protection of wildlife and fisheries habitat

Vernal pools, that confine water for a minimum of two continuous spring months but lack vertebrate predators such as adult fish, are significant in the support of duckweed, caddis flies, and mollusks, thus providing habitat for members of the fingernail and pea clam family (Sphaeriidae), numerous amphibians, reptiles (including spotted turtle, painted turtle, and snapping turtle) and a number of other animals.

Vernal pools, in addition, provide critical breeding habitat for the Jefferson salamander (*Ambystoma jeffersonianum*), blue-spotted salamander (*A. laterale*), marbled salamander (*A. opacum*), spotted salamander (*A. maculatum*), and wood frog (*Rana sylvatica*), as well as feeding and occasional breeding habitat for the gray treefrog (*Hyla versicolor*), spring peeper (*H. crucifer*), American toad (*Bufo americanus*), and four-toed salamander (*Hemidactylium scutatum*).

Land under vernal pools is crucial breeding habitat for amphibian species, and, as most of these amphibians remain near the breeding pool during the remainder of their lifecycle, areas immediately surrounding vernal pools are critical in serving all of the non-breeding habitat functions of amphibians that require the pools for breeding.

Such areas also provide food for many reptiles, birds, and mammals.

The existence of large numbers of small wetlands allows the birds to disperse across the landscape, thereby lowering their vulnerability to predation and diseases and, increases the likelihood for successful reproduction and brood-rearing.

Isolated basins and Vernal Pools provide considerable surface-water storage capacity and support wetland plant communities important to wildlife.

Waterfowl depend on a variety of wetlands, including Isolated Vegetated Wetlands and Vernal Pools for successful breeding because no single wetland/basin provides for all their reproductive needs through the breeding season.

Alteration of natural vegetation buffers around Isolated Vegetated Wetlands and Vernal Pools significantly reduces valuable waterfowl nesting and rearing areas.

protection of rare species habitat

Isolated Vegetated Wetlands and Vernal Pools provide habitats for threatened and endangered species or species of concern.

Isolated Vegetated Wetlands like Kettle-hole bogs can harbor boreal plant species which are important sites to conserve for biodiversity.

protection of agricultural value

Storage controls seasonal flooding, thereby protecting agricultural land and communities from damaging floods

protection of aquacultural value

protection of recreation value

2. Definitions, Critical Characteristics, and Boundary

A. Isolated Vegetated Wetlands are:

1. Freshwater wetlands which may be geographically isolated from other resource areas, or within other resource areas. A few types of isolated freshwater wetlands are wet meadows, ponds, inactive floodplain wetlands, hillside seeps, and springs. Isolated Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The ground and surface water regime and the

vegetational community which occur in each type of freshwater wetland are specified in M.G.L. c. 131, § 40.

2. The physical characteristics of Isolated Vegetated Wetlands, are the same as described in 310 CMR 10.55(2)(a), and are critical to the protection of the interests specified in 310 CMR 10.55(1).
3. The boundary of Isolated Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. Wetland indicator plants shall include but not necessarily be limited to those plant species identified in the Wetlands Protection Act. Wetland indicator plants are also those classified in the indicator categories of Facultative, Facultative+, Facultative Wetland-, Facultative Wetland, Facultative Wetland+, or Obligate Wetland in the National List of Plant Species That Occur in Wetlands: Massachusetts (Fish & Wildlife Service, U.S. Department of the Interior, 1988) or plants exhibiting physiological or morphological adaptations to life in saturated or inundated conditions.
4. Areas containing a predominance of wetland indicator plants are presumed to indicate the presence of saturated or inundated conditions. Therefore, the boundary as determined by 50% or more wetland indicator plants shall be presumed accurate when:
 - a. all dominant species have an indicator status of obligate, facultative wetland+, facultative wetland, or facultative wetland- and the slope is distinct or abrupt between the upland plant community and the wetland plant community;
 - b. the area where the work will occur is clearly limited to the buffer zone; or
 - c. the issuing authority determines that sole reliance on wetland indicator plants will yield an accurate delineation.
5. When the boundary is not presumed accurate as described in 310 CMR 10.55(2)(c)1.a. through c. or to overcome the presumption, credible evidence shall be submitted by a competent source demonstrating that the boundary of Isolated Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist. The issuing authority must evaluate vegetation and indicators of saturated or inundated conditions if submitted by a credible source, or may require credible evidence of saturated or inundated conditions when determining the boundary. Indicators of saturated or inundated conditions sufficient to support wetland indicator plants shall include one or more of the following:
 - a. groundwater, including the capillary fringe, within a major portion of the root zone;
 - b. observation of prolonged or frequent flowing or standing surface water;
 - c. characteristics of hydric soils.
 - d. Where an area has been disturbed (e.g. by cutting, filling, or cultivation), the boundary is the line within which there are indicators of saturated or inundated conditions sufficient to support a predominance of wetland indicator plants, a predominance of wetland indicator plants, or credible

evidence from a competent source that the area supported or would support under undisturbed conditions a predominance of wetland indicator plants prior to the disturbance.

- B. Vernal Pools must meet all of the following physical and any one of the following biological criteria. Biological criteria may only be determined during appropriate time of year (between March 15 - June 15, and only during non-drought years). Vernal Pools are considered to be Resource Areas, but they also may be located within other Resources (Ex. Bordering Land Subject to Flooding, Isolated Land Subject to Flooding, Isolated Vegetated Wetlands, Bordering Vegetated Wetlands, and Riverfront).
- a. Physical criteria
 - i. a pool or pond which is a confined basin or depression
 - ii. has no minimum threshold size
 - iii. in most years, holds water for two (2) continuous months. Any one of the following indicators and delineation criteria listed below is an acceptable indicator (furthest extent of the following):
 1. an area consists of at least 50% of the natural vegetative community of obligate or facultative wetland species;
 2. the broadest extent of pooling observed or recorded in said area;
 3. the extent of the presence of water stained leaves;
 4. the extent of the presence of fairy shrimp, caddis fly cases and/or fingernail or pea clams;
 5. the area calculated to be inundated by runoff from the 100-year storm;
 6. the area of hydric soil.
 - iv. supports obligate or facultative species of amphibians and/or non-transient macro-organisms
 - b. Any one of the Biological Criteria listed below:
 - i. identification of any Obligate Species: Wood frog (*Lithobates sylvaticus*), Spotted salamander (*Ambystoma maculatum*), Blue-spotted salamander (*A. laterale*), Jefferson salamander (*A. jeffersonianum*), Marbled salamander (*A. opacum*)
 1. Adult wood frogs: Full chorus (calls constant, continuous, & overlapping), map location of chorus (pool) and site where recording was taken; OR
 2. 5+ mated pairs; OR
 3. Adult salamanders: Congressing; OR
 4. Spermatophores; OR
 5. Marbled salamander attending a nest; OR
 6. Egg masses TOTAL of 5 egg masses including any combination of species; OR
 7. 1 egg mass of a MESA-listed salamander or nest and eggs of marbled salamander; OR
 8. Larvae: Any number of larvae; OR
 9. Transforming juveniles: Still in pool with tail and/or gill remnants.

- ii. one or more of any of the following from at least one obligate species documented by photos, video, or audio (chorusing): Wood frog (*Lithobates sylvaticus*), Spotted salamander (*Ambystoma maculatum*), Blue-spotted salamander (*A. laterale*), Jefferson salamander (*A. jeffersonianum*), Marbled salamander (*A. opacum*)
- iii. one or more of any of the following from at least two facultative species must be documented by photos, video, or audio (chorusing): Spring peeper (*Pseudacris crucifer*), Gray treefrog (*Hyla versicolor*), American toad (*Anaxyrus americanus*), Fowler's toad (*Anaxyrus fowleri*)
 - 1. Adults: Full chorus (calls constant, continuous, & overlapping) with map location of chorus (pool) and site where recording was taken; OR
 - 2. 5+ mated pairs; OR
 - 3. Egg masses; Any number of egg masses; OR
 - 4. Larvae: Any number of larvae; OR
 - 5. Transforming juveniles: Still in pool with tail remnants

3. Presumptions

- A. Where a proposed activity involves the removing, filling, dredging, or otherwise altering an Isolated Vegetated Wetland or Vernal Pool, the Commission shall presume that such an area, as well as the area within 100 feet of the delineated boundary of said wetland, is significant to the interests identified in the preamble. On a case-by-case basis areas beyond the 100-foot delineated boundary may be determined to be significant to the interests identified in the preamble, where wildlife habitat in such areas is critical to success of the underlying resource area, or where alteration in such area is likely to result in alteration of the Isolated Vegetated Wetland or Vernal Pool.
- B. Vernal pools are critical wildlife habitat, particularly amphibian breeding habitat.
- C. Isolated Vegetated Wetlands and Vernal Pools are presumed to be significant to the prevention of flooding and flood damage, protection of public and private water supplies and groundwater, and the prevention of pollution.
- D. Pool-breeding amphibian populations operate at multiple scales, from the individual pool, to surrounding upland habitat, to clusters of pools in a given area/property. Protection of individual pools or even pools with associated upland habitat may be ineffective over the long term if connectivity among pools is not maintained. The Commission can require habitat connectivity be maintained between clusters of pools, and can consider development between pools as habitat alteration, where fragmentation will have adverse impacts on wildlife habitat associated with the vernal pool(s) and/or Isolated Vegetated Wetland(s).
- E. Forest surrounding Vernal Pools provide critical habitats for amphibian survival and are important for the conservation of biodiversity.
- F. Wildlife that use Isolated Vegetated Wetlands and Vernal Pools are dependent on both wetlands and surrounding upland habitats.
- G. Filling, land-leveling, conversion of land cover types, drainage for agriculture, mining, and excavation around Isolated Vegetated Wetlands and Vernal Pools causes:

- i. habitat destruction from altered hydrology (e.g., ground-water withdrawals and drainage)
- ii. water pollution (e.g., runoff from developed areas and farmland and direct discharge of contaminated water, ground water contamination)

4. General Performance Standards

a. Any proposed work within 100 feet of Isolated Vegetated Wetland or Vernal Pool shall not result in the following:

- i. Any impairment of the capacity of the Isolated Vegetated Wetland or Vernal Pool
- ii. Any impairment of the area within 100 feet of the boundary Isolated Vegetated Wetland or Vernal Pool (or setback determined to be appropriate by the Conservation Commission to protect said wetland),
- iii. Any impairment or adverse impact to wildlife habitat within and surrounding Isolated Vegetated Wetlands or Vernal Pools.
- iv. Flood damage due to filling that causes lateral displacement of water which would otherwise be confined within said area.
- v. An adverse effect of public and private water supply or groundwater supply.
- vi. An adverse effect on the capacity of an Isolated Vegetated Wetland(s) or Vernal Pool(s) to prevent pollution of groundwater.
- vii. An adverse effect on or impairment of specified wildlife habitat of rare vertebrate, invertebrate and/or plant species, as identified by procedures established under 310 CMR 10.59.

D. Land Under Water Bodies and Waterways (under any Rivers, Streams, Pond, Pool, or Lake

1. Preamble

Protection of Wildlife and Fisheries Habitat, Protection of Agricultural Value

Land under Water Bodies and Waterways are presumed to be significant to fish, wildlife and plant habitats.

Alteration or filling of Land under Water Bodies and Waterways that causes flooding additionally results in an elevation of water temperature and a decrease in habitat in main channels. Both conditions 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. Where this land has a more diverse structure including gravel, boulders and rock outcrops it is used by game fish species as escape cover and resting areas. Such bottom type also provides areas for the production of aquatic insects essential to fisheries

Land under lakes and ponds is vital to a large assortment of warm water fish during spawning periods. They build nests on the bottom substrates within which they shed and fertilize their eggs.

The plant community composition and structure, hydrologic regime, topography, soil composition and water quality of Land under Water Bodies and Waterways provide important food, shelter, migratory and overwintering areas, and breeding areas for wildlife. Certain submerged rooted vegetation is eaten by water fowl and some mammals. Some amphibians and invertebrate species attach their eggs to such vegetation.

Soil composition is also important for hibernation and for animals which begin to burrow their tunnels underwater.

Protection of Recreation Value

Land under Water Bodies and Waterways is likely to be significant to the protection of recreation value. Some aquatic vegetation protruding out of the water is used for nesting, and many species use dead vegetation resting on land under water but protruding above the surface for feeding and basking. This provides opportunities for wildlife observation, including tourism and educational opportunities.

Land under Water Bodies and Waterways play an important role in the timely draining of inundated land. Many of the access points, trails and bridges of Amherst conservation land rely on this ability.

Protection of Water Quality, Pollution Control

The sediments and organic soils of Land under Water Bodies and Waterways play an important role in the process of detaining and removing dissolved particulate nutrients (such as Nitrogen and Phosphorus) from the surface water above.

Land under Water Bodies and Waterways also serve as traps for toxic substances (such as heavy metal compounds).

Protection of Groundwater, Protection of Public and Private Water Supply

Land under Water Bodies and Waterways is likely to be significant to groundwater and water supplies. Where such land is composed of pervious material, such land represents a point of exchange between surface and ground water.

Flood Control, Storm Damage Prevention, Erosion and Sedimentation Control

The physical nature of Land under Water Bodies and Waterways is highly variable.

Where such land is composed of concrete, asphalt or other artificial impervious material, said land is likely to be significant to flood control and storm damage prevention.

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 flows 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 that is routinely flooded.

Protection of Rare Species Habitat

Rare, threatened and endangered aquatic species rely on land under water for habitat.

2. Definitions and Critical Characteristics

- a. Land under Water Bodies and Waterways 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 310 CMR 10.56(2)(a) are critical to the protection of the interests specified in 310 CMR 10.56(1).
- c. The boundary of Land under Water Bodies and Waterways is the mean annual low water level.

3. Presumptions

- a. Where a project involves removing, filling, dredging or altering of Land under Water Bodies and Waterways, the issuing authority shall presume that such area is significant to the interests specified in 310 CMR 10.56(1). This presumption is rebuttable and may be overcome upon a clear showing that said land does not play a role in the protection of said interests. In the event that the presumption is deemed to have been overcome, the issuing authority shall make a written determination to this effect, setting forth the grounds (Form 6).
- b. Land within 100 feet of land under water bodies is likely to be significant to the protection and maintenance of the land under the water bodies, and therefore to the protection of the interests which these water bodies serve to protect.

4. General Performance Standards

- a. Where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within Land under Water Bodies and Waterways 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;
 3. The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and
 4. The capacity of said land to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures established under 310 CMR 10.60.
 5. Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.56(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirements of 310 CMR 10.56(4)(a)4., the impact on Land under Water Bodies and Waterways caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures established under 310 CMR 10.60.
- b. Notwithstanding the provisions of 310 CMR 10.56(4)(a), the issuing authority may issue an Order in accordance with M.G.L. c. 131, § 40 to maintain or improve boat channels within Land under Water Bodies and Waterways when said work is

designed and carried out using the best practical measures so as to minimize adverse effects such as the suspension or transport of pollutants, increases in turbidity, the smothering of bottom organisms, accumulation of pollutants by organisms or the destruction of fisheries habitat or nutrient source areas.

- c. Notwithstanding the provisions of 310 CMR 10.56(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.

E. Land Subject to Flooding (Bordering and Isolated)

1. Preamble

A. Bordering Land Subject to Flooding

1. 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.
2. 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 basin of a pond or lake. During periods of peak run-off, flood waters are both retained (i.e., 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.
3. Certain portions of Bordering Land Subject to Flooding are also likely to be significant to the protection of wildlife habitat. These include all areas on the ten year floodplain or within 100 feet of the bank or bordering vegetated wetland (whichever is further from the water body or waterway, so long as such area is contained within the 100 year floodplain), and all vernal pool habitat on the 100 year floodplain, except for those portions of which have been so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated (such "altered" areas include paved and gravelled areas, golf courses, cemeteries, playgrounds, landfills, fairgrounds, quarries, gravel pits, buildings, lawns, gardens, roadways (including median strips, areas enclosed within highway interchanges, shoulders, and embankments), railroad tracks (including ballast and embankments), and similar areas lawfully existing on November 1, 1987 and maintained as such since that time). The hydrologic regime, plant community composition and structure, topography, soil composition and proximity to water bodies and bordering vegetated wetlands of these portions of bordering land subject to flooding provide important food, shelter, migratory and overwintering areas, and breeding areas for wildlife. Nutrients from flood waters, as well as the inundation of floodplain soil, create important wildlife habitat characteristics, such as richness and diversity of soil and vegetation. A great many species require or prefer habitat which is as close as possible to water and/or has moist conditions, characteristics generally present on lower floodplains. Similarly, lower floodplains, because of their proximity to water and

vegetated wetlands, can provide important shelter for wildlife which needs to migrate between such areas, or between such areas and uplands. The "edge" where floodplain habitat borders vegetated wetlands or water bodies is frequently very high in wildlife richness and diversity. Similar "edges" may be found elsewhere the lower floodplain, where differences in topography and frequency of flooding have created varied soil and plant community composition and structure. Finally, vernal pool habitat is found at various locations throughout the 100 year floodplain, the pool itself generally formed by meander scars, or sloughs left after the main water channel has changed course. These pools are essential breeding sites 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.

B. Isolated Land Subject to Flooding

1. 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. Finally, where such areas are vernal pool habitat, they are significant to the protection of wildlife habitat.
2. 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.
3. 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.
4. Isolated Land Subject to Flooding, where it is vernal pool habitat, is an essential breeding site for certain amphibians which require isolated areas that are generally flooded for 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 and Critical Characteristics

A. Bordering Land Subject to Flooding

1. Bordering Land Subject to Flooding is an area with low, flat topography adjacent to and inundated by flood waters 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 said wetland.

2. The topography and location of Bordering Land Subject to Flooding specified in the foregoing 310 CMR 10.57(2)(a)1. are critical to the protection of the interests specified in 310 CMR 10.57(1)(a). Where Bordering Land Subject to Flooding is significant to the protection of wildlife habitat, the physical characteristics as described in the foregoing 310 CMR 10.57(1)(a)(3) are critical to the protection of that interest.
3. The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water 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, successor to the U.S. Department of Housing and Urban Development). Said boundary, so determined, shall be presumed accurate. This presumption is rebuttable and may be overcome only by credible evidence from a registered professional engineer or other professional competent in such matters. Where NFIP Profile data is unavailable, the boundary of Bordering Land Subject to Flooding shall be the maximum lateral extent of flood water which has been observed or recorded. In the event of a conflict, the issuing authority may require the applicant to determine the boundary of Bordering Land Subject to Flooding by engineering calculations which shall be:
 - a. based upon a design storm of seven inches of precipitation in 24 hours (i.e., a Type III Rainfall, as defined by the U.S. Soil Conservation Service);
 - b. based upon the standard methodologies set forth in U.S. Soil Conservation Service Technical Release No. 55, Urban Hydrology for Small Watersheds and Section 4 of the U.S. Soil Conservation Service, National Engineering Hydrology Handbook; and
 - c. prepared by a registered professional engineer or other professional competent in such matters.
4. The boundary of the ten year floodplain is the estimated maximum lateral extent of the flood water which will theoretically result from the statistical ten-year frequency storm. Said boundary shall be determined as specified under 310 CMR 10.57(2)(a)3., except that where NFIP Profile data is unavailable, the boundary shall be the maximum lateral extent of flood water which has been observed or recorded during a ten year frequency storm and, in the event of conflict, engineering calculations under 310 CMR 10.57(2)(a)3.a. shall be based on a design storm of 4 /10 (4.8) inches of precipitation in 8 24 hours.
5. The Conservation Commission shall regulate all Vernal Pools under these Regulations regardless of the status of certification of such Vernal Pools by NHESP. However, notwithstanding any other provision of 310 CMR 10.57, should an Environmental Impact Report be required for a proposed project as determined by 301 CMR 11.00: MEPA Regulations the performance standard established under this Section regarding vernal pool habitat shall only apply to

proposed projects which would alter such habitats as have been identified prior to the time that the Secretary of the Executive Office of Energy and Environmental Affairs has determined, in accordance with the provisions of 301 CMR 11.09(4): Eligible Projects, that a final Environmental Impact Report for that project adequately and properly complies with the M.G.L. c. 30, § 6 through 62H (unless, subsequent to that determination, the Secretary requires supplemental information concerning vernal pool habitat, in accordance with the provisions of 301 CMR 11.17: Transition Rules).

6. The boundary of vernal pool habitat is as defined by these regulations. In the event of a conflict of opinion, or the lack of a clear boundary delineation certified by the Division of Fisheries and Wildlife, the applicant may submit an opinion certified by a registered professional engineer, supported by engineering calculations, as to the probable extent of said habitat. Said calculations shall be prepared in accordance with the general requirements set forth in 310 CMR 10.57(2)(a)3.a. through c., except that the maximum extent of said water shall be based upon the total volume (rather than peak rate) of run-off from the drainage area contributing to the vernal pool and shall be further based upon a design storm of 2 /10 (2.6) 6 inches (rather than seven inches) of precipitation in 24 hours. Vernal pool habitat shall include the area within 100 feet of the boundary of the vernal pool itself.

B. Isolated Land Subject to Flooding

- a. Vernal pools and Isolated Vegetated Wetlands that hold any volume of water are by default also considered to be 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 to a volume of at least ¼ acre-feet and to an average depth of at least six inches. 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 310 CMR 10.57(2)(b)1. are critical to the protection of the interests specified in 310 CMR 10.57(1)(b).
 3. The boundary of Isolated Land Subject to Flooding is the perimeter of the largest observed or recorded volume of water confined in said area. In the event of a conflict of opinion regarding the extent of water confined in an Isolated Land Subject to Flooding, the applicant may submit an opinion certified by a registered professional engineer, supported by engineering calculations, as to the probable extent of said water. Said calculations shall be prepared in accordance with the general requirements set forth in 310 CMR 10.57(2)(a)3.a. through c., except that the maximum extent of said water shall be based upon the total volume (rather than peak rate) of run-off from the drainage area contributing to the Isolated Land Subject to Flooding and shall be further based upon the assumption that there is no infiltration of said run-off into the soil within the Isolated Land Subject to Flooding.
 4. If Isolated Land Subject to Flooding has observed physical criteria of a vernal pool it shall be presumed to be vernal pool habitat. The Commission may use its discretion in determining an area is not Vernal Pool habitat with a clear

showing of evidence from the Applicant that the area does not meet the definition of a Vernal Pool under these regulations.).

5. Presumption. Where a project involves removing, filling, dredging or altering of Land Subject to Flooding (both Bordering and Isolated Areas) the issuing authority shall presume that such an area is significant to, and only to, the respective interests specified in 310 CMR 10.57(1)(a) and (b). This presumption is rebuttable and may be overcome only upon a clear showing that said land does not play a role in the protection of said interests. In the event that the presumption is deemed to have been overcome, the issuing authority shall make a written determination to this effect, setting forth its grounds (Form 6).
6. General Performance Standards
 - A. Bordering Land Subject to Flooding
 1. Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows. Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream or creek.
 2. Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.
 3. Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.
 4. Any activity undertaken on land subject to flooding or within 100 feet of land subject to flooding shall not result in the following: (1) flood damage due to filling causing lateral displacement of water that would otherwise be confined; (2) an adverse effect on public or private water supply or groundwater supply, where said area is underlain by pervious material; (3) an adverse effect on the capacity of said area to prevent pollution of groundwater, where the area is underlain by

pervious material covered by a mat of peat or muck; or (4) an impairment of the area's capacity to provide wildlife or rare plant species habitat.

5. Notwithstanding the above provisions, no project may be permitted that might have adverse effect on habitat sites of rare vertebrate or invertebrate species as identified on the Natural Heritage and Endangered Species Estimated Habitat Maps on file with the Commission and identified under "Estimated Habitats of Rare Wildlife" (Section 10.59) of the state Wetlands Protection Act Regulations.
- B. Isolated Land Subject to Flooding. A proposed project in Isolated Land Subject to Flooding shall not result in the following:
1. Flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area.
 2. An adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material.
 3. 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.
- C. An impairment of its capacity to provide wildlife habitat where said area is vernal pool habitat, as determined by procedures contained in 310 CMR 10.60. (c) Protection of Rare Wildlife Species. Notwithstanding the provisions of 310 CMR 10.57(4)(a) or (b), no project may be permitted which will have any adverse effect on specified wildlife habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.

F. Riverfront Area

1. Preamble. Riverfront areas are likely to be significant to protect the private or public water supply; to protect groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect the fisheries. Land adjacent to rivers and streams can protect the natural integrity of these water bodies. The presence of natural vegetation within riverfront areas is critical to sustaining rivers as ecosystems and providing these public values. The riverfront area can prevent degradation of water quality by filtering sediments, toxic substances (such as heavy metals), and nutrients (such as phosphorus and nitrogen) from stormwater, nonpoint pollution sources, and the river itself. Sediments are trapped by vegetation before reaching the river. Nutrients and toxic substances may be detained in plant root systems or broken down by soil bacteria. Riverfront areas can trap and remove disease-causing bacteria that otherwise would reach rivers and coastal estuaries where they can contaminate shellfish beds and prohibit safe human consumption. Natural vegetation within the riverfront area also maintains water quality for fish and wildlife. Where rivers serve as water supplies or provide induced recharge to wells, the riverfront area can be important to the maintenance of drinking water quality and quantity. Land along rivers in its natural state with a high infiltration capacity increases the yield of a water supply well. When riverfront areas lack the capacity to filter pollutants, contaminants can reach human populations served by wells near rivers or by direct river intakes.

The capacity of riverfront areas to filter pollutants is equally critical to surface water supplies, reducing or eliminating the need for additional treatment. In the watershed, mature vegetation within riverfront areas provides shade to moderate water temperatures and slow algal growth, which can produce odors and taste problems in drinking water. Within riverfront areas, surface water interaction with groundwater significantly influences the stream ecosystem. The dynamic relationship between surface and groundwater within the “hyporheic zone” sustains communities of aquatic organisms which regulate the flux of nutrients, biomass and the productivity of organisms including fish within the stream itself. The hyporheic zone extends to greater distances horizontally from the channel in large, higher order streams with alluvial floodplains, but the interaction within this zone is important in smaller streams as well. By providing recharge and retaining natural flood storage, as well as by slowing surface water runoff, riverfront areas can mitigate flooding and damage from storms. The root systems of riverfront vegetation keep soil porous, increasing infiltration capacity. Vegetation also removes excess water through evaporation and transpiration. This removal of water from the soil allows for more infiltration when flooding occurs. Increases in storage of floodwaters can decrease peak discharges and reduce storm damage. Vegetated riverfronts also dissipate the energy of storm flows, reducing damage to public and private property. Riverfront areas are critical to maintaining thriving fisheries. Maintaining vegetation along rivers promotes fish cover, increases food and oxygen availability, decreases sedimentation, and provides spawning habitat. Maintenance of water temperatures and depths is critical to many important fish species. Where groundwater recharges surface water flows, loss of recharge as a result of impervious surfaces within the riverfront area may aggravate low flow conditions and increase water temperatures. In some cases, summer stream flows are maintained almost exclusively from groundwater recharge. Small streams are most readily impacted by removal of trees and other vegetation along the shore. Riverfront areas are important wildlife habitat, providing food, shelter, breeding, migratory, and overwintering areas. Even some predominantly upland species use and may be seasonally dependent on riverfront areas. Riverfront areas promote biological diversity by providing habitats for an unusually wide variety of upland and wetland species, including bald eagles, osprey, and kingfishers. Large dead trees provide nesting sites for bird species that typically use the same nest from year to year. Sandy areas along rivers may serve as nesting sites for turtles and water snakes. Riverfront areas provide food for species such as wood turtles which feed and nest in uplands but use rivers as resting and overwintering areas. Riverfront areas provide corridors for the migration of wildlife for feeding or breeding. Loss of this connective function, from activities that create barriers to wildlife movement within riverfront areas, results in habitat fragmentation and causes declines in wildlife populations. Wildlife must also be able to move across riverfront areas, between uplands and the river. Vernal pools are frequently found within depressions in riverfront areas. These pools are essential breeding sites for certain amphibians which require isolated, seasonally wet areas without predator fish. Most of these amphibians require areas of undisturbed woodlands as habitat during the non-breeding seasons. Some species require continuous woody vegetation between woodland habitat and the breeding pools. Depending on the species, during

nonbreeding seasons these amphibians may remain near the pools or travel $\frac{1}{4}$ mile or more from the pools. Reptiles, especially turtles, often require areas along rivers to lay their eggs. Since amphibians and reptiles are less mobile than mammals and birds, maintaining integrity of their habitat is critical. In those portions so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated, riverfront areas are not significant to the protection of important wildlife habitat and vernal pool habitat.

2. Definitions and Critical Characteristics

- a. A Riverfront Area is the area of land between a river's mean annual high water line and a parallel line measured horizontally. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone.
 1. A river is any natural flowing body of water that empties to any ocean, lake, pond, or other river and which flows throughout the year. Rivers include streams (see 310 CMR 10.04: Stream) that are perennial because surface water flows within them throughout the year. Intermittent streams are not rivers as defined herein because surface water does not flow within them throughout the year. When surface water is not flowing within an intermittent stream, it may remain in isolated pools or it may be absent. When surface water is present in contiguous and connected pool/riffle systems, it shall be determined to be flowing. Rivers begin at the point an intermittent stream becomes perennial or at the point a perennial stream flows from a spring, pond, or lake. Downstream of the first point of perennial flow, a stream normally remains a river except where interrupted by a lake or pond. Upstream of the first point of perennial flow, a stream is normally intermittent.
 - a. A river or stream shown as perennial on the current United States Geological Survey (USGS) or more recent map provided by the Department is perennial.
 - b. A river or stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Massachusetts Department of Environmental Protection, that has a watershed size greater than or equal to one square mile, is perennial.
 - c. A stream shown as intermittent or not shown on the current USGS map or more recent map provided by the Department, that has a watershed size less than one square mile, is intermittent unless:
 - i. The stream has a watershed size of at least $\frac{1}{2}$ (0.50) square mile and has a predicted flow rate greater than or equal to 0.01 cubic feet per second at the 99% flow duration using the USGS Stream Stats method. The issuing authority shall find such streams to be perennial; or
 - ii. When the USGS StreamStats method cannot be used because the stream does not have a mapped and digitized centerline and the stream has a watershed size of at least $\frac{1}{2}$ (0.50) square mile, and the surficial geology of the

contributing drainage area to the stream at the project site contains 75% or more stratified drift, the issuing authority shall find such streams to be perennial. Stratified drift shall mean sand and gravel deposits that have been layered and sorted by glacial meltwater streams. Areal percentages of stratified drift may be determined using USGS surficial geologic maps, USGS Hydrological Atlases, Massachusetts Geographical Information System (MassGIS) surficial geology data layer, or other published or electronic surficial geological information from a credible source; or

- iii. If the Commission is presented with evidence from a credible source that the watershed size of a stream is greater than or equal to a ½ (.50) square mile, it shall determine the stream to be perennial.
- d. Notwithstanding 310 CMR 10.58(2)(a)1.a. through c., the issuing authority shall find that any stream is intermittent based upon a documented field observation that the stream is not flowing. A documented field observation shall be made by a competent source and shall be based upon an observation made at least once per day, over four days in any consecutive 12 month period, during a non-drought period on a stream not significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other human-made flow reductions or diversions. Field observations made after December 20, 2002 shall be documented by field notes and by dated photographs or video. Field observations made prior to December 20, 2002 shall be documented by credible evidence. All field observations shall be submitted to the issuing authority with a statement signed under the penalties of perjury attesting to the authenticity and veracity of the field notes, photographs or video and other credible evidence. Department staff, conservation commissioners, and conservation commission staff are competent sources; issuing authorities may consider evidence from other sources that are determined to be competent.
- e. Rivers include the entire length and width to the mean annual high-water line of the major rivers
- f. Rivers include perennial streams that cease to flow during periods of extended drought. Periods of extended drought for purposes of 310 CMR 10.00 shall be those periods, in those specifically identified geographic locations, determined to be at the "Advisory" or more severe drought level by the Massachusetts Drought Management Task Force, as established by the Executive Office of Energy and Environmental Affairs and the Massachusetts Emergency Management Agency in 2001, in accordance with the Massachusetts Drought Management Plan (MDMP). Rivers and streams that are perennial under natural conditions but are

significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other human-made flow reductions or diversions shall be considered perennial.

- g. Where rivers flow through lakes or ponds, the Riverfront Area stops at the inlet and begins again at the outlet. A water body identified as a lake, pond, or reservoir on the current USGS map or more recent map provided by the Department, is a lake or pond, unless the issuing authority determines that the water body has primarily riverine characteristics. When a water body is not identified as a lake, pond, or reservoir on the current USGS map or more recent map provided by the Department, the water body is a river if it has primarily riverine characteristics. Riverine characteristics may include, but are not limited to, unidirectional flow that can be visually observed or measured in the field. In addition, rivers are characterized by horizontal zonation as opposed to the vertical stratification that is typically associated with lakes and ponds.
2. Mean Annual High-water Line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. Field indicators of bankfull conditions shall be used to determine the mean annual high-water line. Bankfull field indicators include but are not limited to: changes in slope, changes in vegetation, stain lines, top of pointbars, changes in bank materials, or bank undercuts.
 - a. In most rivers, the first observable break in slope is coincident with bankfull conditions and the mean annual high-water line.
 - b. In some river reaches, the mean annual high-water line is represented by bankfull field indicators that occur above the first observable break in slope, or if no observable break in slope exists, by other bankfull field indicators. These river reaches are characterized by at least two of the following features: low gradient, meanders, oxbows, histosols, a low-flow channel, or poorly-defined or nonexistent banks.
3. The Riverfront Area is the area of land between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet away, except that the parallel line is located:
 - a. 100 feet away for new agricultural and aquacultural activities. Measured horizontally means that the riverfront area extends at a right angle to the mean annual high-water line rather than along the surface of the land. Where a river runs through a culvert more than 200 feet in length, the riverfront area stops at a perpendicular line at the upstream end of the culvert and resumes at the downstream end. When a river contains islands, the riverfront area extends landward into the island from and parallel to the mean annual high-water line.

- b. The physical characteristics of a Riverfront Area as described in 310 CMR 10.58(2)(a) are critical to the protection of the interests specified in 310 CMR 10.58(1).
 - c. The boundary of the Riverfront Area is a line parallel to the mean annual high-water line, located at the outside edge of the riverfront area. At the point where a stream becomes perennial, the riverfront area begins at a line drawn as a semicircle with a 200 foot (100 foot for new agriculture) radius around the point and connects to the parallel line perpendicular to the mean annual high-water line which forms the outer boundary.
3. **Presumption.** Where a proposed activity involves work within the riverfront area, the issuing authority shall presume that the area is significant to protect the private or public water supply; to protect the groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect fisheries. The presumption is rebuttable and may be overcome by a clear showing that the riverfront area does not play a role in the protection of one or more of these interests. In the event that the presumption is deemed to have been overcome as to the protection of all the interests, the issuing authority shall make a written determination to this effect, setting forth its grounds on Form 6. Where the applicant provides information that the riverfront area at the site of the activity does not play a role in the protection of an interest, the issuing authority may determine that the presumption for that interest has been rebutted and the presumption of significance is partially overcome.
4. **General Performance Standards.** Where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. In the event that the presumption is partially overcome, the issuing authority shall make a written determination setting forth its grounds in the Order of Conditions and the partial rebuttal shall be taken into account in the application of 310 CMR 10.58 (4)(d)1.a. and c.; the issuing authority shall impose conditions in the Order that contribute to the protection of interests for which the riverfront area is significant.
 - a. Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the riverfront area, as identified in 310 CMR 10.55 (Bordering Vegetated Wetland), and 10.57 (Land Subject to Flooding). When work in the riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of M.G.L. c. 131, § 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the riverfront area.

- b. Protection of Rare Species. No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.
- c. Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 § 40.

1. Definition of Practicable. As set forth in 310 CMR 10.04, an alternative is practicable and substantially equivalent economically if it is available and capable of being done after taking into consideration costs, existing technology, proposed use, and logistics, in light of overall project purposes. Available and capable of being done means the alternative is obtainable and feasible. Project purposes shall be defined generally (e.g., single family home, residential subdivision, expansion of a commercial development). The alternatives analysis may reduce the scale of the activity or the number of lots available for development, consistent with the project purpose and proposed use. The alternatives analysis shall not include interior design specifications (i.e., neither the proposed use or project purpose in the Notice of Intent nor the Order of Conditions should specify the number of rooms, bedrooms, etc. within a building). Transactions shall not be arranged to circumvent the intent of alternatives analysis review. The four factors to be considered are:

- a. Costs, and whether such costs are reasonable or prohibitive to the owner. The owner means the individual or entity which owns the area where the activity will occur or which will implement the project purpose. Cost includes expenditures for a project within the riverfront area, such as land acquisition, site preparation, design, construction, landscaping, and transaction expenses. Cost does not include anticipated profits after the project purpose is achieved or expenditures to achieve the project purpose prior to receiving an Order with the exception of land acquisition costs incurred prior to August 7, 1996. In taking costs into account, the issuing authority shall be guided by these principles:
 - i. The cost of an alternative must be reasonable for the project purpose, and cannot be prohibitive.
 - ii. Higher or lower costs taken alone will not determine whether an alternative is practicable. An alternative for proposed work in the riverfront area must be a practicable and substantially equivalent economic alternative (i.e., will achieve the proposed use and project purpose from an economic perspective).
 - iii. In considering the costs to the owner, the evaluation should focus on the financial capability reasonably expected from the type of owner (e.g., individual homeowner, residential developer, small business owner, large commercial or industrial developer) rather than the personal or corporate financial status of that particular owner. Applicants should not submit, nor should issuing authorities request, financial information of a confidential nature, such as income tax records or bank statements.

- iv. Issuing authorities may require documentation of costs, but may also base their determinations on descriptions of alternatives, knowledge of alternative sites, information provided by qualified professionals, comparisons to costs normally associated with similar projects, or other evidence. Any documentation of costs should be limited to that required for a determination of whether the costs are reasonable or prohibitive.
 - b. Existing technology, which includes best available measures (i.e., the most up-to date technology or the best designs, measures, or engineering practices that have been developed and are commercially available);
 - c. The Proposed Use. This term is related to the concept of project purpose. In the context of typical single family homes, the project purpose (construction of a single family house) and proposed use (family home) are virtually identical. In the context of projects where the purpose implies a business component, such as residential subdivision, commercial, and industrial projects, the proposed use typically requires economic viability. Practicable and substantially equivalent economic alternatives include alternatives which are economically viable for the proposed use from the perspective of site location, project configuration within a site, and the scope of the project. In the context of publically financed projects, the proposed use includes consideration of legitimate governmental purposes (e.g., protection of health and safety, providing economic development opportunities, or similar public purposes); and
 - d. Logistics. Logistics refers to the presence or absence of physical or legal constraints. Physical characteristics of a site may influence its development. Legal barriers include circumstances where a project cannot meet other applicable requirements to obtain the necessary permits at an alternative site. An alternative site is not practicable if special legislation or changes to municipal zoning would be required to achieve the proposed use or project purpose. An alternative is not practicable if the applicant is unable to obtain the consent of the owner of an alternative site for access for the purpose of obtaining the information required by the Notice of Intent or of allowing the issuing authority to conduct a site visit.
- 2. Scope of Alternatives. The scope of alternatives under consideration shall be commensurate with the type and size of the project. The issuing authority shall presume that alternatives beyond the scope described below are not practicable and therefore need not be considered. The issuing authority or another party may overcome the presumption by demonstrating the practicability of a wider range of alternatives, based on cost, and whether the cost is reasonable or prohibitive to the owner; existing technology; proposed use; and logistics in light of the overall project purpose.
 - a. The area under consideration for practicable alternatives is limited to the lot for activities associated with the construction or expansion of a single family house on a lot recorded on or before August 1, 1996.
 - b. The area under consideration for practicable alternatives is limited to the lot, the subdivided lots and any adjacent lots formerly or presently owned by the same owner for:

- i. activities associated with the construction or expansion of a single family house on a lot recorded after August 1, 1996;
 - ii. any expansion of an existing structure, including enlargement of the footprint of any structure or the addition of associated structures for single family homes (e.g., a garage) on lots recorded after August 1, 1996;
 - iii. any activity other than the construction or expansion of a single family house where the applicant owned the lot before August 7, 1996, including the creation of a real estate subdivision but excluding public projects, and the applicant will implement the project purpose;
 - iv. new agriculture or aquaculture projects;
 - iv. any activity by a public entity when funds for the purchase of the site for the project purpose have been appropriated through action of the appropriate municipal board or state agency prior to the August 7, 1996; or
 - v. any lot shown on a definitive subdivision plan approved under M.G.L. c. 41, §§ 81K to 81GG, provided there is a recorded deed restriction limiting the total alteration to 5000 square feet or 10%, whichever is greater, of the riverfront area allocated to the lots within the entire subdivision.
- c. Except as allowed under 310 CMR 10.58(4)(c)2.b., the area under consideration for practicable alternatives extends to the original parcel and the subdivided parcels, any adjacent parcels, and any other land which can reasonably be obtained within the municipality for:
 - i. activities associated with residential subdivision or housing complexes, institutional, industrial, or commercial projects; or
 - ii. activities conducted by municipal government. For adjacent lots, reasonably be obtained means to purchase at market prices if otherwise practicable, as documented by offers (and any responses). For other land, reasonably be obtained means adequate in size to accommodate the project purpose and listed for sale within appropriately zoned areas, at the time of filing a Request for Determination or Notice of Intent, within the municipality.
- d. Alternatives extend to any sites which can reasonably be obtained within the appropriate region of the state for:
 - i. residential, institutional, commercial, or industrial activities required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under M.G.L. c. 30, §§ 61 through 62H, or an alternatives analysis conducted by the Corps of Engineers for a Section 404 permit under the federal Clean Water Act, 33 U.S.C. 1251 et seq., and used for 401 Water Quality Certification under 314 CMR 9.00: 401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters of the United States Within the Commonwealth; or
 - ii. activities conducted by district, county, state or federal government entities. The area to be considered is the service area within the

governmental unit boundary or jurisdictional authority, or the municipality if there is no defined service area, consistent with the project purpose.

3. Evaluation of Alternatives. The applicant shall demonstrate that there are no practicable and substantially equivalent economic alternatives as defined in 310 CMR 10.58(4)(c)1., within the scope of alternatives as set forth in 310 CMR 10.58(4)(c)2., with less adverse effects on the interests identified in M.G.L. c. 131 § 40. The applicant shall submit information to describe sites and the work both for the proposed location and alternative site locations and configurations sufficient for a determination by the issuing authority under 310 CMR 10.58(4)(d). The level of detail of information shall be commensurate with the scope of the project and the practicability of alternatives. Where an applicant identifies an alternative which can be summarily demonstrated to be not practicable, an evaluation is not required. The purpose of evaluating project alternatives is to locate activities so that impacts to the riverfront area are avoided to the extent practicable. Projects within the scope of alternatives must be evaluated to determine whether any are practicable. As much of a project as feasible shall be sited outside the riverfront area. If siting of a project entirely outside the riverfront area is not practicable, the alternatives shall be evaluated to locate the project as far as possible from the river. The issuing authority shall not require alternatives which result in greater or substantially equivalent adverse impacts. If an alternative would result in no identifiable difference in impact, the issuing authority shall eliminate the alternative. If there would be no less adverse effects on the interests identified in M.G.L. c. 131, § 40, the proposed project rather than a practicable alternative shall be allowed, but the criteria in 310 CMR 10.58(4)(d) for determining no significant adverse impact must still be met. If there is a practicable and substantially equivalent economic alternative with less adverse effects, the proposed work shall be denied and the applicant may either withdraw the Notice of Intent or receive an Order of Conditions for the alternative, provided the applicant submitted sufficient information on the alternative in the Notice of Intent.
4. No Significant Adverse Impact. The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131, § 40.
 1. Within 200 foot riverfront areas, the issuing authority may allow the alteration of up to 5000 square feet or 10% of the riverfront area within the lot, whichever is greater, on a lot recorded on or before October 6, 1997 or lots recorded after October 6, 1997 subject to the restrictions of 310 CMR 10.58(4)(c)2.b.vi., or up to 10% of the riverfront area within a lot recorded after October 6, 1997, provided that:
 - a. At a minimum, a 100 foot wide area of undisturbed vegetation is provided. This area shall extend from mean annual high-water along the river unless another location would better protect the interests identified in M.G.L. c. 131 § 40. If there is not a 100 foot wide area of undisturbed vegetation within the riverfront area, existing vegetative cover shall be preserved or extended to the maximum extent feasible to approximate a 100 foot wide corridor of natural vegetation. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management

measures may be allowed only when there is no practicable alternative. Temporary impacts where necessary for installation of linear site-related utilities are allowed, provided the area is restored to its natural conditions. Proposed work which does not meet the requirement of 310 CMR 10.58(4)(d)1.a. may be allowed only if an applicant demonstrates by a preponderance of evidence from a competent source that an area of undisturbed vegetation with an overall average width of 100 feet will provide equivalent protection of the riverfront area, or that a partial rebuttal of the presumptions of significance is sufficient to justify a lesser area of undisturbed vegetation;

- b. Stormwater is managed according to standards established by the Department in its Stormwater Policy.
 - c. Proposed work does not impair the capacity of the riverfront area to provide important wildlife habitat functions. Work shall not result in an impairment of the capacity to provide vernal pool habitat identified by evidence from a competent source, but not yet certified. For work within an undeveloped riverfront area which exceeds 5,000 square feet, the issuing authority may require a wildlife habitat evaluation study under 310 CMR 10.60.
 - d. Proposed work shall not impair groundwater or surface water quality by incorporating erosion and sedimentation controls and other measures to attenuate nonpoint source pollution. The calculation of square footage of alteration shall exclude areas of replication or compensatory flood storage required to meet performance standards for other resource areas, or any area of restoration within the riverfront area. The calculation also shall exclude areas used for structural stormwater management measures, provided there is no practicable alternative to siting these structures within the riverfront area and provided a wildlife corridor is maintained (e.g. detention basins shall not be fenced).
2. Within 25 foot riverfront areas, any proposed work shall cause no significant adverse impact by:
- a. Limiting alteration to the maximum extent feasible, and at a minimum, preserving or establishing a corridor of undisturbed vegetation of a maximum feasible width. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management measures shall be allowed only when there is no practicable alternative;
 - b. Providing stormwater management according to standards established by the Department;
 - c. Preserving the capacity of the riverfront area to provide important wildlife habitat functions. Work shall not result in an impairment of the capacity to provide vernal pool habitat when identified by evidence from a competent source but not yet certified; and

- d. work shall not impair groundwater or surface water quality by incorporating erosion and sedimentation controls and other measures to attenuate nonpoint source pollution.
 3. Notwithstanding the provisions of 310 CMR 10.58(4)(d)1. or 2., the issuing authority shall allow the construction of a single family house, a septic system if no sewer is available, and a driveway, on a lot recorded before August 7, 1996 where the size or shape of the lot within the riverfront area prevents the construction from meeting the requirements of 310 CMR 10.58(4)(d)1. or 2., provided that:
 - a. The lot can be developed for such purposes under the applicable provisions of other municipal and state law; and
 - b. The performance standards of 310 CMR 10.58(4)(d) are met to the maximum extent feasible. In difficult siting situations, the maximum extent of yards around houses should be limited to the area necessary for construction. Except where the lot contains vernal pool habitat or specified habitat sites of rare species, a wildlife habitat evaluation study shall not be required.
 4. Notwithstanding the provisions of 310 CMR 10.58(4)(d)1. or 2., the issuing authority may allow the construction of a commercial structure of minimum feasible dimension, on a lot recorded before August 7, 1996 where the size or shape of the lot within the riverfront area prevents the construction from meeting the requirements of 310 CMR 10.58(4)(d)1. or 2., only if:
 - a. The lot can be developed for such purposes and cannot be developed for any other purposes under the applicable provisions of other municipal and state law;
 - b. The work is not eligible for 310 CMR 10.58(5); and
 - c. The performance standards of 310 CMR 10.58(4)(d)1. or 2. are met to the maximum extent feasible.
5. Redevelopment Within Previously Developed Riverfront Areas; Restoration and Mitigation. Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas. A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds. Work to redevelop previously developed riverfront areas shall conform to the following criteria:
 - a. At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.
 - b. Stormwater management is provided according to standards established by the Department.
 - c. Within 200 foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing

conditions within 25 foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

- d. Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).
 - e. The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).
 - f. When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include:
 - 1. removal of all debris, but retaining any trees or other mature vegetation;
 - 2. grading to a topography which reduces runoff and increases infiltration;
 - 3. coverage by topsoil at a depth consistent with natural conditions at the site; and
 - 4. seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site;
 - g. When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 through 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Energy and Environmental Affairs.
 - h. The issuing authority shall include a continuing condition in the Certificate of Compliance for projects under 310 CMR 10.58(5)(f) or (g) prohibiting further alteration within the restoration or mitigation area, except as may be required to maintain the area in its restored or mitigated condition. Prior to requesting the issuance of the Certificate of Compliance, the applicant shall demonstrate the restoration or mitigation has been successfully completed for at least two growing seasons.
6. Notwithstanding the Provisions of 310 CMR 10.58(1) through (5), Certain Activities or Areas Are Grandfathered or Exempted from Requirements for the Riverfront Area:

- a. Any excavation, structure, road, clearing, driveway, landscaping, utility line, rail line, airport owned by a political subdivision, marine cargo terminal owned by a political subdivision, bridge over two miles long, septic system, or parking lot within the riverfront area in existence on August 7, 1996. Maintenance of such structures or areas is allowed (including any activity which maintains a structure, roads (limited to repairs, resurfacing, repaving, but not enlargement), clearing, landscaping, etc. in its existing condition) without the filing of a Notice of Intent for work within the riverfront area, but not when such work is within other resource areas or their buffer zones except as provided in 310 CMR 10.58(6)(b). Changes in existing conditions which will remove, fill, dredge or alter the riverfront area are subject to 310 CMR 10.58, except that the replacement within the same footprint of structures destroyed by fire or other casualty is not subject to 310 CMR 10.58.
- b. Certain minor activities as identified in 310 CMR 10.02(2)(b)1.
- c. On-site sewage disposal systems in existence on August 7, 1996 and the repair or upgrade of existing systems in compliance with 310 CMR 15.000: The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage. New construction of a system under 310 CMR 15.000 must comply with 310 CMR 10.58, subject to the presumption for the siting of systems in 310 CMR 10.03.
- d. The expansion of structures, airports, and marine cargo terminals, provided they are owned by a political subdivision and the expansion activity was physically begun on or before November 1, 1996.
- e. Projects for which a draft environmental impact report was prepared and submitted pursuant to M.G.L. c. 30, § 62B, on or before November 1, 1996, or as extended by the Department for just cause but no later than December 31, 1996.
- f. Projects for which a building permit conforming to local requirements was filed on or before October 1, 1996 and granted on or before April 1, 1997, or as extended by the conservation commission for just cause by no more than 60 days.
- g. The road and infrastructure shown on a definitive subdivision plan approved or endorsed under M.G.L. c. 41, § 81U, on or before August 1, 1996. Activities on the subdivided lots are subject to 310 CMR 10.58 unless they received a building permit under 310 CMR 10.58(6)(f).
- h. Construction, expansion, repair, restoration, alteration, replacement, operation and maintenance of public or private local or regional wastewater treatment plants and their related structures, conveyance systems, and facilities, including utility lines.
- i. Structures and activities subject to a M.G.L. c. 91 waterways license or permit, or authorized prior to 1973 by a special act, are exempt, provided the structure or activity is subject to jurisdiction and obtains a license, permit, or authorization under 310 CMR 9.00: Waterways.
- j. Activities within riverfront areas subject to a protective order under M.G.L. c. 21, § 17B, the Scenic Rivers Act.
- k. Activities within an Historic Mill Complex.

G. Buffer Zones

1. Preamble

- a. A growing body of research evidence suggests that even "no disturbance" areas reaching 100 feet from wetlands may be insufficient to protect many important wetland resource characteristics and values. Problems with nutrient runoff, erosion, siltation, loss of groundwater recharge, poor water quality, vegetation change and harm to wildlife habitat are greatly exacerbated by activities within 100 feet of wetlands. These impacts may happen either immediately, or over time, as a consequence of construction, or as a consequence of daily operation. Thus, in general, work and activity within 100 feet of wetlands should be avoided and discouraged and reasonable alternatives pursued.
- b. Certain areas 50 feet to 100 feet from wetlands may be suitable for temporary, limited or permanent disturbance as appropriate when the applicant can demonstrate to the Commission's satisfaction that the proposed work, activity or use will not affect wetland values singularly or cumulatively and, by means of a written and plan view assessment, that reasonable alternatives to the proposed work or activity do not exist.
- c. The Commission may allow the alteration of up to 20% of the area within the fifty-foot to one-hundred-foot buffer zone. This is a total, cumulative allowance. The proposed work must have no significant adverse impact on the resource area, and the applicant must provide evidence deemed sufficient by the Commission that the area being disturbed will not harm the resource area values protected by the law. Exceptions can be made on a case-by-case basis in re-development projects, urban locations, and areas where resource area values are documented as severely degraded.
- d. Work proposed within the 50 foot Buffer Zone requires the filing of a Notice of Intent Application.
- e. An applicant may file a Request for Determination for work proposed between the 50 and 100 foot Buffer Zone.
- f. If, in response to a Request for Determination of Applicability, the Commission finds that work within the Buffer Zone will alter the resource area, it may issue a Positive Determination of Applicability, and require the filing of a Notice of Intent.
- g. If, in response to a Request for Determination of Applicability, the Commission finds that work within the Buffer Zone will not alter the resource area, it may issue a Negative Determination of Applicability, with or without conditions.

2. Definitions and Critical Characteristics

- a. The Buffer Zone is that area of land extending 100 feet horizontally outward from the boundary of any resource area specified in IV.A, IV.B, IV.C and IV.E above.
- b. Vegetative cover and soils within the Buffer Zone filter runoff, thus protecting water quality within the resource area. The vegetation and soils may also slow surface runoff, thereby permitting infiltration of precipitation, thus maintaining the hydrologic regime to which the resource area is adapted.
- c. Vegetative cover, soils, and topography may help to control the surface and groundwater regime in the resource area in a Buffer Zone even where drainage is not towards a resource area.

3. Presumptions

- a. The Commission shall presume that work involving the types of projects listed below, occurring within the designated distances from a resource area, will result in alteration of the resource area. For purposes of the table below: “work” means filling, excavating, grading, operating construction equipment, altering vegetation, and/or storing or stockpiling earth or construction materials; “building” means a structure requiring a building permit.

Minimum Setbacks for various types of projects:

Type of Project	No-work Distance from a Resource Area	Building Set Back
Single Family/Residential Subdivision Building(s)	50 feet	60 feet
Commercial/Industrial Building(s)	50 feet	75 feet
Institutional/Mixed Use/Multi-Family Building(s)	50 feet	75 feet
Driveways/Utilities	50 feet	
Parking Lot	50 feet	
Other Roads	50 feet	

For any of the projects listed in the table above and any work related thereto proposed in proximity to an Isolated Vegetated Wetland and/or Vernal Pool, no work may occur within 100 feet of the Isolated Vegetated Wetland, Isolated Land Subject to Flooding or Vernal Pool and no structure or associated driveway, utility, parking lot and/or other road may be constructed within 100 feet of the Isolated Vegetated Wetland and/or Vernal Pool.

The Conservation Commission reserves the right to adjust these set-backs on a case-by-case basis in consideration of hydrologic connectivity, habitat connectivity, slope, and protection of the interests listed in the bylaw and regulations. If the Commission determines that the setback is insufficient to protect the interests of the Amherst Wetlands Bylaw it can require greater “No-Work distances” from Resource Areas and “Building Set Back Distance” from Resource Areas. The Commission can also reduce the required set back in consideration of the existing development on and around the site.

- b. Minor Activities, and the activities listed below (i & ii) in the Buffer Zone are presumed not to alter a resource area. However, activities described in i & ii below require the filing of a Request for Determination of Applicability:
 - i. Discharge of subsurface drainage from a single lot or residential building with outfall outside 50 ft. No Work Distance;

- ii. Discharge of roof and driveway runoff from a total impervious area of less than 4,000 square feet (per project) with outfall outside 50 ft. No Work Distance;
4. General Performance Standards
- a. Work in the Buffer Zone shall not alter a resource area.
 - b. If the Commission, at its discretion allows Buffer Zone alteration, all work must comply with the applicable performance standards.
 - c. In the case of work within the Buffer Zone that will result in an alteration of Vegetated Wetlands, the Commission may require wetland replication in accordance with Section IV.B.5 of the Bylaw. Replication shall be required for work occurring in the 30 Ft No-Work Distance for the type of project outlined in Section G.3.a of the Bylaw, at a ratio of 2:1. If the Commission determines that it is unfeasible to create a replacement wetland on site, it may require the applicant to contribute financially to the construction of an off-site wetland replication area, or habitat or infrastructure improvement in lands under the control of the Commission, the contribution not to exceed the actual cost of the wetland replacement.
 - d. For projects where the Massachusetts Stormwater Standards do not apply, such as single-family lots, point discharge of surface runoff within or through a Buffer Zone shall be designed and controlled to minimize increase in peak flow in the watercourse downstream of the discharge point for the runoff, as determined for the 2-year, 10-year, and 100-year storms, and to cause no increase in flood elevations outside the project site.

H. Limited Projects

Notwithstanding the provisions of IV.A through IV.E above, the Commission may issue a Permit and impose such conditions as will contribute to the interests identified in the bylaw permitting limited projects as specified in the state Wetlands Protection Act Regulations, 310 CMR 10.53(3). In determining whether to exercise its discretion to approve the limited projects listed in 310 CMR 10.53(3), the Issuing Authority shall consider the following factors: the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the availability of reasonable alternatives to the proposed activity, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.