

ENVIRONMENTAL PROTECTION STANDARDS

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12.01 General Protection Standards, Classifications and Review Procedures

A. Purpose. It is the purpose of this Article to implement, from a regulatory perspective, the Comprehensive Plan's goal of "emphasizing sustainability for long-term viability of a clean and green South Burlington" and objective to "promote conservation of identified important natural areas, open spaces, aquatic resources, air quality, arable land and other agricultural resources, historic sites and structures, and recreational assets" in balance with the overall state vision of the Plan.

This Article establishes application requirements and development standards designed to minimize and avoid adverse impacts to these resources. Specific standards related to subdivision or planned unit developments, or for which overlay standards apply, may be found in those relevant sections and, where indicated, may supersede provisions of this Article.

B. Classification. For the purposes of subdivision and Planned Unit Developments, resources are grouped into Hazards, Level I and Level II resource areas.

Table 12-01 – Classification of Natural Resources

	Location in Regulations	Buildable Area	Initial Identification	Field Verification / HDA
Hazards				
Floodplain (1% and 0.2% B1), Floodway	10.01	No	FEMA FIRM	Yes
River Corridor	10.07	No	ANR Atlas	Yes
Surface Waters, Buffers	12.02	No	ANR Atlas	Yes
Class I, II Wetlands, Buffers	12.03	No	ANR Atlas	Yes
Very Steep Slopes (25+%)	12.09	No	ANR Atlas	If impacted
RTE Species Habitat	12.04	Species Specific	Site Mapping	If Impacted
Level I Resources				
Habitat Blocks	12.05	No	City LDR Map	HDA Optional
Habitat Connectors	12.06	No	City LDR Map	HAD Optional
Level II Resources				
Floodplain (0.2% Zone B2)	10.01	Yes	FEMA FIRM	If Impacted
Class III Wetlands, Buffers	12.03	Yes	ANR Atlas	If impacted
Steep Slopes (15 to 25%)	12.09	Yes	ANR Atlas	If impacted
Intermittent Streams, Buffers	12.02	Yes	Site Mapping	If impacted

C. Applicability of Standards. All land uses and development must comply with the provisions of this Article, to minimize adverse impacts on ecological resources, water quality and working lands, unless explicitly waived or amended in this section. Exemptions include:

- (1) Uses and structures exempt from local regulation pursuant to 24 V.S.A. §4413.
- (2) Construction of fences (i) that enclose cleared areas, such as lawn areas surrounding a residence, provided the clearing occurred prior to [effective date of this provision] or was approved by the DRB in accordance with this Article; or (ii) erected for standard agricultural purposes or, (iii) lower than 4 feet and that have at least 16 inches of clearance between the lowest horizontal part of the fence and the ground. In all cases, proposed fences must comply with section 13.17 (Fences) of these Regulations.
- (3) Exemptions as specified elsewhere in these Regulations.

12.02 Streams and Surface Waters

A. Purpose. It is the purpose of this Section to provide for the protection and improvement of the surface waters and streams within the City of South Burlington, Lake Champlain and Shelburne Bay, and the watersheds contained wholly or partially within the City. These regulations and standards are intended to lead to the establishment and protection of natural areas along the City's surface waters and within the City's watersheds to provide improved protection for water quality and the provision of open space areas and wildlife habitat. It is the further purpose of this Section to provide for the retention of preexisting residential neighborhoods located along Lake Champlain and Potash Brook in a manner consistent with the resource protection purposes of this Section

B. Applicability. The requirements of this Section will apply to all lands described as follows, collectively referred to as Stream and Surface Water Buffers:

- (1) All land within one hundred (100) feet horizontal distance from the top of bank or top of slope of major streams, whichever is applicable given the stream's fluvial geomorphology. Major streams are defined as the Winooski River, Muddy Brook and the main stem of Potash Brook.
- (2) All land within fifty (50) feet horizontal distance from the top of bank or top of slope of any minor stream, whichever is applicable given the stream's fluvial geomorphology.
- (3) All land within ten (10) feet horizontal distance from the top of the bank or top of slope of a natural intermittent stream, whichever is applicable given the stream's fluvial geomorphology.
- (4) All land within or abutting the high-water elevation of Lake Champlain, which for the purposes of these regulations shall be one hundred two (102) feet above mean sea level NAVD88 datum.
- (5) All land within Floodplain Overlay District 0.2% Zone B1.

C. Exemptions:

- (1) Establishment and upkeep of unpaved, non-mortorized trails and puncheons not to exceed ten (10) feet in width.

D. Application Submittal Requirements. Submittal of a preliminary and/or complete Site Conditions Map (as applicable to the stage of application) pursuant to Appendix F.

E. Standards. All applicable development must be designed to avoid adverse impacts to major and minor streams and associated buffers and to minimize adverse impacts to intermittent streams and associated buffers.

(1) General standards. It is the objective of these standards to avoid adverse impacts from development on these resources and promote the establishment of heavily vegetated areas of native vegetation and trees in order to reduce the impact of stormwater runoff, reduce sedimentation, promote carbon sequestration, and increase infiltration and base flows in the City's streams and Lake Champlain. Therefore, except as specifically permitted by the DRB pursuant to the standards in Section 12.02(F)(2) or (F)(3) below, all lands within a required stream buffer defined above must be left in an undisturbed, naturally vegetated condition. Supplemental planting and landscaping with appropriate species of vegetation to achieve these objectives will be permitted. The specific standards for the vegetation and maintenance of stream and surface water buffers are as follows:

- (a) The clearing of trees that are not dead, heavily damaged by ice storms or other natural events, or diseased, and the clearing of any other vegetation other than invasive species, is permitted only in conjunction with DRB approval pursuant to (2) or (3) below.
- (b) Any areas within a required stream and surface water buffer that are not vegetated or that are disturbed during construction must be seeded with a naturalized mix of grasses rather than standard lawn grass, and must not be mowed.
- (c) The creation of new lawn areas within stream and surface water buffers is not permitted
- (d) Snow storage areas designated pursuant to site plan or PUD review must not be located within stream buffers unless the applicant can demonstrate that:
 - (i) There is no reasonable alternative location for snow storage on the same property.
 - (ii) Measures such as infiltration areas have been incorporated into the site plan and/or stormwater treatment system to reduce the potential for erosion and contaminated runoff entering the associated stream as a result of snow melt.
- (e) The placing or storing of cut or cleared trees and other vegetation within the stream and surface water buffer is prohibited.
- (f) Suitable landscaping and fencing shall be provided to protect stream and surface water buffers in a manner that is aesthetically compatible with the surrounding landscape. The use of split rail or other fencing made of natural materials is encouraged where the buffer is not clearly identifiable.

(2) Expansion of pre-existing structures. The expansion of pre-existing structures within stream and surface water buffers will be permitted only in accordance with the standards for non-complying structures in Article 3, Section 3.11 of these Regulations.

(3) New uses and encroachments. The encroachment of new land development activities into the City's stream and surface water buffers is prohibited, except as provided for in this section. The DRB may authorize the following as conditional uses within stream buffers, subject to the standards and conditions enumerated for each use. The DRB may grant approvals pursuant to this section as part of PUD review without a separate conditional use review.

- (a) Agriculture, horticulture and forestry including the keeping of livestock, provided that any building or structure appurtenant to such uses is located outside the stream buffer.
- (b) Clearing of vegetation and filling or excavating of earth materials, only to the extent directly necessitated for the construction or safe operation of a permitted or conditional use on the same property and where the DRB finds that:
 - (i) There is no practicable alternative to the clearing, filling or excavating within the stream buffer; and
 - (ii) The purposes of this Section will be protected through erosion controls, plantings, protection of existing vegetation, and/or other measures.
- (c) Encroachments necessary to rectify a natural catastrophe for the protection of the public health, safety and welfare.
- (d) Encroachments necessary for providing for or improving public facilities.
- (e) Public recreation paths located at least twenty-five (25) feet from the top of the bank or top of slope of any stream, whichever is applicable given the stream's fluvial geomorphology.
- (f) Stormwater treatment facilities, either:
 - (i) meeting the Vermont Agency of Natural Resources (VANR) stormwater treatment standards, and routine maintenance thereof, including necessary clearing of vegetation and dredging. Evidence of a complete application to the VANR for coverage under the applicable permitting requirements will be required to meet this criterion for encroachment into a stream buffer, or
 - (ii) treating an area of land that falls below the VANR review thresholds and which are demonstrated to only be affecting impacted buffer areas, such as approved and maintained lawn, parking, or paved surfaces.
- (g) Restricted Infrastructure Encroachment, upon demonstration of compliance with Section 12.10 of these Regulations and the following supplemental standards:
 - (i) The facility must be located at least twenty five (25) feet from the edge of the channel of the surface water for all water bodies listed in section 12.01(B)(1) and (2) and ten (10) feet from the edge of channel of the surface water of all other streams;
 - (ii) Stream crossings shall provide sufficient space for the passage of small amphibian and mammalian wildlife typical to the environment in water and on land beneath the structure; and,
 - (iii) Additional mitigation such as reduction or elimination of curbing to promote wildlife passage as applicable to the environment are strongly encouraged and may be required by the Development Review Board.
- (h) Outdoor recreation, provided any building or structure (including parking and driveways) appurtenant to such use is located outside the stream and surface water buffer.
- (i) Research and educational activities provided any building or structure (including parking and driveways) appurtenant to such use is located outside the stream and surface water buffer.
- (j) Pedestrian / bicycle bridges intended to connect parcels and neighborhoods.

F. Watercourse Alteration and Relocation.

(1) The alteration or relocation of a watercourse is permitted subject to the approval of the Development Review Board provided the alteration or relocation:

- (a) Is needed to accomplish a clear public purpose or objective;
- (b) Will not reduce the ability of the watercourse to carry or store flood waters adequately;
- (c) Will not have an adverse impact on downstream or upstream water quality;
- (d) Will not affect adversely the use and enjoyment of adjacent properties;
- (e) Will not affect adversely the habitat value of the watercourse or immediately adjacent areas or wetlands.

(2) In making findings relative to these criteria, the DRB will invoke technical review by a professional in hydrology or geomorphology, or will rely on the issuance of a Stream Alteration Permit issued by the Vermont Agency of Natural Resources as evidence that the above criteria have been met.

(3) Alteration of Intermittent Streams. Where a development will incorporate Tier 1 or Tier 2 stormwater treatment practices (as defined in the Vermont Stormwater Management Manual issued by VANR) to manage the stormwater that the intermittent stream is conveying in pre-development conditions, the intermittent stream may be altered or relocated as part of that infrastructure, provided the stormwater management system meets the requirements of Article 12.04. Alteration or relocation of an intermittent stream is exempt from the Vermont Stream Alteration Rule and is not subject to the provisions of Article 12.02(G).

G. Protected Shoreland Area. All development located within 250 feet of the mean water level of Lake Champlain is subject to the provisions of the Vermont Shoreland Protection Act. Applicants for development in this area shall demonstrate compliance with the State of Vermont prior to issuance of a zoning permit.

H. Erosion Control Measures and Water-Oriented Development along Lake Champlain.

The installation of erosion control measures and water-oriented development within or abutting the high-water elevation of Lake Champlain may be approved by the DRB as a conditional use provided the following standards are met:

- (1) The improvement involves, to the greatest extent possible, the use of natural materials such as wood and stone.
- (2) The improvement will not increase the potential for erosion.
- (3) The improvement will not have an undue adverse impact on the aesthetic integrity of the lakeshore. In making a determination pursuant to this criterion, the DRB may request renderings or other additional information relevant and necessary to evaluating the visual impact of the proposed improvement.
- (4) A landscaping plan showing plans to preserve, maintain and supplement existing trees and ground cover vegetation is submitted and the DRB finds that the overall plan will provide a visual and vegetative buffer for the lake and/or stream.

12.03 Wetland Protection Standards and Review Procedures

A. Purpose. It is the purpose of this Section to protect the City's wetland resources in order to protect wetland functions and values related to surface and ground water protection, stormwater treatment, wildlife habitat, and flood control.

B. Applicability.

(1) All Class I and Class II wetland areas and related buffer areas measured in horizontal distance from the boundary of the wetland (one hundred (100) feet for Class I and fifty (50) feet for Class II wetland), are subject to the provisions of this section.

(2) Class III wetland areas exceeding 300 square feet in area, and related fifty (50) foot buffer areas measured in horizontal distance from the boundary of the wetland, are subject to the provisions of this section.

C. Application Submittal Requirements. Submittal of a preliminary and/or complete Site Conditions Map (as applicable to the stage of application) pursuant to Appendix E.

(1) The DRB has the authority to invoke technical review of any field delineation and wetlands report. The independent technical review will submit an evaluation of the field delineation and wetlands report addressing the proposed development's consistency with the standards in (E) below, and outlining the following:

(a) Measures that can be taken to improve the overall effect of the project on wetland resources without altering the layout of the proposed project.

(b) Measures that can be taken to improve the overall effect of the project on wetland resources that involve altering the layout of the proposed project.

D. Standards for Wetlands Protection

(1) Consistent with the purposes of this Section, development must avoid encroachment into Class I and Class II wetlands and their associated buffers and minimize encroachment into Class III wetlands and their associated buffers, as enumerated in this section.

(2) Sufficient suitable landscaping and fencing shall be provided to protect wetlands and buffers in a manner that is aesthetically compatible with the surrounding landscape. The use of split rail or other fencing made of natural materials is encouraged.

(3) Encroachment into Class I and Class II wetlands is permitted by the City only in conjunction with issuance of a Wetlands General Permit from the Vermont Department of Environmental Conservation and positive findings by the DRB pursuant to the criteria in (3) below.

(4) Encroachment into Class I and Class II wetland buffers, Class III wetlands and Class III wetland buffers, may be permitted by the DRB upon finding that the proposed project's overall development, erosion control, stormwater treatment system, provisions for stream buffering, and landscaping plan achieve the following standards for wetland protection:

(a) The encroachment(s) will not adversely affect the ability of the property to carry or store flood waters adequately;

(b) The encroachment(s) will not adversely affect the ability of the proposed stormwater treatment system to reduce sedimentation according to state standards;

(c) The impact of the encroachment(s) on the specific wetland functions and values identified in the field delineation and wetland report is minimized and/or offset by appropriate landscaping, stormwater treatment, stream buffering, or other mitigation measures.

(5) Where Restricted Infrastructure Encroachment is proposed within Class I or Class II wetlands or their buffers, the applicant shall demonstrate compliance with this Section 12.03, Section 12.10 and the following supplemental standards:

(a) Roadway paved surface shall be no wider than 20 feet; and,

(b) Roads that bifurcate a wetland or wetland buffer shall propose appropriate mitigation such as reduction or elimination of curbing and installation of cross culverts to promote wildlife passage.

12.04 Rare, Threatened and Endangered Species

A. Purpose. It is the purpose of this Section to protect the City's rare, threatened or endangered plant or animal habitat, as identified by 10 VSA Chapter 123 and mapped and delineated for this purpose, in order to prevent further population loss of these species.

B. Applicability. All development subject to site plan or subdivision review is subject to the standards below where rare, threatened or endangered species habitat is present.

C. Application Submittal Requirements. Submittal of a preliminary and/or complete Site Conditions Map (as applicable for the stage of review) pursuant to Appendix E.

(1) For Preliminary Site Conditions Map, if the data layer showing "Rare, Threatened and Endangered Species" on the Vermont Natural Resources Atlas indicates the potential for such species in an affected area, a written opinion confirming the presence or absence of rare, threatened or endangered species will be required from the Vermont Fish and Wildlife Department or a qualified environmental professional. The applicant must provide the Vermont Fish and Wildlife Department with a map and site plan showing the mapped location of the rare, threatened and endangered species in relation to the proposed development.

(2) For Complete Site Conditions Map, if a rare, threatened or endangered species is present, the applicant must obtain a written opinion from the Vermont Fish and Wildlife Department indicating what measures must be taken to assure that the proposed development will not result in adverse impacts to the rare, threatened or endangered species.

D. Standards. Development must not cause adverse impacts to any rare, threatened or endangered plant or animal habitat identified by the Vermont Department of Fish and Wildlife or through site investigation.

(1) Building envelopes must be located to exclude identified areas supporting rare, threatened and endangered species.

(2) Specific measures identified by the Fish and Wildlife Department's written opinion may be required.

(3) Any impact to an endangered or threatened species may require an Endangered and Threatened Species Permit from the State of Vermont.

12.05 Habitat Blocks

A. Purpose. It is the purpose of these Habitat Block standards to avoid adverse impacts from development on these resources, promote the natural succession of vegetated areas of native vegetation in order to support wildlife habitat and movement, promote carbon sequestration, filter air, and increase infiltration and base flows in the City's streams and Lake Champlain.

B. Applicability. The requirements of this Section will apply to all areas indicated as "Habitat Blocks" on the **Habitat Blocks and Connectors map**, except as follows:

- (1) Lots or parcels of less than one (1) acre in size existing as of the effective date of these Regulations;
- (2) Land located within 50' horizontal distance of a principal building existing as of the effective date of these regulations;
- (3) Land authorized by the Development Review Board to be removed from or added to a Habitat Block pursuant to the modification options of this section or as part of a Conservation Planned Unit Development.

C. Application Submittal Requirements. Submittal of a preliminary and/or complete Site Conditions Map (as applicable to the stage of application) pursuant to Appendix E. Where an applicant elects to perform a Habitat Disturbance Assessment, the submittal requirements of Section 12.07 shall apply.

D. Modification of Habitat Block. An applicant may request approval to modify the mapped Habitat Block in any of the following manners. An applicant may select any one of the options below. An applicant may not select more than one option for any application, however.

(1) Minor Habitat Block Boundary Adjustment. The Development Review Board may modify the boundary of a mapped Habitat Block by up to fifty (50) feet in any direction to account for site-specific conditions, upon written request by the applicant as part of the requisite application. Any proposed reduction in Habitat Block area should be offset with an equal addition elsewhere within the same site plan or preliminary plat area. In no case shall the Board approve a net reduction of Habitat Block that exceeds 3,000 square feet.

(2) Small On-Site Habitat Block Exchange. The Development Review Board may approve the exchange of a mapped Habitat Block area not to exceed three (3) acres or ten (10) percent of the application's total land area, whichever is less, for an equal amount of land within the same Planned Unit Development or Site Plan upon written request, without requiring a Habitat and Disturbance Assessment. Such land exchange must not include Core Habitat Areas and shall not sever Habitat Connectors. In making its determination, the Board shall consider:

- (a) Retaining a similar or greater quality and maturity of vegetation within the proposed areas for exchange;
- (b) Retaining mature and/or prominent tree stands; and,
- (c) Promoting overall neighborhood function and design, and transition to adjacent parcels and any development thereon.

Land located with the SEQ-NRP zoning subdistrict, Hazards, Level I resources, previously approved as open space or conserved land, subject to a deed restriction prohibiting development, subject to a conservation or density reduction easement, or owned by a public entity shall not be eligible to be used for a land exchange.

(3) **Larger Area Habitat Block Exchange.** The Development Review Board may approve the exchange of a mapped Habitat Block area in exchange for an equal amount of land within the same Habitat Block or adjacent connector upon written request, and pursuant to the standards of this Section.

(a) Supplemental submittal requirements.

(i) Indicate, on the Master Plan and all subsequent plans, all proposed alterations to the Habitat Block.

(ii) Submit, as part of the preliminary plat application, a Habitat and Disturbance Assessment (HDA) pursuant Section 12.07 and a written assessment of compliance with the standards contained within this subsection.

(b) Standards of Review. The Board may approve a re-designation of a portion of a Habitat Block if it finds all of the criteria below to be met:

(i) The HDA demonstrates that the alteration will not result in a reduction in the Habitat Block's function as significant wildlife habitat as defined in these Regulations;

(ii) Wildlife movement connectivity is retained between mapped Habitat Blocks; and,

(iii) Proposed adjacent development and infrastructure has been designed to minimize impacts on habitat functions.

(c) Exchanged Land. Land to be added to the Habitat Block pursuant to this section must be set aside and identified on the subdivision plat, and in associated legal documents, as one or more "Conservation Lots" as established in Section 15A, to be maintained and managed in single or common ownership, or under a conservation easement held by the City or qualified third party, such as an established land trust, that is either (I) Contiguous to the habitat block and unseparated by roadways, railways, or other impeding infrastructure, or (II) Expanding upon the width of a Mapped Habitat Connector directly attached to the subject Habitat Block.

(i) Land located within the SEQ-NRP zoning subdistrict, Hazards, Level I resources, previously approved as open space or conserved land, subject to a deed restriction prohibiting development, subject to a conservation or density reduction easement, or owned by a public entity shall not be eligible to be used for a land exchange.

(ii) Any land proposed to be added / conserved shall be accompanied by a restoration plan, prepared by a landscape architect, professional wildlife biologist, or equivalent, that will result in the land functioning as a significant wildlife habitat such that within a period of ten (10) years and being classified as transitional forest / forest by a land use / land cover assessment at that time.

(4) **Substantially-Habitat Block-covered lots.** A lot or parcel containing a combination of Hazards and Level 1 resources exceeding seventy (70) percent of the total lot area is eligible for relief from Habitat Block standards as follows:

(a) As a Conservation Planned Unit Development, for parcels meeting eligibility standards.

(b) For lots or parcels not eligible for review as a Conservation Planned Unit Development, the Development Review Board may approve exclusion of an area of land within the Habitat Block not to exceed thirty (30) percent of the total lot area. Where applicable, land shall be excluded in the following order:

- First: Land not otherwise listed in this subsection
- Second: Land identified as forest in land use / land cover data

- Third: Land connecting portions of a habitat block, or between habitat blocks, that are less than 200' in width
 - Fourth: Land more than 300 feet from the edge of a mapped Forest Block ("Core Forest Block" areas)
 - Fifth: Hazards as defined in these Regulations
- (i) *Calculation:* Land shall be selected from first to fifth. If all applicable land on the lot or parcel from one category is excluded, and the twenty (20) percent allotment has not been reached, then land from the next category land shall be selected next.
- (ii) *Special Circumstances:* Where the DRB finds that exclusion of land pursuant to the priority order above is in conflict with the purposes of this section, or where it finds that strict adherence to the priority order does not allow for a unified PUD consistent with the purposes of intent of these regulations, it may approve modifications to the land selected. Any such modifications shall be minimized in terms of land area and modification to the priority order.
- (iii) Any land excluded from Habitat Blocks under this subsection shall remain subject to all other provisions of these Regulations.

E. Standards for Habitat Block Protection.

(1) General standards. Except as specifically exempted pursuant to Subsection (2) below, approved by the DRB pursuant to subsection (3) below, or modified in accordance with Section (D) above, all lands within a Habitat Block must be left in an undisturbed, naturally vegetated condition. Specifically:

- (a) The clearing of trees and understory vegetation is prohibited except as specified in this section.
- (b) The creation of new lawn areas is prohibited.
- (d) Snow storage areas designated must not be located within Habitat Blocks.
- (e) Pursuant to section 15.A.12, lot lines shall be configured to avoid Habitat Blocks.
- (f) Pursuant to Sections 9.** and 15.A.12, building envelopes shall not contain any land within Habitat Blocks.
- (g) Supplemental planting and landscaping with appropriate species of vegetation to achieve the objectives of this Section is permitted.

(2) Exempted Uses and Activities. The following uses and activities are exempt from review under this section:

- (a) Establishment and maintenance of unpaved, non-motorized trails not to exceed ten (10) feet in width, or their width prior to adoption of these regulations, whichever is greater;
- (b) Removal of invasive species, diseased vegetation, and dead or dying trees posing an imminent threat to buildings or infrastructure; and,
- (c) Uses and activities enumerated in Section 12.01C.

(3) New uses and encroachments within Habitat Blocks. The encroachment of new land development activities, clearing of vegetation, establishment of lawn, or other similar activities into

Habitat Blocks buffers is prohibited, except as provided for in this section. The DRB may authorize the uses and activities enumerated in this subsection within Habitat Blocks, subject to the standards and conditions enumerated for each use, and, where a Mitigation option has been selected pursuant to 12.05(C)(2), subject to any specific mitigation measures identified therein.

- (a) Restricted Infrastructure Encroachment, pursuant to Section 12.10 and the following supplemental standards:
 - (i) The facility shall be strictly limited to be minimum width necessary to function for its intended purposes
 - (ii) The clearing of vegetation adjacent to the facility shall be strictly limited to the minimum necessary width to function for its intended purposes;
 - (iii) Street tree requirements shall not apply in these areas;
 - (iv) Street lighting shall be prohibited in these areas except as necessary to meet State or Federal law; and,
 - (iv) Appropriate measures shall be taken to promote safe wildlife passage, including the reduction or elimination of curbs, reduced speed limits, and/or signage altering users, and underpass or culverts.
- (b) Forest-based outdoor recreation, provided any building or structure (including parking and driveways) appurtenant to such use is located outside the habitat block.
 - (i) Within a public park, uses, structures, and forest management activities are permitted subject to site plan review. Any such site plan shall be accompanied by a written demonstration of consistency with the adopted management plan for the parcel. If no such plan exists, the applicant shall demonstrate that the proposed use, structure, or forest management practice is consistent with the purposes of this Section.
- (c) Research and educational activities provided any building or structure (including parking and driveways) appurtenant to such use is located outside the Habitat Block.
 - (i) The DRB may, as a conditional use, approve compatible research and educational structures within a Habitat Block such as seating areas made of natural materials, storage sheds, or climbing structures.

(4) Expansion of pre-existing structures within Habitat Blocks. The expansion of pre-existing structures, parking areas, lawn areas, or impervious surfaces within Habitat Blocks will be permitted only in accordance with the standards for non-complying structures in Article 3, Section 3.11 of these Regulations and only where such expansion cannot reasonably take place outside of a Habitat Block.

12.06 Habitat Connectors

A. Purpose. It is the purpose of this Section to maintain the functionality of identified Habitat Connectors, allowing species to travel between identified Habitat Blocks, wetland areas, water bodies, and other natural resources within and adjacent to the City.

B. Applicability. The requirements of this Section will apply to all areas indicated as “Habitat Connectors” on the Habitat Blocks and Connectors map, except as follows:

- (1) Lots or parcels of less than one (1) acre existing as of the effective date of these Regulations

(2) Land located within 50' horizontal distance of a principal building existing as of the effective date of these regulations

(C) Standards. The applicant shall retain a 150' wide Habitat Connector where indicated on the Habitat Blocks and Connection Map.

(1) The Habitat Connector may be relocated from its location on the Habitat Blocks and Connection Map but must connect to mapped Habitat Connectors or Habitat Blocks on adjacent parcels. Any relocated portion shall be accompanied by a restoration plan, prepared by a landscape architect, professional wildlife biologist (or equivalent), that will result in the land functioning as a significant wildlife habitat such that within a period of ten (10) years and being classified as transitional forest / forest by a land use / land cover assessment at that time.

(2) Where pre-existing development precludes maintaining an undisturbed width of 150', the corridor shall be the widest possible and restoration of the corridor shall be provided.

(3) Hazards or other protected environmental areas may be used to count towards the connector width.

(4) Habitat Connectors shall be subject to the provisions of 12.05(E) Habitat Blocks Standards.

12.07 Habitat and Disturbance Assessment (HDA)

A. Purpose. The Habitat and Disturbance Assessment is intended to serve as tool to inventory and quantify significant wildlife habitat within and adjacent to properties being evaluated, to supplement or replace mapped Habitat Blocks as applicable in these Regulations.

B. Submittal Requirements. Where an HDA is permitted by these Regulations, the applicant shall contract with a qualified wildlife biologist or ecologist to prepare the Assessment. The HDA prepared for the DRB shall include:

(1) Site Conditions Map including all Habitat Blocks Habitat Connectors as indicated on the Habitat Block and Connectors map on or within 200 feet of the project site.

(2) An inventory of existing (pre-development) wildlife habitat found on the site, including the presence of significant wildlife habitat, the specific types of habitat found on the parcel and their relative importance to the various wildlife species that rely on that habitat for one or more life-cycle function;

(3) An assessment of the relationship of the habitat found on the site relative to other significant wildlife habitat present in the City (e.g., does habitat found on the parcel provide for connectivity between mapped habitat blocks; is the parcel located contiguous to other significant wildlife habitat, or part of a habitat block);

(4) Identification of the distance of all proposed development activities (as permitted), including clearing, driveways and infrastructure, and areas of disturbance, from the significant habitat and, if significant habitat is proposed to be disturbed, the total area of disturbance and the total area of the remaining (undisturbed) habitat;

(5) An assessment of the likely impact of the proposed development, including associated activities (e.g., introduction of domestic pets, operation of vehicles and equipment, exterior lighting, introduction of non-native species for landscaping) on the ecological function of the significant wildlife habitat found on the site. This shall include an assessment of whether travel between areas of core habitat will be

disrupted;

(6) As assessment of the anticipated functionality of the Habitat Block with proposed mitigation measures and a statement identifying specific mitigation measures taken to avoid or minimize the proposed development's impact on the habitat, including buffers of habitat for specific identified species, possible replacement or provisions for substitute habitats that serves a comparable ecological function to the impacted habitat, and/or physical design elements to incorporate into the project.

12.08 Stormwater Management

A. Purpose. The purpose of this section is:

- (1) To promote stormwater management practices that maintain pre-development hydrology through site design, site development, building design and landscape design techniques that infiltrate, filter, store, evaporate and detain stormwater close to its source;
- (2) To protect water resources, particularly streams, lakes, wetlands, floodplains and other natural aquatic systems on the development site and elsewhere from degradation that could be caused by construction activities and post-construction conditions;
- (3) To protect other properties from damage that could be caused by stormwater and sediment from improperly managed construction activities and post-construction conditions on the development site;
- (4) To reduce the impacts on surface waters from impervious surfaces such as streets, parking lots, rooftops and other paved surfaces; and
- (5) To promote public safety from flooding and streambank erosion, reduce public expenditures in removing sediment from stormwater drainage systems and natural resource areas, and to prevent damage to municipal infrastructure from inadequate stormwater controls.

B. Applicability

- (1) These regulations will apply to all land development within the City of South Burlington where one-half acre or more of impervious surface area exists or is proposed to exist on an applicant's lot or parcel.
- (2) If the combination of new impervious surface area created and the redevelopment or substantial reconstruction of existing impervious surfaces is less than 5,000 s.f. then the application is exempt from requirements in this Section 12.08.
- (3) Applications meeting the criteria set forth in section 12.08(B)(1) and not exempt under section 12.08(B)(2) shall meet the requirements in section 12.08(C) as follows:
 - (a) If the area of the lot or parcel being redeveloped or substantially reconstructed is less than 50% of the lot's existing impervious surface area, then only those portions of the lot or parcel that are being redeveloped or substantially reconstructed must comply with all parts of Section 12.084(C). All new impervious surface area must meet the requirements of section 12.08(C).
 - (b) If the area of the lot or parcel that is being redeveloped or substantially reconstructed exceeds 50% of the lot or parcel's existing impervious surface area then all of the lot or parcel's impervious surfaces must comply with all parts of Section 12.08 (C). All new impervious surface area must meet the requirements of Section 12.08(C).

C. Site Design Requirements for New Development

(1) The Water Quality Volume (WQv) as defined in the Vermont Stormwater Management Manual (VSMM) for the lot or parcel's impervious surfaces shall not leave the lot via overland runoff, and shall be treated using Tier 1 practices as detailed in the VSMM.

(a) If it is not possible to treat the volume of stormwater runoff using a Tier 1 practice as specified in Section 12.08(C)(1) due to one or more of the following constraints:

- (i) Seasonally high or shallow groundwater,
- (ii) Shallow bedrock,
- (iii) Soil infiltration rates of less than 0.2 inches per hour,
- (iv) Soils contaminated with hazardous materials, as that phrase is defined by 10 V.S.A. §6602(16), as amended,
- (v) The presence of a "stormwater hotspot" as defined in the VSMM, or
- (vi) Other site conditions prohibitive of on-site infiltration runoff subject to the review and approval of the Development Review Board,

then the WQv shall be treated on the lot using Tier 2 practices as described in the most recently adopted version of the VSMM. A site with an existing Tier 3 practice is allowed to evaluate retrofitting/expanding this practice to meet the requirements of section 12.08(C)(2). Existing Tier 3 practices shall only be used to satisfy the requirements of section 12.08(C)(1) in accordance with the Water Quality Practice Selection Flowchart in the VSMM.

(2) The post-construction peak runoff rate for the one-year, twenty-four hour (rainfall amounts to be determined using NOAA, Atlas 14 data and a type II rainfall distribution) rain event shall not exceed the existing peak runoff rate for the same storm event from the site under conditions existing prior to submittal of an application.

(3) Applicants who demonstrate that the required control and/or treatment of stormwater runoff per section 12.08(C)(1) and 12.08(C)(2) cannot be achieved for areas subject to these regulations per section 12.03(B) may utilize "site balancing".

D. Additional Site Plan Requirements

(1) Applicants required to comply with Section 12.08(C) must include the following information in their site plan submission:

- (a) Sub-watershed boundaries and drainage area delineations for all stormwater treatment practices.
- (b) Location, type, material, size, elevation data, and specifications for all existing and proposed stormwater collection systems, culverts, and stormwater treatment practices.
- (c) Soil types and/or hydrologic soil group, including the location and results of any soil borings, infiltration testing, or soil compaction testing. Infiltration testing shall be completed using methods identified in the VSMM (see section 4.3.3.2 in the 2017 VSMM, or as updated).
- (d) A brief written description of the proposed stormwater treatment and management techniques. Where Tier 1 practices are not proposed (see Section 12.08(C)(1)(a)), the applicant shall provide a full justification and demonstrate why the use of these practices is not possible before proposing to use Tier 2 or Tier 3 practices.

- (e) A detailed maintenance plan for all proposed stormwater treatment practices.
- (f) Modeling results that show the existing and post-development hydrographs for the WQv and the one-year, twenty-four hour rain event (rainfall amounts to be determined using NOAA, Atlas 14 data and a type II rainfall distribution). Any TR-55 based model shall be suitable for this purpose.

E. Drainage Structures

(1) Removal of Runoff – The applicant shall remove any impervious surface runoff that exists as a result of the proposed land development. Drainage facilities shall be located in the street right-of-way where feasible. All drainage facilities in the street right-of-way must comply with the following standards:

- (a) All drainage structures must be designed to safely pass the twenty-five year, twenty-four hour (4.0 inch) rain event (rainfall amounts to be determined using NOAA, Atlas 14 data and a type II rainfall distribution);
- (b) All drainage structures must conform to the provisions of Section 12.01 General Stream and Surface Water Standards.
- (c) Drainage pipes in the street right-of-way must have a minimum diameter of 15” and be connected to drainage structures using booted connections.
- (d) Concrete risers, not brick and mortar, must be used to achieve the necessary drainage structure elevation.
- (e) House footing drains shall only be connected to drainage facilities located in the street right-of-way only when a suitable location to daylight the footing drain cannot be found.
- (f) Footing drains must not be connected to road underdrain.
- (g) Any footing drains connected to drainage facilities in the street right-of-way should be provided with a backflow preventer.
- (h) Driveway culverts must have a minimum diameter of 18” and 12” of cover above them.
- (i) The applicant’s engineer must provide such information as the stormwater superintendent or designee deems necessary to determine the adequacy of all drainage infrastructure.

(2) Drainage Structures To Accommodate Upstream Development – Culverts, pipes, or other drainage facilities shall be of sufficient size to accommodate potential runoff from the entire upstream drainage area, whether or not all or part of the upstream area is on the applicant’s lot or the parcel subject to the application. In determining the anticipated amount of upstream runoff for which drainage facilities must be sized, the applicant shall design the stormwater drainage system assuming the total potential development of upstream drainage areas. All drainage structures shall be designed to, at a minimum, safely pass the twenty-five year, twenty-four hour rain event (rainfall data to be determined using NOAA, Atlas 14 and a type II rainfall distribution). The applicant’s engineer shall provide such information as the Stormwater Superintendent or their designee deems necessary to determine the adequacy of all drainage structures.

(3) Responsibility for Downstream Drainage Structures – The applicant shall provide such information as the Stormwater Superintendent deems necessary to determine the effects of the application on drainage structures located downstream of the applicant’s lot or the parcel subject to the application, notwithstanding whether these structures are located on land owned or controlled by the applicant. This analysis shall be conducted using the twenty-five year, twenty-four hour storm event (rainfall data to be

determined using NOAA, Atlas 14 data and a type II rainfall distribution). In instances where the Superintendent anticipates that additional runoff incident to the application may overload an existing downstream drainage structure(s) and result in damage to private or public infrastructure or property, the DRB shall impose conditions requiring the applicant to incorporate measures to prevent these conditions, notwithstanding whether such improvements are located on or off the applicant's property.

12.09 Steep Slopes

A. Purpose. It is the purpose of this Section to protect the City's areas of steep and very steep slopes, as mapped and delineated for this purpose, in order to prevent erosion that may cause adverse impacts to water quality or hazards to life and property.

- (1) Prevent hazards to life and property resulting from slope instability or failure, including rock falls, slides, slumps and other downslope movements of materials or structures.
- (2) Avoid stream sedimentation and adverse impacts to surface and ground water quality.
- (3) Minimize stormwater runoff, channeling, flooding and soil erosion, on steep slopes.
- (4) Maintain and re-establish vegetation on steep slopes to stabilize soils.
- (5) Ensure that development on steep slopes is constructed and maintained in conformance with best management practices for construction, stormwater management and erosion control.

B. Applicability. All development is subject to the standards below where steep slopes or very steep slopes are present.

C. Application Submittal Requirements. Submittal of a preliminary and/or complete Site Conditions Map (as applicable to the stage of application) pursuant to Appendix E.

D. Standards.

- (1) **Very Steep Slope Standards.** Development other than *Restricted Infrastructure Encroachment* is prohibited on slopes greater than 25%.
- (2) **Steep Slope Standards.** All applicable development must be designed to avoid adverse impacts to slopes between 15% and 25%.
- (3) **General Standards.** In the event that development will impact areas of these identified slopes in accordance with (1) and (2) above, the DRB may require the applicant to provide or meet any of the following:
 - (a) A stormwater management, erosion prevention and sediment control plan with long term maintenance plan included, prepared by a qualified professional;
 - (b) An analysis of slope stability prepared by a licensed engineer to ensure that no erosion hazards are created that would have an adverse impact on surface waters, wetlands, areas of special flood hazards, or downstream facilities, and any recommended mitigation measures;
 - (c) Limit clearing, excavation and filling on such lands to the greatest extent practical, and/or;
 - (d) Prepare and implement an erosion control plan for the property, in accordance with Article 16, as a condition of approval.

12.10 Restricted Infrastructure Encroachment.

A. Included uses and activities: Restricted Infrastructure Encroachments are limited to the uses and activities listed in this subsection. Where a specific Resource using this standard contains additional restrictions on permissible activities, the more restrictive standards shall apply.

- (1) Underground utilities
- (2) Sidewalks and recreation paths
- (3) Public and private Streets
- (4) Stormwater facilities

B. Encroachments. Encroachment into the resource may only be permitted by the Development Review Board if there is a finding that the Restricted Infrastructure Encroachment:

- (1) Is specifically regulated or exempted from these standards elsewhere in these Regulations, or is exempt from local review;
 - (2) Is necessary to rectify a natural catastrophe for the protection of the public health, safety and welfare;
 - (3) Is for a functionally dependent purpose such as operation of critical facilities;
 - (4) Is for purposes of crossing a resource area to gain access to land on the opposite side of the area, or for purposes of providing safe access in accordance with City roadway and connectivity standards to an approved use. In such instances, the encroachment may be permitted only upon determination by the Development Review Board that both the following overall standards, and any resource-specific standards, have been met:
 - (a) There is no feasible alternative for providing safe access within the property;
 - (b) Alternative accesses through adjacent properties have been considered and, where fewer or no constraints exist, property owners have been contacted;
 - (c) The requirements of the applicable restriction will cause unnecessary or extraordinary economic hardship;
 - (d) The area served by the encroachment represents more than thirty (30) percent of the total developable land on the parcel; and,
 - (e) The encroachment represents the least impact feasible to the specific resource.
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2 DEFINITIONS

2.02 Definitions:

Habitat Block. Predominately forested area large enough to provide habitat, either permanently, or seasonally for wider ranging species of wildlife such as bobcat, red and grey fox, river otter, beaver, and fisher. These species of wildlife require larger areas (than squirrels or rabbits for example), and a variety of appropriate habitat to fulfill their daily, seasonal, and yearly habitat needs. These needs include security for breeding activities, a variety of food resources, secure cover for raising young, and the presence of water—either for drinking or in the case of aquatic species, as a general habitat. Habitat Blocks fall within a matrix of land-uses that include urban, residential, agricultural, transportation, and rural uses.

Habitat Connector. Area in city the providing wildlife served by Habitat Blocks the ability to functionally move through the landscape in stepping-stone fashion between Habitat Blocks. For species such as bobcat, red and grey fox, river otter, beaver, and fisher, accessing multiple Habitat Blocks make up for the smaller, more fragmented nature of the Habitat Blocks in the community.

Significant Wildlife Habitat. Those natural features that contribute to the survival and/or reproduction of the native wildlife of South Burlington. Target species include bobcat, red and grey fox, river otter, beaver, and fisher. Areas within significant wildlife habitat include: (1) habitat for rare, threatened and endangered species (state or federally listed); (3) stream and stream buffer areas as defined in these regulations; (4) wetlands and wetland buffers as defined in these Regulations; (5) vernal pools; (6) ledge, talus and cliff habitat; (7) Habitat Blocks, and (8) Habitat Connectors.

Steep Slope. Any land formation, aside from individual rocks, with a measured slope of between 15 and 25% containing a vertical drop of at least three (3) feet. A Very Steep Slope is an land formation, aside from individual rocks, with a calculated slope of over 25% containing a vertical drop of at least three (3) feet.

Very Steep Slope. See Steep Slope

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