

Aquatic Buffer Ordinance

This ordinance focuses primarily on lakes, rivers, stream, coastal buffers. Communities creating coastal buffers may wish to incorporate additional features.

Section 1. Background

Buffers adjacent to streams systems and coastal areas provide numerous environmental protection and resource management benefits that can include the following:

1. Restoring and maintaining the chemical, physical, and biological integrity of the water sources
2. Removing pollutants delivered from rural stormwater
3. Reducing erosion and sediment entering the stream
4. Stabilizing stream banks
5. Providing infiltration of stormwater runoff
6. Maintaining base flow of streams
7. Contributing the organic matter that is a source of food and energy for the aquatic ecosystem
8. Providing tree canopy to shade streams and promote desirable aquatic organisms
9. Providing riparian wildlife habitat
10. Furnishing scenic value and recreational opportunity

It is the desire of the (tribe's or city's name) to protect and maintain the native vegetation in riparian and wetland areas by implementing specifications for the establishment, protection, and maintenance of vegetation along all stream systems and/or coastal zones within our jurisdictional authority.

Section II. Intent

The purpose of this ordinance is to establish minimal acceptable requirements for the design of buffers to protect rivers, streams, wetlands, and floodplains of (Yukon River Basin - or name of local body of water needing protection) to protect the water quality of water sources, reservoirs, lakes, and other significant water resources ; to protect Yukon River Basin's riparian areas and ecosystems; and to provide for the environmentally sound use of (tribes, city or corporation) land resources.

Section III. Definitions

Active Channel: The area of the stream channel that is subject to frequent flows and includes the portion of the channel below the floodplain

Best Management Practices (BMPs): Conservation practices or management measures that control soil loss and reduce water quality degradation caused by nutrients, animal waste, toxics, sediments, and runoff

Buffer: A vegetated area, including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake, reservoir, or coastal estuarine area. Alteration of this natural area is strictly limited.

- Development**
- 1) The improvement of property for any purpose involving building
 - 2) Subdivision or the division of a tract or parcel of land into two or more parcels
 - 3) The combination of any two or more lots, tracts, or parcels of property for any purpose
 - 4) The preparation of land for any of the above purposes

Nontidal Wetlands; Those areas not influenced by tidal fluctuations that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions

Nonpoint Source Pollution; Pollution that is generated by various land use activities rather than from an identified or discrete source and is conveyed to waterways through natural processes, such as rainfall, stormwater runoff, or groundwater seepage rather than direct discharges

One-Hundred-Year Floodplain; The area of land adjacent to a stream that is subject to inundation during a storm event that has a recurrence interval of 100 years.

Pollution Any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to;

- 1) Public health, safety, or welfare
- 2) Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses
- 3) Livestock, wild animals, or birds
- 4) Fish or other aquatic life

Stream Channel; Part of a watercourse either naturally or artificially created that contains an intermittent or perennial base flow of groundwater origin. Base flows of groundwater origin can be distinguished by any of the following physical indicators:

- 1) Hydrophytic vegetation, hydric soil, or other hydrologic indicators in the area(s) where groundwater enters the stream channel in the vicinity of the stream headwaters, channel bed, or channel banks
- 2) Flowing water not directly related to a storm event
- 3) Historical records of a high groundwater table, such as well and stream gauge records

Stream Order; A classification system for streams based on stream hierarchy. The smaller the stream the lower its numerical classification. For example, a first-order stream does not have tributaries and normally originates from springs and/or seeps

Stream System; A stream channel together with one or both of the following:

- 1) 100-year floodplain
- 2) Hydrologically related nontidal wetland

Stream; Perennial and intermittent watercourse identified through site inspection and US Geological Survey (USGS) maps. Perennial streams are those which are depicted on a USGS map with a solid blue line. Intermittent streams are those which are depicted on a USGS map with a dotted blue line.

Water Pollution Hazard; A land use or activity that causes a relatively high risk of potential water pollution

Section IV. Applications

- a) This ordinance shall apply to all proposed development except for that development which meets waiver or variance criteria as outlined in Section IX of this ordinance .
- b) This ordinance shall apply to all timber harvesting activities, except those timber harvesting operations which are implementing a forest management plan that has been deemed to be in compliance with the regulations of the buffer ordinance and has received approval from State of Alaska Department of Natural Resources, and/or Division of Forestry.
- c) This ordinance shall apply to surface mining operations except that the design standards shall not apply to active surface mining operations that are operating in compliance with an approved Alaska Department of Conservation (ADEC), United State, Corps of Engineers (USCOE) and/or Bureau Of Land Management (BLM) surface mining permit.
- d) The ordinance shall not apply to agricultural operations that are covered by an approved Natural Resources Conservation Service (NRCS) conservation plan that includes the application of BMPs.
- e) Except as provided in Section IX, this ordinance shall apply to all parcels of land, structures, and activities that are causing or contributing to
 1. Pollution, including nonpoint source pollution, of the waters of the jurisdiction adopting this ordinance.
 2. Erosion or sedimentation of stream channels
 3. Degradation of aquatic or riparian habitat

Section V. Plan Requirements

- a) In accordance with Section IV of this ordinance, a plan approved by the appropriate agency is required for all development, forest harvesting operations, surface mining operations, and agriculture operations.
- b) The Plan shall set forth an informative, conceptual, and schematic representation of the proposed activity by means of maps, graphs, charts, or other written or drawn documents so as to enable the agency an opportunity to make a reasonably informed decision regarding the proposed activity
- c) The plan shall contain the following information:
 - 1) A location or vicinity map
 - 2) Field-delineated and surveyed streams, springs, seep, bodies of water, and wetlands (include a minimum of 200 feet into adjacent properties)
 - 3) Field delineated and surveyed forest buffers
 - 4) Limits of the ultimate 100-year floodplain

- 5) Hydric soils mapped in accordance with the NRCS soil survey of the site area
- 6) Steep slopes greater than 15 percent for areas adjacent to and within 200 feet of streams, wetlands, or other water bodies
- 7) A narrative of the species and distribution of existing vegetation within the buffer
- d) The buffer plan shall be submitted in conjunction with the required grading plan for any development and the forest/shrub buffer should be clearly delineated on the final grading plan.
- e) Permanent boundary markers, in the form of signage approved by Department of Natural Resources or Alaska Bureau of Land Management (BLM) agency, shall be installed prior to final approval of the required clearing and grading plan. Signs shall be placed at the edge of the middle zone (see Section VI.I)

Section VI. Design Standards for Forest/Shrub Buffers

- A) A forest/shrub buffer for a stream system shall consist of a forest strip of land extending along both sides of a stream and its adjacent wetlands, floodplains, or slopes. The forest buffer width shall be adjusted to include contiguous sensitive areas, such as steep slopes or erodible soils, where development or disturbance may adversely affect water quality, streams, wetlands, or other water bodies .
- B) The forest/shrub buffer shall begin at the edge of the stream bank of the active channel
- C) The required width for all forest/shrub buffers (i.e. the base width) shall be a minimum of 100 feet with the requirement to expand the buffer on
 - 1) Stream order
 - 2) Percent slope
 - 3) 100-year floodplain
 - 4) Wetlands or critical areas
- D) In third-order and higher streams, 25 feet shall be added to the base width of the forest/shrub buffer
- E) The forest/shrub buffer width shall be modified if steep slopes are within close proximity to the stream and drain into the stream system. In those cases, the forest/shrub buffer width may be adjusted
Two examples follow:
Method A, and B

Method B

Percent	Width of Buffer	Percent Slope	Type of Stream Use	
			Water Contact Recreational Use	Sensitive Stream Habitat
15%-17%	add 10 feet	0% to 14%	no change	add 50 feet
18%-20%	add 30 feet	15% to 25%	add 25 feet	add 75 feet
21%-23%	add 50 feet	Greater than 25%	add 50 feet	add 100 feet
24%-25%	add 60 feet			

- F) Forest/Shrub buffers shall be extended to encompass the entire 100-year floodplain and a zone with a minimum width of 25 feet beyond the edge of the floodplain
- G) When wetland or critical areas extend beyond the edge of the required buffer width, the buffer shall be adjusted so that the buffer consists of the extent of the wetlands plus a 25-foot zone extending beyond the wetland edge
- H) Water Pollution Hazards
 The following land uses and/or activities are designed as potential water pollution hazards and must be set back from any river, stream or waterbody by the distance indicated below:
- 1) Storage of hazardous substances ----- (150 feet)
 - 2) Above ground or underground petroleum storage facilities ---(150 feet)
 - 3) Drain fields from onsite sewage disposal and treatment systems (i.e., septic systems--- (100 feet)
 - 4) Raised septic systems --- (250 feet)
 - 5) Solid waste landfills or junkyards ----(300 feet)
 - 6) Confined animal feedlot operations -----(250 feet)
 - 7) Subsurface discharges from a wastewater treatment plant ----(100 feet)
 - 8) Land application of biosolids ----(100 feet)
- I) The forest/shrub buffer shall be composed of three district zones, with each zone having its own set of allowable uses and vegetative targets as specified in this ordinance
1. Zone 1, Streamside Zone
 - a) Protect the physical and ecological integrity of the stream ecosystem
 - b) Begins at the edge of the stream bank of the active channel and extends a minimum of 25 feet from the top of the bank
 - c) Allowable uses within this zone are highly restricted to
 - i. Flood control structures
 - ii. Utility right of ways
 - iii. Footpaths
 - iv. Road crossings, where permitted
 - d) Target for the streamside zone is undisturbed native vegetation
 2. Zone 2, Middle Zone
 - a) Protects key components of the stream and provides distance between upland development and streamside zone

- b) Begins at the outer edge of the streamside zone and extends a minimum of 50 feet plus any additional buffer width as specified in this section
 - c) Allowable uses within the middle zone are restricted to
 - i. Biking or hiking paths
 - ii. Stormwater management facilities with the approval of Alaska Department of Environmental Conservation, Division of Water
 - iii. Recreational uses as approved by Alaska Department of Natural Resources, Division of Mining, Land and Water
 - iv. Limited tree/shrub clearing with approval from Alaska Forest Agency or BLM
 - d) Targets mature native vegetation adapted to the region
3. Zone 3. Outer Zone
- a) Prevents encroachment into forest/shrub buffer and filters runoff from residential and commercial development
 - b) Begins at the outward edge of the middle zone and provide a minimum width of 25 feet between Zone 2 and the nearest permanent structure
 - c) Restricts septic systems, permanent structures, or impervious cover, with the exception of paths
 - d) Encourages the planting of native vegetation to increase the total width of the buffer

Section VII. Buffer Management and Maintenance

- A) The forest/shrub buffer, including wetlands and floodplains, shall be managed to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of these resources. The following practices and activities are restricted within Zones 1 and 2 of the forest/shrub buffer, except with approval by; Department of Natural Resource, USCOE, BLM or Division of Mining, Land and Water.
 - 1. Clearing of existing vegetation
 - 2. Soil disturbance by grading, stripping, or other practices
 - 3. Filling and dumping
 - 4. Drainage by ditching, underdrains, or other practices
 - 5. Use, storage, or application of pesticides, except for spot spraying of noxious weeds or non-native species consistent with recommendations of ADEC, Natural Resources, BLM, EPA.
 - 6. Housing, grazing, or other maintenance of livestock
 - 7. Storage or operation of motorized vehicles, except for maintenance and emergency use approved by ADEC, Natural Resources, BLM, EPA, and USCOE.
- B) The following structures, practices, and activities are permitted in the forest/shrub buffer, with specific design or maintenance features, subject to the review of ADEC, Natural Resources, BLM and/or USCOE.
 - 1. Roads, bridges, paths, and utilities:
 - a) An analysis needs to be conducted to ensure that no economically feasible alternatives is available

- b) The right-of-way should be the minimum width needed to allow for maintenance access and installation
 - c) The angle of the crossing shall be perpendicular to the stream or buffer to minimize clearing requirements
 - d) The minimum number of road crossings should be used within each subdivision, and no more than one fairway crossing is allowed for every 1,000 feet of buffer.
2. Stormwater management
- e) Analysis needs to be conducted to ensure that no feasible alternative is available and that the project either is necessary for flood control or significantly improves the water quality or habitat in the stream
 - f) In new developments, onsite and nonstructural alternatives will be preferred over larger facilities within the stream buffer.
 - g) When constructing stormwater management facilities (i.e. BMOs), the area cleared will be limited to the area required for construction and adequate maintenance access as outlined in the most recent edition of State of Alaska, Alaska Department of Environmental Conservation, Alaska Storm Water Guide, Division of Mining, Land and Water web site.
 - h) Material dredged or otherwise removed from a BMP shall be stored outside the buffer
3. Stream restoration projects, facilities, and activities approved by forestry, natural resources, BLM or US Corps of Engineers are permitted within the forest/shrub buffer.
4. Water quality monitoring and stream gauging are permitted within the forest/shrub buffer, as approved by agencies
5. Individual trees within the forest buffer that are in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream may be removed.
6. Other timber cutting techniques approved by the agency may be undertaken within the forest/shrub buffer under the advice and guidance of state, or federal forestry agency if necessary to preserve the forest from extensive pest infestation, disease infestation, or threat from fire.
- C) All plans prepared for recording and all right-of-way plans shall clearly
- 1. Show the extent of any forest/shrub buffer on the subject property
 - 2. Label the forest/shrub buffer
 - 3. Provide a note to reference any forest/shrub buffer stating: "There shall be no clearing, grading, construction or disturbance of vegetation except as permitted by the agency."
 - 4. Provide a note to reference any protective covenants governing all forest/shrub buffer areas stating: "Any forest/shrub buffer shown hereon is subject to protective covenants that may be found in the land records and that restrict disturbance and use on these areas"
- D) All forest/shrub buffer areas shall be maintained through declaration of protective covenant, which is required to be submitted for approval by appropriate agencies. The covenant shall be recorded in the land records and shall run with the land and continue in perpetuity.
- E) All lease agreements must contain a notation regarding the presence and location of protective covenants for forest/shrub buffer areas and shall contain information on the management and maintenance requirements for the new property owner.

- F) An offer of dedication of a forest/shrub buffer area to the agency shall not be interpreted to mean that this automatically conveys to the general public the right to access this area.
- G) _____ (responsible individual or group) shall respect the buffer annually and immediately following severe storms for evidence of sediment deposition, erosion, or concentrated flow channels and corrective actions taken to ensure the integrity and functions of the forest/shrub buffer.
- H) Forest/shrub buffer areas may be allowed to grow into their vegetative target state naturally, but methods to enhance the successional process such as active reforestation may be used when deemed necessary by appropriate agencies to ensure the preservation and propagation of the buffer area. Forest/shrub buffer areas may also be enhanced through reforestation or other growth techniques as a form of mitigation for achieving buffer preservation requirements.

Section VIII. Enforcement Procedures

- A) State of Alaska, Department of Natural Resources, Alaska Department of Environmental Conservation, US Army Corps of Engineers, Bureau of Land management, Division of Mining, Land and Water (director) or his/her designee is authorized and empowered to enforce the requirements of this ordinance in accordance with the procedures of this section.
- B) If, upon inspection or investigation, the director or his/her designee is of the opinion that any person has violated any provision of this ordinance, he/she shall with reasonable promptness issue a correction notice to the person. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance that has been violated. In addition, the notice shall set a reasonable time for the abatement and correction of the violation.
- C) If it is determined that the violation or violations continue after the time fixed for abatement and correction has expired, the director shall issue a citation by certified mail to the person who is in violation. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance that has been violated and what penalty, if any, is proposed to be assessed. The person charged has 30 days within which to contest the citation or proposed assessment of penalty and to file a request for a hearing with the director or his/her designee. At the conclusion of this hearing, the director or his/her designee will issue a final order, subject to appeal to the appropriate authority. If, within 30 days from the receipt of the citation issued by the director, the person fails to contest the citation or proposed assessment of penalty, the citation or proposed assessment of penalty shall be deemed the final order of the director.
- D) Any person who violates any provision of this ordinance may be liable for any cost or expenses incurred as a result thereof by the agency.
- E) Penalties that may be assessed for those deemed to be in violation may include the following:
 - 1) A civil penalty not to exceed \$1,000 for each violation. Every day that such violation(s) continue will be considered a separate offense.
 - 2) A criminal penalty in the form of a fine of not more than \$1,000 for each violation, imprisonment for not more than 90 days, or both. Every day that such violation(s) continue will be considered a separate offense.

- 3) Anyone who knowingly makes any false statements in any application, record, or plan required by this ordinance shall upon conviction be punished by a fine of not more than \$1,000 for each violation, imprisonment for not more than 30 days, or both.
- F) In addition to any other sanctions listed in this ordinance, a person who fails to comply with the provisions of this buffer ordinance shall be liable to the agency in a civil action for damages in an amount equal to twice the cost of restoring the buffer. Damages that are recovered in accordance with this action shall be used for the restoration of buffer systems or for the administration of programs for the protection and restoration of water quality, streams, wetlands, and floodplains.

Section IX Waivers/Variances

- A) This ordinance shall apply to all proposed development except for activities that were completed prior to the effective date of this ordinance and had received the following:
- 1) A valid, unexpired permit in accordance with development regulations
 - 2) A current, executed public works agreement
 - 3) A valid, unexpired building permit
 - 4) A waiver in accordance with current development regulations
- B) The director of the agency may grant a variance for the following:
- 1) Those projects or activities for which it can be demonstrated that strict compliance with the ordinance would result in a practical difficulty or financial hardship
 - 2) Those projects or activities serving a public need where no feasible alternative is available
 - 3) The repair and maintenance of public improvements where avoidance and minimization of adverse impacts to nontidal wetlands and associated aquatic ecosystems have been addressed
 - 4) Those development which have had buffers applied in conformance with previously issued requirements
- C) Waivers for development may also be granted in two additional forms, if deemed appropriate by the director:
- 1) The buffer width may be reduced at some points as long as the average width of the buffer meets the minimum requirement. This averaging of the buffer may be used to allow for the presence of an existing structure or to recover a lost lot, as long as the streamside zone (Zone 1) is not disturbed by the reduction and no new structures are built within the 100-year floodplain
 - 2) Agencies may offer credit for additional density elsewhere on the site in compensation for the loss of developable land due to the requirements of this ordinance. This compensation may increase the total number of dwelling units on the site up to the amount permitted under the base zoning.
- D) The applicant shall submit a written request for a variance to the director of the agency. The applicant shall include specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. The agency may require an alternative analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.

- E) In granting a request for a variance, the director of the agency may require site design, landscape planting, fencing, signs, and water quality best management practices to reduce adverse impacts on water quality, streams, wetlands, and floodplains .

Section X. Conflict with other regulations

Where the standards and management requirements of this buffer ordinance are in conflict with other laws, regulations, and policies regarding streams, steep slopes, erodible soils, wetlands, floodplains , timber harvesting, land disturbance activities, or other environmental protective measures, the more restrictive shall apply.

Figure 1: Stream Order (Source: Schueler, 1995)

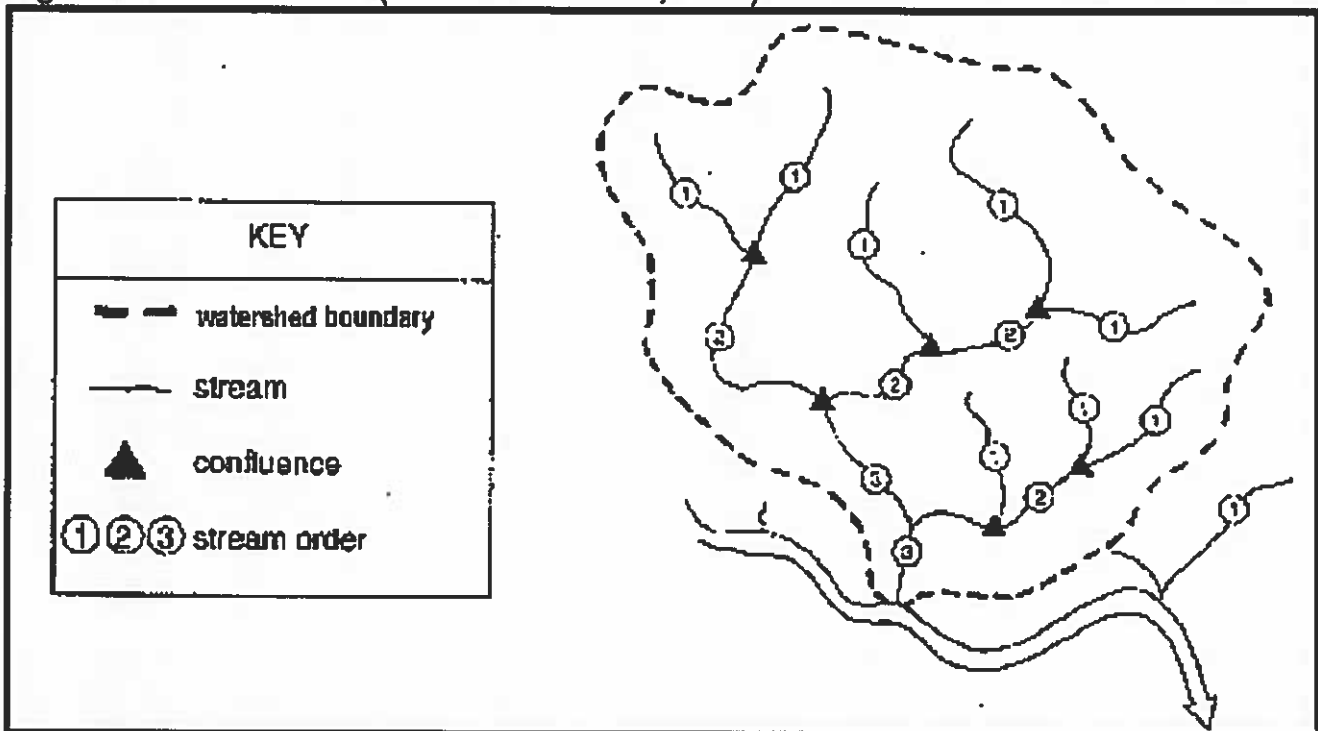
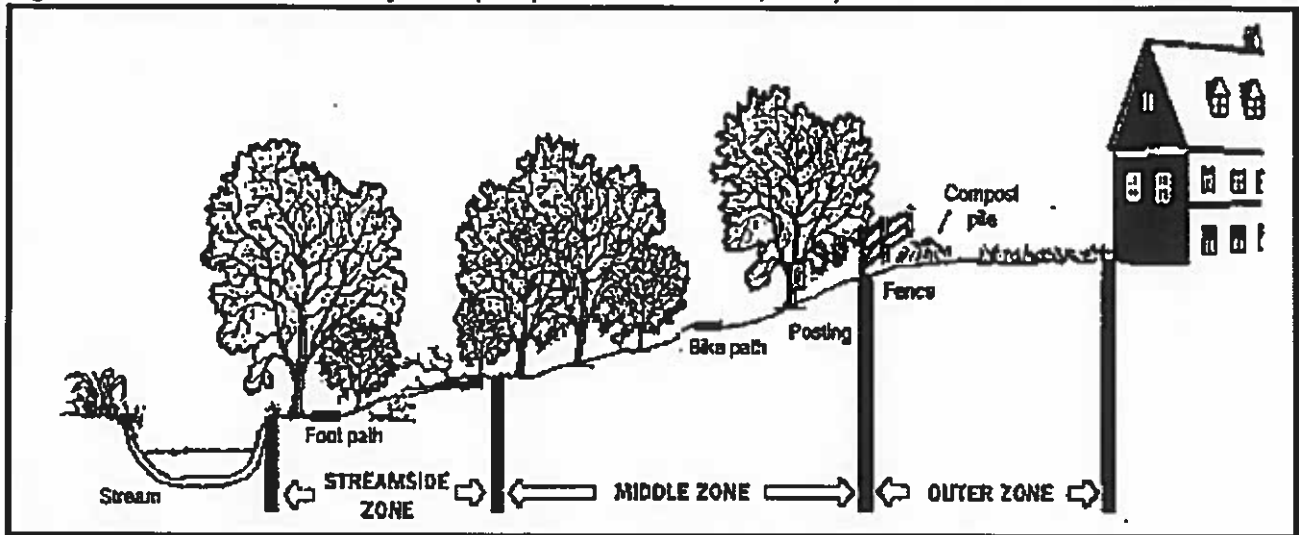


Figure 2: Three Zone Buffer System (Adapted from Welsch, 1991)



References

- Heraty, M. 1993. Riparian buffer programs: a guide to developing and implementing a riparian buffer program as an urban best management practice. Metropolitan Washington Council of Governments, USEPA Office of Wetlands, Oceans and Watersheds. Washington, DC.
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- Welsch, D. 1991. Riparian forest buffers. FS Pub. No. NA-PR-07-91. US Department of Agriculture, Forest Service. Forest Resources Management, Radnor, PA.