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Subject: Stream Buffer Benchmarking Research
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The Strategic Policy and Coordination team within the Philadelphia Water Department, Office of Watersheds, has conducted benchmarking research regarding municipal stream buffer sizes, targeting municipalities with working ports on large rivers as well as smaller tributary streams. Codes and ordinances in the following cities were reviewed:

Baltimore, MD	New York, NY
Chicago, IL	Pittsburgh, PA
Cincinnati, OH	Portland, OR
Detroit, MI	St. Louis, MO
Louisville, KY	Washington, DC
Minneapolis, MN	Wilmington, DE

While two of the cities reviewed (Detroit and St. Louis) do not have stream buffer requirements, the other cities do have required buffers ranging from 25 to 200 feet. In many cases, certain development was allowed within the buffer, either by right or by conditional approval through further review by a particular authority. Information regarding the buffer requirements for the ten cities is described below.

Baltimore, Maryland

<http://www.baltimorecity.gov/Portals/0/Charter%20and%20Codes/Code/Art%2000%20-%20Zoning.pdf>
<http://www.baltimorecountymd.gov/Agencies/environment/eir/cbca.html>

Baltimore has established a buffer system due to the imposition of a State Chesapeake Bay Critical Area Law. These regulations place all waterfront lands within the Critical Area into one of three land use categories:

- **Intensely Developed Areas (IDA)** – developed land uses predominated, and little natural habitat occurs. Pollutant loadings must be reduced by 10 percent and habitat protection areas must be protected. A minimum 100-foot buffer is required.
- **Limited Development Areas (LDA)** – low or moderate uses, and co-existence with natural plant and animal habitats. Runoff has not been substantially altered or impaired.
- **Resource Conservation Areas (RCA)** – natural resource areas and resource-oriented activities predominate.

Within Baltimore, only an IDA and RCA are established. The IDA is comprised of two subareas, a waterfront revitalization area and a waterfront industrial area. The 100 foot buffer is applied to the entirety of the Critical Area. This buffer is defined as naturally vegetated areas or vegetated areas established or managed to protect aquatic, wetland, and terrestrial environments from man-made disturbance. Water-dependent facilities are allowed within buffer in IDAs with certain restrictions, but still prohibited in RCAs. Additionally,

only the following uses are permitted within an RCA: non-profit/publically owned space, natural parks, pedestrian easements, promenades, bike paths, cultural and historic sites, and educational facilities.

Chicago, Illinois

[http://www.amlegal.com/nxt/gateway.dll/Illinois/chicagozoning/title17chicagozoningordinance/chapter17-8planneddevelopments?f=templates\\$fn=document-frame.htm\\$3.0#JD_17-8-0900](http://www.amlegal.com/nxt/gateway.dll/Illinois/chicagozoning/title17chicagozoningordinance/chapter17-8planneddevelopments?f=templates$fn=document-frame.htm$3.0#JD_17-8-0900)

[http://www.amlegal.com/nxt/gateway.dll/Illinois/chicagozoning/title16landuse/chapter16-4lakemichiganandchicagolakefro?f=templates\\$fn=document-frame.htm\\$3.0](http://www.amlegal.com/nxt/gateway.dll/Illinois/chicagozoning/title16landuse/chapter16-4lakemichiganandchicagolakefro?f=templates$fn=document-frame.htm$3.0)

Chicago has developed a setback for waterways within their zoning code. The goal of regulating waterways development is to protect and enhance “the beauty, amenity, economic potential, recreation value and environmental quality of Chicago’s waterways.” The zoning code requires a minimum setback of 30 feet from the top of the bank along certain waterways (Chicago River Main Branch, Chicago River North Branch and North Branch Canal, Chicago River South Branch and South Fork of the South Branch, North Shore Channel, and Chicago Sanitary and Ship Canal). The code also requires planned developments to provide public waterfront paths and amenities, as well as landward connections, although the sizing and type is not specified.

Additionally, a separate section of the Chicago zoning code regulates Lake Michigan and Chicago Lakefront Protection. This portion of the code creates three separate zones in lakefront areas: an offshore zone that includes surface, subsurface and air rights of Lake Michigan, a public use zone that includes open space and ways irrespective of configuration which are adjacent to the shoreline, and a private use zone. These zones are delineated on district maps instead of within the code itself.

Cincinnati, Ohio

<http://library.municode.com/index.aspx?clientId=19996&stateId=35&stateName=Ohio>

Cincinnati has created three separate riverfront sub-districts to regulate riverfront development within their zoning code. The purpose of these districts include to “promote residential and river-related recreational, commercial and manufacturing activities along the Ohio and Little Miami Rivers, maintain scenic river views, and preserve significant natural features of the floodplain environment,” among others. Specifically, the Riverfront Residential/Recreational (RF-R) district prohibits all but public uses within 200 feet of the Little Miami River. The remaining two districts do not have explicitly required setbacks. The Riverfront Commercial District (RF-C) is set up to act as a buffer between the residential and high intensity industrial areas of the riverfront, is limited to certain types of commercial usage (such as offices, day care centers, marinas, and ports), and has a maximum building height of 100 feet. The Riverfront Manufacturing District (RF-M) is set up for heavy industrial uses that require river access, such as boat and ship yards, and does not have a maximum building height. Finally, the zoning code does also establish a 50 feet setback on the entirety of Ohio River, stating that “existing tree cover and vegetation must be preserved” in that setback.

Louisville, Kentucky

http://www.louisvilleky.gov/NR/rdonlyres/B308F782-5619-41BA-97B5-DE8095FF13F0/0/LDCMar06_web.pdf
(See Chapter 4, Part 8)

The Louisville land development code regulates setbacks in the Waterways and Wetlands Protection Section. The purpose of this section is to “promote, preserve, and enhance the important hydrologic, biological, ecological, aesthetic, recreational, and educational functions that river and stream corridors provide; to

locate development in areas that do not have severe environmental limitations and to protect natural areas and features; to minimize water pollution; to promote bank stabilization; to protect riparian wetlands and their wildlife habitats; and generally to promote land use policies which will maintain or improve water quality levels.” The code creates two separate setbacks. “Type A” setbacks apply in downtown, traditional, and village center districts and all require a 25 ft buffer. “Type B” setbacks apply in regional, town center, suburban, and campus districts and all require a 100 ft buffer with three separate zones (25 ft streamside zone, 50 ft middle zone, and 25 ft outer zone).

The code does provide exemptions to these setbacks for the following developments: agricultural operations, certain expansions of building footprints, docks, boat launches, structures which accommodate public water supply intake, water quality treatment plant sewer lines and outfalls, and other uses with a water dependent nature that cannot be located anywhere but within a designated buffer area. These exemptions are not tied to any special reviews or use permits, and thus are by-right exemptions.

Minneapolis, Minnesota

<http://library.municode.com/index.aspx?clientId=11490>

The Minneapolis zoning code sets a Shoreland Overlay District, which prohibits development within 50 feet of the ordinary high water mark of any protected water or 40 feet within the top of a steep slope or bluff. The Shoreland Overlay District is in place in order “to preserve and enhance the environmental qualities of surface waters and the natural economic values of shoreland areas... to provide for the efficient and beneficial utilization of those waters and shoreland areas.... and to protect public health, safety, and welfare.”

Public parks and water-oriented development are allowed within the prohibited area, but they must have a conditional use permit to proceed. Conditional use permits are used to allow development with unique characteristics that cannot be permitted by right in a particular zoning district. An application for a conditional use permit must be filed with the zoning administrator and go through a public hearing process with the city planning commission.

New York, New York

<http://www.nyc.gov/html/dcp/pdf/zone/art06c02.pdf>

http://www.nyc.gov/html/dcp/html/zone/zh_ztools_waterfront.shtml

New York City has created a waterfront area within their zoning code to “maintain and reestablish physical and visual public access; promote a greater mix of uses; encourage water dependent uses; create a desirable relationship between development and the water’s edge; preserve historic resources; and protect environmentally sensitive areas.” Within the waterfront area, there have been established two separate setbacks, called waterfront yards, which determine the depth from the landward edge of the high water line, bulkhead, or natural shore to the development. Generally speaking, residential development has a 30 foot setback while commercial development has a 40 foot setback requirement. Additionally, all zoning districts (aside from heavy commercial, industrial, and low-density residential) require some sort of public open space at the water’s edge with pedestrian links.

Pittsburgh, Pennsylvania

<http://library.municode.com/index.aspx?clientId=13525>

The Pittsburgh zoning code creates a riverfront overlay district. The purpose of this district is to “maintain an open space area with the potential for public access along the banks of the rivers; improve the scenic quality of the City’s riverfronts; and establish a classification of land and water area.” The zoning code places a minimum 50 foot setback from the Allegheny, Ohio, or Monongahela Rivers, in addition to any setback standards of the underlying zoning district. All development in this overlay must submit a riverfront development application to the zoning administrator and made available to the public. The zoning administrator may grant an exception to the riverfront setback in the following instances:

- A Planned Unit Developments that cannot provide for continuous public access, but meets the other purposes of the riverfront district;
- The proposed landscaping, riverfront treatment, and open space meet the purpose of the overlay district; or
- The development includes water enhanced or water oriented uses or structures whose function physically precludes the ability to provide a riverfront setback.

Portland, Oregon

<http://www.portlandoregon.gov/bps/article/53351>

Portland has created five separate greenway overlay zones within their zoning code to regulate waterfront development. These five zones, and the purposes for each zone, are as follows:

- River Natural – to protect, conserve, and enhance land of scenic quality or of significant importance as wildlife habitat.
- River Recreational – to encourage river-dependent and river-related recreational uses which provide a variety of types of public access to and along the river, and which enhance the river’s natural and scenic qualities.
- River General – to allow for uses and development which are consistent with the base zoning, which allows for public use and enjoyment of the waterfront, and which enhance the river’s natural and scenic qualities.
- River Industrial – to encourage and promote the development of river-dependent and river-related industries which strengthen the economic viability of Portland as a marine shipping and industrial harbor, while preserving and enhancing the riparian habitat and providing public access where practical.
- River Water Quality – to protect the functional values of water quality resources by limiting or mitigating the impact of development in the setback.

All five overlay zones have a general greenway setback of at least 25 feet from the top of the bank. Specifically, for the river water quality overlay zone, the greenway setback is extended to 50 feet from the top of the bank if slopes are less than 25%, or 200 feet if slopes are greater than 25%. This 50 foot greenway setback also applies to wetlands, and wetland setbacks start at the delineated edge.

River-dependent development is allowed within the greenway setback if approved through greenway review, which can reduce the setback to zero. Additionally, one of the greenway zones is the “river industrial” zone, which has been set to encourage the development of river-dependent and related industries, and where

industrial use is allowed by right within this zone. Within the City's Comprehensive Plan, large areas of the river industrial zone are designated as an industrial sanctuary to preserve for future industrial development.

Washington, District of Columbia

<http://www.dcregs.org/Gateway/RuleHome.aspx?RuleNumber=11-938>

The Washington, D.C. zoning code sets a specific waterfront setback within their Waterfront District regulations. The purpose of the Waterfront District is to "encourage a diversity of compatible land uses at various densities, including combinations of residential, offices, retail, recreational, arts and cultural uses." The waterfront setback is determined to be 100 feet from the bulkhead or mean high water line. This setback is waived by-right for water taxi ticketing/information booth, wharfs, docks, piers, or for a public nature education center on Kingman Island. Special exemptions may be granted for a proposed setback of greater than 20 feet but less than 100 feet.

Wilmington, Delaware

<http://library.municode.com/index.aspx?clientId=11715&stateId=8&stateName=Delaware>

The Wilmington zoning code requires setbacks for all new construction in waterfront districts. These setbacks exist "to assure that all existing and future development will be of a quality nature" and "to limit the intensity of development to the ... hydrologic ... carrying capacity of each district." The breakdowns of the different setbacks are based on the depth of the property. If the property is less than 200 feet deep, then there is a 30 foot required setback. If the property is between 200 and 400 feet deep, then there is a 40 foot required setback. If the property is more than 400 feet deep, then there is a 50 foot required setback. The minimum setback may be decreased, by the zoning administrator, if recommended during the review process, where: the propose use is water-related; the development requires a lesser setback to maximize the use of the river's scenic value; or to permit reuse of existing buildings, structures, or foundations with a lesser setback.

Summary Table: Buffer Requirements

City	Buffer Description	Buffer Size
Baltimore, Maryland	Critical Areas	100 Ft
Chicago, Illinois	Waterways Setback	30 Ft
Cincinnati, Ohio	Little Miami River	200 Ft
	Ohio River	50 Ft
Detroit, Michigan	None	None
Louisville, Kentucky	Type A – downtown/ village centers	50 Ft
	Type B - regional/suburban centers	100 Ft
Minneapolis, Minnesota	Shoreland Overlay District	50 Ft
New York City	R1-R5, C1-C2 (mapped in R1-R5), C3	30 Ft
	R6-R10, C1-6-C1-9, C2-6-C2-8, C4-C8, M1-M3	40 Ft
Pittsburg, Pennsylvania	Riverfront Overlay District	50 Ft
Portland, Oregon	Greenway General Buffer	25 Ft
	River Water Quality (<25% Slopes)	50 Ft
	River Water Quality (>25% Slopes)	200 Ft
	Wetlands River Water Quality	50 Ft
St. Louis, MO	None	None
Wilmington, Delaware	Depth of property <200 FT	30 Ft
	Depth of property 200-400 FT	40 Ft
	Depth of property >400 FT	50 Ft
Washington, District of Columbia	Waterfront setback	100 Ft