

# Green Infrastructure Municipal Policies, Codes and Ordinances

## Using the Water Quality Scorecard



# Green Infrastructure at 3 Scales

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## □ Site

- Rain gardens, green roofs, pervious pavers

## □ Neighborhood

- Street networks, parking, mixed use

## □ Municipal

- Open space, infill development, trees



# Green Infrastructure



# Benefits of Green Infrastructure

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- ❑ Urban heat island reduction
- ❑ Reduced energy demands
- ❑ Improved air quality
- ❑ Recreational space
- ❑ Walkable streets
- ❑ Increased land values
- ❑ Quality of life
- ❑ And more...



# Comprehensive Program

- Land use planning
- Land acquisition and capital investments
- Internal policies
- Codes and ordinances



# EPA's Water Quality Scorecard

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- ❑ Drivers of impervious cover at regional, neighborhood, site scales
- ❑ Requires cooperation and conversation between numerous departments
- ❑ Identifies 21 broad policy areas across 5 different municipal departments
- ❑ More than 230 different policies, codes, or incentives a local government could implement

# 4 Ways to Impact Change

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- ❑ Adopt Plans
- ❑ Remove Barriers
- ❑ Create Incentives
- ❑ Enact Regulations



# Water Quality Scorecard



1. Protect Natural Resources and Open Space
2. Promote Compact Development and Infill
3. Design Complete, Smart Streets that Reduce Imperviousness
4. Encourage Efficient Parking Supply
5. Green Infrastructure On Site

# 1. Protect Natural Resources and Open Space

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- Natural Resource Protection
- Open Space Protection
- Tree Protection



## 2. Promote Compact Development and Infill

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- Support Infill and Redevelopment
- Direct Development to Existing Infrastructure
- Encourage Mixed-Use Development



# 3. Design Complete, Smart Streets

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## □ Street Design

- Context sensitive solutions
- Narrow streets
- Driveway location/design



## □ Green Infrastructure Designs

- Standards and Design Criteria
- Construction
- Maintenance



## 4. Encourage Efficient Parking Supply

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- ❑ Reduce Parking Requirements
- ❑ Transportation Demand Management
- ❑ Minimize Stormwater from Parking Lots



# 5. Green Infrastructure On Site

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## □ Green Infrastructure Practices

- Allowed for residential management
- Required for new developments

## □ Maintenance and Enforcement

- Monitoring, tracking and maintenance protocols



## Section 1: Protect Natural Resources (Including Trees) and Open Space

1.A—Natural Resource Protection	Implementation Tools and Policies	Points Available	Points Received or N/A	Notes and Local References
<p><b>(1) Sensitive Natural Lands/Critical Area Protection</b>  <b>Question:</b> Are development policies, incentives, regulations, and incentives in place to protect sensitive natural lands and critical wildlife habitat?</p> <p><b>Goal:</b> Protect natural resource areas (e.g., forests, steep slope areas, and critical wildlife habitat) from future development.</p> <p><b>Why:</b> Protection of significant tracts of critical lands and wildlife habitat will aid in protecting and improving water quality by increasing infiltration and groundwater recharge, preventing erosion and contamination of ground water and surface water resources, and protecting sources of drinking water.</p>	<p><b>Adopt Plans/Educate:</b></p> <ul style="list-style-type: none"> <li>• The local government has identified and mapped critical natural resource areas (e.g., steep slopes, wildlife habitat, forests, drinking water source areas). See Lenexa, Kansas.</li> <li>• The local comprehensive plan contains a natural resource protection element with goals calling for preservation of identified critical natural resource areas. See Baltimore County, Maryland.</li> <li>• Key natural resource areas are identified for protection in jurisdiction’s parks and open space plan.</li> <li>• The local government provides assistance to landowners in identifying sensitive natural areas and laying out developments to avoid such areas.</li> <li>• Local plans establish and enforce areas which are available for development and which lands are a priority for preservation.</li> </ul>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>		
	<p><b>Remove Barriers:</b></p> <ul style="list-style-type: none"> <li>• Protection of sensitive natural areas and wildlife habitat qualifies for credit towards local open space dedication and set-aside requirements.</li> </ul>	<p>1</p>		

	<p><b>Adopt Incentives:</b></p> <ul style="list-style-type: none"> <li>• The local government financially supports or partners with land trusts to acquire critical natural areas.</li> <li>• The community has a dedicated source of funding for open space acquisition and management (e.g., bond proceeds, sales tax, etc.).</li> <li>• The locality has adopted a transferable developments rights program to provide an incentive for landowners to preserve sensitive natural lands and wildlife habitat.</li> <li>• Land use regulations provide for the creation of cluster and conservation subdivision on the periphery of urban growth areas to encourage preservation of intact blocks of sensitive natural areas.</li> </ul>	<p>1</p> <p>2</p> <p>1</p> <p>1</p>		
	<p><b>Enact Regulations:</b></p> <ul style="list-style-type: none"> <li>•The locality has adopted regulations to protect steep slope, hillsides, and other sensitive natural lands (e.g., by limiting development on slopes &gt; 30% or requiring larger lot sizes in sensitive areas).</li> <li>•The locality has adopted wildlife habitat protection regulations aimed at preserving large contiguous blocks of habitat areas.</li> <li>•Agriculture/natural resource zoning districts (e.g., minimum lot size of 80 acres and larger) have been created to preserve agricultural areas and forests.</li> </ul>	<p>2</p> <p>2</p> <p>2</p>		

<p><b>(2) Protection Of Water Bodies/Aquifers</b></p> <p><b>a. Question:</b> Are no-development buffer zones and other protective tools in places around wetlands, riparian areas, and flood plains that improve/protect water quality?</p> <p><b>Goal:</b> Protect critical areas such as wetlands, floodplains, lakes, rivers, and estuaries with a mandatory no-development buffer.</p> <p><b>Why:</b> This will limit pollutant loads and hydrologic alterations to water bodies.</p>	<p><b>Adopt Plans/Educate:</b></p> <ul style="list-style-type: none"> <li>• The local government has identified and mapped critical water resource areas.</li> <li>• The local comprehensive plan contains a water quality protection element with goals calling for protection of identified water bodies and other water resource areas such as wetlands.</li> <li>• Key critical water resource areas are identified for protection in jurisdiction’s parks and open space plan.</li> <li>• The local government has cooperated in developing regional approaches to watershed protection and stormwater management.</li> </ul>	1		
	<p><b>Remove Barriers:</b></p> <ul style="list-style-type: none"> <li>• Wetlands and other water bodies and buffer areas qualify for credit against local open space dedication/set-aside regulations.</li> </ul>	1		
	<p><b>Adopt Incentives:</b></p> <ul style="list-style-type: none"> <li>• Protected water bodies and buffer areas qualify for 2X (or more) credit against open space requirements set by the municipality.</li> <li>• Restoration of degraded riparian/wetland areas qualifies for additional open space credit within the local municipal system.</li> <li>• Density from protected riparian areas/buffers can be transferred to upland portion of development sites.</li> </ul>	1	1	1

	<p><b>Enact Regulations:</b></p> <ul style="list-style-type: none"> <li>• Riparian and wetland buffer areas required by local land use regulations <ul style="list-style-type: none"> <li>--Buffer is at least 50 feet (as measured from the top of bank) = 1 point</li> <li>--Buffer is at least 100 feet (as measured from the top of bank) = 2 points</li> <li>--Buffer is greater than 100 feet (as measured from the top of bank) = 3 points</li> </ul>           (See Maryland<sup>[1]</sup> and Wisconsin<sup>[2]</sup> examples).</li> <li>• Critical water resource areas cannot be counted in calculating allowable density on a site (e.g., on a 200-acre site with 50 acres of wetlands, only 150 acres can be used to calculate density under zone district regulations, and only those 150 acres may be developed.)</li> <li>• All development in floodplains is prohibited or must demonstrate no adverse impacts upstream and downstream (See Association of State Floodplain Managers for details on “adverse impact” approach to floodplain management.).</li> <li>• Locality adopts stormwater quality and quantity performance standards for development sites (e.g., restrictions on sedimentation levels, pre/post development flows).</li> <li>• Regulations require restoration of degraded riparian/wetland areas on a development site.</li> <li>• Damage to riparian/wetland areas must be compensated for on a minimum 2:1 basis on- or off-site.</li> <li>• Establish and actively enforce a performance standard for stormwater discharges to wetlands that protect the hydrologic regimes and limit pollutant loads.</li> </ul>	<p><b>1 to 3 points</b></p> <p><b>1</b></p> <p><b>2</b></p> <p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p>		
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<sup>[1]</sup> Riparian Forest Design, Establishment and Maintenance; Maryland Cooperative Extension Service, <http://www.riparianbuffers.umd.edu/fact/FS725.html>

<sup>[2]</sup> US Department of Agriculture, Natural Resources Conservation Service, Solution: Riparian Buffers,

<b>Total score for PROTECT NATURAL RESOURCE AREAS AND OPEN SPACE :</b>	<b>80</b>		
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### Resources

- ❑ Planner's Guide to Wetland Buffers for Local Governments, Environmental Law Institute: [http://www.elistore.org/reports\\_detail.asp?ID=11272](http://www.elistore.org/reports_detail.asp?ID=11272)
- ❑ Center for Watershed Protection guidance on aquatic buffers: [http://www.cwp.org/Resource\\_Library/Restoration\\_and\\_Watershed\\_Stewardship/perviousarea.htm](http://www.cwp.org/Resource_Library/Restoration_and_Watershed_Stewardship/perviousarea.htm)
- ❑ "Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances," Carl Vinson Institute of Government, The University of Georgia: [http://www.rivercenter.uga.edu/publications/pdf/riparian\\_buffer\\_guidebook.pdf](http://www.rivercenter.uga.edu/publications/pdf/riparian_buffer_guidebook.pdf)
- ❑ Riparian Toolbox: Model Regulations and Legal Issues, Long Island Sound Study: <http://www.longislandsoundstudy.net/riparian/legal.htm>
- ❑ Model Ordinances to Protect Local Resources, EPA Sourcewater Protection: <http://www.epa.gov/nps/ordinance/sourcewater.htm>
- ❑ Duerksen and Snyder, "Nature-Friendly Communities: Habitat Protection and Land Use Planning," (Island Press 2005).
- ❑ City Trees: Sustainability Guidelines and Best Practices, <http://www.treetrust.org/pdfs/citytrees-bonestroopilot.pdf>
- ❑ American Forests Guide to Setting Urban Tree Canopy Goals: <http://www.americanforests.org/resources/urbanforests/treedeficit.php>
- ❑ Center for Watershed Protection Urban Forestry Manual: <http://www.cwp.org/forestry/part3forestrymanual.pdf> (pg. 69))
- ❑ Duerksen and Richman, *Tree Conservation Ordinances*, American Planning Assn. PAS Report No. 446 (1993)
- ❑ Zoning Practice: Tree Preservation (American Planning Assn. July 2006)
- ❑ "Trees for green streets: An illustrated guide," Portland Metro: <http://www.metro-region.org/index.cfm/go/by.web/id=26337>
- ❑ Tree Preservation Information Guide, Portland, Oregon: <http://www.sustainableportland.org/shared/cfm/image.cfm?id=72545>
- ❑ EPA Storm Water Pollution Prevention Plan (SWPPP) Guide: <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>
- ❑ Center for Urban Forest Research, US Forest Service: <http://www.fs.fed.us/psw/programs/cufr/>, Urban Forest Policy and Management: <http://www.fs.fed.us/psw/programs/cufr/research/studies.php?TopicID=1>
- ❑ Plants for Stormwater Design Volume II, Great River Greening: <http://www.greatrivergreening.org/downloads/PSD%2011%20Sample.PDF>

## Case Studies

- ❑ Alachua County, Florida land acquisition policies:  
<http://www.alachuacounty.us/government/depts/epd/land/filesforms.aspx>
- ❑ Lino Lakes, Minnesota Natural Resources Stewardship and Water Resources Management Plan:  
<http://ci.lino-lakes.mn.us/vertical/Sites/%7BA233BB09-8316-4E17-A27A-C25E01027DA7%7D/uploads/%7BA4F70E6C-E12F-4CDA-851A-41FF1D66D7BE%7D.PDF>
- ❑ King County, Washington's Greenprint Project open space and land acquisition strategy:  
<http://dnr.metrokc.gov/wlr/greenprint/about.htm>
- ❑ San Jose, California tree credit for post-construction stormwater treatment:  
[http://www.sanjoseca.gov/planning/stormwater/Policy\\_6-29\\_Memo\\_Revisions.pdf](http://www.sanjoseca.gov/planning/stormwater/Policy_6-29_Memo_Revisions.pdf)
- ❑ Portland, Oregon stormwater fee discounts for trees over 15 feet tall:  
<http://www.portlandonline.com/bes/index.cfm?c=43444&#types>
- ❑ Portland, Oregon tree credit for meeting local stormwater requirements:  
<http://www.portlandonline.com/shared/cfm/image.cfm?id=93075>
- ❑ Lenexa, Kansas Parks and Recreation Plan:  
<https://www.ci.lenexa.ks.us/Planning/compplan/Overview/>
- ❑ New York City's street tree planting amendment:  
[http://www.nyc.gov/html/dcp/html/street\\_tree\\_planting/index.shtml](http://www.nyc.gov/html/dcp/html/street_tree_planting/index.shtml)
- ❑ Charlottesville, North Carolina Comprehensive Plan –Chapter 8, Urban Forest Goals:  
<http://www.charlottesville.org/Index.aspx?page=1745> (pg. 184-187)
- ❑ Chicago, Illinois Open Space Impact Fee Ordinance:  
[http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?blockName=Buildings%2FContent&deptMainCategoryOID=-536901233&entityName=Buildings&topChannelName=Dept&contentOID=536988877&contentTypeName=COC\\_EDITORIAL](http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?blockName=Buildings%2FContent&deptMainCategoryOID=-536901233&entityName=Buildings&topChannelName=Dept&contentOID=536988877&contentTypeName=COC_EDITORIAL)

# Quantitative Nature of the Scorecard

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- Communities can evaluate themselves
- Can set goals or objectives for making modifications to local plans, codes or ordinances



[http://www.epa.gov/smartgrowth/pdf/2009\\_1208\\_wq\\_scorecard.pdf](http://www.epa.gov/smartgrowth/pdf/2009_1208_wq_scorecard.pdf)



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# WATER QUALITY SCORECARD

Incorporating Green Infrastructure Practices at the Municipal, Neighborhood, and Site Scales

