

**Lower Raritan Watershed Management Area
Land Use, Wastewater & Water Supply Subcommittee
Strategy Worksheet LRLU-S3A2**

<p>Strategy Name: Policy and Planning Toolbox LRLU-S3A2. Develop and distribute a policy and planning toolbox for municipalities and developers that can be used to control the impacts of development. Develop programs using the toolbox that will ensure that municipalities will have the knowledge necessary to evaluate site plan applications for environmental impacts. See: RB-S5. Create a policy and planning “toolbox” for municipalities and developers that can be used to control development impacts, including environmentally sensitive zoning and site design techniques such as low impact development and smart growth methods. Provide training for municipalities (e.g., municipal and consultant planners and engineers and land use boards) and developers (e.g., engineers, planners, architects and landscape architects) and provide technical and planning assistance to municipalities in using the toolbox.</p>	<p>Strategy Priority: H (H/M/L)</p>
<p>Objectives Addressed by Strategy: LRLU-O3A. By 2004, municipalities shall help protect environmental resources and mitigate environmental impacts by requiring a thorough examination of environmental impacts from applicants for development or redevelopment projects. LRLM-O2A. The potential impacts of different land uses and management methods will be understood by 2004. Appropriate BMPs for various land uses shall be implemented to serve 25% of the land area in the WMA by 2010. An additional 5% of area will be served by BMPs each consecutive year. LRLM-O2F. By 2006, municipalities and other stakeholders will be provided with policy guidelines, methods (BMPs), implementation guidelines and maintenance protocols to achieve the goals and objectives stated in the Lower Raritan WMA watershed management plan. LRSW-O4C. By 2006, municipalities and other stakeholders will be provided with policy guidelines, methods (BMPs), implementation guidelines and maintenance protocols to achieve the goals and objectives stated in the Lower Raritan watershed management plan.</p>	<p>Strategy Schedule: (Begin/End)</p>
<p>Narrative Description of Strategy: Development pressure and suburban sprawl are converting a great deal of forested and agricultural land to urban land uses within the WMA. Along with urban land uses comes an increase in impervious cover that increases stormwater runoff, decreases ground water recharge and baseflow, and degrades water quality of surface and ground water resources. New urban land also increases the number of bridges over streams, increases the number of stormwater outfall structures that discharge to streams, and physically alters the stream corridor. The surface waters of the WMA have documented pollutant loadings from non-point sources. The construction of housing and roads, known sources of sediment loading, along with runoff from the suburban landscape and storm drains, known sources of nutrient, fecal coliform bacteria and sediment loading, all contribute to the suburban non-point source pollution. Primary concerns within the WMA include fecal coliform and phosphorus.</p> <p>Different soils have different suitabilities for development, which will affect the impact that development of a particular site will have on water resources. In order to determine the suitability of soils for development in the Raritan Basin, soils were assessed for 6 of the 26 community development applications according to the USDA-NRCS as part of the “Landscape of the Raritan River Basin” technical report.¹ Common limiting factors for development include shallow depth to seasonal high water table; shallow depth to bedrock; and slope. Ratings of slight, moderate and severe are applied to describe the degree of such limitations.</p> <p>According to the GIS analysis conducted for the technical report to determine the suitability of soils for development in the Basin, 51% of the land area in the Lower Raritan WMA has severe limitations for development. However, development has occurred in these areas despite severe limitations for foundations as well as local roads and streets. All soils of the WMA have severe ratings for septic tank absorption fields.</p> <p>Of the 1995 urban land areas (Figure 35 of the technical report):</p> <ul style="list-style-type: none"> • 13% of development has occurred on soils most suited to development • 36% of development has occurred on soils moderately suited to development • 38% of development has occurred on soils least suited to development. (Watchung Mountains, along the Route 287 corridor - Bridgewater, Piscataway and 	

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Edison Townships, headwaters of the Matchaponix Brook - Monroe and Marlboro Townships).
(Table E-2 of the Landscape report)

This strategy will compile information and policies from several other strategies, across subcommittees. A list of recommended tools – both policy tools and physical tools – will be compiled. Specific tools to be used based on existing characteristics/limitations of various areas will be identified. An annotated bibliography will be prepared to provide municipalities, counties and development organizations will information regarding each of the tools. In addition, a computer program will be developed to aid in site design. The program will either be adapted from an existing program to reflect the Lower Raritan’s characteristics, or a new program will be developed. Outreach to and training for municipalities and other appropriate groups will be provided.

Areawide WQM Plan Consistency Determination Issues: NA

Action Plan (Steps or Tasks)	Responsible Parties for Planning, Design & Implementation ²	Responsible Parties for Oversight	Resource Needs ³	Committed or Recommended Resources	Major Challenges and Opportunities	Evaluation Method & Indicators	Schedule and Milestones for Implementation
<p>1. Based on strategies developed by the Lower Raritan WMA subcommittees, compile a list of recommended site development tools for use in the WMA. Catalogue the tools by type, use and function. Create a clearinghouse or annotated bibliography providing information regarding the recommended tools.⁴</p> <p>See: LRLM-S2A2: Identification of Methods to Control Pollutant Contributions LRLM-S2A3: Projects to Mitigate NPS Loadings LRLM-S2B2: Nutrient Reduction Plan LRLM-S2C2: Sediment Reduction Plan LRLM-S2D2: Pollutant Reduction Plan for Non-conventional Pollutants</p>	<p>C: R: LRLU (if active)⁵, NRCS</p>	<p>C: R: LRMC-WRA LRWMG LRWMAC⁶</p>	<p>L</p>	<p>C: NJDEP BMP Manual, other existing materials LRLM-S2A2, LRLM-S2A3, LRSW-S2B2, LRLM-S2C2, LRLM-S2D2, LRLM-S2E2, LRLU-S3A2, RB-S5, LRLU-S3A3 & LRLU-S3A4, LRLU-S4C2, LRSW-S4C1/LRSW-S4C2/LRLU-S3A6, LRSW-S1A2, LRSW-S1B2, LRSW-S2A2, LRSW-S2A3 & LRSW-S2B3, LRSW-S2A4 & LRSW-S2B4, LRSW-S2B2 R: Existing</p>	<p>Challenges: Understanding the benefits and costs of various tools in different environmental and developmental situations</p>	<p>Completion of list Completion of clearinghouse or bibliography</p>	<p>NJDEP BMP manual – early 2003</p>

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LRLM-S2E2: Fecal Coliform Reduction Plan LRLU-S3A2: Policy & Planning Toolbox LRLU-S3A3 & LRLU-S3A4: Site Plan Provisions to Protect Water Resources LRLU-S4C2: Protection of Water Resources from Road Runoff LRSW-S4C1/LRSW-S4C2/LRLU-S3A6: Improved Knowledge Regarding Stormwater Management and Environmentally Sensitive Development LRSW-S1A2: Improve Effectiveness of Existing Stormwater Systems LRSW-S1B2: Regulation of Stormwater from New Development to Protect Stream Channels & Base Flow LRSW-S2A2: Improve Water Quality of Existing Stormwater Discharges LRSW-S2A3 & LRSW-S2B3: Program of Activities to Remove NPS Pollution from Stormwater LRSW-S2A4 & LRSW-S2B4: BMPs to Manage Hot Spots LRSW-S2B2: Regulation of Stormwater from New Development to Protect Water Quality				documentation on identified policies and tools, existing resources			

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<p>2. Based on strategies developed by the Lower Raritan WMA subcommittees, compile a list of recommended regulatory tools for use in the WMA. Create a clearinghouse or annotated bibliography providing information regarding the recommended tools.</p>	<p>See: LRLI-S1A2: Fill Regulatory Shortfalls for Watershed Management LRLM-S1B1: Programs to Protect Stream Ecosystem Health LRLM-S2B2: Nutrient Reduction Plan LRLM-S2C2: Sediment Reduction Plan LRLM-S2D2: Pollutant Reduction Plan for Non-conventional Pollutants LRLM-S2E2: Fecal Coliform Reduction Plan LRLU-S1A2 & LRLU-S1B2: Ground Water Quantity Protection Programs LRLU-S1A3 & LRLU-S1B3: Ground Water Quality Protection Programs LRLU-S3A1: Evaluation of Environmental Impacts of Proposed Development LRLU-S3A3 & LRLU-S3A4: Site Plan Provisions to Protect Water Resources LRLU-S4A1: Wastewater Capacity Limits LRLU-S4A3: Reduce Water Quality Impacts from Septic Systems LRLU-S4B1: Water Supply Capacity Limits LRLU-S4C1: Incorporation of Water Resources Protection into Transportation Projects LRLU-S4C2: Protection of Water Resources from Road Runoff LRSW-S1B1: Control Physical Stream Impacts from New Stormwater Runoff LRSW-S1B2: Regulation of Stormwater from New Development to Protect Stream Channels and Base Flow LRSW-S2A3 & LRSW-S2B3: Program of Activities to Remove NPS Pollution from Stormwater LRSW-S2A4 & LRSW-S2B4: BMPs to Manage Hot Spots LRSW-S3B1: Measures to Minimize Future Flood Damages LRSW-S3C1: Reduce Existing Potential for Flood Damages LRSW-S4A1: Assess & Improve Organizational & Regulatory Capacity for Stormwater & Flood Damage Management LRWR-S1A2: Regulatory Programs to Protect Riparian Areas</p>						
<p>3. For each HUC-11 or identified environmentally sensitive area or state planning area, identify specific tools to be used based on the existing characteristics and limiting factors of that area (e.g. geology, water supply). Incorporate this information into the clearinghouse developed in Action Step 1.</p> <p>See: LRLM-S2A2: Identification of</p>	<p>C: R: LRLU, NRCS, SCD</p>	<p>C: R: LRMC-WRA LRWMG LRWMAC</p>	<p>L</p>	<p>C: Raritan Project mapping LRLM-S2A2</p> <p>R: CBT & NPS grants, foundation grants, existing resources</p>	<p>Challenges: Extensive local involvement will be key</p>	<p>Identification of specific tools for each HUC-11</p>	

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Methods to Control Pollutant Contributions							
4. Identify and adapt or develop a computer program or model to assist with site design based on the tools recommended for the Lower Raritan WMA. The program should also be used by municipalities during site plan review to determine appropriate tools to use in site design.	C: R: Rutgers University	C: R: LRMC-WRA LRWMG LRWMAC	L-M	C: R: University research grant, existing models developed for other areas	Challenges: Developing a model that will accurately reflect conditions in the Lower Raritan and match site limitations with appropriate tools	Completion of successful program or model	
5. Provide training for municipalities and other groups to implement the tools appropriate for their municipality or project area and the site design model. See: LRSW-S4C1/LRSW-S4C2/LRLU-S3A6: Improved Knowledge Regarding Stormwater Management and Environmentally Sensitive Development LRLM-S2F1: Municipal Education About Nonpoint Source Pollution	C: R: LRLM, LREO, LBWP, Cook College of Continuing Education, RCE, League of Municipalities, Association of Counties	C: R: LRMC-WRA LRWMG LRWMAC	L-M	C: LRSW-S4C1/LRSW-S4C2/LRLU-S3A6 R: Existing educational programs/ series	Challenges: Reaching the appropriate audiences Changing the mindset to use alternative or innovative practices Opportunity: ANJEC outreach to municipalities	Attendance at training sessions Evidence that materials are being used and BMPs/ land use controls are being implemented Use of model by land management organizations or municipalities	

¹ Raritan Basin Watershed Management Project. Final report 2002. Landscape of the Raritan River Basin. <http://www.raritanbasin.org/landscape.htm>

² C = Committed, R = Recommended

³ General Estimates: Low = \$5,000 - \$50,000; Moderate = \$50,000 - \$250,000; High = \$250,000 - \$1 million; Very High = over \$1 million

⁴ The NJDEP BMP Manual will be released in draft form in January 2003. Suggested additional references:

American Society of Civil Engineers. National Stormwater Best Management Practices Database. <http://www.bmpdatabase.org/>

- Center for Watershed Protection. Better Site Design: A Handbook for Changing Development Rules in Your Community <http://centerforwatershedprotection.goemerchant7.com/index.cgi?PageToView=catalog&Department=2602&Cartid=31241041110276&Merchant=centerforwatershedprotection&ExpandedDepts=>
- Center for Watershed Protection. Recommended Model Development Principles for Frederick County, MD. <http://www.cwp.org/Frederick.pdf>
- Center for Watershed Protection. Vermont Stormwater Management Handbook. <http://www.vtwaterquality.org/Stormwater/TSDVermontStormwaterManagementHandbook.pdf>
- Clark County, WA. Stormwater Pollution Control Manual. <http://www.co.clark.wa.us/pubworks/BMPman.pdf>
- Delaware Department of Natural Resources and Environmental Control and The Environmental Management Center of the Brandywine Conservancy. 1997. Conservation Design for Stormwater Management: A Design Approach to Reduce Stormwater Impacts from Land Development and Achieve Multiple Objectives Related to Land Use. http://www.wa.gov/puget_sound/Programs/lid_cd/pdf_docs/DEL_MAN.PDF
- Delaware Department of Natural Resources and Environmental Control. Conservation Design for Stormwater Management. http://www.dnrec.state.de.us/water2000/Sections/Watershed/ws/fact_appo_cons_design_sw.pdf
- Georgia Stormwater Management Manual. <http://www.georgiastormwater.com/>
- Idaho Department of Environmental Quality. Catalog of Stormwater Best Management Practices. http://www.deq.state.id.us/water/stormwater_catalog/index.asp
- Idaho Department of Environmental Quality. Environmental Planning Tools and Techniques Report. http://www.deq.state.id.us/water/gw/env_planning_tools_report.htm
- Low Impact Development Center, Inc.. Low Impact Development – Urban Design Tools. <http://www.lid-stormwater.net/> and <http://www.lowimpactdevelopment.org/>
- Maine Department of Environmental Protection. Stormwater Best Management Practices. <http://www.state.me.us/dep/blwq/stormwtr/material.htm#bmp>
- Maryland Department of the Environment. Stream Response to BMPs. http://www.mde.state.md.us/assets/document/sedimentstormwater/319_report.pdf
- Maryland Department of the Environment. Stormwater Design Manual. http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.asp
- Metropolitan Council, MN. Urban Small Sites Best Management Practice Manual. <http://www.metrocouncil.org/environment/Watershed/bmp/manual.htm>
- Metropolitan North Georgia Water Planning District. Subdivision/Open Space Ordinance. <http://www.northgeorgiawater.org/pdfs/modordfin-task10/tab4.pdf>
- National Association of Counties. Local Tools for Smart Growth – Practical Strategies and Techniques to Improve Our Communities. <http://www.naco.org/programs/environ/sources/localtools.pdf>
- National Association of Home Builders. Smart Growth, Smart Choices. http://www.nahb.org/publication_details.aspx?publicationID=15§ionID=155
- National Association of Home Builders. Builder Greener, Building Better. http://www.nahb.org/publication_details.aspx?sectionID=155&publicationID=17
- National Center for Smart Growth. <http://www.smartgrowth.umd.edu/>
- National Wildlife Federation. 2000. Innovative Site Design. <http://www.nwf.org/northeastern/resources/innovative.pdf>
- Natural Lands Trust. Growing Greener – Putting Conservation Into Local Codes. <http://www.natlands.org/planning/growgreen.html>
- New Jersey Future. Smart Growth. <http://www.njfuture.org/articles/smartgrowth.html>
- New York State Department of Environmental Conservation. New York State Stormwater Management Design Manual. <http://www.dec.state.ny.us/website/dow/swmanual/swmanual.html>
- USEPA. Draft 2002. National Management Measures to Control Nonpoint Source Pollution from Urban Areas. Management Measure 3, Section C.3. Northern Virginia Regional Commission. Northern Virginia BMP Manual. <http://www.novaregion.org/pdf/NVBMP-Handbook.pdf>
- Northern Virginia Regional Commission. Non-structural Urban BMP Handbook. <http://www.novaregion.org/pdf/NSBMP1.pdf>
- Pennsylvania Association of Conservation Districts. Pennsylvania Handbook of Best Management Practices for Developing Areas http://www.pacd.org/products/bmp/bmp_handbook.htm
- Pennsylvania Center for Local Government Services. 2000. Land Use in Pennsylvania – Practices and Tools. http://www.landuseinpa.org/docs/Land_Use_in_PA-Inventory/Land_Use_in_PA-Inventory-Table.pdf
- Purdue Department of Agricultural and Biological Engineering. Impacts of Land Use Change on Water Resources: An analysis tool, Long-Term Hydrologic Impact Assessment (LTHIA) <http://www.ecn.purdue.edu/runoff/>

Prince George's County Department of Environmental Resources. Low Impact Development Design Strategies: An Integrated Approach.

<http://www.epa.gov/owow/nps/lidnatl.pdf>

Portland, OR Department of Environmental Services. 2000. Stormwater Management Manual. http://www.cleanrivers-pdx.org/tech_resources/smm.htm

Smart Communities Network. Land Use Planning Strategies. <http://www.sustainable.doe.gov/landuse/lustrat.shtml>

Smart Growth Network. Smart Growth Online. <http://www.smartgrowth.org/default.asp>

Texas Chapter, American Public Works Association. Texas Nonpoint Source Book. <http://www.txnpsbook.org/default.htm>

USEPA. 1999. Urban Stormwater Best Management Practices Study. <http://www.epa.gov/OST/stormwater/>

USEPA. 2000. Bioretention Application. http://www.wa.gov/puget_sound/Programs/lid_cd/pdf_docs/LID_BIO.PDF

USEPA. Encouraging Smart Growth. <http://www.epa.gov/smartgrowth/index.htm>

USEPA. 2000. Vegetated Roof Cover. http://www.wa.gov/puget_sound/Programs/lid_cd/pdf_docs/LID_ROOF.PDF

USEPA. Draft 2002. National Management Measures to Control Nonpoint Source Pollution from Urban Areas. <http://www.epa.gov/owow/nps/urbanmm/index.html>

Virginia Department of Conservation and Recreation. Virginia Stormwater Management Handbook. <http://www.dcr.state.va.us/sw/stormwat.htm#handbook>

⁵ All qualifiers in #1 (e.g. if active) for subcommittees apply throughout the action plan.

LRLU = Lower Raritan Land Use, Wastewater & Water Supply Subcommittee

LRLI = Lower Raritan Legal, Institutional & Implementation Subcommittee

LRLM = Lower Raritan Land Management & Open Space Subcommittee

NRCS = Natural Resources Conservation Service

SCD = Soil Conservation District

ANJEC = Association of NJ Environmental Commissions

LBWP = Lawrence Brook Watershed Partnership

⁶ LRMC-WRA = Lower Raritan-Middlesex County Water Resources Association

LRWMA = Lower Raritan Watershed Management Area Committee or equivalent

LRSW = Lower Raritan Stormwater & Flooding Subcommittee

LRWR = Lower Raritan Watershed Restoration Subcommittee

BMP = Best Management Practice

HUC = Hydrologic Unit Code

RCE = Rutgers Cooperative Extension

LRWMA = Lower Raritan Watershed Management Group