Water and Wastewater Utilities: **Impacts on Source Water Protection**

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Independent state authority operating state owned water supply facilities:

> Spruce Run Reservoir - natural stream Round Valley Reservoir - pumped

storage - 55BG Delaware & Raritan Canal -100MG/day Delaware & Raritan System serves 1.8+ million people in central New Jersey

New Jersey Water

Supply Authority

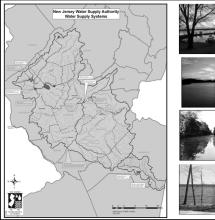
Manasquan Reservoir - pumped storage - 4BG
 Manasquan System serves 300,000 people

in Monmouth County



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➤ Define source water and source water protection

- ➤ Threats to source water
- ➤ Benefits of source water protection
- ➤ How do we protect source water

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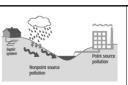
Source Water

Water from rivers, streams, reservoirs and aquifers that is treated and used for drinking water purposes



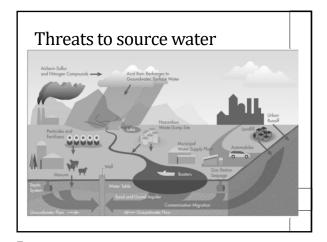
Point Sources VS.

Nonpoint Sources



- · Point source: can be traced to a specific location, such as a pipe, ditch, channel, container or vessel
- · Industrial discharges
- · Wastewater discharges
- · Nonpoint source: enter water bodies from many diffuse sources when stormwater runoff picks up pollutants and carries them into water bodies
- · Agricultural runoff
- Urban runoff

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Potential contaminants

- Nutrients
- VOCs
- Sediment
- Radionuclides
- Pathogens
- Disinfection
- Pesticides
- byproducts
- Trash/litter
- Petroleum products





Source Water Protection

- Provide clean, safe water and protect public health
- Reduction of threats to drinking water quality and quantity
- Multiple barrier approach
- Prevent contamination at the drinking water source
- · Minimize treatment costs



Source Water Protection

- Source water assessment
 - Delineate source area
 - Inventory known and potential sources of contamination
- Determine susceptibility to contaminant sources or activities
- · Prioritize risks
- Identify implementation actions to prevent, reduce, or eliminate risks
- · Develop partnerships
- Take action

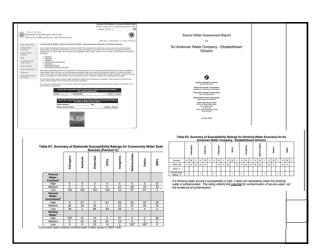
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SWAP Risk Assessment Matrix



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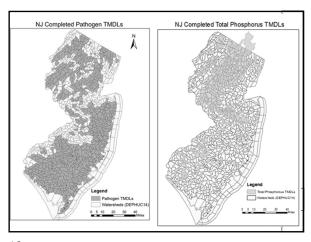
Watershed Control Plan: Cryptosporidium



- Partnership with NJ American Water
- Raritan-Millstone Plant
- Recommended actions:
 - Agricultural BMPs
 - Septic system management
 - Wastewater treatment plant upgrades (where appropriate)

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Source Water Protection:

Reduction of threats to drinking water

*Protect high quality resources

- *Prevent increased flows and pollutant loads
- *Fix existing problems – restoration
- Land use controls zoning, regulations and ordinances
- Best management practices/Land management
- · Good housekeeping practices
- Stormwater BMPs
- Agricultural practices
- · Land preservation and stewardship
- · Restoration projects
- Emergency response planning
- Public education and outreach

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Land Use Controls

- Acquisition of development rights
- Land development ordinances and zoning
- Stormwater management plans
- · Land use prohibitions
- Construction and operating standards
 - Erosion and sediment control
- Public health regulations
 - Septic system construction, density, siting
 - Underground storage tanks

Good Housekeeping

- Equipment operation and maintenance
- Product storage, use and handling
- Waste storage and disposal

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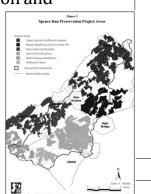
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Land Preservation and

Stewardship

- Protect high quality resources
- Focus preservation of contiguous areas
- Critical lands for water resources protection
- Strategy establish partnerships to maximize financial resources



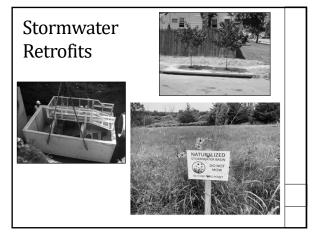
Stormwater Management

- Improve pollutant removal of existing facilities via retrofit
- Install new BMPs to increase pollutant removal
- · Improve maintenance of existing facilities
- Disconnect impervious surfaces
- · Install rain barrels and rain gardens





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River Friendly Programs Partnerships to improve water quality

•Golf Course

Business

•Farm

Resident

Schools

Better management of existing land uses:

• Water Quality Management

• Water Conservation

- Techniques

 Wildlife and Habitat Enhancement

 Education & Outreach



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River-Friendly By The Numbers

- sanofi-aventis research facility reduced irrigation by 33% RVCC reduced mowed lawn area
- NJWSA Spruce Run Administrative Facility established 12 acres of native warm season grasses
- Raritan Headwaters increased no-mow areas by 3.1 acres
- Spooky Brook Golf Course established 30+ acres of no-mow
- Green Knoll Golf Course planted 72 native trees & established 31 acres of no-mow areas
- Somerset County golf courses installed wash facilities

Participation (NJWSA, RHA and TWI

participants): Golf Courses – ~1,800 acres Businesses – ~3,500 acres Schools – ~430 acres Total – 5700+ acres

Better management of existing land uses Agricultural BMPs

- · Raritan Basin Agricultural Cost-Share Program
- Targeted implementation
- · 24 projects
- Incentivize agricultural practice implementation





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Restoration Projects • Fix existing problems · Stream bank restoration · Riparian corridor improvements · Agricultural BMPs • Septic system replacements • Stormwater retrofit projects

Emergency Response Planning

• What if there is a:

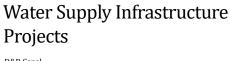
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- Spill
- Hurricane
- Flood Tornado
- Power
- outage Pandemic
- · Can also include planning





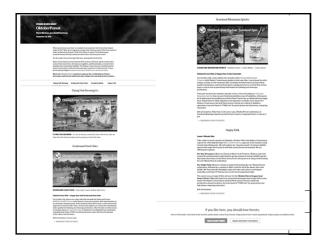




- D&R Canal
 - · Dredging
- Spillway and embankment projects
- · Invasive species management
- Reservoirs
- Dam inspections and maintenance
- RV rehabilitation project
- Pipeline inspection and maintenance
- · Invasive species management
- Harmful algal bloom identification
- · Grounds maintenance



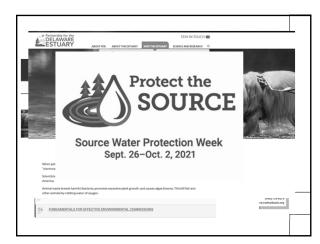
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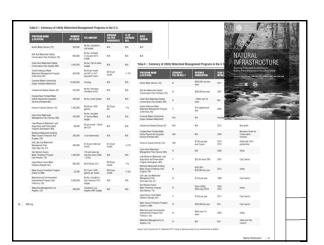


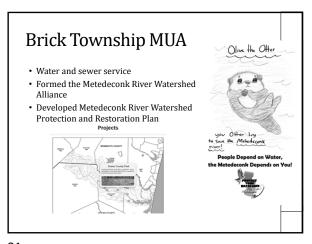
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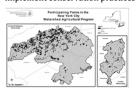




New York City's Watershed Protection Program and Watershed Agricultural Council

- Partnership between New York City's Department of Environmental Protection and the not-for-profit Watershed Agricultural Council (WAC)
- Part of NYC's Filtration Avoidance Determination

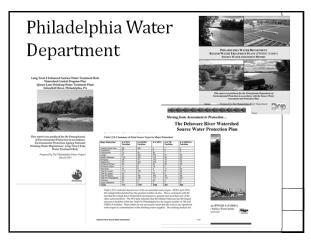
• WAC provides funding and training to farmers to help implement conservation practices





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The Nature Conservancy Healthy Lands, Healthy Water

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Partnerships are key

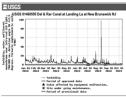


- Watershed Associations
- •Nonprofits North Jersey RC&D, NJ Conservation Foundation,
- Hunterdon Land Trust Alliance, Land Trust of NJ
- •Municipalities •Counties
- •Educational Institutions Rutgers University, NJ Institute of Technology
- •Utilities Middlesex Water Company, New Jersey American Water Company, Stony Brook Regional Sewerage Authority, Middlesex County Utilities Authority, Morris County Municipal Utilities Authority, Somerset Raritan Valley Sewerage Authority •State agencies – Delaware & Raritan Canal Commission, Highlands
- Council, NJDEP, NJ Department of Agriculture
 •Federal Agencies NRCS, US Department of Agriculture, USGS, USEPA
- •County Soil Conservation Districts Americorps Watershed Ambassadors
- Consultants
-and many more

Monitoring & Evaluation aka how do we know if it's working (or not)

- •Assess baseline conditions
- •Define indicators/criteria
- •Define "success"
- $\bullet Link\ physical\ restoration\ to\ water\ quality\ restoration\ goals$
- •Set measurable goals & objectives & assess if project meets them
- •Identify when modifications are necessary





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Funding

NJWSA:

- \$24/mg dedicated to SWP
- \$8 for land acquisition
- \$16 for watershed protection

Be creative!

- ✓ NJDEP 319(h) Nonpoint Source Grants/Corporate Business Tax Funding/Watershed restoration grants

 Municipal stormwater mitigation plans

 In-kind services – counties & municipalities

- ✓ USDA-NRCS: EQIP, RCPP
 ✓ Farm Service Agency (FSA): CREP, CRP
 ✓ US Fish & Wildlife: Partners for Fish & Wildlife
- ✓ US EPA: 5 Star Grant Program
- ✓ ANJEC municipal grants
- NOAA
- ✓ Natural resources damages mitigation funds



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Lessons Learned

existing development

· Adapt projects as needed

planning

• Be patient

· Don't give up!

• Effective source water protection addresses new &

· Effective implementation requires detailed

• Effective projects require partnerships

• Utilize all your contacts/networks

Questions?





Native grass restoration area, NJWSA Administration Facility – Spruce Run Reservoir

