

1

### New Jersey Water Supply Authority

- ▶ Delaware & Raritan System
  - Spruce Run Reservoir
  - Round Valley Reservoir
  - Delaware & Raritan Canal
  - 1.8+ million service connections
- ▶ Manasquan System
  - Serves 300,000 people



2



What is source water protection?

What are the threats?

What are the benefits?

What documents guide our actions?

What actions should we take?

3

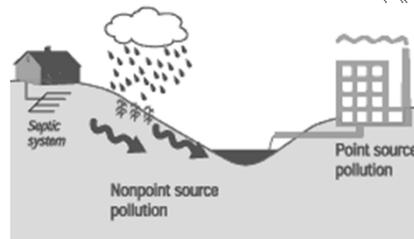


Source water:  
Water from rivers,  
streams,  
reservoirs and  
aquifers that is  
treated and used  
for drinking water  
purposes

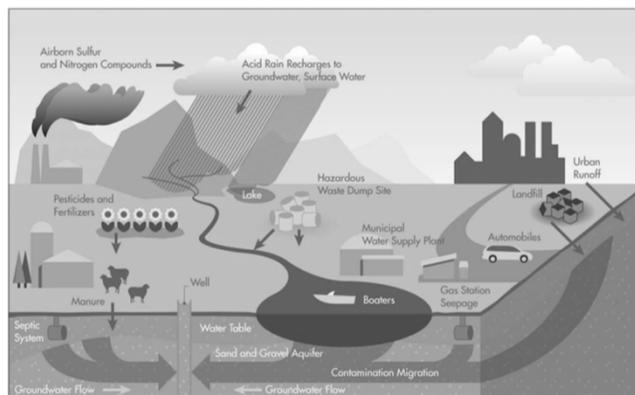
4

## Point vs. Nonpoint Sources

- ▶ Point source: can be traced to a specific location, such as a pipe, ditch or channel
- ▶ Nonpoint source: enter water bodies from many sources when stormwater runoff picks up pollutants and carries them into water bodies



5



## Threats to source water

6

## Potential contaminants

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



7

## Source water protection

- ▶ Provide clean, safe water
- ▶ Protect public health
- ▶ Reduce threats to drinking water quality and quantity
- ▶ Multiple barrier approach
- ▶ Prevent contamination at the source
- ▶ Minimize treatment costs



8

## NJDEP Source Water Assessment Reports

**Table E2: Summary of Susceptibility Ratings for Drinking Water Source(s) for NJ American Water Company - Elizabethtown Division**

Sources	Pathogens			Nutrients			Pesticides			VOCs			Inorganics			Radionuclides			Radon			DBPs		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
Wells - 98	4	65	29	42	56		24	74	88	13	16	94	14	38	58	92	6		25	73				
GLDI - 0																								
Surface water intakes - 7	7			7						7	7					7			7	7				

*If a drinking water source's susceptibility is high, it does not necessarily mean the drinking water is contaminated. The rating reflects the potential for contamination of source water, not the existence of contamination.*

**Table E1: Summary of Statewide Susceptibility Ratings for Community Water System Sources (Percent %)**

Ground Water - Confined?	Pathogens			Nutrients			Pesticides			VOCs			Inorganics			Radionuclides			Radon			DBPs		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
High	0	0	0	0	0	0	0	0	0	47	39	19	70											
Medium	0	0	0	0	0	0	0	0	0	29	26	26	29											
Low	100	100	100	100	100	100	100	100	100	53	61	81	81											
Ground Water - Unconfined?																								
High	6	27	0	61	38	50	50	50	26	26														
Medium	56	32	34	1	23	29	26	26	74	74														
Low	38	3	66	38	28	3	3	4	0	0														
Surface Water																								
High	100	47	13	5	81	0	0	0	58															
Medium	0	42	34	81	19	0	0	0	0															
Low	0	11	53	14	0	100	100	100	0															

\*Community water systems confined wells in New Jersey in 2003 = 640



## USEPA DWMAPS

# USEPA DWMAPS

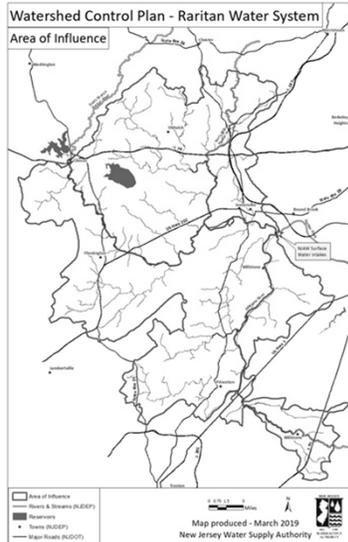


# Watershed Restoration and Protection Plans

- Alexauken Creek Watershed Plan
- Assiscunk Creek Watershed Plan
- Cedar Grove Watershed Plan
- Clove Brook Watershed Restoration Plan
- Long Swamp Creek Watershed Restoration Plan
- Manalapan Watershed Restoration Plan
- Metedeconk Watershed Plan
- Mulhockaway Creek Watershed Restoration Plan
- Neshanic River Watershed Restoration Plan
- Papakating Creek Watershed Restoration Plan
- Pleasant Run and Holland Brook Watershed Restoration Plan
- Sidney Brook Protection Plan
- Sourland Mountain Watershed Plan
- Tenakill Brook Watershed Restoration
- Troy Brook Watershed Plan
- Upper Cohansey River Watershed Plan
- Upper Salem River Watershed Plan

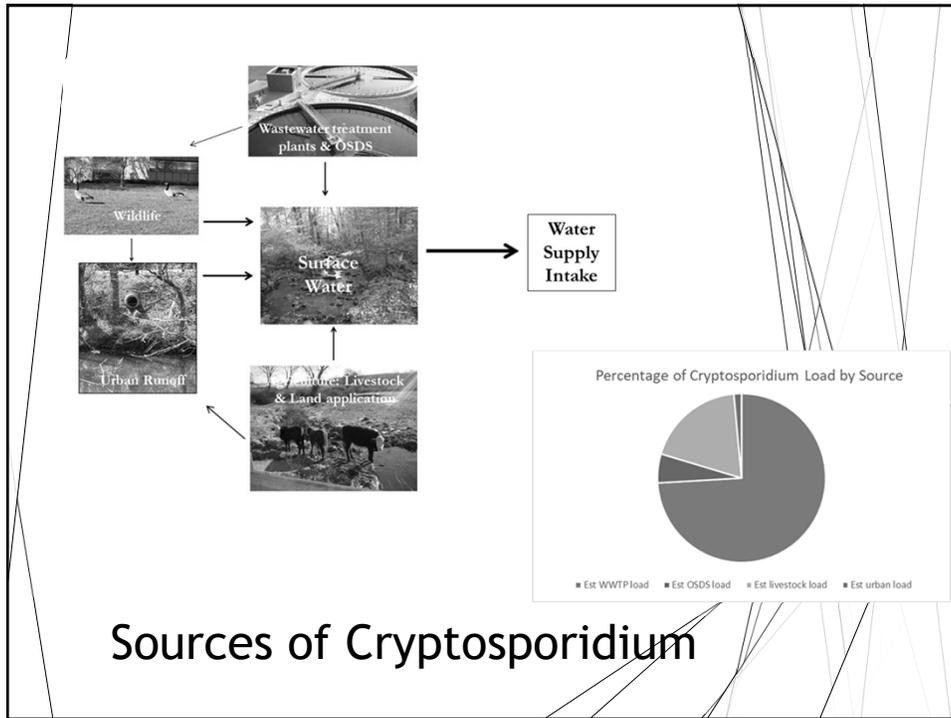


11

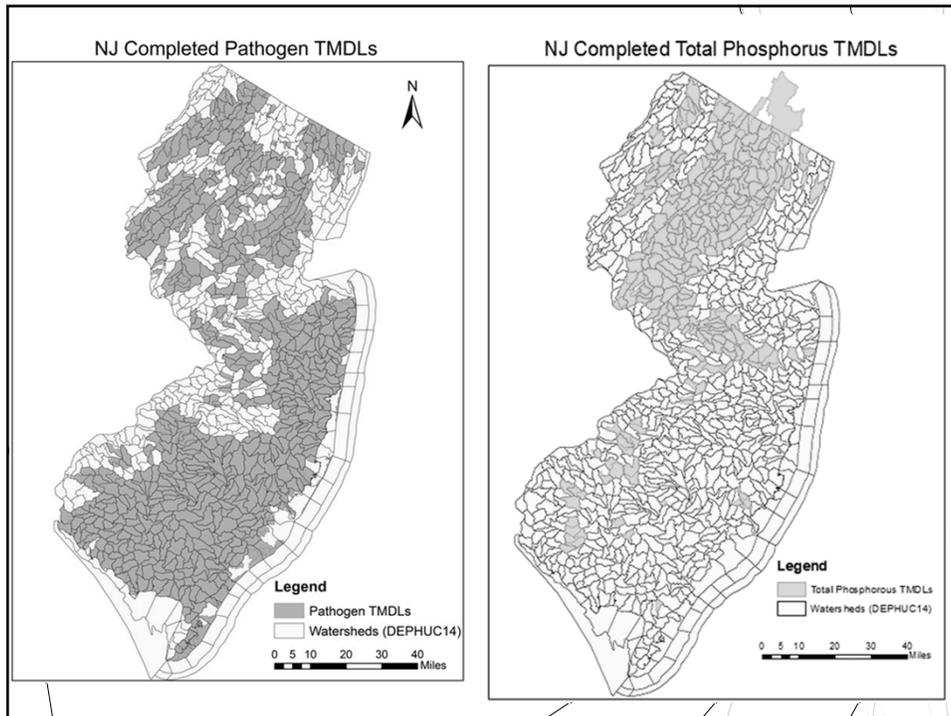


## Watershed Control Plan: Cryptosporidium

12



13



14

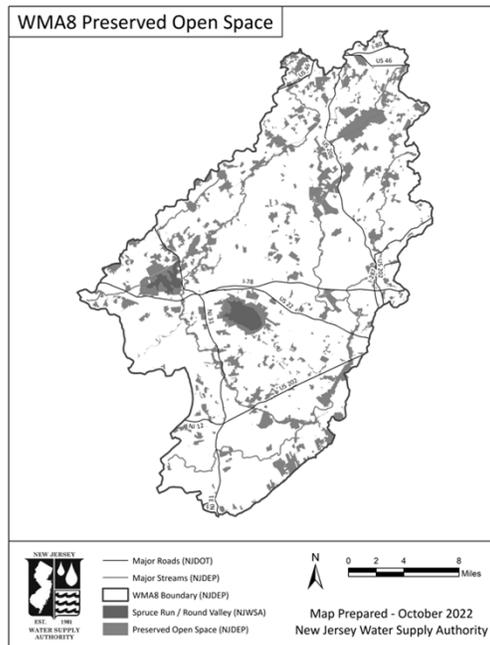
## Source Water Protection: Reduction of threats to drinking water

- \*Protect high quality resources
  - \*Prevent increased flows and pollutant loads
  - \*Fix existing problems - restoration
- ▶ Land use controls - zoning, regulations and ordinances
  - ▶ Land management
    - ▶ Good housekeeping
    - ▶ Stormwater BMPs
    - ▶ Agricultural practices
  - ▶ Land preservation and stewardship
  - ▶ Restoration projects
  - ▶ Emergency response planning
  - ▶ Public education and outreach

15

## Land Preservation and Stewardship

- ▶ Protect high quality resources
- ▶ Target lands that are important for water resources protection
- ▶ Land stewardship



16

## Restoration Projects

- ▶ Fix existing problems
  - ▶ Stream bank restoration
  - ▶ Riparian corridor improvements
  - ▶ Septic system replacements



17

## Stormwater Management

- Improve pollutant removal
  - Retrofit existing facilities
  - Improve maintenance of existing facilities
  - Install new BMPs



18



19

### Raritan Basin Agricultural Cost-Share Program

Target and incentivize  
implementation

20

## River Friendly Programs Partnerships to improve water quality

- Golf Course
- Business
- Farm
- Resident
- Schools
- Community Partner

Better management of existing land uses:

- ▶ Water Quality Management
- ▶ Water Conservation Techniques
- ▶ Wildlife and Habitat Enhancement
- ▶ Education & Outreach



21

## Emergency Response Planning

- ▶ What happens when there is a:
  - Spill
  - Harmful algal bloom
  - Storm
  - Power outage
  - Pandemic
  - .....



22

# Water Supply Infrastructure Maintenance and Improvement



Spruce Run Reservoir  
September-October 2018

- ▶ D&R Canal Dredging
- ▶ D&R Canal spillway and embankment projects
- ▶ Dam and pipeline inspections and maintenance
- ▶ Round Valley dam rehabilitation project
- ▶ Harmful algal bloom identification and treatment
- ▶ Grounds maintenance

23

**MANAGE DOG WASTE**  
What to do with dog doo.

**WHAT'S YOUR DOGGY DOO DOING?**

When pet waste is left on the ground, rain and snowmelt can wash it into storm drains or directly into waterways. This "stormwater runoff" can contaminate our sources of drinking water. Scientists at the U.S. Geological Survey estimate that animal waste is to blame for 20 to 30 percent of water pollution in America. Animal waste breeds harmful bacteria, promotes excessive plant growth, and causes algae blooms, which can kill fish and other animals.

Check out these other facts:

**Our programs...**

- Watershed Protection Programs
- Programs for Youth
- Watershed Stewardship
- River-Friendly Programs
- Programs for Businesses and Homeowners
- Watershed Tools for Our Communities
- Other Watershed Opportunities

**Protect the SOURCE**  
Source Water Protection Week  
Sept. 25–Oct. 1, 2022

**Education**

**River-Friendly Tips**  
from the  
New Jersey Water Supply Authority

Easy ways you can help protect our water!

NJWSA  
Watershed Protection Programs  
1851 State Route 31  
P.O. Box 5196  
Clinton, NJ 08809  
(908) 730-0270  
[www.rwritanbasin.org](http://www.rwritanbasin.org)

24



**PROTECT OUR WATERSHEDS ART CONTEST**

New Jersey American Water is proud to start a new tradition, its first annual Protect Our Watersheds Art Contest! The contest is open to fourth-grade students in schools served by New Jersey American Water, as well as to students who live in the company's service area. We encourage students to use their creativity to express the importance of protecting natural water resources through art.

Entries should reflect positive messages about why our watersheds are valuable and how we can protect them. All artwork must be the student's original work. Artwork on standard white 8.5" x 11" paper is preferred, and should not exceed 11" x 17" in size. Acceptable media are paint, water colors or all colored pencil, markers or pastels. All entries must be postmarked by November 25, 2022 with judging to take place in December 2022.

Click here for the full guidelines and contest rules.

For more information, contact New Jersey American Water's External Affairs team at [externalaffairs@ajawater.com](mailto:externalaffairs@ajawater.com)



**PROTECT OUR WATERSHEDS ART CONTEST**

**DEAR TEACHER OR PARENT**

You are invited to enter your students' art. We are proud to have your students' artwork and encourage you to help them express their creativity. Please contact your teacher or parent to help them get started.

**Attention students, this is your opportunity to creatively express the importance of protecting and conserving our most valuable natural resource - water. We also want to know what your thoughts are about our water supply and why it's important to you.**

**CONTEST RULES AND GUIDELINES**

**COMMUNITY RESOURCES**

A printable version of 10 ways to protect our watersheds (and your drinking water) is available [here](#).

**Residential Tips for Protecting Source Water**

One important tip for protecting the ground is to prevent from the above or below the ground. This includes:
 

- Check for leaks from hot water and showers, hot tubs, and other water-using appliances.
- Limit the use of fertilizers and pesticides on your lawn or consider natural alternatives. Consider fertilizing with iron filings and iron sulfate on lawns and plants to prevent erosion and runoff.
- Clean up after your pets and keep them from your yard and their way out to the storm drain when it rains.
- Report your water leaks and have a certified plumber - usually every 3 years.

 Report any leaks, large amounts of wastewater being let to the air or to the ground.

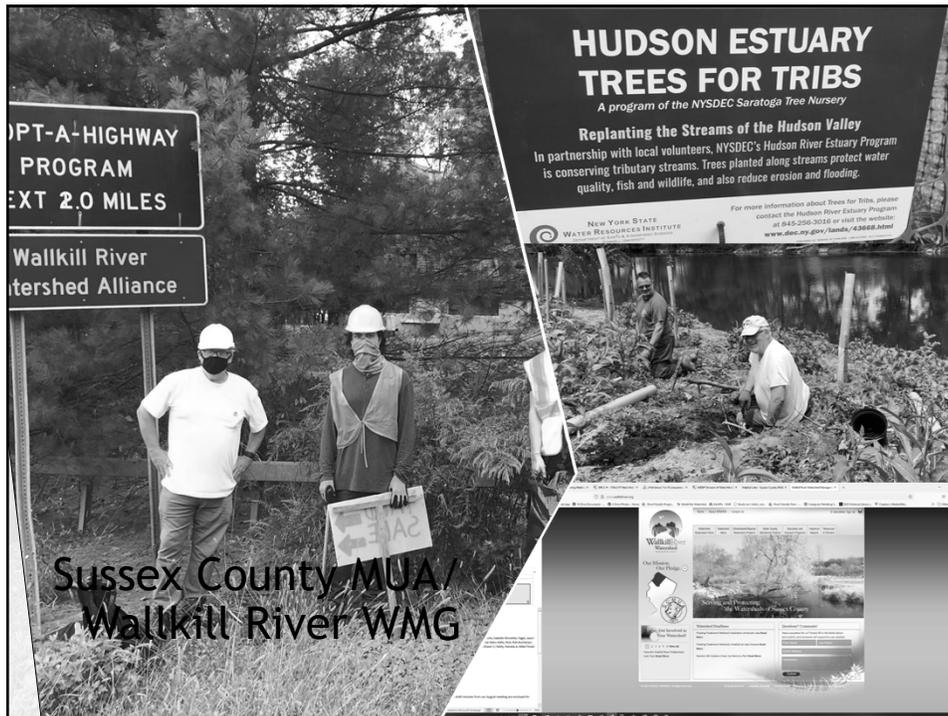
**Business Tips for Protecting Source Water**

Industrial and commercial businesses have an important role in protecting water supplies through best management practices (BMPs) for storm handling and reporting information about releases to the facilities.

Here are some actions that businesses can take to do their part:
 

- Follow all applicable regulations related to waste management, including wastewater and stormwater discharges. Keep records up to date and current.

27



**WALKKILL RIVER WATERSHED ALLIANCE**

**HUDSON ESTUARY TREES FOR TRIBS**  
A program of the NYSDEC Saratoga Tree Nursery

**Replanting the Streams of the Hudson Valley**  
In partnership with local volunteers, NYSDEC's Hudson River Estuary Program is conserving tributary streams. Trees planted along streams protect water quality, fish and wildlife, and also reduce erosion and flooding.

For more information about Trees for Tribs, please contact the Hudson River Estuary Program at 642-256-2028 or visit the website: [www.dec.ny.gov/lands/43668.html](http://www.dec.ny.gov/lands/43668.html)

**Sussex County MUA / Walkkill River WMG**

28

## Brick Township MUA

- ▶ Metedeconk River Watershed Alliance
- ▶ Metedeconk River Watershed Protection and Restoration Plan



you Otter try to save the Metedeconk river!

**People Depend on Water, the Metedeconk Depends on You!**



29

Debris Removal from Local Waterways by PVSC Passaic River/Newark Bay Restoration Program (in tons)			
Year	Shoreline Cleanups	Skimming Program	Total
1998	85.60	NA	85.60
1999	88.71	NA	88.71
2000	203.55	68.00	271.55
2001	431.20	86.18	517.38
2002	894.94	248.49	1143.43
2003	946.20	221.62	1167.22
2004	732.92	209.94	942.86
2005	803.72	217.50	1081.22
2006	828.40	119.13	947.53
2007	547.17	145.77	692.94
2008	469.90	68.58	538.48
2009	403.02	46.00	489.02
2010	676.23	210.74	886.97
2011	559.14	164.46	723.60
2012	485.23	371.83	857.06
2013	395.97	250.16	647.13
2014	329.48	190.11	519.59
2015	216.45	203.43	419.88
2016	381.65	251.87	633.52
2017	152.73	136.85	289.58
2018	154.49	80.74	235.23
2019	163.06	117.88	280.94
2020	39.44	76.73	116.17
<b>TOTALS</b>	<b>10110.20</b>	<b>3525.41</b>	<b>13635.61</b>





# Passaic Valley Sewerage Commission

30

The screenshot shows the Camden SMART Initiative website. The main heading is "Camden SMART Initiative". Below it, there's a section titled "What is the Camden SMART Initiative?" followed by a description of the initiative's goals. To the right, there's a graphic with the text "SMART steps" and "To reduce neighborhood flooding and improve stormwater management". Below the website screenshot are three photographs showing rain garden installations in various settings, including a residential yard and a public space.

## Camden County MUA/ Camden SMART

31

The infographic is titled "CONSERVATION EASEMENTS" and "PROTECTING THE WORKING LANDSCAPE". It features several statistics: "\$52 million Committed to supporting working farms and forests", "180+ Families with Conservation Easements maintain ownership of their land", "26k+ Acres of protected farms and forests in 2017, projected 30k+ in 2020", "Preserves a rural way of life", "Keep the land working: 250+ projects on easement properties", "Prevent subdivisions of farms and forests", and "Prevent 1 million tons of fertilizer harvested per year". To the left is a map of the "Participating Farms in the New York City Watershed Agricultural Program". To the right is a photograph of a rural landscape with trees and a field.

## New York 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

32

**Long Term 2 Enhanced Surface Water Treatment Rule**  
Watershed Control Program Plan  
Queen Lane Drinking Water Treatment Plant  
Schuylkill River, Philadelphia, PA



*This report was produced for the Pennsylvania Department of Environmental Protection in accordance with the Environmental Protection Agency National Primary Drinking Water Regulations: Long Term 2 Enhanced Surface Water Treatment Rule.*

Prepared by The Philadelphia Water Department  
March 2011



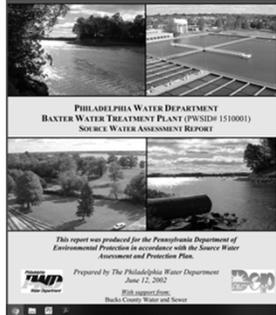
*Moving from Assessment to Protection...*

**The Delaware River Watershed Source Water Protection Plan**



Prepared by Philadelphia Water Department (PWSID #1510001)  
Baxter Water Treatment Plant Surface Water Intake  
Philadelphia, Pennsylvania  
June 2007





**PHILADELPHIA WATER DEPARTMENT**  
BAXTER WATER TREATMENT PLANT (PWSID# 1510001)  
SOURCE WATER ASSESSMENT REPORT

*This report was produced for the Pennsylvania Department of Environmental Protection in accordance with the Source Water Assessment and Protection Plan.*

Prepared by The Philadelphia Water Department  
June 12, 2002

PAUD  
PHILADELPHIA WATER DEPARTMENT  
Baxter Water Treatment Plant  
Bucks County, Water and Sewer



## Philadelphia Water Department

## Green City Clean Waters

Making local waterways cleaner and neighborhoods greener. Our projects drastically reduce pollution from stormwater and combined sewer overflows in Philadelphia.

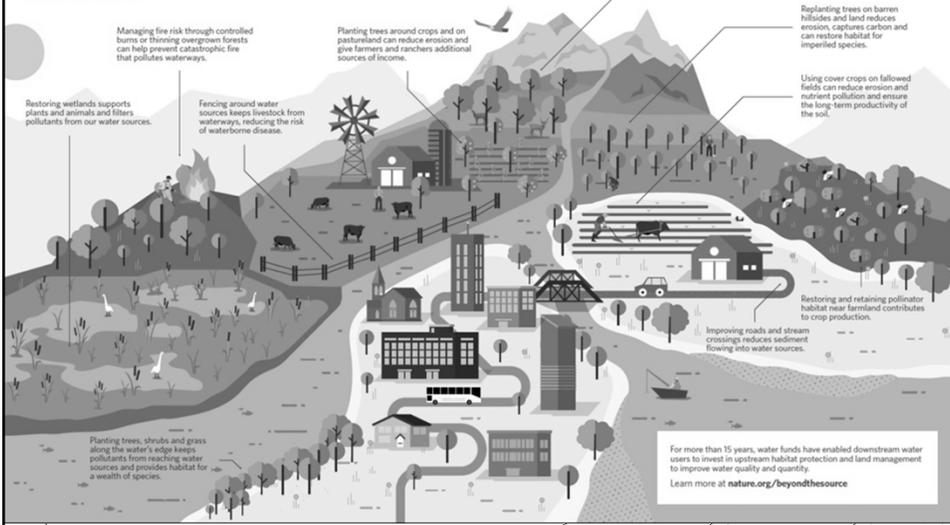
33

### Healthy Lands, Healthy Water

*Natural infrastructure as a path to clean water*

The lands around our water sources serve as vital infrastructure that can meaningfully improve water quality and quantity for cities around the world. Beyond protecting our water sources, forests, grasslands, wetlands and improved agricultural practices can help reduce our carbon footprint, maintain critical ecosystems and build healthier, more resilient communities in the face of climate change.





Managing fire risk through controlled burns or thinning overgrown forests can help prevent catastrophic fire that pollutes waterways.

Planting trees around crops and on pastureland can reduce erosion and give farmers and ranchers additional sources of income.

Protecting existing forests and grasslands can reduce erosion, capture and store carbon, and serve as critical habitat for plants and animals.

Restoring wetlands supports plants and animals and filters pollutants from our water sources.

Fencing around water sources keeps livestock from waterways, reducing the risk of waterborne disease.

Replanting trees on barren hillsides and land reduces erosion, captures carbon and can restore habitat for imperiled species.

Using cover crops on fallowed fields can reduce erosion and nutrient pollution and ensure the long-term productivity of the soil.

Restoring and retaining pollinator habitat near farmland contributes to crop production.

Planting trees, shrubs and grass along the water's edge keeps pollutants from reaching water sources and provides habitat for a wealth of species.

Improving roads and stream crossings reduces sediment flowing into water sources.

For more than 15 years, water funds have enabled downstream water users to invest in upstream habitat protection and land management to improve water quality and quantity. Learn more at [nature.org/beyondthesource](http://nature.org/beyondthesource)

34

# Partnerships

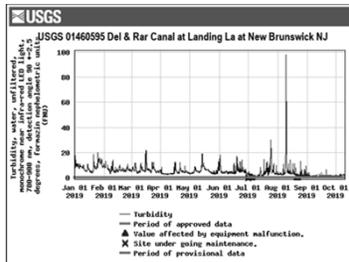


- ▶Watershed Associations
- ▶Nonprofits - North Jersey RC&D, NJ Conservation Foundation, Hunterdon Land Trust Alliance, Land Trust of NJ
- ▶Municipalities
- ▶Counties
- ▶Educational Institutions - Rutgers University, NJ Institute of Technology
- ▶Utilities - Middlesex Water Company, New Jersey American 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

35

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

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



### Source Water Protection Performance Metrics Tool

American Water Works Association (AWWA)

Move left to right within each row to ensure the accurate dropdown menus are available for selection.

- Cells colored Blue contain dropdown menus for selection.
- Cells colored Red are for manually entering information.
- Cells colored Yellow are auto-filled, and should not be overwritten.
- Cells colored Gray are for manually entering optional information.

#### Purpose of this Tool

This tool is intended to help drinking water systems of all sizes identify and document quantitative and/or qualitative metrics to assess the benefits of source water protection measures and your program over tie. This information will help you evaluate the success of measures and the overall program relative to your program goals, demonstrate the value and results of investments in source water protection, and adjust your program as needed.

FILL IN THE INFORMATION BELOW

Utility Name:	
Utility Location:	
Last Updated or Reviewed:	
Population Served:	
Assessor Name:	

36

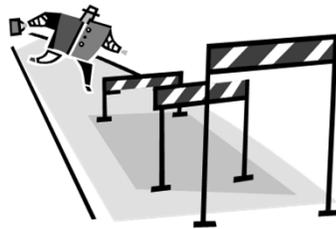
## Funding



- ▶ NJWSA:
  - ▶ \$24/mg dedicated to SWP
- ▶ *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

37

## Lessons Learned



- ▶ Effective source water protection addresses new & existing development
- ▶ Effective implementation requires detailed planning
- ▶ Effective projects require partnerships
- ▶ Utilize all your contacts/networks
- ▶ Learn from your network
- ▶ Be patient
- ▶ Adapt projects as needed
- ▶ Don't give up!

38

# What can you do?

-  Follow SOPs, permits, etc.,
-  Look for areas to improve your operations
-  Participate in community education initiatives
-  Encourage your utility to support community source water protection efforts

39

# Questions?



Native grass restoration area  
NJWSA Administration Facility  
Spruce Run Reservoir

40