

Understanding the Urban Watershed Curriculum

Fairmount Water Works

Why Water?

- Need/Love of water
- Public health
- Cities engineer collective systems (public works)
- Stormwater management – green stormwater infrastructure for the city (home, school, business, visitors)
- Understand and protect our water supply



Map of Pennsylvania



Pennsylvania - Major River Basins

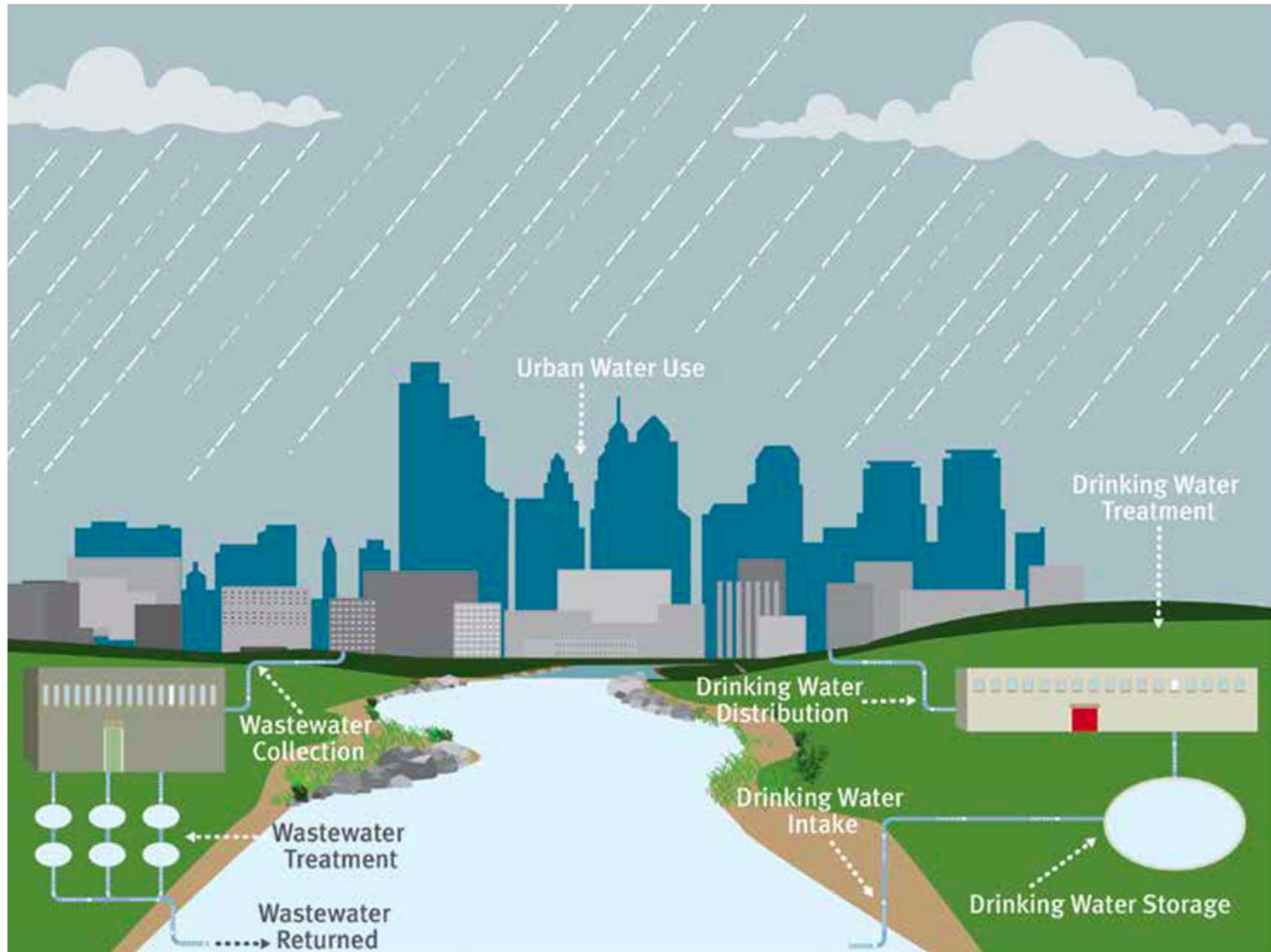


Map of Philadelphia

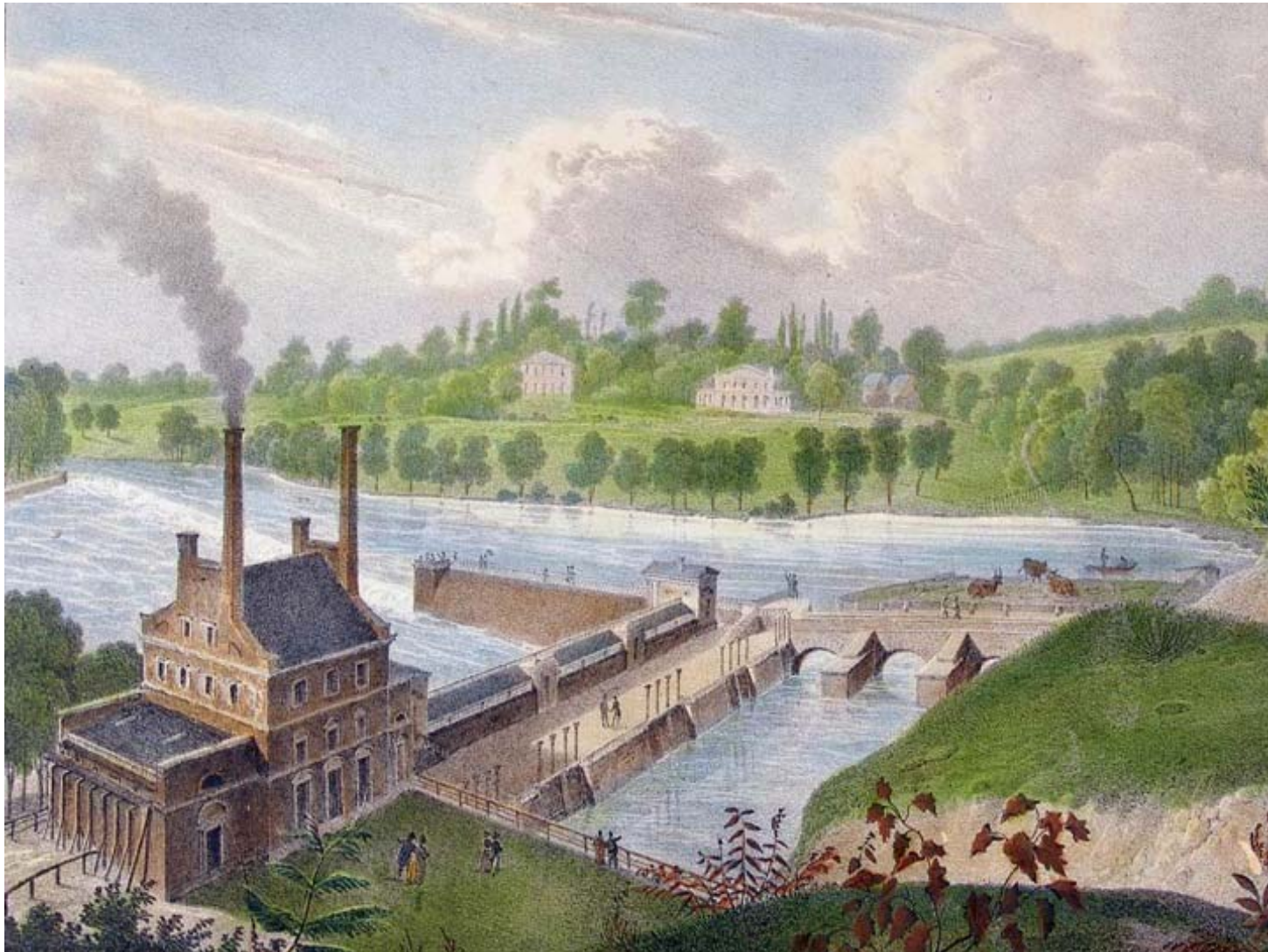
Philadelphia's Remaining Streams



Urban Water Use Cycle



Fairmount Water Works c 1830s



Fairmount Water Works: The Center Now



Discover



Connect



Act

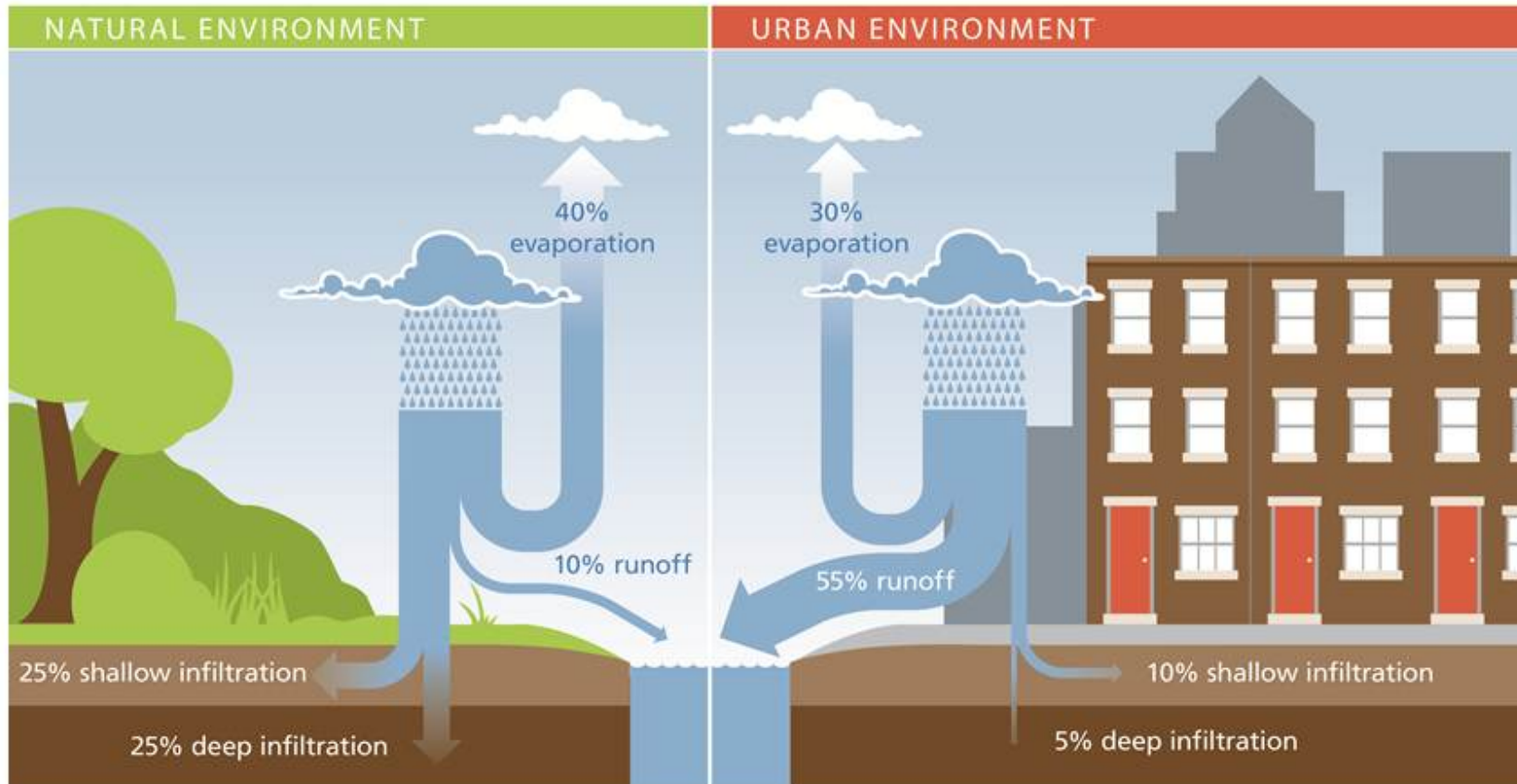


Philadelphia Row Homes



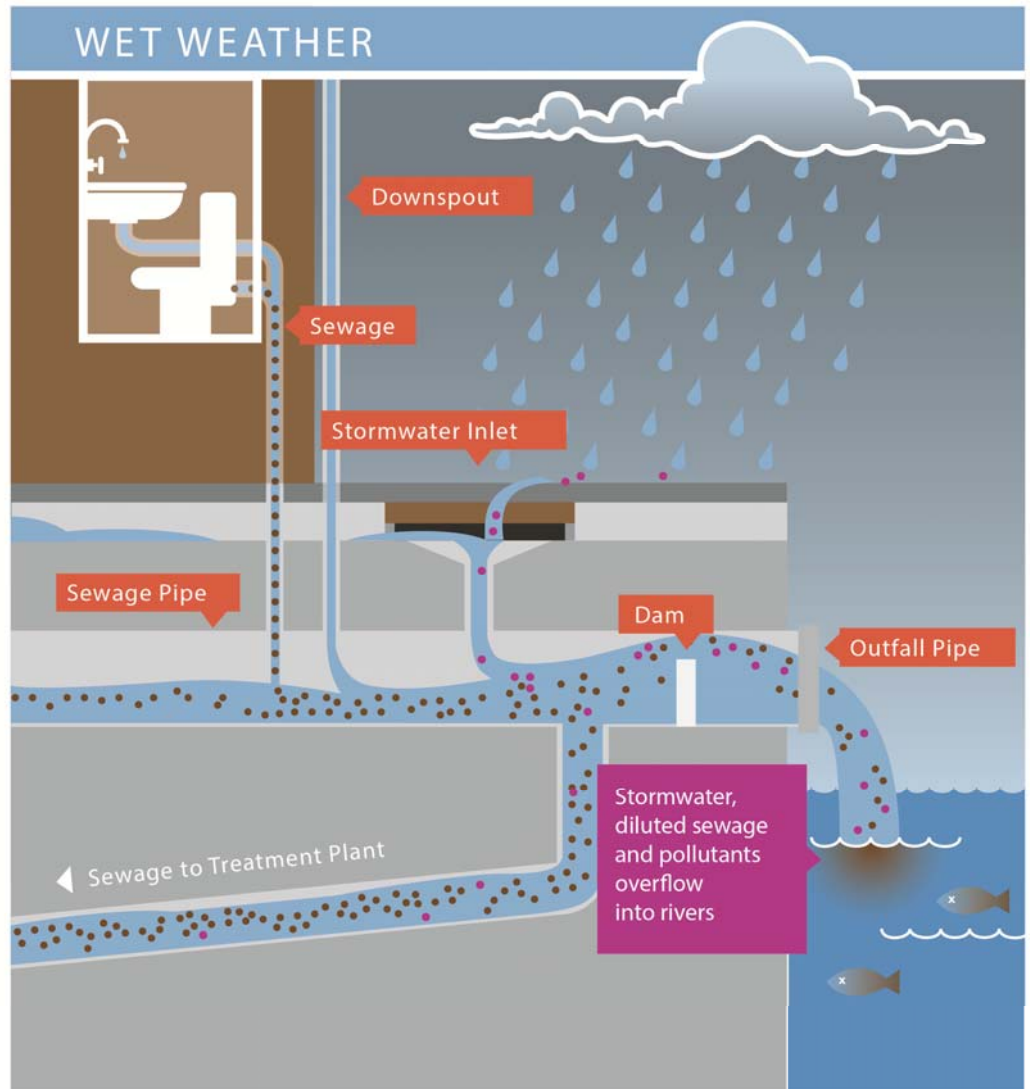


Where the rain flows... in Natural vs. Urban (Impervious) Settings



- Stormwater infiltrates into the ground
- Plants and trees work to absorb stormwater

- Water hits impervious surface and runs off roofs, streets, parking lots etc.
- Runoff goes into the sewers



We're Not Alone



- 772 Communities across 32 states use combined sewer systems

PWD Green City, Clean Waters



“Triple Bottom Line”

Social Benefits

- Recreation
- Aesthetics
- Public Health
- Equity



Environmental Benefits

- Fishable & Swimmable
- Habitat Enhancement
- Air Quality
- Energy Savings
- Carbon Footprint



BOTTOM LINE
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Economic Benefits

- Property Values
- Job Creation
- Competitive City

Advantages of the
Green Approach

Green Schools





Understanding the Urban Watershed: The Curriculum Framework

- 10 years in the making; compilation of tested activities and themes
 - Logical next step for us; classroom to schoolyard connection
 - Interest in enlivening the urban story– focus on water for cities/urban infrastructure systems and how/why they developed FOR PEOPLE in the classroom
 - Advisory Board: FWWIC, PWD Office of Watersheds, Partnership for Delaware Estuary, EcoExpress, PP and R, GFS (CCSS Literacy); Bryn Mawr College (CCSS Math), US Forest Service (Sustainability Fellow '12)
 - Partial funding from EPA; pre-pilot at Nebinger
 - 2013-14 Pilot at Nebinger and Greenfield Elementary
 - 2014-15 Green Schools Classroom to Schoolyard Connection
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How the Narrative Unfolds?



Thematic Unit 1:
Water in Our World



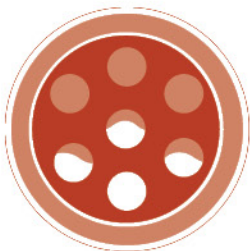
Thematic Unit 4:
Land and Water: A delicate
balance (or Can't We All
Just Get Along?)



Thematic Unit 3:
Drinking Water and You



Thematic Unit 5:
Green Plan for the
Future: Playing a Part



Thematic Unit 3:
Down the Drain, or Out
of Sight, Out of Mind



Thematic Unit 6:
Environmental
Stewardship

Curriculum Overall Learning Objectives

Students Will:

- Grow to understand why the schoolyard projects are important and will want to take care of them
 - Have a healthy environment that makes environmental “sense”
 - Play a role in the larger urban story
 - Engage in learning through an integrated approach to learning (which helps things “stick”)
 - Develop critical and creative thinking
 - Will master skills required by Literacy, Math and Science Benchmarks for Standards
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Curriculum: The Guide

- What it is! A working framework to guide you through lessons and activities
 - Thematic Units 1-5 (Objectives; What you Should Know)
 - Sequential Lessons within Thematic Units
 - Suggested Vocabulary/Activities/Discussion topics
 - Connections to Common Core State Standards in Literacy and Math (Reading, Writing, Speaking and Listening); *Next Generation Science Standards (pending)*
 - What it is *not*: Lesson plans and activities to download/photocopy
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Curriculum: Resource Support

- Content Support: PWD and its Partners
 - Expertise to support the classroom lessons and activities: environmental educators, PWD and Partner scientists, engineers, policy makers (College student teams up with teacher)
 - Teacher Toolbox: Online (resourcewater.org)
 - Content support
 - Classroom media
 - History of Water in Philadelphia
 - <https://resourcewater.org>
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Curriculum: Powerful STEM opportunities



Fairmount Water Works Field Trips Place-based learning



Field Trip Experience Along the Riverbank



and on the water...



Discover.Connect.Act



Classroom to Schoolyard Connection



Cross disciplinary



3-year Teacher Fellowship Program to write Middle Years Curriculum supported by the William Penn Foundation



Intensive Professional Development around *Understanding the Urban Watershed*

- Teacher written- teacher driven curriculum
 - Powerful learning
 - Content support/pedagogy/lesson planning and piloting in the classroom
 - Connect to real world learning /resources
 - Standards-based (Common Core/NGSS)
 - Progressive and innovative
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Curriculum Connections– Get outside



For more information...

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