



Rising Waters, Rising Threat

How Climate Change Endangers America's Neglected Wastewater Infrastructure

By Ben Bovarnick, Shiva Polefka, and Arpita Bhattacharyya October 2014

Introduction and summary

The second anniversary of Superstorm Sandy recalls the tragic loss of 117 lives across eight states, evoking images of flooded streets, power outages, and stranded communities.¹ The storm also caused significant damage away from news cameras—underground and offshore—to wastewater infrastructure. Sandy’s powerful rainfall and record-setting storm surge² overwhelmed wastewater systems throughout coastal New York and New Jersey, resulting in the overflow of almost 11 billion gallons of raw sewage into the stricken region’s streets, rivers, and coastal waters. This was enough untreated effluent to fill the Empire State Building 14 times.³

Unfortunately, wastewater overflow is not unique to superstorms or to the East Coast. As climate change strains aging sewer systems around the country through increasingly severe weather and sea-level rise, the resilience of wastewater infrastructure is becoming a critical public and environmental health issue for communities and municipal and state governments.

The United States has an expansive but aging wastewater system that was built to meet the needs of a much smaller population. The United States had 14,780 wastewater treatment facilities and 19,739 wastewater pipe systems as of 2008.⁴ The American Society of Civil Engineers, or ASCE, found that many of the nation’s pipes were installed shortly after World War II and are reaching the end of their originally intended lifetimes;⁵ some sewers are more than 100 years old.⁶ Aging wastewater infrastructure has immediate, dangerous consequences. The ASCE estimates that aging pipes and inadequate capacity lead to the discharge of 900 billion gallons of untreated sewage and wastewater into U.S. waterways each year, enough to cover New York City under a layer 127 feet deep.⁷ According to a *New York Times* report, municipal sewer systems are the nation’s biggest violators of the U.S. Clean Water Act, and more than one-third of them have violated pollution laws at least once since 2006.⁸

This worn-out, faulty infrastructure requires new investments in order to protect public health and the environment. As climate change poses increasingly severe and costly hazards to these systems, states and municipalities should ensure that any investment in new sewer infrastructure incorporates climate risk. Federal, state, and local governments can achieve this through several innovative strategies.

This report recommends taking the following steps to keep American waters clean and protect public health from disruptions and overflows in wastewater treatment systems:

- Integrate climate risk into all new wastewater infrastructure
- Finance resilience improvements through state infrastructure banks
- Prioritize resilience in state revolving-fund investments, accounting for regional differences in climate change vulnerability
- Invest in green infrastructure and the protection and restoration of wetlands and coastal ecosystems to protect and supplement wastewater treatment systems

Modern wastewater infrastructure is a vital part of everyone's daily lives, protecting Americans from waterborne diseases and preserving the nation's waterways as ecological, recreational, and commercial assets. But Americans' preference to keep their minds out of the gutters, sewer mains, and treatment plants that comprise this system makes it easy for political leaders to neglect this infrastructure—at least until catastrophes such as Superstorm Sandy necessitate unpleasant spills and costly cleanups. As climate change exacerbates the most extreme weather and speeds sea-level rise, deficiencies in wastewater infrastructure will get harder to ignore—and increasingly costly to clean up after failures. To protect public health, the environment, and the economic gains provided by good water quality, local, state, and federal officials must act quickly to repair and upgrade the nation's rapidly aging wastewater infrastructure. This action must accommodate both contemporary and future levels of service demand and withstand the worsening effects of climate change.

Sanitary sewer overflow, or SSO: An SSO is an unintentional discharge of wastewater or sewage from sanitary sewer systems due to overloaded pipes, blockages, pump or power failures, broken lines, or other defects. SSOs can spill into public waterways and back up into buildings or neighborhoods, posing threats to property and public health.⁹

Combined sewer overflow, or CSO: A CSO is an infrequent, intentional discharge of wastewater from a combined sewer system, which usually collects rainwater, sewage, and industrial wastewater into a single pipe for treatment. These systems are typically designed with an overflow that can intentionally discharge the combined effluent into nearby bodies of water in the event of heavy rain or snowmelt that exceeds the system's maximum volume.¹⁰ The majority of combined sewer systems in the United States are in the Great Lakes region and the Northeast.¹¹

The Center for American Progress is a nonpartisan research and educational institute dedicated to promoting a strong, just, and free America that ensures opportunity for all. We believe that Americans are bound together by a common commitment to these values and we aspire to ensure that our national policies reflect these values. We work to find progressive and pragmatic solutions to significant domestic and international problems and develop policy proposals that foster a government that is “of the people, by the people, and for the people.”

