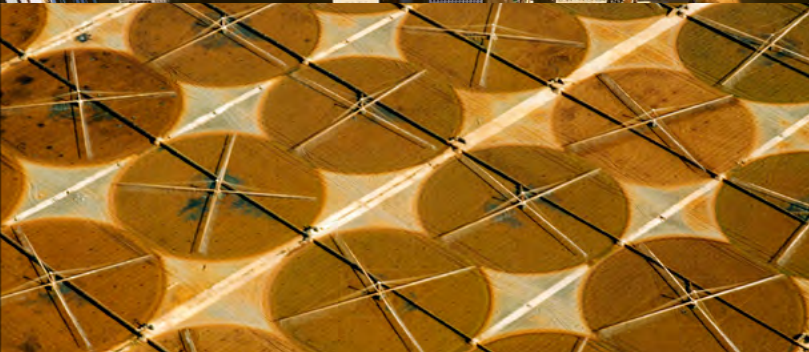
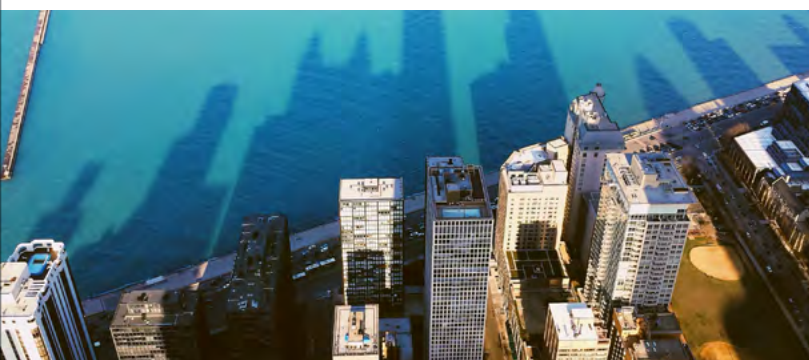




**One Water Roadmap:**  
The Sustainable Management of  
Life's Most Essential Resource



# Executive Summary

No matter who we are, where we live, or what we do, water connects all of us. When we embrace the belief that water in all its forms has value—water in our lakes, seas, rivers, streams, drinking water, wastewater, and stormwater—the full water life cycle can be optimized to build strong economies, vibrant communities, and healthy environments.



Water is our world's most precious resource and essential to everything we do. It sustains our public health and safety, our food supply, and our national economy—a fifth of which depends directly on clean, reliable water service.

Yet the traditional approaches used over the past 200 years to design, build, and operate our existing water systems are insufficient to meet 21st century challenges. Regulatory, financial, and governance structures have put water into separately managed silos for drinking water, wastewater, and stormwater. These stovepipes have been reinforced at every level of government—from the Clean Water Act and Safe Drinking Water Act at the federal level, to how water rights and regulations are managed at the state level, to the fragmented nature of how local utilities and city agencies are organized.

Additionally, the health of our waterways and water sources are influenced by many actors including agriculture and industry. While many regions across the country face water-related challenges, the external factors at play are nuanced and different based on local circumstances. Some areas are water-rich but face massive nutrient-runoff issues; others have seen years of perpetual drought with no end in sight.

Regardless of the locale, the simple truth is that all water has value—drinking water, wastewater, stormwater, and everything in between—and should be managed in a sustainable, inclusive, integrated way. We call this perspective One Water. **And while our focus is water, our goals are thriving local economies, vibrant communities, and healthy ecosystems.**

To that end, this report offers a framework for bold leadership towards One Water management in the United States.

The report is organized by the following sections:

- **The Current Landscape** provides an overview of the varied water-related challenges that face our nation;
- **The One Water Approach** describes the vision and core principles that guide the One Water approach; and
- **Arenas for Action** reviews six key arenas where progress is already being made and greater success can be realized.



All around the country we are seeing silo-busting examples of integrated and inclusive approaches to water resource management. These approaches exemplify the view that *all* water has value and should be managed in a sustainable, inclusive, integrated way. **We call this perspective One Water.**

## The Current Landscape

Our water challenges are vast, including flooding and drought, aging infrastructure, and water pricing and affordability.

Reservoirs, pipes, pumps, treatment plants, and people working 24/7 are all needed to deliver clean water to homes and businesses, and to remove and treat wastewater so it can safely be reused or returned to the environment. Much of our water infrastructure was built more than 100 years ago and is in dire need of investment.

And while water scarcity and flooding seem at opposite ends of the spectrum, both are worsened by the same globally occurring dynamics, and both can have equally devastating impacts. Changing climate patterns are putting additional stress on our water resources and water infrastructure.

While much has been done in America to improve water quality and ecosystem management, we still face challenges in many communities and many watersheds. As our growing cities generate more wastewater, and as storm activity grows more intense, existing infrastructure often is insufficient to accommodate the increased volumes of water flowing into it. This leads to flooding, erosion, combined sewer overflows, and habitat destruction as runoff rushes untreated into local rivers and streams.

Finally, the way we price water is outdated in many cases. A multi-faceted approach is needed—one where water is priced to meet the growing needs for investment in the system, while ensuring that everyone, including low-income households, has access to reliable and affordable water service.

## The One Water Approach

A One Water approach can take many different forms, but all share some unifying characteristics:

- The mindset that **all water has value**—from the water resources in our ecosystems to our drinking water, wastewater, and stormwater.
- A focus on **achieving multiple benefits**, meaning that our water-related investments should provide economic, environmental, and societal returns.
- Approaching decisions with a **systems mindset** that encompasses the full water cycle and larger infrastructure systems.
- Utilizing **watershed-scale thinking and action** that respects and responds to the natural ecosystem, geology, and hydrology of an area.
- Relying heavily on **partnerships and inclusion**, recognizing that real progress will only be made when all stakeholders have a seat at the table.

## Arenas for Action

The report outlines six arenas for action that offer concrete examples of strategies that advance the One Water approach: Reliable and Resilient Water Utilities; Thriving Cities; Competitive Business and Industry; Sustainable Agricultural Systems; Social and Economic Inclusion; and Healthy Waterways. While the report segments the major strategies into these six arenas, it is important to note there is natural interdependence between them.

The One Water approach recognizes that water must be managed in ways that respect and respond to the natural flows of watersheds and the natural ecosystem, geology, and hydrology of an area.



### Arena #1

#### Reliable and Resilient Water Utilities



A central issue for modern water utility management is how to break down the silos among water, wastewater, and stormwater to optimize the benefit to customers and communities. Utilities are on the front lines of achieving a sustainable water future and have increasingly begun to transform the industry by looking beyond their traditional domains.

Water utilities increasingly recognize that the One Water approach can be instrumental in creating efficiencies in service delivery, achieving water quality and environmental improvements, and diversifying and stretching a community's water supplies. This section of the report focuses on innovative strategies for utilities to deploy to achieve greater efficiency, lessen their carbon footprints, and reliably and safely serve their customers better by forging new business models.

### Arena #2

#### Thriving Cities



How do cities meet growing demand in urban centers, in the face of tight budgets and mounting water quality and quantity challenges? As our population becomes more urbanized, the social, economic, and environmental vitality of our growing cities are largely dependent on the sustainable management of water.

Water is rapidly growing in strategic importance for cities and their elected leaders, and sustainability has become a key unifying theme for sophisticated and innovative local governments around the world. This section of the report focuses on strategies being embraced by cities to manage water, including integrated planning across the water cycle, distributed onsite water systems, coordinating water improvements with other infrastructure projects, and deploying advanced technologies such as smart meters and sensors.

### Arena #3 Competitive Business and Industry



Water challenges—whether it is too much, too little, or poor quality—threaten business growth, impact bottom lines, and create direct operational risks (e.g., water availability for manufacturing) as well as indirect ones (e.g., power shortages due to water scarcity). Energy companies and transportation, for example, are particularly reliant on water, and both sectors have a large water footprint. The agricultural sector, by definition, is dependent on water service. There is a business imperative and a social responsibility for companies to adopt sustainable One Water practices both within and beyond their fence lines.

For business leaders, One Water means adopting a holistic, systems approach to their companies' water footprints, and identifying and prioritizing investments that achieve maximum impact. Strategies in this section include developing water-focused partnerships with others in a supply chain and implementing water efficiency and water reuse tactics at industrial facilities.

### Arena #4 Sustainable Agricultural Systems



Water is of growing strategic importance to the agricultural sector as it grapples with challenges such as nutrient loading, soil erosion, scarcity, habitat degradation, and flooding. Variable weather has a direct impact on farmers. Their ability to adapt is key for managing crops and water.

The One Water approach can help the agricultural sector achieve triple-bottom-line outcomes—meeting the growing demand for food, increasing farmer profitability, and protecting the environment and public health. Strategies in this section include partnering with upstream and downstream communities, reducing nutrient runoff into waterways, reducing water consumption with new on-farm technologies, and using watershed-scale planning and monitoring.

### Arena #5 Social and Economic Inclusion



Water issues can affect any community, but low-income people and communities of color can be especially vulnerable to water quality and water quantity issues, including the impacts of climate change. For example, 13 percent of homes on Native American reservations lack access to clean water or sanitation, compared to only 0.6 percent for non-Native Americans.

A central component of the One Water approach is to ensure that water management helps all residents thrive. In this arena, strategies include building a water safety net so everyone has access to affordable and safe water, leveraging infrastructure projects for multiple community benefits, and enhancing community capacity to engage in water planning and governance.

### Arena #6 Healthy Waterways



The American landscape is bound by an intricate web of waterways and water sources—rivers, streams, lakes, wetlands, underground springs, and groundwater. Maintaining the purity and abundance of water needed for fish, wildlife, native plants, forests, and other critical habitats must be balanced with municipal, agricultural, and industrial, or human-centric, needs. The Clean Water Act has inspired innovative solutions and partnerships, and the results for many waterways and watersheds have been outstanding. More innovation and bold solutions will be required to continue meeting the challenge of safeguarding our waters and the ecosystems dependent on them.

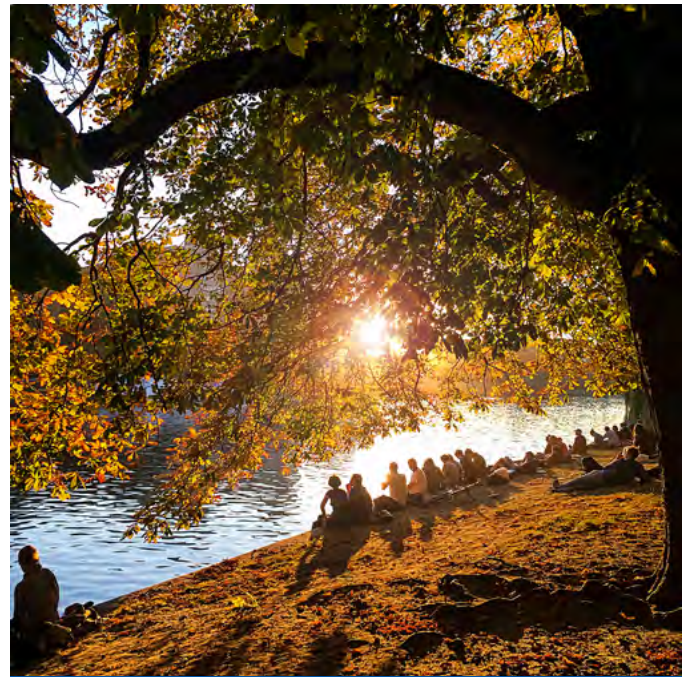
In addition to the many approaches to foster healthy waterways that have been discussed in previous sections of this report, this final arena for action explores One Water strategies such as natural infrastructure, groundwater management, forest restoration, and citizen science.

## Arenas and Strategies for Action

Arenas for Action	Strategies	Case Studies
<b>#1 Reliable and Resilient Water Utilities</b>	Diversifying and stretching water supplies	Santa Clara Valley Water District Deploys Water Reuse on a Massive Scale
	Utilizing green infrastructure to manage flooding and revitalize neighborhoods	Philadelphia's Green City, Clean Waters: A Model for Green Infrastructure
	Transforming wastewater into a resource	DC Water Leads Our Nation's Capital to a More Resilient Future
	Forging new business models	Louisville: Sharing Services, Finding Efficiencies
<b>#2 Thriving Cities</b>	Integrated planning across the water cycle	One Water Los Angeles Exemplifies an Integrated Approach to Planning
	Utilizing onsite water systems	Emory WaterHub® Shows Students that Recycling is Not Just for Trash
	Adopting a "dig once" approach	Spokane Looks Above and Below Ground to Leverage Infrastructure Investments
	Deploying advanced technologies to improve decision-making	Harnessing the Power of Data to Tackle Water Main Breaks in Syracuse
	Managing water to foster climate resilience	Rebuilding for Resilience in New Orleans
<b>#3 Competitive Business and Industry</b>	Fully integrating water stewardship into company strategy	Coca-Cola Launches 500 Projects to Manage Water Sustainably
	Deploying water efficiency, stormwater management, and water reuse at industrial facilities	Dow Tackles Water Efficiency at its Largest Chemical Manufacturing Complex
	Developing upstream and downstream partnerships in priority watersheds	Change the Course Replenishes more than 225 Million Gallons of Water
<b>#4 Sustainable Agricultural Systems</b>	Using on-farm strategies to reduce water consumption and manage nutrients	Salinas Valley: Recycled Water Saves the Agricultural Sector
	Creating partnerships among upstream and downstream communities	Cedar Rapids: Multi-Pronged Coalition for Change
	Using watershed-scale planning and monitoring	Madison, Wisconsin uses Adaptive Management to Target Phosphorous Runoff
<b>#5 Social and Economic Inclusion</b>	Building a water safety net	Detroit Water and Sewerage Department Offers Low-Income Customers Rate Assistance
	Leveraging water investments to generate community benefits	A Good Neighbor: The San Francisco Public Utilities Commission's Community Benefits Program
	Fostering community resilience in the face of a changing climate	Ironbound: Empowering Newark Residents to Revitalize Their River
	Enhancing community capacity to engage in water planning and governance	Community Water Center Helps San Joaquin Valley Residents Build Their Water Knowledge
<b>#6 Healthy Waterways</b>	Maximizing natural infrastructure for healthy ecosystems	Working Together to Deploy Natural Infrastructure in Saginaw Bay Watershed
	Managing groundwater for the future	Tucson Replenishes Aquifer by Diversifying Supply
	Protecting forests to protect water	Chesapeake Bay Uses Forest Buffers to Boost Water Quality
	Utilizing citizen science for ecosystem monitoring and watershed restoration	Chattahoochee Riverkeepers Empower Citizens on Local Water Quality Monitoring

## Conclusion

The strategies and policies highlighted in this report illustrate the rich diversity and growing sophistication of the One Water approach that is taking root all across the country. At its heart, the One Water approach is about diverse stakeholders coming together to advance common-ground solutions to our water challenges. Every individual, every sector, and every stakeholder group has a role to play. We hope that you will take inspiration from the strategies and case studies outlined here to move forward with a One Water approach in your own communities.



At its heart, the One Water approach is about diverse stakeholders coming together to advance common-ground solutions to our water challenges.

To download an electronic copy of the full report, please visit our website: <http://uswateralliance.org/resources/publications>

To request a printed copy of the full report, please email us: [info@uswateralliance.org](mailto:info@uswateralliance.org)



One Water, One Future.

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