STATEMENT OF
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Good morning, Mr. Chairman and Members of the Committee. I am Michael Shapiro, Acting Assistant Administrator for Water at the United States Environmental Protection Agency (EPA). I am happy to be here today to talk to you about our efforts to promote increased water conservation and efficiency.

Too often we take for granted a system that provides clean and safe water: from the drinking water that automatically appears when we turn on our taps or take a shower to the water found in our local watersheds where we live, work, and play.

But water is a finite resource – even though about 70% of the Earth's surface is covered by water, less than 1% is available for human use. Headlines about water crises in different parts of the U.S. and the world have raised the collective awareness about this precious and life-sustaining resource. States and thousands of communities across the nation are facing difficult challenges in meeting their water resource needs.

A report by the Government Accountability Office in 2003 indicated that 36 states projected water shortages by 2013. Studies of water use by the United States Geological Survey show that water withdrawn for the public supply increased by 7 percent from 1995 to 2000 -- an increase of 1 trillion gallons. The U.S. Bureau of Census projects that the U.S. population will increase by 3% by 2010, 12% by 2020 and 30% by 2040.

On average, the per capita residential water use in the U.S. is 100 gallons of water a day and in many areas of the country this rate is even higher. Areas with higher than average per capita water consumption are often experiencing unprecedented population growth. As a result,

communities across the country are facing challenges regarding water supply and water infrastructure.

Improving water efficiency is one of the most effective ways that communities can manage their supplies. With less water moving through the system, utility operating costs will decrease. They will avoid costs for treatment chemicals, residuals disposal, and energy associated with water collection, treatment, and disposal. In addition, water efficiency can help utilities better manage capacity expansion because necessary expansions can be delayed or reduced in size.

Water resources are also affected by decisions communities make about land use and development. Stormwater pollution from point sources and nonpoint sources is one of our nation's most challenging water quality problems and is a significant contributor to the impairment of the country's streams, rivers, and watersheds.

Unlike pollution from industry or sewage treatment facilities, which is caused by a discrete number of specific sources, pollution from stormwater varies widely, not only in the amount of water and the frequency, but also in the contaminants it carries into our rivers, lakes, and coastal waters. For example, rainwater and snowmelt in urban and suburban environments convey contaminants that run off from lawns, parking lots, streets, farms, and construction and industrial sites. The impermeable surfaces of our traditional urban and suburban landscapes interfere with the natural recharge of groundwater and surface water and also cause increases in the intensity and amount of stormwater.

It is clear that our nation must fundamentally change how we use and manage our water resources. We must reduce our water use and supplement our water resources through safe recovery and reuse of reclaimed water, rainwater, and stormwater. And, we must work towards integrating low impact development practices and water efficiency into existing communities and new construction to prevent problems in the future. These approaches are less energy intensive than traditional development and can help to reduce our carbon footprint.

The Office of Water, in partnership with the Office of Research and Development, sees an opportunity to keep pace with the water resource needs of the future by developing a

comprehensive strategy built upon several initiatives focusing on water efficiency, rainwater harvesting, stormwater management, and water recovery and reuse.

Several of our water programs are helping lead the changes necessary for communities to sustain their water resources for future generations. One of these is our WaterSense Program.

WaterSense Certification and Products

EPA is working to foster a national ethic of water efficiency, so that water is valued as a limited resource that should be used wisely. In June 2006, we announced WaterSense, an innovative partnership program that helps American consumers, businesses, and governments make smart water choices that save money and maintain high environmental standards without compromising performance or requiring lifestyle changes.

The WaterSense program is helping to reduce water use across the country by creating an easy-to-identify label for water-efficient products that is backed by strict criteria and independent certification. Products with the WaterSense label use at least 20 percent less water and perform as well as—or better than—conventional models. To earn the WaterSense label, products must be independently tested and certified by a third party to meet EPA's criteria for efficiency and performance. This distinctive approach has been identified as a key strength by many stakeholders.

In less than three years, and with the help of more than 1,000 partners nationwide, WaterSense has become a national symbol for water efficiency. The WaterSense label can now be found on more than 700 varieties of water-efficient faucets and accessories and over 250 models of high-efficiency toilets.

A large part of our success is due to our partners. More than 400 utilities and 170 manufacturers and retailers are helping promote WaterSense products. And more than a dozen states have taken the challenge to bring in additional partners. We are also working with distributors and the media to educate consumers on the benefits of switching to water-efficient products. Earlier this month we promoted our first ever "Fix a Leak" week. Cities and states from across the country promoted actions to prevent water loss and citizens in 35 states took a pledge to fix their leaks.

Our success is in the numbers. The WaterSense program is saving more than 277 million gallons of water per year and saving consumers $1.6 million on their utility bills. Our preliminary data shows that WaterSense labeled faucets and faucet accessories made up close to 20% of the products shipped in 2008, which is impressive given that our specification was finalized in October 2007.

The savings on WaterSense labeled toilets is also significant. Toilets account for about 30 percent of the water used in the home, and Americans waste 900 billion gallons per year by flushing old, inefficient toilets. By replacing an older toilet with a WaterSense labeled model, a family of four could reduce total indoor water use by about 16 percent and, depending on local water and sewer costs, save more than $90 annually.

If every home replaced just one old toilet with a WaterSense labeled High Efficiency Toilet, the water savings would be enough to supply nearly 10 million U.S. households with water for a year. Although we are still compiling last year's data, it is clear that the WaterSense label is gaining a foothold in the market, with close to 5 times more WaterSense labeled high-efficiency toilets shipped in 2008 than in 2007.

WaterSense New Homes and Outdoor Water Use

We know that individual products like water efficient toilets and faucets can have a big impact on a household's water savings. But to achieve significant savings in the future, we know that we also have to influence the construction of new homes and educate homebuyers. To help facilitate this, we are developing a WaterSense "New Homes" label. Our New Homes effort combines water-efficient products, enhanced design features, and homeowner education into a single residential program. WaterSense labeled new homes will be designed to reduce water consumption by setting criteria for both indoor and outdoor water use and by educating homeowners about water efficiency.

While working on a second draft of the specification for public comment, a pilot program was established last fall to test inspection and implementation procedures so that a program will be in place when the specification is finalized. Twelve single-family homes in North Carolina and Wisconsin have already been certified to meet the WaterSense draft new homes criteria. They

have used water-efficient hot water distribution systems as well as bathroom fixtures, dishwashers, and varied landscape plantings.

About 30 percent of the water used by the average American household is devoted to outdoor water use. In more arid parts of the country, however, homeowners use as much as 70 percent of their water outdoors. Experts estimate that up to 50 percent of landscape water use goes to waste due to evaporation, wind, or runoff caused by overwatering. In addition to overextending the water supply, the runoff from overwatering can convey chemical and microbial contaminants into aquatic environment such as fertilizers, herbicides, salts, and pathogens.

Our New Homes effort will address outdoor water use by requiring home builders to plan landscapes utilizing a mix of regionally-appropriate plantings that will require less water than comparable lawns comprised of turf. Also, if in-ground irrigation systems are installed, they will be audited to ensure proper design and installation to maximize water-efficiency.

Two years ago, EPA developed WaterSense certification programs for irrigation designers, auditors, and installation/ maintenance professionals that focus on water-efficient landscape irrigation techniques. A homeowner with an irrigation system who hires a WaterSense irrigation partner to perform regular maintenance can reduce outdoor water by 15 percent or about 9,000 gallons per year—the amount of water that would flow from a garden hose nonstop for nearly a day.

Currently, more than 600 irrigation professionals from across the country have partnered with WaterSense to advance water-efficient irrigation practices. In 2008 EPA will also continue working towards development of a WaterSense label for weather- or sensor-based irrigation control technology to provide irrigation professionals and homeowners with an important tool they can use to reduce outdoor water use.

Yes, WaterSense is making a big impact on reducing water use. But, water efficiency doesn't only result in water savings. Delivering water to homes requires a great deal of energy. Approximately 4 percent of the nation's electricity consumption is used moving or treating water and wastewater. We also use energy when we heat our water for bathing, cooking, even cleaning the dishes.

Given how closely related saving water is to saving energy, one of the best ways to conserve energy across the country – not to mention at wastewater treatment plants – is to use water more efficiently. Through water efficiency, utilities can realize significant energy savings, delay expansions to deal with population growth and make better use of existing resources.

If just one in every 10 homes in the United States were to install WaterSense labeled faucets or aerators in their bathrooms, in aggregate, they could save 6 billion gallons of water, and more than $50 million in the energy costs to supply, heat, and treat that water.

Leveraging WaterSense

The potential for preserving our water supply for future generations through this voluntary program is significant, and WaterSense will continue working on new product areas in the future. In 2009, we will work to issue a final specification for high efficiency flushing urinals that will use 50% less water than standard flushing urinals and issue a draft specification for showerheads.

Looking forward, we will move further into the commercial sector, conducting research on pre-rinse spray valves that are used in the food service industry and working with stakeholders to evaluate other products appropriate for WaterSense certification.

But, to advance an ethic of water conservation and efficiency, EPA cannot work alone. We rely on a national network of partners – who help us with our product specification efforts, marketing, and consumer education. The Alliance for Water Efficiency (AWE) is establishing a water-efficiency information clearinghouse and will expand to complement WaterSense's activities including monitoring national plumbing and appliance standards and codes. We are collaborating with public officials and utility managers to identify strategies and tools for reducing water loss from systems. We are also coordinating with EPA's EnergyStar program, the U.S. Green Building Council's LEED program and NAHB's Green Building Program to incorporate WaterSense criteria into these broader energy efficiency and green building initiatives.

And speaking of LEED, EPA is truly leading the way with its own facilities. One of EPA's newest and most impressive facilities, the LEED certified Region 8 Headquarters, will save

water through the use of high efficiency plumbing fixtures such as dual-flush toilets. It also has a green roof. EPA is also working to ensure that water efficient products and other more sustainable activities are considered as federal agencies, states, cities, and utilities make decisions on how to spend funding made available through the American Recovery and Reinvestment Act of 2009. EPA's Clean Water and Drinking Water State Revolving Fund programs, which are receiving $6 billion through the Recovery Act, are required to direct at least 20% of their funding for green projects, including those that promote water efficiency and green infrastructure. EPA is also working to ensure that funding made available for housing and federal facilities consider WaterSense labeled products when identifying projects.

Other EPA Water Efficiency Efforts

EPA's WaterSense program is not the only program focused on managing our water resources more efficiently. EPA's sustainable infrastructure efforts look more broadly at water efficiency and asset management and many states and utility managers are stepping forward to identify strategies and promote tools for water efficiency on the supply side. Making water distribution more efficient will not only save water and reduce costs, but it will save energy and significantly improve sustainability and increase capital available for infrastructure investment. Installing meters can help utilities better track water loss and also makes it possible to charge customers for their actual use of water, thus advancing full cost pricing.

We know that to reduce real water leakage we must better manage millions of miles of pipelines that are buried beneath our cities and suburbs to distribute water to users and collect wastewater and stormwater from urban environments. Reducing water use by decreasing leaks can reduce the energy costs of transporting additional water to and from users, preserve water resources, and reduce the amount of water that is processed. Reducing leaks is also very important for protecting public health. Pipeline failures and overflows from sewers can cause contamination of water supplies. Also, it is important to remember that what starts as a leak can result in a major line break that may interrupt water supplies resulting in hardships for hospitals, residents, and businesses that rely on uninterrupted access to water. Pro-active approaches to detect and prevent leaks have public health, economic, and environmental benefits in addition to contributing to water efficiency goals.

Green Infrastructure

Another area where EPA is helping lead the change in how we view our water resources is our Green Infrastructure initiative. Green infrastructure is based on the simple idea of creating stormwater management systems that mimic natural hydrology. Rather than piping stormwater away through "grey" infrastructure, we are managing it -- capturing and reusing it to reduce the volume of runoff entering our sewer systems, and ultimately our lakes, rivers and streams. Green infrastructure is also an excellent supplemental strategy to reducing the frequency of combined sewer overflow (CSOs) events.

On the regional scale, green infrastructure consists of an interconnected network of open spaces and natural areas (such as forested areas, floodplains and wetlands) that improve water quality while providing recreational opportunities and wildlife habitat. On the local scale, green infrastructure consists of site-specific management practices (such as rain gardens, porous pavements, green roofs and cisterns) that are designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls, and by returning it to the atmosphere via plants.

With respect to wet weather management, green infrastructure techniques use exactly those mechanisms of stormwater collection, infiltration and evapotranspiration by utilizing natural systems, or engineered systems that mimic natural landscapes, to capture, cleanse and reduce stormwater discharges using plants, soils and microbes. Green infrastructure can also support harvesting and reuse of rainfall, thus also reducing the volume and impacts of stormwater discharges to water quality.

Two years ago, EPA embarked on an enhanced effort to promote green infrastructure through all of our water programs in conjunction with several partners. One of our initial releases, in January of 2008, was the *Green Infrastructure Action Strategy*. The Strategy is an action plan of several dozen activities and initiatives to overcome barriers to green infrastructure implementation, moving these sets of technologies from supplemental components of wet weather management to mainstream approaches.

Because design engineers, utilities, public works departments, transportation agencies and others may be unfamiliar with green infrastructure approaches, we are engaged in a wide variety of outreach and training activities, including workshops, webcasts, publication of many documents on a variety of critical topics. We are also working on partnerships with a variety of sectors such as Federal highways, and modification and development of models and calculators to make design work and life cycle costing analyses easier.

Weak or restrictive local regulations and codes can pose barriers to green infrastructure. These barriers are not insurmountable and cities with successful green infrastructure programs have been able to thoroughly revise their codes and ordinances, usually resulting in valuable modifications to these policies. To assist communities with this process, we have developed a helpful guidebook entitled *Aligning Local Codes and Ordinances with Water Quality Goals*. This document outlines a process for evaluating local policies and provides multiple options in a variety of different areas for modifying those policies to meet community objectives.

As green infrastructure still represents a new area of focus for water managers and local decision-makers, some questions remain. With respect to water quality and quantity, we understand performance of green infrastructure practices in some cases. However, we need better tools for estimating collective performance at regional scales, and there are still questions about long-term performance of some practices under various maintenance regimes.

In addition, we need better quantification of other benefits, such as urban heat island reduction and removal of particulates from the air. A comparison of the economics and performance of green infrastructure and how it can supplement grey infrastructure for the entire life cycle will be extremely useful in establishing the utility of green infrastructure. Moving research to practice is also an important need. There are many green technologies that can help protect water quality, and no single set of practices can be identified as the best for all circumstances.

Research to Integrate Public Health Protection, Water Availability, Water Efficiency, and Ecosystem Services

Clearly, it is important to carefully consider how the water resources of this Nation are used and how we can effectively manage them into the 21st Century, particularly in light of the

uncertainties surrounding climate. Our Nation's water resources face pressures on their quality and availability as a consequence of growing population, increasing urbanization, changes in irrigation and chemical management practices to support agricultural demands for food and biofuel feedstocks, and the need for water to support energy production and provide industrial process water. It is critical that water managers have scientifically sound approaches to implement water use and water management policies and practices that are resilient enough to respond to short-term fluctuations in water resource conditions and to adapt and integrate new knowledge.

As noted in reports by the Western Governor's Association and the National Advisory Council for Environmental Policy and Technology, authorities at the federal, state and local levels need to use robust integrated water resources management approaches to balance and optimize the available water supply and provide more flexible approaches for supply, managing, recovering, and reusing water. We can no longer afford to use water inefficiently Science can inform us about the availability and quality of our water resources and help us evaluate and predict the likely effects of water-policy and management practices and lead towards integrating public health protection with water sustainability to better prepare for the likely challenges related to climate change.

Recognizing that water efficiency and conservation are critical to ensuring water availability and protecting public health, EPA's Office of Research and Development (ORD) conducts several national research programs that build upon the programmatic efforts in the Office of Water (OW) and focus on sound science and engineering approaches that can improve water and energy efficiency. Cutting-edge research is targeted at water processing technologies, water reclamation and reuse, and sustainable infrastructure.

Implementing holistic approaches for producing safe drinking water, while promoting water and energy efficiency, can yield measurable benefits to water resource sustainability and also lead to lower costs of supplying potable water. In conjunction with the intramural research programs in our National Laboratories, ORD's Science to Achieve Results (STAR) grants program is funding research to link public health protection with water infrastructure sustainability by encouraging water reuse, low impact development, and green infrastructure. ORD has been at the forefront of

developing the tools that will be needed to make green infrastructure a reality including hydrologic models to help preserve critical water habitats and geospatial data to map development to inform smart-growth planning and combat urban sprawl.

OW is working closely with ORD to identify research needs related to water resources. Earlier this year, the two offices convened the first National Expert and Stakeholder Workshop on Water Infrastructure Sustainability and Adaptation to Climate Change. Also, ORD's Drinking Water, Water Quality, Ecosystem Services, Sustainability, and Global Change Research Programs are conducting cutting-edge research that can advance green infrastructure and water efficiency. Examples of research activities include modeling and field studies of sustainability of water infrastructure under different climate scenarios, and tracking the performance of green infrastructure in restoring water quality, reducing runoff, and recharging ground water levels. ORD is working with National Geographic to map impervious surfaces across the contiguous U.S. and to develop methods to estimate their effects on runoff and ground water recharge. ORD is also conducting a landscape analysis of the source watersheds for approximately 5,000 drinking water intake locations. This assessment may help identify locations where land conservation and green infrastructure might best protect the natural service of "water provisioning" to water intake locations, thereby preserving drinking water quality and avoiding costs associated with expensive water treatment.

The STAR grant program is soliciting research proposals to develop information and tools (such as coupling global climate models with regional-scale climate and hydrology models) that can improve assessments of climate change impacts on regional water quality to support human and aquatic life uses. ORD has also sponsored an annual competition for college students to develop and test sustainable designs. Many of the projects revolve around producing safe drinking water coupled with water and energy efficiency. The competition, called P3, which stands for People, Prosperity and the Planet will be held this April here in DC along the Mall.

In developing specifications for water efficient products, EPA's WaterSense program works with voluntary consensus standard organizations, utility research committees, trade groups and universities to develop information on product efficiency and performance. WaterSense also relies on research carried out by other federal agencies, including the survey of Estimated Water

Use in the United States which has been carried out by the U.S. Geological Survey every five years since 1950. .

EPA also continues to coordinate and collaborate with other federal agencies on research and other policy matters through our participation on the Western States Federal Agency Support Team (which was organized by the Western States Water Council) and a multi-agency memorandum that authorizes senior staff from EPA, NOAA, USDA, DOI and the U.S. Army Corps of Engineers to cooperate on climate change adaptation work related to water resources. Such cooperation is essential to leverage resources across agencies, avoid duplication of effort, and minimize confusion for states and the regulated community. We are also actively involved in several interagency committees that relate to water resources research including the National Science and Technology Council (NSTC) Subcommittee on Water Availability and Quality (SWAQ). We are also leading the efforts on water efficiency, water recovery, use, and rainwater harvesting that support a major goal in the Net Zero Energy, High Performance Green Building Research and Development Agenda that was recently released by the NSTC's Buildings Technology Research and Development Subcommittee. This program is targeting integrated approaches to reduce water use in buildings by 50%.

Conclusion

All of these actions and initiatives will prove to be critical as we develop adaptation strategies to prepare for potential changes in water resources driven by climate change where we can anticipate changes in contaminant concentrations in water, new patterns of rainfall and snowfall, recurring droughts that will limit water supplies, and more intense and frequent storms that will increase polluted stormwater runoff and threaten the capacity and integrity of our water infrastructure.

We have come a long way in a very short time with our WaterSense and green infrastructure programs. As the demands on our water resources grow, the need for the products and services we are developing through WaterSense will become even more important. Across the country, state and local governments appreciate the consistency that a national product label offers and the water savings the products provide. As we plan for the future, we also need to look towards more sustainable green practices that reduce water degradation and provide us with more livable

communities. We look forward to working with our stakeholders and Congress as we look to expand EPA's efforts in these areas. I ask that my full statement be submitted for the record and I look forward to addressing any questions you may have.

Thank you.