

WATERSHED INVESTMENT PROGRAMS IN THE AMERICAN WEST

AN UPDATED LOOK:
LINKING UPSTREAM WATERSHED HEALTH
&
DOWNSTREAM SECURITY

A Carpe Diem West Report

November 2011



CARPE DIEM WEST
Our water – Finding solutions together

WHY THIS REPORT?

The source of most of the American West's water lies in high-elevation watersheds comprised primarily of public land. Communities large and small around the West rely on these watersheds to deliver clean, reliable supplies of water at the times they need it. But many of these landscapes are highly vulnerable to climate change due to impacts such as increased risk of wildfire and invasive species, decreased snowpack, altered timing of runoff, and large-scale changes in vegetation. These changes, coupled with existing stresses and past management legacies, threaten the ability of many watersheds to continue providing reliable water supplies. Responding to these threats will require substantial new sources of revenue.

Carpe Diem West's October 2010 report *User Contribution Programs: Linking Upstream Watershed Health to the Hearts, Minds, and Wallets of Downstream Water Users* provided a snapshot look at some innovative programs that cities, utilities, and resort owners are employing as a means of having downstream water users help pay the cost of managing the health of the upstream watersheds that supply their water. The report grew out of the work of **Carpe Diem West's** Healthy Headwaters Project, an alliance of upstream land managers, downstream water utilities, and conservation advocates whose goal is to increase the climate resiliency of the headwaters systems that provide the West's drinking water.

In the year since the original *User Contribution Programs* report was released, a steadily increasing level of attention has been focused on programs that harness water user dollars for watershed protection—now commonly referred to as “watershed investment programs.” Given the strong interest in these programs, **Carpe Diem West** has prepared this revised and updated report, whose purpose is threefold:

1. To provide more complete and up-to-date information on existing watershed investment programs across the West.
2. To identify some communities and watersheds that could be fertile ground for new programs.
3. To discuss some fundamental questions that merit careful consideration by policy makers, water utilities and public land managers as these programs develop and expand in the future.

Based on this information, and with these questions in mind, **Carpe Diem West's** Healthy Headwaters leadership will continue to explore opportunities to take watershed investment programs to scale across the American West in the months and years ahead.

– *The Carpe Diem West Team*

I. THE FUNDING GAP: *WHO SHOULD PAY THE COST OF PROTECTING WATERSHEDS IN THE FACE OF CLIMATE CHANGE?*

In the past year, the broad trends that the original *User Contribution Programs* report identified as the basic drivers of watershed investment programs have become even more pronounced. As the effects of the climate crisis become manifest across the western landscape in the form of more-frequent drought, wildfire, and severe flooding, increasing stress is being placed on the health of high-elevation watersheds—along with their ability to provide reliable supplies of clean water at the times Westerners need them. At the same time, downward pressure on federal budgets has become stronger than ever, making it even less likely that land management will be able to provide the funds necessary to restore and maintain the health of these watersheds. This funding gap comes at a time when watersheds are under increasing stress from climate change coupled with a legacy of past management activities such as fire suppression, excessive road density, and loss of riparian vegetation.

Given these realities, an obvious potential source of funding to support watershed management is downstream water users, who currently receive large benefits from the upstream watersheds that collect, store, purify, and deliver usable water to them at little or no cost. The value of these ecosystem services is difficult to estimate, but a recent literature review conducted for **Carpe Diem West** by the Sonoran Institute notes that the annual value of water produced by Forest Service lands alone is in the billions of dollars. The concept of getting water users to help pay the cost of providing the valuable services they are currently getting for little or no cost is an emerging topic among resource economists, who call it the “payment for watershed services” model. The watershed investment programs discussed in this report are on-the-ground examples of that model in action.



II. CLIMATE CHANGE AND THE GROWING INTEREST IN WATERSHED INVESTMENT PROGRAMS

The term “Watershed Investment Programs” is gaining acceptance as a working title for programs that raise money from downstream water users to help fund the management of upstream watersheds. A number of such programs have emerged around the West in recent years, and the **Carpe Diem West** leadership network has identified them as an important tool for securing the watershed restoration that will be necessary to provide long-term water security in the face of uncertainties brought on by climate change.

At the initial leadership meeting of **Carpe Diem West’s** Healthy Headwaters leadership in Seattle in March 2010, the group identified several key facts that must be the starting point for any attempt to provide water security in a warming West: (1) the majority of the water used in the West is produced in high-elevation watersheds, mostly on public land; (2) it is crucial to manage the health of these watersheds in order to ensure they continue to provide reliable supplies of clean water in spite of the stressors that climate change will bring; and (3) current federal agency budgets and management priorities are not adequate to properly manage these watersheds. In that context, the leadership group identified watershed investment programs as an important tool for maintaining water security in a time of climate change.

Watershed investment programs were a leading topic at the second **Carpe Diem West** Healthy Headwaters leadership meeting, held in Salt Lake City in September 2010. That meeting was attended by representatives of most of the programs described in the *User Contribution Programs* report (2010), who shared their experiences with an eye toward helping other water managers who might want to create or expand similar programs across the West. The meeting also included upper-level management from the US Forest Service, and Under Secretary of Agriculture Harris Sherman, who made clear that headwaters protection partnerships are an agency priority.

The third Healthy Headwaters leadership meeting was held in March 2011 at the location of one of the most prominent watershed investment programs, the Denver Water—USFS Forest-to-Faucet Partnership, and was attended by most of the key principals responsible for instigating the project. The Denver meeting participants concluded it was time to take a more in-depth look at where watershed investment programs already exist in the West, and what communities represent the most promising locations for establishing new programs. That work led to this updated report.

III. ELEMENTS OF WATERSHED INVESTMENT PROGRAMS

What all watershed investment programs share in common is that they involve some kind of payment by a group of water users to a collecting entity, which then applies those funds to on-the-ground projects that restore or maintain the health of the watershed. There are several different permutations of this:

- The collecting entity can be either a public agency—e.g., a utility or municipality—or a private entity such as a resort.
- The water users in existing programs consist of either municipal customers or guests at resorts in headwater areas.
- The payment can be either voluntary—e.g., an optional “check-off” contribution on a water bill or a charge at a private resort—or mandatory—e.g., an addition to a monthly water bill. When a utility includes the payment as part of its mandatory water rates, it has two options: Some utilities show the payment for its watershed investment programs as an add-on surcharge that is explicitly identified on the bill, while others simply roll the cost of the program into their overall rates. The rationale for either approach comes down to marketing: showing the watershed investment charge on the bill can serve an educational purpose by reminding water users of their dependence on the watersheds that supply their water. On the other hand, where a utility believes a watershed investment program will be controversial, it may choose not to call attention to its cost by singling it out on the bill, but rather to treat it the same as investment in any other form of infrastructure.
- Projects take a wide variety of forms, depending on the nature of local threats to watersheds and the capacity of the watershed investment program. Examples include large-scale thinning and prescribed burning to reduce wildfire threat, road removal and rehabilitation, re-planting of native riparian vegetation, trail rehabilitation, and public education. In the case of smaller programs, projects are often chosen and implemented with the assistance of the National Forest Foundation, which has long-standing relationships with watershed groups and the Forest Service. In some of the larger municipal programs, city governments work directly with the Forest Service to develop projects.



IV. BUT DO THEY WORK?

QUESTIONS RAISED BY WATERSHED INVESTMENT PROGRAMS

Watershed investment programs such as the ones described at the end of this report have begun to establish a solid base of direct experience among their participants, and have generated a good deal of discussion, both among the public at large and within the **Carpe Diem West** Network. From these discussions have emerged a number of common issues that the water community should keep in mind as it considers how it might expand the reach of the watershed investment model, both by scaling up existing programs and establishing new ones. Following are some of the questions that have been identified.

• *Isn't this the Forest Service's job?*

Some have questioned whether it is appropriate or necessary to ask water users to help pay for the proper management of watersheds on National Forest lands. They point out that proper watershed management has always been a central element of the Forest Service's mission, going all the way back to the original 1897 Organic Act, which stated that a primary purpose for establishing the National Forest System was to "secure favorable conditions of water flows" for downstream use. An argument can be made that it is Congress' responsibility to appropriate sufficient funds to allow the agency to properly manage its lands to meet this mandate, and soliciting monies from users only helps Congress avoid this responsibility.

A countervailing view is that fundamental reform of the current Forest Service budgeting process is unlikely in the foreseeable future, while at the same time there are vast acreages of land in need of urgent attention in the near term. Many believe that, as a practical matter, getting watershed restoration done in the near term will require large sources of money outside the Forest Service budget.

Another view is that watershed investment programs provide an additional benefit by getting water users to think about the huge value of the services they are being provided—essentially for free—by upstream watersheds. Getting downstream users to support the cost of managing those watersheds gets them to acknowledge this link, and gives them a more vested interest in the health of the watersheds. Many see this as a good in and of itself.

• *Will these projects lead to long-term watershed resiliency?*

Many of the large-scale programs that municipalities have undertaken in conjunction with the Forest Service—for example, the Denver, Santa Fe, and Aurora programs—are aimed primarily at reducing the immediate risk of catastrophic wildfire. This is understandable. The huge flushes of sediment that sometimes follow a severe fire can force cities to spend millions of dollars dredging reservoirs and constructing filtration plants, and wildfire has the ability to galvanize public support for projects as nothing else can. But the prevalence of fire-related projects raises a number of complex questions. Is managing fire risk (i.e., vegetation management) really the same thing as long-term watershed

management? Aren't such projects just one component of watershed management? Should the management plans supported by watershed investment programs make greater use of projects to reduce other sources of sediment—for example, reclaiming and upgrading road networks that are poorly constructed and/or too dense? And finally, does the science even support the notion that thinning and prescribed burns can mitigate fire risk and restore a regime of more-frequent, less-severe fires? In some forest types (ponderosa pine), the science appears relatively strong. But in others (lodgepole pine), evidence suggests that catastrophic fires are actually part of the natural system. Even if one is able to reduce fire risk in these forests, is that really providing long-term watershed management?

On a different note, one could ask whether the type of projects funded by the smaller programs can ever be a viable means of maintaining or restoring watershed health on the scale necessary to provide resilience against the effects of climate change. Trail construction, education, and tree planting programs have on-the-ground benefits, and can help get users thinking about where their water comes from and the importance of keeping watersheds healthy. But where those watersheds are in need of landscape-scale management, the on-the-ground work will likely remain beyond the capability of small-scale programs, and other funding sources will be necessary.

• Can the watershed investment program model be extended to other types of water users?

In order to work, the watershed investment model requires that there be a customer who receives a bill for some activity related to the use of water, so that a charge may be added to that bill and applied to watershed management. In the case of municipal residents and resort guests, that link is obvious: the resident gets a monthly water bill, and the guest is presented with a hotel bill at checkout. But if limited to these types of contributors, the geographic reach of watershed investment programs will remain small in relation to the total area of western public land watersheds, the vast majority of which lie outside of municipal watershed boundaries. While watershed investment programs appear capable of accomplishing a great deal of important work—particularly in terms of increasing the water security of urban populations—expanding their reach will require some means of extending the model to water users in non-municipal watersheds.

• Are we underestimating the public's willingness to pay for managing the watersheds that supply its water?

Some municipalities have been quite cautious in introducing their customers to the concept of paying for watershed management. The City of Santa Fe, for example, has gone to great lengths to fund the initial years of its watershed program through non-ratepayer sources such as state and private grants, buying valuable time to lay the groundwork for an modest rate increase via a public campaign to convince users of the need. Other cities such as Phoenix and Ashland have limited their consideration to voluntary opt-in programs. There is some suggestion, however, that the willingness of users to pay for watershed health has been underestimated—particularly when users become educated about the link between the water from their faucets and upland watersheds. A recent survey by The Nature Conservancy found that over 80% of Santa Fe area ratepayers would support a rate increase of 65 cents a month for watershed protection.

V. EXAMPLES OF WATERSHED INVESTMENT PROGRAMS

Following are brief snapshot descriptions of some notable watershed investment programs from around the West. While this does not purport to be a comprehensive list of every such program, it does capture the most prominent examples, and gives a representative cross-section of the types of programs in existence (please see Appendix for more detail).

Water Utility Programs

Most watershed investment programs in the West are administered by water utilities that supply municipal water to urban areas. Water utilities have a direct interest in maintaining watershed health, since doing so can save them literally millions of dollars in treatment costs. In addition, because they already communicate regularly with their customers via monthly bills, utilities are uniquely positioned to make the financial and educational connection between water users and the upstream watersheds that provide their water. Following are some leading examples of watershed investment programs at water utilities across the West.

• *Denver, CO*

One of the most prominent recent examples of a watershed investment program is the Forest-to-Faucet Partnership between Denver Water and the US Forest Service. This program had its origins in the aftermath the Buffalo Creek and Hayman Fires that struck the South Platte watershed in 1996 and 2002, respectively. Erosion and sediment loading from areas burned by these fires have forced Denver Water to spend some \$40 million in dredging, water treatment, and other costs. To prevent a recurrence of this, the utility partnered with the Forest Service to assess and prioritize the threats to watershed health in the key watersheds—encompassing thousands of acres—that supply the city’s water. In August 2010, the two agencies signed a memorandum of understanding in which they agreed to equally share the cost of \$32 million of on-the ground treatment projects over five years. The vast majority of these projects are aimed at reducing the risk and severity of wildfires, largely by thinning and prescribed burning. The MOU also leaves the door open to more conventional sediment-reducing projects such as road and culvert removal. Projects will take place on both Forest Service land (the majority of the land in the watersheds) and on land owned by Denver Water itself. Work on these projects began in Spring 2011. To pay its share of the bill, Denver Water intends to roll the cost into a rate increase at some point in the future.

More information: www.denverwater.org/supplyplanning/watersupply/partnershipUSFS

• *Aurora, CO*

Aurora Water, which provides water to over 300,000 people in the Denver metro area, relies on many of the same watersheds as its sister utility Denver Water—and has taken a similar hit in the pocketbook from catastrophic wildfire. In August 2011, the Aurora City Council approved a memorandum of understanding with the National Forest Foundation and Forest Service, in which the city has committed \$500,000 over the next two years to help restore 45,000 acres of Forest Service land that was burned by the Hayman fire. The total cost of the \$4.6 million project will be split evenly between the Forest Service and its eight private partners, including Aurora Water, Vail Resorts (see below) and the Gates Family Foundation. Aurora does not impose a separate rate surcharge for this program.

• *Salt Lake City, UT*

Perhaps the most established example of the watershed investment model can be found in Salt Lake City, Utah, where city residents have been actively involved in the management of the Wasatch Front watersheds that provide most of their municipal water for more than a century. In 1905, Chief Forester Gifford Pinchot came to Utah to discuss the importance of protecting these watersheds, 80% of which lay within the newly-created National Forest System—with city officials. Under state law and an agreement with the Forest Service, the city has extra-territorial jurisdiction to make and enforce ordinances throughout its municipal watersheds, which include City, Parleys, and Big and Little Cottonwood Creeks. Using this authority, the city places carefully-drawn limits on development and recreational use in the 185-square-mile area of these watersheds. In 1988, it adopted a Watershed Master Plan, which includes a dedicated fund financed by a \$.50 (now \$1) surcharge on every water bill and earmarked for land acquisition within the watersheds. To date, the city has used this fund to purchase over 1,200 acres. In addition, the city has kept a careful eye on proposals for new development on both private and Forest Service land within the watersheds, and has used federal and state processes to propose solutions that balance reasonable development with watershed protection. These include, most recently, the proposed Wasatch Wilderness and Watershed Protection Act of 2010 (HR 5009), currently pending in Congress. All management and land acquisition programs are financed directly by municipal ratepayers as part of their normal water bills.

More information: www.slcgov.com/utilities/ud_watershed.htm

• *Eugene, OR*

The McKenzie River is the sole source of drinking water for the 200,000 residents of Eugene, Oregon. Although three-fourths of the watershed is in public ownership, a major source of the water quality concerns of the Eugene Water and Electric Board (“EWEB”) originate on private land—particularly within the valuable riparian corridors that are largely devoted to farms and forest products, and residential development. EWEB now devotes some \$500,000 per year of ratepayer funds to a variety of programs focused on improving the management of private riparian lands. These include helping homeowners

convert from individual septic tanks to more-effective collective treatment systems, to helping organic farmers find secure markets for their products, to paying landowners for better long-term management of streamside lands. EWEB also works closely with the two National Forests in the watershed to ensure that timber harvest and restoration activities are planned in a way that fully considers impacts and benefits to downstream water quality in the McKenzie. EWEB's watershed protection activities are rolled into its overall water rates.

More information: www.eweb.org/waterquality/protection

• *Santa Fe, NM*

Santa Fe's watershed investment program had its inception following the disastrous Cerro Grande Fire in 2000, which began as a Park Service prescribed burn that got out of control, caused many millions of dollars of property damage, and made national headlines for several weeks. The fire prompted Santa Fe officials to begin thinking about the vulnerability of the Santa Fe River watershed, which supplies about one-third of the city's water, to a similar event. Using a \$50,000 grant from the Forest Service's New Mexico Collaborative Forest Restoration Program, the city developed a comprehensive watershed management plan with four basic components: water management, vegetation management, education, and funding. The plan calls for different treatments in different parts of the watershed, whose forest types range from high-elevation wilderness to mid-elevation ponderosa pine, to lower-elevation pinion/juniper. Based on the plan, the city was able to obtain \$1.2 million in state funds to implement projects in the watershed. In 2010, the Forest Service completed an EIS for the work to be done on public land, which consists primarily of thinning and prescribed burns in ponderosa pine forests.

Because Santa Fe water customers pay relatively high rates compared to other Western cities, the city is taking a careful approach to funding the work called for in the watershed plan. The city is paying for the initial five years of work with grant funds, but is considering an eventual rate increase to fund long-term implementation of the program. To lay the groundwork for the increase, the city is conducting a public outreach campaign in cooperation with the Santa Fe Watershed Association and The Nature Conservancy. Initial work on the campaign has shown strong ratepayer support for a rate increase to implement the watershed plan.

More information: www.santafenm.gov/documentview.aspx?DID=4354
www.ncsu.edu/project/wildfire/santa_fe/reduction.html

• *Portland, OR*

The Bull Run watershed on the slopes of Mount Hood provides 90-95% of the drinking water to almost 900,000 residents of the Portland area. Over the years, a primary threat to water quality in the watershed has been logging—which, while initially banned in most of the Bull Run drainage by President Theodore Roosevelt in 1904, was re-instigated on Forest Service lands in the 1960s. In February 1996, heavy rains washed large amounts of sediment into the Bull Run storage reservoirs, forcing the Portland Water Bureau to shut down the system and temporarily switch to its emergency supply of groundwater. Congress subsequently banned logging in the watershed in the Bull Run Management Act of 1996.

The Portland Water Bureau now co-manages the Bull Run watershed with the Forest Service under a 2007 MOU, the Bull Run Watershed Management Unit Agreement, under which the city shares some of the costs for fire prevention, maintenance to control sediment from eroding roads, and water quality monitoring. The agreement also provides a process for collaboration on long-term management goals, while recognizing the different missions of the two agencies. While the logging ban and recent investments in watershed management have helped, water quality threats to Bull Run are not a thing of the past: turbidity again forced the bureau to switch to emergency groundwater supply for two weeks in the winter of 2011, and the Dollar fire threatened the watershed in September 2011, highlighting its continued vulnerability to large-scale wildfire.

More information: www.portlandonline.com/water/index.cfm?c=48915&

• *Tacoma, WA*

Tacoma Public Utilities (“TPU”) already invests substantial resources in protecting its primary source of water, the Green River watershed in southeast King County. Activities include land acquisition, coordinating forestry activities and road building on private and public land, and controlling public access. These activities are set forth in TPU’s Green River Watershed Management Plan.

To build on these existing activities, TPU is now considering an even more comprehensive approach to watershed management: the creation of a watershed investment district. The nexus for this idea came out of discussions for leveraging local dollars for salmon recovery, but the district would go well beyond salmon recovery, using a holistic approach to protecting watersheds by establishing payments for broader ecosystem services such as stormwater, and flood control. A key question is whether the district would be established with or without its own taxing authority. The former would provide a more stable funding stream, but would require authorization by the state legislature. The latter could be established at the county or local level, but would rely on inter-local funding arrangements. This approach seems to be gaining some momentum, as interest has been expressed by restoration policy/oversight groups in multiple watersheds and from a state agency, the Puget Sound Partnership.

More information: www.mytpu.org/tacomawater/water-system/supply/green-river-watershed/green-river-watershed.htm

• *Seattle, WA*

The City of Seattle represents a unique case among large western cities, in that it owns all the land within its two primary municipal watersheds—those of the Cedar and Tolt Rivers. Currently, Seattle is managing the Cedar River Watershed through a fifty-year initiative to restore and maintain the ecological balance and support wildlife within the riparian area. The initiative will discontinue logging practices, remove roadways, and contribute \$27.2 million towards restoration and conservation of wildlife and species management within the watershed, and \$6 million towards stream restoration projects. The management plan for the Tolt River watershed likewise emphasizes forestland management and wildfire prevention.

In implementing the Cedar and Tolt watershed plans, the city encountered an unusual and unexpected policy hurdle: Although many of the existing logging roads in the drainages are no longer needed, and are sources of sediment pollution, the city found that removing them could actually decrease its financial worth—at least on paper—because current accounting rules regard all roads as a valuable “asset,” even when they pose a harm to drinking water supplies. Seattle, joined by a number of its sister cities, is campaigning for a change in this rule. Seattle Public Utilities’ watershed investment activities are rolled into its regular water rates.

More Information: www.seattle.gov/util/About_SPU/Water_System/Water_Sources_&_Treatment/Cedar_River_Watershed/index.asp

Private Resort Programs

Although water utilities are by far the most common sources of watershed investment programs, an increasing number of private resort companies have started such programs as well, based on the recognition that they benefit from the services provided by healthy watersheds. Following are several of the most prominent such programs.

• *Vail Resorts – Vail, CO*

Since September 2006, Vail Resorts has collected a voluntary \$1 charge on season ski passes, online lift tickets, and hotel rooms and applied the funds, which are matched at a rate of 25% by the National Forest Foundation, to forest conservation projects on National Forest lands adjacent to its resorts in Colorado and California. The program now generates about \$500,000 annually for the National Forest Foundation’s Ski Conservation Fund. Vail Resorts’ policy is to use those funds to help finance at least one large-scale forest project a year. A prominent recent example is the \$200,000 that the company contributed in 2011 to the Homestake Creek rehabilitation project in Colorado’s White River National Forest, which included bridge and trail repairs, campsite rehabilitation, the cutting of beetle killed trees, and improving fish habitat.

Separate from its \$1 check-off program, Vail Resorts has also committed a total of \$750,000 to help restore 45,000 acres in the upper South Platte River area that were burned by the Hayman Fire in 2002. This work will include a variety of measures including forest thinning, riparian restoration, and planting of native species in four key watersheds—West Creek, Manitou Park, Lower Trout and Four Mile—all of which are tributary to the South Platte River, a major source of drinking water to the Denver metro area.

More information at: www.vaildaily.com/article/20100525/NEWS/100529800

• *Snowbird Resorts—Alta, UT*

Snowbird has an opt-out program, in which a one-dollar charge is added to each guest's bill to pay for watershed projects. Since the program's inception in 2006, the resort reports that not a single guest has opted out of the charge. Other area resorts have since picked up the program. Last year the program generated \$46,000, which is matched at a rate of 25% by the National Forest Foundation. The program has raised a total of \$196,600 to date.

Decisions on how to spend the funds are made by a three-member board consisting of Snowbird, the Forest Service, and the National Forest Foundation. The money is available for use by qualifying non-profit organizations that do work in the Little Cottonwood Canyon watershed. In practice, most funds have gone to the Cottonwood Canyons Foundation. Past projects have included trail work and youth education.

More information on projects: www.cottonwoodcanyons.org/stewardship/

• *The Sisters/Metolius Program—Sisters, OR*

This program is operated by five private lodges in the eastern Cascade region of Oregon. Of the five lodges, two are opt-in, one is added to the base rate, and two are opt-out. Two years into the program, the resort reports that not a single guest has sought to opt out. All guests are asked to donate \$1 per night.

The programs raise about \$20,000 a year. Funding is directed to the Whychus-Metolius Restoration campaign in the Deschutes National Forest, as agreed between the lodge owners and the National Forest Foundation. The main project to date has been a new trail connecting significant stops in the area. The trail's location and construction results in less sediment delivery to the river than the previous situation.

More information: www.sistercountry.com/_documents/returntoTwoRiver.pdf

Developing Programs

In the following communities, water utilities are exploring the possibility of creating watershed investment programs, and are engaging in some watershed protection efforts, but these efforts have not yet evolved into formal watershed investment programs.

• *Ashland, OR*

Ashland, a southwestern Oregon city of 22,000, is exploring the feasibility of an opt-in watershed investment program in partnership with the National Forest Foundation. The city is considering a contribution in the range of \$1-\$5 per month. Ashland had already been closely working with the Forest Service on watershed protection of its municipal watershed for several years, primarily on the Ashland Forest Resiliency Project, a burning and thinning project designed largely to reduce the threat of catastrophic wildfire in the Ashland area. The city views the prospective opt-in contribution plan, however, as a standalone program that would be used to fund smaller-scale activities. To date, some of the larger challenges to setting up the program have been internal—e.g., finding ways to properly collect, segregate, and account for the revenues under the city's existing accounting system, and persuading city officials and employees of the value of the program. Ashland is working closely with the National Forest Foundation in setting up the program.

• *Multiple Stakeholders in central Arizona: The Salt and Verde Rivers*

Numerous municipalities in the Phoenix metro area receive a large portion of their municipal water from the Salt and Verde River watersheds in central and eastern Arizona, which consist largely of Forest Service land. These cities saw a noticeable rise in water treatment costs due to elevated levels sediment and organic material following the massive Rodeo-Chediski Fire, which burned almost a half-million acres in the Salt River watershed in 2002, and fear similar effects from the Wallow Fire, which burned another large portion of the same watershed in 2011. The cities of Tempe and Scottsdale, joined by the Salt River Project, have strongly supported large-scale Forest Service restoration projects to create more natural fire regimes in the ponderosa pine forests that dominate at higher elevations in both the Salt and Verde watersheds. The largest and most recent example is the Four Forests Restoration Initiative covering 2.4 million acres of the Kaibab, Coconino, Apache-Sitgreaves, and Tonto National Forests.



APPENDIX—WATER SUPPLY, RATEPAYER BASE, AND WATERSHED PROGRAM INFORMATION FOR SELECTED WATER UTILITIES IN THE AMERICAN WEST

The following table is based on a survey of water utilities that **Carpe Diem West** conducted in the Summer of 2011, to determine the prevalence of watershed investment programs in the western United States, and to gather basic information to help identify potential communities for new programs.

This is by no means an exhaustive list of every program in the West that could be described as a watershed investment program, nor does it include related programs such as public education, water conservation measures, or programs directed at portions of watersheds that are not direct sources of municipal water. **Carpe Diem West** looks forward to revising and updating this list as it receives additional information about watershed investment programs.

State/City	Utility	Approx. Customer Base	Water Source	Watershed Investment Programs
ARIZONA				
Flagstaff	City of Flagstaff	65,000	Lake Mary watershed, groundwater	
Phoenix	City of Phoenix	1,600,000	Colorado, Salt, and Verde Rivers, groundwater	
Prescott	City of Prescott Water & Sewer	40,000	Groundwater	
Tempe	City of Tempe	172,000	Colorado, Salt, and Verde Rivers, groundwater	Joint efforts with Salt River Project and others to protect riparian areas; forest restoration on watershed following the Wallow Fire on Upper Salt River watershed
Tuscon	Tuscon Water	230,000	Colorado River; groundwater	
CALIFORNIA				
Bakersfield	City of Bakersfield Water Resources	130,000	Kern River	
Los Angeles	Los Angeles Dept of Water & Power	600,000	Owens River, Mono Lake Basin, Colorado River, Sacramento River	Owens River Project
Oakland	East Bay Municipal Utility District	1,300,000	Mokelumne River, East Bay watersheds, groundwater	Restoration programs in lower watershed
Sacramento	City of Sacramento	500,000	American River, Sacramento River, groundwater	

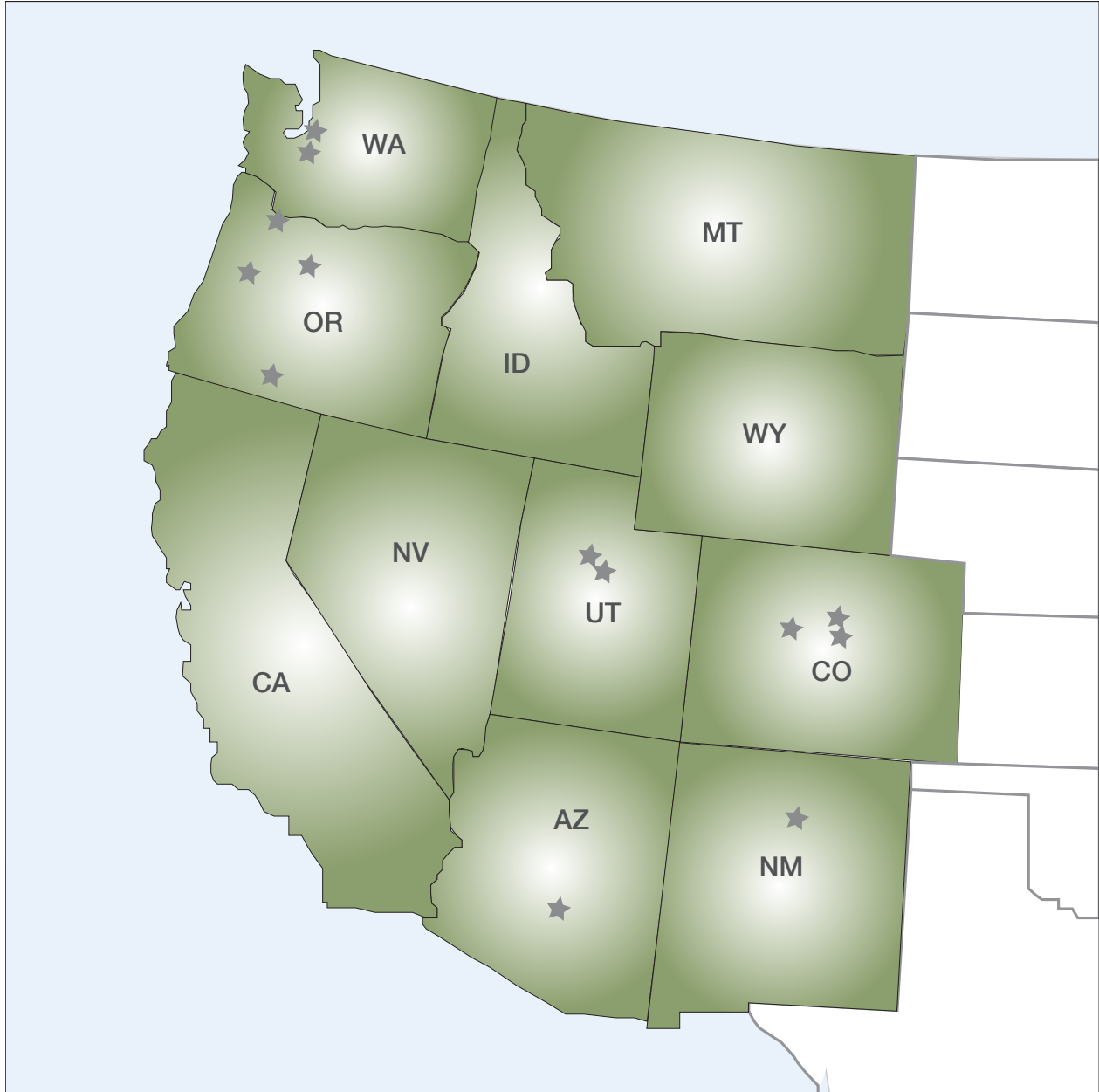
State/City	Utility	Approx. Customer Base	Water Source	Watershed Investment Programs
San Francisco	SF Public Utilities Commission	2,500,000	Tuolumne River, Alameda and Peninsula watersheds, groundwater	
San Jose	San Jose Water Company	1,000,000	Various Sierra Nevada streams, watershed in the Santa Cruz Mountains, groundwater	
COLORADO				
Aurora	Aurora Water	310,000	South Platte, others	Forest-to-Faucet Partnership
Boulder	City of Boulder	28,969	Boulder Creek, Upper Colorado River	Middle Boulder Creek Watersource Management Plan
Colorado Springs	Colorado Springs Utilities	133,463	Fountain Creek, others	Collaboration with USFS on planning issues
Denver	Denver Water	1,300,000	Colorado, South Platte, Blue, Williams Fork, Frazer Rivers, others	Forest-to-Faucet Partnership
Durango	Durango Public Works	20,200	Florida River, Animas River, groundwater	
Ft. Collins	City of Fort Collins	31,000	Cache la Poudre River, Michigan River, Colorado River	
Grand Junction	City of Grand Junction	60,000	Kannah Creek	Partnership with Forest Service
Pueblo	Board of Water Works	160,000	Arkansas River	
IDAHO				
Boise	United Water	250,000	Boise River	Conservation partnership with Idaho Waters United
Meridian	City of Meridian	26,000	Groundwater	
Idaho Falls	City of Idaho Falls	24,000	Groundwater	
Pocatello	City of Pocatello	16,200	Groundwater	
Coeur d'Alene	City of Coeur d'Alene	45,000	Groundwater	
Twin Falls	City of Twin Falls	74,000	Groundwater	
Lewiston	City of Lewiston	32,000	Groundwater	
MONTANA				
Billings	City of Billings	100,000	Yellowstone River	

State/City	Utility	Approx. Customer Base	Water Source	Watershed Investment Programs
Bozeman	City of Bozeman	40,000	Bozeman, Sourdough Creek, Lyman Creeks	Partnership with Forest Service
Butte	City of Butte	35,000	Big Hole River	Partnership with Forest Service
Great Falls	City of Great Falls	60,000	Missouri River	
Helena	City of Helena	11,000	Ten Mile Creek, Missouri River, groundwater	
Missoula	Mountain Water Company	66,000	Groundwater	
NEVADA				
Las Vegas	Las Vegas Valley Water District	2,000,000	Colorado River (Lake Mead)	
Reno	Truckee Meadows Water Authority	330,000	Truckee River	
OREGON				
Ashland	City of Ashland	20,000	Ashland Creek	Voluntary \$1 surcharge program in development
Corvallis	City of Corvallis	160,006	Willamette River, Rock Creek Watershed	Corvallis Forest Stewardship Plan; upland meadow restoration
Eugene-Springfield	Eugene Water & Electric Board	200,000	McKenzie River	McKenzie Watershed Plan
Portland	Portland Water Bureau	184,000	Bull Run River, groundwater	Bull Run Watershed Management Plan
Salem	City of Salem	177,000	North Santiam River	
Medford	City of Medford	131,000	Big Butte Springs Watershed, Rogue River	
NEW MEXICO				
Albuquerque	Albuquerque Bernalillo County Water Authority	500,000	San Juan-Chama/Colorado River, groundwater	
Las Cruces	City of Las Cruces	100,000	Groundwater	
Roswell	City of Roswell	46,000	Groundwater	
Santa Fe	Sangre de Cristo Water Division	32,000	Santa Fe River, groundwater	Santa Fe Water Fund
UTAH				

State/City	Utility	Approx. Customer Base	Water Source	Watershed Investment Programs
Salt Lake City	SLC Public Utilities	500,000	7 Wastach Front creeks, groundwater, Central Utah Project	Salt Lake Watershed Management Plan, MOU with Forest Service, Watershed Purchase Fund
Provo	Provo Water Resource Division	110,000	Provo & Rock Canyons; groundwater	Watershed protection ordinance
Orem	Orem City	21,228	Deer Creek; groundwater	
St. George	City of St. George	70,000	Virgin River; groundwater	
WASHINGTON				
Seattle	Seattle Public Utilities	1,400,000	Cedar & Tolt River Watersheds	Cedar River HCP; Tolt River Management Plan
Spokane	City of Spokane Water Department	200,000	Groundwater	
Tacoma	Tacoma Public Utilities - Tacoma Water	97,000	Green River; groundwater	Green River Watershed Management Plan
Vancouver	Clark Public Utilities	30,000	Salmon Creek	
Walla Walla	Walla Walla Water Division	60,000	Mill Creek	
Yakima	City of Yakima	65,000	Naches River	
WYOMING				
Sheridan	City of Sheridan	17,000	Big Goose Creek; groundwater	

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EXAMPLES OF WATERSHED INVESTMENT PROGRAMS
MUNICIPAL AREAS IN THE WEST



Carpe Diem West leads a network of water decision makers and scientists in the American West that is developing collaborative, innovative actions and policies to create water security for our communities, the food we grow, our economy and our environment.

Healthy Headwaters Project

Carpe Diem West's Healthy Headwaters Project is an alliance of upstream land managers, downstream water utilities, and conservation advocates whose goal is to increase the climate resiliency of the headwaters systems that provide the West's drinking water.

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