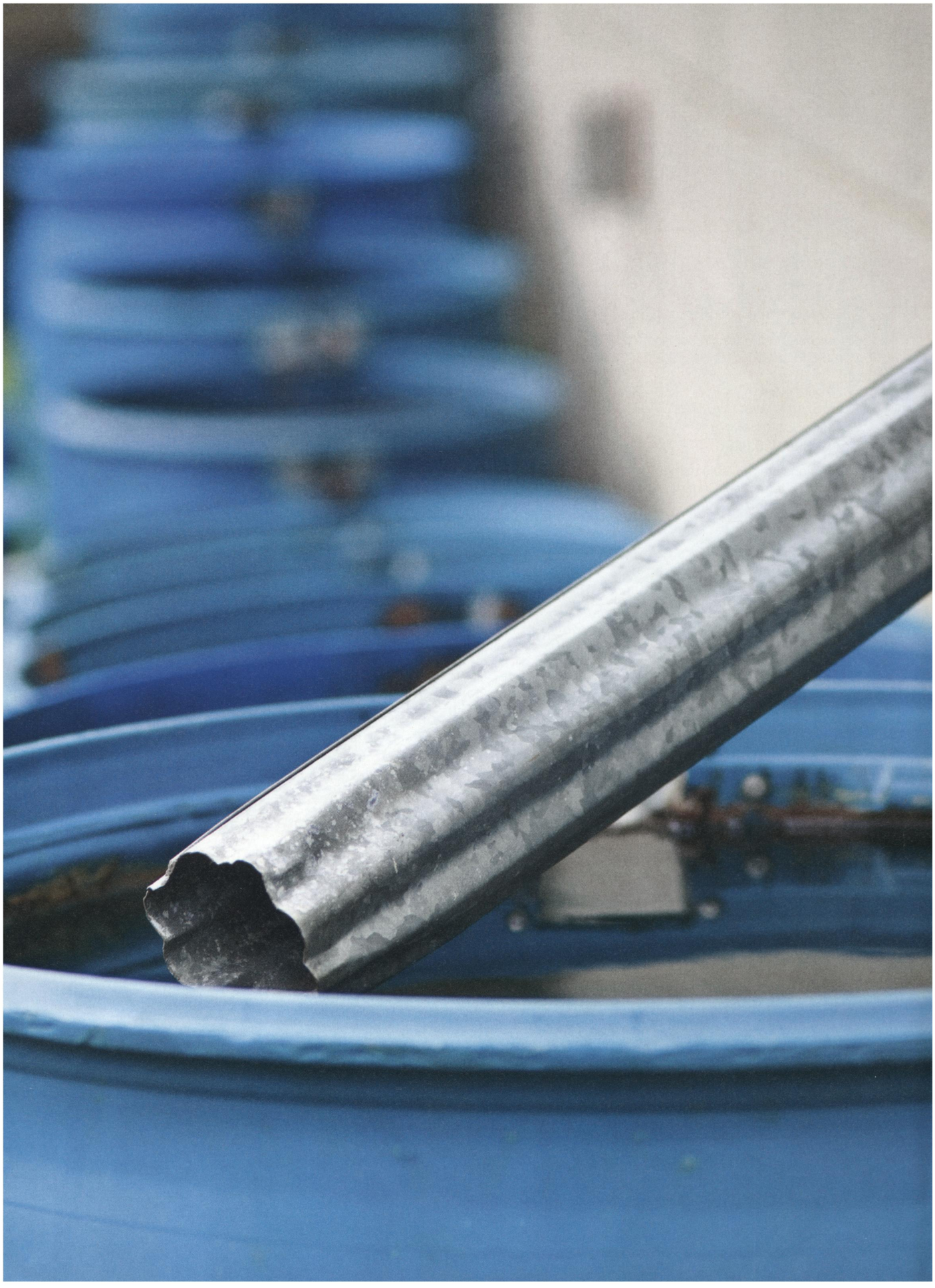

Who owns the rain?

Water rights for rainwater harvesting

James E. Scholl

Rainfall is a diffuse and natural resource that falls on all land surfaces as part of the hydrologic cycle. Harvesting rainwater is a physical process that requires landowners to manage the impacts on downstream users.

In many cities, this practice is gaining new visibility as a means to control wet weather management needs and provide cost-effective, sustainable stormwater management solutions. However, water rights precedents and allocation practices can establish legal constraints that may limit the ability of property owners to harvest the rainwater that falls on their property.

In general, the water rights limitations on harvesting rainwater occur in Western U.S. states (Colorado, California, Washington, New Mexico, and Utah). The basic premise for water rights is the doctrine of prior appropriation, which is derived from the statement "first in time equals first in right."

This means that a senior water rights holder has priority for a water allocation, and if the harvesting of rainwater could limit the ability of the senior water rights holder to gain access to that water allocation, the harvesting must be limited to stay within the accepted priority allocation for the senior holder.

Several water rights issues have to be considered when a rainwater harvesting system is used as a water supply source or management practice. The scenarios below demonstrate the differences among state and local jurisdictions.

Who owns the rain?

Rainfall falls freely from the sky, is dispersed across the land, and is conveyed to streams, rivers, lakes, and groundwater supplies. In essence, the natural systems harvest the rainwater for various functions and offer opportunities to use it. Because there are significant variations in the availability of water in space and time, the approach to manage, regulate, and allocate water varies with the relative availability of water. Concerns about harvesting, therefore, are more significant in areas with limited water than in those with more abundant access to water.

Limitations on the rainfall capture amount typically are not a concern when the amount taken is small. However, there is no clear legal threshold to define when the volume harvested becomes a concern and legal action is applied.

For example, using a few rain barrels to capture water for gardening or targeted landscape irrigation is not likely to be significant, although under a rigorous interpretation, it may not be legal. As the scope of a harvesting system expands to include rooftop capture and cistern storage, the volume and effect become more significant.

The approach to evaluating legal concerns with regard to rainwater harvesting matches the difference in water law between the Eastern and Western United States. In the Eastern states, where water is more abundant, homeowner access to rainwater generally is not viewed as being in conflict with other uses. Reasonable accumulation and use is accepted. In fact, it often is promoted as a method to accomplish sustainable stormwater management in urban drainage systems, as this can help restore more-natural hydrologic functions to manage peak flows and improve water quality. The legal framework in the Eastern states is known as "riparian rights," which allocates water to landowners having access to the water.

The most significant example in the West is the Colorado River, which is overallocated to the states that have drainage areas within the river basin. A key reason for the overallocation and doctrine of prior appropriation is the limited availability and access to water. In this situation, any harvesting could result in reducing the ability to achieve water rights.

Concerns about the potential of rainwater harvesting to reduce the availability of water are more significant in urban areas than in rural ones – although limited definitive data exist to justify a specific position, and each water system is unique. The best outcome will require watershed-specific evaluations. The evaporation process and soil–water interface typically represent the majority of abstractions from the annual water budget. So, the amount extracted by harvesting should be manageable.

Colorado

In Colorado, the diversion and use of rainwater is subject to the state constitution, state statutes, and case law. The use of water is governed by the prior appropriation doctrine, which controls who uses how much water, what types of uses are allowed, and when those waters can be used. In practice, this is referred to as the "priority system," or "first in time, first in right."

Water appropriations occur when an individual physically takes water from a stream or well (when legally available) and applies it for beneficial use. The first person to use water and receive a court decree verifying his or her priority status becomes the senior holder of a water right. In Colorado, the state engineer and director of the state division of water resources have the statutory obligation to protect all vested water rights.

Green roofs like this one in Singapore's central business district capture rainwater to help lessen the effects of stormwater on sewer systems.
Malcolm Pirnie

The allocation system is complicated, as many stream systems are overallocated, and senior water rights often were established in the mid-1800s. When a stream is overallocated, the diversion of rainwater requires a plan for augmentation that replaces the depletions associated with a harvesting diversion, if depletions are likely to occur. Because of this potentially limiting issue, the state made legislative changes to allow rainwater harvesting for certain activities. One provision allows harvesting in rural areas where a public source of water is not available, and another established a limited number of pilot projects to apply and evaluate rainwater harvesting in subdivision developments.

For rural applications, rainwater harvesting can be accomplished by residential properties that are supplied by a well (or could qualify for a well permit). Landowners must complete a permitting process through the division of water resources. To qualify for a permit, the applicant must meet a minimum of the following criteria:

- The property on which the collection takes place is residential property.
- The landowner uses a well or is legally entitled to a well for the supply of water.
- The well is permitted for domestic uses, according to Secs. 37-92-602 and 37-90-105, *Colorado Revised Statutes*.

- There is no water supply available in the area from a municipality or water district.
- The rainwater is collected only from the roof.
- The water is used only for only those uses that are allowed by and identified on the well permit.

The pilot-project process is established to allow developers to apply for approval to be one of 10 statewide projects that harvest rainwater and put it to beneficial but nonessential use in the subdivision. The project also must operate according to an engineered plan submitted to the state engineer for approval and subsequently through the water court. It does not allow individual homeowners to harvest rainwater.

Seattle

Technically, harvesting rainwater from a roof is illegal in the state of Washington, since the collected water is considered a resource of the state and is regulated as public waters. Although there are legal restrictions, state officials allow homeowners to harvest limited amounts of rainwater without legal action. There is limited clarity about how much is acceptable, and the threshold for illegal amounts is not defined. To eliminate this uncertainty, the City of Seattle obtained a citywide water-right permit enabling its citizens to legally collect roof runoff in most areas of the city.

Salt Lake City

Utah has a legal limit on harvesting rainwater that was challenged in August 2009, when a car dealership built a rainwater harvesting system for roof runoff to provide water for car washing. In response, the Utah Legislature made changes to allow rainwater harvesting but limits the size of catchment storage to 9460 L (2500 gal).

Arizona

The City of Tucson has adopted a local mandate requiring rainwater harvesting for all landscape irrigation activities on commercial properties, including apartment complexes. The mandate sets a performance standard that requires facilities to provide at least 75% of the water used for landscape irrigation using rainwater capture systems. This standard must be met within 3 years of legally occupying the premises.

In addition, the State of Arizona has eliminated legal constraints and promotes the use of rainwater harvesting. It even offers a one-time tax credit of 25% of the cost of rainwater systems up to $1000.

Controlling the rain

Rainwater harvesting has been practiced for many years and is gaining increased use as a means of controlling wet weather wastewater and urban stormwater management. With increased use, there is potential for the cumulative amounts of rainfall capture to affect existing water users if the water available for those uses is reduced.

Any practice to capture rainfall directly can improve the opportunity for beneficial uses of the water, especially in urban areas. If the primary beneficial use is irrigation, then the harvesting methods should improve recharge and could support a more natural pattern of runoff as rainwater is stored and released later with more opportunity for infiltration and thus for feeding back to the rivers and groundwater. Therefore, the outright prohibition of rainwater harvesting in urban areas with water rights limitations deserves further consideration.

James E. Scholl *is vice president of Malcolm Pirnie, the Water Division of ARCADIS (Denver).*