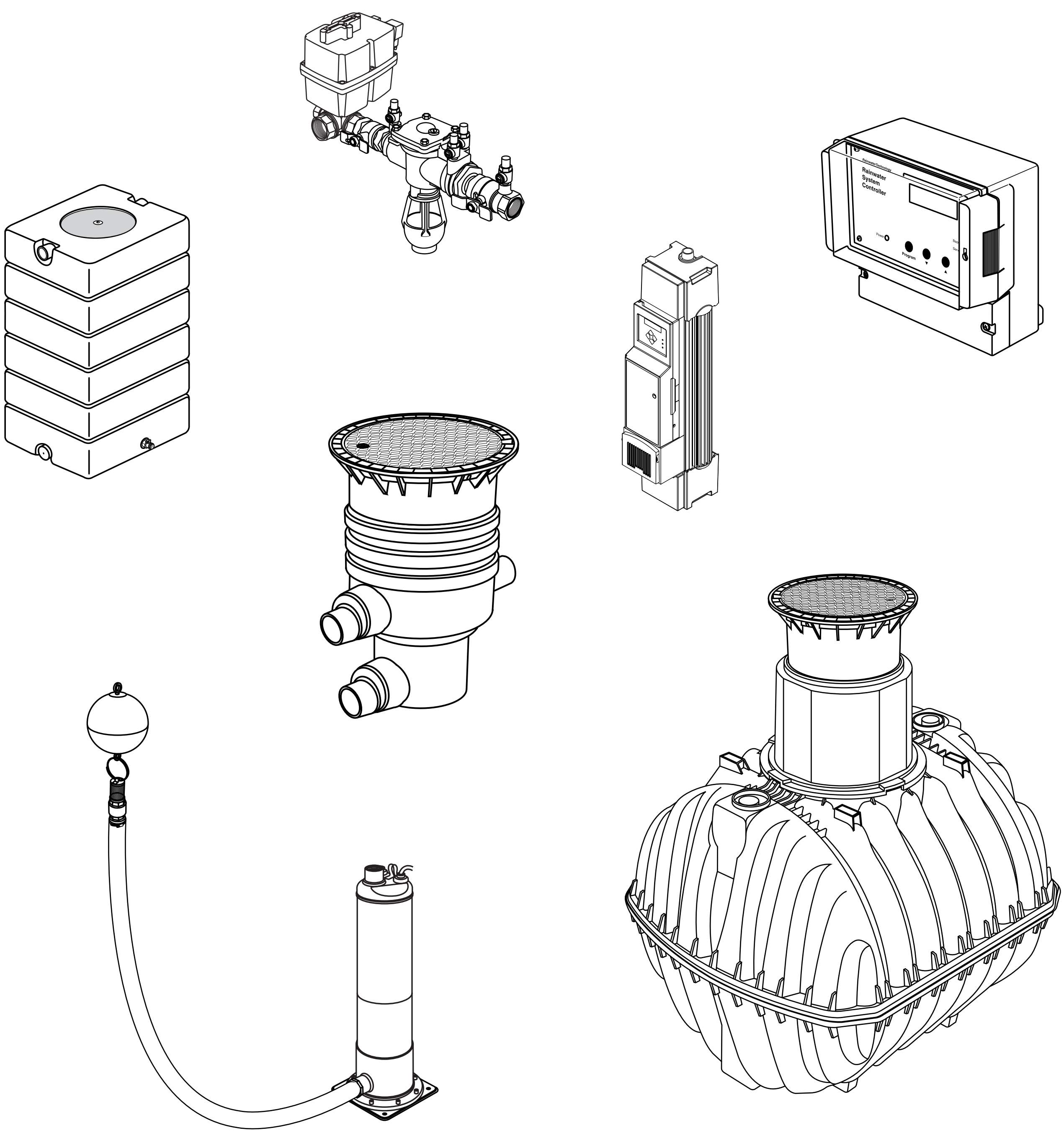
RAINWATER HANDBOOK



GENERAL INFORMATION

ABOUT OUR COMPANY: Conservation Technology has supplied state-of-the-art technology for rainwater harvesting, green roofs, landscape water features, rubber membrane waterproofing, and energy-efficient building since 1984. We design, manufacture, and distribute an extraordinary range of products, many of which are not available elsewhere. For more information about our product lines, please visit our corporate website: www.conservationtechnology.com.

Our Rainwater Harvesting division offers a unique selection of tanks, filters, pumps, controls, sterilizers, backup integration systems, and other engineered rainwater harvesting products. We are experts in storage technology, pump engineering, and filter design and can provide complete technical support and one-stop product sourcing for projects of any size, anywhere in the world.

CONTENTS OF THIS HANDBOOK:

TECHNICAL ASSISTANCE: We have tried to convey a considerable amount of information in this brief handbook, some of which is fairly technical. Rainwater harvesting systems integrate storage, fluid handling, and electrical systems, often a complicated task. We are pleased to offer skilled design and technical support for any rainwater project without charge. Just call for assistance, fax a simple sketch of your project, or email sales@conservationtechnology.com.

PRICING AND DISCOUNTS: We primarily sell to the trade at pricing based on yearly volume. If you are a contractor, dealer, or distributor, please contact us for a current price sheet. If you are an end-user, please contact us for assistance locating a local contractor or dealer. If we do not have a local contractor or dealer, we will sell direct.

PAYMENT: Our minimum order is $25. We accept Mastercard, VISA, Discover, American Express, checks, bank drafts, money orders, or wire transfers. Credit terms are available for dealers and distributors only.

HOURS OF OPERATION: We're open Monday through Friday from 8:30 AM until 5:30 PM Eastern time, often later. If you contact us by telephone, fax, or email, please remember to supply your telephone number and to indicate when you can be reached during both business and evening hours.

PICKUPS: You are welcome to visit our Baltimore warehouse at 2233 Huntingdon Avenue to pick up merchandise, but please place your order by telephone before you visit and ask for directions. We do not currently have a showroom, but can arrange to demonstrate items from stock by advance arrangement.

SHIPPING: Since we try to stock everything we sell, we usually ship very quickly. Many products such as pumps, small filters, valves, and controls can ship by UPS. With the exception of our RainBox which can ship UPS, all tanks must ship by truck, but our substantial truck discounts permit us to offer very reasonable rates to almost any point in North America. Please note, however, that truck shipments to residential addresses can be significantly more expensive than shipments to commercial addresses, and someone must be available to unload and inspect the merchandise. It's always best to arrange for a commercial delivery address or to request shipment to the closest truck terminal (we can locate a terminal in your area).

INSPECTING TRUCK SHIPMENTS: Although we rarely have shipping damage, it is essential that you inspect all truck shipments thoroughly before signing the freight bill, note any damage on the freight bill, and call us within one business day to report the damage. If you follow this procedure, we will guarantee free repair materials in the event of minor damage, and free replacement in the event of major damage. If you fail to note damage before accepting a truck shipment, you may be denied this protection, so insist on taking the time for a thorough inspection.

CONSERVATION TECHNOLOGY

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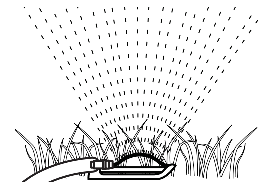
2233 Huntingdon Avenue Baltimore MD 21211

INTRODUCTION

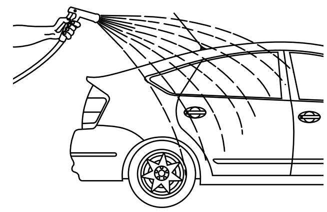
REASONS TO HARVEST RAINWATER Harvesting rainwater makes sense for a variety of economic and environmental reasons:



watering plants

• Rainwater is an economical alternative to public water, especially for exterior water uses such as landscape irrigation that require minimal filtration. Although initial equipment installation can be significant, long-term costs are minimal.

• Rainwater can supplement limited ground water resources. With reduced extraction rates, low-yield ground water wells and springs can last indefinitely. Rainwater can also supplement surface water resources threatened by rapidly growing municipal water use. Rainwater harvesting could significantly reduce water extraction rates from rivers during critical summer months, ensuring adequate water remains to support native ecosystems.



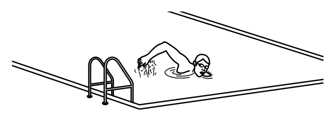
washing cars and boats

• Rainwater is often the only viable water source in arid regions or on islands where other water sources may be high in salt, limited in availability, or very expensive.

• Rainwater is low in minerals, so it is ideal for laundry, dishwashing, hair washing, and car washing. Since it contains no chlorine, rainwater is also ideal for filling garden ponds and irrigating sensitive plants.

• Rainwater is not regulated by municipal water restrictions. During periods of drought, rainwater can protect investments in landscaping, garden ponds, and swimming pools.

• Rainwater can cause leaky basements, eroded foundations, overflowing sewers, soil erosion, and water pollution. Harvesting rainwater can eliminate these problems while eliminating the need for expensive stormwater controls.



filling pools and ponds

Following is a very general introduction to rainwater harvesting. Please contact our technical staff for assistance in specific system design for your climate and needs.

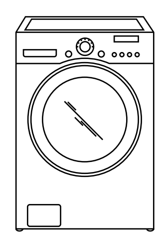
RAINWATER AVAILABILITY: Although rainwater can be harvested from virtually any surface, bare rooftops generally yield the best quality rainwater with the least treatment. Not all of the rainwater that strikes a roof can be captured: water is lost from evaporation, blowing wind, overflowing gutters, and leaky collection pipes, first-flush devices, and self-cleaning filters. The net available rainwater from a bare roof can be roughly estimated as follows:

available rainwater (gallons) = 0.5 x rainfall (inches) x area (square feet)

flushing toilets

Monthly and yearly rainfall data for 300 weather regions of the United States, Puerto Rico, and the US Virgin Islands can be found in the table AVERAGE RAINFALL at the end of this publication. As a general observation, in the continental US yearly rainfall averages 10 to 30 inches in the western states, 20 to 40 inches in the central states, and 30 to 50 inches in the eastern states, with widely varying amounts in some mountain and coastal areas such as the Pacific Northwest. Consequently, in terms of roof area, the available annual rainfall would be

available rainwater, eastern states = 15 - 25 gallons per square foot
available rainwater, central states = 10 - 20 gallons per square foot
available rainwater, western states = 5 - 15 gallons per square foot



washing clothes

In the eastern states rainfall is relatively evenly distributed throughout the year; in the western states rainfall is concentrated in the winter months; and in the central states rainfall is concentrated in the summer months. This has important consequences for rainwater system sizing.

SIZING A RAINWATER HARVESTING SYSTEM: On average, Americans use 70 gallons per person per day to operate toilets, showers, clotheswashers, sinks, and other water-using fixtures and appliances. By replacing fixtures and appliances with modern water-efficient versions and repairing leaks, water usage can be reduced to less than 50 gallons per person per day. Comparing demand for water with the availability and pattern of rainwater yields the following very rough "rules of thumb" for rainwater systems used to provide a meaningful percentage of household water demand:

showering
and bathing

for each person, eastern states: 500 square feet of roof + 1000 gallons of storage
for each person, central states: 750 square feet of roof + 2000 gallons of storage
for person, western states: 1000 square feet of roof + 4000 gallons of storage

Determining requirements for irrigation is more complex because irrigation water usage can be greatly reduced by selecting native plants, or plants that thrive in regions with similar climates. In general, dry-climate plants thrive with one-half inch of rainfall per week, temperate-climate plants with one-inch of rainfall per week, and wet-climate plants with one and one-half inches of rainfall per week. Converting this to gallons:

for irrigation of dry-climate plants (gallons/week) = 0.3 x area (square feet)
for irrigation of temperate-climate plants (gallons/week) = 0.6 x area (square feet)
for irrigation of wet-climate plants (gallons/week) = 0.9 x area (square feet)

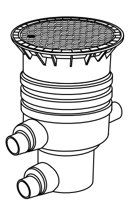
As examples, for temperate climate plants such as typical vegetables, ornamentals, and lawn grasses grown in the eastern states, a 10 ft x 10 ft vegetable garden would do well with 0.6 x 100 square feet = 60 gallons per week which could be supplied by a small section of roof feeding a few rainbarrels; a 10 ft x 100 ft strip of ornamentals might need 0.6 x 1000 square feet = 600 gallons per week which could be supplied by a typical house roof feeding a 1000 to 2000 gallon tank, but a quarter-acre (10,000 square feet) of lawn grass could use 0.6 x 10,000 square feet = 6,000 gallons of water per week, a quantity that is beyond the capacity of most rainwater harvesting systems.

MECHANICS OF HARVESTING RAINWATER FROM ROOFS: It's possible to harvest rainwater from roofs, parking areas, pavement, lawns, and almost any other surface, but roofs typically yield the best quality water at the lowest cost. The type of roof surface is of little consequence when rainwater is to be used for irrigation or other exterior water uses, but when rainwater is to be used for interior water uses, it is preferable to use relatively inert materials such as painted metal, terra cotta tile, cement tile, stone, and elastomeric membranes instead of composite shingles, bituminous membranes, and asphalt coatings. Nevertheless, rooftop debris usually poses a greater water-quality problem than the roofing material, and water from any roof can be treated to drinking-water quality without great expense.

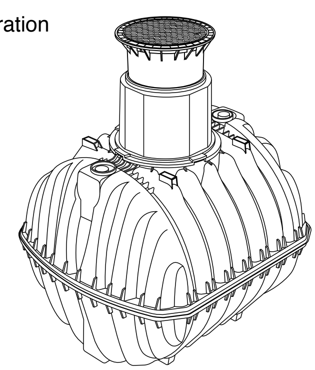
Gutter and downspout sizing for rainwater harvesting can follow standard practice, although it is advisable to oversize components in order to minimize the potential for overflow due to improper installation or settling. Gutter cap systems can be used to reduce the maintenance of pre-filters, but should not be considered as substitutes for pre-filters.

Rainwater systems are most economical when all the rainwater is conveyed to a central site for pre-filtration, storage, and pumping. Piping should be sized using conventional stormwater practice which means 4" pipe will suffice for most residential systems but 6" or larger pipe will be required for most commercial systems. A pitch of one-eighth to one-quarter inch per foot is recommended, but this sometimes poses a design challenge because the allowable burial depths of pre-filters and underground tanks are limited. Pipe connections should be watertight to prevent both water loss and infiltration.

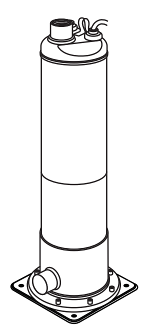
COMPONENTS OF A RAINWATER SYSTEM: A rainwater system should deliver clean water by simply opening a faucet or activating an irrigation valve, just like any other water supply system. In order to be reliable and effective, each component of a rainwater system must be specifically engineered for rainwater harvesting since off-the-shelf water system components are rarely suitable. Rainwater system components can be functionally classified as *pre-filtration*, *storage*, *pumping*, *treatment*, *backup integration*, and *measurement and control*, each of which is described on the pages that follow.



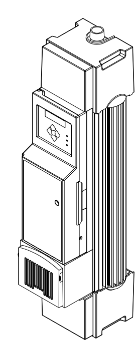
pre-filtration



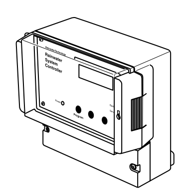
storage



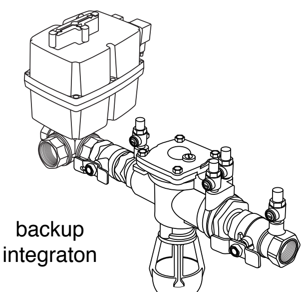
pumping



treatment



measurement
and control

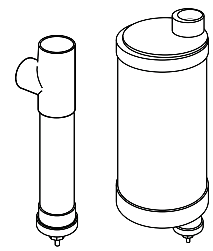


backup
integraton

PRE-FILTRATION

Rainwater captured from rooftops contains significant quantities of plant debris, soil, eroded roof materials, and other solids that can clog pumps, valves, and pipes. Mineral solids collect as sediment at the bottom of storage tanks, reducing tank storage capacity. Organic solids remain in suspension and decompose, depleting oxygen and generating hydrogen sulfide and other noxious by-products.

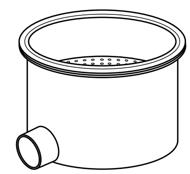
One way to improve the quality of rainwater is to install a “roof washer” or “first-flush diverter”, a device that discards the initial runoff from a roof before it reaches the storage tank. While this technique has some value in regions with extended dry seasons and short but intense rain storms, It is not very effective in regions where rainfall is distributed throughout the year or where rain is often an all day event. Regardless of whether a first-flush diverter is installed, it is essential to filter all of the rainwater with low-maintenance, high-rate, mechanical filters specifically developed for rainwater harvesting. Because rainwater harvesting needs are so varied, we offer three first-flush diverters and nine mechanical filters.



first-flush diverters

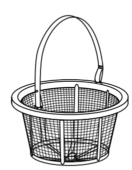
FIRST-FLUSH DIVERTERS: A *First-Flush Diverter* retains the initial runoff from a roof in a length of pipe that is capped at the end. When the pipe is filled, a ball or flapper shuts off the top of the pipe so that additional rainfall flows directly into the rainwater storage tank. The pipe cap has a small-diameter outlet that slowly releases the “first-flush” water so that by the next rain the pipe is empty and is ready to receive more water. We offer three sizes that utilize 3”, 4”, and 12” pipe for water storage.

POT FILTERS: A *Pot Filter* is the simplest rainwater pre-filters, simply a flanged plastic tray with a perforated bottom that covers the top of a large basin with a side outlet. A filter pad is placed over the perforations, the pad is covered with gravel, and the outlet is piped to a rainwater tank. Water from a downspout dumps onto the gravel which strains out leaves and coarse debris and then flows through the filter mat which retains solid particles as small as 1/64”. With minimal maintenance, a pot filter can capture and filter 100% of the rainwater from a single residential downspout. Normally Pot Filters are buried so that the top is flush with the ground surface, but they can be used above ground.

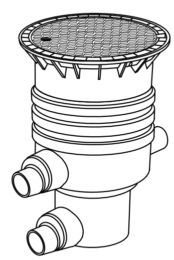


Pot Filter

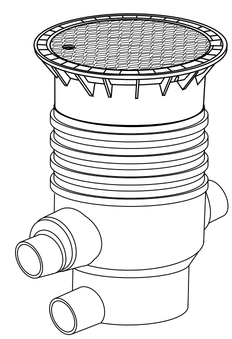
BASKET FILTERS: A *Basket Filter* consists of a large screened filter basket that fits within a plastic filter body. Water flows in through a top port, down through the basket, and out through a bottom port. A second port is provided at the top to allow overflow should the filter basket become full. We offer two sizes designed for direct burial, our *Small Basket Filter* can filter 100% of the rainwater from roofs up to 5,000 square feet, and our *Large Basket Filter* can filter 100% of the rainwater from roofs up to 12,000 square feet. For both, the basket is easily accessible through a removable manhole cover, and the burial depth is adjustable with a telescopic extension.



filter basket



Small Basket Filter

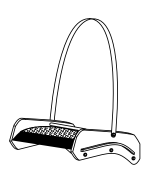


Large Basket Filter

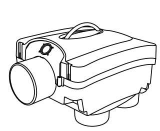
CASCADE FILTERS: In contrast with basket filters, *Cascade Filters* do not collect debris, but rather allow it to wash through the filter in order to minimize maintenance. This is achieved at the penalty of lower recovery rates, typically 95% depending on average rainfall intensity. Rainwater flows in through the top port and cascades over a curved, multi-level screened filter element positioned horizontally within a plastic filter body. Filtered water exits through one bottom port; debris is washed down the surface of the filter element and exits through a second bottom port.

We offer two sizes designed for direct burial, our *Small Cascade Filter* for roofs up to 5,000 square feet, and our *Large Cascade Filter* for roofs up to 16,000 square feet. For both, the filter element is easily accessible through a removable manhole cover, and the burial depth is adjustable with a telescopic extension.

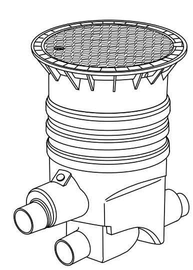
We also offer an *Internal Cascade Filter* that fits completely within the access dome of some rainwater tanks, such as our Carat and DoubleTorus. This compact filter is suitable for roofs up to 5000 square feet.



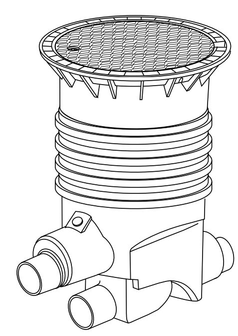
Cascade Filter Element



Internal Cascade Filter



Small Cascade Filter

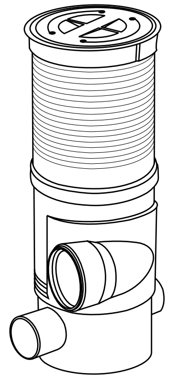


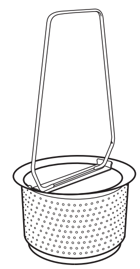
Large Cascade Filter

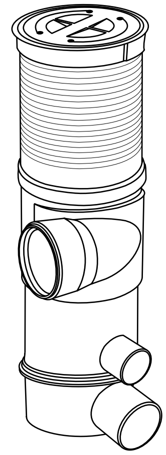
VORTEX FILTERS: Like Cascade Filters, *Vortex Filters* do not collect debris, but rather allow it to wash through the filter in order to minimize maintenance. Instead of a horizontal fllter element, they utilize a vertical filter element. Rainwater flows in through the top port, spins around the circumference of the filter body, and spills into the top of the filter element. A capillary effect draws water through the side walls of the filter element and this filtered water exits through the upper side port. Debris washes down, passes through the open bottom of the filter element, and exits through the lower bottom port. This design requires very little maintenance, but at the penalty of reduced capture efficiency, typically 85% to 90% depending on average rainfall intensity.

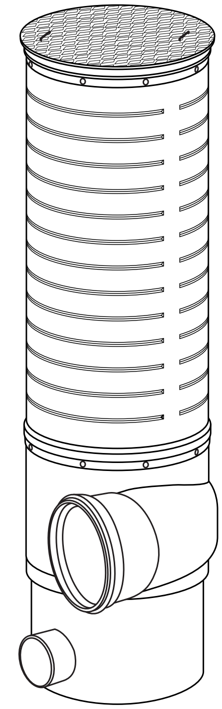
We offer three sizes, a *Small Vortex Filter* for roofs up to 2,500 square feet, a *Large Vortex Filter* for roofs up to 5,000 square feet, and a *Jumbo Vortex Filter* for roofs up to 30,000 square feet. Each can be used above or below ground. When installed underground, the burial depth can be adjusted with an extension section, and the filter element is easily accessible through a removable manhole cover.

NOTE: In regions with long dry seasons followed by periods of intense rainfall, such as the American Southwest, we recommend reducing the maximum roof surface area listed for all filters by as much as 50%.


Small Vortex Filter


filter element

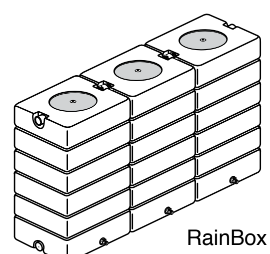

Large Vortex Filter


Jumbo Vortex Filter

STORAGE

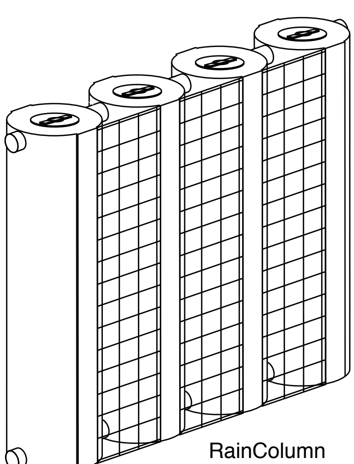
Storage is usually the most expensive component of a rainwater system and often determines the type of filtration and pumping system. We provide a wide range of storage solutions from a 75 gallon consumer tank to custom-designed modular systems capable of storing millions of gallons to run large commercial or multi-family structures or irrigation systems.

SURFACE STORAGE: Free-standing plastic tanks offer the least expensive means of rainwater storage, are available in a wide range of sizes, and are relatively easy to install. On the other hand, they have many liabilities. Plumbing and pre-filtration can be problematic when surface tanks are used for large roofs with multiple downspouts. Without expensive insulation systems, surface tanks must be drained for the winter in cold climates. In hot humid climates where nighttime temperatures do not drop significantly, water stored in surface tanks can get quite warm, accelerating biological activity. Since surface tanks are exposed to the weather, they have finite life spans that must be factored into the cost evaluation. Large surface tanks are very difficult to conceal, although sometimes they can be incorporated as a dramatic building design element.

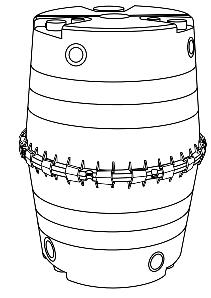

RainBox system

RainBox, our smallest tank, is a rectangular “rainbarrel” that offers high-storage capacity and effective filtration in a very compact package (20” x 24” x 42”h). Each RainBox holds 75 gallons, but much larger systems can be easily assembled by joining multiple tanks using flexible couplings clamped to the built-in 2” high-flow top and bottom ports. Downspouts simply dump onto a low-maintenance 12” diameter filter pad built into the top of each unit which filters all debris larger than 1/64”. Water is typically drawn through a fitting at the bottom of each RainBox and flows by gravity to a garden or pond. A ball valve and hose adapter are standard; an external overflow is available as an option.

RainColumn is a tall cylindrical tank (24”d x 84”h) with a capacity of 150 gallons. Compact high-volume storage systems can be easily assembled by joining multiple tanks using flexible couplings clamped to the built-in 4” high-flow top and bottom ports. Each tank has a twist-lock lid with a built-in filter basket that also serves as an insect-proof venting system. Water enters the tank through the lid or the top ports and is typically pumped out through the bottom ports or through fittings installed in the flat surfaces on the front and back of each tank An optional powder-coated steel trellis bridges the space between adjacent tanks, making it possible to create a vine-covered “green wall” to conceal the tanks and create a privacy wall. An internal overflow system is also available.


RainColumn system with trellis

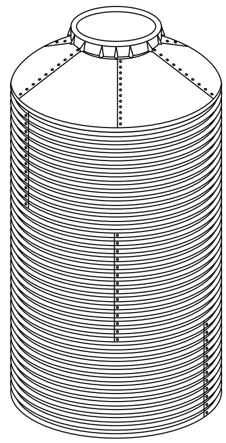
SuperBarrel is a barrel-shaped cylindrical tank (46"d x 63"h) that holds 350 gallons and assembles from two easily-transportable half-sections joined with a reliable gasket and clamping system. Multiple tanks can be connected using our ring gaskets. Since each section will pass through a 32" doorway, this system can be installed in basements or on accessible rooftops.



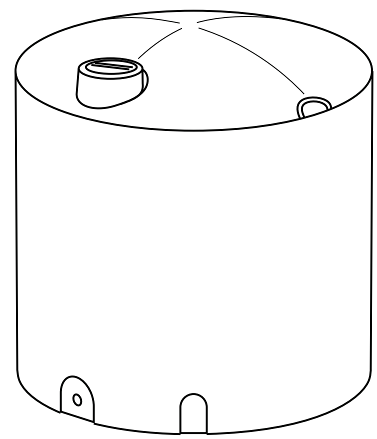
SuperBarrel

RainSilo-P is our largest series of surface plastic tanks. Standard sizes are 500 gallons (46"d x 90"h), 1050 gallons (86"d x 54"h), 1500 gallons (86"d x 69"h), 2000 gallons (90"d x 84"h), 2500 gallons (90"d x 103"h), and 3000 gallons (90"d x 120"h). Although they look similar to typical agricultural tanks, these are industrial-quality tanks with significantly thicker walls for long-term durability. All RainSilo-P tanks include a 16" twist-lock lid and a 2" threaded bulkhead fitting.

RainSilo-S tanks are cylindrical corrugated steel surface tanks available in diameters from six feet to more than one-hundred feet with capacities from 1400 gallons to more than one million gallons. The steel shell is heavily galvanized for long-term durability and each tank is supplied with a flexible, potable-grade internal waterproofing liner. Standard sizes in 6' diameter are 1400 gallons (7'3"h), 2200 gallons (10'9"h), 2900 gallons (14'4"h), 3700 gallons(17'11"h) and 4400 gallons (21'5"h). Standard sizes in 9' diameter are 3200 gallons (7'3"h), 4900 gallons (10'9"h), 6600 gallons (14'4"h), 8300 gallons(17'11"h) and 10,000 gallons (21'5"h). Roofs can be flat or conical.



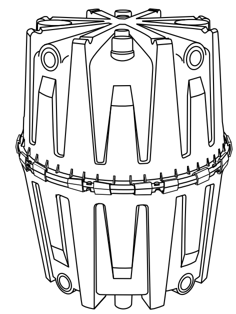
RainSilo-S



RainSilo-P

UNDERGROUND STORAGE: In contrast to surface tanks, underground tanks are invisible, are unaffected by freezing weather, and can last indefinitely. Plumbing and pre-filtration is straightforward, even for large roofs with multiple downspouts. Since underground tanks provide a cool, dark environment inhospitable to algae and microbial growth, they are always preferred when rainwater is to be reused inside buildings. On the other hand, underground storage is usually two to three times as expensive as surface storage and involves significant excavation which can be problematic for sites with large rocks or high groundwater.

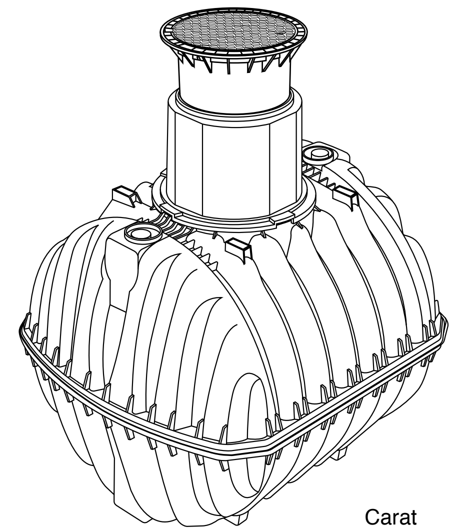
Typical underground plastic water storage tanks are simply septic tanks made with FDA grade plastics and re-labeled as cisterns. While these tanks may work well as holding tanks for low-yield wells, or as holding tanks for fire control, most are not sufficiently strong to remain empty for any period of time and are not suitable for rainwater storage systems. We offer a range of underground tanks suitable for rainwater storage, each of which has been engineered to remain empty indefinitely without risk of collapse. Most also include specialized features for rainwater harvesting such as accessways large enough to accommodate filters and controls or flat surfaces to permit large diameter penetrations both top and bottom.



Hercules

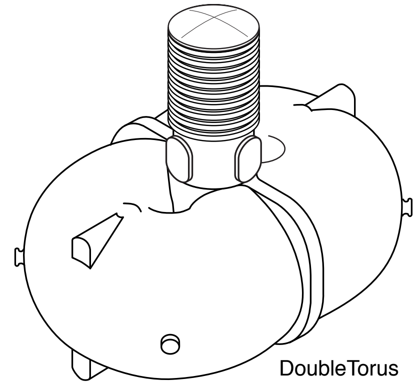
Hercules, our smallest underground tank, is a barrel-shaped cylindrical tank (52"d x 63"h) that holds 430 gallons and assembles from two easily-transportable half-sections joined with a reliable gasket and clamping system. An 8" pipe riser attaches to a top port to provide access for cleaning or for inserting a submersible pump. Multiple tanks can be coupled at the bottom and top. Hercules is also suitable for use as a surface tank, and since each section will pass through a 32" doorway, it can be installed in basements or on accessible rooftops.

Carat is a much more sophisticated two-piece tank with a full access system. A dome on top of the tank swivels in any direction and has sufficient space for an internal filter and controls. A telescopic extension with a sturdy lid slides into the dome and provides height adjustment. This tank is strong enough to be suitable for use under residential driveways and parking areas. We stock 1000 gallon (90"l x 69"w x 63"h) and 1700 gallon (94"l x 86"w x 83"h) sizes. Both assemble from two half-sections joined with a reliable gasket and clamping system.

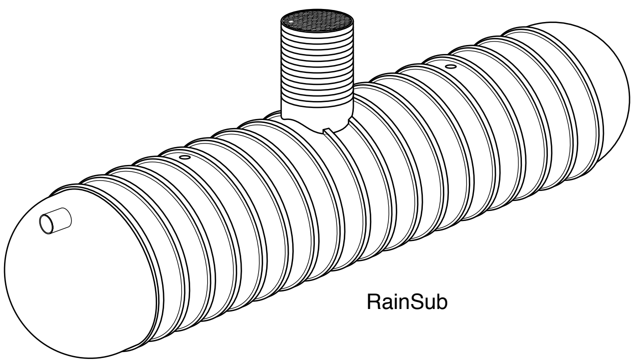


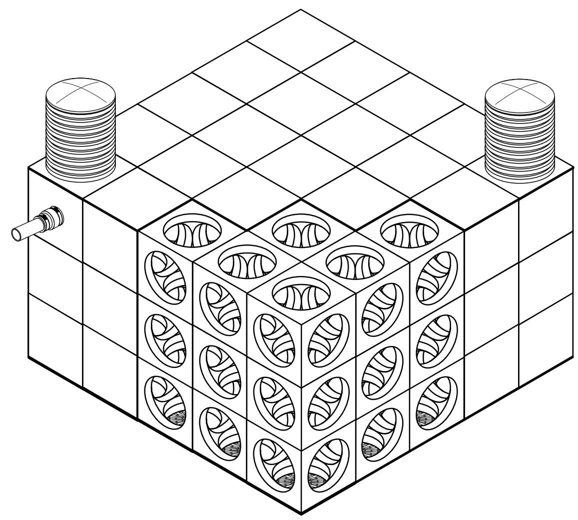
Carat

DoubleTorus utilizes the inherent structural strength of the doughnut shape to create a high-strength underground tank with two “donut” holes and a single center rib. The result is a low-profile 2500 gallon tank (144”l x 102”w x 60”h) with virtually 100% usable volume and no pockets for debris to accumulate. A dome on top of the tank swivels in any direction and has sufficient space for an internal filter and controls. An adjustable extension with a sturdy lid slides over the dome. Interconnection of multiple tanks is facilitated by large top and bottom flats. Side knobs are provided for lifting and anchoring.


DoubleTorus

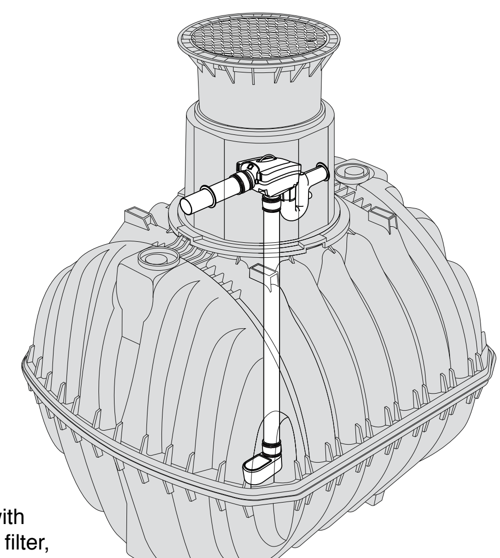
RainSub is our largest unitary underground tank, a horizontal ribbed fiberglass cylinder with standard capacities of 5,000 gallons, (6’d x 27’l), 10,000 gallons (8’d x 32’l) and 20,000 gallons (10’d x 38’l). A large-diameter accessway provides easy access into the tank. A threaded top port directs incoming water to an internal diffuser and a second threaded top port is provided for venting. Water overflows through an internal trap and out through a tangential end pipe.


RainSub


RainCavern

RainCavern is not a tank in the traditional sense, but rather an underground chamber created by a series of plastic modules wrapped in a waterproof membrane and backfilled with earth. The modules are supplied as separate components for economy in shipping and ease of handling, but are easily assembled with only a rubber mallet.

Each module is a two-foot cube that creates a void space that can hold 57 gallons. The modules can be arranged to form a rectangular storage system any multiple of two feet in length and width, and in heights of two, four, six, or eight feet, offering virtually limitless storage in a shape that fits virtually any site geometry. The top cover can be as little as two feet, permitting very shallow excavations not possible with tank systems. Burial can be as deep as eight feet, a depth that would crush most tanks. The modules are strong enough to withstand vehicular traffic and can be installed under parking areas.


Carat with internal filter, diffuser, and trap

The sides and top of the system are closed with panels that press into the openings in the cubes. Access pipes can be attached to any top module for access, inspection, and cleaning, all of which are difficult with many other modular systems. Special fittings enable reliable pipe connections.

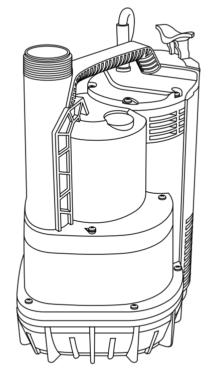
DIFFUSERS AND TRAPS: If rainwater is simply dumped into a storage tank, it will create turbulence that will suspend solids that have accumulated at the bottom and submerge debris floating on the surface. Until the water column has sufficient time to re-stratify, often several days, the quality of extracted rainwater will be diminished. This problem can be largely avoided by using a *diffuser* at the bottom of the tank, a device that reduces the water velocity and re-directs the water upward and away from the sediment layer.

Depending on the filter and tank, it may also be appropriate to use a rainwater tank *trap*, a very large version of a sink trap. A properly designed trap will prevent insects and small animals from entering a rainwater tank through the overflow system.

PUMPING

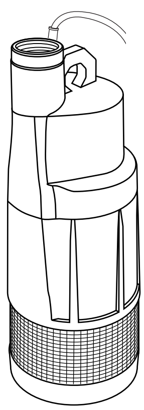
Although gravity flow can be used for flood irrigation, most other rainwater uses require pumping. *Submersible pumps* are installed within a rainwater storage tank, but most require a pump controller that cannot be submerged or flooded. *Surface pumps* are typically installed within a nearby building or pump enclosure.

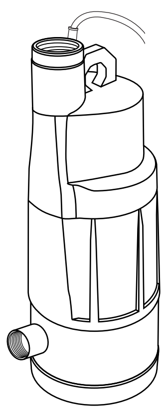
SUBMERSIBLE TRANSFER PUMPS: Submersible transfer pumps are low-pressure pumps designed to be used with open-ended piping systems. They are used for non-pressurized rainwater applications such as transferring rainwater between slave and master storage tanks, transferring rainwater from sump pits to remote storage tanks, pumping excess rainwater from storage tanks where gravity flow is not possible, operating first-flush tanks, and emptying rainwater storage tanks. Transfer pumps do not have sufficient pressure to directly operate irrigation or water supply systems.

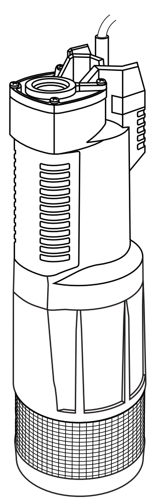

RainDiver-C

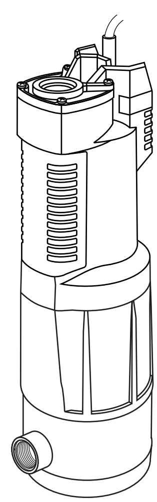
We offer two submersible transfer pumps that are ideal for rainwater systems: a 1/3 HP version with a maximum flow of 37 GPM (RainDiver-C33) and a 1/2 HP version with a maximum flow of 57 GPM (RainDiver-C50). These affordable pumps have sturdy rust-proof plastic housings, reliable oil-free motors, and stainless-steel shafts with ceramic seals. Both contain an internal low-water shutoff float that can be activated or deactivated in seconds by lifting a knob on the top of the pump. In the automatic shut-off mode, they can pump tanks to 1-1/2” water depth and can operate for extended periods of time even while partially submerged. In the manual mode they can pump down to 1/4” of water. Since these pumps can pass solids up to 1/4”, they will rarely clog when rainwater is pre-filtered.

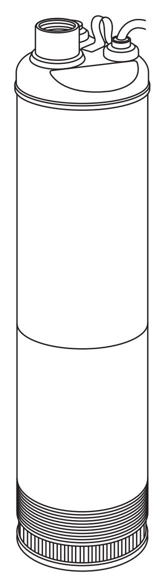
SUBMERSIBLE PRESSURE PUMPS: In comparison with submersible transfer pumps, submersible pressure pumps deliver water at the considerably higher pressures required to operate irrigation or water supply systems. Our *RainDiver* consumer submersible pressure pumps feature sturdy rust-proof plastic housings, reliable 1/2 HP or 1 HP oil-free motors, and stainless-steel shafts with ceramic seals. RainDiver-S and RainDiver-T require an external control system, such as one of our electronic pump controllers, to operate the pump in response to water demand and to protect the pump from running dry. RainDiver-ES and RainDiver-ET contain electronic pump controllers so no other controls are necessary. Both the manual and electronic pumps are available with two intake systems: either a stainless-steel intake screen or stainless-steel ring with a 1” threaded pipe fitting for use with a floating extractor. Both are sufficient to operate typical single-family residential irrigation or water supply systems.

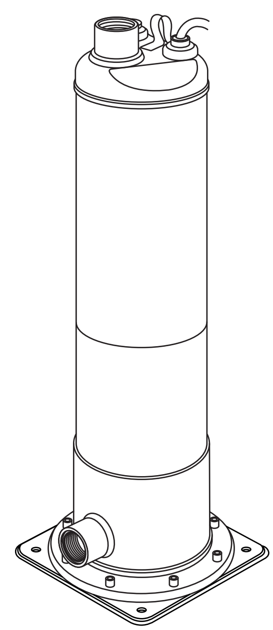

RainDiver-S


RainDiver-T


RainDiver-ES

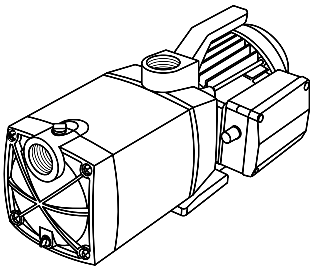

RainDiver-ET


RainDiverPro-S

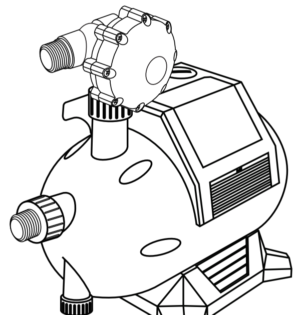

RainDiverPro-T

Our professional line of submersible pressure pumps feature heavy-duty stainless-steel housings, water-cooled motors isolated with double ceramic seals, stainless-steel shafts with oversized bearings, and 48 foot power cords. We offer two versions: the *RainDiverPro-S* with a slotted bottom intake, and the *RainDiverPro-T* with a sealed stainless-steel base that includes a 1-1/4” threaded pipe fitting for use with a floating extractor. Both are available with 1/2 HP, 1 HP, or 1.5 HP motors with flow rates and pressures sufficient for single-family residential, multi-family residential, and commercial rainwater systems. All require an external control system, such as one of our electronic pump controllers, to operate the pump in response to water demand and to protect the pump from running dry.

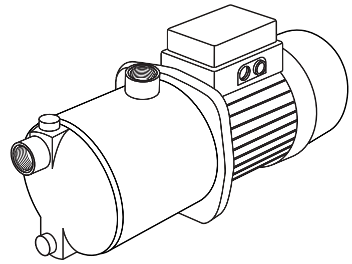
SURFACE PRESSURE PUMPS: Like submersible pressure pumps, surface pressure pumps are used when rainwater is to directly operate irrigation or water supply systems where water pressures of 40 psi to 70 psi are typically required. We offer two self-priming consumer surface pumps: the *RainSpring-P,* a fan-cooled pump that requires an external pump controller and the RainSpring-B, a water-cooled pump with a built-in pump controller. Both are offered with reliable 1/2 HP or 1HP motors. For higher flows and pressures we offer two commercial-quality pumps, the self-priming 1-1/3 HP *RainSpringPro-E,* available in single or three phase, and the three-phase 2.5 HP *RainSpringPro-K*. Both RainSpringPro pumps have stainless-steel housings and require appropriate external pump controllers. All surface pumps should be used in conjunction with an in-line pre-filter or floating extractor.



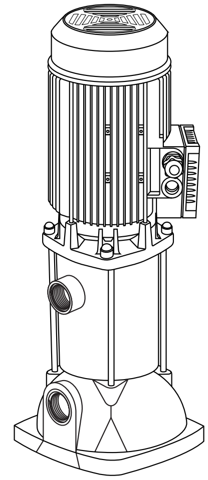
RainSpring-P



RainSpring-B



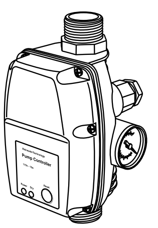
RainSpringPro-E



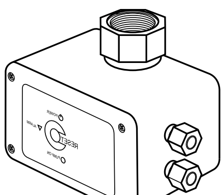
RainSpringPro-K

AUTOMATIC PUMP CONTROLLERS: Automatic Pump Controllers make it possible to operate a rainwater system without a large pressure tank, pressure switch, and float switch. In the simplest design, the bottom inlet connects to the pump, the top outlet connects to the plumbing system, and the pump is plugged into the controller which is in turn plugged into an electrical receptacle. When a faucet is opened, the controller senses the drop in line pressure and instantly turns on the pump to re-pressurize the line. If no water is available, the controller shuts down the pump to prevent dry-run damage.

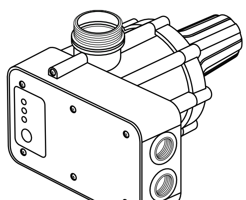
We offer five pump controllers. The low-cost *PumpControl* is a 1" controller that is ideal for use with our manual consumer pumps. It features a pressure gauge on the side that shows the line pressure and is helpful in identifying water leaks. For our professional pumps we recommend the *PumpControl-HD*, *PumpControlPro*, or our most advanced single-phase controller the *PumpControlPro-PR* that features a built-in pressure regulator for optimal system control. For three-phase versions of the RainSpringPro-S and all *RainSpringPro-K* pumps, we offer the state-of-the-art *PumpControlPro-VFD*. Although systems with automatic pump controllers do not require a pressure tank, a small pressure tank is recommended for systems operating building water supply systems.



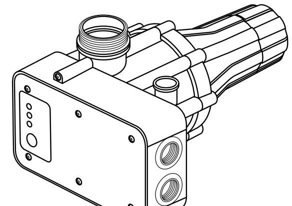
PumpControl



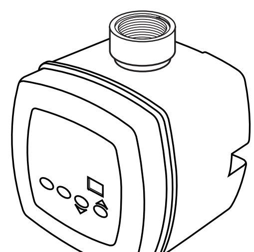
PumpControl-HD



PumpControlPro

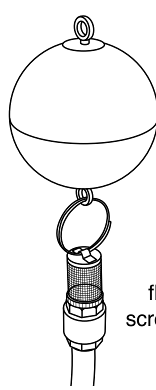


PumpControlPro-PR

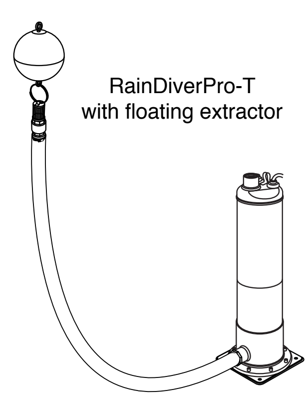


PumpControlPro-VFD

FLOATING EXTRACTOR: Since sediment accumulates at the bottom of a rainwater tank, fine solids are concentrated just above the bottom, and organic debris floats at the water surface, the cleanest water in the tank is generally a few inches below the surface. A *floating extractor* is a screened intake attached to the end of a suction hose and suspended from a float. The extractor rises and falls with the tank water level so the screened intake always draws the cleanest water just under the surface. Our floating extractors use stainless-steel intake screens with larger openings than our pre-filters, so they are unlikely to clog. We also use dense self-sinking intake hoses to prevent air locks from blocking flow to the pump.



float with screened foot valve

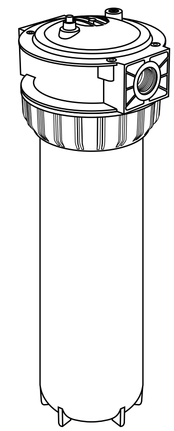


RainDiverPro-T with floating extractor

TREATMENT

Rainwater from a properly designed rainwater pre-filtration and storage system can be used without further treatment for landscape irrigation, garden ponds, and most exterior applications. When rainwater is used within buildings, supplemental filtration is essential and disinfection is recommended. For toilet flushing and clotheswashing, a sediment filter will remove suspended solids which can clog and damage valves, and an activated-carbon filter will remove dissolved organic matter which can cause discoloration and odors. For showering, hand washing, or drinking, use a high-intensity ultraviolet sterilizer to kill microorganisms that could cause illness. All filtration and disinfection components should be oversized in order to maximize performance and minimize maintenance.

PRESSURE FILTERS: We offer exceptional quality pressure-filter housings that accept standard 4.5" x 20" sediment or activated carbon cartridges. Unlike common filter housings, the filter pot is not twisted in place but rather is clamped with a large threaded nut. This makes disassembly easy, even after long intervals between element changes. To facilitate element changing without flooding, a pressure-release button and a filter pot drain plug are supplied as standard items. Either 1" or 1.5" pipe threads are available.



pressure filter

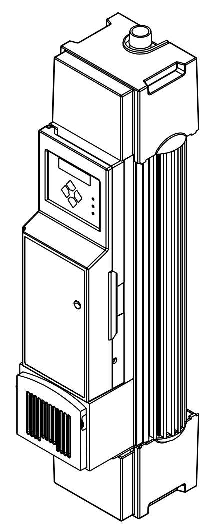
UV STERILIZERS: A typical UV (ultraviolet) sterilizer consists of a UV-emitting lamp mounted within a quartz sleeve (a special type of glass tube that does not block UV) which is in turn mounted within a stainless-steel tube. Water flowing between the quartz sleeve and the stainless-steel tube is exposed to UV energy which theoretically kills any microorganisms in the water. Better units also monitor the amount of UV energy that reaches the stainless-steel tube.

The design and operation of our UV sterilizer is completely different: two UV lamps and a quartz sleeve are all mounted inside a dry enclosure, one lamp on either side of the quartz sleeve. Water flows through the inside of the quartz sleeve and is exposed to UV energy emitted by both lamps. A sophisticated monitoring system measures the UV output from the lamps and compares it with the amount of UV energy that passes through the water. This approach exposes microorganisms in the water to significantly more UV energy, eliminates shadowing behind larger suspended particles, and accurately determines the exact UV exposure.

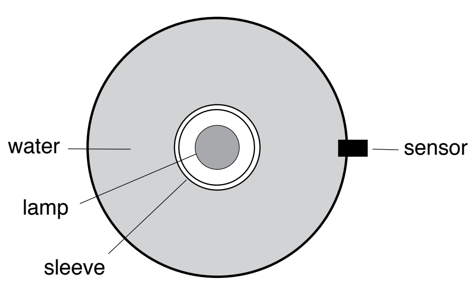
The problem with using typical UV sterilizers for rainwater is that although rainwater is a relatively high-quality water source, it can have elevated levels of dissolved organics, iron compounds, and phosphates that absorb UV energy. It is not uncommon to see the percent of UV energy transmission, called the *UVT*, drop below 70% to 75%, the minimum UVT required for ordinary UV sterilizers. Our high-intensity sterilizer is designed to disinfect when UVT levels are as low as 50%, a level rarely seen in rainwater.

Over time, the quartz sleeves in UV sterilizers become coated with a mineral deposit that inhibits UV transmission. The simplest UV sterilizers require periodic manual disassembly and cleaning, a difficult and messy process that occasionally results in a broken sleeeve. Better UV sterilizers utilize a sleeve wiping device, but these are not completely effective and still require a regular maintenance schedule. UV sterilizers with UV monitors are also prone to problems caused by mineral deposits on the sensors which are exposed to water. Our UV sterilizer features a motor-driven internal wiper that requires no user action, and since the UV monitoring system in our sterilizer is not in contact with water it does not require cleaning.

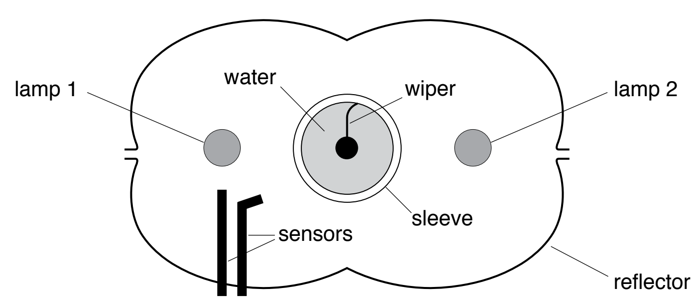
For general rainwater disinfection, either interior or exterior, we supply a version with 1" ports suitable for flow rates up to 15 GPM and a version with 1.5" ports suitable for flow rates up to 30 GPM. Contact us about sizing for drinking water systems. Both units include a sophisticated microprocessor-controlled monitoring system, a 24v output to operate an optional solenoid valve to stop water flow in the event of insufficient sterilization, plus an automatic bleed system to prevent overheating that can reduce UV output.



uv sterilizer



uv sterilizer with internal lamp

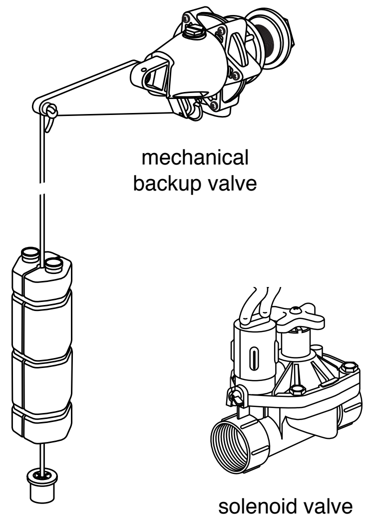


uv sterilizer with external lamps

BACKUP INTEGRATION

If rainwater is to serve as the principal water supply for a building, or if it is the primary exterior water supply, then provision must be made to automatically switch to a backup water supply when there is insufficient rainwater to meet demand. We offer three different solutions that effectively isolate the two water supplies to prevent cross-contamination.

CISTERN BACKUP: The least expensive backup method is *cistern backup*. When the water level in the rainwater tank reaches a pre-set low level, a valve opens and water from the backup source is added directly to the rainwater tank. To prevent cross-contamination, the outlet of the backup water pipe in the tank must be several inches above the highest possible water level of the rainwater tank, or the backup water can flow through a funnel device that provides a similar air gap. Unfortunately, cistern backup creates the undesirable situation where potable-quality backup water is mixed with sediment-laden water at the tank bottom, producing a degraded mixture as the water supply.

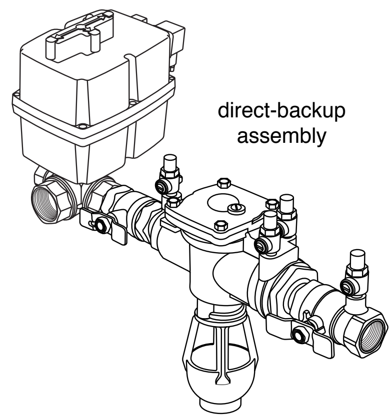


mechanical backup valve

The simplest cistern backup system utilizes a special mechanical valve with a weighted float at the end of a long cord. When the water level in the tank reaches the float, the valve opens and adds several inches of water. More sophisticated systems utilize a solenoid valve controlled by a low-voltage float switch or an electronic control device. Our commercial-grade solenoid valves offer the highest possible reliability for this type of backup. Unlike typical irrigation valves, they feature high-efficiency solenoids, stainless-steel actuators, and brass shock cones. If there is a power failure, they automatically shut off water flow. We stock 1" and 1.5" sizes.

solenoid valve

DIRECT BACKUP: The most reliable backup method is *direct backup* in which both the backup source and rainwater supply directly connect to the plumbing system through a motorized three-port valve. When there is sufficient water in the rainwater tank, the valve connects the rainwater supply to the plumbing system. When the water in the rainwater tank reaches a pre-set low level, the valve connects the backup water supply to the plumbing system. A reduced pressure backflow preventer is used between the backup supply and the valve to assure there is no cross-contamination.

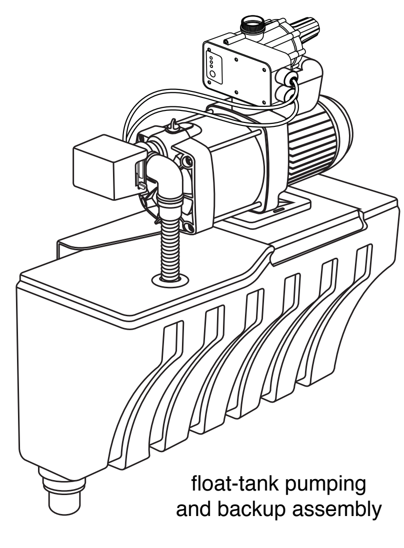


direct-backup assembly

We offer a wide range of industrial-quality three-port ball valves that are ideal for rainwater systems. The valves are directly coupled to a weatherproof low-wattage 24vac electric rotary operator. When power is applied, the ball rotates 90° in one direction; when power is reversed the ball rotates 90° in the other direction. For building water supply systems we offer an optional internal battery that automatically connnects the valve to a public water supply backup in the event of a power failure to assure pressurized water will always be available for toilet flushing and other critical water uses. We can supply 1", 1-1/4", 1-1/2", and 2" valve assemblies in brass or PVC.

FLOAT TANK BACKUP: The safest backup method is *float tank backup*, named for a small wall-mounted tank that contains a float valve. When there is sufficient rainwater, an external pump draws water from the rainwater tank by way of a three-port valve and delivers it to the plumbing system. When the rainwater tank is low, the three-port valve switches so that the pump draws water from the wall-mounted tank. As the water level in this small tank drops, a float valve inside the tank opens and refills the tank. The tank has a primary overflow that is directly plumbed through a trap, as well as an upper emergency overflow that simply dumps water on the floor if the primary overflow ever gets clogged. This assures there will always be an air gap below the float valve, providing absolute assurance that there will be no cross-contamination.

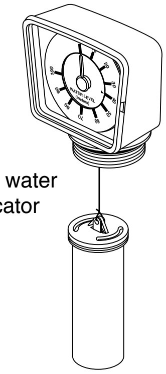
Our residential float tank system consists of a fully-automatic external pump mounted on top of the float tank. The pump sucks backup water from the float tank through a 120vac multi-port valve attached directly to the pump. A float switch running from the valve to the rainwater tank switches the three-port valve between the two water supplies based on the rainwater level. When combined with a pre-filter and storage tank, this serves as an all-in-one rainwater pumping and backup system suitable for operating a residential-scale rainwater system with peak flow rates up to 15 GPM. We also custom fabricate larger systems for commercial applications requiring significantly higher flow rates and programmable controls.



float-tank pumping and backup assembly

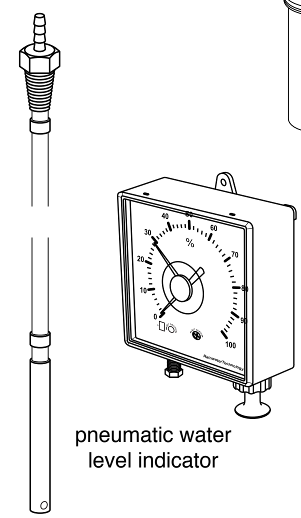
MEASUREMENT AND CONTROL

To effectively manage rainwater utilization, it is important to know how much water remains in storage. We offer a variety of devices that use mechanical or electronic means to accurately measure and display the water level in a rainwater tank. The more sophisticated systems can manage backup and other rainwater system functions by operating valves and pumps in response to the measured water level.



mechanical water level indicator

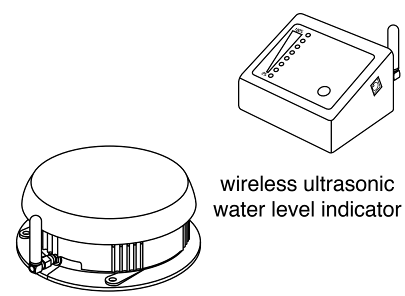
MECHANICAL WATER LEVEL INDICATOR: Our *Mechanical Water Level Indicator* mounts directy into a hole in the top of surface storage tanks. A weighted float hung from a nylon cord rises and falls with the water level, causing a pointer to spin and accurately display the water level from 0 - 100”. Calibration is quick and simple: the cover is opened and the indicator ring is rotated to set the zero point. It’s ultra-low cost makes it practical for the smallest tanks.



pneumatic water level indicator

PNEUMATIC WATER LEVEL INDICATOR: Our *Pneumatic Water Level Indicator* is our least expensive remote-reading system. It can be mounted up to 150 ft from the tank and will accurately display the water level from 0 to 100% by measuring water pressure. The dial gauge must be mounted in a dry location, calibrated to the tank depth (up to 8 feet of water), and zeroed. Pulling a knob at the bottom of the gauge operates an internal air pump that clears any water in the hose and the tank probe. The water in the tank then exerts pressure on the air within the hose and probe in proportion to the water depth, which is displayed on the gauge.

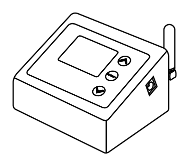
This device is inexpensive enough to be affordable for any rainwater system and can measure in spaces with internal obstructions, including modular underground tanks where electronic devices require expensive pressure sensors to give accurate measurements. We supply a kit consisting of a dial gauge, a tank probe, a condensate trap, 100 feet of small-diameter hose, plus all of the fittings to connect everything together.

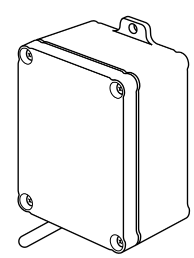


wireless ultrasonic water level indicator

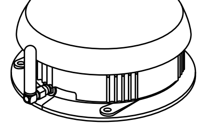
WIRELESS ULTRASONIC WATER LEVEL INDICATOR: Our *Wireless Ultrasonic Water Level Indicator* uses a directed ultrasonic beam to determine the water level in a rainwater tank and then transmits the data without wires to a display unit located in a building up to 1000 feet away. The water level is displayed as a series of eight lights, each representing approximately one-eighth of the tank height. Unlike more primitive ultrasonic devices, this unit features a high-power transmitter design that is unaffected by condensation plus sophisticated electronic circuitry to eliminate stray signals, preserve battery life, and warn of problems such as rapid water loss possibly caused by a leaking tank. The direction of the ultrasonic signal can also be adjusted to provide accurate results with domed tanks.

We supply a kit consisting of a tank unit, a display unit, two antennas, and batteries. An optional extension cable facilitates mounting the tank unit underground. Although ultrasonic units can be used in tanks made of any material, they should not be used in tanks with internal obstructions, such as modular underground tanks.





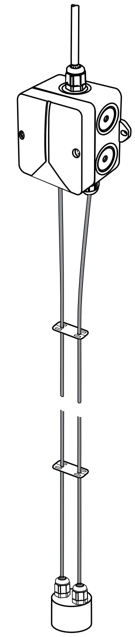
wireless ultrasonic control system

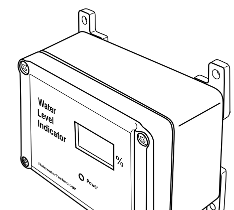


WIRELESS ULTRASONIC CONTROL SYSTEM: Our *Wireless Ultrasonic Control System* uses the same advanced ultrasonic technology as the Wireless Ultrasonic Water Level Indicator, but adds precision programming and display capabilities plus a wireless control unit. The wireless control unit can be located up to 1000 feet from either the display unit or the tank unit and will directly operate pumps or electric valves to provide backup, remote refill, or remote drain capability. Water level is accurately displayed digitally, and the control unit functions can be easily programmed. Manual override capability permits direct valve or pump operation when desired.

We supply a kit consisting of a tank unit, a display unit, a control unit, two antennas and batteries. Two versions are available based on the desired control unit: 24vac or 115vac. Note that power must be present at the site of the control unit to operate a valve or pump.

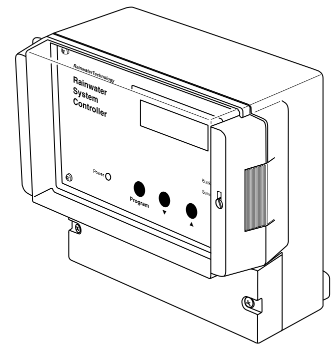
DIGITAL WATER LEVEL INDICATOR: Our *Digital Water Level Indicator* is an electronic device that accurately displays the water level in a rainwater tank from 0 to 100% using a radio frequency cable sensor that hangs in any open plastic or concrete tank. We supply a kit consisting of a digital display, a tank sensor, a sensor control box, and a power transformer. The display must be mounted in a dry location within 150 feet of the tank and wired to the control box mounted in the tank accessway. The standard sensor measures tanks with up to 9 feet of water; an optional longer sensor measures tanks with up to 19 feet of water. Since the system is powered by a plug-in 24 volt transformer, an electrician is not necessary for safe installation. Due to the possibility of radio-frequency interference, this device is not recommended for use in steel tanks or modular underground tanks.





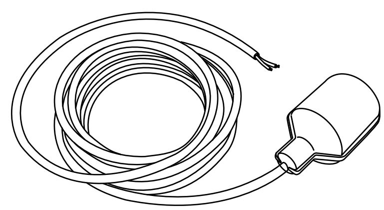
digital water
level indicator

RAINWATER SYSTEM CONTROLLER: Our *Rainwater System Controller* is a state-of-the-art digital electronic device with a sophisticated microprocessor that accurately displays the water level in a rainwater tank from 0 to 100% and manages rainwater system functions based on water level or elapsed time. All system functions are accessible through an intuitive programming interface that can display in English, Spanish, or French. Output relays provide 24 volt power to operate a low-water backup system, a high-water transfer pump, a first-flush device, a filter rinsing valve, a service reminder system, or a variety of other rainwater system functions. We supply kits consisting of a digital control panel, the appropriate tank sensor and sensor-control box, and a power transformer. The control panel must be mounted in a dry location within 150 feet of the tank and wired to the control box mounted in the tank accessway. Since the system is powered by a plug-in 24 volt transformer, an electrician is not necessary for safe installation.



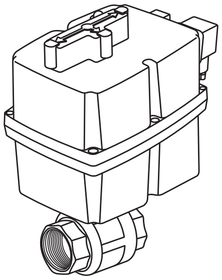
rainwater system controller

FLOAT SWITCHES: When it's not necessary to know exactly how much water is in a rainwater tank, float switches can be used to operate a pump, valve, or other electrical device at a pre-set level. We stock mercury-free low-voltage (SPDT) and line-voltage float switches, as well as cable weights and transformers. Line-voltage float switches are provided with piggyback plugs for simple connection to 120v pumps.

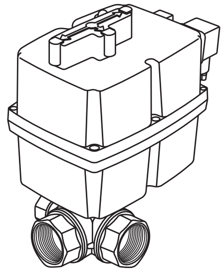


low-voltage float switch

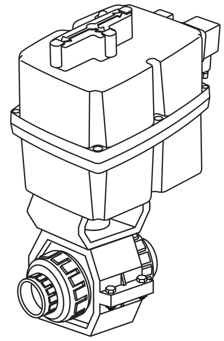
MOTORIZED VALVES: We offer a wide range of industrial-quality motorized ball valves, both two-port and three-port, in both brass and true-union-PVC configurations. All valves have PTFE seats for durability and full-port designs for minimal pressure drop. Stock sizes are 1", 1-1/4", 1-1/2", and 2". We also offer 4" and 6" butterfly valves with glass-filled polyproylene bodies and bolted PVC flanges. All motorized valves use state-of-the-art 24vac operators sealed for external use. Operators feature electronic torque limiters, LED status indicators, internal anti-condensation heaters, internal limit switches, and manual overrides. An optional power-failure return insert is available to assure continuous water supply for rainwater systems serving toilets or other critical water uses.



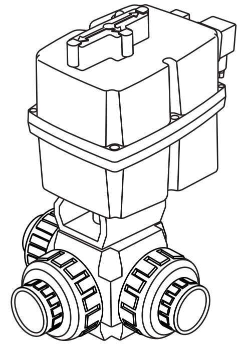
2-port brass
motorized valve



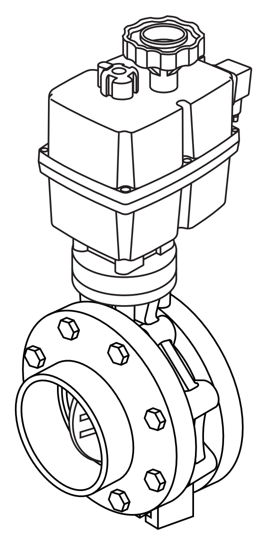
3-port brass
motorized valve



2-port PVC
motorized valve



3-port PVC
motorized valve



motorized
butterfly valve

AVERAGE RAINFALL (inches)

State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
AK	Southeastern	8.6	7.1	6.4	5.4	4.9	3.9	4.2	6.4	10.5	14.3	10.3	9.8	91.8
AK	South Coast	8.9	7.1	6.1	6.4	6.2	4.4	4.7	7.7	12.1	12.0	8.8	10.3	94.5
AK	Southwestern Islands	3.5	3.0	3.0	2.5	2.3	2.5	2.7	3.8	4.7	4.7	4.8	4.3	41.7
AK	Copper River	0.7	0.7	0.5	0.4	0.7	1.9	2.4	2.0	1.7	1.4	1.0	1.1	14.5
AK	Cook Inlet	1.8	1.5	1.3	1.1	1.3	1.6	2.2	3.0	3.8	2.9	2.1	2.3	24.8
AK	Bristol Bay	1.5	1.1	1.2	1.2	1.4	1.7	2.3	3.5	3.4	2.6	2.1	1.9	23.8
AK	West Central	0.8	0.7	0.7	0.6	0.8	1.3	2.1	3.0	2.3	1.5	1.4	1.2	16.1
AK	Interior Basin	0.6	0.5	0.4	0.3	0.7	1.8	2.2	2.2	1.5	1.0	0.8	0.7	12.7
AK	Arctic Drainage Basin	0.4	0.3	0.2	0.3	0.2	0.6	1.2	1.7	1.2	0.7	0.4	0.4	7.6
AL	Northern Valley	5.6	4.8	6.4	4.7	5.2	4.5	4.4	3.3	4.2	3.6	5.1	5.6	57.4
AL	Appalachian Mountains	5.8	5.1	6.4	4.9	4.8	4.3	4.9	3.4	4.5	3.4	4.8	5.2	57.4
AL	Upper Plains	6.1	5.2	6.7	5.3	5.0	4.4	5.1	3.5	4.1	3.5	5.0	5.4	59.3
AL	Eastern Valley	5.9	5.1	6.7	5.1	4.3	4.3	4.8	3.6	3.9	3.1	4.5	4.7	55.9
AL	Piedmont Plateau	5.8	5.4	6.6	4.8	4.1	4.4	5.3	3.7	3.9	3.0	4.6	5.0	56.4
AL	Prairie	5.7	5.0	6.6	4.8	4.2	4.3	4.9	3.5	3.9	3.0	4.5	4.8	55.2
AL	Coastal Plain	6.1	5.3	6.8	4.5	4.7	5.0	6.0	4.4	4.3	2.9	4.8	4.8	59.7
AL	Gulf	6.0	5.2	6.8	4.6	5.5	5.3	7.8	6.4	5.8	3.6	5.1	4.5	66.6
AR	Northwest	2.4	2.7	4.4	4.4	5.2	4.8	3.2	3.2	4.5	3.7	5.0	3.7	47.3
AR	North Central	2.9	3.1	4.6	4.4	4.9	3.9	3.0	2.9	4.0	3.7	5.3	4.1	46.7
AR	Northeast	3.5	3.5	4.8	4.8	5.0	3.7	3.2	2.9	3.5	3.8	5.3	4.6	48.6
AR	West Central	2.9	3.1	4.5	4.4	5.6	4.5	3.5	2.7	4.0	4.3	5.3	4.2	48.8
AR	Central	3.6	3.6	5.0	5.1	5.4	4.4	3.7	2.9	3.8	4.4	5.8	5.0	52.7
AR	East Central	4.0	3.9	5.2	5.3	5.2	4.1	3.4	2.5	3.2	3.8	5.2	5.0	50.8
AR	Southwest	3.8	3.8	5.1	4.8	5.3	4.8	4.0	2.9	4.2	4.8	5.8	5.2	54.4
AR	South Central	4.6	4.1	5.3	4.9	5.1	4.7	3.9	3.0	3.5	4.5	5.4	5.2	54.2
AR	Southeast	5.1	4.7	5.6	5.3	5.0	4.1	3.9	3.0	3.1	4.1	5.2	5.5	54.6
AZ	Northwest	1.1	1.1	1.2	0.4	0.3	0.2	0.8	1.1	0.7	0.7	0.7	0.6	8.9
AZ	Northeast	1.5	1.4	1.6	0.8	0.6	0.4	1.9	2.3	1.6	1.5	1.2	1.2	15.8
AZ	North Central	1.7	1.9	1.9	0.7	0.5	0.3	1.8	2.5	1.7	1.2	1.2	1.3	16.8
AZ	East Central	2.1	2.1	2.3	0.7	0.5	0.3	2.1	2.6	1.6	1.8	1.6	1.9	19.4
AZ	Southwest	0.6	0.6	0.5	0.2	0.1	0.0	0.4	0.8	0.6	0.4	0.3	0.5	5.1
AZ	South Central	1.2	1.2	1.4	0.4	0.2	0.1	1.1	1.5	0.9	1.0	0.9	1.2	11.1
AZ	Southeast	1.2	1.1	1.0	0.4	0.3	0.5	2.9	3.0	1.6	1.4	0.9	1.4	15.6
CA	North Coast	7.5	6.8	6.0	2.6	1.5	0.6	0.2	0.4	0.9	2.4	5.8	6.6	41.3
CA	Sacramento Basin	6.9	6.4	5.8	2.5	1.6	0.7	0.2	0.3	0.9	2.1	4.8	5.4	37.4
CA	Northeast Interior	3.6	3.6	3.2	1.3	1.2	0.7	0.5	0.5	0.8	1.4	2.8	3.0	22.6
CA	Central Coast	4.5	4.2	3.6	1.3	0.5	0.1	0.1	0.1	0.3	1.1	2.6	3.0	21.4
CA	San Joaquin	3.9	3.7	3.6	1.5	0.8	0.3	0.1	0.1	0.5	1.1	2.3	2.6	20.3
CA	South Coast	3.5	3.8	3.4	1.0	0.4	0.1	0.1	0.2	0.4	0.6	1.4	2.1	16.9
CA	Southeast Desert	1.3	1.4	1.2	0.3	0.2	0.1	0.3	0.5	0.4	0.3	0.5	0.9	7.3
CO	Arkansas Basin	0.5	0.5	1.1	1.4	2.0	1.6	2.4	2.3	1.2	0.9	0.8	0.5	15.2
CO	Colorado Basin	1.3	1.2	1.5	1.4	1.5	0.9	1.5	1.6	1.5	1.6	1.4	1.2	16.4
CO	Kansas Basin	0.4	0.4	1.1	1.6	3.1	2.6	2.9	2.2	1.1	0.9	0.7	0.4	17.3
CO	Platte Basin	0.5	0.5	1.3	1.9	2.4	1.9	2.1	1.9	1.4	1.0	0.9	0.6	16.4
CO	Rio Grande Basin	0.7	0.7	1.2	0.9	1.0	0.8	1.7	2.1	1.5	1.3	1.0	0.7	13.7
CT	Northwest	4.0	3.1	4.2	4.2	4.5	4.2	4.6	4.5	4.4	4.2	4.3	4.0	50.1
CT	Central	4.4	3.3	4.5	4.3	4.3	4.1	4.2	4.4	4.4	4.4	4.5	4.1	51.0
CT	Coastal	4.2	3.2	4.4	4.3	4.3	3.9	3.7	4.1	4.1	4.0	4.2	4.0	48.3
DE	Northern	3.7	2.8	4.1	3.6	4.4	3.9	4.5	3.7	4.3	3.4	3.4	3.6	45.5
DE	Southern	4.0	3.2	4.4	3.5	4.1	3.4	3.9	4.9	4.2	3.4	3.3	3.5	45.7
FL	Panhandle	5.7	4.7	6.3	3.8	4.3	6.1	8.0	6.7	5.7	3.5	4.2	4.1	63.1
FL	North	4.2	3.4	4.5	3.1	3.3	6.2	6.7	7.2	5.8	3.3	2.6	3.0	53.4
FL	North Central	3.2	2.9	4.0	2.6	3.6	6.9	6.9	7.1	6.2	3.0	2.6	2.6	51.6
FL	South Central	2.6	2.7	3.3	2.2	3.7	7.0	7.2	7.5	6.8	3.3	2.4	2.3	51.1
FL	Southwest, Everglades	2.2	2.0	2.6	2.3	4.3	8.3	7.3	7.7	7.1	3.5	2.3	1.7	51.3
FL	Lower East Coast	2.6	2.4	2.9	3.3	5.7	8.5	6.1	7.7	8.2	5.8	4.0	2.4	59.7
FL	Keys	2.4	1.7	2.1	2.0	3.5	5.6	3.4	5.3	6.1	4.9	2.7	2.1	41.7

AVERAGE RAINFALL (inches)

State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
GA	Northwest	5.4	4.9	6.1	4.5	4.2	4.2	4.4	3.8	4.1	3.2	4.5	4.5	53.8
GA	North Central	5.8	5.0	6.1	4.2	4.6	4.2	4.6	4.3	4.2	3.8	4.5	4.5	55.7
GA	Northeast	6.0	5.2	6.0	4.1	4.9	4.4	4.7	4.8	4.2	4.1	4.5	4.8	57.4
GA	West Central	5.2	4.9	5.8	4.1	3.7	3.8	4.9	3.9	3.3	2.8	4.0	4.5	50.8
GA	Central	5.1	4.5	5.1	3.4	3.1	3.8	4.6	4.1	3.5	2.7	3.4	3.8	47.0
GA	East Central	4.8	4.1	4.7	3.1	3.1	4.4	4.7	5.0	3.7	3.0	2.9	3.5	47.1
GA	Southwest	5.7	4.9	5.7	3.7	3.7	4.8	5.9	4.2	3.7	2.6	3.7	4.0	52.5
GA	South Central	5.3	4.3	5.1	3.4	3.2	4.8	5.3	4.9	3.8	2.6	3.1	3.7	49.5
GA	Southeast	4.3	3.6	4.1	3.0	3.2	5.4	5.7	6.4	4.8	3.2	2.6	3.2	49.3
HI	Island of Kauai	6.4	5.0	5.5	5.8	4.4	3.3	4.2	3.6	3.6	5.3	7.1	6.6	60.7
HI	Island of Oahu	6.6	5.3	6.3	6.1	4.5	4.1	4.8	3.8	4.1	5.4	6.8	6.4	64.1
HI	Island of Molokai	5.2	4.8	4.1	4.2	3.0	1.5	1.5	1.4	1.3	2.2	4.0	4.8	37.9
HI	Island of Lania	4.0	3.2	2.4	1.7	1.4	1.0	0.8	0.8	1.2	1.8	2.4	3.2	24.1
HI	Island of Maui	7.4	5.3	7.5	6.7	4.0	3.1	4.2	3.7	3.2	4.2	5.9	5.8	61.0
HI	Island of Hawaii	6.7	5.1	7.8	6.7	4.5	3.9	5.4	4.9	4.7	5.0	7.6	5.8	68.1
IA	Northwest	0.7	0.6	2.0	3.0	3.6	4.5	3.8	4.0	2.8	2.1	1.7	0.8	29.4
IA	North Central	0.9	0.8	2.0	3.3	4.1	4.9	4.3	4.4	3.2	2.4	2.0	1.1	33.3
IA	Northeast	1.1	1.1	2.1	3.4	4.0	4.7	4.2	4.7	3.3	2.4	2.3	1.3	34.7
IA	West Central	0.8	0.8	2.2	3.2	4.2	4.4	4.1	3.7	3.2	2.4	1.7	1.0	31.6
IA	Central	1.0	1.0	2.2	3.3	4.3	5.0	4.3	4.4	3.2	2.6	2.1	1.2	34.6
IA	East Central	1.2	1.2	2.3	3.4	4.2	4.6	4.0	4.5	3.5	2.6	2.5	1.7	35.6
IA	Southwest	0.9	1.0	2.3	3.4	4.6	4.6	4.8	3.9	3.8	2.6	2.1	1.2	35.2
IA	South Central	1.0	1.2	2.3	3.6	4.7	4.5	4.7	4.1	4.0	2.9	2.4	1.3	36.5
IA	Southeast	1.2	1.3	2.6	3.5	4.7	4.3	4.5	4.0	3.9	2.8	2.7	1.8	37.2
ID	Panhandle	3.3	2.7	2.4	2.0	2.4	2.0	1.3	1.2	1.3	1.9	3.8	3.8	28.1
ID	North Central Prairies	2.1	1.8	2.2	2.5	3.0	2.1	1.4	1.2	1.4	1.7	2.5	2.2	24.2
ID	North Central Canyons	2.4	1.9	2.3	2.3	2.7	2.0	1.2	1.0	1.4	1.7	2.7	2.4	23.8
ID	Central Mountains	3.2	2.6	2.4	2.0	2.3	1.9	1.1	1.0	1.3	1.7	3.0	3.3	25.6
ID	Southwestern Valleys	1.6	1.3	1.4	1.2	1.2	0.8	0.4	0.3	0.7	0.8	1.6	1.6	13.0
ID	Southwestern Highlands	1.4	1.1	1.3	1.3	1.7	1.2	0.5	0.5	0.8	1.0	1.4	1.2	13.2
ID	Central Plains	1.3	1.0	1.1	0.9	1.2	0.8	0.3	0.4	0.6	0.7	1.2	1.2	10.6
ID	Northeastern Valleys	0.7	0.5	0.7	0.8	1.4	1.3	1.0	0.8	0.8	0.6	0.7	0.8	10.0
ID	Upper Snake River Plains	1.0	0.9	1.1	1.1	1.6	1.2	0.8	0.7	0.8	0.9	1.0	1.0	12.2
ID	Eastern Highlands	1.5	1.3	1.4	1.4	2.2	1.3	1.1	1.1	1.3	1.3	1.4	1.4	16.6
IL	Northwest	1.4	1.4	2.6	3.6	4.1	4.5	3.7	4.4	3.4	2.7	2.7	2.1	36.6
IL	Northeast	1.8	1.5	2.6	3.7	3.9	4.2	3.9	4.2	3.4	2.7	3.0	2.4	37.1
IL	West	1.4	1.7	2.9	3.7	4.6	3.9	4.2	3.6	3.7	2.9	3.0	2.3	37.9
IL	Central	1.7	1.7	3.0	3.5	4.3	4.0	4.0	3.6	3.2	2.8	3.1	2.6	37.4
IL	East	1.8	1.7	3.0	3.6	4.2	4.2	4.3	3.8	3.0	2.8	3.2	2.6	38.3
IL	West Southwest	1.8	2.0	3.3	3.8	4.3	3.9	3.6	3.2	3.1	2.8	3.5	2.8	38.0
IL	East Southwest	2.3	2.3	3.6	3.9	4.3	4.1	4.2	3.5	3.1	3.0	3.9	3.1	41.3
IL	Southwest	2.7	2.8	4.1	4.2	4.5	4.1	3.8	3.4	3.2	3.2	4.3	3.5	43.9
IL	Southeast	3.1	3.1	4.4	4.7	4.9	4.1	3.9	3.3	3.1	3.1	4.4	3.8	45.8
IN	Northwest	1.9	1.7	2.9	3.6	3.9	4.5	3.9	3.8	3.5	3.0	3.3	2.7	38.7
IN	North Central	2.1	1.8	2.7	3.5	3.9	4.2	3.9	3.9	3.4	2.9	3.2	2.8	38.5
IN	Northeast	2.0	1.8	2.7	3.5	3.8	4.2	3.7	3.8	3.3	2.7	3.1	2.7	37.3
IN	West Central	2.2	2.1	3.3	3.8	4.5	4.4	4.4	4.1	3.1	2.9	3.6	2.9	41.2
IN	Central	2.3	2.3	3.3	3.9	4.5	4.1	4.4	3.8	3.0	2.9	3.7	3.0	41.1
IN	East Central	2.2	2.1	3.0	3.8	4.3	4.4	4.3	3.6	2.8	2.7	3.3	2.8	39.4
IN	Southwest	3.0	3.0	4.2	4.5	5.2	4.1	4.4	3.8	3.2	3.1	4.3	3.6	46.3
IN	South Central	3.2	3.0	4.2	4.6	5.1	4.2	4.4	4.1	3.3	3.1	4.1	3.7	46.9
IN	Southeast	3.1	2.9	4.1	4.3	4.9	4.2	4.2	4.2	3.0	3.1	3.7	3.6	45.1
KS	Northwest	0.5	0.6	1.5	2.1	3.7	3.1	3.4	2.7	1.5	1.3	1.0	0.5	21.7
KS	North Central	0.7	0.7	2.2	2.5	4.2	3.5	3.9	3.3	2.5	1.9	1.5	0.8	27.5
KS	Northeast	0.9	1.0	2.5	3.2	5.0	4.8	4.4	3.8	4.2	2.9	2.3	1.3	36.3
KS	West Central	0.5	0.6	1.6	1.8	3.3	2.7	3.4	2.6	1.5	1.2	1.0	0.5	20.7
KS	Central	0.7	0.9	2.4	2.6	4.4	3.8	3.8	3.4	2.5	2.2	1.6	0.9	29.4
KS	East Central	1.1	1.2	2.8	3.4	5.1	5.1	3.9	3.7	4.0	3.1	2.6	1.5	37.5

AVERAGE RAINFALL (inches)

State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
KS	Southwest	0.5	0.5	1.5	1.7	3.1	2.9	2.9	2.5	1.6	1.3	0.9	0.5	19.8
KS	South Central	0.8	1.0	2.5	2.6	4.1	4.0	3.4	3.0	2.6	2.2	1.6	1.0	28.7
KS	Southeast	1.3	1.6	3.2	3.6	5.2	5.2	3.9	3.7	4.1	3.7	3.1	1.9	40.6
KY	Western	3.7	4.1	4.6	4.7	5.0	4.0	4.3	3.3	3.5	3.3	4.6	4.6	49.6
KY	Central	3.9	4.0	4.9	4.2	5.3	4.5	4.5	3.7	3.8	3.2	4.3	4.8	51.0
KY	Blue Grass	3.4	3.3	4.3	3.9	4.9	4.5	4.5	3.8	3.3	3.0	3.5	3.9	46.2
KY	Eastern	4.0	3.7	4.6	3.9	5.0	4.4	4.6	4.0	3.5	3.0	3.9	4.3	48.9
LA	Northwest	5.0	4.4	4.6	4.6	5.0	4.9	3.9	2.9	3.4	4.4	4.9	4.8	52.9
LA	North Central	5.8	4.8	5.6	5.1	5.5	4.8	3.9	3.1	3.7	4.2	4.9	5.5	56.8
LA	Northeast	6.0	5.0	6.2	5.7	5.6	4.4	3.8	3.0	3.1	4.0	5.1	5.8	57.6
LA	West Central	5.7	4.5	5.2	4.5	5.6	4.7	4.1	3.5	3.7	4.1	4.9	5.8	56.2
LA	Central	6.3	4.8	5.6	5.1	5.6	4.8	4.6	4.1	4.3	4.4	5.6	5.9	61.0
LA	East Central	6.3	5.3	6.0	5.6	5.6	5.1	6.0	5.5	4.8	3.6	5.0	5.2	64.1
LA	Southwest	6.0	4.0	4.4	4.2	5.7	5.9	5.9	5.2	5.5	4.3	5.2	5.4	61.6
LA	South Central	5.8	4.3	4.7	4.8	5.1	6.2	6.8	6.2	5.6	3.9	4.7	5.1	63.2
LA	Southeast	5.8	4.9	5.5	4.7	5.1	5.9	7.0	6.3	6.2	3.4	4.9	4.7	64.3
MA	Western	4.0	3.2	4.0	4.1	4.8	4.4	4.5	4.6	4.2	4.3	4.4	3.9	50.4
MA	Central	4.2	3.2	4.1	4.1	3.8	3.8	3.8	4.0	3.9	4.2	4.3	4.0	47.3
MA	Coastal	4.3	3.6	4.3	4.2	3.6	3.5	3.4	3.8	3.9	4.1	4.4	4.3	47.2
MD	Southern Eastern Shore	4.0	3.4	4.5	3.3	3.6	3.4	4.3	4.7	3.8	3.4	3.2	3.4	44.9
MD	Central Eastern Shore	4.0	3.3	4.3	3.4	3.9	3.6	4.2	4.3	3.8	3.2	3.3	3.5	44.7
MD	Lower Southern	3.7	3.0	4.3	3.2	4.1	3.8	4.2	4.1	4.2	3.5	3.3	3.3	44.8
MD	Upper Southern	3.6	2.9	4.0	3.3	4.4	3.7	4.1	4.0	4.2	3.5	3.4	3.4	44.5
MD	Northern Eastern Shore	3.7	3.0	4.1	3.4	4.2	3.9	4.1	3.9	4.3	3.4	3.3	3.6	44.7
MD	Northern Central	3.6	2.9	4.0	3.5	4.6	4.1	4.0	3.8	4.3	3.5	3.6	3.5	45.5
MD	Appalachian Mountain	3.1	2.6	3.4	3.4	4.2	3.5	3.6	3.5	3.5	3.1	3.3	2.9	40.1
MD	Allegheny Plateau	3.6	3.1	3.9	3.8	4.5	4.2	4.9	3.9	3.6	3.0	3.6	3.6	45.7
ME	Northern	3.1	2.1	2.8	3.0	3.4	3.8	3.9	3.8	3.6	3.4	3.4	3.1	39.4
ME	Southern Interior	3.7	2.7	3.8	3.8	3.8	3.8	3.6	3.5	3.7	3.9	4.1	3.8	44.3
ME	Coastal	4.4	3.4	4.5	4.4	4.1	3.6	3.4	3.1	4.0	4.4	4.9	4.5	48.6
MI	West Upper	2.2	1.4	2.2	2.2	3.0	3.4	3.5	3.5	3.6	3.0	2.7	2.2	32.9
MI	East Upper	2.2	1.3	2.0	2.2	2.6	3.0	3.2	3.3	3.6	3.1	2.8	2.3	31.7
MI	Northwest Lower	2.2	1.4	2.0	2.5	2.6	2.9	2.9	3.5	3.8	3.1	2.7	2.2	32.0
MI	Northeast Lower	1.9	1.3	2.0	2.4	2.7	2.8	3.1	3.6	3.4	2.7	2.3	2.0	30.2
MI	West Central Lower	2.1	1.5	2.4	3.0	2.9	3.1	2.7	4.1	3.7	3.3	3.2	2.4	34.1
MI	Central Lower	1.9	1.4	2.3	2.9	3.0	3.2	2.7	3.9	3.8	2.8	2.7	2.1	32.7
MI	East Central Lower	1.9	1.5	2.3	2.8	2.9	3.1	2.8	3.5	3.9	2.6	2.7	2.1	32.1
MI	Southwest Lower	2.3	1.7	2.5	3.4	3.4	3.6	3.6	3.7	4.1	3.0	3.4	2.9	37.6
MI	South Central Lower	1.8	1.5	2.4	3.2	3.2	3.5	3.3	3.7	3.7	2.7	2.8	2.3	34.0
MI	Southeast Lower	1.9	1.7	2.4	3.1	3.0	3.4	3.1	3.4	3.4	2.4	2.8	2.4	32.9
MN	Northwest	0.7	0.5	0.9	1.4	2.6	3.9	3.5	3.1	2.6	2.0	1.1	0.6	22.9
MN	North Central	0.8	0.6	1.1	1.6	2.8	4.1	4.1	3.6	3.0	2.4	1.4	0.7	26.2
MN	Northeast	1.0	0.7	1.3	1.8	2.8	4.1	4.2	3.8	3.6	2.6	1.8	0.9	28.6
MN	West Central	0.9	0.7	1.5	2.0	2.9	3.9	3.6	3.1	2.3	2.2	1.3	0.6	24.7
MN	Central	0.9	0.7	1.7	2.3	3.3	4.5	3.9	3.9	2.8	2.3	1.7	0.8	28.6
MN	East Central	1.0	0.7	1.6	2.2	3.3	4.4	4.4	4.1	3.2	2.5	1.9	0.9	30.2
MN	Southwest	0.7	0.6	1.9	2.6	3.3	4.1	3.5	3.3	2.6	2.0	1.6	0.7	26.9
MN	South Central	0.9	0.7	2.0	2.9	3.7	4.5	4.1	4.1	2.9	2.3	1.9	1.0	31.0
MN	Southeast	1.1	0.8	2.0	3.2	3.8	4.3	4.5	4.6	3.5	2.3	2.2	1.1	33.4
MO	Northwest Prairie	1.2	1.4	2.7	3.5	4.9	4.4	4.5	3.8	4.4	3.2	2.7	1.8	38.4
MO	Northeast Prairie	1.8	2.0	3.2	3.8	4.7	3.9	4.0	3.5	3.5	3.0	3.5	2.6	39.4
MO	West Central Plains	1.7	2.0	3.3	4.1	5.1	4.6	3.9	3.7	4.2	3.7	3.6	2.4	42.3
MO	West Ozarks	2.1	2.3	3.9	4.3	4.8	4.8	3.6	3.4	4.7	3.7	4.5	3.1	45.0
MO	East Ozarks	2.6	2.7	4.2	4.4	4.7	3.9	3.8	3.6	3.6	3.3	4.6	3.6	45.0
MO	Bootheel	3.3	3.6	4.7	4.8	4.8	4.1	3.9	3.0	3.2	3.5	4.8	4.4	48.1
MS	Upper Delta	4.9	4.5	5.7	5.5	5.5	5.0	4.1	2.6	3.0	3.3	5.5	5.6	55.1
MS	North Central	5.1	4.5	5.9	5.5	5.5	4.9	4.3	3.3	3.6	3.5	5.3	5.8	57.0

AVERAGE RAINFALL (inches)

State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
MS	Northeast	5.3	4.7	6.3	5.3	5.8	4.5	4.3	3.2	3.9	3.4	5.4	6.2	58.4
MS	Lower Delta	5.7	4.7	6.2	5.7	5.6	4.3	4.4	2.7	3.1	3.7	5.3	5.9	57.2
MS	Central	5.9	5.0	6.3	5.8	5.2	4.0	4.6	3.4	3.5	3.6	5.3	5.8	58.3
MS	East Central	5.9	5.0	6.3	5.7	5.1	4.3	4.5	3.3	3.6	3.4	5.1	5.3	57.5
MS	Southwest	6.4	5.2	6.5	6.0	5.4	4.7	4.5	4.0	3.8	3.6	5.1	6.0	61.4
MS	South Central	6.5	5.3	6.5	5.9	5.6	4.6	5.3	4.5	4.1	3.5	5.0	5.7	62.5
MS	Southeast	6.4	5.0	6.6	5.4	4.9	4.1	5.4	3.9	4.1	3.3	5.0	5.1	59.1
MS	Coastal	6.3	5.6	6.5	5.1	5.7	4.9	6.9	5.7	5.7	3.2	5.0	5.0	65.7
MT	Western	1.9	1.4	1.3	1.4	2.2	2.2	1.4	1.3	1.3	1.3	2.0	2.0	19.6
MT	Southwestern	0.8	0.7	1.1	1.4	2.4	2.3	1.5	1.4	1.4	1.1	0.9	0.8	15.8
MT	North Central	0.5	0.4	0.7	1.0	2.3	2.5	1.6	1.5	1.3	0.7	0.6	0.5	13.5
MT	Central	0.7	0.5	0.9	1.3	2.6	2.4	1.8	1.6	1.3	0.9	0.6	0.7	15.1
MT	South Central	0.8	0.6	1.2	1.8	2.7	2.3	1.5	1.2	1.5	1.4	0.9	0.8	16.6
MT	Northeastern	0.4	0.3	0.5	1.0	2.0	2.6	2.1	1.3	1.3	0.8	0.4	0.4	13.1
MT	Southeastern	0.5	0.4	0.7	1.4	2.3	2.5	1.6	1.1	1.3	1.2	0.6	0.5	14.2
NC	Southern Mountains	5.1	4.6	5.7	4.3	5.0	4.7	4.5	4.6	4.2	3.6	4.4	4.3	54.8
NC	Northern Mountains	4.4	4.0	5.2	4.5	5.1	4.9	4.7	4.4	4.6	3.9	4.1	3.7	53.2
NC	Northern Piedmont	4.1	3.4	4.4	3.4	4.2	3.9	4.5	4.3	4.3	3.7	3.2	3.3	46.6
NC	Central Piedmont	4.2	3.6	4.5	3.3	4.1	4.1	4.2	3.9	4.2	3.6	3.3	3.3	46.2
NC	Southern Piedmont	4.5	3.7	4.7	3.2	3.9	4.1	4.7	4.1	4.2	3.9	3.4	3.4	47.8
NC	Southern Coastal Plains	4.5	3.6	4.4	3.1	4.0	4.8	6.3	6.1	5.7	3.3	3.1	3.5	52.4
NC	Central Coastal Plains	4.6	3.5	4.3	3.2	4.2	4.4	5.6	6.0	5.4	3.6	3.2	3.6	51.6
NC	Northern Central Plains	4.5	3.4	4.5	3.2	4.1	4.2	5.1	5.2	4.9	3.7	3.3	3.4	49.5
ND	Northwest	0.5	0.5	0.8	1.3	2.1	2.9	2.6	1.8	1.7	1.1	0.6	0.5	16.3
ND	North Central	0.5	0.5	0.8	1.3	2.2	3.2	2.9	2.2	1.8	1.4	0.7	0.5	17.8
ND	Northeast	0.6	0.5	0.8	1.1	2.2	3.3	3.1	2.6	1.9	1.5	0.9	0.5	19.0
ND	West Central	0.4	0.4	0.7	1.4	2.2	3.2	2.5	1.7	1.6	1.3	0.7	0.4	16.6
ND	Central	0.5	0.4	0.8	1.4	2.2	3.3	3.0	2.3	1.8	1.5	0.7	0.4	18.3
ND	East Central	0.6	0.5	1.0	1.4	2.5	3.4	3.1	2.6	2.1	1.8	1.0	0.5	20.6
ND	Southwest	0.4	0.4	0.7	1.5	2.4	3.1	2.1	1.5	1.5	1.3	0.6	0.4	15.8
ND	South Central	0.4	0.4	0.8	1.6	2.4	3.0	2.6	2.0	1.5	1.3	0.6	0.4	16.9
ND	Southeast	0.6	0.5	1.1	1.7	2.7	3.4	3.0	2.3	2.0	1.7	0.9	0.4	20.4
NE	Panhandle	0.4	0.4	1.1	1.9	3.1	2.7	2.4	1.7	1.4	1.1	0.6	0.4	17.2
NE	North Central	0.5	0.6	1.5	2.3	3.6	3.4	3.3	2.5	2.1	1.5	1.0	0.5	22.7
NE	Northeast	0.5	0.7	2.0	2.8	4.1	4.0	3.4	3.0	2.4	1.9	1.5	0.7	27.1
NE	Central	0.5	0.6	1.9	2.6	3.9	3.8	3.4	2.8	2.1	1.5	1.3	0.6	24.9
NE	East Central	0.7	0.7	2.2	2.9	4.5	4.1	3.6	3.4	2.9	2.1	1.7	0.9	29.6
NE	Southwest	0.5	0.5	1.3	2.0	3.3	3.2	3.0	2.4	1.4	1.3	0.9	0.4	20.2
NE	South Central	0.5	0.6	1.9	2.3	4.1	3.4	3.7	3.1	2.1	1.5	1.3	0.5	24.8
NE	Southeast	0.7	0.8	2.4	2.9	4.4	3.9	4.3	3.5	3.2	2.2	1.8	0.9	31.0
NH	Northern	3.1	2.2	2.9	3.2	3.7	4.2	4.1	4.3	3.8	3.8	3.7	3.1	42.2
NH	Southern	3.6	2.8	3.6	3.7	3.8	3.7	3.9	3.8	3.6	4.0	4.0	3.6	44.0
NJ	Northern	4.0	3.0	4.1	4.2	4.7	4.3	4.7	4.4	4.7	3.8	4.1	3.8	49.8
NJ	Southern	3.9	3.0	4.2	3.8	4.1	3.5	4.4	4.8	3.9	3.4	3.5	3.7	46.0
NJ	Coastal	3.8	3.0	4.0	3.6	3.8	3.0	3.9	4.3	3.4	3.3	3.3	3.5	43.0
NM	Northwest Plateau	0.9	0.8	1.0	0.7	0.7	0.5	1.4	1.8	1.2	1.2	1.0	0.8	11.9
NM	Northern Mountains	0.8	0.7	1.1	1.0	1.5	1.4	2.5	2.9	1.7	1.3	1.0	0.7	16.8
NM	Northern Plains	0.4	0.4	0.7	1.0	1.9	2.2	2.8	3.0	1.9	1.3	0.7	0.5	16.8
NM	Southwest Mountains	0.8	0.7	0.7	0.4	0.7	0.7	2.6	3.0	1.9	1.5	0.8	0.9	14.5
NM	Central Valley	0.5	0.4	0.5	0.4	0.6	0.7	1.7	2.1	1.5	1.2	0.7	0.6	10.8
NM	Central Highlands	1.0	0.9	0.9	0.7	1.2	1.4	2.9	3.4	2.2	1.6	1.0	1.2	18.4
NM	Southeast Plains	0.4	0.5	0.4	0.6	1.5	1.8	2.1	2.6	2.5	1.3	0.7	0.6	15.0
NM	Southern Desert	0.7	0.6	0.5	0.2	0.5	0.7	2.2	2.4	1.6	1.3	0.8	1.1	12.5
NV	Northwestern	1.1	1.0	1.1	0.7	0.9	0.7	0.3	0.4	0.5	0.6	0.9	1.0	9.1
NV	Northeastern	1.1	0.9	1.2	1.1	1.5	0.9	0.5	0.6	0.9	1.0	1.0	0.9	11.7
NV	South Central	0.7	0.8	1.1	0.7	0.8	0.5	0.7	0.9	0.8	0.8	0.6	0.5	8.6
NV	Extreme Southern	0.8	0.9	0.9	0.3	0.3	0.1	0.5	0.7	0.5	0.4	0.4	0.5	6.3

AVERAGE RAINFALL (inches)

State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
NY	Western Plateau	2.5	2.1	2.9	3.2	3.4	4.5	3.8	3.6	4.0	3.3	3.4	2.9	39.5
NY	Eastern Plateau	3.1	2.6	3.5	3.8	4.1	4.3	3.9	3.7	4.1	3.6	3.9	3.4	43.9
NY	Northern Plateau	3.6	2.7	3.3	3.4	3.8	4.0	4.2	4.3	4.6	3.9	4.3	3.8	45.8
NY	Coastal	4.2	3.2	4.3	4.2	4.3	3.8	3.9	4.1	4.0	3.7	4.1	3.9	47.7
NY	Hudson Valley	3.3	2.6	3.6	3.8	4.4	4.1	4.2	4.1	4.0	3.6	3.8	3.3	44.6
NY	Mohawk Valley	3.4	2.7	3.5	3.7	3.9	4.3	4.2	4.1	4.7	3.7	4.2	3.6	45.9
NY	Champlain Valley	2.5	1.9	2.4	2.9	3.1	3.3	3.6	4.0	3.5	3.0	3.2	2.5	35.9
NY	St. Lawrence Valley	2.5	2.1	2.4	2.9	3.0	3.5	3.7	4.1	4.1	3.2	3.4	2.8	37.7
NY	Great Lakes	2.9	2.3	2.8	3.2	3.2	3.7	3.3	3.7	4.2	3.4	3.8	3.3	39.7
NY	Central Lakes	2.1	1.9	2.5	3.1	3.2	3.9	3.5	3.4	4.0	3.1	3.2	2.6	36.4
OH	Northwest	2.0	1.8	2.6	3.3	3.6	3.9	3.6	3.5	2.9	2.4	2.9	2.6	35.2
OH	North Central	2.1	1.9	2.6	3.3	3.7	4.0	3.7	3.7	3.2	2.4	3.0	2.7	36.3
OH	Northeast	2.4	2.1	3.0	3.4	3.6	4.0	3.9	3.7	4.0	3.0	3.5	3.2	39.8
OH	West Central	2.3	2.1	2.8	3.5	4.0	4.2	4.3	3.6	2.8	2.5	3.1	2.8	37.9
OH	Central	2.5	2.2	2.8	3.5	4.2	4.2	4.2	3.8	2.9	2.6	3.1	2.9	38.7
OH	Central Hills	2.5	2.2	3.0	3.6	4.1	4.3	4.1	4.0	3.3	2.6	3.2	2.9	39.7
OH	Northeast Hills	2.7	2.3	3.2	3.3	4.1	4.2	4.2	3.8	3.3	2.5	3.2	3.0	39.8
OH	Southwest	2.8	2.6	3.6	4.0	4.7	4.2	4.1	3.8	2.9	2.9	3.4	3.2	42.3
OH	South Central	2.9	2.8	3.7	3.4	4.3	3.9	4.3	4.0	2.9	2.6	3.1	3.2	41.0
OH	Southeast	2.8	2.6	3.3	3.4	4.2	4.2	4.4	3.9	3.1	2.6	3.2	3.0	40.9
OK	Panhandle	0.5	0.6	1.6	1.9	3.3	2.9	2.6	2.5	1.9	1.5	1.0	0.7	21.0
OK	North Central	1.0	1.3	2.7	3.0	4.7	4.0	3.0	3.1	3.1	2.7	2.1	1.3	32.0
OK	Northeast	1.7	2.1	3.7	4.1	5.4	4.7	3.2	3.1	4.9	3.7	3.8	2.5	42.8
OK	West Central	0.9	1.2	2.4	2.6	4.8	3.9	2.2	2.7	3.1	2.6	1.8	1.2	29.2
OK	Central	1.4	1.8	3.1	3.5	5.5	4.5	2.6	2.6	4.0	3.6	2.7	2.0	37.3
OK	East Central	2.2	2.5	4.1	4.3	5.8	4.8	3.0	2.9	4.9	4.3	4.4	3.1	46.1
OK	Southwest	1.1	1.4	2.2	2.6	4.9	4.1	2.2	2.7	3.4	3.0	1.7	1.4	30.8
OK	South Central	1.8	2.2	3.4	3.6	5.5	4.5	2.5	2.5	4.2	4.1	2.9	2.4	39.7
OK	Southeast	2.8	3.1	4.4	4.5	6.4	4.7	3.6	2.7	4.5	5.1	4.9	4.1	50.8
OR	Coastal Area	11.4	9.7	8.9	5.7	3.8	2.3	0.8	1.1	2.4	5.3	11.7	12.4	75.5
OR	Willamette Valley	7.5	6.4	5.6	4.2	3.1	2.1	0.8	1.0	2.0	3.8	8.1	8.2	52.8
OR	Southwestern Valleys	5.6	4.7	4.3	2.9	2.1	1.1	0.5	0.7	1.2	2.7	6.0	6.1	38.0
OR	Northern Cascades	10.6	9.0	7.6	6.0	4.3	2.9	1.1	1.3	2.7	5.3	11.6	11.9	74.3
OR	High Plateau	3.6	3.0	2.6	1.7	1.5	1.1	0.7	0.8	0.9	1.5	3.5	3.6	24.4
OR	North Central	2.1	1.7	1.5	1.2	1.2	0.8	0.4	0.5	0.7	1.1	2.2	2.2	15.6
OR	South Central	1.5	1.1	1.2	1.0	1.2	0.8	0.5	0.6	0.6	0.8	1.5	1.4	12.3
OR	Northeast	2.0	1.6	1.6	1.5	1.8	1.5	0.8	0.9	0.9	1.1	2.2	2.1	17.9
OR	Southeast	1.2	1.0	1.1	1.0	1.2	0.9	0.5	0.5	0.5	0.7	1.1	1.3	10.8
PA	Pocono Mountains	3.4	2.7	3.4	3.9	4.4	4.5	4.1	3.9	4.5	3.6	3.9	3.3	45.6
PA	East Central Mountians	3.6	2.8	3.7	3.7	4.7	4.4	4.4	4.3	4.5	3.6	3.9	3.6	47.1
PA	Southeastern Piedmont	3.7	2.8	3.8	3.7	4.5	4.0	4.5	3.8	4.3	3.4	3.6	3.4	45.4
PA	Lower Susquehanna	3.4	2.8	3.6	3.5	4.3	4.0	3.6	3.4	4.1	3.2	3.4	3.2	42.4
PA	Middle Susquehanna	3.0	2.6	3.3	3.4	4.0	4.5	3.9	3.5	4.1	3.2	3.5	3.0	42.2
PA	Upper Susquehanna	2.7	2.3	2.9	3.3	3.5	4.3	3.6	3.3	3.7	3.1	3.3	2.8	38.8
PA	Central Mountains	2.6	2.4	3.2	3.3	3.8	4.8	4.1	3.8	3.9	3.0	3.5	2.8	41.2
PA	South Central Mountains	3.0	2.7	3.6	3.6	4.2	4.1	4.1	3.4	3.7	3.1	3.6	2.9	41.9
PA	Southwest Plateau	3.0	2.7	3.6	3.6	4.2	4.3	4.4	3.9	3.8	2.8	3.5	3.2	42.9
PA	Northwest Plateau	2.8	2.4	3.3	3.6	3.8	5.0	4.3	4.2	4.4	3.3	3.7	3.5	44.3
PR	North Coastal	3.9	3.1	2.8	4.5	6.1	4.0	4.6	5.9	5.8	6.0	6.4	5.2	58.1
PR	South Coastal	1.2	1.2	1.4	1.9	3.6	2.0	2.1	3.8	6.0	6.2	4.2	1.4	34.8
PR	Northern Slopes	3.6	3.2	3.0	4.5	6.9	5.0	5.0	6.4	6.4	6.9	6.3	4.9	61.9
PR	Southern Slopes	2.4	2.4	2.5	3.4	6.2	4.2	5.1	6.6	8.7	8.7	6.3	2.9	59.3
PR	Eastern Interior	5.1	4.5	4.3	5.0	8.1	6.1	7.0	8.6	9.6	9.2	9.4	6.4	83.2
PR	Western Interior	3.2	3.1	3.7	6.0	9.1	5.5	5.5	7.9	11.0	10.9	6.6	3.6	76.0
RI	State	4.5	3.6	4.7	4.3	3.7	3.5	3.2	4.0	3.8	3.8	4.6	4.4	48.0
SC	Mountain	6.5	5.4	7.1	5.1	6.2	6.1	6.2	5.5	5.5	5.1	6.0	5.6	70.2
SC	Northwest	5.0	4.4	5.4	3.6	4.3	4.0	4.3	4.3	4.2	4.0	4.1	4.2	51.8
SC	North Central	4.7	3.8	4.7	3.2	3.4	4.3	4.4	4.4	4.1	3.5	3.3	3.4	47.0

AVERAGE RAINFALL (inches)														
State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
SC	Northeast	4.5	3.5	4.3	3.0	3.7	4.6	5.5	5.7	4.8	3.4	2.9	3.7	49.6
SC	West Central	5.0	4.2	5.0	3.2	3.6	4.3	4.5	4.5	3.9	3.4	3.3	3.7	48.4
SC	Central	4.7	3.7	4.4	3.0	3.5	4.9	5.2	5.1	4.2	3.1	2.9	3.5	48.1
SC	Southern	4.3	3.4	4.1	3.0	3.4	5.5	5.5	6.5	5.2	3.2	2.7	3.5	50.4
SD	Northwest	0.4	0.5	1.0	1.8	2.9	3.0	2.3	1.5	1.1	1.5	0.6	0.4	17.0
SD	North Central	0.4	0.5	1.1	1.8	2.7	3.1	2.6	2.1	1.4	1.6	0.7	0.4	18.3
SD	Northeast	0.6	0.5	1.3	1.9	2.7	3.4	3.2	2.7	1.9	1.7	0.9	0.4	21.3
SD	Black Hills	0.7	0.8	1.4	2.5	3.7	3.6	2.8	2.1	1.5	1.8	0.9	0.7	22.5
SD	Southwest	0.4	0.5	1.1	2.0	3.1	3.0	2.3	1.7	1.3	1.5	0.7	0.4	17.9
SD	Central	0.4	0.5	1.3	2.0	2.9	3.1	2.7	2.0	1.5	1.5	0.7	0.4	19.0
SD	East Central	0.5	0.6	1.5	2.2	3.1	3.7	3.1	2.7	2.2	1.8	1.1	0.4	22.9
SD	South Central	0.5	0.6	1.5	2.4	3.6	3.3	3.1	2.0	1.8	1.7	0.9	0.5	21.8
SD	Southeast	0.5	0.6	1.7	2.6	3.6	3.5	3.1	2.8	2.4	1.8	1.2	0.5	24.3
TN	Eastern	4.7	4.2	5.3	4.1	4.9	4.3	4.7	3.7	3.6	2.9	4.1	4.5	51.1
TN	Cumberland Plateau	5.2	4.4	6.0	4.5	5.4	4.7	4.9	4.0	4.0	3.5	5.0	5.5	57.1
TN	Middle	4.6	4.4	5.9	4.5	5.5	4.5	4.6	3.5	4.1	3.5	5.0	5.4	55.3
TN	Western	4.2	4.3	5.3	5.1	5.4	4.5	4.5	3.1	3.7	3.4	5.1	5.4	54.0
TX	High Plains	0.6	0.6	1.0	1.4	2.8	2.9	2.4	2.6	2.4	1.6	0.8	0.7	19.6
TX	Low Rolling Plains	0.9	1.2	1.4	1.9	3.5	3.4	1.9	2.5	3.2	2.4	1.2	1.1	24.5
TX	North Central	1.8	2.4	2.8	3.0	4.8	3.7	2.2	2.2	3.2	4.0	2.7	2.6	35.2
TX	East Texas	3.9	3.5	4.0	3.9	5.0	4.6	3.0	2.8	3.8	4.6	4.6	4.5	48.1
TX	Trans Pecos	0.5	0.5	0.3	0.5	1.2	1.5	1.9	2.1	2.3	1.3	0.5	0.6	13.2
TX	Edwards Plateau	1.0	1.4	1.4	1.8	3.2	3.1	1.9	2.4	3.0	2.7	1.5	1.3	24.7
TX	South Central	2.3	2.2	2.2	2.7	4.5	4.2	2.1	2.9	4.0	4.1	2.8	2.3	36.2
TX	Upper Coast	4.1	3.0	3.2	3.3	5.0	5.4	3.9	4.0	5.9	4.6	4.2	3.7	50.3
TX	Southern	1.1	1.3	1.2	1.8	3.1	3.3	1.6	2.4	3.1	2.8	1.3	1.1	24.1
TX	Lower Valley	1.4	1.5	1.1	1.6	2.6	2.8	1.8	2.5	4.7	3.0	1.4	1.2	25.4
UT	Western	0.6	0.7	0.9	0.9	1.1	0.6	0.7	0.8	0.8	1.0	0.7	0.5	9.2
UT	Dixie	1.6	1.6	2.0	0.9	0.7	0.3	0.9	1.1	0.9	1.0	1.1	0.8	12.9
UT	North Central	1.6	1.6	1.9	1.9	2.2	1.1	0.9	1.0	1.4	1.8	1.5	1.4	18.2
UT	South Central	1.2	1.2	1.4	1.1	1.1	0.6	1.0	1.4	1.2	1.3	1.1	0.9	13.4
UT	Northrn Mountains	2.0	1.9	2.0	1.9	2.0	1.1	1.1	1.2	1.6	1.9	1.9	1.7	20.1
UT	Untia Basin	0.5	0.5	0.6	0.8	1.0	0.6	0.7	0.8	0.9	1.1	0.5	0.4	8.5
UT	Southeast	0.8	0.7	0.9	0.7	0.8	0.4	0.9	1.0	1.0	1.3	0.8	0.6	9.8
VA	Tidewater	4.0	3.3	4.4	3.2	4.0	3.5	4.7	4.4	4.4	3.5	3.1	3.2	45.6
VA	Eastern Piedmont	3.8	3.2	4.2	3.3	4.1	3.6	4.4	3.9	4.0	3.9	3.4	3.2	45.0
VA	Western Piedmont	3.8	3.3	4.2	3.7	4.4	4.0	4.6	3.8	4.4	3.8	3.4	3.3	46.6
VA	Northern	3.2	2.7	3.6	3.2	4.2	3.9	3.9	3.7	4.1	3.6	3.5	3.0	42.4
VA	Central Mountain	3.2	2.7	3.6	3.2	4.1	3.7	4.0	3.4	3.6	3.2	3.2	2.8	40.6
VA	Southwestern Mountain	3.5	3.4	4.1	3.7	4.6	4.1	4.3	3.6	3.5	3.1	3.2	3.3	44.3
VI	St Thomas, St Croix, St John	2.5	1.9	1.8	2.8	3.8	2.5	2.9	4.0	5.8	5.4	6.1	3.5	42.9
VT	Northeastern	3.3	2.4	3.1	3.3	3.9	4.1	4.4	4.7	4.1	3.8	3.8	3.4	44.2
VT	Western	2.5	1.9	2.7	3.0	3.6	3.7	4.1	4.3	3.9	3.4	3.4	2.7	39.0
VT	Southeastern	3.8	2.9	3.9	3.9	4.2	4.0	4.0	4.1	3.8	3.9	4.1	3.8	46.4
WA	West Olympic Coastal	13.9	12.1	10.6	7.1	4.7	3.2	2.0	2.2	3.8	8.6	14.7	15.0	97.8
WA	Northeast Olympic San Juan	3.3	2.3	2.1	1.7	1.7	1.4	0.9	1.0	1.3	2.1	3.8	3.5	25.2
WA	Puget Sound Lowlands	5.6	4.6	4.2	3.2	2.5	2.0	1.2	1.3	2.0	3.7	6.4	6.2	42.7
WA	East Olympic Cascade Foothills	9.0	7.2	6.4	4.8	3.6	2.8	1.5	1.6	2.8	5.4	10.1	9.6	64.8
WA	Cascade Mountains West	13.6	11.0	9.1	6.5	4.5	3.5	1.8	1.9	3.9	7.4	14.8	14.8	92.8
WA	East Slope Cascades	4.9	3.7	2.5	1.4	1.1	1.0	0.5	0.7	1.0	2.0	4.7	5.3	28.8
WA	Okanogan Big Bend	1.4	1.2	1.1	0.9	1.2	1.0	0.7	0.6	0.6	0.7	1.6	1.8	12.6
WA	Central Basin	1.3	1.0	0.9	0.7	0.8	0.6	0.3	0.4	0.5	0.7	1.4	1.5	10.2
WA	Northeastern	2.1	1.8	1.8	1.6	2.1	1.9	1.2	1.1	1.1	1.2	2.5	2.7	21.0
WA	Palouse Blue Mountains	2.1	1.8	1.7	1.5	1.6	1.2	0.7	0.7	0.8	1.3	2.4	2.4	18.2
WI	Northwest	1.1	0.8	1.8	2.4	3.3	4.2	4.3	4.4	3.9	2.6	2.2	1.1	32.0
WI	North Central	1.3	0.9	1.8	2.4	3.3	4.0	4.1	4.4	4.0	2.7	2.3	1.3	32.4
WI	Northeast	1.3	1.0	2.0	2.7	3.3	3.7	3.7	3.8	3.7	2.5	2.3	1.5	31.5

AVERAGE RAINFALL (inches)

State	Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Year
WI	West Central	1.1	0.9	1.9	3.1	3.7	4.2	4.5	4.5	3.8	2.4	2.2	1.1	33.3
WI	Central	1.2	1.0	2.1	3.0	3.5	3.9	4.1	4.2	3.7	2.4	2.3	1.3	32.7
WI	East Central	1.4	1.1	2.1	2.8	3.0	3.5	3.4	3.9	3.4	2.4	2.4	1.6	31.0
WI	Southwest	1.1	1.1	2.1	3.6	3.6	4.4	4.3	4.5	3.4	2.3	2.3	1.3	33.9
WI	South Central	1.3	1.3	2.2	3.5	3.4	4.2	4.1	4.2	3.5	2.5	2.4	1.6	34.1
WI	Southeast	1.6	1.3	2.2	3.5	3.1	3.8	3.8	4.2	3.5	2.5	2.6	1.9	33.9
WV	Northwestern	3.0	2.7	3.6	3.3	4.3	4.1	4.5	4.1	3.3	2.7	3.3	3.2	42.0
WV	North Central	3.5	3.2	4.1	3.7	4.7	4.5	5.0	4.4	3.7	3.1	3.7	3.5	46.9
WV	Southwestern	3.4	3.1	3.9	3.5	4.5	4.2	4.8	4.2	3.4	2.9	3.5	3.5	44.7
WV	Central	4.0	3.6	4.4	4.1	5.0	4.6	5.2	4.5	3.8	3.3	3.7	3.9	50.1
WV	Southern	3.3	3.0	3.7	3.5	4.4	3.7	4.3	3.5	3.2	2.8	2.9	3.0	41.4
WV	Northeastern	2.5	2.2	3.1	2.9	3.9	3.5	3.8	3.6	3.3	3.0	3.0	2.4	37.1
WY	Yellowstone River Basin	1.1	0.8	1.0	1.1	1.8	1.8	1.5	1.4	1.2	1.0	1.0	1.0	14.5
WY	Snake River Basin	2.4	2.0	1.9	1.7	2.4	1.8	1.5	1.4	1.6	1.6	2.2	2.3	22.8
WY	Green and Bear River Basin	0.6	0.5	0.7	0.9	1.4	0.9	1.0	0.9	1.0	0.9	0.7	0.6	9.9
WY	Big Horn River Basin	0.4	0.3	0.6	1.1	1.9	1.5	1.0	0.7	1.1	0.9	0.5	0.4	10.5
WY	Powder, Little MO, Tongue RB	0.6	0.5	0.9	1.7	2.5	2.2	1.4	1.0	1.3	1.3	0.7	0.6	14.7
WY	Belle Fourche River Basin	0.5	0.6	1.0	2.0	2.8	2.7	1.9	1.4	1.3	1.5	0.7	0.6	17.0
WY	Cheyenne Niobara River Basin	0.4	0.5	0.8	1.8	2.6	2.3	1.9	1.3	1.2	1.2	0.7	0.5	14.9
WY	Lower Platte River Basin	0.4	0.5	0.9	1.7	2.6	2.0	1.9	1.4	1.3	1.0	0.7	0.5	15.0
WY	Wind River Basin	0.3	0.3	0.6	1.3	1.9	1.2	0.9	0.6	1.0	0.8	0.5	0.3	9.7
WY	Upper Platte River Basin	0.6	0.6	0.9	1.3	1.9	1.2	1.2	1.0	1.0	1.0	0.8	0.6	12.0

Source: NOAA Climate Normals, 1971-2000

Note: Due to rounding precision, yearly totals may differ slightly from the sum of the monthly totals

Abbreviations used for States, including Puerto Rico and US Virgin Islands:

AK	Alaska	MA	Massachusetts	OR	Oregon
AL	Alabama	MD	Maryland	PA	Pennsylvania
AR	Arkansas	ME	Maine	PR	Puerto Rico
AZ	Arizona	MI	Michigan	RI	Rhode Island
CA	California	MN	Minnesota	SC	South Carolina
CO	Colorado	MO	Missouri	SD	South Dakota
CT	Connecticut	MS	Mississippi	TN	Tennessee
DE	Delaware	MT	Montana	TX	Texas
FL	Florida	NC	North Carolina	UT	Utah
GA	Georgia	ND	North Dakota	VA	Virginia
HI	Hawaii	NE	Nebraska	VT	Vermont
IA	Iowa	NH	New Hampshire	VI	Virgin Islands
ID	Idaho	NJ	New Jersey	WA	Washington
IL	Illinois	NM	New Mexico	WI	Wisconsin
IN	Indiana	NV	Nevada	WV	West Virginia
KS	Kansas	NY	New York	WY	Wyoming
KY	Kentucky	OH	Ohio		
LA	Louisiana	OK	Oklahoma		