

WATER SMART BUDGET FORMULAS

Guideline to understand how much water is required to irrigate 1000 square feet of oasis area
 1" precipitation / 1000 SF collection surface = 623 gallons of water

- One acre feet = 325,851 gallons of water
- Residential customer's annual water allotment is approximately 1/3 acre or about 108,617 gallons. Household average monthly water use should not exceed 9,051 gallons per month.

OASIS AREAS – (High water use plants and Lawn areas)

Growing season 8" /month = 4984 gal / 1000 SF times 6 months = 29,904 gals 6 months / 1000 SF

Dormant season 1" /month = 623 gal / 1000 SF times 6 months = 3,738 gals 6 months / 1000 SF

Year total needed per 1000 SF = 33,642 gals

Note: Turf or Oasis water budget formula is: one (1) square foot x 33.62 gallons
 example: 1000 square feet oasis area requires no more than 33,642 gallons of water annually

TREES DRIP

Growing season (6 months) 10 cycles x (4.5 gal) x (6 month) = 270 gallons per tree over 6 months

Dormant season (6 months) 1 cycle x (4.5 gal) x (6 month) = 27 gallons per tree over 6 months

Year total needed per tree = 297 gals

SHRUBS DRIP

Growing season (6 months) 10x (3 gal)(6 months) = 180 gal / shrub / 6 months

Dormant season 1x (3 gal) (6 months) = 18 gal / shrub / 6 months

Year total needed per shrub = 198 gals

Prescott, Arizona

Climate and Geography

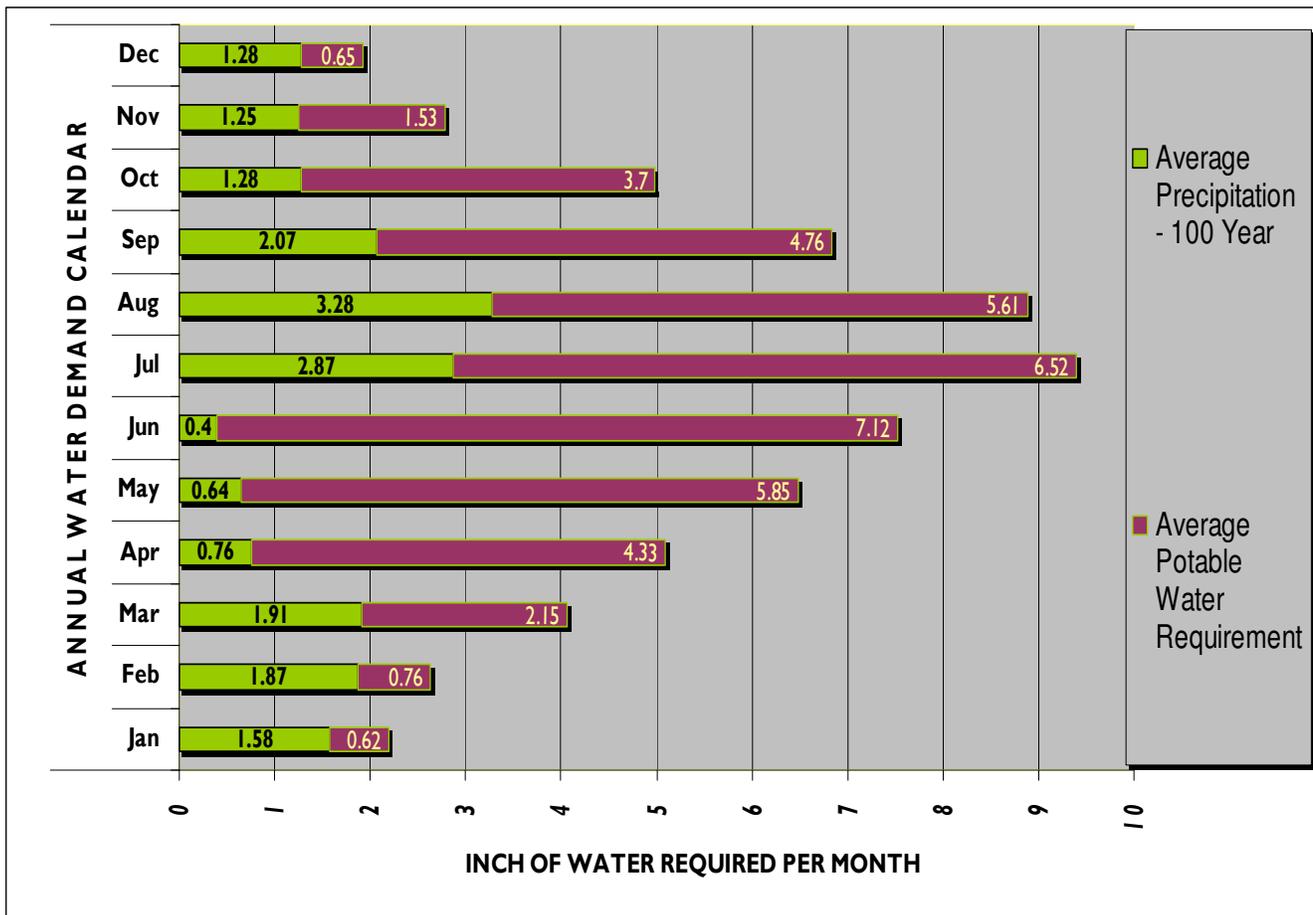
Location - Located in the mountains of north central Arizona and approximately 96 miles northwest of Phoenix, Flagstaff is just 90 miles to the northeast, and the Grand Canyon is only about an hour and three-quarters drive to the north. The City borders the Prescott National Forest to the south and west. Prescott is the county seat of Yavapai County. To the north are the Granite Dells, looking more like sculptured gardens than natural rock formations. Mountain views abound - from Prescott's landmark Thumb Butte to Granite Mountain and the snow-capped San Francisco Peaks 75 miles to the north.

Climate - Prescott's average elevation is 5,400 feet. The local climate is mild, with average temperatures ranging from fifty degrees to ninety degrees F and the average precipitation recorded at 19.8 inches, most of which is rain. Humidity is very low year-round, and winter snow is only occasional and moderate.

Fire Safety – Urban Interface conditions apply to nearly every site in Prescott. – Know the rules

Reference : <http://www.city-data.com/city/Prescott-Arizona.html>

Turf . Lawn . Grass – General Guide to Water Use Requirements



1” of water is equal to about 650 gallons of all water resources applied to about 1000 square feet area. So in July annually about 9.5” of water adjust for precipitation (rain gauge on site will assist you in determining rainfall) needs to be applied to the lawn area. If you have a 20 x 50 area of lawn you should apply a total of 6,175 gallons of water to the area.

OUTDOOR WATER CONSERVATION GUIDELINES AND CHECKLIST

Irrigation System Efficiency

- Runoff and Overspray. Soil types and infiltration rate should be considered when designing irrigation systems. All irrigation systems should be designed to avoid runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures. Proper irrigation equipment and schedules, including features such as repeat cycles, should be used to closely match application rates to infiltration rates therefore minimizing runoff. (see Turf Lawn Irrigation schedule)
- Special attention should be given to avoid runoff on slopes and to avoid overspray in planting areas with a width less than ten feet, and in median strips.
- No overhead sprinkler irrigation systems should be installed in median strips less than ten feet wide.

Equipment

- Water meters for irrigation purpose may be separate landscape water meters and may be installed for all commercial projects. Exceptions, single family homes or any commercial project with a landscaped area of less than 5,000 square feet may not have a separate irrigation meter.
- Controllers. Automatic control systems should be required for all irrigation systems and must be able to accommodate all aspects of the design.
- Backflow-cross connection device are code required on all automated in ground irrigation systems. Request a copy of building permit and final device test for landscape record. Remember to winterize device every fall before the first freeze.
- Zoning system valves. Plants which require different amounts of water shall be irrigated by separate valves. If one valve is used for a given area, only plants with similar water use shall be used in that area. Anti-drain (check) valves should be installed in strategic points to minimize or prevent low-head drainage.
- Sprinkler heads. Heads and emitters shall have consistent application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance.
- Rain Sensing Override Devices. Rain sensing override devices shall be required on all irrigation systems.
- Soil Moisture Sensing Devices. It is recommended that soil moisture sensing devices be considered where appropriate.

Recycled Water-Effluent and Harvested Water

- The installation of recycled water irrigation systems (dual distribution systems) shall be optional to allow for the current and future use of recycled water.
- Irrigation systems may make use of rainwater harvested water distribution and design upon a a written approval which has been granted by the local water agency, stating that harvested water proposed meets all health and safety standards.
- All recycled water and harvested irrigation systems shall be designed and operated in accordance with all local and state codes.

Irrigation System Exceptions

May include the use of supplemental harvested rainwater on public and private landscapes to reduce the use of potable water for landscape irrigation. Alternative irrigation system design and installation are encouraged and may be approved the Community Development Director subject to proven effectiveness.

Irrigation Schedules

- An annual irrigation program with monthly irrigation schedules should be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.
- Irrigation system as built plan should be submitted to homeowner for permanent record

Annual watering schedule recommendations: (Put a watering chart inside irrigation timer box)

- A. Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station; and
- B. Provide the amount of applied water (in gallons of water projected for use) recommended on a monthly and annual basis.
- C. The total amount of water for the project should only include water designated in the Estimated Total Water Use calculation plus water needed for any water features, which should be considered as a high water using hydrozone.
- D. Recreational areas designated in the landscape design plan should be highlighted and the irrigation schedule should indicate if any additional water is needed above the water budget because of high plant factors, recreation sport schedules or other predicted and seasonal use program. (but not due to irrigation inefficiency.)
- E. Whenever possible, irrigation scheduling should incorporate the use of evapotranspiration (ET) data such as those from the Irrigation Management Information System (IMIS) weather stations or the Yavapai Extension Agency standard developed to apply the appropriate levels of water for different climates.
- F. As required seasonally, landscape irrigation shall be scheduled between 8:00 p.m. and 8:00 a.m. to avoid irrigating during times of high wind or high temperature. April 15 through October 1st Annually.

Maintenance Schedules

- Unless otherwise specified, the maintenance of landscaping in the public right-of-way is the responsibility of the adjacent property owner, whether an individual, corporation, or homeowner's association.
- Landscaped areas should be reasonably maintained by the owner or the lessee of the property, including pruning, trimming, weeding, and other requirements necessary to create an attractive appearance for the development. Lack of maintenance of required landscaping material shall constitute a violation of this Code.
- Plant materials not surviving should be replaced within 90 days of its demise utilizing Prescott AMA Low Water Use Drought Tolerant Plant List.
- A regular maintenance schedule satisfying the following conditions shall be submitted as part of the Landscape Documentation Package:
- Landscapes should be maintained to ensure water efficiency. A regular maintenance schedule shall include but not limited to checking, adjusting, and repairing irrigation equipment; resetting the automatic controller; aerating and detaching turf areas; replenishing mulch; fertilizing; pruning, and weeding in all landscaped areas.
- Whenever possible, repair of irrigation equipment should be done with the originally specified materials or their equivalents.

Landscape Irrigation Audit Schedules

- A schedule of landscape irrigation audits, for all but single family residences should be conducted at the completion of all landscape projects in support of documenting the water budget allocation. The auditor should provide for the property owner a monthly irrigation schedule.
- Landscape irrigation audits should be conducted by a certified landscape irrigation auditors at least once every five years.

Grading Design Plan

- Grading design plans satisfying the following conditions may be submitted as part of the Landscape Documentation Package.
- A grading design plan should be drawn on the same scale as the project base sheets.
- It shall be separate from but use the same format as the landscape design plan.
- The grading design plan should indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade.

Soils

- A soil analysis may be submitted as part of the Landscape Documentation Package.
- Determination of soil texture, assist in indicating the percentage of organic matter.
- An approximate soil infiltration rate (either measured or derived from soil texture/infiltration rate tables.) A range of infiltration rates should be noted where appropriate.
- Request a measure of soil pH, and total soluble salts in support of improving soil conditions.
- An organic mulch of at least three inches should be applied to all planting areas over a weed barrier
- Oasis and turf areas should improve soils to a depth of 6-inch minimum. Commercial, Industrial and Municipal development projects are required to prepare oasis areas with 6" compost soil as a standard conservation practice.