PINE CREEK CANYON
DOMESTIC WATER IMPROVEMENT DISTRICT

DROUGHT/WATER SUPPLY DEFICIENCY PLAN

Prepared by
Drought Plan Sub-Committee of the Pine Creek Canyon Domestic Water Improvement District

November 2004 and Modified December, 2014

Consumer Update Notice:

This Drought/Water Deficiency Plan was adopted by the Pine Creek Canyon Domestic Water Improvement District (the "District") Board of Directors in 2004. Substantial portions of the Drought/Water Deficiency Plan (the "Plan") are still very applicable; however, updates to the timing of restrictions on water use are required due to (a) a continuing drought throughout Western and Central Arizona that has been occurring since about the year 2000, and (b) the addition of a 1785' deep well brought on line in 2010. The deep well draws water from a separate aquifer far deeper than the upper aquifer from which the District's first well (380' deep), and most of the area's other community wells (200'-600'), draw their water. Therefore, adjustments to this Plan have been incorporated as of December, 2014.

Acknowledgements

The original Drought/Water Deficiency Plan was researched and drafted by a sub-committee of the District. Sub-committee members were Bruce Parke, Sandy Velotta and Del Walth. Final Board of Director adoption was approved on November 27, 2004.

The primary elements of this Plan were originally obtained from the drought plan of the City of Peoria, Arizona. That plan was based on elements of the plans adopted by the City of Phoenix, Arizona and the City of San Diego, California. The Drought Plan Sub-Committee wishes to acknowledge and thank the City of Peoria for its assistance in the preparation of this document. Additionally, the Plan provides

mechanisms to implement strategies contained in Arizona Governor Janet Napolitano's Governor's Drought Task Force Report (October 1, 2004).

Document review was obtained in several ways. Technical review was performed by hydrologist, Dr. Paul Manera, P.E. and legal review was performed by the Gila County Attorney's Office. Public comment was obtained during a specially convened District Board of Directors meeting on October 9, 2004.

I. Introduction

The Drought/Water Deficiency Plan (the "Plan") aims to prudently plan for sustainability of water resources within the District. This Plan provides procedures and strategies in the event that the District's supplies may not be able to meet demand. The Plan is yet another resource the District can use should a meteorological drought last for several years. The Plan provides ways for District customers to aid in water demand reduction when a water supply drought occurs.

A. Weather and Geological Impact

Drought conditions may quickly impact the District because of the geologic structure of the area. Based upon conclusions reached by Dr. Paul Manera, P.E., precipitation generally recharges the Supai formation and underlying Redwall limestone along the Mogollon Rim. Groundwater flows through the aquifer until it reaches a generally east-west trending fault which passes under Pine. The ground water flow then follows the fault which dips sharply to the south. Consequently, ground water is present north of the fault at relatively shallow depths and much deeper south of the fault.

During years of normal or above normal precipitation, the ground water levels in the typical shallow wells (200'-600') remain relatively constant. However, when below normal precipitation occurs like has been the case for the last 16-18 years, recharge is greatly reduced and the water levels in the shallow wells of the Pine area begin to decline, often dramatically by 40'-60' from pre-drought norms. Withdrawal of ground water for residential uses exacerbates the decline in the shallow ground water levels. The threat of drought results in extensive media attention and scrutiny of residential use drought plans and responses. Since 2010, shallow wells have continued to decline by another 20'-30', while water levels in the

deep well have only varied by less than 2.0 inches over the four year period.

B. Economy

A drought plan establishes the criterion for action and, in doing so, can ensure the least possible impact on the district's customers. The responsibility of a water district in a semi-arid climate is to demonstrate how it will deal with the effects of drought in order to maintain the sustainability of the district's water resources.

The District's primary strategy to deal with drought conditions that mainly affect shallow wells has been to invest heavily in a deep well that is expected to be highly resistant to drought conditions. In 2009-2010, the District invested about $800,000 in a new 1785' deep well with about 40% ($325,000) of the total cost paid with funds from a grant from the American Recovery and Reinvestment Act (Obama "Stimulus Program").

C. Equity

Not all uses of water are of equal importance. Some uses, such as reserves for fire suppression and domestic use, take priority over less universally beneficial applications of the available resource, such as landscape irrigation.

D. Preparedness

A drought plan gives a district's leaders the opportunity to react quickly and implement appropriate restrictions early, while making allowances to suit every situations specific need.

E. Response to Citizens

A district should attempt to ensure that future property owners and residential customers have the opportunity to utilize and enjoy their property in the same manner as existing customers when drought conditions do arise.

II. Definitions

A. Drought

A drought is a long period of abnormally low precipitation (rain or snow), especially one that adversely affects growing or living conditions. A drought can be caused by seasonal or multi-year weather conditions, a curtailment of delivery because of water quantity or quality problems, or any of a number of natural or man-

made situations.

B. Supply Deficiency
Supply deficiency occurs when water availability in an area is not sufficient to meet immediate unrestricted demand. While drought is usually systemic and regional in nature and of indeterminable length, a supply insufficiency may be system-wide or very localized, can be of relatively short duration, and may be caused by unforeseen increases in water demand or failure of a localized part of the storage or delivery system to provide a sufficient unrestricted supply of water.

C. Demand Reductions
Demand reductions are all measures taken by a water district to reduce the use of potable water in response to drought or supply insufficiency conditions. While a number of water conservation measures may be implemented or accelerated during drought, not all water conservation is a response to drought and not all demand reduction measures are factors in a comprehensive water conservation program. Conservation, by its very nature, should be a normal component of a well-run water district that seeks to maintain a reliable water resource. It should be an on-going practical application of good citizenship in the community. Demand reduction includes measures which would restrict water use beyond a normal conservation minded semi-arid lifestyle.

Conservation programs are usually voluntary and are driven by a desire of a district to extend the existing water supply, reduce the costs of finding and delivering additional water, and minimize the damage to the natural ecosystem caused by removing groundwater. For customers, conservation efforts can decrease overall household operating expenses. For both a district and customers, conservation activities are exercises in responsible behavior. Water demand reduction during a drought may incorporate both voluntary and mandatory measures, such as curtailment of landscape water use and, in extreme cases, rationing of available supplies. Many of the organizational demand management responses to a drought condition, including conservation measures, are appropriate for responding to a short-duration supply insufficiency. Generally, responses to a systemic failure will be more rapid and may exclude intermediate steps normally associated with an incremental drought response plan.

Based upon information reviewed from areas that have experienced drought, it is evident that drought is not a constant or totally

predictable condition in occurrence or duration. Rather, there are levels of drought and levels of drought impact and therefore various levels of demand reduction response.

D. Potable Water
Potable water is water suitable or safe for drinking. Water is considered safe to drink if it meets or exceeds all of the federal, state, and local standards that are legally enforceable.

E. Effluent
Effluent is an outflow from a sewer or sewage treatment system. Reclaimed wastewater is effluent that has been treated to a quality suitable for non-potable applications such as landscape irrigation, decorative water features, and non-food crops. Such water remains effluent until it acquires the characteristics of groundwater or surface water.

F. Ornamental Fountain
An ornamental fountain is any fountain that is solely or partially used for decorative purposes.

G. Household Graywater
Household graywater is any potable water that passes through a residential shower, bathtub, bathroom sink, or washing machine, but contains no fecal coliform.

H. Household Blackwater
Household blackwater is any potable water that passes through a residential toilet, kitchen sink, dishwasher, or workshop sink, among other things, and usually contains fecal coliform.

III. Purpose

The purpose of this Plan is to:

A. Provide for sustainability of the District's water resources.
B. Aid in citizen and economic security.
C. Determine water supply drought stages.
D. Provide authority and enforcement.
E. Establish flexibility and preparedness for the District's leaders and customers.
F. Establish the difference between the water conservation lifestyle and demand reduction drought response.

IV. Goals

The goals of the Plan include:

A. To protect public health and safety.
B. To provide sufficient water to meet the District's customers' needs.
C. To share the impacts and hardships caused by drought equitably and in proportion to the magnitude of the drought.
D. To provide competent implementation of demand reduction measures.
E. To provide options for updating or changing the Drought Plan.
F. To enforce District policies so that drought related water reduction goals are met.

V. Demand Management Options

A. Public Education for Voluntary Reduction

The goal of a good public education program is to generate an appropriate level of public awareness that results in the desired participation. These programs stress long-term management solutions, general awareness of water issues, and the recognition that Portal IV is a semi-arid community with a limited supply of water. An appropriate demand reduction response would provide for heightened awareness of drought and behavior modification to conserve water above and beyond the District's normal public outreach.

B. Increase Public Education Programs

Once citizens are convinced of the need to conserve water, residential retrofit is one of the most practical and effective approaches in providing the District's customers with "how-to" information on altering their water use habits. At the same time, it provides them with the technology to save water with the least impact on their lifestyle. The greatest water savings can be achieved by combining the use of conservation devices with behavioral changes since these two actions tend to reinforce each other.

Future programs should focus on in-home leak repair, installation of interior plumbing isolation/shut-off valves, and promotion of other water-saving appliances such as water efficient washing machines, landscape timers, hot water recirculation systems, and recovery of graywater/storm water for landscape irrigation. Programs to encourage conservation should be actively promoted in partnership

with the Portal IV Home Owners Association and its architectural review committee.

C. District Use Restrictions

There is no faster way to undermine the effectiveness of a water demand reduction program than to allow flagrant and visible water waste within the District's jurisdiction. The strategy for controlling the District's water use is to at a minimum strictly monitor the restrictions requested of its consumers. The amount of the District's water use is relatively small, and therefore, these restrictions are not expected to produce a large volume of savings. However, it is essential that the appropriate steps be taken to establish the District as a leader in the drought effort, not merely a regulator of others' use of water.

D. Outdoor Use Restrictions and Bans

Outdoor water use is a significant portion of everyday consumption within the District. Water consumption increases as much as 500 percent from March through October each year due to seasonal heat and cooling needs, and to a prolonged growing season in the semi-arid environment. Drought certainly would have a much more severe impact during these months, making restrictions and outright bans on outdoor water use a significant water savings measure.

Effective outdoor restrictions include time-of-day watering and odd/even landscape watering restrictions based on house numbering, or a combination of the two. In some drought-stricken communities complete bans on all outdoor water use have been implemented. The potential loss of costly landscaping, and the impact to quality-of-life make complete bans an extreme measure.

Outdoor use restrictions help to reduce peak demand in the water treatment system and improve water service pressure on maximum need days. The negative side of outdoor water use restrictions is that effectiveness diminishes over time, and enforcement is difficult and expensive. Peer pressure and citizen reports can help with enforcement; however, this can also have a negative "rat on your neighbor" effect.

In spite of enforcement difficulties, outdoor water use restrictions must be considered because of their potential benefits for early implementation and the potential water savings that can be derived. Implementation would require the commitment of resources to monitor violators and enforce restrictions. An appeal process is also necessary.

E. Pricing Policies

An important concern created by a drought situation is the negative impact on revenues as a result of successful demand reduction. Such drops in revenue come at a time when operational expenses tend to increase. The establishment of financial systems to allow for fines, surcharges, or other measures is designed to support programs such as extensive public education.

Charges for water consumption have significant influence on the amount of water consumed. If the drought condition continues to the point that voluntary conservation is not sufficient, the District would be forced to use alternative means to reduce water use during the critical period. The usual response in communities all across the Country has been some form of rationing.

The surcharge amount would be determined based on the cost of services to implement water saving programs or acquisition costs necessary to meet reasonable water delivery demands. In a Water Emergency, the surcharge may be raised above revenue requirements as a strong disincentive for use until demand matches supply.

F. Moratorium on New Water Connections

Reducing water demand by curtailing growth is a controversial option, but one that must be considered should the drought situation require extreme measures. If the water supply status deteriorates and existing customers become impacted, it is inequitable to expect existing customers to make highly painful cuts in water use while new users are being added. This is a difficult issue since new users represent economic growth, both for the water District and Portal IV as a whole.

G. Physical Rationing and Mandatory Reductions

Sometimes a drought surcharge is used to ration water use through economic means. Price rationing offers the consumer more flexibility in quality-of-life issues and has less impact on the revenue stream of the District which has normal or higher-than-normal operational expenses during a drought.

Key elements of a successful rationing program are that: (1) the resources and the hardships are shared as equitably as possible, and (2) customers are kept informed about the status of the shortage. However, allocation disagreements are to be expected and procedures to handle valid exceptions and variances need to be part of the

rationing program. Pertinent information regarding water use and supply must be published and disseminated on a timely basis to continually reaffirm customer commitment.

Physical rationing programs are generally patterned after either percentage reduction or specific use bans. To better demonstrate the difficulty and expense created by choosing to implement physical rationing for a utility the size of the District, the various physical rationing plans are defined below:

- A percentage reduction assigns customers a consumption reduction goal, based on the system's total water use, as a percentage of the consumption level used in a similar billing period during a normal season.
- Specific use bans are a rationing alternative; however, they do not increase or change the billing calculations. Instead they are imposed primarily through public education and enforcement. Specific use bans, such as landscape watering only every other day and prohibition of water features can be effective. Bans generate awareness, prioritize water use, and establish a sense of equity in the community.

VI. Water Use Restriction Stage Descriptions

Stage Zero – No Restrictions on Use

A. Stage One - Water Watch - Voluntary

Stage One is invoked when (a) the static water level in the District's Production Well 1 (shallow well) reaches an elevation greater than 300 feet below the collar elevation of the well, or when otherwise deemed necessary by the District and (b) the static water level in the District's Production Well 2 (deep well) reaches an elevation greater than 1,350 feet below the collar elevation of the well.

B. Stage Two - Water Alert

Stage Two is invoked during periods when the probability exists that the District will not be able to meet all of the water demands of its customers and when (a) the static water level in the District's Production Well 1 reaches an elevation greater than 310 feet below the collar elevation of the well, or when deemed necessary by the District and (b) the District's Production Well 2 reaches an elevation greater than 1,355 feet below the collar elevation of the well.

C. Stage Three - Water Warning

Stage Three is invoked during periods when the probability exists that the District will not be able to meet all of the water demands of its customers and when (a) the static water level in the District's Production Well 1 reaches an elevation greater than 320 feet below the collar elevation of the well, or when deemed necessary by the District and (b) the District's Production Well 2 reaches an elevation greater than 1,360 feet below the collar elevation of the well.

D. Stage Four - Water Emergency

Stage Four is invoked when a major failure occurs in any portion of the District's supply and/or distribution system, whether of a temporary or permanent nature, or when (a) the static water level in the District's Production Well 1 reaches an elevation greater than 330 feet below the collar elevation of the well, or when deemed necessary by the District and (b) the District's Production Well 2 reaches an elevation greater than 1,365 feet below the collar elevation of the well.

VII. Water Use Restriction Plan by Water Use Category

A. Stage One - Water Watch - Voluntary

Goal: The goal of the Stage One - Water Watch is to reduce demand for water supplies by 5%.

B. Stage Two - Water Alert

Goal: The goal of the Stage Two - Water Alert is to reduce demand for water supplies by10%.

The following Stage Two water restriction become mandatory:

- Outdoor water use allowed from 8:00 PM to 6:00 AM only; coordinated by street address. Even numbered addresses may water on even numbered days of the month. Odd numbered addresses may water on odd numbered day of the month. For customers where there is no discernable address, the even date schedule shall apply (*i.e.,* District property, HOA common areas, multi-family tracts and commercial tracts),
- Automobile washing only with a bucket and by hose with shut off nozzle.
- No wasting of water as defined by the District Board of Directors.
- Turn off all non-greywater, non-reclaimed water fountains unless part of an indoor cooling system including posting that your fountain is either using greywater or reclaimed water near the

fountain. Drain fountains and do not refill. No new fountains approved.
• No washing of sidewalks, driveways, parking areas, tennis courts, patios, or other similar paved surfaces with water.
• No cooling of outdoor areas with water or misting systems.

C. Stage Three - Water Warning

Goal: The goal of the Stage Three – Water Warning is to reduce demand for water supplies by 20% or more.

All of Stage Two water restrictions apply in addition to the following additions and/or modifications:

• Outdoor water use restricted to twice per week (Wednesdays and Sundays).
• Drought surcharge fee of a minimum of 125% of base water rate will be introduced. Surcharge will only apply to the volume of water used above a monthly target set by the District for each class of water user (*i.e.,* residential, non-residential, etc.).
• Construction water use and timing will be limited as directed by the District Manager and approved by the District Board of Directors.
• No new water meters will be issued until Stage Three has been reduced to Stage Two or Stage One levels.

D. Stage Four - Water Emergency

Water demand shall be further reduced by methods determined by the District's Board of Directors.

All of Stage Three water restrictions apply in addition to the following additions or modifications:

• No new water service permits will be issued.
• No new landscaping installations will be permitted.
• No trench compaction via water consolidation will be permitted.

E. Essential Use Exemptions

The following water use exemptions may be granted by the District Manager as approved by the District's Board of Directors:

• Any use necessary to maintain the health, welfare, and safety of the District's customers.
• Washing of sidewalks, driveways, parking areas, etc. related to immediate fire or sanitation hazards.
• Construction restrictions necessary to maintaining the health, safety and welfare of the public.

Appeals can be made on a case-by-case basis to the District Manager, with final decisions made by the District's Board of Directors

VIII. Mandatory Restriction Phase Implementation and Publication of Terms of Water Use

The District Manager shall monitor the projected supply and demand for water by the District's customers on a daily basis during periods of emergency or drought and shall recommend to the District's Board of Directors the extent of the conservation required through the implementation and/or termination of particular conservation stages to prudently plan and supply water to the District's customers. Thereafter, the District Manager may order the implementation and/or termination of the appropriate phase of water conservation. The declaration of Stage One or higher shall be made by public announcement and notices shall be sent by e-mail and by U.S. Mail to all owners of record in the District, be placed in monthly water bills, and posted to the District's website (pccdwid.org). The District Manager shall cause informational signs to be placed at the entrance and exit to Portal IV declaring a Water Watch or higher classification. The stage designated shall become effective immediately upon announcement and notification.

IX. Penalty

It shall be unlawful for any person, corporation or association to violate the provisions of this Plan. Violations of these provisions shall be a misdemeanor subject to penalties provided in the Gila County Municipal Code. First violations shall be subject to a written warning to the water customer. Second violations shall be $100 fine. Third violations shall result in a $250 fine. The fines shall increase in $250 increments for each subsequent violation. In addition to any other remedies, water shall be discontinued or appropriately limited to any customer who willfully uses water in violation of any provision of the Plan.