Water Efficiency National Trends and State Directions

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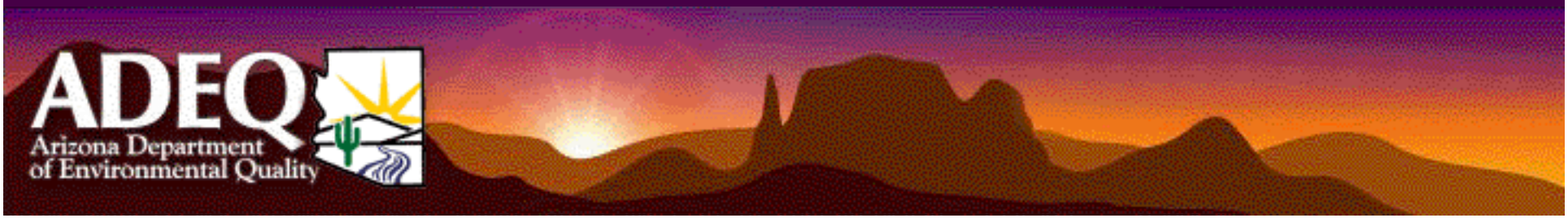
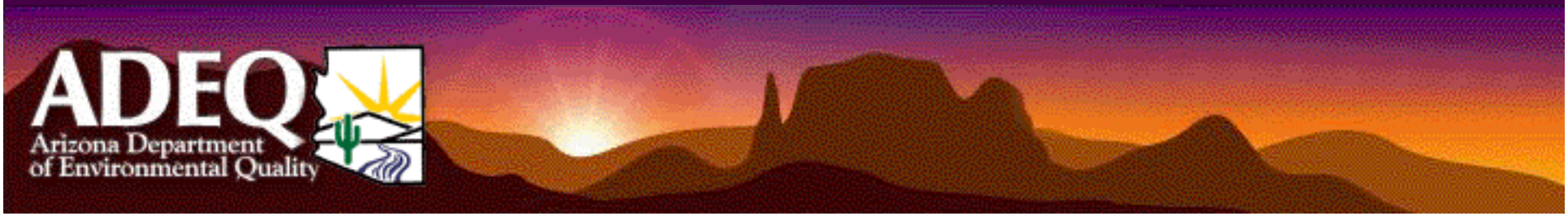


EPA's WaterSense Program

- Established in 2006, this partnership program sponsored by EPA seeks to protect the future of our nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices
- Partnerships with irrigation professionals and irrigation certification programs to promote water-efficient landscape irrigation practices



EPA's WaterSense Program

- Partnerships with manufacturers, retailers and distributors, and utilities to bring WaterSense products to the marketplace and make it easy for consumers to identify and purchase high-performing water efficient products
- WaterSense labeled products will perform well, help save money, and encourage innovation in manufacturing.

WaterSense Milestones

- Established criteria to recognize certification programs for irrigation professionals (system design, installation and maintenance, system auditing)
- Established and drafted specifications for high efficiency toilets, urinals and bathroom sink faucets and showerheads
- Drafting criteria that single-family new homes must meet to earn the WaterSense label

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WaterSense Accomplishments

(2008)

- Saving 9.3 billion gallons of water and 1 billion kWh through use of WaterSense labeled products.
- Helping consumers realize more than $55 million in water and sewer bill savings.
- Doubling the list of program partners.

WaterSense in Arizona

- Thirty WaterSense partners in Arizona: a cross-section of municipal and private water companies, manufacturers and government agencies (including ADEQ).
- Arizona beat out 20 other states to win the WaterSense State Challenge.
- More than 60 percent of the state's population is served by municipalities and water companies that are WaterSense partners.
- Arizona partners are actively promoting use of WaterSense labeled products; seven currently offer product rebates.
- Forty-four WaterSense certified Irrigation Partners

National Trends: Estimated Use of Water in US in (USGS)

- Data collected since 1950, analysis of trends from 2000 to 2005
- Overall water use has declined slightly although population has increased demand
- Largest increase in water demand is for thermoelectric power but efficiency improved due to increased use of recirculation water for cooling (reduced gals water per kilowatt hr)
- Agriculture, industry and mining have reduced water usage

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Arizona Water Trends
Reclaimed Water Use

- Since 2001, significant increase in direct reuse of reclaimed water, gray water
- WWTPs are classified for quality of reclaimed water produced
- Uses are based on appropriate quality
- Industrial uses of reclaimed are not considered direct reuse and no permit is required

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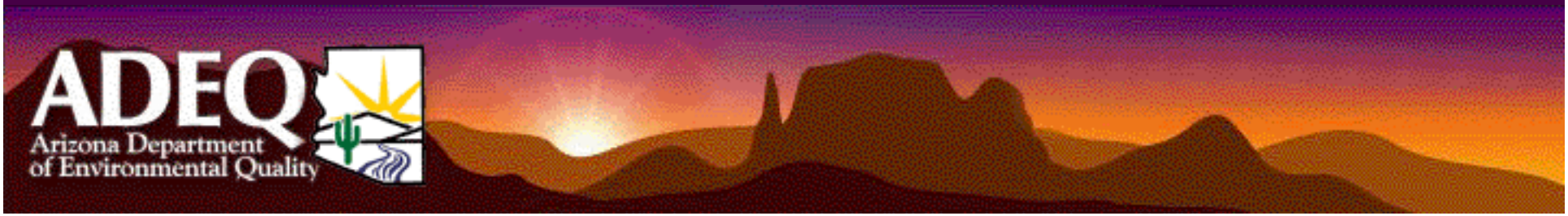
Reclaimed Water Quality Standards

CLASS	A+	A	B+	B	C
Total N_2	≤ 10 mg/l		≤ 10 mg/l		
Fecal coliform (cfu/100ml)	ND (4 of 7 daily) 23 (SSM)	ND (4 of 7 daily) 23 (SSM)	200 (4 of 7 daily) 800 (SSM)	200 (4 of 7 daily) 800 (SSM)	1000 (4 of 7 daily) 4000 (SSM)
Turbidity	2 ntu 5 ntu	2 ntu 5 ntu			



Reclaimed Water Uses

Class	Use
A	Open access irrigation (food crops, residential & school ground landscape, spray), toilet flushing, vehicle washing, snowmaking, recreational impoundments, fire protection systems
B	Restricted access irrigation (golf course), surface irrigation, landscape impoundment, dust control, soil compaction, concrete & cement mixing, pasture and watering (dairy), street cleaning
C	Non-dairy pasture and watering, irrigation of sod, fiber, seed, forage crops, silviculture

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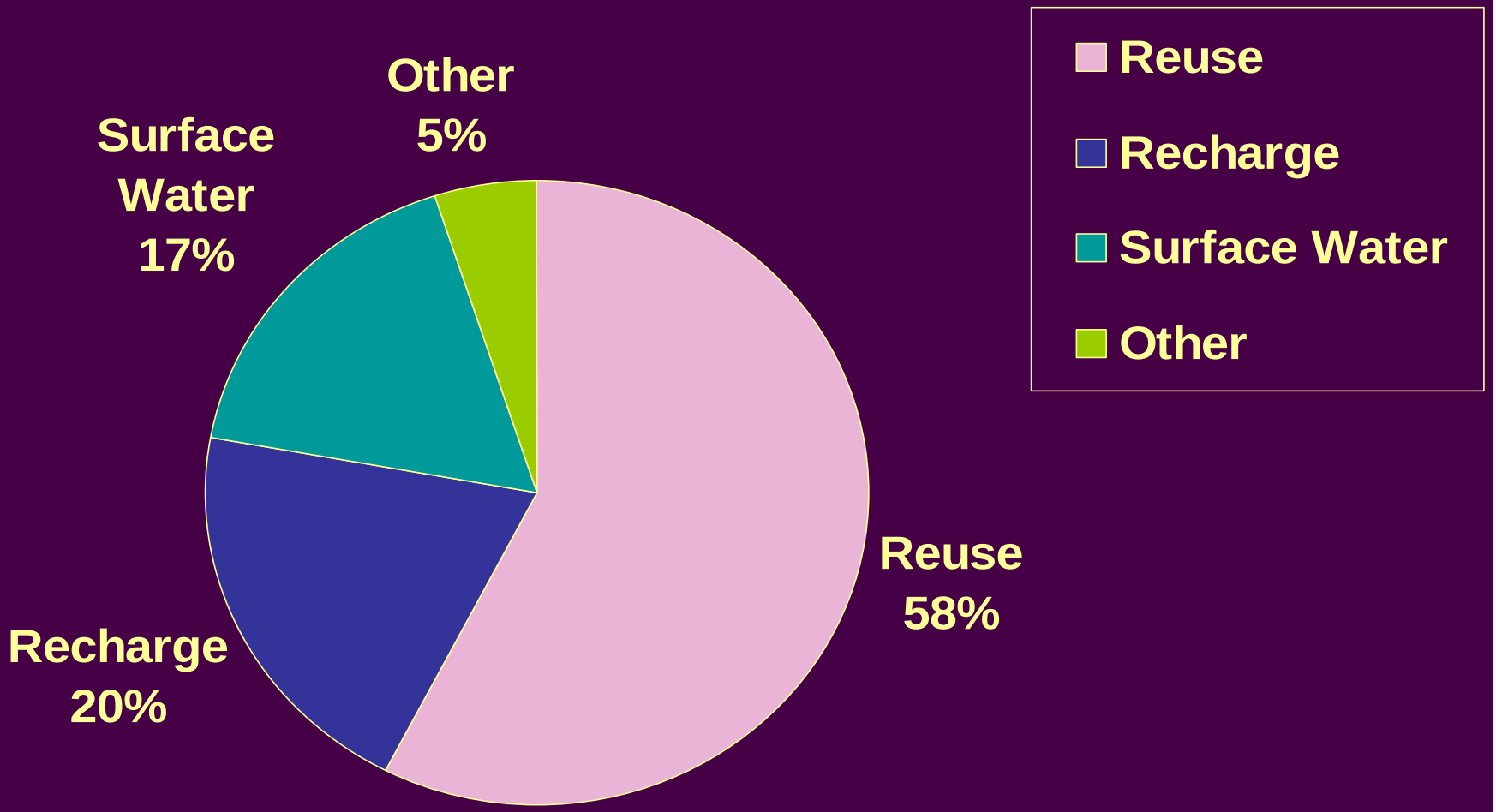
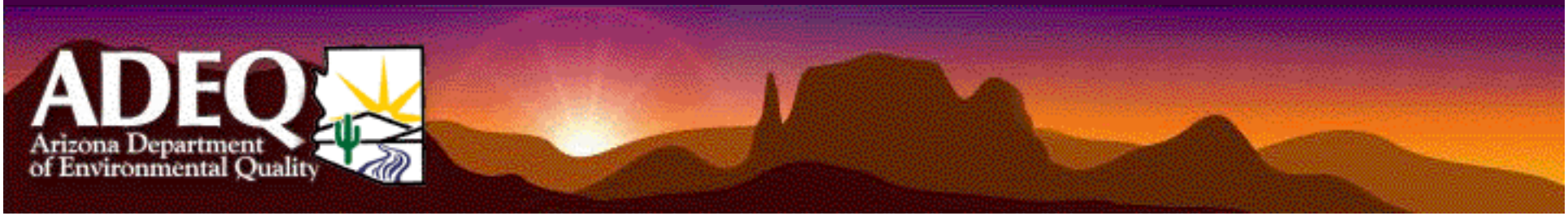
Permitted Reclaimed Uses in AZ WWTPs ≥ 24,000 GPD



Arizona Water Trends
Power Production

- Reclaimed water provides 100% of cooling water for Palo Verde Nuclear Generating Station (largest nuclear power plant in US)
- Average 25 cycles recirculation in condensers and cooling towers
- PVNGS uses 60,000 A-F/yr (22% of total reclaimed water supply of Phoenix Active Management Area or *20 Billion gallons)*
- Reclaimed water used at other power plants in Phoenix AMA



Arizona Water Trends
Power Production

- As a part of AZ's water conservation requirements, ADWR requires annual average of 7 cycles for cooling water in pre-1984 power plants and 15 cycles for newer plants
- Total cycles are limited by salt concentrations
- Water supply concerns likely to be an issue for proposed solar power plants

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Arizona's "3 Rs" of Water Sustainability

Reducing Water Waste

- water efficient technologies and practices
- emphasizing the water – energy nexus
- full cost pricing

Restoring Watersheds

- collaborative planning
- market-based tools
- green infrastructure techniques

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Arizona's "3 Rs" of Water Sustainability

Recycling Water

- personal stewardship
- Blue Ribbon Panel on Water Sustainability: new partnership with ADWR and ACC to increase efficient use and conservation of wastewater, graywater, stormwater, industrial process water
- Goals to increase use and delivery efficiency of recycled water; examine market and policy incentives