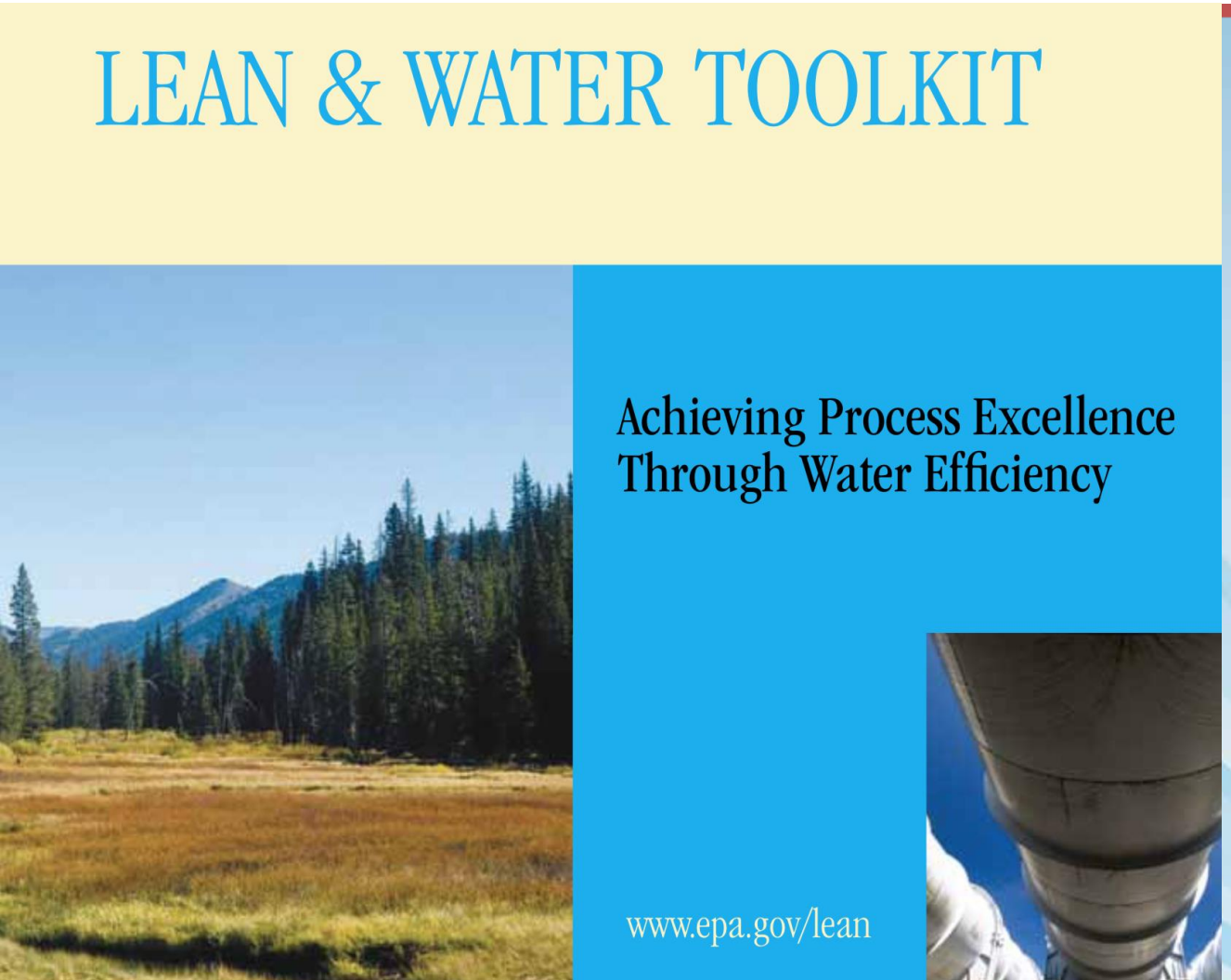
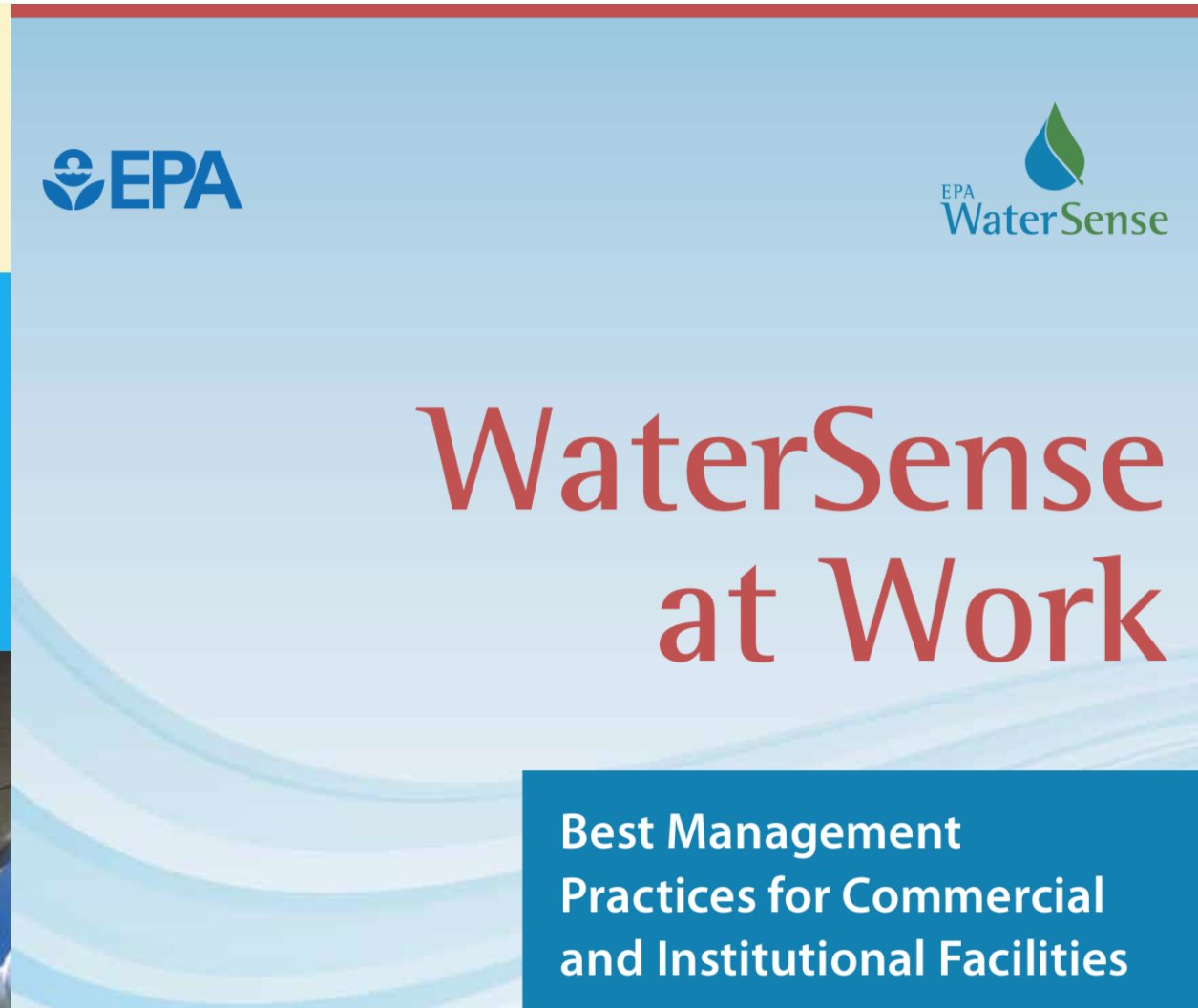
Industrial Water Conservation

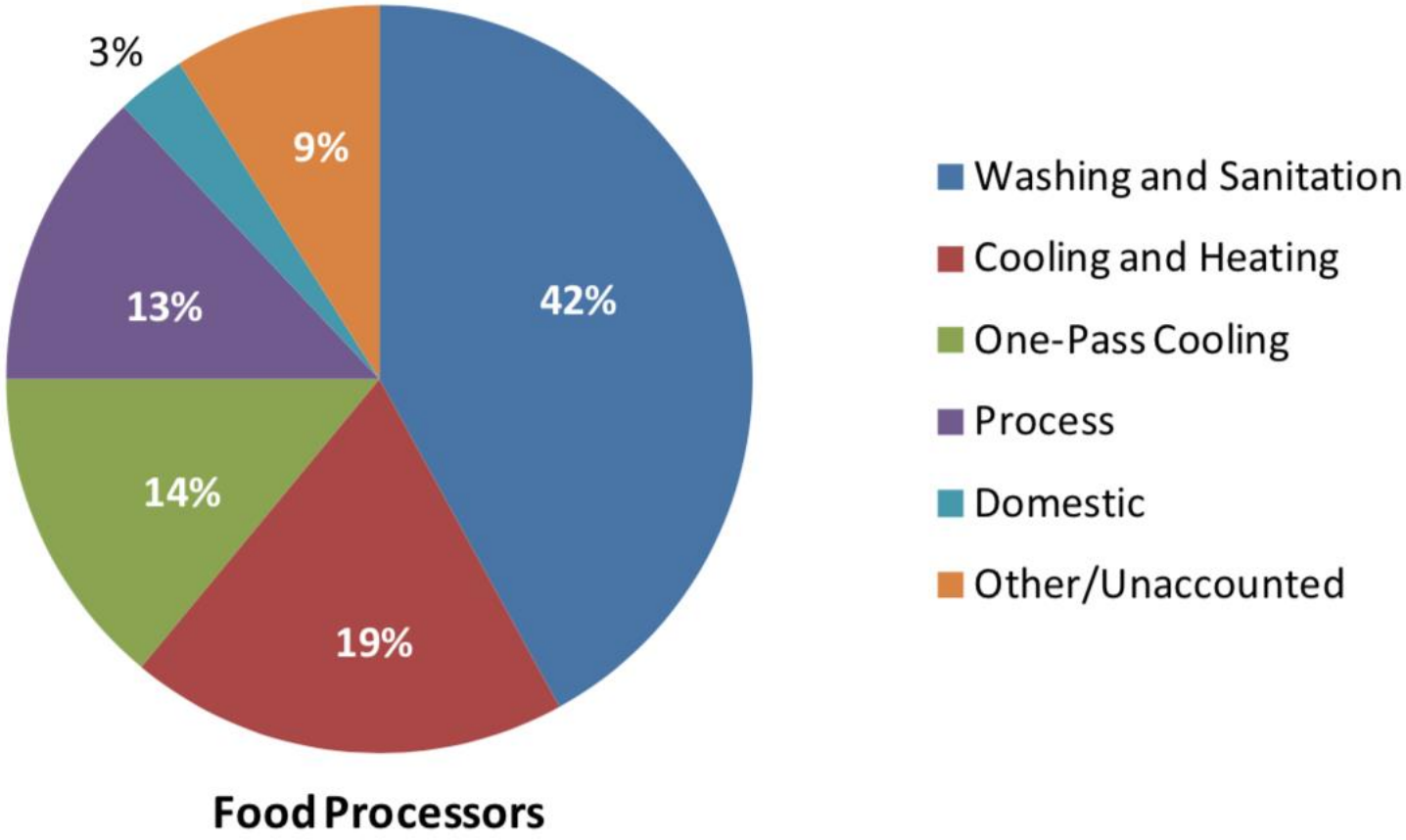
Focus on Food Processors Existing Facilities most Common High Water Waste Systems

Quick Highlights of Resources & Case Studies





Typical Balance of Water Use by Food Processors



Source: Adapted from New Mexico Office of the State Engineer, "A Water Conservation Guide for Commercial, Institutional and Industrial Users," July 1999, available at: www.ose.state.nm.us/water-info/conservation/pdf-manuals/cii-users-guide.pdf.

Sanitation Wash Down Equipment Flow Control

High Pressure Hot Water Power Wash System

Instantaneous or Point of Use Hot Water Systems

Cooling Towers or Evaporative Condensers

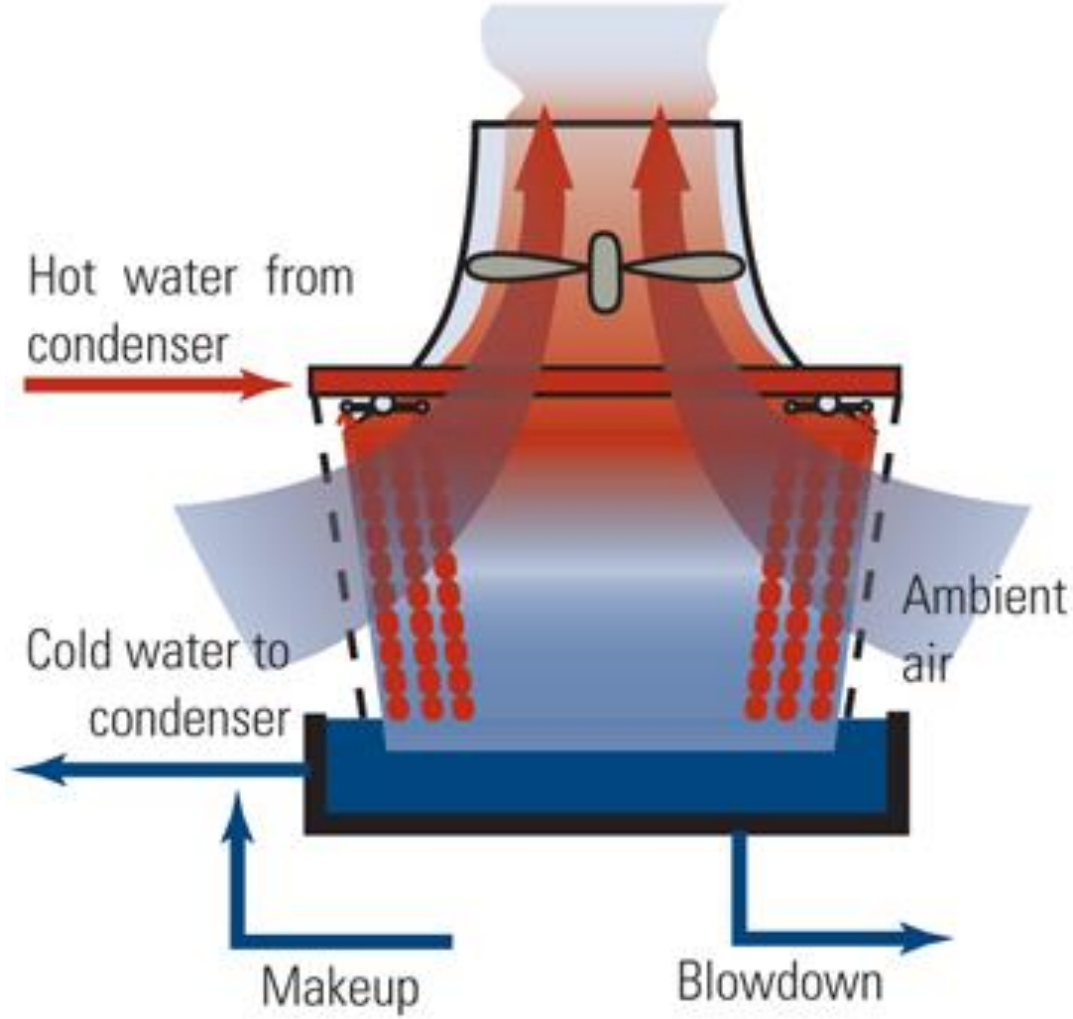
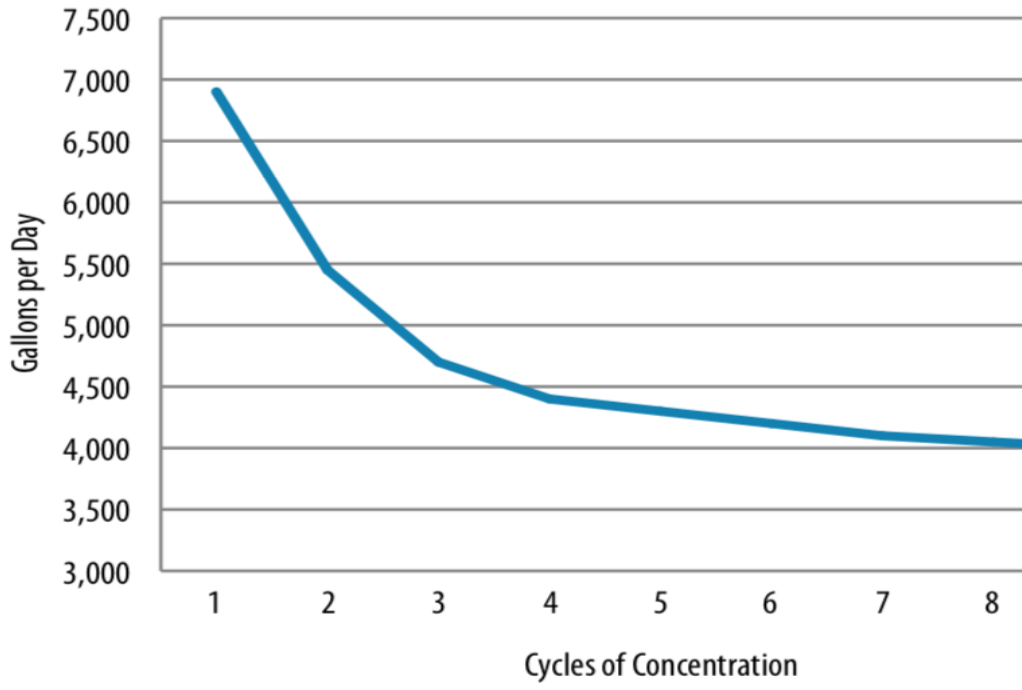


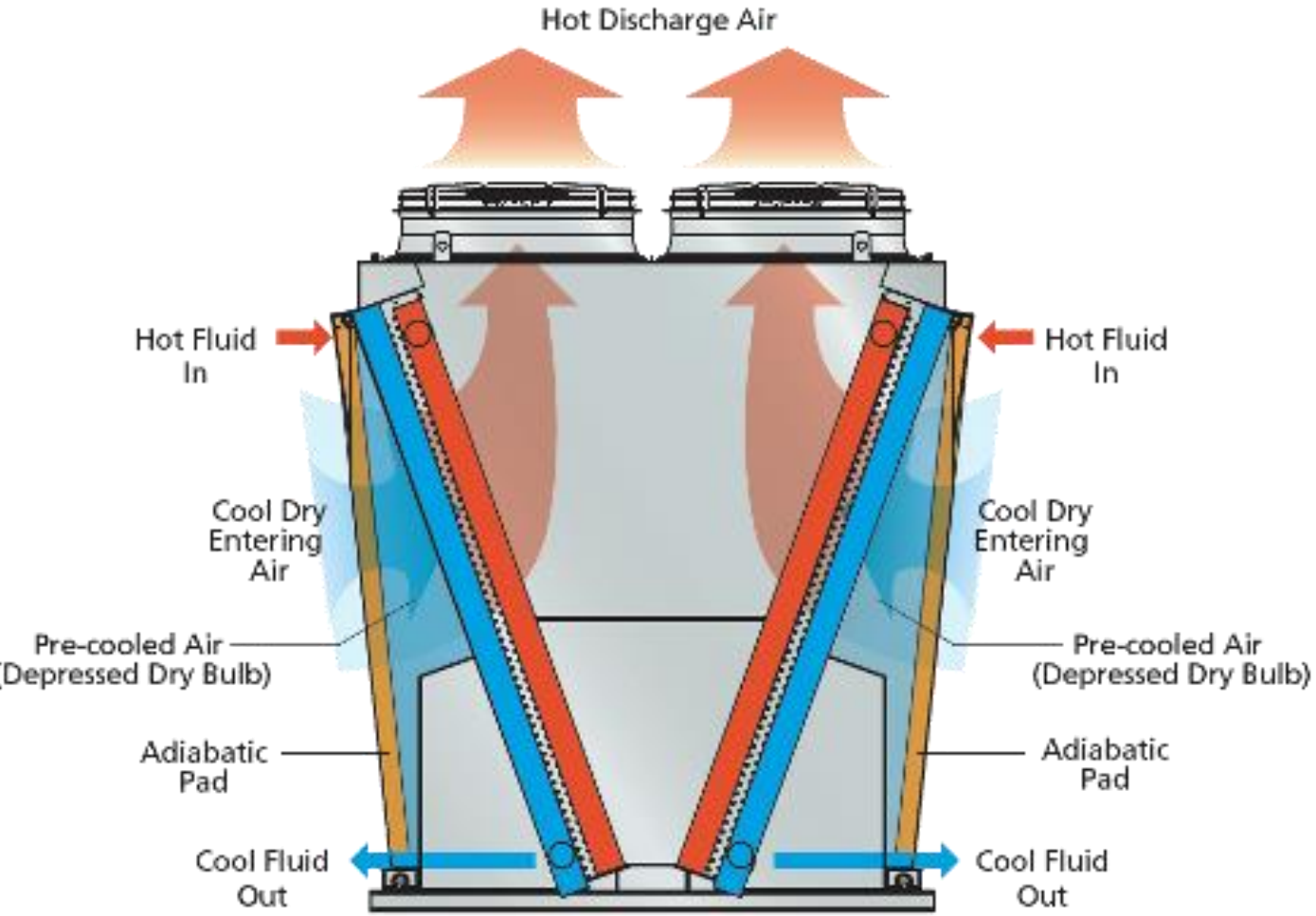
Table 6-1. Percent of Make-Up Water Saved by Maximizing Cycles of

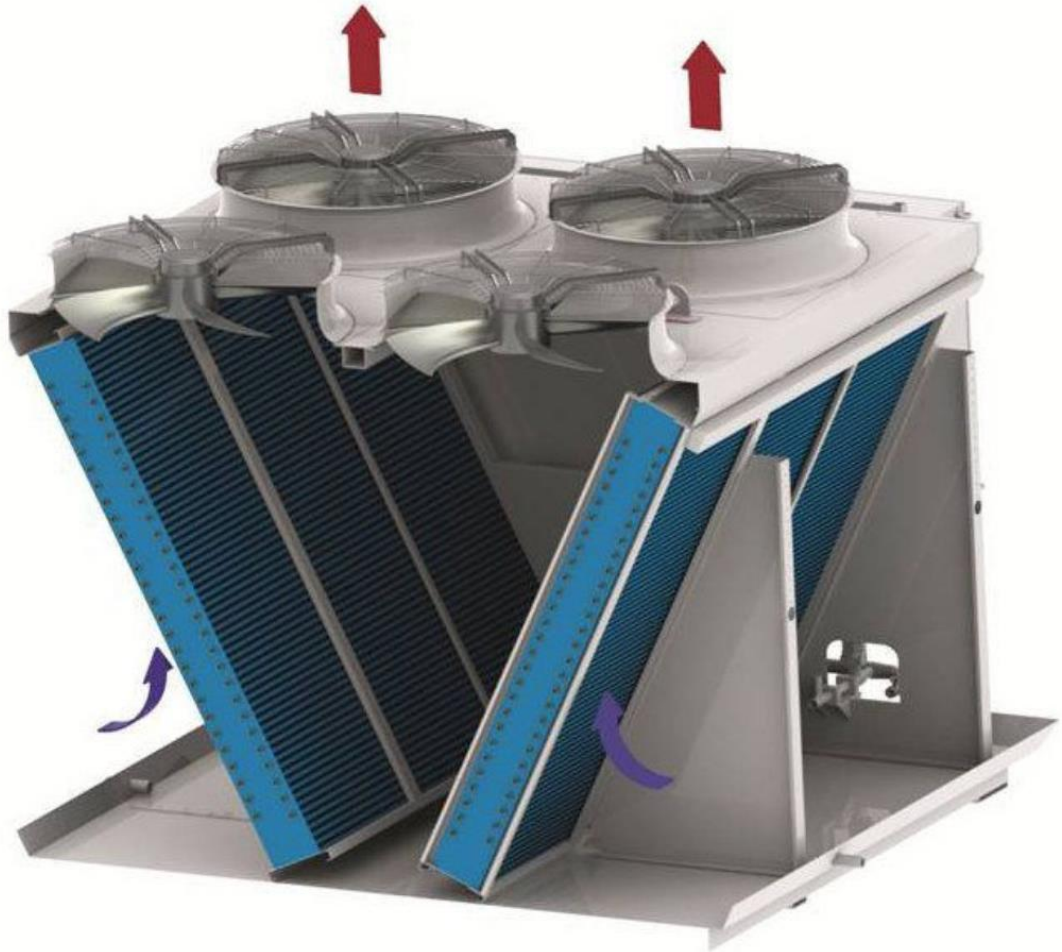
Initial Concentration Ratio (Cri)	New Concentration Ratio (CRf)								
		2	2.5	3	3.5	4	5	6	7	8
	1.5	33%	44%	50%	53%	56%	58%	60%	61%	62%
	2.0	–	17%	25%	30%	33%	38%	40%	42%	43%
	2.5	–	–	10%	16%	20%	25%	28%	30%	31%
	3.0	–	–	–	7%	11%	17%	20%	22%	24%
	3.5	–	–	–	–	5%	11%	14%	17%	18%
	4.0	–	–	–	–	–	6%	10%	13%	14%
	5.0	–	–	–	–	–	–	4%	7%	9%
	6.0	–	–	–	–	–	–	–	3%	5%

Figure 6-3. Cooling Tower Water Usage at Various Cycles of Concen
100-Ton Tower



Innovative Alternative Tower Technologies
Adiabatic or Hybrid





On Site Alternative Water Re-Use

Figure 8-1. Examples of Onsite Alternative Water Use

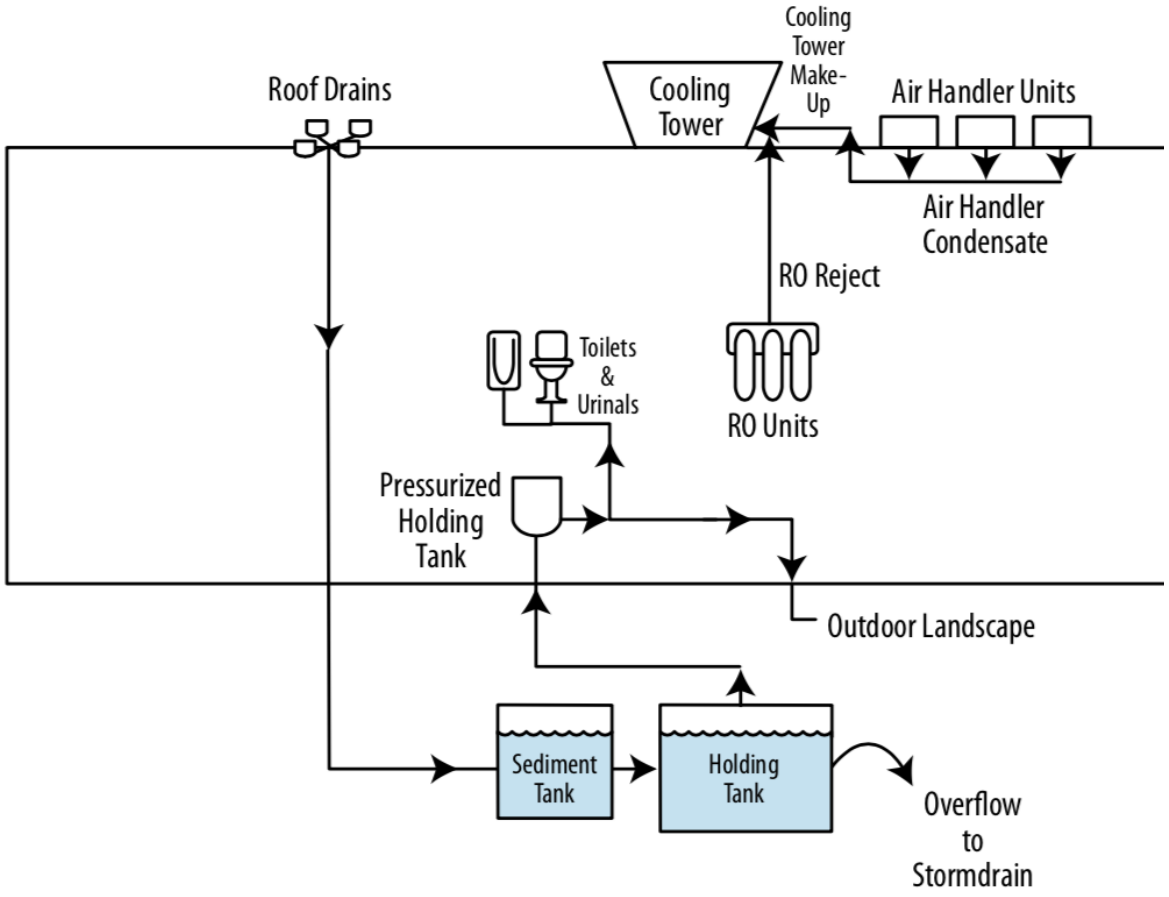


Table 8-2. Types of Available Treatment Based on Intended End Use Quality Needs*

Possible Sources	Filtration	Sedimentation	Disinfection	Biological Treatment	Other Treatment Considerations
Rainwater	Depends	Depends	Depends	No	May be used for irrigation without additional treatment
Stormwater	Yes	Depends	Depends	Depends	For non-potable use only
Air Handling Condensate	No	No	Yes	No	Segregate coil cleaning water
Cooling Tower Blowdown	Depends	Depends	No	No	Consider TDS monitoring
Reverse Osmosis and Nanofiltration Reject Water	No	No	No	No	Consider TDS monitoring
Gray Water	No	Depends	No	Depends	Biologically unstable for long periods of storage unless treated; subsurface drip irrigation requires the least treatment
Foundation Drain Water	Depends	No	Depends	No	May be hard if in alkaline soils

*Key
Yes: Level of treatment likely needed
No: Level of treatment not likely needed
Depends: Treatment depends upon ultimate use

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