

# Proposed Water Quality Standards for CAP System Use Agreement

October 31, 2017

*Proposal provided by AMWUA, the municipalities of Apache Junction, Avondale, Chandler, Gilbert, Glendale, Goodyear, Mesa, Oro Valley, Peoria, Phoenix, Scottsdale, Tempe, Tucson, Metro Water District, and the Salt River Project, with consultation from Gila River Indian Community*

Described below are a series of successively more stringent water quality requirements aimed at protecting CAP water quality, preserving equitable use of wheeling capacity, and maintaining CAWCD Board autonomy with regard to Wheeling Agreements. The proposal requires the use of predictive modeling using both periodic sampling and real-time water quality monitoring to manage wheeling discharges and provide CAP customers with water quality data. The cost for predictive modeling, sampling, and real-time monitoring to be borne by parties seeking Wheeling Agreements.

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## Level 1 Protection—Prohibited Pollutants

Wheeling discharges may not have detectable amounts of any of these prohibited pollutants: PFOA/PFAA, Perchlorate, Cyanide, and other contaminants as designated by the CAWCD Board.

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## Level 2 Protection—Flow Maximums

The flow volume of an individual wheeling discharge is restricted to be no more than 25% of CAP flow above the point of discharge. Cumulative amount of all wheeling discharges must not exceed 35% of CAP flow, unless authorized by the CAWCD Board.

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## Level 3 Protection—Source Water Parameters

Source water proposed for wheeling may not exceed certain parameters. Central Arizona parties propose levels based on 90<sup>th</sup> percentile of concentration in natural Arizona water sources. Southern Arizona parties propose source water standards that are 1.3 times the Level 4 Point of Delivery Standards.

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## Level 4 Protection—Point of Delivery Standards

Wheeling discharges may not cause water quality in the CAP canal at downstream points of delivery to exceed historical Colorado River water quality. Predictive modeling is used for initial project approval and on-going operational compliance in conjunction with real-time monitoring. Table below are proposed point of delivery standards for six basic constituents. Standards for additional constituents would be set upon acceptance of proposal.

Priority Constituents	Point of Delivery Standards
Arsenic ug/l	5
Fluoride mg/l	0.7
Nitrate mg/l	1
TDS mg/l	723
TOC mg/l	4
Turbidity NTU	6

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## Level 5 Protection—CAWCD Board Approval

Wheeling Agreements are subject to CAWCD Board approval.

Proposed Standard	Rationale	Known Potential Projects																										
		Tonopah Desert Recharge Project	Scottsdale Harquahala Groundwater	Salt & Verde River Water																								
<p><b>Level 1 Protection—Prohibited Pollutants</b>            Wheeling discharges may not have detectable amounts of any of these prohibited pollutants: PFOA/PFAA, Perchlorate, Cyanide, and other contaminants as designated by the CAWCD Board.</p>	Protective requirement to provide certainty that particularly troublesome contaminants are forbidden at any detectable level. Contaminants listed due to unknown risks of exposure and cost of removal.	Prohibited pollutants non-detect	Prohibited pollutants non-detect	Prohibited pollutants non-detect																								
<p><b>Level 2 Protection—Flow Maximums</b>            The flow volume of an individual wheeling discharge is restricted to be no more than 25% of CAP flow above the point of discharge. Cumulative amount of all wheeling discharges must not exceed 35% of CAP flow, unless authorized by the CAWCD Board.</p>	Avoids inequitable allocation of wheeling capacity and prevents a single wheeling party from consuming available capacity.	Proposed volume=10,000-30,000 af/yr Represents 0.7%-2.1% of CAP flow Cumulative volume of all three projects less than 35%	Proposed volume=3,645 af/yr Represents 0.25% of CAP flow Cumulative volume of all three projects less than 35%	Proposed volume=25,000-75,000 af/yr Represents 1.7%-5.3% of CAP flow Cumulative volume of all three projects less than 35%																								
<p><b>Level 3 Protection—Source Water Parameters</b>            Source water proposed for wheeling may not exceed certain parameters. Central Arizona parties propose levels based on 90<sup>th</sup> percentile of concentration in natural Arizona water sources. Southern Arizona parties propose source water standards that are 1.3 times the Level 4 Point of Delivery Standards. Wheeling discharges may not exceed:</p> <table border="1" data-bbox="102 828 975 1157"> <thead> <tr> <th colspan="2">Central Arizona Parameters</th> <th colspan="2">Southern Arizona Parameters</th> </tr> <tr> <th>Priority Constituents</th> <th>90<sup>th</sup> Percentile of Concentration in Natural Arizona Water Sources</th> <th>Priority Constituents</th> <th>1.3 Times Point of Delivery Standards</th> </tr> </thead> <tbody> <tr> <td>Arsenic ug/l</td> <td>31</td> <td>Arsenic ug/l</td> <td>6.5</td> </tr> <tr> <td>Fluoride mg/l</td> <td>5.8</td> <td>Fluoride mg/l</td> <td>0.91</td> </tr> <tr> <td>Nitrate mg/l</td> <td>28.0</td> <td>Nitrate mg/l</td> <td>1.3</td> </tr> <tr> <td>TDS mg/l</td> <td>1800</td> <td>TDS mg/l</td> <td>940</td> </tr> </tbody> </table>	Central Arizona Parameters		Southern Arizona Parameters		Priority Constituents	90 <sup>th</sup> Percentile of Concentration in Natural Arizona Water Sources	Priority Constituents	1.3 Times Point of Delivery Standards	Arsenic ug/l	31	Arsenic ug/l	6.5	Fluoride mg/l	5.8	Fluoride mg/l	0.91	Nitrate mg/l	28.0	Nitrate mg/l	1.3	TDS mg/l	1800	TDS mg/l	940	Source Water Parameters prevent sources with high concentrations from using all of the capacity for blending in the CAP canal, thereby preserving wheeling opportunities for future users and avoiding inequitable allocation of wheeling capacity.	<p><u>Central Arizona Parameters:</u> Projected 2020 concentrations for Arsenic (16 ug/l) and Fluoride (2.3 mg/l) meet Central Arizona Parameters. Projected 2045 concentration for Arsenic (41 ug/l) does not meet the Central Arizona Parameters and Fluoride (5.6 mg/l) almost exceeds the parameter. Wheeling could be approved subject to treatment if concentrations approached Source Water Parameters.</p> <p><u>Southern Arizona Parameters:</u> Current and projected concentrations for Arsenic and Fluoride exceed Southern Arizona Parameters and would require treatment before being wheeled.</p>	<p><u>Central Arizona Parameters:</u> Current concentrations for TDS (600-962 mg/l) and Nitrate (1.9-12.2 mg/l) meet Central Arizona Parameters.</p> <p><u>Southern Arizona Parameters:</u> Current concentrations for TDS (600-962 mg/l) meet Southern Arizona Parameters except for the very high end of the range. Nitrate concentrations exceed Southern Arizona Parameters and would require treatment before being wheeled.</p>	<p><u>Central Arizona Parameters:</u> Current concentrations for Salt River water of TDS (950 mg/l) and Arsenic (5.6 mg/l) and for Verde River water of TDS (160 mg/l) and Arsenic (11.1 mg/l) meet Central Arizona Parameters.</p> <p><u>Southern Arizona Parameters:</u> Current concentrations for TDS in Salt River water (950 mg/l) almost meet Southern Arizona Parameters. Verde River water TDS concentration (160 mg/l) meets Southern Arizona Parameters. Arsenic in Salt River water (5.6 mg/l) meets Southern Arizona Parameters but Verde River water concentration of Arsenic (11.1 mg/l) exceeds Southern Arizona Parameters and would require treatment before being wheeled.</p>
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<p><b>Level 5 Protection—CAWCD Board Approval</b>            Wheeling Agreements are subject to CAWCD Board approval.</p>	Maintains local decision-making by the CAWCD Board for final approval of any proposed wheeling.	Subject to CAWCD Board approval	Subject to CAWCD Board approval	Subject to CAWCD Board approval																								