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# Water Quality Guidance

For the Introduction of Non-Project Water  
Into the Central Arizona Project



— BUREAU OF —  
RECLAMATION

Water Quality Guidance  
For The Introduction of Non-Project Water  
Into the Central Arizona Project

April 9, 2020

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## 1. Definitions

- *Applicant* - means the person or organization that wishes to enter into an agreement with CAWCD and/or the United States to introduce Non-Project Water into the CAP System.
- *CAP System* – means all of the transferred works of the Central Arizona Project (CAP) including, but not limited to: A) the Mark Wilmer Pumping Plant; B) the Hayden-Rhodes Aqueduct; C) the Fannin-McFarland Aqueduct; D) the Tucson Aqueduct; E) the New Waddell Dam; F) any pumping plant or appurtenant works of a feature described in any of A) through E); and G) any extension of, addition to, or replacement for a feature described in any of A) through F).
- *CAP System-wide Water Quality Model* – means a computer model maintained by CAWCD that is capable of simulating the individual and cumulative water quality effects of introducing Non-Project Water into the CAP system.
- *CAWCD* – means the Central Arizona Water Conservation District, a multi-county water district organized under the laws of Arizona, or any successor operating agency for the CAP System.
- *CAWCD Water Transmission Group* – means the division of CAWCD charged with the operational responsibilities for wheeling Non-Project Water.
- *CAWCD Wheeling Contract* – as defined in the System Use Agreement, and used herein means a contract among CAWCD, Reclamation, and a separate party for the transportation of Non-Project Water in the CAP system.
- *Delivery Standards* – means the maximum target numeric water quality standards, established by CAWCD and Reclamation, for water delivered by the CAP System.
- *Federal Arrangement* – as defined in the System Use Agreement, and used herein means an arrangement relating to the use of the CAP System entered into by Reclamation and a separate party under Article 8.17 of the Master Repayment Contract.
- *Firming Agreement* – as defined in the System Use Agreement, and used herein means an agreement between the United States or CAWCD and Long-Term Contractors or lessees of tribal Project Water to set forth the terms and conditions under which CAWCD will deliver, and the Long-Term Contractor or lessee of tribal Project Water will accept, Firming Water.
- *Firming Water* – as defined in the System Use Agreement, and used herein means water, including non-Project Water introduced into the CAP System, available to satisfy all or a portion of a CAP long-term delivery contract that has been reduced due to a water shortage.
- *Introduction Standards* – means the numeric water quality standards, established by CAWCD and Reclamation, which define the maximum allowable concentrations of constituents in Non-Project Water that is introduced into the CAP System.

- *Master Repayment Contract* – means the Contract Between the United States and the Central Arizona Water Conservation District for Delivery of Water and Repayment of Costs of the Central Arizona Project, Contract No. 14-06-W-245, Amendment No. 1, Dated December 1, 1988, as it may be amended and supplemented.
- *Non-Project Water* – as defined in the System Use Agreement, and used herein means all water, including Recovered Water, other than Project Water. For the purposes of the System Use Agreement and this Guidance Document, the term Non-Project Water does not include Long-Term Storage Credits.
- *Project Water* - means that water defined as Project Water in the Repayment Stipulation.
- *Reclamation Wheeling Contract*— as defined in the System Use Agreement, and used herein means a contract between Reclamation and a separate entity to deliver Non-Project Water using the CAP system entered into pursuant to Article 8.17 of the Master Repayment Contract.
- *Recovered Water* - as defined in the System Use Agreement, and used herein means the water resulting from the recovery of Long-Term Storage Credits from wells pursuant to a valid recovery well permit issued by Arizona Department of Water Resources (ADWR) under A.R.S. § 45-834.01.
- *Repayment Stipulation* – means the Stipulated Judgment and the Stipulation for Judgment (including any exhibits to those documents) entered on November 21, 2007, in the United States District Court for the District of Arizona in the consolidated civil action styled Central Arizona Water Conservation District v. United States, et al., and numbered CIV 95-625-TUC-WDB (EHC) and CIV 95-1720-PHX-EHC.
- *System Use Agreement* – means The Central Arizona Project System Use Agreement between the United States and the Central Arizona Water Conservation District, Agreement No. 17-XX-30-W0622 (Feb. 2, 2017).
- *Turn-In* – means a structure that facilitates the introduction of Non-Project Water into the CAP System.
- *Verification Sample* – means a mandatory water quality sample collected pursuant to Section 7 herein after an exceedance of an Introduction Standard in an initial sample.
- *Water Quality Monitoring and Reporting Plan*— means a water quality monitoring and compliance agreement between CAWCD or Reclamation and a Wheeling Entity introducing Non-Project Water into the CAP System.
- *Wheeling* – means use of the CAP system to transport and deliver Non-Project Water.
- *Wheeling Entity* – means the person or organization that has entered into a CAWCD Wheeling Contract, Reclamation Wheeling Contract, Federal Arrangement, or Firming Agreement.

## 2. Introduction

### 2.1. CAP Water Quality

CAP water is high quality and suitable for a variety of uses by tribes, cities, private water companies, irrigation districts and others. It meets most (if not all) established primary drinking water standards, and requires minimal treatment prior to delivery for potable uses. CAWCD has been monitoring water quality within the CAP system since 1996 and the historical data show a high degree of consistency through time. The historical data also provide a baseline for many of the water quality standards referenced in this document (see [Appendix A](#)). Although CAWCD does not warrant the quality of water and is under no obligation to treat the water, CAWCD recognizes that the high quality and chemical stability of CAP water is highly valued by water users.

### 2.2. Transportation of Non-Project Water

The CAP system was designed to divert and deliver Project Water. However, the ability to wheel Non-Project Water supplies has been contemplated for decades, and is consistent with federal directives to maximize project benefits. The first request for transportation of Non-Project Water came to CAWCD in 1983, and the 1988 Master Repayment Contract explicitly contemplates wheeling Non-Project Water, notably in Articles 8.17 and 8.18. Article 8.18 includes specific reference to a jointly developed Standard Form of Wheeling Contract. The Secretary is also required to take into consideration the impact that wheeling of such Non-Project water will have on the quality of the project water when considering the approval of such a contract

In February 2017, CAWCD and Reclamation approved the Central Arizona Project System Use Agreement, which includes a Standard Form Wheeling Agreement and other provisions related to the transportation of Non-Project Water through the CAP System. Non-Project Water can originate from a variety of sources with water quality characteristics that differ from CAP water. Therefore, the System Use Agreement calls for CAWCD and Reclamation to establish “uniform water quality standards” that must be adhered to by all parties introducing Non-Project Water into the CAP system. Non-Project Colorado River supplies that are transported by the CAP system are excluded from these standards.

### 2.3. Establishment of Water Quality Standards

The water quality standards and related operational approaches in this document were developed by CAWCD and Reclamation with extensive engagement by the CAWCD Board of Directors, technical experts, and affected parties, including both Tribal contractors and M&I subcontractors. These processes spanned more than two years, and included multiple opportunities for public comment and involvement. Water quality data and information developed pursuant to this agreement will be available to both CAWCD and Reclamation.

The core of the adopted water quality approach is the establishment of numeric standards for a broad suite of constituents. These include Introduction Standards, which are fully enforceable at the point of discharge into the CAP System, and Delivery Standards, which serve as maximum reference levels for modeling the collective impacts after blending with Project water. In addition to input from stakeholders and experts, the historical CAP water quality data, laboratory Method Reporting Limits, recognized Federal and State contaminant levels, and model simulations for wide range of future scenarios were considered in developing these standards. The numeric standards are presented in [Appendix A](#):

**Table A-1** - Includes identified priority constituents. Standards were developed for constituents with sufficient background data. If there was not adequate data to develop Standards, the constituent was labeled as “Characterize”. Standards will be established for these constituents after sufficient data collection and review.

**Table A-2** – Includes primary and secondary EPA regulated contaminants, EPA unregulated contaminants, EPA recognized disinfection byproducts, and pathogens of concern that have rarely or never been found in the CAP. The Introduction and Delivery Standards are equivalent to the Method Reporting Limit (MRL) historically recognized by CAWCD.

**Table A-3** – Includes constituents that have the potential to be detected, but are rare in most water supplies and there is currently no standard EPA analytical method for testing. Status of these constituents will be continually monitored and may be re-characterized at any time.

#### *2.4. Environmental Reviews*

The Central Arizona Project is a federal facility, and Applicants proposing to introduce Non-Project Water into the CAP System must comply with all applicable environmental regulations, including the National Environmental Policy Act (NEPA). This Guidance Document does not alleviate the Applicant from satisfying any requirements of NEPA, but it is the intent of CAWCD and Reclamation that the provisions of this Guidance Document will assist in that process.

#### *2.5. Guidance Document*

This Guidance Document is intended to provide assistance to both those seeking to introduce Non-Project Water to the CAP System, and those reviewing such proposals in the course of administrating the CAP System and related contracts. This Guidance Document does not create any legal right, entitlement, or cause of action. Proposals for introduction and delivery of Non-Project Water into the CAP System will be reviewed individually. Although this document can be used as a general guideline, CAWCD and Reclamation reserve the right to modify its contents at any time and waive specific provisions, if applicable.



### 3. Initial Analysis

#### 3.1. Purpose

The Initial Analysis is intended to allow CAWCD and Reclamation to have sufficient information to make a determination of the likely effect of introducing a proposed Non-Project Water source into the CAP System. This step occurs prior to the introduction of the Non-Project Water supply and includes use of the CAP System-wide Water Quality Model described in Section 6 to evaluate conformance with Delivery Standards.

#### 3.2. Applicant Permitting

An Applicant that desires to introduce Non-Project Water into the CAP System is responsible for securing all requisite Federal, State, or local approvals, permits, or licenses, including all applicable environmental clearances.

#### 3.3. Applicant Financial Requirements

An Applicant that desires to introduce Non-Project Water into the CAP System is responsible for all costs and expenses related to the transportation of that water. Costs and expenses include but are not limited to the environmental clearances, permitting, facilities used to introduce and transport water into the CAP System, and the associated water quality testing and monitoring described in this document.

#### 3.4. Water Quality Analysis

The introduction of Non-Project Water has the potential to alter, and possibly degrade, the water quality in the CAP System. Because of this potential, it is essential for CAWCD to evaluate how a proposed Non-Project Water supply will meet Introduction Standards. Additionally, the introduction of the Non-Project Water must not, in combination with all other approved Non-Project Water supplies, result in an exceedance of the Delivery Standards as calculated by the CAP System-wide Water Quality Model.

##### 3.4.1. Water Quality – Initial Analysis

The following sampling protocols will be required in the initial analysis phase for all entities that wish to introduce Non-Project Water into the CAP system:

##### 3.4.1.1 Physical Sampling Procedures

To adequately assess the suitability of groundwater (wells) for introduction into the CAP, Non-Project source water must be sampled by the Applicant using approved procedures outlined by the United States Environmental Protection Agency (EPA; SESDPROC-301-R4) or as amended. Similarly, Non-Project surface water must be sampled by the Applicant using approved procedures outlined by the EPA (SESDPROC-201-R4) or as amended. Alternative procedures may be utilized with approval from CAWCD and Reclamation.

##### 3.4.1.2 Laboratory

Laboratories must use analytical methods as prescribed in A.A.C. R9-14-610, 40 CFR 136.3, or an alternative analytical method approved under A.A.C. R9-14-610(C). A test result is valid only if the sample is analyzed by a laboratory that is licensed by the Arizona Department of Health Services, an out-of-state laboratory licensed under A.R.S. § 36-495.14, or a laboratory exempted under A.R.S. § 36-495.02, for the analysis

performed.

#### 3.4.1.3 Chain of Custody (COC)

COC forms will be used to document custody of the samples. All individuals transferring and receiving samples will sign, date, and record the time on the COC that the samples are transferred. Laboratory COC procedures are described in each laboratory's Quality Assurance Program Manual. Laboratories must receive the COC documentation submitted with each batch of samples and sign, date, and record the time the samples are transferred. Laboratories will also note any sample discrepancies (e.g., labeling, breakage). After generating the laboratory data report for the client, samples will be stored for a minimum of 30 days in a secured area of the lab prior to disposal.

#### 3.4.1.4 Initial Analysis Sampling – Groundwater

A sample of each well that is proposed as a Non-Project source is required and must be collected during the initial analysis phase using physical collection methods described above. Constituents listed in [Table A-1](#) must be sampled from each proposed well. Constituents listed in [Table A-2](#) must also be sampled from each well unless CAWCD, in consultation with the Applicant and Reclamation, has determined that a subset of representative wells is sufficient for the initial analysis.

#### 3.4.1.5 Initial Analysis Sampling – Surface Water

Due to the seasonal variability and complexity in surface waters, specific sampling frequency for the initial analysis may be determined through coordination with CAWCD and Reclamation. However, general guidelines will be as follows:

The Applicant must demonstrate that Introduction Standards can be met for all times of the year, and all operating conditions, for which introduction into the CAP system is proposed. Historic data may be utilized in lieu of sampling, but is subject to approval. The historic data must include the full list of constituents ([Tables A-1](#) and [A-2](#)). The Applicant may be required to supplement the historic data with current sample data to meet Introduction Standards.

If historic data is not available, current conditions must be tested and stability in water quality must be demonstrated. Surface water samples must be taken at the nearest point of proposed introduction (Turn-In). Sampling procedures must follow EPA protocols as described above. For constituents listed in [Table A-1](#), samples must be collected quarterly for a minimum of one year (February, May, August, November). For constituents in [Table A-2](#), samples will be collected semi-annually during that same year (February, August). All samples should be collected as near to the beginning of the designated month as practical.

#### 3.4.2. Modeling of Introduction Standards

For groundwater, if multiple wells are to be blended prior to introduction into the CAP, the Applicant is responsible for demonstrating (through modeling) that the blended composition of well water will meet established Introduction Standards. Although CAWCD does not require a specific water quality model to be used, the model chosen by the Applicant must be robust enough to adequately demonstrate that water quality will meet Introduction Standards over a broad range of operational regimes (e.g. flow rates from various wells).

For surface water, water quality modeling on a monthly time-step will be required to demonstrate that the surface water will meet established Introduction Standards based on seasonal water quality characteristics and over a range of operational regimes (e.g. seasonal flow rates).

In the event that surface water and groundwater are proposed to be blended prior to introduction into the CAP, considerable modeling will be required to demonstrate compliance with Introduction Standards. In this case, specific requirements will be outlined in advance.

For blending purposes, values of constituents that are reported by a laboratory as “non-detect” should be considered to be 50% of the Method Reporting Limit (MRL) as listed in Appendix A.

#### *3.4.3. Review and Verification*

The Applicant will meet with CAWCD to discuss test results and model output. Original test results provided by the laboratory, and conducted within the previous twelve months, must be made available at this meeting. In addition, the water quality model must be presented in a manner that clearly demonstrates that the Applicant will meet Introduction Standards over a range of operational scenarios. Under limited conditions, a short-term variance can be issued (Section 7.2.4).

#### *3.4.4. CAWCD System-wide Modeling of Delivery Standards*

Upon verification and acceptance of initial water quality test results and modeling, the CAWCD Water Transmission group will incorporate the data into the CAP System-wide Water Quality Model. This model will include water quality and volume from all previously approved sources of Non-Project Water, a shortage-reduced Project Water supply of one million acre-feet, and additional CAP operational data. Results of the model will determine if the proposed introduction of Non-Project Water will meet established Delivery Standards over a range of operational scenarios.

#### *3.4.5. Exceedance of Modeled Delivery Standards*

In the event that modeling during the Initial Analysis shows that the proposed Non-Project Water supply would meet the Introduction Standards, but would, in combination with all other previously approved Non-Project Water sources, result in an exceedance of one or more Delivery Standards, CAWCD and Reclamation will take steps to accommodate the proposed project. This may include reducing the relevant Introduction Standard(s) applicable to both the proposed and all previously approved Non-Project Water supply projects, provided CAWCD and Reclamation have first consulted with all affected parties and provided opportunities for alternative resolution.

#### *3.4.6. Water Treatment*

If testing and modeling fail to demonstrate compliance with Introduction Standards, and a variance is not provided, then treatment may be required prior to introducing water into the CAP System. In this case, the Applicant must demonstrate that the treated water is acceptable for introduction. A comprehensive water treatment plan will be developed by the Applicant for approval by CAWCD. Testing and modeling of the treated water will be required

similarly to groundwater procedures, but will be specifically determined by CAWCD on a case-by-case basis.

#### *3.4.7. Modifications to Non-Project Source Supply*

Any proposed changes to Non-Project Water sources (e.g., new or modified groundwater wells, changes in surface water diversions, changes in treatment processes, etc.) after the initial analysis phase must be reported to CAWCD and Reclamation. The proposed changes will require additional sampling, as described above, and, if applicable, a new blending model must be approved by CAWCD and Reclamation prior to implementation of the changes. The modified Non-Project supply must comply with all Standards. Modifications may result in additional water quality monitoring requirements and possible revisions to the CAWCD Wheeling Contract, Reclamation Wheeling Contract, Federal Arrangement, or Firming Agreement.

## **4. Operational Monitoring**

### *4.1. Purpose*

The goal of operational water quality monitoring is to collect essential data to establish/affirm baseline conditions for the introduced Non-Project Water during an initial Proving Period, and ensure continued compliance with Introduction Standards thereafter.

### *4.2. Sampling Protocols*

The following sampling protocols will be required for all Wheeling Entities that have been approved to introduce Non-Project Water into the CAP System:

#### *4.2.1. Physical Sampling Procedures*

A permanent water sampling station will be constructed within the turn-in structure/pipeline that will allow for an accessible and consistent point of obtaining a representative grab sample for analysis by the Wheeling Entity. The construction of this sampling point must be included within the facility design. All samples collected by the Wheeling Entity for submission to the CAWCD Water Transmission Group must use EPA approved methods. CAWCD reserves the right to access this sampling point for verification sampling.

#### *4.2.2. Laboratory*

Laboratories must use analytical methods as prescribed in A.A.C. R9-14-610, 40 CFR 136.3, or an alternative analytical method approved under A.A.C. R9-14-610(C). A test result is valid only if the sample is analyzed by a laboratory that is licensed by the Arizona Department of Health Services, an out-of-state laboratory licensed under A.R.S. § 36-495.14, or a laboratory exempted under A.R.S. § 36-495.02, for the analysis performed.

#### *4.2.3. Chain of Custody (COC)*

COC forms will be used to document custody of the samples. All individuals transferring and receiving samples will sign, date, and record the time on the COC that the samples are transferred. Laboratory COC procedures are described in each laboratory's Quality Assurance Program Manual. Laboratories must receive the COC documentation submitted with each batch of samples and sign, date, and record the time the samples are transferred. Laboratories will also note any sample discrepancies (e.g., labeling, breakage). After

generating the laboratory data report for the client, samples will be stored for a minimum of 30 days in a secured area prior to disposal.

#### 4.3. Sampling Frequency

The frequency of sampling is divided into two time periods: an initial Proving Period, and an ongoing Compliance Period thereafter.

##### 4.3.1. Proving Period

All water conveyed into the CAP System will require routine monitoring for a minimum of two years following initial introduction to determine the water classification and compliance monitoring frequency (Section 4.3.2). During that two year period, known as the “Proving Period”, constituents included in Tables A-1 will be sampled quarterly and constituents included in Table A-2 will be tested semi-annually. For Non-Project Water that requires treatment prior to introduction into the CAP System, additional sampling frequency and/or procedures may be required and will be determined by CAWCD and Reclamation. If more than twelve months have elapsed between the Initial Analysis in 3.4.1 and the beginning of the Proving Period, re-sampling of individual wells or source water is required to confirm original analysis.

##### 4.3.2. Supply Classification

Based on water quality test results compiled during the Proving Period, Non-Project Water will be placed into one of three classifications (described below; [Table 1](#)) and the frequency of ongoing Compliance Monitoring will be based on those designations. CAWCD will review the classifications of each Non-Project source every five years and confer with Reclamation. Operational changes by the Wheeling Entity may also initiate a review and re-classification.

**“Type A”** – Initial Analysis and Proving Period have demonstrated that the Non-Project Water source complies with Introduction Standards and is below Delivery Standards prior to mixing with the CAP water. For ongoing Compliance Monitoring, Type A water must be tested annually for the full list of constituents ([Appendix A](#)).

**“Type B”** – Initial Analysis and Proving Period have shown that the Non-Project source complies with Introduction Standards for each water quality constituent ([Appendix A](#)), but only meets Delivery Standards when mixed with CAP water (as predicted by modeling). For ongoing Compliance Monitoring, Type B water will be tested annually for the full list of constituents ([Appendix A](#)), however, exceedance constituents (those that exceed Delivery Standards) must be sampled quarterly. Operational data (e.g. flow data) may also be required.

**“Type C”** – Initial Analysis and Proving Period have shown that the Non-Project Water source requires treatment prior to introduction into the CAP canal. For Compliance Monitoring, Type C water will be tested annually for the full list of constituents ([Appendix A](#)). However, for exceedance constituents (those contributing to the reason for treatment), real-time or monthly sampling will be required to verify successful treatment. Real-time sampling will only be required for an exceedance constituent that can be effectively tested in real-time (e.g. turbidity). Operational data (e.g. flow data) may also be required.

**Table 1.** Ongoing water quality sampling frequency for Non-Project Water. All waters are sampled quarterly and semi-annually for the first two years (Proving Period). Waters are then classified and sampled accordingly for Compliance Monitoring. All samples should be collected as close to the beginning of the designated month as possible.

| Time Period                  | Water Types                       | Table A-1 Sampling             | Table A-2 Sampling     | Exceedance Constituent Sampling           |
|------------------------------|-----------------------------------|--------------------------------|------------------------|---|
| Proving Period               | All Introduced Non-Project Waters | Quarterly (Feb, May, Aug, Nov) | Semi-Annual (Feb, Aug) | Real-time or Monthly (Treated Water Only) |
| Compliance Monitoring Period | Type A Water                      | Annual (August)                |                        | N/A                                       |
|                              | Type B Water                      |                                |                        | Quarterly (Feb, May, Aug, Nov)            |
|                              | Type C Water                      |                                |                        | Real-time or Monthly                      |

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## 5. Reporting/Communication

### 5.1. Purpose

The goal of reporting/communication is to ensure that CAWCD has the necessary information to make critical decisions regarding Non-Project Water.

Specifically, communication between the Wheeling Entity and CAWCD will:

- Provide water quality data for the CAP System-wide Water Quality Model
- Allow for review of long-term sampling data and flag any exceedances or potential problem constituents
- Provide a basis for enforcement (due to exceedance)
- Alert CAWCD of changes in operation that may affect water quality
- Provide a summary of activities in the form of an annual report

### 5.2. Requirements

#### 5.2.1. Water Quality Reporting – Test Results

The Wheeling Entity or its designee will be responsible for submitting test results from each sampling event to the CAWCD Water Transmission Group for review, verification, and approval. These results will be transmitted electronically in a format approved by the CAWCD Water Transmission Group within 48 hours of receiving the results. Any exceedance of established water quality Introduction Standards (Appendix A) must be identified within the test results. All submitted water quality data will be made available to Reclamation.

#### 5.2.2. Records Retention

All field notes, chain of custody paperwork, and laboratory water quality analytical reports will be kept by the Wheeling Entity for a period of five years, and made available to CAWCD upon request.

#### 5.2.3. Operational Changes

Operational changes are expected from time-to-time due to maintenance, addition/subtraction of equipment (including wells), or other extenuating circumstances. Operational changes must be reported to the CAWCD Water Transmission Group at least 14 days prior to the occurrence of the operational change so that potential impacts can be evaluated. For example, if a group of wells will be shut down for maintenance, but water will continue to be wheeled, CAWCD may require the Wheeling Entity to model potential impacts to water quality.

#### 5.2.4. Water Quality Reporting - Annual Report

By March 31 of each year of the operational period, the Wheeling Entity shall submit an annual report for the previous year to the CAWCD Water Transmission Group and Reclamation. The CAWCD Water Transmission Group will develop a standard format for the report, but in general, the report will detail all sampling activity, operational data, and water quality data. Constituents that exceed Standards at any time during the year will be highlighted with an explanation of reasons for the exceedance and actions taken to mitigate the exceedance.

## 6. CAP System-wide Water Quality Modeling

### 6.1. Purpose

The goal of the CAP System-wide Water Quality Model is to simulate the individual and cumulative water quality effects of introducing Non-Project Water on established Delivery Standards over a broad range of operating scenarios.

### 6.2. Modeling

The CAWCD Water Transmission Group will develop and maintain the CAP System-wide Water Quality Model. All modeling will be performed by CAWCD and shared with Reclamation results may be made available to Wheeling Entities and water users upon request.

As described in [Section 3.4.4](#), the CAP System-wide Water Quality Model will be used in the Initial Analysis to determine if the proposed introduction of Non-Project Water will meet established Delivery Standards.

For Compliance Monitoring, the CAP System-wide Water Quality Model will incorporate test results provided by the Wheeling Entity ([Section 5.2.1](#)) and CAWCD baseline monitoring to predict compliance with established water quality Delivery Standards. CAWCD will incorporate operational data, as well as operational data from Wheeling Entities, to improve accuracy of the predicted effects.



## 7. Enforcement

### 7.1. Purpose

The goal of enforcement is to maintain the integrity of Standards adopted by CAWCD and Reclamation, and to allow for appropriate corrective action to take place.

### 7.2. Requirements

#### 7.2.1. Exceedance of Introduction Standards – Proving Period

Any exceedance of the Introduction Standards by the Wheeling Entity during the Proving Period must be identified and reported as described in [Section 5.2.1](#).

Within 5 days of receiving test results that show an exceedance, the Wheeling Entity must collect a second sample to be tested (Verification Sample). Only constituents that exceed the Introduction Standards are required in the Verification Sample. Results of this test must be provided to the CAWCD Water Transmission Group within 48 hours of receipt.

CAWCD acknowledges that there may be variations in water quality associated with the initiation of a Non-Project Water supply. An exceedance in the Verification Sample will prompt consultation with CAWCD Water Transmission. On a case-by-case basis, CAWCD Water Transmission Group with Reclamation will consider issuing a short-term variance as described in [Section 7.2.4.2](#).

#### 7.2.2. Exceedance of Introduction Standards – Ongoing Monitoring Period

Following the proving period, the Wheeling Entity must meet Introduction Standards at all times. If test results show an exceedance, the Wheeling Entity must report the exceedance ([Section 5.2.1](#)) and follow these procedures:

1. Within 5 days of receiving test results that show an exceedance, the Wheeling Entity must collect a second sample to be tested (Verification Sample). Only constituents that exceed Introduction Standards are required in the Verification Sample. Results of this test must be provided to the CAWCD Water Transmission Group within 48 hours of receipt.
2. CAWCD will categorize Exceedances into one of two categories, which will determine the next steps ([Figure 1](#)):

**Tier 1** – Exceedance occurred in the initial sample, but did not occur in the Verification Sample. Introduction of Non-Project Water can continue; however, CAWCD may require increased sampling frequency to verify that the irregularity is not re-occurring.

**Tier 2** – Exceedance occurs in both the initial sample and the Verification Sample. Introduction of Non-Project Water must cease immediately and may not resume until an approved remedy can be implemented. Remedies may include, but are not limited to:

- The exceedance constituent(s) may require more frequent sampling (at the discretion of CAWCD Water Transmission),

- The Wheeling Entity may apply for a variance ([Section 7.2.4.3](#)),
- Modification of blending, exclusion of specific water source, treatment, etc.

If, at the time of cessation, the cumulative volume of Non-Project Water introduced by Wheeling Entity, after accounting for any applicable losses, exceeds the amount delivered by CAWCD to that point in time, CAWCD will continue to satisfy the Non-Project Water delivery schedule up to the point where the Wheeling Entity's delivered water, less applicable losses, is equal to the volume of introduced water. The Wheeling Entity must consult with CAWCD to determine availability of water to be delivered.

#### 7.2.3. CAWCD Reporting of Exceedances

All verified (initial and Verification Sample) exceedances will be reported to CAP water users, including the categorization of the exceedance ([Section 7.2.2](#)) and the steps to remedy the exceedance. This notification will be provided electronically, either through direct communication or through a secure web site for authorized users.

#### 7.2.4. Variance

##### 7.2.4.1 Variance – Proving Period

Under limited circumstances, a short-term variance for a constituent(s) that exceeds an Introduction Standard may be granted by CAWCD and Reclamation on a case-by-case basis during the Proving Period. Requests for a variance will be considered if:

- The constituent(s) of concern is expected to stabilize below the Introduction Standard by the end of the variance period, and
- CAWCD System-wide modeling performed in the Initial Analysis ([Section 3.4.4](#)) using the variance level confirms that the Delivery Standard for the constituent(s) of concern will not be exceeded in the CAP System after blending.

If a variance is granted:

- The variance will be set for no more than 150% of the Introduction Standard without express authorization of CAWCD and Reclamation, and
- The variance will be set for a fixed duration not to exceed the remaining time in the Proving Period (24 month maximum), and
- The variance shall apply only on a constituent-specific basis. The Non-Project Water shall meet all other applicable Standards for which a variance is not granted

CAWCD and Reclamation reserve the right to withdraw a variance if there is inadequate progress towards stabilizing the constituent of concern below the Introduction Standard during the variance period.

##### 7.2.4.2 Variance - Ongoing Compliance Period

If unforeseen issues arise, CAWCD, with approval from Reclamation, may issue a temporary variance for a constituent(s) that exceeds Introduction Standards on a case-by-case basis, provided that:

- Delivery Standards, as predicted by the CAP System-wide Water Quality Model, are not exceeded, and
- The variance is for a fixed duration, not to exceed two years, and
- The variance applies only on a constituent-specific basis. The Non-Project Water shall meet all other applicable water quality standards for which a variance is not granted, and
- CAWCD and Reclamation expect that the issue requiring the variance will be resolved by the end of the variance period, and
- An increased frequency of sampling will be required.

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## 8. Indemnification and Revision

### *8.1. Indemnification*

The party introducing the Non-Project Water into the CAP System shall indemnify and hold the United States and CAWCD harmless from and against all claims, damages, costs and other liabilities resulting from that party's introduction of Non-Project Water into the CAP System.

### *8.2. Revision*

The Guidance Document is subject to periodic review and modification by CAWCD and Reclamation. CAWCD and Reclamation will review and seek comment on revisions no less frequently than every five years after the first introduction of Non-Project Water. CAWCD and Reclamation also reserve the right to make revisions of Introduction Standards pursuant to Section 3.4.5.

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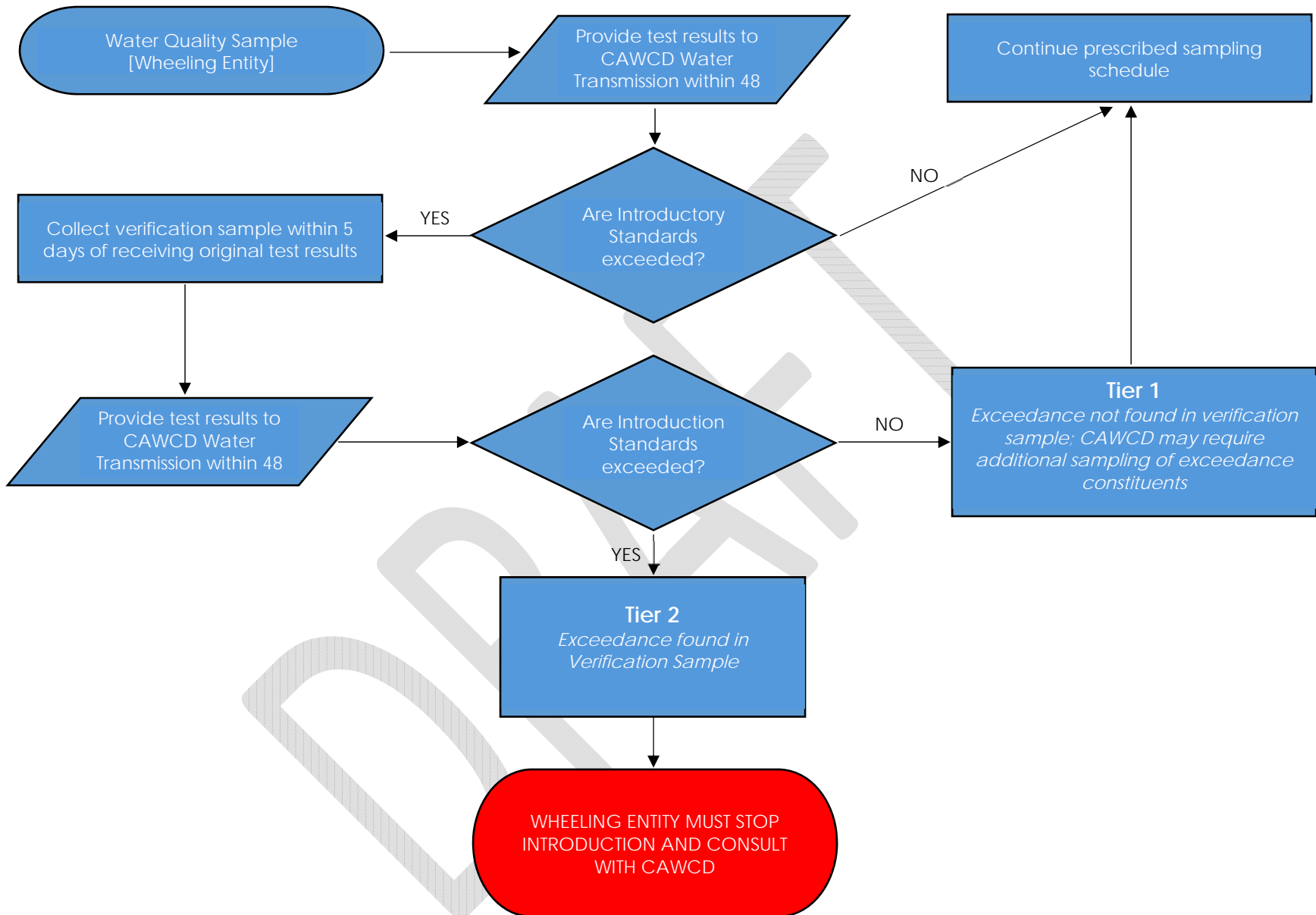


Figure 1. Flow chart describing process when there is an exceedance in water quality results.

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Appendix A

**Table A-1.** List of CAP Priority Constituents and their respective Introduction and Delivery standards. If there was not sufficient information to develop Standards, constituents were flagged for further evaluation (Characterize). In cases in which an Introduction Standard is listed as "TBD," testing will still be required, and if a supply exceeds the MRL, a temporary Introduction Standard will be set at the lessor of the current MCL (if available) or 3x the MRL. Temporary Introduction Standards will be refined as data becomes available. CAP 5 Year Averages designated with an ND either have not been detected or detected in less than 5% of samples. Dashes represent constituents that have not been tested by CAWCD in the past.

| Constituent                                     | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|---|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| Dissolved Oxygen                                | Field                         | mg/L  |                        | ---                   | ---               |                                |
| pH  | Field                         |       |                        | 6.5-9.5               |                   |                                |
| Temperature                                     | Field                         | °F    |                        | ---                   | ---               |                                |
| <b>CAP Priority Contaminants - Characterize</b> |                               |       |                        |                       |                   |                                |
| Alpha, Gross                                    | EPA 900.0                     | pCi/l | 3                      | TBD                   | Characterize      | --                             |
| Aluminum, Total, ICAP                           | EPA 200.8                     | µg/l  | 20                     | TBD                   | Characterize      | --                             |
| Beryllium                                       | EPA 200.8                     | µg/l  | 1                      | TBD                   | Characterize      | ND                             |
| Beta, Gross                                     | EPA 900.0                     | pCi/l | 3                      | TBD                   | Characterize      | --                             |
| Bromide   | EPA 300.0                     | µg/l  | 5                      | TBD                   | Characterize      | 81.7                           |
| Cadmium   | EPA 200.8                     | µg/l  | 0.5                    | TBD                   | Characterize      | ND                             |
| Cobalt, Total                                   | EPA 200.8                     | µg/l  | 2                      | TBD                   | Characterize      | --                             |
| Germanium                                       | EPA 200.8                     | µg/l  | 0.3                    | TBD                   | Characterize      | --                             |
| Mercury   | EPA 245.1                     | µg/l  | 0.2                    | TBD                   | Characterize      | ND                             |
| Molybdenum                                      | EPA 200.8                     | µg/l  | 2                      | TBD                   | Characterize      | --                             |
| Nickel  | EPA 200.8                     | µg/l  | 5                      | TBD                   | Characterize      | ND                             |
| Nitrite   | EPA 300.0                     | µg/l  | 0.05                   | TBD                   | Characterize      | --                             |
| Potassium, Total, ICAP                          | EPA 200.7                     | µg/l  | 1                      | TBD                   | Characterize      | 4.9                            |
| Radium-226+228                                  | GA Tech                       | pCi/l | 1                      | TBD                   | Characterize      | --                             |
| Strontium, ICAP                                 | EPA 200.7                     | mg/l  | 0.01                   | TBD                   | Characterize      | 1.1                            |
| Vanadium  | EPA 200.8                     | µg/l  | 3                      | TBD                   | Characterize      |                                |
| <b>CAP Priority Constituents</b>                |                               |       |                        |                       |                   |                                |
| Alkalinity in CaCO <sub>3</sub> units           | SM2320B                       | mg/l  | 2                      | 250                   | 170               | 122.3                          |
| Ammonia Nitrogen                                | EPA 350.1                     | mg/l  | 0.05                   | 0.05                  | 0.05              | 0.04                           |
| Antimony  | EPA 200.8                     | µg/l  | 1                      | 6                     | Characterize      | --                             |
| Arsenic   | EPA 200.8                     | µg/l  | 1                      | 10                    | 5                 | 2.9                            |
| Barium, Total, ICAP/MS                          | EPA 200.8                     | µg/l  | 2                      | 2000                  | 230               | 123.2                          |
| Boron   | EPA 200.7                     | mg/l  | 0.05                   | 1                     | 0.5               | --                             |
| Calcium, Total, ICAP                            | EPA 200.7                     | mg/l  | 1                      | 200                   | 160               | 72.6                           |

| Constituent                  | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|------------------------------|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| Chloride                     | EPA 300.0                     | mg/l  | 2.5                    | 450                   | 170               | 91.5                           |
| Chromium                     | EPA 200.8                     | µg/l  | 1                      | 100                   | 10                | ND                             |
| Copper, Dissolved            | EPA 200.8                     | µg/l  | 2                      | 64                    | 64                | --                             |
| Fluoride                     | SM4500F C                     | mg/l  | 0.05                   | 4                     | 0.7               | --                             |
| Hexavalent Chromium          | EPA 218.7                     | µg/l  | 0.02                   | 16                    | 3                 | 0.05                           |
| Iron, Dissolved ICAP         | EPA 200.7                     | mg/l  | 0.02                   | 1000                  | 100               | ND                             |
| Lead                         | EPA 200.8                     | µg/l  | 0.5                    | 15                    | 3                 | ND                             |
| Manganese, Total, ICAP       | EPA 200.8                     | µg/l  | 2                      | 250                   | 27                | 5.7                            |
| Nitrate as Nitrogen          | EPA 300.0                     | mg/l  | 0.5                    | 10                    | 1                 | 0.12                           |
| Perchlorate                  | EPA 314                       | µg/l  | 2                      | 15                    | Characterize      | ND                             |
| Phosphorus, Total-P          | EPA 365.1                     | mg/l  | 0.02                   | 0.1                   | 0.025             | 0.02                           |
| Selenium                     | EPA 200.8                     | µg/l  | 5                      | 50                    | 20                | ND                             |
| Silver Total ICAP/MS         | EPA 200.8                     | µg/l  | 0.5                    | 100                   | 20                | ND                             |
| Sodium, Total, ICAP          | EPA 200.7                     | mg/l  | 1                      | 350                   | 110               | 92.6                           |
| Sulfate                      | EPA 300.0                     | mg/l  | 2.5                    | 400                   | 250               | 237.4                          |
| Thallium                     | EPA 200.8                     | µg/l  | 1                      | 1                     | Characterize      | ND                             |
| Total Dissolved Solids (TDS) | SM2540C                       | mg/l  | 10                     | 1150                  | 747               | 629.7                          |
| Total Organic Carbon         | SM5310C                       | mg/l  | 0.25                   | 6                     | 4                 | --                             |
| Turbidity                    | EPA 180.1                     | NTU   | 0.1                    | 9                     | 6                 | 1.1                            |
| Uranium                      | EPA 200.8                     | pCi/l | 0.7                    | 30                    | 5                 | 4.1                            |
| Zinc                         | EPA 200.8                     | µg/l  | 20                     | 1                     | 0.03              | ND                             |



**Table A-2.** List of primary and secondary EPA regulated Constituents, EPA unregulated Constituents, EPA recognized disinfection byproducts, and pathogens that are recognized as constituents of concern and are prohibited from introduction into the CAP System. These constituents have rarely or never been found in the CAP System, and therefore, Standards are equivalent to the Method Reporting Limit that has historically been utilized by CAWCD. CAP 5 Year Averages designated with an ND either have not been detected or detected in less than 5% of samples. Dashes represent constituents that have not been tested by CAWCD in the past.

| Constituent   | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|---|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| <b>Regulated EPA Primary and Secondary Constituents</b> |                               |       |                        |                       |                   |                                |
| 1,1,1-Trichloroethane                                   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,1,2-Trichloroethane                                   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,1-Dichloroethylene                                    | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,2,4-Trichlorobenzene                                  | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,2-Dibromo-3-Chloropropane (DBCP)                      | EPA 551.1                     | µg/l  | 0.01                   | 0.01                  | 0.01              | --                             |
| 1,2-Dichlorobenzene (1,2 DCB)                           | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| 1,2-Dichloroethane                                      | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,2-Dichloropropane                                     | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,4 Dichlorobenzene (1,4 DCB)                           | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| 2,4,5-TP (Silvex)                                       | EPA 515.4                     | µg/l  | 0.2                    | 0.2                   | 0.2               | ND                             |
| 2,4-D   | EPA 515.4                     | µg/l  | 0.1                    | 0.1                   | 0.1               | 0.07                           |
| Alachlor  | EPA 525.2                     | µg/l  | 0.05                   | 0.05                  | 0.05              | ND                             |
| Atrazine  | EPA 525.2                     | µg/l  | 0.05                   | 0.05                  | 0.05              | ND                             |
| Benzene   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Benzo(a)pyrene  | EPA 525.2                     | µg/l  | 0.02                   | 0.02                  | 0.02              | ND                             |
| Carbofuran (Furadan)                                    | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Carbon Tetrachloride                                    | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Chlordane   | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Chlorobenzene   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| cis-1,2-Dichloroethylene                                | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Dalapon   | EPA 515.4                     | µg/l  | 1                      | 1                     | 1                 | ND                             |
| Di-(2-Ethylhexyl)adipate                                | EPA 525.2                     | µg/l  | 0.6                    | 0.6                   | 0.6               | ND                             |
| Di(2-Ethylhexyl)phthalate                               | EPA 525.2                     | µg/l  | 0.6                    | 0.6                   | 0.6               | ND                             |
| Dichloromethane   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Dinoseb   | EPA 515.4                     | µg/l  | 0.2                    | 0.2                   | 0.2               | ND                             |
| Diquat  | EPA 549.2                     | µg/l  | 0.4                    | 0.4                   | 0.4               | --                             |
| Endothall   | EPA 548.1                     | µg/l  | 5                      | 5                     | 5                 | --                             |
| Endrin  | EPA 525.2                     | µg/l  | 0.2                    | 0.2                   | 0.2               | ND                             |
| Ethyl benzene   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Ethylene Dibromide                                      | EPA 551.1                     | µg/l  | 0.01                   | 0.01                  | 0.01              | --                             |
| Glyphosate  | EPA 547                       | µg/l  | 6                      | 6                     | 6                 | --                             |

| Constituent                         | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|-------------------------------------|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| Heptachlor                          | EPA 525.2                     | µg/l  | 0.04                   | 0.04                  | 0.04              | ND                             |
| Heptachlor Epoxide (isomer B)       | EPA 525.2                     | µg/l  | 0.05                   | 0.05                  | 0.05              | ND                             |
| Hexachlorobenzene                   | EPA 525.2                     | µg/l  | 0.05                   | 0.05                  | 0.05              | ND                             |
| Hexachlorobutadiene                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Hexachlorocyclopentadiene           | EPA 525.2                     | µg/l  | 0.05                   | 0.05                  | 0.05              | ND                             |
| Lindane                             | EPA 525.2                     | µg/l  | 0.04                   | 0.04                  | 0.04              | ND                             |
| Methoxychlor                        | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | ND                             |
| Metolachlor                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Oxamyl                              | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Pentachlorophenol                   | EPA 515.4                     | µg/l  | 0.04                   | 0.04                  | 0.04              | ND                             |
| Picloram                            | EPA 515.4                     | µg/l  | 0.1                    | 0.1                   | 0.1               | ND                             |
| Simazine                            | EPA 525.2                     | µg/l  | 0.05                   | 0.05                  | 0.05              | ND                             |
| Styrene                             | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Tetrachloroethylene                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Total PCB                           | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Total Trihalomethanes               | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Toxaphene                           | EPA 525.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| Trichloroethylene                   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Vinyl Chloride                      | EPA 524.2                     | µg/l  | 0.3                    | 0.3                   | 0.3               | ND                             |
| <b>Unregulated EPA Constituents</b> |                               |       |                        |                       |                   |                                |
| 1,1,1,2-Tetrachloroethane           | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,1,2,2-Tetrachloroethane           | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,1-Dichloroethane                  | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,1-Dichloropropene                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,2,3-Trichlorobenzene              | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,2,3-Trichloropropane              | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,2,4-Trimethylbenzene              | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,3,5-Trimethylbenzene              | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,3-Dichlorobenzene (1,3 DCB)       | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| 1,3-Dichloropropane                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,3-Dichloropropene                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 1,4-Dioxane                         | EPA 522                       | µg/l  | 0.07                   | 0.07                  | 0.07              | --                             |
| 1-Butanol                           | EPA 541                       | µg/l  | 2                      | 2                     | 2                 | --                             |
| 2,2-Dichloropropane                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 2,4,5-T                             | EPA 515.4                     | µg/l  | 0.2                    | 0.2                   | 0.2               | ND                             |
| 2,4-DB                              | EPA 515.4                     | µg/l  | 2                      | 2                     | 2                 | ND                             |
| 2-Butanone (MEK)                    | EPA 524.2                     | µg/l  | 5                      | 5                     | 5                 | ND                             |
| 2-Methoxyethanol                    | EPA 541                       | µg/l  | 0.4                    | 0.4                   | 0.4               | --                             |

| Constituent                          | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|--------------------------------------|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| 2-Propen-1-ol                        | EPA 541                       | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| 3,5-Dichlorobenzoic acid             | EPA 515.4                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 3-Hydroxycarbofuran                  | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| 4,4'-DDD                             | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| 4,4'-DDE                             | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| 4,4'-DDT                             | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| 4-Methyl-2-Pentanone (MIBK)          | EPA 524.2                     | µg/l  | 5                      | 5                     | 5                 | ND                             |
| Acetaldehyde                         | EPA 556/556.1                 | µg/l  | 1                      | 1                     | 1                 | --                             |
| Acetochlor                           | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Acetochlor ethanesulfonic acid (ESA) | EPA 535                       | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Acetochlor oxanilic acid (OA)        | EPA 535                       | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Acifluorfen                          | EPA 515.4                     | µg/l  | 0.2                    | 0.2                   | 0.2               | ND                             |
| Acrolein                             | EPA 8260B                     | µg/l  | 25                     | 25                    | 25                | --                             |
| Alachlor ethanesulfonic acid (ESA)   | EPA 535                       | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Alachlor oxanilic acid (OA)          | EPA 535                       | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aldicarb (Temik)                     | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Aldicarb sulfone                     | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Aldicarb sulfoxide                   | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Aldrin                               | EPA 525.2                     | µg/l  | 0.01                   | 0.01                  | 0.01              | --                             |
| alpha-Chlordane                      | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| alpha-Hexachlorocyclohexane          | EPA 525.3                     | µg/l  | 0.01                   | 0.01                  | 0.01              | --                             |
| Aniline                              | EPA 8270C                     | µg/l  | 20                     | 20                    | 20                | --                             |
| Aroclor 1016                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aroclor 1221                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aroclor 1232                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aroclor 1242                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aroclor 1248                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aroclor 1254                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Aroclor 1260                         | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Baygon                               | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| Bentazon                             | EPA 515.4                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Bromobenzene                         | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Bromochloromethane                   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Bromodichloromethane                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Bromoethane                          | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Bromoform                            | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Bromomethane (Methyl Bromide)        | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Butylated hydroxyanisole             | EPA 530                       | µg/l  | 0.03                   | 0.03                  | 0.03              | --                             |
| Carbaryl                             | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |

| Constituent                                    | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|--|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| Carbon Disulfide                               | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Chlorodibromomethane                           | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Chloroethane                                   | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Chloroform (Trichloromethane)                  | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Chloromethane(Methyl Chloride)                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Dibromomethane                                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Dicamba  | EPA 515.4                     | µg/l  | 0.1                    | 0.1                   | 0.1               | ND                             |
| Dichlorodifluoromethane                        | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Dichlorprop                                    | EPA 515.4                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Dieldrin                                       | EPA 525.2                     | µg/l  | 0.01                   | 0.01                  | 0.01              | --                             |
| Di-isopropyl ether                             | EPA 524.2                     | µg/l  | 3                      | 3                     | 3                 | ND                             |
| Dimethipin                                     | EPA 525.3                     | µg/l  | 0.2                    | 0.2                   | 0.2               | --                             |
| Equilin  | EPA 539                       | µg/l  | 0.004                  | 0.004                 | 0.004             | --                             |
| Estradiol (17-beta estradiol)                  | EPA 539                       | µg/l  | 0.0004                 | 0.0004                | 0.0004            | --                             |
| Estriol  | EPA 539                       | µg/l  | 0.0009                 | 0.0009                | 0.0009            | --                             |
| Estrone  | EPA 539                       | µg/l  | 0.0008                 | 0.0008                | 0.0008            | --                             |
| Ethinyl estradiol (17-alpha ethynyl estradiol) | EPA 539                       | µg/l  | 0.0009                 | 0.0009                | 0.0009            | --                             |
| Ethoprop                                       | EPA 525.3                     | µg/l  | 0.03                   | 0.03                  | 0.03              | --                             |
| Ethylene glycol                                | EPA 8015D                     | mg/l  | 5                      | 5                     | 5                 | --                             |
| Formaldehyde                                   | EPA 556/556.1                 | µg/l  | 5                      | 5                     | 5                 | --                             |
| Gamma-Chlordane                                | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| HCFC-22  | EPA 8260B                     | µg/l  | 2.5                    | 2.5                   | 2.5               | --                             |
| Hexane   | EPA 8260B                     | µg/l  | 2                      | 2                     | 2                 | --                             |
| Isopropylbenzene                               | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| M/P-Xylenes                                    | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Methanol                                       | EPA 8015B                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Methiocarb                                     | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Methomyl                                       | EPA 531.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Methyl Tert-butyl ether (MTBE)                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Metolachlor ethanesulfonic acid (ESA)          | EPA 535                       | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Metolachlor oxanilic acid (OA)                 | EPA 535                       | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Molinate                                       | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Naphthalene                                    | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| N-Butylbenzene                                 | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| N-nitrosodiethylamine (NDEA)                   | EPA 521                       | µg/l  | 2                      | 2                     | 2                 | --                             |
| N-nitrosodimethylamine (NDMA)                  | EPA 521                       | µg/l  | 2                      | 2                     | 2                 | --                             |
| N-nitroso-di-n-propylamine (NDPA)              | EPA 521                       | µg/l  | 2                      | 2                     | 2                 | --                             |
| N-nitrosopyrrolidine (NPYR)                    | EPA 521                       | µg/l  | 2                      | 2                     | 2                 | --                             |
| NEtFOSAA                                       | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |

| Constituent                            | Recommended Analytical Method | Units | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|--|-------------------------------|-------|------------------------|-----------------------|-------------------|--------------------------------|
| NMeFOSAA                               | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| N-Propylbenzene                        | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| o-Chlorotoluene                        | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | --                             |
| o-Toluidine                            | EPA 530                       | µg/l  | 0.007                  | 0.007                 | 0.007             | --                             |
| o-Xylene                               | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Oxyfluorfen                            | EPA 525.3                     | µg/l  | 0.05                   | 0.05                  | 0.05              | --                             |
| Paraquat                               | EPA 549.2                     | µg/l  | 2                      | 2                     | 2                 | --                             |
| p-Chlorotoluene                        | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Perfluorobutanesulfonic acid (PFBS)    | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorodecanoic acid (PFDA)          | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorododecanoic acid (PFDoA)       | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluoroheptanoic acid (PFHpA)        | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorohexanesulfonic acid (PFHxS)   | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorohexanoic acid (PFHxA)         | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorononanoic acid (PFNA)          | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorooctanesulfonic acid (PFOS)    | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorooctanoic acid (PFOA)          | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorotetradecanoic acid (PFTA)     | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluorotridecanoic acid (PFTrDA)     | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Perfluoroundecanoic acid (PFUnA)       | EPA 537                       | ng/l  | 2                      | 2                     | 2                 | --                             |
| Permethrin                             | EPA 525.2                     | µg/l  | 0.04                   | 0.04                  | 0.04              | --                             |
| p-Isopropyltoluene                     | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Profenofos                             | EPA 525.3                     | µg/l  | 0.3                    | 0.3                   | 0.3               | --                             |
| Quinoline                              | EPA 530                       | µg/l  | 0.02                   | 0.02                  | 0.02              | --                             |
| sec-Butylbenzene                       | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Silicon                                | EPA 200.7                     | mg/l  | 0.2                    | 0.2                   | 0.2               | --                             |
| Tebuconazole                           | EPA 525.3                     | µg/l  | 0.2                    | 0.2                   | 0.2               | --                             |
| Tert-Butylbenzene                      | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Thiobencarb                            | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Toluene                                | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Total DCPA Mono- and Di-acid Degradate | EPA 515.4                     | µg/l  | 0.1                    | 0.1                   | 0.1               | 0.05                           |
| Total Kjeldahl Nitrogen                | EPA 351.2                     | mg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| trans-1,2-Dichloroethylene             | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| trans-1,3-Dichloropropene              | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| trans-Nonachlor                        | EPA 525.2                     | µg/l  | 0.1                    | 0.1                   | 0.1               | --                             |
| Tribufos                               | EPA 525.3                     | µg/l  | 0.07                   | 0.07                  | 0.07              | --                             |
| Trichlorofluoromethane-Freon11         | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |
| Xylenes (total)                        | EPA 524.2                     | µg/l  | 0.5                    | 0.5                   | 0.5               | ND                             |

| Constituent                        | Recommended Analytical Method | Units      | Method Reporting Limit | Introduction Standard | Delivery Standard | CAP 5 Year Average (2015-2019) |
|------------------------------------|-------------------------------|------------|------------------------|-----------------------|-------------------|--------------------------------|
| <b>EPA Disinfection Byproducts</b> |                               |            |                        |                       |                   |                                |
| Bromochloroacetic Acid             | EPA 552.3                     | µg/l       | 0.3                    | 0.3                   | 0.3               | --                             |
| Bromodichloroacetic Acid           | EPA 552.3                     | µg/l       | 0.5                    | 0.5                   | 0.5               | --                             |
| Chlorodibromoacetic Acid           | EPA 552.3                     | µg/l       | 0.3                    | 0.3                   | 0.3               | --                             |
| Dibromoacetic Acid                 | EPA 552.3                     | µg/l       | 0.3                    | 0.3                   | 0.3               | --                             |
| Dichloroacetic Acid                | EPA 552.3                     | µg/l       | 0.2                    | 0.2                   | 0.2               | --                             |
| Monobromoacetic Acid               | EPA 552.3                     | µg/l       | 0.3                    | 0.3                   | 0.3               | --                             |
| Monochloroacetic Acid              | EPA 552.3                     | µg/l       | 2                      | 2                     | 2                 | --                             |
| Total Haloacetic Acids (HAAS)      | EPA 552.3                     | µg/l       | 0.2                    | 0.2                   | 0.2               | --                             |
| Trichloroacetic Acid               | EPA 552.3                     | µg/l       | 0.5                    | 0.5                   | 0.5               | --                             |
| <b>Pathogens</b>                   |                               |            |                        |                       |                   |                                |
| Coliform, Total                    | SM9233                        | MPN/100 mL | 1                      | 1                     | 1                 | --                             |
| Cryptosporidium                    | EPA 1632                      | oocysts/l  | 0.1                    | 0.1                   | 0.1               | 0.05                           |
| E. Coli                            | SM9223                        | MPN/100 mL | 1                      | 1                     | 1                 | --                             |
| Giardia                            | EPA1632                       | oocysts/l  | 0.1                    | 0.1                   | 0.1               | 0.05                           |
| HPC                                |                               | CFU/ml     | 1                      | 1                     | 1                 | --                             |

**Table A-3.** List of constituents for which there is currently no EPA approved analytical method. There is no requirement to test for these constituents at this time, however, this list will be re-evaluated periodically and constituents will be re-classified as needed.

| Constituents                |   |
|-----------------------------|---|
| 1,3-Butadiene               | Equilenin                                     |
| 17 alpha-estradiol          | Erythromycin                                  |
| 2-Nonylphenol               | Ethylene oxide                                |
| 4,4'-Methylenedianiline     | Ethylene thiourea                             |
| 4-Nitrophenol (qualitative) | Hydrazine                                     |
| Acephate                    | Legionella Pneumophilia                       |
| Acetamide                   | Mestranol                                     |
| Bensulide                   | Methamidophos                                 |
| Benzyl chloride             | Nitrobenzene                                  |
| Captan                      | Nitroglycerin                                 |
| Chloramben                  | N-Methyl-2-pyrrolidone                        |
| Clethodim                   | N-nitrosodiphenylamine                        |
| Cumene hydroperoxide        | Norethindrone (19-Norethisterone)             |
| Cyanotoxins                 | Oxirane, methyl                               |
| Anatoxin a                  | Oxydemeton-methyl                             |
| Cylindrospermopsin          | RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine) |
| Microcystin-LA              | Tebufenozide                                  |
| Microcystin-LF              | Tellurium                                     |
| Microcystin-LR              | Thiodicarb                                    |
| Microcystin-LY              | Thiophanate-methyl                            |
| Microcystin-RR              | Toluene diisocyanate                          |
| Microcystin-YR              | Triethylamine                                 |
| Nodularin                   | Triphenyltin hydroxide (TPTH)                 |
| Dacthal                     | Urethane                                      |
| Dicrotophos                 | Vinclozolin                                   |
| Diuron                      | Ziram   |