ADEQ Arizona Department of Environmental Quality

# DRAFT FACT SHEET

## ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the issuance of the AZPDES permit listed below. This facility is a wastewater treatment plant (WWTP) with a design capacity of 8 million gallons per day (MGD) and is considered to be a major facility under the AZPDES program. The effluent limitations contained in this permit will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 *et seq*. This permit is proposed to be issued for a period of 5 years.

| **I. PERMITTEE INFORMATION** | |
|---|---|
| Permittee's Name: | City of Phoenix / Water Services Department |
| Permittee's Mailing Address: | 2474 South 22nd Avenue, Building #31, Phoenix, AZ 85009 |
| Facility Name: | Cave Creek Water Reclamation Plant (WRP) |
| Facility Address or Location: | 22841 N. Cave Creek Rd. Phoenix, AZ 85024 |
| County: | Maricopa County |
| Contact Person(s):<br>Phone/e-mail address | Berai Kimball<br>(602) 495-7478/ berai.kimball@phoenix.gov |
| AZPDES Permit Number: | AZ0026727 |
| Inventory Number: | 103320 |
| LTF Number: | 104388 |

| **II. STATUS OF PERMIT(s)** | |
|---|---|
| AZPDES permit applied for: | New |
| Date application received: | July 2, 2024 |
| Date application was determined administratively complete: | July 12, 2024 |
| Previous permit number (if different): | AZ0024465 |
| Previous permit termination date: | July 31, 2013 |

**208 Consistency:**

In accordance with A.A.C. R18-9-A903(6), a permit cannot be issued for any discharge inconsistent with a plan or plan amendment approved under section 208(b) of the Clean Water Act.

As a new facility, a 208 Plan Consistency Review was required; the facility was determined to be consistent with the Maricopa Association of Governments Regional Water Quality Management Plan in August 2024.

| City of Phoenix has the following permits issued by ADEQ applicable to the Cave Creek Reclamation Plant: | | |
|---|---|---|
| **Type of Permit** | | |
| Aquifer Protection Permit (APP) | P-103320 | Regulates discharges to the local aquifer |
| Reuse Permit | R-103320 | Regulates the practice of reusing treated wastewater for beneficial purposes |
| Multi-Sector General Permit (MSGP) | AZMS80179 | Regulates stormwater discharge |

| **III. GENERAL FACILITY INFORMATION** | |
|---|---|
| Type of Facility: | Publicly owned treatment works (POTW) |
| Facility Location Description: | Facility is located in the Cave Creek section of Phoenix, AZ |
| Permitted Design Flow: | 8 MGD |
| Treatment Level (WWTP): | Tertiary |
| Treatment Processes: | Screened and degritted influent is directed to a new primary treatment process using disk filters. Primary filter (PF) backwash waste and the solids waste settled at the bottom are pumped to the primary sludge thickener, which is modified from the existing primary clarifier. The thickened solids waste is discharged to the plant drain. The filtered primary effluent flows to the new secondary treatment biological nutrient removal-membrane bioreactor (BNR-MBR) process. The proposed BNR-MBR process comprises three new BNR trains. The MBR portion of the BNR-MBR process consists of four new MBR trains. Return activated sludge (RAS) from the MBR trains is collected and pumped to the aerobic zone of the BNR-trains. The MBR-filtrate is pumped to new reverse osmosis (RO) feed tanks (converted from existing secondary sedimentation basins).<br><br>Feed to the advanced water purification facility (AWPF) is treated by RO, ultraviolet advanced oxidation processes (UVAOP), and decarbonator system process units. RO brine is sent to the plant drain. Product water is stored in the existing reclaimed water storage reservoir.<br><br>A centralized odor control facility will serve the proposed coarse screening facility, the influent pump station, and the primary treatment facilities. The centralized odor control facility will use a bio-trickling filter with carbon adsorption polishing to treat odors from these facilities. A second centralized odor control facility will serve the BNR-MBR and Filtrate Storage using carbon adsorption. |
| Sludge Handling and Disposal: | The generated sludge is treated at the 91st Avenue Wastewater Treatment Plant. Cave Creek Reclamation Plant does not generate nor prepare biosolids and performs no monitoring. |
| Nature of Facility Discharge: | Domestic wastewater from residential, commercial, and industrial sources. |

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|---|---|
| Total Number of Significant Industrial Users (SIUs): | One, Honor Health Sonoran Crossing Medical Center |
| Average Flow Per Discharge: | N/A, Facility has not yet discharged |
| Service Area: | Cave Creek, Phoenix, and Scottsdale |
| Service Population: | 77,060 |
| Reuse / Irrigation or other disposal method(s): | Approximately 0.05 MGD direct reuse to 100 acres of land located at Latitude 33° 45' 23" N, Longitude 112° 01' 05.9" W, on a daily basis in addition to planned recharge to the aquifer via an onsite aquifer storage and recovery well system involving one aquifer storage and recovery (ASR) well. ASR is used to store water, which is later recovered for use. |
| Continuous or Intermittent Discharge: | Intermittent |
| Description of Discharge: | Discharge to the Cave Creek Wash will only occur on an emergency discharge basis. |

Planned Rehabilitation to Operational Status

The Cave Creek Water Reclamation Plant was first operational in 2002, intended to service new population and development growth north of the Loop 101 Freeway. When development in the service area fell below predictions by 2009, the Cave Creek WRP was taken offline. Because facility operation has been shut down for over ten years this permit will treat the facility as a new facility for which no discharges have yet occurred. The Rehabilitation project will place the Cave Creek WRP back into operation. The Cave Creek WRP will produce Class A+ reclaimed water with 3 effluent discharge options as noted below:

1. Discharge to Cave Creek Wash
2. Beneficial reuse by reclaimed water users
3. Recharge to the aquifer via an onsite aquifer storage and recovery well

Planned Implementation Schedule

| | |
|---|---|
| Begin Construction | June 2024 |
| End Construction | January 2027 |
| Begin Discharge | January 2027 |
| Attain Operational Level | April 2027 |

## IV. RECEIVING WATER

The State of Arizona has adopted water quality standards to protect the designated uses of its surface waters. Streams have been divided into segments and designated uses assigned to these segments. The water quality standards vary by designated use depending on the level of protection required to maintain that use.

| | |
|---|---|
| Receiving Water (Federal): | The Water of the U.S. Protected Surface Water (WOTUS PSW) for facility/ outfall is: An unnamed wash, tributary to Cave Creek — Headwaters to the Cave Creek Dam. |
| River Basin: | Middle Gila River Basin |
| Outfall Location(s): | Outfall 001: Township 4N, Range 3E, Section 14<br>Latitude 33° 45' 18.5" N, Longitude 112° 01' 05.9" W |

| | |
|---|---|
| Designated uses for the receiving water listed above: | The receiving water for discharge from Outfall 001 is an unnamed wash that is not listed in A.A.C. R18-11 Appendix B. However, the wash is an effluent-dependent tributary to Cave Creek (from the headwaters to the Cave Creek Dam) which is a protected surface water listed in A.A.C. R18-11 Appendix B. |
| Designated uses for the receiving water listed above: | The receiving water is not listed in A.A.C. R18-11 Appendix B; however, the wash is a tributary to the name of listed surface water. Therefore, the designated uses will be applied to the receiving water according to A.A.C. R18-11-105<br>Aquatic and Wildlife ephemeral (A&We)<br>Partial Body Contact (PBC) |
| Designated uses for downstream receiving water, Cave Creek: | Aquatic and Wildlife warmwater (A&Ww)<br>Full Body Contact (FBC)<br>Fish Consumption (FC)<br>Agricultural Livestock watering (AgL) |
| Per A.A.C. R18-11-113(D), the water quality standards that apply to effluent-dependent waters (EDWs) will be applied to derive discharge limitations for any point source discharge of wastewater to an ephemeral water. The AZPDES permit includes discharge limitations and monitoring requirements designed to achieve compliance with A&Wedw standards.<br>Therefore, the following uses are being applied to the receiving water:<br>• Aquatic and Wildlife effluent dependent water (A&Wedw)<br>• Partial Body Contact (PBC) | |
| Is the receiving water on the 303(d) list? | No, and there are no TMDL issues associated. |

**V. DESCRIPTION OF DISCHARGE**

Because this is a new facility and no discharges have yet occurred, effluent monitoring data are not available. The following is the effluent quality based on the treatment processes designed, as outlined in the application.

| **Parameters** | **Units** | **Maximum Daily Discharge Concentration** |
|---|---|---|
| Carbonaceous Biochemical Oxygen Demand (CBOD) | mg/L | N/A |
| Total Suspended Solids (TSS) | mg/L | N/A |
| Total Kjeldahl Nitrogen (TKN) | mg/L | N/A |
| *E. coli* | cfu/100 mL | N/A |
| Facility Design Removal Rates: | | CBOD 85 %<br>TSS 85 %<br>N 90 % |

**VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT**

This section is not applicable because this is a new permit.

## VII. PROPOSED PERMIT CHANGES

This section is not applicable because this is a new permit.

## VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS

When determining what parameters need monitoring and/or limits included in the permit, both technology-based and water quality-based criteria were compared and the more stringent criteria applied.

**Technology-based Limitations:** As outlined in 40 CFR Part 133:

The regulations found at 40 CFR §133 require that POTWs achieve specified treatment standards for CBOD, TSS, and pH based on the type of treatment technology available. Therefore, technology-based effluent limitations (TBELs) have been established in the permit for these parameters. Additionally, oil & grease will be monitored with an assessment level based on best professional judgment (BPJ). The average monthly assessment level of 10 mg/L and daily maximum of 15 mg/L are commonly accepted values that can be achieved by properly operated and maintained WWTPs. This level is also considered protective of the narrative standard at A.A.C. R18-11-108(B).

**Water Quality-Based Effluent Limitations**:

Per 40 CFR 122.44(d)(1)(ii), (iii) and (iv), discharge limits must be included in the permit for parameters with "reasonable potential" (RP), that is, those known to be or expected to be present in the effluent at a level that could potentially cause any applicable numeric water quality standard to be exceeded. Numeric water quality standards are outlined in A.A.C. R18-11-109 and Appendix A. RP refers to an analysis, based on the statistical calculations using the data submitted or consideration of other factors, to determine whether the discharge may exceed the Water Quality Standards. The procedures used to determine RP are outlined in the *Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001). In most cases, the highest reported value for a parameter is multiplied by a factor (determined from the variability of the data and number of samples) to determine a "highest estimated value." This value is then compared to the lowest applicable Water Quality Standard for the receiving water. If the value is greater than the standard, RP exists and a water quality-based effluent limitation (WQBEL) is required in the permit for that parameter. RP may also be determined from BPJ based on knowledge of the treatment facilities and other factors. The basis for the RP determination for each parameter with a WQBEL is shown in the table below.

It is assumed that RP exists for exceedance of water quality criteria for the pollutants *E. coli* and, if chlorine or bromine is used in the treatment process, total residual chlorine (TRC). These parameters have been shown through extensive monitoring of WWTPs to fluctuate greatly and thus are not conducive to exclusion from limitation due to a lack of RP. Therefore, the permit contains WQBELs for *E. coli* and TRC.

Since this is a new facility and effluent data are not yet available, RP could not be calculated for other potential pollutants that are subject to numeric water quality standards. Instead of WQBELs, assessment levels (ALs) were established for Trace Substances (Table 2 in the permit). ALs and relatively frequent monitoring are necessary for these parameters because they are commonly present in WWTP effluents at variable concentrations and at a level that could exceed the applicable water quality criteria for them. (See discussion under "Assessment Levels" below for further details.) For a number of other pollutants, Effluent Characterization (EC) monitoring is required at a lesser frequency and without established ALs or numeric limits (Tables 4.a. – 4.f in the permit). (See discussion under "Effluent Characterization" below for further details.)

The proposed permit limits were established using a methodology developed by EPA. Long Term Averages (LTA) were calculated for each designated use and the lowest LTA was used to calculate the average monthly limit (AML) and maximum daily limit (MDL) necessary to protect all uses. This methodology takes into account criteria, effluent variability, and the number of observations taken to determine compliance with the limit and is described in Chapter 5 of the TSD. Limits based on A&W criteria were developed using the "two-value steady state wasteload allocation"

described on page 99 of the TSD. When the limit is based on human health criteria, the monthly average was set at the level of the applicable standard and a daily maximum limit was determined as specified in Sections 5.4.4 and 5.5.3 of the TSD.

**Mixing Zone**

The limits in this permit were determined without the use of a mixing zone. Arizona state water quality rules require that water quality standards be achieved without mixing zones unless the permittee applies for and is approved for a mixing zone. Since a mixing zone was not applied for or granted, all water quality criteria are applied at end-of-pipe.

**Assessment Levels (ALs)**

ALs are listed in Part I.B of the permit. An AL differs from a discharge limit in that an exceedance of an AL is not a permit violation. Instead, ALs serve as triggers, alerting the permitting authority when there is cause for re-evaluation of RP for exceeding a water quality standard, which may result in new permit limitations. The AL numeric values also serve to advise the permittee of the analytical sensitivity needed for meaningful data collection. Trace substance monitoring is required when there is uncertain RP (based on non-detect values or limited datasets) or a need to collect additional data or monitor treatment efficacy on some minimal basis. A reopener clause is included in the permit should future monitoring data indicate water quality standards are being exceeded.

The requirement to monitor for these parameters is included in the permit according to A.A.C. R18-11-104(C) and Appendix A. Except for oil and grease, ALs listed for each parameter were calculated in the same manner that a limit would have been calculated (see Water Quality-Based Effluent Limitations above). The ALs for oil and grease were determined based on BPJ as described above.

Ammonia water quality criteria vary based on the effluent pH and temperature at the time of effluent sampling. As a result, no single ammonia concentration can be included as a permit limit. To overcome this, an Ammonia Impact Ratio (AIR) of 1 for the monthly average and a value of 2 for the maximum daily assessment levels has been established as the permit assessment levels for ammonia. The AIR is calculated by dividing the ammonia concentration in the effluent by the applicable ammonia standard based on the effluent pH and temperature at the time of sampling. AIR values will be reported on DMRs and on the Ammonia Data Log which is included as Appendix B in the permit.

The following trace substances were not included as limits or assessment levels in the permit due to a lack of RP based on best professional judgment (BPJ): barium, nitrates, nitrites, and manganese. The numeric standards for these pollutants are well above what would be expected from a WWTP discharge.

**Hardness**

The permittee is required to sample hardness as $CaCO_3$ at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. Since no actual effluent monitoring data are yet available, a protective default hardness value of 120 mg/L was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness-dependent metals (cadmium, chromium III, copper, lead, nickel, silver, and zinc).

**Whole Effluent Toxicity (WET)**

WET testing is required in the permit (Parts I.C and IV) to evaluate the discharge according to the narrative toxic standard in A.A.C. R18-11-108(A)(5), as well as whether the discharge has RP for WET per 40 CFR 122.44(d)(iv). At a minimum, the results reported on an AZPDES application must include quarterly testing for a 12-month period within the past year using multiple species or the results from four tests performed at least annually in the 4.5 years prior to the application. However, because this permit is for a new facility, the permittee may report these required WET test results up to two years after beginning discharge.

WET testing for chronic and/or acute toxicity is required. The requirement to conduct chronic toxicity testing is contingent upon the frequency or duration of discharges. Since completion of the chronic WET test requires a

minimum of three samples be taken for renewals, the chronic WET test is not required during any given monitoring period in which the discharge does not occur over seven consecutive calendar days and is not repeated more frequently than every thirty days.

WET testing for chronic or acute toxicity shall be conducted using the following three surrogate species:

- *Ceriodaphnia dubia* (water flea) – for evaluating toxicity to invertebrates
- *Pimephales promelas* (fathead minnow) – for evaluating toxicity to vertebrates
- *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum or Raphidocelis subcapitata)* (a green alga) – for evaluating toxicity to plant life

ADEQ does not have a numeric standard for Whole Effluent Toxicity. However, ADEQ adopted the EPA recommended chronic toxicity benchmark of 1.0 Toxic Unit-Chronic (TUc) for a four-day exposure period. Using this benchmark, the limitations and/or action levels for WET included in the permit were calculated in accordance with the methods specified in the *TSD*. The species chosen for WET testing are as recommended in the *TSD* and in *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*.

An exceedance of a limit or action level will trigger follow-up testing to determine if effluent toxicity is persistent. If toxicity above a limit or action level is found in a follow-up test, the permittee will be required to conduct a Toxicity Reduction Evaluation (TRE) and possibly a Toxicity Identification Evaluation (TIE) to identify the source of toxicity and reduce toxicity. These conditions are required to ensure that toxicants are not discharged in amounts that are toxic to organisms [A.A.C. R18-11-108(A)(5)]. A reopener clause is included in accordance with 40 CFR Parts 122 and 124 and AAC R18-9-B906.

The permit requires 24-hour composite samples be collected for WET testing. WET sampling must coincide with testing for all the parameters in Parts I.A and B of the permit, when testing of those parameters is required, to aid in the determination of the cause of toxicity if toxicity is detected. Additional procedural requirements for the WET test are included in the proposed permit.

The required WET monitoring frequency for this facility is consistent with the WET testing frequency required for facilities with a similar design flow. The permit requires WET test results to be reported on discharge monitoring reports and submittal of the full WET lab report to ADEQ.

**Effluent Characterization (EC)**

In addition to monitoring for parameters assigned either a limit or an AL, sampling is required to assess the presence of pollutants in the discharge at certain minimum frequencies for additional suites of parameters, whether the facility is discharging or not. This monitoring is specified in Tables 4.a. through 4.f., *Effluent Characterization Testing,* as follows:

• Table 4.a.—General Chemistry and Microbiology: ammonia, CBOD-5, *E. coli*, total residual chlorine (TRC), dissolved oxygen, total Kjeldahl nitrogen (TKN), nitrate/nitrite, oil and grease, pH, phosphorus, temperature, total dissolved solids (TDS), and total suspended solids (TSS)

• Table 4.b. — Selected Metals, Hardness, Cyanide, and WET

• Table 4.c. — Selected Volatile Organic Compounds

• Table 4.d. — Selected Acid-Extractable Compounds

• Table 4.e. — Selected Base-Neutral Compounds

• Table 4.f. — Additional Parameters Based on Designated Uses (from Arizona Surface Water Quality Standards, Appendix A, Table 1)

NOTE: Some parameters listed in Tables 4.a. and 4.b. are also listed in Tables 1 or 2. In this case, the data from monitoring under Tables 1 or 2 may be used to satisfy the requirements of Tables 4.a. and / or 4.b., provided the

specified sample types are the same. In the event the facility does not discharge to a Protected Surface Water during the life of the permit, EC monitoring of representative samples of the effluent is still required.

The purpose of EC monitoring is to characterize the effluent and determine if the parameters of concern are present in the discharge and at what levels. This monitoring will be used to assess RP per 40 CFR 122.44(d)(1)(iii)). EC monitoring is required in accordance with 40 CFR 122.43(a), 40 CFR 122.44(i), and 40 CFR 122.48(b) as well as A.R.S. §49-203(A)(7). If pollutants are noted at levels of concern during the permit term, this permit may also be reopened to add related limits or conditions.

**Permit Limitations and Monitoring Requirements**

Table 1 summarizes the parameters that are limited in the permit and the rationale for that decision. Also included are the parameters that require monitoring without any limitations or that have not been included in the permit at all and the basis for those decisions. The corresponding monitoring requirements are shown for each parameter. In general, the regulatory basis for monitoring requirements is per 40 CFR §122.44(i) *Monitoring requirements,* and 40 CFR §122.48(b), *Required monitoring*; all of which have been adopted by reference in A.A.C. R18-9-A905, *AZPDES Program Standards*.

**Table 1. Permit limitations and monitoring requirements.**

| Parameter | Lowest Standard/Designated Use | Maximum Reported Daily Value | No. of Samples | Estimated Maximum Value | RP Determination | Proposed Monitoring Requirement/Rationale (1) |
|---|---|---|---|---|---|---|
| Flow | - - - | - - - | - - - | - - - | - - - | Discharge flow is to be monitored on a continual basis using a flow meter. |
| Carbonaceous Biological Oxygen Demand (CBOD) and Total Suspended Solids (TSS) | 25 mg/L 30-day average<br>40 mg/L 7-day average<br>Technology-based limits<br>40 CFR 133.102 | CBOD: 25 mg/L<br>TSS: 30 mg/L | CBOD: N/A<br>TSS: N/A | N/A | TBELs for CBOD and TSS are always applicable to WWTPs. | Monitoring for influent and effluent CBOD and TSS to be conducted using composite samples of the influent and the effluent. The sample type required was chosen to be representative of the discharge. The requirement to monitor influent CBOD and suspended solids is included to assess compliance with the 85% removal requirement in this permit. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected. |
| Chlorine, Total Residual (TRC) | 11 µg/L A&W chronic | No Data | 0 | N/A | RP always expected when chlorine or bromine is used for disinfection. | This facility uses UV for disinfection. TRC is to be monitored as a discrete sample only if chlorine or bromine compounds are used for disinfection. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine. At least one sample per quarter must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. |
| *E. coli* | 30-day geometric mean:<br>126 cfu /100 mL (4 sample minimum)<br>Single sample maximum:<br>576 cfu /100 mL/ PBC | No Data | 0 | N/A | RP always expected for WWTPs. See explanation above. | *E. coli* is to be monitored as a discrete sample and a WQBEL is set. |
| pH (2) | Minimum: 6.5<br>Maximum: 9.0<br>A&W, PBC<br>A.A.C. R18-11-109(B)<br><br>Minimum: 6.0<br>Maximum: 9.0<br>Technology-based limits<br>40 CFR 133.102 | No Data | 0 | N/A | WQBEL or TBEL is always applicable to WWTPs. | pH is to be monitored using a discrete sample of the effluent and a WQBEL is set. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required. |

**Table 1. Permit limitations and monitoring requirements.**

| Parameter | Lowest Standard/Designated Use | Maximum Reported Daily Value | No. of Samples | Estimated Maximum Value | RP Determination | Proposed Monitoring Requirement/Rationale (1) |
|---|---|---|---|---|---|---|
| Temperature (2) | R18-11-109C the discharge shall not cause an increase in the ambient water temperature.<br><br>A&W:<br>no more than 3.0°C | No Data | 0 | N/A | N/A | Effluent temperature is to be monitored for effluent characterization by discrete sample. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. Temperature sampling must also coincide with ammonia sampling when required (3). |
| Ammonia (2) | Standard varies with temperature and pH | No Data | 0 | N/A | RP Indeterminate (3) | Ammonia is to be monitored by discrete sample and a WQBEL in the form of an ammonia impact ratio (AIR) of 1 is set in the permit (2). An ammonia data log with concurrent pH and temperature monitoring is also required. One sample must coincide with WET sampling to aid in the determination of the cause of toxicity, if toxicity is detected. |
| Nutrients (Total Nitrogen and Total Phosphorus) | No applicable standards | No Data | 0 | N/A | N/A | Monitoring required for effluent characterization. |
| Oil & Grease | BPJ Technology-Based Level of 10 mg/L monthly average and 15 mg/L daily maximum | No Data | 0 | N/A | RP Indeterminate (3) | Monitoring required and an assessment level is set. |
| Antimony | 600 µg/L A&Wedw chronic | No Data | 0 | N/A | RP Indeterminate | Monitoring required for effluent characterization. |
| Arsenic | 150 µg/L A&Wedw chronic | No Data | 0 | N/A | RP Indeterminate | Monitoring required and an assessment level is set. |
| Beryllium | 5.3 µg/L A&Wedw chronic | No Data | 0 | N/A | RP Indeterminate | Monitoring required and an assessment level is set. |
| Boron | 186,667 µg/L PBC | No Data | 0 | N/A | RP Indeterminate | Monitoring required and an assessment level is set. |
| Cadmium (4) | 2.6 µg/L A&Wedw chronic | No Data | 0 | N/A | RP Indeterminate | Monitoring required and an assessment level is set. |
| Chromium (Total) | No Criteria | No Data | 0 | N/A | No RP | Monitoring required as an indicator parameter for chromium III and chromium VI. If total chromium exceeds 86 µg/L, the permittee must conduct sampling for chromium III for the remainder of the permit. If total chromium exceeds 8 µg/L, the permittee must conduct sampling for chromium VI for the remainder of the permit. Otherwise, monitoring for chromium III and/or chromium VI is not required. |

**Table 1. Permit limitations and monitoring requirements.**

| Parameter | Lowest Standard/Designated Use | | Maximum Reported Daily Value | No. of Samples | Estimated Maximum Value | RP Determination | Proposed Monitoring Requirement/Rationale (1) |
|---|---|---|---|---|---|---|---|
| Chromium VI | 11 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring for total chromium required as an indicator parameter for chromium VI. If total chromium exceeds 8 µg/L, the permittee must conduct sampling for chromium VI for the remainder of the permit. Otherwise, monitoring for chromium VI is not required. An assessment level is set. |
| Copper (4) | 10.5 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring required and an assessment level is set. |
| Cyanide | 9.7 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring required and an assessment level is set. |
| Hardness | No applicable standard. Hardness is used to determine standards for specific metal parameters. | | No Data | 0 | N/A | No RP | A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required. |
| Hydrogen sulfide | 2 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring for sulfides required as an indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term and an assessment level is set. |
| Iron | 1,000 ug/L A&Ww chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Lead (4) | 3.1 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Mercury | 0.01 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Nickel (4) | 61 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Selenium | 2 µg/L A&Wedw chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Silver (4) | 4.4 µg/L A&Wedw acute | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Sulfides | No applicable standard | | No Data | 0 | N/A | RP Indeterminate | Indicator parameter for hydrogen sulfide. Assessment level Monitoring is required. If sulfide is detected, monitoring for hydrogen sulfide is required as an assessment level for the remainder of the permit term. |
| Thallium | 75 µg/L PBC | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Zinc (4) | 137 µg/L A&Wedw acute and chronic | | No Data | 0 | N/A | RP Indeterminate | Monitoring is required and an assessment level is set. |
| Whole Effluent Toxicity (WET) | No toxicity (A.A.C. R18-11-108(A) | *Pseudo-kirchneriella subcapitata (5)* | No Data | 0 | N/A | RP Indeterminate (3) | Monitoring required and an action level is set. |

**Table 1. Permit limitations and monitoring requirements.**

| Parameter | Lowest Standard/Designated Use | | Maximum Reported Daily Value | No. of Samples | Estimated Maximum Value | RP Determination | Proposed Monitoring Requirement/Rationale (1) |
|---|---|---|---|---|---|---|---|
| | | *Pimephales promelas* | No Data | 0 | N/A | RP Indeterminate. (3) | Monitoring required and an action level is set. |
| | | *Ceriodaphnia dubia* | No Data | 0 | N/A | RP Indeterminate (3) | Monitoring required and an action level is set. |

Footnotes:

1. The monitoring frequencies are as specified in the permit.
2. An AIR will be calculated by dividing effluent ammonia concentration by the applicable standard using the receiving water pH and temperature.
3. Monitoring with ALs or Action Levels always required for WWTPs for these parameters unless RP exists and limits are set.
4. Hardness-dependent metal - the standard is for this parameter is based on the average hardness value of the effluent or receiving water as indicated above.
5. Formerly known as *Selenastrum capricornutum or Raphidocelis subcapitata.*

**VIII. NARRATIVE WATER QUALITY STANDARDS**

All narrative limitations in A.A.C. R18-11-108 that are applicable to the receiving water are included in Part I, Section E of the permit.

**IX. MONITORING AND REPORTING REQUIREMENTS** (Part II of Permit)

Section 308 of the Clean Water Act and 40 CFR Part 122.44(i) require that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Monitoring frequencies for some parameters may be reduced in subsequent permits if all monitoring requirements have been met and the limits or ALs for those parameters have not been exceeded during the first permit term.

For the purposes of this permit, a "24-hour composite" sample has been defined as a flow-proportioned mixture of not less than three discrete samples (aliquots) obtained at equal time intervals over a 24-hour period. The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.

These criteria for composite sampling are included in order to obtain samples that are representative of the discharge given the potential variability in the duration, frequency and magnitude of discharges from this facility.

Discrete (i.e., grab) samples are specified in the permit for parameters that for varying reasons are not amenable to compositing.

Monitoring locations are specified in the permit (Part I.A, Part II.A and Part III.J) in order to ensure that representative samples of the influent and effluent are consistently obtained.

The requirements in the permit pertaining to Part II, Monitoring and Reporting, are included to ensure that the monitoring data submitted under this permit is accurate in accordance with 40 CFR 122.41(j). The permittee has the responsibility to determine that all data collected for purposes of this permit meet the requirements specified in this permit and is collected, analyzed, and properly reported to ADEQ.

The permit (Part II.A.3) requires the permittee to keep a Quality Assurance (QA) manual at the facility, describing sample collection and analysis processes; the required elements of the QA manual are outlined.

Reporting requirements for monitoring results are detailed in Part II, Section B of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs), Ammonia Data Logs, and AZPDES Flow Record forms.

The permittee is responsible for conducting all required monitoring and reporting the results to ADEQ on DMRs or as otherwise specified in the permit.

**Electronic reporting**

The US EPA has published a final regulation that requires electronic reporting and sharing of Clean Water Act National Pollutant Discharge Elimination System (NPDES) program information instead of the current paper-based reporting (Federal Register, Vol. 80, No. 204, October 22, 2015). Beginning December 21, 2016 (one year after the effective date of the regulation), the Federal rule required permittees to make electronic submittals of any monitoring reports and forms called for in their permits. ADEQ has created an online portal called myDEQ that allows users to submit their discharge monitoring reports and other applicable reports required in the permit.

The permit also requires annual submittal of an Ammonia Data Log that records the results for temperature, pH, and ammonia samples and date of sampling (Part II.B.4). Because the ammonia standards in 18 A.A.C. 11, Article 1,

Appendix A are contingent upon the pH and temperature at the time of sampling for ammonia, the permittee must determine the applicable ammonia standard using the ammonia criteria table(s) and calculate the Ammonia Impact Ratio for that ammonia sample result. The AIR is recorded on the DMR.

Requirements for retention of monitoring records are detailed in Part II.D.1 of the permit.

**X. BIOSOLIDS REQUIREMENTS** (Part III in Permit)

Cave Creek WRP will not have any biosolids treatment on site. All sewage sludge is discharged directly into the wastewater interceptor system and flows to the 91st Avenue Wastewater Treatment Plant (WWTP) for further treatment.

**XI. SPECIAL CONDITIONS** (Part V in Permit)

**Pretreatment**

Requirement to submit an evaluation of the need to revise local limits under 40 C.F.R. section 403.5(c)(1) is waved for this permit term due to new construction of facility.

**Operation**

This permit condition requires the permittee to ensure that the WWTP has an operator who is certified at the appropriate level for the facility, in accordance with A.A.C. R18-5-104 through -114. The required certification level for the WWTP operator is based on the class (Wastewater Treatment Plant) and grade of the facility, which is determined by population served, level of treatment, and other factors.

**Permit Reopener**

This permit may be modified based on newly available information; to add conditions or limits to address demonstrated effluent toxicity; to implement any EPA-approved new Arizona water quality standard; or to re-evaluate reasonable potential (RP), if assessment levels in this permit are exceeded [A.A.C. R18-9-B906 and 40 CFR Part 122.62 (a) and (b)].

**XII. ANTIDEGRADATION**

Antidegradation rules have been established under A.A.C. R18-11-107 to ensure that existing surface water quality is maintained and protected. The discharge from the Cave Creek Water Reclamation Plant will be to an ephemeral wash which will become (for purposes of this permit) an effluent-dependent water. Except for flows resulting from rain events, the only water in the wash will be the effluent. Therefore, the discharge and the receiving water will normally be one and the same. Therefore, an antidegradation review is not required at this time. Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.

## XIII. STANDARD CONDITIONS

Conditions applicable to all NPDES permits in accordance with 40 CFR, Part 122 are attached as an appendix to this permit.

## XIV. ADMINISTRATIVE INFORMATION

**Public Notice (A.A.C. R18-9-A907)**

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft AZPDES permit or other significant action with respect to an AZPDES permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

**Public Comment Period (A.A.C. R18-9-A908)**

Rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

**Public Hearing (A.A.C R18-9-A908(B))**

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

**EPA Review (A.A.C. R18-9-A908(C)**

A copy of this permit and any revisions made to this draft as a result of public comments received will be sent to EPA Region 9 for review. If EPA objects to a provision of the draft, ADEQ will not issue the permit until the objection is resolved.

## XV. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Surface Water Permits Unit
Attn: Julia Rowe
1110 West Washington Street
Phoenix, Arizona 85007

Or by contacting Julia Rowe at (520) 628 – 6721 or by e-mail at rowe.julia@azdeq.gov.

## XVI. INFORMATION SOURCES

While developing effluent limitations, monitoring requirements, and special conditions for the permit, the following information sources were used:

1. AZPDES Permit Application Form(s) 2A and 2S, received July 2, 2024, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. ADEQ files on Cave Creek Water Reclamation Plant.
3. MAG 208 Water Quality Management Plan Point Source Update, Maricopa Association of Governments, June 2014.
4. 208 Water Quality Management Plan, Maricopa Association of Governments, Final, October 2002.
5. MAG 208 Amendment For the Town of Cave Creek Water Reclamation Facility, April 2008.
6. 208 Consistency Review dated 8/7/2024.
7. ADEQ Geographic Information System (GIS) Web site
8. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters,* adopted December 31, 2016.
9. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
10. Code of Federal Regulations (CFR) Title 40:

    Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.*

    Part 124, *Procedures for Decision Making*.

    Part 133. *Secondary Treatment Regulation.*

    Part 503. *Standards for the Use or Disposal of Sewage Sludge*.
11. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
12. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
13. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
14. U.S. EPA NPDES Permit Writers' Manual, September 2010.
15. The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit from A Dissolved Criterion, US EPA, June 1996.