

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is a wastewater treatment plant (WWTP) with a design capacity of 18 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 Mesa - Water Resources
Permittee's Mailing Address:	P.O. Box 1466, Mail Stop 5010 Mesa, AZ 85211-1466
Facility Name:	City of Mesa Northwest Water Reclamation Plant (WRP)
Facility Address or Location:	960 North Riverview Drive Mesa, AZ 85201
County:	Maricopa County
Contact Person(s): Phone/e-mail address	Jennifer Calles, Regulatory Compliance Program Manager (480) 644-3890, jennifer.calles@mesaaz.gov
AZPDES Permit Number:	AZ0024031
Inventory Number:	100369
LTF Number:	102602

II. STATUS OF PERMIT(S)	
AZPDES permit applied for:	Renewal
Date application received:	02/13/2024
Date application was determined administratively complete:	02/16/2024
Previous permit number (if different):	N/A
Previous permit expiration date:	08/18/2024

II. STATUS OF PERMIT(s) (Continued)

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.

Based on review of the application, there are no changes to the facility that require a new determination of consistency with the Regional Water Quality Management Plan.

City of Mesa - Water Resources has the following permits issued by ADEQ applicable to the Northwest WRP:

Type of Permit

Aquifer Protection Permit (APP)	P-100369	Regulates discharges to the local aquifer
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III. GENERAL FACILITY INFORMATION

Type of Facility:	Publicly Owned Treatment Works (POTW)
Facility Location Description:	The Northwest WRP is located at 960 North Riverview Drive on the south side of the Salt River and Red Mountain Freeway (SR 202) between SR 101 and N. Dobson Road in Mesa, Arizona.
Proximity to Tribal Nations	Outfall 003 discharges to the Salt River approximately <1 mile south of the Salt River Pima–Maricopa Indian Community at the southwest boundary and approximately 21 miles upstream of the Gila River Indian Community northwest boundary.
Permitted Design Flow:	18 million gallons per day (MGD)
Treatment Level (WWTP):	Tertiary
Treatment Processes:	The WRP treatment process consists of screening, primary sedimentation, grit removal, activated sludge with aerated and anoxic zones for biological nitrogen removal, secondary clarification, and tertiary filtration. Disinfection is performed by ultraviolet (UV). Chlorination/de-chlorination may be used as a back-up to UV disinfection.
Sludge Handling and Disposal:	Sludge undergoes a thickening process for on-site treatment by an anaerobic digestion followed by dewatering. Class B pathogen reduction is achieved with a minimum of 38% reduction in volatile solids, per A.A.C. R18-9-1010 - Vector Attraction Reduction. Class B biosolids are land applied at J&M Farms located at E Highway 287 and N Christensen Rd. in Coolidge, AZ, by Synagro, a biosolids management firm.

III. GENERAL FACILITY INFORMATION (Continued)	
Nature of Facility Discharge:	Domestic wastewater from residential, commercial sources, and industrial sources.
Total Number of Significant Industrial Users (SIUs):	1 SIU Categorical SIU: 433 – Metal Finishing Point Source Category The Boeing Company Industrial processes include assembly, painting, and research/development for aircraft and aircraft parts Intermittent discharger: >12,000 gallons per day (gpd) process wastewater, >24,000 gpd non-process wastewater
Average Flow Per Discharge:	6.82 MGD (Ranging from 2 to 8 MGD)
Service Area:	City of Mesa and Salt River Pima-Maricopa Indian Community Businesses
Service Population:	120,000
Reuse / Irrigation or other disposal method(s):	<u>Recharge</u> <ul style="list-style-type: none"> Percolation ponds for recharge (APP Permit No. P-100369) are sparingly used (intermittent, approximately 20 discharges per year averaging 5 days each) due to limited capacity of approximately 50 million gallons. The ponds are located at: Latitude 33° 26' 08" N, Longitude 111° 53' 05" W The Northwest WRP preferentially discharges from Outfall 005 to the Granite Reef Underground Storage Project (GRUSP), covered under the Region 9 NPDES permit (AZ0024627) for discharge to Tribal lands. When the Northwest WRP cannot discharge to the GRUSP discharge is routed through Outfall 003.
Continuous or Intermittent Discharge:	Intermittent, but frequent
Discharge Pattern Summary:	AZPDES Flow Records indicated that discharge from Outfall 003 occurred during the current permit term most days of each month with a monthly maximum discharge rate of 8 MGD. Discharge from Outfall 003 occurs when the Granite Reef Underground Storage Project (GRUSP) is offline and effluent cannot discharge from Outfall 005.
<u>Future Development in Process: Central Mesa Reclaimed Pipeline (CMRP) Project</u>	
<p>The Central Mesa Reclaimed Pipeline (CMRP) project is currently under construction and will eventually require the addition of two new outfalls (Outfall 001 and 002), which are not covered under this permit renewal unless a permit modification is approved. The CMRP will provide an additional option to send treated effluent to the Gila River Indian Community (GRIC) for reuse on crops. The City of Mesa has an Intergovernmental Agreement (IGA) with GRIC to exchange reclaimed water for Central Arizona Project (CAP) water.</p> <p>Currently the Northwest WRP discharges on a continuous basis to either Outfall 003 (this ADEQ permit AZ0024031) or Outfall 005 in Region 9 NPDES permit (No. AZ0024627). Outfall 005 discharges to the Granite Reef Underground Storage Project (GRUSP) for recharge within the Salt River. When GRUSP is offline, it tends to be offline for a long time because the site was washed out due to reservoir releases due to rain and snow. During a GRUSP outage, the Northwest WRP discharges to Outfall 003.</p>	

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 Salt River (EDW) – City of Mesa NW WRF outfall to Tempe Town Lake. This surface water is listed in A.A.C. R18-11 Appendix B.
River Basin:	Middle Gila River Basin
Outfall Location(s):	Outfall 003: Township 1N, Range 5E, Section 7 Latitude 33° 26' 10" N, Longitude 111° 53' 10" W
Designated uses for the receiving water listed above:	Aquatic and Wildlife effluent dependent water (A&Wedw) Partial Body Contact (PBC)
Is the receiving water on the 303(d) list?	No, and there are no TMDL issues associated.

Given the uses stated above, the applicable narrative water quality standards are described in A.A.C. R18-11-108, and the applicable numeric water quality standards are listed in A.A.C. R18-11-109 and in Appendix A thereof. There are two standards for the Aquatic and Wildlife uses, acute and chronic. In developing AZPDES permits, the standards for all applicable designated uses are compared and limits that will protect for all applicable designated uses are developed based on the standards.

V. DESCRIPTION OF DISCHARGE

Because the facility is in operation and discharges have occurred, effluent monitoring data are available. The following is the measured effluent quality reported in the application.

Parameters	Units	Maximum Daily Discharge Concentration
Biochemical Oxygen Demand (BOD)	mg/L	38
Total Suspended Solids (TSS)	mg/L	17
Total Kjeldahl Nitrogen (TKN)	mg/L	6.5
<i>E. coli</i>	cfu/100 mL	200.5
Facility Design Removal Rates:		BOD 85 % TSS 85 %

VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT	
Date of Most Recent Inspection:	06/29/2023; no potential violations were noted as a result of this inspection.
Discharge Monitoring Reports (DMR) Reviewed:	08/2019 through 04/2024
Lab Reports Reviewed:	08/2019 through 04/2024
DMR Exceedances:	Ammonia Nitrogen (June 2021); Total Residual Chlorine (November 2023). No other exceedances were noted.
Notice(s) of Violation (NOV) Issued:	None
NOVs Closed:	N/A
Formal Enforcement Action(s):	None

VII. PROPOSED PERMIT CHANGES			
The following table lists the major changes from the previous permit in this permit.			
Parameter	Existing Permit	Proposed Permit	Reason for Change
Noncompliance Reporting Hotline	(602) 771-2330	Noncompliance resulting in imminent threat to human health or the environment must be reported to (602) 771-2330, while all other noncompliance must be reported to (602) 771-1440.	Routing emergency calls to the emergency hotline, but all other calls to a non-emergency number.
Reporting Location for Effluent Characterization Monitoring	Submit results through DMRs	Report results on the EC Monitoring Data Sheet Excel form provided by ADEQ and submit annually to azpdes_data@azdeq.gov by January 28 th following each annual reporting period. See Part I.D.2 and Part II.B.3 of permit. Laboratory reports for EC monitoring shall be submitted through myDEQ with the last DMR of the calendar year. See Part II.B.3.b. of the permit.	ADEQ is implementing this new procedure to facilitate data analysis by ADEQ and reporting by permittees. Outcomes include expedited data processing and improved data quality review, per ADEQ Surface Water Protection Quality Assurance Program Plan (2022).

VII. PROPOSED PERMIT CHANGES (Continued)			
Parameter	Existing Permit	Proposed Permit	Reason for Change
Sufficiently Sensitive Test Methods and Limit of Quantitation (LOQ) Reporting Requirements	Limited explanation of analytical requirements for LOQ and sufficiently sensitive test methods.	Analytical test sensitivity requirements are specified in the footnotes of Part I Tables 1-4 of the permit and associated definitions in Appendix A. Part B. The requirement to use sufficiently sensitive test methods is specified in Part II.A.5.	The Limit of Quantitation (LOQ) must be low enough to allow comparison of the results to the applicable water quality standards (WQS) to be protective of the receiving water designated uses. New language clarifies the requirement that parameters must be analyzed using sufficiently sensitive test methods in accordance with 40 CFR 136.1(c).
Pretreatment Conditions	Standard conditions, including instructions for submission of annual reports via email and annual report requirements.	Updated standard conditions, including instructions to submit annual reports using ADEQ's Annual Report Form via email or myDEQ (when available), updated annual report requirements, and a requirement to complete a local limit evaluation within 180 days of permit reissuance.	ADEQ has updated the pretreatment conditions for consistency with 40 CFR 403 and the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule.
Use of Metal Translators to Calculate Total Recoverable Permit Limits from Dissolved Criteria (Applicable to Cadmium, Chromium VI, Copper, Lead, Mercury, Nickel, Silver, and Zinc).	No metal translators were used. Assumed the ratio of dissolved to total recoverable is 1 to 1 for all metals with water quality criteria expressed as dissolved.	WQBELs and ALs were converted from dissolved to total recoverable using the default metal translators from the EPA's <i>The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit from A Dissolved Criterion</i> .	New procedure for ADEQ to incorporate default metal translators when calculating total recoverable WQBELs and ALs from dissolved criteria.
Outfalls	Outfalls 003 and 004	Outfall 003 only Outfall 004 removed from AZPDES permit coverage	Outfall 004 is removed from the renewal permit at the request of City of Mesa – Water Resources. Plans to construct Outfall 004 were terminated.

VII. PROPOSED PERMIT CHANGES (Continued)			
Parameter	Existing Permit	Proposed Permit	Reason for Change
Copper	Limited	Limit removed	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.
Selenium	Effluent Characterization Monitoring	Limited	Data submitted indicated reasonable potential (RP) exists for an exceedance of a standard.
Whole Effluent Toxicity (WET)	Chronic WET test only	Option for Acute WET test included if discharge does not occur over seven consecutive calendar days and is not repeated more frequently than every thirty days. See Table 3 of permit.	AZPDES Flow Records indicated that discharge from Outfall 003 is intermittent. For WET testing required during a monitoring period either acute OR chronic WET test must be performed per Part I.C and Part IV of the permit.
Monitoring Frequency Decreased Effluent Characterization Testing -Based on Designated Uses (Table 4.f)	Monitoring frequency set at 4x/permit term. Parameters flagged with footnotes 1-3 set at a frequency of 3x/permit term.	Monitoring frequency set at 3x/permit term. Parameters flagged with footnotes 2 and 3 set at a frequency of 2x/permit term. See Table 4.f of permit.	Monitoring frequency is based on tiers established for design capacity to (1) obtain sufficient data to protect surface water quality and (2) set monitoring requirements consistently. For this POTW, monitoring frequency is based on the design flow tiers established for 18 MGD. Previous monitoring frequency was inconsistent with this protocol.
Barium, Boron, Fluoride, Manganese, Uranium	Effluent characterization monitoring set at 3x or 4x/permit term in Table 4.f.	Effluent characterization monitoring set at 1x/year in 2026, 2027, and 2028. See Table 4.b of permit.	Inorganic monitoring parameters previously listed in Table 4.f were consolidated in Table 4.b with other inorganic metals and trace substances. Effluent characterization monitoring frequency established for miscellaneous substances for a design capacity ≥ 5 MGD is set at 3x per permit term to obtain sufficient data to perform RP analysis.
Hydrogen Sulfide, Iron, Sulfides	Effluent characterization monitoring frequency set in both Table 4.b and 4.f.	Effluent characterization monitoring frequency set in Table 4.b only.	Redundancy removed for consistency.

VII. PROPOSED PERMIT CHANGES (Continued)			
Parameter	Existing Permit	Proposed Permit	Reason for Change
Ammonia Impact Ratio (AIR)	No effluent characterization monitoring requirement.	Effluent characterization monitoring required. See Table 4.a of permit.	Calculation necessary to determine if the ammonia concentration meets the applicable standard determined using pH and temperature monitored at the time of sampling, per A.A.C. R18-11 Appendix A. Exclusion of this monitoring requirement in the previous permit was less conservative in approach.

Anti-backsliding considerations — “Anti-backsliding” refers to statutory (Section 402(o) of the Clean Water Act) and regulatory (40 CFR 122.44(l)) requirements that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the previous permit. The rules and statutes do identify exceptions to these circumstances where backsliding is acceptable. This permit has been reviewed and drafted with consideration of anti-backsliding concerns.

Limits for the following parameter have been removed from the permit because evaluation of current data allows the conclusion that no reasonable potential (RP) for an exceedance of a standard exists:

- Copper (Outfall 003)

This is considered allowable backsliding under 303(d)(4). The effluent limitations in the current permit for copper were based on state standards, the respective receiving waters are in attainment for this parameter, and the revisions are consistent with antidegradation requirements. See Section XII for information regarding antidegradation requirements.

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 BOD, 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).

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS (Continued)

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.

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 limits has been established as the permit limits 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.

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.

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

Arizona water quality rules require that water quality standards be achieved without mixing zones unless the permittee applies and is approved for a mixing zone. Since the receiving stream for this discharge is ephemeral prior to the discharge, no water is available for a mixing zone and all water quality criteria are applied at end-of pipe. This means that the effluent concentration must meet stream standards.

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS (Continued)

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.

Hardness

The permittee is required to sample hardness as CaCO₃ at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. The hardness value of 225 mg/L (average hardness of the effluent as supplied in the application) 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.

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 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

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS *(Continued)*

Whole Effluent Toxicity (WET) *(Continued)*

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, BOD-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. 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.

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS (Continued)**Effluent Characterization (EC) (Continued)**

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*.

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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.
Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) (2)	30 mg/L 30-day average 45 mg/L 7-day average Technology-based limits 40 CFR 133.102	BOD: 38 mg/L TSS: 17 mg/L	BOD: 245 TSS: 248	N/A	TBELs for BOD and TSS are always applicable to WWTPs.	Monitoring required and TBELs remain in the permit. Monitoring for influent and effluent BOD 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 BOD 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&Wedw chronic	3,000 µg/L	1,825	N/A	RP always expected when chlorine or bromine is used for disinfection	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine. At least one sample per month must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
<i>E. coli</i>	30-day geometric mean: 126 cfu /100 mL (4 sample minimum) Single sample maximum: 575 cfu /100 mL/ PBC	200.5 MPN/100mL	1,796	N/A	RP always expected for WWTPs. See explanation above.	<i>E. coli</i> is to be monitored as a discrete sample and a WQBEL remains in the permit.
pH (2)	Minimum: 6.5 Maximum: 9.0 A&Wedw and PBC A.A.C. R18-11-109(B) Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR 133.102	Minimum: 6.94 Maximum: 7.61	122	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 remains in the permit. 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.
Temperature (2)	R18-11-109C the discharge shall not cause an increase in the ambient water temperature. A&Wedw: no more than 3.0°C	Maximum: 34 °C Minimum: 19 °C	122	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.
Total Dissolved Solids (TDS)	No applicable standard	1,008 mg/L	7	N/A	N/A	Monitoring required for effluent characterization.

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)
Ammonia (2)	Standard varies with temperature and pH	4.60 mg/L AIR: 2.16	116	6.29 mg/L	RP Exists (3)	Ammonia is to be monitored by discrete sample and a WQBEL in the form of an ammonia impact ratio (AIR) of 1 remains in the permit. 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	P: 2.19 mg/L N: 9.21 mg/L	P: 19 N: 12	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	<5.8 mg/L	18	N/A	RP Indeterminate (3)	Monitoring required and an assessment level remains in the permit.
Antimony	600 µg/L A&Wedw chronic	<1 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.
Arsenic	150 µg/L A&Wedw chronic	7.4 µg/L	19	17.40 µg/L	No RP	Monitoring required for effluent characterization.
Barium	98,000 µg/L PBC	26.6 µg/L	17	44.06 µg/L	No RP	Monitoring required for effluent characterization.
Beryllium	5.3 µg/L A&Wedw chronic	<1 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.
Boron	186,667 µg/L PBC	435 µg/L	5	1,824 µg/L	No RP	Monitoring required for effluent characterization.
Cadmium (4)	4.1 µg/L A&Wedw chronic	<1 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	No applicable standard	1.31 µg/L	20	N/A	N/A	Effluent characterization monitoring required as an indicator parameter for chromium III and chromium VI.
Chromium III	144 µg/L A&Wedw chronic	<5 µg/L	5	N/A	No RP	Total chromium monitoring required for effluent characterization as an indicator parameter for chromium III.
Chromium VI	11 µg/L A&Wedw chronic	<5 µg/L	6	N/A	No RP	Monitoring required for effluent characterization. (See Chromium (Total) above.)
Copper (4)	17.9 µg/L A&Wedw chronic	<10 µg/L	51	N/A	No RP	Monitoring required for effluent characterization.
Cyanide	9.7 µg/L A&Wedw chronic	<6.8 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	270 mg/L	51	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent value of 225 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is 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)	
Hydrogen sulfide	2 µg/L A&Wedw chronic	No Data	0	N/A	RP Indeterminate (No Data)	Monitoring required for effluent characterization. The permittee may initially monitor for sulfide as an indicator parameter instead of hydrogen sulfide. The limit of quantification shall be no higher than 100 µg/L, and any detection of sulfides shall trigger monitoring for hydrogen sulfide for the remainder of the permit term.	
Iron	1,000 µg/L A&Wedw chronic	266 µg/L	23	580 µg/L	No RP	Monitoring required for effluent characterization.	
Lead (4)	6 µg/L A&Wedw chronic	<1 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.	
Manganese	130,667 µg/L PBC	63.3 µg/L	5	265 µg/L	No RP	Monitoring required for effluent characterization.	
Mercury	0.01 µg/L A&Wedw chronic	<0.01 µg/L	20	N/A	No RP	Monitoring required for effluent characterization.	
Nickel (4)	103 µg/L A&Wedw chronic	5.6 µg/L	19	8.53 µg/L	No RP	Monitoring required for effluent characterization.	
Selenium	2 µg/L A&Wedw chronic	1.07 µg/L	19	2.51 µg/L	RP Exists	Monitoring required and a WQBEL is set in the permit.	
Silver (4)	13 µg/L A&Wedw acute	<1 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.	
Sulfides	No applicable standard	<100 µg/L	19	N/A	N/A	Effluent characterization monitoring required as an indicator parameter for hydrogen sulfide. The limit of quantification shall be no higher than 100 µg/L and any detection of sulfides shall trigger monitoring for hydrogen sulfide for the remainder of the permit term.	
Thallium	75 µg/L PBC	<1 µg/L	19	N/A	No RP	Monitoring required for effluent characterization.	
Zinc (4)	233 µg/L A&Wedw acute and chronic	21 µg/L	19	29 µg/L	No RP	Monitoring required for effluent characterization.	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A))	<i>Pseudo-kirchneriella subcapitata</i> (5)	1 TUc	9	N/A	RP Indeterminate (3)	Monitoring required and an action level remains in the permit.
		<i>Pimephales promelas</i>	1 TUc	9	N/A	RP Indeterminate (3)	Monitoring required and an action level remains in the permit.
		<i>Ceriodaphnia dubia</i>	1 TUc	9	N/A	RP Indeterminate (3)	Monitoring required and an action level remains in the permit.

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 effluent 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 for this parameter is based on the average effluent value of 225 mg/L 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(e). 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.

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

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)

Standard requirements for the monitoring, reporting, record keeping, and handling of biosolids, as well as minimum treatment requirements for biosolids according to 40 CFR Part 503 are incorporated in the permit.

XI. SPECIAL CONDITIONS (Part V in Permit)

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.

Pretreatment Conditions

Standard requirements for implementing and enforcing an approved pretreatment plan are included in the permit.

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 City of Mesa Northwest WRP will be to an effluent-dependent water. Except for flows resulting from rain events, the only water in the stream will be the effluent. Therefore, the discharge and the receiving water will normally be one and the same. 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: Corin Hammond
1110 West Washington Street
Phoenix, Arizona 85007

Or by contacting Corin Hammond at (602) 771 – 4144 or by e-mail at hammond.corin@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 February 13, 2024, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. Supplemental information to the application received by ADEQ on February 15, 2024, May 14, 2024, and July 24, 2024.
3. ADEQ files on the City of Mesa Northwest WRP.
4. ADEQ Geographic Information System (GIS) Web site.
5. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters*, adopted December 31, 2016.
6. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
7. Code of Federal Regulations (CFR) Title 40:
 - a. Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*.
 - b. Part 124, *Procedures for Decision Making*.
 - c. Part 133. *Secondary Treatment Regulation*.
 - d. Part 503. *Standards for the Use or Disposal of Sewage Sludge*.
8. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
9. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
10. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
11. U.S. EPA NPDES Permit Writers' Manual, September 2010.
12. *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, US EPA, June 1996.