# NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FACT SHEET

This document gives pertinent information concerning the issuance of the permit listed below. This facility is a Publicly Owned Treatment Works (POTW) with a design capacity of 18 million gallons per day (MGD). Since the facility's discharge is greater than 1 MGD, it is considered a major facility under the NPDES regulations. The effluent limitations contained in this permit are in compliance with the provisions of the Clean Water Act (CWA) as amended, (33 U.S.C. 1251 *et seq.*) and based on Water Quality Standards listed in Arizona Administrative Code (AAC.) R18-11-101 *et seq.* This permit is proposed to be issued for a period of 5 years.

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| Permittee's Name: | City of Mesa Utilities Department |
| Mailing Address: | 640 N. Mesa Drive<br>P.O. Box 1466<br>Mesa, Arizona 85211-1466 |
| Plant Location: | 960 North Riverview<br>Mesa, Arizona 85201 |
| Contact Person(s): | Brian Draper, Wastewater Compliance Administrator<br>(480) 644-3246 |
| AZPDES Permit No. | AZ0024627 |

## I. STATUS OF PERMIT(s)

The City of Mesa Utilities Department has applied for a National Pollutant Discharge Elimination System (NPDES) permit to allow for intermittent and/or emergency discharges of treated domestic, commercial and industrial wastewater from the Northwest Water Reclamation Plant (NWWRP) to a new outfall located on Salt River Pima Maricopa Indian Community (SRPMIC) tribal land. The NWWRP collects and treats wastewater from the northwest portion of the City of Mesa, Arizona. The City of Mesa currently has an AZPDES Permit (AZ0024031) issued by Arizona for discharge into the Salt River at locations under Arizona's jurisdiction, an Aquifer Protection Permit (APP) No. P100369 and a Reuse Permit No. R1003694

## II. GENERAL FACILITY INFORMATION

The NWWRP facility is owned and operated by the City of Mesa, AZ, and is located at 960 North Riverview in Mesa, Arizona 85201, on the south side of the Salt River, adjacent to the Red Mountain Freeway between Price Road and Dobson Road in Township 1 North, Range 5 East, Section 18 North 1/2.

The NWWRP collects and treats wastewater from the service area for northwest portion of the City of Mesa, constituting a population of approximately 160,000 persons. A pretreatment program is in operation for industrial contributors. The facility is being modified and expanded to increase the design

flow from 8 MGD to 18 MGD of municipal wastewater. The facility receives and treats domestic wastewater from the service area, but receives no wastewater from Significant Industrial Users.

Treatment will include mechanical climber screens, grinding pump, primary clarification, nitrification and de-nitrification via activated sludge process, secondary clarification, filtration and disinfection. Water discharged to the Salt River will be disinfected by ultra-violet (UV) light.

The NWWRP effluent is or can be potentially discharged to four different outfalls, namely Outfalls #002, #003, #004 and #005. Outfalls #003 and #004 discharge to locations under the jurisdiction of the State of Arizona, and are regulated by the Arizona Pollutant Discharge Elimination System (AZPDES) permit No. AZ0024031. Outfalls #002 and #005 discharge to locations on Salt River Pima Maricopa Indian Community (SRPMIC) land and are the subject of this federal permit being issued by the United States Environmental Protection Agency (USEPA).

The treated effluent can either flow by gravity to the existing plant recharge basins or the existing Outfall #003. Or the effluent can flow to the effluent pump station and from there, the effluent can be pumped to the Salt River Pima Maricopa Indian Community (SRPMIC) recharge basins or the effluent distribution pipeline locate in the Red Mountain Freeway right-of-way. From the effluent pipeline, the effluent can go to the new Granite Reef Underground Storage Project (GRUSP) Discharge Point (Outfall #005) to the Hennessey Drain located on Tribal land at 33° 29' 04.63" N , 111° 44' 47.54" W. At this time Outfall #002 located on Tribal land at 33° 27' 25" N , 111° 50' 25" is not expected to be a discharge point, except as a back-up, in case discharge it Outfall #005 is impracticable for some reason.

## III. RECEIVING WATER

The facility has four permitted effluent discharge locations, but the discharge locations that are the subject of this permit are Outfalls #005 and #002 which are located in a portion of the Salt River which is on SRPMIC tribal land. The State of Arizona has adopted water quality standards to protect the designated uses of 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. This federal permit will apply these State of Arizona standards to protect beneficial uses and to maintain consistency of treatment requirements, as not only does the effluent discharged onto Tribal land have the potential to cross over Tribal boundaries and enter State waters, but also the two other discharge points of the NWWRP are to state lands and subject to the jurisdiction of the Sate of Arizona and its Department of Environmental Quality for permitting, and which has issued an AZPDES permit (AZ0024031) for those outfalls.

The receiving water for the treated domestic, commercial and industrial wastewater discharged from the NWWRP Outfall #002 and #005 is the Salt River in the Middle Gila watershed.

Outfall 002 is located at: Latitude 33° 27′ 25″ N , Longitude 111° 50′ 25″ W

Outfall 005 is located at: Latitude 33° 29′ 05″ N, Longitude 111° 44′ 48″ W

This receiving waters is not on the 303(d) list and there are no TMDL issues associated. The outfalls discharge to the Salt River. The discharge points are both on SRPMIC tribal land. The SRPMIC does have adopted water quality standards, but these have not yet been approved by the USEPA. Therefore the USEPA is relying on standards in Arizona Water Quality Standards (18 A.A.C. Chapter 11, Article 1) for the segment of the Salt River which is included in Appendix B as a surface water in the Salt River Basin and which has designated uses of Aquatic & Wildlife (ephemeral water) (A&We), and Partial Body Contact, (PBC). This segment is not listed as impaired and there are no TMDL issues associated with it. At this time, the numeric criteria used in this federal permit are the same as the State of Arizona's as established in Title 18, Chapter 11, Appendix B. of the Arizona Administrative Code.

Based on the considerations above, the permit has been drafted to protect the following designated uses:

Aquatic and Wildlife ephemeral (A&We)
Partial Body Contact (PBC)

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. The standards for all applicable designated uses are compared and the most stringent standard is applied, thus protecting for all applicable designated uses.

## IV. DESCRIPTION OF DISCHARGE

The following table summarizes the characteristics of treated wastewater discharged from the NWWRP through its existing outfalls permitted by the State of Arizona.

| PARAMETER | UNITS | MAXIMUM DAILY VALUE | AVERAGE DAILY VALUE |
|---|---|---|---|
| pH (minimum) | s.u. | 6.59 | --- |
| pH (maximum) | s.u. | 8.0 | --- |
| Flow rate | MGD | 14.32 | 7.67 |
| Temperature (Oct.-Mar.) | °C | 32.2 | 27.0 |
| Temperature (Apr.-Sep.) | °C | 33.1 | 30.9 |

| | | | |
|---|---|---|---|
| $BOD_5$ | mg/L | 13 | 1.81 |
| Fecal Coliform (1) | cfu/100mL | 53 | 7.63 |
| TSS | mg/L | 4 | 0.94 |
| Ammonia (as N) | mg/L | 1.12 | 0.5 |
| Total Kjeldahl Nitrogen (TKN) | mg/L | 5.9 | 1.74 |
| Nitrogen plus Nitrite Nitrogen | mg/L | 8.56 | 4.73 |
| Oil & Grease | mg/L | <10 | <10 |
| Hardness ($CaCO_3$) | mg/L | 280 | --- |
| Chlorine (Total Residual Chlorine, TRC) | ug/L | <50 | <50 |

(1) cfu is considered to be a 1:1 relationship to most probable number (MPN).

The application indicates that the removal rate for: BOD is 99%, TSS is 99%, and N is 85%.

The organics data that was submitted was limited and some parameters had detection limits that were higher than the standards. The organics are listed in the expanded effluent testing tables in the permit. The permit will require the permittee ensure that the laboratory use an analytical method that is lower than the effluent limitations when such levels are achievable.

## V. DETERMINATION OF EFFLUENT LIMITATIONS

When determining what parameters need monitoring and/or limits included in the draft NWWRP 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 publicly owned treatment works achieve specified treatment standards for BOD, TSS, and pH based on the type of treatment technology available.

**Numeric Water Quality Standards**: As outlined in A.A.C. R18-11-109 and Appendix A:
Per 40 CFR 122.44(d)(1)(ii), (iii) and (iv), limits have been 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. The procedures used to determine reasonable potential are outlined in the *Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001).

It is assumed that RP exists for exceedance of water quality criteria for *E. coli* and total residual chlorine (TRC). These parameters have been shown through extensive monitoring of POTWs to fluctuate greatly and thus are not conducive to exclusion from limitation due to lack of reasonable potential (RP).

DMR data was reviewed for purposes of developing the proposed permit. This data was used to calculate RP for applicable parameters, using appropriated statistical procedures.

The proposed permit limits and/or action levels were established using a methodology developed by EPA. Long Term Averages (LTAs) were calculated for each designated use and the lowest LTA was use 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 *Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001).

The limits and Action Levels 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 and there is insufficient water for mixing, all water quality criteria are applied at end-of-pipe, which in this case means the UV or chlorination disinfection unit discharge point.

In order to be consistent with the existing NPDES permit for this facility issued by the State of Arizona (AZ0024031) and in order to ensure the protection of all designated beneficial uses this permit shall require the monitoring for TRC, beryllium, cadmium, chromium (total as Cr), copper, lead, mercury, selenium, silver, cyanide and sulfides, plus 17 organics and two pesticides. Action Levels were calculated for these parameters found in Table 2a. and 2b., of the permit using the statistical methodology developed by EPA and referenced above. Antimony, arsenic, boron, nickel and zinc are not included in the compliance monitoring program, as effluent data for these parameters show no reasonable potential to exceed water quality standards. However, a one time scan of all the priority pollutants is required, during the first 18 months of this permit cycle.

No data were submitted for chromium III or chromium VI. As a result, RP calculations could not be run for these parameters. (Calculations for chromium III and VI using the currently available data for total chromium indicates RP). Because data indicating RP is not available, compliance limits were not placed on these pollutants in the permit. However, monitoring for these pollutants is nonetheless required and Action Levels have been established to alert the permitting authority if the discharge may have the potential to exceed water quality criteria (An Action Level differs from other limits in that an exceedance on an Action Level is not a permit violation. Instead, Action Levels serve as triggers, alerting the permitting authority when there is cause for reevaluation of RP for exceeding a water quality standard, which may result in new permit limitations). In such case, the permit could be re-opened and modified to include limit(s) if the data obtained indicates RP. In any event, RP for chromium III and VI will be re-evaluated based on the collected data before future renewal of this permit.

**Permit Limitations**:

The tables that follow summarize parameters limited in the permit, the regulatory justification for their inclusion, and the associated monitoring. Also included are some parameters that require monitoring without any limitations and some parameters that have not been included in the permit at all and the basis for that decision.

| Parameter | Basis | Proposed Monitoring Requirement (1) |
|---|---|---|
| **Flow** | | It is proposed that flow be monitored on a continual basis using a flow meter. |
| **BOD & Suspended Solids** | **Concentration Limits**<br>The concentration limits for both effluent biochemical oxygen demand (BOD) and suspended solids are:<br>30-day average - 30 mg/l<br>7-day average - 45 mg/l<br>30-day average percent removal: minimum 85%<br>These technology-based limits are included in the draft permit in accordance with Secondary Treatment Standards for an activated sludge POTW found in 40 CFR §133.102.<br><br>**Mass Limits**<br>The mass limits for both BOD and suspended solids are:<br>30-day average – 2044 kg/day<br>7-day average - 3066 kg/day<br>These limits are included in the draft permit per 40 CFR § 122.45(d) & (f) and were calculated based on the design flow as follows:<br><br>Kilograms per day = 3.785 x design flow in MGD x concentration limit in mg/L. [3.785 is the weight of one gallon of water in kilograms.]<br><br>30-day average = 3.785 * 18 MGD * 30 mg/L = 2044 kg/day<br>7-day average = 3.785 * 18 MGD * 45 mg/L = 3066 kg/day | Monitoring for influent and effluent BOD and TSS to be conducted once per week 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 quarterly when discharging must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. |
| **pH** | pH limits are included in the draft permit to protect for the designated uses of A&Wedw, PBC, FC, AgI and AgL, in accordance with A.A.C. R18-11-109(D). The proposed limits are:<br><br>Minimum: 6.5<br>Maximum: 9.0<br>Maximum change due to discharge: 0.5 | pH is to be monitored once per week using a discrete sample of the effluent. 40 CFR Part 136 specifies that discrete samples must be collected for pH. At least one sample quarterly when discharging 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** | Based on the designated use of A&Wedw the Maximum change due to a thermal discharge shall be 3.0 degrees Celsius. | Effluent temperature is to be monitored at least monthly by discrete sample when the facility discharges. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. These temperature samples must be taken at the same time and location as the required samples for ammonia and pH. Additionally, one sample quarterly when discharging must coincide with WET sampling to aid in the determination of the cause of toxicity, if toxicity is detected. At a minimum, annual samples must be taken for effluent characterization. |

| Parameter | Basis | Proposed Monitoring Requirement (1) |
|---|---|---|
| **Ammonia** | Compliance monitoring is not required for ammonia, as no ammonia standards apply for the designated uses of A&Wedw, PBC, FC, AgI and AgL. Amonia monitoring is included only with the monitoring for Appendix J parameters, per 40 CFR 122.21(j)(4) | At least one sample quarterly when discharging must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. At a minimum, annual samples must be taken for effluent characterization. |
| ***E. Coli* (2)** | Limits for E. coli are included in the draft permit to protect for the designated use of PBC of the receiving water in accordance with A.A.C. R18-11-109(A). The proposed limits are:<br><br>30-day average: 126 cfu /100 mL (4 sample minimum)<br>Single sample maximum: 235 cfu /100 mL | *E. coli* is to be monitored four times per month using a discrete sample of the effluent. The specified monitoring frequency is the minimum required to ensure compliance with the 30-day mean water quality standards. 40 CFR Part 136 specifies that discrete samples must be collected for coliform bacteria. At least one sample quarterly when discharging must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. |
| **Nutrients (Total N or NO3 and Total P or PO4)** | There is no Phosphorous standard for any of the designated uses, and there are no water quality standards for combined nitrate/nitrite for the designated uses. Nitrate and nitrite separately are assigned standards of 2,2400,000 ug/L and 140,000ug/L for the PBC designated use, but these values are far above the known discharge levels of this facility, and monitoring is therefore considered unnecessary.<br><br>However, monitoring and reporting for Kjeldahl nitrogen, nitrate/nitrite (as Total N), and phosphorous is included with the monitoring for Appendix J parameters, per 40 CFR 122.21(j)(4)<br><br>Also, a narrative limitation is included that prohibits the discharge from causing the growth of algae or aquatic plants that inhibit or prohibit habitation, growth or propagation of aquatic life or impair recreational uses. This narrative limit applies to all surface waters in Arizona and is included in the permit in accordance with A.A.C. R18-11-108(A)(6) | Kjeldahl nitrogen, nitrate/nitrite (as total N), and phosphorous are to be monitored once in each of years 2,3 and 4 using a composite sample. 40 CFR Part 136 specifies that composite samples must be collected for these parameters. |
| **Total Residual Chlorine (TRC)** | Ultra Violet Disinfection is currently used. If UV disinfection fails, alternative disinfection may be used. 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 both uses. This method of limit determination is outlined in Chapter 5 of the TSD. The Arizona water quality standards for TRC are located in A.A.C. R18-11-Appendix A. The TRC water quality standards for A&Wedw are 5.0 ug/L, chronic and 11 ug/L acute; The TRC standard for PBC is 140,000ug/L. The A&Wedw chronic standard resulted in the lowest LTA for permit limit development. The proposed TRC limits are:<br><br>Monthly average: 4.08 ug/L and 0.28 kg/d<br>Daily maximum: 8.19 ug/L and 0.56 kg/d<br><br>Mass TRC limits are included in the draft permit in accordance with 40 CFR §122.45(d) & (f) and were calculated as follows:<br><br>Kilograms per day = 3.785 x design flow in MGD x concentration limit in mg/L. [3.785 is the weight of one gallon of water in kilograms].<br><br>Monthly average = 3.785 * 18.0 MGD * 0.00408 mg/L = 0.28 kg/day<br>Maximum Daily = 3.785 * 18.0 MGD * 0.00819 mg/L = 0.56 kg/day | TRC is to be monitored five times per week as a grab sample. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine. At least one sample quarterly when discharging must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. |

(1) For the purposes of this permit "quarterly when discharging" means that a quarterly sample is required to be taken in each 90-day period after a discharge to outfall 002 or 005 is initiated, and every 90 days thereafter if discharge occurs during that period.

(2) cfu is considered to be a 1:1 relationship to most probable number (MPN).

## COMPLIANCE MONITORING FOR PARAMETERS WITH

## REASONABLE POTENTIAL

Water quality data submitted for the Mesa NWWRP effluent during the application process indicates that RP exists for an exceedance of the water quality standards for the parameters in the following table. This data was obtained through the monitoring for parameters in 40 CFR Part 122 Appendix D, as required in the Arizona (AZ0024031) permit. Parameters with RP are included in the permit to protect for the designated uses of PBC and A&Wedw. For each parameter, Long Term Averages (LTAs) 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 both uses. (Average monthly limits were not calculated when the lowest LTA was based on human health or agricultural standards because the numeric standards to protect these uses are not to be exceeded at the outfalls. Only daily maximum limits are used in these cases.) Monitoring for these parameters is included pursuant to 40 CFR 122.44(d)(1)(iii). The method of limit determination takes into account criteria, effluent variability, and the number of observations taken, and is outlined in Chapter 5 of the TSD (*Technical Support Document for Water Quality-based Toxics Control (TSD)* (EPA/505/2-90-001)). The Arizona water quality standards for these parameters are located in A.A.C. R18-11-Appendix A.

Mass limits are included in the renewal permit in accordance with 40 CFR §122.45(d) & (f) and were calculated in the same manner as were mass limits for TRC, as follows: Kilograms per day = 3.785 x design flow in MGD x concentration limit in mg/L. [3.785 is the weight of one gallon of water in kilograms].

| Parameter | ACTION LEVLES | | | | Basis | Proposed Monitoring Requirement |
|---|---|---|---|---|---|---|
| | Mass | | Concentration | | | |
| | Monthly Avg (kg/day) | Daily Max (kg/day) | Monthly Avg (µg/L) | Daily Max (µg/L) | | |
| Beryllium | 0.30 | 0.59 | 4.33 | 8.69 | A&Wedw (Chronic) | Metals and sulfides will be monitored monthly using composite samples. The sample type was chosen to be representative of the discharge. Also, 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. |
| Cadmium | 0.26 | 0.53 | 3.76 | 7.83 | A&Wedw (Chronic) | " |
| Chromium (total as Cr) | NA | 6.81 | NA | 100 | A&Wedw (Acute) | " |
| Copper | 1.03 | 2.33 | 17.1 | 34.20 | A&Wedw (Acute) | " |
| Lead | 0.28 | 0.87 | 4.13 | 12.70 | A&Wedw (Chronic) | " |
| Mercury | 0.01 | 0.02 | 0.12 | 0.37 | A&Wedw (Chronic) | " |
| Selenium | 0.12 | 0.20 | 1.75 | 2.92 | A&Wedw (Chronic) | " |
| Silver | 0.65 | 1.30 | 9.47 | 19.01 | A&Wedw (Acute) | " |
| Sulfides | 3.39 | 6.80 | 49.76 | 99.83 | A&Wedw (Acute) | " |
| Hardness | NA (4) | NA | Report | Report | NA | Hardness will be monitored monthly using composite samples. No limits are assigned, but |

| Parameter | ACTION LEVLES | | | | Basis | Proposed Monitoring Requirement |
|---|---|---|---|---|---|---|
| | Mass | | Concentration | | | |
| | Monthly Avg (kg/day) | Daily Max (kg/day) | Monthly Avg (µg/L) | Daily Max (µg/L) | | |
| | | | | | | hardness data is required in order to calculate limits for some of the metals. |
| Cyanide | 0.54 | 1.08 | 7.92 | 15.90 | A&Wedw (Chronic) | Cyanide will be monitored monthly using discrete samples. 40 CFR Part 136 specifies that discrete samples must be used for cyanide. Also, 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. |
| **ORGANICS** | | | | | | |
| Acrolein | 1.15 | 2.31 | 16.92 | 33.94 | A&Wedw (Acute) | Listed organics will be monitored monthly using composite samples. The sample type was chosen to be representative of the discharge. Also, 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. |
| Benzidine | 4.95 | 9.94 | 72.70 | 145.87 | A&Wedw (Chronic) | " |
| Benzo(A)pyrene | NA | 0.014 | NA | 0.2 | PBC | " |
| Bis(2-chloroethyl)ether | NA | 0.09 | NA | 1.3 | PBC | " |
| 4-Bromophenyl phenyl ether | 0.78 | 1.56 | 11.44 | 22.95 | A&Wedw (Chronic) | " |
| 4-chloro-3-methyl phenol | 0.26 | 0.52 | 3.84 | 7.70 | A&Wedw (Chronic) | " |
| 3,3-Dichlorobenzidine | NA | 0.21 | NA | 3.1 | PBC | " |
| 2,4-Dinitrophenol | 0.51 | 1.03 | 7.52 | 15.08 | A&Wedw (Chronic) | " |
| 1,2-Diphenylhydrazine | NA | 0.12 | NA | 1.8 | PBC | Listed organics will be monitored monthly using composite samples. The sample type was chosen to be representative of the discharge. Also, at least one sample per quarter must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is |

| Parameter | ACTION LEVLES Mass | | Concentration | | Basis | Proposed Monitoring Requirement |
|---|---|---|---|---|---|---|
| | Monthly Avg (kg/day) | Daily Max (kg/day) | Monthly Avg (µg/L) | Daily Max (µg/L) | | |
| | | | | | | detected. |
| Hexachlorobutadiene | 0.46 | 0.92 | 6.70 | 13.44 | A&Wedw (Chronic) | " |
| Hexachlorocyclopentadiene | 0.02 | 0.03 | 0.25 | 0.49 | A&Wedw (Chronic) | " |
| 2-methyl-4,6-dinitrophenol | 1.34 | 2.68 | 19.60 | 39.34 | A&Wedw (Chronic) | " |
| N-nitrosodimethylamine | NA | 0.002 | NA | 0.03 | PBC | " |
| Pentachlorophenol | 0.30 | 0.60 | 4.36 | 8.74 | A&Wedw (Acute) | " |
| Phenanthrene | 0.35 | 0.70 | 5.15 | 10.33 | A&Wedw (Chronic) | " |
| Polychlorinated biphenyls (PCBs) | 0.0014 | 0.002 | 0.02 | 0.03 | A&Wedw (Chronic) | " |
| 2,4,6-Trichlorophenol | 1.39 | 2.79 | 20.42 | 40.97 | A&Wedw (Chronic) | " |
| **PESTICIDES** | | | | | | |
| Endosulfan Sulfate | 0.0034 | 0.007 | 0.05 | 0.10 | A&Wedw (Chronic) | Listed pesticides will be monitored monthly using composite samples. The sample type was chosen to be representative of the discharge. Also, 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. |
| Endosulfan (Total) | 0.0034 | 0.007 | 0.05 | 0.10 | A&Wedw (Chronic) | " |

The permittee is required to sample effluent hardness as $CaCO_3$ at the same time the above trace metals (and pentachlorophenol) are sampled because the water quality standards for some metals (and pentachlorophenol) are calculated using the effluent hardness values. For the above list of parameters, the hardness value of 270.22 mg/L (the hardness of the effluent as determined from data supplied by the permit applicant) was used to calculate the permit limits for cadmium, copper, lead, silver, and pentachlorophenol. The same hardness value was used to calculate the action level for chromium III in table 2.b.

Average monthly limits were not calculated when the lowest LTA was based on human health or agricultural standards because the numeric standards to protect these uses are not to be exceeded at the outfalls. Only daily maximum limits are used in these cases. (In the preceding table, this is the case for several of the organics, for which the lowest LTA was derived from the PBC standards.)

Additional Trace Substances:

The following table shows two additional parameters (chromium III and chromium VI) included in the draft permit with 30-day average and maximum Action Levels in both mass and concentration. An Action Level differs from other limits in that an exceedance of an Action Level is not a permit violation. Instead, Action Levels 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. RPs cannot be determined for these two parameters because effluent water quality data has not yet been submitted for them. However, RP is present for total chromium, using data submitted for total chromium, and calculations using the data for total chromium indicate that RP may also be present for these other valence states and monitoring for them using Action Levels rather than compliance limits has therefore been included. A re-opener clause is included in the draft permit should monitoring data indicate water quality standards are being exceeded.

**TABLE 2.b.: Trace Substances Action Levels and Monitoring Requirements**

| Parameter | ACTION LEVELS (1) (2) | | | | Monitoring Requirements (3) | |
|---|---|---|---|---|---|---|
| | Mass Kilograms/Day (kg/day) | | Concentration Micrograms/liter (ug/l) | | | |
| | Monthly Avg | Daily Max | Monthly Avg | Daily Max | Monitoring Frequency | Sample Type |
| Chromium III (2) (4) | 7.22 | 20.84 | 105.93 | 305.86 | Quarterly | 24-hour Composite (5) |
| Chromium VI (2) | 0.38 | 1.09 | 5.53 | 15.97 | " | Discrete |

(1) Concentration values for the action levels are calculated based on Arizona Water Quality Standards. Exceedances of these values will trigger an evaluation of reasonable potential and the permit may be reopened and modified to include limitations if necessary. Monitoring and reporting required. Action levels rather than actual compliance limits are used where RP cannot be calculated using data available to date. An *Action Level* differs from other permit limits in that an exceedance of an action level is not a permit violation. In any event, RP will be re-evaluated based on the collected data before a renewal of this permit could be issued in the future.

(2) All metals effluent action levels are for total recoverable metals, except for Chromium VI, for which the action levels listed are dissolved.

(3) At a minimum, one sample each quarter must coincide with one of the WET samples taken each quarter. See Part IV.D.5 of the permit. See also Part I.D., table 4.

(4) Action levels for Chromium III are based on a hardness of 270.22 mg/L as $CaCO_3$. Samples for Chromium III shall be drawn concurrently with samples for the metals referenced by footnote 3 in table 2.a. The effluent must be tested for hardness at the same time that these metal samples are taken, using composite samples.

(5) For this permit, each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 mL each. (The contracted analytical laboratory may specify larger volumes.)

The requirement to monitor for these trace substances is included in the draft permit according to standards

listed in Appendix A of A.A.C. Title 18, Chapter 11, Article 1. Action Levels listed for each parameter were calculated in the same manner that a limit would have been calculated were it determined that RP was present.

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 chromium III are calculated using the water hardness values. The hardness value of 270.22 mg/L (the hardness of the effluent as determined from data supplied by the permit applicant) was used to calculate the action levels for chromium III. If effluent hardness changes over time, future action levels or limits for chromium III will also change.

Monitoring (for either limits or Action Levels) for the following trace substances was not included in the proposed permit, except in table 3 monitoring to acquire data for reevaluation of RP for permit renewal: antimony, arsenic, boron, nickel, thallium, and zinc. Analysis of the effluent quality data indicates that RP to violate standards is not present for these parameters.

The following substances are not included in the draft permit due to a lack of RP based on best professional judgement (BPJ): barium, nitrates, nitrites, and manganese. The numeric standards for these pollutants are well above what would be expected from a POTW discharge.

Note: The trace substances Action Levels expressed as mass are included in the draft permit per 40 CFR § 122.45(d) & (f) and were calculated as follows:

Kilograms per day = 3.785 x design flow in MGD x concentration limit in mg/L.
(3.785 is the weight of one gallon of water in kilograms.)

For example: Chromium III: 3.785 * 18.0 MGD * 0.30586 mg/L = 20.84 kg/day (Daily Max)

**Whole Effluent Toxicity:**

Action Levels of 1.6 chronic toxicity units daily maximum and 1.0 chronic toxicity units monthly median are included for three test species in the proposed permit in accordance with ADEQ's *Interim Whole Effluent Toxicity Implementation Guidelines For Arizona*. Since the Mesa NWWRP is designed to discharge up to 18.0 MGD, this facility is defined by federal NPDES regulations as a major discharger. All major facilities are required to report the results of whole effluent toxicity (WET) testing on their permit application. Pursuant to the requirements of 40 CFR 122.21(j)(5), the results reported on the application must include, at a minimum, quarterly testing for the year preceding the application, using multiple species, or the results from four tests performed at least annually in the 4.5 years prior to the application, if available.

Action levels rather than actual compliance limits were used for toxicity monitoring, as RP cannot be calculated using the toxicity data available to date.

WET testing is required in the draft permit to implement the narrative toxic standard in A.A.C. R18-11-108(A)(5) and to satisfy the requirement for all major POTWS to report WET test results on their permit

applications. The draft permit requires WET test results to be submitted with the discharge monitoring reports that are due following receipt of each WET test result.

| Parameter | Proposed Monitoring Requirement |
|---|---|
| Whole Effluent Toxicity (WET) | WET testing for chronic toxicity shall be conducted quarterly. The permittee may request a reduction in the required WET monitoring frequency after 10 or more chronic toxicity tests have been completed, if no exceedances of daily maximums or monthly medians have occurred. A more frequent sampling requirement is triggered if any of the WET action levels listed in the permit are exceeded.<br><br>Three composite samples are required to complete one WET test. WET sampling must coincide with testing for all of the parameters in Tables 1, 2.a., and 2.b. of the draft permit 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. |

## VI. NARRATIVE WATER QUALITY STANDARDS

All applicable narrative limitations in A.A.C. R-11-108 are included in the draft permit.

## VII. MONITORING

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. The permittee is responsible for conducting and reporting results to EPA Region 9 and on DMRs or as otherwise specified in the permit.

For purposes of this permit, each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 mL each. (The contracted analytical laboratory may specify larger volumes.) 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. Grab samples are specified in the permit for parameters that for varying reasons are not amenable to compositing.

Monitoring under this permit is authorized to be performed immediately past the UV or chlorine disinfection unit or at the point of discharge for outfall #002 or #005, provided effluent quality is the same at both outfalls.

## VIII. PRETREATMENT AND SEWAGE SLUDGE REQUIREMENTS

Sewage sludge use or disposal practices, generator's responsibilities and annual reporting requirements are incorporated in the draft permit. With an 18 MGD discharge, this permittee is required to have a

pretreatment program. These requirements are incorporated in the draft permit.

## IX. SPECIAL CONDITIONS

**Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE) Processes:**

Requirements for follow-up testing if an action level is exceeded in WET testing, and the development of a TRE and/or TIE to identify, control or eliminate the cause of toxicity within an approved time-frame are included in the draft permit. These special 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 re-opener clause is included in accordance with 40 CFR Parts 122 and 124.

**Special Discharge Limitation:**

This permit includes a Special Discharge Limitation, that is based on a similar limitation included in the Arizona issued permit (AZ0024031), that requires the permittee to cease discharge, except as provided in the Special Discharge Limitation in Part V. of the permit, when flow in the Salt River reaches the edge of the concrete footing beneath the dam at the eastern end of Tempe Town Lake.

Flow in this provision is defined in the permit to mean water in the river from all sources, including but not limited to precipitation, stormwater, wastewater, and agricultural return flows. It also refers to a consistent presence of water throughout the entire receiving segment of the Salt River between the most downstream active outfall of the Mesa NWWRP and the dam at the eastern end of Tempe Town Lake. This part also contains a caveat allowing effluent to be diverted around the lake if a bypass conduit or canal should ever be constructed.

The intent of this provision is to minimize impacts on Tempe Town Lake, which has more stringent water quality standards than the receiving segment of the Salt River. Even during times of heavy precipitation, as long as the discharge ceases when flow reaches the concrete footing of the dam, dilution of the effluent flow will be significant if storm flow ultimately overtops the dam. However, the requirement to cease discharge will not apply during periods when the dams at the east and west ends of the lake have been deflated. The City of Tempe plans to deflate the dams when flow in the river is between 30,000 to 36,000 cubic feet per second (CFS), or approximately the volume of the 10-year flood, thereby allowing flow in the river to move through the lake segment unimpeded until such time as the dams are re-inflated. During these periods City of Mesa NWWRP may discharge, as needed, 18 MGD from either permitted outfall, until the dams are re-inflated, subject to all other applicable limitations and requirements of this permit.

**Permit Renewal/Re-application Requirements:**

Samples required to be reported in a reapplication for continued discharge after the expiration date of this permit have been included in the permit. A list of required pollutants to be sampled, sample type, how many samples must be taken, and the required time frame for taking these samples is provided in Tables 3.a. through 3.f. in the permit. This information is included in the permit to help ensure that the

application requirements in 40 CFR Part 122 are met and will be used in future RP determination efforts.

## X. PERMIT REOPENERS

This permit may be modified per the provisions of 40 CFR Part 122.62 This permit may be re-opened 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 (as downstream State water quality standards); or to re-evaluate reasonable potential (RP), if Action Levels in this permit are exceeded.

## XI. STANDARD CONDITIONS

Conditions applicable to all NPDES permits are included in accordance with 40 CFR, Part 122.

## XII. THREATENED AND ENDANGERD SPECIES

The Endangered Species Act (ESA) allocates authority to and administers requirements upon Federal agencies regarding threatened or endangered species of fish, wildlife, or plants and habitat of such species that have been designated as critical. Its implementing regulations [50 CFR Part 402] require Federal agencies such as the U.S. Environmental Protection Agency (EPA) to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS), that any action authorized, funded or carried out by EPA is not likely to jeopardize the continued existence of any Federally-listed threatened or endangered species or adversely affect critical habitat of such species. [40 CFR 122.49( c)]. Since the issuance of NPDES permits by EPA is a Federal action, consideration of a permitted discharge and its effect on any listed species is appropriate.

Implementing regulations for the ESA establish a process by which Federal agencies consult with one another to ensure that the concerns of both the USWFS and the National Marine Fisheries Service (NMFS) (collectively "Services") are addressed. EPA requested and obtained information regarding threatened and endangered species found in Maricopa County from the USFWS, and requested input on its proposed permit from the Service and others as part of the public notification and comment process.

The proposed NPDES permit authorizes the discharge of treated wastewater in conformance with federal tertiary treatment regulations and contains provisions for monitoring conventional, toxic chemicals, and non-conventional pollutants in compliance with the Federal and Arizona State water quality standards, to ensure an appropriate level of quality of water discharged by the facility. These standards are applied in the permit as both numeric and narrative limits.

Since the standards themselves are designed to protect aquatic species, including threatened and endangered species, any discharge in compliance with these standards should not adversely impact any threatened and endangered species.

While EPA believes that discharge in compliance with this permit will have no effect on threatened or endangered species and is proposing to issue the permit at this time. EPA may decide that changes to the permit may be warranted based on receipt of new information and EPA will initiate consultation should new information reveal impacts not previously considered, or should the activities affect a newly-listed species. Re-opener clauses have been included in the permit should new information become available to indicate that the requirements of the permit need to be changed.

## XIII. ADMINISTRATIVE INFORMATION

**Public Notice** (40 CFR Part 124.10)
The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft NPDES permit or other significant action with respect to an NPDES 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.

**Public Comment Period** (40 CFR Part 124.10)
Regulations require that NPDES permits be public noticed in a daily or weekly 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 EPA. After the closing of the public comment period, EPA 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** (40 CFR Part 124.12 ( c ) )
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.

## XIV. ADDITIONAL INFORMATION

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

USEPA Region IX
Water Division- CWA Standards & Permits Office WTR-5
Attn: Gary Sheth
75 Hawthorne Street
San Francisco, CA 94105

Or, by contacting Gary Sheth at (415) 972-3516

## XIV. INFORMATION SOURCES

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

1. NPDES Permit Application Forms 1 and 2A, received October 31, 2003, along with supporting data, facility diagram and maps submitted by the applicant with the application forms.

2. Supplemental information to the application received by EPA via ADEQ on March 2, 2004.

3. Supplemental information to the application received by EPA from the applicant on November 29, 2006.

4. ADEQ files on Northwest Mesa Water Reclamation Plant and the permit and fact sheet for AZ0024031

5. Arizona Water Quality Standards for Surface Waters, Title 18, Chapter 11, Article 1. Adopted March 2, 2002

6. Title 18, Chapter 9, Article. Arizona Pollutant Discharge Elimination System rules.

7. 40 CFR Parts 122, 124 and 133.

8. 40 CFR, Part 503, Sludge Regulations.

9. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.

10. U.S.G.S. National Mapping Information Website.

11. U.S. EPA NPDES Permit Writers' Manual, December 1996.

12. List of Threatened and Endangered Species from USFWS Website at www.fws.gov/southwest.es/EndangeredSpecies/lists/ListSpecies.cfm