



DRAFT PERMIT

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ADEQ Inventory No. 100254
LTF No. 64728

Permit No. AZ0025151

AUTHORIZATION TO DISCHARGE UNDER THE ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Article 3.1; the Federal Water Pollution Control Act, (33 USC §1251 et. seq., as amended), and Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 9 and 10, and amendments thereto,

City of Mesa Water Resources
Southeast Water Reclamation Plant
P.O. Box 1466
Mesa, Arizona 85211-1466

is authorized to discharge treated domestic wastewater from the wastewater treatment plant located at 6308 E. Baseline Road serving Mesa, Gilbert and Queen Creek in Maricopa County, Arizona to the East Maricopa Floodway, tributary to the Gila River in the Middle Gila River Basin at:

Outfall No.	Latitude	Longitude	Legal
001 – discharges directly to the East Maricopa Floodway	33°21' 54" N	111°41' 19" W	Township 1 S, Range 6 E, Section 12
002 – discharges to the East Maricopa Floodway by way of the Greenfield facility outfall	33°15' 47" N	111°43' 33" W	Township 2 S, Range 6 E, Section 15

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein, and in the attached "Standard AZPDES Permit Conditions."

This permit shall become effective on March 18, 2015.

This permit modification shall become effective on _____, 2016.

This permit and the authorization to discharge shall expire at midnight, March 17, 2020.

/s/ 18th day of March, 2015
Trevor Baggione, Director
Water Quality Division
Arizona Department of Environmental Quality

Modification signed this _____ day of _____, 2016.

Trevor Baggione, Director
Water Quality Division
Arizona Department of Environmental Quality

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PART I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Effluent Limitations and Monitoring Requirements

The permittee shall limit and monitor discharges from the Southeast Water Reclamation Plant (SEWRP) designated for either outfall 001 or 002 as specified in Table 1 which follows. These requirements are based on a design capacity of 45,428 m³/day (8 MGD).

TABLE 1: Effluent Limitations and Monitoring Requirements (Outfall 001 & Outfall 002)

Parameter	Maximum Allowable Discharge Limitations						Monitoring Requirement (2)(3)	
	Mass Limits (1)			Concentration Limits				
	Monthly Average	Weekly Average	Daily Maximum	Monthly Average	Weekly Average	Daily Maximum	Monitoring Frequency	Sample Type
Discharge Flow (MGD)	REPORT (4)	---	REPORT	---	---	---	Continuous	Metered
Biochemical Oxygen Demand (BOD) (5-day)	910 kg/day	1,400 kg/day	---	30 mg/L	45 mg/L	---	1x /week	24-hour Composite (5)
BOD (6)	---	---	---	85% REMOVAL MINIMUM	---	---	1x /week	24-hour Composite
Total Suspended Solids (TSS)	910 kg/day	1,400 kg/day	---	30 mg/L	45 mg/L	---	1x /week	24-hour Composite
TSS (6)	---	---	---	85% REMOVAL MINIMUM	---	--	1x /week	24-hour Composite
<i>E. coli</i>	---	---	---	126 cfu/100 mL (7)	---	575 cfu/100 mL (7)	4x /month	Discrete
Chlorine, Total Residual (TRC) (8) (9)	270 g/day	---	540 g/day	9.0 µg/L	---	18 µg/L	5x /week	Discrete
Copper (10)	557 g/day	---	1120 g/day	18.4 µg/L	---	37.0 µg/L	1x /month	24-hour Composite
Cyanide	239 g/day	---	484 g/day	7.9 µg/L	---	16 µg/L	1x /month	24-hour Composite
pH - effluent (9)	Not less than 6.5 standard units (S.U.) nor greater than 9.0 S.U.						5x /week	Discrete
Hardness (10)	---	---	---	REPORT (mg/L)	---	REPORT (mg/L)	1x/month	24-hour Composite
SEE TABLE 3 FOR WHOLE EFFLUENT TOXICITY LIMITS								

Footnotes:

- (1) Mass values are to be calculated and reported using the following formulas: 1) Mass in kilograms per day = 3.785 x flow in MGD x concentration in mg/L, and 2) mass in grams per day = 3.785 x flow in MGD x concentration in µg/L.
- (2) Testing must coincide with the Whole Effluent Toxicity Test (WET) samples, if any, taken during that monitoring period as per Part I.C, Table 3 of the permit. See Part IV of the permit.
- (3) If discharge is infrequent, see Part I.D for minimum effluent characterization monitoring requirements.
- (4) Monitoring and reporting required. No limit set at this time. In addition to the average and maximum flows reported on the Discharge Monitoring forms, daily discharge flow shall be recorded on the **Discharge Flow Record** provided in Appendix B. See Part II.B for reporting requirements.

- (5) 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 during a 24-hour period. The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.
- (6) Both the influent and the effluent shall be monitored.
- (7) cfu = colony forming units; “most probable number” (mpn) is considered equivalent for reporting purposes. The monthly average for *E. coli* is calculated as a geometric mean. A minimum of 4 samples are required in order to report a geometric mean. See the definition for “Monthly or Weekly Average Concentration Limit” in Appendix A.
- (8) Sample when chlorine or bromine compounds are used for disinfection. See Part II.A.6 for specific monitoring requirements for chlorine.
- (9) pH and TRC must be measured at the time of sampling and do not require use of a certified laboratory. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.
- (10) Hardness of the effluent must be sampled at the same time as this metal.

B. Trace Substance Monitoring

The permittee shall monitor discharges from the SEWRP designated for either outfall 001 or 002 as specified in Table 2. Monitoring results above the Assessment Levels (ALs) listed below do not constitute a permit violation, but may trigger evaluation of Reasonable Potential (RP) by ADEQ. The permittee shall use an approved analytical method with a Limit of Quantitation (LOQ) lower than the AL values as described in Part II.A.4.

TABLE 2: Trace Substance Monitoring Requirements (Outfall 001 & Outfall 002)

Parameter	Assessment Levels (1) (2)		Monitoring Requirements (3) (4)	
	Concentration (µg/L) unless otherwise specified			
	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type
Ammonia (5)	(5) [mg/L]	(5) [mg/L]	2x /month	Discrete
Ammonia Impact Ratio (AIR) (7)	1	1	2x /month	Discrete
Oil & Grease	10 mg/L	15 mg/L	1x /quarter	Discrete
pH - effluent (5) (6)	Report [S.U.] (5)	Report [S.U.] (5)	2x /month	Discrete
Temperature - effluent (5) (6)	Report [°C] (5)	Report [°C] (5)	2x /month	Discrete

Footnotes:

- (1) Concentration values are calculated based on Arizona Water Quality Standards. Monitoring and reporting required.
- (2) All metals effluent Assessment Levels are for total recoverable metals, except for Chromium VI, for which the assessment levels listed are dissolved.
- (3) Testing must coincide with the Whole Effluent Toxicity Test (WET) samples, if any, taken during that monitoring period as per Part I.C, Table 3 of the permit. See Part IV of the permit.
- (4) If discharge is infrequent see Part I.D for minimum effluent characterization monitoring requirements.
- (5) The ammonia assessment level is dependent on pH and temperature. The effluent must be tested for pH and temperature at the same time that the ammonia samples are taken. In addition to reporting the ammonia values on the DMRs, the ammonia data log shall also be completed including values of the effluent pH and temperature at the time the ammonia sample is taken. See Part II.B of the permit.
- (6) pH and temperature must be measured at the time of sampling and do not require use of a certified laboratory. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.
- (7) The Ammonia Impact Ratio (AIR) is calculated as the ratio of the ammonia value in the effluent and the calculated ammonia standard as determined by comparing concurrent measurement of the effluent pH and temperature with the ammonia criteria table in Appendix B. In addition to reporting the AIRs on the DMRs, the ammonia data log (Appendix B) shall also be completed. The ammonia data log shall include the ammonia values in the effluent, values of the effluent pH and temperature at the time the effluent ammonia sample is taken, calculated ammonia standards, and AIRs. See Part II.B of the permit.

C. Whole Effluent Toxicity Monitoring

The permittee shall monitor discharges from the SEWRP designated for either outfall 001 or 002 for Whole Effluent Toxicity (WET) as specified in Table 3. If toxicity is detected above a limit and/or

an Action Level specified as follows, the permittee must perform follow-up testing and, as applicable, follow the TIE/TRE processes in Part IV.E of the permit.

TABLE 3: WET Testing

Effluent Characteristic (1)	Limits		Monitoring Requirements	
	Daily Maximum (2) (3)	Monthly Median (3)	Monitoring Frequency (5)	Sample Type
Acute Toxicity (4) <i>Pimephales promelas</i> (Fathead minnow)	N/A	Fail	1x /6 months	24-hr Composite
Acute Toxicity (4) <i>Ceriodaphnia dubia</i> (Water flea)	N/A	Fail	1x /6 months	24-hr Composite
Chronic Toxicity <i>Pimephales promelas</i> (Fathead minnow)	1.6 TUc	1.0 TUc	1x /6 months	24-hr Composite
Chronic Toxicity <i>Ceriodaphnia dubia</i> (Water flea)	1.6 TUc	1.0 TUc	1x /6 months	24-hr Composite
Effluent Characteristic (1)	Action Levels		Monitoring Requirements	
	Daily Maximum (2) (3)	Monthly Median (3)	Monitoring Frequency (5)	Sample Type
Chronic Toxicity <i>Pseudokirchneriella subcapitata</i> (Green algae) (6)	1.6 TUc	1.0 TUc	1x /6 months	24-hr Composite

Footnotes:

- (1) See Part IV for additional requirements for testing and reporting Whole Effluent Toxicity (WET).
- (2) Since completion of one chronic WET test takes more than 24 hours, the daily maximum is considered to be the highest allowable test result.
- (3) If chronic toxicity is detected above the limits and/or Action Levels in this table or an acute test fails, the permittee must perform follow-up testing. See Part IV for details.
- (4) The requirement for an acute test applies when duration of discharge doesn't allow for chronic tests to be conducted. See Part IV.
- (5) If discharge is infrequent see Part I.D for minimum effluent characterization monitoring requirements.
- (6) Formerly known as *Selenestrum capricornutum* or *Raphidocelis subcapitata*.

D. Effluent Characterization Testing

The permittee shall monitor to characterize the facility's effluent from the SEWRP designated for either outfall 001 or 002 for the parameters listed in Tables 4.a - f, whether discharging or not. When the facility discharges, monitoring is to be conducted at the frequency indicated in Tables 1 through 3. No limits or ALs are established, but the LOQ must be low enough to allow comparison of the results to the applicable surface water quality standards (SWQS). If a LOQ below the SWQS cannot be achieved, then the permittee shall use the method expected to achieve the lowest LOQ, as defined in Appendix A of this permit. Samples are to be representative of any seasonal variation in the discharge:

TABLE 4.a: Effluent Characterization Testing – General Chemistry and Microbiology

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency (1)	Sample Type
Ammonia (as N) (2)	mg/L	1x /3 months	Discrete
Biochemical Oxygen Demand (BOD-5)	mg/L	1x /3 months	24-hour Composite
Chlorine, Total Residual (TRC) (4)(5)	µg/L	1x /3 months	Discrete

Dissolved Oxygen (5)	mg/L	1x /year	Discrete
<i>E. coli</i>	cfu/100 mL (3)	1x /3 months	Discrete
Nitrate/Nitrite (as N)	mg/L	1x /3 months	24-hour Composite
Nitrogen, Total Kjeldahl (TKN)	mg/L	1x /3 months	24-hour Composite
Oil and Grease	mg/L	1x /3 months	Discrete
pH (5)	S.U.	1x /3 months	Discrete
Phosphorus	mg/L	1x /3 months	24-hour Composite
Temperature (5)	°Celsius	1x /3 months	Discrete
Total Dissolved Solids (TDS)	mg/L	1x /year	24-hour Composite
Total Suspended Solids (TSS)	mg/L	1x /3 months	24-hour Composite

Footnotes:

- (1) If more frequent monitoring of any of these parameters is required by another part of this permit, those sampling results may be used to satisfy Table 4.a. requirements.
- (2) When sampling for ammonia, temperature and pH must be determined concurrently and the results recorded on the **Ammonia Data Log** provided in Appendix C. See Part II.B for reporting requirements.
- (3) cfu = colony forming units; "most probable number" (mpn) is considered equivalent for reporting purposes.
- (4) Sample when chlorine or bromine compounds are used for disinfection. See Part II.A.6 for specific monitoring requirements for chlorine.
- (5) Temperature, pH, TRC and dissolved oxygen must be measured at the time of sampling and do not require use of a certified laboratory. See Part II.A.6 for methods of analyses for chlorine. Measurements must be obtained in accordance with the applicable method and must meet all method quality assurance/quality control requirements to be considered valid data.

TABLE 4.b: Effluent Characterization Testing – Selected Metals, Trace Substances and WET

Parameter (1)	Reporting Units	Monitoring Requirements	
		Monitoring Frequency (2)	Sample Type
Antimony	µg/L	1x /3 months	24-hour Composite
Arsenic	µg/L	1x /3 months	24-hour Composite
Beryllium	µg/L	1x /3 months	24-hour Composite
Cadmium	µg/L	1x /3 months	24-hour Composite
Chromium (Total)	µg/L	1x /3 months	24-hour Composite
Chromium VI	µg/L	1x /3 months	Discrete
Copper	µg/L	1x /3 months	24-hour Composite
Iron	µg/L	1x /3 months	24-hour Composite
Lead	µg/L	1x /3 months	24-hour Composite
Mercury	µg/L	1x /3 months	Discrete
Nickel	µg/L	1x /3 months	24-hour Composite
Selenium	µg/L	1x /3 months	24-hour Composite
Silver	µg/L	1x /3 months	24-hour Composite
Thallium	µg/L	1x /3 months	24-hour Composite
Zinc	µg/L	1x /3 months	24-hour Composite
Hardness	mg/L	1x /3 months	24-hour Composite

TABLE 4.b: Effluent Characterization Testing – Selected Metals, Trace Substances and WET

Cyanide	µg/L	1x /3 months	Discrete
Whole Effluent Toxicity - chronic (all 3 species) (3)	TUc	4x /permit term (4)	24-hour Composite

Footnotes:

- (1) All metals analyses shall be for total recoverable metals, except Chromium VI, which is dissolved.
- (2) If more frequent monitoring of any of these parameters is required by another part of this permit, those sampling results may be used to satisfy Table 4.b. requirements.
- (3) If chronic toxicity is detected above the Action Levels specified in Table 3 or an acute test fails, the permittee must perform follow-up testing and, as applicable, follow the TIE/TRE processes in Part IV.D of the permit, whether discharging or not. See Part IV for additional information on requirements for testing and reporting Whole Effluent Toxicity (WET).
- (4) Four tests shall be conducted during the permit term: once per year in years 1, 2, 3, and 4 of the permit term.

TABLE 4.c: Effluent Characterization Testing - Selected Volatile Organic Compounds

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Acrolein	µg/L	1x /year	Discrete
Acrylonitrile	µg/L	1x /year	Discrete
Benzene	µg/L	1x /year	Discrete
Bromoform	µg/L	1x /year	Discrete
Carbon tetrachloride	µg/L	1x /year	Discrete
Chlorobenzene	µg/L	1x /year	Discrete
Chlorodibromomethane	µg/L	1x /year	Discrete
Chloroethane	µg/L	1x /year	Discrete
2-chloroethylvinyl ether	µg/L	1x /year	Discrete
Chloroform	µg/L	1x /year	Discrete
Dichlorobromomethane	µg/L	1x /year	Discrete
1,1-dichloroethane	µg/L	1x /year	Discrete
1,2-dichloroethane	µg/L	1x /year	Discrete
Trans-1,2-dichloroethylene	µg/L	1x /year	Discrete
1,1-dichloroethylene	µg/L	1x /year	Discrete
1,2-dichloropropane	µg/L	1x /year	Discrete
1,3-dichloropropylene	µg/L	1x /year	Discrete
Ethylbenzene	µg/L	1x /year	Discrete
Methyl bromide	µg/L	1x /year	Discrete
Methyl chloride	µg/L	1x /year	Discrete
Methylene chloride	µg/L	1x /year	Discrete
1,1,2,2-tetrachloroethane	µg/L	1x /year	Discrete
Tetrachloroethylene	µg/L	1x /year	Discrete
Toluene	µg/L	1x /year	Discrete

1,1,1-trichloroethane	µg/L	1x /year	Discrete
1,1,2-trichloroethane	µg/L	1x /year	Discrete
Trichloroethylene	µg/L	1x /year	Discrete
Vinyl chloride	µg/L	1x /year	Discrete

TABLE 4.d: Effluent Characterization Testing - Selected Acid-extractable Compounds

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
P-chloro-m-cresol	µg/L	1x /year	24-hour Composite
2-chlorophenol	µg/L	1x /year	24-hour Composite
2,4-dichlorophenol	µg/L	1x /year	24-hour Composite
2,4-dimethylphenol	µg/L	1x /year	24-hour Composite
4,6-dinitro-o-cresol	µg/L	1x /year	24-hour Composite
2,4-dinitrophenol	µg/L	1x /year	24-hour Composite
2-nitrophenol	µg/L	1x /year	24-hour Composite
4-nitrophenol	µg/L	1x /year	24-hour Composite
Pentachlorophenol	µg/L	1x /year	24-hour Composite
Phenol	µg/L	1x /year	24-hour Composite
2,4,6- trichlorophenol	µg/L	1x /year	24-hour Composite

TABLE 4.e: Effluent Characterization Testing - Selected Base-neutral Compounds

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Acenaphthene	µg/L	1x /year	24-hour Composite
Acenaphthylene	µg/L	1x /year	24-hour Composite
Anthracene	µg/L	1x /year	24-hour Composite
Benzidine	µg/L	1x /year	24-hour Composite
Benzo(a)anthracene	µg/L	1x /year	24-hour Composite
Benzo(a)pyrene	µg/L	1x /year	24-hour Composite
3,4 benzofluoranthene	µg/L	1x /year	24-hour Composite
Benzo(ghi)perylene	µg/L	1x /year	24-hour Composite
Benzo(k)fluoranthene	µg/L	1x /year	24-hour Composite
Bis (2-chloroethoxy) methane	µg/L	1x /year	24-hour Composite
Bis (2-chloroethyl) ether	µg/L	1x /year	24-hour Composite
Bis(2-chloroisopropyl) ether	µg/L	1x /year	24-hour Composite
Bis (2-ethylhexyl) phthalate	µg/L	1x /year	24-hour Composite
4-bromophenyl phenyl ether	µg/L	1x /year	24-hour Composite

Butyl benzyl phthalate	µg/L	1x /year	24-hour Composite
2-chloronaphthalene	µg/L	1x /year	24-hour Composite
4-chlorophenyl phenyl ether	µg/L	1x /year	24-hour Composite
Chrysene	µg/L	1x /year	24-hour Composite
Di-n-butyl phthalate	µg/L	1x /year	24-hour Composite
Di-n-octyl phthalate	µg/L	1x /year	24-hour Composite
Dibenzo(a,h)anthracene	µg/L	1x /year	24-hour Composite
1,2-dichlorobenzene	µg/L	1x /year	24-hour Composite
1,3-dichlorobenzene	µg/L	1x /year	24-hour Composite
1,4-dichlorobenzene	µg/L	1x /year	24-hour Composite
3,3-dichlorobenzidine	µg/L	1x /year	24-hour Composite
Diethyl phthalate	µg/L	1x /year	24-hour Composite
Dimethyl phthalate	µg/L	1x /year	24-hour Composite
2,4-dinitrotoluene	µg/L	1x /year	24-hour Composite
2,6-dinitrotoluene	µg/L	1x /year	24-hour Composite
1,2-diphenylhydrazine	µg/L	1x /year	24-hour Composite
Fluoranthene	µg/L	1x /year	24-hour Composite
Fluorene	µg/L	1x /year	24-hour Composite
Hexachlorobenzene	µg/L	1x /year	24-hour Composite
Hexachlorobutadiene	µg/L	1x /year	24-hour Composite
Hexachlorocyclopentadiene	µg/L	1x /year	24-hour Composite
Hexachloroethane	µg/L	1x /year	24-hour Composite
Indeno(1,2,3-cd)pyrene	µg/L	1x /year	24-hour Composite
Isophorone	µg/L	1x /year	24-hour Composite
Naphthalene	µg/L	1x /year	24-hour Composite
Nitrobenzene	µg/L	1x /year	24-hour Composite
N-nitrosodi-n-propylamine	µg/L	1x /year	24-hour Composite
N-nitrosodimethylamine	µg/L	1x /year	24-hour Composite
N-nitrosodiphenylamine	µg/L	1x /year	24-hour Composite
Phenanthrene	µg/L	1x /year	24-hour Composite
Pyrene	µg/L	1x /year	24-hour Composite
1,2,4-trichlorobenzene	µg/L	1x /year	24-hour Composite

TABLE 4.f: Effluent Characteristic Testing Based on Designated Uses

Additional Parameters from the Arizona Surface Water Quality Standards, Appendix A: Table 1

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Alachlor (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite

Aldrin	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Atrazine (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Barium	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Boron	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Carbofuran (Furadan) (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Chlordane	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
1,2-cis-Dichloroethylene	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Chlorpyrifos	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Dalapon (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
1,2-Dibromoethane (EDB) Ethylene dibromide	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
4,4-DDD (p,p,- Dichlorodiphenyldichloroethane)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
4,4-DDE (p,p- Dichlorodiphenyldichloroethylene)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
4,4-DDT ((p,p- Dichlorodiphenyltrichloroethane)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
2,4-Dichlorophenoxyacetic acid (2,4-D) (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Dieldrin	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Di (2-ethylhexyl) adipate	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Dinoseb (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Diquat (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Endosulfan sulfate	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Endosulfan (Total)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Endothall (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Endrin	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Endrin aldehyde	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Fluoride	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Glyphosate (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Guthion	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Heptachlor	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Heptachlor epoxide	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Hexachlorocyclohexane alpha (Alpha-BHC)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Hexachlorocyclohexane beta	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Hexachlorocyclohexane delta	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Hexachlorocyclohexane gamma (lindane)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Hydrogen Sulfide (2)	µg/L	1x /year in 2016, 2017, and 2018	Discrete
Iron	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Malathion	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Manganese	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Methoxychlor (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Mirex (3)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Oxamyl (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite

Parathion	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Paraquat	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Permethrin (3)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Pichloram (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Polychlorinated biphenyls (PCBs)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Simazine (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Styrene	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Sulfides (2)	µg/L	1x /year in 2016, 2017, and 2018	Discrete
2,3,7,8-Tetrachlorodibenzo-p-dioxin	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Toxaphene	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
2-(2,4,5,-Trichlorophenoxy) Propionic Acid (1)	µg/L	1x /year in 2016 and 2018	24-hour Composite
Total Trihalomethanes	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Tributyltin (3)	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Uranium	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite
Xylenes	µg/L	1x /year in 2016, 2017, and 2018	24-hour Composite

Footnotes:

- (1) There may be no approved wastewater methods for analyses of these parameters in 40 CFR 136. As such, 500 series drinking water Methods may be used; in this case, a 10X sample dilution is acceptable for these parameters. Appropriate data qualifiers are to be used.
- (2) The permittee may initially monitor for sulfides 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.
- (3) If no ADHS-certified analytical methods exist for these parameters, monitoring is not required.

E. The discharge shall be free from pollutants in amounts or combinations that:

1. Settle to form bottom deposits that inhibit or prohibit the habitation, growth or propagation of aquatic life;
2. Cause objectionable odor in the area in which the surface water is located;
3. Cause off-flavor in aquatic organisms;
4. Are toxic to humans, animals, plants or other organisms;
5. Cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth or propagation of other aquatic life or that impair recreational uses;

F. The discharge shall be free from oil, grease and other pollutants that float as debris, foam, or scum; or that cause a film or iridescent appearance on the surface of the water; or that cause a deposit on a shoreline, bank or aquatic vegetation.

G. The discharge shall not cause an increase in the ambient water temperature of more than 3.0 degrees Celsius.

- H.** The discharge shall not cause the dissolved oxygen concentration in the receiving water to fall below 3 mg/L from 3 hours after sunrise to sunset and 1 mg/l from sunset to 3 hours after sunrise, unless the percent saturation of oxygen remains equal to or greater than 90%.
- I.** Samples taken for the monitoring requirements specified in Part I shall be collected at the following locations:
1. Influent samples shall be taken after the last addition to the SEWRP collection system and prior to the first treatment process.
 2. Effluent samples shall be taken after the last SEWRP treatment process and prior to mixing with the receiving waters.

PART II. MONITORING AND REPORTING

A. Sample Collection and Analysis

1. The permittee is responsible for the quality and accuracy of all data required under this permit.
2. Quality Assurance (QA) Manual

The permittee shall keep a QA Manual on site that describes the sample collection and analyses processes. If the permittee collects samples or conducts sample analyses in house, the permittee shall develop a QA Manual that addresses these activities. If a third party collects and/or analyzes samples on behalf of the permittee, the permittee shall obtain a copy of the applicable QA procedures. The QA Manual shall be available for review by ADEQ upon request. The QA Manual shall be updated as necessary to reflect current conditions, and shall describe the following:

- a. Project Management, including:
 - Purpose of sample collection and sample frequency;
 - When and where samples will be collected;
 - How samples will be collected;
 - Who will collect samples and their qualifications;
 - Laboratory(s) that will perform analyses;
 - Any field tests to be conducted (detail methods and specify equipment, including a description of any needed calibrations); and
 - Pollutants or analytes being measured and for each, the permit-specific limits, Assessment Levels, or thresholds, (e.g. the associated detection limits needed.)
- b. Sample collection procedures including
 - Equipment to be used;
 - Type and number of samples to be collected including QA/QC samples (i.e., background samples, duplicates, and equipment or field blanks);
 - Types, sizes, and number of sample bottles needed;

- Preservatives and holding times for the samples (see methods under 40 CFR 136 or 9 A.A.C. 14, Article 6 or any condition within this permit that specifies a particular test method); and
 - Chain of custody procedures.
- c. Specify approved analytical method(s) to be used and include;
- Limits of Detection (LOD) and Limits of Quantitation (LOQs);
 - Required quality control (QC) results to be reported (e.g., matrix spike recoveries, duplicate relative percent differences, blank contamination, laboratory control sample recoveries, surrogate spike recoveries, etc.) and acceptance criteria; and
 - Corrective actions to be taken by the permittee or the laboratory as a result of problems identified during QC checks.
- d. How the permittee will perform data review; complete DMRs and records used to report results to ADEQ; resolve data quality issues; and identify limitations on the use of the data.
3. Sample collection, preservation and handling shall be performed as described in 40 CFR 136 including the referenced Edition of *Standard Methods for the Examination of Water and Wastewater*, or by procedures referenced in A.R.S Title 9, Chapter 14 of the Arizona Department of Health Services (ADHS) Laboratory Licensure rules. The permittee shall outline the proper procedures in the QA Manual, and samples taken for this permit must conform with these procedures whether collection and handling is performed directly by the permittee or contracted to a third-party.
4. Analytical requirements
- a. The permittee shall use a laboratory licensed by the ADHS Office of Laboratory Licensure and Certification that has demonstrated proficiency within the last 12 months under R9-14-609, for each parameter to be sampled under this permit. However, this requirement does not apply to parameters which require analysis at the time of sample collection as long as the testing methods used are approved by ADHS and ADEQ. (These parameters may include flow, dissolved oxygen, pH, temperature, and total residual chlorine.)
 - b. The permittee must utilize analytical methods specified in this permit. If no test procedure is specified, the permittee shall analyze the pollutant using:
 - i. A test procedure listed in 40 CFR 136 which is also approved under A.A.C. R9-14-610;
 - ii. An alternative test procedure approved by EPA as provided in 40 CFR 136 and which is also approved under A.A.C. R9-14-610;
 - iii. A test procedure listed in 40 CFR 136, with modifications allowed by EPA or approved as a method alteration by ADHS under A.A.C. R9-14-610(C); or
 - iv. If no test procedure for a pollutant is available under (3)(b)(i) through (3)(b)(iii) above, any Method approved under A.A.C. R9-14-610(B) for wastewater may be used, except the use of field kits is not allowed unless otherwise specified in this permit. If there is no approved wastewater method for a parameter, any other method

identified in 9 A.A.C. 14, Article 6 that will achieve appropriate detection and reporting limits may be used for analyses.

- c. For results to be considered valid, all analytical work, including those tests conducted by the permittee at the time of sampling (see Part II.A.4.a), shall meet quality control standards specified in the approved methods.
 - d. The permittee shall use analytical methods with a Limit of Quantitation (LOQ) that is lower than the effluent limitations, Assessment Levels, Action Levels, or water quality criteria specified in this permit. If all methods have LOQs higher than applicable water quality criteria, the Permittee shall use the approved analytical method with the lowest LOQ.
 - e. The permittee shall use a standard calibration curve when applicable to the method, where the lowest standard point is equal to or less than the LOQ.
 - f. If requested, the permittee shall participate in the annual NPDES DMR/QA study and submit the results of this study to ADEQ and ADHS for all laboratories used in monitoring compliance with this permit.
5. Mercury Monitoring

The permittee shall use an ADHS-certified low-level mercury analytical method such as EPA method 245.7 or 1631E to achieve a reporting limit at or below the discharge limitations or assessment levels for mercury as specified in this permit. The permittee shall also use a “clean hands/dirty hands” sampling technique such as EPA Method 1669 if necessary to achieve these reporting limits.

6. Chlorine Monitoring

Because of the short holding time for chlorine, samples may be analyzed on-site using Hach Method No. 10014. Other methods are also acceptable for chlorine if the Method has a LOQ lower than discharge limits specified in this permit.

7. Metals Analyses

In accordance with 40 CFR 122.45(c), all effluent metals concentrations, with the exception of chromium VI, shall be measured as “total recoverable metals”. Discharge Limits and Assessment Levels in this permit are for total metals, except for chromium VI for which the levels listed, if any, are dissolved.

B. Reporting of Monitoring Results

1. The permittee shall report monitoring results on Discharge Monitoring Report (DMR) forms supplied by ADEQ, to the extent that the results may be entered on the forms. The permittee shall submit results of all monitoring required by this permit in a format that will allow direct comparison with the limitations and requirements of this permit. If no discharge occurs during a reporting period, the permittee shall specify “No discharge” on the DMR. The results of all discharge analyses conducted during the monitoring period shall be included in determinations

of the monthly average and daily maximums reported on the DMRs if the analyses were by methods specified in Part II.A above, as applicable.

2. DMRs and attachments are to be submitted by the 28th day of the month following the end of a monitoring period. For example, if the monitoring period ends January 31st, the permittee shall submit the DMR by February 28th. The permittee shall electronically submit all compliance monitoring data and reports using the myDEQ electronic portal provided by ADEQ. The reports required to be electronically submitted include, but are not limited to, the following:

- Discharge Monitoring Reports
- Whole Effluent Toxicity (WET) reports
- Original copies of laboratory results
- Ammonia data logs (if applicable)
- AZPDES discharge flow records (if applicable)
- Method detection limit studies (if applicable)
- Bench sheets or similar documentation for field testing parameters (if applicable)

3. When sampling for effluent ammonia, the pH and temperature of the effluent must be recorded at the time of sample collection. Results for all three parameters as well as the applicable ammonia standard and the calculated Ammonia Impact Ratio shall be recorded on the **Ammonia Data Log** provided in Appendix B. Results of the effluent ammonia, calculated ammonia impact ratio, and the effluent pH and temperature shall also be recorded on DMRs. The ammonia data log shall be submitted to ADEQ annually to the address in Part II.B.2, above.

4. If requested to participate, the permittee shall submit results of the NPDES DMR/QA study to ADEQ and ADHS for all laboratories used in monitoring compliance with this permit by December 31st of each year. The permittee shall also participate in the DMR-QA study for any DMR-QA parameters that the permittee analyzes (typically pH and chlorine) and submit the results along with the laboratory results. The results shall be submitted to the following addresses:

Arizona Department of Environmental Quality
Email: AZPDES@azdeq.gov

Arizona Department of Health Services
Attn: Office of Laboratory Licensure and
Certification
250 N 17th Avenue
Phoenix, AZ 85007

5. For the purposes of reporting, the permittee shall use the Limit of Quantitation.

6. For parameters with Daily Maximum Limits or Daily Maximum Assessment Levels in this permit, the permittee shall review the results of all samples collected during the reporting period and report as follows:

For Daily Maximum Limits/Assessment Levels	The Permittee shall Report on the DMR
When the maximum value of any analytical result is greater than or equal to the LOQ	The maximum value of all analytical results

For Daily Maximum Limits/Assessment Levels	The Permittee shall Report on the DMR
When the maximum value detected is greater than or equal to the laboratory's LOD but less than the LOQ (1)	NODI (Q)
When the maximum value is less than the laboratory's LOD (2)	NODI (B)

Footnotes:

- (1) Not Quantifiable
- (2) Below Detection

7. For parameters with Monthly Average Limits or Monthly Average Assessment Levels in this permit, the permittee shall review the results of all samples collected during the reporting period and report:

For Monthly Average Limits/Assessment Levels		The Permittee shall Report on the DMR
If only one sample is collected during the reporting period (monthly, quarterly, annually, etc.) (In this case, the sample result is the monthly average.)	When the value detected is greater than or equal to the LOQ	The analytical result
	When the value detected is greater than or equal to the laboratory's LOD, but less than the LOQ	NODI (Q)
	When the value is less than the laboratory's LOD	NODI (B)
If more than one sample is collected during the reporting period	All samples collected in the same calendar month must be averaged. <ul style="list-style-type: none"> • When all results are greater than or equal to the LOQ, all values are averaged • If some results are less than the LOQ, use the LOD value in the averaging • Use '0' for values less than the LOD 	The highest monthly average which occurred during the reporting period

8. For all field testing, or if the information below is not included on the laboratory reports required by Part II.B.2, the permittee shall attach a bench sheet or similar documentation to each DMR that includes, for all analytical results during the reporting period:
- a. the analytical result,
 - b. the number or title of the approved analytical method, preparation and analytical procedure utilized by the field personnel or laboratory, and the LOD and LOQ for the analytical method for the parameter, and
 - c. any applicable data qualifiers using the most current revision of the Arizona Data Qualifiers (available on line at <http://www.azdhs.gov/lab/license/resources/resources.htm>).

C. Twenty-four Hour Reporting of Noncompliance

The permittee shall orally report any noncompliance which may endanger the environment or human health within 24 hours from the time the permittee becomes aware of the event to:

ADEQ 24 hour hotline at (602) 771-2330

The permittee shall also notify the AZPDES Individual Permits Unit in writing within 5 days of the noncompliance event. The permittee shall include in the written notification: a description of the noncompliance and its cause; the period of noncompliance, including dates and times, and, if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D. Monitoring Records

The permittee shall retain records of the following monitoring information:

1. Date, exact location and time of sampling or measurements performed, preservatives used;
2. Individual(s) who performed the sampling or measurements;
3. Date(s) the analyses were performed;
4. Laboratory(s) which performed the analyses;
5. Analytical techniques or methods used;
6. Chain of custody forms;
7. Any comments, case narrative or summary of results produced by the laboratory. These comments should identify and discuss QA/QC analyses performed concurrently during sample analyses and should specify whether analyses met project requirements and 40 CFR 136. If results include information on initial and continuing calibration, surrogate analyses, blanks, duplicates, laboratory control samples, matrix spike and matrix spike duplicate results, sample receipt condition, or holding times and preservation, these records must also be retained.
8. Summary of data interpretation and any corrective action taken by the permittee.

PART III. BIOSOLIDS/ SEWAGE SLUDGE REQUIREMENTS

A. Use or Disposal Requirements

All sewage sludge generated by the permittee shall be sent via a separate sludge line to the City of Mesa's Greenfield Water Reclamation Plant (GWRP), or via the sanitary sewer to the Phoenix 91st Avenue Wastewater Treatment Plant (91st Ave WWTP) for disposal. Note that the sludge does not go through the plant processes at GWRP, but is treated as influent at the 91st Avenue WWTP. If the permittee wishes to change this practice during the life of this permit, a request for a permit modification must be made and the permit modified to reflect the change(s) in sludge handling, storage or disposal prior to such a change(s) being made.

B. Sewer Sludge Generator's and Biosolids Preparer's Responsibility

The permittee (City of Mesa) is responsible for assuring that all sewage sludge produced at this facility is used or disposed of in accordance with 40 CFR 503, 257, 258 and 18 A.A.C. Chapter 9, Article 10, as applicable. The permittee is responsible for informing subsequent preparers, applicers, and disposers of the requirements that they must meet under 40 CFR 503 and 18 A.A.C. Chapter 9, Article 10.

C. Facilities with Pretreatment Programs

The permittee shall design local limits to achieve the metals concentration limits in Table 2 of A.A.C. R18-9-1005.

D. Annual Report for all Permittees

The permittee shall submit an annual biosolids report to the ADEQ Biosolids Coordinator pursuant to A.A.C. R18-9-1014(F) for land application or 40 CFR 503.28 for surface disposal by February 19 of each year for the period covering the previous calendar year. All POTWs with a design flow rate equal to or greater than one MGD must report. Since the City of Mesa's Southeast Water Reclamation Plant (SEWRP), the GWRP, and 91st Ave. WWTP are all major POTWs, all facilities must report. SEWRP's annual biosolids report shall state the annual amount of sewage sludge generated from the treatment process and the amount that was sent to the GWRP or to the Phoenix 91st Ave. WWTP. The annual biosolids report shall be submitted to:

ADEQ Biosolids Coordinator
AZPDES Individual Permits Unit
1110 W. Washington St.
Phoenix, AZ 85007
602-771-7674

Note: Sewage sludge that is hazardous as defined in 40 CFR 261 must be disposed of in accordance with the Resource Conservation and Recovery Act (RCRA). Sludge with PCB (polychlorinated biphenyls) levels greater than 50 mg/kg, must be disposed of in accordance with 40 CFR 761.

PART IV. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. General Conditions

1. The permittee shall conduct chronic or acute toxicity tests on 24-hour composite samples of the final effluent at the frequencies specified in Part I. The requirement to conduct chronic toxicity testing is contingent upon the frequency or duration of discharges. See Part IV.C.1 below for details. If chronic testing is conducted a separate acute test is not required. However, the acute endpoint shall be reported from the chronic test.
2. Final effluent samples must be taken following all treatment processes, including chlorination and dechlorination, and prior to mixing with the receiving water. The required WET tests must be performed on unmodified samples of final effluent. **WET tests conducted on samples that are dechlorinated after collection are not acceptable for compliance with this permit.**

3. Chemical testing for all the parameters listed in Parts I.A and B of this permit whose required sample type is a composite shall be performed on a split of one composite sample taken for an acute WET test or a split of at least one of the three composite samples taken for one chronic WET test. For those parameters listed in Parts I.A and B of this permit whose required sample type is discrete, the testing shall be performed on a discrete sample collected concurrently with one sample, discrete or composite, collected for an acute or chronic WET test.
4. Definitions related to toxicity are found in Appendix A.

B. Acute Toxicity

1. If chronic toxicity testing is not required per Part IV.C.1, the permittee shall conduct 96-hour acute toxicity tests with renewal at 48 hours on two species; *Ceriodaphnia dubia* and *Pimephales promelas* using 100% effluent and a control. The acute test may be completed as a non-renewal 48-hour acute test when a second sample for renewal at 48 hours cannot be taken due to a cessation of the discharge after an acute test has been initiated.
2. The permittee must follow the USEPA 5th edition manual, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA/821-R-02-012) for all acute toxicity testing. The presence of chronic toxicity shall be estimated as specified in the method for each species tested.
3. The acute toxicity action level is any failing test result. The test fails if survival in 100% effluent is less than 90%, and is significantly different from control survival (which must be 90% or greater), as determined by hypothesis testing. Section 11.3 of the acute manual referenced above must be followed to determine Pass or Fail. Any result of Fail requires follow-up testing per Part IV, Section E.
4. The permittee shall report results as Pass or Fail.

C. Chronic Toxicity

1. The permittee shall conduct short-term chronic toxicity tests on three species: the waterflea, *Ceriodaphnia dubia* (survival and reproduction test); the fathead minnow, *Pimephales promelas* (larval survival and growth test); and the green alga, *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*) (growth test). Since completion of the chronic WET test for *Ceriodaphnia dubia* and *Pimephales promelas* requires a minimum of three samples be taken for renewals, the chronic WET test will not be required during any given monitoring period in which the discharge(s) does not occur over seven consecutive calendar days and is(are) not repeated more frequently than every thirty days, except as specified in Part I.D (chronic WET testing for effluent characterization is required whether discharging or not). The discharge does not have to be continuous to fall under this requirement.
2. The permittee must follow the USEPA 4th edition manual, "*Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*" (EPA/821-R-02-013) for all chronic compliance toxicity testing.

3. The chronic toxicity action levels are any one test result greater than 1.6 TUc or any calculated monthly median value greater than 1.0 TUc. If chronic toxicity is detected above these values, follow-up testing is required per Part IV, Section E. A chronic toxicity unit (TUc) shall be calculated as $TUc = 100/NOEC$.
4. The chronic WET test shall be conducted using a series of five dilutions and a control. The following dilution series must be used: 12.5, 25, 50, 75, and 100% effluent.

D. Quality Assurance

1. Effluent samples must be maintained between 0 and 6°C from collection until utilized in the toxicity testing procedure. When a composite sample is required, each aliquot making up the composite must be chilled after collection and throughout the compositing period. The single allowable exception is when a grab sample is delivered to the performing laboratory for test initiation no later than 4 hours following the time of collection.
2. Control and dilution water should be receiving water or lab water as appropriate, as described in the 40 CFR Part 136.3 approved method. If the dilution water used is different from the culture water, a second control, using culture water shall also be used.
3. Reference toxicity tests, (a check of the laboratory and test organisms' performance), shall be conducted at least 1 time in a calendar month for each toxicity test method conducted in the laboratory during that month. Additionally, any time the laboratory changes its source of test organisms, a reference toxicity test must be conducted before or in conjunction with the first WET test performed using the organisms from the newer source. Reference toxicant testing must be conducted using the same test conditions as the effluent toxicity tests (ie., same test duration, etc.).
4. If either the reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the 40 CFR Part 136.3 approved WET methods, then the permittee must re-sample and re-test within 14 days of receipt of the test results. The re-sampling and re-testing requirements include laboratory induced error in performing the test method.
5. The chronic reference toxicant and effluent tests must meet the upper and lower bounds on test sensitivity as determined by calculating the percent minimum significant difference (PMSD) for each test result. The test sensitivity bound is specified for each test method (see Section 10, Table 6 in EPA/821-R-02-013). There are five possible outcomes based on the PMSD result.
 - a. *Unqualified Pass*- The test's PMSD is within bounds and there is no significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is no toxicity.
 - b. *Unqualified Fail*- The test's PMSD is larger than the lower bound (but not greater than the upper bound) in Table 6 and there is a significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is toxicity.
 - c. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 6 and there is no significant difference between the means for the control and the effluent. The test is

considered invalid. An effluent sample must be collected and another toxicity test must be conducted within 14 days of receipt of the test results.

- d. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 6 and there is a significant difference between the means for the control and the effluent. The test is considered valid. The regulatory authority will conclude that there is toxicity.
- e. *Very Small but Significant Difference*- The relative difference between the means for the control and effluent is smaller than the lower bound in Table 6 and this difference is statistically significant. The test is acceptable and the NOEC should be determined.

E. Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE) Processes

1. If (acute or chronic) toxicity is detected above a WET action level or Limit specified in this permit and the source of toxicity is known (for instance, a temporary plant upset), the permittee shall conduct one follow-up test within two weeks of receipt of the sample results that exceeded the action level or limit. The permittee shall use the same test and species as the failed toxicity test. For intermittent discharges, the follow-up test shall be conducted whether discharging or not. If toxicity is detected in the follow-up, the permittee shall immediately begin developing a TRE plan and submit the plan to ADEQ for review and approval within 30 days after receipt of the toxic result. Requirements for the development of a TRE are listed in paragraph 3 below. The permittee must implement the TRE plan as approved and directed by ADEQ.
2. If (acute or chronic) toxicity is detected above an action level or Limit specified in this permit and the source of toxicity is unknown, the permittee shall begin additional toxicity monitoring within two weeks of receipt of the sample results that exceeded the action level. The permittee shall conduct one WET test approximately every other week until either a test exceeds an action level (or limit) or four tests have been completed. The follow-up tests must use the same test and species as the failed toxicity test. For intermittent discharges, the first follow-up test shall be conducted whether discharging or not; the subsequent three follow-up tests shall be conducted during the next three discharge events.
 - a. If none of the four tests exceed a WET action level or limit, then the permittee may return to the routine WET testing frequency specified in this permit.
 - b. If a WET action level or limit is exceeded in any of the additional tests, the permittee shall immediately begin developing a TRE plan and submit the plan to ADEQ for review and approval within 30 days after receipt of the toxic result. Requirements for the development of a TRE are listed in subsection 3, below. The permittee must implement the TRE plan as approved and directed by ADEQ.
3. The permittee shall use the EPA guidance manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, 1999 (EPA/833/B-99/002) in preparing a TRE plan. The TRE plan shall include, at a minimum, the following:
 - a. Further actions to investigate and identify the causes of toxicity, if unknown. The permittee may initiate a TIE as part of the TRE process using the following EPA manuals as guidance: *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, 1992 (EPA/600/6-91/005F); *Methods for Aquatic Toxicity*

Identification Evaluations: Phase I, Toxicity Characterization Procedures, 2nd Edition, 1991 (EPA/600/6-91/003); Methods for Aquatic Toxicity Identification Evaluations: Phase II, Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, 1993 (EPA/600/R-92/080); and Methods for Aquatic Toxicity Identification Evaluations: Phase III, Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, 1993 (EPA/600/R-92/081).

- b. Action the permittee will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity; and
- c. A schedule for implementing these actions.

F. WET Reporting

1. The permittee shall report chronic toxicity results on DMRs in Chronic Toxicity Units (TUc). The TUc for DMR reporting shall be calculated as $TUc = 100/NOEC$.
2. In addition to reporting WET results on DMRs, the permittee shall submit a copy of the full lab report(s) for all WET testing conducted during the monitoring period covered by the DMR. The lab report should report TUc as 100/NOEC **and** as 100/IC₂₅. If the lab report does not contain any of the following items, then these must also be supplied in a separate attachment to the report: 1) sample collection and test initiation dates, 2) the results of the effluent analyses for all parameters required to be tested concurrently with WET testing as defined in Part I.A and B, Tables 1 and 2, and Part IV.A.3 of this permit, and 3) copies of completed "AZPDES Discharge Flow Records" for the months in the WET monitoring period.
3. WET lab reports and any required additional attachments shall be submitted to ADEQ by the 28th day of the month following the end of the WET monitoring period, or upon request, via e-mail to AZPDES@azdeq.gov or by mail to the following address:

Arizona Department of Environmental Quality
AZPDES Individual Permits Unit
1110 W. Washington St.
Phoenix, AZ 85007

(NOTE: This is not the same ADEQ address as the one specified under Part II.B.1 of this permit.)

PART V. SPECIAL CONDITIONS

A. OPERATION

The permittee shall ensure that the facilities or systems are operated by or under the supervision of an operator currently certified by ADEQ at the level appropriate for the facility or system.

B. PRE-TREATMENT CONDITIONS

1. The permittee shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to Part 403. Where Part 403 or subsequent revision places mandatory actions upon the

- permittee as Control Authority but does not specify a timetable for completion of the actions, the permittee shall complete the required actions within six months from the issuance date of this permit or the effective date of the Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the permittee shall be subject to enforcement actions, penalties, fines and other remedies by ADEQ, the U.S. Environmental Protection Agency (EPA) or other appropriate parties as provided in the Act. ADEQ or EPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Act.
2. The permittee shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d) and 402(b) of the Act with timely, appropriate and effective enforcement actions. The permittee shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.
 3. The permittee shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:
 - a. Implement the necessary legal authorities as provided in 40 CFR Part 403.8(f)(1);
 - b. Enforce the pretreatment requirements under 40 CFR Part 403.5 and 403.6;
 - c. Implement the programmatic functions as provided in 40 CFR Part 403.8(f)(2); and
 - d. Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR Part 403.8(f)(3).
 4. The permittee shall submit annually a report to ADEQ and EPA, Region 9 describing its pretreatment activities over the previous year. In the event the permittee is not in compliance with any conditions or requirements of this permit, the permittee shall also include the reasons for noncompliance and state how and when the permittee shall comply with such conditions and requirements. This annual report shall cover operations from January 1 through December 31 and is due on February 28 of each year. The report shall contain, but not be limited to, the following information:
 - a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants EPA has identified under section 307(a) of the Act which are known or suspected to be discharged by nondomestic users. This will consist of an annual full priority pollutant scan, with quarterly samples analyzed only for those pollutants detected in the full scan. The permittee is not required to sample and analyze for asbestos. Sludge sampling and analysis are covered in the sludge section of this permit. The permittee shall also provide any influent or effluent monitoring data for nonpriority pollutants which the permittee believes may be causing or contributing to interference or pass through. Sampling and analysis shall be performed with the techniques prescribed in 40 CFR Part 136;
 - b. A discussion of Upset, Interference or Pass Through incidents, if any, at the treatment plant which the permittee knows or suspects were caused by nondomestic users of the POTW system. The discussion shall include the reasons why the incidents occurred, the corrective

actions taken and, if known, the name and address of the nondomestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent pass through or interference;

- c. An updated list of the permittee's significant industrial users (SIUs) including their names and addresses, and a list of deletions, additions and SIU name changes keyed to the previously submitted list. The permittee shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall also indicate which SIUs are subject to local limitations;
- d. The permittee shall characterize the compliance status of each SIU by providing a list or table which includes the following information:
 - i. Name of the SIU;
 - ii. Category, if subject to federal categorical standards;
 - iii. The type of wastewater treatment or control processes in place;
 - iv. The number of samples taken by the POTW during the year;
 - v. The number of samples taken by the SIU during the year;
 - vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;
 - vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits;
 - viii. Whether the facility is in significant noncompliance (SNC) as defined at 40 CFR 403.12(f)(2)(vii) at any time during the year; and
 - ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action, final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;
- e. A brief description of any programs the POTW implements to reduce pollutants from nondomestic users that are not classified as SIUs;
- f. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;
- g. A summary of the annual pretreatment budget, including the cost of pretreatment program

functions and equipment purchases; and

- h. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(vii).
5. The permittee shall submit the annual report pertaining to pre-treatment activities to the following EPA Region 9 and ADEQ Pretreatment Coordinator addresses:

Pretreatment Coordinator
EPA Region 9
R9Pretreatment@epa.gov

Pretreatment Coordinator
Arizona Department of Environmental Quality
AZPDES Individual Permits Unit
1110 West Washington Street
Phoenix, AZ 85007

C. REOPENER

This permit may be modified per the provisions of A.A.C. R18-9-B906, and R18-9-A905 which incorporates 40 CFR Part 122. This permit may be reopened 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.

APPENDIX A PART A: ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
EQ	Exceptional Quality (biosolids)
AZPDES	Arizona Pollutant Discharge Elimination System
A.R.S.	Arizona Revised Statutes
CFR	Code of Federal Regulations
CFU	Colony Forming Units
Director	The Director of ADEQ or any authorized representative thereof
DMR	Discharge Monitoring Report
EPA	The U.S. Environmental Protection Agency
kg/day	kilograms per day
MGD	Million Gallons per Day
mg/L	milligrams per Liter, also equal to parts per million (ppm)
MPN	Most Probable Number
NPDES	National Pollutant Discharge Elimination System
PFU	Plaque-Forming Unit
QA	Quality Assurance
SSU	Sewage Sludge Unit
TBEL	Technology-based effluent limitation
µg/L	micrograms per Liter, also equal to parts per billion (ppb)
WQBEL	Water quality-based effluent limitation

APPENDIX A PART B: DEFINITIONS

ACTIVE SEWAGE SLUDGE UNIT means a sewage sludge unit that has not closed.

ACUTE TOXICITY TEST is a test used to determine the concentration of effluent or ambient waters that produces an adverse effect (lethality) on a group of test organisms during a short-term exposure (e.g., 24, 48, or 96 hours). Acute toxicity is measured using statistical procedures (e.g., point estimate techniques or hypothesis testing) and is reported as PASS/FAIL or in TUs, where $TU_a = 100/LC_{50}$.

ACUTE-to-CHRONIC RATIO (ACR) is the ratio of the acute toxicity of an effluent or a toxicant to its chronic toxicity. It is used as a factor for estimating chronic toxicity on the basis of acute toxicity data, or for estimating acute toxicity on the basis of chronic toxicity data.

AGRONOMIC RATE means the whole biosolids application rate on a dry-weight basis that meets the following conditions: a.) The amount of nitrogen needed by existing vegetation or a planned or actual crop has been provided, and b.) The amount of nitrogen that passes below the root zone of the crop or vegetation is minimized.

AMMONIA IMPACT RATIO (AIR) is the ratio of the concentration of ammonia in the effluent and the calculated ammonia standard as determined by the use of effluent/receiving water pH and temperature.

ANNUAL POLLUTANT LOADING RATE means the maximum amount of a pollutant that can be applied to an acre or hectare of land during a 365-day period.

APPLICATOR means a person who arranges for and controls the site-specific land application of biosolids in Arizona.

BASE FLOOD means a flood that has a one percent chance of occurring in any given year (or a flood that is likely to occur once in 100 years).

BULK BIOSOLIDS means biosolids that are transported and land-applied in a manner other than in a bag or other container holding biosolids of 1.102 short tons or 1 metric ton or less.

CHRONIC TOXICITY TEST is a test in which sublethal effects (e.g., reduced growth or reproduction) are measured in addition to lethality. Chronic toxicity is measured as $TU_c = 100/NOEC$ or $TU_c = 100/EC_p$ or $100/IC_p$. The IC_p and EC_p value should be the approximate equivalent of the NOEC calculated by hypothesis testing for each test method.

COMPOSITE SAMPLE means a sample that is formed by combining a series of individual, discrete samples of specific volumes at specified intervals. Composite samples characterize the quality of a discharge over a given period of time. Although, composite samples can be time-weighted or flow-weighted, this permit requires the collection of flow-proportional composite samples. This means that samples are collected and combined using aliquots in proportion to flow rather than time. Also see Flow-Proportional Composite.

CUMULATIVE POLLUTANT LOADING RATE means the maximum amount of a pollutant applied to land application site.

DAILY MAXIMUM CONCENTRATION LIMIT means the maximum allowable discharge of a pollutant in a calendar day as measured on any single discrete sample or composite sample.

DAILY MAXIMUM MASS LIMIT means the maximum allowable total mass of a pollutant discharged in a calendar day.

DISCRETE or GRAB SAMPLE means an individual **sample of at least 100 mL** collected from a single location, or over a period of time not exceeding 15 minutes.

DRY-WEIGHT BASIS means the weight of biosolids calculated after the material has been dried at 105 °C until reaching a constant mass.

EFFECT CONCENTRATION POINT (ECP) is a point estimate of the toxicant (or effluent) concentration that would cause an observable adverse effect (e.g., survival or fertilization) in a given percent of the test organisms, calculated from a continuous model (e.g., USEPA Probit Model).

EXCEPTIONAL QUALITY BIOSOLIDS means biosolids certified under R18-9-1013(A)(6) as meeting the pollutant concentrations in R18-9-1005 Table 2, Class A pathogen reduction in R18-9-1006, and one of the vector attraction reduction requirements in subsections R-18-9-1010(A)(1) through R18-9-1010(A)(8).

FLOW PROPORTIONAL COMPOSITE SAMPLE means a sample that combines discrete samples collected over time, based on the flow of the discharge being sampled. There are two methods used to collect this type of sample. One collects a constant sample volume at time intervals that vary based on stream flow. The other collects discrete samples that are proportioned into aliquots of varying volumes based on stream flow, at constant time intervals (i.e. flow-weighted composite sample).

HARDNESS means the sum of the calcium and magnesium concentrations, expressed as calcium carbonate ($CaCO_3$) in milligrams per liter.

HYPOTHESIS TESTING is a statistical technique (e.g., Dunnetts test) that determines what concentration is statistically different from the control. Endpoints determined from hypothesis testing are NOEC and LOEC. The two hypotheses commonly tested in WET are:

- Null hypothesis (H_0): The effluent is not toxic.
- Alternative hypothesis (H_a): The effluent is toxic.

INHIBITION CONCENTRATION (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., USEPA Interpolation Method). IC_{25} is a point estimate of the toxicant concentration that would cause a 25% reduction in a non-lethal biological measurement.

LAND APPLICATION or LAND APPLY means spraying or spreading biosolids on the surface of the land, injecting biosolids below the land's surface, or incorporating biosolids into the soil to amend, condition, or fertilize the soil.

LAND TREATMENT FACILITY means an operation designed to treat and improve the quality of waste, wastewater, or both, by placement wholly or in part on the land surface to perform part or all of the treatment. A land treatment facility includes a facility that performs biosolids drying, processing, or composting, but not land application performed in compliance with 18 A.A.C. 9, Article 10.

LC50 is the toxicant (or effluent) concentration that would cause death in 50 percent of the test organisms.

LIMIT OF QUANTITATION (LOQ) means the minimum levels, concentrations, or quantities of a target variable such as an analyte that can be reported with a specific degree of confidence. The calibration point shall be at or below the LOQ. The LOQ is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all of the method-specified sample weights, volumes, and processing steps have been followed.

LIMIT OF DETECTION (LOD) means an analyte and matrix-specific estimate of the minimum amount of a substance that the analytical process can reliably detect with a 99% confidence level. This may be laboratory dependent and is developed according to R9014-615(C)(7).

METHOD DETECTION LIMIT (MDL) - See LOD.

MIXING ZONE is an area where an effluent discharge undergoes initial dilution and may be extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.

MONTHLY OR WEEKLY AVERAGE CONCENTRATION LIMIT, other than for bacteriological testing, means the highest allowable average calculated as an arithmetic mean of consecutive measurements made during calendar month or week, respectively. The "monthly or weekly average concentration limit" for *E. coli* bacteria means the highest allowable average calculated as the geometric mean of a minimum of four (4) measurements made during a calendar month or week, respectively. The geometric mean is the n th root of the product of n numbers. For either method (CFU or MPN), when data are reported as "0" or non-detect then input a "1" into the calculation for the geometric mean.

MONTHLY OR WEEKLY AVERAGE MASS LIMITATION means the highest allowable value that shall be obtained by taking the total mass discharged during a calendar month or week, respectively, divided by the number of days in the period that the facility was discharging. Where less than daily sampling is required by this permit, the monthly or weekly average value shall be determined by the summation of all the measured discharges by mass divided by the number of days during the month or week, respectively, when the measurements were made.

NO OBSERVED EFFECT CONCENTRATION (NOEC) is the highest tested concentration of effluent or toxicant, that causes no observable adverse effect on the test organisms (i.e., the highest concentration of toxicant at which the values for the observed responses are not statistically significant different from the controls).

PATHOGEN means a disease-causing organism.

POINT ESTIMATE TECHNIQUES such as Probit, Interpolation Method, Spearman-Kärber are used to determine the effluent concentration at which adverse effects (e.g., fertilization, growth or survival) occurred. For example, concentration at which a 25 percent reduction in fertilization occurred.

REFERENCE TOXICANT TEST is a toxicity test conducted with the addition of a known toxicant to indicate the sensitivity of the organisms being used and demonstrate a laboratory's ability to obtain consistent results with the test method. Reference toxicant data are part of the routine QA/QC program to evaluate the performance of laboratory personnel and test organisms.

RUNOFF means rainwater, leachate, or other liquid that drains over any part of a land surface and runs off of the land surface.

SEWAGE SLUDGE UNIT means land on which only sewage sludge is placed for final disposal. This does not include land on

which sewage sludge is either stored or treated. Land does not include navigable waters.

SIGNIFICANT DIFFERENCE is defined as statistically significant difference (e.g., 95% confidence level) in the means of two distributions of sampling results.

SINGLE CONCENTRATION ACUTE TEST is a statistical analysis comparing only two sets of replicate observations. In the case of WET, comparing only two test concentrations (e.g., a control and 100% effluent). The purpose of this test is to determine if the 100% effluent concentration differs from the control (i.e., the test passes or fails).

SOURCE WATER is defined as untreated water from streams, rivers, lakes or underground aquifers that is used to provide public drinking water as well as to supply private wells used for human consumption.

STORE BIOSOLIDS or *STORAGE OF BIOSOLIDS* means the temporary holding or placement of biosolids on land before land application.

SURFACE DISPOSAL SITE means an area of land that contains one or more active sewage sludge units.

SUBMIT, as used in this permit, means post-marked, documented by other mailing receipt, or hand-delivered to ADEQ.

TEST ACCEPTABILITY CRITERIA (TAC) are specific criteria for determining whether toxicity tests results are acceptable. The effluent and reference toxicant must meet specific criteria as defined in the test method.

TON means a net weight of 2000 pounds and is known as a short ton.

TOTAL SOLIDS means the biosolids material that remains when sewage sludge is dried at 103° C to 105° C.

TOXIC UNIT (TU) is a measure of toxicity in an effluent as determined by the acute toxicity units or chronic toxicity units measured. Higher the TUs indicate greater toxicity.

TOXIC UNIT ACUTE (TU_a) is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end of an acute toxicity test (i.e., $TU_a = 100/LC_{50}$).

TOXIC UNIT CHRONIC (TU_c) is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of a chronic toxicity test (i.e., $TU_c = 100/NOEC$).

TOXICITY IDENTIFICATION EVALUATION (TIE) is a set of procedures used to identify the specific chemical(s) causing effluent toxicity.

TOXICITY REDUCTION EVALUATION (TRE) is a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

TOXICITY TEST is a procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect of a specific chemical or effluent on exposed test organisms.

VECTORS means rodents, flies, mosquitoes, or other organisms capable of transporting pathogens.

WHOLE EFFLUENT TOXICITY is the total toxic effect of an effluent measured directly with a toxicity test.

APPENDIX B

AZPDES Discharge Flow Record		
Southeast Water Reclamation Plant - AZ0025151		
Discharge to the East Maricopa Floodway At:		
Outfall No.: 001		
Location: 33° 21' 54" N 111° 41' 19" W Township 1 S, Range 6 E, Section 12		
Month:	Year:	
DATE	Flow Duration ⁽¹⁾ (Total hours per day)	Flow Rate ⁽²⁾ (Total MGD per day)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
Comment:		

footnotes:

- (1) Total time of discharge in hours per day. If actual time is not available, use an estimate of flow duration.
- (2) Report flow discharged in MGD. If no discharge occurs on any given day, report 'ND' for the flow for that day

Signature of Authorized Representative:

APPENDIX B

AZPDES Discharge Flow Record		
Southeast Water Reclamation Plant - AZ0025151		
Discharge to the East Maricopa Floodway At:		
Outfall No.: 002		
Location: 33° 15' 47" N 111° 43' 33" W Township 2 S, Range 6 E, Section 15		
Month:	Year:	
DATE	Flow Duration ⁽¹⁾ (Total hours per day)	Flow Rate ⁽²⁾ (Total MGD per day)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
Comment:		

footnotes:

- (1) Total time of discharge in hours per day. If actual time is not available, use an estimate of flow duration.
- (2) Report flow discharged in MGD. If no discharge occurs on any given day, report 'ND' for the flow for that day

Signature of Authorized Representative:

Signature of Authorized Representative _____

APPENDIX C - AMMONIA SPECIAL REPORTING REQUIREMENTS

The Arizona Administrative Code, Title 18, Chapter 11 Department of Environmental Quality Water Quality Standards contains acute and chronic ammonia standards that are contingent upon temperature and/or pH values. The chronic ammonia criteria table for Aquatic and Wildlife warm follows below. The permittee shall refer to these tables to determine the ammonia standard that applies each time an ammonia sample is taken. Additionally, the ammonia impact ratio is calculated by dividing the ammonia value by the corresponding ammonia standard. The permittee shall record all sampling results for effluent ammonia, effluent pH and temperature, as well as the applicable ammonia standards, ammonia impact ratios, and sampling dates in the Ammonia Data Log. The required minimum sampling frequency for these parameters may be found in Table 2 of this permit. Anytime an ammonia impact ratio is found to be above the limit of 1 for the pH and temperature at the time the sample was taken, the permittee must highlight this on the ammonia data log. These results must also be reported on DMRs with any exceedances noted. Annual submittal of the ammonia data log is required (See Part II.B.3)

A&W Designated Uses

Determination of Chronic Total Ammonia Criteria as N in mg / L										
Based on pH and Temperature at Time of Sampling (1) (2)										
pH	Temperature, °C									
	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.5	3.07	2.7	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.3	3.78	3.32	2.92	2.57	2.25
7	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.5	3.08	2.7	2.38	2.09
7.2	5.39	5.39	4.9	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.3	3.78	3.33	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.9	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.5	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17

Determination of Chronic Total Ammonia Criteria as N in mg / L										
Based on pH and Temperature at Time of Sampling (1) (2)										
7.9	2.8	2.8	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.1	2.1	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.7	0.615	0.541	0.475
8.5	1.09	1.09	0.99	0.87	0.765	0.672	0.591	0.52	0.457	0.401
8.6	0.92	0.92	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.48	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9	0.486	0.486	0.442	0.389	0.342	0.3	0.264	0.232	0.204	0.179

Footnotes:

- (1) pH and temperature are field measurements taken at the same time and location as the water samples destined for the laboratory analysis of ammonia.
- (2) If field measured pH and/or temperature values fall between the Chronic Total Ammonia tabular values, round field measured values according to standard scientific rounding procedures to nearest tabular value to determine the ammonia standard.

Determination of Acute Total Ammonia Criteria as N in mg / L		
Based on pH at Time of Sampling (1) (2)		
pH	A&W c	A&Ww and A&Wedw
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9

7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

- (1) pH and temperature are field measurements taken at the same time and location as the water samples destined for the laboratory analysis of ammonia.
- (2) If field measured pH and/or temperature values fall between the Acute Total Ammonia tabular values, round field measured values according to standard scientific rounding procedures to nearest tabular value to determine the ammonia standard.