

## ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is a wastewater treatment plant (WWTP) with a design capacity of 0.6 million gallons per day (mgd) and is considered to be a minor facility under the NPDES program. The effluent limitations contained in this permit will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 et. seq. This permit is proposed to be issued for a period of 5 years.

<b>I. PERMITTEE INFORMATION</b>	
Permittee's Name:	Pinewood Sanitary District
Permittee's Mailing Address:	P.O. Box 18758 Munds Park, AZ 86017
Facility Name:	Kay S. Blackman Wastewater Treatment Plant (WWTP)
Facility Address or Location:	18075 Fairway Drive Munds Park, AZ 86017
County:	Coconino
Contact Person(s): Phone/e-mail address	Leo Krosnicki; District Manager leok@pinewoodsanitary.com / (928) 286-9166
AZPDES Permit Number:	AZ0025879
Inventory Number:	102887
LTF Number:	82150

<b>II. STATUS OF PERMIT(S)</b>	
AZPDES permit applied for:	Renewal
Date application received:	<b>April 22, 2020</b>
Date application was determined administratively complete:	May 11, 2020
Previous permit number (if different):	N/A
Previous permit expiration date:	October 27, 200

**II. STATUS OF PERMIT(s)**

**208 Consistency:**

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

Under the amended Northern Arizona Council of Government (NACOG) 208 Water Quality Management Plan, the Kay S. Blackman WWTP was to continue to identify ways to operate the facility without discharging to Munds Creek. The proposed permit will authorize the regular discharge of treated wastewater to Munds Creek between November 16 and April 14, inclusive. The permit contains special provisions in Part V.B to allow discharge during the remainder of the year. Therefore, renewal of the AZPDES permit is consistent with the NACOG 208 Plan.

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

Pinewood Sanitary District has the following permits issued by ADEQ applicable to the Kay S. Blackman WWTP:

Type of Permit	Permit Number	Purpose
Aquifer Protection Permit (APP)	P-102887	Regulates discharges to the local aquifer
Reuse Permit	R-102877	Regulates the practice of reusing treated wastewater for beneficial purposes

**III. GENERAL FACILITY INFORMATION**

Type of Facility:	Privately owned wastewater treatment plant (WWTP)
Facility Location Description:	The facility is located along the east side of I-17 approximately 20 miles south of Flagstaff.
Permitted Design Flow:	0.6 mgd
Treatment level (WWTP):	Tertiary
Treatment Processes :	The treatment process consists of head works, primary bar screening, flow equalization basin, flow splitter box, two anoxic tanks, four parallel aeration basins with diffused air utilizing mechanical blowers, clarifier basins, chlorine contact chamber for disinfection, sulfur dioxide injection for dechlorination and parallel traveling bridge filters for polishing and aluminum injection for phosphorus removal.
Sludge Handling and Disposal:	Sludge is de-watered utilizing a belt press and disposed of at Painted Desert Landfill in Joseph City.
Nature of facility discharge:	Domestic wastewater from residential and commercial sources in Munds Park.
Total Number of significant industrial Users (SIUs):	None

<b>III. GENERAL FACILITY INFORMATION</b>	
Average flow per discharge:	Data indicates that the average flow per discharge is 0.54 mgd.
Service Area:	Munds Park
Service Population:	Winter (1,600) Summer (10,000)
Reuse / irrigation or other disposal method(s):	Currently, all treated wastewater from the Kay S. Blackman WWTP is reused as irrigation on the Pinewood Country Club Golf Course and Driving Range. The proposed AZPDES permit will authorize discharge of treated wastewater to Munds Creek between November 16 and April 14 inclusive, according to the NACOG 208 Water Quality Management Plan.
Continuous or intermittent discharge:	Intermittent
Discharge pattern summary:	Winter months (November 16 to April 14) – continuous discharge Summer months (April 15 to November 15) – discharge only allowed if the freeboard in the storage ponds fall below three (3) feet, such as during storm events

<b>IV. RECEIVING WATER</b>	
The State of Arizona has adopted water quality standards to protect the designated uses of its surface waters. Streams have been divided into segments and designated uses assigned to these segments. The water quality standards vary by designated use depending on the level of protection required to maintain that use.	
Receiving Water :	Munds Creek, tributary to Oak Creek  ADEQ evaluated the riparian corridor vegetation of Munds Creek, as riparian corridor vegetation is indicative of at least intermittent flow. ADEQ’s analysis showed 100% presence of riparian corridor vegetation, established using GIS tools and 2017 imagery from the U.S. Geological Survey’s National Agriculture Imagery Program. Munds Creek is a tributary to a Traditionally Navigable Water (TNW) segment of the Gila River via Oak Creek, Verde River, and Salt River. As those water bodies are either intermittent or perennial all the way downstream to the TNW segment of the Gila River, they meet the definition of a tributary, and therefore a Water of the U.S. Thus, the facility’s discharges of pollutants to Munds Creek is a point source discharge requiring an AZPDES permit.
River Basin:	Verde River Basin
Outfall Location(s):	Outfall 001: Township 18 N, Range 7 E, Section 22 Latitude 34° 56’ 09” N, Longitude 111° 38’ 35” W
Designated uses for the receiving water listed above:	Munds Creek is an unlisted tributary. Pursuant to tributary rule listed in A.A.C. R18-11-105, the following designated uses are applied to Munds Creek:  Aquatic and Wildlife warm water (A&Ww) Aquatic and Wildlife cold water (A&Wc)

IV. RECEIVING WATER	
	<p>Full Body Contact (FBC) Fish Consumption (FC)</p> <p>Both A&amp;Wc and A&amp;Ww apply in this case because the elevation of Munds Creek changes from above 5000 feet at the outfall to below 5000 feet at the confluence of Oak Creek.</p>
<p>Designated uses for downstream receiving water:</p>	<p>A continuous discharge from Kay S. Blackman WWTP has the potential to reach Oak Creek (Below confluence with unnamed tributary to confluence with Verde River), an Outstanding Arizona Water (OAW). The receiving segment of Oak Creek has the following designated uses:</p> <p>Domestic Water Source (DWS) Aquatic and Wildlife cold water (A&amp;Wc) Full Body Contact (FBC) Fish Consumption (FC) Agricultural Irrigation (Agl) Agricultural Livestock water (AgL)</p> <p>Therefore the following combination of Munds Creek and Oak Creek's designated uses are being applied to the receiving water:</p> <p>Domestic Water Source (DWS) Aquatic and Wildlife warm water (A&amp;Ww) Aquatic and Wildlife cold water (A&amp;Wc) Full Body Contact (FBC) Fish Consumption (FC) Agricultural Irrigation (Agl) Agricultural Livestock water (AgL)</p>
<p>Is the receiving water on the 303(d) list?</p>	<p>Yes, Oak Creek is currently listed on the 303(d) list as impaired for <i>E. coli</i>. A TMDL was approved in August 2010. The wasteload allocation (WLA) for the Kay S. Blackman WWTP was calculated using the permit limits based on the FBC designated use of 235 cfu/100 mL.</p> <p>Oak Creek was listed as impaired for nitrogen and phosphorous but has since been delisted. A TMDL was completed in June 1999 for phosphorus and nitrogen. The total allowable Munds Creek nutrient load (at the confluence of Oak Creek) under the TMDL from the combined point and non-point sources is 51.61 kg/day Total N and 7.75 kg/day Total P. The Kay S. Blackman WWTP is the only point source discharge from Munds Creek to Oak Creek. Under this TMDL, the point source WLAs set in 1999 for this WWTP was 0.50 kg/day for Total N and 0.71 kg/day for Total P.</p>
<p>Given the uses stated above, the applicable narrative water quality standards are described in A.A.C. R18-11-108, and the applicable numeric water quality standards are listed in A.A.C. R18-11-109 and in Appendix A thereof. There are two standards for the Aquatic and Wildlife uses, acute and chronic. In developing AZPDES permits, the standards for all applicable designated uses are compared and limits that will protect for all applicable designated uses are developed based on the standards.</p>	

<b>V. DESCRIPTION OF DISCHARGE</b>		
Because the facility is in operation and discharges have occurred, effluent monitoring data are available. The following is the measured effluent quality reported in the application.		
<b>Parameters</b>	<b>Units</b>	<b>Maximum Daily Discharge Concentration</b>
Biochemical Oxygen Demand (BOD)	mg/L	13
Total Suspended Solids (TSS)	mg/L	20
Total Kjeldahl Nitrogen (TKN)	mg/L	3.39
<i>E. coli</i>	cfu / 100 mL	2.0
Facility design removal rates:	BOD 98 % TSS 98 % N 88 % P 75 %	

<b>VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT</b>	
Date of most recent inspection:	February 19, 2020; no potential violations were noted as a result of this inspection.
DMR files reviewed:	November 2015 through March 2020
Lab reports reviewed:	July 2016 through March 2020
DMR Exceedances:	Cyanide (July 2017, January and April 2020); and Total Nitrogen (January, February, and April 2016, and April 2020). No other exceedances were noted.
NOVs issued:	October 24, 2017. NOV issued for exceedance of daily maximum concentration limit for total cyanide.  March 2, 2020. NOV issued for exceedance of daily maximum mass limit for total cyanide.  September 9, 2020. NOV issued for exceedance of daily maximum mass limit for total cyanide.
NOVs closed:	November 9, 2017. NOV closed  April 1, 2020. NOV closed
Compliance orders:	None

**VII. PROPOSED PERMIT CHANGES**

The following table lists the major changes from the previous permit in this draft permit.

Parameter	Existing Permit	Proposed permit	Reason for change
Reporting Location	Mail in hard copies of DMRs and other attachments	DMRs and other reports to be submitted electronically through myDEQ portal	Language added to support the NPDES electronic DMR reporting rule that became effective on December 21, 2015.
Mercury	Limited	Limit removed	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.
Lead	Effluent Characterization	Limited	Data submitted indicated a reasonable potential (RP) for an exceedance of a standard.
Boron and Iron	Assessment Level	Effluent Characterization	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.

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

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

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

**VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS**

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

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

The regulations found at 40 CFR §133 require that POTWs achieve specified treatment standards for BOD, TSS, and pH based on the type of treatment technology available. The Kay S. Blackman WWTP is a privately owned plant using the same technology for treatment of domestic sewage as a POTW. Therefore, technology-based effluent limitations (TBELs) have been established in the permit for these parameters based on Best Professional Judgment (BPJ). Additionally, oil & grease will be monitored with a TBEL based on best professional judgment (BPJ). The average monthly limit of 10 mg/L and daily maximum of 15 mg/L are commonly accepted values that can be achieved by properly operated and maintained WWTPs. This level is also considered protective of the narrative standard at A.A.C. R18-11-108(B).

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

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

As discussed in Part III above, the discharge from the Kay S. Blackman WWTP is subject to the 1999 Oak Creek nitrogen and phosphorus TMDL. The nitrogen and phosphorus limits applied in the permit were derived based on WWTP performance data obtained in previous permits. Under the previous permits, the Kay S. Blackman WWTP nutrient contributions reaching Oak Creek were calculated based on data from an in-stream monitoring program. The previous permits were written on the assumption that as long as the WLAs were not exceeded, the nutrient additions from Kay S. Blackman WWTP would be in compliance with the 1999 Oak Creek nutrient TMDL. The in-stream monitoring data collected between 2001 and 2010 demonstrated the WLAs have not been exceeded. Therefore, the monthly mass limits of 13.6 kg/day for Total N and 1.14 kg/day for Total P set previously are continued in this permit. In addition, the previous permit did not contain daily maximum limits for total N and total P. As described in the TSD, the daily maximum limits in this permit were obtained by 99<sup>th</sup> percentile probability basis of the WWTP’s effluent data.

The proposed permit limits were established using a methodology developed by EPA. Long Term Averages (LTA) were calculated for each designated use and the lowest LTA was used to calculate the average monthly limit (AML) and maximum daily limit (MDL) necessary to protect all uses. This methodology takes into account criteria, effluent variability, and the number of observations taken to determine compliance with the limit and is described in Chapter 5 of the TSD. Limits based on A&W criteria were developed using the “two-value steady state wasteload allocation” described on page 99 of the TSD. When the limit is based on human health criteria, the monthly average was set at

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the level of the applicable standard and a daily maximum limit was determined as specified in Section 5.4.4 of the TSD.

**Mixing Zone**

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

**Assessment Levels (ALs)**

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

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

The requirement to monitor for these parameters is included in the draft permit according to A.A.C. R18-11-104(C) and Appendix A. ALs listed for each parameter were calculated in the same manner that a limit would have been calculated (see Numeric Water Quality Standards Section above).

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

**Hardness**

The permittee is required to sample hardness as CaCO<sub>3</sub> at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. The hardness value of 140 mg/L (the average hardness of the receiving stream as supplied in the application) was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness dependent metals (cadmium, copper, lead, nickel, silver and zinc).

**Whole Effluent Toxicity (WET)**

WET testing is required in the draft permit (Parts I.C and IV) to evaluate the discharge according to the narrative toxic standard in A.A.C. R18-11-108(A)(5), as well as whether the discharge has RP for WET per 40 CFR 122.44(d)(iv).

WET testing for chronic and/or acute toxicity is required. The requirement to conduct chronic toxicity testing is contingent upon the frequency or duration of discharges. Since completion of the chronic WET test requires a minimum of three samples be taken for renewals, the chronic WET test is not required during any given monitoring period in which the discharge does not occur over seven consecutive calendar days and is not repeated more frequently than every thirty days.

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



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

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

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

The draft permit requires 12-hour composite samples be collected for WET testing. A 12-hour composite sample type was chosen over the suggested 24-hour composite for WET testing in order to have consistency with the type of sample required for other parameters requiring monitoring in this permit. WET sampling must coincide with testing for all the parameters in Parts I.A and B of the draft permit, when testing of those parameters is required, to aid in the determination of the cause of toxicity if toxicity is detected. Additional procedural requirements for the WET test are included in the proposed permit.

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

**Effluent Characterization (EC)**

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

- Table 4.a. – General Chemistry and Microbiology: ammonia, BOD-5, *E. coli*, total residual chlorine (TRC), dissolved oxygen, total Kjeldahl nitrogen (TKN), nitrate/nitrite, oil and grease, pH, phosphorus, temperature, total dissolved solids (TDS), and total suspended solids (TSS)
- Table 4.b. – Selected Metals, Hardness, Cyanide, and WET

NOTE: Some parameters listed in Tables 4.a. and 4.b. are also listed in Tables 1 or 2. In this case, the data from monitoring under Tables 1 or 2 may be used to satisfy the requirements of Tables 4.a. and / or 4.b., provided the specified sample types are the same. In the event the facility does not discharge to a water of the U.S. during the life of the permit, EC monitoring of representative samples of the effluent is still required.

The purpose of EC monitoring is to characterize the effluent and determine if the parameters of concern are present in the discharge and at what levels. This monitoring will be used to assess RP per 40 CFR 122.44(d)(1)(iii)). EC monitoring is required in accordance with 40 CFR 122.43(a), 40 CFR 122.44(i), and 40 CFR 122.48(b) as well as A.R.S.

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§49-203(A)(7). If pollutants are noted at levels of concern during the permit term, this permit may also be reopened to add related limits or conditions.

**Permit Limitations and Monitoring Requirements**

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

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Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Flow	---	---	---	---	---	Discharge flow is to be monitored on a continual basis using a flow meter.
Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS)	30 mg/L 30-day average 45 mg/L 7-day average/ Technology-based limits 40 CFR 133.102	BOD: 13 mg/L TSS: 20 mg/L	BOD: 26 TSS: 26	N/A	TBELs for BOD and TSS are always applicable to WWTPs.	Monitoring for influent and effluent BOD and TSS to be conducted using composite samples of the influent and the effluent. The sample type required was chosen to be representative of the discharge. The requirement to monitor influent BOD and suspended solids is included to assess compliance with the 85% removal requirement in this permit. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
Chlorine, Total Residual (TRC)	11 µg/L/ A&Ww and A&Wc chronic	< 30.9 µg/L	173	N/A	RP always expected when chlorine or bromine is used for disinfection.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine. At least one sample per month must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
<i>E. coli</i>	30-day geometric mean: 126 cfu /100 mL (4 sample minimum) Single sample maximum: 235 cfu /100 mL/ FBC	2 cfu /100 mL	88	N/A	RP always expected for WWTPs. See explanation above.	<i>E. coli</i> is to be monitored as a discrete sample and a WQBEL remains in the permit.
pH	Minimum: 6.5 Maximum: 9.0 A&Wedw and PBC A.A.C. R18-11-109(B)  Minimum: 6.0 Maximum: 9.0 Technology-based limits 40 CFR 133.102	6.47 – 7.6	173	N/A	WQBEL or TBEL is always applicable to WWTPs.	pH is to be monitored using a discrete sample of the effluent and a WQBEL is set. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required.
Temperature	No applicable numeric standard	16.8°C – 21.9°C	26	N/A	N/A	Effluent temperature is to be monitored for effluent characterization by discrete sample. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. Temperature sampling must also coincide with ammonia sampling when required.

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)
Ammonia	Standard varies with temperature and pH	0.2 AIR 2.66 mg/L	26	N/A	RP Indeterminate (4)	Ammonia is to be monitored by discrete sample and an assessment level in the form of an ammonia impact ratio (AIR) of 2 is set in the permit (5). An ammonia data log with concurrent pH and temperature monitoring is also required. One sample must coincide with WET sampling to aid in the determination of the cause of toxicity, if toxicity is detected.
Nutrients (Total Nitrogen and Total Phosphorus)	Oak Creek TMDLs for Munds Creek apply (June 1999). See Section III.	N: 12.5 mg/L P: 0.79 mg/L	N: 79 P: 87	N/A	N/A	Monitoring required and a limit remains in the permit.
Oil & Grease	BPJ Technology-Based Level of 10 mg/L monthly average and 15 mg/L daily maximum	< 5 mg/L	14	N/A	RP Indeterminate (4)	Monitoring required and a limit remains in the permit.
Antimony	6 µg/L/ DWS	< 0.5 µg/L	12	N/A	No RP	Monitoring required for effluent characterization.
Arsenic	10 µg/L/ DWS	< 1 µg/L	12	N/A	No RP	Monitoring required for effluent characterization.
Beryllium	4 µg/L/ DWS	< 2 µg/L	12	N/A	No RP	Monitoring required for effluent characterization.
Boron	1,000 µg/L/ Agl	190 µg/L	14	494 µg/L	No RP	Monitoring required for effluent characterization.
Cadmium (2)	0.31 µg/L/ A&Wc chronic	< 0.1 µg/L	12	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	100 µg/L/ DWS	< 5 µg/L	12	N/A	No RP	Monitoring required for effluent characterization.
Chromium VI	11 µg/L/ A&Wc and A&Ww chronic	< 8 µg/L	3	N/A	RP Indeterminate	Monitoring required for effluent characterization.
Copper (2)	12 µg/L/ A&Wc and A&Ww chronic	19 µg/L	14	49 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.
Cyanide	5.2 µg/L/ A&Wc chronic	6 µg/L	16	15 µg/L	RP Exists	Monitoring is required and a WQBEL remains in the permit.
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	161 mg/L	14	N/A	N/A	A&W standards for cadmium, copper, lead, nickel, silver and zinc used for RP determinations were based on the average receiving water hardness value of 140 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)	
Hydrogen Sulfide	2 µg/L/ A&Wc and A&Ww chronic	No Data	0	N/A	RP Indeterminate (No Data)	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.	
Iron	1,000 ug/L / A&Wc and A&Ww chronic	< 50 µg/L	12	N/A	No RP	Monitoring required for effluent characterization.	
Lead (2)	3.62 µg/L / A&Wc and A&Ww chronic	1.7 µg/L	11	4.93 µg/L	RP Exists	Monitoring is required and a WQBEL is set.	
Mercury	0.01 µg/L/ A&Wc and A&Ww chronic	0.003 µg/L	12	0.008 µg/L	No RP	Monitoring required for effluent characterization.	
Nickel (2)	69.1 µg/L/ A&Wc and A&Ww chronic	< 20 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.	
Selenium	2 µg/L/ A&Wc and A&Ww chronic	< 200 µg/L	13	N/A	RP Exists	Monitoring required and a WQBEL remains in the permit.	
Silver (2)	4.40 µg/L/ A&Wc chronic	< 0.1 µg/L	3	N/A	No RP	Monitoring required for effluent characterization.	
Sulfides	No applicable standard	< 200 µg/L	14	N/A	N/A	Indicator parameter for hydrogen sulfide. Monitoring required. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.	
Thallium	2 µg/L/ DWS	< 0.5 µg/L	11	N/A	No RP	Monitoring required for effluent characterization.	
Zinc (2)	155 µg/L/ A&Wc and A&Ww acute and chronic	50 µg/L	10	150 µg/L	No RP	Monitoring required for effluent characterization.	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A)(6) )	<i>Pseudo-kirchneriella subcapitata</i> (3)	1.0 TUc	3	N/A	RP Indeterminate (4)	Monitoring required and an action level remains in the permit.
		<i>Pimephales promelas</i>	1.0 TUc	3	N/A	RP Indeterminate (4)	Monitoring required and an action level remains in the permit.
		<i>Ceriodaphnia dubia</i>	1.0 TUc	3	N/A	RP Indeterminate (4)	Monitoring required and an action level remains in the permit.

**Footnotes:**

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

**VIII. NARRATIVE WATER QUALITY STANDARDS**

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

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

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

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

For the purposes of this permit, a "12-hour composite" sample has been defined as a flow-proportioned mixture of two discrete samples (aliquots) collected between 7:00 a.m. and 7:00 p.m. and separated by an equal time interval over an 8-hour period (if only two samples are collected, they should be taken approximately 8 hours apart). The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling.

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

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

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

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

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

Reporting requirements for monitoring results are detailed in Part II, Section B of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs), Ammonia Data Logs, and AZPDES Flow Record forms. The permittee is responsible for conducting all required monitoring and reporting the results to ADEQ on DMRs or as otherwise specified in the permit.

**Electronic reporting**

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

The permit also requires annual submittal of an Ammonia Data Log that records the results for temperature, pH, and ammonia samples and date of sampling (Part II.B.3). Because the ammonia standards in 18 A.A.C. 11, Article 1, Appendix A are contingent upon the pH and temperature at the time of sampling for ammonia, the permittee must determine the applicable ammonia standard using the ammonia criteria table(s) and calculate the Ammonia Impact Ratio for that ammonia sample result. The AIR is recorded on the DMR.

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

Requirements for retention of monitoring records are detailed in Part II.C.3 of the permit.

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

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

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

**Operation**

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

**Emergency Discharge Provisions**

This permit condition requires the permittee to contact ADEQ if intent to discharge between April 15 and November 14. Between the dates of April 15 and November 14, inclusive, the permittee shall not discharge to Munds Creek without prior notification to ADEQ of the intent to discharge. The permittee shall maintain freeboard of greater than three (3) feet in the effluent holding ponds.

**Permit Reopener**

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

**XII. ANTIDegradation**

Antidegradation rules have been established under A.A.C. R18-11-107 to ensure that existing surface water quality is maintained and protected. The discharge from the Kay S. Blackman WWTP has the potential to reach Oak Creek. A.A.C. R18-11-107(D) indicates that Outstanding Arizona Waters (OAWs) fall in the Tier 3 category. The Tier 3 category states that existing water quality shall be maintained and protected in surface water listed under A.A.C. R18-11-112. Oak Creek is listed as an OAW under A.A.C. R18-11-112(G). Ambient monitoring (in-stream monitoring data) during the previous permit terms has shown no evidence that the water quality of Munds Creek has been degraded by the discharge. Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.

**XIII. STANDARD CONDITIONS**

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

**XIV. ADMINISTRATIVE INFORMATION**

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

**XIV. ADMINISTRATIVE INFORMATION**

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

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

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

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

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

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

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

**XV. ADDITIONAL INFORMATION**

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

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

Or by contacting Devin McAllister at (602) 771 – 4374 or by e-mail at [mcallister.devin@azdeq.gov](mailto:mcallister.devin@azdeq.gov).



## **XVI. INFORMATION SOURCES**

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

1. AZPDES Permit Application Forms 1, 2A and 2S, received April 22, 2020, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. ADEQ files on Pinewood Sanitary District - Kay S. Blackman WWTP.
3. 208 Consistency Review Form dated May 7, 2015.
4. ADEQ Geographic Information System (GIS) Web site.
5. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters*, adopted December 31, 2016.
6. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
7. Code of Federal Regulations (CFR) Title 40:
  - Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*.
  - Part 124, *Procedures for Decision Making*.
  - Part 133. *Secondary Treatment Regulation*.
  - Part 503. *Standards for the Use or Disposal of Sewage Sludge*.
8. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
9. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
10. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
11. Oak Creek and Spring Creek, Verde River Watershed, Total Maximum Daily Loads for Escherichia Coliform, Arizona Department of Environmental Quality, August 30, 2010.
12. Total Maximum Daily Loads (TMDLs) for Total Phosphorus and Nitrogen in the Oak Creek Basin, Arizona (Including Munds Creek), Arizona Department of Environmental Quality, June 1999.
13. U.S. EPA NPDES Permit Writers' Manual, September 2010.