

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the reissuance of the AZPDES permit listed below. This facility is an electric generating station and is considered to be a major facility under the AZPDES program. The effluent limitations contained in this permit will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 *et seq.* This permit is proposed to be issued for a period of 5 years.

I. PERMITTEE INFORMATION	
Permittee's Name:	Salt River Project Agricultural Improvement and Power District
Permittee's Mailing Address:	P.O. Box 52025, STS 300, Phoenix, Arizona 85072
Facility Name:	Santan Generating Station
Facility Address or Location:	1005 South Val Vista Drive Gilbert, AZ 85296
County:	Maricopa
Contact Person(s):	Barbara Sprungl, Director
Phone/e-mail address	(602) 236-5374, barbara.sprungl@srpnet.com
AZPDES Permit Number:	AZ0023558
Inventory Number:	100601
LTF Number:	102113

II. STATUS OF PERMIT(S)	
AZPDES permit applied for:	Renewal
Date application received:	January 9 th , 2024
Date application was determined administratively complete:	January 19 th , 2024
Previous permit number (if different):	N/A
Previous permit expiration date:	July 7 th , 2024
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.	
208 Plan consistency is not required for industrial facilities.	

Salt River Project Agricultural Improvement and Power District has the following permits issued by ADEQ applicable to the Santan Generating Station:

Type of Permit		
Aquifer Protection Permit (APP)	P-100601	Regulates discharges to the local aquifer
Reuse Permit	R-100601	Regulates the practice of reusing treated wastewater for beneficial purposes
RCRA (hazardous wastes)	AZD000629493	Regulates hazardous waste generated by businesses

III. GENERAL FACILITY INFORMATION

Type of Facility:	Industrial – Electric Generating Station
Facility Location Description:	The facility is located on Val Vista Drive, a quarter of a mile south of Warner Road in Gilbert, Maricopa County, Arizona.
Discharge Flow:	Maximum daily value — 5.2 MGD
Applicable Treatment Processes:	<p>Santan includes six natural gas fired combined cycle systems. The systems include seven stationary combustion turbines, six stationary steam turbines, seven Heat Recovery Steam Generators (HRSGs), one diesel fired emergency fire water pump, three mechanical draft cooling towers, and associated water supply, water discharge, and natural gas supply pipelines.</p> <p>Water Supply: Santan receives water from both surface and ground sources. Units 1–4 receive groundwater from two onsite groundwater wells (Wells A and B) and three offsite groundwater wells (Wells C, D, and Ray Road). The primary source of raw water for Units 5 and 6 is water from a shallow intake structure on the Eastern Canal. All groundwater wells serve as back-up supply for Units 5 and 6 during emergencies or routine dry-up maintenance activities on the Eastern Canal. All groundwater wells are owned and maintained by SRP and are registered with the Arizona Department of Water Resources (ADWR).</p> <p>Water Treatment: Treatment processes of raw surface water consist of filtration and clarification to remove suspended solids with further clarification by ultrafiltration (UF), reverse osmosis (RO) and deionization (DI) (UF/RO/DI) for use in HRSG. The clarifier unit treats surface water entering the facility for use in Units 5 and 6. Solids removed by the clarifier are pumped to the settling beds where they can be dried and disposed as solid waste; no wastewater stream is contributed by the clarifier system. Groundwater is treated by reverse osmosis and deionization and used as make-up to the HRSG in addition to firewater for Santan. Cooling water is treated (prior to use) with chemicals to retard algae growth, inhibit corrosion and scaling, and control pH. Cooling tower water is dechlorinated prior to discharge to</p>

	<p>reduce free and total residual chlorine. A variety of chemicals are used in water treatment process to clean the reverse osmosis membranes and prevent fouling. Several conditioners and corrosion inhibitors are also used to pretreat boiler water. Moreover, chemical treatments have been used for invertebrate control to prevent quagga mussel infestation in Santan source water.</p> <p>Cooling Water Intake Structure: Santan operations are maintained by two primary sources of raw water — groundwater and surface water. The primary source of raw water for units 5 and 6 is surface water pumped from a single, shallow intake structure adjacent to the plant site on the SRP Eastern Canal. Although the volume of water withdrawn from the Eastern Canal for use at Santan varies by season, the engineered design withdrawal rate for the facility exceeds two MGD of cooling water, subjecting the facility to the 316(b) CWIS requirements specified in 40 CFR § 122.21(r)(2)–(r)(8).</p>
<p>Nature of facility discharge:</p>	<p>Outfall 001 — cooling tower blowdown, HSRG blowdown, and RO reject and sample system drains from units 1–4.</p> <p>Outfall 005 & 021— cooling tower blowdown, HSRG blowdown, RO reject, sample system drains, multimedia filter backwash, cartridge filter backwash, S1-4 Cir water treatment and low volume waste water from units 1–6.</p>
<p>Average flow per discharge:</p>	<p>001 — 0.396 MGD</p> <p>005 & 021 — 3.321 MGD</p>
<p>Continuous or intermittent discharge:</p>	<p>Intermittent discharge</p>
<p>Discharge pattern summary:</p>	<p>Discharges usually occur during the months of December and January, when the RWCD conducts annual maintenance activities, or immediately following heavy precipitation events as demand for irrigation temporarily subsides.</p>
<p>Santan Generating station is a natural gas fired electrical generating facility comprised of seven combustion turbines, each with a heat recovery steam generator (“HRSG”), all with an approximate generating capacity of 1,227 megawatts (MW) with seasonal variations.</p>	
<p>Permitted Outfalls: Santan has three specific wastewater streams: 1) sanitary wastewater, 2) stormwater exposed to industrial activities, and 3) process wastewater that includes cooling tower blowdown, HSRG blowdown, water treatment waste, and miscellaneous low volume wastes.</p> <p>Sanitary wastewater is discharged to the Town of Gilbert sanitary sewer system. Stormwater exposed to industrial activities is accumulated in one of the four on-site retention basins. Two registered drywells collect stormwater that is not exposed to industrial activities. Process wastewater is discharged through one of three discrete conveyances. They are: 1) the Roosevelt Water Conservation District (RWCD) canal, 2) a RWCD tailwater ditch, or 3) AZPDES permitted outfalls. Wastewater is discharged from the three permitted outfalls in the following order of priority: (1) Outfall 021, (2) Outfall 005, and (3) Outfall 001.</p> <p>Each of the three Santan AZPDES permitted outfalls (Outfall 001, Outfall 005 and Outfall 021) discharge to SRP irrigation laterals. Discharge to SRP irrigation laterals is primarily used when RWCD discharge locations are not available. This usually occurs during the months of December and January, when the RWCD conducts annual</p>	

maintenance activities, or immediately following heavy precipitation events as demand for irrigation temporarily subsides. The three permitted outfalls at Santan serve the following functions:

Outfall 021: This outfall is the primary AZPDES discharge outfall when RWCD is unavailable. Outfall 021 discharges are pumped through a 24-inch line that travels north from the plant and ties into SRP lateral 4-8.4 near Greenfield Road and Guadalupe Road. Discharges are directed to SRP lateral 4-8.4, then to SRP lateral 5-9.0, followed by SRP lateral 5-9.5, and ultimately into the **SRP Western Canal**.

Outfall 005: This outfall is the back-up AZPDES discharge outfall when RWCD and Outfall 021 are unavailable. Discharges are pumped through 16-inch line that travels south from the plant to SRP lateral 4-11.4, and directed into SRP lateral 5-11.0 farther downstream. Excess water not used for irrigation may be intercepted by an Arizona Department of Transportation (ADOT) storm drain that eventually discharges to the **Salt River**.

The function of Outfall 005 and 021 is redundant as both outfalls share the same source water (wastewater from Units 1–6). Under normal operation, wastewater from all the plant processes is directed to the 3A wastewater ponds. When discharging, wastewater is drawn into the plant wastewater sump and Santan operations personnel open and close valves downstream to direct wastewater flows to the designated discharge location.

Outfall 001: This outfall is used for emergency purposes only. Normally, wastewater from Units 1–4 bypasses Outfall 001 and is pumped to the 3A wastewater ponds. Outfall 001 is dedicated for discharging wastewater generated from Units 1–4; Units 5 and 6 cannot discharge through Outfall 001. In the event that Outfall 001 is used, process wastewater from Units 1–4 is accumulated in Units 1–4 wastewater vault, discharged to SRP lateral 4-11.4, and is directed into SRP lateral 5-11.0 farther downstream. Excess water not used for irrigation may be intercepted by an ADOT storm drain that eventually discharges to the **Salt River**.

For Units 1–4, the water treatment waste streams and HRSG blowdown and drains combine with cooling tower blowdown in the Units 1–4 wastewater sump. This wastewater sump can discharge to Outfall 001, but normally discharges to the 3A wastewater ponds where it comingles with wastewater from Units 5 and 6. Once wastewater is comingled in the wastewater pond it can be discharged to Outfall 005 or Outfall 021. For Units 5 and 6, the HRSG blowdown and water treatment wastewater is combined in a pit wastewater sump. This stream is considered a “Low volume waste stream” and is handled separately from the Unit 5 and 6 cooling tower blowdown until both waste streams are discharged to the 3A wastewater ponds.

Each permitted outfall along with its contributing wastewater flows and estimated volumes are provided in Part IV below.

Cooling Water Intake Structure (CWIS): Section §316(b) of Clean Water Act (CWA) requires steam-electric generating facilities that operate cooling water intake structures (CWIS) with a design intake flow greater than 2 MGD from a Water of the United States to minimize the adverse environmental impact of their operations. This includes implementation of certain standards to reduce the threat of impingement and /or entrainment of fish and other aquatic organisms.

Santan Generating Station (Santan) withdraws water for cooling from a surface water that is subject to § 316(b). As part of their application materials, the facility submitted the following information:

Source Water Physical Data — 40 CFR § 122.21(r)(2)(i) – (r)(2)(iv):

A narrative description and scaled drawings showing the physical configuration of surface water used by facility - including areal dimensions, depths, and other documentation including water chemistry data at approximately 0.6 canal miles upstream of the CWIS, and a location map showing the area of influence.

Cooling Water Intake Structure Data — 40 CFR § 122.21(r)(3)(i) – (r)(3)(v):

A narrative description of configuration, operation, latitude and longitude, flow distribution and water balance diagram and engineering drawings of the CWIS.

Source Water Baseline Biological Characterization — 40 CFR § 122.21(r)(4):

Existing biological study data conducted by US Bureau of Reclamation (1995 -2010 and 2015) which contains information to address the key requirements of 40 CFR § 122.21(r)(4). It should be noted that the CWIS is located with a surface water that does not contain aquatic and wildlife designated uses, and there are no threatened, endangered, or fragile species in the vicinity of the action area. The majority of the species present in the canal system are non-native or invasive fish species.

Existing biological data also suggests that adult fish are the primary life stage present in the canals due to the lack of suitable spawning habitat. Therefore, the potential for impingement or entrainment is limited to small non-native fish species. The highest concentrations of native and non-native species are concentrated several canal miles upstream of the CWIS.

Cooling water system Data — 40 CFR § 122.21(r)(5):

A narrative description of the operation of the cooling water system, design and engineering calculations and also description of existing impingement and entrainment technologies and a summary of their performance.

Compliance with impingement Mortality Standard — 40 CFR § 122.21(r)(6):

A closed-cycle recirculating system is in operation at Santan. Closed cycle systems have been identified by the EPA as the preferred alternative for meeting the impingement mortality standard.

Entrainment Performance studies — 40 CFR § 122.21(r)(7):

The facility has not previously conducted studies on entrainment, therefore there is no historical entrainment data that the Department can review. Since the actual cooling water intake flow is 3.64 MGD, which is less than 125 MGD, operation of intake structure with a closed-cycle recirculating system meets the BTA for entrainment, as defined under 40 CFR 125.94(d).

Operational Status — 40 CFR § 122.21(r)(8):

A description of the operational status of Units 5 and 6 that uses water for cooling was provided by the permittee.

Best Technology Available (BTA) standards determination for impingement and Entrainment:

Based upon the materials submitted, the Department has determined that the facility operates a closed-cycle recirculating system that meets the Best Technology Available (BTA) for impingement mortality, as defined under 40 CFR § 125.94(c)(1). In addition, the Department has also determined that the proper operation and maintenance of the closed-cycle recirculating system will also meet the Best Technology Available (BTA) for entrainment, as defined under 40 CFR § 125.94(d). No additional or biological monitoring are required, provided that terms and conditions for BTA compliance, as specified in the permit, are maintained by the permittee.

IV. RECEIVING WATER

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

<p>Receiving Water (Federal):</p>	<p>The Water of the U.S. Protected Surface Water (WOTUS PSW) for the facility are the Western Canal (a Phoenix Area Canal) and the Salt River. The receiving water for Santan Outfalls 001 and 005 is SRP irrigation lateral 4-11.4, which is directed into SRP lateral 5-11.0. Excess water not used for irrigation may be intercepted by an ADOT storm drain that eventually discharges to the Salt River (from 2 kilometers below Granite Reef Dam to City of Mesa NW WRF outfall), in the Middle Gila River Basin.</p> <p>The receiving water for Santan Outfall 021 is SRP lateral 4-8.4, which is directed into SRP lateral 5-9.0, then into SRP lateral 5-9.5, and ultimately into the SRP Western Canal, a Phoenix Area Canal.</p>
<p>River Basin:</p>	<p>Middle Gila River Basin</p>
<p>Outfall Location(s):</p>	<p>Outfall 001: Township 1 S, Range 6 E, Section 21 Latitude 33°19' 53.82" N, Longitude 111°44' 59.09" W</p> <p>Outfall 005: Township 1 S, Range 6 E, Section 21 Latitude 33°20' 01.65" N, Longitude 111°44' 57.30" W</p> <p>Outfall 021: Township 1 S, Range 6 E, Section 21 Latitude 33°20' 01.65" N, Longitude 111°44' 57.30" W</p>
<p>Designated uses for the receiving water listed above:</p>	<p>Outfall 021 (Western Canal): Phoenix Area Canals below municipal water treatment plant intakes and all other locations have the following designated uses:</p> <ul style="list-style-type: none"> • Agricultural Irrigation (Agl) • Agricultural Livestock watering (AgL) <p>Outfall 001 & 005 Salt River (via ADOT drain): Excess water not used for irrigation may be intercepted by an Arizona Department of Transportation (ADOT) storm drain that eventually discharges to the Salt River.</p> <p>The Salt River has the following designated uses:</p> <ul style="list-style-type: none"> • Aquatic and Wildlife – ephemeral (A&We) • Partial Body Contact (PBC)
<p>Per A.A.C. R18-11-113(D), the water quality standards that apply to effluent-dependent waters (EDWs) will be applied to derive discharge limitations for any point source discharge of wastewater to an ephemeral water. The AZPDES permit includes discharge limitations and monitoring requirements designed to achieve compliance with A&Wedw standards.</p> <p>Therefore, the following uses are being applied to the receiving water:</p> <ul style="list-style-type: none"> • Aquatic and Wildlife effluent dependent water (A&Wedw) • Partial Body Contact (PBC) 	
<p>Is the receiving water on the 303(d) list?</p>	<p>No, and there are no TMDL issues associated.</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</p>	

all applicable designated uses are compared and limits that will protect for all applicable designated uses are developed based on the standards.

V. DESCRIPTION OF DISCHARGE

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

Parameters	Units	Maximum Daily Discharge Concentration
Outfalls 001		
Biochemical Oxygen Demand (BOD)	mg/L	2
Total Suspended Solids (TSS)	mg/L	<5
Total Kjeldahl Nitrogen (TKN)	mg/L	<1
Outfalls 005 & 021		
Biochemical Oxygen Demand (BOD)	mg/L	3
Total Suspended Solids (TSS)	mg/L	55
Total Kjeldahl Nitrogen (TKN)	mg/L	1.3

VI. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT

Date of Most Recent Inspection:	1/11/2023; no potential violations were noted as a result of this inspection.
Discharge Monitoring Reports (DMR) Reviewed:	7/2019 – 3/2024
Lab Reports Reviewed:	7/2019 – 3/2024
DMR Exceedances:	No exceedances were noted.
Notice(s) of Violation (NOV) Issued:	None
NOVs Closed:	N/A
Formal Enforcement Action(s):	None

VII. PROPOSED PERMIT CHANGES

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

Parameter	Existing Permit	Proposed Permit	Reason for Change
-----------	-----------------	-----------------	-------------------

<p>Noncompliance Reporting Hotline</p>	<p>(602) 771-2330</p>	<p>Noncompliance resulting in imminent threat to human health or the environment must be reported to (602) 771-2330, while all other noncompliance must be reported to (602) 771-1440.</p>	<p>Routing emergency calls to the emergency hotline, but all other calls to a non-emergency number.</p>
<p>Reporting Location for Effluent Characterization Monitoring</p>	<p>Submit results through DMRs</p>	<p>Report results on the EC Monitoring Data Sheet Excel form provided by ADEQ and submit annually to azpdes_data@azdeq.gov by January 28th following each annual reporting period. See Part II.B.3 of permit.</p>	<p>ADEQ is implementing this new procedure to facilitate data analysis by ADEQ and reporting by permittees. Outcomes include expedited data processing and improved data quality review, per ADEQ Surface Water Protection Quality Assurance Program Plan (2022).</p>
<p>Sufficiently Sensitive Test Methods and Limit of Quantitation (LOQ) reporting requirements</p>	<p>Limited explanation of analytical requirements for LOQ and sufficiently sensitive test methods.</p>	<p>Analytical test sensitivity requirements are specified in the footnotes of Part I Tables 1-3 of the permit and associated definitions in Appendix A. Part B. The requirement to use sufficiently sensitive test methods is specified in Part II.A.5.</p>	<p>The Limit of Quantitation (LOQ) must be low enough to allow comparison of the results to the applicable water quality standards (WQS) to be protective of the receiving water designated uses. New language clarifies the requirement that parameters must be analyzed using sufficiently sensitive test methods in accordance with 40 CFR 136.1(c).</p>
<p>Use of Metal Translators to Calculate Total Recoverable Permit Limits from Dissolved Criteria (Applicable to Cadmium, Chromium VI, Copper, Lead, Mercury, Nickel, Silver, and Zinc).</p>	<p>No metal translators were used. Assumed the ratio of dissolved to total recoverable is 1 to 1 for all metals with water quality criteria expressed as dissolved.</p>	<p>WQBELs and ALs were converted from dissolved to total recoverable using the default metal translators from the EPA's <i>The Metals Translator: Guidance for Calculating A Total Recoverable</i></p>	<p>New procedure for ADEQ to incorporate default metal translators when calculating total recoverable WQBELs and ALs from dissolved criteria.</p>

		<i>Permit Limit from A Dissolved Criterion.</i>	
Table 1.	Subdivided into 1.a Chronic discharge limitations for outfalls 001 & 005, and 1.b Discharge limitations for outfall 021	Subdivided into 1.a. Chronic discharge limits for outfall 001, 1.b Chronic discharge limits for outfall 005, 1.c. Acute discharge limits for outfall 001, 1.d. Acute discharge limits for outfall 005, and 1.e. Discharge limits for outfall 021	Requested from applicant since the discharge water from 001 & 005 are not exactly the same.
Outfall 001: arsenic	Effluent Characterization only	Monitoring required and a WQBEL set.	Data submitted indicate RP to exceed standard.
Outfall 001 & 005: cyanide	No monitoring	Assessment Level is set	More data required to determine RP.
Outfall 001 chronic: nickel	Effluent Characterization only	Monitoring required and a WQBEL is set	Data submitted indicate RP to exceed standard.
Outfall 021: boron, manganese, mercury, selenium	Effluent Characterization only	Monitoring required and a WQBEL set.	Data submitted indicate RP to exceed standard.
Table 4.a. Effluent Characterization Testing— General Chemistry and Microbiology: TRC, FAC, dissolved oxygen, TKN, oil and grease, TDS, and TSS	No Effluent Characterization monitoring required.	Effluent Characterization monitoring is required.	Ensure that required monitoring is conducted during the permit term to adequately characterize the effluent for permit renewal. Multi-parameter sampling throughout the permit term for parameters not limited is necessary to understand if new pollutants are present in the effluent at levels harmful to human health or the environment.
Table 4.b Outfall 001, 005, and 021 — Effluent Characterization Testing— Selected Metals, Trace Substances: antimony, boron, Chromium, chromium VI, copper, selenium, thallium, zinc, cyanide	No Effluent Characterization monitoring required.	Effluent Characterization monitoring is required.	Ensure that required monitoring is conducted during the permit term to adequately characterize the effluent for permit renewal. Multi-parameter sampling throughout the permit term for parameters not limited is

			necessary to understand if new pollutants are present in the effluent at levels harmful to human health or the environment.
Table 4.c. Outfall 001 & 005 — Effluent Characterization Testing—Selected Volatile Organic Compounds and trace substances	No monitoring required	Effluent Characterization monitoring is required	Effluent characterization monitoring is required for both of these outfalls regardless of discharging. The permit was simplified This will ensure that the required monitoring of cooling water blown down is completed during the permit term for effluent characterization. In addition, 40 CFR 423.13(d)(1) requires that no detectable amount of the 126 priority pollutants contained in chemicals added for cooling tower maintenance except for chromium and zinc.
Table 4.d. Outfall 001 & 005 — Effluent Characterization Testing—Selected Acid Extractable Compounds	No monitoring required	Effluent Characterization monitoring is required	Effluent characterization monitoring is required for both of these outfalls regardless of discharging. The permit was simplified This will ensure that the required monitoring of cooling water blown down is completed during the permit term for effluent characterization. In addition, 40 CFR 423.13(d)(1) requires that no detectable amount of the 126 priority pollutants contained in chemicals added for cooling tower maintenance except for chromium and zinc.
Table 4.e. Outfall 001 & 005 — Effluent Characterization	No monitoring required	Effluent Characterization monitoring is required	Effluent characterization monitoring is required for both of these outfalls

<p>Testing—Selected Base Neutral Compounds</p>			<p>regardless of discharging. The permit was simplified This will ensure that the required monitoring of cooling water blown down is completed during the permit term for effluent characterization.</p> <p>In addition, 40 CFR 423.13(d)(1) requires that no detectable amount of the 126 priority pollutants contained in chemicals added for cooling tower maintenance except for chromium and zinc.</p>
<p>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.</p>			

VIII. DETERMINATION OF EFFLUENT LIMITATIONS and ASSESSMENT LEVELS

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

Water Quality-Based Effluent Limitations:

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

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

applicable ammonia standard based on the effluent pH and temperature at the time of sampling. AIR values will be reported on DMRs and on the Ammonia Data Log which is included as Appendix B in the permit.

The proposed permit limits were established using a methodology developed by EPA. Long Term Averages (LTA) were calculated for each designated use and the lowest LTA was used to calculate the average monthly limit (AML) and maximum daily limit (MDL) necessary to protect all uses. This methodology takes into account criteria, effluent variability, and the number of observations taken to determine compliance with the limit and is described in Chapter 5 of the TSD. Limits based on A&W criteria were developed using the “two-value steady state wasteload allocation” described on page 99 of the TSD. When the limit is based on human health criteria, the monthly average was set at the level of the applicable standard and a daily maximum limit was determined as specified in Sections 5.4.4 and 5.5.3 of the TSD.

Hardness

The permittee is required to sample hardness as CaCO₃ at the same time the trace metals are sampled because the water quality standards for some metals are calculated using the water hardness values. The hardness value of 503 mg/L, (the average hardness of the effluent as supplied in the application) was used to calculate the applicable water quality standards and any assessment levels or limits for the hardness dependent metals (cadmium, chromium III, copper, lead, nickel, silver and zinc).

Whole Effluent Toxicity (WET)

WET testing is required in the permit (Parts I.C and III) to evaluate the effluent according to the narrative toxic standard in A.A.C. R18-11-108(A)(5), as well as whether the effluent has RP for WET per 40 CFR 122.44(d)(iv). At a minimum, the results reported on an AZPDES application must include annual testing for a 12-month period within the past year using multiple species or the results from four tests performed at least annually in the 4.5 years prior to the application.

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

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

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

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

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

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

The required WET monitoring frequency for this facility is consistent with the WET testing frequency required for facilities with a similar design flow. The permit requires WET test results to be reported on effluent 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 effluent 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.e., *Effluent Characterization Testing*, as follows:

- Table 4.a.—General Chemistry and Microbiology
- Table 4.b. —Selected Metals, Hardness, & Cyanide
- Table 4.c. —Selected Volatile Organic Compounds
- Table 4. d. —Selected Acid-Extractible Compounds
- Table 4. e. —Selected Base-Neutral Compounds

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

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

Permit Limitations and Monitoring Requirements

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

Table 1a. Permit limitations and monitoring requirements for outfalls 001.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
Flow	---	---	---	---	---	Effluent flow is to be monitored on a continual basis using a flow meter.
Total Suspended Solids (TSS) (2)	TSS - 30 mg/L 30-day average 100 mg/L Daily Maximum Technology-based limits 40 CFR § 423.12(b)(3) – Low Volume Waste (LVW) Sources.	<5.0 mg/L	TSS: 1	N/A	TBELs for TSS are applicable.	Monitoring for effluent TSS to be conducted using discrete samples of the effluent. The sample type required was chosen to be representative of the discharge.
Chlorine, Free Available (FAC)	0.2 mg/L 30-day average 0.5 mg/L Daily maximum Technology-based limits 40 CFR § 423.12(b)(7) 40 CFR § 423.13 (d)(1) Cooling tower blowdown 40 CFR § 423.13(d)(2) – FAC may not be discharged from any unit for more than 2 hours in any one day, and not more than one unit may discharge FAC at any one time unless demonstrated that it is necessary for operation.	<0.03 mg/L	1	N/A	TBEL for FAC is applicable.	TBEL for FAC is required and included in the permit. FAC is a component of TRC. FAC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.6 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), FAC may not be discharged from any unit for more than two (2) hours in any one day and not more than one unit in any plant may discharge FAC at any one time unless demonstrated that it is necessary for operation.
Chlorine, Total Residual (TRC)	40 CFR § 423.13(b)(2) – TRC may not be discharged from any unit for more than 2 hours in any one day, and not more than one unit may discharge TRC at any one time unless demonstrated that it is necessary for operation.	<0.009 mg/L	1	N/A	RP expected when chlorine or bromine is used for in operation of the facility.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. TRC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.5 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(b)(2), TRC may not be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge FAC at any one time unless demonstrated that it is necessary for operation. 40 CFR part 136 specifies that discrete samples must be collected for chlorine.

Table 1a. Permit limitations and monitoring requirements for outfalls 001.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
pH (2)	Minimum: 6.5 Maximum: 9.0 A&Wedw, PBC A.A.C. R18-11-109(B) Minimum: 6.0 Maximum: 9.0 40 CFR § 423.12(b)(1) – The pH of all discharges, except once-through cooling water, shall be within the range of 6.0 to 9.0 s.u.	Minimum: 7.6 Maximum: 7.6	1	N/A	Limit is always included. Technology based limit exists in addition to the limit in A. A. C. R 18-11-109(B).	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	R18-11-109C the discharge shall not cause an increase in the ambient water temperature.	26°C	1	N/A	N/A	Effluent temperature is to be monitored for effluent characterization by discrete sample.
Oil & Grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(1)	6.2 mg/L	1	29	TBEL	Technology based limit is always included
Antimony	600 µg/L A&W edw chronic	<1 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Arsenic	150 µg/L A&W edw chronic	17 µg/L	1	227 µg/L	RP Exists	RP exists and a WQBEL is set.
Beryllium	5 µg/L A&W edw chronic	<1 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Boron	186,667 µg/L PBC	644 µg/L	1	8,499 µg/L	No RP	Monitoring required for effluent characterization.
Cadmium (2)	7 µg/L A&W edw chronic	<1 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Chromium III	277 µg/L A&W edw chronic	<0.02 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	30-day average: 0.2 mg/L Daily maximum: 0.2 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	35 µg/L	30	71 µg/L	TBEL	Monitoring required as an indicator parameter for Chromium VI.
Chromium VI	11 µg/L A&W edw chronic	33ug/L	1	435.5ug/L	RP Exists	Monitoring is required and a WQBEL is set.
Copper (2)	35.4 µg/L A&W edw chronic	130 µg/L	1	1,716 µg/L	RP Exists	Monitoring is required and a WQBEL is set.
Cyanide	9.7 µg/L A&Wedw chronic	<10 µg/L	1	N/A	RP Indeterminate	Monitoring is required and an assessment level is set.

Table 1a. Permit limitations and monitoring requirements for outfalls 001.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)	
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	584 mg/L	1	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.	
Iron	1,000 ug/L A&W edw chronic	71 µg/L	1	937 µg/L	No RP	No Monitoring is required	
Lead (2)	14 µg/L A&W edw chronic	<2 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.	
Manganese	130,667 µg/L PBC	<20ug/L	1	N/A	No RP	Monitoring required for effluent characterization	
Mercury	0.01 µg/L A&Wedw chronic	0.045 µg/L	1	0.59µg/L	RP Exists	Monitoring required and a WQBEL remains in the permit.	
Nickel (2)	203 µg/L A&W edw chronic	25 µg/L	1	330 µg/L	RP Exists	Monitoring is required and a WQBEL is set.	
Selenium	2 µg/L A&W edw chronic	4.4 µg/L	1	58 µg/L	RP Exists	Monitoring is required and a WQBEL is set.	
Silver (2)	51 µg/L A&Wedw acute	<1 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.	
Sulfides	No applicable standard	<40 µg/L	1	N/A	N/A	Indicator parameter for hydrogen sulfide. Monitoring required for effluent characterization. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term.	
Thallium	150 µg/L A&W edw chronic	<2 µg/L	1	N/A	No RP	No Monitoring is required.	
Zinc (2)	458 µg/L A&Wedw acute and chronic Daily maximum: 1.0 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	27 µg/L	1	356 µg/L	TBEL 40 CFR 423.13(d)(1)	Monitoring is required and a TBEL remains in the permit.	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A) (6))	<i>Pseudo-kirchneriella subcapitata</i> (3)	No data	0	N/A	RP Indeterminate	Monitoring required and an action level is set.
		<i>Pimephales promelas</i>	No data	0	N/A	RP Indeterminate	Monitoring required and an action level is set.
		<i>Ceriodaphnia dubia</i>	No data	0	N/A	RP Indeterminate	Monitoring required and an action level is set.

Footnotes:

1. The monitoring frequencies are as specified in the permit.
2. Hardness-dependent metal - the standard 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*.

Table 1.b. Permit limitations and monitoring requirements for outfalls 005.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
Flow	---	---	---	---	---	Effluent flow is to be monitored on a continual basis using a flow meter.
Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) (2)	30 mg/L 30-day average 45 mg/L 7-day average Technology-based limits 40 CFR 133.102	BOD: 3 mg/L TSS: 55mg/L	BOD: 4 TSS: 31	N/A	TBELs for TSS are applicable.	At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
Total Organic Carbon (TOC)	No Applicable Standard	N/A	No data	N/A		Monitoring required for effluent characterization
Chlorine, Free Available (FAC)	0.2 mg/L 30-day average 0.5 mg/L Daily maximum Technology-based limits 40 CFR § 423.13(d)(1) – Cooling tower blowdown 40 CFR § 423.13(d)(2) – FAC may not be discharged from any unit for more than 2 hours in any one day, and not more than one unit may discharge FAC at any one time unless demonstrated that it is necessary for operation.	<0.03 mg/L	20	N/A	TBEL for FAC is applicable.	Monitoring without limitations is required; no limits are established because TRC will be monitored with more stringent WQBEL than TBEL (see TRC below). FAC is a component of TRC. FAC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.5 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), FAC may not be discharged from any unit for more than two (2) hours in any one day and not more than one unit in any plant may discharge FAC at any one time unless demonstrated that it is necessary for operation.
Chlorine, Total Residual (TRC)	40 CFR § 423.13(d)(2) – TRC may not be discharged from any unit for more than 2 hours in any one day, and not more than one unit may discharge TRC at any one time unless demonstrated that it is necessary for operation.	<0.009 mg/L	21	N/A	RP expected when chlorine or bromine is used for in operation of the facility.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. TRC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.5 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), TRC may not be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge FAC at any one time unless demonstrated that it is necessary for operation. 40 CFR part 136 specifies that discrete samples must be collected for chlorine.

Table 1.b. Permit limitations and monitoring requirements for outfalls 005.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
pH (2)	Minimum: 6.5 Maximum: 9.0 A&Wedw, PBC A.A.C. R18-11-109(B) Minimum: 6.0 Maximum: 9.0 40 CFR § 423.12(b)(1) – The pH of all discharges, except once-through cooling water, shall be within the range of 6.0 to 9.0 s.u.	Minimum: 7.2 Maximum: 8.9	91	N/A	Limit is always included. Technology based limit exists in addition to the limit in A. A. C. R 18-11-109(B).	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	R18-11-109C the discharge shall not cause an increase in the ambient water temperature.	29°C	95	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.
Oil & Grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(1)	6.2 mg/L	29	N/A	RP Exists	Technology based limit is always included
Antimony	600 µg/L A&W edw chronic	<1 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Arsenic	150 µg/L A&Wedw chronic	10.9 µg/L	4	52 µg/L	No RP	Monitoring required for effluent characterization.
Beryllium	5 µg/L A&W edw chronic	<1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.
Boron	186,667 µg/L PBC	370 µg/L	1	4,883 µg/L	RP Exists	Monitoring required for effluent characterization.
Cadmium (2)	7 µg/L A&W edw chronic	<1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	30-day average: 0.2 mg/L Daily maximum: 0.2 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	35 µg/L	30	71 µg/L	TBEL	Monitoring required as an indicator parameter for Chromium VI.
Chromium III	277 µg/L A&W edw chronic	<0.02 µg/L	1	N/A	No RP	Monitoring required and an assessment level remains in the permit.
Chromium VI	11µg/L A&W edw chronic	8 µg/L	1	105 µg/L	RP Exists	Monitoring is required and a WQBEL is set.
Copper (2)	35.4 µg/L A&W edw chronic	<20 µg/L	1	N/A	No RP	Monitoring required for effluent characterization

Table 1.b. Permit limitations and monitoring requirements for outfalls 005.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)	
Cyanide	9.7 µg/L A&W edw chronic	<10 µg/L	1	N/A	RP Indeterminate	Monitoring is required and an assessment level is set.	
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	751 mg/L	32	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.	
Iron	1,000 ug/L A&W edw chronic	820 µg/L	3	4,592 µg/L	RP Exists	Monitoring is required and a WQBEL is set.	
Lead (2)	14 µg/L A&W edw chronic	<2 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.	
Manganese	130667 µg/L PBC	26µg/L	1	343.2 µg/L	No RP	Monitoring required for effluent characterization.	
Mercury	0.01 µg/L A&W edw chronic	0.052 µg/L	3	0.29 µg/L	RP Exists	Monitoring required and a WQBEL remains in the permit.	
Nickel (2)	203 µg/L A&W edw chronic	5.4 µg/L	4	26 µg/L	No RP	Monitoring required for effluent characterization.	
Selenium	2 µg/L A&W edw chronic	1.9 µg/L	1	25 µg/L	RP Exists	Monitoring is required and a WQBEL is set.	
Silver (2)	51 µg/L A&W edw acute	<1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.	
Sulfides	No applicable standard	<40 µg/L	1	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	150 µg/L A&W edw chronic	<2 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.	
Zinc (2)	458 µg/L A&W edw acute and chronic Daily maximum: 1.0 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	<20 µg/L	30	N/A	TBEL 40 CFR 423.13(d)(1)	Technology based limit is always included	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A) (6))	<i>Pseudo-kirchneriella subcapitata</i> (3)	No data	0	N/A	RP Indeterminate	Monitoring required and an action level is set.
		<i>Pimephales promelas</i>	No data	0	N/A	RP Indeterminate	Monitoring required and an action level is set.
		<i>Ceriodaphnia dubia</i>	No data	0	N/A	RP Indeterminate (5)	Monitoring required and an action level is set.

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*.

DRAFT

Table 1.c. Permit limitations and monitoring requirements outfall 021.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
Flow	---	---	---	---	---	Effluent flow is to be monitored on a continual basis using a flow meter.
Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) (2)	BOD – no applicable standard TSS - 30 mg/L 30-day average 100 mg/L Daily maximum Technology-based limits 40 CFR § 423.12(b)(3) – Low Volume Waste (LVW) Sources.	BOD: 3 mg/L TSS: 55 mg/L	BOD: 4 TSS: 31	N/A	TBELs for BOD and TSS are applicable.	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 effluent.
Total Organic Carbon (TOC)	No Applicable Standard	N/A	No data	N/A		Monitoring required for effluent characterization.
Chlorine, Free Available (FAC)	0.2 mg/L 30-day average 0.5 mg/L Daily maximum Technology-based limits 40 CFR § 423.13(d)(1) – Cooling tower blowdown 40 CFR § 423.13(d)(2) – FAC may not be discharged from any unit for more than 2 hours in any one day, and not more than one unit may discharge FAC at any one time unless demonstrated that it is necessary for operation.	<0.03 mg/L	20	N/A	TBEL for FAC is applicable.	Monitoring without limitations is required; no limits are established because TRC will be monitored with more stringent WQBEL than TBEL (see TRC below). FAC is a component of TRC. FAC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.5 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), FAC may not be discharged from any unit for more than two (2) hours in any one day and not more than one unit in any plant may discharge FAC at any one time unless demonstrated that it is necessary for operation.
Chlorine, Total Residual (TRC)	40 CFR § 423.13(d)(2) – TRC may not be discharged from any unit for more than 2 hours in any one day, and not more than one unit may discharge TRC at any one time unless demonstrated that it is necessary for operation.	<0.009	21	N/A	RP expected when chlorine or bromine is used for in operation of the facility.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. TRC shall be monitored within the first hour of discharge after each chlorination event if chlorination is used. See Part II.A.5 for specific monitoring requirements for chlorine. Per CFR 40 § 423.13(d)(2), TRC may not be discharged from any unit for more than two (2) hours in any one day and not more than one unit in any plant may discharge FAC at any one time unless demonstrated that it is necessary for operation. 40 CFR part 136 specifies that discrete samples must be collected for chlorine.

Table 1.c. Permit limitations and monitoring requirements outfall 021.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
pH (2)	Minimum: 6.5 Maximum: 9.0 A&Wedw, PBC and AgL A.A.C. R18-11-109(B) Minimum: 6.0 Maximum: 9.0 40 CFR § 423.12(b)(1) – The pH of all discharges, except once-through cooling water, shall be within the range of 6.0 to 9.0 s.u.	Minimum: 7.2 Maximum: 8.9	91	N/A	Limit is always included. Technology based limit exists in addition to the limit in A. A. C. R 18-11-109(B).	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	R18-11-109C the discharge shall not cause an increase in the ambient water temperature.	29°C	95	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.
Oil & Grease	30-day average: 15 mg/L Daily maximum: 20 mg/L Technology-based limits 40 CFR § 423.12(b)(1)	6.2 mg/L	29	N/A	RP Exists	Monitoring required and a limit remains in the permit.
Antimony	No applicable criteria	<1 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Arsenic	200 µg/L AgL	10.9 µg/L	4	51.62 µg/L	No RP	Monitoring required for effluent characterization.
Beryllium	No applicable criteria	<1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.
Boron	1,000 µg/L Agl	370 µg/L	1	4,883 µg/L	RP Exists	Monitoring is required and a WQBEL is set.
Cadmium (2)	50 µg/L Agl	<1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.
Chromium (Total)	1,000 µg/L Agl 30-day average: 0.2 mg/L Daily maximum: 0.2 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	35 µg/L	30	N/A	No RP	Monitoring required as an indicator parameter for Chromium VI.
Chromium III	No applicable criteria	<0.02 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Chromium VI	11µg/L A&W edw chronic	8 µg/L	1	105 µg/L	RP Exists	Monitoring is required and a WQBEL is set.

Table 1.c. Permit limitations and monitoring requirements outfall 021.

Parameter	Lowest Standard/Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/Rationale (1)
Copper (2)	500 µg/L AgL	<20 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Cyanide	200 µg/L AgL	<10 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	751 mg/L	32	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.
Iron	No applicable criteria	820 µg/L	3	4,610 µg/L	No RP	Monitoring required for effluent characterization.
Lead (2)	100 µg/L AgL	<2 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.
Manganese	10,000 µg/L AgL	26µg/L	1	343.2 µg/L	No RP Exists	No Monitoring required
Mercury	10 µg/L AgL	0.052 µg/L	3	0.29µg/L	No RP	No Monitoring required
Nickel (2)	No applicable criteria	5.4 µg/L	4	26 µg/L	No RP	Monitoring required for effluent characterization.
Selenium	20 µg/L Agl	1.87 µg/L	1	25 µg/L	RP Exists	Monitoring required and a WQBEL is set.
Silver (2)	No applicable criteria	<1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization.
Sulfides	No applicable criteria	<40 µg/L	1	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	No applicable criteria	<2 µg/L	1	N/A	No RP	Monitoring required for effluent characterization.
Zinc (2)	10,000 µg/L Agl Daily maximum: 1.0 mg/L Technology-based limits 40 CFR § 423.13(d)(1)	<20 µg/L	30	N/A	TBEL 40 CFR 423.13(d)(1)	Technology based limit is always included.

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 D of the permit.

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

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

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

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

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

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

Monitoring locations are specified in the permit (Part I.A 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.4). Because the ammonia standards in 18 A.A.C. 11, Article 1, Appendix A are contingent upon the pH and temperature at the time of sampling for ammonia, the permittee must

determine the applicable ammonia standard using the ammonia criteria table(s) and calculate the Ammonia Impact Ratio for that ammonia sample result. The AIR is recorded on the DMR.

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

X. BIOSOLIDS REQUIREMENTS (Part III in Permit)

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

XI. SPECIAL CONDITIONS (Part V in Permit)

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 Santan Generating Station will be to an effluent-dependent water. Except for flows resulting from rain events, the only water in the wash will be the effluent. Therefore, the discharge and the receiving water will normally be one and the same. This is a renewal permit for an existing facility with no new or expanded discharge, and the existing uses have been maintained. Therefore, an antidegradation review is not required at this time. Additionally, discharge from the Santan Generating Station will be to a canal which is subject to Tier 1 antidegradation protection. Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.

XIII. STANDARD CONDITIONS

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

XIV. ADMINISTRATIVE INFORMATION

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

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

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

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

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

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

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

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

XV. ADDITIONAL INFORMATION

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

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

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

XVI. INFORMATION SOURCES

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

1. AZPDES Permit Application Forms: 1C, 2C, addendum to 2C & 2F received January 9th, 2024 along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. ADEQ files on SRP Santan Generating Station.
3. ADEQ Geographic Information System (GIS) Web site
4. Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 1, *Water Quality Standards for Surface Waters*, adopted December 31, 2016.
5. A.A.C. Title 18, Chapter 9, Article 9. *Arizona Pollutant Discharge Elimination System* rules.
6. 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.*

7. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
8. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
9. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).
10. U.S. EPA NPDES Permit Writers' Manual, September 2010.
11. *The Metals Translator: Guidance for Calculating A Total Recoverable Permit Limit From A Dissolved Criterion*, US EPA, June 1996.
12. Additional information received on 4/3/2024.

DRAFT