

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

This document gives pertinent information concerning the issuance of the AZPDES permit listed below. This facility is a wastewater treatment plant (WWTP) with a design capacity of 0.015 million gallons per day (mgd) and thus is considered to be a minor facility under the NPDES program. The previous permit for this facility (AZ0026069) was not administratively continued because the permittee did not submit a renewal application within 180 days of permit expiration. 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.

Permittee's Name:	U.S. Bureau of Reclamation Glen Canyon Dam & Power Plant Wastewater Treatment Plant
Permittee's Mailing Address:	P.O. Box 1477 Page, AZ 86040
Facility Name:	Glen Canyon Dam & Power Plant Wastewater Treatment Plant
Facility Address or Location:	2 miles North of Page, Arizona on U.S. Highway 89
County:	Coconino
Contact Person(s): Phone/e-mail address	C. Shane Mower (928) 645-0468
AZPDES Permit Number:	AZ0026182
Inventory Number:	100785

I. STATUS OF PERMIT(S)	
AZPDES permit applied for:	Renewal
Date application received:	12/14/16
Date application was determined administratively complete:	1/4/17
Previous permit number (if different):	AZ0026069
Previous permit expiration date:	4/26/17

208 Consistency:

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

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

The U.S. Bureau of Reclamation has the following permits issued by ADEQ applicable to the Glen Canyon Dam and Power Plant Wastewater Treatment Plant:

Type of Permit	Permit Number	Purpose
Aquifer Protection Permit (APP)	100785	Regulates discharges to the local aquifer
Reuse Permit	none	Regulates the practice of reusing treated wastewater for beneficial purposes

II. GENERAL FACILITY INFORMATION

Type of Facility:	Federally owned treatment works
Facility Location Description:	Approximately 2 miles north of Page, AZ
Permitted Design Flow:	0.015 MGD
Constructed Design Flow:	0.015 MGD
Treatment level (WWTP):	Secondary
Treatment Processes (include sludge handling and disposal/use):	Treatment processes at the WWTP consist of bar screen, aeration basin, secondary clarifier and an ultraviolet light bank. Sludge will be hauled to the City of Page Wastewater Treatment Plant Aerobic Digester and then hauled to the Washington County Landfill for disposal.
Nature of facility discharge:	Domestic wastewater
Number of industrial dischargers:	None
Average flow per discharge:	The application indicates an average flow of 0.013 MGD.
Service Area:	Federally owned treatment works that serves the Carl Hayden Visitor Center and power plant staff.
Service Population:	Approximately 400 visitors and 85 employees per day.
Reuse / irrigation or other disposal method(s):	N/A
Continuous or intermittent discharge:	continuous

III. RECEIVING WATER	
<p>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 :	The receiving water for Glen Canyon Dam & Power Plant WWTP Outfall 001 is to the Colorado River.
River Basin:	Colorado - Grand Canyon River Basin.
Outfall Location(s):	Outfall 001: Township 41N, Range 8E, Section 24 Latitude 36° 56' 24" N, Longitude 111° 29' 12" W
<p>The outfall discharges to, or the discharge may reach, a surface water listed in Appendix B of A.A.C. Title 18, Chapter 11, Article 1.</p>	
Designated uses for the receiving water listed above:	Aquatic and Wildlife cold water (A&Wc) Full Body Contact (FBC) Fish Consumption (FC) Agricultural Irrigation (AgI) Agricultural Livestock watering (AgL) Domestic Water Supply (DWS)
Is the receiving water on the 303(d) list?	No, and there are no TMDL issues associated.
<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>	
<p>In addition to the above, the Colorado River has a salinity standard. Per A.A.C. R18-11-110, the flow-weighted average annual concentration of total dissolved solids shall not exceed 723 milligrams per liter (mg/L) in the river below Hoover Dam and above Parker Dam. In order to meet this standard, discharges must meet the plan of implementation requirements developed by the Colorado River Basin Salinity Control Forum.</p>	

IV. DESCRIPTION OF DISCHARGE		
<p>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.</p>		
Parameters	Units	Maximum Daily Discharge Concentration
Biochemical Oxygen Demand (BOD)	mg/L	3.0

Total Suspended Solids (TSS)	mg/L	17.0
Total Kjeldahl Nitrogen (TKN)	mg/L	<9.0
<i>E. coli</i>	cfu / 100 mL	1.0

Facility design removal rates:	BOD 85 % TSS 85 %
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V. STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT	
Date of most recent inspection:	12/17/13; no potential violations were noted as a result of this inspection.
DMR files reviewed:	January 2012 through December 2016.
Lab reports reviewed:	January 2012 through January 2017.
DMR Exceedances:	Copper- 2/25/13, 7/1/13, 7/3/13, 2/10/14, 8/14/14, 3/9/15, 7/23/15
NOVs issued:	January 30, 2017- did not report Quarterly DMRs for all quarters in 2015 and for the 2nd Quarter 2016. Nor did they submit Semi-Annual DMRs for 2015 and the first Semi-Annual Report for 2016.
Compliance orders:	None

VI. 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.
Antimony	Limited	Limit removed	Data submitted indicated no reasonable potential (RP) for an exceedance of a standard.
Ammonia	Monitoring with floating limits based on pH and temperature. No numeric	Monitoring with an assessment level using an Ammonia Impact Ratio (AIR).	The AIR is a trackable numeric value. See Section VII for details.

	limit is included in the permit.		
Iron	No monitoring required	Monitoring required and an assessment level set.	New standard in 2009.
Mercury	Effluent Characterization	Permit requires the use of the “clean hands/dirty hands” sampling technique.	Special sampling technique necessary to meet lower surface water quality standards.
Cyanide	Effluent Characterization	Monitoring with a limit	Data submitted indicated RP for an exceedance of a standard.
Copper	Limited	Monitoring for effluent characterization	Data submitted indicated no RP for an exceedance of a standard with the approval of a mixing zone for copper.
Mixing Zone for Copper	No mixing zone for Copper	Mixing zone included for Copper	A mixing zone for Copper was applied for and approved.
Mixing Zone for Ammonia	Mixing zone included	No mixing zone needed for Ammonia	Data submitted indicated no RP for exceeding the AIR.

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

Limits for the following parameters 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:

- Antimony
- Ammonia
- Copper

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

Limits are retained in the draft permit for parameters where reasonable potential (RP) for an exceedance of a standard continues to exist or is indeterminate. In these cases, limits will be recalculated using the most current Arizona Water Quality Standards (WQS). If less stringent limits result due to a change in the WQS

then backsliding is allowed in accordance with 303(d)(4) if the new limits are consistent with antidegradation requirements and the receiving water is in attainment of the new standard; see Section XII for information regarding antidegradation requirements. No limits are less stringent due to a change in the WQS in this permit.

VII. 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.

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 Glen Canyon Dam WWTP is a federally 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. 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.

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 Section 5.4.4 of the TSD.

Mixing Zone:

Except for copper, the limits and ALs 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 [for other pollutants], all water quality criteria, except copper, are applied at end-of-pipe.

ADEQ evaluated the request and approved establishment of the copper mixing zone. ADEQ determined the request met the requirements of the Arizona mixing zone rule policy based on the high dilution ratios associated with the effluent discharge to the Colorado River.

The following factors in Arizona mixing zones rules listed in A.A.C. R18-11-114(D) were considered upon approving the request:

Factor	Consideration
Assimilative capacity of the receiving water	The large dilution factor of the discharge to the receiving water will have no impact on the assimilative capacity of the receiving water.
Likelihood of adverse human health effects	No health based copper standard is applied to the discharge. The most stringent health based standard for copper is 1300 ug/L, which is substantially greater than Cd and Cr in the model results below.
Location of drinking water plant intakes and public swimming areas	Copper concentrations in the effluent and receiving water are well below standards for FBC and DWS.
Predicted exposure of biota and the likelihood that resident biota will be adversely affected	There will be no likelihood the resident biota will be affected. A complete and rapid mix is assumed at the discharge point with the downstream concentration being below the aquatic and wildlife standard.
Bioaccumulation	NA - Copper does not bio accumulate
Size of the zone of initial dilution	Due to the large dilution factor of the discharge to the receiving water and the location of the outfall immediately downstream of the dam's spillway - rapid and complete mixing will occur.
Known or predicted safe exposure levels for the pollutant for which the mixing zone is granted	Effluent concentrations are well below safe exposure levels for copper.
Size of the mixing zone	Since a complete mix is assumed, the mixing zone is at the end of pipe.
Location of the mixing zone relative to biologically sensitive areas in the surface water	A complete and rapid mix is assumed at the discharge point with the downstream concentration being below the aquatic and wildlife standard.
Concentration gradient of the pollutant within the mixing zone	A complete and rapid mix is assumed.
Sediment deposition	None

Potential to attracting aquatic life to the mixing zone	None
Cumulative impacts of other mixing zones and other discharges to the surface water	Not applicable

Rapid and complete mixing occurs when the lateral variation in the concentration of a pollutant in the direct vicinity of the outfall is small. The outfall from the WWTP enters into the tailrace area below the dam, which is also where water from Lake Powell is released after passing through the dam. Because of the extreme amount of dilution and turbulence that occurs in this area, rapid and complete mixing is assumed and the steady state dilution model is used to calculate the mixing zone.

The following steady-state mass balance formula was used to determine reasonable potential for copper in consideration of the applicant’s request for a mixing zone:

$$Q_s C_s + Q_d C_d = Q_r C_r$$

Where: Q_s =background in-stream flow above discharge point during critical conditions (7-day low flow value over the past 10 years); C_s =background in-stream copper concentration; Q_d =facility design capacity was used for maximum waste discharge flow; C_d = highest estimated maximum effluent concentration for copper (using the highest reported value and a multiplier to account for variability of data); Q_r = low-flow (7Q10) value; and C_r =resultant in-stream pollutant concentration.

Model Results:

- $Q_s = 5171$ MGD
- $C_s = 10$ µg/L
- $Q_d = 0.015$ MGD
- $C_d = 203$ µg/L
- $Q_r = 5171$ MGD
- $C_r = 10$ µg/L

RP is determined based on the projected maximum receiving water concentration at the edge of the mixing zone. This is determined by solving for C_r using the critical inputs into the steady-state mass balance formula.

Solving for C_r to determine RP yields:

$$C_r = (Q_s C_s + Q_d C_d) / Q_r$$

$$C_r = 10 \text{ µg/L}$$

Because the C_r value of 10 µg/L is less than the copper standard of 29.3 it was determined that there would not be RP for an exceedance of the chronic copper standard.

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 an Assessment Level. To overcome this, an Ammonia Impact Ratio (AIR) of one (1) has been established as the Assessment Level 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. Any AIR value in excess of 1 will indicate an exceedance of the Assessment Level.

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 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_3 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 400 mg/L (the maximum value allowed) 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 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 toxicity shall be conducted using the following three 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 TUc for a four day exposure period. Using this benchmark, the 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 an action level will trigger follow-up testing to determine if effluent toxicity is persistent. If toxicity above an 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 8-hour composite samples be collected for WET testing. An 8-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. and 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. §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*.

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: 16 mg/L TSS: 17 mg/L	BOD: 36 TSS: 36	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&Wc chronic	N/A	0	N/A	RP always expected when chlorine or bromine is used for disinfection.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine. At least one sample per month must coincide with WET testing to aid in the determination of the cause of toxicity, if toxicity is detected.
<i>E. coli</i>	30-day geometric mean: 126 cfu /100 mL (4 sample minimum) Single sample maximum: 575 cfu /100 mL/ FBC	1.0	52	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&Wc and FBC A.A.C. R18-11-109(B)	7.55	12	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	21.5°C	14	N/A	N/A	Effluent temperature is to be monitored for effluent characterization by discrete sample. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. Temperature sampling must also coincide with ammonia sampling when required.
Total Dissolved Solids (TDS)	723 mg/L flow-weighted annual average/ A.A.C. R18-11-110 Colorado River Basin Salinity Control Forum requirements	1210 mg/L	11	N/A	N/A	Monitoring required and an assessment level is set; both the source water and the effluent shall be monitored for TDS to determine compliance with Colorado River Basin Salinity Control Forum requirements [Mass load < 1 ton/day may apply].

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	2.12 mg/L	3	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 1 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)	N- 10,000 µg/L/ DWS	116 µg/L	9	371	No RP	Monitoring required for effluent characterization.
Oil & Grease	BPJ Technology-Based Level of 10 mg/L monthly average and 15 mg/L daily maximum	<5 mg/L	3	N/A	RP Indeterminate (4)	Monitoring required and a TBEL remains in the permit.
Antimony	6 µg/L/ DWS	0.6 µg/L	9	1.9 µg/L	No RP	Monitoring required for effluent characterization.
Arsenic	10 µg/L/ DWS	1.1 µg/L	9	3.5 µg/L	No RP	Monitoring required for effluent characterization.
Beryllium	4 µg/L/ DWS	<2 µg/L	7	N/A	No RP	Monitoring required for effluent characterization.
Cadmium (2)	0.64 µg/L/ A&Wc chronic	0.2 µg/L	9	0.36 µg/L	No RP	Monitoring required for effluent characterization.
Chromium (Total)	100 µg/L/ DWS & FBC	<5 µg/L	2	N/A	No RP	Monitoring required as an indicator parameter for Chromium VI.
Chromium VI	11 µg/L/ A&Wc chronic	<15 µg/L	3	N/A	No RP based on Total Chromium data	Monitoring required and an assessment level remains in the permit.
Copper (2)	29.3 µg/L/ A&Wc chronic	70 µg/L	11	in-stream pollutant concentration = 10 µg/L(6)	No RP Mixing Zone Approved	Monitoring required for effluent characterization.
Cyanide	5.2 µg/L/ A&Wc chronic	10 µg/L	7	35 µg/L	RP Exists	Monitoring is required and a WQBEL is set.
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	548 mg/L	3	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 hardness value of 400 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required.
Hydrogen Sulfide	2 µg/L/ A&Wc chronic	<40	3	N/A	RP Indeterminate (High LOQ)	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 with an assessment level set in the permit.
Iron	1,000 µg/L / A&Wc chronic	N/A	0	N/A	RP Indeterminate (No Data)	Monitoring is required and an assessment level is set.

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value	No. of Samples	Estimated Maximum Value	RP Determination	Proposed Monitoring Requirement/ Rationale (1)	
Lead (2)	11 µg/L / A&Wc chronic	<1 µg/L	7	N/A	No RP	Monitoring required for effluent characterization.	
Mercury	0.01 µg/L/ A&Wc chronic	<0.2 µg/L	5	N/A	RP Indeterminate (High LOQ)	Monitoring is required and an assessment level is set.	
Nickel (2)	140 µg/L/ DWS	<20 µg/L	7	NA	No RP	Monitoring required for effluent characterization.	
Selenium	2 µg/L/ A&Wc chronic	<2 µg/L	8	N/A	RP Indeterminate (High LOQ)	Monitoring required and a WQBEL remains in the permit.	
Silver (2)	4.4 µg/L/ A&Wc chronic	0.05 µg/L	7	0.175 µg/L	No RP	Monitoring required for effluent characterization.	
Sulfides	No applicable standard	No data	N/A	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	0.25 µg/L	5	1.05 µg/L	No RP	Monitoring required for effluent characterization.	
Zinc (2)	379 µg/L/ A&Wc acute and chronic	110 µg/L	10	330 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	1	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.
		<i>Pimephales promelas</i>	1.0 TUc	1	N/A	RP Indeterminate (4)	Monitoring required and an action level is set.
		<i>Ceriodaphnia dubia</i>	1.0 TUc	1	N/A	RP Indeterminate (4)	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*.
- (4) Monitoring with ALs or Action Levels always required for WWTPs for these parameters unless RP exists and limits are set. The lowest applicable standard based on reported temperature and pH data over the previous permit term was 2.69.
- (5) An AIR will be calculated by dividing effluent ammonia concentration by the applicable standard using the receiving water pH and temperature.
- (6) Concentration based on the application of a mixing zone for copper.

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, Sections E and F 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 second term 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, an "8-hour composite" sample has been defined as a flow-proportioned mixture of two or more discrete samples (aliquots) obtained at equal time intervals 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 I.J) in order to ensure that representative samples of the influent and effluent are consistently obtained.

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

The permit (Part II.A.2) 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, Sections B.1 and 2 of the permit, including completion and submittal of Discharge Monitoring Reports (DMRs), and Ammonia Data Logs. 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 on December 21, 2016 (one year after the effective date of the regulation), the Federal rule

requires 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.

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

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 Glen Canyon Dam and Power Plant WWTP will be to a perennial water with Tier 2 antidegradation protection. 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. 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 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 – AZPDES Individual Permits Unit
Attn: Richard Mendolia
1110 West Washington Street
Phoenix, Arizona 85007

Or by contacting Richard Mendolia at (602) 771 – 4374 or by e-mail at rjm@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 Form(s) 2A and 2S (or insert other forms submitted), received December 14, 2016, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. Supplemental information to the application received by ADEQ on January 4, 2017 and February 21, 2017.

3. ADEQ files on Glen Canyon Dam Power Plant and WWTP.
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 January 31, 2009.
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. U.S. EPA NPDES Permit Writers' Manual, September 2010.