

Tempe – Kyrene Water Reclamation Plant (WRP)
 Aquifer Protection Permit No. P-100405
 Place ID 888, LTF No. 100495
 Significant Amendment

I. Introduction:

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

II. Permittee & Facility Location:

Name of Permittee:	The City of Tempe
Mailing Address:	Water Utilities Department P. O. Box 5002, Mail Stop 2301 Tempe, Arizona 85280
Facility Name and Location:	Tempe – Kyrene Water Reclamation Plant (WRP) 311 West Guadalupe Road Tempe, Arizona Maricopa County

III. Facility Description:

The permittee is authorized to operate the Tempe Kyrene Water Reclamation Plant (KWRP) at maximum average monthly flow of 4.5 million gallons per day (MGD). The Department has graded this facility as a Grade 4 wastewater treatment plant. The facility shall have an operator in direct responsible charge who is certified for the grade of the facility and inspects the facility “Daily” for a Grade 4 WWTP.

The WRP treatment process consists of headworks with an influent lift station, screens, a grit chamber, and a flow equalization basin, biological nitrification and denitrification, membrane filtration and ultraviolet disinfection. The WRP is a scalping plant and as such is equipped with gravity overflow pipes across the facility that drain to the downstream sewer to be treated at the 91st Ave. WWTP. All the KWRP units are constructed from reinforced concrete except for the UV chamber which is constructed from stainless steel. All the KWRP units and components are fully enclosed, odor control scrubbers installed on all vents, and the entire KWRP site surrounded with a fence or wall that is at least 6 feet high and which aesthetically matches the surrounding area.

All waste sludge, including the screenings, grit, and scum, is delivered to the sanitary sewer for treatment at the City of Phoenix 91st Avenue Wastewater Treatment Plant in accordance with Agreement No. 22699, the Inter-Governmental Agreement for the Construction, Operation, and Maintenance of the Jointly used Sewerage Treatment and Transportation Facilities, Updated to Addendum No. 6 - Annotated, the Sub-Regional Operating Group (SROG) Agreement.

Effluent generated shall either be 1) discharged into three direct injection recharge wells with ADWR Underground Storage Facility Permit No. 71-563943.0005 and ADWR Water Storage Permit No. 73-563943.002 and pursuant to this permit; 2) reused pursuant to valid Reclaimed Water Permits; 3) reused at the SRP Kyrene Generating Station or 4) divert to City of Phoenix, 91st Ave Wastewater Treatment Plant.

The depth to groundwater is approximately 95 feet bgs beneath the facility. The direction of groundwater flow is generally towards the west.

The WRP will produce reclaimed water meeting Class A+ Reclaimed Water Standards (A.A.C. R18-11, Article 3) and may be delivered for beneficial use under valid reclaimed water permits under A.A.C. R18-9 Article 7.

All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations.

IV. Amendment Description:

The purpose of this amendment is to:

- 1.) Present proposed design changes and upgrades to the KWRP;
- 2.) Reduce the permitted flow rate from 9.0 million gallons per day (MGD) [10,088 acre-feet per year (ac-ft/yr)] to 4.5 MGD (5,044 ac-ft/yr);
- 3.) Move the location of Recharge Well #4 from D(1-4)acd to D(1-4)10bad, which is not included as a contingency location;
- 4.) Remove Point of Compliance wells POC#3, POC#7, POC#8
- 5.) Add new POC wells within the boundary of Ken McDonald Golf Course;
- 6.) Fix typo graphical error on Table 9 which references a footnote 7 and
- 7.) Re-establish footnote 35 on Table 10 from permit dated November 9, 2020 which states “A positive test result for total coliform may be verified with an analysis of fecal coliform. A positive result for fecal coliform shall be considered an exceedance for the AQL for total coliform.”

V. Best Available Demonstrated Control Technology (BADCT):

The WRP is designed to meet the treatment performance criteria for new facilities as specified in Arizona Administrative Code R18-9-B204. The facility shall also meet the performance requirement for industrial pre-treatment as per A.A.C. R18-9-B204(B)(6)(b). The facility relies on engineered controls and operational procedures to demonstrate BADCT. The APP addresses the design, construction, operation, and closure requirements for the APP-regulated facilities. The facility will denitrify the effluent to below 10.0 mg/l for total nitrogen. This treatment Plant technology is considered to meet BADCT requirements.

VI. Compliance with Aquifer Water Quality Standards (AWQS):

To ensure that site operations do not result in violation of Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent is collected at the point of discharge from the disinfection unit. The permittee shall monitor the effluent daily for Fecal Coliform and total nitrogen, quarterly for metals, and semi-annually for VOCs and SVOCs (see Section 4.2, Table 8 in the permit).

To ensure that site operations do not result in violation of Reclaimed Water Quality Standards for the beneficial use of Class A+ reclaimed water, the permittee shall monitor the reclaimed water at the point of discharge from the disinfection unit. The permittee shall monitor the reclaimed water daily for Fecal Coliform, turbidity, total nitrogen, and monthly for Enteric Virus (see Section 4.2, Table 9 in the permit).

Groundwater monitoring is required at, POC #4, POC #5, POC #6, POC # 9, POC #10, POC #11, and POC #12(see Section 4.2, Table 10, 11, 12, in the permit). The permittee will monitor the groundwater monthly for nitrate/nitrite as N, Total Kjeldahl Nitrogen (TKN), total nitrogen, total coliform and water level, quarterly for metals, and semi-annually for organic compounds (see Section 4.2, Table 10).

Facility inspection and operational monitoring shall be performed on a routine basis (see Section 4.2, Table 15 in the permit).

The Points of Compliance (POCs) have been established at the following locations:

Table 1: POINT(S) OF COMPLIANCE			
POC #	POC Location	Latitude (North)	Longitude (West)
POC # 1: WRP (hazardous) (Conceptual only)	Conceptual only	33° 21' 44" N	111° 56' 35" W
POC # 4: Well #COT-2 (hazardous)	Down gradient of direct injection well #1	33° 21' 11" N	111° 56' 04" W
POC # 5: Well # COT-3 (hazardous)	Down gradient of direct injection well #1 & #2	33° 21' 18" N	111° 56' 04" W
POC # 6: Well # COT-4 (non-hazardous)	Down gradient of direct injection well #2 & #3	33° 20' 58" N	111° 55' 58" W
POC # 9: Well # TBD	Down gradient of RW-2 – Cadastral location D(1-4)10bcd	TBD	TBD
POC # 10: Well # TBD	Down gradient of RW-4 – Cadastral location D(1-4)10abb	TBD	TBD
POC # 11: Well # TBD	Down gradient of RW-3 – Cadastral location D(1-4)10dab	TBD	TBD
POC # 12: Well # TBD	Down gradient of RW-2 and RW-3 – Cadastral location D(1-4)10acd	TBD	TBD