

Aquifer Protection Permit 100630
Place ID #429, LTF #62415
SIGNIFICANT AMENDMENT

Tres Rios Water Reclamation Facility

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to A.A.C. R18-9-A213. This document gives pertinent information concerning the issuance of the permit. 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 at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). The purpose of BADCT is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., local subsurface geology) to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer, or to keep pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

| | |
|-----------------------------|--|
| Name of Permittee: | Pima County Regional Wastewater Reclamation Department (PCRWRD) |
| Mailing Address: | 2955 W. Calle Agua Nueva Tucson, Arizona 85745 |
| Facility Name and Location: | Tres Rios Wastewater Reclamation Facility (WRF) 7101 N. Casa Grande Highway Tucson, Arizona 85743 Pima County |

Regulatory Status

This is an existing facility. The following table includes APP, AZPDES, and Reuse amendments. At the time of permit issuance, there are no active Notices of Violation (NOVs).

| Type of license | License identifier | Effective date |
|---|--------------------|----------------|
| Notice of Disposal (NOD) | n/a | 01/21/1985 |
| Aquifer Protection Permit | P-100630 | 02/26/2002 |
| Type 3 Reclaimed Water Permit | R105455 | 01/26/2004 |
| Significant Amendment | P-100630 | 07/14/2006 |
| Other Amendment | P-100630 | 02/19/2008 |
| Type 3 Reclaimed Water Permit (renewal) | R105455 | 10/03/2008 |
| Other Amendment | P-100630 | 10/23/2008 |
| Other Amendment | P-100630 | 02/09/2010 |
| Significant Amendment | P-100630 | 10/15/2010 |
| Significant Amendment | P-100630 | 05/31/2012 |
| Other Amendment | P-100630 | 03/26/2013 |
| Other Amendment | P-100630 | 10/17/2013 |

An application for this significant permit amendment was received on July 6, 2015.

Facility Description

The permittee is authorized to operate the Tres Rios Wastewater Reclamation Facility (WRF), formerly known as Ina Road WRF, with a capacity to collect and treat a maximum average monthly flow of 50.0 million gallons per day (mgd). The WRF consists of two treatment trains (the East Plant and the West Plant), one shared upgraded headworks, three emergency influent overflow storage basins, a chlorine contact basin as needed, and a solids handling facilities. The influent wastewater flows through the common headworks of the East and West treatment trains, to three new coarse screens, an influent pump station with four pumps (three existing and one new pump), four fine screens (three existing and one new fine screen), and four new grit chamber.

The East Plant treatment process consists of three primary clarifiers, the 8.3 mgd 5-stage Bardenpho treatment train, the retrofitted 16.7 mgd Bardenpho treatment train, three existing and one new secondary clarifier and a chlorine contact basin. The West Plant treatment process will consist of four primary clarifiers, the 25 mgd 5-stage Bardebpho treatment train, four new secondary clarifiers, and a chlorine contact basin. The treatment system contains a third chlorine contact basin for the combined flows from the East and West treatment trains and will be used as needed. All of the effluent will be nitrified, de-nitrified, and chlorinated, and the effluent disposed under a valid AZPDES permit will be de-chlorinated.

During emergencies, the wastewater may be routed to three emergency influent overflow storage basins. Effluent shall not be discharged to Basin #4 until it is lined, as it is a storm water basin. The solids handling facility consists of Waste Activated Sludge (WAS) thickening, digested sludge thickening/dewatering, and sludge/centrate recycle storage tanks. Sludge and bio-solids are thickened, digested, and disposed of in accordance with Federal and State Regulations.

All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations. The estimated depth to groundwater in the vicinity of the WRF ranges from 96–155 feet below ground surface (ft bgs) and groundwater flow direction in the vicinity of the WRF is to the northwest, parallel to the Santa Cruz River.

The site includes the following permitted discharging facilities:

| Facility | Latitude | Longitude |
|----------------------|----------------------|----------------------|
| Tres Rios WRF | 32° 20' 12" North | 111° 04' 05" West |
| Sludge Storage Basin | 32° 20' 9.6"North | 111° 04' 13.8"West |
| Overflow Basin 1 | 32° 19' 50.8" North | 111° 04' 4.8" West |
| Overflow Basin 2 | 32° 19' 48" North | 111° 04' 6.2" West |
| Overflow Basin 3 | 32° 19' 47" North | 111° 04' 3.4" West |
| Overflow Basin 4 | 32° 19' 46.75" North | 111° 04' 53.25" West |

Amendment Description

ADEQ has reviewed and approved the following under this amendment:

The reclassification of the reclaimed water from Class B+ to Class A+ and to set the nitrogen species limits for groundwater monitoring at POC Well SC-03R.

- The treatment plant does not include filtration process. The facility requested to classify effluent as Class A+ based on A.A.C. R18-11-303(C). The facility has proposed a control strategy where turbidity value will be used to control reclaimed water delivery through the use of motor operation valve. The output of the turbidity meter will function as an interlock control for operation of the valve in either an open or closed position.
- The facility has proposed to monitor enteric virus monthly for up to seven months to demonstrate that the facility meets Class A+ reclaimed water criteria.

Listed below are the changes to the permit as a result of this amendment:

1. Section 2.1, Facility/Site Description: Changed the description of the permit to reflect the processes and removed references to Phase I, Phase II and Phase III.
2. Section 2.2.4, Operational Requirements: Changed Section 4.2, Tables IIIA and IIIB to Section 4.2, Table III.
3. Section 2.2.5, Reclaimed Water Classification: Changed the reclaimed water from Class B to Class A+.
4. Section 2.3, Discharge Limitations: Updated this section to the current permit format, and updated discharging limit to 50.0 mgd.
5. Section 2.5, Monitoring Requirements: Changed 2.5.1 from Pre-Operational Monitoring to Routine Discharge Monitoring; Changed 2.5.2 from Discharge Monitoring to Reclaimed Water Monitoring; Changed 2.5.3 from Reclaimed Water Monitoring to Facility/Operational Monitoring.
6. Section 2.5.4, Groundwater Monitoring and Sampling Protocols: Added 2.5.4.2 Ambient Groundwater Monitoring.
7. Section 2.6.2.1, Exceeding of Alert Levels and Performance Levels: Changed Section 4.2, Tables IIIA and IIIB to Table III.
8. Section 2.6.2.2, Exceeding of Alert Levels Set for Discharge Monitoring: Changed Section 4.2, Tables IA-I and IA-II to Section 4.2, Table IA.
9. Section 2.6.2.2.1, Exceeding Permit Flow Limit: Changed Section 4.2, Tables IA-I and IA-II to Section 4.2, Table IA.
10. Section 2.6.3, Discharge Limitations Violations: Section 4.2, Tables IA-I, IA-II, IB-I and IB-II to Section 4.2, Tables IA or IB.
11. Section 2.7.1, Self Monitoring Form: Updated the descriptions for the Tables in Section 4.0 for reporting results on the SMRFs:
 - Table IA Routine Discharge Monitoring

- Table IB, Reclaimed Water Monitoring – Class A+
- Table II, Groundwater Monitoring

Logbook

- Table III - Facility Inspection (Operational Monitoring)

12. Section 3.0, Compliance Schedule: Updated

| CSI | Description | Due by: | Permit Amendment Required? |
|-----|--|--|----------------------------|
| 3.1 | The permittee shall start monthly monitoring of enteric virus. | Within 30 days of permit issuance. | No |
| 3.2 | The facility shall submit a report showing the results of seven monthly monitoring of enteric virus. | Within 30 days of completion of seven monthly monitoring for enteric virus | No |
| 3.3 | The permittee shall line the overflow basin #4 with the liner which meets the criteria of A.A.C. R18-9-B204 (B)(7). The permittee shall not use overflow basin #4 until the basin is lined. | Within 36 months from the date of the permit issuance. | No |
| 3.4 | The permittee shall submit a signed, dated, and sealed Engineer's Certificate of Completion in a format approved by the Department along with plans and specifications, and a QA/QC plan to the Department upon installation of liner to the overflow basin #4 | Within 30 days of installation of liner and prior to use of the overflow basin #4. | No |
| 3.5 | The permittee shall begin conducting monthly rounds of ambient groundwater monitoring for nitrogen species at POC#1 SC-03R for the parameters listed in Section 4.2, Table IIA monthly for three (3) years or 36 months. Sampling under Table IIA shall be discontinued upon completion of the 36 round of monthly sampling and begin monitoring per Section 4.2, Table IIC. | Within 30 days of permit issuance | No |
| 3.6 | The permittee shall submit the ambient groundwater monitoring report and a permit amendment to set the ALs/AQLs for the nitrogen species at POC#1 SC-03R. | Within 30 days of completion of ambient monitoring for nitrogen species. | Yes |
| 3.7 | The permittee shall submit updated cost estimates for facility closure and post-closure, as per A.A.C. R18-9-A201(B)(5). | Every 6 years from the date of permit signature, for the duration of the permit. | No |
| 3.8 | Submit Annual Report in accordance with Section 2.7.4.1. | January 30 and yearly thereafter | No |

13. Other changes include updating the permit language to conform to the most current permit format.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The WRF is designed, constructed, operated, and maintained to meet the treatment performance criteria for new facilities as specified in A.A.C. R18-9-B204. The facility shall meet the performance requirement for industrial pre-treatment as per A.A.C. R18-9-B204(B)(6)(b).

III. HYDROGEOLOGIC SETTING

The Site is located within the Tucson Sub-basin, which consists of sedimentary, igneous, and metamorphic rocks that eroded from the surrounding mountain ranges. Sediments within the Tucson Sub-basin have been divided into three Cenozoic stratigraphic units. These are from oldest to youngest, the Pantano Formation, the Tinaja beds, and the Fort Lowell Formation.

The Fort Lowell Formation is overlain by recent alluvium composed of floodplain, stream channel, and terrace surficial deposits. Thicknesses of the recent alluvium along the river range from 40 to over 100 feet. The alluvium contains mainly coarse sand and gravel with small amounts of silt and clay. The ability to convey subsurface effluent flows is significantly greater in the permeable recent alluvium than in the lower underlying Pleistocene age or older formations.

Deposits to a depth of 140 feet below ground surface are composed of interbedded sands and gravels with little silt and clay. Boring logs within the Site indicate that the lithology at depths between eight and twenty feet below ground surface is predominantly composed of a mixture of clays, silt, and fine sand. Below these finer grained surficial sediments are coarser grained sediments comprised of sands, gravels, gravelly sand and sandy gravels with some cobble to boulder sized clastics. The lithologic logs also indicated variable amounts of clay and silts within the coarser grained sediments.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

Storm water/surface water considerations included whether the WRF is located within the 100-year flood plain and whether the discharge had the potential to impact surface water drainages located down-stream of the WRF. The effluent is discharged to the Santa Cruz River under an AZPDES permit which addresses surface water quality standards.

The major surface drainage is the Santa Cruz River and its tributaries: Canada del Oro Wash, Rillito Creek, and Sopri Wash. Rillito Creek and Canada del Oro Wash discharge into the Santa Cruz River approximately 1.7 and 0.7 miles upstream of the WRF, respectively. There are several active USGS gauging stations along the Santa Cruz River and its tributaries. Stream gauging at the stations is sporadic, due to the intermittent nature of the flows. Stream flow results mainly from precipitation.

The Flood Insurance Rate Map (FIRM) for this area prepared by the Federal Emergency Management Agency (FEMA) indicates the WRF is not within a 100-year floodplain and should not be affected by flooding. The facility is located in Zone X which is outside of the 500-year flood plain with less than 0.2 % annual chance of flooding.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Monitoring and Reporting Requirements

To ensure that site operations do not violate Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent shall be collected downstream of the UV channel. The permittee will monitor the effluent daily for fecal coliform, monthly for total nitrogen, quarterly for metals, and semi-annually for VOCs (see Section 4.2, Table IA in the permit).

To ensure that site operations do not violate the Reclaimed Water Quality Standards for the beneficial use of Class A+ reclaimed water, the permittee will monitor the reclaimed water at the same effluent sampling point as indicated above. The permittee will monitor the reclaimed water daily for *E. coli* and turbidity, monthly for total nitrogen, and on a suspended/monthly basis for enteric virus (see Section 4.2, Table IB, in the permit).

To ensure that site operations do not violate the Groundwater Aquifer Water Quality Standards, the permittee will monitor inorganic constituents, trace metals, volatile organic compounds (VOCs) and total coliform bacteria (see Section 4.2, Table IIB, in the permit).

Facility inspection and operational monitoring will be performed on a routine basis (see Section 4.2, Tables III in the permit).

Discharge Monitoring

Routine Discharge Monitoring shall be conducted as per Section 4.2, Table IA.

Total daily flow shall be monitored at sampling point #1 located at the flow meter for reuse flow and sampling point #2 located downstream of the of chlorine contact chamber to measure AZPDES flow.

Point of Compliance (POC)

The Points of Compliance (POCs) is designated at the following location:

| POC # | Descriptive Location | Latitude | Longitude |
|-------|--|-----------------|------------------|
| 1 | POC Well SC-03R is located approximately 50 feet downstream from the AZPDES outfall | 32° 20' 12.5" N | 111° 04' 48.2" W |
| 2 | POC Well SC-05R is approximately four (4) miles downstream from the AZPDES outfall (approximately 25 feet in a westerly direction from POC Well SC-05) | 32° 22' 12.5" N | 111° 06' 44.8" W |
| 3 | POC Well SC-07R is located approximately 7.1 miles downstream from the AZPDES outfall | 32° 24' 9.8" N | 111° 08' 40.9" W |

Groundwater monitoring is required at three points of compliance wells.

The Director may amend this permit to designate additional POCs if information on groundwater gradients or groundwater usage indicates the need.

VI. COMPLIANCE SCHEDULE

See item 12 in the Amendment Description.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The Pima County Regional Wastewater Reclamation Department has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B).

ADEQ requires that appropriate documents be sealed by an Arizona-registered Geologist or Professional Engineer. This requirement is a part of an on-going demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The Pima County Regional Wastewater Reclamation Department has demonstrated the financial responsibility necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee is expected to maintain financial capability throughout the life of the facility.

The applicant, being a local government, provided a detailed financial plan on its letterhead for meeting the requirements for financial capability, in accordance with A.A.C. R18-9-A203 (B)(1) and (2).

Zoning Requirements

The Tres Rios WRF has been properly zoned for the permitted use and the permittee has complied with applicable zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(B)(3).

VIII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The aquifer protection program 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. 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.

The public notice was published in the XXXXXX on XXXXXXXXXX, 2016, under public notice No. XX-XX.

Public Comment Period (A.A.C. R18-9-109(A))

The Department shall accept written comments from the public before a significant permit amendment is made. The written public comment period begins on the publication date of the public notice and extends for 30 calendar days. 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 R18-9-109(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.

IX. ADDITIONAL INFORMATION

Additional information relating to this permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Water Permits Section – APP Unit
Attn: Monica Phillips
1110 West Washington Street, Mail Code 5500E-3
Phoenix, Arizona 85007
Phone: (602) 771-2253