

Airport Water Reclamation Facility
Aquifer Protection Permit No. P-101733
Place ID 3288, LTF No. 86910
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:

City of Prescott

2800 Melville Road

Prescott, Arizona, 86301

34° 39' 26" N / 112° 24' 05" W

Township 15N, Range 1W, Section 30, Gila and Salt River Baseline and Meridian

III. Facility Description:

The permittee is authorized to operate the Airport Water Reclamation Facility (WRF) with a maximum average monthly flow of 7.5 million gallons per day (mgd). The WRF will be constructed in three phases. The Phase I treatment train is rated at 3.75 mgd, Phase IA treatment train is rated at 4.75 mgd, and the Phase II treatment train is rated at 7.5 mgd. The facility is currently in Phase I and upon installation of an additional disc to each filter and a new pump in effluent pump station, the facility may operate under Phase IA. Upon construction of Phase II and submittal and approval of the Engineer's Certification of Completion, the facility may operate in Phase II under this permit. For all phases, the facility may receive up to 2.24 mgd of influent, 0.014 mgd of primary sludge, and 0.044 mgd of waste active sludge from the City of Prescott Sundog Wastewater Treatment Plant. The combined flow from the Sundog facility will be added at the influent manhole prior to the headworks at the Airport WRF. All industrial hookups and other non-residential hookups to the treatment system shall be authorized according to the applicable federal, state or local regulations.

Phase I

In Phase I, the permittee is authorized to operate the treatment plant at a capacity of 3.75 mgd. The Phase I treatment process consists of headworks with a fine screen and grit removal system, two equalization basins, two aeration basins with anoxic and aerobic zones for nitrification and denitrification, two secondary clarifiers, three cloth media filters, two on-site sodium hypochlorite

generators, one chlorine contact chamber, an effluent pump station, two sludge thickeners, and two centrifuges for sludge dewatering. Alum is added to the secondary process for chemical precipitation to reduce fluoride levels in the effluent. There is one existing sludge drying beds at the site which is used during emergencies only. The Phase I WRF is classified as producing Class A+ reclaimed water as per A.A.C. R18-11, Article 3. Dewatered sludge is hauled off-site to an approved landfill.

Phase IA - Current

In Phase IA, the permittee is authorized to operate the treatment plant with a flow of 4.75 mgd. The existing treatment train of Phase I is re-rated to 4.75 mgd and the facility will be adding one additional disc to each cloth media disc filter unit, and upgrading one pump in existing pump station. The treatment process remains same as Phase I WRF.

Phase II

In Phase II, the permittee is authorized to operate the treatment plant at a capacity of 7.5 mgd. The Phase II treatment process consists of headworks with a fine screen and grit removal system, two existing equalization basins, two new primary clarifiers, two existing aeration basins with anoxic and aerobic zones for nitrification and de-nitrification, two existing secondary clarifiers and one new secondary clarifier, three existing filters and one new filter, two existing and one new on-site sodium hypochlorite generators, one existing and one new chlorine contact chamber, an upgraded effluent pump station, two existing sludge thickeners and two existing centrifuges for sludge dewatering. One sludge drying beds will remain on site for emergency use. The Phase II WRF is classified as producing Class A+ reclaimed water as per A.A.C. R18-11, Article 3. Dewatered sludge shall be hauled off-site to an approved landfill.

Effluent from the Phase I, Phase IA and Phase II WRFs may be discharged to existing recharge basins or may be used for beneficial purposes under a valid reclaimed water permit (A.A.C. R18-9, Article 7). The recharge basins may also receive effluent from the City of Prescott Sundog Wastewater Treatment Plant (see APP No. 100353).

The facility includes eight recharge basins which can dispose up to 14,237 acre-feet per year (12.7 mgd) of combined effluent from the Airport and Sundog treatment facilities.

IV. Amendment Description:

The purpose of this amendment is to:

- Re-rate plant capacity to 4.75 million gallons per day.
 - The facility has demonstrated through treatment process modeling that existing treatment train will be able to handle the flow of 4.75 mgd. The facility has performed process modeling using the actual influent characteristics of wastewater at the treatment plant. The facility will be adding one additional disc in each filter unit to handle the re-rated flow and upgrading the existing effluent pump.

- Close-in-place the sludge drying beds #1 and #2
 - The permittee has demonstrated that the sludge drying beds #1 and #2 meet the requirements for closure-in-place. No cracks or holes are observed in the drying beds. The beds are free of sludge and are being utilized for storage of equipment and miscellaneous supplies.
- Clean close the sludge drying beds #4 and #5
 - The permittee has demonstrated that the sludge drying beds #4 and #5 meet the requirements for clean closure. Prior to demolition of the sludge drying beds, no cracks or holes were observed as shown. Exposed soil following removal of the 6-inch thick, steel reinforced concrete beds showed no signs of seepage. The piping to the drying beds was capped in December 2013. The demolished areas were backfilled and compacted.
- Include Fecal Coliform groundwater monitoring and suspend Total Coliform groundwater monitoring.
 - While fecal coliform can be used to determine whether total coliform must be analyzed, it cannot replace total coliform as an Aquifer Water Quality Standard. Therefore, it has been determined that groundwater monitoring requirements can be established such that total coliform monitoring in groundwater can be suspended, as long as the fecal coliform alert level is not exceeded. If the fecal coliform alert level is exceeded, then the facility must begin monitoring for total coliform to determine if the total coliform Aquifer Quality Limit is exceeded

The permit category for this amendment was determined to be an “Significant Amendment” as per A.A.C. R18-9-A211(B)(2)(b) – “An increase in design flow of a sewage treatment facility as follows – A 6% increase for a permitted design flow that is Greater than 500,000 gallons per day but less than or equal to five million gallons per day (3.75 mgd to 4.75 mgd is an increase that is > 6%).

V. Regulatory Status

- There are no open compliance or enforcement actions.

VI. Best Available Demonstrated Control Technology (BADCT):

- There are eight recharge basins, two sludge drying beds that are closed in place, one active sludge drying bed, and the water reclamation facility itself.
- The facility is classified as producing Class A+ reclaimed water as per A.A.C. R18-11, Article 3.

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

Groundwater monitoring is required at two POC well(s) to ensure compliance with AWQS. The POC well(s) are downgradient of the discharging facilities and serve to provide ADEQ with groundwater quality data. ADEQ uses groundwater quality data to make regulatory and enforcement decisions.