



Fact Sheet

Aquifer Protection Permit #P-105966
 Place ID 12636, LTF 44640
 City of Williams Wastewater Treatment Plant

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:	City of Williams
Mailing Address:	113 South First Street Williams, Arizona 86046
Facility Name and Location:	City of Williams Wastewater Treatment Plant 1010 North Airport Road (Coconino County)

Regulatory Status

ADEQ received an Aquifer Protection Permit (APP) from the City of Williams to construct a new 0.98 million gallon per day (mgd) Wastewater Treatment Plant (WWTP) on June 19, 2007. The City of Williams was originally issued an APP #101368, on August 3, 1999 to operate a 0.54 mgd aerated lagoon WWTP. The permittee currently has Reuse Permit No. R101368 issued on April 25, 2006 and AZPDES permit No. AZ0025775 issued June 2, 2008.

Facility Description

The City of Williams is authorized to operate the City of Williams Wastewater Treatment Plant (WWTP) with a design flow of 980,000 gallons per day (gpd). The treatment process consists of: influent headworks with flow metering; screening; grit removal; influent pump station and septage receiving; oxidation ditch with flow splitter box to clarifiers; two clarifiers; Return Activated Sludge (RAS)/Waste Activated Sludge (WAS) pump station; two chlorine contact basins; tablet chlorination system for disinfection; sodium bisulfate storage and feed for dechlorination; one belt filter press; and minor upgrades to the existing effluent pump station (addition of remote input/output (I/O) points for monitoring). Sludge will be dewatered and hauled to the Cinder Lake Landfill in Flagstaff for treatment and disposal. The WWTP was designed, constructed, and located according to plans approved by ADEQ.

The WWTP shall produce effluent which meets the Class B+ Reclaimed Water Standards (A.A.C. R18-11, Article 3). Effluent may be stored at the Elephant Rocks Golf Course storage ponds and in the storage basin (Lake Ellen) within the facility site, once they have been clean closed or discharged to the Cataract Creek. Disposal methods include reuse under a valid reclaimed water permit or discharged to Cataract Creek under AZPDES permit No AZ0025755.

The WWTP is located on 27 acres approximately ¼ mile east of Williams Airport Road on Ellen Way north of Interstate 40. The site is adjacent to the Burlington Northern Santa Fe (BNSF) Railway right-of-way, which bounds the site to the north. The western boundary is adjacent to Kaibab National Forest property and a private parcel. The eastern boundary is property of the Grand Canyon Railway. The WWTP is located outside of the 100-year flood plain.

Depth to groundwater at the WWTP is approximately 13 feet below ground surface (bgs) and the direction of flow is to the north.

In addition to the APP conditions pertaining to treatment and disposal of sewage sludge, the permittee must also comply with the requirements for sewage sludge disposal, use, and transportation in 40 Code of Federal Regulations (CFR) Part 503 and 18 A.A.C. 9, Article 10.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The WWTP is designed to meet the treatment performance criteria for new facilities with a design flow of less than 1,000,000 gpd as specified in R18-9-B204.

III. HYDROGEOLOGIC SETTING

City of Williams WWTP is located in Township 22N, Range 2E, Section 21 in Coconino County, Arizona, and approximately 50 miles upstream of the Havasupai Reservation. The applicant operates a Publicly Owned Treatment Works (POTW) that serves the City of Williams, with a service population of approximately 3,400 people. The wastewater treatment plant is part of a sanitary sewer system that receives domestic wastewater from residential and commercial sources in the City of Williams. There are no significant industrial dischargers connected to the treatment works.

The geologic formations observed on the surface near the WWTP are composed primarily of middle Pliocene to Holocene volcanic rocks of the San Francisco Volcanic field. Basalt is observed at the surface at the WWTP. Based upon drillers' logs, the volcanic rocks extend down to a maximum of about 450 ft bgs. There is a thick sequence, approximately 3,400 feet thick, of Paleozoic sedimentary rock beneath the volcanic rocks. The stratigraphy, from top to bottom, in the area near the WWTP include: alluvium, volcanic rocks, Kaibab Formation, Toroweap Formation, Coconino Sandstone, Schnebly Hill Formation, Supai Group, Redwall Limestone, Muav Limestone, and crystalline bedrock consisting of granite and metamorphic rocks. The Kaibab Formation and Toroweap Formation consist of limestone, the Coconino Sandstone is sandstone, the Schnebly Hill Formation consists of sandstone, siltstone, limestone and dolomite, and the Supai Formation is primarily sandstone.

Groundwater in the Williams areas is found in perched discontinuous water-bearing zones (shallow aquifers) and the deep regional aquifer. Shallow aquifers have formed were isolated

clay-rich paleo soil horizons have formed where extensive volcanic basalt flows are typically found. These clay-rich soils can hinder and restrict down-ward water movement received from direct recharge of precipitation and runoff. Recharge water received from precipitation and runoff from ephemeral streams tend to collect in the shallow aquifers until it either slowly drains from the sediment over time or it is removed by pumping from shallow wells. The depth to water in these shallow aquifers can vary depending on where they exist. The depth to water in the shallow aquifer that exists within the alluvium of Cataract Creek and likely its tributary at the WWTP is approximately 13 ft bgs. The groundwater flow direction in the shallow aquifer cannot be determined due to the lack of wells but is inferred to be parallel to Cataract Creek and is therefore to the north.

There are two primary regional aquifer systems on the Colorado Plateau. The first is the Coconino aquifer which is the primary source of groundwater for the City of Flagstaff and the eastern Colorado Plateau. The saturated stratigraphic units, from top to bottom, include: the Kaibab Formation, Coconino Sandstone, Schnebly Hill Formation, Upper Supai Formation, and Middle Supai Formation. This aquifer generally becomes dry to the west of Bellemont and Parks. The depth to groundwater, where the aquifer is saturated ranges from a few hundred feet to over 1,500 feet deep.

The second aquifer on the Colorado Plateau is the deep regional aquifer, where City of Williams has been developing groundwater resources. The saturated stratigraphic units, from top to bottom, include: the Lower Supai Formation, Redwall Limestone, Muav Limestone, Bright Angel Shale and Tapeats Sandstone. The water quality in the Bright Angel Shale and Tapeats Sandstone is saline with elevated levels of total dissolved solids (TDS) at 11,200 milligrams per liter (mg/l). Therefore, water resources are limited to the three limestone units. The depth to water in this deep regional aquifer is approximately 2,900 ft bgs.

There are few wells located to the north, up-gradient, of the proposed City of Williams WWTP. The proposed WWTP would not impact these wells.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

Storm water/surface water considerations included whether the facility was located within the 100-year flood plain and whether the discharge had the potential to impact surface water drainages located down-stream of the WWTP.

The WWTP is located approximately 2,500 feet from Cataract Creek, an ephemeral stream. Cataract Creek flows in a northeasterly direction. Approximately 600 feet to the southeastern end of the property is an unnamed wash which leads to Cataract Creek. The WWTP outfall is into this unnamed wash. According to Flood Insurance Rate Maps (FIRM) prepared through the Federal Emergency Management Agency (FEMA), most of the City of Williams WWTP property is outside of the 100-year floodplain. The northwest corner of the property is within Zone A, classified as the 100-year floodplain of Cataract Creek. Other parts of the site are in areas determined as Zone B, noted as being within the 500-year floodplain. East of the WWTP property and the railroad tracks, another area has been determined as Zone A. The WWTP is not within the 100-year floodplain, but is within the 500-year floodplain.

V. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Depth to groundwater at the proposed WWTP is approximately 13 ft bgs and the direction of flow is to the north. Groundwater monitoring is required in the permit. The effluent is expected to meet Aquifer Water Quality Standards (AWQS) at the point of discharge. Most of the effluent is expected to be used for beneficial reuse with any excess discharged to Cataract Creek under AZPDES permit No. AZ0025755. At the currently permitted flow limit, this facility is expected to meet aquifer water quality standards (AWQS) at the POC.

Monitoring and Reporting Requirements

ADEQ has determined that effluent, reclaimed water, and groundwater monitoring is required by this facility. Effluent and groundwater monitoring will be monitored for the following parameters (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 B+ reclaimed water, the permittee shall monitor the reclaimed water daily for flow rate and fecal coliform (see Section 4.2, Table IB in the permit).

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

The purpose of the discharge monitoring tables is explained below:

Parameter	Effluent	Groundwater
Flow: total and reuse	Daily; monthly calculation	N/A
Turbidity	Daily	N/A
Fecal coliform	Daily	N/A
Total coliform	N/A	Monthly
Nitrate, Nitrite, TKN, Total Nitrogen (Total Nitrogen = Nitrate as N + Nitrite as N + TKN)	Monthly	Monthly
Depth to Groundwater	N/A	Monthly
Inorganic chemicals: metals, cyanide, fluoride as listed in A.A.C. R18-9-11-406.C	Quarterly	Quarterly
VOCs and Semi-volatiles per A.A.C. R18-11-406.C	Semi-annual	Semi-annual
Radionuclides	Annual	Annual
Indicator Parameters: Major Cations and Anions	Quarterly	Quarterly

Point of Compliance (POC)

The location of the POC was determined by an analysis of the geology and possibility of observing groundwater within the shallow, alluvial aquifer. The POC is located within the pollutant management area (PMA), immediately down-gradient of the point of discharge. The

POC location was selected to protect off-site uses of groundwater, to verify BADCT performance, and to allow early detection of potential impact from WWTP discharges.

The hazardous/non-hazardous POC is located as follows:

Well Name	POC Location	Latitude	Longitude
POC	Approximately 190 feet north of the point of discharge	35°16'15.7"N	112°10'54.3"W

VI. COMPLIANCE SCHEDULE

A compliance schedule is included in Section 3.0 of the permit which includes the requirement for submittal of an Engineer's Certificate of Completion, the installation of the proposed POC #4, results of testing of POC #4 and the submittal of a significant amendment to calculate AQLs and ALs from ambient water quality that will be collected from the POC in an Ambient Water Quality Report necessary to determine if the well is dry and if intersects the alluvium in the wash bottom.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

City of Williams WWTP 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). The WWTP was designed by John Douglas Kobrick, a professional engineer registered in the state of Arizona.

Financial Capability

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee shall maintain financial capability throughout the life of the facility. The dollar amount demonstrated for closure and post closure cost estimates is \$322,000.00. The financial capability was demonstrated through A.A.C. R18-9-A203 (B)(2).

Zoning Requirements

The City of Williams WWTP has been properly zoned for the permitted use and the permittee has complied with all zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(A)(2)(c).

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 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. R18-9-109(A))

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. 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 - Groundwater Section - APP and Reuse Unit
Attn: Monica Phillips
1110 West Washington Street, Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-2253