

Douglas Wastewater Treatment Plant
Aquifer Protection Permit #100831
Place ID #1120, LTF #56346
SIGNIFICANT AMENDMENT

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an amendment to the 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. 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 (POC); 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., 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.

I. FACILITY INFORMATION

Name and Location

Name of Permittee:	City of Douglas
Mailing Address:	425 Tenth Street Douglas, AZ 85607
Facility Name and Location:	Douglas Wastewater Treatment Plant 700 West International Avenue Douglas, Arizona 85607

Regulatory Status

The City of Douglas submitted an application for Aquifer Protection Permit (APP) on January 24, 2002. An APP was issued to City on February 28, 2003 to operate 2 mgd treatment plant.

An application for this significant permit amendment was received on May 10, 2016 to increase the treatment plant capacity from 2 mgd to 3.1 mgd by adding new oxidation ditches, clarifiers and modifying the existing treatment units.

The most recent inspection of this facility was in September 2016; no significant violations were noted as a result of this inspection.

Facility Description

The permittee is authorized to operate the Douglas Wastewater Treatment Plant (WWTP), with a maximum average monthly flow of 3.1 million gallons per day (mgd) upon construction of new oxidation ditches and a clarifier. The Existing WWTP is rated at 2 mgd and Upgraded WWTP is rated at 3.1 mgd. The existing headworks was upgraded in year 2011 and can handle the flow of 3.1 mgd.

Existing WWTP: The Existing WWTP has a capacity to collect and treat a maximum average monthly flow of 2 mgd. The existing treatment process consists of headworks with a mechanical bar screen, a manual screen and a grit removal chamber, two aeration basins, two secondary clarifiers in parallel, chlorine contact basin for disinfection, de-chlorination, sludge drying beds and belt press for sludge dewatering. The Existing WWTP produces reclaimed water meeting Class C Reclaimed Water Standards (A.A.C. R18-11, Article 3). Treated effluent from the WWTP is discharged to Mexico to irrigate 240 acre community farm. Sludge shall be hauled off-site for disposal in accordance with state and federal regulations.

Upgraded WWTP: The Upgraded WWTP has a capacity to collect and treat a maximum average monthly flow of 3.1 mgd. The treatment process consists of existing headworks with a mechanical bar screen, a manual screen and a grit removal chamber, two new oxidation ditches for nitrification-denitrification, one existing and one new clarifier, a new return activated sludge (RAS)/waste activated sludge (WAS) pump station, modified existing RAS/WAS pump station and existing chlorine contact chamber. The existing two aeration basins will be converted aerobic digesters and an existing clarifier will be converted to a sludge thickener. The sludge generated from the treatment process will be digested in two aerobic digesters and will be thickened in a sludge thickener. The sludge will be dried in an existing belt press and/or existing sludge drying beds. Sludge shall be hauled off-site for disposal in accordance with state and federal regulations. The Upgraded WWTP will produce reclaimed water meeting Class B+ Reclaimed Water Standards (A.A.C. R18-11, Article 3). Treated effluent from the WWTP will be discharged to Mexico to irrigate 240 acre community farm.

Depth to groundwater at the site is approximately 120 feet below ground surface and the direction of groundwater flow is to the south-southeast.

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

Amendment Description

ADEQ has reviewed and approved the following changes in the permit:

- Increase of the design flow from 2 mgd to 3.1 mgd
- Addition of two oxidation ditches for nitrification-denitrification, a clarifier and an ammonia feed for chlorination
- Modification of two existing aeration basins to aerobic digesters
- Modification of an existing clarifier to a sludge thickener

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

The Existing WWTP is designed, constructed, operated and maintained to meet the treatment performance criteria for existing facilities as specified in A.A.C. R18-9-B205.

The Upgraded WWTP shall be 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). The treatment facility shall not exceed a maximum seepage rate of 550 gallons per day per acre for all containment structures within the treatment works.

III. 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 are collected in the Existing WWTP at point of discharge located downstream of the chlorine contact chamber. The permittee will be required to monitor the effluent monthly for fecal coliform, and annually for metals and volatile and semi-volatile organic compounds (VOCs and SVOCs) (see Section 4.2, Table IA-1, in the permit).

Representative samples of the effluent will be collected in the Upgraded WWTP at downstream of the chlorine contact chamber. The permittee will be required to monitor the effluent daily for fecal coliform, monthly for total nitrogen, quarterly for metals, and semi-annually for VOCs and SVOCs (see Section 4.2, Table IA-2 in the permit).

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

Point of Compliance

The conceptual POC for this facility is designated at the following location:

POC #	POC Location	Latitude	Longitude
1 (conceptual)	Southeast corner of WWTP site	31° 20' 2.97" N	109° 34' 27.9" W

Groundwater monitoring is not required at permit issuance. The Director may amend this permit to designate additional POCs if information on groundwater gradients or groundwater usage indicates the need.

IV. HYDROGEOLOGIC SETTING

The WWTP overlies the Douglas groundwater basin. The basin lies within the Mexican Highland section of the Basin and Range physiographic province. The valley fill of the Douglas basin can be divided into upper and lower alluvial deposits. The upper alluvial deposits consist of gravel, sand and silt with a maximum thickness of approximately 1,000 feet below ground surface (ft bgs). The lower alluvial deposits consist of conglomerate, gravel and sand and begin at approximately 650 ft bgs to a depth of greater than 5,450 ft bgs.

The primary water bearing unit in the Douglas basin is in the upper alluvial deposits. The water bearing zones are unconfined to semi-confined and are primarily interconnected to form a single groundwater reservoir. Depth to water measurements in the same township and range as the WWTP ranged from minimum of 10.3 ft bgs to a maximum of 275.0 ft bgs with a mean depth to water of 120.1 ft bgs from 23 wells measured by Arizona Department of Water Resources (ADWR) in 2015. The groundwater flow direction near the WWTP appears to be towards south-southeast.

V. SURFACE WATER CONSIDERATIONS

The facility is located in Map Panel 04003C2879F, in Zone A which is the area of 100-yr flood plain with no base flood elevations determined. Based on the ‘Douglas Fence Replacement Phase 2 Final Drainage Report’, the base elevation during 100-yr flood plain is 3900.17 ft. All the proposed and existing treatment units are at elevations ranging from 3903 and 3912 ft., except the existing sludge drying beds and chlorine contact basin. The facility is surrounded by the berm on north and north-west side of the site. The facility is in process of constructing berm on west and south side of the site. The top elevation of the berm is 3902 ft. The facility is protected from 100-yr flood plain.

VI. COMPLIANCE SCHEDULE

The two compliance schedule items included in the permit include submittal of an Engineer's Certificate of Completion (ECOC) upon completion of construction of the new oxidation ditches and a clarifier, and submittal of ECOC for aerobic digesters and a sludge thickener.

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The City of Douglas 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 permit 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 City of Douglas 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(C)(1). The estimated dollar amount demonstrated for financial capability is \$105,432. The permittee is expected to maintain financial capability throughout the life of the facility.

Zoning Requirements

The Douglas WWTP 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 Douglas Daily Dispatch on XXXX, 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 prior to granting the significant amendment. 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 - APP Unit
Attn: Shivani Shah, EES
1110 W. Washington Street, Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4465