

Aquifer Protection Permit 100737
Place ID #4288, LTF #61137
SIGNIFICANT AMENDMENT
Show Low 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 Show Low
Mailing Address:	180 N. 9 th Place City of Show Low, Arizona 85901
Facility Name and Location:	Show Low Wastewater Treatment Plant 1300 N. 6th Street City of Show Low, Arizona 85901 Navajo County

Regulatory Status

This is an existing facility. A notice of disposal (NOD) was submitted on August 27, 1984. The Aquifer Protection Permit (APP) application was submitted on May 17, 1999. An application for this significant permit amendment was received on December 12, 2014. At the time of permit issuance, there are no active Notices of Violation (NOVs).

Facility Description

The City of Show is authorized to operate the 2.5 million gallons per day (mgd), City of Show Low Main Wastewater Treatment Plant (WWTP) upon the construction of new the Biolac treatment system (New Biolac WWTP). The existing WWTP is rated at 2.46 mgd and consists of lagoon treatment system. During construction of the new Biolac treatment system, the permittee will operate an interim treatment plant by operating only one lagoon with a capacity of 1.25 mgd.

Existing Treatment Plant: The existing treatment plant has the capacity to collect and treat a maximum average monthly flow of 2.46 mgd. The existing WWTP consists of headworks, two facultative lagoons (north and south), chlorine disinfection, an effluent pump station, three wetland cells, and one polishing pond. Influent sewage is conveyed through two primary sewers to

the headworks structure which includes two bar screens. Screened wastewater then flows to clay-lined facultative aerated lagoons providing primary wastewater treatment. Treated wastewater exits the aerated lagoons through a bar rack structure to an effluent pump station where it is pumped to polishing ponds for further treatment. Chlorine is added to the force main after the pump station to disinfect the effluent. Effluent from the four polishing wetlands (ponds) is discharged under a valid AZPDES permit (AZ0023841) through Outfall 001 to two main wetland systems: (#1) east to Pintail Lakes or South Marsh, or (#2) west to Telephone Lake, Bosque Mujado (riparian area), and Red Head Marsh. The receiving waters for the City of Show Low WWTP Outfall 001 are Telephone Lake, Pintail Lake, and South Marsh in the Little Colorado River Basin. Under conditions where discharge effluent is in excess of consumption by these wetland systems, effluent can be diverted to Ned Lake by way of overland flow from Telephone Lake via Bullseye Marsh. The permittee will operate this WWTP prior to the construction of the interim plant.

Interim Treatment Plant: During the operation of the interim WWTP, the north lagoon will be taken out of service to allow for the construction of the new Biolac WWTP. The permittee will begin operating the interim WWTP prior to the construction of the upgraded plant. The interim WWTP shall have a capacity of 1.25 mgd and will consist of the existing headworks, one facultative (south) lagoon, chlorine disinfection, an effluent pump station, three wetland cells, and one polishing pond. Effluent from the four polishing wetlands (ponds) is discharged under a valid AZPDES permit (AZ0023841) through Outfall 001 to main wetland systems #1 and #2. Under conditions where discharge effluent is in excess of consumption by main wetland systems, effluent can be diverted to Ned Lake by way of overland flow from Telephone Lake via Bullseye Marsh.

New Biolac WWTP: The new Biolac WWTP shall be constructed in the footprint of north lagoon. The new Biolac WWTP shall have the capacity to treat a maximum monthly average flow of 2.5 mgd. The treatment process includes an upgrad to the existing headworks with coarse screen, a new influent pump station, new headworks with fine screen and a grit removal system, two Biolac treatment basins with nitrification and de-nitrification capability, two new clarifiers, a new chlorination system, and the existing effluent pump station. The sludge shall be dewatered through a new screw press. The clay lined existing south lagoon shall be used to store or dewater sludge during emergencies. The Biolac basins shall be lined with 45-mil reinforced polypropylene geomembrane liner.

The effluent from the effluent pump station shall be discharged to the three existing wetland cells and one existing polishing pond located approximately two miles north of the WWTP prior to being discharged via a pipeline. Discharge to the pipeline may be sent to either main wetland systems. Under conditions where discharge effluent is in excess of consumption by these wetland systems, effluent can be diverted to Ned Lake by way of overland flow from Telephone Lake via Bullseye Marsh.

All the sludge, including screenings, grit, and scum, will be hauled to landfill for disposal in accordance with State and Federal regulations.

The site includes the following permitted discharging facilities:

Facility	Latitude	Longitude
WWTP	34° 15' 43" N	110° 02' 02" W

Outfall 001	34° 17' 41" N	110° 02' 04" W
South Lagoon (emergency storage pond)	34° 15' 43" N	110° 02' 02" W
Polishing Pond	34° 17' 37" N	110° 02' 08" W
Wetland Cells	34° 17' 37" N	110° 02' 08" W
Telephone Lake	34° 17' 35" N	110° 02' 41" W
Redhead Marsh	34° 17' 41" N	110° 04' 22" W
Bullseye Marsh	34° 17' 21" N	110° 02' 57" W
Ned Lake	34° 17' 18" N	110° 03' 22" W
South Marsh	34° 17' 33" N	110° 01' 24" W
Pintail Marsh	34° 18' 06" N	110° 01' 21" W

Amendment Description

The purpose of this significant amendment is to:

- Increase the design flow from 2.46 mgd to 2.5 mgd.
- Add the New Biolac WWTP.
- Upgrade the headworks.

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

1. Section 2.1, Facility/Site Description: Added language to describe the Existing Treatment Plant, the Interim Treatment Plant and the New Biolac WWTP. In addition to the increase in flow from 2.46mgd to 2.5mgd.
2. Section 2.2.1, Engineering Design: Added information about the current engineering design report.
3. Section 2.2.3, Pre-operational Requirements: Added the requirement to submit the Engineer's Certificate of Completion prior to operating the Biolac Plant.
4. Section 2.2.4, Operational Requirements: Updated the boiler plate language.
5. Section 2.3, Discharge Limitations: Updated this section to the current permit format, and updated discharging limits.
6. Section 2.4, Point of Compliance: Changed POC Well #1 to a Conceptual POC Well.
7. Section 2.5.1, Discharge Monitoring: Added the requirement to monitoring Tables IA-1, IA-2 and IA-3.
8. Section 2.5.4 is now Groundwater Monitoring and Sampling Protocols changed from Section 2.5.3.
9. Section 2.5.2.2, Exceeding of Alert Levels Set for Discharge Monitoring: Added the requirement to monitor Tables IA-1, IA-2 or IA-3.
10. Added Section 2.6.2.2.1, Exceeding Permit Flow Limit: Added the requirement to monitoring Tables IA-1, IA-2 and IA-3.

11. Section 2.6.3, Discharge Limitations Violations : Added the requirement to monitoring Tables IA-1, IA-2 and IA-3.
12. Section 2.7.1, Self-monitoring Report Form: Added the requirements for reporting Tables IA-1, IA-2, IA-3 and II.
13. Section 3.0, Compliance Schedule: (3.1) Added requirements pertaining to the Engineer's Certificate of Completion for the upgraded Headworks (3.1) and the Biolac treatment plant (3.3). Added the requirement for receiving the SMRFs (Table IA-2) to monitor the 1.25 mgd interim facility(3.2), and the requirement for receiving the SMRFs (Table IA-3) to monitor the 2.5 mgd Biolac plant. Added the requirement to amend the permit to provide a new Conceptual POC well.
14. Section 4.0, Tables of Monitoring Requirements: Added sub-sections 4.1, Pre-operational Monitoring, which is not applicable and 4.2, Compliance or Operational Monitoring. Under 4.2, the tables have been renumbered and renamed to reflect the following:
 - The previous Table I, Discharge Monitoring is now Table IA-1, Routine Discharge Monitoring – 2.46 mgd Existing facility.
 - Added Table IA-2, Routine Discharge Monitoring – 1.25 mgd Interim Facility.
 - Added Table IA-3, Routine Discharge Monitoring – 2.5 mgd new Biolac Facility.
15. Other changes include updating the permit language to conform to the most current permit format.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The WWP is designed to meet the treatment performance criteria for new facilities as specified in Arizona Administrative Code R18-9-B204.

The facility meets the requirements for pretreatment by conducting monitoring per: 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. HYDROGEOLOGIC SETTING

The Study Area is located in the Little Colorado River Plateau Basin, which is almost entirely within the Colorado Plateau physiographic province. Groundwater beneath the Show Low WWTP is found at varied depths in both minor (local) and regional aquifers. The regional aquifer in the Study Area is the Coconino Sandstone (C-Aquifer). Monitor wells installed near the constructed wetlands show that groundwater is also present in the Cretaceous sedimentary rocks (Moenkopi Formation) above the C-Aquifer. Near the constructed wetlands, the well driller reportedly encountered groundwater beneath the surficial volcanic deposits at approximately 85 to 93 ft bgs.

A local perched water system from 4 to 12 ft bgs is found in the Quaternary Alluvium beneath the Show Low WWTP adjacent to Show Low Creek. Groundwater flow direction in this shallow perched system is from west to east beneath the lagoons. The saturated thickness is estimated to range from 20 to 30 feet beneath the Show Low WWTP, and is believed to be seasonally dependent on precipitation runoff and/or up-gradient irrigation. This shallow perched aquifer system is believed to be found locally south and west of Show Low Creek, and does not extend north to the constructed wetlands.

Depth to water in the Cretaceous units (Moenkopi Formation) near the Show Low WWTP ranges from 49 ft bgs near the lagoons, to approximately 93 feet near the constructed wetlands. A map of 2001 static groundwater levels of wells installed in the C-Aquifer indicates that the depth to groundwater in the C-Aquifer near the Show Low WWTP is approximately 432 ft bgs. Review of the regional groundwater surface contours for the C-Aquifer indicates that the direction of groundwater flow is north-northeast.

Groundwater samples were collected from POC2, POC3, and POC4 as required by the APP (P-100737). The monitor wells are located in the vicinity of the lagoons (POC4) and constructed wetlands (POC2 and POC3), and monitor the elevation and quality of water in the Cretaceous sediments (Moenkopi Formation). Groundwater from these wells is sampled quarterly for selected inorganic parameters, and semi-annually for metals and volatile organic compounds (VOCs) as specified in the APP. According to the laboratory results, no Alert Levels (AL) or Aquifer Water Quality Standards (AQWS) for any permitted parameters were exceeded.

Groundwater from the Coconino Sandstone (C-Aquifer) in the Study Area is suitable for potable use. Groundwater pumped from the City of Show Low (City) wells installed in the C-Aquifer reportedly meets current EPA Drinking Water Standards.

There are ten (10) ADWR registered wells within 0.5 miles of the facility. Three (3) of these wells are monitoring wells for the Show Low WWTP. The remaining seven (7) wells are reportedly for domestic, commercial, and industrial uses.

IV. STORM WATER/SURFACE WATER CONSIDERATIONS

The Show Low WWTP lies outside the 100-year floodplain. The main surface water system in the Study Area is Show Low Creek, which originates in the White Mountains to the south and has a drainage area of approximately 87 square-miles. The Show Low WWTP lagoons are located near the west bank of Show Low Creek. Show Low Creek is a perennial surface water drainage that connects Show Low Lake to the south with Fools Hollow Lake to the west. Discharge from the Show Low WWTP lagoons does not directly enter Show Low Creek.

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 inlet to the Polishing Wetland. 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, Tables IA-1, IA-2, and IA-3 in the permit).

To ensure that site operations do not violate the Aquifer Water Quality Standards, the permittee will monitor the groundwater at sampling point #3, #4 and #5. The permittee will monitor the groundwater monthly for fecal coliform, and for total nitrogen, Semi-annually for metals, and Annually for VOCs (see Section 4.2, Table II, in the permit).

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

Discharge Monitoring

Routine Discharge Monitoring shall be conducted as per Section 4.2, Tables IA-I, IA-2 and IA-3. Total daily flow shall be monitored at sampling points #1 and #2.

Point of Compliance (POC)

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

POC#	POC Locations	Latitude	Longitude
1	Located approximately 85 feet from the northwest corner of Red head Marsh eastern pond Redhead Marsh	34°17 ' 49" N	110° 04 '21"W
2	Located approximately 1580 ft from the southern edge of the Polishing Pond	34°17 ' 17" N	110° 02' 04" W
3	Located approximately 685 ft west of Pintail Lake and approximately 1575 ft northwest of	34° 18' 02" N	110° 01' 35" W
4	Located approximately 120 ft northeast of the North Lagoon at the WWTP.	34° 15' 48" N	110° 01' 59" W
5	Located 200 feet to the northeast of the eastern most part of the Telephone Lake. (Conceptual)	34° 17' 45" N	110° 02' 25" W

Groundwater monitoring is required at POC wells #2, #3 and #4 according to Section 4.2, Table II. No groundwater monitoring is required at Conceptual POC wells #1 and #5. The Director may amend this permit to require the installation of a well and the initiation of groundwater monitoring at the POC, or to designate additional points of compliance, if information on groundwater gradients or groundwater usage indicates the need.

VI. COMPLIANCE SCHEDULE

No.	Description	Due by:	Permit Amendment
3.1	The permittee shall submit a signed, dated and sealed Engineer's Certificate of completion for the new and modified units of WRF.	Within 90 days of completion of the upgraded facilities and prior to utilizing the new and modified units of the WRF	No
3.2	To receive the SMRFs (Table IA-2) to monitor the 1.25 mgd facility; the permittee shall notify the Water Quality Compliance Section, Data Unit.	Within 15 days of commencement of operation.	No
3.3	The permittee shall submit a signed, dated and sealed Engineer's Certificate of completion and the for the new Biolac treatment plant (new headworks, influent pump station, Biolac basins, clarifiers, chlorination, sludge dewatering unit).	Prior to discharging under this permit and within 90 days of completion of construction.	No
3.4	To receive the SMRFs (Table IA-3) to monitor the 2.5 new Biolac treatment plant; the permittee shall notify the Water Quality Compliance Section, Data Unit.	Within 15 days of commencement of operation.	No

VII. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The City of Show Low 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 ongoing demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The City of Show Low 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 \$858,000.00. The financial capability was demonstrated through a letter from the chief financial officer and a statement specifying the details of the financial arrangements used to meet the estimated closure and post-closure costs as per A.A.C. R18-9-A203 (B)(1)and(2). The permittee is expected to maintain financial capability throughout the life of the facility.

Zoning Requirements

The City of Show Low WWTF 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, under public notice No. 15-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

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