

PATAGONIA LAKE STATE PARK WASTEWATER TREATMENT PLANT
 Aquifer Protection Permit No. P-100624
 Place ID 996, LTF No. 82378
NEW PERMIT

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:

Name of Permittee:	Arizona State Parks Board
Permittee Address:	1110 W. Washington Street, Suite 100 Phoenix, Arizona 85007
Facility Name and Location:	Patagonia Lake State Park Wastewater Treatment Plant (WWTP) 400 Patagonia Lake Rd Nogales, Arizona 85621 Santa Cruz County

III. Facility Description:

The permittee is authorized to operate the Patagonia Lake State Park Wastewater Treatment Plant (WWTP), with a maximum average monthly flow of 24,900 gallons per day. The Department has graded this facility as a Grade 2 wastewater treatment plant. The facility shall have an operator in direct responsible charge who is certified for the grade of the facility and inspects the facility "Weekly" for a Grade 2 WWTP.

Wastewater at the park is generated primarily from recreational restrooms/showers and an RV dump station. Wastewater enters the WWTP through a duplex packaged lift station (Lift Station #1) consisting of two (2) 6.5-hp 120-gpm pumps and Lift Station #2 consisting of two (2) 11-hp 124-gpm pumps which are permitted under a Type 4.01 General Permit. Prior to discharging into the 2-mm perforated plate mechanical fine screen (130 gpm), raw wastewater passes through the 4-inch (maximum flow 1,250 gpm) influent electromagnetic flow meter. Then flows directly to a 1,360-gallon transfer chamber. The 0.5hp (44 gpm) transfer pumps deliver, the screened influent to a two-stage biological treatment process for biological nutrient removal which includes a 2,400 gallon anoxic tank with a factory installed tank mounted lightening mixer, followed by a 4,000-gallon integrated aeration chamber with six (6) membrane style 1.2 mm fine bubble diffusers and a 10 hp blower. After biological treatment, mixed liquors are pumped from the aeration chamber to the duplex hollow fiber ultrafiltration unit using a 100-gpm 0.5 hp forward activated sludge

(FAS) VFD pump. A vacuum is applied across the ultrafiltration membranes by a 14-gpm positive displacement rotary lobe permeate pump, pulling water through the membranes to the Clear Well chamber. The permeate is pumped to this attached clear well reservoir of effluent that is used for regular flushing and maintenance of the membrane filters. The effluent is discharged from the clear well to the two UV disinfection systems (maximum capacity of 75 gpm) which each have (two (2) bulbs). A UV recirculation pump is in place in the event effluent needs to be returned to the clear well chamber after passing through the UV. From the UV disinfection units, effluent is discharged through a 3-inch (maximum flow 800gpm) electromagnetic effluent flowmeter by gravity into the nearby dry wash located west of the treatment facility site and is a tributary to Patagonia Lake. The point of discharge is permitted under Arizona Pollutant Discharge Elimination System (AZPDES) permit number AZ0026620. The northern facultative lagoon that was part of the historic WWTP is being repurposed as an emergency effluent storage lagoon for contingency operations or in case of non-compliant quality effluent, and has an additional storage capacity of up to 1 million gallons.

Return activated sludge is sent back to either the anoxic tank or wasted by a pump to a 1,770 gallon sludge holding tank with two (2) 12-inch fine bubble disc aeration diffusers, and a 0.5-hp progressive cavity pump for sludge wasting. The level transmitter monitors the level of solids in the chamber. The sludge chamber is pumped and hauled offsite through a contract hauler. At permitted capacity, the WWTP can produce approximately 400 gallons of sludge on an average day. The storage chamber can hold approximately 4.4 days of sludge. The sludge storage chamber has a 3-in flange and ball valve (normally closed) and a spill containment area for easy pumping and hauling procedures at the plant.

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 site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES		
Facility	Latitude	Longitude
Patagonia Lake State Park WWTP (packaged MBR system)	31° 29' 25.00" N	110° 51' 24.00" W
Dry Wash (AZPDES outfall)	31° 29' 25.16" N	110° 51' 24.20" W

IV. New Permit Description:

The Patagonia Lake State Park WWTP has two (2) existing facultative lagoons that were originally designed in 1988 with a point discharge to the south. The lagoons were permitted with ADEQ under the Type 1.09 General Permit for the two (2) non-aerated facultative lagoons and a surface water discharge to a dry wash for disposal. The option to discharge had not been utilized and the lagoons were operated as evaporation basins. A new individual permit is required to upgrade the facility by replacing the existing facultative lagoon system with a new MBR packaged wastewater treatment plant. Effluent will be discharged into the nearby dry wash located west of the treatment facility site and is a tributary to Patagonia Lake. The point of discharge is permitted under Arizona Pollutant Discharge Elimination System (AZPDES) permit number AZ0026620.

V. Best Available Demonstrated Control Technology (BADCT):

The treatment facility 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.

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

Monitoring and Reporting Requirements

The permittee shall monitor the effluent according to Section 4.2, Table 6: ROUTINE FLOW & DISCHARGE MONITORING. Representative samples of the effluent shall be collected at the location downstream of the UV disinfection units.

Groundwater monitoring is not required under the terms of the permit.

Point of Compliance (POC)

The Points of Compliance (POCs) have been established at the following locations:

Table 2: POINT(S) OF COMPLIANCE			
POC #	POC Location	Latitude	Longitude
1 (Conceptual)	Downstream of the WWTP and within 750 feet of the edge of the Pollutant Management Area (PMA)	31°29'25.49" N	110°51'24.41" W

The depth to groundwater is 20 feet below the ground surface, and the direction of groundwater flow is towards the north/northeast.

Groundwater monitoring is not required at the point of compliance wells. POC #1 well is a conceptual well, monitoring is not required except as a contingency action. The director may require an amendment of this permit to install a monitoring well if there is cause or concern that groundwater quality may be impacted at the POC. The Director may amend this permit to designate additional points of compliance if information on groundwater gradients or groundwater usage indicates the need.