

North Rim Wastewater Treatment Plant
Aquifer Protection Permit No. P-100749
Place ID 1065, LTF No. 101527
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:

Name of Permittee:	U.S. Department of the Interior – National Park Service
Mailing Address:	P.O. Box 129 Grand Canyon, Arizona 86023
Facility Name and Location:	North Rim Wastewater Treatment Plant 30 Helibase Road North Rim, Grand Canyon National Park, Arizona 86052 Coconino County

III. Facility Description:

The North Rim WWTP is a Grade 2 facility authorized to operate at a maximum monthly flow of 86,000 gallons per day (gpd).

Headworks & Equalization: Influent is routed through a septage receiving manhole and a screening vault with a 6-millimeter mechanical auger screen and compactor. Screened sewage is pumped from a packaged influent lift station to a 20,000-gallon equalization tank equipped with a 2-millimeter perforated screen and coarse-bubble aeration.

Biological Nutrient Removal (BNR): Treatment occurs in two parallel packaged units using a Modified Ludzack-Ettinger (MLE) nitrification/denitrification process. Each unit has a 4,300-gallon anoxic zone with a submersible mixer and an 11,600-gallon aeration zone with fine-bubble diffusers.

Membrane Bioreactor (MBR): Mixed liquor is filtered through hollow-fiber membrane cassettes under vacuum. Waste activated sludge is pumped to the existing sludge drying beds, and drying-bed filtrate is returned to the headworks.

Disinfection & Polishing: Permeate from the MBR tanks undergoes UV disinfection. Disinfected effluent is continuously metered and discharged by gravity to Outfall No. 001.

The facility utilizes a Modified Ludzack-Ettinger (MLE) biological nitrogen-removal process and a Membrane Bioreactor (MBR) system to treat influent.

IV. Amendment Description:

The purpose of this amendment is to authorize the discharge of a 0.086 MGD temporary wastewater treatment plant at the North Rim Wastewater Treatment Plant, replacing the secondary treatment system lost in the July 2025 Dragon Bravo Fire with a temporary packaged Membrane Bioreactor (MBR) treatment system.

V. Regulatory Status

There are no outstanding compliance or enforcement actions associated with the North Rim Wastewater Treatment Plant.

VI. Best Available Demonstrated Control Technology (BADCT):

The North Rim WWTP meets Best Available Demonstrated Control Technology (BADCT) standards through a Modified Ludzack-Ettinger (MLE) biological nitrogen-removal process and a Membrane Bioreactor (MBR) system, which reduce nitrogen and total suspended solids to levels that meet regulatory requirements. Treated effluent is disinfected by a closed-vessel ultraviolet (UV) system. The plant maintains compliance through operational controls, including weekly site visits under a certified operator in direct responsible charge of the appropriate grade for the facility.

The treatment units are enclosed in insulated, climate-controlled steel structures. The facility is located on federal land within Grand Canyon National Park; the nearest property line is approximately 8.8 miles from the discharge locations, and a 350-foot setback is maintained around the treatment works, which exceeds the minimum setback requirement.

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

The facility discharges treated effluent to Outfall No. 001, which conveys effluent over the west-facing wall of Transept Canyon under AZPDES Permit No. AZ0110426.

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

Monitoring and Reporting Requirements

To ensure that site operations do not result in violation of Aquifer Water Quality Standards at the point of compliance, representative samples of the effluent shall be collected at the end of the UV disinfection unit. The permittee shall monitor the effluent monthly for fecal coliform and total nitrogen, and quarterly for other inorganic parameters and metals (see Section 4.2, Table 7, in the permit).

Facility inspection and operational monitoring shall be performed on a routine basis (see Section 4.2, Table 8 in the permit).

Point of Compliance

The hazardous/non-hazardous POC is designated at the following location:

P.O.C #	P.O.C. Locations	Latitude	Longitude
1 (Conceptual)	Approximately 250 feet west-southwest of the WWTP.	36° 13' 18" N	112° 04' 42" W

Groundwater monitoring is not required at the time of permit issuance. The Director may amend this permit to require installation of wells and 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.