

**STATEMENT OF BASIS FOR MODIFICATION**  
**OF AZPDES PERMIT NO. AZ0023621**

Pursuant to A.C.C. R18-9-B906, on April 11, 2023, ADEQ received an application from the United States Department of the Interior - National Park Service (USDOI-NPS), Grand Canyon National Park to modify Arizona Pollution Discharge Elimination System (AZPDES) Permit (No. AZ0023621, LTF No. 98484) for the Havasupai Garden Potable Water Pump Station (formerly known as the Indian Garden Potable Water Pump Station). This facility is a federally-owned potable water pumping station in Coconino County and is considered to be a minor industrial facility under the NPDES program.

The request would permit discharge of dechlorinated potable water from two (2) additional outfalls (Outfall CH002 and Outfall 003) to Bright Angel Creek. Discharge from Outfall 001 to Garden Creek averages a flow rate of 0.1556 MGD with a maximum discharge rate of 0.3325 MGD. Discharge from Outfall 002 to Bright Angel Creek will average a flow rate of 0.144 MGD and discharge from Outfall 003 to Bright Angel Creek will average a flow rate of 0.0576 MGD. In total, the flow rate is expected to average 0.3572 MGD, well below the current permitted design capacity of 1.25 MGD. Therefore, the permitted flow rate will not be modified.

The current permit became effective on March 23, 2021. This document gives pertinent information concerning the modification. The effluent limitations contained in this permit modification will maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 *et seq.* The permit was issued for a period of five (5) years and shall expire at midnight on March 22, 2026.

**Purpose of Modification:**

This modification will add two (2) additional outfalls (002 and 003) to the individual AZPDES permit for USDOI NPS Grand Canyon Havasupai Garden Potable Water Pump Station (AZ0023621) to meet a condition of Consent Order (No. 682). This modification will result in no change to the permitted discharge design capacity of 1.25 MGD or permit requirements for Outfall 001.

**Background:**

The State of Arizona adopted water quality standards to protect the designated uses of its surface waters. Streams have been divided into segments and designated uses assigned to these segments. The water quality standards vary by designated use depending on the level of protection required to maintain that use.

An Arizona Department of Environmental Quality (ADEQ) Surface Water Protection Inspection and Compliance Unit routine in-person inspection of Phantom Ranch was conducted on October 13, 2022 (Inspection No. 408588). This inspection alerted ADEQ to the continuous discharge of chlorinated drinking water from the Transcanyon Waterline (TCWL) at two (2) points. The two (2) outfalls are located at the Phantom Ranch site where discharge may reach Bright Angel Creek - Below Roaring Spring Springs Creek to confluence with Colorado River, which is a Water of the U.S. (WOTUS) listed in A.A.C. R18-11 Appendix B. The average value for Total Residual Chlorine (TRC) was 1 ppm<sup>1</sup>, exceeding both the acute (0.019 ppm) and chronic (0.011 ppm) numeric

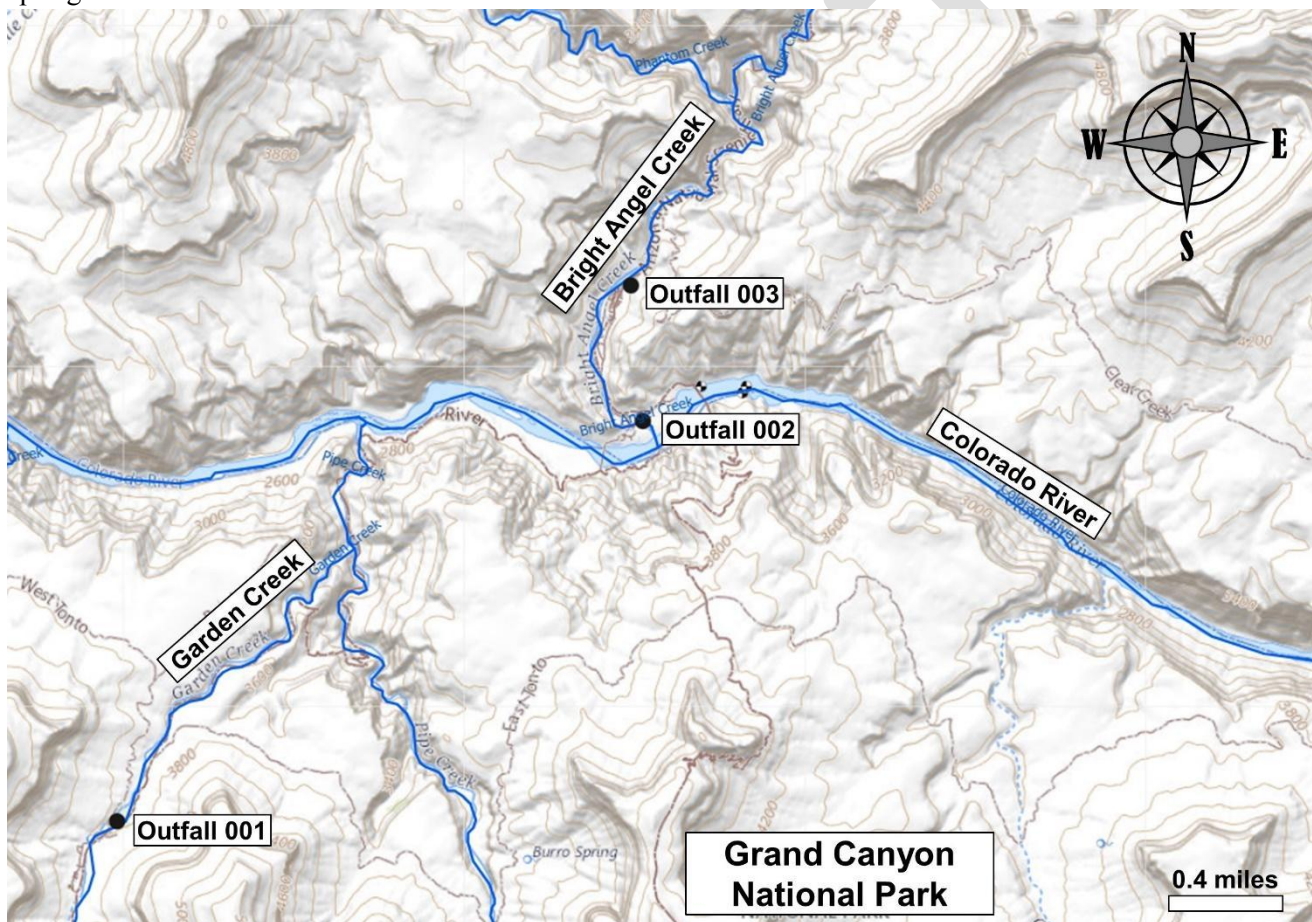
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<sup>1</sup> This average was determined from measurements taken by the NPS at many points along the distribution system. Measurements were confirmed during an ADEQ and U.S. Environmental Protection Agency (USEPA) inspection in May 2022 where a chlorine analyzer at Phantom Ranch records the TRC concentration at 15-minute increments. The lowest daily measurement is reported to the ADEQ Drinking Water Section.

water quality criteria for the Aquatic and Wildlife (warm water) designated uses. These are the lowest water quality standards for TRC that apply to the receiving water segment of Bright Angel Creek.

Compliance Case No. 208628 was opened by ADEQ on November 04, 2022 for Phantom Ranch (Place ID 1066). The facility was determined to be in violation of Arizona Revised Statutes (A.R.S.) § 49-255.01(A) for addition of a pollutant to protected surface water from a point source without a permit. Formal Enforcement action in the form of a Consent Order (No. 682) went into effect on February 10, 2023. Conditions of the Consent Order included modification of the Havasupai Garden Potable Water Pump Station individual AZPDES permit with the ADEQ Surface Water Protection Permits Unit to incorporate the two (2) TCWL discharges as additional permitted outfalls. The discharges from Outfall 002 and 003 do not meet the necessary criteria to qualify for an AZPDES De Minimis General Permit. Figure 1 shows the geographical location of Outfalls 001, 002, and 003.

**Figure 1.** Map showing all three outfalls identified by black dots that will be permitted to discharge under AZPDES permit No. AZ0023621 following modification. The TCWL conveys water originating at the Roaring Springs source from north to south.



## GENERAL FACILITY INFORMATION

### Facility Description:

The TCWL is a 12.5-mile conveyance of 6-in and 8-in aluminum water pipeline constructed in the 1960s that conveys water from the Roaring Springs source on the North Rim to the Havasupai Garden Potable Water Pump Station, and ultimately to the South Rim. It provides the potable water and fire suppression for all facilities on the South Rim as well as some inner canyon facilities in the Cross-Canyon Corridor including over 800 historic buildings. The NPS is replacing the TCWL as it experiences frequent failures and requires expensive and continuous inner canyon maintenance work to repair leaks due to the aging infrastructure. Design plans for the replacement of the TCWL are in place with a target completion date set for Fall 2026. Once complete, the segment of water line between Cottonwood and Phantom Ranch (a 6-mile span) will be decommissioned.

### Facility Overflow Information:

Chlorinated groundwater from Roaring Springs flows by gravity via the TCWL to a settling tank for sedimentation at the Havasupai Garden Potable Water Pump Station prior to further transport and distribution to Grand Canyon South Rim Village. Chlorine is injected into the system at Roaring Springs. Operating pressure at Phantom Ranch and the Havasupai Garden Potable Water Pump Station is 800 psi. Exceedance of this designated operating pressure results in pipe breaks, making pressure release points at designated points of accessibility by helicopter necessary. If pressure in the waterline drops below the operating pressure, potable drinking water will not be delivered to the Havasupai Garden area. Both outfalls 003 and 002 maintain local distribution system flow at Phantom Ranch and eliminate back pressure on the TCWL. Outfalls are listed below in order from upstream to downstream flow along the TCWL.

#### Outfall 003

Outfall 003 is a finished water tank overflow located at the upper Phantom Ranch area. From the overflow pipe, the discharge is routed to an LPD-250A dechlorinating diffuser designed to chemically treat potable water with a chlorine/chloramine concentration  $\leq 4$  ppm (Figure 2). The final treatment process occurs within the diffuser tank where dechlorination is achieved by sodium bisulfite tablets (also called pucks) prior to discharge from Outfall 003 and mixing with receiving water. Addition of sodium bisulfite to the diffuser is performed manually at intervals determined by sample monitoring.

**Figure 2.** Discharge of effluent from Outfall 003 directly from LPD-250A dechlorinating diffuser, the final treatment process, at the upper Phantom Ranch area



## Outfall 002

Outfall 002 is a yard hydrant discharge at Phantom Ranch Delta. From the distribution pipe, a hose conveys effluent to an LPD-250A dechlorinating diffuser designed to chemically treat potable water with a chlorine/chloramine concentration  $\leq 4$  ppm (Figure 3 and Figure 4). The final treatment process occurs within the diffuser tank where dechlorination is achieved by sodium bisulfite tablets (also called pucks) prior to discharge from Outfall 002 and mixing with receiving water. Addition of sodium bisulfite to the diffuser is performed manually at intervals determined by sample monitoring.

**Figure 3.** Hydrant overflow conveyance by hose.



**Figure 4.** Discharge of effluent from Outfall 002 directly from LPD-250A dechlorinating diffuser, the final treatment process, at Phantom Ranch Delta



**Outfall 001**

Continuous overflow of unused potable water from the settling tank is de-chlorinated by sodium bisulfite addition via peristaltic pump at the Havasupai Garden Potable Water Pump Station. Effluent then travels from Outfall 001 at the point of discharge from the Havasupai Garden Potable Water Pump Station into a discharge channel about 700 feet before the confluence with Garden Creek.

**208 Consistency:**

208 Plan consistency is not required for industrial facilities.

**RECEIVING WATER****Receiving Water and Facility Outfalls:**

The facility discharge outfalls and the corresponding receiving waters are shown in Table 1. The receiving water for the Havasupai Garden Potable Water Pump Station for Outfall 001 is Garden Creek – Headwaters to confluence with Pipe Creek in the Colorado – Grand Canyon River Basin. The receiving water for both Outfalls 002 and 003 is Bright Angel Creek – Below Roaring Spring Springs Creek to confluence with Colorado River in the Colorado – Grand Canyon River Basin. Discharge is continuous from all three (3) outfalls. The designated uses are the same for both receiving waters. The designated uses for the receiving water bodies are Aquatic and Wildlife (warm water) (A&Ww), Full Body Contact (FBC), and Fish Consumption (FC). Table 1 summarizes the outfall locations, receiving water designated uses, and discharge patterns.

**Table 1. Facility Outfalls and Corresponding Receiving Water.**

<b>ID</b>	<b>Location</b>	<b>Receiving Water</b>	<b>Designated Uses</b>	<b>Discharge Pattern</b>
001	Latitude 36° 04' 43.1" N, Longitude 112° 07' 36.7" W Township 31 N, Range 2 E, Section 13 Havasupai Garden Potable Water Pump Station	Garden Creek – Headwaters to confluence with Pipe Creek	A&Ww FBC FC	Continuous 0.1556 MGD Avg 0.3325 MGD Max
002	Latitude 36° 05' 58.2" N Longitude 112° 05' 34.74" W Township 31 N, Range 3 E, Section 05 Second pressure release outfall in TCWL downpipe of Roaring Springs at Phantom Ranch Delta	Bright Angel Creek – Below Roaring Spring Springs Creek to confluence with Colorado River	A&Ww FBC FC	Continuous 0.1440 MGD Avg
003	Latitude 36° 06' 23.58" N Longitude 112° 05' 37.26" W Township 31 N, Range 3 E, Section 05 First pressure release outfall in TCWL downpipe of Roaring Springs at Upper Phantom Ranch area	Bright Angel Creek – Below Roaring Spring Springs Creek to confluence with Colorado River	A&Ww FBC FC	Continuous 0.0576 MGD Avg

**Total Maximum Daily Load and 303(d) Listing Status:**

1. Garden Creek – Headwaters to confluence with Pipe Creek  
The receiving waters is not on the 303(d) list and there are no TMDL issues associated.
2. Bright Angel Creek – Below Roaring Spring Springs Creek to confluence with Colorado River  
The receiving waters is not on the 303(d) list and there are no TMDL issues associated.

## DETERMINATION OF MONITORING REQUIREMENTS

### **Application of 40 CFR Part 122.45(h) *Internal Waste Streams* for Outfall 002 and 003:**

As outlined in 40 CFR Part 133: There are no applicable technology-based limitations for the type of discharge from Outfall 002 or Outfall 003. As outlined in A.A.C. R18-11-109 and Appendix A: Per 40 CFR 122.44(d)(1)(ii), (iii) and (iv), discharge limits must be included in the permit for parameters with “reasonable potential” (RP), that is, those known to be or expected to be present in the effluent at a level that could potentially cause any applicable numeric water quality standard to be exceeded. Numeric water quality standards are outlined in A.A.C. R18-11-109 and Appendix A. RP determinations for Outfalls 002 and 003 for this modification are based on RP analysis conducted on data submitted on September 16, 2020 to apply for reissuance of permit coverage of discharge from Outfall 001.

The Phantom Ranch site is described as ‘nestled at the bottom of Grand Canyon’ on tourist websites. It can only be reached by mule, on foot, by rafting the Colorado River, or by helicopter. Consequently, monitoring requirements for Outfall 002 and 003 will be established for parameters limited for Outfall 001 in the current permit (see Table 1 of the permit). However, Assessment Level, Action Level, and Effluent Characteristic monitoring for Outfall 001 (see Table 2, 3, 4.a., and 4.b. of the permit) will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h).

### STATUS OF COMPLIANCE WITH THE EXISTING AZPDES PERMIT

The consent order in effect for unauthorized discharge from two outfalls correspond to Place ID 1066, Phantom Ranch. This permit modification is for the individual AZPDES permit associated with Place ID 1922, Havasupai Garden Potable Water Pump Station, which is in good compliance standing. Table 2 summarizes the compliance status of individual AZPDES permit No. AZ0023621 during the current permit term (LTF No. 85926).

**Table 2.** Compliance summary for individual AZPDES permit No. AZ0023621

Date of Most Recent Inspection	10/13/2022, Announced Inspection (No. 408444)
Discharge Monitoring Reports Reviewed	03/2021 through 05/2023
DMR Exceedances	None
Notice of Violation Issued	None
Notice of Violation Closed	N/A
Formal Enforcement Actions	None

### **Required Use of Sufficiently Sensitive Test Methods:**

Self-reported monitoring results submitted to ADEQ during the past permit term (04/21/2016 – 03/23/2021, LTF 63311) and the current permit term (03/23/2021 – present, LTF 85926) indicate that the NPS failed to use sufficiently sensitive analytical methods for mercury and cyanide as required by 40 CFR 136.1(c). Non-detect test results reported on discharge monitoring reports (DMRs) to ADEQ for mercury and cyanide have high limits of quantification (LOQs) that exceed the lowest applicable water quality standards listed in A.A.C. R18-11 Appendix A. Reasonable Potential (RP) analysis results for mercury and cyanide are indeterminate on the basis of high LOQ and assessment level monitoring remains in the permit. See Part II.A.5. of the permit for analytical requirements to meet compliance criteria for use of sufficiently sensitive test methods. See Part II.A.6. of the permit for analytical requirements specific to meet compliance criteria for mercury monitoring. Note that monitoring for hydrogen sulfide and chromium VI are only required if the concentration for the corresponding indicator parameter exceeds the threshold designated in the permit (See Part I.B. Trace Substance Monitoring in the permit).

**PROPOSED PERMIT CHANGES****1. Addition of Outfalls 002 and 003:**

The addition of two (2) outfalls (002 and 003) to the individual AZPDES permit for USDOJ NPS Grand Canyon Havasupai Garden Potable Water Pump Station will apply for the remainder of the current permit term, which expires at midnight on March 22, 2026. ADEQ has reviewed the request and proposes to modify the permit according to the changes described below. Proposed changes are also summarized in Table 3.

**2. Changes to Part I.A.1 *Discharge Limitations and Monitoring Requirements* are as follows:**

- a. Discharge limits and monitoring requirements specified in Table 1 will apply to Outfalls 001, 002, and 003. Mass limits will remain the same since the permitted design capacity will remain at 1.25 MGD.

- b. **Total Dissolved Solids**

The Havasupai Garden Potable Water Pump Station is categorized as an industrial user in compliance with Forum policy by the Colorado River Basin Salinity Control Forum in the 2014 Review. Forum industrial criteria requires that no industrial user discharges more than 1.00 ton/day TDS. With an average flow rate of 1.25 MGD, the facility was estimated by the forum to discharge 0.8 tons/day based for an average TDS concentration of 172 mg/L. Data submitted with the application for the current permit report a maximum daily TDS concentration of 748 mg/L. The current permit sets a TDS limit at 650 mg/L provided by a “fresh water waiver” (Appendix B. Part I.B.4 of the 2014 Colorado River Basin Salinity Control Forum Review). However, because the maximum reported TDS concentration exceeds 90% of 500 mg/L (for Colorado River downstream of Lees Ferry, Arizona and upstream of the Hoover Dam) the discharge will no longer be considered for the fresh water waiver (Appendix B. Part I.B.4 of the 2014 Colorado River Basin Salinity Control Forum Review). The TDS limit of 650 mg/L daily maximum limit will be changed to a mass-based limit of 1 metric Ton/day net increase. The mass-based TDS limit will be applied to all three outfalls combined. Net TDS increase will be calculated from the discharge flow rate and TDS measurements for all three (3) outfalls (001, 002, and 003) combined compared to the source water.

**3. Changes to Part I.B.1 *Trace Substance Monitoring* are as follows:**

The condition that the permittee shall monitor discharge from Outfall 001 will remain in the permit. This section will specify that Monitoring for Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h). Discharges from Outfall 001 are considered representative of discharges from Outfall 002 and Outfall 003. Monitoring and reporting for discharges from Outfalls 002 and 003 are not required except as specified in Part I.A. and Part II.A.1.

**4. Changes to Part I.C.1 *Whole Effluent Toxicity Monitoring* are as follow:**

- a. The condition that the permittee shall monitor discharge from Outfall 001 will remain in the permit. This section will specify that Monitoring for Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h). Discharges from Outfall 001 are considered representative of discharges from Outfall 002 and Outfall 003. Monitoring and reporting for discharges from Outfalls 002 and 003 are not required except as specified in Part I.A. and Part II.A.1.

- b. The monitoring frequency requirement of 1x / 4<sup>th</sup> year of permit term for whole effluent toxicity is changed to 1x/year in 2025 for added clarity.

**5. Changes to Part I.D.1 *Discharge Characterization Testing* are as follows:**

- a. This section will specify that the permittee shall monitor discharges from Outfall 001. Monitoring for Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h). Discharges from Outfall 001 are considered representative of discharges from Outfall 002 and Outfall 003. Monitoring and reporting for discharges from Outfalls 002 and 003 are not required except as specified in Part I.A. and Part II.A.1.
- b. The monitoring frequency requirement of 1x / 4<sup>th</sup> year of permit term for whole effluent toxicity is changed to 1x/year in 2025 for added clarity.

**6. Changes to Part II.A.1. *Sample Collection and Analysis* are as follows:**

Samples taken for the monitoring requirements specified in Part I shall be collected at the following locations:

- a. Source water samples shall be taken at the intake of untreated water (from streams, rivers, or underground aquifers) prior to treatment at the public drinking water system.
- b. Effluent samples collected for limited parameters specified in Part I.A. Table 1 of the permit:
  - i. Outfall 001 shall be taken at the point of discharge at the Havasupai Garden Potable Water Pump Station and prior to discharge into the diversion channel 700 feet before the confluence with Garden Creek.
  - ii. Outfall 002 shall be taken at the point of discharge from the dechlorinating diffuser and prior to mixing with the receiving waters.
  - iii. Outfall 003 shall be taken at the point of discharge from the dechlorinating diffuser and prior to mixing with the receiving waters.
- c. Effluent samples collected for trace substance, WET, and discharge characterization monitoring specified in Part I.B., Part I.C., and Part I.D. shall be taken at the Outfall 001 point of discharge at the Havasupai Garden Potable Water Pump Station and prior to discharge into the diversion channel 700 feet before the confluence with Garden Creek. Monitoring for Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h).

**7. Change to Appendix B. *AZPDES Discharge Flow Record* are as follows:**

Because discharge from all three outfalls is reported to be continuous, the requirement for a discharge flow record has been removed.

**Table 3.** Major proposed permit changes to modify the current permit.



<b>Parameter</b>	<b>Existing Permit</b>	<b>Modified Permit</b>	<b>Reason for Change</b>
Part I.A.1 Limited Parameters	Monitor from Outfall 001	Monitor from Outfalls 001, 002, and 003	Permit the discharge of pollutants from two additional outfalls.
Noncompliance Reporting Hotline	(602) 771-2330	Noncompliance resulting in imminent threat to human health or the environment must be reported to (602) 771-2330, while all other noncompliance must be reported to (602) 771-1440.	Routing emergency calls to the emergency hotline, but all other calls to a non-emergency number.
Total Dissolved Solids	Effluent concentration limit 650 mg/L	Net Increase Mass Limit for industrial user in compliance with Forum policy set at 1 metric ton/day. Applies to sum of TDS in effluent discharged from all three outfalls combined.	Limit required based on re-evaluation of the "2014 Review, Water Quality Standards for Salinity, Colorado River System" developed by the Colorado River Basin Salinity Control Forum.
Trace Substance Monitoring, Whole Effluent Toxicity, and Discharge Characterization Testing	Monitor discharges from Outfall 001	Monitor discharges from Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003.	Monitoring for Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h).
Whole Effluent Toxicity Monitoring Frequency	1x/ 4 <sup>th</sup> year of permit term	1x/year in 2025	Make clear the requirement for testing for WET in the fourth year of the permit term, which is 2025.
Part II.A.1. Source Water Sample Collection Locations	No specification	Source water samples shall be taken at the intake of untreated water (from streams, rivers, or underground aquifers) prior to treatment at the public drinking water system.	Necessary to calculate the limited parameter TDS (Net Increase) by subtracting the TDS in the source water from the TDS in the effluent.
Part II.A.1. Effluent Sample Collection Locations	Monitor discharges from Outfall 001	Monitor discharges from Outfall 001, 002, and 003	Permit the discharge of pollutants from two additional outfalls. Monitoring for Outfall 001 will serve as monitoring of internal waste streams for Outfall 002 and 003 in accordance with 40 CFR Part 122.45(h) with the exception of limited parameters specified in Part I.A.1.
Appendix B. Discharge Flow Record	Required for monitoring discharge flow from Outfall 001	Discharge flow record removed.	Discharge from Outfall 001, 002, and 003 are reported to be continuous.

**MONITORING REQUIREMENTS**

Table 4 summarizes permit limitations and monitoring requirements for Outfall 002. Table 5 summarizes permit limitations and monitoring requirements for Outfall 003.

**Table 4.** Permit limitations and monitoring requirements for Outfall 002

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value (1)	No. of Samples (1)	Estimated Maximum Value (1)	RP Determination	Proposed Monitoring Requirement/ Rationale (2)
Flow (3)	---	---	---	---	---	Discharge flow is to be monitored on a continual basis using a flow meter.
Chlorine, Total Residual (TRC) (3)	11 µg/L/ A&Ww chronic	N/A	0	N/A	RP always expected when chlorine or bromine is used for disinfection.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine.
pH (3)	Minimum: 6.5 Maximum: 9.0 A&Ww and FBC A.A.C. R18-11-109(B)	N/A	0	N/A	Limit in A.A.C.R 18-11-109(B).	pH is to be monitored using a discrete sample of the effluent and a WQBEL remains in the permit. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required.
Total Dissolved Solids (TDS) (3)	Colorado River Salinity Forum requirements	N/A	0	N/A	N/A	Monitoring required to determine compliance with Colorado River Basin Salinity Control Forum (2014 Review) requirements and a mass limit is set.
Temperature	R18-11-109C the discharge shall not cause an increase in the ambient water temperature.  A&Ww: no more than 3.0°C	16.5 °C to 21.3 °C	52	N/A	N/A	Effluent temperature is to be monitored for effluent characterization. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. Temperature sampling must also coincide with ammonia sampling when required. (4)
Ammonia	Standard varies with temperature and pH	< 1 mg/L	2	N/A	No RP	Ammonia is to be monitored for effluent characterization by discrete sample. One sample must coincide with WET sampling to aid in the determination of the cause of toxicity, if toxicity is detected. (4)
Nutrients Total Nitrogen Total Phosphorus	No applicable standards	N: 0.238 mg/L P: < 0.05 mg/L	N: 2 P: 2	N/A	N/A	Monitoring required for effluent characterization. (4)
Antimony	30 µg/L / A&Ww chronic	< 0.5 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value (1)	No. of Samples (1)	Estimated Maximum Value (1)	RP Determination	Proposed Monitoring Requirement/ Rationale (2)
Arsenic	30 µg/L / FBC	< 1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)
Beryllium	5.3 ug/L / A&Ww chronic	< 2 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)
Cadmium (5)	4.73 µg/L / A&Ww chronic	< 0.1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)
Chromium (Total)	No applicable standard	< 5 µg/L	4	N/A	No RP	Monitoring required as an indicator parameter for Chromium VI. (4)
Chromium VI	11 µg/L / A&Ww chronic	< 15 µg/L	4	N/A	RP Indeterminate (high LOQ)	An assessment level remains in the permit. (4)
Copper (5)	13.5 µg/L / A&Ww chronic	< 10 µg/L	4	N/A	RP Indeterminate (Limited Data)	An assessment level remains in the permit. (4)
Cyanide	9.7 µg/L / A&Ww chronic	< 10 µg/L	6	N/A	RP Indeterminate (high LOQ)	An assessment level remains in the permit. (6)
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	170 mg/L	4	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent hardness value of 161 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required. (4)
Hydrogen Sulfide	2 µg/L / A&Ww chronic	< 500	6	N/A	RP Indeterminate (High LOQ)	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide, for which an assessment level remains in the permit. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term. (6)
Iron	1,000 ug/L / A&Ww chronic	No Data	N/A	N/A	RP Indeterminate (No data)	An assessment level remains in the permit. (4)
Lead (5)	4.21 µg/L / A&Ww chronic	< 1 µg/L	4	N/A	No RP	Monitoring is required for effluent characterization. (4)
Mercury	0.01 µg/L/ A&Ww chronic	< 0.2 µg/L	7	N/A	RP Indeterminate (High LOQ)	An assessment level remains in the permit. (7)

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value (1)	No. of Samples (1)	Estimated Maximum Value (1)	RP Determination	Proposed Monitoring Requirement/ Rationale (2)	
Nickel (5)	77.8 µg/L/ A&Ww chronic	< 20 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Selenium	2 µg/L / A&Ww chronic	< 2 µg/L	7	N/A	RP Indeterminate (High LOQ)	An assessment level remains in the permit. (4)	
Silver (5)	7.30 µg/L / A&Ww acute	< 0.1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Sulfides	No applicable standard	< 250 µg/L	6	N/A	N/A	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide, for which an assessment level remains in the permit. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term. (6)	
Thallium	7.2 µg/L / FC	< 0.5 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Zinc (5)	175 µg/L/ A&Wedw acute and chronic	< 20 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A))	<i>Pseudo-kirchneriella subcapitata</i> (8)	1.0 TUc	1	N/A	RP Indeterminate	Monitoring required and an action level remains in the permit. (4)
		<i>Pimephales promelas</i>	1.0 TUc	1	N/A	RP Indeterminate	Monitoring required and an action level remains in the permit. (4)
		<i>Ceriodaphnia dubia</i>	1.0 TUc	1	N/A	RP Indeterminate	Monitoring required and an action level remains in the permit. (4)

**Footnotes:**

- (1) Data for Outfall 001 submitted on September 16, 2020 with application for permit reissuance.
- (2) The monitoring frequencies are as specified in the permit.
- (3) Monitoring shall be performed at Outfall 002.
- (4) Monitoring shall be performed at Outfall 001, an internal waste stream for Outfall 002, in accordance with 40 CFR Part 122.45(h).
- (5) Hardness-dependent metal - the standard is for this parameter is based on the average effluent hardness value of 161 mg/L as indicated above.
- (6) High limit of quantification (LOQ). Analytical method used for self-reported monitoring is not sufficiently sensitive in accordance with 40 CFR 136.1(c). See Part II.A.5. of the permit for analytical requirements to meet compliance criteria.
- (7) High limit of quantification (LOQ). Analytical method used for self-reported monitoring of mercury is not sufficiently sensitive in accordance with 40 CFR 136.1(c). See Part II.A.5.b. and Part II.A.6. of the permit for analytical requirements to meet compliance criteria.
- (8) Formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*.

**Table 5.** Permit limitations and monitoring requirements for Outfall 003

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value (1)	No. of Samples (1)	Estimated Maximum Value (1)	RP Determination	Proposed Monitoring Requirement/ Rationale (2)
Flow (3)	---	---	---	---	---	Discharge flow is to be monitored on a continual basis using a flow meter.
Chlorine, Total Residual (TRC) (3)	11 µg/L/ A&Ww chronic	N/A	0	N/A	RP always expected when chlorine or bromine is used for disinfection.	TRC is to be monitored as a discrete sample and a WQBEL remains in the permit. 40 CFR Part 136 specifies that discrete samples must be collected for chlorine.
pH (3)	Minimum: 6.5 Maximum: 9.0 A&Ww and FBC A.A.C. R18-11-109(B)	N/A	0	N/A	Limit in A.A.C.R 18-11-109(B).	pH is to be monitored using a discrete sample of the effluent and a WQBEL remains in the permit. 40 CFR Part 136 specifies that grab samples must be collected for pH. At least one sample must coincide with WET testing to aid in the determination of the cause of toxicity if toxicity is detected. pH sampling must also coincide with ammonia sampling when required.
Total Dissolved Solids (TDS) (3)	Colorado River Salinity Forum requirements	N/A	0	N/A	N/A	Monitoring required to determine compliance with Colorado River Basin Salinity Control Forum (2014 Review) requirements and a mass limit is set.
Temperature	R18-11-109C the discharge shall not cause an increase in the ambient water temperature.  A&Ww: no more than 3.0°C	16.5 °C to 21.3 °C	52	N/A	N/A	Effluent temperature is to be monitored for effluent characterization. 40 CFR Part 136 specifies that discrete samples must be collected for temperature. Temperature sampling must also coincide with ammonia sampling when required. (4)
Ammonia	Standard varies with temperature and pH	< 1 mg/L	2	N/A	No RP	Ammonia is to be monitored for effluent characterization by discrete sample. One sample must coincide with WET sampling to aid in the determination of the cause of toxicity, if toxicity is detected. (4)
Nutrients Total Nitrogen Total Phosphorus	No applicable standards	N: 0.238 mg/L P: < 0.05 mg/L	N: 2 P: 2	N/A	N/A	Monitoring required for effluent characterization. (4)
Antimony	30 µg/L / A&Ww chronic	< 0.5 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)
Arsenic	30 µg/L / FBC	< 1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)
Beryllium	5.3 ug/L / A&Ww chronic	< 2 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value (1)	No. of Samples (1)	Estimated Maximum Value (1)	RP Determination	Proposed Monitoring Requirement/ Rationale (2)
Cadmium (5)	4.73 µg/L / A&Ww chronic	< 0.1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)
Chromium (Total)	No applicable standard	< 5 µg/L	4	N/A	No RP	Monitoring required as an indicator parameter for Chromium VI. (4)
Chromium VI	11 µg/L / A&Ww chronic	< 15 µg/L	4	N/A	RP Indeterminate (high LOQ)	An assessment level remains in the permit. (4)
Copper (5)	13.5 µg/L / A&Ww chronic	< 10 µg/L	4	N/A	RP Indeterminate (Limited Data)	An assessment level remains in the permit. (4)
Cyanide	9.7 µg/L / A&Ww chronic	< 10 µg/L	6	N/A	RP Indeterminate (high LOQ)	An assessment level remains in the permit. (6)
Hardness	No applicable standard. Hardness is used to determine standards for specific metal parameters.	170 mg/L	4	N/A	N/A	A&W standards for cadmium, chromium III, copper, lead, nickel, silver and zinc used for RP determinations were based on the average effluent hardness value of 161 mg/L. Monitoring for hardness is required whenever monitoring for hardness dependent metals is required. (4)
Hydrogen Sulfide	2 µg/L / A&Ww chronic	< 500	6	N/A	RP Indeterminate (High LOQ)	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide, for which an assessment level remains in the permit. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term. (6)
Iron	1,000 ug/L / A&Ww chronic	No Data	N/A	N/A	RP Indeterminate (No data)	An assessment level remains in the permit. (4)
Lead (5)	4.21 µg/L / A&Ww chronic	< 1 µg/L	4	N/A	No RP	Monitoring is required for effluent characterization. (4)
Mercury	0.01 µg/L/ A&Ww chronic	< 0.2 µg/L	7	N/A	RP Indeterminate (High LOQ)	An assessment level remains in the permit. (7)
Nickel (5)	77.8 µg/L/ A&Ww chronic	< 20 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)

Parameter	Lowest Standard / Designated Use	Maximum Reported Daily Value (1)	No. of Samples (1)	Estimated Maximum Value (1)	RP Determination	Proposed Monitoring Requirement/ Rationale (2)	
Selenium	2 µg/L / A&Ww chronic	< 2 µg/L	7	N/A	RP Indeterminate (High LOQ)	An assessment level remains in the permit. (4)	
Silver (5)	7.30 µg/L / A&Ww acute	< 0.1 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Sulfides	No applicable standard	< 250 µg/L	6	N/A	N/A	Monitoring is required for sulfides as an indicator parameter for hydrogen sulfide, for which an assessment level remains in the permit. If sulfides are detected, monitoring for hydrogen sulfide is required for the remainder of the permit term. (6)	
Thallium	7.2 µg/L / FC	< 0.5 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Zinc (5)	175 µg/L/ A&Wedw acute and chronic	< 20 µg/L	4	N/A	No RP	Monitoring required for effluent characterization. (4)	
Whole Effluent Toxicity (WET)	No toxicity (A.A.C. R18-11-108(A))	<i>Pseudo-kirchneriella subcapitata</i> (8)	1.0 TUc	1	N/A	RP Indeterminate	Monitoring required and an action level remains in the permit. (4)
		<i>Pimephales promelas</i>	1.0 TUc	1	N/A	RP Indeterminate	Monitoring required and an action level remains in the permit. (4)
		<i>Ceriodaphnia dubia</i>	1.0 TUc	1	N/A	RP Indeterminate	Monitoring required and an action level remains in the permit. (4)

**Footnotes:**

- (1) Data for Outfall 001 submitted on September 16, 2020 with application for permit reissuance.
- (2) The monitoring frequencies are as specified in the permit.
- (3) Monitoring shall be performed at Outfall 003.
- (4) Monitoring shall be performed at Outfall 001, an internal waste stream for Outfall 003, in accordance with 40 CFR Part 122.45(h).
- (5) Hardness-dependent metal - the standard for this parameter is based on the average effluent hardness value of 161 mg/L as indicated above.
- (6) High limit of quantification (LOQ). Analytical method used for self-reported monitoring is not sufficiently sensitive in accordance with 40 CFR 136.1(c). See Part II.A.5. of the permit for analytical requirements to meet compliance criteria.
- (7) High limit of quantification (LOQ). Analytical method used for self-reported monitoring of mercury is not sufficiently sensitive in accordance with 40 CFR 136.1(c). See Part II.A.5.b. and Part II.A.6. of the permit for analytical requirements to meet compliance criteria.
- (8) Formerly known as *Selenastrum capricornutum* or *Raphidocelis subcapitata*.

**Permit Effective Time Frame**

This permit modification will not change the permit effective time frame from March 23, 2021 through midnight on March 22, 2026.

**Anti-Backsliding Considerations:**

“Anti-backsliding” refers to statutory (Section 402(o) of the Clean Water Act) and regulatory (40 CFR 122.44(l)) requirements that prohibit the renewal, reissuance, or modification of an existing NPDES permit that contains effluent limits, permit conditions, or standards that are less stringent than those established in the previous permit. The rules and statutes do identify exceptions to these circumstances where backsliding is acceptable. This permit has been reviewed and drafted with consideration of anti-backsliding concerns.

No limits have been removed from the permit. Limits are retained in the permit for parameters where reasonable potential (RP) for an exceedance of a standard was calculated to exist or be indeterminate at the time of the March 23, 2026 permit issuance. In those cases, limits were recalculated using the most current Arizona Water Quality Standards (WQS). If less stringent limits result due to a change in the WQS then backsliding is allowed in accordance with 303(d)(4) if the new limits are consistent with antidegradation requirements and the receiving water is in attainment of the new standard; see Section XII for information regarding antidegradation requirements.

**Antidegradation:**

Antidegradation rules have been established under A.A.C. R18-11-107 to ensure that existing surface water quality is maintained and protected. The discharge from the Havasupai Garden Potable Water Pump Station will be to a perennial water with Tier 2 antidegradation protection. This is a renewal permit for an existing facility with no new or expanded discharge, and the existing uses have been maintained. Therefore, an antidegradation review is not required at this time. Effluent quality limitations and monitoring requirements have been established under the proposed permit to ensure that the discharge will meet the applicable water quality standards. As long as the permittee maintains consistent compliance with these provisions, the designated uses of the receiving water will be presumed protected, and the facility will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.



**ADMINISTRATIVE INFORMATION****Public Notice (A.A.C. R18-9-A907):**

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft AZPDES permit or other significant action with respect to an AZPDES 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 Fact Sheet Page 22 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-A908):**

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-A908(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.

**EPA Review (A.A.C. R18-9-A908(C)):**

A copy of this draft permit modification any revisions made to this draft as a result of public comments received will be sent to EPA Region 9 for review. If EPA objects to a provision of the draft, ADEQ will not issue the permit until the objection is resolved.

**ADDITIONAL INFORMATION****Contact Information:**

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality  
Water Quality Division – Surface Water Permits Unit  
Attn: Corin Hammond  
1110 West Washington Street  
Phoenix, Arizona 85007

Or by contacting Corin Hammond at (602) 771 – 4144 or by e-mail at hammond.corin@azdeq.gov.

**Information Sources:**

While developing effluent limitations, monitoring requirements, and special conditions for the permit, the following information sources were used:

1. AZPDES Permit Application Form 1 and Forms 2A and 2S, received September 16, 2020, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
2. AZPDES Permit Application Form 1 and Form 2C, received April 11, 2023, along with supporting data, facility diagram, and maps submitted by the applicant with the application forms.
3. Supplemental information to the application received by ADEQ on April 26, 2023, May 25, 2023, and June 01, 2023.
4. ADEQ files on Havasupai Garden Potable Water Pump Station (*formerly known as the Indian Garden Potable Water Pump Station*) (Place ID 1922).
5. ADEQ files on Phantom Ranch (Place ID 1066).
6. ADEQ Geographic Information System (GIS) Web site
7. ADEQ Arizona's 2018 303(d) List of Impaired Waters.
8. Information provided to ADEQ staff during an in-person inspection of the Havasupai Garden Potable Water Pump Station and Phantom Ranch facilities on October 13, 2022.
9. Arizona Administrative Code (A.A.C.) Title 18, Chapter 11, Article 1, Water Quality Standards for Surface Waters, adopted December 31, 2016.
10. A.A.C. Title 18, Chapter 9, Article 9. Arizona Pollutant Discharge Elimination System rules.
11. Code of Federal Regulations (CFR) Title 40:
  - a. Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*.
  - b. Part 124, *Procedures for Decision Making*.
  - c. Part 133. *Secondary Treatment Regulation*.
  - d. Part 503. *Standards for the Use or Disposal of Sewage Sludge*.
12. EPA Technical Support Document for Water Quality-based Toxics Control dated March 1991.
13. *Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs*, US EPA, May 31, 1996.
14. *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA /821-R-02-013).

15. U.S. EPA NPDES Permit Writers' Manual, September 2010.

DRAFT