

**STATE OF ARIZONA  
 AQUIFER PROTECTION PERMIT NO. P-512235  
 PLACE ID 18640 LTF 83040  
 SIGNIFICANT AMENDMENT**

**1.0 AUTHORIZATION**

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2 and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A. A. C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, the Arizona Department of Environmental Quality (ADEQ) hereby authorizes Arizona Minerals Inc. to operate the Hermosa Project Property located approximately 5 miles south of the Town of Patagonia, Arizona, over groundwater of the Santa Cruz groundwater basin, in Section 32 in Township 22S, Range 16E and in Township 23S, Range 16E ; and un-surveyed Sections 3 and 4, of the Gila and Salt River Baseline and Meridian.

This permit becomes effective on the date of the Water Quality Division Director’s signature and shall be valid for the life of the facility (operational, closure, and post-closure periods) unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below, and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant and as determined at the applicable POC occurs as a result of the discharge from the facility.

**1.1. PERMITTEE INFORMATION**

**Facility Name:** Hermosa Project Property  
**Facility Address:** 749 Harshaw Road  
 Patagonia, Arizona 85624  
**County:** Santa Cruz County

**Annual Registration Fee Flow Rate:** 6,652,000 gallons per day (gpd)

**Permittee:** Arizona Minerals Inc.  
**Permittee Address:** 2210 East Fort Lowell Road  
 Tucson, Arizona 85719

**Facility Contact:** Brent Musslewhite  
**Emergency Phone No.:** (520) 485-1300

**Latitude/Longitude:** 31° 27' 59.4" N/110° 43' 35.8" W  
**Legal Description:** Section 32 in Township 22S, Range 16E and in Township 23S, Range 16E; and un-surveyed Sections 3 and 4, of the Gila and Salt River Baseline and Meridian.

**1.2. AUTHORIZING SIGNATURE**

  
 Trevor Baggione (Aug 4, 2021 14:41 PDT)

**Trevor Baggione, Director**  
 Water Quality Division  
 Arizona Department of Environmental Quality

Signed this 25th day of August, 2021

**THIS AMENDED PERMIT SUPERCEDES ALL PREVIOUS PERMITS**

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## **2.0 SPECIFIC CONDITIONS**

[A.R.S. §§ 49-203(4), 49-241(A)]

### **2.1. FACILITY / SITE DESCRIPTION**

[A.R.S. § 49-243(K)(8)]

The Hermosa Project Property is located approximately 5 miles south of the Town of Patagonia, Arizona. Arizona Minerals Inc. (AMI) purchased the historic, January and Norton Mine Claims and the Trench Camp Mine claims and associated Tailings Pile/waste rock from the ASARCO Trust in early 2016. The historic Mine Claims are closed and not considered APP regulated facilities and thus exempt according to the Arizona Revised Statute (A.R.S.) § 49 -201.7 and A.R.S. § 49-250.B.11. The APP application has been submitted for APP-regulated discharges associated with ADEQ's Voluntary Remediation Program (VRP) project related to eliminating discharges of mine impacted water from January Adit mine workings and tailing piles (which includes potentially acid generating (PAG) waste rock) seepage to Alum Gulch.

The Trench Camp historic tailings piles (1 through 4) were located within an unlined natural basin in a three pile configuration. Tailings Pile #1 contained tailings and potential acid generating (PAG) waste rock. Stockpile #2 and #4 contained only tailings and have been combined into one pile referred to as Tailings Pile #2 and are generally divided by the 5,100 foot contour elevation. In addition Tailings Pile # 3 contained only tailings.

The Trench Camp TSF is designed as a lined, dry-stack permanent storage area for the remediation of the existing tailings piles, described above. Placement of the existing tailings piles on the lined permanent containment is part of the VRP program in Arizona under the site code 505143-2. Tailings, PAG waste rock and impacted soils beneath the existing tailings piles are to be excavated and placed in the lined Trench Camp TSF as an earthen material. PAG development rock from site surface construction and from a planned exploration decline or shaft, solids from the water treatment plants WTP1 and WTP2, core cuttings, drill cuttings, and stormwater best management practices (BMPs) solids will also be stored in the lined TSF as a co-mingled material with the existing tailings and PAG waste rock. Additionally, the development rock may be placed on the exterior face of the existing tailings and PAG waste rock thereby acting as rock armor, to prevent water and wind erosion prior to closure.

The Trench Camp TSF shall be constructed in three stages; construction began in 2018. The TSF consists of a lined tailings storage facility, two stormwater detention ponds and an underdrain collection pond. The tailings seepage water in the Trench Camp TSF will be collected through an underground collection system and gravity fed to the double lined underdrain collection pond (UCP). The UCP will be constructed downgradient of the Trench Camp TSF. The captured tailings seepage water, precipitation that falls within the UCP and water from the January Adit (the January and Norton Mine Claims) will be piped to WTP1 and/or WTP2 for treatment and discharge to Alum Gulch and/or Harshaw Creek under AZPDES permit No AZ0026387.

#### **Interim Stage**

The materials from Tailings Pile #1, which included 225,000 cubic yards of tailings, waste rock, and native material, were excavated, hauled and temporarily placed on Tailings Piles #2 and #4 in order to provide space for the Stage 1 TSF. The temporary placement of Tailing Pile #1 on Tailings Piles #2 and #4 consisted of approximately 5H:1V (horizontal: vertical) slopes, 50 feet (ft.) setback from the brow of the existing slope on Tailings Pile #2, and an approximate maximum height of 30 ft.

#### **Stage 1**

Stage 1 of the Trench Camp TSF was constructed and utilizes approximately 650,000 square feet (ft<sup>2</sup>) of lined containment. Approximately 950,000 cubic yards of tailings, waste rock and native material were excavated, hauled, placed and compacted within the lined Stage 1 Trench Camp TSF from temporary Tailings Pile #1 and Tailings Piles #2 and #4. This volume includes the 225,000 cubic yards of Interim Stage material discussed above.

**Stage 2**

Stage 2 of the Trench Camp TSF was constructed after Stage 1 and utilizes approximately 596,000 ft<sup>2</sup> of additional lined containment. Approximately 280,500 cubic yards of additional tailings, waste rock and native material were excavated, hauled, placed and compacted within the lined Stage 2 Trench Camp TSF from Tailings Piles #2 and #4, and Tailings Pile #3. All historic tailings, waste rock and native materials from Tailings Piles #1, #2, #3 and #4 have been relocated within the constructed Stage 1 and 2 TSF lined containment as a compacted earthen fill totaling approximately 1,230,500 cubic yards.

To complete the design stacking geometry, approximately 1,400,000 cubic yards of additional material including exploration decline or shaft development rock (approximately 932,092 cubic yards), filter cake from WTP1 (approximately 20,097 cubic yards) and WTP2 (approximately 14,949 cubic yards), core cutting solids (approximately 105 cubic yards), drill cuttings (approximately 5 cubic yards), construction PAG rock (approximately 385,051 cubic yards), and sediments from stormwater control features (approximately 9,000 cubic yards), will be placed in the Trench Camp TSF. These volumes are estimates only, but reflect the overall proportion of each type of material expected to be placed into the TSF. The actual volumes of the various materials placed in the TSF may vary so long as all placement requirements are met for each material type (see Section 2.2.1.1) and the elevation of the completed TSF does not exceed 5,175 feet. All materials will be placed within the existing lined Stage 1 and Stage 2 TSF footprint.

The site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES		
Facility	Latitude	Longitude
Lined Tailings Storage Facility (TSF)	31° 27' 59.4" N	110° 43' 35.8" W
Underdrain Collection Pond (UCP)	31° 27' 59" N	110° 43' 39.2" W
AZPDES Outfall 001	31° 28' 15" N	110° 43' 43" W
AZPDES Outfall 002	31° 27' 56.62" N	110° 43' 11.51" W

**2.1.1. Annual Registration Fee**

[A.R.S. § 49-242 and A.A.C. R18-14-104]

The annual registration fee for this permit is payable to ADEQ each year. The permitted flow for fee calculation is 6,652,000 gallons per day (gpd). If the facility is not yet constructed or is incapable of discharge at this time, the permittee may be eligible for reduced fees under the rule. Send all correspondence requesting reduced fees to the Water Quality Division of ADEQ. Please reference the permit number, LTF number and why reduced fees are requested under the rule.

**2.1.2. Financial Capability**

[A.R.S. § 49-243(N) and A.A.C. R18-9-A203 ]

The Permittee shall be required to demonstrate financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The Permittee shall be required to maintain financial capability throughout the life of the facility. The closure costs are \$5,600,685, and post-closure costs are \$8,320,187, for a total of \$13,920,872. The financial assurance mechanism shall be demonstrated through a “performance surety bond” as per A.A.C. R18-9-A203(C)(2).

**2.2. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)**

[A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

Facilities regulated by this permit shall be designed, constructed, operated, and maintained to meet requirements specified by A.R.S. §49-243(B) and A.A.C. R18-9-A202(A)(5).

### **2.2.1. Engineering Design**

The Trench Camp TSF and the UCP employ prescriptive BADCT components (in accordance with the Arizona Mining BADCT Guidance Manual (AMBGM)). BADCT has been determined in accordance with the AMBGM. The design of the UCP incorporates enhanced discharge control measures (such as double liner and leak collection and recovery systems) that go beyond the prescriptive components identified in the AMBGM for non-stormwater impoundments.

#### **2.2.1.1. Tailings Impoundment (Stage 1 and 2 TSF)**

The lined, dry stack TSF will be constructed in two Stages (in addition to the “Interim Stage” described in Section 2.1). BADCT for each Stage is provided below:

##### **Stage 1**

Prior to placement of the tailings material, the basin area shall be cleared of any vegetation and stripped of any growth media and graded to have maximum slopes of 2.5H (horizontal):1V (vertical). A composite liner system consisting of a 12 inch thick low permeability soil layer (LPSL) having a coefficient of permeability that is less than or equal to  $1.0 \times 10^{-6}$  centimeters/second (cm/sec) overlain by a double-sided textured 60 mil high density polyethylene (HDPE) liner shall be placed over the graded area. The geomembrane shall be anchored in the perimeter road at a setback of 3 ft. with trenched dimensions of 3 ft. deep by 2 ft. wide. An 18 inch (in.) protective layer composed of 1 1/2 in. minus granular material shall be placed over the geomembrane. An underdrain collection system, consisting of a series of pipes shall be placed in topographic lows to collect drainage from the base of the facility and convey them to the UCP via the concrete encased underdrain outlet pipe works. At the outlet point of the underdrain pipes, valves shall be installed to control flow to the Underdrain Collection Pond. The maximum elevation of the Stage 1 TSF shall not exceed 5,175 ft.

External and internal stormwater channels shall be constructed to appropriately capture and convey stormwater from a 100-year/24-hour storm event. A geomembrane lined external stormwater detention basin having the capacity of 2.66 million gallons (8.16 ac. ft.) shall be constructed to route runoff from the east side (upstream) of Stage 1 to the underdrain collection system via a pipe located in the basin low point. After Tailings Piles 1, 2 and 4 are relocated to the Stage 1 TSF, the external stormwater detention basin pipe shall be capped and the detention basin shall be expanded as part of the Stage 2 TSF basin construction. Two internal detention basins designed to contain contact stormwater, one having a capacity of 847,214 gallons (2.6 acre feet (ac. ft.)) shall be constructed in the northwestern portion of Stage 1 TSF, and another having a capacity of 488,777 gallons (1.5 ac. ft.) shall be constructed near the northeastern portion of Stage 1 TSF.

##### **Stage 2**

The Stage 2 TSF shall be constructed in a manner similar to that of Stage 1 TSF. The permittee may use geosynthetic clay liner (GCL) in lieu of the LPSL if field conditions allow its use and it is approved by the design engineer. The maximum elevation of the Stage 2 TSF shall match up with the Stage 1 TSF elevation and shall not exceed 5,175 ft. During the Stage 2 construction, the 2.6 ac. ft. internal detention basin located at the northwestern portion will be expanded to contain a volume of 3,258,514 gallons (10 ac. ft.) of contact stormwater, and another 260,681 gallons (0.8 ac. ft.) internal detention basin will be constructed in the eastern portion of the Stage 2 TSF. The 1.5 ac. ft. internal detention basin located at the northeastern portion of the Stage 1 TSF will be covered by materials deposited in this stage.

A geomembrane lined external stormwater detention basin having the capacity of 3.2 million gallons (9.82 ac. ft.) to detain upstream unimpacted runoff on the east side of Stage 2 shall be constructed. The unimpacted runoff captured in this detention pond shall be pumped around the TSF until closure is substantially complete.

A minimum of four (4) piezometers shall be placed immediately adjacent to the geomembrane surface within the protective layer next to an underdrain collection pipe within the TSF to measure hydraulic head on the liner system, at the locations and as per the design submitted in the application. The phreatic surface in these piezometers shall be maintained below 1.5 feet.

The permittee is allowed to place additional materials including solids from WTP1 and WTP2, core cutting solids, drill cuttings, construction PAG, and sediment from stormwater BMPs. The placement of the solids shall be in accordance with the recommendations and following all quality control and quality assurance procedures (QA/QC) made in the Attachment C of the application dated August 14, 2020.

#### Solids from WTP

Filter cake from WTP1 is currently stored on the TSF. Recently-permitted upgrades to WTP1 will result in additional filter cake solids at approximately 3,650 cubic yards per year. The solids shall be hauled to the TSF in approximately 20 cubic yard increments.

WTP2 filter cake is anticipated to be hauled and placed in the TSF at a rate of approximately 4,380 cubic yards per year from the stage one filter press and approximately 146 cubic yards per year from the stage two filter press for an aggregate total of approximately 4,526 cubic yards per year. It will be hauled to the TSF in approximately 20 cubic yard increments. WTP2 filter cake material properties are assumed to be similar in nature to WTP1 filter cake and therefore the placement criteria are the same for both filter cake products.

The anticipated material properties are as follows based on a control sample obtained November 20th, 2019:

- 100 percent passing (by dry weight) the no. 200 sieve.
- Non-plastic soil.
- Moisture content will be 363% (based on dry weight of solids) upon arrival to the TSF.

Upon placement on the TSF, filter cake from WTP1 and WTP2 shall be spread and dried to reduce the material moisture content. The filter cake shall then be mixed with tailings, on site native borrow material and/or development rock at a minimum ratio of 3:1 (tailings/on site native borrow/development rock to filter cake). After mixing, the material shall be moisture conditioned to within 2 percent below and 3 percent above the optimum moisture content. The material shall be placed in 12-inch maximum loose lifts and compacted to 90 percent of the maximum dry density as determined by ASTM D698.

#### Core-cutting solids

Approximately 12 cubic yards per year of core cutting solids will be placed on the TSF. This material simply consists of rock fragments generated from cutting of core. Upon placement in the TSF, the core cutting material shall be spread and dried to reduce the material moisture content. The core cutting material shall then be mixed with tailings, on site native borrow material and/or development rock at a minimum ratio of 3:1 (tailings/on site native borrow/development rock to core cutting material). After mixing, the material shall be moisture conditioned to within 2 percent below and 3 percent above the optimum moisture content. The material shall be placed in 12-inch maximum loose lifts and compacted to 90 percent of the maximum dry density as determined by ASTM D698.

#### Drill Cuttings

The drill cutting material that is generated from exploration activities is anticipated to be hauled and placed in the TSF at a rate of less than 1 cubic yard per year. Upon placement in the TSF, the drill cutting material shall be spread and dried to reduce the material moisture content. The drill cutting material shall then be mixed with tailings, on site native borrow material and/or development rock at a minimum ratio of 3 (tailings/on site native borrow/development rock) to 1 (drill cutting material). After mixing, the material shall be placed in 12-inch maximum loose lifts and compacted to 90 percent of the maximum dry density as determined by ASTM D698.



### Solids from Stormwater BMPs

The sediments generated from site stormwater best management practices (BMPs) is anticipated to be hauled and placed in the TSF at a rate of approximately 1,800 cubic yards per year. The material is assumed to comprise of gravel, sand, silt and clay. Upon placement in the TSF, the sediments shall be spread and dried to reduce the material moisture content. The sediments shall then be mixed with tailings, on site native borrow material and/or development rock at a minimum ratio of 3 (tailings/on site native borrow/ development rock) to 1 (sediment). After mixing, the material shall be placed in 12-inch maximum loose lifts and compacted to 90 percent of the maximum dry density as determined by ASTM D698.

#### **2.2.1.2. Underdrain Collection Pond (UCP)**

The UCP shall be located downstream of Stage 1 TSF. Valves placed at the inlet end to the UCP from the Stage I TSF, shall remain completely open unless it needs be pumped completely dry for repairs. The UCP crest shall be approximately 200 ft. wide by 345 ft. long and 42 ft. deep. The pond shall be designed with a 25 ft. wide perimeter access road around the crest, which widens to 50 ft. on the southern edge where the pumps shall be sited for pump maintenance that may be required. The UCP shall be constructed to maintain a minimum of 2 feet of freeboard from the spillway invert to contain flows from the 100-yr/24-hr storm event, and the maximum operational volume of 2,200,000 gallons. The UCP shall be sized to contain 8,900,000 gallons up to the spillway elevation while maintaining a minimum of seven (7) feet of total freeboard. The pond slopes shall be 2H:1V, and the bottom of the pond shall be graded at 1% to a low point in the corner of the pond. At the low point, two parallel sloping decant structures shall be constructed for housing submersible pumps to reclaim fluids for treatment at the Water Treatment Plant (WTP).

The liner system for the UCP consists of geonet placed between two 60 mil HDPE double sided textured geomembrane layers overlying 6-inches of low permeability soil layer. The HDPE liner shall be secured in an engineered anchor trench around the impoundment perimeter. A leak collection and removal system (LCRS) shall be installed between the two HDPE liners. The LCRS shall be equipped with a level control to activate a pump, and the outflow shall be measured with a flow totalizer. A record of these measurements shall be maintained in a log book maintained at the site.

A minimum of two (2) piezometers shall be placed along the maximum section of the UCP, at the locations and as per the design submitted in the application.

#### **2.2.1.3. Water Treatment Plant 1 (WTP1)**

WTP1 is designed for treating underdrain seepage and storm water runoff from the TSF and water from the January Adit mine workings. The flow rate from the UCP and the January Adit mine workings are anticipated to fluctuate up to a maximum of 120 gallons per minute (gpm) from each source, with a maximum combined flow from both sources not to exceed 120 gpm.

The WTP1 process consists of pH adjustment to 10.5 followed by liquid/solids separation. This process includes various elements including: an equalization tank, a multiflo tank (consisting of reaction, flocculation, and clarifier compartments), an ultrafiltration unit, a pH adjustment tank, a Moving Bed Biofilm Reactor (for treatment of residual ammonia), an electro-reduction circuit (for selenite removal), a thickening tank, a filtrate tank, and a filter press.

Treated water may be used for on-going mine exploration, construction soil conditioning, and future milling and mining operations. Periodic, short-term discharge of treated water or a portion of treated water to Alum Gulch may be necessary during periods of exploration or mine development. Releases from WTP1 are authorized under an AZPDES permit (AZ0026387).

**2.2.1.4. Water Treatment Plant 2 (WTP2)**

WTP2 is designed for treating groundwater pumped from a wellfield to depressurize and dewater the fractured rock aquifer, groundwater and operational water pumped from underground workings, tailing seepage and January Adit water, treated water from WTP1, drilling water and core cutting water, and water from stormwater BMPs. The maximum design flow is 4500 gpm.

WTP2 consists of two treatment circuits. The first circuit will remove suspended solids (TSS) and metals. The second circuit will remove selenate (a species of selenium not removed in the first circuit) and consists of an IX ion exchange column circuit and an Electro Reduction Circuit.

Treated water may be used for on-going mine exploration, construction soil conditioning, and future milling and mining operations. Releases from WTP2 to Harshaw Creek are authorized under an AZPDES permit (AZ0026387).

**2.2.2. Site-Specific Characteristics**

Not applicable.

**2.2.3. Pre-Operational Requirements**

Not applicable.

**2.2.4. Operational Requirements**

At a minimum, permitted facilities shall be inspected for performance levels listed in Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING. Results of these inspections shall be documented and maintained on location for at least 10 years from the date of each inspection, as required by Section 2.7.2 of this permit. If damage is identified during an inspection that could cause or contribute to a discharge, proper repairs shall be promptly performed and documented as described in Section 2.5.2 and Section 2.7.2.

**2.3. DISCHARGE LIMITATIONS**

[A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

The permittee shall operate and maintain all permitted facilities to prevent unauthorized discharges pursuant to A.R.S. § 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies.

**2.3.1. Tailings Storage Facility (TSF)**

The total deposition of tailings and development rock under this permit shall not cause the ultimate dam crest elevation to exceed an elevation of 5,175 feet amsl as per Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING. If the permittee wishes to deposit a greater quantity of material, or modify the ultimate height of the TSF, then the permittee shall apply for a permit amendment pursuant to Section 6.9 and Section 3.7 in the Compliance Schedule.

**2.3.2. Underdrain Collection Pond (UCP)**

Discharge to the UCP shall be limited to tailings seepage water, mine workings water, exploration decline or shaft water, and precipitation falling on the TSF (including the embankment, perimeter road and construction areas).

**2.4. POINT OF COMPLIANCE (POC)**

[A.R.S. § 49-244]

The POCs are established by the following monitoring location(s):

Table 2: POINT OF COMPLIANCE				
Well Number	POC Locations	Latitude	Longitude	ADWR Number
POC-1	Conceptual location downgradient of the TSF	31° 28' 15.21" N	110° 43' 42.45" W	TBD
POC-2	200 feet downgradient of the AZPDES Outfall-001 (MW3)	31° 28' 18.91" N	110° 43' 48.83" W	55-920120
POC-3	Conceptual location approximately one mile to the north-northwest and downgradient of the WTP1 outfall	31° 29' 1.7" N	110° 44' 16.4" W	TBD
POC-4	Conceptual location approximately nine miles to the north and downgradient of the WTP2 outfall	31° 32' 2.4" N	110° 43' 29.3" W	TBD

Groundwater monitoring is required under this permit at POC-2. Groundwater monitoring is not required at POC-1, POC-3, and POC-4 unless as contingency monitoring. The Director may amend this permit to designate an additional point or points of compliance if information on groundwater gradient or groundwater usage indicates the need.

**2.5. MONITORING REQUIREMENTS**

[A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

Unless otherwise specified in this permit, all monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. Unless otherwise provided, monitoring shall commence the first full monitoring period following permit issuance. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and Chain-of-Custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

**2.5.1. Pre-Operational Monitoring**

Not applicable

**2.5.2. Facility / Operational Monitoring**

Operational monitoring inspections shall be conducted according to Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING.

If any damage of the pollution control structures is identified during inspection that could cause or contribute to a discharge, proper repair procedures shall be performed. All repair procedures and materials used shall be documented in the facility log book as per Section 2.7.2.

**2.5.3. Groundwater Monitoring and Sampling Protocols**

Groundwater monitoring is required under the terms of this permit at POC-2 per Section 4.2.3.

Static water levels shall be measured and recorded prior to sampling. Wells shall be purged of at least three borehole volumes (as calculated using the static water level) or until field parameters (pH, temperature, and conductivity) are stable, whichever represents the greater volume. If evacuation results in the well going dry, the well shall be allowed to recover to 80 percent of the original borehole volume, or for 24 hours, whichever is shorter, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as “dry” for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the SMRF.

The permittee may conduct the sampling using the low-flow purging method as described in the Arizona Water Resources Research Center, March 1995 Field Manual for Water Quality Sampling. The well must be purged until indicator parameters stabilize. Indicator parameters shall include dissolved oxygen, turbidity, pH, temperature, and conductivity.

#### **2.5.3.1. POC Well Replacement**

In the event that one or more of the designated POC wells should become unusable or inaccessible due to damage or any other event, a replacement POC well shall be constructed and installed upon approval by ADEQ. If the replacement well is 50 feet or less from the original well, the ALs and/or aquifer quality limits (AQLs) calculated for the designated POC well shall apply to the replacement well.

#### **2.5.4. Surface Water Monitoring and Sampling Protocols**

Routine surface water monitoring is not required under the terms of this permit.

#### **2.5.5. Analytical Methodology**

All samples collected for compliance monitoring shall be analyzed using Arizona state-approved methods. If no state-approved method exists, then any appropriate EPA-approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. If all methods have detection limits higher than the applicable limit, the permittee shall follow the applicable contingency requirements of Section 2.6 and may propose “other actions” including amending the permit to set higher limits. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification unless exempted under A.R.S. § 36-495.02. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state-certified laboratories can be obtained at the address below:

Arizona Department of Health Services  
Office of Laboratory Licensure and Certification  
250 North 17th Avenue  
Phoenix, AZ 85007  
Phone: (602) 364-0720

#### **2.5.6. Installation and Maintenance of Monitoring Equipment**

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the Groundwater Protection Value Stream for approval prior to installation and the permit shall be amended to include any new monitoring points.

### **2.6. CONTINGENCY PLAN REQUIREMENTS**

[A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

#### **2.6.1. General Contingency Plan Requirements**

At least one copy of this permit and the approved contingency and emergency response plan (to be submitted as per the compliance schedule in Section 3.0) shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL exceedance, or violation of an AQL, DL, or other permit condition shall be reported to ADEQ following the reporting requirements in Section 2.7.3, unless more specific reporting requirements are set forth in Section 2.6.2 through 2.6.5.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL or DL. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling had been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit.

## **2.6.2. Exceeding of Alert Levels and Performance Levels**

### **2.6.2.1. Exceeding of Performance Levels Set for Freeboard**

In the event that freeboard performance levels required by Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING in a surface impoundment are not maintained, the permittee shall:

1. As soon as practicable, cease or reduce discharging to the impoundment to prevent overtopping. Remove and properly dispose or recycle to other operations the excess fluid in the reservoir until the water level is restored at or below the permitted freeboard limit.
2. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions or identify design improvements to the affected system as necessary to avoid future occurrences.
3. Within 30 days of discovery, initiate repairs to the affected system, structure, or other component as necessary to return the system to compliance with this permit, or remove the affected system(s) from service as specified in Section 2.8 (Temporary Cessation) and Section 2.9 (Closure) of this permit. Record any repair procedures, methods, and materials used to restore the facility to operating condition in the facility log/recordkeeping file.
4. If design improvements are necessary, submit an amendment application within 90 days of discovery.
5. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

### **2.6.2.2. Exceeding of Performance Levels Set for Conditions Other Than Freeboard**

1. If exceedance of an operational performance level (PL) listed in Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:
  - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.
  - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.

2. The PL exceedance, results of the investigation, and any corrective action taken shall be reported to the Groundwater Protection Value Stream, within 30 days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 2.6.1 and any necessary contingency measures to resolve problems identified by the investigation which may have led to a PL being exceeded. To implement any other corrective action the permittee may choose to obtain prior approval from ADEQ according to Section 2.6.6.

### **2.6.2.3. Exceedance of Alert Level #1 for Normal Liner Leakage**

If an Alert Level #1 (AL #1) as specified in Section 4.2, Table 11: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING, has been exceeded, the permittee shall take the following actions:

1. Within 5 days of AL #1 exceedance, notify Groundwater Protection Value Stream in accordance with Section 2.7.3 Permit Violation and Alert Level Status Reporting. Continue monitoring to determine if the leakage rate is increasing.
2. If the leakage rate continues to exceed AL#1 for 15 days following notification of initial AL #1 exceedance, perform a visual inspection of the liner above the solution level, to determine the location of the leaks in the primary liner.
3. Within 45 days of AL #1 exceedance, if liner damage is evident, the permittee shall complete liner repairs.
4. Within 45 days of AL #1 exceedance, if the visual inspection does not identify the location of leaks, formulate a corrective action plan to determine their location and repair them.
5. Within 90 days of AL #1 exceedance and following formulation of a corrective action plan, the permittee shall complete liner repairs.
6. Within 75 days of AL #1 exceedance (if repairs were completed in Step 3), or 120 days of AL #1 exceedance (if corrective action plan was implemented per Steps 4 and 5 ), if no alert level exceedance is observed for 30 consecutive days, notify Groundwater Protection Value Stream and document assessment and/or repairs in the log book.
7. Within 120 days of AL #1 exceedance (if repairs were completed in Step 3), or 165 days of AL #1 exceedance (if corrective action plan was implemented per Steps 4 and 5), if 30 consecutive days without an AL #1 exceedance is not achieved, notify Groundwater Protection Value Stream and reassess the entire liner system and complete any necessary repairs as described in Steps 2 and 3 (and if necessary Steps 4 and 5 also). Repeat the assessment and liner repair cycle until requirements of Step No. 6 are attained.
8. A liner leakage assessment and repair report shall be included in the next annual report described in Section 2.7.4.11 (Annual Reporting) of this permit. The permittee may also submit the liner leakage assessment report to the ADEQ prior to the annual report due date. This liner leakage assessment and repair report shall be submitted to Groundwater Protection Value Stream. Upon review of the report, ADEQ may require that the permittee take additional corrective actions to address the problems identified from the assessment of the liner and perform other applicable repair procedures.

### **2.6.2.4. Exceedance of Alert Level #2 for Liner Failure or Rips**

If the Liner Leakage Discharge Limit (AL #2) specified in Section 4.2, Table 11: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING has been exceeded, the permittee shall:

1. As soon as practicable, cease all discharge to the impoundment, implement control measures to prevent new solution buildup that may subsequently report to the impoundment, and immediately notify Groundwater Protection Value Stream of the AL #2 exceedance.
2. Within 15 days of initial AL #2 exceedance, perform a visual inspection of the liner above the solution level to identify the location of the leak(s). The permittee shall complete liner repairs and discharge to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.
3. Within 60 days of initial AL #2 exceedance if leaks were found and fixed and if no AL #2 exceedance is observed for 30 consecutive days, submit a liner leakage assessment and repair report to ADEQ. The report shall include the results of the initial liner evaluation, methods used to locate the leak(s), repair procedures and quality assurance/quality control implemented to restore the liner to optimal operational status, and other information necessary to ensure the future occurrence of the incidence will be minimized.
4. Within 30 days of initial AL #2 exceedance if the visual inspection does not identify the location of leaks and AL #2 exceedance continues, formulate a corrective action plan to determine their location and repair them. The corrective action plan will take into account the schedule for a 3rd party contractor to perform electronic leak detection or other methods if required.
5. Within 75 days of initial AL #2 exceedance and following formulation of a corrective action plan, the permittee shall complete liner repairs
6. Within 105 days of AL #2 exceedance and implementation of the corrective action plan per Steps 4 and 5, if no AL #2 exceedance is observed for 30 consecutive days, notify Groundwater Protection Value Stream and document assessment and/or repairs in the log book.
7. Within 105 days of initial AL #2 exceedance, (if repairs were completed in Step 3), or 150 days of AL #2 exceedance (if corrective action plan was implemented per Steps 4, 5, and 6) if 30 consecutive days without an AL #2 exceedance is not achieved, repeat Steps 1 through 7 until AL #2 is not exceeded for 30 consecutive days. When the Steps 1 through 7 are repeated, the notification date is reset. Discharge to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.
8. Liner leakage assessment and repair reports required by Section 2.6.2.2, shall be referenced in the next annual report described in Section 2.7.4.1 (Annual Reporting) of this permit.

**2.6.2.5. Exceeding of Alert Levels Set for Discharge Monitoring**

1. If an AL set in Section 4.2, Table 9: ROUTINE DISCHARGE MONITORING has been exceeded, the permittee shall immediately investigate to determine the cause of the AL exceedance. The investigation shall include the following:
  - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the AL exceedance;
  - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences;
  - c. Sampling of individual waste streams composing the wastewater for the parameters being exceeded;
2. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5.0 and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation, which may have led to an AL exceedance. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6.

3. Within 30 days of an AL exceedance, the permittee shall submit the laboratory results to the Groundwater Protection Value Stream, along with a summary of the findings of the investigation, the cause of the AL exceedance, and actions taken to resolve the problem.
4. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

#### **2.6.2.6. TSF Slope Conditions**

The permittee shall monitor the TSF perimeter road and dry stack TSF for general slope conditions as per Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING to identify unusual scour or degradation of materials, sloughing, rolling rocks or visible seepage. If the TSF exhibits any signs that require maintenance, AMI shall take the following actions:

1. After discovery prevent vehicle and/or foot traffic in the area.
2. Notify the design engineer of record (EOR).
3. If necessary, perform remedial actions approved by the EOR.
4. Monitor the area for signs of decreasing slope stability.

#### **2.6.2.7. TSF Piezometric Head**

The permittee shall monitor the piezometric head per Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING. If the piezometers read a phreatic surface in excess of 1.5 ft the permittee shall take the following actions:

1. Notify the design engineer.
2. Monitor the phreatic surface within the TSF.
3. Initiate an evaluation to determine the cause of the incident. Identify the circumstances that resulted in the elevated phreatic surface. Implement corrective actions including pumping, if necessary, to resolve the problems identified in the evaluation.
4. If necessary, perform a slope stability analysis on the dry stack TSF with the elevated phreatic surface to determine if any reduction in safe operation of the facility has occurred.
5. Record in the facility log book, the piezometer number, reading and location. Hydrographs of this and all other piezometers will be recorded on at least a monthly basis to allow quick inspection and evaluation of historic facility operations.

#### **2.6.2.8. Exceeding of Alert Levels in Groundwater Monitoring**

##### **2.6.2.8.1. Alert Levels for Indicator Parameters**

None required by this permit.

##### **2.6.2.8.2. Alert Levels for Pollutants With Numeric Aquifer Water Quality Standards**

1. If an AL for a pollutant set in Section 4.2, Table 10: GROUNDWATER MONITORING AT POC-2 has been exceeded, the Permittee shall request that the laboratory verify the sample results within five (5) days of becoming aware of an AL exceedance. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms the AL exceedance or if the Permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring for the



pollutant(s) exceeding their respective AL(s) to Quarterly from Semi-Annually. In addition, the permittee shall immediately initiate an investigation of the cause of the AL exceedance, including inspection of all discharging units and all related pollution control devices, review of any operational and maintenance practices that might have resulted in an unexpected discharge, and hydrologic review of groundwater conditions including upgradient water quality.

3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5.0 and specific contingency measures identified in Section 2.6 to resolve any problems identified by the investigation which may have led to an AL exceedance. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 2.6.6. Alternatively, the permittee may submit a technical demonstration, subject to written approval by the Groundwater Protection Value Stream, that although an AL is exceeded, pollutants are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency for approval in writing by the Groundwater Protection Value Stream.
4. Within 30 days after confirmation of an AL exceedance, the permittee shall submit the laboratory results to the Groundwater Protection Value Stream along with a summary of the findings of the investigation, the cause of the AL exceedance, and actions taken to resolve the problem.
5. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
6. The increased monitoring required as a result of ALs being exceeded may be reduced to the regularly scheduled frequency, if the results of three (3) consecutive monthly sampling events demonstrate that no parameters exceed the AL.
7. If the increased monitoring required as a result of an AL exceedance continues for more than six (6) sequential sampling events, the Permittee shall submit a second (2nd) report documenting an investigation of the continued AL exceedance within 30 days of the receipt of laboratory results of the sixth (6th) sampling event.

**2.6.2.8.3. Alert Levels to Protect Downgradient Users from Pollutants Without Numeric Aquifer Water Quality Standards**

Not applicable.

**2.6.2.8.4. Alert Level for Groundwater Level**

Not applicable:

**2.6.3. Discharge Limit Violation**

**2.6.3.1. Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid**

In the event of overtopping, liner failure, containment structure failure, or unexpected loss of fluid as described in Section 2.3, the permittee shall take the following actions:

1. As soon as practicable, cease all discharges as necessary to prevent any further releases to the environment, including removal of any fluid remaining in the impoundment as necessary, and capture and containment of all escaped fluids.
2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.

3. Within 24 hours of discovery of a failure estimate the quantity released, collect representative samples of the fluid remaining in affected impoundments and drainage structures, analyze sample(s) according to Section 4.3, Table 12: CONTINGENCY DISCHARGE CHARACTERIZATION, and report in accordance with Section 2.7.3 (Permit Violation and AL Status Reporting). In the 30-day report required under Section 2.7.3, include a copy of the analytical results and forward the report to Groundwater Protection Value Stream.
4. Within 15 days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the discharging facility and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the discharging facility. The permittee shall not resume discharge to the facility until repairs of any failed liner or structure are performed.

Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the facility log/recordkeeping file and available for ADEQ review. Record in the facility log/recordkeeping file the amount of fluid released, a description of any removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).

5. As soon as practicable, remove fluid remaining in the surface impoundment as necessary to prevent further releases to the subsurface and/or to perform repairs. Record in the facility log/recordkeeping file the amount of fluid removed a description of the removal method, and other disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
6. Within 30 days of discovery of the incident, submit a report to Groundwater Protection Value Stream as specified in Section 2.7.3. Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, conduct an assessment of the impacts to soil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could or did cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ, for approval, a corrective action plan to address such impacts, including identification of remedial actions and a schedule for completion of activities. At the approval of ADEQ, the permittee shall implement the approved plan.
8. Within 30 days of completion of corrective actions, submit to Groundwater Protection Value Stream, a written report as specified in Section 2.6.6 (Corrective Actions).
9. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

#### **2.6.3.2. Overtopping of a Surface Impoundment**

If overtopping of fluid from a permitted surface impoundment occurs, and results in a discharge pursuant to A.R.S. § 49-201(12), the permittee shall:

1. As soon as practicable, cease all discharges to the surface impoundment to prevent any further releases to the environment.

2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.
3. Within 24 hours, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4.2, Table 12: CONTINGENCY DISCHARGE CHARACTERIZATION. Within 30 days of the incident, submit a copy of the analytical results to Groundwater Protection Value Stream.
4. As soon as practicable, remove and properly dispose of excess water in the impoundment until the water level is restored at or below the appropriate freeboard as described in Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING. Record in the facility log/recordkeeping file the amount of fluid released, a description of the removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection/LogBook/Recordkeeping File).
5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 30 days of discovery of overtopping, submit a report to ADEQ as specified in Section 2.7.3(2) (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, and based on sampling in Item No. 3 above, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident.
8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
9. Within 30 days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions). Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

### **2.6.3.3. Inflows of Unexpected Materials to a Surface Impoundment**

The types of materials that are expected to be placed in the permitted surface impoundments are specified in Section 2.3 (Discharge Limitations). If any unexpected materials flow to a permitted surface impoundment, the Permittee shall:

1. As soon as practicable, cease all unexpected inflows to the surface impoundment(s).
2. Within 24-hours of discovery, notify the Groundwater Protection Value Stream.
3. Within 5 days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unexpected material and contents of the affected impoundment, and evaluate the volume and concentration of the material to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or

equipment and/or adjust operations, as necessary to prevent future occurrences of inflows of unexpected materials.

4. Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in Section 2.7.3(2) (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in Subsections 1 through 3 listed above.
5. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, mitigation, or other actions.

#### **2.6.3.4. Exceeding of Discharge Limitation for Tailings Deposition Height**

1. If the DL for tailings deposition height set in Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING has been exceeded, the permittee shall immediately investigate to determine the cause of the DL being exceeded. The investigation shall include a review of recent process logs, reports, and other operational control information to identify the cause of the exceedance.
2. The Permittee shall initiate actions to return to compliance with the DL as soon as practicable.
3. Within 30 days of a DL being exceeded, the Permittee shall submit to the ADEQ Groundwater Protection Value Stream, a summary of the findings of the investigation, the cause of the DL being exceeded, and actions taken to resolve the problem.
4. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions

#### **2.6.3.5. Slope and Berm Failures**

If the slope for the TSF or the UCP becomes unstable to the point of failure and results in a discharge, AMI will take the following actions:

1. Immediately after discovery, prevent vehicle and/or foot traffic in the area.
2. Notify the ADEQ WQCS within 24 hours.
3. Notify the design engineer immediately.
4. Within 15 days of discovery, initiate an evaluation to determine the cause of the incident. Identify the circumstances that resulted in the failure and assess the condition of the facility and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to the slope and/or any failed liner. Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the facility log/recordkeeping file and available for ADEQ review.
5. Within 30 days of discovery of the incident, submit a report to ADEQ. Include a description of the actions performed in the steps listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
6. Within 60 days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at an applicable monitoring well or a POC (if installed), submit to ADEQ, for approval, a corrective action plan to address problems

identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, implement the approved plan.

7. Within 30 days of completion of corrective actions, submit a written report to ADEQ. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

**2.6.4. Aquifer Quality Limit Exceedances**

1. If an AQL set in Section 4.2 Table 10: GROUNDWATER MONITORING AT POC-2 has been exceeded, the permittee may conduct verification sampling within 5 days of becoming aware of an AQL exceedance. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling does not confirm an AQL exceedance, no further action is needed under this Section.
3. If verification sampling confirms that an AQL was exceeded for any parameter or if the permittee opts not to perform verification sampling, then, the permittee shall increase the frequency of monitoring for those parameters as follows:

May use the following table, or may insert alternate monitoring frequencies, if requested by technical staff.

<b>Table 3: ACCELERATED MONITORING - AQUIFER QUALITY LIMIT VIOLATION</b>	
<b>Specified Monitoring Frequency</b>	<b>Monitoring Frequency for AQL Violation</b>
Daily or Weekly	Daily
Monthly	Weekly
Quarterly	Monthly
Semi-annually	Quarterly
Annually	Quarterly

In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge.

The permittee also shall submit a report according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 90 days that the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water, or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ approved contingency plan, or separately approved according to Section 2.6.6.

4. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.
5. The permittee shall notify any downstream or downgradient users who may be directly affected by the discharge.

The increased monitoring for those pollutant(s) required as a result of an AQL exceedance may be reduced to the original sampling frequency for each respective pollutant, if the results of three sequential sampling events demonstrate that the parameter(s) does not exceed their respective AQL(s).

## **2.6.5. Emergency Response and Contingency Requirements for Unauthorized Discharges**

[A.R.S. § 49-201(12) AND PURSUANT TO A.R.S. § 49-241]

### **2.6.5.1. Duty to Respond**

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. § 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

### **2.6.5.2. Discharge of Hazardous Substances or Toxic Pollutants**

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of suspected hazardous substances (A.R.S. § 49-201(19)) or toxic pollutants (A.R.S. § 49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the discharged material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of hazardous material which (a) has the potential to cause an AWQS or AQL exceedance, or (b) could pose an endangerment to public health or the environment.

### **2.6.5.3. Discharge of Non-Hazardous Materials**

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the Groundwater Protection Value Stream within 24 hours of discovering the discharge of non-hazardous material which has the potential to cause an AQL exceedance, or could pose an endangerment to public health or the environment.

### **2.6.5.4. Reporting Requirements**

The permittee shall submit a written report for any unauthorized discharges reported under Sections 2.6.5.2 and 2.6.5.3 to the Groundwater Protection Value Stream within 30 days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and include all information specified in Section 2.7.3. If a notice is issued by ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in the notice. Upon review of the submitted report, ADEQ may require additional monitoring or corrective actions.

## **2.6.6. Corrective Actions**

Specific contingency measures identified in Section 2.6 have already been approved by ADEQ and do not require written approval to implement.

With the exception of emergency response actions taken under Section 2.6.5, the permittee shall obtain written approval from the Groundwater Protection Value Stream prior to implementing a corrective action to accomplish any of the following goals in response to exceedance of an AL, AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer;
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 days of completion of any corrective action, the operator shall submit to the Groundwater Protection Value Stream, a written report describing the causes, impacts, and actions taken to resolve the problem.

**2.7. REPORTING AND RECORDKEEPING REQUIREMENTS**

[A.R.S. § 49-243(K)(2) and A.A.C. R18-9-A206(B) and R18-9-A207]

**2.7.1. Self-Monitoring Report Form**

1. The permittee shall complete the Self-Monitoring Reporting Forms (SMRFs) provided by ADEQ, and submit the completed report through the myDEQ online reporting system. The permittee shall use the format devised by ADEQ.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a reporting period, the permittee shall enter “not required” on the form, include an explanation, and submit the form to the Groundwater Protection Value Stream.
3. The tables contained in Section 4.0 list the monitoring parameters and the frequencies for reporting results on the SMRF:
  - a. Table 9: ROUTINE DISCHARGE MONITORING
  - b. Table 10: GROUNDWATER MONITORING AT POC-2

The parameters listed in the above-identified tables from Section 4.0 are the only parameters for which SMRF reporting is required.

**2.7.2. Operation Inspection / Log Book Recordkeeping**

A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms, or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and shift inspection was conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;
5. Documentation of sampling date and time;
6. Any other information required by this permit to be entered in the log book; and
7. Monitoring records for each measurement shall comply with A.A.C. R18-9-A206(B)(2).

**2.7.3. Permit Violation and Alert Level Status Reporting**

1. The permittee shall notify the Groundwater Protection Value Stream within 5 days (except as provided in Section 2.6.5) of becoming aware of an AL exceedance, or violation of any permit condition, AQL, or DL for which notification requirements are not specified in Sections 2.6.2 through 2.6.5.

2. The permittee shall submit a written report to the Groundwater Protection Value Stream within 30 days of becoming aware of the violation of any permit condition, AQL, or DL. The report shall document all of the following:
  - a. Identification and description of the permit condition for which there has been a violation and a description of the cause;
  - b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue;
  - c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation;
  - d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS;
  - e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring; and
  - f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

#### **2.7.4. Operational, Other or Miscellaneous Reporting**

The permittee shall record the information as required in Section 4.2, Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING in the facility log book as per Section 2.7.2, and report to the Groundwater Protection Value Stream any violations or exceedances as per Section 2.7.3.

##### **2.7.4.1. Annual Report**

If an Alert Level #1 or Alert Level #2 has been exceeded as discussed in Sections 2.6.2.3 and 2.6.2.4, the permittee shall submit an annual report that summarizes the results of the liner assessment. The Liner Leakage Assessment Report shall also include information including but not limited to the following: number and location of holes identified; a table summarizing the exceedances including the frequency and quantity of fluid removed, and corrective actions taken.

The permittee shall submit an annual report containing the following:

1. Annual update of the AMI seeps and springs catalog, as well as a chart illustrating trends in flows at those seeps and springs.
2. Groundwater monitoring results from MW-9 (located at 110°44'33" W, 31°32'31" N).
3. If updated information becomes available related to mine dewatering, a summary that includes potentiometric maps and hydrographs.

When required the annual report is to be submitted by January 30 of each year to cover activities from January 1 through December 31st of the previous year, consistent with Section 2.7.6.

##### **2.7.5. Reporting Location**

All Self-Monitoring Report Forms (SMRFs) shall be submitted through the myDEQ portal accessible on the ADEQ website at: <http://www.azdeq.gov/welcome-mydeq>



All other documents required by this permit shall be mailed to:

The Arizona Department of Environmental Quality  
Groundwater Protection Value Stream  
Mail Code 5415B-3  
1110 West Washington Street  
Phoenix, Arizona 85007  
Phone (602) 771-4571

**2.7.6. Reporting Deadline**

The following table lists the quarterly SMRF report due dates:

Table 4: QUARTERLY REPORTING DEADLINES	
Monitoring Conducted During Quarter:	Quarterly Report Due By:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

The following table lists the semi-annual SMRF report due dates:

Table 5: SEMI-ANNUAL REPORTING DEADLINES	
Monitoring Conducted:	Report Due By:
Semi-annual: January-June	July 30
Semi-annual: July-December	January 30

The following table lists the due date for the Annual report per Section 2.7.4.1:

Table 6: ANNUAL REPORTING DEADLINES	
Monitoring Conducted:	Report Due By:
Annual: January-December	January 30

**2.7.7. Changes to Facility Information in Section 1.0**

The Groundwater Protection Value Stream shall be notified within ten days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person, or Emergency Telephone Number.

**2.8. Temporary Cessation**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A209(A)]

The permittee shall give written notice to the Groundwater Protection Value Stream before ceasing operation of the facility for a period of 60 days or greater. The permittee shall take the following measures upon temporary cessation:

1. Submittal of Self-Monitoring Report Forms (SMRFs) is still required; report “temporary cessation” in the comment section.

At the time of notification the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ approval, the permittee shall implement the approved plan. If necessary, ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Groundwater Protection Value Stream of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 2.9 below.

## **2.9. Closure**

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

For a facility addressed under this permit, the permittee shall give written notice of closure to the Groundwater Protection Value Stream of the intent to cease operation without resuming activity for which the facility was designed or operated. Submittal of SMRFs is still required; report “closure in process” in the comment section.

### **2.9.1. Closure Plan**

Within 90 days following notification of closure, the permittee shall submit for approval to the Groundwater Protection Value Stream, a closure plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3).

If the closure plan achieves clean-closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean-closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

### **2.9.2. Closure Completion**

Upon completion of closure activities, the permittee shall give written notice to the Groundwater Protection Value Stream indicating that the approved closure plan has been implemented fully and providing supporting documentation to demonstrate that clean-closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). If clean-closure has been achieved, ADEQ shall issue a letter of approval to the permittee at that time. If any of the following conditions apply, the permittee shall follow the terms of post-closure stated in this permit:

1. Clean-closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with the AWQS at the applicable POC or, for any pollutant for which the AWQS was exceeded at the time this permit was issued, further action is necessary to prevent the facility from further degrading the aquifer at the applicable POC with respect to that pollutant;
3. Activities are necessary to verify that actions or controls specified as closure requirements in an approved closure plan or strategy are routinely inspected or maintained;
4. Remedial, mitigative or corrective actions or controls are necessary to comply with A.R.S. § 49-201(30) and Title 49, Chapter 2, Article 3;
5. Further action is necessary to meet property use restrictions.
6. SMRF submittals are still required until Clean Closure is issued.

## **2.10. Post-Closure**

[A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9 A209(C)]

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Groundwater Protection Value Stream.

In the event clean-closure cannot be achieved pursuant to A.R.S. § 49-252, the permittee shall submit for approval to the Groundwater Protection Value Stream a post-closure plan that addresses post-closure maintenance and monitoring actions at the facility. The post-closure plan shall meet all requirements of A.R.S. §§ 49-201(30) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the post-closure plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the post-closure plan.

### **2.10.1. Post-Closure Plan**

A specific post-closure plan may be required upon the review of the closure plan.

**2.10.2. Post-Closure Completion**

Not required at the time of permit issuance.

**3.0 COMPLIANCE SCHEDULE**

[A.R.S. § 49-243(K)(5) and A.A.C. R18-9-A208]

Unless otherwise indicated, for each compliance schedule item listed below, the permittee shall submit the required information to the Groundwater Protection Value Stream.

Table 7: COMPLIANCE SCHEDULE ITEMS			
No.	Description	Due By:	Permit Amendment Required?
1	The financial assurance mechanism listed in Section 2.1, Financial Capability, is being maintained as per A.R.S. 49-243.N.4 and A.A.C. R18-9-A203(H) for all estimated closure and post-closure costs including updated costs submitted under Section 3.0, No. 2 below. The demonstration shall include a statement that the closure and post-closure strategy has not changed, the discharging facilities listed in the permit have not been altered in a manner that would affect the closure and post-closure costs, and discharging facilities have not been added. The demonstration shall also include information in support of a “performance surety bond” as required as per A.A.C. R18-9-A203(C)(2).	Six years from the signature date of this amended permit, and every 6 years thereafter, for the duration of the permit.	No
2	The permittee shall submit updated cost estimates for facility closure and post-closure, as per A.A.C. R18-9-A201(B)(5) and A.R.S. 49-243.N.2.a, and an updated financial assurance demonstration for the updated cost estimate as per A.A.C. R18-9-A203(C)(2).	Six years from the signature date of this amended permit, and every 6 years thereafter, for the duration of the permit.	Yes
3	If the permittee wishes to deposit a greater quantity of material, or to increase the crest elevation above 5,175 feet amsl, then the permittee shall apply for a permit amendment.	Within six months of determination to increase tailings crest elevation	Yes
4	The permittee shall submit as-built design drawings for WTP1 following upgrades. The design documents shall be sealed by an Arizona licensed professional engineer.	Within 90 days after completion of construction.	No
5	The permittee shall submit as-built design report of the TSF documenting placement of development rock from surface and exploration declines or shaft, filter cake from WTP1 and WTP2, core cutting solids, drill cutting, and solid from stormwater BMPs when the TSF reaches the maximum permitted elevation of the 5,175 ft. The design documents shall be sealed by an Arizona licensed professional engineer.	Within 90 days after completion of construction.	No

Table 7: COMPLIANCE SCHEDULE ITEMS

No.	Description	Due By:	Permit Amendment Required?
6	The permittee shall submit as-built design drawings for WTP2 following construction. The design documents shall be sealed by an Arizona licensed professional engineer.	Within 90 days after completion of construction.	No
7	An updated Contingency and Emergency Response plan will be submitted to ADEQ and kept at the site.	Within 30 days of amended permit issuance	No

**4.0 TABLES OF MONITORING REQUIREMENTS**

**4.1. PRE-OPERATIONAL MONITORING (or CONSTRUCTION REQUIREMENTS)**

Not Required

**4.2. COMPLIANCE OR OPERATIONAL MONITORING**

**Table 8: FACILITY INSPECTION AND OPERATIONAL MONITORING**

The permittee shall record the inspection performance levels in a log book as per Section 2.7.2, and report any violations or exceedances as per Section 2.7.3. In the case of an exceedance, identify which structure exceeds the performance level in the log book.

**TAILINGS STORAGE FACILITY**

<b>Parameter</b>	<b>Performance Standard</b>	<b>Monitoring Frequency</b>
Facility Height	Does not exceed 5,175 ft amsl	Annually
Structural Integrity	No visible structural weakness, seepage erosion, sloughing, rolling rocks, or other hazardous conditions	Monthly
Piezometric Head	The phreatic surface in the piezometers shall be less than 1.5 feet <sup>1</sup>	Weekly

**PIEZOMETER LOCATION**

<b>Piezometer ID</b>	<b>Association</b>	<b>Latitude</b>	<b>Longitude</b>
P1	TSF	31° 28' 01.3135" N	110° 43' 36.4235" W
P2	TSF	31° 27' 58.5711" N	110° 43' 39.4789" W
P3	TSF	31° 27' 59.3730" N	110° 43' 32.8978" W
P4	TSF	31° 27' 56.4873" N	110° 43' 28.0662" W

**NOTE:** If replacement of a piezometer is necessary due to malfunction, the permittee may install a replacement piezometer in the same general location, and no permit amendment is necessary. The locational information may be updated in the permit, during any future amendment.

**UNDERDRAIN COLLECTION POND**

<b>Parameter</b>	<b>Performance Standard</b>	<b>Monitoring Frequency</b>
Freeboard	Minimum of seven (7) feet	Weekly or after a significant rainstorm or other natural disaster
Anchor trench integrity	No impairment	Monthly
Embankment integrity	No visible structural weakness, seepage erosion, or other hazardous conditions	Monthly
Liner Integrity	No visible cracks, punctures, or deteriorations of liner	Monthly
Integrity of Pumping System	Good working condition	Monthly
Sediments/sludge	Remove sediments/sludge as needed to maintain at least 90 percent of designed capacity	Monthly

<sup>1</sup> If the phreatic surface is in excess of 1.5 feet, the permittee shall follow the contingency action per Section 2.6.2.7.

Table 9: ROUTINE DISCHARGE MONITORING

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)	
1	AZPDES Outfall 001			31° 28' 15" N	110° 43' 43" W	
3	AZPDES Outfall 002			31° 27' 56.62" N	110° 43' 11.51" W	
Parameter	AL <sup>2</sup> for both outfalls	DL <sup>3</sup> for Outfall 001	DL for Outfall 002	Units	Sampling Frequency	Reporting Frequency
Flow	N/A	0.172	6.48	mgd <sup>4</sup>	Daily <sup>5</sup>	Quarterly
Temperature	Monitor <sup>6</sup>	Monitor	Monitor	Degrees	Quarterly	Quarterly
pH (field)	Monitor	Monitor	Monitor	S.U.	Quarterly	Quarterly
Specific Conductance (field)	Monitor	Monitor	Monitor	µmhos/cm	Quarterly	Quarterly
Nitrate (as N)	8.0	10.0	10.0	mg/L	Quarterly	Quarterly
Nitrite (as N)	0.8	1.0	1.0	mg/L	Quarterly	Quarterly
Nitrate-Nitrite as N	8.0	10.0	10.0	mg/L	Quarterly	Quarterly
Total Dissolved Solids	Monitor	Monitor	Monitor	mg/L	Quarterly	Quarterly
Total Alkalinity	Monitor	Monitor	Monitor	mg/L	Quarterly	Quarterly
Sulfate	Monitor	Monitor	Monitor	mg/L	Quarterly	Quarterly
Metals (Total)						
Antimony	0.0048	0.006	0.006	mg/l	Quarterly	Quarterly
Arsenic	0.04	0.05	0.05	mg/l	Quarterly	Quarterly
Barium	1.60	2.00	2.00	mg/l	Quarterly	Quarterly
Beryllium	0.0032	0.004	0.004	mg/l	Quarterly	Quarterly
Cadmium	0.004	0.005	0.005	mg/l	Quarterly	Quarterly
Chromium	0.08	0.1	0.1	mg/l	Quarterly	Quarterly
Cyanide (as free cyanide)	0.16	0.2	0.2	mg/l	Quarterly	Quarterly
Fluoride	3.2	4.0	4.0	mg/l	Quarterly	Quarterly
Lead	0.04	0.05	0.05	mg/l	Quarterly	Quarterly
Mercury	0.0016	0.002	0.002	mg/l	Quarterly	Quarterly
Nickel	0.08	0.1	0.1	mg/l	Quarterly	Quarterly
Selenium	0.04	0.05	0.05	mg/l	Quarterly	Quarterly
Thallium	0.0016	0.002	0.002	mg/l	Quarterly	Quarterly
Iron	Monitor <sup>7</sup>	Monitor	Monitor	mg/L	Quarterly	Quarterly
Copper	Monitor	Monitor	Monitor	mg/L	Quarterly	Quarterly
Manganese	Monitor	Monitor	Monitor	mg/L	Quarterly	Quarterly
Zinc	Monitor	Monitor	Monitor	mg/L	Quarterly	Quarterly
Radionuclides						
Gross Alpha (including Radium 226) <sup>8,9</sup>	12	15	15	pCi/L	Quarterly	Quarterly
Radium 226 + Radium 228	4	5	5	pCi/L	Quarterly	Quarterly
Total uranium	Monitor	Monitor	Monitor	pCi/L	Quarterly	Quarterly

<sup>2</sup> AL = Alert Levels

<sup>3</sup> DL = Discharge Limits

<sup>4</sup> mgd=Million gallons per day

<sup>5</sup> "Daily" means the days that effluent from the Water Treatment Plant is discharged to the AZPDES Outfall 001, or that effluent from the Water Treatment Plant 2 is discharged to the AZPDES Outfall 002. On the days effluent from the Water Treatment Plant is NOT being discharged to the AZPDES Outfall 001, or that effluent from the Water Treatment Plant 2 is NOT being discharged to the AZPDES Outfall 002, indicate "No Flow" on the SMRF reporting form for the appropriate outfall(s).

<sup>6</sup> Monitor = Analysis is required but limits are not established.

<sup>7</sup> Monitoring is required, but no limit is established.

<sup>8</sup> If the gross alpha particle activity is greater than 15 pCi/L, then calculate adjusted gross alpha particle activity

<sup>9</sup> The adjusted gross alpha particle activity is the gross alpha particle activity, including radium 226, and any other alpha emitters, if present in the water sample, minus radon and total uranium (the sum of uranium 238, uranium 235 and uranium 234 isotopes). The gross alpha analytical procedure (evaporation technique: EPA Method 900.0) drives off radon gas in the water samples. Therefore, the Adjusted Gross Alpha should be calculated using the following formula: (Laboratory Reported Gross Alpha MINUS Sum of the Uranium Isotopes).



Table 10: GROUNDWATER MONITORING AT POC-2

Sampling Point Number	Sampling Point Identification			Latitude (North)	Longitude (West)
2	300 feet downgradient of the AZPDES Outfall-			31° 28' 18.91"	110° 43' 48.83"
Parameter	AL	AQL <sup>10</sup>	Units	Sampling Frequency	Reporting Frequency
Depth to Water Level	Monitor <sup>11</sup>	Monitor	Feet	Semi-Annually <sup>12</sup>	Semi-Annually
Water Level Elevation	Monitor	Monitor	Feet amsl <sup>13</sup>	Semi-Annually	Semi-Annually
Temperature	Monitor	Monitor	Degrees	Semi-Annually	Semi-Annually
pH	Monitor	Monitor	S.U.	Semi-Annually	Semi-Annually
Specific Conductance	Monitor	Monitor	µmhos/cm	Semi-Annually	Semi-Annually
Nitrate (as N)	8	10	mg/L	Semi-Annually	Semi-Annually
Nitrite (as N)	0.8	1	mg/L	Semi-Annually	Semi-Annually
Nitrate-Nitrite as N	8	10	mg/L	Semi-Annually	Semi-Annually
Total Dissolved Solids	Monitor	Monitor	mg/L	Semi-Annually	Semi-Annually
Total Alkalinity	Monitor	Monitor	mg/L	Semi-Annually	Semi-Annually
Sulfate	Monitor	Monitor	mg/L	Semi-Annually	Semi-Annually
Metals (Dissolved)					
Antimony	0.0048	0.006	mg/L	Semi-Annually	Semi-Annually
Arsenic	0.04	0.05	mg/L	Semi-Annually	Semi-Annually
Beryllium	0.0032	0.004	mg/L	Semi-Annually	Semi-Annually
Barium	1.6	2	mg/L	Semi-Annually	Semi-Annually
Cadmium	Not Established <sup>14</sup>	0.011	mg/L	Semi-Annually	Semi-Annually
Chromium	0.08	0.1	mg/L	Semi-Annually	Semi-Annually
Cyanide (free)	0.16	0.2	mg/L	Semi-Annually	Semi-Annually
Fluoride	3.2	4.0	mg/L	Semi-Annually	Semi-Annually
Lead	0.04	0.05	mg/L	Semi-Annually	Semi-Annually
Mercury	0.0016	0.002	mg/L	Semi-Annually	Semi-Annually
Nickel	0.08	0.1	mg/L	Semi-Annually	Semi-Annually
Selenium	0.04	0.05	mg/L	Semi-Annually	Semi-Annually
Thallium	0.0016	0.002	mg/L	Semi-Annually	Semi-Annually
Iron	Monitor <sup>15</sup>	Monitor	mg/L	Semi-Annually	Semi-Annually
Copper	Monitor	Monitor	mg/L	Semi-Annually	Semi-Annually
Manganese	Monitor	Monitor	mg/L	Semi-Annually	Semi-Annually
Zinc	Monitor	Monitor	mg/L	Semi-Annually	Semi-Annually
Radionuclides					
Gross Alpha (including Radium 226) <sup>16,17</sup>	12	15	pCi/L	Semi-Annually	Semi-Annually
Radium 226 + Radium 228	4	5	pCi/L	Semi-Annually	Semi-Annually
Total uranium	Monitor	Monitor	pCi/L	Semi-Annually	Semi-Annually

<sup>10</sup> AQL = Aquifer Quality Limits

<sup>11</sup> Monitor = Analysis is required but an AQL and/or AL is not established in the permit

<sup>12</sup> Semi-Annual monitoring shall be conducted as follows: During each semi-annual period described in Sections 2.6.2.8.2, 2.6.4, and 2.7.6 sampling shall occur within seven days of a discharge from the WTP outfall, but not exceeding one sampling event per semi-annual period. If no discharge should occur during a semi-annual period, no sample is required for that period. Should sampling frequency increase to Quarterly monitoring, sampling shall be conducted in the same manner as described above, except the period for sampling will be quarterly as described in Sections, 2.6.2.8.2, 2.6.4, and 2.7.6.

<sup>13</sup> amsl = above mean sea level

<sup>14</sup> Not Established means monitoring is required but no limits are specified.

<sup>15</sup> Monitoring is required, but no limit is established.

<sup>16</sup> If the gross alpha particle activity is greater than 15 pCi/L, then calculate adjusted gross alpha particle activity

<sup>17</sup> The adjusted gross alpha particle activity is the gross alpha particle activity, including radium 226, and any other alpha emitters, if present in the water sample, minus radon and total uranium (the sum of uranium 238, uranium 235 and uranium 234 isotopes). The gross alpha analytical procedure (evaporation technique: EPA Method 900.0) drives off radon gas in the water samples. Therefore, the Adjusted Gross Alpha should be calculated using the following formula: (Laboratory Reported Gross Alpha MINUS Sum of the Uranium Isotopes).

Table 11: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING			
LCRS Sump	Alert Level 1 (gpd)	Alert Level 2 (gpd)	Monitoring Method
Underdrain Collection Pond (UCP) Sump	3,456	22,896	Automated

**Note:** The information in this table shall be maintained in a Log Book.

The volume of liquid pumped from the LCRS shall be monitored on a continuous basis using a totalizer and entered in a facility log book on a daily basis. The Alert Level 1 (AL1) or Alert Level 2 (AL2) shall be exceeded when the amount of leakage pumped from the sump for the UCP is greater than the applicable quantity above. Contingency requirements of Sections 2.6.2.3 and 2.6.2.4 shall be followed for AL1 and AL2 exceedances, respectively. An exceedance of AL 1 or AL2 is not a violation of the permit unless the permittee fails to perform actions as required under the Sections referenced above.

Table 12: CONTINGENCY DISCHARGE CHARACTERIZATION<sup>18</sup>

Parameter <sup>19</sup>	Units	Monitoring Frequency <sup>20</sup>
pH (field)	Standard Units	One sample
Total Dissolved Solids (TDS)	mg/L	One sample
Specific Conductance (lab)	umhos/cm	One sample
Hardness <sup>21</sup>	Standard Units	One sample
Nitrate (as N)	mg/L	One sample
Nitrite (as N)	mg/L	One sample
Nitrate-Nitrite as N	mg/L	One sample
Total Alkalinity	mg/L	One sample
Sulfate	mg/L	One sample
Antimony	mg/L	One sample
Arsenic	mg/L	One sample
Beryllium	mg/L	One sample
Barium	mg/L	One sample
Cadmium	mg/L	One sample
Chromium	mg/L	One sample
Cyanide (free)	mg/L	One sample
Fluoride	mg/L	One sample
Lead	mg/L	One sample
Mercury	mg/L	One sample
Nickel	mg/L	One sample
Selenium	mg/L	One sample
Thallium	mg/L	One sample
Iron	mg/L	One sample
Copper	mg/L	One sample
Manganese	mg/L	One sample
Zinc	mg/L	One sample

<sup>18</sup> Contingency discharge characterization shall be conducted for BADCT failures and overtopping. Monitoring under this table per Section 2.6.3.1, Surface Impoundments, Liner Failure, Containment Structure Failure, Unexpected Loss of Fluid, or Section 2.6.3.2, Overtopping of an Impoundment.

<sup>19</sup> Metals shall be analyzed as total metals.

<sup>20</sup> One sample shall be taken within 24 hours of discovery of an event.

<sup>21</sup> Hardness may be expressed as the sum of calcium plus magnesium as calcium carbonate (CaCO<sub>3</sub>)  
mg/L = milligrams per liter umhos/cm = micromhos per centimeter

## **5.0 REFERENCES AND PERTINENT INFORMATION**

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

APP Application, dated: August 18, 2020

Contingency Plan, dated: June 5, 2017

### **Document Reviewed**

- Hermosa Project – Trench Camp Property, Aquifer Protection Permit SIGNIFICANT Amendment Application, P-512235, Santa Cruz County, Arizona, dated August 14, 2020

## **6.0 NOTIFICATION PROVISIONS**

### **6.1 Annual Registration Fees**

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based on the amount of daily influent or discharge of pollutants in gallons per day (gpd) as established by A.R.S. § 49-242.

### **6.2 Duty to Comply**

[A.R.S. §§ 49-221 through 263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

### **6.3 Duty to Provide Information**

[A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

### **6.4 Compliance with Aquifer Water Quality Standards**

[A.R.S. §§ 49-243(B)(2) and 49-243(B)(3)]

The permittee shall not cause or contribute to a violation of an Aquifer Water Quality Standard (AWQS) at the applicable point of compliance (POC) for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an AWQS for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

### **6.5 Technical and Financial Capability**

[A.R.S. §§ 49-243(K)(8) and 49-243(N) and A.A.C. R18-9-A202(B) and R18-9-A203(E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(C), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

### **6.6 Reporting of Bankruptcy or Environmental Enforcement**

[A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within five days after the occurrence of any one of the following:

1. the filing of bankruptcy by the permittee; or
2. the entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

### **6.7 Monitoring and Records**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.

**6.8. Inspection and Entry**

[A.R.S. §§ 41-1009, 49-203(B), and 49-243(K)(8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), the permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

**6.9. Duty to Modify**

[A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]

The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices authorized by this permit.

**6.10. Permit Action: Amendment, Transfer, Suspension, and Revocation**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

This permit may be amended, transferred, suspended, or revoked for cause, under the rules of the Department. The permittee shall notify the Groundwater Protection Value Stream in writing within 15 days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

**7.0 ADDITIONAL PERMIT CONDITIONS**

**7.1. Other Information**

[A.R.S. § 49-243(K)(8)]

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit the correct facts or information.

**7.2. Severability**

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

**7.3. Permit Transfer**

This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the applicant complies with all transfer requirements as specified in A.A.C. R18-9-A212(B) and (C).