

**STATE OF ARIZONA
AQUIFER PROTECTION PERMIT NO. P-100534
PLACE ID 5425, LTF 75301
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 Freeport-McMoRan Safford Inc. to operate the discharging facilities located at the Safford Mine, located north of Safford in Graham County, Arizona, over groundwater of the Gila River Basin, in Section 36, Township 5 South, Range 25 East; Sections 31-33, Township 5 South, Range 27 East; Sections 1-2, 11-12, 13-14 Township 6 South, Range 25 East; Sections 27-29 and 32-36, Township 5 South, Range 26 East; Sections 1-6, 7-11, and 14, Township 6 South, Range 26 East; and Sections 3-6, 7-9, Township 6 South, Range 27 East, East of the Gila and Salt River Base Line 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: Freeport-McMoRan Safford Mine
Facility Address: 8500 N. Freeport-McMoRan Road
Safford, Arizona 85546
County: Graham County
Permittee: Freeport-McMoRan Safford Inc.
Permittee Address: P. O. Box 1019
Safford, Arizona 85548

Annual Registration Fee Flow Rate: 10,000,000 gallons per day (gpd) or more

Facility Contact: Jeremy Saline
Emergency Phone No.: (928) 792-5873

Latitude/Longitude: 32° 57' 00" N /109° 40' 00" W
Legal Description: Section 36, Township 5 South, Range 25 East; Sections 31-33, Township 5 South, Range 27 East; Sections 1-2, 11-12, 13-14 Township 6 South, Range 25 East; Sections 27-29 and 32-36, Township 5 South, Range 26 East; Sections 1-6, 7-11, and 14, Township 6 South, Range 26 East; and Sections 3-6, 7-9, Township 6 South, Range 27 East, East of the Gila and Salt River Base Line and Meridian.

1.2 AUTHORIZING SIGNATURE

Trevor Baggio, Director
Water Quality Division
Arizona Department of Environmental Quality

Signed this _____ day of _____, 2019

THIS AMENDED PERMIT SUPERCEDES ALL PREVIOUS PERMITS

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 Freeport-McMoRan Safford Mine is located in Graham County, Arizona, approximately eight miles north of the City of Safford, in the foothills of the Gila Mountains. The project is located on Freeport-McMoRan Safford Inc. (FMSI) patented land. This site involves open-pit copper mining and leaching of the ore on a lined leach pad. The resulting pregnant leach solution is processed at an on-site solvent extraction/electrowinning (SX/EW) plant. Existing Dos Pobres/San Juan Project facilities include the Dos Pobres and San Juan pits, Heap Leach Pad (Pad), Excess Process Solution Impoundment (EPSI), Non-stormwater Impoundment (NSI), San Juan Non-stormwater Evaporation Impoundment (SJNEI), SX/EW plant, and infrastructure and support facilities associated with copper mining. Recent Lone Star Project facilities include the Lone Star Pit, Lone Star Heap Leach Facility (HLF), North Process Solution Impoundment (NPSI), Process Solution Tank, North Non-Stormwater Impoundment (NNSI), and South Non-Stormwater Impoundment (SNSI). Domestic wastewater discharges are authorized separately under Type 4 general aquifer protection permits.

This permit authorizes the operation of the discharging facilities described below:

2.1.1 Heap Leach Pad (Pad)

The Pad is utilized for the storage and leaching of copper ore and other solid, copper-bearing materials, sediment and wash water generated from the mine vehicle wash facilities, and sulfuric acid and petroleum contaminated soil, rock, and aggregate resulting from accidental spills. The Pad will have an area of approximately 748 acres, with an ultimate height of the ore pile of up to 600 feet above the liner surface. Raffinate will be applied to the ore pile, with the resulting leachate being collected in a series of leachate collection pipes installed on top of the geomembrane liner. Pregnant leach solution (PLS) will be routed through the collection pipe system into a stainless steel PLS tank at the downgradient edge of the Pad, and from there to the SX/EW process plant.

2.1.2 Excess Process Solution Impoundment (EPSI)

The EPSI is designed to capture excess solution and stormwater from the PLS tank and from the Heap Leach Pad. It has a design capacity of 53.8 acre-feet (ac-ft) to the spillway, 47.9 ac-ft with 2 feet of freeboard. It is double-lined, with a leakage collection and recovery system. The primary liner is a minimum 80-mil high density polyethylene (HDPE). The secondary (bottom) liner is a 60-mil HDPE composite liner. Collected fluid is pumped to the PLS tank, SX/EW Plant, or back into the operations cycle. Overflow will pass through an HDPE lined channel into the Non-stormwater Impoundment (NSI).

2.1.3 Non-stormwater Impoundment (NSI)

The NSI receives overflow through the spillway from the Excess Process Solution Impoundment. It has a composite liner consisting of a minimum 60-mil HDPE liner in the general impoundment area overlying a minimum 6 inches of 3/8 inch minus bedding soil compacted to 95 percent maximum dry density and a 100-mil HDPE liner in the area of pump operation. The total storage capacity at the emergency spillway elevation is 430 acre-feet, with a maximum depth below the spillway of 47.5 feet and a storage capacity of 390 ac-ft with 2 feet of freeboard. Accumulated fluid is pumped back into the operations cycle.

2.1.4 San Juan Non-stormwater Evaporation Impoundment (SJNEI)

The SJNEI captures stormwater and seepage from the historic San Juan leach stockpiles. The impoundment is an existing unlined facility that has been upgraded with a composite liner system consisting of a 60-mil HDPE liner over 6 inches minimum thickness of compacted low permeability clay. The maximum storage capacity of the impoundment is 7.7 acre-feet at the crest elevation and 5.4 ac-ft with 2 feet of freeboard. Seepage is collected in a lined intercept trench equipped with 6 reclaim wells located downgradient of the stockpiles and upgradient of the impoundment, from which water is pumped into the impoundment. Accumulated fluid in the impoundment is evaporated.

2.1.5 Lone Star Heap Leach Facility (HLF)

The HLF is similar in design to the existing Heap Leach Pad that is currently in use at the Safford Mine (see section 2.1.1) and is utilized for the storage and leaching of copper ore and other solid, copper-bearing materials,

sediment and wash water generated from the mine vehicle wash facilities, and sulfuric acid and petroleum contaminated soil, rock, and aggregate resulting from accidental spills. The HLF will be constructed in three phases, ultimately covering an area of approximately 1,610 acres, or approximately 2.5 square miles. Construction of the HLF will begin with Phase 1 on the southeast side of the proposed HLF footprint, proceed with Phase 2 in the center of the facility, and conclude with Phase 3, which will form the northwest side of the facility. The HLF will be isolated from the surrounding area by stormwater diversions upstream of the HLF and a containment berm around its perimeter. The HLF foundation will be prepared by clearing and grubbing the site before grading to construct a planar surface with a uniform drainage gradient of approximately 3 percent from the northeast to the southwest. A composite liner system will be constructed over the prepared subgrade consisting of a minimum of 1 foot of low-permeability (maximum 1×10^{-6} centimeters per second (cm/s)) Underliner Fill overlain by either a 60-mil or 80-mil smooth low density polyethylene (LLDPE) geomembrane. The LLDPE geomembrane will be overlain by a minimum of 2 feet of Fine Overliner Fill and a minimum of 2 feet of run of mine (ROM) Overliner Fill. A network of perforated HDPE pipes will be installed directly on top of the geomembrane before the placement of the Fine Overliner Fill to collect and carry PLS to a system of solid-walled HDPE pipes installed along the southeast toe of the HLF to carry the PLS to either the NPSI or the new Process Solution Tank located to the west of the NPSI. Crushed and agglomerated ore will be delivered to the HLF via conveyor and placed in lifts of approximately 16 feet in height. The outer slope of each lift will be constructed at the angle of repose which is estimated to be 1.3H:1V based on current stacking data. The toe of each subsequent lift will be offset from the crest of the prior lift by approximately 21 feet, resulting in a composite outer slope of approximately 2.6H:1V. The ultimate height of the HLF at full construction will be approximately 350 feet.

2.1.6 North Process Solution Impoundments (NPSI)

The NPSI is being relocated approximately 1,700 feet to the northwest and will be constructed down-gradient of the HLF. Pumping of the process solution will now be by an inclined riser and pump system within the NPSI and all solution will be pumped from the NPSI to the new Process Solution Tank located to the west of the NPSI. Process solution will be pumped from the Process Solution Tank to the solution extraction electrowinning (SX/EW) plant for processing. The NPSI is sized to contain 12 hours of the nominal PLS flows of 50,000 gpm, or 110.5 ac-ft with two (2) feet of freeboard. The total design storage capacity is 122.5 ac-ft. Flows in excess of storage capacity will flow out of the NPSI via an HDPE-lined channel to the North Non-Stormwater Solution Impoundment (NNSI). The impoundment will be constructed entirely by excavation below the existing grade with 3:1 slopes, have a bottom drainage grade of 2-percent, and employ a composite, double liner with an integrated leakage collection and recovery system (LCRS). The excavated and prepared subgrade will be overlain by a minimum of 12 inches of low-permeability (maximum 1×10^{-6} cm/s) Underliner Fill in preparation for the installation of the double liner and LCRS. The double liner will consist of an 80-mil HDPE primary (upper) geomembrane and a 60-mil HDPE secondary (lower) geomembrane with a HDPE geonet installed between the two geomembrane components. Any leakage through the primary liner will pass between the two liners via the geonet to a collection sump located at the lowest spot in the NPSI. A pump installed in a riser pipe will allow for the removal of any collected seepage.

2.1.7 North Non-Stormwater Impoundment (NNSI)

The NNSI receives and contains PLS and non-stormwater flows from the HLF, the NPSI, and the Process Solution Tank due to upset conditions resulting from power failure, storm events, or other abnormal conditions. The NNSI will be formed by excavating to a maximum depth of approximately 77 feet below grade with 2.5H:1V side slopes. The interior of the NNSI will employ a composite liner consisting of 6 inches of low-permeability underliner fill and an 80-mil HDPE geomembrane. The total design storage capacity is 753 ac-ft at the spillway and 717 ac-ft with 2 feet of freeboard. Flows in excess of the capacity provided by the NNSI will flow into the adjoining SNSI via an HDPE-lined spillway constructed between the two impoundments. A submersible pump placed in an HDPE carrier pipe will be installed in the NNSI. The pump will be used to transfer solution from the NNSI to an intermediate booster tank, where another pump will deliver the solution to the existing raffinate tank as make-up water for leaching operations.

2.1.8 South Non-Stormwater Impoundment (SNSI)

The SNSI serves to receive and contain PLS and non-stormwater flows from the HLF, the NPSI, the NNSI and the Process Solution Tank due to upset conditions resulting from power failure, storm events, or other abnormal

conditions. The SNSI will be formed by excavating to a maximum depth of approximately 42 feet below grade with 2.5H:1V side slopes. The interior of the SNSI will employ a composite liner consisting of 6 inches of low-permeability underliner fill and an 80- mil HDPE geomembrane. The total design storage capacity is 219 ac-ft at the crest elevation, 203 ac-ft with 2 feet of freeboard. Flows will report to the SNSI via a HDPE-lined solution collection channel. An inclined submersible pump placed in an HDPE carrier pipe will be installed in the SNSI. The pump will be used to transfer solution from the SNSI to an intermediate booster tank, where another pump will deliver the solution to the existing raffinate tank as make-up water for leaching operations.

The site includes the following permitted discharging facilities:

Facility Name	Latitude	Longitude
Heap Leach Pad (Pad)	32° 56' 45" N	109° 41' 00" W
Excess Process Solution Impoundment (EPSI)	32° 56' 15" N	109° 41' 15" W
Non-stormwater Impoundment (NSI)	32° 56' 00" N	109° 41' 30" W
San Juan Non-stormwater Evaporation Impoundment (SJNEI)	32° 56' 30" N	109° 39' 15" W
Lone Star Heap Leach Facility (HLF)	32° 56' 03" N	109° 44' 07" W
North Process Solution Impoundment (NPSI)	32° 55' 15" N	109° 44' 44" W
North Non-Stormwater Impoundment (NNSI)	32° 55' 11" N	109° 44' 51" W
South Non-Stormwater Impoundment (SNSI)	32° 55' 04" N	109° 44' 46" W

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 annual registration fee flow rate is established in Section 1.1. 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.

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 \$69,159,569.00, post-closure costs are \$246,250.00, for a total of \$69,405,816.00. The permittee provided financial capability for the estimated Net Present Value (NPV) of the closure and post-closure costs in the amount of \$32,672,186.00. The financial assurance mechanism was demonstrated through a Guarantee per A.A.C. R18-9-A203(C)(8).

2.2 Best Available Demonstrated Control Technology (BADCT)

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

The permittee is authorized to operate the permitted facilities listed in Section 4, Table 4.1.1. The facilities shall be constructed, operated, and maintained in accordance with the construction details in the initial application, dated October 2, 1998 and subsequent amendment applications and supplemental documents including the February 4, 2019 amendment application, and the February 14, 2019 and June 5, 2019 application addenda.

2.2.1 Engineering Design

The list of permitted facilities and a description of BADCT is included in Section 4, Table 4.1.1.

2.2.2 Site-specific Characteristics

Not applicable

2.2.3 Pre-operational Requirements

Not applicable

2.2.4 Operational Requirements

The permitted facilities shall be inspected for performance levels listed in Section 4.2, Table 4.2.1. 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 as defined in A.R.S. § 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure, uncontrollable leakage, berm breaches that result in an unexpected loss of fluid, or accidental spills. Liner failure in a single-lined impoundment is any condition that would result in leakage exceeding 550 gallons per day per acre. The discharge limitations in this section are not applicable to any discharge caused by precipitation in excess of a single 100-year/24 hour storm event or process overflow during a power outage exceeding 24 hours in duration.

2.3.1 Heap Leach Pad (Pad)

The Pad is designed and authorized for the storage and leaching of copper ore and other solid, copper-bearing materials, sediment and wash water generated from the mine vehicle wash facilities and sulfuric acid and petroleum contaminated soil, rock, and aggregate resulting from accidental spills. Per Section 4.2, Table 4.1.1, the Pad shall have a maximum capacity of 618 million tons of (oxide and sulfide) copper ore, and the ultimate height of the ore pile shall not exceed a maximum of 600 feet above the leach pad liner surface elevation.

2.3.2 Excess Process Solution Impoundment (EPSI)

The EPSI is designed and authorized for the storage of process solutions and stormwater. Flows through the spillway of the EPSI into the NSI are not considered to be a discharge limitation violation.

2.3.3 Non-stormwater Impoundment (NSI)

The NSI is designed and authorized to receive stormwater and process solutions as a result of storm events or process upset events.

2.3.4 San Juan Non-stormwater Evaporation Impoundment (SJNEI)

The SJNEI is designed and authorized to receive stormwater and seepage from the closed San Juan leach stockpiles.

2.3.5 Lone Star Heap Leach Facility (HLF)

The HLF is designed and authorized for the storage and leaching of copper ore and other solid, copper-bearing materials, sediment and wash water generated from the mine vehicle wash facilities, and sulfuric acid and petroleum contaminated soil, rock, and aggregate resulting from accidental spills. The HLF will have a maximum surface area of approximately 1,610 acres. The HLF will be constructed in three phases starting at the southeast third of the facility and ending with the northwest third. Per Section 4.2, Table 4.1.1, the HLF shall have a maximum capacity of 980 million tons of (oxide and sulfide) copper ore, and the ultimate height of the ore pile shall not exceed a maximum of 350 feet above the leach pad liner surface elevation.

2.3.6 North Process Solution Impoundment (NPSI)

The NPSI is a double lined pond with leakage collection and recovery system (LCRS). It is designed and authorized to collect and contain process solution.

2.3.7 North Non-Stormwater Impoundment (NNSI)

The NNSI is designed and authorized to collect non-stormwater flows and overflows from the HLF and NPSI during upset conditions exceeding the capacity of the NPSI via an HDPE-lined spillway between the two impoundments.

2.3.8 South Non-Stormwater Impoundment (SNSI)

The SNSI is designed and authorized to collect non-stormwater flows and overflows from the NNSI and the HLF during upset conditions that flow via gravity to the SNSI via a geomembrane-lined channel.

2.4 Point of Compliances (POCs) [A.R.S. § 49-244]

The hazardous /non-hazardous points of compliance (POCs) have been established at the following locations:

Freeport-McMoRan Well ID	Latitude (North)	Longitude (West)	ADWR Number
AP-22A ¹	32° 56' 10.468" N	109° 41' 04.706" W	55-920355
AP-25	32° 56' 15.830" N	109° 39' 15.580" W	55-556055
AP-35B	32° 57' 06.600" N	109° 41' 31.130" W	55-919846
AP-39	32° 55' 34.229" N	109° 42' 05.634" W	55-211962
AP-51 ²	32° 55' 54.970" N	109° 43' 04.818" W	55-921493
DPW-12 ³	32° 55' 28.564" N	109° 45' 20.516" W	55-539450

¹New POC well to replace AP-22

²New POC well northeast of the Lone Star Heap Leach Facility

³New POC well to replace AP-50

Groundwater monitoring is required at the POC Wells per Section 4.2, Tables 4.2.2 and 4.2.3. 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, ADEQ personnel shall make these documents immediately available for review.

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 4.2.1.

If any damage of the pollution control structures is identified during inspection that could cause or contribute to a discharge as defined in A.R.S. § 49-201(12), 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 Compliance Groundwater Monitoring and Sampling Protocols

Compliance groundwater monitoring is required under the terms of this permit per Section 4.2 Table 4.2.2 for Quarterly Groundwater monitoring and Table 4.2.3 Biennial Groundwater monitoring.

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, insufficient water in the well for more than two (2) sampling events, 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

Not applicable

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 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, Arizona 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 submitted in the application, 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 Sections 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 of a DL or AQL 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 in a surface impoundment are not maintained, the permittee shall:

1. As soon as practicable and to the extent 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 impoundment until the water level is restored at or below the permitted freeboard limit.
2. Within five (5) days of discovery, evaluate the cause of the incident and adjust operational conditions as necessary to avoid future occurrences.
3. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log shall be maintained according to Section 2.7.2 (Operational Inspection / Log Book Recordkeeping).
4. 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, Other than Freeboard

1. If an operational performance level (PL) listed in Section 4.2, Table 4.2.1 has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge as defined in A.R.S. § 49-201(12), 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 5 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 Exceeding of Alert Levels Set for in Discharge Monitoring

Not applicable

2.6.2.4 Exceeding of Alert Levels in Groundwater Monitoring

2.6.2.4.1 Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards

1. If an AL for a pollutant set in Section 4.2, Tables 4.2.2 and 4.2.3 has been exceeded, the Permittee may 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 that parameter to Monthly. 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, the pollutant(s) for which the AL is exceeded are not reasonably expected to cause a violation of an AQL at any POC. The demonstration may propose a revised AL or monitoring frequency for approval in writing by the Groundwater Protection Value Stream for any pollutant that exceeded its AL.
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 the pollutant(s) which have been monitored for more frequently no longer exceed the AL(s).
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.

2.6.2.4.2 Alert Levels to Protect Downgradient Users from Pollutants Without Numeric Aquifer Water Quality Standards

Not applicable

2.6.2.4.3 Alert Level for Groundwater Level

Not applicable

2.6.2.5 Exceedance of Action Leakage Rate for Excess Process Solution Impoundment and North Process Solution Impoundment

The permittee shall initiate the following actions within three (3) days of becoming aware of an exceedance of the action leakage rate (ALR) specified in Section 4.2, Table 4.2.4.

All information shall be recorded in a log book as described in Section 2.7.2. The permittee shall:

1. Drain and/or pump out all fluid collected in the leak collection and recovery system (LCRS) to reduce head on the liner system;
2. Quantify and record the amount of fluid pumped from the leak collection and recovery system on a weekly basis until the leakage rate is no longer exceeded;
3. Assess the potential for migration of liquids out of the containment system; and,
4. Assess the current condition of the liner system.

2.6.2.6 Exceedance of Rapid and Large Leakage Rate for Excess Process Solution Impoundment and North Process Solution Impoundment

If the rapid and large leakage rate specified in Section 4.2, Table 4.2.4 has been exceeded, the permittee shall:

1. Notify the Groundwater Protection Value Stream, within 24 hours of becoming aware of the exceedance,
2. Reduce the hydraulic head on the liner including emptying of the portion of the impoundment over the affected liner,
3. Conduct visual inspection to identify areas of leakage,
4. Repair all identified areas of leakage within 90 days of discovery,
5. Initiate closure or partial closure of the impoundment if identified areas of leakage cannot be repaired within 90 days of discovery,
6. After repairs have been made, monitor the leakage rate on a weekly basis while the impoundment is being filled, and for a period of three (3) months after filling.

Within 30 days of a confirmed RLL exceedance, the permittee shall submit a written report to the Groundwater Protection Value Stream. The written report shall include a description of the exceedance and its potential causes, the period of exceedance and the anticipated time period during which the exceedance is expected to continue, and a description of any actions taken or planned to be taken to eliminate or prevent recurrence of the exceedance and to mitigate the impacts of the exceedance. Upon approval of the Groundwater Protection Value Stream the permittee shall initiate the actions necessary to mitigate the impacts of the exceedance.

2.6.3 Discharge Limitation Violation

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

In the event of 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 to prevent further releases to the subsurface and/or to perform repairs.
2. Within 24 hours of discovery, notify the Groundwater Protection Value Stream,
3. Within five (5) days 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 4.3.1. 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 Book/Recordkeeping File).

5. 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.
6. 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.

7. 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).
8. 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 the Groundwater Protection Value Stream.
3. Within five (5) days, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4.3, Table 4.3.1 Within 30 days of the incident, submit a copy of the analytical results to the 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 Table 4.2.1. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/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 the Groundwater Protection Value Stream, as specified in section 2.7.3.2 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, the Groundwater Protection Value Stream, may request additional monitoring or remedial actions.
7. Within 60 days of discovery, and based on sampling in Subsection 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 the Groundwater Protection Value Stream, 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 the Groundwater Protection Value Stream, the permittee shall implement the approved plan.
9. Within 30 days of completion of corrective actions, submit to the Groundwater Protection Value Stream, a written report as specified in Section 2.6.6 (Corrective Actions). Upon review of the report, the Groundwater Protection Value Stream, 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 Surface Impoundments is specified in Section 2.3 (Discharge Limitations). If any unexpected materials flow to the permitted surface impoundment, the permittee shall:

1. As soon as practicable, cease all unexpected inflows to the surface impoundment.
2. Within 24-hours of discovery, notify the Groundwater Protection Value Stream.
3. Within five (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 the Groundwater Protection Value Stream 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, the Groundwater Protection Value Stream may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions including remediation.

2.6.4 Aquifer Quality Limit Violation

1. If an AQL set in Section 4.2 Table 4.2.2 and or 4.2.3 has been exceeded, the permittee may conduct verification sampling for those pollutant(s) that were above their respective AQL(s) 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 confirms that the AQL is violated for those pollutant(s) that were above their respective AQL(s) or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring for those pollutant(s) that were above their respective AQL(s) to Monthly. 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(2), 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 or a longer time period if agreed to by the Groundwater Protection Value Stream 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 the Groundwater Protection Value Stream 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 the Groundwater Protection Value Stream approved contingency plan, or separately approved according to Section 2.6.6.

3. Upon review of the submitted report, the Groundwater Protection Value Stream may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
4. The permittee shall notify any downstream or downgradient users who may be directly affected by a verified exceedance of the AQL.
5. The permittee shall continue monitoring at the increased frequency until the contaminant(s) are below the AQL and AL for three consecutive quarters.

2.6.5 Emergency Response and Contingency Requirements for Unauthorized Discharges pursuant to A.R.S. § 49-201(12) and pursuant to A.R.S. § 49-241 That Are Not Addressed Elsewhere in Section 2.6

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 as defined in 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 upon discovering the discharge of hazardous material which (a) has the potential to cause an AWQS or AQL to be exceeded, 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 as defined in 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 required to be 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(2). 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 or violation of an 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) through the myDEQ online reporting system.
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 4.2 list the monitoring parameters and the frequencies for reporting results on the SMRF:
 - Table 4.2.2 Quarterly Groundwater Compliance Monitoring
 - Table 4.2.3 Biennial Groundwater Compliance Monitoring
- The parameters listed in the above-identified tables from Section 4.2 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 time 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; and
6. Any other information required by this permit to be entered in the log book.

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 in writing within five (5) days (except as provided in Section 2.6.5) of becoming aware of a violation of any permit condition, discharge limitation or of an AL exceedance 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 or discharge limitation. 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. Biennial Sampling Report

The permittee shall, upon completion of the biennial sampling described in Table 4.2.3 and Section 3.0 Compliance Schedule, item 3.3, submit a monitoring summary report to the Groundwater Protection Value Stream. This report shall be due at the same time as the SMRF form for the biennial sampling event as indicated in Table 2.7.6. The report shall include, but not be limited to the following:

1. A description of any deviations from standard sampling protocols during the reporting period.

2. A summary of all exceedances of ALs, AQLs, Action Levels, or operational limits that occurred during the reporting period.
3. Graphical time versus concentration plots of field pH, sulfate, total dissolved solids, and any parameter which exceeded an applicable AL or AQL in the past eight quarters at each POC well, and tabulated sampling data for all wells required to be sampled by this permit during the last eight quarters.
4. An updated table of all monitor wells and piezometers in the Discharge Impact Area including, but not limited to, location of well, depth of well, depth to water, and water level elevation.
5. A summary of any groundwater monitor wells replaced in the reporting period including, but not limited to, location of well, depth of well, depth to water, and screened interval.
6. An updated groundwater contour map, based on the most recent groundwater level measurements.

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 to be submitted to the Groundwater Protection Value Stream shall be directed to:

Arizona Department of Environmental Quality
Groundwater Protection Value Stream
Mail Code 5415B-3
1110 West Washington Street
Phoenix, Arizona 85007
Phone (602) 771-4449

2.7.6 Reporting Deadline

The following table lists the due dates:

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 due date for the Biennial report per Section 2.7.4.

Monitoring conducted Biennial:	Report due by:
January-December	January 30 of the following year

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:

- 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; and
5. Further action is necessary to meet property use restrictions.

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.

No.	Description	Due by:	Permit Amendment Required?
3.1	The permittee shall submit a demonstration that 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 the self-assurance demonstration as required in A.A.C. R18-9- A203(C)(8).	August 30, 2021 every 2 years thereafter.	No
3.2	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.	January 1, 2025, and every 6 years thereafter.	Yes
3.3	The permittee shall submit the biennial monitoring summary report required by Section 2.7.4 of the permit.	Within 90 days of the completion of the biennial sampling event	No

TABLES OF MONITORING REQUIREMENTS

4.1 FACILITY AND POINT of COMPLIANCE TABLES

Table 4.1.1 Permitted Facilities and BADCT

Table 4.1.2 Required Inspections and Operational Monitoring

4.2 COMPLIANCE AND OPERATIONAL MONITORING TABLES

Table 4.2.1 Required Inspections and Operational Monitoring

Table 4.2.2 Quarterly Compliance Groundwater Monitoring Requirements

Table 4.2.3 Biennial Compliance Groundwater Monitoring Requirements

Table 4.2.4 Leakage Rates for Collection Recovery Monitoring Requirements

4.3 CONTINGENCY MONITORING TABLE

Table 4.3.1 Groundwater Contingency Monitoring (Reserved)

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4.0 TABLES OF MONITORING REQUIREMENTS and BADCT DEMONSTRATIONS

4.1 FACILITY AND POINT of COMPLIANCE TABLES

Table 4.1.1 Permitted Facilities and BADCT
<p><u>Heap Leach Pad (Pad):</u></p> <p>The Pad has been constructed to prescriptive BADCT standards using a composite liner system over a prepared subgrade. The composite liner system design consists of a 60-mil and 80-mil Linear Low Density Polyethylene (LLDPE) geomembrane underlain by a minimum of 12 inches of compacted 3/8-inch minus, low permeability soil (hydraulic conductivity no greater than 10-$\{j\}$ cm/sec). The LLDPE geomembrane varies in thickness with an 80-mil-thick liner material within the center area of the pad and a 60-mil thick (minimum) liner material underlying the slopes of the stockpile. The geomembrane is covered by approximately 24 inches of nominal 1.5-inch crushed material, overlying a network of leachate collection pipes laid on top of the geomembrane. The geomembrane is secured by an engineered trench. The Pad footprint has been prepared to a relatively planar surface with a slope of approximately 3 percent by excavating and filling before the liner system is installed. Surface water run-on from the 100-year, 24-hr storm event is diverted around the operational phase of the facility. The design and construction details of the Leach Pad and heap, approved by ADEQ, are contained in the APP Amendment Application, dated April 19, 2011.</p> <p>The Pad will be loaded primarily with agglomerated ore using a conveyor/stacking system, with supplemental run-of-mine ore transported to the pad via trucks. The Pad has a maximum capacity of 618 million tons (oxide and sulfide) copper ore. The ultimate height of the ore pile will not exceed a maximum of 600 feet above the leach pad liner surface elevation. The maximum areal extent of the Pad will not exceed the foot print shown in the approved design plans provided in the APP Amendment Application dated April 19, 2011.</p>
<p><u>Excess Process Solution Impoundment (EPSI):</u></p> <p>The EPSI is constructed to prescriptive BADCT standards using a double liner incorporating a LCRS. The primary liner is a minimum 80-mil-thick high density polyethylene (HDPE) which overlies a geonet for the rapid collection of leakage through the primary liner. The geonet and LCRS are underlain by a 60-mil thick HDPE secondary liner. The secondary liner is a composite liner placed directly over a minimum 12-inch layer of compacted 3/8-inch minus soil underliner with a saturated hydraulic conductivity no greater than 10-6 cm/sec. The design and construction details of the EPSI, approved by ADEQ, are contained in the APP Amendment Application, dated March 2007.</p> <p>The EPSI's maximum design capacity of 53.8 ac-ft of process solution and stormwater corresponds to a spillway elevation of approximately 3484.7 feet amsl. The EPSI storage capacity is 47.9 ac-ft with 2 feet of freeboard. The EPSI will have a minimum of two (2) feet of embankment above the spillway elevation with a minimum depth of approximately 25 feet below the spillway. The spillway for the EPSI is designed to pass the peak flow from the 100-year, 24-hour storm event, plus operational flow at 960 cubic feet per second, with a minimum of 12 inches of freeboard. Overflow from the EPSI is conveyed through the HDPE lined channel to the NSI.</p>
<p><u>Non- Stormwater Impoundment (NSI):</u></p> <p>The NSI is designed and has been constructed to prescriptive BADCT standards with a composite liner system that consists of a single 60-mil thick (minimum) HDPE geomembrane overlying a minimum of 6 inches of 3/8-inch minus bedding soil compacted to 95 percent maximum dry density and a 100-mil HDPE liner in the area of pump operation. The NSI receives fluid overflow from the spillway of the EPSI through an HDPE-lined channel and concrete inlet structure. Total storage capacity of the NSI is approximately 390 acre-feet (ac-ft) at an elevation two (2) feet below the emergency spillway, and 430 ac-ft at the emergency spillway elevation. The NSI is designed to accommodate the 100-year, 24-hour storm event plus process upset flows during a 24-hour power outage, with a minimum of 2 feet of freeboard. The maximum depth of the NSI below the emergency spillway is approximately 47.5 feet. The stormwater from the NSI reports to the raffinate tanks through an outlet (HDPE) pipe via pumping. The design and construction details of the NSI, including the overflow channel and inlet structure, approved by ADEQ, are contained in the APP Amendment Application, dated March 2007.</p>

Table 4.1.1
Permitted Facilities and BADCT

San Juan Non- Stormwater Evaporation Impoundment (SJNEI):

The SJNEI was an unlined existing facility that was upgraded with a composite liner system consisting of 60-mil HDPE geomembrane over 6 inches minimum thickness of compacted low permeability soil (clay). The liner is extended into the upgradient gravel-filled trench to capture shallow, subsurface seepage from the closed San Juan leach stockpiles. The intercept trench, excavated into competent bedrock, is lined on the down-gradient face with 60-mil HDPE geomembrane, with a 10-oz geotextile placed above and underneath the geomembrane. Seepage collected from the intercept trench by six up-gradient reclaim wells is pumped into the impoundment and allowed to evaporate. Each well is equipped with an automatic pump to discharge a maximum of 3 gpm into the impoundment. The impoundment is designed to contain the surface water run-on generated from the 100-yr, 24-hr storm event. A "witness" drain is installed underneath the geomembrane liner to detect leakage through the liner. To capture seepage from the SJNEI, the seepage collection system is installed downgradient of the impoundment. The seepage collection system consists of a concrete intercept curb and an HDPE lined concrete sump placed in bedrock. The sump is equipped with an automatic pump to transfer solution from the sump to the SJNEI. The impoundment has a storage capacity of 5.4 ac-ft, with a minimum of 2 feet of freeboard. The maximum storage capacity of the impoundment at the crest elevation is 7.7 ac-ft. The design and construction details of the facility upgrades, approved by ADEQ, are contained in the APP Application, dated October 1998.

Lone Star Heap Leach Facility (HLF):

The HLF has a prescriptive BADCT design similar to the existing Pad. The HLF will be constructed in three phases, ultimately covering an area of approximately 1,610 acres, or approximately 2.5 square miles. Construction of the HLF began with Phase 1 on the southeast side of the proposed HLF footprint, will proceed with Phase 2 in the center of the facility, and conclude with Phase 3, which will form the northwest side of the facility. The HLF will be constructed using a composite liner system over a prepared subgrade. The composite liner system design will consist of a 60-mil and 80-mil Linear Low Density Polyethylene (LLDPE) geomembrane underlain by a minimum of 12 inches of compacted 3/8-inch minus, low permeability soil (hydraulic conductivity no greater than 10^{-6} cm/sec). The geomembrane will be covered by approximately 24 inches of nominal 1.5-inch crushed material, overlying a network of leachate collection pipes laid on top of the geomembrane. The geomembrane will be secured by an engineered trench. The Pad footprint will be prepared to a relatively planar surface with a slope of approximately 3 percent by excavating and filling before the liner system is installed. Surface water run-on from the 100-year, 24-hr storm event will be diverted around the operational phase of the facility. The design and construction details of the HLF, approved by ADEQ, are contained in the APP Amendment Application, dated March 31, 2016.

The HLF has a maximum a capacity of 980 million tons of copper ore. The ultimate height of the ore pile will not exceed a maximum of 350 feet above the leach pad liner surface elevation. The overall external slope of the ore heap will vary from approximately 2.6(H): 1 (V). The maximum areal extent of the HLF will not exceed approximately 1,610 acres or about 2.5 square miles. The HLF will be loaded primarily with agglomerated ore using a conveyor/stacking system, with supplemental run-of-mine ore transported to the pad via trucks.

North Process Solution Impoundments (NPSI):

The NPSI is constructed to prescriptive BADCT standards using a double liner incorporating a leakage collection and recovery system (LCRS). The primary liner is a minimum 80-mil-thick HDPE which overlies a geonet for the rapid collection of leakage through the primary liner. The geonet and LCRS are underlain by a 60-mil thick HDPE secondary liner. The secondary liner is a composite liner placed directly over a minimum 12-inch layer of compacted 3/8-inch minus soil underliner with a saturated hydraulic conductivity no greater than 10^{-6} cm/sec. The NPSI has a maximum design capacity of 122.5 ac-ft of process solution that is pumped to the Process Solution Tank through an inclined riser and pump system within the pond. The design capacity of the NPSI is 110.4 ac-ft with 2 feet of freeboard. The design and construction details of the NPSI, approved by ADEQ, are contained in the APP Amendment Application, dated March 31, 2016.

Table 4.1.1
Permitted Facilities and BADCT

North Non- Stormwater Impoundment (NNSI):

The NNSI is designed to prescriptive BADCT standards to collect non-stormwater flows and overflows from the NPSI and the HLF during upset conditions exceeding the capacity of the NNSI via an HDPE-lined spillway between the two impoundments. The impoundment was formed by excavating to a maximum depth of approximately 77 feet below grade with 2.5H:1V side slopes. The interior of the impoundments employ a composite liner consisting of 6 inches of low-permeability Underliner Fill and an 80-mil HDPE geomembrane. The total design storage capacity of the NNSI is 753 ac-ft at the spillway and 717 ac-ft with 2 feet of freeboard. An inclined submersible pump placed in a HDPE carrier pipe is installed in the impoundment. The pump will be used to transfer solution from the impoundment to an intermediate booster station, where another pump delivers the solution to the existing raffinate tank as make-up water for leaching operations

South Non- Stormwater Impoundment (SNSI):

The SNSI is designed to prescriptive BADCT standards to collect non-stormwater flows and overflows from the NPSI and the HLF during upset conditions that flow via gravity to the SNSI via a geomembrane-lined channel. The SNSI will be formed by excavating to a maximum depth of approximately 42 feet below grade with 2.5H:1V side slopes. The interior of the SNSI employs a composite liner consisting of 6-inches of low-permeability Underliner Fill and an 80-mil HDPE geomembrane. The total design storage capacity of the SNSI is 219 ac-ft at the crest elevation and 203 ac-ft with 2 feet of freeboard. An inclined submersible pump placed in a HDPE carrier pipe is installed in the impoundment. The pump transfers solution from the impoundments to an intermediate booster station, where another pump delivers the solution to the existing raffinate tank as make-up water for leaching operations.

4.2 COMPLIANCE (or OPERATIONAL) MONITORING

TABLE 4.2.1
FACILITY INSPECTION (OPERATIONAL MONITORING) - LOG BOOK¹

Facility Name	Operational Requirement	Frequency
Lone Star Heap Leach Facility (HLF) and Heap Leach Pad (Pad)		
Pad	Visually inspect and take appropriate action if any evidence of : 1.Heap deformations, including surface cracks, slides, sloughs or unusual differential settlement affecting slope stability; 2.Seepage along perimeter berm; 3.Visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; 4.Impairment of access; 5. Excessive erosion or accumulation of debris in conveyances and diversions; 6. Accumulation of debris in leach pad solution conveyance channels causing flow restriction.	Quarterly
HLF		
Non-Stormwater Impoundments		
NSI NNSI SNSI	Visually inspect and take appropriate action if any evidence of: 1.Visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; 2.Impairment of access; 3.Excessive erosion or accumulation of debris in conveyances and diversions. 4.Check that fluid level is at least 2 feet below the spillway elevation. 5.Remove accumulated fluid- the process solution or impacted stormwater due to process upsets and/or storm event, from the impoundment as soon as practical, but no later than 60 days after cessation of the upset or storm event.	Monthly
Process Solution Impoundment		
EPSI NPSI	Visually inspect and take appropriate action if any evidence of: 1. Seepage along perimeter or embankment; 2. Visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; 3.Excessive erosion in conveyances and diversions.	Monthly

¹ The permittee shall record the inspection performance levels in a log book as per Section 2.7.2. In the case of an exceedance, identify which structure exceeds the performance level in the log book.

Non-Stormwater Evaporation Impoundment		
SJNEI	<p>Visually inspect and take appropriate action if any evidence of:</p> <ol style="list-style-type: none"> 1. Visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions; 2. Impairment of access; 3. Excessive erosion or accumulation of debris in conveyances and diversions; 4. Seepage at the extremities of the concrete curb; 5. Seepage at the "witness" drain; <p>Check that the pump at the concrete sump is functioning properly. Check that the reclaim well pumps are functioning properly. Check that fluid level is at least two feet below the lowest crest elevation.</p>	Monthly
Leak Collection Recovery System (LCRS)		
LCRS for EPSI	<p>Check for the presence of fluid. Measure rate of inflow: confirm that it is less than 2,100 gallons per day (gpd) for Action Leakage Rate (see Section 2.6.2.5), and less than 15,000 gpd for Rapid and Large Leakage Rate (see Section 2.6.2.6). Implement the provisions of Section 2.6.2.5 or 2.6.2.6 as appropriate in case of exceedances.</p>	Weekly
LCRS for NPSI	<p>Check for the presence of fluid. Measure rate of inflow: confirm that it is less than 5,400 gallons per day (gpd) for Action Leakage Rate (see Section 2.6.2.5), and less than 170,400 gpd for Rapid and Large Leakage Rate (see Section 2.6.2.6). Implement the provisions of Section 2.6.2.5 or 2.6.2.6 as appropriate in case of exceedances.</p>	

4.2 COMPLIANCE (or OPERATIONAL) MONITORING

TABLE 4.2.2

QUARTERLY COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS ^{2,3}								
PARAMETER	AP-22A		AP-39		AP-35B		AP-25	
	AL ⁴	AQL ⁵	AL	AQL	AL	AQL	AL	AQL
Depth to Water ⁶	Monitor ⁷	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation ⁸	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
pH (field) (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Specific Conductance ⁹	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Beryllium	0.0032	0.004	0.0032	0.004	0.0032	0.004	0.0032	0.004
Cadmium	0.004	0.005	0.004	0.005	0.004	0.005	0.004	0.005
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	0.08	0.10	0.08	0.10	0.08	0.10	0.08	0.10
Selenium	0.04	0.05	0.04	0.05	0.04	0.05	None	0.14
Fluoride	3.2	4.0	None	8.8	3.2	4.0	3.2	4.0
Magnesium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	8.0	10.0	8.0	10.0	8.0	10.0	8.0	10.0
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

² Metals will be analyzed as dissolved metals

³ All units are in milligrams per liter (mg/L) unless otherwise noted. S.U. = standard units. °F = degrees Fahrenheit.

⁴ AL = Alert Levels

⁵ AQL= Aquifer Quality Limits

⁶ Depth to groundwater measured in feet below ground surface.

⁷ Monitoring is required but no limits have been specified at the time of permit issuance.

⁸ Water Elevation in feet above means sea level

⁹ Specific Conductance in micromhos per centimeter (umhos/cm) (Field)

4.2 COMPLIANCE (or OPERATIONAL) MONITORING

TABLE 4.2.2 - Continued

QUARTERLY COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS^{2,3}				
PARAMETER	AP-51		DPW-12	
	AL⁴	AQL⁵	AL	AQL
Depth to Water ⁶	Monitor ⁷	Monitor	Monitor	Monitor
Water Level Elevation ⁸	Monitor	Monitor	Monitor	Monitor
pH (field) (S.U.)	Monitor	Monitor	Monitor	Monitor
Specific Conductance ⁹	Monitor	Monitor	Monitor	Monitor
Temperature (field)	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor
Beryllium	0.0032	0.004	0.0032	0.004
Cadmium	0.004	0.005	0.004	0.005
Cobalt	Monitor	Monitor	Monitor	Monitor
Nickel	0.08	0.10	0.08	0.10
Selenium	0.04	0.05	0.04	0.05
Fluoride	None	4.2	None	5.8
Magnesium	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	8.0	10.0	8.0	10.0
Sulfate	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor

² Metals will be analyzed as dissolved metals

³ All units are in milligrams per liter (mg/L) unless otherwise noted. S.U. = standard units. °F = degrees Fahrenheit.

⁴ AL = Alert Levels

⁵ AQL= Aquifer Quality Limits

⁶ Depth to groundwater measured in feet below ground surface.

⁷ Monitoring is required but no limits have been specified at the time of permit issuance.

⁸ Water Elevation in feet above means sea level

⁹ Specific Conductance in micromhos per centimeter (umhos/cm) (Field)

TABLE 4.2.3¹⁰

BIENNIAL COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS ^{11, 12}								
PARAMETER	AP-22A		AP-39		AP-35B		AP-25	
	AL ¹³	AQL ¹⁴	AL	AQL	AL	AQL	AL	AQL
Depth to Water ¹⁵	Monitor ¹⁶	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation ¹⁷	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
pH (field) (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Specific Conductance ¹⁸	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature (field)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Alkalinity	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Hydroxide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chloride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sodium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Potassium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Calcium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Magnesium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	8.0	10.0	8.0	10.0	8.0	10.0	8.0	10.0
Fluoride	3.2	4.0	None	8.8	3.2	4.0	3.2	4.0
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	0.0048	0.006	0.0048	0.006	0.0048	0.006	0.0048	0.006
Arsenic	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05
Beryllium	0.0032	0.004	0.0032	0.004	0.0032	0.004	0.0032	0.004
Barium	1.6	2.0	1.6	2.0	1.6	2.0	1.6	2.0
Cadmium	0.004	0.005	0.004	0.005	0.004	0.005	0.004	0.005
Chromium	0.08	0.1	0.08	0.1	0.08	0.1	0.08	0.1
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05
Nickel	0.08	0.1	0.08	0.1	0.08	0.1	0.08	0.1
Selenium	0.04	0.05	0.04	0.05	0.04	0.05	None	0.14
Thallium	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Adjusted Gross Alpha ¹⁹	12	15	12	15	12	15	12	15
Radium 226 + Radium 228	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0

¹⁰ Table 4.2.3 lists the parameters for monitoring on biennial basis (i.e. every 8th quarter). The Self-Monitoring Report Form shall be completed for biennial sampling events. The biennial sampling shall be conducted concurrently with the annual sampling event, so that analysis shall be conducted for both the annual and biennial parameters listed in Tables 4.2.2 and 4.2.3, respectively. See also permit Sections 2.5.3 and 2.7.

¹¹ Metals will be analyzed as dissolved metals

¹² All units are in milligrams per liter (mg/L) unless otherwise noted. S.U. = standard units. °F = degrees Fahrenheit.

¹³ AL = Alert Levels

¹⁴ AQL= Aquifer Quality Limits

¹⁵ Depth to groundwater measured in feet below ground surface.

¹⁶ Monitoring is required but no limits have been specified at the time of permit issuance.

¹⁷ Water Elevation in feet above means sea level

¹⁸ Specific Conductance in micromhos per centimeter (umhos/cm) (Field)

¹⁹ If the gross alpha particle activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha particle activity including radium 226, minus radon and total uranium (the sum of the uranium 238, 235 and 234 isotopes).

TABLE 4.2.3- Continued

BIENNIAL COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS ^{20, 21}				
PARAMETER	AP-51		DPW-12	
	AL ²²	AQL ²³	AL	AQL
Depth to Water ²⁴	Monitor ²⁵	Monitor	Monitor	Monitor
Water Level Elevation ²⁶	Monitor	Monitor	Monitor	Monitor
pH (field) (S.U.)	Monitor	Monitor	Monitor	Monitor
Specific Conductance	Monitor	Monitor	Monitor	Monitor
Temperature (field)	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor
Total Alkalinity	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor
Hydroxide	Monitor	Monitor	Monitor	Monitor
Chloride	Monitor	Monitor	Monitor	Monitor
Sulfate	Monitor	Monitor	Monitor	Monitor
Sodium	Monitor	Monitor	Monitor	Monitor
Potassium	Monitor	Monitor	Monitor	Monitor
Calcium	Monitor	Monitor	Monitor	Monitor
Magnesium	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	8.0	10.0	8.0	10.0
Fluoride	None	4.2	None	5.8
Aluminum	Monitor	Monitor	Monitor	Monitor
Antimony	0.0048	0.006	0.0048	0.006
Arsenic	0.04	0.05	0.04	0.05
Beryllium	0.0032	0.004	0.0032	0.004
Barium	1.6	2.0	1.6	2.0
Cadmium	0.004	0.005	0.004	0.005
Chromium	0.08	0.1	0.08	0.1
Iron	Monitor	Monitor	Monitor	Monitor
Lead	0.04	0.05	0.04	0.05
Nickel	0.08	0.1	0.08	0.1
Selenium	0.04	0.05	0.04	0.05
Thallium	0.0016	0.002	0.0016	0.002
Copper	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor
Adjusted Gross Alpha ²⁷	12	15	12	15
Radium 226 + Radium 228	4.0	5.0	4.0	5.0

²⁰ Metals will be analyzed as dissolved metals

²¹ All units are in milligrams per liter (mg/L) unless otherwise noted. S.U. = standard units. °F = degrees Fahrenheit.

²² AL = Alert Levels

²³ AQL= Aquifer Quality Limits

²⁴ Depth to groundwater measured in feet below ground surface.

²⁵ Monitoring is required but no limits have been specified at the time of permit issuance.

²⁶ Water Elevation in feet above means sea level

²⁷ If the gross alpha particle activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha particle activity including radium 226, minus radon and total uranium (the sum of the uranium 238, 235 and 234 isotopes).

TABLE 4.2.3 - Continued

BIENNIAL COMPLIANCE GROUNDWATER MONITORING REQUIREMENTS				
PARAMETER	AP-51		DPW-12	
	AL	AQL	AL	AQL
Uranium	Monitor	Monitor	Monitor	Monitor
Benzene	0.004	0.005	0.004	0.005
Toluene	0.08	1.0	0.08	1.0
Ethylbenzene	0.56	0.7	0.56	0.7
Total Xylenes	8.0	10.0	8.0	10.0
TPH	Monitor	Monitor	Monitor	Monitor

TABLE 4.2.4²⁸ - Logbook Only

LEAKAGE RATES for LEAK COLLECTION RECOVERY SYSTEM FACILITIES		
Facility Name	Action Leakage Rate (gpd)	Rapid and Large Leakage Rate (gpd)
EPSI Excess Process Solution Impoundment ²⁹	2,100	15,000
NPSI North Process Solution Impoundment ³⁰	5,400	170,400

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²⁸ No SMRFs

²⁹ EPSI leakage rates may not exceed 2,100 gallons per day (gpd) for Action Leakage Rate (see Section 2.6.2.5), and 15,000 gpd for Rapid and Large Leakage Rate (see Section 2.6.2.6). Implement contingency and response actions as appropriate in case of exceedances.

³⁰ NPSI leakage rate may not exceeds 5,400 gpd for Action Leakage Rate (see Section 2.6.2.4), and 170,400 gpd for Rapid and Large Leakage Rate (see Section 2.6.2.5). Implement contingency and response actions as appropriate in case of exceedances.

**TABLE 4.3.1
CONTINGENCY DISCHARGE CHARACTERIZATION FOR BADCT FAILURES AND
OVERTOPPING³¹**

Parameter	Units	Monitoring Frequency ³²
pH (field)	Standard Units	One sample
Total Dissolved Solids (TDS)	mg/L	One sample
Specific Conductance (lab)	umhos/cm	One sample
Hardness ³³	Standard Units	One sample
Total Alkalinity	mg/L	One sample
Carbonate	mg/L	One sample
Bicarbonate	mg/L	One sample
Hydroxide	mg/L	One sample
Chloride	mg/L	One sample
Sulfate	mg/L	One sample
Sodium	mg/L	One sample
Potassium	mg/L	One sample
Calcium	mg/L	One sample
Magnesium	mg/L	One sample
Nitrate + Nitrite	mg/L	One sample
Fluoride	mg/L	One sample
Aluminum	mg/L	One sample
Antimony	mg/L	One sample
Arsenic	mg/L	One sample
Beryllium	mg/L	One sample
Cadmium	mg/L	One sample
Chromium	mg/L	One sample
Iron	mg/L	One sample
Lead	mg/L	One sample
Nickel	mg/L	One sample
Selenium	mg/L	One sample
Thallium	mg/L	One sample
Copper	mg/L	One sample
Cobalt	mg/L	One sample
Manganese	mg/L	One sample
Zinc	mg/L	One sample
Benzene	mg/L	One sample
Toluene	mg/L	One sample
Ethylbenzene	mg/L	One sample
Total Xylenes	mg/L	One sample

³¹ Monitor 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.

³² One sample shall be taken within five (5) days of discovery of an event.

³³ Hardness may be expressed as the sum of calcium plus magnesium as calcium carbonate (CaCO₃)
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:

1. APP Application, dated: February 4, 2019
2. Contingency Plan, dated: February 4, 2019
2. Final Financial Memo dated: July 18, 2019
3. Final Engineering Memo dated: March 27, 2019
4. Final Hydrologist Memo dated: March 27, 2019 and June X, 2019 (Supplemental)
3. Public Notice, dated: XXXXX, 2019
4. Public Hearing, dated: NA
5. Responsiveness Summary, dated: NA

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 stipulated in the permit 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. §§ 49-1009, 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).