STATE OF ARIZONA
AQUIFER PROTECTION PERMIT NO. P-105258
PLACE ID 1390, LTF 77735
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 Bagdad Inc. to operate the discharging facilities located at the Freeport-McMoRan Bagdad Inc. Bagdad Mine near Bagdad, Yavapai County, Arizona, over the groundwater of the Burro Creek groundwater basin, in Township 14 North, Range 9 West and 10 West; and Township 15 North, Range 9 West and 10 West 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:

Following all the conditions of this permit including the design and operational information documented or referenced below, and

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 Bagdad Mine
Facility Address:	P.O. Box 245 Bagdad, Arizona 86321
County:	Yavapai
Annual Registration Fee Flow Rate:	Greater than 10,000,000 gallons per day (gpd)
Permittee:	Freeport-McMoRan Bagdad Inc.
Permittee Address:	P.O. Box 245 Bagdad, Arizona 86321
Facility Contact:	Daniel Lye, Sr. Environmental Scientist
Emergency Phone No.:	(928) 830-2867 (work)
Latitude/Longitude:	34° 35' 14" N / 113° 14' 10" W
Legal Description:	Township 14 North, Range 9 West and 10 West; and Township 15 North, Range 9 West and 10 West of the Gila and Salt River Baseline and Meridian

1.2. AUTHORIZING SIGNATURE

_____

Randall Matas, Deputy Director
Water Quality Division
Arizona Department of Environmental Quality

Signed this _____ day of _____, 20_____

THIS AMENDED PERMIT SUPERCEDES ALL PREVIOUS PERMITS

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2.0 SPECIFIC CONDITIONS

[A.R.S. §§ 49-203(4), 49-241(A)]

2.1. FACILITY / SITE DESCRIPTION

[A.R.S. § 49-243(K)(8)]

The Bagdad Mine is an open pit copper mine and mineral concentration operation located in Yavapai County and adjacent to the unincorporated town of Bagdad, Arizona. Bagdad lies approximately 40 miles west of the town of Prescott, Arizona and 100 miles northwest of Phoenix, Arizona. The mine is owned and operated by Freeport-McMoRan Bagdad Mine (FMBI). Mining of copper from the Bagdad porphyry copper deposit began in 1928. The active mining and ore processing operations are located within Township 14 North, Range 9 West and 10 West, and Township 15 North, Range 9 West and 10 West of the Gila and Salt River Base Line and Meridian.

The operations produce a combined total of 300,000 tons per day of sulfide ore, leach rock, and waste rock. Sulfide ores are processed in the flotation concentrator and sent to off-site smelters. Oxide ore is processed through the leach dump and solution extraction/electrowinning (SX/EW) method. The mine includes an open pit, a concentrator, ore and concentrate stockpiles, an SX/EW plant, active and inactive leach dumps, waste rock dumps, active and inactive tailings impoundments, pregnant leach solution impoundments, raffinate impoundments, and stormwater diversion ditches and detention basins.

The site includes the following permitted discharging facilities:

Table 1: DISCHARGING FACILITIES

Facility Name	Facility No.	Latitude	Longitude
Process Solution Impoundments			
Catchments within the PCCZ	D-27	See Table 9	See Table 9
Copper Creek PLS Pond System (pond and conveyance channel)	D-10	34° 36' 12" N	113° 13' 46" W
Boulder Flood Basin	D-11	34° 36' 19" N	113° 13' 48" W
Raffinate Pond	D-13	34° 36' 05" N	113° 13' 00" W
PLS Surge Pond	D-14	34° 36' 04" N	113° 12' 58" W
Strong PLS Pond	D-20	34° 35' 46" N	113° 14' 03" W
Leach Dumps			
Upper Niagara Leach Dump	D-6	34° 35' 04" N	113° 13' 53" W
Plan IX Leach Dump	D-15	34° 34' 36" N	113° 13' 30" W
Mineral Creek Leach Dump	D-18	34° 34' 30" N	113° 12' 52" W
Copper Creek Leach Dump	D-7	34° 35' 56" N	113° 13' 31" W
Crystal Mountain Leach Dump	D-19	34° 35' 48" N	113° 13' 42" W
Tailings Impoundments			
Mulholland Tailings Impoundment	D-1	34° 35' 34" N	113° 15' 11" W
Mulholland Seepage Collection Pond	D-2	34° 35' 51" N	113° 15' 26" W
Last Chance Pond	D-3	34° 35' 39" N	113° 14' 20" W
Mammoth Tailings Impoundment	D-23	34° 35' 04" N	113° 16' 11" W
Upper Mammoth Tailings Impoundment	D-24	34° 34' 10" N	113° 14' 41" W
Mammoth Tailings Seepage Collection Pond	D-25	34° 35' 19" N	113° 17' 50" W
Sycamore Tailings Storage Facility & Sycamore Reclaim Pond (STSF)	D-30	34° 34' 46" N, 34° 35' 17" N	113° 04' 12" W, 113° 05' 23" W
Sycamore Seepage Collection Pond (A)	D-31	34° 33' 58" N	113° 04' 05" W

Sycamore Seepage Collection Pond (B)	D-32	34° 34' 03" N	113° 04' 54" W
Waste Rock Storage Facilities			
South Waste Rock Disposal Pond	D-26	34° 34' 07" N	113° 12' 10" W
Butte Stockpile	D-33	34° 36' 07" N	113° 11' 03" W
Waste Management Facilities			
Waste Management Facility (WMF): Construction Debris Landfill (CDL), Leachate Evaporation Pond (LEP), Bioremediation Land Treatment Unit (LTU), LTU Evaporation Pond	-	34° 35' 47" N	113° 10' 50" W
Ore Stockpiles			
Coarse Ore Stockpile	D-34	34° 36' 50.56" N	113° 12' 4.73" W
Decommissioned Facilities to be addressed at Final Mine Closure			
Tucker Pond	-	34° 35' 35" N	113° 13' 44" W
EW Catchment Basin	-	34° 36' 10" N	113° 12' 57" W
Mineral Creek Sump	-	34° 34' 39" N	113° 12' 58" W

2.1.1. Annual Registration Fee

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

The annual registration fee for this permit is payable to ADEQ each year. The annual registration fee flow rate is established by the permitted flow rate identified in Section 1.1. If the facility is not constructed or is incapable of discharge, the permittee may be eligible for reduced fees pursuant to Table 2 under A.A.C. R18-14-104(A). Send all correspondence requesting reduced fees to the Groundwater Protection Value Stream. Please reference the permit number, LTF number, and the reason for requesting reduced fees under this rule.

2.1.2. Solid Waste Annual Registration and Disposal Fees

[A.R.S. §§ 49-747, 49-836]

The annual registration fee for the solid waste landfills is established by A.R.S. § 49-747 and A.A.C. R18-13-2102 and 2103 (effective July 1, 2012). The solid waste landfill disposal fees are established by A.R.S. § 49-836 based on the amount of waste landfilled. The fees are payable to ADEQ each year.

2.1.3. Financial Capability

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

The permittee shall maintain financial capability throughout the life of the facility. The Groundwater Protection Value Stream approved the closure costs of $245,838,173 and post-closure cost of $42,318,932 for a total of $288,157,105.

The financial assurance mechanism was demonstrated through A.A.C. R18-9-A203(C)(8) using a corporate guarantee in the amount of $85,587,390 to cover the financial assurance obligations of APPs P-105258 [$85,344,000]), P-102896 (FMI Bagdad Hillside, $139,759), and P-101740 (Bagdad Township WWTP, $103,631) at the Bagdad mine site which is being consolidated into this permit.

The permittee has a reclamation bond of $10,172,100 with the United States Bureau of Land Management (BLM) for a portion of the mine on Federal Lands, and reclamation guarantee of $13,012,532 with the Arizona State Mine Inspectors Office (ASMI) which will cover costs associated with the "additional" requirements of A.R.S. 49-243(G)(2). This double-bonding more than covers these costs, as outlined in the BLM and ASMI reclamation plans, which includes but was not limited to regrading (topographic contouring and benching), crown-chaining, capping (up to 2-feet) with compaction, stormwater diversions (channels), and revegetation as controls measures to minimize the potential for leachate discharge to groundwater. The cost for neutralizing the PILD, if necessary, has also been provided for in the ASMI guarantee amount. Post-

closure maintenance and monitoring is required for a 30-year period and those costs are also covered under BLM and ASMI.

2.2. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

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

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

2.2.1. Engineering Design

BADCT description for the permitted facilities is presented in Section 4.1, Table 9: PERMITTED FACILITIES AND BADCT.

2.2.2. Site-Specific Characteristics

Site-specific characteristics such as foundation rock of low hydraulic conductivity and within the PCCZ support the BADCT demonstration for several regulated facilities. The passive containment created by the Bagdad Mine Open Pit is used as an integral part of BADCT (A.R.S. § 49-243[G]) for the following facilities:

Catchments within the PCCZ (D-27), the Coarse Ore Stockpile Runoff Collection Pond, and other future catchment facilities within the PCCZ have specific BADCT requirements. This permit allows catchments to be constructed and decommissioned in accordance with the following:

The proposed BADCT for new catchments includes:

- Catchments will be unlined excavations in foundation rock of low hydraulic conductivity;
- Catchments will be located within the PCCZ;
- An acceptable slope stability analysis (BADCT, Appendix E, embankments) of the pit walls, adjacent slopes, and stockpiles will be completed prior to the installation of a new catchment. A copy of the stability analysis will be provided to ADEQ in the biennial report (CSI 2).
- Slope stability of pit walls or stockpiles will be assessed prior to installation of each new catchment. Construction will include such methods as waterstop sealing, keying into bedrock, etc., as necessary, to reduce the possibility for slope/berm failure;
- Catchments will be sized to accommodate the maximum flow that would occur if PLS flow from leaching activities were contained with the runoff from a 100-year, 24-hour storm event;
- Pumps will be installed in the catchments, as necessary, to maintain a controlled ponded surface elevation and minimize the risk of overtopping during storm events;
- Should overtopping occur for catchments within the pit area, the overflow solution will be contained within the confines of the mine pit (within the PCCZ); and
- For new catchments constructed outside the pit, but within the PCCZ, a minimum of 2 feet of freeboard will be maintained to reduce the possibility of overflow. Pumps and piping will be on hand to direct excess PLS to the SX-EW plant, leach circuit, or other APP-regulated facility, as needed.

In addition to ongoing operational monitoring and maintenance, BADCT requirements for decommissioning will include:

Reduction or cessation of inflow into the catchment;

Routing of any remaining inflow to another facility regulated by the APP or allowing gravity flow over unfractured bedrock into the bottom of the pit for collection and recovery;

Filling the catchment with rock material; and

Conducting additional excavation at the bench for stabilization, as needed.

Other site-specific BADCT has been demonstrated for the following facilities within the PCCZ and incorporating additional controls to minimize discharge pursuant to A.R.S. § 49-243(G): South Waste Rock Disposal Facility (D-26); Upper Niagara Leach Dump (D-6); Plan IX Leach Dump (D-15); Mineral Creek Leach Dump (D-18); Raffinate Pond (D-13); PLS Surge Pond (D-14); Last Chance Pond (D-3), Butte Stockpile, Waste Management Facility, and the Coarse Ore Stockpile.

2.2.3. Pre-Operational Requirements

Not applicable.

2.2.4. Operational Requirements

The discharging facilities shall be operated and inspected for the performance levels in Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING, and recorded in a log as required by Section 2.7.2. If damage is identified during an inspection that could cause or contribute to an unauthorized discharge pursuant to A.R.S. § 49-201(12), proper repairs shall be promptly performed in accordance with Section 2.6 of this permit and recorded in a log.

2.3. DISCHARGE LIMITATIONS

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

The permittee shall operate and maintain all permitted facilities to prevent unauthorized discharges pursuant to A.R.S. §§ 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure, uncontrollable leakage, berm breaches that result in an unexpected loss of fluid, and accidental spills.

2.3.1. Leaching Facilities

The Leaching Facilities are designed and authorized for use in leaching ore. The Leaching Facilities shall be constructed and operated in accordance with the BADCT outlined in Section 4.1, Table 9: PERMITTED FACILITIES AND BADCT, and the ultimate heights shall not exceed those set forth in the approved permit application and engineering study.

2.3.2. Pregnant Leach Solution Ponds and Impoundments

The Pregnant Leach Solution (PLS) Ponds and Impoundments are designed and authorized receive pregnant leach solution, stormwater, process water and process upset events.

2.3.3. Non-stormwater Impoundments

The permitted non-stormwater impoundments shall only receive stormwater runoff and run-on, and process solutions as a result of storm events or process upset events.

2.3.4. Waste Management Facility

Discharges shall be controlled by the construction of a final cover system and surface water diversion structures during the 30-year post-closure care period. During operation, the facility shall provide adequate protection from inundation or intrusion of water into the waste management area, as well as restriction on the type of waste materials accepted at the landfill. The facility is restricted to accept offsite-generated waste, and is subject to the following restrictions.

2.3.4.1. General Restrictions

The following materials are prohibited from disposal at the Waste Management Facility

Municipal Solid Waste

Regulated hazardous waste

Special Waste as defined in A.R.S. § 49-851(A)(5)

Polychlorinated biphenyl (PCB) waste

Infectious and/or biohazardous medical wastes

Any other waste which is prohibited by Federal or State of Arizona statute or regulation from disposal at a non-municipal solid waste landfill such as:

Tires

Automobiles

Lead-acid batteries

Freon-containing white goods

Sewage or septic waste

2.3.4.2. Petroleum Contaminated Soils Restrictions

Under a separate facility plan for its Special Waste Treatment Facility, approval number 50178400.00, Freeport-McMoRan Bagdad Inc., has been approved to accept and treat Petroleum Contaminated Soils (PCS) that have been generated onsite. PCS is prohibited from disposal in the landfill. Treated soils (PCS remediated to concentrations below the non-residential soil remediation levels, as set forth in A.A.C. Title 18, Chapter 7, Article 2, Appendix A may be disposed at the landfill facility.

2.4. POINT OF COMPLIANCE (POC)

[A.R.S. § 49-244]

The POCs are established by the following monitoring locations:

Table 2- POC WELLS

POC Location (Well Number)	ADWR Registration Number	Latitude	Longitude
CMW-609	55-537609	34° 36' 25" N	113° 13' 57" W
CMW-610	55-537610	34° 36' 25" N	113° 13' 56" W
CMW-611	55-906854	34° 35' 51" N	113° 15' 26" W
020R (A01HB)	55-916349	34° 35' 47" N	113° 16' 57" W
803 (AH13HB)	55-543803	34° 35' 41" N	113° 17' 08" W
283	55-588283	34° 35' 36" N	113° 17' 57" W
613 (A22HB)	55-546613	34° 35' 17" N	113° 17' 30" W
810R (A10HB)	55-920381	34° 34' 57" N	113° 17' 33" W
SYC-1	TBD[1]	34° 34' 06" N	113° 05' 24" W
SYC-2	TBD	34° 33' 52" N	113° 04' 45" W
SYC-3	TBD	34° 33' 52" N	113° 03' 55" W
SYC-4	TBD	34° 34' 21" N	113° 03' 45" W

Monitoring requirements for each POC are listed in Section 4.2, Table 12, Table 13, and Table 14. The Director may amend this permit to designate additional POCs, if information on groundwater gradients or groundwater usage indicates the need.

2.4.1. Continuity Wells

The Data Continuity Wells (DCW) are established at the following monitoring locations:

[1] TBD: To be determined

Table 3- DATA CONTINUITY WELLS			
POC Location (Well Number)	**ADWR Registration Number**	**Latitude**	**Longitude**
MW-SC-01	229103	34° 35' 56.5" N	113° 06' 43.87" W
MW-SC-02	229504	34° 35' 54.5" N	113° 05' 37.77" W
MW-SC-03	229104	34° 35' 8.8" N	113° 03' 41.15" W
MW-SC-04	229498	34° 35' 11" N	113° 06' 19.35" W
MW-SC-05	229498	34° 35' 16.7" N	113° 05' 22.12" W
MW-SC-06	229501	34° 34' 39.7" N	113° 04' 11.22" W
MW-SC-07	229105	34° 34' 5.15" N	113° 03' 35.65" W
MW-SC-08	229508	34° 34' 16.96" N	113° 05' 23.28" W
MW-SC-09	229507	34° 33' 44.71" N	113° 04' 18.7" W

Groundwater monitoring is required for the DCWs as per Section 4.2, Table *15*: QUARTERLY GROUNDWATER MONITORING OF DATA CONTINUITY WELLS. Establishments of ALs and AQLs are not required for Data Continuity Wells. All data continuity wells shall be abandoned prior to STSF construction and once abandoned no further monitoring will be required under this Section.

2.5. MONITORING REQUIREMENTS

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

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

2.5.1. Discharge Monitoring

None required by this permit.

2.5.2. Facility / Operational Monitoring

At a minimum, permitted facilities shall be inspected for performance levels listed in Section 4.2, Table 10. If damage is identified during an inspection that could cause or contribute to an unauthorized discharge pursuant to A.R.S. § 49-201(12), proper repairs shall be promptly performed. Results of these inspections and monitoring activities shall be documented and maintained at the facility location for at least 10 years, and as required by Section 2.7.2 of this permit.

2.5.3. Groundwater Monitoring and Sampling Protocols

For all sampling methods, 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 Self-Monitoring Report Form (SMRF).

As an alternative method for sampling, the permittee may conduct the sampling using a low-flow purging

method in accordance with accepted EPA, USGS, or DOD protocols. The well must be purged until indicator parameters stabilize. Indicator parameters shall include dissolved oxygen, turbidity, pH, temperature, and conductivity.

As a third alternative method for sampling within POC wells with very low recharge rates, the permittee may conduct the sampling using no-purge sampling techniques using HydraSleeve™ or similar type methodology. The use of HydraSleeve™ or similar type samplers shall follow accepted EPA, USGS, or DOD protocols. In addition, the HydroSleeve™ or similar type sampler shall be placed just below the water table.

2.5.3.1. Point of Compliance 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, 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 may apply to the replacement well. Otherwise, the ALs and/or AQLs shall be set following the provisions in Section 2.5.3.4 and Section 2.5.3.5 of this permit.

2.5.3.2. Ambient Groundwater Quality Monitoring for Point of Compliance Wells

The permittee shall complete a minimum of eight quarterly rounds of ambient groundwater monitoring for new POC wells SYC-1, SYC-2, SYC-3, and SYC-4 in accordance with CSI 10. The permittee shall complete a minimum of eight quarterly rounds of ambient groundwater monitoring for replacement POC wells more than 50 feet from the original POC well for all parameters listed in Section 4.2, Table 12.

2.5.3.3. Alert Levels for Point of Compliance Wells

For any new POCs, or replacement POC wells, ALs shall be calculated for all contaminants with an established numeric AWQS, as described below.

As per the compliance schedule item No. 11, following receipt of the laboratory analyses for the final quarter of the ambient groundwater monitoring period for POC wells SYC-1, SYC-2, SYC-3, and SYC-4 referenced in Table 2- POC WELLS, the permittee shall submit the ambient groundwater data in tabulated form to the Groundwater Protection Value Stream for review. Following receipt of the laboratory analyses for the final quarter of the ambient groundwater monitoring period for each replacement POC well, the permittee shall submit the ambient groundwater data in tabulated form to the Groundwater Protection Value Stream for review. Copies of all laboratory analytical reports, field notes, and the Quality Assurance/Quality Control (QA/QC) procedures used in collection and analyses of the samples for all parameters listed in Section 4.2, Table 13 and Table 14, to be established for each new or replacement POC well, shall be submitted to the Groundwater Protection Value Stream. The permittee may submit a report with the calculations for each AL and AQL included in the permit for review and approval by ADEQ, or the permittee may defer calculation of the ALs and AQLs by the Groundwater Protection Value Stream. The ALs shall be established and calculated by the following formula, or another valid statistical method submitted to Groundwater Protection Value Stream in writing and approved for this permit by the Groundwater Protection Value Stream:

$AL = M + KS$

Where M = mean, S = standard deviation, and K = one-sided normal tolerance interval with a 95% confidence level (Lieberman, G.J. (1958) Tables for One-sided Statistical Tolerance Limits: Industrial Quality Control, Vol XIV, No. 10). Obvious outliers should be excluded from the data used in the AL calculation.

The following criteria shall be met in establishing ALs in the permit:

1. The AL shall be calculated for a parameter using the analyses from a minimum of eight sample events.

2. Any data where the laboratory Practical Quantitation Limit (PQL) exceeds 80% of the AWQS shall not be included in the AL calculation.

3. If a parameter is below the detection limit, the permittee must report the value as "less than" the numeric value for the PQL or detection limit for the parameter, not just as "non-detect". For those parameters, the permittee shall use a value of one-half the reported detection limit for the AL calculation.

4. If the analytical results from more than 50% of the samples for a specific parameter are non-detect, then the AL shall be set at 80% of the AWQS.

5. If the calculated AL for a specific constituent and well is less than 80% of the AWQS, the AL shall be set at 80% of the AWQS for that constituent in that well.

2.5.3.4. Aquifer Quality Limits for POC Wells

For each of the monitored analytes for which a numeric AWQS has been adopted, the AQL shall be established as follows:

1. If the calculated AL is less than the AWQS, then the AQL shall be set equal to the AWQS.

2. If the calculated AL is greater than the AWQS, then the AQL shall be set equal to the calculated AL value, and no AL shall be set for that constituent at that monitoring point

2.5.3.5. Compliance Groundwater Quality Monitoring for POC Wells

Quarterly compliance groundwater monitoring in each POC well shall commence within the first calendar quarter after completion of the ambient groundwater sampling period. For quarterly compliance monitoring, the permittee shall analyze groundwater samples for the parameters listed in Section 4.2, Table 13. In addition to quarterly compliance groundwater monitoring, every two years (biennial) the permittee shall analyze samples from the POC wells for an expanded list of parameters. For the biennial monitoring events in POC wells, the parameters listed in Section 4.2, Table 14 shall be analyzed. The first biennial sampling event shall commence within the eighth quarter after completion of the ambient monitoring permit (IDENTIFY QUARTER e.g. First Quarter of 2016) and shall replace the regularly scheduled quarterly sampling event. Biennial sampling shall occur every two years thereafter.

2.5.3.6. Passive Containment Demonstration

Based on supporting documentation provided in the Application, the permittee has satisfactorily predicted that the Bagdad open pit mine will create a "passive containment capture zone" (PCCZ), as per A.R.S. § 49-243(G). The water balance in the numerical model for the Bagdad open pit predicts that static equilibrium will be maintained in the pit lake following closure at an elevation of 2,300 feet amsl. The model estimates that static equilibrium in the pit lake will not be reached for approximately 150 years. Demonstration of passive containment shall be based solely on natural or engineered topographical, geological or hydrological control measures that can operate without continuous maintenance.

Per CSI. 1, Every five (5) years thereafter, the permittee shall compare the current groundwater data to the previous model predictions. Factors to be evaluated in the post-audit include groundwater inflow, the estimated static water level in the pit, the estimated time to reach static water level, and any potential for the water level in the pit to rise to an elevation where the hydraulic gradient reverses and the pit ceases to function as a passive containment. The assumptions about mine development and infiltration shall be revised in terms of the actual changes in the pit configuration, leaching areas, leach rates, sump locations, water balance, annual precipitation and storm events. The resulting compilation shall be compared to predictions provided by the groundwater flow model for the previous calibration period. The permittee shall amend this permit if a change in the configuration of the PCCZ results in a discharging facility no longer being located within the capture created by the PCCZ Per rule R18-9-

A211 (B)(9).

A report summarizing the original passive containment demonstration and the revisions made to the model shall be submitted to the Groundwater Protection Value Stream for review. The report shall include a table listing groundwater elevations from piezometer and monitor wells current at the time of the post-audit used to demonstrate the configuration of the hydraulic containment and a potentiometric contour map based on groundwater elevations used in the post-audit demonstration. ADEQ will determine whether a full model recalibration is required. If a recalibration is necessary, a report describing the model output and the revisions and/or changes to the model shall be submitted to the Groundwater Protection Value Stream. The submittal shall be sealed by an Arizona Registered Geologist or other qualified registrant.

2.5.4. Surface Water Monitoring and Sampling Protocols

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

2.5.5. Analytical Methodology

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

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

2.5.6. Installation and Maintenance of Monitoring Equipment

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

2.6. CONTINGENCY PLAN REQUIREMENTS

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

2.6.1. General Contingency Plan Requirements

At least one copy of this permit and the approved contingency and emergency response plan shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

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

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL.

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

2.6.2. Exceeding of Alert Levels and Performance Levels

2.6.2.1. Exceeding of Performance Levels Set for Operational Conditions

2.6.2.1.1. 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, cease or reduce discharging to the impoundment to prevent overtopping. Remove and properly dispose or recycle to other operations the excess fluid in the reservoir until the water level is restored at or below the freeboard performance level.
2. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions or identify design improvements to the affected system as necessary to avoid future occurrences.
3. Record any repair procedures, methods, and materials used to restore the facility to operating condition in the facility log/recordkeeping file.
4. If design improvements are necessary and if they trigger a permit amendment, submit an amendment application within 90 days of discovery.
5. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

2.6.2.1.2. Performance Levels, other than Freeboard

1. If an operational performance level (PL) listed in Section 4, Table 10 has not been maintained during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:

a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.

b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.

2. The PL exceedance, results of the investigation, and any corrective action taken shall be reported to the Groundwater Protection Value Stream, within 30 days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.

3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 2.6.1 and any necessary contingency measures to resolve problems identified by the investigation which may have led to a PL being exceeded. To implement any other corrective action the permittee may choose to obtain prior approval from ADEQ according to Section 2.6.6.

2.6.2.2. Exceeding of Alert Levels Set for Discharge Monitoring

Not applicable for this permit.

2.6.2.3. TSF Slope Conditions

The permittee shall monitor the TSF for general slope conditions as per Section 4.2, Table 10 to identify unusual scour or degradation of materials, sloughing, rolling rocks or visible seepage. If the TSF exhibits any signs that require maintenance, the permittee shall take the following actions:

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

2.6.2.4. Exceeding of Alert Levels in Groundwater Monitoring

2.6.2.4.1. Alert Levels for Indicator Parameters

Monitoring for Indicator Parameters is not required under the terms of this permit.

2.6.2.4.2. Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards

1. If an AL for a pollutant set in Section 4.2, Table 13,Table 14 has been exceeded, the permittee may conduct verification sampling of the pollutant(s) that exceed their respective AL(s) within 5 days of becoming aware of an AL exceedance. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms the AL exceedance or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring for the pollutant(s) exceeding their respective AL(s) to 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) that exceed their respective AL(s) are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency, for those pollutant(s) that exceed their respective AL(s), for approval in writing by the Groundwater Protection Value Stream.
4. Within 30 days after confirmation of an AL exceedance for those pollutant(s), 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) monthly sequential sampling events demonstrate that no parameters exceed the AL.
7. If the increased monitoring required as a result of an AL exceedance continues for more than three sequential sampling events, the permittee shall submit a second report documenting an investigation of the continued AL exceedance within 30 days of the receipt of laboratory results of the third sampling event

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

Not applicable for this permit.

2.6.2.5. Exceedance of Action Leakage Rate (ALR)

If an ALR as specified in Table 11 has been exceeded, the permittee shall take the following actions:

1. Within five (5) days of discovery, determine if the fluid in the LCRS is operational/process solution from the impoundment by measuring the pH and conductivity of fluids in the impoundment and in the LCRS to allow direct comparison of solution characteristics.
2. Within 15 days, assess the condition of the liner system using visual methods for visible portions of the liner.
3. Repair all identified areas of leakage within 90 days of discovery.
4. Assess the potential for migration of liquids out of the containment system.
5. Within 30 days of discovery of exceeding an ALR, submit the results of the liner assessment, the suspected cause of the exceedance and actions taken or planned to resolve the exceedance in a report to the Groundwater Protection Value Stream.

2.6.2.6. Exceedance of Rapid and Large Leakage Rate (RLLR)

If an RLLR as specified in Table 11, has been exceeded, the permittee shall:

1. As soon as practicable, cease all discharge to the impoundment.
2. Within 24 hours of becoming aware of the exceedance, determine if the fluid in the LCRS is operational/process solution from the impoundment by measuring the pH and conductivity of fluids in the impoundment and in the LCRS to allow direct comparison of solution characteristics.
3. Within 24 hours of becoming aware of the exceedance, notify the Groundwater Protection Value Stream and include an assessment regarding the type of solution in the LCRS
4. Within 15 days, assess the condition of the liner system using visual methods for visible portions of the liner.
5. Repair all identified areas of leakage within 90 days of discovery. Discharges to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.
6. Within 30 days of discovery of exceeding an RLLR, submit the results of the liner assessment, the suspected cause of the exceedance and actions taken or planned to resolve the exceedance in a report to the Groundwater Protection Value Stream. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. If the RLLR continues to be exceeded following completion of repairs, submit for approval to ADEQ, a corrective action plan including a re-assessment of liner systems integrity and a

schedule to complete the corrective actions to address all problems identified from the assessment of the liner system within 60 days of completion of repairs conducted in response to Item No. 5 above. Upon ADEQ approval, the permittee shall implement the approved plan and schedule of corrective actions.

8. Within 30 days of completion of corrective actions initiated from Item No. 7, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions).

2.6.3. Discharge Limit Violation

2.6.3.1. Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid for reasons other than Overtopping

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, and capture and containment of all escaped fluids.

2. Within 24 hours of discovery, notify Groundwater Protection Value Stream.

3. Within 24 hours of discovery of a failure, or as soon as practicable, estimate the quantity released, collect representative samples of the fluid remaining in affected impoundments and drainage structures, analyze sample(s) according to Section 4.2, Table 12. In the 30-day report required under Section 2.7.3, include a copy of the analytical results and forward the report to Groundwater Protection Value Stream.

4. Within 15 days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the discharging facility and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the discharging facility. The permittee shall not resume discharge to the facility until repairs of any failed liner or structure are performed.

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

5. 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 4 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.

6. Within 60 days of discovery, assess 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 Groundwater Protection Value Stream.

3. Within 24 hours, as practicable, collect representative samples of the fluid contained in the surface impoundment. Should the permittee determine that these actions cannot be performed within 24 hours of discovery, as practicable, document the reasons in the log book and the subsequent 30-day report, as necessary**.** Samples shall be analyzed for the parameters specified in Section 4.2, Table 12. Within 30 days of the incident, submit a copy of the analytical results to Groundwater Protection Value Stream.

4. As soon as practicable, remove and properly dispose of excess water in the impoundment until the water level is restored at or below the appropriate freeboard as described in Section 4.1, Table 10. Record in the facility log/recordkeeping file the amount of fluid released, a description of the removal method and volume of any fluid removed from the impoundment and/or captured from the release area. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection/LogBook/Recordkeeping File).

5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.

6. Within 30 days of discovery of overtopping, submit a report to ADEQ as specified in Section 2.7.3(2) (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.

7. Within 60 days of discovery, and based on sampling in Item No. 3 above, assess of the impacts to the subsoil and/or groundwater resulting from the incident.

8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.

9. Within 30 days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions). Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

2.6.3.3. Inflows of Unexpected Materials to a Surface Impoundment

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

As soon as practicable, cease all unexpected inflows to the surface impoundment(s).

Within 24-hours of discovery, notify Groundwater Protection Value Stream.

Within 5 days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unexpected material and contents of the affected impoundment, and evaluate the volume and concentration of the material to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of inflows of unexpected materials.

Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in Section 2.7.3(2) (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in Subsections 1 through 3 listed above.

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 including remediation.

2.6.4. Aquifer Quality Limit Exceedances

If an AQL set in Section 4, Table 13 to 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 the exceedance. The permittee may use results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.

If verification sampling does not confirm an AQL exceedance, no further action is needed under this Section.

If verification sampling confirms that an AQL was exceeded for any parameter or if the permittee opts not to perform verification sampling, then, the permittee shall increase the frequency of monitoring for those parameters as follows:

Table 4. ACCELERATED MONITORING - AQUIFER QUALITY LIMIT VIOLATION

Specified Monitoring Frequency	Monitoring Frequency for AQL Violation
Daily	Daily
Weekly	Daily
Monthly	Weekly
Quarterly	Monthly
Semi-annually	Quarterly
Annually	Quarterly
Biennially	Quarterly

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

The permittee also shall submit a report according to Section 2.7.3, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 30 days that

the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water, or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall either be specifically identified in this permit, included in an ADEQ approved contingency plan, or separately approved according to Section 2.6.6.

Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

The permittee shall notify any downstream or downgradient users who may be directly affected by the discharge.

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

2.6.5. Emergency Response and Contingency Requirements for Unauthorized Discharges

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

2.6.5.1. Duty to Respond

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

2.6.5.2. Discharge of Hazardous Substances or Toxic Pollutants

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

2.6.5.3. Discharge of Non-Hazardous Materials

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

2.6.5.4. Reporting Requirements

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

report, ADEQ may require additional monitoring or corrective actions.

2.6.6. Corrective Actions

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

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

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

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

2.7. REPORTING AND RECORDKEEPING REQUIREMENTS

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

2.7.1. Self-Monitoring Report Form

The permittee shall complete the Self-Monitoring Reporting Forms (SMRFs) provided by ADEQ, and submit the completed report through the myDEQ online reporting system. The permittee shall use the format devised by ADEQ.

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.

The following tables contained in Section 4.2 0 list the monitoring parameters and the frequencies for reporting results on the SMRF:

Table 13: QUARTERLY COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

Table 14: BIENNIAL COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

The parameters listed in the above-identified tables from Section 4.2are 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 (see Sections 2.2.4, 2.5.2, 2.6.3.2(4), and Section 4.2, Table 10) 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:

Name of inspector;

Date and shift inspection was conducted;

Condition of applicable facility components;

Any damage or malfunction, and the date and time any repairs were performed;

Documentation of sampling date and time;

Any other information required by this permit to be entered in the log book; and

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

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

The permittee shall submit a written report to the Groundwater Protection Value Stream within 30 days of becoming aware of the violation of any permit condition, AQL, or DL. The report shall document all of the following:

Identification and description of the permit condition for which there has been a violation and a description of the cause;

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;

Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation;

Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS;

Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring; and

Description of any malfunction or failure of pollution control devices or other equipment or processes.

2.7.4. Operational, Other or Miscellaneous Reporting

The permittee shall record the information as required in Section 4.2, Table 10, as per Section 2.7.2, and report to the Groundwater Protection Value Stream in accordance with Section 2.6.2.1.2.

2.7.4.1. Biennial Reporting

The permittee shall submit biennial reports as required by the following subsections.

2.7.4.1.1. Biennial Sampling Summary Reporting

The permittee shall, upon completion of the biennial sampling, submit a monitoring summary report (CSI 2) to the Groundwater Protection Value Stream. This report shall be due at the same time as the SMRF form for the biennial sampling event. 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 performance levels 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, water level elevation, and screened interval.

6. A list of any new sumps, impoundments, or vehicle washes constructed within the PCCZ, unless exempt or covered by a general APP.

7. A summary of new Catchments within the PCCZ (D-27) including location, and a description of the BADCT/installation.

8. A list of any catchments within the PCCZ decommissioned during the past two (2) years.

2.7.4.1.2. Tailings Impoundment Reporting

The permittee shall submit a biennial technical report to the Groundwater Protection Value Stream that is prepared, signed and sealed by the Engineer of Record. This report shall be due as specified in Section 3.0, Compliance Schedule Item (CSI) No. 12. The report shall include the following:

1. A summary of STSF construction activities for the reporting period including maps and construction completion documents such as as-built documentation and construction quality control summary.

2. A summary of construction activities planned for the upcoming 2 year period.

3. Summary of findings including maps, graphs and figures related to STSF stability and performance resulting from inspections and monitoring activities.

4. Description of any updates to the STSF stability model and updates to the credible failure modes analysis.

2.7.4.2. Well Abandonment Reports

If monitor wells associated with this permit are abandoned due to poor performance, casing collapse, or other reasons, or are abandoned at the end of the post-closure period, then within 90 days of completing abandonment, the permittee shall submit a well abandonment report to Groundwater Protection Value Stream in the biennial report. Appropriate contents of the report shall be sealed by an Arizona professional geologist or professional engineer, in accordance with BTR requirements. Well abandonment records shall include:

Copies of ADWR NOI to Abandon;

Copies of ADWR Abandonment Reports;

A description of the methods used to seal the well casing and the perforated or screened interval of the well; and

GPS coordinates of the former well location.

2.7.4.3. Passive Containment Capture Zone Demonstration Reporting

The results of the post-audit (see Section 2.5.3.6) shall be submitted to the Groundwater Protection Value Stream for review in a report that summarizes the original passive containment demonstration and any updates or revisions made to the model in accordance with Compliance Schedule Item 1.

Each post-audit report shall include a revised table listing the groundwater elevations for the data points used to demonstrate the configuration of the hydraulic containment, flow vector analysis (including plan and cross-sectional figures at inflection points), a map of facilities that rely on the PCCZ for BADCT and a potentiometric contour map based on groundwater elevations used in the post-audit demonstration. The model needs to be calibrated every 5 years, unless the groundwater conditions as demonstrated by the permittee do not require a recalibration. A report describing the model output and the revisions and/or changes to the model shall be submitted to the Groundwater Protection Value Stream. The permittee shall compare the current groundwater data to the previous model predictions and a report on the comparison shall be submitted to the Groundwater Protection Value Stream for review. The submittal shall be sealed by an Arizona Registered Geologist or other qualified registrant.

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. Contact at 602-771-4571 for any inquiry related to the SMRFs.

5-day and 30-day contingency notification and reports, laboratory reports, and verification sampling results required by this permit should be submitted through the myDEQ portal accessible on the ADEQ website at: http://www.azdeq.gov/welcome-mydeq.

If the required reports cannot be submitted, or require further documentation that cannot be submitted on the myDEQ portal, then submit items to groundwaterpermits@azdeq.gov or the address listed below:

The Arizona Department of Environmental Quality
Groundwater Protection Value Stream
Mail Code 5415B-3
1110 West Washington Street
Phoenix, Arizona 85007
Phone (602) 771-4999

2.7.6. Reporting Deadline

The following table lists the quarterly SMRF report due dates:

Table 5- QUARTERLY REPORTING DEADLINES

Monitoring Conducted During Quarter:	Quarterly Report Due By:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

The following table lists the biennial SMRF due date:

Table 6 BIENNIAL SMRF REPORTING DEADLINES

Monitoring conducted during biennial period:	Biennial Report due by:
January-December of the following year	January 30, 2024, and every two years thereafter

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). Notice of decommissioning of Catchments within the PCCZ (D-27) shall comply with the requirements of Section 2.7.4. Submittal of SMRFs is still required; report "closure in process" in the comment section.

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:

Clean-closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;

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;

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;

Further action is necessary to meet property use restrictions.

SMRF submittals are still required until Clean Closure is issued.

2.9.3. Decommissioned Facilities

The following facilities were originally listed in the APP, issued March 25, 2009. They have been decommissioned and closure shall be addressed at final mine closure.

Table 7: DECOMMISSIONED FACILITY LOCATION(S)		
Facility	**Latitude**	**Longitude**
Tucker Pond	34° 35' 35" N	113° 13' 44" W
EW Catchment Basin	34° 36' 10" N	113° 12' 57" W
Mineral Creek Sump	34° 34' 39" N	113° 12' 58" W

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 (CSI) listed below, the permittee shall submit the required information to the Groundwater Protection Value Stream.

Note: Arizona law requires that engineering and geological documents such as cost estimates, drawings, specifications, maps, plans, and reports be signed and sealed by an Arizona registered professional engineer or an Arizona registered geologist, pursuant to the Arizona Board of Technical Registration statutes, unless a statutory exclusion or exemption applies. See A.R.S. § 32-101 to -152; A.A.C. R4-30-101 to -306.

Table 8: COMPLIANCE SCHEDULE ITEMS			
No.	**Description**	**Due By:**	**Permit Amendment Required?**
CSI. 1	**Passive Containment Demonstration Update** The permittee shall submit an update to the passive containment demonstration, in accordance with Section 2.5.3.6.	March 25, 2024, and every five (5) years thereafter for the duration of the permit.	No (if there is no change in the list of facilities located within the PCCZ)/Yes (if there is a change of facilities located within

Table 8: COMPLIANCE SCHEDULE ITEMS			
No.	**Description**	**Due By:**	**Permit Amendment Required?**
			the PCCZ unless exempt or covered by a general APP)
CSI. 2	**Biennial Report** The permittee shall submit the Biennial Monitoring Summary Report, in accordance with Section 2.7.4	January 30, 2024, and every two (2) years thereafter for the duration of the permit.	No
CSI. 3	**Financial Assurance Mechanism** 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. 7. 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 corporate guarantee demonstration as required in A.A.C. R18-9-A203(C)(8).	On July 1, 2024 and every 2 years thereafter **NOTE:** The financial assurance mechanism due on the date specified in CSI No. 7, may be provided following ADEQ's approval of the closure and post-closure costs due on that same date. When submitting the closure and post-closure costs, FMI may provide a statement for the type of mechanism intended to be provided.	No
CSI. 4	**Updated Closure Cost Estimates** 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	April 1, 2028 and every six (6) years thereafter for the duration of the permit.	Yes
CSI. 5	The permittee shall submit a plan for installation and monitoring of landfill methane gas probes if any permanent buildings or enclosed structures are constructed within 1000 feet of the Construction Debris Landfill.	Within 90 days of construction of each structure.	No
CSI. 6	The permittee shall submit construction QA/QC Report and as-built drawings, sealed by an Arizona registered professional engineer, which indicate that the COS, the sediment control	Within 90 days of construction of each structure.	No

Table 8: COMPLIANCE SCHEDULE ITEMS			
No.	**Description**	**Due By:**	**Permit Amendment Required?**
	structures designated as COS-DG-1, COS-DG-5, and Ore Stockpile Runoff Collection Pond were constructed in accordance with plans and specifications approved by ADEQ.		
CSI. 7	Submit financial capability demonstration relating to the Sycamore TSF for the approved closure and post-closure amount of $130,474,000 and $ 11,729,250 respectively, for a total of $142,203,250. The total cost shall be updated using the inflation factor published on the ADEQ website at https://azdeq.gov/node/542 and the NPV shall be based on the total cost following application of the inflation factor.	180 days prior to placing any materials that can discharge pollutants (per ARS 49-201 (12)) within the footprint of the STSF	Yes
CSI. 8	The permittee shall submit a well construction and installation proposal for the POC wells SYC-1, SYC-2, SYC-3, and SYC-4. At a minimum the proposal shall contain well construction diagrams, proposed locations (latitude and longitude), and a proposed installation schedule.	Within 30 days of permit issuance	No
CSI. 9	The permittee shall submit to ADEQ a well completion report which includes a discussion of installation and development activities, the ADWR registration number for POC wells SYC-1, SYC-2, SYC-3 and SYC-4, and copies of all ADWR documents related to the wells including well driller reports and logs, as-built diagrams, and the actual latitude and longitude.	Within 60 days of the installation of the last POC well	No
CSI.10	The permittee shall begin quarterly ambient groundwater monitoring in POC wells SYC-1, SYC-2, SYC-3, and SYC-4 for 8 quarters, as required under Section 2.5.3.2 Ambient Groundwater Quality Monitoring for Point of Compliance Wells for parameters listed in Section 4.2,Table 13: QUARTERLY COMPLIANCE GROUNDWATER	Within 30 days of the installation of all four POC wells.	No

Table 8: COMPLIANCE SCHEDULE ITEMS			
No.	**Description**	**Due By:**	**Permit Amendment Required?**
	MONITORING and Table 14: BIENNIAL COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS		
CSI.11	Submit an APP amendment application to include: An ambient groundwater monitoring report to establish ALs and AQLs for POC wells SYC-1, SYC-2, SYC-3, and SYC-4 in accordance with Section 2.5.3.3. At a minimum the ambient groundwater monitoring report shall contain summaries of the sampling results, laboratory analytical reports, field notes, QA/QC procedures used in the collection and analysis of the water quality samples, results of statistical analyses to determine distribution type and trends, and calculation methods and results for establishing ALs and AQLs.	Within 120 days of completion of ambient groundwater monitoring as required under Section 2.5.3.2 Ambient Groundwater Quality Monitoring for Point of Compliance Wells	Yes
CSI.12	The permittee shall submit a biennial report for the STSF as Described in Section 2.7.4.1.	By July 1, 2024 and every two years thereafter	No
CSI.13	The permittee shall submit a Construction Quality Assurance (CQA) Report for STSF's structures construction. The Report shall document that the STSF was built in accordance with the final technical documents, and shall include as-built design drawings and the results of all required testing. As-built documentation shall supersede all previous design documents and still meet all permit requirements. The structures include: Starter dam, diversion berms, rockfill toe dam seepage ponds, underdrain channels, saddle dams, seepage ponds, catch basins, bypass channels, and bypass dikes.	Within 120 days after completion of construction of the STSF	No
CSI.14	The permittee shall provide a summary of the results of the Semi-Quantitative Risk Analysis (SQRA) and dam breach analysis	Six months prior to the initiation of the construction of the STSF starter dam.	No

Table 8: COMPLIANCE SCHEDULE ITEMS			
No.	**Description**	**Due By:**	**Permit Amendment Required?**
	for credible flow failure modes identified. The analysis should identify, analyze and evaluate each Potential Failure Mode (PFM) including categorizing the likelihood and consequence of each Credible Failure Mode (CFM) for the STSF based on industry standards. The review will also confirm that the risk associated with these is as low as reasonably practicable (ALARP) or identify any further risk reduction measures that may be needed to reach ALARP. The report will summarize SQRA, CFMs, likelihood and consequence, risk reduction measures, major findings and understandings, and other considerations. The dam breach analysis will be conducted for those CFMs that may result in failure, if any, to identify the physical area impacted by the particular scenario. The results of the SQRA and dam breach analysis will be used to identify any additional controls and/or monitoring that may be required for the STSF. These will be documented in the Operations, Maintenance and Surveillance (OMS) manual.		
CSI.15	If any credible flow failure scenarios are identified pursuant to the information submitted in response to CSI 14, as part of the contingency plan, the permittee shall provide an Emergency Preparedness and Response Plan (EPRP). The EPRP shall be prepared as part of a community-focused planning process and contain an impact assessment that will identify ways to prevent, minimize and mitigate any potential impacts to the project-affected stakeholders and procedures that will be followed in case of a credible STSF failure.	Six months prior to the initiation of construction of the STSF starter dam	No

Table 8: COMPLIANCE SCHEDULE ITEMS			
No.	**Description**	**Due By:**	**Permit Amendment Required?**
CSI 16	Provide a plan for the operations, maintenance, surveillance and monitoring of the STSF during operation.	Six months prior to the initiation of construction of the STSF starter dam	No
CSI 17	Provide list of piezometers (ID) and GPS coordinates for the proposed Sycamore TSF.	Within 1 year of completion of the starter dam for the Sycamore TSF	No

4.0 TABLES OF MONITORING REQUIREMENTS

4.1. PERMITTED FACILITIES AND BADCT

Table 9: PERMITTED FACILITIES AND BADCT
Facility Name and BADCT[2]
Process Solution Impoundments
<u>Catchments within PCCZ (D-27) – Individual BADCT[3]:</u> These facilities consist of existing (Upper Niagara Pond (D-4), Upper Niagara PLS Pond (D-5), Alum Sump PLS Pond (D-21), and Kimberly Pond (D-22)) and future collection and diversion points including catchments, sumps and impoundments, for process solution/stormwater within the PCCZ. This permit allows catchments within the PCCZ to be constructed, operated, maintained, and decommissioned without requiring any permit amendments in accordance with the following: The facilities will be equipped with pumps, as necessary, to maintain a controlled ponded surface elevation and minimize the risk of overtopping during storm events. Should overtopping occur for catchments within the pit area, the overflow solution will be contained within the confines of the mine pit (within the PCCZ). For new catchments constructed outside the pit, but within the PCCZ, a minimum of 2 feet of freeboard will be maintained to reduce the possibility of overflow, Pumps and piping will be on hand to direct excess PLS to the SX-EW plant, leach circuit, or other APP-regulated facility, as needed. The slope stability of pit walls and stockpiles shall be assessed for new catchments prior to installation. Facilities will be decommissioned by (1) reducing or ceasing inflow, (2) routing of remaining inflow to another facility regulated by the APP or allowing gravity flow over unfractured bedrock into the bottom of the pit for collection and recovery, and (3) filling with rock material. **Upper Niagara Pond (D-4) (Process Solution Pond):** The facility is an impoundment located on top of the Upper Niagara Leach Dump (D-6) confined in a valley. The pond is lined with a 2-foot thick compacted clay liner, underlain by leach dump material placed on the Precambrian crystalline bedrock of relatively low hydraulic conductivity. The pond receives process solution and stormwater and has a design capacity of approximately 20 million gallons. Accumulated fluid in the impoundment is pumped back into the leach circuit. The pond is situated within the PCCZ of the existing open pit. Consequently, any discharge from the pond will be captured by the open pit. **Upper Niagara PLS Pond (D-5) (Process Solution Pond):** The facility is an impoundment consisting of an earthen dam and 2-foot thick compacted clay liner underlain by

[2] Best Available Demonstrated Control Technology
[3] Individual BADCT requirements are described in the ADEQ Arizona Mining BADCT Guidance Manual. For existing facilities, consideration of additional as listed in A.R.S §§ 49-243(B)(1)(a) through (h) and 49-243(G) apply.

Table 9: PERMITTED FACILITIES AND BADCT

Precambrian crystalline bedrock of relatively low hydraulic conductivity. The pond receives process solution and stormwater from the Upper Niagara Leach Dump which is conveyed by gravity through an HDPE pipeline to N5/N6 pumping station. Process solution from the N5/N6 pumping station is pumped to the SX/EW Plant, or when not actively leaching, residual flow can be diverted into Copper Creek Leach Dump (D-19). The pond operating volume is approximately 10,000 gallons and the average operating depth is 3 feet. Excess solution overflow is contained within the Copper Creek Leach Dump. The pond is situated within the PCCZ of the existing open pit. Consequently, any discharge from the pond will be captured by the open pit.

Alum Sump PLS Pond (D-21) (Process Solution Impoundment):

The facility is a lined impoundment designed to receive leachate from the Plan IX Leach Dump. The impoundment has a total solution capacity of approximately 774,000 gallons, including 414,000 gallons at the normal operating level, and an approximate total depth of 12 feet, including 8 feet at the same operating level. Accumulated process solution is pumped through an HDPE pipeline to the SX-EW Plant. The pond is situated within the passive containment zone of the existing open pit. Consequently, any discharge from the pond will be captured by the open pit.

Kimberly Pond (D-22) (Process Solution Impoundment):

The facility receives leachate and stormwater runoff from the Plan IX leach stockpile. The base of Kimberly Pond is comprised of a 2-foot-thick layer of compacted Gila Conglomerate. The area is underlain by crystalline bedrock that is covered with approximately 150-feet of historic Kimberly tailings. The pond has an operating solution holding capacity of approximately 17.9-million gallons. The pond is protected from stormwater run-on by ditches and berms and is surrounded on all sides by leach stockpiles. A slope stability analysis for Kimberly Pond has determined acceptable factors of safety for both static and pseudostatic loading conditions. The pond is situated within the passive containment zone of the existing open pit. Consequently, any discharge from the pond will be captured by the open pit.

Copper Creek PLS Pond System (PLS pond and conveyance channel) (D-10):

The facility is a process solution pond system consisting of an 80-mil HDPE[4]-lined channel leading from the toe of the Copper Creek Leach Dump to the Copper Creek PLS Pond. The PLS pond system is constructed on Quaternary gravels of moderate hydraulic conductivity underlain by Precambrian granite. The pond has a design capacity of 4.5 million gallons, with a depth of 20 feet. Process solution from the pond is pumped to the SX-EW Plant for processing. During process upset or severe storm events, overflow shall report to Boulder Flood Basin (D-11) via a lined overflow channel.

Boulder Flood Basin (D-11):

The facility is a double-lined, impoundment equipped with a Leak Collection and Removal System (LCRS). The primary liner is an 80-mil HDPE geomembrane, secured in an engineered anchor trench, and a secondary liner consisting of a compacted, amended soil liner. The overflow channel from the Copper Creek PLS Pond leading to the Boulder Flood Basin is lined with an 80-mil HDPE geomembrane. The impoundment is located in a Quaternary alluvium consisting of gravelly silts and clays partially underlain by Precambrian Alaskite Porphyry. The impoundment has a solution holding capacity of 37 million gallons. The impoundment has a 30 ft. deep by 12 ft. wide soil cutoff wall down gradient of the facility with an 80-mil HDPE lined face designed to intercept subsurface flows. The cutoff wall is equipped with a sump and pump-back system to capture any seepage from the cutoff wall. The impoundment receives stormwater runoff and contains process solution overflow due to process upsets in the Copper Creek leach system. The facility is designed with pumping system capability to divert solution to the Bagdad open pit, the Mulholland Tailings Impoundment, Mammoth Tailings Pond, or the Copper Creek PLS Pond System. Potential discharges from the Boulder Flood Basin to Boulder Creek are addressed under the terms and provisions of an individual AZPDES permit (AZ0022268).

[4] High-density Polyethylene

Table 9: PERMITTED FACILITIES AND BADCT
Raffinate Pond (D-13):
Facility is located within the passive containment zone of the open pit. The facility is a double-lined process solution impoundment equipped with LCRS. The liner system consists of an 80-mil HDPE primary geomembrane, with the secondary liner consisting of compacted two feet thick Gila Formation (rhyolite tuff and clay). The geomembrane is secured in an engineered anchor trench around the pond perimeter. The impoundment has a maximum solution holding capacity of approximately 0.5 million gallons, at a depth of approximately 6 feet. To avoid potential overflow, the impoundment is equipped with an automatic, high-level alarm system. The raffinate solution is used in the leach process. To minimize the potential for discharge, surface water run-on is diverted away from the facility. The ALR[5] and RLLR[6] for the ponds are established at 223 gpd and 670 gpd respectively. During process upset or severe storm events, the piped overflow reports to the Copper Creek Leach Dump.
PLS Surge Pond (D-14):
Facility is located within the passive containment zone of the open pit. The facility is a double-lined process solution impoundment equipped with LCRS. The liner system consists of an 80-mil HDPE primary geomembrane, with the secondary liner consisting of compacted two feet thick Gila Formation (rhyolite tuff and clay). The geomembrane and the geonet/geotextile composite used in the LCRS are secured in an engineered anchor trench around the pond perimeter. The pond is constructed on non-mineralized material of the Mine Shop Overburden Dump. The pond has a maximum solution holding capacity of approximately 1.5 million gallons, with a depth of 8 feet. The pond receives process solution from various PLS collection facilities from where it is pumped to the SX-EW Plant for processing. To avoid potential overflow, the PLS Surge Pond is equipped with an automatic, high-level alarm system. To minimize the potential for discharge, surface water run-on is diverted away from the facility. The ALR and RLLR for the pond are established at 279 gpd and 836 gpd respectively.
Strong PLS Pond (D-20) – Prescriptive BADCT[7]:
The facility (D20) is a double-lined impoundment equipped with a leak detection and removal system (LCRS). The double liner consists of a 60-mil HDPE primary and secondary liner, with a 200-mil HDPE geonet between the two liners for drainage. The lower liner is a composite liner underlain by a minimum of 6-inch minus low permeability soil compacted to achieve a saturated hydraulic conductivity of no greater than 1×10^{-6} cm/sec. The pond is designed to contain maximum fluid volume of 3.86 million gallons plus direct precipitation from the 100-year, 24-hour storm event while maintaining 2 feet of freeboard. The total depth of the pond is 26 feet. Berms and diversion channels are designed to prevent surface stormwater from entering the pond. The ALR and RLLR for the pond are established at 515 gpd and 1,545 gpd, respectively (Ref. Area-wide APP Application Addendum, July 2002).
Leach Dumps
Upper Niagara Leach Dump (D-6):
Facility is located within the passive containment zone of the open pit. The facility is a low-grade leach dump located on alluvial valley-fill, underlain primarily by Precambrian crystalline bedrock. The leach dump is constructed over steeply sloping natural terrain using end dumping method of construction. The leachate (PLS) from the dump is collected at the downstream tow of the dump and gravity flows to the Upper Niagara PLS Pond (D-5). To minimize discharge, surface water run-on is diverted away from the facility. The maximum slope angle shall not exceed 28 degrees and the facility footprint extension and rock-fill buttress will be constructed as described in the amendment application dated August 7, 2019.
Plan IX Leach Dump (D-15):

[5] Action Leakage Rate
[6] Rapid and Large Leakage Rate
[7] Prescriptive BADCT design involves a prescribed engineering approach that utilizes pre-approved discharge control technologies or engineering equivalents to meet the requirements of A.R.S. 49-243(B)(1)

Table 9: PERMITTED FACILITIES AND BADCT
Facility is located within the passive containment zone of the open pit. The facility is a low-grade leach dump located on alluvial valley-fill, underlain primarily by Precambrian crystalline bedrock. The leach dump is constructed over steeply sloping natural terrain using end dumping method of construction. The leachate (PLS) from the dump is collected at the downstream toe of the dump and gravity flows to the Alum Sump PLS Pond, Mineral Creek Sump and Kimberly Pond. Diversion ditches located up-gradient of the dump divert the stormwater run-on away from the facility. The leach dump occupies approximately 1,661 acres, contains approximately 192,853,000 tons of leach material, and is permitted for a maximum height of 4,850 feet above mean sea level. To minimize discharge, surface water run-on is diverted away from the facility.
Mineral Creek Leach Dump (D-18): Facility is located within the passive containment zone of the open pit. The facility is a low-grade leach dump located within a well-defined canyon, underlain primarily by Precambrian crystalline bedrock. The leach dump is constructed over steeply sloping natural terrain using end dumping method of construction. The leachate (PLS) from the dump is collected at the downstream toe of the dump. Residual PLS at the former Mineral Creek Sump area is directed to the bottom of the open pit. Diversion ditches are located up-gradient of the dump to divert stormwater run-on away from the facility. To minimize discharge, surface water run-on is diverted into the open pit.
Copper Creek Leach Dump (D-7): The facility is a low grade leach dump located on alluvial valley-fill, underlain primarily by Precambrian crystalline bedrock. The leach dump is constructed over steeply sloping natural terrain using end dump method of construction. The leachate (PLS) from the dump is collected at the concrete cutoff wall constructed at the downstream toe of the dump and gravity flows to the Copper Creek PLS Pond System. The stability analysis, water balance and aquifer loading analysis, as well as solution, ore and waste characterization, sighting considerations, design construction and operational measures received in submittals dated March 25, 2010, July 1, 2010 and February 14, 2018 (updated stability analysis and modified design have satisfied the requirements of A.R.S. 49-243 and A.A.C. R-18-9-A202. The maximum dump elevation shall be 3,900 feet above mean sea level.
Crystal Mountain Leach Dump (D-19): The facility is located within the footprint of the existing Copper Creek Leach dump. The ore material (mixed sulfide and oxide ore) is placed over existing leached ore that is underlain by Precambrian crystalline bedrock. The leach dump is constructed over steeply sloping natural terrain using end dumping method of construction. The leachate (PLS) from the dump is collected by the Copper Creek PLS Pond System. The stability analysis, water balance and aquifer loading analysis, as well as solution, ore and waste characterization, sighting considerations, design construction and operational measures received in submittals dated March 25, 2010 and July 1, 2010 have satisfied the requirements of A.R.S. 49-243 and A.A.C. R-18-9-A202.
Non-stormwater Impoundments
Last Chance Pond (D-3): Facility is located within the PCCZ of the open pit. The facility is a concrete lined impoundment bermed on all uphill sides and located within the Mulholland Tailings Impoundment, which is located over predominantly Precambrian crystalline rocks providing a low-permeability base to the tailings. The impoundment receives and contains excess discharge from the mill, washdown from the concentrate loadout pad, and stormwater runoff from these facilities. The normal operating capacity is approximately 500,000 gallons with a center depth of 3 feet. Stored solutions are pumped to the Mulholland Tailings Impoundment reclaim pond or allowed to discharge to the reclaim pond by overland flow across the tailings surface. From the reclaim pond, the Last Chance Pond solutions are returned to the mine water reclaim system for reuse.

Table 9: PERMITTED FACILITIES AND BADCT
Tailings Impoundments
Mulholland Tailings Impoundment (D-1): The facility is a tailings impoundment used primarily as a recycled water storage facility for site-wide water management purposes and, as needed, as a secondary tailings disposal impoundment. The facility is constructed employing centerline dam construction method, using a combination of spigotting and cycloning of tailings material. The impoundment is located over predominantly Precambrian crystalline rocks. The tailings dam and pond cover an area of approximately 500 acres and contain approximately 120 million dry tons of tailings. The water in the tailings pond has an alkaline pH, reflecting the large volumes of alkaline tailings that are stored within the impoundment. The Mulholland Tailings Impoundment includes a saddle dam to the south of the primary tailings embankment. Drainage from the saddle dam reports to the Mammoth Tailings Pond. At times, Bagdad Pit water and stormwater runoff and process solutions from the Boulder flood Basin (D-11) that is transferred to the Bagdad Pit will be directed to the Mulholland Tailings Impoundment. Before being discharged, these waters, and any other potentially acidic waters, are tested and the pH is adjusted, as necessary, to ensure compatibility with the impoundment and for operational reuse of the water. Upset flows from the concentrator area are also discharged to the impoundment. The facility receives effluent from the Concentrator Waste Water Treatment Plant (WWTP) and Bagdad Townsite WWTP. Downstream of the tailings impoundment is a seepage collection pond and pumpback system.
Mulholland Seepage Collection Pond (D-2): The facility is a lined impoundment formed by a seepage collection dam constructed adjacent to the downstream toe of the Mulholland tailings embankment. The dam is a compacted rock-fill dam with a reinforced gunnite facing on its entire surface and has a concrete lined basin. The seepage pond is located over predominantly Precambrian crystalline rocks. The impoundment has an approximate storage capacity of 531,000 gallons, with an average depth of approximately 6 feet. Collected seepage is pumped back to the Mulholland Tailings Impoundment using two vertical turbine pumps. Both pumps are equipped with automatic level controls and have a combined design capacity of 1,175 gpm. The impoundment receives seepage of approximately 300 to 400 gpm from the Mulholland Tailings Impoundment. Potential discharges from the Mulholland Seepage Pond to Mulholland Wash are addressed under the terms and provisions of an individual AZPDES permit (AZ0022268).
Mammoth Tailings Impoundment (D-23): The facility is a tailing dam constructed using the centerline dam construction method, via a combination of spigotting and cycloning of tailings material. The maximum areal extent of the tailings impoundment is described in Figure 1 of the approved design provided in the July 18, 2007, *Site Characterization & Design Studies*. The facility has a maximum capacity of 900,000,000 tons of tailings and a maximum permitted dam crest elevation of 3,600 feet above mean sea level. Tailings are delivered to the tailings impoundment at a rate not exceeding 200,000 dry tons per day. Process fluids include: water from the Freeport-McMoRan Bagdad water supply system; water pumped from the tailings seepage collection system and the tailings water reclaim and return system; wastewater effluent from the Bagdad Townsite Wastewater Treatment Plant (WWTP) and reagents that are manufactured, processed, and used in compliance with the federal Toxic Substances Control Act. At times, Bagdad Pit water, accumulated stormwater runoff and process solutions, are diverted to the facility as needed to transport tailings, or to maintain the overall mine water/solution balance during upset or emergency conditions when systems are out of balance. Before being diverted to this facility, any potentially acidic waters, will be tested to ensure compatibility with the impoundment and for later operational reuse of the water and solutions. The facility is a tailings impoundment used in a secondary capacity as a solution storage facility for site-wide solution management purposes.
Upper Mammoth Tailings Impoundment (D-24): The Upper Mammoth Tailings Impoundment shall be constructed, operated, and maintained according to Plans and Specifications provided in the March 24, 1995 titled *Site Characterization & Design Studies,* the December 2010 Upper Mammoth Tailing Feasibility Level Design, and amendments and supplements referenced in Section

Table 9: PERMITTED FACILITIES AND BADCT

5 of this Permit. The Upper Mammoth Tailings impoundment has a maximum capacity of 600,000,000 tons of tailings. The maximum permitted dam crest elevation shall not exceed 4,050 feet above mean sea level, and the maximum areal extent of the tailings impoundment shall not exceed the footprint shown in Figure 1 of the approved design plans provided in the July 18, 2007, *Site Characterization & Design Studies*. Tailings shall be delivered to the tailings impoundment at a rate not to exceed 200,000 dry tons per day during ore processing. The facility is a tailings impoundment used in a secondary capacity as a solution storage facility for site-wide solution management purposes.

Mammoth Tailings Seepage Collection Pond (D-25):

The tailings seepage collection pond (SCP) is constructed with a gunite liner and has a normal operating capacity of 350,000 with a minimum freeboard of 1 foot. The facility is located at an elevation of 2,740 feet above sea level. The pump-back dam, constructed upon crystalline bedrock, is a compacted rock fill dam with a 12-inch concrete facing on its entire surface. In addition, a seepage sump (SS) is located at an elevation of 2,730 feet above sea level immediately downstream from the facility. The SS is a 1-foot-diameter well, extending to a depth of 11 feet in the gravels of Mammoth Wash, immediately downstream from the SCP.

Sycamore Tailings Storage Facility (D-30):

The facility is a tailing dam constructed using the centerline dam construction method, via a combination of spigotting and cycloning of tailings material. The maximum areal extent of the tailings impoundment is described in the June 15, 2021, Bagdad Mine-Sycamore TSF Best Available Demonstrated Control Technologies Demonstration. The facility has a maximum capacity of approximately 1,300,000,000 tons of tailings and a maximum permitted dam crest elevation of 3,855 feet above mean sea level. Tailings are delivered to the tailings impoundment at a rate not exceeding 220,000 dry tons per day. Process fluids include water from the Freeport-McMoRan Bagdad water supply system; water pumped from the tailings seepage collection system and the tailings water reclaim and return system; wastewater effluent from the Bagdad Townsite Wastewater Treatment Plant (WWTP) and reagents that are manufactured, processed, and used in compliance with the federal Toxic Substances Control Act. At times, Bagdad Pit water, accumulated stormwater runoff and process solutions, are diverted to the facility as needed to transport tailings, or to maintain the overall mine water/solution balance during upset or emergency conditions when systems are out of balance. Before being diverted to this facility, any potentially acidic waters, will be tested to ensure compatibility with the impoundment and for later operational reuse of the water and solutions. The facility is a tailings impoundment used in a secondary capacity as a solution storage facility for site-wide solution management purposes.

The Sycamore TSF will store approximately 1.3 billion tons of tailings and has an estimated design life of 21 years at a tailings throughput of 220,000 tons per day (tpd). The ultimate height of the Sycamore TSF is approximately 933 feet including the starter dam, with an ultimate crest elevation of 3855 feet. The Sycamore TSF has been designed as a centerline raise TSF with a cycloned underflow sand embankment that will contain fine overflow and whole tailings within the impoundment. The embankment and dams, have been designed to contain the design storm volume, normal operating solution volume, and tailings while maintaining an adequate factor of safety for stability and an additional freeboard of 5 feet or greater. The TSF embankment will be constructed of underflow sand via cycloning and deposited from the dam crest to maintain a 3.5H:1V downstream slope. The facility shall not exceed the aerial footprint shown in the application.

The tailings transport system consists of dedicated pipelines from the Bagdad concentrator transporting up to 220,000 tpd. Additional whole tailings will be deposited via spigots on the crest of the embankment and several single point deposit locations around the perimeter of the TSF. The water reclaim system will consist of a floating barge pump system located within the reclaim pond to return supernatant water to the concentrator.
The contributing drainage area that reports to the Sycamore TSF consists of the sub-basin within the footprint of the TSF and two sub-basins located immediately upstream of the TSF. The west bypass system will include a series of bypass channels, dikes and a saddle dam that will be constructed to divert surface water runoff from the northern upstream sub-basin around the Sycamore TSF. The east bypass includes a bypass channel that diverts surface water runoff from the northeastern upstream sub-basin around the Sycamore TSF.

Table 9: PERMITTED FACILITIES AND BADCT

Saddle Dam:

The saddle dam on the west side of the impoundment is constructed of rockfill with filter layers on the upstream face in contact with impounded tailing. Seepage through the saddle dam is collected along the downstream toe and conveyed in a toe ditch to a sump. Two pipes (one from the north and one from the south) convey seepage water from the downstream ends of the north and south toe ditches to the sump. Drain gravel placed around the sump provides additional seepage collection via perforations in the sump. The sump consists of a 9-foot diameter concrete vertical riser. The maximum anticipated seepage rate through the saddle dam is 15.4 cubic feet per day per foot of saddle dam length, as estimated from a steady state seepage analysis at ultimate height conditions. This results in an estimated maximum seepage rate of approximately 290 gpm. Stormwater from the downstream face of the saddle dam (a 13-acre area) is collected in the toe ditch used for seepage water collection. The sump is located in a local depression where, in addition to stormwater runoff from the saddle dam, it collects stormwater from an 84-acre watershed on the west side of the saddle dam. Stormwater will seep through the drain gravel surrounding the sump and enter the sump via the perforations in the concrete riser. Stormwater from this watershed will also be conveyed in a pipe connected directly to the sump. The total contributing drainage area to the sump is approximately 97 acres. The runoff volume was calculated using the Soil Conservation Service (SCS) Runoff Curve Number method. The 100-year, 24-hour precipitation depth is 4.99 inches and the Curve Number is 86 (for natural ground). The calculated 100-year, 24-hour runoff volume is approximately 28 acre-feet.

Rockfill Toe Dams:

Five rockfill toe dams (A, B, C-D, E, & F-G) will be located at the downstream toe of the ultimate underflow sand embankment and will collect and convey stormwater at the downstream end of the major drainages to the seepage collection ponds (SCPs). The rockfill toe dams are designed to detain stormwater runoff and eroded tailings from the downstream slope of the underflow sand embankment during precipitation events and minimize eroded underflow sand tailings from reporting to the SCPs. Stormwater diversion berms have been designed to direct runoff to the rockfill toe dams. The detained stormwater will infiltrate through the rockfill toe dams, be collected within the catch basins located downstream, then conveyed via pipelines to the SCPs, and pumped back to the impoundment. The rockfill toe dams have sufficient capacity to temporarily store the runoff volume from the 100-year, 24-hour precipitation event. The runoff volumes were calculated for the TSF ultimate footprint.

Stormwater Diversion Berms:

Stormwater runoff from the main Sycamore TSF embankment will be contained upstream of the rockfill toe dams. In areas where stormwater runoff from the embankment does not naturally flow towards one of the rockfill toe dams, stormwater diversion berms have been designed to direct runoff to the rockfill toe dams. Eight separate stormwater diversion berms are located downstream of the ultimate embankment toe to intercept stormwater and direct it towards the rockfill toe dams. The stormwater diversion berms have been designed with a minimum height of 8 feet, 10-foot crest width, and 1.75H:1V side slopes.

Stormwater diversion berms are located at the toe of the saddle dam that convey runoff to the west bypass channel. The stormwater diversion berms reduce the area that drains to the toe of the saddle dam from 207 acres to 97 acres. The saddle dam stormwater diversion berms have same dimensions as those for the TSF embankment described above.

Catch Basins and Gravity Seepage Pipelines:

Catch basins will be located downstream of the rockfill toe. Each catch basin includes a 24-inch HDPE gravity seepage pipeline to convey seepage and stormwater to an adjacent seepage collection point. The upstream pipeline invert will be 2 feet above the catchment floor to provide for sediment accumulation. Flow depth in the pipeline was limited to no more than 75 percent full, resulting in the 24-inch diameter pipeline. The water surface elevation for the design flow at the upstream end of the gravity seepage pipeline is approximately 3 feet above the pipe invert. The catch basins will be 6 feet deep, allowing 2 feet of sediment accumulation, 3 feet of water depth above the pipe invert, and 1 foot of freeboard. The catch basins will be lined with concrete to accommodate maintenance equipment required for removal of accumulated sediment via an access ramp.

Table 9: PERMITTED FACILITIES AND BADCT
Sycamore Reclaim Pond: The TSF is designed to maintain ponded water reclaimed from the tailings slurry. The Sycamore TSF is designed such that the reclaim pond is continually pushed further away from the embankment. As a result, part of the reclaim pond is usually in contact with native ground (surficial bedrock). The rest of the reclaim pond is expected be underlain by relatively loose, fine-grained tailings. Any settled tailings materials under the pond will thus be relatively thin and uncompacted. In seepage calculations for this part of the TSF, the thin uncompacted tailings are ignored, and the seepage rate is assumed to be controlled by the hydraulic conductivity of the surficial bedrock. The reclaim pond will initially be located in the northern side of the impoundment and eventually move towards the northeast side when the underflow embankment expands to the northwest. The ultimate reclaim pond location in the northeast side of the impoundment is a central location in relation to the underflow embankment and saddle dam. This reduces the flow length of tailings deposition water to minimize water losses due to evaporation. The SPDs are located in the west side and northwestern corner of the impoundment to aid in managing the reclaim pond location in the northeastern corner of the TSF.
Sycamore Seepage Collection Pond SCPs (A and B) (D-31 and D-32): Seepage Pond A will be located in the Little Sycamore Wash drainage area and Seepage Pond B is located in the unnamed drainage located to the southwest of the Little Sycamore Wash. The SCPs include a sediment collection basin located between the rockfill toe dam and the pond. This reduces sediment in the seepage water and allows it to settle out prior to entering the SCP. A concrete weir wall will be placed between the sedimentation basin and the SCP with a notch and a 2.5-foot H flume in the wall to measure the seepage rate. The SCPs are designed to detain12-hours of seepage and provides storage of seepage water without overtopping the SCP in case of pump failure. The design storage volume of each SCP is 15 acre-feet (4.89 million gallons). Seepage ponds A and B will be excavated in the natural drainage channels downstream of the respective rockfill toe dams. The SCPs, including the sedimentation basins will be lined with concrete to accommodate maintenance equipment required for removal of accumulated sediment via an access ramp. The SCP designs also include an HDPE bypass drain pipe that connects the sedimentation basin at its upstream end to the SCP intake structure at its downstream end. The bypass drain pipe transports seepage water from the sedimentation basin directly to the SCP intake structure to facilitate cleaning of the SCP without water flowing through the flume.
Waste Rock Storage Facility
South Waste Rock Disposal Facility (D-26): The South Waste Rock Disposal Facility is located within the PCCZ encompassing approximately 624 acres and with a maximum permitted capacity of 875,839,000 tons of mining waste rock. Maximum permitted elevation of the facility is 4,500 feet above mean sea level. The maximum areal extent of the waste rock disposal facility is shown in Table 3, page 16, of the Request to Amend APP No. P-105258 to Extend Plan IX Leach Dump and South Waste Rock Disposal Facilities, dated June 15, 2015. The facility shall consist of 50-foot lift heights with 36º angle of repose and 43.5-foot horizontal benches between lifts, resulting in an inter-ramp slope of 24º.
Butte Stockpile (D-33): Facility is located within the PCCZ of the open pit. The facility has a maximum capacity of 785,600,000 cubic yards of mining overburden, a maximum slope height of 900 feet, and a maximum permitted elevation of 4,700 feet above mean sea level. The maximum area extent of the waste rock stockpile shall not exceed the footprint represented in revised Drawing 2-1 dated December 9, 2020 of the amendment application dated December 15, 2020 of the June 2020 amendment application, received by ADEQ on June 30, 2020; approximately 1,337 acres. The design value for the angle of repose is 1.4 horizontal to one vertical (1.4H:1V) that results in a minimum inter-ramp slope angle of two horizontal to one vertical (2H:1V) for the stockpile. Half of the stockpile slope has a 130 foot wide access road, which provides a minimum overall slope of 2.5 horizontal to one vertical (2.5H:1V). One downgradient sediment control structure, DG-2, currently detains, decelerates, and allows infiltration of runoff and sediment from the stockpile along the northern boundary resulting from the design storm event (100-year, 24-hour). Upon construction of the inert Gila Conglomerate base for the Coarse Ore Stockpile (COS), downgradient

Table 9: PERMITTED FACILITIES AND BADCT
stormwater and sediment migration will be detained against its thick base and DG-2 will be buried by the Butte Stockpile expansion. The COS base will capture runoff and sediment from within the small drainage basin remaining between the extended Butte Stockpile and the COS Base and will provide the same function as DG-2. Surface water from watershed areas upstream of the stockpile shall be retained in impoundment UG-3, within the main stem of the Copper Creek channel upstream of the main gate.
Ore Stockpiles
Coarse Ore Stockpile (COS) (D-34): Facility is located within the PCCZ of the open pit. The facility has a maximum capacity of approximately 55 million tons and a maximum elevation of 4,100 feet above mean sea level (amsl). The COS will be constructed on a base made of non-mineralized Gila Conglomerate (Gila Base) covering 232 acres which will be built to an elevation of 3,720 feet amsl. The Gila Base will be constructed from run-of-mine (ROM) material that was previously demonstrated (studies conducted in 1993 and 2013) to be inert. The ore stockpile will consist of temporarily stored ROM primary crusher feed material that is not considered inert. Although the ore stockpile is not considered inert, it is situated on the inert Gila Base, and additionally, the entire footprint of the proposed stockpile is located within the PCCZ thereby containing any discharges to the aquifer. The Gila Base and the ore stockpile will have a slope of 2H:1V. Five downgradient sediment control structures, COS-DG-1 through COS-DG-5 will, shall detain, decelerate, and allow infiltration and evaporation of stormwater runoff and to retain sediment from the Gila Base. Stormwater from the ore stockpile will be diverted by diversion channels, located along the toe of the ore stockpile on top of the Gila Base, which drain to the Coarse Ore Stockpile Runoff Collection Pond. The collection pond shall have a capacity of 36-acre feet. The length and width of the pond shall be approximately 500 feet, and a depth of 7 feet including 2 feet of freeboard.
Waste Management Facilities
Waste Management Facility (WMF): Construction Debris Landfill, Leachate Evaporation Pond (LEP), Bioremediation Land Treatment Unit (LTU), LTU Evaporation Pond Facility is located within the PCCZ of the open pit. The facility covers approximately 10 acres on the mine property and is primarily used for disposal of construction debris. The WMF is situated on non-mineralized overburden material that was excavated to house the Construction Debris Landfill (CDL). The CDL covers approximately 4.5 acres and is permitted to accept non-liquid, non-hazardous solid wastes generated from mine administration, operations, maintenance, and construction activities. Such Solid Waste may include the Facility construction debris of wood pallets, timber, demolition debris, all generated on-site and may include other materials as permissible pursuant to A.A.C R18-13-802(B). Such Solid Waste shall contain only inert material as defined in A.R.S. § 49-201. The sides and bottom of the CDL excavation are lined with a geosynthetic clay liner and the landfill includes a leachate collection system. The bottom of the landfill is approximately 35 feet below the level of the perimeter berm. The LTU is underlain by a geosynthetic clay liner with soil cover. Both evaporation ponds include primary and secondary 60-mil high density polyethylene (HDPE) geomembrane liners. Surface water run-on and run-off diversions have been constructed and maintained to direct peak flows away from the landfill in accordance with plans referenced in SRK Consultant (2001). These structures shall be maintained until facility closure. Facility closure will be accomplished by burial under the Butte Stockpile which will be graded and maintained to direct stormwater runoff away from the facility area.

4.2. **Compliance and Operational Monitoring**

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING

Facility Name & Number	Operational Requirements[8]	Inspection Frequency	Reporting Frequency
Leach Dumps			
Upper Niagara Leach Dump (D-6) Copper Creek Leach Dump (D-7) Plan IX Leach Dump (D-15) Mineral Creek Leach Dump (D-18) Crystal Mountain Leach Dump (D-19)	Visually inspect and take appropriate action if any evidence of: a) Instability, including surface cracks, slides, sloughs or unusual differential settlement; b) Excessive erosion in conveyances and diversions; c) Excessive accumulation of debris in conveyances and diversions; and d) Impairment of access.	Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period	As per Section 2.6.2.1.2
rocess Solution Impoundments, Double-Lined – Outside the PCCZ			
Boulder Flood Basin (D-11)	**Daily:** Check and take appropriate action in the case of any evidence of blockages of overflow pipes/spillway structures. Visually inspect and maintain applicable freeboard in impoundment – Strong PLS Pond – 2 feet **Weekly:** **Strong PLS Pond** Measure flow rate in the LCRS: confirm it is less than specified ALR (see Section 2.6.2.4 and Table 11and less than the specified rate for RLLR (see Section 2.6.2.5 and Table 11); and take appropriate action if exceedance is observed in the values. **Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period:** (Precipitation shall be measured based on readings obtained from the mine weather station used for such measurements.): Visually inspect and take appropriate action if any evidence of: a) Instability, including surface cracks, slides, sloughs or unusual differential settlement; b) Excessive erosion in conveyance and diversions; c) Excessive accumulation of debris in conveyances and diversions; and d) Impairment of access. e) At pump locations, inspect pumps, valves and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge from the impoundment as needed to maintain at least 80 percent of design capacity.	See Operational Requirements	As per Section 2.6.2.1.2
Strong PLS Pond (D-20)			

[8] If a performance level is not maintained for any parameter other than a freeboard, report to ADEQ in accordance with Section 2.6.X.X.X Performance Levels, other than Freeboard

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING			
Facility Name & Number	**Operational Requirements[8]**	**Inspection Frequency**	**Reporting Frequency**
Process Solution Impoundments, Lined – Outside the PCCZ			
Copper Creek PLS Pond System (PLS Pond and Conveyance Channel) (D-10)	**Daily:** Check and take appropriate action in the case of any evidence of blockages of overflow pipes/spillway structures or conveyance channel. **Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period:** (Precipitation shall be measured based on readings obtained from the mine weather station used for such measurements.): a) Visually inspect and take appropriate action if any evidence of: b) Perforated cut, tear of damaged liner and impairment of anchor trench integrity of the Conveyance Channel; c) Impairment of embankment integrity; d) Excessive erosion or accumulation of debris in conveyances and diversions; and e) Impairment of access. f) At pump locations, inspect pumps, valves and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge from the impoundment as needed to maintain at least 80 percent of design capacity.	See Operational Requirements	As per Section 2.6.2.1.2
Tailings Impoundments			
Mulholland Tailings Impoundment (D-1)	**Daily:** Check and take appropriate action in the case of any evidence of blockages of overflow pipes/spillway structures or conveyance channel. **Quarterly and following precipitation evens measuring at least one (1) inch in a 24-hour period:** Visually inspect and take appropriate action if any evidence of: a) Perforated cut, tear of damaged liner and impairment of anchor trench integrity of the Conveyance Channel; b) Impairment of embankment integrity; c) Excessive erosion or accumulation of debris in conveyances and diversions; and d) Impairment of access. e) At pump locations, inspect pumps, valves and structures for pump operation and structural integrity	See Operational Requirements	As per Section 2.6.2.1.2
Process Solution Impoundments Within the PCCZ			
Catchments within PCCZ (D-27)	Visually inspect and take appropriate action if any evidence of:	Quarterly and following	As per Section 2.6.2.1.2

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING			
Facility Name & Number	**Operational Requirements[8]**	**Inspection Frequency**	**Reporting Frequency**
	a) Instability, including surface cracks, slides, sloughs or unusual differential settlement; b) Excessive erosion in conveyance and diversions; c) Excessive accumulation of debris in conveyances and diversions; and d) Impairment of access. e) At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.	precipitation events measuring at least one (1) inch in a 24-hour period	
Process Solution Impoundments, Doubled-Lined – Within the PCCZ			
Raffinate Pond (D-13) PLS Surge Pond (D-14)	**Daily:** Check and take appropriate action in the event of any evidence of: Blockages of overflow pipes/spillway structures. **Weekly:** Raffinate Pond and PLS Surge Pond Measure flow rate in the LCRS; confirm that it is less than specified ALR (See Section 2.6.2.4 and Table 11) and less than specified rate for RLLR (see Section 2.6.2.5 and Table 11); and take appropriate action if exceedance is observed in the values. **Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period:** Visually inspect and take appropriate action if any evidence of: a) Perforated cut, tear or damaged liner and impairment of anchor trench integrity; b) Impairment of embankment integrity; c) Excessive erosion in conveyances and diversions; d) Excessive accumulation of debris in conveyances and diversions; and e) Impairment of access. f) At pump locations, inspect pumps, valves and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge from the impoundment as needed to maintain at least 80 percent of designed capacity.	See Operational Requirements	As per Section 2.6.2.1.2
Tailings Impoundments			
Mulholland Tailings Impoundment (D-1)	**Daily during operational use, and following precipitation events measuring at least one (1) inch in a 24-hour period:** Visually inspect and maintain a minimum of four (4) feet of freeboard.	See Operational Requirements	As per Section 2.6.2.1.2

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING			
Facility Name & Number	**Operational Requirements[8]**	**Inspection Frequency**	**Reporting Frequency**
	Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period: Visually inspect and take appropriate action if any evidence of: a) Tailings dam deformation, including surface cracks, slides, sloughs, seeps, erosion features or differential settlement-affecting dam stability; b) Excessive erosion or accumulation of debris in conveyances and diversions; and c) Impairment of access; d) At pump installations, inspect pumps, valves and structures for pump operation and structural integrity. REQUIREMENTS SPECIFIC TO WATER QUALITY Ensure that the pH of all potentially acidic waters directed to the Mullholland Tailings Impoundment shall be tested and adjusted upward as needed to a pH greater than 4.5 SU before being discharged to the impoundment.		
Mammoth Tailings Impoundment (D-23) Upper Mammoth Tailings Impoundment (D-24)	Tailings Dam(s) Integrity Check for erosion beyond that due to normal deposition Check for evidence of unexpected seepage, header damage or excessive construction water flows Tailings Impoundments Check tailing water reclaim pumps Check for minimum ten (10) feet of freeboard During periods when process solutions are being blended with tailings reclaim water, pit water and tailings and routed to the Mammoth and Upper Mammoth Tailings Storage Facilities, the blended mix of solutions and tailings should be tested and the pH adjusted as needed to ensure chemical compatibility with the impoundment and for future operational re-use of solutions.	Daily	As per Section 2.6.2.1.2
Sycamore Tailings Impoundment (D-30), and Sycamore Reclaim Pond	Daily during operational use, and following precipitation events measuring at least one (1) inch in a 24-hour period: a) Visually inspect and maintain a minimum of four (4) feet of freeboard. b) Check for erosion beyond that due to normal deposition c) Check for evidence of unexpected seepage, header damage or excessive construction water flows.		As per Section 2.6.2.1.2

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING			
Facility Name & Number	**Operational Requirements[8]**	**Inspection Frequency**	**Reporting Frequency**
	Table 9: PERMITTED FACILITIES AND BADCT Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period: Visually inspect and take appropriate action if any evidence of: a) Tailings dam deformation, including surface cracks, slides, sloughs, seeps, erosion features or differential settlement-affecting dam stability; b) Excessive erosion or accumulation of debris in conveyances and diversions; and Impairment of access; c) Monitor piezometers and inclinometers along the tailing dam to maintain phreatic surface within safe operating limits and to ensure dam safety. d) At pump installations, inspect pumps, valves and structures for pump operation and structural integrity.		
Non-Storm Water Impoundments			
Mulholland Seepage Collection Pond (D-2)	**Weekly:** Visually inspect and take appropriate action if: Seepage from the Mulholland Tailings Impoundment into the seepage pond exceeds the pumping capacity of 1,175 gpm. **Monthly and following precipitation events measuring at least one (1) inch in a 24-hour period:** Visually inspect and take appropriate action if any evidence of: a) Instability, including surface cracks or unusual differential settlement, b) Seepage through surface cracks along the embankment; c) Excessive erosion or accumulation of debris in conveyances and diversions; and d) Impairment of access; e) At pump installations, inspect pumps, valves and structures for pump operations and structural integrity.	See Operational Requirements	As per Section 2.6.2.1.2
Sycamore Seepage Collection Pond SCPs (A and B) (D-31 and D-32)	**Weekly:** Visually inspect and take appropriate action if: Seepage from the STSF into the seepage pond exceeds the pumping capacity. Check for minimum 1 foot of freeboard **Monthly and following precipitation events measuring at least one (1) inch in a 24-hour period:**		As per Section 2.6.2.1.2

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING			
Facility Name & Number	**Operational Requirements[8]**	**Inspection Frequency**	**Reporting Frequency**
	Visually inspect and take appropriate action if any evidence of: a) Instability, including surface cracks or unusual differential settlement, b) Seepage through surface cracks along the embankment; c) Excessive erosion or accumulation of debris in conveyances and diversions; and d) Impairment of access; e) At pump installations, inspect pumps, valves and structures for pump operations and structural integrity.		
Last Chance Pond (D-3)	**Quarterly and following precipitation events measuring at least one (1) inch in a 24-hour period:** Visually inspect and take appropriate action if any evidence of: a) Excessive erosion or accumulation of debris in conveyances and diversions; and b) Impairment of access; c) At pump installations, inspect pumps, valves and structures for pump operation and structural integrity. **Annually:** Remove excess sediments/sludge from the impoundment as needed to maintain at least 80 percent of designed capacity.	See Operational Requirements	As per Section 2.6.2.1.2
Mammoth Tailings Seepage Collection Pond (D-25)	Visually inspect and take appropriate action if any evidence of: a) Visible leaks or seepage b) Check seepage return pumps for proper function c) Check for water level below weir d) Check for minimum 1 foot of freeboard e) Check for evidence of seepage f) Inspect Seepage Collection Pumpback Dam for visible leaks or structure failure g) Inspect Seepage Pump (below Pumpback Dam) for overflow and check down-hole pump operation	Daily	As per Section 2.6.2.1.2
South Waste Rock Disposal Facility (D-26)	Visually inspect and take appropriate action if any evidence of: Dump or stockpile deformation, including surface cracks, slides, sloughs, or differential settlement affecting slope stability.	Monthly	As per Section 2.6.2.1.2
Butte Stockpile (D-33)	**Monthly:** Visually inspect and take appropriate action if any evidence of: Dump or stockpile deformation, including surface cracks, slides, sloughs, or differential settlement affecting slope stability	See Operational Requirements	As per Section 2.6.2.1.2

Table 10: FACILITY INSPECTION AND OPERATIONAL MONITORING			
Facility Name & Number	**Operational Requirements[8]**	**Inspection Frequency**	**Reporting Frequency**
	Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: Visually inspect and take appropriate action if any evidence of: Impairment or erosion of downgradient sediment control structure DG-2, and upgradient stormwater impoundment (UG-3); **Annually:** Remove excess sediments from downgradient sediment control structure DG-2, and upgradient stormwater impoundment (and UG-3) as needed to maintain at least 80 percent of designed capacity. Note: DG-2 will be buried by the Butte Stockpile expansion. The COS base will capture runoff and sediment from within the small drainage basin remaining between the extended Butte Stockpile and the COS Base and will provide the same function as DG-2		
Ore Stockpiles			
Coarse Ore Stockpile (COS) (D-34)	**Monthly:** Visually inspect and take appropriate action if any evidence of: Stockpile deformation, including surface cracks, slides, sloughs, or differential settlement affecting slope stability. **Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period:** Visually inspect and take appropriate action if any evidence of: Impairment or erosion of downgradient sediment control structures (COS-DG-1 through COS-DG-5), and Check for minimum of 2 feet of freeboard in the Coarse Ore Stockpile Runoff Collection Pond **Annually:** Remove excess sediments from downgradient sediment control structures (COS-DG-1 through COS-DG-5).	See Operational Requirements	As per Section 2.6.2.1.2
Waste Management Facilities Within the PCCZ			
Waste Management Facility	At least quarterly, and after every significant rainfall event, the leachate evaporation pond located in the northwest corner of the CDL shall be inspected to ensure sediment buildup, evidence of seepage, cracking, piping, sloughing, or sliding do not occur. Sediment shall be removed from the pond as necessary to ensure adequate capacity. A significant rain event shall be defined as 0.50 inches, or greater, of precipitation within a 24-hour period.	Quarterly and after a significant rainfall event	As per Section 2.6.2.1.2

Table 11: LEAK COLLECTION AND REMOVAL SYSTEM MONITORING				
The Action Leakage Rate (ALR) or Rapid and Large Leakage Rate (RLLR) is exceeded when the amount of leakage pumped from the sump for the pond is greater than the applicable quantity below. An exceedance of the ALR or the RLLR is not a violation of the permit unless the permittee fails to perform as required under Section 2.7.2.4 or Section 2.7.2.5, as applicable.				
LCRS Sump	**Parameter**	**ALR in gallons per day (gpd)**	**RLLR in gallons per day (gpd)**	**Monitoring Frequency**
Raffinate Pond (D-13)	Liquid Pumped	223	670	Weekly
PLS Surge Pond (D-14)	Liquid Pumped	279	836	Weekly
Strong PLS Pond (D-2)	Liquid Pumped	515	1,545	Weekly

Table 12: PARAMETERS FOR AMBIENT GROUNDWATER MONITORING FOR ALL POC WELLS		
This table is being provided in the event that it becomes necessary to install additional POC wells; SMRF reporting is not required for ambient groundwater monitoring results		
Depth to Water Level (feet bgs)	Potassium[9]	Nickel
Water Level Elevation (feet amsl)	Sodium	Selenium
Temperature – field (°F)	Iron	Thallium
pH – field and lab (S.U.)	Aluminum	Zinc
Field Specific Conductance (µmhos/cm)	Antimony	Free Cyanide
Total Dissolved Solids – lab	Arsenic	Adjusted Gross Alpha Activity (pCi/L)[10]
Total Alkalinity[11]	Barium	Radium 226 (pCi/L)
Bicarbonate	Beryllium	Radium 228 (pCi/L)
Carbonate	Cadmium	Carbon Disulfide
Sulfate	Cobalt	Benzene
Chloride	Copper	Toluene
Fluoride	Lead	Ethylbenzene
Nitrate+Nitrite	Manganese	Total Xylenes
Calcium	Mercury	TPH
Magnesium	Molybdenum	

[9] Metals must be analyzed as dissolved metals.
[10] The adjusted gross alpha particle activity is the gross alpha particle activity, including radium 226, minus radon and total uranium activity (the sum of the uranium 238, uranium 235 and uranium 234 isotopes).
[11] All parameters are in milligrams per liter (mg/L) unless otherwise noted.

Table 13: QUARTERLY COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS								
Parameter	**CMW-609**		**CMW-610**		**CMW-611**		**020R**	
	AQL[12]	**AL[13]**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Depth to Water[14]	Monitor[15]	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation[16]	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH[17]	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance[18]	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature - Field[19]	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Fluoride	6.0[20]	None	7.45	None	4.0	3.2	4.0	3.2
Nitrate + Nitrite	10	8	10	8	10	8	10	8
Arsenic[21]	0.050	0.040	0.360	None	0.050	0.040	0.050	0.040
Cadmium	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Chromium	0.10	0.08	0.40	None	0.10	0.08	0.10	0.08
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	0.10	0.08	1.58	None	0.10	0.08	0.10	0.08
Selenium	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Table 13: QUARTERLY COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS (Continued)								
Parameter	**803**		**283**		**613**		**810R**	
	AQL[22]	**AL[23]**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Depth to Water	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance	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
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Fluoride	4.0	3.2	4.0	3.2	4.0	3.2	4.0	3.2
Nitrate + Nitrite	10	8	10	8	10	8	10	8

[12] Aquifer Quality Limit
[13] Alert Level
[14] In feet bgs
[15] Monitoring is required, but no AQL or AL is established in the permit.
[16] In feet amsl
[17] Standard Units
[18] µmhos/cm
[19] °F
[20] All concentrations are in milligrams per liter (mg/L) unless otherwise specified.
[21] Metals will be analyzed as dissolved metals
[22] Aquifer Quality Limit
[23] Alert Level

Table 13: QUARTERLY COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS (Continued)								
Arsenic	0.050	0.040	0.050	0.040	0.050	0.040	0.050	0.040
Cadmium	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Chromium	0.10	0.08	0.10	0.08	0.10	0.08	0.10	0.08
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	0.10	0.08	0.10	0.08	0.10	0.08	0.10	0.08
Selenium	0.050	0.040	0.050	0.040	0.050	0.040	0.050	0.040
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Table 13: QUARTERLY COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS (Continued)								
Parameter	SYC-1		SYC-2		SYC-3		SYC-4	
	AQL[24]	**AL[25]**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Depth to Water	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance	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
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Fluoride	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Nitrate + Nitrite	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Arsenic	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Cadmium	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Chromium	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Selenium	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

[24] Aquifer Quality Limit
[25] Alert Level

Table 14: BIENNIAL COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS								
Parameter	**CMW-609**		**CMW-610**		**CMW-611**		**020R**	
	AQL[26]	**AL[27]**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Total Alkalinity	Monitor[28]	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Hydroxide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chloride[29]	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
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	0.006[30]	0.0048	0.006	0.0048	0.006	0.0048	0.006	0.0048
Barium	2.0	1.6	2.0	1.6	2.0	1.6	2.0	1.6
Beryllium	0.004	0.0032	0.004	0.0032	0.004	0.0032	0.004	0.0032
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	0.050	0.040	0.050	0.040	0.050	0.040	0.050	0.040
Mercury	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Thallium	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Molybdenum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Adjusted Gross Alpha Activity[31]	15	12	15	14	15	12	15	12
Radium226 + Radium228[32]	6.72	None	5.0	4.07	5.0	4.74	5.0	4.17
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Free Cyanide	0.2	0.16	0.2	0.16	0.2	0.16	0.2	0.16
Carbon Disulfide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
TPH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Toluene	1	0.8	1	0.8	1	0.8	1	0.8
Ethylbenzene	0.7	0.56	0.7	0.56	0.7	0.56	0.7	0.56
Total Xylenes	10	8	10	8	10	8	10	8

[26] Aquifer Quality Limit
[27] Alert Level
[28] Analysis required but no AQL or AL established in the permit
[29] Metals will be analyzed as dissolved metals.
[30] All concentrations are in milligrams per liter (mg/L) unless otherwise specified
[31] pCi/L. If the gross alpha particle activity is greater than the AL or AQL, then test for and report adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha particle activity including radium226, minus radon and total uranium (the sum of the uranium 238, 235 and 234 isotopes).
[32] pCi/L

Table 14: BIENNIAL COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS (Continued)								
Parameter	**803**		**283**		**613**		**810R**	
	AQL[33]	**AL[34]**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Total Alkalinity	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	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
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
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Barium	2.0	1.6	2.0	1.6	2.0	1.6	2.0	1.6
Beryllium	0.004	0.0032	0.004	0.0032	0.004	0.0032	0.004	0.0032
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	0.050	0.040	0.050	0.040	0.050	0.040	0.050	0.040
Mercury	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Thallium	0.002	0.0016	0.002	0.0016	0.002	0.0016	0.002	0.0016
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Molybdenum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Adjusted Gross Alpha Activity	15	12	20.4	None	28.7	None	42.1	None
Radium226 + Radium228	5.0	4.0	5.0	4.0	5.0	4.0	5.2	None
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Free Cyanide	0.2	0.16	0.2	0.16	0.2	0.16	0.2	0.16
Carbon Disulfide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
TPH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.004
Toluene	1	0.8	1	0.8	1	0.8	1	0.8
Ethylbenzene	0.7	0.56	0.7	0.56	0.7	0.56	0.7	0.56
Total Xylenes	10	8	10	8	10	8	10	8

[33] Aquifer Quality Limit
[34] Alert Level

Table 14: BIENNIAL COMPLIANCE GROUNDWATER MONITORING AND REPORTING REQUIREMENTS (Continued)								
Parameter	SYC-1		SYC-2		SYC-3		SYC-4	
	AQL[35]	**AL[36]**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Total Alkalinity	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	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
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
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Barium	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Beryllium	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Mercury	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Thallium	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Molybdenum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Adjusted Gross Alpha Activity	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Radium226 + Radium228	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Free Cyanide	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Carbon Disulfide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
TPH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Toluene	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Ethylbenzene	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Total Xylenes	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

[35] Aquifer Quality Limit
[36] Alert Level

Table 15: QUARTERLY GROUNDWATER MONITORING OF DATA CONTINUITY WELLS								
Parameter	MW-SC-01		MW-SC-02		MW-SC-03		MW-SC-04	
	AQL[37]	**AL**[38]	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Depth to Water	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field pH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance	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
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Fluoride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate + Nitrite	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Arsenic	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cadmium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chromium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Selenium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

Table 15: QUARTERLY GROUNDWATER MONITORING OF DATA CONTINUITY WELLS (Continued)										
Parameter	MW-SC-05		MW-SC-06		MW-SC-07		MW-SC-08		MW-SC-09	
	AQL[39]	**AL**[40]	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**	**AQL**	**AL**
Depth to Water	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Water Level Elevation	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Field pH	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Field Specific Conductance	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Temperature – Field	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	
Fluoride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	

[37] Aquifer Quality Limit
[38] Alert Level
[39] Aquifer Quality Limit

Table 15: QUARTERLY GROUNDWATER MONITORING OF DATA CONTINUITY WELLS (Continued)									
Nitrate + Nitrite	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Arsenic	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cadmium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chromium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Selenium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

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:

Amendment Application, APP No. P-105258, Bagdad Mine Sycamore Tailings Storage Facility, Bagdad, Arizona. Prepared by Golder Associates Inc. Dated June 22, 2021.

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:

the filing of bankruptcy by the permittee; or

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

6.7. Monitoring and Records

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

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

6.8. Inspection and Entry

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

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

6.9. Duty to Modify

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

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

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

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

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

7.0 ADDITIONAL PERMIT CONDITIONS

7.1. Other Information

[A.R.S. § 49-243(K)(8)]

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

7.2. Severability

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

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

7.3. Permit Transfer

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