

**72989STATE OF ARIZONA  
AQUIFER PROTECTION PERMIT NO. P-100514  
PLACE ID # 5683, LTF # 72989  
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 Excelsior Mining JCM, Inc. (EMJCM) to operate the Johnson Camp Mine located near the Town of Dagoon, Cochise County Arizona, over groundwater of the Willcox Groundwater Basin, within Township 15 South, Range 22 East, and all or parts of Sections 22 to 27, 35 and 36, of the Gila and Salt River Base Line and Meridian.

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

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

**1.1 Permittee Information**

**Facility Name:** Johnson Camp Mine  
**Facility Address:** 3048 N. Seven Dash Road  
Dagoon, AZ 85609  
**Annual Registration Fee**  
**Flow Rate:** 8,200,000 gallons per day (gpd)

**Permittee:** Excelsior Mining JCM, Inc.  
**Permittee Address:** 2999 N. 44<sup>th</sup> Street, Suite 300  
Phoenix, AZ 85018

**Facility Contact:** Rebecca Sawyer  
**Emergency Phone No.:** 520-368-1772

**Latitude/Longitude:** 32° 05' 45" N/110° 04' 30" W  
**Legal Description:** Township 15 South, Range 22 East, and all or parts of Sections 22 to 27, 35 and 36, of the Gila and Salt River Base Line and Meridian.

**1.3 Authorizing Signature**

\_\_\_\_\_  
**Trevor Baggio, Director, Water Quality Division**  
**Arizona Department of Environmental Quality**  
Signed this \_\_\_\_\_ day of \_\_\_\_\_, 2019

**THIS AMENDMENT SUPERSEDES ALL PREVIOUS AMENDMENTS**

## **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)]**

Johnson Camp Mine (JCM) is an open pit base metal mining/extraction operation located near the town of Dragoon in Cochise County, Arizona, approximately 60 miles east of Tucson. The mine property is located within Township 15 South, Range 22 East, and all or parts of Sections 22, 23, 24, 25, 26, 27, 34, 35, and 36 (Gila and Salt River Base Line and Meridian). The property consists of multiple patented, unpatented, and fee simple mining claims totaling approximately 3,092 acres, or about 4.8 square miles. The mine is located in the southern half of the property. Access to the property is via Exit 322 off of Interstate Highway 10 and approximately one mile north on Johnson Road, which becomes Seven Dash Road near the mine entrance.

The mining history of the property dates to the 1880s, with intermittent underground and open pit mining activity. Until recently, JCM produced cathode copper through leaching and solvent extraction/electrowinning (SX/EW) methods. Mine facilities include:

- Two inactive open pits (the Burro Pit and the Copper Chief Pit)
- A waste rock stockpile currently being processed for aggregate
- Three heap leach pads
- Four process solution impoundments
- Several non-stormwater ponds
- A SX/EW plant
- Former crushing, agglomeration, and conveying systems
- Supporting infrastructure, including offices and warehouses, repair and maintenance facilities, tanks, ponds, piping, vehicles, and miscellaneous equipment

The JCM property was acquired by Nord Resources Corporation (Nord) in 1999. Nord expanded and upgraded the mine facilities and actively mined the Burro and Copper Chief pits in 2009 and 2010. Nord ceased mining activities in July 2010 and continued to leach the existing heap leach pads and operate the SX/EW plant until October 2015. Current activities consist of site maintenance and security, and circulating process solution through the heap leach pads to maintain freeboard in the pregnant leach solution (PLS) and raffinate ponds and to allow process solution to evaporate. The property was placed into receivership in November 2014. EMJCM entered into an agreement to purchase the property with the Receiver, Christopher Linscott of Keegan, Linscott & Kenon, P.C., in September 2015. The sale was approved in October 2015 and closed in December 2015.

Planned activities consist of use of the ponds to contain process solution from the Gunnison Copper Project (APP No. 511633). During the Stage 1 operations of the Gunnison Copper Project, PLS will be pumped to the JCM impoundments located (APP No. P-100514) for processing at the SX/EW plant. Raffinate will be stored, re-acidified, and pumped back to the Gunnison Copper Project wellfield.

#### **2.1.1 Permitted Discharging Facilities**

JCM's facility identification number is shown in parentheses for each facility below:

##### **2.1.1.1 Waste Rock Stockpile (JCM 003)**

This facility is an existing facility containing waste rock from the Burro and Copper Chief open pits. The facility currently covers 84.8 acres east-northeast of the Burro Pit. It was constructed from overburden materials stripped during open pit development. Stockpile materials consist primarily of sedimentary, metamorphic, and igneous rock types of negligible economic mineralization. The waste rock has not been subject to chemical or leaching agents or processes. The waste rock is currently being mined for aggregate/decorative rock.

**2.1.1.2 Leach Pad #1 (JCM 008)**

This facility is a leach stockpile located southwest of Burro Pit and east-southeast of Leach Pad #2. Constructed by Cyprus Mines Corporation in 1975, it currently occupies 35.5 acres containing approximately 11.8 million tons.

**2.1.1.3 Leach Pad #2 (JCM 013)**

This facility is a leach stockpile located west-northwest and adjacent to Leach Pad #1 and east-southeast and adjacent to Leach Pad #3. Constructed by Cyprus Mines Corporation in 1981-1984, it currently occupies 39 acres containing approximately 10.3 million tons.

**2.1.1.4 Leach Pad #3 (JCM 015)**

This facility is located west-northwest and adjacent to Leach Pad #2. Constructed by Arimetco during 1993-1994, it currently occupies 28.6 acres containing approximately 9.5 million tons.

**2.1.1.5 Solution Pond #1 (JCM 009)**

This facility is located east-southeast of Leach Pad #1 and has been reconstructed as a double-lined pond with a leak collection and removal system with a surface area of 2.4 acres. This pond will be partitioned into two cells with a lined earthen berm thus forming Draindown Cell #1 to contain draindown and stormwater runoff from Leach Pad #1, and Solution Cell #1 which will be used to contain raffinate, PLS and hydraulic control water from the Gunnison Copper Project at the maximum rate of up to 5,000 gallons per minute (gpm) on an as needed basis. The current existing leak collection and removal system (LCRS) will remain intact and it will serve Solution Cell #1.

**2.1.1.6 Intercept Sump (Old PLS Pond #2) (Nord 014)**

This facility is located east-southeast of Leach Pad #2 and north of Leach Pad #1 in the invert (lowest point) of old PLS Pond #2. It is considered to be part of the design of Leach Pad #2. This facility is currently covered by Leach Pad #1/#2, and it will be closed concurrently when Leach Pad #1/#2 is granted APP closure. The capacity of the sump is estimated to be 8.3 million gallons and consists of the void space in the Leach Pad #1/#2 backfill.

**2.1.1.7 Solution Pond #3 (JCM 016)**

This facility is located east-southeast of Leach Pad #2 and has been reconstructed as a double-lined pond with a leak collection and removal system with a surface area of 78,905 square feet. This pond will be partitioned into two cells with a lined earthen berm, thus forming Draindown Cell #3 to contain draindown and stormwater runoff from Leach Pad #3, and Solution Cell #3 which will be used to contain PLS from the Gunnison Copper Project at the maximum rate of up to 5,000 gpm on an as needed basis. The current existing LCRS will remain intact and it will serve Solution Cell #3.

**2.1.1.8 Raffinate Pond #1 (JCM 029)**

This facility is located southwest of the SX/EW Plant. It receives solution discharged from the Solvent Extraction (SX) Plant following copper recovery from PLS and assay wastewater from the Main Laboratory. Raffinate Pond #1 has been reconstructed as a double-lined pond with a LCRS with a surface area of 30,456 square feet with an estimated capacity of 1.7 million gallons. Raffinate Pond #1 will be connected to the ILS Pond via a pipeline. Solutions from this facility will be re-acidified and pumped to the Gunnison Copper Project wellfield. On an as needed basis, raffinate may be routed to Solution Cell #1.

**2.1.1.9 ILS Pond (JCM 030)**

This facility is located southwest of Raffinate Pond #1 and northeast of the Intercept Sump. / This pond will receive raffinate from Raffinate Pond #1 via a pipeline connecting the two ponds. The ILS Pond has been reconstructed as a double-lined pond with a LCRS with a surface area of 25,830 square feet with a capacity of 1.6 million gallons.

**2.1.1.10 SWCP #051 (JCM 051)**

This facility receives stormwater runoff from the Waste Rock Stockpile and is located between the stockpile and the main entrance road. It is clay lined and serves to minimize stormwater runoff from leaving the mine site.

**2.1.1.11 SWCP #052 (JCM 052)**

This facility receives stormwater runoff from the Waste Rock Stockpile and is located between the stockpile and the main entrance road. It is clay lined and serves to minimize stormwater runoff from leaving the mine site.

**2.1.1.12 SWCP #053 (JCM 053)**

This facility receives stormwater runoff from the Waste Rock Stockpile and is located between the stockpile and the main entrance road. It is clay lined and serves to minimize stormwater runoff from leaving the mine site.

**2.1.1.13 SWCP #054 (JCM 054)**

This facility receives stormwater runoff from the Waste Rock Stockpile. It is located east of the main entrance road and just inside the eastern property boundary. It is clay lined and serves to minimize stormwater runoff from leaving the mine site.

**2.1.1.14 SWCP #055 (JCM 055)**

This facility receives stormwater runoff from the Waste Rock Stockpile. It is located east of the main entrance road and just inside the eastern property boundary. It is clay lined and serves to minimize stormwater runoff from leaving the mine site.

**2.1.1.15 SWCP #056 (JCM 056)**

This facility receives stormwater runoff from the Waste Rock Stockpile. It is located east of the main entrance road and just inside the eastern property boundary. It is clay lined and serves to minimize stormwater runoff from leaving the mine site.

**2.1.1.16 SWCP #057 (JCM 057)**

This facility receives stormwater runoff from the southwestern side of the heap leach pads. It is located west of the leach pads and east of the western property boundary. It shall be lined with a single 80-mil HDPE liner on a minimum of 6 inches of prepared subgrade.

**2.1.1.17 SWCP #058 (JCM 058)**

This facility receives stormwater runoff from the southwestern side of the heap leach pads. It is located west of the leach pads and east of the western property boundary. It shall be lined with a single 80-mil HDPE liner on a minimum of 6 inches of prepared subgrade.

**2.1.1.18 SWCP #59 (JCM 059)**

This facility receives non-stormwater runoff from the northeastern side of the heap leach pads. It is clay lined and serves to minimize stormwater runoff from leaving the mine site. This facility is currently covered by Leach Pad #3, and it will be closed concurrently when Leach Pad #3 is granted APP closure.

**2.1.1.19 SWCP #60 (JCM 060)**

This facility receives non-stormwater runoff from the northeastern side of the heap leach pads. It is clay lined and serves to minimize stormwater runoff from leaving the mine site. This facility is currently covered by Leach Pad #3, and it will be closed concurrently when Leach Pad #3 is granted APP closure.

**2.1.1.20 Secondary Containment Pond #1 (JCM 011)**

This facility is an unlined impoundment connected to Solution Pond #1 by a geomembrane

lined ditch. The facility formerly served as an emergency overflow impoundment to receive PLS infrequently from Solution Pond #1 and/or non-stormwater runoff. A water balance demonstration was provided under an amendment (LTF 65043), and it was determined that this facility is no longer required. Closure activities shall be completed at the time of APP closure for the entire facility.

**2.1.1.21 Secondary Containment Pond #2 (JCM 012)**

This facility formerly served as an emergency overflow impoundment down gradient from Secondary Containment Pond #1 and received only non-stormwater runoff on an infrequent basis. It is clay lined. A water balance demonstration was provided under an amendment (LTF 65043), and it was determined that this facility is no longer required. Closure activities shall be completed at the time of APP closure for the entire facility.

The site includes the following permitted discharging facilities:

Facility No.	Facility	Latitude	Longitude
<b>Waste Rock Stockpiles</b>			
1	Waste Rock Stockpile (JCM 003)	32° 05' 54'' N	110° 03' 36'' W
<b>Leach Pads</b>			
2	Leach Pad #1 (JCM 008)	32° 05' 45'' N	110° 04' 07'' W
3	Leach Pad #2 (JCM 013)	32° 05' 55'' N	110° 04' 29'' W
4	Leach Pad #3 (JCM 015)	32° 06' 01'' N	110° 04' 26'' W
<b>PLS and Raffinate Ponds</b>			
5	Solution Pond #1 (JCM 009)	32° 05' 42'' N	110° 03' 54'' W
6	Intercept Sump (JCM 014; buried under Leach Pad #1/#2)	32° 05' 51'' N	110° 04' 15'' W
7	Solution Pond #3 (JCM 016)	32° 05' 57'' N	110° 04' 14'' W
8	Raffinate Pond #1 (JCM 029)	32° 05' 56'' N	110° 04' 11'' W
9	ILS Pond (JCM 030)	32° 05' 54'' N	110° 04' 12'' W
<b>Stormwater Ponds</b>			
10	SWCP #051 (JCM 051)	32° 05' 39'' N	110° 03' 23'' W
11	SWCP #052 (JCM 052)	32° 05' 44'' N	110° 03' 22'' W
12	SWCP #053 Shaft(JCM 053)	32° 05' 47'' N	110° 03' 22'' W
13	SWCP #054 (JCM 054)	32° 05' 58'' N	110° 03' 19'' W
14	SWCP #055 (JCM 055)	32° 06' 01'' N	110° 03' 25'' W
15	SWCP #056 (JCM 056)	32° 06' 05'' N	110° 03' 23'' W
16	SWCP #057 (JCM 057)	32° 05' 53'' N	110° 04' 35'' W
17	SWCP #058 (JCM 058)	32° 05' 52'' N	110° 04' 34'' W
18	SWCP #59 (JCM 059; buried under Leach Pad #3)	32° 06' 06'' N	110° 04' 27'' W
19	SWCP #60 (JCM 060; buried under Leach Pad #3)	32° 06' 06'' N	110° 04' 24'' W
<b>Non-Stormwater Ponds</b>			

Facility No.	Facility	Latitude	Longitude
20	Secondary Containment Pond #1 (JCM 011)	32° 05' 41" N	110° 03' 40" W
21	Secondary Containment Pond #2 (JCM 012)	32° 05' 33" N	110° 03' 23" W

**Annual Registration Fee [A.R.S. § 49-242 and A.A.C. R18-14-104]**

The annual registration fee for this permit is payable to ADEQ each year. The annual registration fee flow rate is established in permit Section 1.1. If the facility is not yet constructed or is incapable of discharge at this time, the permittee may be eligible for reduced fees under the rule. Send all correspondence requesting reduced fees to the Water Quality Division of ADEQ. Please reference the permit number, LTF number and why reduced fees are requested under the rule.

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

The permittee has demonstrated financial capability under 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 estimated closure and post-closure cost is \$432,476. The financial assurance mechanism was demonstrated through a performance surety bond as per A.A.C. R18-9-A203(C)(2).

**2.2 Best Available Demonstrated Control Technology [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]**

**2.2.1 Engineering Design**

The facilities list is provided in Section 2.1.1 and BADCT descriptions are included in Section 4.1, Table 1.

**2.2.2 Site-specific Characteristics**

Not applicable

**2.2.3 Pre-operational Requirements**

Not applicable

**2.2.4 Operational Requirements**

A description of required inspections for discharging facilities is presented in Section 4.2, Table 1. If damage is identified during an inspection that could cause or contribute to a discharge, proper repairs shall be promptly performed. The corrective action requirements are provided in Section 2.6.6.

**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, accidental spills, or other unauthorized discharges. Liner failure in a single-lined impoundment is any condition that would result in leakage exceeding 550 gallons per day per acre. The discharge limitations in this section are not applicable to any discharge caused by precipitation in excess of a single 100-year/24-hour storm event or process overflow during a power outage exceeding 24 hours in duration.

**2.3.1 Discharge Limitations for the Heap Leach Facility**

The drainage system for the Heap Leach Facility (Leach Pad #1, Leach Pad #2, and Leach Pad #3), shall be operated in a manner to ensure adequate capacity to manage draindown solutions and stormwater runoff and direct it to the designated impoundments (ponds). Residual heap materials and fluids shall not leave the heap liner or overtop the berms.

**2.3.2 Discharge Limitations for the Waste Rock Stockpile**

Runoff from the Waste Rock Stockpile shall be contained in downgradient impoundments and the Burro Pit as described in Section 4.1, Table 1. Waste rock characterization shall be conducted

according to the approved Revised Waste Rock Characterization Plan to assess if the waste rock is potentially acid generating. The Waste Rock Stockpile and associated runoff impoundments shall be operated and inspected according to Section 4.2, Table 1. Results of waste rock characterization shall be submitted in a Waste Rock Characterization Report in accordance with Compliance Schedule Item (CSI) No. 5 (Section 3.0).

**2.3.3 Discharge Limitations for Stormwater Impoundments**

The permitted stormwater impoundments are authorized to receive stormwater runoff and run-on, and process solutions as a result of storm events or process upset events.

**2.3.4 Discharge Limitations for Process Solution Impoundments and Cells**

The four process solution impoundments/cells (Solution Cell #1, Solution Cell #3, Raffinate Pond #1, and the ILS Pond) are designed and authorized to receive PLS, raffinate, stormwater, and other process solutions from JCM and the Gunnison Copper Project.

**2.3.5 Discharge Limitations for Draindown Cells**

The two draindown cells (Draindown Cell #1 and Draindown Cell #3) are designed and authorized to receive draindown and stormwater runoff from the Heap Leach Facility (Leach Pad #1, Leach Pad #2, and Leach Pad #3).

**2.4 Point(s) of Compliance [A.R.S. § 49-244]**

The POCs are established by the following monitoring locations:

**Table 2.4-1 – POC Wells**

Well #	Descriptive Location	ADWR #	Latitude	Longitude	Screen Interval
CW-1	East of the Waste Rock Stockpile	TBD <sup>1</sup>	32° 05' 44" N	110° 03' 17" W	TBD
CW-2	East of the Waste Rock Stockpile	TBD	32° 06' 00" N	110° 03' 14" W	TBD
CW-5	East of Secondary Containment Pond #1	TBD	32° 05' 33" N	110° 03' 15" W	TBD
CW-6	East of the Waste Rock Stockpile	TBD	32° 06' 17" N	110° 03' 30" W	TBD

- TBD = Wells to be installed per the Compliance Schedule (Section 3.0). The coordinates given are estimated locations given in degrees, minutes and seconds. Upon completion of installation, monitoring requirements for each POC well are listed in Section 4.2, Tables 3 and 4.

The Director may amend this permit to designate additional POCs, if information on groundwater gradients or groundwater usage indicates the need.

**2.4.1 Data Continuity Wells**

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

**Table 2.4-2 – Data Continuity Wells**

DCW ID/ Description	Well Location	ADWR No.	Latitude	Longitude	Screen Interval
Durham	Southwest of Heap Leach Pad #1	55-595927	32° 05' 37" N	110° 04' 08" W	168-178, 198-208, 228-268
Hill	South of Heap Leach Pad #2	55-563955	32° 05' 44" N	110° 04' 18" W	115-175
Saddle	South of Heap Leach Pad #2	55-561563	32° 05' 51" N	110° 04' 35" W	60-120

Groundwater monitoring is required for the DCWs as per Section 4.2, Tables 5 and 6.

**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. 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 Facility / Operational Monitoring**

The inspections and operational monitoring required under this permit are described in Section 4.2, Table 1.

**2.5.2 Groundwater Monitoring and Sampling Protocols**

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).

**2.5.2.1 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 2 sampling events, or any other event, a replacement POC well shall be constructed and installed upon approval by ADEQ. If the replacement well is 50 feet or less from the original well, the alert levels (ALs) and/or aquifer quality limits (AQLs) calculated for the designated POC well shall 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.

**2.5.2.2 Point of Compliance Well Installation**

Four monitor wells designated as POC wells are listed in Section 2.4, Table 1. Installation of the four POC wells, CW-1, CW-2, CW-5 and CW-6, will depend on the results of waste rock characterization, as required by CSI No. 5 in the Compliance Schedule (Section 3.0). Each POC well must be constructed to monitor groundwater quality in the uppermost aquifer. Detailed geologic and well construction logs for each well must be submitted to the Groundwater Protection Value Stream, within 60 days of well installation. Where identification is possible, the logs should note the depth at which groundwater is first encountered in each well. If a well screen greater than 60 feet in length is installed in a well, the permittee must provide justification in the log for the extended screen length.

**2.5.2.3 Ambient Groundwater Quality Monitoring for Point of Compliance Wells**

Eight consecutive quarterly rounds of groundwater sampling must be completed to establish existing ambient groundwater quality conditions for evaluating any short-term or long-term changes in water quality. Each quarterly groundwater sample shall be analyzed for the parameters listed in Section 4.2, Table 2.

**2.5.2.4 Alert Levels for Point of Compliance Wells**

ALs shall be calculated for all contaminants with an established numeric AWQS for each POC. Within 90 days of the receipt of the laboratory analyses for the final month of the ambient groundwater monitoring period for each POC well referenced in Section 4.2, Table 2, 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 2, to be established for each 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 percent 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 8 consecutive quarterly sample events. The permittee shall not use more than 12 sample rounds in the calculation of a parameter.
2. Any data where the Practical Quantitation Level (PQL) exceeds 80 percent 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 percent of the samples for a specific parameter are non-detect, then the AL shall be set at 80 percent of the AWQS.
5. If the calculated AL for a specific constituent and well is less than 80 percent of the AWQS, the AL shall be set at 80 percent of the AWQS for that constituent in that well.

**2.5.2.5 Aquifer Quality Limits for POC Wells**

For each of the monitored analytes for which a numeric AWQS has been adopted and that has exceeded the AWQS, 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.

**2.5.2.6 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 initial ambient groundwater sampling period. For quarterly compliance monitoring, the permittee shall analyze groundwater samples for the parameters listed in Section 4.2, Table 3. 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 4 shall be analyzed. Please note that the biennial sampling event would coincide with a quarterly sampling event, therefore the sample(s) shall be analyzed for the parameters listed in Section 4.2 Table 3 and Table 4 during the combined quarterly and biennial sampling event.

The permittee may submit a written request to the APP Program to modify, reduce or delete a monitoring parameter in either the Quarterly or the Biennial Compliance Groundwater

Monitoring Tables in accordance with the following criteria:

1. The parameter in question has not been detected for at least two consecutive biennial or four consecutive quarterly monitoring periods. The PQL reported by the laboratory shall be less than 80 percent of the established numeric aquifer water quality standard, and shall not be greater than three times the laboratory's method detection limit for that pollutant.
2. The permittee shall submit a written report indicating the parameter(s) proposed for modification, accompanied by supporting data, including laboratory analytical reports and quality assurance/quality control data to the Groundwater Protection Value Stream for review and approval.
3. Upon review, the Groundwater Protection Value Stream will determine if the modification(s) requested is justified and approved. The respective changes, if approved, will require an amendment to the permit.

### **2.5.3 Data Continuity Wells**

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).

#### **2.5.3.1 Data Continuity Well Replacement**

In the event that one or more of the designated DCWs should become unusable or inaccessible due to damage, insufficient water in the well for more than 2 sampling events, or any other event, a replacement DCW well shall be constructed and installed upon approval by ADEQ.

### **2.5.4 Discharge Monitoring**

Discharge monitoring shall be conducted on a one time basis for the PLS pumped from the Gunnison Copper Project at Solution Pond #3, and for the raffinate from the SX/EW plant at Raffinate Pond #1 for the parameters listed in Section 4.2, Table 8, within 120 days of start-up of the injection and recovery operations at the Gunnison Copper Project, per CSI No. 9 of the Compliance Schedule in Section 3.0, in order to allow for accurate representation of process solutions. Results of the discharge monitoring shall be submitted to the Groundwater Protection Value Stream within 30 days from receipt of the laboratory analytical results, per CSI No. 10 of the Compliance Schedule in Section 3.0.

### **2.5.5 Surface Water Monitoring and Sampling Protocols**

Not applicable

### **2.5.6 Analytical Methodology**

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

Arizona Department of Health Services  
Office of Laboratory Licensure and Certification

250 North 17<sup>th</sup> Avenue  
Phoenix, AZ 85007  
Phone: (602) 364-0720

**2.5.7 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 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 the current contingency and emergency response plan(s) 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 plan(s).

Except for alert level exceedances for liner leakage in Sections 2.6.2.4 and 2.6.2.5, any AL that is exceeded or any violation of an AQL, discharge limit (DL), or other permit condition shall be reported to ADEQ following the reporting requirements in Section 2.7.3.

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. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit. 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 has 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.

**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 permitted freeboard limit.
2. Within 5 days of discovery, evaluate the cause of the incident and adjust operational conditions or identify design improvements to the affected system as necessary to avoid future occurrences.
3. Within 30 days of discovery, initiate repairs to the affected system, structure, or other component as necessary to return the system to compliance with this permit, or remove the affected system(s) from service as specified in Section 2.8 (Temporary Cessation) and Section 2.9 (Closure) of this permit. Record any repair procedures, methods, and materials used to restore the facility to operating condition in the facility log/recordkeeping file.
4. If design improvements are necessary, submit an amendment application within

90 days of discovery.

5. The facility is no longer on alert status once the operational indicator no longer indicates that the freeboard performance level is being exceeded. The permittee shall, however, complete all tasks necessary to return the facility to its pre-alert operating condition.

**2.6.2.1.2 Performance Levels, Other Than Freeboard**

1. If an operational performance level (PL) listed in Section 4.2, Table 1 has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, the permittee shall immediately investigate to determine the cause of the condition. The investigation shall include the following:
  - a. Inspection, testing, and assessment of the current condition of all treatment or pollutant discharge control systems that may have contributed to the operational performance condition.
  - b. Review of recent process logs, reports, and other operational control information to identify any unusual occurrences.
2. The PL exceedance, results of the investigation, and any corrective action taken shall be reported to the Groundwater Protection Value Stream, within 30 days of the discovery of the condition. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
3. The permittee shall initiate actions identified in the approved contingency plan referenced in Section 5 and any necessary contingency measures to resolve problems identified by the investigation which may have led to a PL being exceeded. To implement any other corrective action the permittee may choose to obtain prior approval from ADEQ according to Section 2.6.6.

**2.6.2.2 Exceeding of Alert Levels Set for Discharge Monitoring**

Not applicable

**2.6.2.3 Exceeding of Alert Levels in Groundwater Monitoring**

**2.6.2.3.1 Alert Levels for Indicator Parameters**

1. If an AL set for total dissolved solids, sulfate, and/or copper has been exceeded, the permittee shall request that the laboratory verify the sample results within 5 days. If the analysis does not confirm that an exceedance has occurred, the permittee may assume there has been no exceedance and no further action is required.
2. Within 5 days after receiving laboratory confirmation of an AL) being exceeded, the permittee shall notify the Groundwater Protection Value Stream within 5 days and submit written confirmation within 30 days after receiving laboratory confirmation of an AL being exceeded. The permittee shall submit the laboratory results to the Groundwater Protection Value Stream.
3. If the results indicate an exceedance of an AL, the permittee shall conduct a verification sample of groundwater from the well within 15 days from laboratory confirmation. If the verification sample does not confirm that an exceedance has occurred, the permittee shall notify ADEQ of the results and assume there has been no exceedance. No further action is required under this subsection.
4. If verification sampling confirms that the AL has been exceeded, the permittee shall increase the frequency of monitoring to monthly. In addition, the permittee shall immediately investigate the cause of the exceedance and report the results of the investigation with the 30 day confirmation noted

above. ADEQ may require additional investigations, the installation of additional wells or corrective action in response to the report. The permittee shall continue monthly testing for the parameter(s) until the parameter(s) has remained below the AL for two consecutive monthly sampling events.

**2.6.2.3.2 Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards**

1. If an AL for a pollutant set in Table 3 or Table 4 has been exceeded, the permittee may conduct verification sampling for the pollutant(s) that exceed their respective AL(s) within 5 days of becoming aware of an AL being exceeded. 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 being exceeded 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 being exceeded, 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 being exceeded. 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 being exceeded, 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 for those pollutant(s) required as a result of ALs being exceeded may be reduced to the regularly scheduled frequency, if the results of three sequential sampling events demonstrate that the parameter(s) does not exceed the AL(s).
7. If the increased monitoring required as a result of an AL exceedance for those pollutants continues for more than six 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 sixth sampling event.

**2.6.2.4 Exceedance of Alert Level #1 for Normal Liner Leakage**

If an Alert Level #1 (AL #1) as specified in Section 4.2, Table 7, has been exceeded, the permittee shall take the following actions:

1. Within 5 days of AL #1 exceedance, notify Groundwater Protection Value Stream. Continue monitoring to determine if the leakage rate is increasing.
2. If the leakage rate continues to exceed AL#1 for 15 days following notification of initial AL #1 exceedance, perform a visual inspection of the liner above the solution level, to determine the location of the leaks in the primary liner.
3. Within 45 days of AL #1 exceedance, if liner damage is evident, the permittee shall complete liner repairs.
4. Within 45 days of AL #1 exceedance, if the visual inspection does not identify the location of leaks, formulate a corrective action plan to determine their location and repair them.
5. Within 90 days of AL #1 exceedance and following formulation of a corrective action plan, the permittee shall complete liner repairs.
6. Within 75 days of AL #1 exceedance (if repairs were completed in Step 3), or 120 days of AL #1 exceedance (if corrective action plan was implemented per Steps 4 and 5 ), if no alert level exceedance is observed for 30 consecutive days, notify Groundwater Protection Value Stream and document assessment and/or repairs in the log book.
7. Within 120 days of AL #1 exceedance (if repairs were completed in Step 3), or 165 days of AL #1 exceedance (if corrective action plan was implemented per Steps 4 and 5), if 30 consecutive days without an AL #1 exceedance is not achieved, notify Groundwater Protection Value Stream and reassess the entire liner system and complete any necessary repairs as described in Steps 2 and 3 (and if necessary Steps 4 and 5 also). Repeat the assessment and liner repair cycle until requirements of Step No. 6 are attained.
8. A liner leakage assessment and repair report shall be included in the next annual report described in Section 2.7.4.1 (Annual Reporting) of this permit. The permittee may also submit the liner leakage assessment report to the ADEQ prior to the annual report due date. This liner leakage assessment and repair report shall be submitted to the Groundwater Protection Value Stream. Upon review of the report, ADEQ may require that the permittee take additional corrective actions to address the problems identified from the assessment of the liner and perform other applicable repair procedures.

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

If the Liner Leakage Discharge Limit (AL #2) specified in Section 4.2, Table 7 has been exceeded, the permittee shall:

1. As soon as practicable, cease all discharge to the impoundment, implement control measures to prevent new solution buildup that may subsequently report to the impoundment, and immediately notify Groundwater Protection Value Stream of the AL #2 exceedance.
2. Within 15 days of initial AL #2 exceedance, perform a visual inspection of the liner above the solution level to identify the location of the leak(s). The permittee shall complete liner repairs and discharge to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.
3. Within 60 days of initial AL #2 exceedance if leaks were found and fixed and if no AL #2 exceedance is observed for 30 consecutive days, submit a liner leakage assessment and repair report to ADEQ. The report shall include the results of the initial liner evaluation, methods used to locate the leak(s), repair procedures and quality assurance/quality control implemented to restore the liner to optimal operational status, and other information necessary to ensure the future occurrence of the incidence will be minimized.
4. Within 30 days of initial AL #2 exceedance if the visual inspection does not identify the location of leaks and AL #2 exceedance continues, formulate a corrective action plan to determine their location and repair them. The corrective action plan will take into account the schedule for a 3rd party contractor to perform electronic leak detection or other methods if required.

5. Within 75 days of initial AL #2 exceedance and following formulation of a corrective action plan, the permittee shall complete liner repairs.
6. Within 105 days of AL #2 exceedance and implementation of the corrective action plan per Steps 4 and 5, if no AL #2 exceedance is observed for 30 consecutive days, notify Groundwater Protection Value Stream and document assessment and/or repairs in the log book.
7. Within 105 days of initial AL #2 exceedance, (if repairs were completed in Step 3), or 150 days of AL #2 exceedance (if corrective action plan was implemented per Steps 4, 5, and 6) if 30 consecutive days without an AL #2 exceedance is not achieved, repeat Steps 1 through 7 until AL #2 is not exceeded for 30 consecutive days. When Steps 1 through 7 are repeated, the notification date is reset. Discharge to the impoundment shall not be re-initiated until the leak(s) have been identified and repaired.
8. Liner leakage assessment and repair reports required by Section 2.6.2.5, shall be referenced in the next annual report described in Section 2.7.4.1 (Annual Reporting) of this permit.

### **2.6.3 Discharge Limitations Violations**

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

In the event of liner 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 the Groundwater Protection Value Stream.
3. Within 24 hours of discovery of a failure estimate the quantity released, collect representative samples of the fluid remaining in affected impoundments and drainage structures, analyze sample(s) according to Section 4.2, Table 2 and report in accordance with Section 2.7.3 (Permit Violation and AL Status Reporting). In the 30-day report required under Section 2.7.3, include a copy of the analytical results and forward the report to Groundwater Protection Value Stream.
4. Within 15 days of discovery, initiate an evaluation to determine the cause for the incident. Identify the circumstances that resulted in the failure and assess the condition of the discharging facility and liner system. Implement corrective actions as necessary to resolve the problems identified in the evaluation. Initiate repairs to any failed liner, system, structure, or other component as needed to restore proper functioning of the discharging facility. The permittee shall not resume discharge to the facility until repairs of any failed liner or structure are performed.

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

5. Within 30 days of discovery of the incident, submit a report to Groundwater Protection Value Stream as specified in Section 2.7.3. Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
6. Within 60 days of discovery, conduct an assessment of the impacts to soil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could or did cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ, for approval, a corrective action plan to address such

- impacts, including identification of remedial actions and a schedule for completion of activities. At the approval of ADEQ, the permittee shall implement the approved plan.
7. Within 30 days of completion of corrective actions, submit to Groundwater Protection Value Stream, a written report as specified in Section 2.6.6 (Corrective Actions).
  8. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

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

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

1. As soon as practicable, cease all discharges to the surface impoundment to prevent any further releases to the environment.
2. Within 24-hours of discovery, notify the Groundwater Protection Value Stream.
3. Within 24-hours, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4.2, Table 2. Within thirty (30) days of the incident, submit a copy of the analytical results to the Groundwater Protection Value Stream.
4. As soon as practicable, remove and dispose of or recycle excess fluid in the impoundment until the water level is restored at or below the appropriate freeboard. Record in the facility log, the amount of fluid removed, a description of the removal method, and any disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 30 days of discovery of overtopping, submit a report to ADEQ as specified in Section 2.7.6 (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 subsection 3 above, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident.
8. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable POC, submit to ADEQ for approval, a corrective action plan to address such impacts, including identification of releases to the environment, 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 submitted 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. If any unexpected materials flow to a permitted surface impoundment, the permittee shall:

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



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

4. Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in Section 2.7.6 (Permit Violation and Alert Level Status Reporting). Include a description of the actions performed in subsections 1 through 3 listed above.
5. Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions including remediation.

#### **2.6.3.4 Waste Rock Stockpile Failures**

Mitigating actions for the Waste Rock Stockpile shall be initiated if there is evidence of any of the following conditions: measurable slips at the toe of the Waste Rock Stockpile, evidence of a crest failure, and evidence of visible erosion or other damage that may impact berm integrity or stability.

Mitigating actions shall include repairing the affected facility, removing discharged material that has the potential to affect the aquifer, and other actions necessary to meet permit requirements.

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

If a slope or berm failure involving the leach pads, liners, surface impoundments or retention structures (dams) occurs which affects the ability of the facility to operate safely or results in an unauthorized discharge, the permittee shall promptly close the active area in the vicinity of the failure, and conduct a field investigation of the failure to analyze its origin and extent, its impact on the facility operations, temporary and permanent repairs and changes in operational plans considered necessary. Within thirty (30) days of a slope or berm failure, the permittee shall submit a written report which includes the documentation specified in Section 2.7.3 of this permit. The permittee shall initiate the actions necessary to mitigate the impacts of the failure, consistent with Department approval.

#### **2.6.4 Aquifer Quality Limit Violation**

1. If an AQL has been exceeded, the permittee may conduct verification sampling for those pollutant(s) that were above their respective AQL(s) within 5 days of becoming aware of an AQL being exceeded. The permittee may use the results of another sample taken between the date of the last sampling event and the date of receiving the result as verification.
2. If verification sampling confirms that the AQL is violated for those pollutant(s) that were above their respective AQL(s) or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring to monthly for those pollutant(s) that exceeded their respective AQL(s). 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.

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

the discharge.

**2.6.5 Emergency Response and Contingency Requirements for Unauthorized Discharges pursuant to A.R.S. §49-201(12) and pursuant to A.R.S. § 49-241**

**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 upon discovering the discharge of hazardous material which: a) has the potential to cause an AWQS or AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

**2.6.5.3 Discharge of Non-hazardous Materials**

In the event of any unauthorized discharge 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 upon discovering the discharge of non-hazardous material which: a) has the potential to cause an AQL to be exceeded; or b) 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 that 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 exceeding an AL or violation of an AQL, DL, or other permit condition:

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

Within 30 days of completion of any corrective action, the operator shall submit to the ADEQ

Groundwater Protection Value Stream, a written report describing the causes, impacts, and actions taken to resolve the problem.

## **2.7 Reporting and Recordkeeping Requirements**

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

### **2.7.1 Self-monitoring Report Form**

1. When submitting hard copy, the permittee shall complete the SMRFs provided by ADEQ, and submit them to the Groundwater Protection Value Stream. The permittee shall use the format devised by ADEQ.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a reporting period, the permittee shall enter “not required” on the SMRF include an explanation, and submit the report to the Groundwater Protection Value Stream.
3. The following tables contained in Section 4.0 list the parameters to be monitored and the frequency for reporting results on the SMRFs.
  - Table 3, Quarterly Groundwater Monitoring of POC Wells
  - Table 4, Biennial Groundwater Monitoring of POC Wells
  - Table 5, Quarterly Groundwater Monitoring of DCWs
  - Table 6, Biennial Groundwater Monitoring of DCWs

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

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

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

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

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

1. The permittee shall notify the Groundwater Protection Value Stream in writing within 5 days (except as provided in Section 2.6.5) of becoming aware of a violation of any permit condition, discharge limitation or of an AL exceedance for which notification requirements are not specified in Sections 2.6.2 through 2.6.5.
2. The permittee shall submit a written report to the Groundwater Protection Value Stream within 30 days of becoming aware of the violation of any permit condition or discharge limitation (NOTE: This reporting requirement is not applicable to Sections 2.6.2.4 and 2.6.2.5 related to alert level exceedance for liner leakage). The report shall document all of the following:
  - a. Identification and description of the permit condition for which there has been a violation and a description of its cause;

- b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue;
- c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation;
- d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS;
- e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring; and
- f. Description of any malfunction or failure of pollution control devices or other equipment or processes.

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

### **2.7.4.1 Annual Report**

The permittee shall submit an Annual Report summarizing the results of groundwater monitoring from the DCW per Section 4.2, Table 5. For the year when biennial monitoring for Section 4.2, Table 6 occurs, the Annual Report shall also contain this information. The permittee shall submit this report to the Groundwater Protection Value Stream in accordance with the table in Section 2.7.6. This report shall contain concentration graphs, hydrographs, and a discussion on concentration trends.

If an Alert Level #1 in Section 2.6.2.4 or Alert Level #2 in Section 2.6.2.5 has been exceeded, the permittee shall submit a report that summarizes the results of the liner assessment. The Liner Leakage Assessment Report shall also include information including but not limited to the following: number and location of holes identified; and a table summarizing alert level exceedances including the frequency and quantity of fluid removed, and corrective actions taken. Appropriate components of the report required by this Section shall be sealed by an Arizona registered professional engineer, in accordance with Arizona Board of Technical Registration (BTR) requirements.

### **2.7.4.2 Well Installation Reports**

A well installation report shall be submitted to ADEQ within 90 days of the completion of any new well installations in accordance with Section 2.4 of this permit and the Compliance Schedule in Section 3.0. Well installation reports shall be sealed in accordance with Arizona BTR requirements and shall include the following:

1. Arizona Department of Water Resources (ADWR) Notice of Intent and Well Drilling Report;
2. Boring log and well as-built diagram;
3. Total depth of well measured after installation;
4. Top of well casing or sounding tube (whichever is used as the fixed reference measuring point) and ground surface elevation;
5. Geophysical logging reports and subsurface sampling results;
6. Description of well drilling method;
7. Description of well development method;
8. Summary of analytical results for initial groundwater sample collected after installation; and
9. GPS coordinates for each new well.

### **2.7.4.3 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 ADEQ Groundwater Protection Value Stream. 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 be provided to ADEQ within 90 days of monitor well abandonment and shall include:

1. Copies of ADWR Notice of Intent to Abandon;
2. Copies of ADWR Abandonment Reports;
3. A description of the methods used to seal the well casing and the perforated or screened interval of the well; and

4. Global Positioning System (GPS) coordinates of the former well location.

**2.7.5 Reporting Location**

All SMRFs shall be submitted to:

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

Or

Through the myDEQ portal accessible on the ADEQ website at:  
<http://www.azdeq.gov/welcome-mydeq>

All documents required by this permit to be submitted to the Groundwater Protection Value Stream shall be directed to:

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

**2.7.6 Reporting Deadline**

The following table lists the quarterly SMRF due dates:

<b>Monitoring conducted during quarter:</b>	<b>Quarterly Report due by:</b>
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30

The following table lists the biennial SMRF due dates:

<b>Monitoring conducted during the biennial period:</b>	<b>Report due by:</b>
January to December of the following year	January 30, 2018 and every two years thereafter

The following table lists the due dates for the annual report per Section 2.7.4.1:

<b>Monitoring conducted during the year:</b>	<b>Report due by:</b>
January-December	April 30 <sup>th</sup> of the following year

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

The Groundwater Protection Value Stream shall be notified within 10 days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact

Person or Emergency Telephone Number.

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

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

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

At the time of notification the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ’s 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 permittee’s 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). Furthermore, the plan shall include the following specific activities:

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

**2.9.2 Closure Completion**

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

1. Clean closure cannot be achieved at the time of closure notification or within one year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with AWQS at the applicable POC or, for any pollutant for which the AWQS was exceeded at the time this permit was issued, further action is necessary to prevent the facility from further degrading the aquifer at the applicable POC with respect to that pollutant;
3. 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;
4. Further action is necessary to meet property use restrictions;
5. SMRF submittals are still required until Clean Closure is issued. (see Section 2.9 above)
6. Further action is necessary to keep the facility in compliance with aquifer water quality standards at the applicable point of compliance;
7. Continued action is required to verify that the closure design has eliminated discharge to the extent

- intended;
8. Remedial or mitigative measures are necessary to achieve compliance with Title 49, Ch. 2; and/or
  9. Further action is necessary to meet property use restrictions.
  10. SMRF submittals are still required until Clean Closure is issued.

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

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

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

**2.10.1 Post-closure Plan**

Reserved

**2.10.2 Post-closure Completion**

Reserved

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

For each compliance schedule item listed below, the permittee shall submit the required information, including a cover letter that lists the compliance schedule items (CSI), to the Groundwater Protection Value Stream.

No.	Description	Due by:	Permit Amendment Required?
1	<p>This CSI is contingent upon the results of the Waste Rock Stockpile Characterization presented in a report in CSI No. 3.</p> <p>If the Waste Rock Stockpile is determined not to be inert, EMJCM shall provide ADEQ with revised BADCT demonstrations for stormwater ponds SWCP #051 through #056. Drawings containing plans and cross-sections shall be of a scale to clearly present the configuration of the ponds and the surrounding topography. Such maps and sections shall be signed and sealed by an Arizona licensed professional engineer with appropriate credentials in the required disciplines. If pond capacity is insufficient, EMJCM shall detail plans for pond modifications with the same PE requirements as noted above. A site map showing these facilities relative to surrounding facilities is to be included.</p>	<p>Within 6 months of ADEQ’s determination following review of the Waste Rock Stockpile Characterization Report in CSI No. 3, if the waste rock is determined not to be inert.</p>	Yes
2	<p>Submit updated closure and post-closure costs and if necessary an updated closure strategy for all APP facilities.</p> <p>Following ADEQ’s approval of the closure and post-closure strategy and costs for the facilities listed in Section 2.1 of the permit, EMJCM shall provide a financial assurance mechanism for the approved amount.</p>	<p>April 6, 2026; i.e. 10 Years from permit dated April 6, 2016 under LTF 63194 when the permit was transferred to Excelsior Mining JCM, Inc.</p>	Yes
3	<p>Submit a Waste Rock Stockpile Characterization Report following completion of the characterization activities.</p>	<p>April 14, 2018. (In review; submitted April 12, 2018)</p>	No
4	<p>EMJCM shall initiate installation of the POC wells CW-1, CW-2, CW-5, and CW-6 at ADEQ approved locations, in accordance with all ADWR requirements. Geologic and well construction logs must be submitted to ADEQ within 60 days of well installation. The log must include the ADWR well registration number, and the as built cadastral and latitude and longitude coordinates for the well. Each well must be screened in the uppermost aquifer. The well screen shall extend a maximum of 10 feet above and 50 feet below the top of the aquifer. If a longer well screen interval is used, EMJCM must provide an explanation in the well logs for using the longer screen.</p>	<p>Within 30 days of ADEQ’s determination following review of the Waste Rock Stockpile Characterization Report in CSI No. 3, if the waste rock is determined not to be inert. If the waste rock is determined to be inert, Excelsior shall submit an application to redraw the pollutant management area (PMA) and propose new POC wells.</p>	No



<b>No.</b>	<b>Description</b>	<b>Due by:</b>	<b>Permit Amendment Required?</b>
5	EMJCM shall initiate the ambient groundwater monitoring as per Section 2.5.3.3 of this permit for POC wells CW-1, CW-2, CW-5, and CW-6. Each sample shall be analyzed for all parameters listed in Section 4.2, Table 2.	Initiate monthly ambient groundwater monitoring within 30 days following installation of wells per CSI 4.	No
6	EMJCM shall submit copies of all laboratory analytical reports, field notes, QA/QC procedures used in collection and analysis of the samples, and a report including the statistical calculations of the ALs and AQLs.	Within 45 days following completion of initial sampling periods discussed in CSI 5.	Yes (if required)
7	Notify ADEQ when Excelsior commences injection and recovery operations at the Gunnison Copper Project (APP No. 511633)	On the day of start-up of the injection and recovery operations at the Gunnison Copper Project	No
8	Conduct discharge monitoring on a one time basis in accordance with Section 2.5.4, for the PLS pumped from the Gunnison Copper Project at the Solution Pond #3, and for the raffinate from the SX/EW plant at the Raffinate Pond #1.	Within 120 days of start-up of the injection and recovery operations at the Gunnison Copper Project	No
9	Notify ADEQ when laboratory analytical results are received for the discharge monitoring conducted under CSI No. 8.	Upon receipt of laboratory analytical results.	No
10	Submit results of the discharge monitoring conducted at the Solution Pond #3 and Raffinate Pond #1.	Within 30 days from receipt of the laboratory analytical results under CSI No. 9	No
11	Submit an annual report per Section 2.7.4.1.	The report is due on April 30, 2019 (as per Section 2.7.6), and every year thereafter.	No

**4.0 TABLES OF MONITORING REQUIREMENTS**

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

TABLE 1 FACILITY BADCT DESCRIPTIONS

**4.2 COMPLIANCE (or OPERATIONAL) MONITORING**

TABLE 1 REQUIRED INSPECTIONS AND OPERATIONAL MONITORING

TABLE 2 AMBIENT GROUNDWATER MONITORING PARAMETERS

TABLE 3 QUARTERLY COMPLIANCE GROUNDWATER MONITORING OF POCS WELLS

TABLE 4 BIENNIAL COMPLIANCE GROUNDWATER MONITORING OF POC WELLS

TABLE 5 QUARTERLY GROUNDWATER MONITORING OF DATA CONTINUITY WELLS

TABLE 6 BIENNIAL GROUNDWATER MONITORING FOR OF DATA CONTINUITY WELLS

TABLE 7 LEAK COLLECTION AND REMOVAL SYSTEM MONITORING

TABLE 8 ONE-TIME SAMPLING EVENT DISCHARGE MONITORING LOCATIONS AND  
PARAMETERS

**4.3 CONTINGENCY MONITORING**

Not applicable

4.1 PRE-OPERATIONAL MONITORING (or CONSTRUCTION REQUIREMENTS)

<b>TABLE 1 FACILITY BADCT DESCRIPTIONS</b>				
ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
<b>Waste Rock Stockpile:</b>				
1	003	Waste Rock Stockpile	32° 05' 54'' N 110° 03' 36'' W	<b>Individual BADCT:</b> The Waste Rock Stockpile currently covers 84.8 acres. Base rests directly on metamorphic rocks with demonstrated hydraulic conductivity ranging from $1.0 \times 10^{-6}$ centimeters/second (cm/sec) to $10^{-8}$ cm/sec. Geologic disruptions or faults are minor at the stockpile site. Groundwater flows northeastward and is restricted within fractures dissecting the rock units and at depths below land surface (bls) ranging from 50 feet southeastward to 600 feet along the east fringe of the mine area. Characterization of the stockpile material is required (see Compliance Schedule Section 3.0). The Waste Rock Stockpile was constructed using the end-dumping method over moderate sloping topography which minimizes the potential for discharge. End dumping allows side slopes at the angle of repose (nominal 1.3 horizontal to 1 vertical). Geotechnical investigations indicate these slopes of 1.3H:1V offer safe levels of BADCT slope stability. It has not been subjected to leaching. Stormwater runoff (non-stormwater) is collected in downgradient impoundments and the Burro Pit. Combined with a quarterly water quality monitoring program checking Action Levels (ALs or AQLs) at respective POC wells, these evaluations will provide ongoing verification of BADCT effectiveness for this facility.
<b>Leach Pads:</b>				
2	008	Leach Pad #1	32° 05' 45'' N 110° 04' 07'' W	<b>Individual BADCT:</b> Leach Pad #1 is a leach stockpile of 11.8 million tons constructed using the end-dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. Maximum lift is set at 225 feet. Located southwest of Burro Pit and east-southeast of Leach Pad #2. Currently occupying 35.5 acres. Constructed over Pioneer Shale formations (average hydraulic conductivity of $1.0 \times 10^{-7}$ cm/s) by removal of vegetation and filling the main drainage invert with

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
				10-15 feet of coarse quartzite to form a drainage media for gravity flow of solution into Solution Pond #1. Stability analyses demonstrate acceptable factors of safety. A water quality monitoring program will verify effectiveness of BADCT for this facility.
3	013	Leach Pad #2 (old #2a and #2b)	32° 05' 55'' N 110° 04' 29'' W	<b>Individual BADCT:</b> Leach Pad #2 is a leach stockpile with 10.3 million tons constructed using the end-dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. Maximum lift is set at 300 feet. Currently occupying 39 acres in the same drainage of Leach Pad #1. Constructed over Pioneer Shale formations (average hydraulic conductivity of $1.0 \times 10^{-7}$ cm/s) by removal of vegetation and filling the main drainage invert with 10-15 feet of coarse quartzite to form a drainage media for gravity flow of solution into Solution Pond #1 and into the Intercept Sump for pumping into PLS #3 under normal operating conditions. Stability analyses demonstrate acceptable factors of safety. A water quality monitoring program will verify effectiveness of BADCT for this facility
4	015	Leach Pad #3 (old #2c, #2d and #3)	32° 06' 01'' N 110° 04' 26'' W	<b>Individual BADCT:</b> Leach Pad #3 is a leach stockpile of 9.5 million tons constructed using the end-dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. Maximum lift is set at 340-455 feet. Currently occupying 28.6 acres. Constructed over Pioneer Shale formations (average hydraulic conductivity of $1.0 \times 10^{-7}$ cm/s) following removal of vegetation. A clay liner was constructed over the areas as part of foundation preparation forming a drainage media for gravity flow of solution into Solution Pond #3 and into the Intercept Sump for pumping into the SX/EW Plant under normal operating conditions. Stability analyses demonstrate acceptable factors of safety. A water quality monitoring program will verify effectiveness of BADCT for this facility.
<b>PLS and Raffinate Ponds:</b>				
5	009	Solution Pond #1	32° 05' 42'' N	Solution Pond #1 will be partitioned into two cells (Draindown Cell #1 and Solution Cell #1), with a lined earthen berm (divider berm)

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
			110° 03' 54'' W	constructed in between the two cells. The entire pond system has a surface area of 2.4 acres, with a depth of 24 feet at the lowest point. Draindown Cell #1 will have a capacity of 1,856,738 gallons, and Solution Cell #1 will have a capacity of 7,115,238 gallons. The divider berm will be approximately 161 feet wide and 26 feet high, and the crest is approximately 120 feet from the eastern edge of Leach Pad #1. A 50 feet long by 32 feet wide spillway located two feet below the crest is provided in the approximate central portion of the divider berm. Upper and lower liners are composed of 60-mil HDPE with geonet matting placed in between the liners. The dam and pond embankment under the liner are compacted soil with an emergency overflow spillway designed into the dam. Embankment side slopes are constructed to 1.5H:1V with the dam sloping into the pond at 2.5H:1V. The divider berm shall be constructed with a slope of 3:1 and lined with 80-mil HDPE underlain by geosynthetic clay liner (GCL) in the Draindown Cell and double lined separated by geonet in the Solution Cell. The liner shall be tied into the existing 60-mil liner at the cutoff trench on the Draindown Cell side and to the double liner system on the Solution Cell side. The GCL shall have a permeability of less than $1 \times 10^{-9}$ cm/s. Solution Cell #1 will be used to store raffinate or PLS from the future Gunnison Copper Project (APP P-511633), and the Draindown Cell #1 is designed to contain runoff from the 100-yr, 24-hr storm event in addition to 12 hours of heap draindown. A sub-surface drain shall be installed on the heap side of the cutoff trench connecting to a pump which shall be installed in the northwest portion of the Draindown Cell #1. The current existing leak collection and removal system (LCRS) shall remain intact. Two feet of freeboard shall be provided for the entire pond system. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
6	014	Intercept Sump	32° 05' 51'' N	<b>Individual BADCT:</b> The Intercept Sump is located in the invert (lowest

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
			110° 04' 15'' W	point) of old PLS Pond #2. It is considered as part of the design of Leach Pad #2. The integrity of the old clay liner was maintained or reconstructed along with the overlying gravel collection area with embedded collection pipes leading northward to the pump station near ILS Pond. Solution collected in this pond shall be pumped to the leach pads. Any solution not collected by the sump will remain in the heap underflow pathway that drains to Draindown Cell #1. This facility is currently covered by Leach Pad #1/#2, and it will be closed concurrently when Leach Pad #1/#2 is granted APP closure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
7	016	Solution Pond #3	32° 05' 57'' N 110° 04' 14'' W	Solution Pond #3 will be partitioned into two cells (Draindown Cell #3 and Solution Cell #3), with a lined earthen berm (divider berm) constructed in between the two cells. The entire pond system has a surface area of 1.81 acres, with a depth of 20 feet at the lowest point. Draindown Cell #3 will have a capacity of 1,177,636 gallons, and Solution Cell #3 will have a capacity of 4,436,650 gallons. The divider berm will be approximately 116 feet wide and 17 feet high, and the crest is approximately 80 feet from the eastern edge of Leach Pad #1. A 40 feet long by 20 feet wide spillway located one foot below the crest is provided in the approximate central portion of the divider berm. Upper and lower liners are composed of 60-mil HDPE with geonet matting placed in between the liners. The dam and pond embankment under the liner are compacted soil. The divider berm shall be constructed with a slope of 3:1 and lined with 80-mil HDPE underlain by geosynthetic clay liner (GCL) in the Draindown Cell and double lined separated by geonet in the Solution Cell. The liner shall be tied into the existing 60-mil liner at the cutoff trench on the Draindown Cell side and to the double liner system on the Solution Cell side. The GCL shall have a permeability of less than $1 \times 10^{-9}$ cm/s. Solution Cell #3 will be used to store PLS from the future Gunnison Copper Project (APP P-511633), and the Draindown Cell #1 is designed to contain runoff from the 100-yr, 24-hr storm event in addition to 12 hours of heap draindown. A sub-surface drain shall be installed on

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
				<p>the heap side of the cutoff trench connecting to a pump which shall be installed in the northwest portion of the Draindown Cell #3. The current existing leak collection and removal system (LCRS) shall remain intact. Two feet of freeboard shall be provided for the entire pond system. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.</p>
8	029	Raffinate Pond #1	32° 05' 56" N 110° 04' 11" W	<p><b>Prescriptive BADCT:</b> Raffinate Pond #1 receives solution discharged from the Solvent Extraction (SX) Plant following copper recovery from PLS. The acid content in the solution is adjusted and then pumped to the leach pads for leaching of the ore. In the future, Raffinate Pond #1 will receive raffinate generated from the Gunnison Copper Project (APP P-511633) at 5,000 gpm. Raffinate Pond #1 has been reconstructed applying QA/QC standards as a double-lined pond with a leak collection and removal system with a surface area of 30,456 square feet, 13 feet deep at the lowest point, with a capacity of 1,714,214 gallons allowing for 2 feet of freeboard. Upper and lower liners are 60-mil HDPE with geonet drainage matting between layers. Beneath the lowest HDPE liner is a minimum 6-inch thick compacted soil liner. Pond side slopes are constructed to a slope of 3.3H:1V. Pond capacity is designed to contain runoff from the 100-yr, 24-hr storm event. A 24-inch diameter HDPE pipe connecting the Raffinate Pond #1 and the ILS Pond will be placed in the area of the existing pumps. A water quality monitoring program will verify effectiveness of BADCT for this facility.</p>
9	030	ILS Pond	32° 05' 54" N 110° 04' 12" W	<p><b>Prescriptive BADCT:</b> ILS Pond will receive only raffinate from Raffinate Pond #1. The solution is pumped to the Gunnison Wellfield for injection into the wells. ILS Pond is double-lined pond with a leak collection and removal system with a surface area of 25,830 square feet, 14 feet deep at the lowest point, with a capacity of 1,688,191 gallons allowing for 2 feet of freeboard. Upper and lower liners are 60-mil</p>

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
				HDPE with geonet drainage matting between layers. Beneath the lowest HDPE liner is a minimum 6-inch thick compacted soil liner. Pond side slopes are constructed to a slope of 3H:1V. Pond capacity is designed to contain runoff from the 100-yr, 24-hr storm event. A 24-inch diameter HDPE pipe will be installed to connect the Raffinate Pond #1 and the ILS Pond. The pond outlet shall consist of a set of suction pumps with low level intake pipes. The pumps and associated tanks, electrical items and pipes will be located on the pond embankment crest adjacent to the Raffinate Pond pump station. A water quality monitoring program will verify effectiveness of BADCT for this facility.
<b>Non-stormwater Ponds:</b>				
10	051	SWCP #051	32° 05' 39'' N 110° 03' 23'' W	<b>Individual BADCT:</b> SWCP #051 receives stormwater runoff from the Waste Rock Stockpile and is located between the stockpile and the main entrance road. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
11	052	SWCP #052	32° 05' 44'' N 110° 03' 22'' W	<b>Individual BADCT:</b> SWCP #052 receives stormwater runoff from the Waste Rock Stockpile and is located between the stockpile and the main entrance road. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
12	053	SWCP #053	32° 05' 47'' N 110° 03' 22'' W	<b>Individual BADCT:</b> SWCP #053 receives stormwater runoff from the Waste Rock Stockpile and is located between the stockpile and the main entrance road. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
13	054	SWCP #054	32° 05' 58'' N 110° 03' 19'' W	<b>Individual BADCT:</b> SWCP #054 receives stormwater runoff from the Waste Rock Stockpile. It is located east of the main entrance road and just inside the eastern property boundary. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water



**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
				quality monitoring program will verify effectiveness of BADCT for this facility.
14	055	SWCP #055	32° 06' 01" N 110° 03' 25" W	<b>Individual BADCT:</b> SWCP #055 receives stormwater runoff from the Waste Rock Stockpile. It is located east of the main entrance road and just inside the eastern property boundary. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
15	056	SWCP #056	32° 06' 05" N 110° 03' 23" W	<b>Individual BADCT:</b> SWCP #056 receives stormwater runoff from the Waste Rock Stockpile. It is located east of the main entrance road and just inside the eastern property boundary. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
16	057	SWCP #057	32° 05' 53" N 110° 04' 35" W	<b>Individual BADCT:</b> SWCP #057 receives stormwater runoff from the southwestern side of the heap leach pads. It is located west of the leach pads and east of the western property boundary. This facility shall be upgraded as per the compliance schedule in Section 3. This facility shall be expanded from the existing size of 0.2 acre-feet to 0.59 acre-feet, and lined with single 80-mil HDPE liner on a minimum of 6 inches of prepared subgrade. The liner shall be anchored in a trench on the pond embankment crest and a cutoff trench at the heap slope toe. A ditch shall direct slope runoff to the ponds. The regrading and berms on the heap bench shall control slope runoff and promote drainage into the heap.. Water will be pumped out of the pond after storm events. A prefabricated HDPE (more than 80-mil thick) sump 2 feet square by 2 feet deep placed in the southwestern portion of the pond will be used to keep the pump submerged while operating. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

ADEQ Facility No.	JCM Facility No.	Facility / Site Name	Latitude / Longitude	Facility BADCT
17	058	SWCP #058	32° 05' 52'' N 110° 04' 34'' W	<b>Individual BADCT:</b> SWCP #058 receives non-stormwater runoff from the southwestern side of the heap leach pads. It is located west of the leach pads and east of the western property boundary. This facility shall be upgraded as per the compliance schedule in Section 3. This facility shall be expanded from the existing size of 0.43 acre-feet to 1.26 acre-feet, and lined with single 80-mil HDPE liner on a minimum of 6 inches of prepared subgrade. The liner shall be anchored in a trench on the pond embankment crest and a cutoff trench at the heap slope toe. A ditch shall direct slope runoff to the ponds. The regrading and berms on the heap bench shall control slope runoff and promote drainage into the heap. Water will be pumped out of the pond after storm events. A prefabricated HDPE (more than 80-mil thick) sump 2 feet square by 2 feet deep placed in the northwestern portion of the pond will be used to keep the pump submerged while operating. Portable pumps and electric generators will provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility.
18	059	SWCP #59	32° 06' 06'' N 110° 04' 27'' W	<b>Individual BADCT:</b> SWCP #59 receives non-stormwater runoff from the northeastern side of the heap leach pads. It is located where Leach Pad #4 was planned for construction. It is clay lined. This facility is currently covered by Leach Pad #3. A water quality monitoring program will verify effectiveness of BADCT for this facility.
19	060	SWCP #60	32° 06' 06'' N 110° 04' 24'' W	<b>Individual BADCT:</b> SWCP #60 receives non-stormwater runoff from the northeastern side of the heap leach pads. It is located where Leach Pad #4 was planned for construction. It is clay lined. This facility is currently covered by Leach Pad #3. A water quality monitoring program will verify effectiveness of BADCT for this facility.

**TABLE 1  
FACILITY BADCT DESCRIPTIONS**

<b>ADEQ Facility No.</b>	<b>JCM Facility No.</b>	<b>Facility / Site Name</b>	<b>Latitude / Longitude</b>	<b>Facility BADCT</b>
20	011	Secondary Containment Pond #1	32° 05' 41'' N 110° 03' 40'' W	<b>Individual BADCT:</b> Secondary Containment Pond #1 serves as an emergency overflow impoundment down gradient from Solution Pond #1 receiving both PLS and non-stormwater runoff on an as needed basis. It is lined with 60-mil HDPE. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility. A water balance demonstration was provided under an amendment (LTF 65043), and it was determined that this facility is no longer required. Closure activities shall be completed at the time of APP closure for the entire facility.
21	012	Secondary Containment Pond #2	32° 05' 33'' N 110° 03' 23'' W	<b>Individual BADCT:</b> Secondary Containment Pond #2 serves as an emergency overflow impoundment down gradient from Secondary Containment Pond #1 receiving non-stormwater runoff on an as needed basis. It is clay lined. Portable pumps and electric generators provide backup in case of a power failure. A water quality monitoring program will verify effectiveness of BADCT for this facility. A water balance demonstration was provided under an amendment (LTF 65043), and it was determined that this facility is no longer required. Closure activities shall be completed at the time of APP closure for the entire facility.

**4.2 COMPLIANCE (or OPERATIONAL) MONITORING**

<b>TABLE 1 REQUIRED INSPECTIONS AND OPERATIONAL MONITORING</b>		
<b>Facility</b>	<b>Requirements</b>	<b>Frequency</b>
<b>PERMITTED DISCHARGING FACILITIES</b>		
Stormwater Ponds	<p>Visually inspect monthly or during and following a storm event of 1-inch or more precipitation and take appropriate action if evidence of:</p> <ol style="list-style-type: none"> <li>1. visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation or other causes;</li> <li>2. animals, or other adverse conditions affecting liner stability;</li> <li>3. accumulation of erosion and other debris from the upgradient Waste Rock Disposal pile; and/or</li> <li>4. spillway and connecting ditch integrity/instability or impairment.</li> </ol>	Monthly
Waste Rock Stockpile	<p>Visually inspect monthly or following a storm event of 1-inch or more precipitation and take appropriate action if evidence of:</p> <ol style="list-style-type: none"> <li>1. stockpile deformations, including surface cracks, slides, sloughs or unusual differential settlement affecting slope stability;</li> <li>2. excessive erosion requiring slope stabilization and/or construction of a perimeter containment berm; and/or</li> <li>3. visible damage to the integrity and efficiency of the drainage control ditches for storm runoff into the down gradient non-stormwater ponds.</li> </ol>	Monthly
Process Solution Ponds	<p>Visually inspect monthly or during and following a storm event of 1-inch or more precipitation and take appropriate action if evidence of:</p> <ol style="list-style-type: none"> <li>1. a minimum of two feet of freeboard. For Solution Pond #1 and Solution Pond #3, the freeboard requirement is for the Solution Cell and Draindown Cell in each pond.</li> <li>2. visible liner tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris,</li> <li>3. vegetation or other causes;</li> <li>4. animals, or other adverse conditions affecting liner stability;</li> <li>5. accumulation of erosion and other debris from the upgradient Waste Rock Disposal pile;</li> <li>6. spillway integrity/instability or impairment; and/or</li> <li>7. ditch connecting to another facility inspected for the above listed features requiring remedial action.</li> </ol>	Monthly

**TABLE 1**  
**REQUIRED INSPECTIONS AND OPERATIONAL MONITORING**

<b>Facility</b>	<b>Requirements</b>	<b>Frequency</b>
Leach Pads	Visually inspect and take appropriate action if evidence of: <ol style="list-style-type: none"> <li>1. differential settlement or other developed features which may result in plumbing impairment or failure promoting leakage of sewage onto underlying ground;</li> <li>2. visible tears, punctures, cracks, deformities, or other damage to plumbing fixtures resulting in undetected process solution leakage; and/or</li> <li>3. excessive erosion around process solution pipelines.</li> </ol>	Monthly
Emergency Generators and Pumps	Visually inspect and take appropriate action to maintain <ol style="list-style-type: none"> <li>1. starting and operation efficiency;</li> <li>2. portability and frame integrity; and</li> <li>3. proper hookup/connector on the rig.</li> </ol>	Weekly

**TABLE 2**  
**Ambient Groundwater Monitoring Parameters**  
**for All Point of Compliance (POC) Wells**  
**(In mg/L unless otherwise noted)**

Depth to Water Level (ft.)	Phosphate	Copper
Water Level Elevation (ft. amsl)	Calcium	Lead
Temperature - field (F°)	Magnesium	Manganese
pH - field & lab (SU)	Potassium	Mercury
Field Specific Conductance (µmhos/cm)	Sodium	Nickel
Total Dissolved Solids -lab	Iron	Selenium
Total Alkalinity	Aluminum	Thallium
Carbonate	Antimony	Zinc
Bicarbonate	Arsenic	Total Petroleum Hydrocarbons (TPH)
Hydroxide	Barium	Volatile Organic Compounds (VOCs)
Sulfate	Beryllium	Gross Alpha Particle Activity (pCi/L) <sup>1</sup>
Chloride	Cadmium	Radium 226 + Radium 228 (pCi/L)
Fluoride	Chromium	Uranium
Nitrate-Nitrite as N	Cobalt	
<p><sup>1</sup> If Gross Alpha Particle Activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha activity, including radium 226, minus radon and total uranium (the sum of the uranium 238, uranium 235 and uranium 234 isotopes).</p> <p>Metals shall be analyzed as dissolved metals</p>		

<b>TABLE 3 QUARTERLY COMPLIANCE GROUNDWATER MONITORING OF POC WELLS</b>								
<b>PARAMETER</b>	<b>CW-1</b>		<b>CW-2</b>		<b>CW-5</b>		<b>CW-6</b>	
	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>
Depth to Water (feet)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field & sLab pH (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance (µmhos/cm)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature Field (°F)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	None	Res.	None	Res.	None	Res.	None	Res.
Fluoride	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Nitrate-Nitrite as N	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Sulfate	None	Res.	None	Res.	None	Res.	None	Res.
Antimony	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Arsenic	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Barium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Beryllium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Cadmium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Chromium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Copper	None	Res.	None	Res.	None	Res.	None	Res.
Lead	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Mercury	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Nickel	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Selenium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Thallium	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Toluene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Ethylbenzene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Xylene	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.

**NOTES:**

Metals shall be analyzed as dissolved metals.

Res. =Reserved means that ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.3.

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.

AQL = Aquifer Quality Limit.

AL = Alert Level.

None = Analysis is required but an AQL is not established in the permit.

TABLE 4 BIENNIAL COMPLIANCE GROUNDWATER MONITORING OF POC WELLS								
PARAMETER	CW-1		CW-2		CW-5		CW-6	
	AQL	AL	AQL	AL	AQL	AL	AQL	AL
Total Alkalinity	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Hydroxide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chloride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Phosphate	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
Potassium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sodium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Petroleum Hydrocarbons (TPH)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Gross Alpha Particle Activity (pCi/L) <sup>1</sup>	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Radium 226 + Radium 228 (pCi/L)	Res.	Res.	Res.	Res.	Res.	Res.	Res.	Res.
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

**NOTES:**

Metals shall be analyzed as dissolved metals.

Res. =Reserved means that ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.3.

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.

AQL = Aquifer Quality Limit.

AL = Alert Level.

None = Analysis is required but an AQL is not established in the permit.

<sup>1</sup> If Gross Alpha Particle Activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha activity, including radium 226, minus radon and total uranium (the sum of the uranium 238, uranium 235 and uranium 234 isotopes).



<b>TABLE 5 QUARTERLY GROUNDWATER MONITORING OF DATA CONTINUITY WELLS</b>						
<b>PARAMETER</b>	<b>Durham</b>		<b>Hill</b>		<b>Saddle</b>	
	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>
Depth to Water (feet)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Level Elevation (in feet amsl)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field & Lab pH (S.U.)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Field Specific Conductance (µmhos/cm)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Temperature Field (°F)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Dissolved Solids	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Fluoride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nitrate-Nitrite as N	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sulfate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Antimony	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Arsenic	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Barium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Beryllium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cadmium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chromium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Copper	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Lead	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Mercury	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Nickel	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Selenium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Thallium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Zinc	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Benzene	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Toluene	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Ethylbenzene	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Xylene	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

**NOTES:**

Metals shall be analyzed as dissolved metals.

Res. =Reserved means that ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.3.

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.

AQL = Aquifer Quality Limit.

AL = Alert Level.

None = Analysis is required but an AQL is not established in the permit.

<b>TABLE 6 BIENNIAL GROUNDWATER MONITORING OF DATA CONTINUITY WELLS</b>						
<b>PARAMETER</b>	<b>Durham</b>		<b>Hill</b>		<b>Saddle</b>	
	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>	<b>AQL</b>	<b>AL</b>
Total Alkalinity	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Carbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Bicarbonate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Hydroxide	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Chloride	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Phosphate	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Calcium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Magnesium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Potassium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Sodium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Cobalt	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Iron	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aluminum	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Manganese	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Total Petroleum Hydrocarbons (TPH)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Gross Alpha Particle Activity (pCi/L) <sup>2</sup>	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Radium 226 + Radium 228 (pCi/L)	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Uranium	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor

**NOTES:**

Metals shall be analyzed as dissolved metals.

Res. =Reserved means that ADEQ will establish an AQL and AL based on the ambient monitoring performed under Section 2.5.3.3.

Monitor = Analysis is required but an AQL and/or AL is not established in the permit.

AQL = Aquifer Quality Limit.

AL = Alert Level.

None = Analysis is required but an AQL is not established in the permit.

---

<sup>2</sup> If Gross Alpha Particle Activity is greater than 15 pCi/L, then test for adjusted gross alpha particle activity. The adjusted gross alpha particle activity is the gross alpha activity, including radium 226, minus radon and total uranium (the sum of the uranium 238, uranium 235 and uranium 234 isotopes).

<b>TABLE 7</b>				
<b>LEAK COLLECTION AND REMOVAL SYSTEM MONITORING</b>				
<b>Facility Name</b>	<b>Alert Level #1 (gallons per day; gpd)</b>	<b>Alert Level #2 (gpd)</b>	<b>Monitoring Method</b>	<b>Monitoring Frequency</b>
Raffinate Pond #1	1,440	7,074	Manual	Weekly
ILS Pond	1,440	7,074	Manual	Weekly
Solution Pond #1	3,140	20,895	Manual	Weekly
Solution Pond #3	1,849	12,358	Manual	Weekly

**NOTE:** The volume of liquid pumped from the LCRS shall be entered in a facility log book on a weekly basis. The Alert Level 1 (AL1) or Alert Level 2 (AL2) shall be exceeded when the amount of leakage pumped from the sump for the pond is greater than the applicable quantity above. Contingency requirements of Sections 2.6.2.4 and 2.6.2.5 shall be followed for AL1 and AL2 exceedances, respectively. An exceedance of AL 1 or AL2 is not a violation of the permit unless the permittee fails to perform actions as required under the Sections referenced above.

<b>TABLE 8</b>			
<b>ONE-TIME SAMPLING EVENT-DISCHARGE MONITORING LOCATIONS AND PARAMETERS</b>			
<b>Sampling Point Number</b>	<b>Facility</b>	<b>Latitude</b>	<b>Longitude</b>
001	Solution Pond #3	32° 05' 57" N	110° 04' 14" W
002	Raffinate Pond #1	32° 05' 56" N	110° 04' 11" W
<b>Discharge Monitoring Parameters (in mg/L unless otherwise noted)</b>			
pH – field & lab (SU)	Sodium	Nickel	
Specific Conductance - field and lab (µmhos/cm)	Iron	Selenium	
Total Dissolved Solids	Aluminum	Thallium	
Total Alkalinity	Antimony	Zinc	
Carbonate	Arsenic	Gross Alpha Particle Activity (pCi/L) <sup>1</sup>	
Bicarbonate	Barium	Radium 226 + Radium 228 (pCi/L)	
Nitrate	Beryllium	Uranium-Isotopes (pCi/L) <sup>2</sup>	
Sulfate	Cadmium	Total Petroleum Hydrocarbons	
Chloride	Chromium	Benzene	
Fluoride	Cobalt	Toluene	
Calcium	Copper	Ethylbenzene	
Ammonia	Lead	Total Xylenes	
Magnesium	Manganese	Uranium, Total (µg/L)	
Potassium	Mercury		

1. The adjusted gross alpha particle activity is the gross alpha particle activity, including radium 226, and any other alpha emitters, if present in the water sample, minus radon and total uranium (the sum of uranium 238, uranium 235 and uranium 234 isotopes). The gross alpha analytical procedure (evaporation technique: EPA Method 900.0) drives off radon gas in the water samples. Therefore, the Adjusted Gross Alpha should be calculated using the following formula: (Laboratory Reported Gross Alpha MINUS Sum of the Uranium Isotopes).
  2. Uranium Isotope activity results must be used for calculating Adjusted Gross Alpha. No SMRF reporting is required.
- NOTE:** Metals shall be analyzed as dissolved metals.

**5.0 REFERENCES AND PERTINENT INFORMATION**

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

1. Contingency and Emergency Response Plan, APP Application Supplement, Attachment 23G, September 28, 2006
2. APP Application received August 21, 2007
  - a. Public Notice dated July 7, 2010
  - b. Responsiveness Summary dated August 10, 2010
  - c. Issued on October 15, 2010
3. Other Amendment Application for Permit Transfer received December 4, 2015, and issued on April 6, 2016.
4. Other Amendment Application received on November 9, 2016, which also included an updated closure strategy. Issued on April 14, 2017.
5. Significant Amendment Application received December 22, 2016
  - a. Public Notice dated May 3, 2017
  - b. Issued on June 26, 2017
6. Significant Amendment Application received December 18, 2017
  - a. Public Notice dated March 28, 2018
  - b. Issued on June 28, 2018
7. Significant Amendment Application received December 18, 2017.
  - a. Public Notice dated \_\_\_\_\_.
  - b. Issued on \_\_\_\_\_

**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 upon the amount of daily influent or discharge of pollutants in gallons per day as established by A.R.S. § 49-242.

**6.2 Duty to Comply [A.R.S. §§ 49-221 through 49-263]**

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 at the applicable point of compliance for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an aquifer water quality standard 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(D), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

**6.6 Reporting of Bankruptcy or Environmental Enforcement [A.A.C. R18-9-A207(C)]**

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

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

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

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

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

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

**6.9 Duty to Modify [A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]**

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

**6.10 Permit Action: Amendment, Transfer, Suspension & 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, renewed, 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).