

**STATE OF ARIZONA
OTHER AMENDMENT TO
AQUIFER PROTECTION PERMIT NO. P-101679
PLACE ID No. 1567 LTF 49162**

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, Freeport-McMoRan Sierrita Inc. is hereby authorized to operate the Freeport-McMoRan Sierrita Mine located near Green Valley, Arizona, Pima County, over groundwater of the Upper Santa Cruz Basin, in Sections 8, 9, 13, 16, 17, 19, 20, and 21, and parts of Sections 3-7, 10, 11, 14, 15, 18, and 24, in Township 18 South, Range 12 East; and Sections 17-20, 29, and parts of Sections 16, 21, 28, and 30 in Township 18 South, Range 13 East, of the Gila and Salt River Base Line and Meridian.

This permit becomes effective on the date of the Water Quality Division Director's signature and shall be valid for the life of the facility (operational, closure, and post-closure periods), unless suspended or revoked pursuant to A.A.C. R-18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

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

1.1 PERMITTEE INFORMATION

| | | |
|------------------------------------|---|---|
| Facility Name: | Freeport-McMoRan Sierrita Inc. | |
| Permittee: | Mailing Address: | Facility's Street Address: |
| Freeport-McMoRan Sierrita Inc. | P.O. Box 527 Green Valley, AZ 85622-0527 | 6200 West Duval Mine Road Green Valley, AZ 85622 |
| Facility Contact: | John Broderick, Vice President - General Manager | (520) 648-8500 |
| Emergency Telephone Number: | Chad Fretz, (520) 648-8700 | |

Latitude: 31° 51' 14" N

Longitude: 111° 04' 13" W

Legal Description: Sections 8, 9, 13, 16, 17, 19, 20, and 21, and parts of Sections 3-7, 10, 11, 14, 15, 18, and 24, in Township 18 South, Range 12 East; and Sections 17-20, 29, and parts of Sections 16, 21, 28, and 30 in Township 18 South, Range 13 East, of the Gila and Salt River Base Line and Meridian.

1.2 AUTHORIZING SIGNATURE

Henry R. Darwin, Acting Director
Water Quality Division
Arizona Department of Environmental Quality
Signed this ____ day of _____, 2009

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)]**

Freeport-McMoRan Sierrita Inc. (Sierrita) is operating an open pit mine and mineral concentration facility which is located approximately 6 miles northwest of Green Valley, Arizona. Green Valley lies approximately 25 miles south of the city of Tucson, Arizona. Sierrita operations (previously Cyprus Sierrita Corporation (CSC) and Phelps Dodge Sierrita Inc. (PDSI)) include conventional crushing and flotation followed by differential flotation, leaching and roasting of molybdenum disulfide, rhenium recovery, molybdenum disulfide production and packaging, molybdenum trioxide production and packaging, and leach dump, solution extraction/electrowinning.

Sierrita produces copper, molybdenum, and rhenium products. Copper and molybdenum disulfide is produced through conventional milling and froth flotation and pure copper is produced through solution extraction and electrowinning. Copper sulfate is produced through solution extraction and crystallization. Molybdenum trioxide is produced through roasting. Rhenium is also produced as a byproduct of the molybdenum roasting operations.

The Sierrita property consists of three open-pits (the Sierrita-Esperanza pit, a molybdenum satellite pit, and the Ocotillo pit), a 115,000-ton-per-day concentrator, two molybdenum roasting plants, a rhenium plant, an oxide and low-grade sulfide dump leaching operation, and a copper sulfate plant. Ore production from each pit is highly variable; however, the aggregate production is limited to the capacity of the plant operation. The mine is capable of producing up to 250 million pounds of copper and, as a co-product, 25 million pounds of molybdenum, annually. Domestic wastewater treatment is separately permitted under general permits, and is not permitted under this individual APP.

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

2.1.1 Duval Canal Velocity Pond (D-64)(Non-Stormwater Impoundment)

This new facility is an unlined flow-through structure, and receives stormwater runoff from the crushing and conveying area. It is sized for the 100 year, 24 hour storm event. Accumulated fluids drain into Duval Canal.

2.1.2 Amargosa Pond (D-05)(Non-Stormwater Impoundment)

This facility provides containment for stormwater runoff and upset conditions from Headwall No. 1, Bailey Lake, Raffinate Pond No. 2, and Drain Pond No. 2. It has a storage capacity of 49 acre-feet, and a depth of 25 feet. It has a single 80-mil high-density polyethylene (HDPE) liner, underlain by a compacted subgrade.

2.1.3 SX-1 Drain Pond (D-33)(Non-Stormwater Impoundment)

This facility provides containment for any wash-down and runoff from the SX-1 Plant. It is double-lined, with two 60-mil HDPE liners, and a leakage collection and recovery system (LCRS). It has a storage capacity of 0.2 acre-feet, and an approximate depth of 7 feet. Accumulated fluids are pumped back into the SX-1 leach circuit.

2.1.4 SX-1 Tank Farm Pond (D-34)(Non-Stormwater Impoundment)

This facility provides containment for stormwater runoff and surface flows during upset conditions from the upgradient SX-1 Tank Farm Secondary Containment. It has a single 80-mil geomembrane liner, overlying a 3-inch gunnite layer, with a storage capacity of 0.12 acre-feet, and a depth of 5 feet. Accumulated fluid is pumped back into the SX-1 circuit.

2.1.5 Headwall No. 1 (D-02)(PLS Impoundment)

This facility provides containment for pregnant leach solution (PLS) from the oxide leach area. It is an unlined impoundment created by an earthen dam. The impoundment has a

storage capacity of 3 acre-feet, and a maximum depth of 22 feet. Accumulated PLS is directed into Bailey Lake through an HDPE-lined channel. The facility is designed to overflow into Bailey Lake.

2.1.6 Bailey Lake (D-03)(PLS Impoundment)

The facility is designed to contain overflow and subsurface flow from Headwall No. 1, and excess fluid from the Moly Decant Tanks. It is an unlined impoundment behind an earthen dam, with a storage capacity of 135 acre-feet, and a maximum depth of 42.1 feet. Accumulated fluid is pumped to SX Plant Nos. 1 and 2. The facility is designed to overflow into Amargosa Pond through a concrete-lined spillway. A sump and pumpback system will be added downgradient to control seepage.

2.1.7 Raffinate Pond No. 2 (D-10)(Raffinate Impoundment)

This facility provides temporary storage for copper depleted leakage solution from SX Plants Nos. 1 and 2. It is double-lined, using two 60-mil HDPE liners with a LCRS, with a storage capacity of six acre-feet, and a maximum depth of 16 feet. Accumulated solution is pumped to the leach dumps for leaching operations.

2.1.8 Drain Pond No. 2 (D-15)(Non-Stormwater Impoundment)

This facility provides temporary containment for organics used in the SX Plants, and for upset conditions from Tank Farm 2. It is double-lined, using two 60-mil HDPE liners with a LCRS, with a storage capacity of one acre-foot, and a maximum depth of ten feet. Accumulated fluid is pumped to Raffinate Pond No. 2, the SX Strip Solution Tanks, or Headwall No. 1. It is designed to overflow into Amargosa Pond through a HDPE-lined spillway.

2.1.9 Moly Decant Tanks and Pad Area (D-39A)(Non-Stormwater Impoundment) ¹

Facility consists of four partially below-ground steel-reinforced concrete walls with an adjacent steel-reinforced concrete drying pad. The adjacent drying pad is approximately 60 feet by 110 feet. Each Moly Decant Tank is 50 feet by 26 feet and 3 to 4 feet deep, with a soil/bentonite admix bottom. The impoundments provide containment of overflow from the molybdenum processing thickeners. Any excess fluid is pumped to Bailey Lake. The concrete pad is used to further dry the molybdenum concentrate. Once dry, concentrate is moved to the molybdenum roaster. Downgradient, two interceptor trenches, equipped with pump-back systems, capture any potential discharge and pump it back into the SX circuit.

2.1.10 Sulfide Active Leach Area (D-17)(Leach Dump)

This facility is a sulfide leach dump. The facility covers an area of approximately 420 acres. Dilute sulfuric acid and raffinate is applied to the facility, and leachate is collected in the downgradient Headwall Nos. 3 and 5. Containment of the overflow and run-on from storm events is provided by Amargosa Pond and SW-3 Pond.

2.1.11 Duval Canal (D-29)(Conveyance Channel)

This facility is a solution conveyance channel lined with an 80-mil HDPE geomembrane. It is 4.25 miles long, 10 feet wide, and 6 feet deep, with a design flow capacity of 31,000 cubic feet per second (cfs). The facility receives process solutions and surface runoff from the Plant Site, including, but not limited to, overflow from Amargosa Pond, B Pond, seepage from B and C Sumps, tailings thickeners, and decant pond, bleed from the lime scrubber, dust control water from crushing and conveying, and vehicle wash water. Fluids are conveyed to the Sierrita Tailings Impoundment.

2.1.12 Amargosa Spillway (D-48)(Conveyance Channel)

This facility is a solution conveyance channel lined with an 80-mil HDPE geomembrane. It is 1,950 feet, 29 feet wide, and 3 to 5 feet deep, with a design flow capacity of 1,762 cfs. The facility receives overflow from Amargosa Pond during upset conditions, and stormwater runoff from upgradient areas. Fluids are conveyed to Duval Canal.

2.1.13 07 Pond (D-43)(Non-Stormwater Impoundment)

This facility provides containment for stormwater runoff from the Ocotillo Waste Rock Pile, and native upgradient areas to the East. It has a 80-mil HDPE liner, a storage capacity of 24.9 acre-feet, and a depth of 25 feet. Accumulated fluids are pumped to the Raw Water Reservoir.

2.1.14 New D Pond (D-45)Non-Stormwater Impoundment)

This facility provides containment for runoff from the closed CLEAR Plant and Copper Sulfate areas. The impoundment is single lined with an 80-mil HDPE liner, has a storage capacity of 14 acre-feet, and a depth of 8 feet. Accumulated fluids are gravity fed into Duval Canal through a 10-inch HDPE pipeline.

2.1.15 Copper Sulfate Ponds 1 & 2 (D-59)((Non-Stormwater Impoundments)

These facilities provide secondary containment for upset conditions in the Copper Sulfate Plant area. They are single lined, with 60-mil HDPE liners. Each impoundment has a storage capacity of 15,000 gallons, and a depth of seven feet. Accumulated fluid is pumped into the SX/Copper Sulfate circuit.

2.1.16 Copper Sulfate Plant Tanks Secondary Containment Structures (D-65)(Non-Stormwater Impoundments)

The facility provides secondary containment for seven above ground SX storage tanks, and runoff from the old plant area. The structure has a storage capacity of 14,000 gallons, and a depth of 8 inches. It is 118 feet long and 32 feet wide, with a 10-inch high curb around the perimeter. Accumulated fluids are pumped to Raffinate Pond #2.

2.1.17 Tailing Pipeline Containment Structures (D-62A-F)(Non-Stormwater Impoundments)

These facilities provide containment for breaches in the tailings slurry pipeline and reclaim pipeline. The six containment structures are soil compacted, with a depth of 8 inches. Structures A and B have a storage capacity of 1.462 million gallons, and C-F have a storage capacity of 1.815 million gallons.

2.1.18 SX-3 Stormwater Pond (D-11)(Non-Stormwater Impoundment)

This impoundment provides containment of stormwater runoff from native, upgradient terrain, upset conditions at Headwall No. 3, Raffinate Pond No. 3, SX-3 Drain Pond, and surface runoff from the Headwall No. 2 Area. The facility has a single 80-mil HDPE liner, a storage capacity of 52 acre-feet, and a depth of 17 feet. Accumulated solutions are pumped to Raffinate Pond No. 3, or, if needed, to Amargosa Pond.

2.1.19 SX-3 Drain Pond (D-31)(Non-Stormwater Impoundment)

The impoundment receives leaching process solution (PLS, raffinate, organics) from the SX-3 Tank Farm Secondary Containment, and stormwater. It is double-lined with two 60-mil HDPE liners and a LCRS. The storage capacity is 2.6 acre-feet. Accumulated solutions are pumped back into the leach circuit. The facility is designed to overflow through a lined spillway into the SX-3 Stormwater Pond.

2.1.20 Cat Pond 1 (D-42A)(Non-Stormwater Impoundment)

The facility provides containment for stormwater runoff from the Sierrita Waste Rock Pile and upgradient native terrain, and upset conditions from Headwall No. 5. It is lined with an

80-mil HDPE liner, has a fluid storage capacity of 25.2 acre-feet, and a depth of 27 feet. Accumulated fluid is pumped into the leach circuit.

2.1.21 Cat Pond 2 (D-42B)(Non-Stormwater Impoundment)

The facility provides containment for stormwater runoff from the Sierrita Waste Rock Pile and upgradient native terrain. It is lined with an 80-mil HDPE liner, has a fluid storage capacity of 60.1 acre-feet, and a depth of 40 feet. Accumulated fluid is pumped into the leach circuit.

2.1.22 Raffinate Pond No. 3 (D-04)(Process Solution Impoundment)

This facility provides containment for stormwater runoff, during upset conditions from SX-3 Stormwater Pond, Headwall No.3, and Headwall No. 5, and subsurface flows pumped from Interceptor No. 3. It is designed to overflow through a lined spillway into SX-3 Stormwater Pond. It is double-lined with two 60-mil HDPE liners and LCRS, with a storage capacity of 16 acre-feet, and a maximum depth of 22 feet.

2.1.23 Headwall No. 2 (D-46)(Process Solution Impoundment)

This facility collects PLS from the oxide and sulfide leach areas. The headwall is lined with an 80-mil HDPE liner on the face of the dam, and is keyed into bedrock. Accumulated fluid is discharged into Raffinate Pond No. 3 using a 10-inch diameter HDPE pipeline. The facility is designed to overflow through Headwall No. 2 Channel into SX-3 Stormwater Pond.

2.1.24 Headwall No. 3 (D-09)(Process Solution Impoundment)

This facility collects PLS from the Sierrita Sulfide Active Leach Area, and upgradient stormwater runoff. It is partially lined with 80-mil HDPE liners, with a storage capacity of 15 acre-feet, and a maximum depth of 21 feet. Accumulated fluid is pumped through two 24-inch HDPE pipelines into a concrete vault, and then to Raffinate Pond No. 3. It is designed to overflow through a concrete-lined spillway into Stormwater No. 3 Pond.

2.1.25 Headwall No. 5 (D-12)(Process Solution Impoundment)

The facility receives potentially impacted stormwater commingled with PLS from the Sierrita Active Leach Area. It is partially lined with an 80-mil HDPE liner, has a storage capacity of 11.44 acre-feet, and a maximum depth of 20 feet. Accumulated fluid is pumped to Headwall No. 3.

2.1.26 Oxide Active Leach Area (D-18)(Leach Dump)

This facility is an oxide leach dump, covering a surface area of approximately 570 acres. Dilute sulfuric acid and raffinate is applied to the facility, and the PLS collected at Headwall No. 1, Headwall No. 2 and Headwall No. 3. Stormwater overflow and run-on is contained in Amargosa Pond and SW-3 Pond.

2.1.27 Headwall No. 2 Channel (D-08)(Solution Conveyance Channel)

This facility provides conveyance for stormwater from upgradient native terrain, and during upset conditions from an upgradient booster station. It is 2,500 feet long, 10 feet wide at the base, and 2.5 feet deep. It is lined with a 60-mil HDPE liner, and has a flow capacity 420 cfs. Accumulated fluid is discharged at the east end of SX-3 Stormwater Pond.

2.1.28 Rhenium Plant Sump (D-63)(Non-Stormwater Impoundment) ¹

The facility is a single-lined secondary containment with a 90-mil PVC liner underlain by 6-inch thick steel reinforced concrete poured as part of the adjacent pad. A 100-mil HDPE rubber sheet cushion is laid down at the bottom of the impoundment beneath the 90-mil liner. The

impoundment is 4 feet x 4 feet x 3.5 feet deep provides secondary containment during upset condition from the concrete pad which is used for temporary storage of packaged and sealed sodium perrhenate. Accumulated fluid in the impoundment during upset conditions is recovered into the Rhenium processing.

2.1.29 Raw Water Reservoir (D-21)(Non-Stormwater Impoundment)

The facility is a single-lined impoundment with a 3-foot thick compacted bentonite-amended soil liner with a hydraulic conductivity of approximately 2×10^{-8} cm/sec. The impoundment has a fluid storage capacity of 25 acre-feet, with a depth of 50 feet. The impoundment provides containment for plant make-up water pumped from the interceptor wellfield east of the tailing impoundment, reclaim water from the tailings, fresh water from Canoa wellfield and Esperanza wellfield and periodically stormwater from 07 Pond.

2.1.30 Decant Ponds and Pad Area (D-20)(Process Solution Impoundments)

This facility consists of reinforced concrete lined basins (6-inch thick concrete with polyethylene tape-sealed joints and PVC liner on the side walls) covered by gunnite. The pad area is 44 feet by 276 feet. The facility provides containment of overflow from the copper-moly thickeners and used for settling and recovery of solids. Reclaimed fluids are pumped to the reclaim circuit in the Sierrita Tailing Thickeners.

2.1.31 Tailing Thickeners (D-40)(Process Solution Impoundments)

This facility consists of four circular walls, each with a diameter of 508 feet, and a maximum depth of 23 feet. The walls are constructed with concrete, the floor with 3 feet of compacted soil-bentonite admix with an average hydraulic conductivity of 2.2×10^{-8} cm/sec and average moisture content of 8.9%. The thickener area is underlain by Tertiary intrusives. The impoundments provide containment of the tailings before they are deposited in the tailing impoundment.

2.1.32 Drainage Channel West Plant Area (D-22)(Solution Conveyance Channel)

This facility provides conveyance for stormwater runoff, and upset conditions from the West Plant Area. It is 5,370 feet long, 40-100 feet wide, and 4-10 feet deep, with a 60-mil HDPE liner. It is designed to flow into Duval Canal.

2.1.33 Thickeners Area Drainage Channel (D-41)(Solution Conveyance Channel)

This facility conveys stormwater runoff, and upset conditions of process solutions in the Sierrita Mill tailing thickener area. It is lined with a 60-mil HDPE liner, is 18 feet wide, with an average depth of 6 feet, and is designed to flow into Duval Canal.

2.1.34 Sierrita Tailing Impoundment (D-01)(Tailing Impoundment)

This tailings impoundment covers an area of approximately 4,316 acres, with a 2,500 foot divider dam to separate it into north and south sections. Water accumulates toward the west side of the impoundment, and is pumped to the Raw Water Reservoir. Tailings are deposited such that the finer grained tailings slimes provide a low permeability coating of the floor of the impoundment, to minimize infiltration of fluids.

2.1.35 Sierrita Tailing Impoundment Sediment Basins (D-01 A-K)(Tailings Impoundments)

The facility consists of eleven unlined sediment ponds with varying storage capacities. Caliche layers provide a zone of permeability relatively lower than the underlying alluvium. The sediment ponds provide containment for surface water runoff from the face of tailing dam along with the tailings that have been discharged off the tailing impoundment and deposited into these ponds. Accumulated fluid is allowed to evaporate. Interceptor well water is pumped to the Raw Water Reservoir.

2.1.36 Blue Algae Pond (D-58)(Tailings Impoundment)

This facility consists of a single-lined impoundment with a 36-mil ultra violet (UV) protected polypropylene geomembrane liner and three 500-gallon tanks. The facility is located on top of the Esperanza Tailing Impoundment with relatively low permeability. The impoundment has a storage capacity of approximately 1 acre-foot with a depth of 6 feet. The impoundment provides containment of algae cultures used as a biological soil crust reducing fugitive dust from the tailing impoundment. Accumulated cultures are pumped out into the active tailing impoundment.

2.1.37 West Waste Rock Piles (D-19)(Waste Rock Piles)

These facilities store waste rock from mining operations, covering a surface area of 715 acres.. Run-on is diverted upstream of the piles, while runoff from precipitation falling on the piles gravity flows into Cat Ponds 1 and 2.

2.1.38 Ocotillo Waste Rock Pile (D-36)(Waste Rock Pile)

This facility stores waste rock from mining operations. The facility covers approximately 200-250 acres. Run-on is diverted upstream of the piles, while runoff from precipitation falling on the piles flows directly into Ocotillo Pit and 07 Pond through an HDPE-lined collection channel located at the toe of the pile.

2.1.39 M Waste Rock Pile (D-47)(Waste Rock Pile)

This facility stores waste rock from mining operations, covering a surface area of 275 acres. Runoff from the facility enters the Sierrita-Esperanza Pit.

2.1.40 V Waste Rock Pile (D-56)(Waste Rock Pile)

This new facility stores waste rock from mining operations, covering a surface area of 30 acres. The runoff from the facility follows the natural drainage.

2.1.41 Sierrita-Esperanza Pit (D-55)(Open Pit)

This facility is an open pit created by mining operations. It has a surface area of 72 million square feet, and a depth of approximately 1,650 feet. The pit creates a passive containment with the groundwater boundary at an elevation of 3800 feet a.m.s.l. The storage capacity of the facility is about 500 million gallons. The pit receives surface stormwater, and overflow from SX-3 Stormwater Pond, Amargosa Pond, and the Truck Wash. Accumulated fluid is pumped to the SX Plant and the reclaim water system.

2.1.42 Ocotillo Pit (D-60)(Open Pit)

This facility is an open pit created by mining operations. It is approximately 1,800 feet in diameter. It provides containment for stormwater runoff discharging directly to the bottom of the pit. It is inaccessible due to overburden encroachment of the access ramp. Sierrita plans to backfill this pit with waste rock, which will minimize the potential for discharge.

2.1.43 Moly Satellite Pit (D-61)(Open Pit)

This facility is a series of push-backs representing the beginnings of a new open pit, located immediately north of the Sierrita-Esperanza Pit. Accumulated stormwater is pumped to the solution storage area in the Sierrita-Esperanza Pit.

2.1.44 Truck Wash (D-16)(Vehicle Wash)

The facility is located near the maintenance shop on the south side of the Sierrita Pit. Trucks are washed off by high-pressure hoses with the water discharging through a metal grate to a concrete-lined sump for settling of solids. The water is then run through an oil water separator and discharged to the Sierrita Pit.

2.1.45 Copper Concentrate Storage (D-35)(Storage Facility)

The facility is an engineered concrete-reinforced pad with an 18-inch thick concrete containment berm underlain by 6-inches of compacted gravel. Facility is underlain by bedrock with relatively low hydraulic conductivity ranging from 10^{-6} cm/sec to 10^{-4} cm/sec.

Note 1: Some facilities use the term “tank” or “sump” in their descriptive title. These are listed among the discharging facilities covered by this permit because they do not meet the statutory definition of exempt facilities.

Annual Registration Fee [A.R.S. § 49-242(E)]

The Annual Registration Fee for this permit is established by A.R.S. § 49-242(E) and is payable to ADEQ each year. The design flow is 10,000,000 gallons or more.

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 costs are \$17,729,265 and \$705,341, respectively. The financial capability was demonstrated through A.A.C. R18-9-A203(C)(8).

Mitigation Order [A.R.S. § 49-286]

The permittee shall perform the mitigation measures under Mitigation Order on Consent No. P-50-06 issued on June 14, 2006 (Consent Order). As specifically prescribed in the Consent Order, the permittee shall prepare and submit a Work Plan to ADEQ for review and approval, which is designed to complete characterization of the vertical and horizontal extent of the sulfate plume down gradient Sierrita; shall inventory all existing registered private wells used as a drinking water source and public drinking water system wells located within a one mile radius of the sulfate plume’s outer edge; shall submit a Mitigation Plan to ADEQ for review and approval, which identifies and evaluates alternatives (e.g. containment, collection and discharge with or without treatment, institutional controls, alternative water supplies (including, but not limited to, a new supply well, use of an existing supply well, modifying the screened interval of an existing supply well, connection to an existing public water supply system, and bottled water), mixing or blending, technically practicable treatment, and no action) to practically and cost effectively provide a drinking water supply that meets applicable drinking water quality standards and with sulfate concentrations less than 250 mg/L to the owner/operator of an existing drinking water supply; and shall establish a community advisory group (CAG) consisting of at least ten persons, chosen from a cross section of the community, for the purpose of identifying and improving the public’s access and understanding of information regarding this Consent Order.

2.2 Best Available Demonstrated Control Technology (BADCT)

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

For facilities listed in Section 4, Table 4.1.1, design and construction details are described in the APP application and supplemental file documents. Also, this technical information outlines how each facility is operated to ensure the greatest degree of discharge reduction achievable through application of BADCT, processes, operating methods or other alternatives, including, where practicable, a technology permitting no discharge of pollutants. All permitted facilities shall be constructed, operated, and maintained in accordance with BADCT, as outlined in the application and Section 4, Table 4.1.1. All facilities have been evaluated for BADCT under APP requirements.

2.2.1 Engineering Design

The facilities list, with BADCT descriptions, is located in Section 4, Table 4.1.1.

2.2.2 Site Specific Characteristics

The passive containment created by the Sierrita-Esperanza Pit is used as an integral part of BADCT

for the following facilities:

Truck Wash (D-16), Sulfide Active Leach Area (D-17), Oxide Active Leach Area (D-18), West Waste Rock Piles (D-19), M Waste Rock Pile (D-47), and Moly Satellite Pit (D-61).

2.2.3 Pre-Operational Requirements

Not applicable

2.2.4 Operational Requirements

At a minimum, permitted facilities shall be inspected for performance levels listed in Section 4, Table 4.2.1. Results of these inspections and monitoring activities shall be documented and maintained at the mine location for at least ten (10) years, and as required by Section 2.7.2 of this permit.

If damage is identified during an inspection that could cause or contribute to an unauthorized discharge, proper repairs shall be promptly performed. A summary of the repairs, including a description of the procedures and materials used shall be maintained with the inspection records noted above.

| Table 2.2.4 Leakage Rates for LCRS Facilities | | |
|--|----------------------------------|---|
| Facility Name (#) | Action Leakage Rate (GPD) | Rapid and Large Leakage Rate (GPD) |
| Raffinate Pond No. 3 (D-04) | 1132 | 9947 |
| Raffinate Pond #2 (D-10) | 1081 | 9498 |
| Drain Pond No. 2 (D-15) | 124 | 1089 |
| SX-3 Drain Pond (D-31) | 553 | 4858 |
| SX-1 Drain Pond (D-33) | 28 | 245 |

GPD = gallons per day

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 listed below to prevent unauthorized discharges pursuant to A.R.S. §§ 49-201(12) resulting from failure or bypassing of BADCT pollutant control technologies including liner failure¹, uncontrollable leakage, overtopping (e.g., exceeding the maximum storage capacity, defined as a fluid level exceeding the crest elevation of a permitted impoundment), berm breaches that result in an unexpected loss of fluid, accidental spills, or other unauthorized discharges. 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 Leaching Facilities

The Leaching Facilities are designed and authorized for use in leaching of ore. The Leaching Facilities shall be constructed and operated in accordance with the BADCT outlined in Section 4, Table 4.1.1, and the ultimate heights shall not exceed those set forth in the approved permit application and engineering study.

2.3.2 Pregnant Leach Solution Ponds and Impoundments

The PLS Ponds and Impoundments are designed and authorized to receive pregnant leach solution, stormwater, process water and process upset events.

2.3.3 Non-stormwater Impoundments

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

¹ Liner failure in a single-lined impoundment is any condition that would result in a leakage exceeding 550 gallons per day per acre.

2.4 Points of Compliance [A.R.S. § 49-244]

There are 12 established POC well locations. Table 2.4.1 lists the POC wells:

| Table 2.4.1 POINTS OF COMPLIANCE FOR SIERRITA MINE | | | | | |
|---|---------------------------|---------------------------------|-----------------------------|-----------------------------|-------------|
| Well Number | Designation ² | Cadastral Location ¹ | Latitude North ¹ | Longitude West ¹ | ADWR Number |
| MH-14* | Hazardous / Non-Hazardous | (D-18-13) 16bcc2 | 31° 51' 48.8" | 111° 01' 28.8" | 55-528098 |
| MH-15W* | Hazardous / Non-Hazardous | (D-18-13) 21cbc | 31° 50' 44" | 111° 01' 28.5" | 55-528093 |
| MH-16W* | Hazardous / Non-Hazardous | (D-18-13) 28cbb3 | 31° 49' 58.3" | 111° 01' 28.7" | 55-528099 |
| MH-18 | Hazardous / Non-Hazardous | (D-18-12) 20cdd | 31° 50' 28.4" | 111° 08' 26" | 55-561874 |
| MH-19 | Hazardous / Non-Hazardous | (D-18-12) 21ccc | 31° 50' 29.1" | 111° 07' 43.7" | 55-561878 |
| MH-20 | Hazardous / Non-Hazardous | (D-18-12) 21dda | 31° 50' 38" | 111° 06' 47.1" | 55-561880 |
| MH-21 | Hazardous / Non-Hazardous | (D-18-12) 11bbc | 31° 52' 58.7" | 111° 05' 36.3" | 55-561881 |
| MH-22 | Hazardous / Non-Hazardous | (D-18-12) 14bdd1 | 31° 51' 50.8" | 111° 05' 17.5" | 55-561872 |
| MH-23 | Hazardous / Non-Hazardous | (D-18-12) 14bdd2 | 31° 51' 51.6" | 111° 05' 17.4" | 55-561871 |
| MH-27 | Hazardous / Non-Hazardous | (D-18-12) 21add | 31° 51' 02" | 111° 06' 54" | 55-203702 |
| MH-28* | Hazardous / Non-Hazardous | (D-18-13) 21bbb3 | 31° 51' 19.6" | 111° 01' 34.0" | 55-903648 |
| MH-29* | Hazardous / Non-Hazardous | (D-18-12) 28bba3 | 31° 50' 20.9" | 111° 01' 29.2" | 55-903649 |

1 Cadastral coordinates and latitude and longitude bearings are approximate.
 2 Hazardous = Well used to monitor hazardous constituents. Non-Hazardous = Well used to monitor non-hazardous constituents.
 * East-Half POC Wells

The monitoring parameters and requirements for each POC well are listed in Section 4, Tables 4.2.2, 4.2.3 and 4.2.4. The Director may amend this permit to designate additional points of compliance if information on groundwater gradients or groundwater usage indicates the need.

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

All monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. 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. The permittee shall consult the most recent version of the ADEQ Quality Assurance Project Plan (QAPP) and Environmental Protection Agency (EPA) Title 40 Code of Federal Regulations (CFR) PART 136 for guidance in this regard. Copies of laboratory analyses and chain of custody forms shall be maintained at the permitted facility. Upon request these documents shall be made immediately available for review by ADEQ personnel.

2.5.1 Discharge Monitoring

None required by this permit.

2.5.2 Facility / Operational Monitoring

The operational monitoring requirements for the facilities referenced in Section 4.1, Table 4.1.1 are

listed in Section 4.2, Table 4.2.1.

2.5.3 Groundwater Monitoring and Sampling Protocols

2.5.3.1 Groundwater Sampling Protocol

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, 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 72 hours, whichever is shorter, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as “dry” for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the Self-monitoring Report Form (SMRF).

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

2.5.3.2 POC Well Installation

Not applicable

2.5.3.3 Alert Levels (ALs) for POC Wells

ALs shall be calculated for all contaminants with an established numeric AWQS for each POC well. The AL and AQL for each parameter for which the eight rounds of ambient samples have been completed, are listed in Section 4, Tables 4.2.3, 4.2.4.

Where ambient sampling is required, within 90 days of the receipt of the laboratory analyses for the final quarter or month of the ambient groundwater monitoring period for each POC well referenced in Section 2.4, Table 2.4.1 the permittee shall submit the ambient groundwater data in tabulated form to the Groundwater Section, APP & Drywell Unit 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, Tables 4.2.3, and 4.2.4 to be established for each POC well, shall be submitted to the GWS-APP&DRU. 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 GWS-APP&DRU. The ALs shall be established and calculated by the following formula, or another valid statistical method submitted to GWS-APP&DRU in writing and approved for this permit by the GWS-APP&DRU:

$$AL = M + KS$$

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:

- A. The AL shall be calculated for a parameter using the analyses from a minimum of eight consecutive quarterly sample events. For wells MH-27, MH-28, and MH-29, eight

consecutive monthly sample rounds must be used to calculate ALs. The permittee shall not use more than eight sample rounds in the calculation of a parameter. Any data where the PQL exceeds 80 percent of the AWQS shall not be included in the AL calculation.

- B. 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.
- C. 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.
- D. 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.

2.5.3.4 Aquifer Quality Limits for POC Wells

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

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

2.5.3.5 Compliance Groundwater Monitoring for POC Wells

Quarterly compliance groundwater monitoring in all other POC wells shall commence within the first calendar quarter after the effective date of this permit. For quarterly compliance monitoring, the permittee shall analyze groundwater samples for the parameters listed in Section 4, Table 4.2.3. In addition to quarterly compliance groundwater monitoring, every 2 years (biennial) the permittee shall analyze samples from the POC wells for an expanded list of parameters. For the biennial monitoring event, the parameters listed in Section 4, Table 4.2.4 shall be analyzed. The biennial sampling event shall replace the regularly scheduled quarterly sampling event. The permittee may submit a written request to the GWS-APP&DRU to modify, reduce or delete a monitoring parameter in the quarterly or biennial compliance groundwater monitoring tables (Section 4, Tables 4.2.3 and 4.2.4) 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 events in the well. The PQL reported by the laboratory shall be less than 80 percent of the established numeric AWQS, and shall not be greater than three times the laboratory method detection limit for that parameter.
- 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 ADEQ GWS-APP&DRU for review.
- 3. Upon review, the GWS-APP&DRU will determine if the modification(s) requested is justified and approved. The respective changes, if approved, will require an amendment to the permit.

2.5.3.6 POC Well Replacement

In the event that one or more of the designated POC wells should become unusable or inaccessible due to damage, a decrease in water levels, or any other event, a replacement POC well shall be constructed and installed within 60 days upon approval by the GWS-APP&DRU.

2.5.3.7 Passive Containment Demonstration

Based on supporting documentation provided in the Application, the permittee has satisfactorily predicted that the Sierrita-Esperanza open-pit will create a “passive containment capture zone,” as per A.R.S. § 49-243(G). Passive containment, per A.R.S. § 49-243(G)(1), means natural or engineered topographical, geological or hydrological control measures that can operate without continuous maintenance. Monitoring and inspections to confirm performance of the passive containment do not constitute maintenance. A post-audit of the approved groundwater flow model shall be conducted 5 years from the effective date of this permit. The results of the post-audit shall be submitted to the GWS-APP&DRU for review in a report that summarizes the original passive containment demonstration and any updates or revisions made to the model. Factors to be evaluated in the post-audit include groundwater inflow, the estimated static water level in the pit, the estimated time to reach static water level, and any potential for the water level in the pit to rise to an elevation where the hydraulic gradient reverses and the pit ceases to function as a passive containment. The report shall include a table listing groundwater elevations from piezometer and monitor wells current at the time of the post-audit, used to demonstrate the configuration of the passive containment, and a potentiometric contour map based on groundwater elevations used in the post-audit passive containment demonstration. The passive containment modeling projections shall be based solely on natural or engineered topographical, geological, or hydrological control measures that can operate without continuous maintenance (A.R.S. § 49-243(G)(1)).

Every 5 years thereafter, the permittee shall compare the current groundwater data to the previous model predictions. The assumptions about mine development and infiltration shall be reviewed in terms of the actual changes in the pit configuration, leaching areas, leach rates, sump locations, water balance, annual precipitation and storm events. The resulting compilation shall be compared to predictions provided by the groundwater flow model for the previous calibration period. A report summarizing the original passive containment demonstration and the revisions made to the model shall be submitted to the GWS-APP for review.

Each post-audit report shall include a revised table of groundwater elevations for the piezometer and monitor wells used in the demonstration and a revised potentiometric contour map for the passive containment capture area. ADEQ will determine whether a full model recalibration is required. If a recalibration is necessary, a report summarizing the revisions and/or changes to the model shall be submitted to the GWS-APP.

2.5.4 Surface Water Monitoring and Sampling Protocols

None required by this permit.

2.5.5 Analytical Methodology

All samples collected for compliance monitoring shall be analyzed using Arizona state approved methods. If no state approved method exists, then any appropriate EPA approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state certified laboratories can be obtained at the address below:

Arizona Department of Health Services
Office of Laboratory Licensure and Certification

250 North 17th Ave.
Phoenix, AZ 85007
Phone: (602) 364-0720

2.5.6 Installation and Maintenance of Monitoring Equipment

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

2.6 Contingency Plan Requirements

2.6.1 General Contingency Plan Requirements

At least one copy of the approved contingency and emergency response plan(s) submitted in response to the Compliance Schedule, Section 3, shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL 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 of an AQL, or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. 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

2.6.2.1 Exceeding of Alert Levels Set for Operational Conditions

A. 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 impoundment 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 as necessary to avoid future occurrences.
3. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log shall be maintained according to Section 2.7.2 (Operational Inspection / Log Book Recordkeeping). Records documenting each freeboard incident and actions taken to correct the problem shall be included in the current report as required in Section 2.7.1 (Self Monitoring Report

Forms).

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

B. Performance Levels, Other Than Freeboard

1. If an operational AL listed in Section 4, Table 4.2.1 has been observed or noted during required inspection and operational monitoring, such that the result could cause or contribute to an unauthorized discharge, 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 AL exceedance, results of the investigation, and any corrective action taken shall be reported to the Water Quality Compliance Section (WQCS), 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 3 and any 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.

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 Wells

2.6.2.3.1 Alert Levels for Indicator Parameters

Not applicable for this permit.

2.6.2.3.2 Alert Levels for Pollutants with Numeric Aquifer Water Quality Standards

1. If an AL for a pollutant set in Section 4, Tables 4.2.3 or 4.2.4 has been exceeded, the permittee may conduct verification sampling 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 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 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 Water Permits Section, that although an AL is exceeded, pollutants are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency for approval in writing by the Water Permits Section.
4. Within 30 days after confirmation of an AL being exceeded, the permittee shall submit the laboratory results to the Water Quality Compliance Section, 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 required as a result of ALs being exceeded may be reduced to the regularly scheduled frequency, if the results of three consecutive monthly sampling events demonstrate that no parameters exceed the AL.

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

Not applicable

2.6.2.4 Exceedance of Action Leakage Rate for Process Solution Impoundments

At a minimum, the permittee shall initiate the following actions within 3 days of becoming aware of an exceedance of an action leakage rate for a facility listed in Section 2.2.4, Table 2.2.4.

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

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

2.6.2.5 Rapid and Large Leakage Exceedance in the Process Solution Impoundments

Additional response actions based on rapid and large leakage rate (RLL) for a facility listed in Section 2.2.4, Table 2.2.4 shall include the following:

1. Notify the WQCS within 24 hours of becoming aware of the exceedance,
2. Reduce the hydraulic head on the liner including emptying of the portion of the impoundment over the affected liner,
3. Conduct visual inspection to identify areas of leakage,
4. Repair all identified areas of leakage within 90 days of discovery,
5. Initiate closure, temporary cessation, or partial closure of the impoundment if

- identified areas of leakage cannot be repaired within 90 days of discovery,
6. After repairs have been made, monitor the leakage rate on a weekly basis while the impoundment is being filled, and for a period of 3 months after filling.
 7. Within 30 days of a confirmed RLL exceedance, the permittee shall submit a written report to the GWS-APP. The written report shall include a description of the exceedance and its potential causes, the period of exceedance and the anticipated time period during which the exceedance is expected to continue, and a description of any actions taken or planned to be taken to eliminate or prevent recurrence of the exceedance and to mitigate the impacts of the exceedance. Upon approval of the GWS-APP, the permittee shall initiate the actions necessary to mitigate the impacts of the exceedance.

2.6.3 Discharge Limitations (DL) Violations

If a DL set in Sections 2.6.3.1, 2.6.3.2 or 2.6.3.3 has been violated, the permittee shall immediately investigate to determine the cause of the violation.

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

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

1. As soon as practicable, cease all discharges to the surface impoundment as necessary to prevent any further releases to the environment.
2. Within 24-hours of discovery, notify ADEQ Water Quality Compliance Section.
3. Within 5 days of discovery of a failure that resulted in a release to the subsurface, collect representative samples of the fluid remaining in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 4, Table 4.2.2. Within 30 days of the incident, submit a copy of the analytical results to ADEQ Water Quality Compliance Section.
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 surface impoundment 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 surface impoundment. The permittee shall not resume discharging to the surface impoundment 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.
5. As soon as practicable, remove fluid remaining in the surface impoundment as necessary to prevent further releases to the subsurface and/or to perform repairs. Record in the facility log/recordkeeping file the amount of fluid removed, a description of the removal method, and other disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
6. Within 30 days of discovery of the incident, submit a report to ADEQ as specified in Section 2.7.3 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. If soil or groundwater is impacted such that it could cause or contribute to an exceedance of an AQL at the applicable point of compliance, submit to ADEQ, for approval, a corrective

action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.

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

2.6.3.2 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 ADEQ Water Quality Compliance Section.
3. Within 5 days, collect representative samples of the fluid contained in the surface impoundment. Samples shall be analyzed for the parameters specified in Table 4.2.2. Within 30 days of the incident, submit a copy of the analytical results to ADEQ Water Quality Compliance Section.
4. As soon as practicable, remove and properly dispose of excess water in the impoundment until the water level is restored at or below the appropriate freeboard as described in Table 4.1.1. Record in the facility log, the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 2.7.2 (Operation Inspection / Log/Recordkeeping File).
5. Within 30 days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 30 days of discovery of overtopping, submit a report to ADEQ as specified in section 2.7.3 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 5 listed above. Upon review of the report, 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 point of compliance, submit to ADEQ for approval, a corrective action plan to address such impacts, including identification of remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
9. Within 30 days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 2.6.6 (Corrective Actions). Upon review of the report, ADEQ may amend the permit to require additional monitoring, increased frequency of monitoring, amendments to permit conditions, or other actions.

2.6.3.3 Inflows of Unexpected Materials to a Surface Impoundment

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

1. As soon as practicable, cease all unexpected inflows to the surface impoundment(s).
2. Within 24-hours of discovery, notify ADEQ Water Quality Compliance Section.
3. Within 5 days of the incident, identify the source of the material and determine the cause for the inflow. Characterize the unexpected material and contents of the affected impoundment, and evaluate the volume and concentration of the material to determine if it is compatible with the surface impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of inflows of unexpected materials.
4. Within 30 days of an inflow of unexpected materials, submit a report to ADEQ as specified in section 2.7.3 (Permit Violation and AL Status Reporting). Include a description of the actions performed in Subsections 1 through 3 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
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.

2.6.4 Aquifer Quality Limit (AQL) Violation in Groundwater Monitor Wells

1. If an AQL set in Tables 4.2.3 or 4.2.4 has been exceeded, the permittee may conduct verification sampling 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 any parameter or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring to monthly. In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge.

The permittee also shall submit a report according to Section 2.7.3, 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.
5. The permittee shall continue monitoring at the increased frequency until the contaminant(s) is below the AQL and AL for three consecutive months.

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

2.6.5.1 Duty to Respond

The permittee shall act immediately to correct any condition resulting from a discharge (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 (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 ADEQ Water Quality Field Service Unit (WQFSU) at (602) 771-4620 within 24-hours upon discovering the discharge of 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.

2.6.5.3 Discharge of Non-hazardous Materials

In the event of any unauthorized discharge (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 ADEQ WQFSU at (602) 771-4620 within 24-hours upon discovering the discharge of non-hazardous material which: a) has the potential to cause an AQL to be exceeded at the applicable point of compliance; 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 ADEQ WQCS 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.

A post-audit report regarding the passive containment demonstration is required within 5 years of the effective date of this permit, and every 5 years thereafter, in accordance with Section 2.5.3.9 of this permit.

2.6.6 Corrective Actions

Specific contingency measures identified in Section 2.6 and actions identified in the approved contingency plan referenced in Section 3.0 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 GWS-APP 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 WQCS, 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 Forms

1. The permittee shall complete the SMRFs provided by ADEQ, and submit them to the WQCS.
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 quarter, the permittee shall enter "not required" on the SMRF and submit the report to ADEQ. The permittee shall use the format devised by ADEQ.
3. The tables contained in Section 4 of this permit list the parameters to be monitored and the frequency for reporting results for groundwater compliance monitoring. Analytical methods shall be recorded on the SMRFs.
4. In addition to the SMRF, the applicable information contained in Section 6.7 shall be included for exceeding an AL or violation of an AQL, DL, or any other permit condition being reported in the current reporting period.

2.7.2 Operation Inspection / Log Book Recordkeeping

A signed copy of this permit, and a log book (paper copies, forms or electronic data) of the inspections and measurements required by this permit, shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made.

The log book shall be retained for ten years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel.

The information in the log book shall include, but not be limited to, the following information as applicable:

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

2.7.3 Permit Violation and Alert Level Status Reporting

1. The permittee shall notify the WQCS 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 being exceeded.
2. The permittee shall submit a written report to the WQCS within 30 days of becoming aware of the violation of any permit condition or discharge limitation. The report shall document all of the following:
 - a. Identification and description of the permit condition for which there has been a violation and a description of 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

The permittee shall, upon completion of the biennial sampling described in Table 4.2.4, submit a monitoring summary report to the Groundwater Section. This report shall be due at the same time as the SMRF form for the biennial sampling event. The report shall include, but not be limited to the following:

1. A description of any deviations from standard sampling protocols during the reporting period.
2. A summary of all exceedances of ALs, AQLs, or operational limits that occurred during the reporting period.
3. Graphical time versus concentration plots of field pH, sulfate, total dissolved solids, and any parameter which exceeded an applicable AL or AQL in the past eight quarters at each POC well, and tabulated sampling data for all wells required to be sampled by this permit during the last eight quarters.
4. An updated table of all monitor wells and piezometers in the Discharge Impact Area including, but not limited to, location of well, depth to water, and screened interval
5. A summary of any groundwater monitor wells replaced in the reporting period including, but not limited to, location of well, depth of well, depth to water, and screened interval.
6. A list of any new sumps, impoundments, or vehicle washes constructed within the passive containment, unless exempt or covered by a general APP.
7. The report shall also include an evaluation of the performance of the interceptor wellfield to provide hydrologic capture to prevent exceedance of an AWQS at any applicable point of compliance.

2.7.5 Reporting Location

All SMRFs shall be submitted to:

Arizona Department of Environmental Quality
Water Quality Compliance Section, Data Unit
Mail Code: 5415B-1
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4681

All documents required by this permit to be submitted to the Water Quality Compliance Section shall be directed to:

Arizona Department of Environmental Quality
Water Quality Compliance Section
Mail Code: 5415B-1

1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4614

All documents required by this permit to be submitted to the Groundwater Section shall be directed to:

Arizona Department of Environmental Quality
Groundwater Section
Mail Code: 5415B-3
1110 W. Washington Street
Phoenix, AZ 85007
Phone (602) 771-4428

2.7.6 Reporting Deadline

The following table lists the quarterly report (SMRF) due dates:

| Monitoring conducted during quarter: | Quarterly Report due by: |
|---|---------------------------------|
| January-March | April 30 |
| April-June | July 30 |
| July-September | October 30 |
| October-December | January 30 |

2.7.7 Changes to Facility Information in Section 1.0

The GWS-APP and WQCS shall be notified within ten (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 Water Quality Compliance Section before ceasing operation of any facility covered by this permit for a period of 60 days or greater.

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 Water Quality Compliance Section 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 Water Quality Compliance Section of the permittee's intent to cease operation without resuming activity for which the facility was designed or operated.

2.9.1 Closure Plan

Within ninety (90) days following notification of closure, the permittee shall submit for approval to the GWS-APP, a Closure Plan which meets the requirements of A.R.S. § 49-252 and A.A.C.

R18-9-A209(B)(3).

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

2.9.2 Closure Completion

Upon completion of closure activities, the permittee shall give written notice to the GWS-APP 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 aquifer water quality standards at the applicable point of compliance;
3. Continued action is required to verify that the closure design has eliminated discharge to the extent intended;
4. Remedial or mitigative measures are necessary to achieve compliance with Title 49, Ch. 2;
5. Further action is necessary to meet property use restrictions.

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

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the GWS-APP.

In the event clean closure cannot be achieved pursuant to A.R.S. § 49-252, the permittee shall submit for approval to the GWS-APP 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, to the GWS-APP&DRU. A copy of the cover letter must also be submitted to the WQCS/DU.

| ITEM DESCRIPTION | TIME TO COMPLETE | REMARKS |
|---|--|--|
| POINT OF COMPLIANCE WELLS | | |
| POC Well Installation: Wells MH-28 and MH-29 | Within 45 days after completion of construction of wells | Geologic and well construction logs must be submitted to ADEQ within 45 days of well installation. The logs must include the ADWR well registration number, and the “as built” cadastral and latitude and longitude coordinates for the wells. (Received by ADEQ 8/15/07). |
| Ambient Water Quality Monitoring: Wells MH-28 and MH-29 | Within 14 months after effective date of APP No. P-101679 | Each well must be sampled for ambient water quality for 8 consecutive months. The first sample event must be completed within 60 days of well installation. Each well must be sampled for all of the parameters listed for the well in Table 4.2.2. (Complete 8/29/08) |
| Alert Levels (AL) and Aquifer Quality Limits (AQL) for POC wells MH-28 and MH-29 | Within 17 months after effective date of APP No. P-101679 | Submit within 3 months following completion of the ambient sampling period, copies of all laboratory analytical reports, field notes, the QA/QC data used in collection and analysis of the samples, and a report including the statistical calculations of the ALs and AQLs to ADEQ GWS-APP&DRU. Incorporation of these data will constitute a minor amendment to the permit. (Received by ADEQ 9/25/08) |
| POC Well Compliance Monitoring Wells MH-14, MH-15W, MH-16W, MH-18, MH-19, MH-20, MH-21, MH-22, MH-23 Compliance Monitoring for POC Wells MH-27, MH-28 and MH-29 | Beginning with the first calendar quarter after the effective date of APP No. P-101679. Submittal of quarterly Self Monitoring Report Forms (SMRF) shall follow the due date schedule in Section 2.7.6 Beginning with the first calendar quarter following completion of the ambient sampling period or no later than seventeen (17) months after the effective date of APP P-101679. | Sample for parameters listed in Table 4.2.3 for quarterly sampling events. Sample for parameters listed in Table 4.2.4 for biennial events in place of Table 4.2.3 parameters. Following completion of each compliance monitoring event, submit copies of SMRFs to the ADEQ, WQCS-DU according to the schedule in Section 2.7.6. |
| Ambient Water Quality for POC Well MH-27 | Within 14 months after the effective date of APP P-101679 | POC well MH-27 shall be sampled for 8 consecutive months beginning with the first calendar quarter after the effective date of the permit. (Complete 8/29/08) |

AQUIFER PROTECTION PERMIT

Permit Number P-101679

Page 26 of 69

| ITEM DESCRIPTION | TIME TO COMPLETE | REMARKS |
|---|--|---|
| Alert Level (AL) and Aquifer Quality Limits (AQL) for POC well MH-27 | Within 17 months after the effective date of APP P-101679. | Submit within 3 months following completion of the ambient sampling period, copies of all laboratory analytical reports, field notes, the QA/QC data used in the collection and analysis of the samples, and a report including the statistical calculations of the ALs and AQLs for this well to ADEQ, GWS-APP&DRU. Incorporation of these data to the permit will constitute a minor amendment to the permit. (Received by ADEQ 9/25/08) |
| PASSIVE CONTAINMENT DEMONSTRATION | | |
| Sierrita-Esperanza open pit mine | Within 60 months from the effective date of APP No. P-101679, and every 60 months thereafter until mine closure. | Permittee shall submit a post-audit report to the GWS-APP&DRU updating the passive containment demonstration, including any revisions resulting from hydrologic or operational changes observed during the reevaluation. The first post-audit is due 5 years from the effective date of the permit with subsequent post-audits due every 5 years thereafter. |
| CONTINGENCY AND EMERGENCY RESPONSE PLAN | | |
| Contingency and Emergency Response Plan | Within 90 days of the effective date of the permit. | Permittee shall submit for ADEQ approval a Contingency Plan that satisfies the requirements of Arizona Administrative Code R18-9-A204, including emergency response provisions. (Received by ADEQ 9/26/07). |
| BADCT/ENGINEERING | | |
| SX-1 Drain Pond (D-33) | Within 6 months from effective date of permit. | Submit the Action Leakage Rate (ALR) and the rate for the Rapid and Large Leakage (RLL) to ADEQ Aquifer Protection Program for approval, with an application for a permit amendment. The calculations shall be done in accordance with ADEQ memo MU03:0057, dated 3/31/2003 or other method approved by ADEQ. (Received by ADEQ 1/14/08). |
| Raffinate Pond No. 2 (D-10) Raffinate Pond No. 3 (D-04) Drain Pond No. 2 (D-15) SX-3 Drain Pond (D-31) | Within 6 months from effective date of permit | Upon ADEQ approval, install dedicated pump with adequate design capacity to remove the fluid collected in the sump at each of the Leakage Collection and Recovery System (LCRS) sumps. Note: ALR and RLL values for the LCRS sumps are established (see Table 2.2.4) As of March 2007, installation of suitable pump system at each of the LCRS sumps is completed. |

AQUIFER PROTECTION PERMIT

Permit Number P-101679

Page 27 of 69

| ITEM DESCRIPTION | TIME TO COMPLETE | REMARKS |
|----------------------------------|--|---|
| Bailey Lake (D-03) | Within 6 months from effective date of permit. | Submit to ADEQ Aquifer Protection Program, for evaluation, 2 copies of the study conducted for neutralization potential and/or attenuation capacity in support of BADCT demonstration. (Received by ADEQ 12/27/07). |
| Sulfide Active Leach Area (D-17) | Within 12 months from effective date of permit | If evaluation indicates the need for additional facility upgrade, submit a revised BADCT approach identifying the preferred upgrade(s) to the ADEQ Aquifer Protection Program for review. No Further Action Required |
| Oxide Active Leach Area (D-18) | Within 18 months from effective date of permit | If required: Submit 2 copies of proposed design, construction and operational details of the preferred upgrade(s) to the ADEQ Aquifer Protection Program for approval, along with an application for a permit amendment. |
| | Within 36 months from effective date of permit | If required: Complete construction of the ADEQ approved design upgrade(s). |
| Sulfide Active Leach Area (D-17) | Within 12 months from effective date of permit | Submit to ADEQ Aquifer Protection Program, for evaluation, 2 copies of stability analysis (static and pseudostatic) based on facility's final configuration (ultimate height and foot-print). Complete, submitted 6/27/08 |
| Oxide Active Leach Area (D-18) | Within 18 months from effective date of permit | If evaluation indicates the need for corrective measures to sustain acceptable safety factors, submit a revised BADCT approach, identifying the preferred corrective action(s) or upgrade (s) to the ADEQ Aquifer Protection Program for review and comments. |
| | Within 24 months from effective date of permit | If required: Submit 2 copies of proposed design, construction and operational details of the preferred corrective action(s) or upgrade(s) to the ADEQ Aquifer Protection Program for approval, along with an application for a permit amendment. |
| | Within 36 months from effective date of permit | If required: Complete construction of the ADEQ approved design for the corrective action(s) or upgrade(s). Note: Stability analysis for each of the Active Oxide and Active Sulfide Leach Areas is completed, and is consistent with the requirements of the Arizona Mining BADCT Guidance Manual. |
| West Waste Rock Piles (D-19) | Within 12 months from effective date of permit | Submit to ADEQ Aquifer Protection Program, for evaluation, 2 copies of stability analysis (static and pseudostatic) based on facility's final configuration (ultimate height and foot-print). Complete, submitted 6/27/08 |
| M Waste Rock Pile (D-47) | Within 18 months from effective date of permit | If evaluation indicates the need for corrective measures to sustain acceptable safety factors, submit a revised BADCT approach, identifying the preferred corrective action(s) or upgrade(s) to the ADEQ Aquifer Protection Program for review and comments. |
| "V" Waste Rock Pile (D-56) | Within 24 months from effective date of permit | If required: Submit 2 copies of proposed design, construction and operational details of the preferred corrective action(s) or upgrade(s) to the ADEQ Aquifer Protection Program for approval, along with an application for a permit amendment.. |
| | Within 36 months from effective date of permit | If required: Complete construction of the ADEQ approved design for the corrective action(s) or upgrade(s). Note: Stability analysis for each of the Waste Rock Piles is completed, and is consistent with the requirements of the Arizona Mining BADCT Guidance Manual. |

AQUIFER PROTECTION PERMIT

Permit Number P-101679

Page 28 of 69

| ITEM DESCRIPTION | TIME TO COMPLETE | REMARKS |
|--|--|--|
| Sierrita Tailing Sediment Basins (D-01 A-K) | Within 12 months from effective date of permit | Submit BADCT alternatives, identifying the preferred upgrade(s), to the ADEQ Aquifer Protection Program for review and comments. (Received by ADEQ 6/30/08). |
| | Within 24 months from effective date of permit | Submit 2 copies of the proposed design, construction and operational details of the preferred upgrades to the ADEQ Aquifer Protection Program for approval, along with an application for a permit amendment. |
| | Within 42 months from effective date of permit | Complete construction of the ADEQ approved design upgrades |
| Sierrita Tailing Impoundment (D-01) | Within 12 months from effective date of permit | Submit to the ADEQ Aquifer Protection Program, for evaluation, two copies of stability analysis (static and pseudostatic) based on facility's final configuration (ultimate height and foot-print). (Received by ADEQ 12/29/08). |
| | Within 18 months from effective date of permit | If evaluation indicates the need for corrective measures to sustain acceptable safety factors, submit a revised BADCT approach, identifying the preferred corrective action(s) or upgrade(s) to the ADEQ Aquifer Protection Program for review and comments. |
| | Within 30 months from effective date of permit | If required: Submit two copies of proposed design, construction and operational details of the preferred corrective action(s) or upgrade(s) to the ADEQ Aquifer Protection Program for approval, along with an application for a permit amendment.. |
| | Within 48 months from effective date of permit | If required: Complete construction of the ADEQ approved design for the corrective action(s) or upgrade(s). |
| B Pond (D-07) | Within 12 months from effective date of permit | Submit to ADEQ the test results of soil samples for total metals and SPLP, including the closure plan, for review and approval, along with an application for a permit amendment. Complete, submitted 6/27/08 |
| | Within 24 months from effective date of permit | Implement the ADEQ approved closure plan. N/A, B-Pond will not be closed |
| Copper Sulfate Plant Tanks Secondary Containment Structures (D-65) | Within 6 months from effective date of permit. | Submit to the ADEQ Aquifer Protection Program, for evaluation, two copies of facility design drawings or as built drawings, including an appropriate freeboard and provision to overflow into an existing tertiary containment structure. (Received by ADEQ 1/25/08). |
| | Within 12 months from effective date of permit | Complete implementation of the ADEQ approved design plan. Complete per 1/25/08 submittal |
| New D Pond (D-45) | Within 6 months from effective date of permit. | Submit to the ADEQ Aquifer Protection Program, for evaluation, two copies of facility design drawings or as-built drawings, including an appropriate freeboard. (Received by ADEQ 12/14/07). |
| | Within 12 months from effective date of permit | Complete implementation of ADEQ approved design plan. |

4.0 TABLES AND FIGURES

4.1 FACILITY AND POC TABLES

TABLE 4.1.1 Permitted Facilities and BADCT

4.2 COMPLIANCE AND OPERATIONAL MONITORING

TABLE 4.2.1 Required Inspections and Operational Monitoring

TABLE 4.2.2 Table of Parameters for Ambient Groundwater Monitoring for Point of Compliance (POC) Wells MH-27, MH-28, and MH-29

TABLE 4.2.3 Quarterly Compliance Groundwater Monitoring Requirements for Hazardous POC Wells

TABLE 4.2.4 Biennial Compliance Groundwater Monitoring Requirements for POC Wells

4.3 SITE MAP Attachment 1 Point of Compliance Wells

DRAFT

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|---|
| AMARGOSA WASH DRAINAGE AREA | | |
| Non-stormwater Impoundments: | | |
| Duval Canal Velocity Pond (D-64) New Facility | 31° 52' 10" N 111° 06' 05" W | Individual BADCT: Facility is an unlined flow-through structure over-excavated and backfilled with on-site borrow material that was moisture conditioned and compacted to 95 percent maximum dry density. The facility is an energy dissipation and sediment pond that receives stormwater runoff from the crushing and conveying area. Accumulated fluids drain into Duval Canal. |
| Amargosa Pond (D-05) | 31° 51' 55" N 111° 06' 00" W | Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil HDPE liner underlain by a 12-inch-thick layer of compacted on-site native material. The HDPE liner is secured in an engineered anchor trench. The competent, andesite bedrock underlying the facility has relatively low hydraulic conductivity ranging from 10 ⁻⁴ cm/sec to 10 ⁻⁶ cm/sec. The impoundment has a fluid storage capacity of 49 acre-feet with a depth of 25 feet and is sufficient to contain stormwater run-on from a 100-year, 24-hour storm event. The impoundment provides containment for stormwater runoff and during upset conditions from Headwall No. 1, Bailey Lake, Raffinate Pond No. 2, and Drain Pond No. 2. Upstream, Interceptor No. 1 – a primary cutoff trench equipped with a sump and pump-back system captures any subsurface flow and pumps it back to Raffinate Pond No. 2. Downstream, Interceptor No. 2, a secondary cutoff trench equipped with a sump and pump-back system, captures any seepage from Amargosa Pond and subsurface flow not captured by the primary cutoff trench. The facility is designed to overflow through a 6-inch thick concrete-lined Amargosa spillway into Duval Canal. Accumulated fluid shall be pumped out into the leach circuit as soon as practical, but no later than 60 days. The facility shall be operated with a minimum of 2 feet of freeboard. |
| SX-1 Tank Farm Pond (D-34) | 31° 51' 56" N 111° 06' 02" W | Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil geomembrane overlying a 3-inch thick gunnite layer. The geomembrane is secured in an engineered anchor trench. The competent bedrock underlying the facility has relatively low hydraulic conductivity ranging from 10 ⁻⁵ cm/sec to 10 ⁻⁷ cm/sec. The impoundment has a storage capacity of 0.12 acre-feet with a depth of 5 feet. The impoundment provides containment for stormwater runoff and surface flows during upset conditions from the upgradient SX-1 Tank Farm Secondary Containment. Accumulated fluid is pumped back into the SX-1 circuit. The facility is designed to overflow into Amargosa Pond. |
| Process Solution Impoundments: | | |
| Headwall No. 1 (D-02) | 31° 51' 49" N 111° 06' 34" W | Individual BADCT: Facility is an existing unlined impoundment created behind an earthen dam across Amargosa Wash which is underlain by the existing land surface comprised of Quaternary alluvium and Demetrie volcanics. The impoundment has a fluid storage capacity of 3 acre-feet with a maximum depth of 22 feet. The impoundment provides containment for leachate (PLS) from the oxide leach area. Accumulated PLS is directed through an HDPE lined discharge channel and gravity fed to Bailey Lake. The facility is designed to overflow into Bailey Lake. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|---|
| Bailey Lake (D-03) | 31° 51' 52" N 111° 06' 17" W | Individual BADCT: Facility is an existing unlined impoundment constructed behind an earthen dam immediately below the Headwall No. 1 in Amargosa Wash. The subgrade, consisting of on-site native material, is compacted to 95 percent maximum dry density and is underlain by Quaternary alluvium and Demetrie volcanics. The impoundment has a fluid storage capacity of 135 acre-feet with a maximum depth of 42.1 feet. The impoundment provides containment for overflow and any subsurface flow from the upgradient Headwall No. 1. Accumulated fluid is pumped to SX Plant Nos. 1 and 2. Facility upgrade includes an interceptor trench, excavated into bedrock. The trench, equipped with a sump and pump-back system, is located immediately downgradient to capture any seepage from Bailey Lake. The facility is designed to overflow through a concrete-lined spillway into Amargosa Pond. |
| SX-1 Drain Pond (D-33) | 31° 51' 55" N 111° 06' 05" W | Prescriptive BADCT: Facility is upgraded from a single-lined to a double-lined impoundment using 60-mil HDPE liners incorporating an LCRS. The bottom liner is underlain by a minimum of 6-inch thick layer of compacted 3/8-inch minus sand and gravel layer over a 1-inch minus gravel sub-grade. The competent andesite bedrock underlying the facility has relatively low hydraulic conductivity ranging from 10 ⁻⁴ cm/sec to 10 ⁻⁷ cm/sec. The HDPE liners are secured in an engineered anchor trench. The impoundment has a fluid storage capacity of 0.2 acre-feet with an approximate depth of 7 feet. The impoundment provides containment for any washdown and runoff from SX-1 Plant. Upstream, stormwater is diverted via roadway, away from facility. The facility is designed to overflow through an 8-inch HDPE pipe, installed 12 inches below the embankment crest, to SX-2 Drain Pond. |
| Raffinate Pond No. 2 (D-10) | 31° 51' 51" N 111° 06' 09" W | Individual BADCT: Facility is an existing double-lined impoundment using 60-mil HDPE liners incorporating an LCRS. The bottom liner is underlain by a geotextile cushion underlain by a 6-inch thick layer of compacted native material. The facility overlies shallow bedrock that has a low permeability ranging from 10 ⁻⁴ cm/sec to 10 ⁻⁶ cm/sec. The liners are secured in an engineered anchor trench around the impoundment perimeter. The impoundment has a fluid storage capacity of 6 acre-feet with a maximum depth of 16 feet. Surface water runoff is diverted away from the facility. The impoundment provides temporary containment for copper depleted leachate solution from SX Plant Nos. 1 and 2. Accumulated fluid is pumped to the leach dumps. The facility is designed to overflow through a HDPE-lined spillway into Amargosa Pond. |
| Drain Pond No. 2 (D-15) | 31° 51' 53" N 111° 06' 04" W | Individual BADCT: Facility is an existing double-lined impoundment using 60-mil HDPE liners incorporating an LCRS. The bottom liner is underlain by a geotextile cushion over 6-inch layer of compacted fine-grained material. The facility overlies shallow bedrock which has a low permeability ranging from 10 ⁻⁵ cm/sec to 10 ⁻⁷ cm/sec. The liners are secured in an engineered anchor trench around the impoundment perimeter. The impoundment has a fluid storage capacity of 1 acre-foot with a maximum depth of 10 feet. The impoundment provides temporary containment for organics used at SX Plant Nos. 1 and 2 and during upset conditions from Tank Farm 2. Accumulated fluid is pumped to Raffinate Pond No.2, SX Strip Solution Tanks, or Headwall No.1. Downstream, Interceptor No. 1 trench is excavated into bedrock to capture any subsurface flow. The trench is equipped with a sump and pump to discharge captured fluid, via an HDPE pipeline, into Raffinate Pond No. 2. The facility is designed to overflow through a concrete-lined spillway into Amargosa Pond. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|---|---------------------------------|--|
| Moly Decant Tanks and Pad Area (D-39A) New Facility | 31° 51' 54" N 111° 06' 11" W | Individual BADCT: Facility consists of four partially below-ground steel-reinforced concrete walls with an adjacent steel-reinforced concrete drying pad. The adjacent drying pad is approximately 60 feet by 110 feet. The facility is underlain by crystalline (andesite) bedrock with relatively low permeability of 10 ⁻⁴ cm/sec to 10 ⁻⁷ cm/sec. Each Moly Decant Tank is 50 feet by 26 feet and 3-4 feet deep. The impoundments provide containment of overflow from the molybdenum processing thickeners. Any excess fluid is pumped to Bailey Lake. The concrete pad is used to further dry the molybdenum concentrate. Once dry, concentrate is moved to the molybdenum roaster. Downgradient, two interceptor trenches, equipped with pump-back systems, capture any potential discharge and pump it back into the SX circuit. |
| Dump Leaching Area: | | |
| Sulfide Active Leach Area (D-17) | 31° 51' 19" N 111° 07' 59" W | Individual BADCT: Facility is an existing sulfide leach dump, constructed using the end dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. The natural channels within the leach dump footprint are underlain by relatively low hydraulic conductivity bedrock. The facility covers a surface area of approximately 420 acres. The leachate is collected at the headwalls (Headwall No. 1 and/or Headwall No. 3) located immediately downgradient of the facility. Containment of overflow and run-on from a 100-year, 24-hour storm event is provided by Amargosa Pond and SW-3 Pond. The facility shall not exceed the aerial footprint shown in the Geotechnical Review of the Ultimate Rock Stockpile Plan at Sierrita Mine (Revised 21 August 2009) that forms an integral part of the APP application. The ultimate crest elevation of the facility shall not exceed 4,350 feet amsl. See Compliance Schedule. |
| Solution Conveyance Channels: | | |
| Duval Canal (D-29) | 31° 51' 32" N 111° 04' 39" W | Individual BADCT: Facility is an existing canal (conveyance channel), initially lined with an 80-mil HDPE geomembrane extending from Sierrita Mill to Demetrie Wash Crossing. Recent upgrade includes installation of an 80-mil HDPE liner along the remaining segment from Demetrie Wash Crossing to Sierrita Tailing Impoundment. The liner is anchored in an engineered trench. The canal is approximately 4.25 miles long, 10 feet wide, and 6 feet deep and has side slopes at 1.3H:1V. The canal has a design capacity of 3,100 cubic feet per second and an average gradient of 3.4 percent. The facility receives process solutions and surface runoff from the Plant Site, including, but not limited to, overflow from Amargosa Pond, B Pond, bleed from the lime scrubber, dust control water from crushing and conveying, and seepage collected and pumped from B and C Sumps. Containment of surface flow and runoff from a 100-year, 24-hour storm event is provided by the Sierrita Tailing Impoundment. |
| Amargosa Spillway (D-48) | 31° 51' 55" N 111° 05' 46" W | Individual BADCT: Facility is an existing single-lined spillway (conveyance channel) with an 80-mil HDPE geomembrane overlying a 6-inch bedding layer of compacted native material. The liner is anchored in an engineered trench. The conveyance channel approximately 1,950 feet long, 15 feet wide at the base, 29 feet wide at the crest, 3 to 5 feet deep, with an average slope of 1 percent, has a design capacity of 1,762 cubic feet per second. A 26-foot x 18-foot x 2-foot deep stilling basin is designed at the confluence of the spillway and the Amargosa Pond concrete overflow. The spillway receives overflow from Amargosa Pond during upset conditions or stormwater runoff from the upgradient areas. Containment of surface flow and runoff from a 100-year, 24-hour storm event is provided by the Sierrita Tailing Impoundment. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|---|
| DEMETRIE WASH AREA | | |
| Non-stormwater Impoundments: | | |
| 07 Pond (D-43) | 31° 52' 58" N 111° 06' 29" W | Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil HDPE liner underlain by alluvium and shallow, igneous intrusive bedrock with relatively low permeability ranging from 10 ⁻⁴ cm/sec to 10 ⁻⁶ cm/sec. The HDPE liner is secured in an engineered anchor trench. The impoundment has a storage capacity of 24.9 acre-feet with a depth of 25 feet. The impoundment provides containment for potentially impacted runoff from the Ocotillo Waste Rock Pile and stormwater from native upgradient hills to the east. Accumulated fluid is pumped via HDPE pipeline below the Ocotillo Waste Rock Pile and discharged into the Raw Water Reservoir. Upstream, a 750 foot long interceptor trench, lined with an 80-mil HDPE geomembrane and equipped with a sump and pump system captures any stormwater from the upgradient watershed and discharges at the east end of 07 Pond. The facility is designed to contain stormwater runoff from a 100-year, 24-hour storm event. Accumulated fluid shall be pumped out as soon as practical, but no later than 30 days. Facility shall maintain a minimum of 2 feet of freeboard. |
| New D Pond (D-45) | 31° 52' 31" N 111° 05' 51" W | Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil HDPE geomembrane underlain by 12-inch-thick compacted layer of native material. The HDPE liner is secured in an engineered anchor trench. The facility overlies shallow andesite and granodiorite with relatively low permeability of 10 ⁻⁶ cm/sec. The pond has a storage capacity of 14 acre-feet with a depth of 8 feet. The impoundment provides containment for runoff from the closed CLEAR Plant and Copper Sulfate areas. Accumulated fluid collected in the pond is gravity fed via 10-inch diameter HDPE pipeline into the Duval Canal. Upstream, a 300-foot long diversion channel, lined with a 60-mil HDPE geomembrane underlain by a 12-inch-thick layer of compacted native material, diverts any stormwater to a reinforced shotcrete-lined sediment basin. The pond is designed as a surge pond and is normally dry. The bottom of the pond slopes toward a perforated HDPE drainpipe, which protrudes 2 feet above the bottom of the pond in the southwest corner. The side slopes have a grade of 3H:1V. Although normally dry, the facility is designed to contain surface flows and runoff from a 100-year, 24-hour storm event. The facility shall be operated with a minimum of 2 feet of freeboard. See Compliance Schedule. |
| Copper Sulfate Pipeline Ponds 1 & 2 (D-59) New Facilities | 31° 52' 02" N 111° 05' 56" W | Prescriptive BADCT: Facilities are single-lined impoundments with a 60-mil HDPE liner underlain by a 12-inch-thick layer of 3/8-inch minus native material compacted to 95 percent maximum dry density. The HDPE liners are secured in an engineered anchor trench. The facilities are approximately 73 feet long, 67 feet wide, 7 feet deep, with sides sloping at 3H:1V. Each impoundment has a fluid storage capacity of 15,000 gallons. The impoundments provide secondary containment during an upset condition for the Copper Sulfate Plant area. Accumulated fluid shall be pumped out into the SX/Copper Sulfate circuit as soon as practical, but no later than 30 days. The facilities shall be operated with a minimum of 2 feet of freeboard. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|---|--|---|
| Copper Sulfate Plant Tanks Secondary Containment Structures (D-65) New Facility | 31° 52' 36" N 111° 05' 56" W | Individual BADCT: Facility is a new reinforced concrete containment structure underlain by a minimum of three inches of compacted aggregate material overlying an existing concrete slab. The secondary containment structure is approximately 118 feet long, 32 feet wide with a 10-inch tall curb around the entire perimeter. The reinforced concrete curb is eight inches wide. Solutions captured are diverted to a central fiberglass reinforced plastic (FRP) trench running the entire length of the facility sloping to a FRP embedded 4 ft. X 4 ft. sump for return to the process water circuit. The containment has a fluid storage capacity of 14,000 gallons (0.057 acre-feet) with a depth of 8 inches. The facility provides secondary containment for potentially impacted stormwater from the old plant area and upset conditions from seven above ground crystallizing vessels containing process solution. Upgradient, an interceptor trench captures any surface water run-on and diverts it into New D Pond. The facility is designed to overflow through a weir via a proposed gravity-fed pipeline underlain by a concrete apron into an existing reinforced concrete tertiary containment structure. Fluid accumulated in the facility shall be pumped out into Raffinate Pond #2 as soon as practical, but no later than 30 days. See Compliance Schedule. |
| Tailing Pipeline Containment Structures (D-62 A-F) New Facilities | 31° 52' 07" N to 31° 52' 12" N 111° 05' 30" W to 111° 05' 37" W | Individual BADCT: Facilities consist of six secondary containment structures over-excavated to a depth of 8 inches, moisture conditioned, and backfilled and compacted to 95 percent maximum dry density within plus or minus 3 percent of optimum moisture content. Containment structures A and B have a fluid storage capacity of 1.462 million gallons. Containment structures C-F have a fluid storage capacity of 1.815 million gallons. The structures provide containment in the event that the reclaim pipeline or tailing slurry pipeline should have a breach. Accumulated fluid shall be pumped out as soon as practical, but no later than 30 days. |
| ESPERANZA WASH DRAINAGE AREA | | |
| Non-stormwater Impoundments: | | |
| SX-3 Stormwater Pond (D-11) | 31° 50' 49" N 111° 07' 08" W | Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil HDPE liner underlain by a compacted alluvium material overlying shallow andesite bedrock with relatively low permeability ranging from 10 ⁻⁵ cm/sec to 10 ⁻⁷ cm/sec. The HDPE liner is secured in an engineered anchor trench. The impoundment has a fluid storage capacity of 52 acre-feet, with a depth of 17 feet. The impoundment provides containment of stormwater runoff from upgradient, native terrain, during upset conditions at Headwall No.3, Raffinate Pond No.3, SX-3 Drain Pond, and surface runoff from the Headwall No. 2 area. Any solutions impounded in the pond are pumped out by a floating barge pump back to Raffinate Pond No. 3. An additional pump may be used to transport solutions to Amargosa Pond if needed. Upstream, Interceptor No.3, an HDPE-lined interceptor trench keyed into bedrock, captures any subsurface flow which may have bypassed the primary interceptor trench upgradient of Headwall No. 3 and pumps it back to Raffinate Pond No.3. The trench contains a subsurface drain consisting of gravel size material wrapped in geotextile extending the length of the trench diverting any subsurface flow and directing it to the sump which pumps it back to Raffinate Pond No.3. The facility is designed to contain stormwater runoff from a 100-year, 24-hour storm event. Accumulated fluid shall be pumped into the leach circuit as soon as practical, but no later than 30 days. The facility shall be operated with a minimum of 2 feet of freeboard. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--------------------------------------|---------------------------------|--|
| Cat Pond 1 (D-42A) | 31° 50' 33" N 111° 07' 53" W | <p>Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil HDPE liner underlain by a 12-inch-thick layer of 3/8-inch minus native material compacted to 95 percent maximum dry density. The HDPE liner is secured in an engineered anchor trench. The facility overlies more competent bedrock with relatively low permeability of 10^{-5} cm/sec. The impoundment has a fluid storage capacity of 25.2 acre-feet, with a depth of 27 feet. The sides of the pond have a slope of 3H:1V. The impoundment provides containment for stormwater runoff from the upgradient native terrain, the Sierrita Waste Rock Pile, and during upset conditions from Headwall No. 5. Upgradient and to the west, a single-lined channel with an 80-mil HDPE liner underlain by a 12-inch-thick layer of bedding material discharges stormwater from the upgradient watershed into Cat Pond 1. The channel is 8 feet wide at the base, approximately 11.5 feet wide at the crest with 3H:1V side slopes. The channel is approximately 1,400 feet long with an average grade at 1 percent. This facility is designed to contain flows from a 100-year, 24-hour storm event. In the event of overflow, discharge would flow into a single-lined spillway with an 80-mil HDPE liner underlain by a 12-inch-thick layer of native material. The spillway consists of a 40-foot long riprap apron for energy dissipation. The spillway is 10 feet wide at the base with 3H:1V side slopes. Accumulated fluid shall be pumped back into the process or used for dust control on roads on-site as soon as practical, but no later than 30 days. The facility shall be operated with a minimum of 2 feet of freeboard.</p> |
| Cat Pond 2 (D-42B) | 31° 50' 34" N 111° 08' 18" W | <p>Individual BADCT: Facility is an existing, single-lined impoundment with an 80-mil HDPE liner underlain by a 12-inch-thick layer of 3/8-inch minus native material compacted to 95 percent maximum dry density. The HDPE liner is secured in an engineered anchor trench. The facility overlies more competent bedrock with relatively low permeability of 10^{-5} cm/sec. The impoundment has a fluid storage capacity of 60.1 acre-feet, with a depth of 40 feet. The sides of the pond have a slope of 3H:1V. The impoundment provides containment for stormwater runoff from the upgradient native terrain and the Sierrita Waste Rock Pile. Upgradient and to the west, a single-lined channel with an 80-mil HDPE geomembrane underlain by a 12-inch-thick layer of compacted native material, discharges stormwater from the upgradient watershed into Cat Pond 2. The channel is 20 feet wide at the base, approximately 34 feet wide at the crest with 3H:1V side slopes. The channel is approximately 1,800 feet long with an average grade of 1 percent. The facility is designed to contain a 100-year, 24-hour storm event. In the event of overflow, discharge would flow into a single-lined spillway with an 80-mil HDPE geomembrane underlain by a 12-inch-thick layer of compacted bedding material and a 50-foot long riprap apron for energy dissipation. The spillway is 20 feet wide at the base with 3H:1V side slopes. Accumulated fluid shall be pumped back into the process or used for dust control on roads on-site as soon as practical, but no later than 30 days. The facility shall be operated with a minimum of 2 feet of freeboard.</p> |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|---------------------------------------|---------------------------------|--|
| Process solution Impoundments: | | |
| Raffinate Pond No. 3 (D-04) | 31° 50' 53" N 111° 07' 09" W | Individual BADCT: Facility is an existing double-lined impoundment with 60-mil HDPE liners incorporating an LCRS. The bottom liner is underlain by a geotextile cushion underlain by 6 inches of 3/4-inch minus native material compacted to 95% of maximum dry density. The facility is underlain by andesite with relatively low permeability ranging from 10 ⁻⁵ cm/sec to 10 ⁻⁷ cm/sec. The liners are secured in an engineered anchor trench around the impoundment perimeter. The impoundment has a fluid storage capacity of 16 acre-feet with a maximum depth of 22 feet. The pond has side slopes of 2.5H:1V. The impoundment provides containment for stormwater runoff and during upset conditions at SX-3 Stormwater Pond, Headwall #3, Headwall #5, and subsurface flows pumped from Interceptor No. 3. The facility is designed to overflow through lined spillway into SX-3 Stormwater Pond. |
| SX-3 Drain Pond (D-31) | 31° 50' 54" N 111° 07' 16" W | Individual BADCT: Facility is a double-lined impoundment using 60-mil HDPE liners incorporating an LCRS. The bottom liner is underlain by geotextile cushion underlain by a 6-inch thick bedding layer of ¾-inch minus material compacted to 95% of maximum density. The impoundment is underlain by shallow bedrock with relatively low permeability ranging from 10 ⁻⁵ to 10 ⁻⁷ cm/sec. The HDPE liner is secured in an engineered anchor trench. The impoundment has a fluid storage capacity of 2.6 acre-feet and sides slope with a grade of 2.5H:1V. The impoundment receives leaching process solution (PLS, raffinate, organics) from SX-3 Tank Farm Secondary Containment activities and impacted stormwater. The facility is designed to overflow through a lined spillway into SX-3 Stormwater Pond. The facility shall be operated with a minimum of 2 feet of freeboard. |
| Headwall No. 2 (D-46) | 31° 51' 08" N 111° 06' 55" W | Individual BADCT: Facility is an existing, partially lined impoundment created behind an earthen dam. The headwall is lined with an 80-mil HDPE on the upstream face of the dam and is keyed into bedrock. The facility is underlain by Demetrie Volcanics. The impoundment provides containment of leachate (PLS) from the oxide and sulfide leach areas. The facility is designed to discharge accumulated fluid via 10-inch diameter HDPE pipeline into Raffinate Pond No. 3. The facility is designed to overflow through Headwall No.2 Channel into SX-3 Stormwater Pond. |
| Headwall No. 3 (D-09) | 31° 50' 57" N 111° 07' 16" W | Individual BADCT: Facility is an existing, partially lined impoundment created behind an earthen dam. The upstream face of the dam is lined with two face-to face 80-mil HDPE liners, keyed into bedrock, underlain by a 12-inch-thick layer of compacted native material. The excavation for the impoundment is lined with bentonite-amended soil having a permeability of less than 10 ⁻⁶ cm/sec. The facility is underlain by andesite bedrock with relatively low permeability of 10 ⁻⁵ cm/sec to 10 ⁻⁷ cm/sec. The HDPE geomembrane is secured in an engineered anchor trench around the perimeter. The impoundment has a fluid storage capacity of 15 acre-feet, with a maximum depth of 21 feet. The impoundment provides containment for stormwater from relatively undisturbed terrain above the dam site and leachate (PLS) from the Sierrita Oxide and Sulfide Active Leach Areas. Accumulated fluid is pumped through two 24-inch HDPE pipelines installed near the bottom of the impoundment to a concrete vault and then to Raffinate Pond No. 3. Upstream, an 80-mil HDPE double lined interceptor trench, equipped with a sump and pump system captures subsurface flows and directs the collected fluid to the Headwall No. 3 Reservoir. The facility is designed to accommodate flow from a 25-year, 24-hour storm event. The facility is designed to overflow through a concrete-lined spillway into Stormwater No. 3 Pond. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|---|
| Headwall No. 5 (D-12) | 31° 50' 42" N 111° 07' 57" W | Individual BADCT: Facility is an existing partially lined impoundment created behind an earthen dam. The upstream face of the dam is lined with an 80-mil HDPE geomembrane underlain by 12-inches of compacted course sand and gravel bedding material. The liner is secured into an anchor trench that runs along the entire length of the dam. The facility is underlain by bedrock with relatively low permeability of 10 ⁻⁵ cm/sec. The impoundment has a fluid storage capacity of 11.44 acre-feet with a maximum depth of 20 feet. The impoundment receives potentially impacted stormwater commingled with PLS from the leach area. Accumulated fluid is pumped to Headwall No.3 by a self-activated floating barge pump with a maximum pumping capacity of 50 gpm. To the East, a diversion channel diverts any runoff around the reservoir to the natural drainage channel downstream of the headwall. The trapezoidal channel has a 12-foot wide base and 1H:1V side slopes. Downgradient, a cutoff trench intercepts any subsurface flow or seepage through the dam. The facility shall be operated with a minimum of 2 feet of freeboard. |
| Dump Leaching Area: | | |
| Oxide Active Leach Area (D-18) | 31° 52' 02" N 111° 06' 50" W | Individual BADCT: Facility is an existing oxide leach dump, constructed using the end dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. The natural channels, within the leach dump footprint, are underlain by bedrock with relatively low permeability of 10 ⁻⁵ to 10 ⁻⁹ cm/sec. The facility covers a surface area of approximately 420 acres. The leachate is collected at the headwalls (Headwall No. 1 and/or Headwall No. 3) located immediately downgradient of the facility. Containment of overflow and run-on from a 100-year, 24-hour storm event is provided by Amargosa Pond and SW-3 Pond. The facility shall not exceed the aerial footprint shown in the Geotechnical Review of the Ultimate Rock Stockpile Plan at Sierrita Mine (Revised 21 August 2009) that forms an integral part of the APP application. The ultimate crest elevation of the facility shall not exceed 4400 feet amsl. See Compliance Schedule. |
| Solution Conveyance Channel: | | |
| Headwall No. 2 Channel (D-08) | 31° 50' 59" N 111° 06' 56" W | Individual BADCT: Facility is an existing single-lined conveyance channel with a 60-mil HDPE geomembrane underlain by a 6-inch layer of compacted native bedding material. The facility is underlain by andesite with relatively low permeability ranging from 10 ⁻⁴ cm/sec to 10 ⁻⁶ cm/sec. The HDPE liner is anchored in an engineered trench. The conveyance channel is approximately 2,500 feet long, 10 feet wide at the base, 2.5 feet deep with 2H:1V slopes, having an average gradient of 1.2 percent. The channel has a design capacity of 420.6 cubic feet per second. The channel provides conveyance for stormwater from native upgradient terrain and during upset conditions from Headwall No. 2 and an upgradient booster station. Accumulated fluid is discharged at the east end of SX-3 Stormwater Pond. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|---|---------------------------------|--|
| MILL SITE AREA | | |
| Non-stormwater Impoundments: | | |
| Rhenium Plant Sump (D-63) New Facility | 31° 52' 43" N 111° 06' 05" W | Prescriptive BADCT: Facility is a single-lined secondary containment with a 90-mil PVC liner underlain by 6-inch thick steel reinforced concrete poured as part of the adjacent pad. A 100-mil HDPE rub sheet cushion is laid down at the bottom of the impoundment beneath the 90-mil liner. The impoundment 4 feet x 4 feet x 3.5 feet deep provides secondary containment during upset condition from the concrete pad which is used for temporary storage of packaged and sealed sodium perrenate. Accumulated fluid in the impoundment during upset condition is recovered into the Rhenium processing circuit. The impoundment shall be pumped out as soon as practical, but no later than 30 days. |
| Raw Water Reservoir (D-21) | 31° 52' 29" N 111° 06' 35" W | Individual BADCT: Facility is an existing, single-lined impoundment with a 3-foot thick compacted bentonite-amended soil liner with a hydraulic conductivity of approximately 2×10^{-8} cm/sec. The impoundment has a fluid storage capacity of 25 acre-feet, with a depth of 50 feet. The impoundment provides containment for plant make-up water pumped from the interceptor wellfield east of the tailing impoundment, reclaim water from the tailings, fresh water from Canoa wellfield and Esperanza wellfield and periodically stormwater from 07 Pond. The stormwater runoff is diverted away from the impoundment. The reservoir shall be pumped out as soon as practical, but no later than 60 days. The facility shall be operated with a minimum of 2 feet of freeboard. |
| Process Solution Impoundment: | | |
| Decant Ponds and Pad Area (D-20) | 31° 52' 22" W 111° 06' 03" W | Individual BADCT: Facility consists of reinforced concrete lined basins (6-inch thick concrete. with polyethylene tape-sealed joints and PVC liner on the side walls) covered by gunnite. The pad covers 400 feet by 276 feet in area. The facility provides containment of overflow from the copper-moly thickeners and used for settling and recovery of solids. Reclaimed fluids are pumped to the reclaim circuit and the Tailing Thickeners. |
| Tailing Thickeners (D-40) | 31° 52' 25" N 111° 06' 11" W | Individual BADCT: Facility consists of four circular walls, each with a diameter of 508 feet, and a maximum depth of 23 feet. The walls are constructed with concrete, the floor with 3 feet of compacted soil-bentonite admix with an average hydraulic conductivity of 2.2×10^{-8} cm/sec and average moisture content of 8.9%. The thickener area is underlain by Tertiary intrusives. The Thickeners allow for the recovery and recycling of makeup water prior to transfer of the tailing material to the Tailing Impoundment.. |
| Solution Conveyance Channels: | | |
| Drainage Channel West Plant Area (D-22) | 31° 52' 20" N 111° 05' 59" W | Individual BADCT: Facility is an existing single-lined conveyance channel with 60-mil HDPE geomembrane underlain by compacted native material overlying Tertiary intrusives. The liner is secured in an engineered anchor trench. The channel is 5,370 feet long, 15-30 feet wide and 4-6 feet deep. The channel provides conveyance for stormwater runoff and accommodates fluids during upset conditions from the West Plant area. The facility is designed to flow into Duval Canal. |
| Thickeners Area Drainage Channel (D-41) | 31° 52' 16" N 111° 06' 01" W | Individual BADCT: Facility is an existing single-lined conveyance channel with 60-mil HDPE geomembrane liner underlain by compacted native material overlying Tertiary intrusives. The liner is secured in an engineered anchor trench. The channel provides containment for stormwater runoff and during upset conditions of process flows in the Sierrita Mill tailing thickener area. It is 15 feet in width, with an average depth of 4 feet. The facility is designed to flow into Duval Canal. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|--|--|
| TAILING IMPOUNDMENTS | | |
| Sierrita Tailing Impoundment (D-01) | 31° 50' 59" N 111° 02' 57" W | Individual BADCT: Facility is an existing tailing impoundment, where tailing in the slurry form is deposited using conventional upstream method of tailing deposition. The slimes, a finer fraction of the tailing material, provide a relatively low permeability coating of the floor surface to minimize infiltration. The tailing impoundment covers a surface area of approximately 4,316 acres, with a 2,500 feet long divider dam separating the pond into north and south sections. Diversion channels to the west and upgradient are designed to divert surface run-on from a 100-year, 24-hour storm event. The runoff from the embankment is captured by the catchment basins. Water accumulates toward the west side of the impoundment in the reclaim pond where it is recovered and pumped to the Raw Water Reservoir for use in the milling process. Piezometers and inclinometers are installed along the impoundment dam for monitoring phreatic surface and to ensure dam stability. The facility shall be operated with a minimum of 4 feet of freeboard. The maximum crest elevation of the tailing dam shall not exceed 4,350 feet amsl. The facility shall not exceed the aerial footprint shown in the application. See Compliance Schedule. |
| Sierrita Tailing Impoundment Sediment Basins (D-01 A-K) New Facility | 31° 49' 42" N to 31° 51' 51" N 111° 01' 28" W to 111° 01' 39" W | Individual BADCT: Facility consists of eleven unlined sediment ponds of varying storage capacities, underlain by alluvial deposits consisting of sand and gravel with caliche layers near the ground surface. Caliche layers provide a zone of permeability relatively lower than the underlying alluvium. The sediment ponds provide containment for surface water runoff from the face of tailing dam along with the tailings that have been discharged off the tailing impoundment and deposited into these ponds. Accumulated fluid is allowed to evaporate. In the event, infiltration of impacted water from sediment ponds to occur, it would be captured by a series of interceptor wells located along the east side of the tailing impoundment. Water is pumped from the wells to the Raw Water Reservoir for use in the milling process. See Compliance Schedule. |
| Blue Algae Pond (D-58) New Facility | 31° 52' 11" N 111° 05' 05" W | Individual BADCT: Facility consists of a single-lined impoundment with a 36-mil ultra violet (UV) protected polypropylene geomembrane liner and three 500-gallon tanks. This facility is underlain by a 6-inch layer of natural material compacted to 95% maximum dry density. The geomembrane is secured in an engineered anchor trench. The facility is located on top of the Esperanza Tailing Impoundment with relatively low permeability. The impoundment has a storage capacity of approximately 1 acre-foot with a depth of 6 feet. The impoundment provides containment of algae cultures used as a biological soil crust reducing fugitive dust from the tailing impoundment. Accumulated cultures are pumped out into the active tailing impoundment. The facility shall be operated with a minimum of two feet of freeboard. |
| WASTE ROCK PILES | | |
| West Waste Rock Piles (D-19) | 31° 51' 12" N 111° 08' 57" W | Individual BADCT: Facilities are waste rock piles constructed using the end dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. The facility covers a surface area of approximately 715 acre feet. Upstream, the Tinaja Pond captures any run-on and eliminates flow through the pile. Additionally, runoff that is contained in Tinaja Wash is captured by Headwall No.5, Cat Ponds 1 and 2. Further run-on to the pile is reduced by the West Diversion Channel, Upper Diversion Channel, and Lower Collections Channel. Runoff from the waste piles gravity flows into Cat Ponds 1 and 2. The facility shall not exceed the maximum crest elevation of 4,375 feet amsl. The facility shall not exceed the aerial footprint shown in the Supplement to the Geotechnical Review of the Ultimate Rock Stockpile Plan at Sierrita Mine (Revised 21 August 2009) that forms an integral part of the APP application. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|---|
| Ocotillo Waste Rock Pile (D-36) | 31° 52' 50" N 111° 06' 35" W | Individual BADCT: Facility is a waste rock pile constructed using the end dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. The facility covers a total surface area of approximately 200-250 acres and contains approximately 130 million tons of overburden. Upgradient, runoff is diverted to the Mill Site drainage. Runoff from the northern portion of the rock pile will flow onto 07 Pond via HDPE-lined collection channel located at the toe of the waste rock pile. The overburden will be backfilled into the Ocotillo Pit as mining progresses. The facility shall not exceed the maximum crest elevation of 4,500 feet amsl. The facility shall not exceed the aerial footprint shown in Drawing No.3 of the Supplement to the APP Application BADCT Demonstration Addendum issued March 2005. |
| M Waste Rock Pile (D-47) | 31° 52' 52" N 111° 09' 19" W | Individual BADCT: Facility is a waste rock pile constructed using the end dumping method over moderate-to-steeply sloping topography which minimizes the potential for discharge. The facility covers a surface area of approximately 275 acre feet. The runoff from the facility enters the Sierrita-Esperanza Pit - a passive containment. The facility shall not exceed the maximum crest elevation of 4,500 feet amsl. The facility shall not exceed the aerial footprint shown in the Geotechnical Review of the Ultimate Rock Stockpile Plan at Sierrita Mine (Revised 21 August 2009) that forms an integral part of the APP application. |
| "V" Waste Rock Pile (D-56) New Facility | 31° 53' 12" N 111°07' 06" W | Individual BADCT: Facility is waste rock pile underlain by Quaternary alluvium and Tertiary intrusives. The facility covers a surface area of approximately 30 acre feet. Runoff from the facility follows the natural drainage. Downgradient, monitor well MH-21 provides warning of any potential discharge to the groundwater. The facility shall not exceed the maximum crest elevation of 4,350 feet. The facility shall not exceed the aerial footprint shown in the Geotechnical Review of the Ultimate Rock Stockpile Plan at Sierrita Mine (Revised 21 August 2009) that forms an integral part of the APP application. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|--|
| OPEN PITS | | |
| Sierrita-Esperanza Pit (D-55) | 31° 52' 17" N 111° 08' 01" W | Individual BADCT: Facility is an open pit approximately 6,000 by 12,000 feet in plan area, and is currently mined for copper ore. The top elevation of the pit is approximately 4,100 feet amsl and the bottom is approximately 2,550 feet amsl. The pit is underlain by Tertiary intrusive rocks with a permeability ranging from 1×10^{-6} cm/sec to 7×10^{-4} cm/sec and quartz monzonite with a permeability of 5×10^{-6} cm/sec. The Sierrita and Esperanza pits were mined into one large pit causing a passive containment. The pit creates a passive containment with a capture zone defined by the 3800 foot potentiometric contour. The impoundment has a fluid storage capacity of 500 million gallons of solution. The passive containment provides containment for water conservation and receives surface stormwater and overflow from SX-3 Stormwater Pond and Amargosa Pond. Accumulated fluid is pumped to SX Plant and the reclaim water system. |
| Ocotillo Pit (D-60) New Facility | 31° 53' 00" N 111° 06' 50" W | Individual BADCT: Facility is a small, open pit approximately 1,824 feet in diameter. The facility provides containment for stormwater runoff discharged directly into the bottom of the Ocotillo Pit. The facility is inaccessible due to the encroachment of overburden dumped near the edge of the pit, covering the access ramp. The current pit lake elevation is 3,580 feet amsl. Sierrita plans to backfill this pit with waste rock, which will minimize the potential for discharge. |
| Moly Satellite Pit (D-61) New Facility | 31° 53' 02" N 111° 08' 18" W | Individual BADCT: Facility consists of a series of push-backs located immediately north of the Sierrita-Esperanza Pit. These push-backs are the beginning of a pit being mined for molybdenum ore. The facility is underlain by Ruby Star quartz monzonite porphyry and Harris Ranch quartz monzonite. Accumulated fluid is pumped out and conveyed to the Sierrita-Esperanza Pit solution storage area. Sierrita plans to backfill this pit with waste rock, which will minimize the potential for discharge. |
| VEHICLE WASHES AND MISCELLANEOUS FACILITIES | | |
| Truck Wash (D-16) | 31° 51' 38" N 111° 08' 26" W | Individual BADCT: Facility is located near the maintenance shop on the south side of the Sierrita Pit. Trucks are washed off by high-pressure hoses with the water discharging through a metal grate to a concrete-lined sump for settling of solids. The water is then run through an oil water separator and discharged to the Sierrita Pit. |
| Copper Concentrate Storage (D-35) | 31° 52' 30" N 111° 06' 13" W | Individual BADCT: Facility is an engineered 10 inch thick reinforced concrete slab, partially covered with a 1.5-foot-thick reinforced concrete curb around the perimeter. The concrete slab overlies a minimum 6-inch compacted gravel layer. The concrete slab is sloped to drain to a concrete-lined sump within the confines of the facility. Any fluid that accumulates in the sump is pumped into the flotation circuit. |

**TABLE 4.1.1
PERMITTED FACILITIES AND BADCT**

| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
|--|---------------------------------|--|
| Facilities to be Closed Under Compliance Schedule and/or to cease operation without intent to resume activities | | |
| A Pond (D-06) | 31° 51' 55" N 111° 05' 48" W | Facility has been decommissioned and no longer exists. The test results of soil samples have been submitted to ADEQ for review and comments. |
| B Pond (D-07) | 31° 51' 56" N 111° 05' 36" W | Facility has ceased operation without intent to resume activity for which it was designed. The test results of soil samples have been submitted to ADEQ. The facility will be closed under Compliance Schedule. |
| Old D Pond (D-13) | 31° 52' 22" N 111° 05' 50" W | Facility has ceased operation without intent to resume activity for which it was designed. All of the sample results for total metals and SPLP submitted to ADEQ are within the SRL requirements and AWQS. This site is scheduled for reclamation. Final closure for the facility will be completed during mine closure. |
| Rhenium Ponds (D-23) | 31° 51' 59" N 111° 04' 25" W | Facility ceased operation in 1998. The test results of soil samples have been submitted to ADEQ for review and comment. |
| Launders Facility (D-39) | 31° 51' 54" N 111° 06' 11" W | The facility has ceased operation without intent to resume activity for which it was designed. Final closure for the facility will be completed during mine closure. |
| Facilities Regulated under other Permits | | |
| Wastewater system (40-101) 10,000 gpd | N/A | General Permit 1.09 (A.A.C. R-18-9-B301.I) |
| Mine Waste Tires | N/A | General Permit 1.06 (A.A.C. R18-9-B301.F) |
| Mine Area Septic 20,000 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| Primary Crusher Septic 1,500 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| Shovel/Drill Maintenance Shop Septic 5,000 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| Clear Plant Septic 10,000 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| Tailings Thickener Septic 2,000 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| Esperanza Mill Area Septic 10,000 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| SX Maintenance septic | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |

| TABLE 4.1.1 PERMITTED FACILITIES AND BADCT | | |
|---|--------------------------------|--|
| Facility Name (PDSI Facility No.) | Latitude/Longitude | Facility BADCT |
| 1,200 gal. | | |
| Tailing Impoundment Office Septic 1,200 gal. | N/A | General Permit 1.09 (A.A.C. R18-9-B301.I) |
| Duval Canal Impoundment | 31° 51' 14" N 111°04' 13" W | General Permit 3.04 (A.A.C R18-9-A301(A)(3)) |

Notes:

- A. The primary discharge control technologies (DCTs) for each discharging facility are presented; however, additional discharge controls are discussed in the APP application and subsequent submittals and correspondence referenced in Section 5.0 of this APP.
- B. Prescriptive BADCT design involves a prescribed engineering approach that utilizes pre-approved discharge control technologies or engineering equivalents to meet the requirements of A.R.S 49-243(B)(1).

Individual BADCT design involves general principals of engineering design, and is based upon alternative discharge control measures considered, the technical and economic advantages and disadvantages of each alternative, and justification for the selection of the best alternative to meet the requirements of A.R.S. 49-243(B)(1).

- C. Definitions/Abbreviations:

BADCT – Best Available Demonstrated Control Technology
 HDPE – High Density Polyethylene
 PVC – Poly Vinyl Chloride
 LCRS – Leakage Collection and Recovery System
 ALR – Action Leakage Rate
 RLL – Rapid and Large Leakage
 PLS – Pregnant Leachate Solution
 amsl – above mean sea level
 N/A – Not Applicable

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|---|---|
| AMARGOSA WASH DRAINAGE AREA - Non-stormwater Impoundments; Lined | |
| <p>Non-stormwater Impoundments - Ponds, Sumps, and Associated Conveyance Systems:</p> <p>Amargosa Pond (D-05)</p> <p>SX-1 Tank Farm Pond D-34)</p> | <p>Monthly: Visually inspect and maintain applicable freeboard in impoundments: Amargosa Pond – 2 feet.</p> <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: (Precipitation depth to be measured based on readings obtained from the mine weather station used for such measurements) Visually inspect and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -perforated, cut, tear or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. <p>At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity.</p> <p><u>Specific Requirement</u> Remove accumulated fluid - the process solution or impacted stormwater due to process upsets and/or storm event, from the impoundment as soon as practical, but no later than 30 days after cessation of the upset or storm event, or 60 days for Amargosa Pond.</p> |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|--|--|
| AMARGOSA WASH DRAINAGE AREA – Process Solution Impoundments; Double-lined | |
| <p>Process Solution Impoundments - Ponds, Sumps, and Associated Conveyance Systems:</p> <p>Raffinate Pond No. 2 (D-10)</p> <p>Drain Pond No. 2 (D-15)</p> <p>SX-1 Drain Pond (D-33)</p> | <p>Daily: Visually inspect and take appropriate action if any evidence of : -blocked overflow pipes/spillway structures.</p> <p>Weekly: Measure flow rate in the LCRS; confirm that it is less than specified Action Leakage Rate (ALR) (See BADCT TABLE 4.1.1 and Section 2.6.2.4) and less than specified rate for Rapid and Large Leakage (RLL) (See BADCT TABLE 4.1.1 and Section 2.6.2.5); and take appropriate action if exceedence is observed in the ALR or RLL.</p> <p>Quarterly: Visually inspect and take appropriate action if any evidence of: -perforated, cut, tear or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity.</p> |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|---|--|
| AMARGOSA WASH DRAINAGE AREA – Process Solution Impoundments; Unlined | |
| <p>Process Solution Impoundments - Ponds, Sumps, and Associated Conveyance Systems:</p> <p>Headwall No. 1 (D-02)</p> <p>Bailey Lake (D-03)</p> <p>Moly Decant Tanks and Pad Area (D-39A)</p> | <p>Quarterly: Visually inspect and take appropriate action if any evidence of: -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity. (Does not apply to Moly Decant Tanks & Pad Area.)</p> <p><u>Moly Decant Tanks & Pad Areas:</u> Quarterly: Visually inspect and take appropriate action if there is any evidence of seepage or cracks that affect the structural integrity of the concrete tanks or pad area.</p> |
| AMARGOSA WASH DRAINAGE AREA – Dump Leaching | |
| Oxide Active Leach Area (D-18) | <p>Monthly: Visually inspect and take appropriate action if any evidence of: -dump or stockpile deformations, including surface cracks, slides, sloughs, or differential settlement affecting slope stability.</p> |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|---|---|
| AMARGOSA WASH DRAINAGE AREA – Solution Conveyance Channels | |
| Duval Canal - Lined (D-29) Amargosa Spillway - Lined (D-48) Duval Canal Velocity Pond (D-64) - Unlined | <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: (Precipitation depth to be measured based on readings obtained from the mine weather station used for such measurements)</p> <p>Visually inspect and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -perforated, cut, tear or damaged liner and impairment of anchor trench integrity (lined conveyances); -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. <p>Annually: Remove excess sediments/sludge from the conveyances and diversions as needed to maintain at least 80 percent of designed capacity.</p> |
| DEMETRIE WASH DRAINAGE AREA – Non-Stormwater Impoundments | |
| 07 Pond - Lined (D-43) New D Pond - Lined (D-45) Copper Sulfate Ponds 1&2 - Lined (D-59) Copper Sulfate Plant Tanks Secondary Containment Structures (D-65) Tailing Pipeline Containment Structures - Unlined (D-62 A-F) | <p>Monthly: Visually inspect and maintain applicable freeboard in impoundments: 07-Pond – 2 feet, New D Pond – 2 feet, Copper Sulfate Ponds 1&2 – 2 feet.</p> <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: (Precipitation depth to be measured based on readings obtained from the mine weather station used for such measurements)</p> <p>Visually inspect and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -perforated, cut, tear or damaged liner and impairment of anchor trench integrity (lined ponds); -surface cracks at concrete-lined structures and impoundments; -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. <p>At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity.</p> |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|---|--|
| | <p><u>Specific Requirement</u> Remove accumulated fluid - the process solution or impacted stormwater due to process upsets and/or storm event, from the impoundment as soon as practical, but no later than 30 days after cessation of the upset or storm event.</p> |
| ESPERANZA WASH DRAINAGE AREA - Non-stormwater Impoundments; Lined | |
| <p>Non-stormwater Impoundments - Ponds, Sumps, and Associated Conveyance Systems:</p> <p>SX-3 Stormwater Pond (D-11)</p> <p>Cat Pond 1 (D-42A)</p> <p>Cat Pond 2 (D-42B)</p> | <p>Monthly: Visually inspect and maintain applicable freeboard in impoundments: SX-3 Stormwater Pond – 2 feet, Cat Pond 1 – 2 feet, Cat Pond 2 – 2 feet.</p> <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: (Precipitation depth to be measured based on readings obtained from the mine weather station used for such measurements) Visually inspect and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -perforated, cut, tear or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. <p>At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity.</p> <p><u>Specific Requirement</u> Remove accumulated fluid - the process solution or impacted stormwater due to process upsets and/or storm event, from the impoundment as soon as practical, but no later than 30 days after cessation of the upset or storm event.</p> |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|--|--|
| ESPERANZA WASH DRAINAGE AREA – Process Solution Impoundments | |
| Process Solution Impoundments - Ponds, Sumps, and Associated Conveyance Systems: Raffinate Pond No. 3 - Double Lined (D-04) Headwall No.2 - Partially Lined (D-46) Headwall No. 3 - Single Lined (D-09) Headwall No. 5 – Partially Lined (D-12) SX-3 Drain Pond (D-31) | Daily: Visually inspect and take appropriate action if any evidence of : -blocked overflow pipes/spillway structures. Visually inspect and maintain applicable freeboard of 2 feet in Headwall No. 5, 2 feet in SX-3 Drain Pond. Weekly – Raffinate Pond No. 3 & SX-3 Drain Pond: Measure flow rate in the LCRS; confirm that it is less than specified Action Leakage Rate (ALR) (See BADCT TABLE 4.1.1, Section 2.6.2.4, and Table 2.2.4) and less than specified rate for Rapid and Large Leakage (RLL) (See BADCT TABLE 4.1.1, Section 2.6.2.5); and take appropriate action if exceedence is observed in the ALR or RLL. Quarterly: Visually inspect and take appropriate action if any evidence of: -perforated, cut, tear or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. At pump locations, inspect pumps, valves and structures for pump operation and structural integrity. Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity. |
| ESPERANZA WASH DRAINAGE AREA – Dump Leaching | |
| Sulfide Active Leach Area (D-17) | Monthly: Visually inspect and take appropriate action if any evidence of: -dump or stockpile deformations, including surface cracks, slides, sloughs, or differential settlement affecting slope stability. |
| ESPERANZA WASH DRAINAGE AREA – Solution Conveyance Channel | |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|--|--|
| Headwall No. 2 Channel - Lined (D-08) | <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: (Precipitation depth to be measured based on readings obtained from the mine weather station used for such measurements)</p> <p>Visually inspect and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -perforated, cut, tear or damaged liner and impairment of anchor trench integrity; -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. <p>At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity.</p> |

MILL SITE - Non-stormwater Impoundments and Concentrate Storage; Lined

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|---|---|
| <p>Rhenium Plant Sump – PVC Liner (D-63)</p> <p>Raw Water Reservoir – Bentonite Liner (D-21)</p> <p>Copper Concentrate Storage (D-35)</p> | <p>Monthly: Visually inspect and maintain applicable freeboard of 2 feet in the Raw Water Reservoir.</p> <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: (Precipitation depth to be measured based on readings obtained from the mine weather station used for such measurements) Visually inspect and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -perforated, cut, tear or damaged liner and impairment of anchor trench integrity (Rhenium Plant Sump) -desiccation, gaps or gouges in bentonite amended soil liner (Raw Water Reservoir) -surface cracks at concrete-lined impoundment (Copper Concentrate Storage) -impairment of embankment integrity as applicable; -excessive erosion in conveyances and diversions; -excess accumulation of debris in conveyances and diversions; and -impairment of access. <p>At pump locations, inspect pumps, valves and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the impoundments, conveyances and diversions as needed to maintain at least 80 percent of designed capacity (except for Copper Concentrate Storage).</p> |
| <p>MILL SITE – Process Solution Impoundments; Lined</p> | |
| <p>Tailing Thickeners (D-40)</p> <p>Decant Ponds and Pad Areas (D-20)</p> | <p><u>Tailings Thickeners</u></p> <p>Quarterly: Visually inspect thickeners and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -seepage through surface cracks of concrete-lined walls. <p>After Cleanout: Visually inspect thickeners and take appropriate action if any evidence of:</p> <ul style="list-style-type: none"> -desiccation, gaps or gouges in bentonite-amended soil liner during the clean out cycle; <p><u>Decant Ponds & Pad Areas:</u></p> <p>Quarterly: Visually inspect & take appropriate action if there is any evidence of:</p> <ul style="list-style-type: none"> -seepage or cracks that affect the structural integrity of the concrete tanks or pad area. |
| <p>MILL SITE – Solution Conveyance Channels</p> | |

**TABLE 4.2.1
Required Inspections and Operational Monitoring**

| Facility Name (#) | Operational Requirements |
|--|--|
| Blue Algae Pond (D-58) | <p>Monthly: Visually inspect and take appropriate action if any evidence of: -impairment of embankment integrity; -impairment of access. At pump locations, inspect pumps and structures for pump operation and structural integrity.</p> <p>Annually: Remove excess sediments/sludge from the Sediment Basins and Blue Algae Pond as needed to maintain at least 80 percent of designed capacity -</p> |
| WASTE ROCK PILES | |
| West Waste Rock Piles (D-19) Ocotillo Waste Rock Pile (D-36) M Waste Rock Pile (D-47) “V” Waste Rock Pile(D-56) | <p>Monthly: Visually inspect and take appropriate action if any evidence of: -dump or stockpile deformation, including surface cracks, slides, sloughs, or differential settlement affecting slope stability.</p> |
| OPEN PITS | |
| Sierrita-Esperanza Pit (D-55) | <p>Quarterly and following precipitation events measuring at least 1 inch in a 24-hour period: Visually inspect and maintain the fluid level in the pit below the maximum operating elevation of 3,700 feet amsl.</p> <p>Quarterly: At pump locations, inspect pumps and pump structures for pump operation and structural integrity. Visually inspect and take appropriate action if any evidence of: -impairment of embankment integrity as applicable; -impairment of access.</p> |
| TRUCK WASH AND MISCELLANEOUS FACILITIES | |

TABLE 4.2.1
Required Inspections and Operational Monitoring

| Facility Name (#) | Operational Requirements |
|------------------------------|---|
| Truck Wash (D-16) | Monthly: Maintain oil-water separators, grease traps, and sediment basins in operational condition, as applicable. Inspect concrete structures – slab and sumps for structural integrity, as applicable. |

DRAFT

Table 4.2.2
Table of Parameters for Ambient Groundwater Monitoring for Point of Compliance (POC) Wells

| | | |
|---------------------------------------|-------------------------|--|
| Depth to Water Level (feet) | Potassium ¹ | Nickel ¹ |
| Water Level Elevation (feet amsl) | Sodium ¹ | Selenium ¹ |
| Temperature – field (°F) | Iron ¹ | Thallium ¹ |
| pH – Field & Lab (S.U.) | Aluminum ¹ | Zinc ¹ |
| Field Specific Conductance (µmhos/cm) | Antimony ¹ | Free Cyanide |
| Total Dissolved Solids – Lab | Arsenic ¹ | Gross Alpha Particle Activity (pCi/L) ² |
| Total Alkalinity | Barium ¹ | Radium 226 (pCi/L) |
| Bicarbonate | Beryllium ¹ | Radium 228 (pCi/L) |
| Carbonate | Cadmium ¹ | Uranium-Isotopes(pCi/L) ³ |
| Hydroxide | Chromium ¹ | Carbon Disulfide |
| Sulfate | Cobalt ¹ | Benzene |
| Chloride | Copper ¹ | Toluene |
| Fluoride | Lead ¹ | Ethylbenzene |
| Nitrate + Nitrite | Manganese ¹ | Total Xylenes |
| Calcium | Mercury ¹ | Uranium |
| Magnesium ¹ | Molybdenum ¹ | |

- 1 Metals must be analyzed as dissolved metals.
- 2 If the gross alpha particle activity is greater than 15 pCi/L, then calculate adjusted gross alpha particle activity. 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).
- 3 Uranium Isotope activity results must be used for calculating Adjusted Gross Alpha.

All concentrations are in milligrams per liter (mg/L), unless otherwise specified.

**Table 4.2.3
Quarterly Compliance Groundwater Monitoring Requirements for
Hazardous POC Wells**

| PARAMETER | MH-14 | | MH-15W | | MH-16W | | MH-18 | |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Depth to Water (in feet) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Water Level Elevation (in feet amsl) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Field 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 |
| Cadmium | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 |
| Cobalt | NR | NR | NR | NR | NR | NR | Monitor | Monitor |
| Copper | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Molybdenum | NR | NR | NR | NR | NR | NR | Monitor | Monitor |
| Fluoride | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 |
| Nitrate + Nitrite | 10 | 8 | 10 | 8 | 10 | 8 | 10 | 8 |
| Sulfate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Total Dissolved Solids | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Beryllium | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 |
| Nickel | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |
| Selenium | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
| Magnesium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Antimony | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 |
| Arsenic | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
| Chromium | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |
| Lead | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
| Thallium | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 |

Reserved: At the conclusion of eight rounds of groundwater sampling from well MH-27, MH-28 and MH-29; the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ GWS-APP&DRU to propose AQLs and ALs based on the ambient data. AQLs and ALs will be calculated based on the criteria in 2.5.3.4 and 2.5.3.5. Either a numeric value or “Monitor” will be amended to the permit for each AQL and AL listed as “Reserved.”

NR = Analysis is not required

Monitor = Monitoring required, but no AQL or AL established in the permit.

AQL = Aquifer Quality Limit

AL = Alert Level

All concentrations are in milligrams per liter (mg/L) unless otherwise specified.

Metals will be analyzed as dissolved metals.

Use Table 4.2.4 parameter list for biennial sampling events.

**Table 4.2.3
Quarterly Compliance Groundwater Monitoring Requirements for
Hazardous POC Wells**

| PARAMETER | MH-19 | | MH-20 | | MH-21 | | MH-22 | |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Depth to Water (in feet) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Water Level Elevation (in feet amsl) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Field 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 |
| Cadmium | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.010 | Monitor |
| Cobalt | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Copper | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Molybdenum | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Fluoride | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 |
| Nitrate + Nitrite | 10.0 | 8.3 | 10.0 | 8.0 | 10.0 | 8.0 | 10.0 | 8.0 |
| Sulfate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Total Dissolved Solids | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Beryllium | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 |
| Nickel | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |
| Selenium | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
| Magnesium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Antimony | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 |
| Arsenic | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
| Chromium | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |
| Lead | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 |
| Thallium | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 |

Reserved: At the conclusion of eight rounds of groundwater sampling from well MH-27, MH-28 and MH-29; the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ GWS-APP&DRU to propose AQLs and ALs based on the ambient data. AQLs and ALs will be calculated based on the criteria in 2.5.3.4 and 2.5.3.5. Either a numeric value or “Monitor” will be amended to the permit for each AQL and AL listed as “Reserved.”

NR = Analysis is not required

Monitor = Monitoring required, but no AQL or AL established in the permit.

AQL = Aquifer Quality Limit

AL = Alert Level

All concentrations are in milligrams per liter (mg/L) unless otherwise specified.

Metals will be analyzed as dissolved metals.

Use Table 4.2.4 parameter list for biennial sampling events.

**Table 4.2.3
Quarterly Compliance Groundwater Monitoring Requirements for
Hazardous POC Wells**

| PARAMETER | MH-23 | | MH-27 | | MH-28 | | MH-29 | |
|---------------------------------------|---------|---------|----------|----------|----------|----------|----------|----------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Depth to Water (in feet) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Water Level Elevation (in feet amsl) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Field 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 |
| Cadmium | 0.005 | 0.004 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Cobalt | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Copper | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Molybdenum | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Fluoride | 4.0 | 3.2 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Nitrate + Nitrite | 10.0 | 8.0 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Sulfate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Total Dissolved Solids | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Beryllium | 0.004 | 0.0032 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Nickel | 0.10 | 0.08 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Selenium | 0.05 | 0.04 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Magnesium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Antimony | 0.006 | 0.0048 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Arsenic | 0.05 | 0.04 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Chromium | 0.10 | 0.08 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Lead | 0.05 | 0.04 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Thallium | 0.002 | 0.0016 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |

Reserved: At the conclusion of eight rounds of sampling from well MH-27, MH-28 and MH-29; the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ GWS-APP&DRU to propose AQLs and ALs based on the ambient data. AQLs and ALs will be calculated based on the criteria in 2.5.3.4 and 2.5.3.5. Either a numeric value or “Monitor” will be amended to the permit for each AQL and AL listed as “Reserved.”

NR = Analysis is not required

Monitor = Monitoring required, but no AQL or AL established in the permit.

AQL = Aquifer Quality Limit

AL = Alert Level

All concentrations are in milligrams per liter (mg/L) unless otherwise specified.

Metals will be analyzed as dissolved metals.

Use Table 4.2.4 parameter list for biennial sampling events.

**Table 4.2.4
Biennial Compliance Groundwater Monitoring Requirements for POC Wells**

| PARAMETER | MH-14 | | MH-15W | | MH-16W | | MH-18 | |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Depth to Water (in feet) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Water Level Elevation (in feet amsl) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Field 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 | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Total Alkalinity | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Carbonate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Bicarbonate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Hydroxide | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Chloride | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Sulfate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Sodium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Potassium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Calcium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Magnesium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Nitrate + Nitrite | 10 | 8 | 10 | 8 | 10 | 8 | 10 | 8 |
| Fluoride | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 |
| Aluminum | NR | NR | NR | NR | NR | NR | Monitor | Monitor |
| Antimony | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 |
| Arsenic | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 |
| Beryllium | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 |
| Barium | 2.0 | 1.6 | 2.0 | 1.6 | 2.0 | 1.6 | 2.0 | 1.6 |
| Cadmium | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 |
| Chromium | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |

| | | | | | | | | |
|------|---------|---------|---------|---------|---------|---------|---------|---------|
| Iron | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
|------|---------|---------|---------|---------|---------|---------|---------|---------|

**Table 4.2.4
Biennial Compliance Groundwater Monitoring Requirements for POC Wells**

| PARAMETER | MH-14 | | MH-15W | | MH-16W | | MH-18 | |
|---|---------|---------|---------|---------|---------|---------|---------|---------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Lead | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 |
| Mercury | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 |
| Nickel | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |
| Selenium | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 |
| Thallium | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.02 | 0.0016 | 0.02 | 0.0016 |
| Copper | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Cobalt | NR | NR | NR | NR | NR | NR | Monitor | Monitor |
| Manganese | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Molybdenum | NR | NR. | NR | NR | NR | NR | Monitor | Monitor |
| Zinc | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Gross Alpha Particle Activity (pCi/L) | 15 | 13 | 32 | NA | 15 | 12 | 15 | 12 |
| Radium 226+Radium 228 (pCi/L) | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 4 |
| Uranium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Uranium-isotopes (pCi/L) ^{1,2} | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Benzene | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 |
| Toluene | 1.0 | 0.800 | 1.0 | 0.800 | 1.0 | 0.800 | 1.0 | 0.800 |
| Ethylbenzene | 0.70 | 0.560 | 0.70 | 0.560 | 0.70 | 0.560 | 0.70 | 0.560 |
| Total Xylenes | 10 | 8 | 10 | 8 | 10 | 8 | 10 | 8 |
| Free Cyanide | 0.2 | 0.16 | 0.2 | 0.16 | 0.2 | 0.16 | 0.2 | 0.16 |
| Carbon Disulfide | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |

Reserved - At the conclusion of eight rounds of groundwater sampling from well MH-27, MH-28 and MH-29; the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ to propose ALs and AQLs based on ambient data. AQLs and ALs will be calculated based on the criteria in 2.5.3.4 and 2.5.3.5. Either a numeric value or "Monitor" will be amended to the permit for each AQL or AL listed as "Reserved."

NA = AL not applicable. AQL exceeds AWQS at time of permit issuance.

NR = Analysis not required

Monitor = Analysis required but no AQL or AL established in permit

AQL = Aquifer Quality Limit

AL = Alert Level

All concentrations in parts per million (ppm) unless otherwise specified

Metals will be analyzed as dissolved metals

- 1) If the gross alpha particle activity is greater than 15 pCi/L, then calculate adjusted gross alpha particle activity. 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 the 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.
Use Table 4.2.3 parameters for quarterly sampling events between biennial events.

**Table 4.2.4
Biennial Compliance Groundwater Monitoring Requirements for POC Wells**

| PARAMETER | MH-19 | | MH-20 | | MH-21 | | MH-22 | |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Depth to Water (in feet) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Water Level Elevation (in feet amsl) | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Field 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 | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Total Alkalinity | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Carbonate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Bicarbonate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Hydroxide | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Chloride | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Sulfate | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Sodium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Potassium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Calcium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Magnesium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Nitrate + Nitrite | 10 | 8.3 | 10 | 8 | 10 | 8 | 10 | 8 |
| Fluoride | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 | 4.0 | 3.2 |
| Aluminum | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Antimony | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 | 0.006 | 0.0048 |
| Arsenic | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 |
| Beryllium | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 | 0.004 | 0.0032 |
| Barium | 2.0 | 1.6 | 2.0 | 1.6 | 2.0 | 1.6 | 2.0 | 1.6 |
| Cadmium | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.010 | Monitor |
| Chromium | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |

| | | | | | | | | |
|------|---------|---------|---------|---------|---------|---------|---------|---------|
| Iron | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
|------|---------|---------|---------|---------|---------|---------|---------|---------|

**Table 4.2.4
Biennial Compliance Groundwater Monitoring Requirements for POC Wells**

| PARAMETER | MH-19 | | MH-20 | | MH-21 | | MH-22 | |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Lead | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 |
| Mercury | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 |
| Nickel | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 | 0.10 | 0.08 |
| Selenium | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 | 0.050 | 0.040 |
| Thallium | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 | 0.002 | 0.0016 |
| Copper | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Cobalt | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Manganese | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Molybdenum | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Zinc | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Gross Alpha Particle Activity (pCi/L) | 15 | 12 | 15 | 12 | 138 | NA | 15 | 12 |
| Radium 226+Radium 228 (pCi/L) | 5 | 4 | 5 | 4 | 31 | NA | 5 | 4 |
| Uranium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Uranium-Isotopes (pCi/L) 1,2 | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Benzene | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 | 0.005 | 0.004 |
| Toluene | 1.0 | 0.800 | 1.0 | 0.800 | 1.0 | 0.800 | 1.0 | 0.800 |
| Ethylbenzene | 0.700 | 0.560 | 0.700 | 0.560 | 0.700 | 0.560 | 0.700 | 0.560 |
| Total Xylenes | 10 | 8 | 10 | 8 | 10 | 8 | 10 | 8 |
| Free Cyanide | 0.20 | 0.16 | 0.20 | 0.16 | 0.20 | 0.16 | 0.20 | 0.16 |
| Carbon Disulfide | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |

Reserved - At the conclusion of eight rounds of groundwater sampling from well MH-27, MH-28 and MH-29; the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ to propose ALs and AQLs based on ambient data. AQLs and ALs will be calculated based on the criteria in 2.5.3.4 and 2.5.3.5. Either a numeric value or "Monitor" will be amended to the permit for each AQL or AL listed as "Reserved."

NA = AL not applicable. AQL exceeds AWQS at time of permit issuance.

NR = Analysis not required

Monitor = Analysis required but no AQL or AL established in permit

AQL = Aquifer Quality Limit

AL = Alert Level

All concentrations in parts per million (ppm) unless otherwise specified

Metals will be analyzed as dissolved metals

- 1) If the gross alpha particle activity is greater than 15 pCi/L, then calculate adjusted gross alpha particle activity. 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 the 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.

Use Table 4.2.3 parameters for quarterly sampling events between biennial events.

| | | | | | | | | |
|------|---------|---------|---------|---------|---------|---------|---------|---------|
| Iron | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
|------|---------|---------|---------|---------|---------|---------|---------|---------|

**Table 4.2.4
Biennial Compliance Groundwater Monitoring Requirements for POC Wells**

| PARAMETER | MH-23 | | MH-27 | | MH-28 | | MH-29 | |
|---|---------|---------|----------|----------|----------|----------|----------|----------|
| | AQL | AL | AQL | AL | AQL | AL | AQL | AL |
| Lead | 0.050 | 0.040 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Mercury | 0.002 | 0.0016 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Nickel | 0.10 | 0.08 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Selenium | 0.050 | 0.040 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Thallium | 0.002 | 0.0016 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Copper | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Cobalt | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Manganese | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Molybdenum | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Zinc | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Gross Alpha Particle Activity (pCi/L) | 15 | 12 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Radium 226+Radium 228 (pCi/L) | 5 | 4 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Uranium | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Uranium-Isotopes (pCi/L) ^{1,2} | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |
| Benzene | 0.005 | 0.004 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Toluene | 1.000 | 0.800 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Ethylbenzene | 0.700 | 0.560 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Total Xylenes | 10 | 8 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Free Cyanide | 0.20 | 0.16 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| Carbon Disulfide | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor | Monitor |

Reserved - At the conclusion of eight rounds of groundwater sampling from well MH-27, MH-28 and MH-29; the permittee is required to submit an Ambient Groundwater Monitoring Report and permit amendment request to ADEQ to propose ALs and AQLs based on ambient data. AQLs and ALs will be calculated based on the criteria in 2.5.3.4 and 2.5.3.5. Either a numeric value or "Monitor" will be amended to the permit for each AQL or AL listed as "Reserved."

NA = AL not applicable. AQL exceeds AWQS at time of permit issuance.

NR = Analysis not required

Monitor = Analysis required but no AQL or AL established in permit

AQL = Aquifer Quality Limit

AL = Alert Level

All concentrations in parts per million (ppm) unless otherwise specified

Metals will be analyzed as dissolved metals

- 1) If the gross alpha particle activity is greater than 15 pCi/L, then calculate adjusted gross alpha particle activity. 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 the 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.
Use Table 4.2.3 parameters for quarterly sampling events between biennial events.

DRAFT

5.0 REFERENCES AND PERTINENT INFORMATION

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

1. APP Application Sierrita Operation, Cyprus Sierrita Corporation, Pima County, Arizona, dated, September 7, 1994.
2. Cyprus Sierrita Corporation, Supplement to Application for Aquifer Protection Permit, September 1996.
3. Cyprus Sierrita Corporation, BADCT Work Plan for APP Application, January 1997.
4. Cyprus Sierrita Corporation, Supplement to Application for Aquifer Protection Permit BADCT Demonstration, August 1997.
5. Cyprus Sierrita Corporation, Supplement to Application for Aquifer Protection Permit, August 1999.
6. Supplement to the Aquifer Protection Permit Application BADCT Demonstration Addendum, Sierrita Mine, Green Valley, Arizona dated March 2005.
7. Aquifer Protection Permit Program Project File, Inventory Number 101679.
8. Public Notice, dated July 7, 2005, and July 8, 2005.
9. Public Hearings, dated August 17, 2005, and July 27, 2006.
10. Responsiveness Summary, dated February 2007.
11. ADEQ *Arizona Mining BADCT Guidance Manual*, September 1998.
12. Mitigation Order on Consent, P-50-06, Effective June 14, 2006.
13. APP amendment application and supporting information received December 16, 2008 and August 25, 2009.

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 5 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. §§ 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 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 Water Permits Section 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).