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**GROUND WATER QUALITY BUREAU (GWQB)  
DISCHARGE PERMIT RENEWAL AND MODIFICATION  
EXISTING COPPER MINE FACILITY  
Issued under 20.6.2 and 20.6.7 NMAC**

Certified Mail No: 7017 3040 0000 4183 7274  
Return Receipt Requested

<b>Mine Facility Name:</b>	Chino Mine
<b>GWQB Discharge Permit No.:</b>	DP-1340
<b>GWQB TEMPO AI No.:</b>	526
<b>Permittee Name/Responsible Party:</b>	Freeport-McMoRan Chino Mines Company
<b>Mailing Address:</b>	P.O. Box 10 Bayard, NM 88023
<b>Mine Facility Contact</b>	Kariann Sokulsky; (575) 912-5386
<b>Mine Facility Location:</b>	Chino Mine 99 Santa Rita Mine Road Vanadium, NM 88023
<b>County:</b>	Grant County
<b>Permitting Action:</b>	Renewal and Modification
<b>Effective Date:</b>	<b>DATE</b>
<b>Expiration Date:</b>	<b>DATE</b>
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\_\_\_\_\_  
**Rebecca Roose**  
Director, Water Protection Division

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**Date**

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## Part A GENERAL INFORMATION

### A100 Introduction

- A. The New Mexico Environment Department (NMED) issues this renewal and modification of the Supplemental Groundwater Discharge Permit for Closure, DP-1340 (Discharge Permit) to Freeport-McMoRan Chino Mines Company (permittee) pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978, §§ 74-6-1 through 74-6-17, and the New Mexico Water Quality Control Commission (WQCC) Regulations, 20.6.2 and 20.6.7 NMAC. NMED is issuing this Supplemental Discharge Permit to control the discharge of water contaminants from the Chino Mines Facility (Chino Mine) following cessation of operations for the protection of groundwater and those segments of surface water gaining from groundwater inflow, for present and potential future use as domestic and agricultural water supply and other uses, and to protect public health.
- B. Pursuant to this Discharge Permit, the permittee is authorized to implement the closure/closeout plan to facilitate closure measures for the Chino Mine. The permittee submitted an updated Closure/Closeout Plan titled "Chino Mine Closure/Closeout Plan Update" dated February 14, 2018 ("Updated CCP"). The Updated CCP shall be implemented and enforceable under the terms of this Discharge Permit.
- C. Approval of this Discharge Permit does not relieve the permittee of its responsibility to comply with all conditions and requirements of the Chino Mine operational discharge permits, WQA, WQCC Regulations, and any other applicable federal, state, and local laws and regulations.
- D. Leachate from the leach stockpiles, waste rock stockpiles, tailing storage facilities (also called "tailing impoundment(s)" or "tailing pond(s)"), and other areas at the Chino Mine at closure will be regulated pursuant to this discharge permit. These discharges may move directly or indirectly into groundwater of the State of New Mexico which has an existing concentration of 10,000 milligrams per liter (mg/L) or less of total dissolved solids (TDS) within the meaning of Section 20.6.2.3104 and Subsection A of 20.6.2.3101 NMAC. These discharges may contain water contaminants or toxic pollutants elevated above the standards of Section 20.6.2.3103 NMAC.
- E. The permittee is authorized to discharge water contaminants at closure pursuant to this Supplemental Discharge Permit which includes conditions authorized or specified by Part 20.6.7 NMAC (Copper Mine Rule) on condition that the permittee complies with the Copper Mine Rule and this Supplemental Discharge Permit, which are enforceable by NMED.

- F. The facility characteristics, reclamation designs, and associated reclamation cost estimate provided in the Updated CCP and referenced in this Discharge Permit are based on projected conditions at the Chino Mine at End-of-Year 2018 (EOY 2018). As provided in the Updated CCP, the permittee determined this using a 5-year mining forecast between 2014-2019. The cost estimate for closure and closeout measures for the period between 2014 and 2019 is estimated to be highest at EOY 2018 assuming that the Updated CCP is implemented for conditions existing at EOY 2018. As such, EOY 2018 conditions are the basis for all facility characteristics, reclamation designs, and associated reclamation cost estimate for the Chino Mine. The term "EOY 2018" as used in this Discharge Permit is meant to represent the closure condition that the Updated CCP and this Discharge Permit is based upon and may not represent actual or existing conditions in EOY 2018.

#### **A101 Applicable Regulations**

- A. The Chino Mine meets the definition of an "existing copper mine facility." Sections 20.6.2.3000 through 20.6.2.3114 NMAC and Part 20.6.7 NMAC apply to discharges specific to copper mine facilities and their operations.
- B. The discharge from the mine units regulated pursuant to this Discharge Permit are not subject to any of the exemptions of Section 20.6.2.3105 NMAC, except as provided in this Supplemental Discharge Permit.
- C. Groundwater quality as observed in monitoring wells required by this Discharge Permit is subject to the criteria of Sections 20.6.2.3101 and 20.6.2.3103 NMAC except as provided in Subsection D of 20.6.7.24 NMAC.

#### **A102 Permit Duration**

- A. Pursuant to the WQA 74-6-5(l) and Subsection H of 20.6.2.3109 NMAC, the term of this Discharge Permit is **five (5) years** from its effective date.
- B. If the permittee submits an application for renewal in accordance with Subsection F of 20.6.2.3106 NMAC, and the permittee is not in violation of the discharge permit on the date of its expiration, then the existing discharge permit shall not expire until the application for renewal has been approved or disapproved.

#### **A103 Terms of Permit Issuance**

- A. **Permit Fees** - As a discharge permit associated with Freeport-McMoRan Chino Mines Company Chino Mine, the permittee shall remit an annual permit fee payment for Chino Mine equal to the applicable permit fee based on mine size listed in Subsection A of 20.6.7.9 NMAC

on August 1 of each year until termination of all discharge permits for the Chino Mine. [Subsection A of 20.6.7.9 NMAC].

- B. **Transfer of Discharge Permit** - Prior to the transfer of any ownership, control, or possession of this permitted facility or any portion thereof, the permittee shall notify the proposed transferee in writing of the existence of this Discharge Permit and include a copy of this Discharge Permit with the notice. The permittee shall deliver or send by certified mail to NMED a copy of the notification and proof that such notification has been received by the proposed transferee. [20.6.7.38 NMAC and 20.6.2.3111 NMAC]
- C. **Permit Renewal** - To renew this Discharge Permit, the permittee shall submit an application including a Closure/Closeout Plan, and associated fees for renewal at least 270 days prior to the expiration date of this Discharge Permit (By DATE) in accordance with Section 20.6.7.9, Section 20.6.7.10, and Section 20.6.7.11 NMAC. The renewal application and Closure/Closeout Plan shall reflect the closure scenario with the highest cost estimate for a five period beyond the date of this permit expiration (i.e., based on the projected mine plan from EOY 2025 to EOY 2030).
- D. **Additional Conditions** - In addition to the requirements of 20.6.7 NMAC, the permittee shall comply with the following additional conditions as authorized by Subsection I of 20.6.7.10 NMAC pursuant to WQA 74-6-5:

C101.C, C104.C, C108.D.4, C110.B, C110.C, C110.D, C112.B, C112.I, C113.F, and C114.E.

## Part B FACILITY SPECIFIC INFORMATION

### B100 History and Facility Description

- A. The Chino Mine is an open pit copper mine facility owned by Freeport-McMoRan Chino Mines Company which covers an area of approximately 35,000 acres. The Chino Mine includes the Santa Rita Open Pit, associated waste rock and leach stockpiles, collection systems, a solution extraction and electrowinning (SX/EW) plant, a concentrator and associated mineral processing units, an active tailing impoundment, and reclaimed mine units. The Chino Mine is regulated pursuant to multiple operational Groundwater Discharge Permits, this Supplemental Discharge Permit for Closure, and an abatement plan.
- B. Open pit mining operations began in 1910 at the Santa Rita Open Pit. In 1911, a mill and concentrator were constructed near the former Hurley Smelter site. High grade ore transported by rail from the Santa Rita Open Pit was processed by crushing the ore at the mill and using a flotation circuit at the concentrator to recover copper concentrate. Waste Rock and lower grade ore was stockpiled near the Santa Rita Open Pit and tailing from the

concentrator was deposited east and south of Hurley in Tailing Ponds along Whitewater Creek. In 1936, Chino began leaching the low-grade ore stockpiles near the Santa Rita Open Pit. Copper was extracted from the resulting leach solutions at the precipitation plants. Construction of the Hurley Smelter was completed in 1939. Leaching of the Lampbright Leach Stockpile began in 1976. In mid-1982, the Hurley Mill and concentrator were replaced by a new mill and concentrator called the Ivanhoe Concentrator. The SX/EW plant was constructed in 1988. The Hurley Smelter ceased operations in 2001, was demolished in 2007 and the 25-acre site was reclaimed in 2008.

- C. The Chino Mine comprises three geographic areas: North Mine Area, Pipeline Corridor Area, and South Mine Area as described below.
1. The North Mine Area (NMA) contains the primary mining operation at the Chino Mine and includes the Santa Rita Open Pit, leach ore stockpiles, waste rock stockpiles, the SX/EW Plant, reservoirs, pumping/booster stations, seepage impoundments, stormwater impoundments, mill facilities, storage tanks, a maintenance area that includes truck and equipment washing units, a former precipitation plant area, the Groundhog Mine area, Oswaldo Mine Shaft, Star Mine Shaft, and the Ivanhoe Concentrator.
    - a. Operations at the SX/EW plant include copper removal from leach solutions and acidification of process water to produce raffinate for leaching. The SX/EW plant covers approximately 51 acres. Reservoirs 2, 4A, 5, 6, 7, 8 and 9, and the PLS (Pregnant Leach Solution) Tank on the west side of the South Stockpile, are located in the vicinity of the Santa Rita Open Pit and store process solutions where they are returned to the process water reuse circuit, used for additional leaching, or piped to the SX/EW plant for copper extraction. The pumping capacity to these reservoirs is augmented by various pumping stations including Estrella Boosters #1 - 4, 6525 Raffinate Tank, South Stockpile Booster Station and PLS and Raffinate Tanks. The reservoirs cover approximately 165 acres. Additional storage capacity exists for impacted stormwater and seepage management along the western side of the West Stockpile at Dams 10, 11, 12, 13, 14, 14-1, 14-2, 14-3, 18, 19, and 20. Additional stormwater retention and seepage interception occurs at the Ivanhoe Concentrator area at Dams 15, 16, 20, and Reservoir 17. These seepage impoundments and stormwater retention reservoirs cover approximately 8 acres.
    - b. The maintenance facility area services haulage trucks and other mine equipment and also contains the laboratory, vehicle and equipment wash units, the security office, the geology department, safety department and mine engineering. The primary crusher crushes run-of-mine rock from the Santa Rita Open Pit prior to additional crushing and grinding at the Ivanhoe Concentrator. Finely ground ore enters the Ivanhoe Concentrator where copper and molybdenum are produced through conventional froth-flotation circuits. The copper concentrate is piped to the SMA for further processing at the Hurley Operations Area Filter Plant. Molybdenum concentrates are packaged for additional off-site processing. The former precipitation



plant area is located adjacent to the mill facility and Ivanhoe Concentrator. The precipitation plant has been removed and the area is primarily used as a storage area. The mill facilities, mine maintenance and general offices, former precipitation plant area and Ivanhoe Concentrator cover approximately 110 acres. The Groundhog Mine area is located southwest of the Ivanhoe Concentrator and includes covered waste rock stockpiles and inactive underground workings. Surface disturbance associated with Groundhog Mine has been reclaimed under the Chino Administrative Order on Consent. Other inactive underground workings include those associated with the Star and Oswaldo #2 mine shafts.

2. The Pipeline Corridor Area (PCA), also referred to as the Middle Whitewater Creek Area, extends from the Ivanhoe Concentrator (in the NMA) to the north end of Lake One and the Hurley Operation Area which includes the Filter Plant, Hurley Power Plant, and Maintenance Shop. The PCA includes three tailings pipelines, one process water pipeline, one concentrate pipeline and associated infrastructure between the Ivanhoe Concentrator and the SMA. From the Ivanhoe Concentrator, tailing flows in either the West Train, the East Train or the Spare Train pipelines for approximately nine miles, partly along Whitewater Creek, from the concentrator to the Termination Tank and Chino Tailing Pump Station (CTPS) located on top of reclaimed Tailing Pond 4. Process water from the 750,000-gallon tank at the Hurley Smelter follows a similar pipeline route to the Ivanhoe Concentrator. A copper concentrate pipeline also follows this route.
  3. The South Mine Area (SMA) includes reclaimed Lake One; reclaimed Older Tailing Ponds 1, 2, 4 East, 4 West, B, and C; partially reclaimed Older Tailing Ponds 6 East and 6 West; active Tailing Pond 7; and the Hurley Operation Area. The tailing impoundments in total contain approximately 690 million tons of tailing and cover approximately 3,500 acres. The SMA encompasses the area from the north end of Lake One to the confluence of Whitewater Creek with San Vicente Arroyo, approximately 12 miles to the south. The Tailing Pond 7 seepage interceptor system is located immediately south of Tailing Pond 7 and consists of approximately 20 wells that pump impacted groundwater and tailing pond seepage to Tailing Pond 7. The seepage is pumped to the NMA through Axiflo Lake and the 750,000-gallon tank, used for process make-up water. James Canyon Reservoir is used for stormwater and sediment retention and is used as part of the upper Whitewater Creek Diversion. Fresh water is pumped from various well fields (currently the Bolton, Apache Tejo, McCauley, Whitewater, Warm Springs, Moody, Stark, 2C, Yates and Baker wellfields) to the NMA and SMA as necessary. The Hurley power plant provides a portion of the electrical power for the Chino Mine.
- D. The majority of the older Tailing Ponds in the SMA were reclaimed between 2012-2014 in accordance with the Copper Mine Rule. These reclaimed mine units comprise approximately 2016 acres and include Lake One, the Slag Pile, and Older Tailing Ponds 1, 2, 4, B, C, 69% of

6E, and 71% of 6W. Tailing Ponds 7, portions of Ponds 6E and 6W, and Axiflo Lake remain operational.

- E. Current operational discharge permits approved for the Chino Mines Facility include DP-213 for the Ivanhoe Concentrator and associated pipelines; DP-214 for the reclaimed Hurley Smelter, Lake One, Older Tailings, Axiflo Lake and Lower Whitewater Creek; DP-376 for the Lampbright Leach System; DP-484 for Tailing Pond 7; DP-459 for the Santa Rita Open Pit, North In-Pit Leach Stockpile; the 9, East In-Pit Road, South In-Pit Road, 3A, Highway to Heaven, Northeast, North, and Northwest Waste Rock Stockpiles; and Reservoir 5; DP-526 for the Whitewater Leach System, DP-591 for the SX/EW Plant and Reservoirs 6 and 7; and DP-1568 for the Lee Hill Stockpile Leach System. These facilities contain multiple mine units or components including pipelines, reservoirs, buildings and roads which are not specifically mentioned in DP-1340 but are regulated pursuant to these operational discharge permits.

#### **B101 Modification**

- A. The modification of DP-1340 includes updating the Closure/Closeout Plan and cost estimate. The modification also includes authorization to implement the Whitewater Creek Alkaline Flush Pilot Project (or "ALF"). ALF is intended to evaluate the potential to treat impacted shallow alluvial groundwater and sediments in Middle Whitewater Creek through discharge of high alkalinity water into Middle Whitewater Creek. Discharge of high alkalinity water to the shallow subsurface will occur via a subsurface trench, classified as a Class V Underground Injection Control (UIC) well. The pilot project discharge site is proposed to be located approximately 700 to 1000 feet downstream from the Bayard Wastewater Treatment Facility.

#### **B102 Permitting History**

- A. The Discharge Plan for DP-1340 consists of an application and Closure/Closeout Plan submitted on August 28, 2007 and an updated Closure/Closeout Plan titled "Chino Mine Closure/Closeout Plan Update" dated February 14, 2018 (Updated CCP), two addendums to the Updated CCP dated August 17, 2018 and January 17, 2019, an updated cost estimate dated March 20, 2019 which is based on the Updated CCP, and materials contained in the administrative record prior to issuance of this Discharge Permit. The Updated CCP was submitted to meet the requirements of the Copper Mine Rule. As part of the application process, the permittee also provided a document dated October 8, 2015 referred to as the Chino North Mine Area Master Document (NMA Master Document) which addresses Copper Mine Rule general application requirements for the NMA and is applicable to all the permittee's discharge permits in the NMA, including DP-1340. In addition, the Discharge Plan for DP-1340 includes applicable information and materials submitted as part of the original Discharge Plan for DP-1340 approved on February 24, 2003 and amended on December 2,

2011, September 6, 2013, March 4, 2014, August 14, 2014, February 11, 2015, March 13, 2015, July 26, 2016, and November 10, 2016.

### **B103 Facility Location, Groundwater and Process Water Characteristics**

- A. The NMA is located near the towns of Bayard, Vanadium, and Hanover, Grant County, in Sections 25, 26, 27, 28, 29, 32, 33, 34, 35, and 36, T17S, R12W; Sections 2, 3 and 4, T18S, R12W; Section 30, and 31, T17S, R11W. The PCA runs between the towns of Vanadium, Bayard, and Hurley, Grant County, in Section 32, T17S, R12W; Sections 5, 6, 7, 18, 19, 30, 31 and 32, T18S, R12W; Sections 5, 6, 7 and 8, T19S, R12W. The SMA is located east and south of the town of Hurley, Grant County, in Sections 31 and 32, T18S, R12W, Sections 12 and 13, T18S, R13W, Sections 5, 6, 7, 8, 16, 17, 18, 19, 20, 21, 28, 29, 30, and 33, T19S, R12W; Sections 4, 9, 16, 21, 22, 27, 34, and 35, T20S, R12W; and the following locations in Luna County: Sections 1, 2, and 12, T21S, R12W; Sections 7 and 18, T21S, R11W.
- B. Groundwater beneath the mine units regulated pursuant to DP-1340 is at a depth of approximately 0 - 250 feet and had a pre-discharge total dissolved solids (TDS) concentration range from approximately 300 to 1,500 milligrams/liter (mg/L). Groundwater background concentrations may exceed water quality standards under the WQCC Regulations for some constituents in some areas of the mine, although NMED has not yet made any background determinations.
- C. The Chino Mine Santa Rita Open Pit walls, leach stockpiles, waste rock stockpiles, Tailing Pond 7, the reclaimed tailing ponds, and other disturbed areas at the mine facility may contain sulfide minerals which, when oxidized, generate acidic solutions. These acidic solutions react with in situ minerals to produce acid rock drainage (ARD) that typically contains TDS, sulfate, and certain metals in concentrations that may exceed the water quality standards of Section 20.6.2.3103 NMAC.
- D. Process water and impacted stormwater discharges regulated pursuant to DP-1340, including ARD, are typically outside the acceptable range for pH and contain TDS, sulfate, and certain metals in concentrations that exceed the water quality standards of Section 20.6.2.3103 NMAC.

### **B104 Mine Units to be Closed**

This Discharge Permit contains requirements associated with closure of the following mine units as identified in the Updated CCP and the administrative record as of the effective date of this Discharge Permit. All mine units listed below are "existing" mine units pursuant to the Copper Mine Rule and are located outside the Open Pit Surface Drainage Area (OPSDA) as defined by Section 20.6.7.7 NMAC, unless otherwise noted. The OPSDA and Area of Open Pit Hydrologic

Containment (AOPHC) are shown on Figures 1 and 2 of this Discharge Permit. A reclamation schedule and anticipated duration to reclaim each mine unit is provided in Table 10-1 of the Updated CCP and attached to this Discharge Permit as Table 1. Table 2 of this Discharge Permit provides an EOY 2018 reclamation description and activities to be performed for mine units to be closed.

- A. Open Pit: The Santa Rita Open Pit is predicted to be a hydrologic evaporative sink at closure. During, and after closure, groundwater within the AOPHC and surface water within the OPSDA will be captured within the open pit. The open pit bottoms will be used as part of the collection and treatment system following closure; specifically, water that is captured within the pit will either evaporate or be treated in the water treatment system and then released. The EOY 2018 Santa Rita Open Pit configuration is provided in Appendix A of the Updated CCP and shown in Figure 1 of this Discharge Permit. The EOY 2018 Santa Rita Open Pit is approximately 1,630 acres in areal extent, approximately 1,550 feet deep and 2.2 miles in greatest diameter as shown on Figure 1.
- B. Waste Rock and Leach Stockpiles: Based on the EOY 2018 conditions, approximately 2,340 acres of Waste Rock and Leach Stockpiles will require reclamation. As shown on Figure 1 of this Discharge Permit, these include the Upper South, STS2, Northeast, Northwest, North, Southwest Lampbright, 3A, North Lampbright, Highway to Heaven, Groundhog No. 5, and 9 Waste Rock Stockpiles; and the North In-Pit, Santa Rita, Lee Hill, Main Lampbright, South Lampbright, South, and West Leach Stockpiles. As allowed by the Copper Mine Rules, stockpile outcrops within the OPSDA are not required to be regraded and covered. These are shown in Figure 1 and include approximately 28 acres of Lee Hill outslope area; approximately 20 acres of the interior (eastern) slope of the West Stockpile; approximately 91 acres of the interior (northeastern) slope of the South Stockpile; and approximately 79 acres of the Northeast Waste Rock Pile outslope. The reclaimed configuration footprints and design drawings are provided in Appendix A of the Updated CCP. EOY 2018 acreages are provided in Table 3-1 of the Updated CCP.
  - 1. The leach stockpiles will be used as part of the short-term evaporative treatment system during the post-closure period and will not be reclaimed until the short-term evaporation phase is complete (estimated to be at year 6 following closure).
- C. Impoundments, Tanks, Pipelines, Sumps, and Other Containment Systems
  - 1. Impoundments: Impoundments are defined in the Updated CCP as storage tanks for process waters, seepage collection waters, and extracted groundwater/pit water; stormwater catchments; dams; reservoirs, and surface impoundments. Table 3-3 of the Updated CCP delineates impoundments at EOY 2018. Many of the impoundments will be utilized during the closure period and early in the post-closure period after which time

- some will be reclaimed. Impoundments will be used to intercept surface water, seeps, or perched water and direct flows to permanent impoundments or treatment facilities. A smaller number of impoundments in the NMA associated with stockpile toe perimeter and groundwater control systems will continue to be used during the post-closure period for seepage capture and long-term evaporation, and in conjunction with the water treatment system or other PMLU functions.
2. Pipeline corridors located outside the regraded footprint of stockpiles and outside the OPSDA will be inspected and characterized for evidence of past spills that could potentially cause exceedances of water quality standards of Section 20.6.4 NMAC and Section 20.6.2.3103 NMAC. If soils have been impacted, the material will be removed or covered with 36 inches of reclamation cover material.
  3. Groundwater Interceptor Systems: These include groundwater extraction or interceptor wells around the perimeter of Lampbright Leach Stockpile and West Waste Rock Stockpile, the Tailing Pond 7 Interceptor system, and any other groundwater interceptor or remediation system components that may be in place following facility closure.
- D. Copper Crushing, Milling, Concentrator, Tailings Storage Facility Units, Miscellaneous Disturbed Areas and Ancillary Facilities
1. Tailing Storage Facilities: Based on the EOY 2018 conditions, approximately 1,640 acres of tailing storage facilities will require reclamation. As displayed on Figure 4 of this Discharge Permit, these include Tailing Pond 7, Axiflo Lake, and the southern portion of Tailing Ponds 6E and 6W. The top surface of Tailing Pond 7 will be graded at a minimum of 0.5% to the north toward an HDPE-lined attenuation pond and rock drainage sump with a 22-inch diameter conveyance pipe. The HDPE liner will be covered with two feet of reclamation cover material and will drain non-impacted stormwater from the top surface of the reclaimed Tailing Pond 7 to an outlet channel located at the northeast corner of Tailing Pond 7 via the 22-inch diameter conveyance pipe. The reclaimed configuration footprints and design drawings are provided in Appendix A of the Updated CCP of this Discharge Permit. EOY 2018 acreages are provided in Table 3-1 of the Updated CCP.
  2. Many buildings located at the Ivanhoe Concentrator, copper crushing and milling areas, and Mine Maintenance Facilities Area in the NMA will remain after closure for post-closure as approved for an industrial Post Mine Land Use (PMLU) pursuant to the Permit issued by the Mining and Minerals Division (MMD) of the New Mexico Energy, Minerals and Natural Resources Department. The areas approved for an industrial PMLU have the infrastructure necessary to support a variety of future industrial uses. Buildings to be demolished and reclaimed at closure are listed in Table 5-2 of the Updated CCP. Industrial PMLU designation of buildings and structures to remain after closure are summarized in

Table 8-3 of the Updated CCP.

3. Various ancillary facilities and disturbed areas associated with mine activity, including haul roads and operational roads, existing borrow areas, utility and structure foundations, power lines and buildings, no longer required for the approved PMLU will be reclaimed at closure. Table 5-2 of the Updated CCP lists the ancillary facilities to be reclaimed at closure in the NMA including various facilities such as the SX/EW, concentrator, acid storage areas, and equipment storage areas. For the PCA and SMA, the primary ancillary facilities include utility and structure foundations, power lines, buildings (including the Filter Plant), and disturbed areas including the unreclaimed slag piles adjacent to the Filter Plant. The Updated CCP includes the total estimated area of 128 acres for this miscellaneous group of disturbed areas within the copper mine facility.
4. Star and Oswaldo #2 mine shafts: These shafts are permitted points of diversion through the New Mexico Office of the State Engineer. They have a post-mining land use for water supply, and will be left in place at closure.

E. Flow Measurement Devices

1. The permittee will utilize flow meters to measure regulated discharge volumes at closure as required by the Copper Mine Rule. Flow meters are described in Table 10 and Figure 6 of the NMA Master Document.

F. Truck and Equipment Washing Units

1. All truck and equipment washing units described in Table 9 of the NMA Master Document will require reclamation at closure.

**B105 Closure Water Management and Water Treatment**

- A. The permittee will collect and treat process waters associated with mine operations beginning at closure and continuing for a duration of a minimum of 100 years following cessation of mining operations. The permittee will treat these waters to meet all applicable water quality criteria for discharge. Appendix C of the Updated CCP identifies nine sources of process water, impacted stormwater, and seepage that will require management and treatment, classified in two general categories as "High TDS and Sulfate Process Waters," and "Low TDS and Sulfate Process Waters". High TDS and Sulfate Process Waters include residual process solutions from the copper ore leach operation (PLS and raffinate); meteoric water that infiltrates through the leach stockpiles to seepage collection; and impacted stormwater runoff resulting from contact with un-reclaimed leach stockpiles. Low TDS and Sulfate Process Waters include process water conveyed to Chino Mine from the Continental Mine via

the Bullfrog Pipeline; meteoric water that infiltrates through the waste rock stockpiles to seepage collection systems; impacted stormwater runoff that comes into contact with un-reclaimed waste rock stockpiles; impacted stormwater runoff that comes into contact with un-reclaimed pit walls; dewatering water from the open pit sumps; and impacted groundwater captured in seepage collection and groundwater interceptor well systems.

- B. To meet process solution reduction, water management, and water treatment plan requirements set forth in Subsections G and H of 20.6.7.33 NMAC, the permittee has proposed a short- and long-term evaporation and water treatment plan. A short-term evaporative treatment system (ETS) utilizing forced mechanical-spray evaporation and wetted-surface evaporation (via existing drip systems on leach stockpiles) will be utilized to evaporate process waters for the first six years following closure. A long-term ETS with forced mechanical-spray evaporation and wetted-surface evaporation at impoundments located at the toes of leach stockpiles will be utilized to evaporate the High TDS and Sulfate process waters beginning in year seven and continuing through year 100 following closure. A combined high-density sludge and membrane water treatment system consisting of microfiltration and reverse osmosis will be utilized beginning in year 6 following closure and continuing through year 100 to treat the Low TDS and Sulfate Process Waters from the SMA and NMA. The high-density sludge treatment system will treat Low TDS and Sulfate Process Waters from the NMA that have metals contamination and low pH while the membrane water treatment system will treat SMA sulfate and TDS-impacted water and HDS system treated water. The combined treatment system is referred to as the South Treatment System (STS) and will be located within the current footprint of Tailing Pond 6E. A water treatment system block flow diagram for Low TDS and Sulfate Process Waters is presented in Appendix C of the Updated CCP and provided as Figure 3 of this Discharge Permit. Two HDPE-lined impoundments for salt and sludge disposal will be constructed to dispose of salts and sludge waste generated from the high-density sludge and membrane water treatment system. The Sludge Disposal Facility will be constructed in the current footprint of Tailing Pond 6W in the SMA and the Salt Disposal Facility will be constructed within the current footprint of Reservoir 6 in the NMA.

### **B106 Authorized Discharges Following Closure**

Following closure, the permittee shall manage the discharges associated with the features listed below in accordance with this Discharge Permit and as described in the Closure Water Management and Treatment Plan required in Condition C108.A and described in the Updated CCP, and the Surface Water Management Plan required in Condition C107.B.

- A. The permittee is authorized to manage discharges associated with the mine units identified in B104 and the Updated CCP for closure and post-closure purposes.

- B. The permittee is authorized to implement the Closure Water Management and Treatment Plan, described in Appendix C of the Updated CCP and required by C108.A, at closure to contain, collect, and treat all the water sources described in B105.A including process water, impacted stormwater, and seepage.
- C. The permittee is authorized to discharge up to 2,266 gpm of treated water from the Southside Treatment System to Whitewater Creek in accordance with to all applicable ground and surface water quality standards for discharge, including applicable NPDES and Ground Water Quality Bureau permitting requirements.
- D. This Discharge Permit authorizes only those discharges specified herein. Any unauthorized discharges such as spills or leaks must be reported to NMED and remediated as required by Section 20.6.2.1203 NMAC, and any additional requirements listed in this Discharge Permit.
- E. The permittee shall provide written notice to NMED of the commencement, or recommencement of operations in accordance with Subsection C of 20.6.7.18 NMAC.

### **Part C CLOSURE SPECIFIC REQUIREMENTS**

The permittee shall conduct the requirements set forth below, in accordance with Sections 20.6.2.3106 and 20.6.2.3107 NMAC to ensure compliance with Part 20.6.2 NMAC, and in accordance with applicable requirements of Part 20.6.7 NMAC. Requirements listed in Part C are applicable for the closure and post closure period for the copper mine facility and to all currently reclaimed mine units and any additional mine units reclaimed prior to implementation of the closure plan for the entire copper mine facility. Specific closure requirements are discussed herein.

#### **C100 Closure - General**

- A. Closure of all mine units associated with this Discharge Permit shall be performed in accordance with applicable sections of the Copper Mine Rule including requirements listed in Sections 20.6.7.33 and 20.6.7.34 NMAC; the Updated CCP; the renewal Discharge Permit Application; this Discharge Permit, and applicable requirements from MMD.

#### **C101 Santa Rita Open Pit**

- A. The Santa Rita Open Pit shall be closed in accordance with the applicable requirements of Section 20.6.7.33 NMAC and the Updated CCP.
- B. In order to minimize the potential to cause an exceedance of applicable water quality standards and to meet criteria presented in Subsection D of 20.6.7.33 NMAC, the Santa Rita



Open Pit shall be managed during closure and post-closure such that it remains a hydrologic sink.

- C. The permittee shall minimize the size of the open pit water body in the Santa Rita Open Pit, to the maximum extent practicable, by pumping from the open pit after closure.

#### **C102 Waste Rock and Leach Stockpiles**

- A. The permittee shall close waste rock and leach stockpiles in accordance with the Updated CCP and comply with applicable closure requirements listed in Subsections A, B, C, and F of 20.6.7.33 NMAC.
- B. As allowed by Subparagraph (a) of 20.6.7.33.C(3) NMAC and in accordance with the Updated CCP, to avoid encroachment onto Hanover Creek, the western slope of the West Stockpile shall be graded to an inter-bench slope of 2.5H:1V, with 15-foot wide terrace benches, and 175-foot inter-bench slope lengths.
- C. Pursuant to Subsection F of 20.6.7.33 NMAC, a 36-inch cover system shall be placed on top surfaces of leach and waste rock stockpiles inside OPSDA.
- D. Closure/Closeout for the North Lampbright Waste Rock Stockpile shall be performed in accordance with Section C109 of DP-376 dated August 14, 2017, the Closure/Closeout Plan and associated materials submitted as part of the Discharge Permit application for DP-376, the requirements of Section 20.6.7.33 NMAC and Section 20.6.7.34 NMAC, and in accordance with this Discharge Permit, as applicable.

#### **C103 Impoundments, Tanks, Pipelines, Sumps and Other Containment Systems**

- A. The permittee shall maintain and operate impoundments proposed for closure and post-closure purposes in accordance with the Updated CCP, this Discharge Permit, and applicable requirements listed in Subsection F of 20.6.7.18 NMAC.
- B. Existing impoundments or newly constructed impoundments to be used for closure and post-closure purposes located outside the OPSDA shall meet requirements of Subsection D of 20.6.7.17 NMAC.
- C. The permittee shall close impoundments designated for closure at EOY 2018 and listed in Table 2 of this Discharge Permit in accordance with the Updated CCP and applicable closure requirements listed in Subsection I of 20.6.7.33 NMAC.

- D. The permittee shall maintain, operate, and/or close tanks, pipelines, sumps and other containment systems in accordance with the Updated CCP and comply with applicable closure requirements listed in Subsection J of 20.6.7.33 NMAC.
- E. Pursuant to Subsection A of 20.6.7.35 NMAC, the permittee shall perform quarterly inspections and annual evaluations of all seepage collection and interception systems and perform maintenance as necessary. These include the Tailing Pond 7, SX/EW Plant, West Stockpile, Lampbright Stockpile and Reservoir 8 area, and any other seepage collection and interceptor system components that may be in place following facility closure. Locations to be monitored include extraction wells and any new collection points added to any seepage interceptor system installed after issuance of this Discharge Permit.
- F. Pursuant to Subsection J of 20.6.7.33 NMAC, upon discontinuing the operation of, or before moving tanks, pipelines, sumps, or other containment systems, all liquids shall be released to a location specifically authorized in a discharge permit, an alternate location subject to NMED approval or otherwise properly contained, transferred, or disposed of in a manner that does not result in discharge to non-authorized areas.
- G. Pursuant to Subsection J of 20.6.7.33 NMAC, pipeline corridors located outside the regraded footprint of stockpiles and outside the OPSDA shall be inspected and characterized for evidence of past spills that could potentially cause exceedances of water quality standards of Section 20.6.4 NMAC and Section 20.6.2.3103 NMAC. If soils have been impacted, the material shall be removed or covered with 36 inches of Reclamation Cover Material as defined in C109.A. Where process water pipelines are removed or buried, the pipeline corridor will be revegetated in accordance with Appendix C of MMD Permit GR009RE and applicable modifications.

**C104 Copper Crushing, Milling, Concentrator, Tailings Storage Facility Units, Miscellaneous Disturbed Areas**

- A. The permittee shall close all crushing, milling, and concentrating areas (including the Filter Plant area in the SMA) in accordance with applicable requirements of Subsection K of 20.6.7.33 NMAC
- B. The permittee shall close the tailing storage facilities in accordance with the Updated CCP and comply with applicable closure requirements listed in Subsections A, C, and F of 20.6.7.33 NMAC.
- C. All exploration drill holes not eliminated as a result of mining shall be plugged and abandoned consistent with Section 19.10.3.302.L NMAC unless an alternate method is approved by NMED. The permittee shall prepare a drill hole plugging report and include the report with

the Construction Quality Assurance/Construction Quality Control (CQA/CQC) report required pursuant to Subsection G of 20.6.7.34 NMAC. The report shall include a description of the plugging procedures used, a table with Universal Transverse Mercator (UTM) coordinates of the plugged drill holes, and a map or aerial photograph showing the location of the plugged drill holes.

#### **C105 Flow Measurement Devices**

- A. Pursuant to Paragraph (2) of 20.6.7.18.E NMAC, the permittee shall visually inspect all flow measurement devices used during the closure and post-closure period on a monthly basis for evidence of malfunction and repair or replace malfunctioning flow measurement devices within 30 days of or as soon as practicable following discovery.

#### **C106 Truck and Equipment Washing Units**

- A. All truck and equipment washing units shall be closed in a manner that is protective of surface and groundwater quality. Soil around truck and equipment washing units shall be sampled and analyzed for contaminants of concern. Any materials containing water contaminants that may cause an exceedance of the applicable water quality standards shall be removed or disposed of in a department-approved manner, or covered in accordance with Subsection F of 20.6.7.33 NMAC.

#### **C107 Stormwater Management**

- A. Pursuant to Paragraph (5) of 20.6.7.35.C NMAC, following closure the permittee shall inspect monthly and perform maintenance as necessary to all stormwater impoundments, diversion structures, and collection ponds in accordance with the Surface Water Management Plan required in Condition C107.B, the Updated CCP, and applicable requirements of Subsections A, E, and H of 20.6.7.33 NMAC. Inspection results shall be reported pursuant to Subsection D of 20.6.7.35 NMAC and C112.
- B. The permittee shall submit to NMED for approval a Surface Water Management Plan as part of the CQA/CQC plan submitted pursuant to Subsection E of 20.6.7.33 and Paragraph (4) of 20.6.7.33.F NMAC and required by C111.B. The surface water management plan shall detail how stormwater and sediment generated from the copper mine facility during reclamation will be managed. The plan shall include maps in addition to narrative descriptions of sequencing of reclamation for each mine unit, discuss how clean stormwater will be segregated from impacted stormwater during reclamation, and a schedule for inspection of stormwater impoundments.

**C108 Closure Water Management and Treatment Plan**

- A. The permittee shall manage all collected impacted water and sediment at closure in accordance with the Closure Water Management and Treatment Plan described in Appendix C of the Updated CCP and in accordance with Subsections G and H of 20.6.7.33 NMAC.
- B. The permittee shall continue to implement the Closure Water Management and Treatment Plan during the post-closure period pursuant to Paragraph (6) of 20.6.7.35.C NMAC. The water management and treatment plan may be modified in accordance with its terms or by NMED-approval to reflect changes in site conditions.
- C. The permittee shall inspect and maintain all closure water management facilities in accordance with the Closure and Post-Closure Monitoring and Reporting Requirements described in C112 and Subsection L of 20.6.7.33 NMAC.
- D. Water Treatment System (STS)
  - 1. In accordance with Subparagraph (6) of 20.6.7.35.C NMAC, the permittee shall construct, operate, and maintain the STS water treatment system within the Pond 6W footprint in accordance with the schedule and design described in Appendix C of the Updated CCP to treat all impacted water at the mine facility. The water treatment system shall be designed with a useful operating life of a minimum of 100 years with a minimum operating capacity of 2,266 gpm. The operating life design shall consider replacement costs for the water treatment system. Operation of the water treatment system shall commence at year six following closure and completion of the short-term evaporation program. Water shall be treated to meet all applicable WQCC water quality standards at the discharge location and shall be discharged in accordance with all applicable federal, state, and local laws, regulations, and permits.
  - 2. The permittee shall treat impacted water pumped from the Santa Rita Open Pit as required by the Closure Water Management and Treatment Plan required in C108.A and Condition C101.C.
  - 3. Dewatered sludge and salts generated as byproducts of STS operation and maintenance shall be disposed of in accordance with the sludge and salt disposal plan described in Appendix C of the Updated CCP. Sludge shall be disposed in the proposed HDPE-lined Sludge Disposal Facility, and salts shall be disposed of in the proposed HDPE-lined Salt Disposal Facility.
  - 4. The permittee shall maintain adequate water rights to implement the Closure Water Management and Treatment Plan required in C108.A.

### **C109 Reclamation Cover Material**

- A. Pursuant to Subsection F of 20.6.7.33 NMAC, covers placed on waste rock stockpiles, leach stockpiles, tailing impoundments, and other units that have the potential to generate leachate and cause an exceedance of applicable standards at monitoring well locations specified by 20.6.7.28 NMAC shall consist of a minimum of 36 inches of Reclamation Cover Material (RCM). RCM is defined as pre-mining salvaged soils, overburden from un-mineralized Tertiary volcanic rocks and igneous rock, Paleozoic sedimentary rocks, and intrusive dikes and sills that meets the requirements of Subsection F of 20.6.7.33 NMAC. Non-volcanic overburden from potentially mineralized deposits shall be tested and segregated according to the July 7, 2006 South Pit Area Materials Handling Plan. RCM meeting the water holding capacity, and with appropriate erosion-resistant and growth media properties as required by Subsection F of 20.6.7.33 NMAC may be sourced for use as cover material from the existing RCM stockpiles, planned borrow areas, or combined with other approved, suitable materials using an approved cover material handling plan. Final RCM approval is subject to a demonstration that Copper Mine Rule requirements will be met, and concurrence from MMD that requirements of the Mining Act will be met.
- B. Pursuant to Paragraph (4) of Subsection F of 20.6.7.33 NMAC, a Construction Quality Control/Construction Quality Assurance (CQA/CQC) plan for the final cover design shall be submitted for NMED approval.
- C. Pursuant to C109.C of DP-376 dated August 14, 2017, and in accordance with the work plan and implementation schedule submitted to NMED on November 10, 2017 the permittee shall perform soil water characteristic curve laboratory analysis on the Rubio Peak material proposed as RCM for the Lampbright Main, Southwest Lampbright, and North Lampbright Waste Rock Stockpile. Based on the results of soil water characteristic curve laboratory analysis, the permittee will be required to develop and implement an appropriate material handling plan at closure to ensure the emplaced cover material textural characteristics achieves the requirements of Subsection F of 20.6.7.33 NMAC.
- D. The Rubio Peak Test Plot Program shall evaluate if the proposed RCM will be capable of sustaining plant growth without continuous augmentation and have erosion resistant capabilities as required pursuant to Subsection F of 20.6.7.33 NMAC. The Rubio Peak Test Plot Program shall be conducted in accordance with all approved work plans, and applicable MMD requirements.

### **C110 Additional Studies**

- A. Sampling and Analysis Plan (SAP) - The permittee shall submit a comprehensive Sampling and Analysis Plan for NMED approval within 180 days of the effective date of this Discharge Permit

(By DATE) that will be implemented during the closure and post-closure period. The SAP shall also include any current monitoring required for mine units that have already been reclaimed. The SAP shall identify specific sampling and discharge volume reporting locations including, but not limited to groundwater, surface water (including surface waters of the state), process water, stormwater, STS water, pit lake water, seeps, and spring sampling locations.

1. The SAP shall be updated every five years and included with the discharge permit renewal application, closure/closeout plan, and cost estimate.
- B. Whitewater Creek Alkaline Flush Pilot Project (ALF) - The permittee shall submit a workplan and implementation schedule to NMED for approval a minimum of 90 days prior to initiation of the Whitewater Creek Alkaline Flush Pilot Project.
- C. Precipitation Analysis - The permittee shall submit a precipitation analysis workplan for NMED approval within one year of the effective date of this Discharge Permit (By DATE) that includes evaluation of current climatological site condition data and forward projections to determine the adequacy of the design of stormwater structures proposed at closure at the Chino Mine.
- D. Tailing Pond 7 Attenuation Basin Evaluation - The permittee shall submit a workplan to NMED for approval, within 180 days of the effective date of this Discharge Permit (By DATE), to conduct a study to evaluate alternatives to the HDPE-lined attenuation basin proposed to be constructed on the top surface of Tailing Pond 7 at closure. The evaluation shall consider design alternatives including, but not limited to, construction of a top surface stormwater runoff channel. It shall consider long-term operation and maintenance of the proposed and alternative approaches, including costs to maintain the liner and drainage components. Subsection C of 20.6.7.33 NMAC requires that the permittee provide an estimate of the "magnitude and location of large-scale settlement due to totaling consolidation or differential settlement" for top surfaces of all tailing impoundments. Accordingly, the permittee shall analyze the potential for compromise of the proposed HDPE liner due to potential differential settlement in the area of the attenuation basin.

#### **C111 Implementation of Closure**

- A. Pursuant to Subsection A of 20.6.7.34 NMAC, the permittee shall submit to NMED in writing a Notice of Intent to Close indicating the permittee intends to close an individual mine unit at the copper mine facility, or intends to implement the closure plan for the copper mine facility.
- B. Pursuant to Subsections B and F of 20.6.7.34 NMAC, the permittee shall submit a final design and CQA/CQC plan to NMED for approval within 180 days of submission of the Notice of

Intent to Close required by Subsection A of 20.6.7.34 NMAC. The final design and CQA/CQC plan shall be submitted at least 60 days prior to construction, including commencement of surface shaping activities of any area subject to a closure plan and where cover is required under the approved closure plan pursuant to the Copper Mine Rule.

- C. Pursuant to Subsection C of 20.6.7.34 NMAC, the permittee shall provide NMED with written notification within 30 days of the date of a suspension or resumption of the operational status of the copper mine facility. During a suspension of the operational status, each subsequent semi-annual monitoring report submitted shall state whether the permittee intends to resume operations, the anticipated date of resumption of operations, or the conditions under which operations will resume.
- D. Pursuant to Subsection D of 20.6.7.34 NMAC, following suspension of leaching or milling activities for a period of more than one year, NMED may determine that the permittee is in violation of the Copper Mine Rule if the permittee fails to implement closure in a timely manner.
- E. The permittee may request deferral of closure of a mine unit that has reached the end of its useful life with no intent by the permittee to resume operations if the proximity of active operations could result in ongoing contamination of the unit, closure would require relocation or replacement of infrastructure that supports ongoing operations, or for other good cause shown in accordance with Subsection E of 20.6.7.34 NMAC.
- F. In accordance with Section 20.6.7.35 NMAC, for each mine unit closed, the closure period shall cease, and the post-closure period shall commence following NMED approval of a final CQA/CQC report that is in accordance with Subsection G of 20.6.7.34 NMAC. The permittee shall submit a final CQA/CQC report for NMED approval within 180 days after project completion in accordance with Subsection G of 20.6.7.34 NMAC.
- G. In accordance with Section 20.6.7.35 NMAC, the post-closure period shall cease for a mine unit upon completion of all applicable post-closure monitoring, inspection and maintenance for the mine unit, including requirements listed in C112.
- H. In accordance with Section 20.6.7.35 NMAC, the post-closure period for the copper mine facility shall cease upon completion of all applicable post-closure monitoring, inspections, and maintenance requirements, including those listed in C112, and operation of the water management and treatment plan is authorized by NMED to cease.

### **C112 Closure and Post-Closure Monitoring and Reporting Requirements**

- A. The permittee shall collect, preserve, transport, and analyze all groundwater, surface water, stormwater, open pit water, and seeps and springs samples collected for laboratory analyses from the facility in accordance with the applicable requirements of Sections 20.6.7.28, 20.6.7.29, 20.6.7.33, and 20.6.7.35 NMAC, the approved SAP required by C110, and any additional requirements listed in this Discharge Permit.
- B. Samples of open pit water, stormwater, PLS, seeps, and process water shall be analyzed for total concentrations for metal parameters (Suite C of Table 3) and dissolved concentrations for all parameters (including metal parameters) in accordance with Table 3 of this Discharge Permit. Samples of groundwater and springs shall be analyzed for dissolved concentrations in accordance with Table 3 of this Discharge Permit.
- C. The permittee shall submit monitoring reports to NMED on a semi-annual basis that contain all quarterly monitoring data and information collected pursuant to the requirements of this Discharge Permit, and applicable requirements of Section 20.6.7.29 NMAC and Section 20.6.7.35 NMAC. Semi-annual reports are due by February 28 and August 31 of each year. Data required to be submitted annually shall be submitted in the monitoring report due by February 28 of each year.
- D. Changes to monitoring and reporting requirements may require amendment or modification of this Discharge Permit as required by the Secretary. [20.6.2.7.P and 20.6.7.7.B(19) NMAC]
- E. Groundwater
  - 1. Pursuant to Subsection B of 20.6.7.35 NMAC, the permittee shall conduct closure and post-closure groundwater monitoring in accordance with an approved SAP required in C110 and the appropriate operational Discharge Permits for monitoring wells which were subject to monitoring at the time of or following site closure. The permittee shall record the depth-to-water to the nearest hundredth of a foot (0.01 ft) in all monitoring wells. Samples shall be analyzed for the water parameters listed in Table 3. Analytical results shall be submitted in the semi-annual monitoring reports in the format specified by Subsection C of 20.6.7.29 and Subsection D of 20.6.7.35 NMAC.
  - 2. Pursuant to Subsection G of 20.6.7.28 NMAC, the permittee shall sample and analyze groundwater quality in any private supply well within a reasonable proximity to the Chino Mine when the well owner or NMED requests an analysis and there is a reasonable basis. The permittee shall make a good faith effort to obtain access to private wells for which NMED requests analysis. Samples shall be collected and analyzed for the water parameters listed in Table 3. Analytical results shall be mailed to the owner of the private



supply well and submitted in the semi-annual monitoring reports in the format specified by Subsection C of 20.6.7.29 and Subsection D of 20.6.7.35 NMAC.

3. Pursuant to Subsection L of 20.6.7.28 NMAC and Subsection B of 20.6.7.35 NMAC, the permittee shall submit groundwater elevation contour maps for both the NMA and SMA on a semi-annual basis, and a map(s) showing the extent of the OPSDA and the AOPHC at the NMA on an annual basis. The SMA groundwater elevation contour map shall cover the area bounded by the town of North Hurley to 2 miles south of Tailing Ponds 7, and the NMA map shall cover the area bounded by Hanover Creek to the west and the Tributary 2 area east of the Lampbright Leach Stockpile. The groundwater elevation contour maps shall be of an appropriate scale to show groundwater elevation contours for both the NMA and SMA; the contour maps shall include land surface topographic contours with appropriate contour intervals, and shall include the monitoring wells, extraction wells, piezometers, seeps, and springs that the groundwater data is based on. The groundwater elevation contour maps are due in the semi-annual reports due by February 28 and August 31 of each year. The OPSDA and AOPHC map(s) for the NMA and shall be submitted in the monitoring report due by February 28 of each year. The maps shall be submitted according to the reporting schedule listed in C112.C. The permittee may request to submit groundwater elevation maps on an annual basis when the post-closure period commences.

F. Surface Water

1. The permittee shall monitor surface water quality at all designated locations at Whitewater Creek, Lampbright Draw, and Hanover Creek pursuant to the SAP required in C110 and Subsection B of 20.6.7.35 NMAC.

G. Seepage Collection and Interceptor Systems, Impoundments, Tanks, Pipelines, Sumps, and Other Containment Systems

1. Pursuant to Subsection D of 20.6.7.35 NMAC, the permittee shall report the inspection results and a description of any maintenance performed on all seepage collection and interception systems.
2. Following closure of the copper mine facility, the permittee shall collect and analyze samples from the seepage collection and groundwater interceptor systems, impoundments, tanks, sumps, and other containment systems pursuant to the SAP required in C110. Samples shall be analyzed for the water parameters listed in Table 3. Analytical results shall be submitted in the semi-annual monitoring reports in the format specified by Subsection C of 20.6.7.29 and Subsection D of 20.6.7.35 NMAC.

#### H. Seeps and Springs

1. The permittee shall conduct closure and post-closure monitoring of seeps and springs pursuant to the SAP required in C110, and applicable requirements of Subsection F of 20.6.7.28 and Section 20.6.7.35 NMAC. If additional seeps and springs are discovered within the copper mine facility, NMED shall be notified and they shall be sampled and analyzed for the water parameters listed in Table 3. Analytical results shall be submitted in the semi-annual monitoring reports in the format specified by Subsection C of 20.6.7.29 and Subsection D of 20.6.7.35 NMAC.

#### I. Piezometers

1. Following closure, the permittee shall provide NMED with the annual Tailing Pond 7 Tailing Dam Inspection Report submitted to the Office of the State Engineer-Dam Safety Bureau until such time as Tailing Pond 7 is fully reclaimed and released from reporting requirements by the Office of the State Engineer-Dam Safety Bureau.

#### J. Reclamation Monitoring, Maintenance, and Inspections

1. The permittee shall perform closure and post-closure monitoring and reporting of vegetation at reclaimed areas where vegetation is required by the Copper Mine Rule or approved discharge permit in accordance with Paragraph (1) of 20.6.7.35.C NMAC and applicable schedules and monitoring requirements approved by MMD, to ensure that vegetative cover is protective of water quality.
2. Pursuant to Paragraph (2) of 20.6.7.35.C NMAC, the permittee shall visually inspect closed discharge permit areas where a cover was installed for signs of excessive erosion, subsidence features, slope instability, ponding, development of fissures, or any other feature that may compromise the functional integrity of the cover system or drainage channels. The permittee shall report or take corrective action regarding signs of excessive erosion, subsidence features, slope instability, ponding, development of fissures, or any other feature that may compromise the functional integrity of the cover system or drainage channels. Inspection frequency, including after storm events, shall be conducted in accordance with Paragraph (2) of 20.6.7.35.C NMAC. Monitoring and inspection results shall be reported as required by Subsection D of 20.6.7.35 NMAC.
3. Pursuant to Paragraph (2) of 20.6.7.35.C and Section 20.6.7.30 NMAC, the permittee shall report or take corrective action regarding signs of excessive erosion, subsidence features, slope instability, ponding, development of fissures, or any other feature that may compromise the functional integrity of the cover system or drainage channels.

4. Cover maintenance shall be performed, as necessary, in accordance with Paragraph (4) of 20.6.7.35.C NMAC. Recommendations for maintenance work shall be provided in the semiannual monitoring reports as required in Subsection D of 20.6.7.35 NMAC.
5. Pursuant to Paragraph (5) of 20.6.7.35.C NMAC, the permittee shall routinely inspect and maintain all structures, units, and equipment for failure of which may impact water quality. Water that is collected that exceeds the groundwater standards in Section 20.6.2.3103 NMAC shall be stored, conveyed, treated and discharged in a manner that is consistent with the Closure Water Management and Treatment Plan described in C108.A of this Discharge Permit and any other applicable regulatory requirements.
6. Pursuant to Paragraph (3) of 20.6.7.35.C NMAC, the permittee shall inspect and maintain the fencing or other management systems required by this Discharge Permit to prevent access by wildlife and unauthorized members of the public to an open pit, reservoir, impoundment, or any sump that contains water that may present a hazard to public health or wildlife.
7. The permittee shall implement C112.J.1 through C112.J.5 for the following reclaimed mine units located at the South Mine Area: Lake One, Pond 1, Pond 2, Pond 4 East, Pond 4 West, Pond 6 East, Pond 6 West, and the B/C Ponds.

K. Flow Measurement Devices

1. Pursuant to Subparagraph (a) of 20.6.7.18.E.(2) NMAC, the permittee shall submit a report of repaired or replaced flow measurement devices in the semi-annual monitoring reports that include a description of any flow measurement device malfunctions with a statement verifying the repair and description of calibration of the flow measurement device pursuant to Paragraph (3) of 20.6.7.18.E NMAC.

L. Discharge Volumes

1. In addition to discharge volume reporting required by Subsections B, E, and F of 20.6.7.29 NMAC, the permittee shall measure the cumulative flow rate of intercepted and extracted water and report discharge volumes pursuant to Subsections E and F of 20.6.7.29 NMAC for seepage collection and groundwater interceptor systems.

M. Meteorological Data

1. Meteorological data shall be measured as stipulated in the NMA Master Document. The data shall be submitted to NMED in the monitoring report due on February 28 of each year as required in Condition C111.C. Pursuant to Subsection G of 20.6.7.29 NMAC,

tabulated data shall be submitted to NMED in the monitoring report due by February 28 of each year.

### **C113 Contingency Plan**

- A. The permittee shall comply with all applicable contingency requirements and submit to NMED all applicable information or documentation specified in Subsections A through J of 20.6.7.30 NMAC. NMED may require additional investigation and implementation of corrective actions in accordance with 20.6.7.30 NMAC in the event groundwater monitoring indicates previously undetected exceedances of applicable standards or if the extent or magnitude of existing groundwater contamination is significantly increasing. This may include additional seepage or groundwater interceptor systems, other source control measures as appropriate, or additional groundwater abatement as necessary.
- B. Pursuant to Subsection G of 20.6.7.30 NMAC, discharges of process water or impacted stormwater that exceeds the standards of Section 20.6.2.3103 NMAC to unauthorized areas must be reported under Section 20.6.2.1203 NMAC.
- C. Pursuant to Subsection I of 20.6.7.30 NMAC, the permittee shall notify NMED of any significant erosion or conditions that may compromise conveyance structures required or constructed in accordance with DP-1340, including any new stormwater structures.
- D. Pursuant to Subsection E of 20.6.7.35 NMAC, the contingency requirements of Section 20.6.7.30 NMAC apply to any deficiencies discovered during post-closure monitoring and inspections, including, but not limited to, the requirements for possible corrective action plans, abatement plans, monitoring well replacement, reporting and correction of unauthorized discharges, and significant erosion of, or ponding of water, on a cover system.
- E. The permittee shall notify NMED of significant failures to the water management and water treatment system or any condition that may cause a significant failure of the water treatment system. The permittee shall follow the corrective action requirements pursuant to Subsection J of 20.6.7.30 NMAC.
- F. If NMED or the permittee identifies any other failures of the discharge plan or system not specifically noted in this permit, NMED may require the permittee to develop and submit contingency plans and schedules for NMED approval to address such failures. [20.6.2.3107.A.10 NMAC]

**C114 Abatement Plan**

- A. The permittee has been required to submit to NMED for approval a proposed abatement plan for Chino Mine. All abatement plans and activities shall be performed in accordance with Sections 20.6.2.4000 through 4115 NMAC and Paragraphs (3) and (4) of 20.6.7.30.A NMAC.
- B. The permittee shall continue to pump all seepage collection and groundwater interceptor and abatement systems, operational at the time of closure, as needed to protect groundwater and surface water in accordance with Subsection H of 20.6.7.33 NMAC. These systems shall be operated until monitoring indicates that groundwater standards have been achieved and maintained for a minimum of two years.
- C. NMED will require abatement of any material containing water contaminants that are potential source areas for groundwater and surface water contamination in accordance with 20.6.2.1203, 20.6.2.3109.E.1, and 20.6.2.4103 NMAC in and around all mine units and structures approved by MMD to be left for an industrial PMLU, or structures necessary for post-closure treatment and disposal of groundwater and/or surface water.
- D. Pursuant to 20.6.7.35 NMAC, for units of a copper mine facility subject to an abatement plan, monitoring, inspection, reporting, and operation of abatement systems shall be conducted in accordance with the approved abatement plan in addition to applicable DP-1340 post-closure monitoring and reporting requirements.
- E. The permittee is authorized to construct a Class V UIC Injection Well to introduce high alkalinity water to shallow alluvial groundwater in Middle Whitewater Creek pursuant to a workplan approved by NMED required in Condition C110.B. The purpose of the introduction of high alkalinity water to shallow alluvial groundwater is to evaluate the effectiveness of abating shallow groundwater and sediment contamination.

**C115 Financial Assurance**

- A. The permittee shall maintain the existing, and any revised, joint financial assurance with NMED and MMD to cover costs associated with closure and post-closure activities approved under this Discharge Permit and Updated CCP. [20.6.2.3107 NMAC]

**Part D GENERAL CONDITIONS**

NMED has reviewed the permit application for the proposed permitting action and has determined that the provisions of the Copper Mine Rule and applicable groundwater quality standards will be met in accordance with this Discharge Permit. General conditions pursuant to 20.6.2 NMAC and 20.6.7 NMAC are listed below.

### **D100 Enforcement**

- A. Any violation of the requirements and conditions of this Discharge Permit, including any failure to allow NMED staff to enter and inspect records or facilities, or any refusal or failure to provide NMED with records or information, may subject the permittee to a civil enforcement action pursuant to the NMSA 1978, Section 74-6-10(A) and (B). Such action may include a compliance order requiring compliance immediately or in a specified time, assessing a civil penalty, modifying or terminating the discharge permit, or any combination of the foregoing; or an action in district court seeking injunctive relief, civil penalties, or both. Pursuant to the NMSA 1978, Section 74-6-10(C) and 74-6-10.1, civil penalties of up to \$15,000 per day of noncompliance may be assessed for each violation of the NMSA 1978, Section 74-6-5, the WQCC Regulations, or this Discharge Permit, and civil penalties of up to \$10,000 per day of noncompliance may be assessed for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision. In any action to enforce this Discharge Permit, the permittee waives any objection to the admissibility as evidence of any data generated pursuant to this Discharge Permit. The permittee does not waive any argument as to the weight such evidence should be given. [74-6-10 WQA, 74-6-10.1 WQA]
- B. Pursuant to the NMSA 1978, Section 74-6-10.2(A-F), criminal penalties may be assessed for any person who knowingly violates or knowingly causes or allows another person to:
1. Make any false material statement, representation, certification or omission of material fact in an application, record, report, plan or other document filed, submitted or required to be maintained under the WQA;
  2. Falsify, tamper with or render inaccurate any monitoring device, method or record required to be maintained under the WQA; or
  3. Fail to monitor, sample or report as required by a permit issued pursuant to a state or federal law or regulation, is subject to felony charges and shall be sentenced in accordance with the provisions of Section 31-18-15 NMSA 1978.

### **D101 General Inspection and Entry Requirements**

- A. Nothing in this Discharge Permit shall be construed as limiting in any way the inspection and entry authority of NMED under the WQA, the WQCC Regulations, or any other applicable law or regulation. [20.6.2.3107 NMAC, 74-6-9(B) & (E) WQA]
- B. The permittee shall allow the Secretary or an authorized representative, upon the presentation of credentials, to [20.6.2.3107.D NMAC, 74-6-9(B) & (E) WQA]:

1. Enter at regular business hours or at other reasonable times upon the permittee's premises or other location where records must be kept under the conditions of this Discharge Permit, or under any federal or WQCC regulation.
2. Inspect and copy, during regular business hours or at other reasonable times, any records required to be kept under the conditions of this Discharge Permit, or under any federal or WQCC regulation.
3. Inspect, at regular business hours or at other reasonable times, any facility, equipment (including monitoring and control equipment or treatment works), practices or operations regulated or required under this Discharge Permit, or under any federal or WQCC regulation.
4. Sample or monitor, at reasonable times for the purpose of assuring compliance with this Discharge Permit or as otherwise authorized by the WQA, any effluent, water contaminant, or receiving water at any location before or after discharge.

#### **D102 General Operational and Closure Planning Requirements**

- A. Mine units shall be designed in accordance with the applicable requirements of Section 20.6.7.17 NMAC.
- B. Mine units shall be operated in accordance with the applicable requirements of Section 20.6.7.18 NMAC.
  1. Pursuant to Subsection A of 20.6.7.18 NMAC, to the extent practicable, mine units shall be designed and operated in a manner that contemplates the closure plan including identifying and segregating suitable material to construct covers and consideration of closure grading and drainage plans in the design and construction of operational mine units.
- C. The permittee shall meet all applicable setback requirements pursuant to Section 20.6.7.19 NMAC.

#### **D103 General Record Keeping and Reporting Requirements**

- A. The permittee shall retain written records at the copper mine facility written records as required pursuant to Section 20.6.7.37 NMAC.
- B. The permittee shall furnish to NMED, within a reasonable time, any documents or other information which it may request to determine whether cause exists for modifying, terminating and/or renewing this Discharge Permit or to determine compliance with this

Discharge Permit. The permittee shall also furnish to NMED, upon request, copies of documents required to be kept by this Discharge Permit. [20.6.2.3107.D NMAC, 74-6-9(B) & (E) WQA]

#### **D104 General Sampling and Analytical Methods**

- A. Unless otherwise approved in writing by NMED, the permittee shall conduct sampling and analysis in accordance with the most recent edition of the following documents [Subsection B of 20.6.2.3107 NMAC]:
1. American Public Health Association, Standard Methods for the Examination of Water and Wastewater (18th, 19th or current)
  2. U.S. Environmental Protection Agency, Methods for Chemical Analysis of Water and Waste
  3. U.S. Geological Survey, Techniques for Water Resources Investigations of the U.S. Geological Survey
  4. American Society for Testing and Materials, Annual Book of ASTM Standards, Part 31. Water
  5. U.S. Geological Survey, et al., National Handbook of Recommended Methods for Water Data Acquisition
  6. Federal Register, latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations
  7. Methods of Soil Analysis: Part 1. Physical and Mineralogical Methods; Part 2. Microbiological and Biochemical Properties; Part 3. Chemical Methods, American Society of Agronomy

#### **D105 Monitoring Well Abandonment**

- A. The permittee shall submit a written request for NMED approval to amend or modify this Discharge Permit at least 30 days prior to the anticipated destruction or removal of any monitoring wells required under this Discharge Permit. Monitoring well plugging and abandonment shall be completed in accordance with the *Groundwater Discharge Permit Monitoring Well Construction and Abandonment Conditions*, Revision 1.1, March 2011, and according to regulations issued by the Office of the State Engineer in 19.27.7 NMAC, unless an alternate method is approved by NMED. [20.6.2.3107 NMAC]
- B. The request required in D105.A shall include the following information:



1. A scaled map showing the location of the monitoring well(s) and the mine units it is intended to monitor;
2. The purpose for plugging and abandoning the monitoring well(s);
3. Details, if available, on the monitoring well(s) including depth-to-water elevation, top-of-casing elevation, construction and lithologic logs;
4. Recent groundwater analytical results from a minimum of the most recent eight sampling events from the monitoring well(s);
5. Proposed replacement well(s), if applicable, and;
6. Same details, as applicable, as provided in D105.B.1, D105.B.3, and D105.B.4 above are required for the proposed replacement monitoring well(s). New replacement wells require monitoring well completion reports pursuant to Subsection K of 20.6.7.28 NMAC.

#### **D106 Reporting Requirements for Unauthorized Discharges**

- A. In the event of a spill or release that is not authorized under this Discharge Permit, the permittee shall initiate the notifications and corrective actions as required in 20.6.2.1203 NMAC. The permittee shall take immediate corrective action to contain and remove or mitigate any damage caused by the discharge. Within 24 hours after discovery of the discharge, the permittee shall verbally notify NMED and provide the information required by Paragraph (1) of Subsection A of 20.6.2.1203 NMAC, and to determine applicable monitoring and reporting requirements pursuant to Paragraphs (2) and (3) of Subsection B of 20.6.7.29 NMAC. Within 7 days of discovering of a discharge reportable under 20.6.2.1203 NMAC, the permittee shall submit a written report to NMED verifying the oral notification and providing any additional information or changes. The permittee shall submit a corrective action report within 15 days after discovery of the discharge. [20.6.2.1203 NMAC]
- B. As part of the 24-hour spill notification requirements, the permittee shall submit a figure to NMED that clearly displays the location (or locations) of the spill and identifies nearby mine units and/or location information in latitude/longitude coordinates in decimal degrees (XX.XXXXXX and -XXX.XXXXXX, respectively), using a specified datum of WGS 84. Submittal of location information in Universal Transverse Mercator (UTM) format is also acceptable.

#### **D107 Modifications and Amendments**

- A. In the event the permittee proposes a change to the facility or the facility's discharge that would result in a change in the volume discharged; the location of the discharge; or in the amount or character of water contaminants received, treated or discharged by the facility, the permittee shall notify and obtain approval from NMED prior to implementing such

changes. Such changes may require modification or amendment to this Discharge Permit, including payment of applicable fees as specified in Section 20.6.7.9 NMAC. [20.6.2.3107.C NMAC, 20.6.2.3109.E, 20.6.2.3109.E NMAC, 20.6.7.7.B(19), 20.6.7.14 NMAC]

- B. For any proposed change that would meet the definition of a discharge permit modification as specified in Paragraph P of 20.6.2.7 NMAC the permittee shall submit for NMED approval an application for modification of this Discharge Permit pursuant to Sections 20.6.7.10 NMAC and 20.6.7.11 NMAC. Plans and specifications shall be included in the requests as applicable, pursuant to Section 20.6.7.17 NMAC.
- C. For any proposed change that meets the definition of a discharge permit amendment as specified in Paragraph 19 of 20.6.7.7.B NMAC, the permittee shall submit a request to NMED for amendment of this Discharge Permit pursuant to Section 20.6.7.14 NMAC of the Copper Mine Rule. Plans and specifications shall be included in the requests as applicable, pursuant to Section 20.6.7.17 NMAC.
- D. Pursuant to Section 20.6.2.3109 NMAC, NMED reserves the right to require a discharge permit modification in the event NMED determines that the requirements of 20.6.2 NMAC are being or may be violated, or the standards of Section 20.6.2.3103 NMAC are being or may be violated. This may include a determination that structural controls and/or management practices approved under this Discharge Permit are not protective of groundwater quality, and that more stringent requirements are needed to protect groundwater quality. The permittee may be required to abate water pollution.

#### **D108 Compliance with Other Laws**

- A. Nothing in this Discharge Permit shall be construed in any way as relieving the permittee of the obligations to comply with all applicable federal, state, and local laws, regulations, permits or orders. [20.6.2 NMAC, 20.6.7.8(D) NMAC]

Figure 1. Chino North Mine Area Reclamation Plan Showing OPSDA and AOPHC

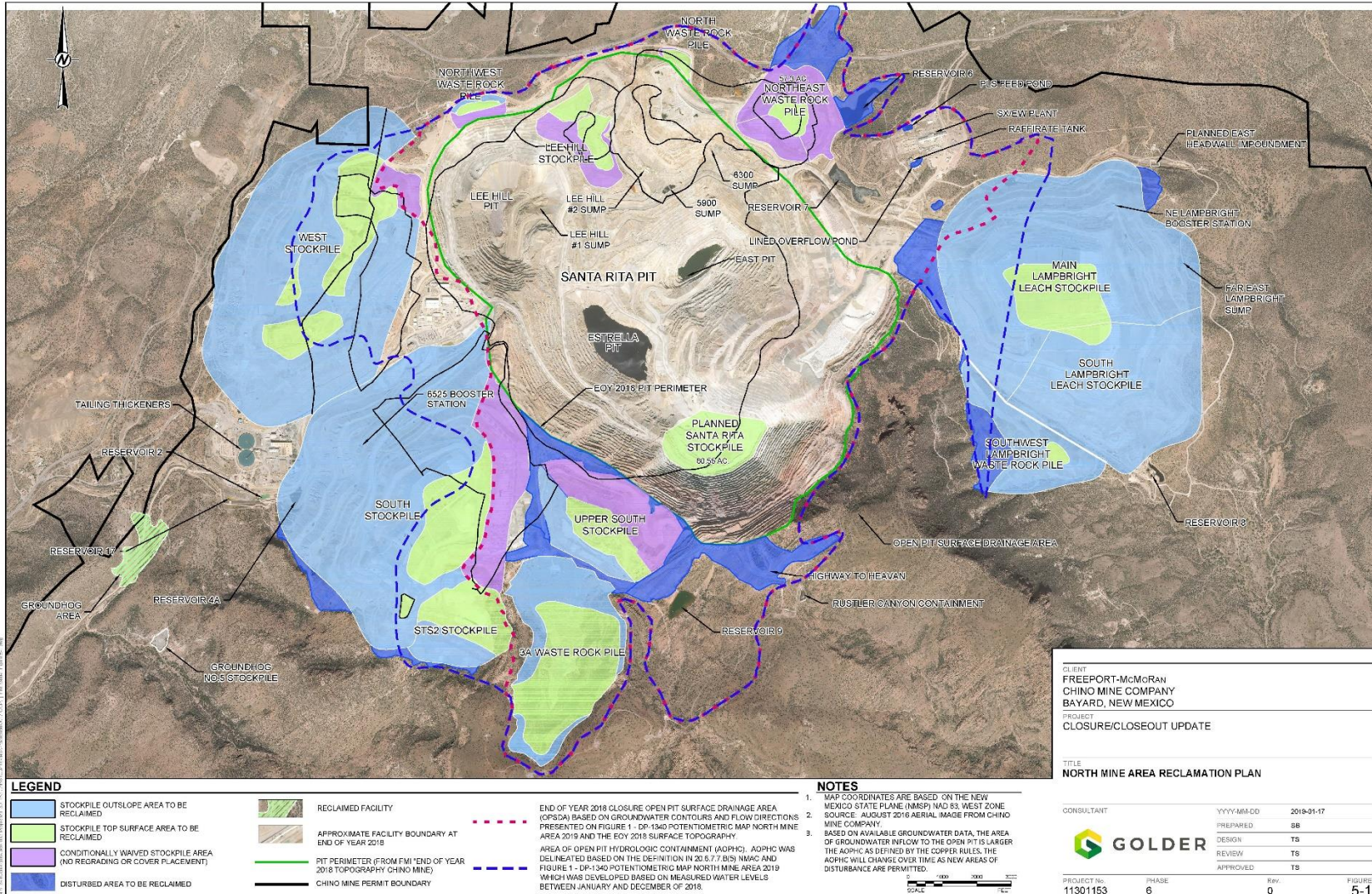
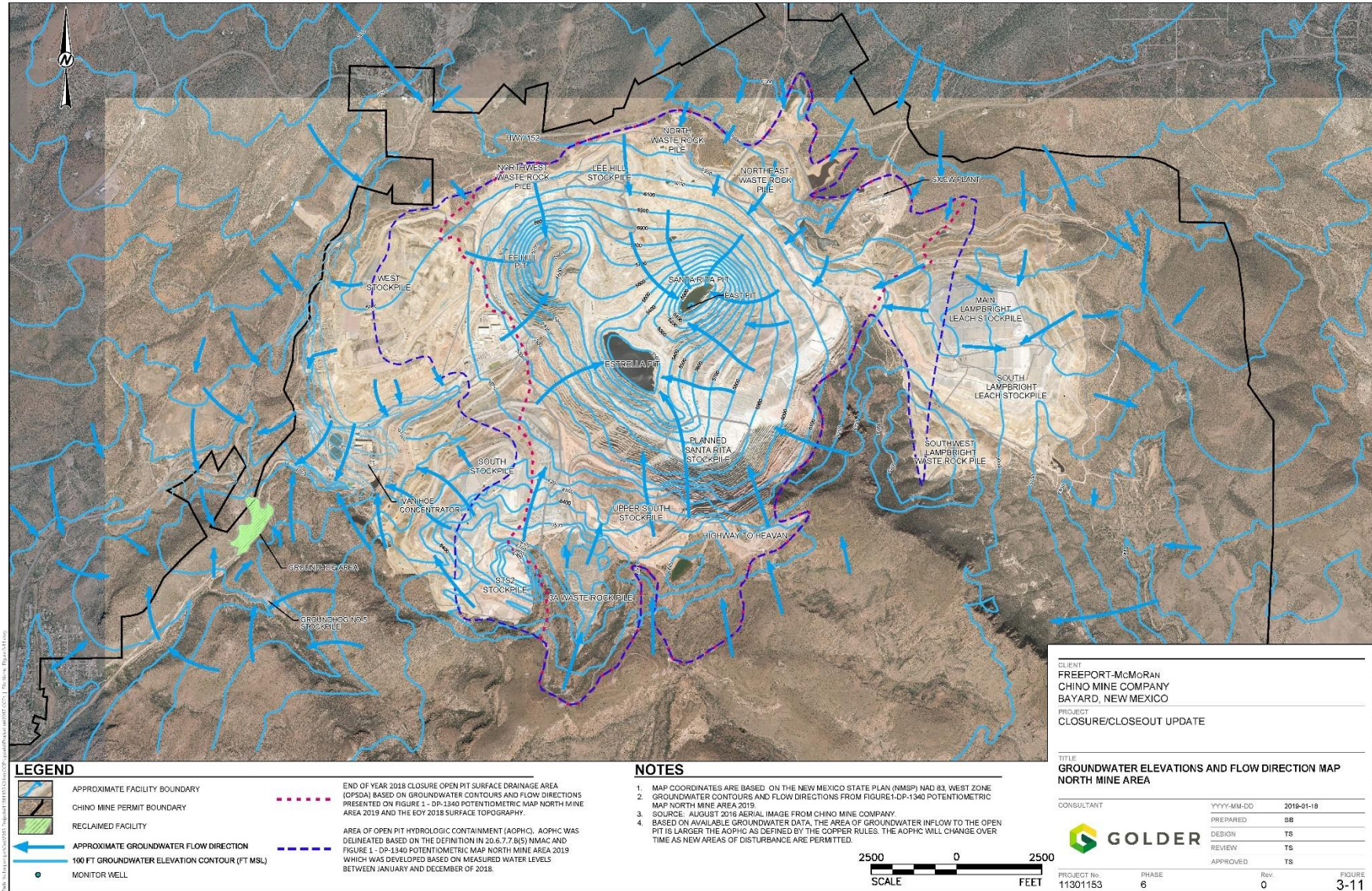




Figure 2. Chino North Mine Area Groundwater Elevation and Flow Directions




CLIENT  
 FREEPORT-McMORAN  
 CHINO MINE COMPANY  
 BAYARD, NEW MEXICO

PROJECT  
 CLOSURE/CLOSEOUT UPDATE

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
TITLE  
 GROUNDWATER ELEVATIONS AND FLOW DIRECTION MAP  
 NORTH MINE AREA

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CONSULTANT  
 GOLDER

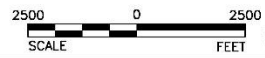
PROJECT No.	PHASE	Rev.	FIGURE
11301183	6	0	3-11

**LEGEND**

	APPROXIMATE FACILITY BOUNDARY		END OF YEAR 2018 CLOSURE OPEN PIT SURFACE DRAINAGE AREA (OPSDA) BASED ON GROUNDWATER CONTOURS AND FLOW DIRECTIONS PRESENTED ON FIGURE 1 - DP-1340 POTENTIOMETRIC MAP NORTH MINE AREA 2019 AND THE EGY 2018 SURFACE TOPOGRAPHY.
	CHINO MINE PERMIT BOUNDARY		AREA OF OPEN PIT HYDROLOGIC CONTAINMENT (AOPHC). AOPHC WAS DELINEATED BASED ON THE DEFINITION IN 20.6.7.7 (5) NMCA AND FIGURE 1 - DP-1340 POTENTIOMETRIC MAP NORTH MINE AREA 2019 WHICH WAS DEVELOPED BASED ON MEASURED WATER LEVELS BETWEEN JANUARY AND DECEMBER OF 2018.
	RECLAIMED FACILITY		
	APPROXIMATE GROUNDWATER FLOW DIRECTION		
	100 FT GROUNDWATER ELEVATION CONTOUR (FT MSL)		
	MONITOR WELL		

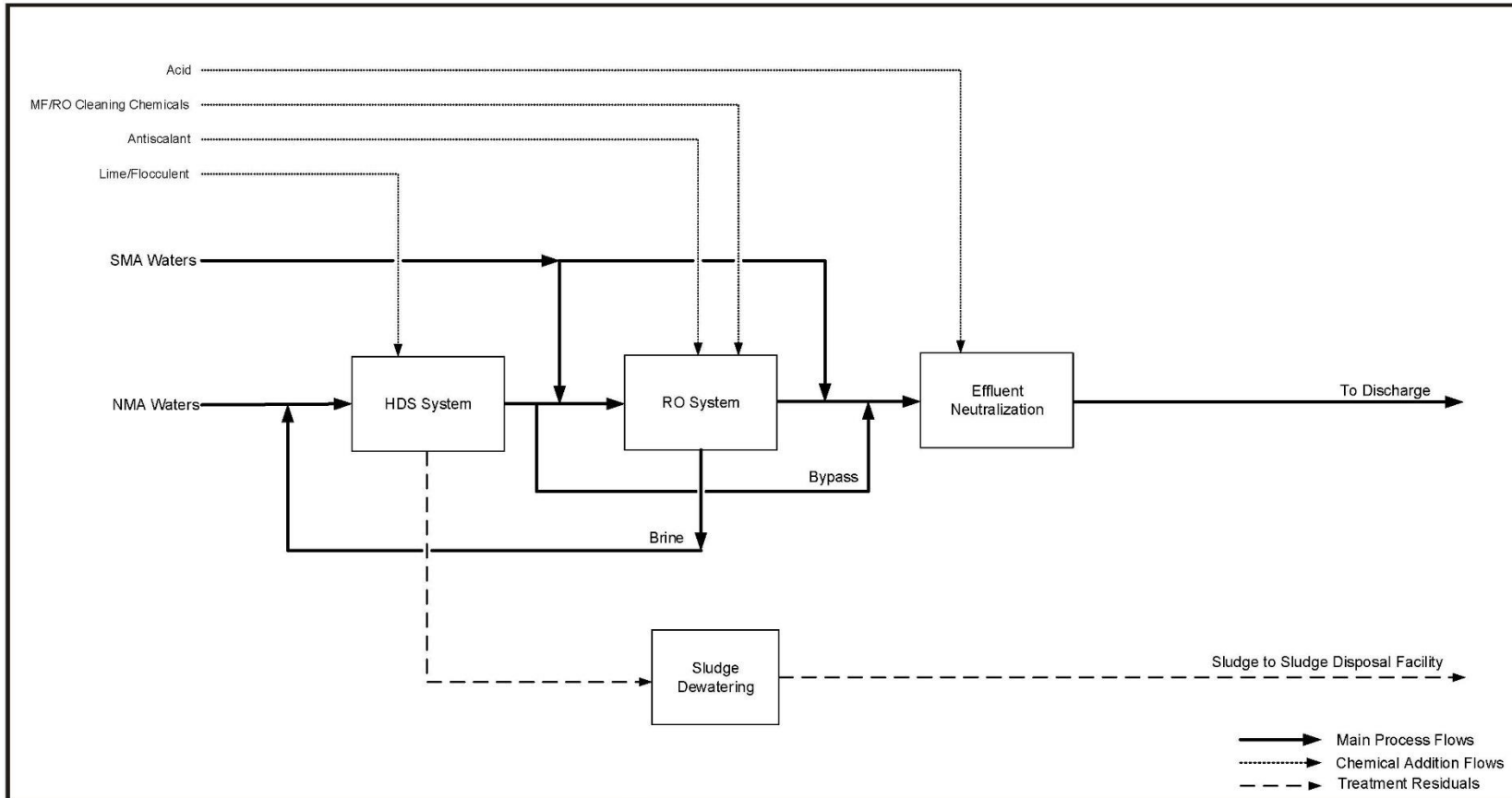
**NOTES**

1. MAP COORDINATES ARE BASED ON THE NEW MEXICO STATE PLAN (NMSPP) NAD 83, WEST ZONE.
2. GROUNDWATER CONTOURS AND FLOW DIRECTIONS FROM FIGURE 1-DP-1340 POTENTIOMETRIC MAP NORTH MINE AREA 2019.
3. SOURCE: AUGUST 2016 AERIAL IMAGE FROM CHINO MINE COMPANY.
4. BASED ON AVAILABLE GROUNDWATER DATA, THE AREA OF GROUNDWATER INFLOW TO THE OPEN PIT IS LARGER THE AOPHC AS DEFINED BY THE COPPER RULES. THE AOPHC WILL CHANGE OVER TIME AS NEW AREAS OF DISTURBANCE ARE PERMITTED.





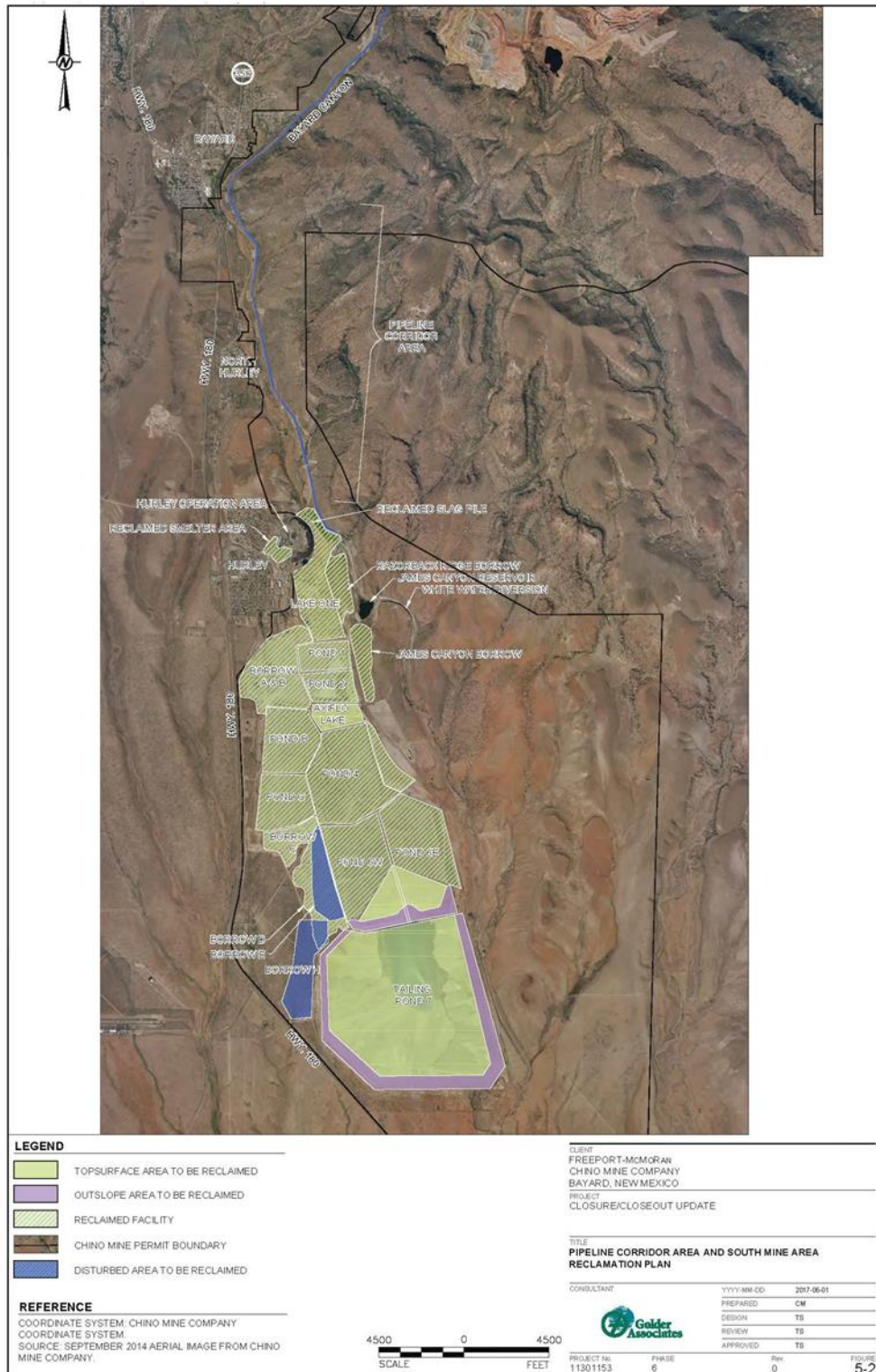
**Figure 3. Water Treatment System Block Diagram for Low TDS and Sulfate and Process Water**



Denver, Colorado

CLIENT/PROJECT		TITLE	
Freeport-McMoRan Chino Mine		Water Treatment System Block Flow Diagram Year 6	
DRAWN	KMB	DATE	July 25, 2016
CHECKED	BCH	SCALE	Not To Scale
REVIEWED	TS	FILE NO.	
		JOB NO.	11501153
		DWG. NO.	REV 1
		FIGURE NO.	2

Figure 4. Chino South Mine Area Reclamation Map



**Table 1. Chino Mine Reclamation Schedule**

Unit	Anticipated Start Date for Reclamation to Begin <sup>a</sup>	Anticipated Duration (Years) <sup>b</sup>
Axiflo Lake	4 years following cessation of milling operations to allow for water management	1.5
Southern ends of Ponds 6E and 6W	180 days following reclamation of Pond 7 to allow for water management	2
Tailing Pond 7 <sup>e</sup>	4 years following cessation of short-term ETS period	7.5
Tailing Pipeline Corridor	4 years following cessation of milling operations and water management	2.5
Tailing Borrow Areas	1 year following reclamation of Tailing Ponds	2
3A Stockpile <sup>c</sup>	180 days following cessation of mining operations	1.5
North Stockpile <sup>c</sup>	180 days following cessation of mining operations	1.5
Northeast Stockpile <sup>c</sup>	180 days following cessation of mining operations	1.5
Northwest Stockpile <sup>c</sup>	180 days following cessation of mining operations	1
North Lampbright Stockpile <sup>d</sup>	180 days following cessation of mining operations	3.5
Southwest Lampbright Stockpile <sup>d</sup>	180 days following cessation of mining operations	3.5
West Stockpile <sup>c, d, e</sup>	2 years following cessation of short-term ETS period	4.5
Lee Hill Leach Stockpile <sup>c, e</sup>	2 years following cessation of short-term ETS period	1.5
Santa Rita Stockpile <sup>c</sup>	2 years following cessation of mining operations	1.5
Main Lampbright Stockpile <sup>d, e</sup>	5 years following cessation of short-term ETS period	4.5
South Lampbright Stockpile <sup>d, e</sup>	5 years following cessation of short-term ETS period	4.5
South Stockpile <sup>c, d, e</sup>	3 years following cessation of short-term ETS period	5

Unit	Anticipated Start Date for Reclamation to Begin <sup>a</sup>	Anticipated Duration (Years) <sup>b</sup>
Upper South Stockpile <sup>c</sup>	1 year following completion of reclamation of South Stockpile	2
STS 2 Stockpile <sup>d</sup>	1 year following completion of reclamation of South Stockpile	1.5
East Pit Access Area	1 year following reclamation of Lampbright Stockpile	1
Reservoirs (not part of WTP)	5 years following cessation of leaching operations	3
Industrial PMLU areas	10 years following cessation of leaching operations	3.5

Notes:

- WTP = water treatment plant
- PMLU = post-mining land use
- Cessation of Milling Operations = Cessation of operation at the Ivanhoe Concentrator when there is no intent to resume operations.
- Cessation of Mining Operations = Cessation of ore and waste haulage operations at the Chino Mine when there is no intent to resume operations.
- Cessation of Leaching Operations = Cessation of copper recovery operations at the SX/EW Plant when there is no intent to resume operations.
- Start Date is defined as the date that work plans or engineering designs, describing how the unit is to be closed or reclaimed have been submitted.
- <sup>a</sup> Anticipated start dates are subject to modification; if cessation occurred for multiple facilities at the same time, the duration for reclamation of the facilities is approximately the sum of the durations for each facility.
- <sup>b</sup> Estimated duration for facility reclamation does not include regulatory design review and approval processes; some borrow areas may be left open to be used in maintenance activities on the primary reclaimed facilities.
- <sup>c</sup> Stockpiles located inside the OPSDA include the future Santa Rita leach stockpile; Lee Hill leach stockpile; North, Northeast and 3A waste rock stockpiles; Upper South stockpile; interior slope of the Northwest waste rock stockpile; portions of the eastern slope of the West stockpile; northwest corner of the Main Lampbright leach stockpile; and portions the northeastern slope of the South leach stockpile.
- <sup>d</sup> Stockpiles located outside the OPSDA include the Main and South Lampbright leach stockpiles; Southwest Lampbright waste rock stockpile; STS 2 overburden and waste rock stockpile; all but the eastern slope of the West leach stockpile; and all but the northeastern slope of the South leach stockpile.
- <sup>e</sup> The top surface area of this facility (or portions thereof) will be utilized for all 6 years of operation of the short-term evaporative treatment system (ETS). Cessation of Operation of this facility is considered the end of the 6 year short-term ETS period.



**Table 2. Chino Mine Reclamation Overview at EOY 2018**

**Table 1 Facility Overview**

Site	Status EOY 2018 and Reclamation Description	Reclamation Activities to be Performed at Location
<b>North Mine Area</b>		
<b>Stockpiles</b>		
Triangle Area	Angle of repose slopes—reclaim top and out slopes	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
Groundhog #5	Reclaimed—add 1 ft of cover, continue O&M	Dozer Assist, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
Lampbright	Leach Stockpile, Angle of repose—reclaim top and out slopes	Rip Before Scraping, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Downdrain Excavation, Place Downdrain/Dissipater ACBs, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
Southwest Lampbright	Waste Rock Stockpile, Angle of repose slopes—reclaim top and out slopes	Rough Grading, Dozer Assist, Rip Rough Grade, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
Lee Hill	Leach Stockpile, Angle of repose slopes—reclaim top <sup>1</sup>	Rough Grading, Dozer Assist, Rip Rough Grade, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
North	Waste Rock Stockpile, Angle of repose slopes—reclaim top	Rough Grading, Dozer Assist, Rip Rough Grade, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
Northeast	Waste Rock Stockpile, Angle of repose slopes, most material was removed in 2014—reclaim stockpile	Rough Grading, Dozer Assist, Rip Rough Grade, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
Northwest	Waste Rock Stockpile, Angle of repose slopes—reclaim top and north out slope	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
South and East In-Pit Stockpiles	Stockpiles, Angle of repose slopes—reclaim stockpiles <sup>1</sup>	Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
South	Leach Stockpile, Angle of repose slopes—reclaim top and western out slopes	Rip Before Scraping, Rough Grading, Dozer Assist, Rip Rough Grade, Load & Haul Cover, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Downdrain Excavation, Place Downdrain/Dissipater ACBs, Revegetate, O&M
STS2	Waste Rock and Overburden Stockpile, overburden material will be used as a cover source during closure—reclaim and provide drainage for remnant out slopes and top	Rough Grading, Dozer Assist, Rip Rough Grade, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
Upper South	Waste Rock and Overburden Stockpile, overburden material will be used as a cover source during closure—reclaim and provide drainage for remnant out slopes and top	Rough Grading, Dozer Assist, Rip Rough Grade, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
West	Leach and Waste Rock Stockpile, Angle of repose slopes—pull back and reclaim top and out slopes	Rip Before Scraping, Rough Grading, Dozer Assist, Dozer Assist Scraper, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Downdrain Excavation, Place Downdrain/Dissipater ACBs, Plug Abandoned Wells, Replace Wells, Revegetate, O&M
9 Waste Rock	Waste Rock Stockpile, Angle of repose slopes—reclaim top and out slopes	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Construct Top Channels, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Downdrain Excavation, Place Downdrain ACBs, Revegetate, O&M
<b>Seepage Collection</b>		
Dam 15	Stormwater containment/control-reclaim	Breach Dam, Rough Grade, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Dam 16	Stormwater containment/control-reclaim	Breach Dam, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Dam 20	Stormwater containment/control-reclaim	Breach Dam, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Elmo's Pond	Stormwater runoff pond—reclaim	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade



Site	Status EOY 2018 and Reclamation Description	Reclamation Activities to be Performed at Location
		Cover, Revegetate, O&M
Lower Lined Pond	HDPE Lined Stormwater runoff pond–reclaim	Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Upper Lined Pond	HDPE Lined Stormwater runoff pond–reclaim	Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
<b>Reservoirs</b>		
Fleming Pond	Lined process water pond–reclaim	Breach Dam, Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
PLS Pond & Launder	Lined process water pond–reclaim	Breach Dam, Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
5900 PLS Sump	Lined process sump–reclaim	Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
6300 PLS Booster Station	Lined process booster station–reclaim	Breach Dam, Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Raffinate Pond	Lined process water pond–reclaim	Breach Dam, Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Reservoir 17	Stormwater management pond, lined–reclaim	Breach Dam, Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Reservoir 2	Stormwater management pond, unlined–reclaim	Breach Dam, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Reservoir 6	Stormwater management pond, unlined–reclaim	Breach Dam, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Reservoir 7	Process water pond, unlined–reclaim	Breach Dam, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Tailing Thickener 1	Lined process water pond–reclaim	Breach Dam, Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
<b>Miscellaneous</b>		
Lee Hill #2 Booster	Lined process water pond–reclaim	Puncture Liner, Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Filter Plant	Reclaim	Dozer Assist, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
Disturbed Area Around Reservoir 5	Land surrounding Reservoir 5	Dozer Assist, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
200-Acre Unplanned Future Disturbance	Unplanned disturbed area–reclaim	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
<b>Roads</b>		
Chino Portion Cobre Haul Road	Removed for cover–reclaim disturbed area (road)	Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
Northwest Haul Road	Part outside Open Pit Surface Drainage Area (OPSDA)–reclaim top area	Revegetate, O&M
East Pit Access Disturbed Area	Outside OPSDA–reclaim top area and slopes	Dozer Assist, Load & Haul Cover, Place & Grade Cover, Revegetate, O&M
Highway to Heaven Haul Road	Reclaim road surface and side slopes	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
<b>South Mine Area</b>		
<b>Stockpiles</b>		

DRAFT PERMIT DATE: January 23, 2020

Site	Status EOY 2018 and Reclamation Description	Reclamation Activities to be Performed at Location
Slag Pile	Approximately 90% of area is reclaimed—reclaim remainder after Filter Plant reclamation	Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
<b>Roads and Misc Areas</b>		
35-Acre Misc Area	Reclaim	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Revegetate, O&M
<b>Tailing Ponds</b>		
1	Reclaimed—Continue O&M	O&M
2	Reclaimed—Continue O&M	O&M
B	Reclaimed—Continue O&M	O&M
C	Reclaimed—Continue O&M	O&M
4E	Reclaimed—Continue O&M	O&M
4W	Reclaimed—Continue O&M	O&M
6E	Partially reclaimed—Continue O&M on reclaimed portion, reclaim remaining top and outslopes	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Excavate Downdrains, Place Downdrain ACBs, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
6W	Partially reclaimed—Continue O&M on reclaimed portion, reclaim remaining top and outslopes	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Excavate Downdrains, Place Downdrain ACBs, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
7	4H:1V outslopes—reclaim tops and outslopes	Rough Grading, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Excavate Downdrains, Place Downdrain ACBs, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M
Axiflo	Reclaim sideslopes and pond bottom, armor dam breach channel	Breach Dam, Rough Grade, Dozer Assist, Load & Haul Cover, Rip Rough Grade, Place & Grade Cover, Bench Grading, Excavate Bench Channels, Make Riprap, Load & Haul Riprap, Place Riprap, Revegetate, O&M

<sup>1</sup> Inside Open Pit Surface Drainage Area (OPSDA) and MMD waiver area



**Table 3. Monitoring and Reporting Summary for DP-1340**

<b>Monitoring Report Schedule of Submittal (Subsection A of 20.6.7.29 NMAC)</b>		
1	January 1 through June 30 (Q1 and Q2 sampling quarters) – Semi-annual report due by August 31 of each year	
2	July 1 through December 31 (Q3 and Q4 sampling quarters) – Semi-annual report due by February 28 of each year	
3	Annual reports due by February 28 of each year	
4	Sampling Quarter: Q1 = Jan-Mar; Q2 = Apr-Jun; Q3 = Jul-Sep; Q4 = Oct-Dec	
<b>Reporting Summary</b>		
<b>Annual Reporting Frequency</b>	<b>Number of Sites</b>	<b>Description</b>
2	Not Applicable	Monitoring reports – All applicable requirements of Subsections A through H of 20.6.7.29 NMAC, and Section 20.6.7.35 NMAC.
2	1	Mine facility groundwater elevation contour map
1	1	OPSDA and AOPHC Map(s) for the NMA
2	Not Applicable	Additional discharge volume reporting listed in C112.L
2	Not Applicable	Vegetation Monitoring required by Condition C112.J
2	Not Applicable	Cover System Monitoring required by Condition C112.J
<b>Water Parameters and Measurements</b>		
<p><u>Sampling Analytical Suites</u> (dissolved concentrations in mg/L, unless otherwise noted, see C112B):</p> <p>A = <u>Field Parameters</u>: Temperature (°C), pH, specific conductance (µS/cm)</p> <p>B = <u>General Chemistry and Inorganic Parameters</u>: alkalinity-bicarbonate (alk-HCO<sub>3</sub>), alkalinity-carbonate (alk-CO<sub>3</sub>), alkalinity-total (alk-Tot), calcium (Ca), chloride (Cl), cyanide (CN), fluoride (F), magnesium (Mg), potassium (K), sodium (Na), sulfate (SO<sub>4</sub>), and total dissolved solids (TDS)</p> <p>C = <u>Metal Parameters</u>: aluminum (Al), arsenic (As), barium (Ba), beryllium (Be), boron (B), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), molybdenum (Mo), nickel (Ni), selenium (Se), silver (Ag), total mercury (Hg), uranium (U), and zinc (Zn).</p> <p>D = <u>Nutrients</u>: Total Kjeldahl nitrogen (TKN), and Nitrate-Nitrogen (NO<sub>3</sub>-N)</p> <p>E = <u>Radioactivity</u>: Combined Radium-226 and Radium-228 (pCi/L)</p> <p><u>Measurements</u></p> <p>W = Depth-to-water measurement to the nearest 0.01 foot</p>		