

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

Permittee: Newmont Mining Corporation – Twin Creeks Mine
P. O. Box 69
Golconda, Nevada 89414

Permit: NV0021725

Location: Twin Creeks Mine
26 miles northeast of
Golconda, Humboldt County, Nevada

Latitude: 41° 07' 27" N

Longitude: 117° 05' 39" W

Township 39 N, Range 43 E, Section 31, 32 MDB&M

Corrective Actions Sites:

There are no Bureau of Corrective Actions (BCA) remediation sites located within a one-mile radius of the subject site.

Well Head and Drinking Water Supply Protection:

The subject facility is within the 6000' Drinking Water Protection Areas (DWPAs) around two non-transient, non-community public water supply wells (Barrick Turquoise Ridge Inc. West Well 1 and Twin Creeks Well 1). A Well Head Protection Area (WHPA) has not been established for this location.

General:

National Pollutant Discharge Elimination System Permit NV0021725 was originally issued to Rabbit Creek Mining, Inc. on November 6, 1990 with a discharge limitation of 3.2 million gallons per day (MGD). The NV0021725 Permittee has changed from Rabbit Creek Mining Inc. to Santa Fe Pacific Gold Corporation to Newmont Gold Corporation, and to Newmont Mining Corporation in 2000. The discharge rate has been increased over the years, reaching the currently permitted 19.872 MGD in 2008. The Permittee has applied for renewal of the permit authorizing discharge of 19.872 MGD treated water produced by mine dewatering wells and sumps located within the open-pit mine to the Humboldt River via the ephemeral Rabbit and Kelly Creeks.

The Permittee owns and operates a gold mining operation located in Humboldt County, Nevada, approximately 26 miles northeast of Golconda. The Twin Creeks Mine was formed by the consolidation of the former Rabbit Creek and Chimney Creek Mines in 1993. Mineral processing and the management of all mineral processing fluids at this site are permitted under Water Pollution Control Permits NEV86018 Twin Creeks Mine – North Project and NEV89035 Twin Creeks Mine – South Project issued by the Bureau of Mining Regulation and Reclamation (BMRR).

To ensure stability of open-pit mine walls and to facilitate optimum recovery of the precious metals resources, the Permittee developed and implemented a groundwater management program; the surface water discharge of extracted groundwater began in 1991. Water is pumped from the pit dewatering wells and in-pit sumps to the Water Distribution Pond (WDP), also known as the Sky

Pond. The WDP replaced the mine water settling ponds that were decommissioned in 1993. The permit does not regulate the number of dewatering wells or in-pit sumps or the individual pumping rates. This source of water may contain naturally occurring, elevated soluble arsenic concentrations greater than the 50 micrograms per liter ($\mu\text{g/L}$) standard, Nevada Administrative Code (NAC) 445A.144, "Standards for toxic materials". Excess water is diverted to the water treatment plant for arsenic removal before discharge to the Rabbit Creek drainage.

Water from the pit dewatering system is pumped to the seven-million gallon, leak detected, 80-mil HDPE-lined, WDP. A geocomposite underdrain system was installed between the liner and the 6 inches of compacted, fine grained liner bedding material to indicate the presence of leakage, should it occur. The leak detection system is monitored but leakage is not recovered. The purpose of the 20-foot deep WDP is to store water from the mine dewatering wells, provide water to the process facilities, provide water for mine site dust control, provide additional time to de-aerate mine water and provide surge capacity prior to the water treatment facility. The WDP was constructed in a mine overburden waste stockpile area to allow gravity flow to the Water Treatment Plant (WTP) and has a 1.5 million-gallon reserve capacity below the two 36-inch HDPE pipes to the WTP. The WDP water level is regulated by allowing excess water to flow to the WTP.

The WTP is designed to treat excess mine water containing a maximum of 0.5 mg/L arsenic and 50 mg/L total suspended solids from wells and in-pit sumps at a rate of 15,000 gallons per minute (gpm) through the settling pond treatment system when all three ponds are online. Ferric sulfate is injected into feed water prior to entering the 80,000-gallon reaction tank. Ferric arsenate is precipitated in the baffled and mechanically agitated reaction tank. Water from the reaction tank overflows to the 10,000-gallon floc addition tank, where a flocculent solution containing a copolymer of sodium acrylate and acrylamide is added to promote clarification. All reagents are stored within lined containment. The water overflows from the floc addition tank to one of the twin 3,000-gallon floc growth tanks or to the floc channel. The floc growth tanks overflow to the 800,000-gallon, 80-mil HDPE lined settling pond or the 600,000-gallon, 60-mil HDPE lined settling pond; the floc channel discharges to the recently constructed 4,200,000-gallon, 60-mil HDPE lined settling pond, the West Pond. The settling ponds provide adequate time to settle the ferric arsenate and attain the 50 $\mu\text{g/L}$ total arsenic standard before decanting through Parshall flume 1, the old settling ponds, or Parshall flume 2, the new settling pond. Flow is quantified in the flumes with ultrasonic open channel flow/level transmitters and flow recorders prior to discharge to a conveyance ditch that delivers the treated water to Rabbit Creek. Upgrades to the East Pond have been authorized, necessitating the diversion of flows to the West Pond. Based on a hydraulic study of the settling pond systems hydraulic and treatment capacity submitted to the Division in May 2010, the Daily Maximum flow limit for the West Pond is increased to 7,500 gpm, or 10.8 MGD. The total flow limit remains unchanged.

Periodically, the ponds are cleaned and the sludge hauled to either the Juniper or Pinion Tailings Impoundments for internment as authorized by BMRR.

The WTP also includes a 10,000 gpm PROSYS microfiltration system with an 80,000-gallon reaction tank, five independently operated microfiltration vessels, and an 80,000-gallon discharge equalization tank. This treatment system has not been operated since 1996 due to higher operational and maintenance costs than the settling pond. A revision of the WTP Operations and Maintenance

(O&M) Manual must be approved by the Division prior to discharge from this portion of the treatment system.

Most of the discharge water seeps into the ground for water table recharge before reaching the Humboldt River. The Division of Water Resources (DWR) has limited the discharge to the Humboldt River to not more than 2 CFS (898 GPM, 1.3 MGD) annual average. The Division does not monitor compliance with this DWR restriction. Based on 84 years of USGS data, the Humboldt River at Comus 7Q10 low flow is 0.1 cubic feet per second (cfs) and the 7Q10 high flow is 3,027 cfs.

Receiving Water Characteristics:

The receiving water for this discharge is the reach of the Humboldt River between the Battle Mountain Gage and the crossing of state highway 789 control points via the ephemeral Rabbit and Kelly Creeks. Beneficial uses of the Humboldt River are listed in Nevada Administrative Code (NAC) 445A.202. Water quality standards for the pertinent reach of the Humboldt River are listed in Nevada Administrative Code (NAC) 445A.206.

The October 2006 303(d) “Impaired Waters List” shows the pollutants or stressors of concern for the reach of the Humboldt River from Battle Mountain to Comus, NV04-HR-04, as Fluoride, Turbidity, Iron, Boron, and Molybdenum. This reach of the river has existing total maximum daily loads (TMDL) for total phosphorus, Total Dissolved Solids and Total Suspended Solids.

During the period from February 1999 through November 2008, the following water quality data for parameters monitored and/or limited in the discharge were recorded by the NDEP Bureau of Water Quality Planning for the pertinent reach of the Humboldt River:

Parameter	Requirement to Meet Existing Higher Quality	Beneficial Use Standard	Average	Maximum	Minimum	
Total Suspended Solids (mg/L)	---	Annual Median: ≤ 80	105.6	380	12	
Turbidity (NTU)	---	S.V.: ≤ 50	69.1	260	7.3	
Total Dissolved Solids (mg/L)	A-Avg: ≤ 500 S.V.: ≤ 560	A-Avg: ≤ 500	491.0	1340	278	
pH (SU)	A-Avg: 7.0-8.5 S.V.: 7.0-8.7	S.V.: 6.5-9.0	8.57	9.42	7.8	
Total Arsenic, ($\mu\text{g/L}$)	NA	NA	23	49	11	
Total Iron ($\mu\text{g/L}$)	NA	NA	3536	10200	530	
Nitrogen Species (mg/L)	Total Nitrogen	A-Avg: ≤ 2.9 Apr-Nov S.V.: ≤ 3.7	NA	0.6	1.1	0.2
	Nitrate	NA	S.V.: ≤ 10	0.105	0.35	<0.1
	Nitrite	NA	S.V.: ≤ 1.0	0.07	0.18	0
Hardness as CaCO_3 (mg/L)	NA	NA	154.9	244	103	
Total Phosphorus -P (mg/L)	---	Apr-Nov Seasonal Avg: ≤ 0.1	0.18	0.6	0.03	
Total Ammonia (mg/L)	NAC 445A.118	NAC 445A.118	<0.1	0.15	<0.1	
Temperature ($^{\circ}\text{C}$)	$\Delta T = 0^{\circ}\text{C}$	$\Delta T \leq 2^{\circ}\text{C}$	12.33	25.6	0.7	
Total Boron ($\mu\text{g/L}$)	NA	NA	465	1000	100	
Total Cadmium, ($\mu\text{g/L}$)	NA	NA	<1	<2	<1	
Total Mercury ($\mu\text{g/L}$)	NA	NA	<0.2	<0.5	<0.2	
Total Molybdenum ($\mu\text{g/L}$)	NA	NA	13	24	<10	
Total Antimony ($\mu\text{g/L}$)	NA	NA	<5	<5	<5	
Fluoride ($\mu\text{g/L}$)	NA	NA	1029	2200	400	
Total Nickel ($\mu\text{g/L}$)	NA	NA	<5	11	<5	
Sulfate (mg/L)	---	\leq S.V.: 250	73.2	200	24	

A-Avg: Annual Average
 S.V.: Single Value

The water quality of ephemeral streams, such as Rabbit and Kelly Creeks, is not monitored by BWQP. The groundwaters being recharged by the discharge are not monitored due to the rigorous standards applied to the surface water discharge.

Description of the Location of the Discharge:

Treated water is discharged into Rabbit Creek, which flows into Kelly Creek, both ephemeral streams. According to the Permittee, the water infiltrates into the ground along approximately 22 miles of creek bed, but during storm events or wet climatic conditions the treated dewatering water may reach the Humboldt River. The DWR has restricted the discharge to the Humboldt River to 2.0 CFS annual average.

Discharge Flow and Characteristics:

Permit limits for Permit NV0021725 are 19.872 MGD for the Daily Maximum and 30-day Average. The settling pond treatment system of the WTP has been designed to treat 21.6 MGD, 15,000 gpm. The Permittee has requested that the facility be permitted at 13,800 gpm.

Based on Form 2C of the permit application submitted in May 2010, the daily maximum flow value was 12.23 MGD and the long term average flow was 6.77 MGD. The following water quality data was included in Form 2C, or were determined from quarterly monitoring reports submitted during the term of the current permit (from January 2007 through September 2010):

Parameter	Permit Limit (if applicable)	Maximum Daily Value	Average Value
Total Suspended Solids (mg/L)	20 (Avg); 30 (Daily Max)	10	5.4
Ammonia As N (mg/L)	NAC 445A.118	0.04	0.03
pH (Standard Units)	7.0 to 8.5	8.17	7.92 (Minimum)
Total Fluoride (µg/l)	1000 (Daily Max)	820	632.25
Nitrate-Nitrite as N (mg/L)	NA	0.08	0.02
Total Phosphorus as P (mg/L)	0.1 (Avg)	0.02	0.01
Sulfate (mg/L)	250 (Daily Max)	105	94.4
Total Boron (µg/l)	750 (Daily Max)	143	141
Total Iron (µg/l)	1000 (Daily Max)	143	125.25
Total Antimony (µg/l)	146 (Daily Max)	21.1	16.65
Total Arsenic (µg/l)	50 (Daily Max)	13.1	8.39
Total Cadmium(µg/l)	$e^{0.8190\ln(H)+1.561}$ (Avg) $e^{0.8190\ln(H)+3.688}$ (Daily Max)	2	2
Total Mercury(µg/l)	2.0 (Daily Max), 0.012 (Annual Analysis)	<0.010	<0.010
Total Nickel (µg/l)	13.4 (Daily Max)	10	10
Total Dissolved Solids (mg/L)	500 (Avg.)	1010	332.2
Turbidity (NTU)	50 (Daily Max)	2.1	<1
Total Nitrogen (mg/L)	2.9 (Avg); 3.7 (Daily Max)	0.316	0.078
Total Petroleum Hydrocarbons (mg/L)	1.0 (Daily Max)	<0.6	<0.5

NTU: Nephelometric Turbidity Units
 P: Phosphorus

mg/L: milligrams per liter
 N: Nitrogen

µg/l: micrograms per liter
 Avg: Average

Compliance History:

Based on the Division's Compliance Database, the Permittee has had three occurrences of noncompliance during the term of the current permit (first quarter 2007 through third quarter 2010). In March 2008, the reported discharge flow through Flume 1 was 7.52 MGD, exceeding the discharge limit of 7.2 MGD. The Permittee indicated that the reported exceedance was due to a malfunction of the monitoring equipment. In November 2008, the reported Flume 1 discharge flow was 9.72 MGD. The Permittee indicated that this exceedance of the discharge limit was due to changes in plant operation and changes in utilization rate of dewatering water within the system. Changes in the flow alarm system and communication protocols were instituted to prevent future exceedances of this type. In December 2008, the discharge flow was 8.13 MGD. The Permittee reported that this reported exceedance of the discharge limit was due to operator recording error, and

did not in fact actually constitute a permit violation. There were no other permit exceedances reported. At no time was the total discharge limit of 19.872 MGD exceeded.

Proposed Effluent Limitations:

During the period beginning on the effective date of this permit and lasting until the permit expires, the Permittee is authorized to discharge from the three settling ponds via the two flumes to Rabbit Creek. The discharge shall consist only of treated groundwater pumped from mine dewatering wells and from in-pit sumps.

- a. Effluent samples and measurements taken in compliance with the monitoring requirements specified below shall be taken at:
 - i. Ultrasonic open channel flow/level transmitter and flow recorder at Parshall flume 1 the discharge channel from the new settling ponds;
 - ii. Ultrasonic open channel flow/level transmitter and flow recorder at Parshall flume 2, the discharge channel from the old settling pond;
 - iii. Monitoring point located downgradient of the settling ponds, prior to discharge to Rabbit Creek; and
 - iv. Each dewatering well or in-pit sump used during the calendar year and any new dewatering well or in-pit sump upon commissioning or first pumped for sumps.
- b. The discharge shall be limited and monitored by the Permittee as specified below:

Table 1: Discharge Limitations

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	30-day Average	Daily Maximum	Sample Location	Measurement Frequency	Sample Type
Flow: (MGD)	Monitor & Report	19.872	Σ i. + ii.	Continuous	Calculation
Flume 2 (MGD)	Monitor & Report		ii.		Flow Meters
Flume 1 (MGD)	Monitor & Report	10.8	i.		
Total Suspended Solids: (mg/L)	20	30	iii.	Monthly	Discrete
(lb/day)	3,310	4,970			Calculation
Turbidity: (NTU)	---	50	iii.	Quarterly	Discrete
Total Dissolved Solids: (mg/L)	500 ¹	---	iii.	Monthly	Discrete
(lb/day)	82,900 ¹	---			Calculation
(mg/L)	Monitor & Report		iv.	Annually ²	Discrete
pH: (Standard Units)	7.0 ≤ pH ≤ 8.5 ¹	7.0 ≤ pH ≤ 8.7	iii.	Monthly	Discrete

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	30-day Average	Daily Maximum	Sample Location	Measurement Frequency	Sample Type
	Monitor & Report		iv.	Annually ²	
Arsenic, Total: (µg/L)	---	50	iii.	Monthly	Discrete
	Monitor & Report		iv.	Annually ²	
Iron, Total (µg/L)	---	1,000	iii.	Quarterly	Discrete
	(lb/day)	166			Calculation
(mg/L)	Monitor & Report		iv.	Annually ²	Discrete
	2.9 ¹	3.7 ⁴	iii.	Quarterly	Discrete
Total Nitrogen –N: (mg/L)	Monitor & Report		iv.	Annually ²	
	Total Petroleum Hydrocarbons: (mg/L)	---	1.0	iii.	Quarterly
Monitor & Report		iv.	Annually ²		
Hardness as CaCO ₃ : (mg/L)	Monitor & Report		iii.	Monthly	Discrete
Total Phosphorus –P: (mg/L)	0.1 ⁵	---	iii.	Quarterly	Discrete
	(lb/day)	16.6 ⁵			Calculation
(mg/L)	Monitor & Report		iv.	Annually ²	Discrete
	(6)	(7)	iii.	Monthly	Discrete
Total Ammonia ³ : (mg/L)	Monitor & Report		iv.	Annually ²	
	Temperature: (°C)	---	Monitor & Report	iii.	Monthly
Boron, Total: (µg/L)	---	750	iii.	Quarterly	Discrete
	(lb/day)	124			Calculation
Cadmium, Total ³ : (µg/L) (Report Calculated Numerical Limit with Analytical Results)	$e^{(0.7409 \ln(H) + 4.719)}$	$e^{(1.0166 \ln(H) + 3.924)}$	iii.	Monthly	Discrete
	Monitor & Report			iv.	Annually ²
	Monitor & Report		iv.	Annually ²	Discrete
Mercury, Total: (µg/L)	0.77 ⁸	1.4	iii.	Annually ²	Discrete
	Monitor & Report ⁹		iv.		
Antimony, Total: (µg/L)	---	146	iii.	Quarterly	Discrete
	Monitor & Report		iv.	Annually ²	
Fluoride: (µg/L)	---	1,000	iii.	Quarterly	Discrete
	Monitor & Report		iv.	Annually ²	
Nickel, Total: (µg/L)	---	13.4	iii.	Quarterly	Discrete
	Monitor & Report		iv.	Annually ²	
Sulfate: (mg/L)	---	250	iii.	Quarterly	Discrete
	Monitor & Report		iv.	Annually ²	
Whole Effluent Toxicity	See Part I.A.6.		iii.	See Part I.A.6.	Composite

Notes;

1. Annual average, based on the calendar year with compliance determined from the 4th quarter discharge monitoring report.
2. Annual analysis performed in the fourth quarter.

3. Permittee shall calculate appropriate standards and report in the discharge monitoring report. After an adequate period of monthly monitoring demonstrates compliance with calculated permit limits based on Hardness, the Permittee may request adjustment of the monitoring frequency to quarterly as a minor modification. If approved, Hardness monitoring will also be adjusted to quarterly.
4. April thru November single value.
5. April thru November annual average.

$$6. \left[\frac{0.0577}{1+10^{7.688-pH}} \right] + \left[\frac{2.487}{1+10^{pH-7.688}} \right] \times \text{MIN} [2.85, 1.45 \times 10^{0.028x(25-T)}]$$

Where: T = discharge temperature in degrees Celsius (°C)

x = multiplication

MIN = the lesser of the two values separated by the comma

$$7. \left[\frac{0.411}{1+10^{7.204-pH}} \right] + \left[\frac{58.4}{1+10^{pH-7.204}} \right]$$

8. A total mercury concentration exceeding the 0.77 µg/L annual analysis limitation shall trigger monthly total mercury analyses with a daily maximum discharge limitation of 1.4 µg/L, the acute standard, until two consecutive analyses meet the chronic standard.
9. The mercury source water analyses are not required to be conducted to the chronic standard.

MGD: Million gallons per day.
 mg/L: Milligram per liter.
 µg/L: Microgram per liter.
 NTU: Nephelometric turbidity units.
 SU: Standard units.

°C: Degrees Celsius.
 CaCO₃: Calcium carbonate.
 -P: As phosphorus.
 -N: As nitrogen.
 lb/day: Pounds per day.

Schedule of Compliance:

The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications which the Administrator may make in approving the schedule of compliance.

- a. The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- b. Thirty (30) days prior to startup of the microfiltration system, the Permittee shall submit to the Division for review and approval a revised Operations and Maintenance Manual covering the microfiltration portion of the arsenic treatment system.
- c. Ninety (90) days prior to discharging a daily maximum of more than 14.5 MGD, the Permittee shall submit to the Division for review and approval a channel stability

analysis for the portions of Rabbit and Kelly Creeks that will convey the increased discharge to the Humboldt River. The analysis shall at a minimum evaluate stream channel capacity, stream channel bank and bed stability, and sediment transport. Based on this analysis, the Permittee may be required to implement mitigative measures to minimize the impact of the increased flow prior to discharge at a rate greater than 14.5 MGD of the previous permit.

Rationale for Permit Requirements:

The Permittee is proposing to continue the utilization of an arsenic treatment process that results in compliance with all appropriate Humboldt River water quality standards at the WTP outfall, except for temperature and dissolved oxygen. Due to the 22 mile flow path in ephemeral stream channels, Rabbit and Kelly Creeks, these physical standards were not applied to the discharge in the previous permit and are not included in the draft permit.

The permit issued prior to the 2006 renewal included monthly and quarterly monitoring of the discharge with surface water standards as the discharge limitations for parameters of concern as determined by a reasonable potential analysis. That issuance of the permit also included quarterly monitoring of the version 07/98 NDEP Profile I parameters. This long term discharge water quality data has been used in a reasonable potential analysis to determine whether further monitoring of each parameter is appropriate.

The two ephemeral creeks are neither class nor designated waters, therefore, the Humboldt River at Comus (crossing of state highway 789), Standards of Water Quality, NAC 445A.206 (NAC 445A.206) standards have been applied to the discharge via the tributary rule, NAC 445A.145.

Because the NAC 445A.144 aquatic life total metals standards are at least as stringent as the 40 CFR Part 440.104 new source performance standards daily maximum effluent guidelines, the state standards have been used to establish the draft permit discharge limitations. For all Hardness based total metals calculations, the Hardness of the discharge at the time of sampling is used to calculate the permit limit. If the discharge total metal analytical results do not exceed the calculated permit limit, compliance is determined. Appropriately low analytical reporting limits must be used.

Mass Loading Calculations: As stated previously, this reach of the Humboldt River has existing TMDLs for total phosphorus, TDS, and TSS and is considered impaired due to total boron, total iron, turbidity, and fluoride, and total molybdenum. Recent (2010) EPA-approved changes to the molybdenum water quality standards from 19 µg/L to 1,600 µg/L are expected to effectively negate the previous molybdenum impaired status for this reach of the Humboldt River.

Nevada's December 2002 Continuing Planning Process states that there are instances where existing TMDLs may not result in load limits for a discharge. TMDLs were developed for the Humboldt River as part of the "208 Plan for Undesignated Areas" (NDEP, 1994); however no waste load allocations were made. Included in the 208 Plan is the following language:

"Any discharge which improves the existing water quality and has permitted discharge limits as strict or stricter than the water quality standards can be considered in compliance with an established TMDL."

The Permittee's discharge to the Humboldt will be required to comply with this requirement and meet the 0.1 mg/L total phosphorus and 500 mg/L TDS standards of water quality and will be significantly below the 80 mg/L TSS River standard (see Rationale for Permit Requirements for further details). The proposed total phosphorus and TDS average load limitations, 16.6 lb/day and 82,900 lb/day, respectively, are based on the permitted flow, 19.872 MGD, and the water quality standards. TSS permitted load limitations, 3,310 lb/day, quarterly average, and 4,970 lb/day, daily maximum, are based on the same permitted flow and the TSS effluent limitations of Code of Federal Regulations, Title 40, Subpart J – Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory, Part 440.104, New Source Performance Standards (40 CFR Part 440.104), 20 mg/L, average, and 30 mg/L, daily maximum, standards.

The total boron, 124 lb/day, and total iron, 166 lb/day, loads are also limited because this reach of the river is listed as impaired for these constituents. Turbidity is not a concentration based parameter, therefore, there is no turbidity load limitation.

These loads are for the discharge to Rabbit Creek at the maximum permitted flow. Based on the 2.0 CFS annual average DWR restriction, the maximum surface water flow load reaching the Humboldt will be less than 7% of the maximum Rabbit Creek loadings.

Calculation of the loadings of the other monitored parameters are not required by the permit.

Flow: The daily maximum and 30-day average flow rate, 19.872 MGD/13,800 gpm, is based on the requested flow limit of the permit application. The expanded three settling pond treatment system has a design capacity of 21.6 MGD/15,000 gpm.

The draft permit allows use of the PROSYS microfiltration system, provided that the 19.872 MGD discharge limitation is not exceeded, and that the Permittee notify BWPC 30 days prior to start-up.

During the period from January 2007 through September 2010, the highest daily maximum total flow reported was 12.23 MGD. The highest average total flow was 6.77 MGD

Total Suspended Solids: The TSS limitations, 30 mg/L daily maximum and 20 mg/L 30-day average, are based on the effluent limitations of 40 CFR Part 440.104. These permit limitations are more restrictive than the 80 mg/L daily maximum of NAC 445A.206, water quality standards for beneficial uses, with aquatic life, warm-water fishery as the most restrictive beneficial use and the previous permit.

Due to the Humboldt TSS TMDL, the 30-day average, 3,310 lb/day, and daily maximum, 4,970 lb/day, TSS load limitations to the Rabbit Creek discharge have been retained in the proposed permit.

During the period from January 2007 through September 2010, TSS was not detected above the reporting limit of 5 mg/l (<5 mg/L). Based on the reported flow and the reporting limit, the highest daily maximum loading reported was 510 lb/day. Highest average loading was 282 lb/day.

Monthly monitoring of the TSS concentration in the discharge has been retained from the previous permit to ensure adequate retention time for settling of flocculated arsenic compounds.

Turbidity: The turbidity limitation, 50 Nephelometric turbidity units (NTU), is based on the NAC 445A.206, water quality standards for beneficial uses, with aquatic life, warm-water fishery as the most restrictive beneficial use. The 50 NTU daily maximum is the single value maximum.

During the period from January 2007 through September 2010, Turbidity levels were reported to be a daily maximum of 2.1 NTU and an average of <1 NTU.

The frequency of turbidity monitoring frequency is proposed to be retained quarterly in the proposed permit.

Total Dissolved Solids: The TDS limitation, 500 mg/L annual average, is based on the NAC 445A.206, water quality standards for beneficial uses, with municipal or domestic supply as the most restrictive beneficial use. Since the Division lists the reach of the river from Battle Mountain to Comus as exceeding the TDS RMHQ, a portion of this standard, 560 mg/L single value, is not applied to the discharge. The RMHQ and beneficial use standards both contain a 500 mg/L annual average value. Applying the 500 mg/L standard as an annual average, rather than a daily maximum, corrects a mistake in the previous permit that was more restrictive than the RMHQ.

During the period from January 2007 through September 2010, the highest annual average calculated from reported TDS values was 383 mg/L, with a maximum reported value of 1010 mg/L in September 2010.

Monthly monitoring of the TDS concentration in the discharge has been retained from the previous permit.

Due to the Humboldt TDS TMDL, the annual average, 82,900 lb/day TDS load limitation has been retained for the permit renewal.

The water from each dewatering location must be analyzed for TDS without limitation on an annual basis.

pH: The pH limitations are based on the NAC 445A.206, requirements to maintain existing higher quality (RMHQ), with recreation involving contact with the water and propagation of wildlife as the most restrictive beneficial uses. The daily maximum range, $7.0 \leq \text{pH} \leq 8.7$ standard units (SU), is the single value limitation range and the range of the annual average is $7.0 \leq \text{pH} \leq 8.5$ SU. The 40 CFR Part 440.104 pH standard, $6.0 \leq \text{pH} \leq 9.0$ both daily maximum and average, are less restrictive than the water quality standards listed in NAC 445A.206, and are not applied to this discharge.

During the period from January 2007 through September 2010, the discharge pH has ranged from 7.41 SU to 8.38 SU with an average pH value of 8.01 SU.

The discharge has consistently met the RMHQ daily maximum standard. The discharge limits of the previous permit have been retained.

The water from each dewatering location must be analyzed for pH without limitation on an annual basis.

Arsenic, total: The total arsenic limitation, 50 µg/L, is based on the Standards for Toxic Materials Applicable to Designated Waters, NAC 445A.144 (NAC 445A.144), municipal or domestic supply standard. This permit limitation is consistent with the previous permit.

During the period from January 2007 through September 2010, the maximum arsenic daily value was 25 µg/L, and the average value was 6.69 µg/L.

Monthly monitoring of the total arsenic concentration in the discharge has been retained from the previous permit.

The water from each dewatering location must be analyzed for arsenic without limitation on an annual basis.

Iron, total: The proposed total iron limitation, 1,000 µg/L daily maximum, is based on the NAC 445A.144 aquatic life standard. As stated, the Humboldt River is listed as impaired for total iron.

During the period from January 2007 through September 2010, maximum reported total iron was 232 µg/l. Average total iron based on reported values was 118.9 mg/L.

Due to the use of ferric sulfate in the treatment process, the quarterly frequency of iron monitoring from the previous permit has been retained in the proposed permit renewal. Further, due to the Humboldt's listing as impaired by total iron, the daily maximum total iron load limitation, 166 lb/day, has been retained for the permitted discharge.

The water from each dewatering location must be analyzed for iron without limitation on an annual basis.

Total Phosphorus as P: The total phosphorus limit of 0.1 mg/L is based on NAC 445A.206 water quality standard. As stated, a total phosphorus TMDL exists for the Humboldt River.

During the period from June 2007 through September 2010, total phosphorus was detected once at a concentration of 0.01 mg/L. All other analyses reported total phosphorus as undetected at a reporting limit of less than 0.01 mg/L.

The NAC 445A.206 water quality standard of 0.1 mg/L has been retained as the permit limit in the proposed permit renewal. Further, due to the Humboldt total phosphorus TMDL, the April through November annual average, 16.6 lbs/day, total phosphorus load limit, based on the permitted flow and the water quality standard listed in NAC 445A.206, has been retained for the permitted discharge.

The water from each dewatering source must be analyzed for total phosphorus without limitation on an annual basis.

Total Ammonia as N: The total ammonia limits listed in the permit are based on NAC 445A.118, and are determined based on pH and temperature. Calculation of chronic and acute limits based on lowest pH and temperature of the discharge (7.4 S.U. and 11°C) are 5.94 and 23, respectively. Calculation of the chronic and acute limits based on highest pH and temperature of the discharge (8.4 S.U. and 25°C) are 0.66 mg/L and 9.5 mg/L, respectively.

During the period from January 2007 through September 2010, the maximum total ammonia value reported was 0.06 mg/L. During that period, total ammonia was detected above the reporting limit of 0.03 mg/L only 7 times

The total ammonia permit limits from the previous permit have been retained in the proposed permit renewal.

The water from each dewatering source must be analyzed for total ammonia without limitation on an annual basis.

Total Nitrogen as N: The total nitrogen as N limitations are based on the NAC 445A.206, requirements to maintain existing higher quality. The daily maximum, 3.7 mg/L, is based on the April through November single value limitation. The annual average, 2.9 mg/L, was obtained directly from NAC 445A.206. The previous permit included the NAC 445A.206 annual average standard as the daily maximum effluent limitation.

During the period from January 2007 through September 2010, the maximum total nitrogen concentration was 0.316 mg/L. The average total nitrogen concentration was 0.08 mg/L.

The quarterly total nitrogen monitoring frequency of the previous permit has been retained in the proposed permit.

The water from each dewatering source must be analyzed for total nitrogen without limitation on an annual basis.

Total Petroleum Hydrocarbons: The extractable TPH discharge limitation, 1.0 mg/L, is based on the State TPH standard for remediation projects and is used for discharges to surface waters.

During the period from January 2007 through September 2010, total petroleum hydrocarbons have not been detected at a reporting limit of 0.6 mg/L.

This limitation with quarterly analyses has been retained from the previous permit.

The water from each dewatering source must be analyzed for TPH without limitation on an annual basis.

Temperature: The Humboldt River at crossing of state highway 789, Standards of Water Quality, NAC 445A.206, water quality standards for beneficial uses, with aquatic life, warm-water fishery as the most restrictive beneficial use, includes a single value temperature standard of $\Delta T \leq 2^\circ\text{C}$. Monitoring of the discharge temperature was not required by the previous permit.

Temperature monitoring is required because temperature is a variable in the total ammonia acute and chronic toxicity formulas, but is not limited due to the 18-mile flow path via intermittent streams from the discharge point to the confluence of Kelly Creek and the Humboldt River.

Boron: The boron NAC 445A.144, irrigation standard is 750 µg/L.

During the period from January 2007 through September 2010, the average boron concentration in the discharge was 145.5 µg/l with a maximum value of 174 µg/l.

The discharge limitation of 750 µg/L total boron with quarterly analysis has been retained in the proposed permit. Further, due to the Humboldt's listing as being impaired by total boron, the daily maximum, 124 lb/day, total boron load limitation, based on the maximum permitted flow and the NAC 445A.144 standard, has been retained for the permitted discharge.

Cadmium, total: The total cadmium limitations in the previous permit were based on the Standards for Toxic Materials Applicable to Designated Waters, NAC 445A.144, Aquatic Life Standards, with the 1-hour, acute, standard as the daily maximum and the 96-hour, chronic, standard as the 30-day average. The NAC 445A.144 cadmium standards are for the dissolved fraction, therefore, the dissolved fraction adjustment factor for acute and chronic toxicity has been eliminated from the standard equations. The 40 CFR Part 440.104 total cadmium standards, 100 µg/L daily maximum and 50 µg/L 30-day average, are less restrictive than NAC 445A.144 standards, and so are not applied to this discharge.

During the period from January 2007 through September 2010, total cadmium was detected above the reporting limit of 2.0 µg/l only once, at a concentration of 2.0 µg/l. Due to fluctuating hardness values, the calculated cadmium standards vary significantly. (Calculated acute standards: 9.345 to 18.938 µg/L; calculated chronic standards 1.114 to 2.257 µg/L for the reported Humboldt River hardness range of 103 to 244 mg/L CaCO₃). The total cadmium concentrations reported have all been below the calculated acute standards for the reported hardness. Compliance with the calculated chronic standards was determined for all reporting periods.

The total cadmium permit limitations proposed in the permit renewal differ from the previous permit limits. This is due to USEPA-approved revisions of NAC 445A.144, which became effective 09/18/2006. Since total cadmium is limited, the coefficients related to the dissolved metal fraction, as listed in NAC 445A.144, are not used to determine the hardness based permit limits. Analyses must be performed using appropriate reporting limits to determine compliance with the calculated limits.

With the variability of the hardness based calculated standards for cadmium and the low chronic toxicity standards, monthly cadmium monitoring is required. After an adequate number of monthly analyses demonstrate compliance with the hardness based limits, the Permittee may request that the monitoring frequency be adjusted to quarterly monitoring as a minor modification.

The water from each dewatering source must be analyzed for total cadmium without limitation on an annual basis.

Hardness as CaCO₃: Hardness as calcium carbonate has been retained in the monitored parameters as monitor and report because the aquatic life standard listed in NAC 445A.144 for cadmium is a function of the hardness. Monthly monitoring of total cadmium is required by the draft permit, so monthly monitoring of Humboldt River Hardness is also required. Should the permit be adjusted to allow for quarterly monitoring of cadmium, the Hardness monitoring frequency will also be adjusted.

Mercury, total: The total mercury permit limitations in the previous permit were of 2.0 µg/L Daily Maximum, and 0.012 µg/L 30-Day A, based on NAC 445A.144 and the *USEPA National Recommended Water Quality Criteria* chronic toxicity aquatic life criteria for dissolved mercury. This aquatic life criteria was established below commonly available laboratory reporting detection limits or practical quantitative limits. This limit is more restrictive than the 30-Day Average and Daily Maximum effluent limits promulgated in 40 (CFR) Part 440.104 Subpart J, New Performance Standards for the Copper, Lead Zinc, Gold, Silver and Molybdenum Ores Subcategory.

During the period from January 2007 through September 2010, total mercury was detected one time at a concentration of 0.012 µg/L. All other monitoring events were below the reporting limit of 0.010 µg/l.

The total mercury permit limitations proposed in the permit, 1.4 µg/L Daily Maximum and 0.77 µg/L 30-Day Average, differ from the previous permit limits. This is due to USEPA-approved revisions of NAC 445A.144, which became effective 09/18/2006. This proposed limit is more restrictive than the 30-Day Average and Daily Maximum effluent limits promulgated in 40 (CFR) Part 440.104 Subpart J, New Performance Standards for the Copper, Lead Zinc, Gold, Silver and Molybdenum Ores Subcategory. Analytical testing with reportable detection limits at or below the 0.77 µg/L chronic aquatic life standard is required to demonstrate compliance with the total mercury chronic toxicity aquatic life criteria.

The water from each dewatering source must be analyzed for mercury without limitation on an annual basis.

Antimony, total: The total antimony NAC 445A.144, municipal or domestic supply standard is 146 µg/.

During the period from January 2007 through September 2010, the average total antimony concentration in the discharge was 14.9 µg/L, with a maximum value of 23.1 µg/L.

The proposed permit has retained quarterly total antimony analysis with a discharge limitation of 146 µg/L added.

The water from each dewatering location must be analyzed for antimony without limitation on an annual basis.

Fluoride: The fluoride limitation, 1,000 µg/L, is based on the NAC 445A.144, irrigation standard.

During the period from January 2007 through September 2010, the average fluoride concentration was 607.8 µg/l, with a maximum single value of 823 µg/l.

Because the long-term average fluoride concentration was greater than one-half the standard, quarterly fluoride monitoring and the discharge limit have been retained.

The water from each dewatering location must be analyzed for fluoride without limitation on an annual basis.

Nickel: The total nickel NAC 445A.144, municipal or domestic supply standard is 13.4 µg/L. Using a calculated average hardness of 200 mg/L as CaCO₃, the aquatic life dissolved nickel standards are much higher, acute 2,170 µg/L and chronic 240 µg/L, than the municipal or domestic supply standard, so the municipal supply standard will be used as the permit limit.

During the period from January 2007 through September 2010, nickel was not detected in the at a detection limit of 10 µg/L.

Quarterly monitoring of nickel has been retained. The permit limit has also been retained from the previous permit.

The water from each dewatering location must be analyzed for nickel without limitation on an annual basis.

Sulfate: The sulfate NAC 445A.206, water quality standards for beneficial uses, with municipal or domestic supply as the most restrictive beneficial use, standard is 250 mg/L.

During the period from January 2007 through September 2010, the average sulfate concentration in the discharge was 106.4 mg/L with a maximum value of 174 mg/L.

Due to the use of ferric sulfate in the treatment process, the frequency of sulfate monitoring and the permit limit have been retained from the previous permit.

The water from each dewatering location must be analyzed for sulfate without limitation on an annual basis.

Whole Effluent Toxicity Testing: Acute toxicity testing using a 96-hour juvenile *Pimephales promelas* percent survival test is included in the draft permit to verify the cumulative effects of the discharge on aquatic life. WET testing was required by the previous permit.

Proposed Determination:

The Division has made the tentative determination to issue the proposed permit for a five (5) year period.

Procedures for Public Comment:

The Notice of the Division's intent to issue a permit authorizing the Permittee to continue to

discharge treated mine dewatering water to the Humboldt River via Rabbit and Kelly Creeks subject to the conditions contained within the permit, is being sent to the **Reno Gazette-Journal** and the **Humboldt Sun** for publication. The notice is being mailed to interested persons on our mailing list.

Anyone wishing to comment on the proposed permit can do so in writing until **5:00 PM May 16, 2011**, a period of 30 days following the date of the public notice. The comment period can be extended at the discretion of the Administrator.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator of EPA Region IX or any interested agency, person or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted. Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determined to be appropriate. All public hearings must be conducted to accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.238.

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