NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

Calculations to Determine Baseline Water Quality and Evaluate the Level or Significance of Degradation

See 2020 Water Quality Management Plan / Continuous Planning Process Appendix A Sections 4 and 5.

Determine Critical Low Flow / Mixing Zones (See 20.6.4.11 NMAC (Applicability of Water Quality Standards):

	Streams:	**Lakes, Reservoirs, Playas:**
Human Health-Organism Only Criteria	= Harmonic Mean (HM) or Modified Harmonic Mean (MHM) See 20.6.4.7 (H)(2) & 20.6.4.11(B)(1) NMAC.	Mixing zones are not allowed. Effluent discharges shall meet criteria at point of discharge. See 20.6.4.11(E)(1) NMAC.
All Other Narrative and Numeric Criteria	= 4Q3 See 20.6.4.7 (A)(1) & 20.6.4.11(B)(2) NMAC. 4Q3 is the minimum average flow over four consecutive days that occurs with a frequency of once in three years. 4Q3 may be determined on an annual, a seasonal, or a monthly basis, as appropriate, after due consideration of site-specific conditions.	Mixing zones are not allowed. Effluent discharges shall meet criteria at point of discharge. See 20.6.4.11(E)(1) NMAC. Omit Mixing Zone Limitations in 20.6.4.11 NMAC (Applicability of Water Quality Standards). Critical lake and reservoir water levels will be determined on a case-by-case basis.

Determine Reasonably Expected Concentration Effluent (Ce):

Reasonably Expected Pollutants: Determined by a review of effluent data in the NPDES application, Form 2; effluent and stormwater data provided for NMED GWQB discharge permits (DPs), and site-specific background water quality data provided NMED SWQB MASS.

Determine Baseline Water Quality (bwq):

Baseline Water Quality Concentration (Cbwq) = concentration of pollutant in stream/waterbody above the discharge; baseline water quality

Cbwq Calculation Notes:
- Minimum Detection Limit = MDL (See 2020 WQMP/CPP Appendix A Glossary and USEPA 40 CFR 136 Appendix B)
- Minimum Level (ML) = Reported Level (RL) or Quantitation Level (See USEPA Sufficiently Sensitive Method Rule)
- If pollutant is "not detected" or is "less than" MDL and MDL < or = Cwqs; then use Geometric Mean of MDL
- If at least one data point is detected (i.e., = or > MDL meaning estimated data may be used), then use MDL/2 for "less than"
- If data not provided / not retested at MDL that is lower or < Cwqs, then Cbwq = MDL/2
- If data not reported to MDL, then may substitute reported or quantitation minimum level (ML)
- If higher ML or 1/2 ML (using same instructions for MDL) results in no or allowable degradation, then use of MDL or 1/2 MDL will also result in no or allowable degradation.

Evaluate Level of Degradation (Surface Water + Discharge):

See 2020 Water Quality Management Plan / Continuous Planning Process Appendix A Section 5.3 Calculations to Determine Significance of Degradation.

Mass Balance Equation:

[(discharge flow x discharge concentration) + (stream/waterbody flow x stream/waterbody concentration)]
= (resulting flow downstream of discharge x resulting concentration downstream of discharge)
[(Qs x Cs) + (Qd x Cd)] = (Qr x Cr)

Where (for streams):	**Where (for lakes, reservoirs, and playas):**
Qs = stream flow above discharge (cfs or MGD) 4Q3 or HM	Qs = volume of lake at critical lake water level (ac-ft or MG)
Qd = discharge flow (cfs or MGD)	Qd = discharge flow (cfs or MGD) or discharge volume (ac-ft or MG)
Qr = resulting flow in-stream downstream of discharge (cfs or MGD) Qs + Qd (cfs or MGD)	Qr = resulting volume of lake after discharge (ac-ft or MG) Qs + Qd (ac-ft or MG)
Cs = concentration of pollutant in stream above the discharge (mg/L)	Cs = concentration of pollutant in lake (mg/L)
Cd = concentration of pollutant in discharge (mg/L)	Cd = concentration of pollutant in discharge (mg/L)
Cr= resulting concentration of pollutant in-stream downstream of discharge (mg/L)	Cr = resulting concentration of pollutant in lake (mg/L)

Solve for Cd

Cd= [(Qr x Cr) - (Qs x Cs)] / Qd
{[(Qs + Qd) x Cr] - (Qs x Cs)} / Qd

Determining Assimilative Capacity

Concentration Water Quality Standard (Cwqs)= segment-specific criteria or designated use-specific numeric criteria (mg/L or other unit as indicated)

Assimilative Capacity (AC)= The difference between the most stringent applicable water quality standard for a pollutant (Cwqs) and the baseline water quality concentration for that pollutant (Cbwq).
Cwqs - Cbwq (mg/L)

Notes:
- If AC is negative (-), then water may not be high-quality. Antidegradation Tier 2 review may not applicable at this time.
- If AC is negative (-), then evaluate the need for additional testing or condition that Ce = Cwqs at point of discharge, outfall or end of pipe.
- For example, a permittee may re-test at a lower MDL (if available) if a pollutant is reasonably expected in discharge

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

For purposes of Tier 2 antidegradation reviews, NMED solves for the discharge concentration that uses 10% of the assimilative capacity.

Calculated Resulting Concentration of Pollutant at 10% AC (Cr_{10})=	Calculate the resulting concentration of pollutant in-stream downstream of the discharge (mg/L) when 10% of the assimilative capacity has been used. (AC x 0.1) + Cbwq ((Cwqs - Cbwq) x 0.1) + Cbwq
Calculated Concentration of Pollutant in the Discharge that uses 10% AC (Cd_{10}) =	Calculate the discharge concentration at 10% AC using Cr_{10} = {[(((Cwqs – Cbwq) x 0.1) + Cbwq) x (Qs + Qd)] – (Qs x Cs)} / Qd
50% cumulative cap	= Not applicable for only one (1) regulated discharge = Only applicable for multiple regulated discharges to the same receiving water over time

Comparison (comprehensive Tier 2 antidegradation review includes an alternatives analysis and social and economic demonstration - See 2020 WQMP/CPP Appendix A Sections 6 & 7):

No significant degradation.	If $Cd_{10\%}$ > Ce, then antidegradation review process is complete and the permitting process may proceed.
Further degradation analysis needed.	Calculated maximum loading capacity (with increased 10% assimilative capacity) would be flagged if further comprehensive review required. If $Cd_{10\%}$ < or = Ce or if Ce > 50% cumulative cap, then "Further Antidegradation Required."

References:

State of New Mexico Water Quality Management Plan / Continuing Planning Process Appendix A
Antidegradation Policy Implementation Procedure for Regulated Activities Revision October 23, 2020
https://www.env.nm.gov/surface-water-quality/wqs/

State of New Mexico Water Quality Standards (NMWQS) effective March 15, 2025 for state purposes
https://www.env.nm.gov/surface-water-quality/wqmp-cpp/

2024-2026 Integrated Report Clean Water Act 303(d)/305(b) Integrated Report, EPA-Approved May 13, 2024
https://www.env.nm.gov/surface-water-quality/303d-305b/

Additional Information:

20.6.4.900(J)(1) Use-specific criteria (effective 04/23/22)

(2) Notes applicable to the table of numeric criteria in Paragraph (1) of this subsection.
(a) Where the letter “a” is indicated in a cell, the criterion is hardness-based and can be referenced in Subsection I of 20.6.4.900 NMAC.
(b) Where the letter “b” is indicated in a cell, the criterion can be referenced in Subsection C of 20.6.4.900 NMAC.
(c) Criteria are in µg/L unless otherwise indicated.
(d) Abbreviations are as follows: CAS - chemical abstracts service (see definition for “CAS number” in 20.6.4.7 NMAC);
DWS - domestic water supply; Irr/Irr storage- irrigation and irrigation storage; LW - livestock watering;
WH - wildlife habitat; HH-OO - human health-organism only; C – criteria based on cancer-causing endpoint; P - persistent toxic pollutant.
(e) The criteria are based on analysis of an unfiltered sample unless otherwise indicated. The
acute and chronic aquatic life criteria for aluminum are based on analysis of total recoverable aluminum in a sample that is filtered to
minimize mineral phases as specified by the department.
(f) The criteria listed under human health-organism only (HH-OO) are intended to protect human
health when aquatic organisms are consumed from waters containing pollutants. These criteria do not protect the aquatic life itself;
rather, they protect the health of humans who ingest fish or other aquatic organisms.
(g) The dioxin criteria apply to the sum of the dioxin toxicity equivalents expressed as 2,3,7,8-TCDD dioxin.
(h) The criteria for polychlorinated biphenyls (PCBs) apply to the sum of all congeners, to the sum of all homologs or to the sum of all aroclors.
(i) The acute and chronic aquatic life criteria for dissolved aluminum only apply when the
concurrent pH is less than 6.5 or greater than 9.0 S.U. If the concurrent pH is between 6.5 and 9.0 S.U. then the hardness-dependent
total recoverable aluminum criteria in Paragraphs (1) and (2) of Subsection I of 20.6.4.900 NMAC apply.

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

Permittee / Applicant:	Chevron Mining Inc.
Facility / Proposed Discharge:	Questa Mine, Outfall 002
NPDES Permit/Application Tracking #:	NM0022306
Source Water:	Current seepage from tailing facility, potential future water management (Source: NPDES application, Form 2C)
Receiving Water:	Red River, Segment 20.6.4.122 NMAC in the Rio Grande Basin
Segment:	20.6.4.122 NMAC
Designated Uses:	Coldwater aquatic life, fish culture, irrigation/irrigation storage, livestock watering, wildlife habitat and primary contact.
Existing Uses:	Same as designated uses.
Segment Specific Numeric Criteria:	The monthly geometric mean of E. coli bacteria 126 cfu/100 mL or less, single sample 235 cfu/100 mL or less. 20.6.4.122(B) NMAC
Use Specific Numeric Criteria / Table:	20.6.4.900(J)(1) NMAC (Applicable to Existing, Designated or Attainable Uses unless otherwise specified in 20.6.4.97 through 20.6.4.899 NMAC)
Impairments:	Assessment Unit Red River (Rio Grande to Placer Creek), assessment unit ID NM-2119_10. TMDL for dissolved aluminum approved in 2006, and withdrawn in 2013 because dissolved aluminum criteria no longer apply. TMDL for turbidity approved in 2025. (Source: 2024-2026 Integrated Report https://www.env.nm.gov/surface-water-quality/303d-305b/ and TMDLS https://www.env.nm.gov/surface-water-quality/tmdl/)

Cd ={ [((Cwqs - Cbwq) x 0.1 + Cbwq) x (Qd + Qs)] - [(Cbwq x (Qs)]}/Qd

Cd_{10} = concentration of pollutant in discharge (mg/L)
Cwqs = water quality standard
Cbwq = baseline water quality (mg/L)
Qd = discharge flow (cfs or MGD) or discharge volume (ac-ft or MG)
Qs = volume of lake at critical lake water level, case by case (acre-feet (ac-ft) or million gallons (MG))
Cs = concentration of pollutant in lake (mg/L)
Cr = Cr =resulting concentration of pollutant at 10% Assimilative capacity, set equal to (((Cwqs-Cbwq) x 0.1) + Cbwq)

Solve for Cd (NMED solves for the discharge concentration that would use up 10% of the assimilative capacity):

	cubic feet per second (cfs)	million galls per day (MGD)	
Q_{d1} (effluent discharge flow 1) =	0.45 cfs	0.288 MGD	From NPDES application Form 2C - Outfall 002, current seepage from tailing facility
Q_{d2} (effluent discharge flow 2) =	0.54 cfs	0.346 MGD	From NPDES application Form 2C - Outfall 002, potential future water management
Qd (effluent discharge) =	0.98 cfs	0.63 MGD	
Qs (4Q3) =	12.25 cfs	7.92 MGD	from calculation StreamStats
Qd + Qs (total streamflow) =	13.23 cfs	8.55 MGD	
Qs (harmonic mean) =	28.04 cfs	18.12 MGD	from calculation StreamStats
Qd + Qs (total streamflow, HM for HH-OO) =	29.02 cfs	18.76 MGD	
Cs (in-stream) =	Same as Cbwq, baseline water quality		
Cbwq =	Upstream of facility		

Cd_{10} (mg/L) = Effluent discharge concentration using 10% AC

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

The calculated discharge concentration (Cd) is compared with the proposed discharge concentration. If the proposed discharge is less than 10% of the assimilative capacity (calculated > proposed) and existing uses are maintained, the antidegradation review process is complete and the permitting process may proceed. If the proposed discharge consumes more than 10% of available assimilative capacity (calculated < proposed), a comprehensive Tier 2 review is required.

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

							Mixing Calculation		Loading Calculation	
Pollutant	**CAS**	**20.6.4 NMAC Water Quality Standard (Cwqs),** *ug/L*	**20.6.4 NMAC Water Quality Standard (Cwqs),** *mg/L*	***Baseline Concentration (Cbwq) In-Stream,*** *mg/L*	**Assimilative Capacity (AC) (Cwqs-Cbwq),** *mg/L*	**Significant degradation (Cbwq+10% AC),** *mg/L*	**Calculated Effluent Concentration (Cd)** ((Cwqs-Cbwq) x 0.1 + Cbwq) x (Qd + Qs), *mg/L*	**Cs*Qs**	**Calculated Effluent Concentration @ 10% of AC Daily Max (Cd_{10}),** *mg/L*	**Allowable Effluent Load @ 10% of AC Daily Max,** *mg/L*
Aluminum, dissolved	7429-90-5	5,000	5.0000	0.118979	4.8810	0.607	5.1913	0.9420	6.702	35.440
Aluminum, total recoverable*	7429-90-5	3,417.71	3.42	0.872618	2.5451	1.127	9.6384	6.9088	4.305	22.765
Antimony, dissolved**	7440-36-0	640	0.64	0.000019	0.6400	0.0640	1.2008	0.0004	1.894	10.012
Arsenic, dissolved**	7440-38-2	9	0.009	0.000085	0.0089	0.00098	0.0183	0.0015	0.026	0.140
Boron, dissolved	7440-42-8	750	0.75	0.000524	0.7495	0.075	0.6454	0.0042	1.011	5.348
Cadmium, dissolved *	7440-43-9	1.186	0.0012	0.000035	0.0012	0.000150	0.0013	0.0003	0.002	0.008
Chromium, dissolved	7440-47-3	100	0.100	0.000041	0.1000	0.010	0.0858	0.0003	0.135	0.713
Cobalt, dissolved	7440-48-4	50	0.050	0.000483	0.0495	0.00543	0.0465	0.0038	0.067	0.356
Copper, dissolved *	7440-50-8	15.839	0.0158	0.000109	0.0157	0.00168	0.0144	0.0009	0.021	0.113
Lead, dissolved *	7439-92-1	5.161	0.00516	0.000016	0.0051	0.001	0.0045	0.0001	0.007	0.037
Manganese, dissolved *	7439-96-5	2060.193	2.06	0.067650	1.9925	0.267	2.2824	0.5356	2.755	14.568
Mercury, total	7439-97-6	0.77	0.001	0.000004	0.0008	0.0000803	0.0007	0.0000	0.001	0.005
Mercury, dissolved	7439-97-6	0.77	0.001	0.000003	0.0008	0.0000799	0.0007	0.0000	0.001	0.005
Molybdenum, dissolved	7439-98-7	1,000	1.000	0.002908	0.9971	0.103	0.8775	0.0230	1.348	7.126
Molybdenum, total recoverable	7439-98-7	1,895	1.895	0.002908	1.8921	0.192	1.6429	0.0230	2.555	13.509
Nickel, dissolved *	7440-02-0	91.459	0.091	0.001112	0.0903	0.010	0.0868	0.0088	0.123	0.650
Selenium, dissolved	7782-49-2	50	0.05	0.000200	0.0498	0.00518	0.0443	0.0016	0.067	0.356
Selenium, total recoverable	7782-49-2	5	0.005	0.000199	0.0048	0.00068	0.0058	0.0016	0.007	0.035
Silver, dissolved *	7440-22-4	10.136	0.010	0.000006	0.0101	0.00102	0.0087	0.0000	0.014	0.072
Thallium, dissolved**	7440-28-0	0.47	0.000	0.000005	0.0005	0.00005	0.0010	0.0001	0.001	0.007
Uranium, dissolved	7440-61-1	30	0.030	0.000026	0.0300	0.00302	0.0259	0.0002	0.040	0.214
Vanadium, dissolved	7440-62-2	100	0.100	0.000021	0.1000	0.010	0.0857	0.0002	0.135	0.713
Zinc, dissolved *	7440-66-6	222.332	0.222	0.025914	0.1964	0.046	0.3896	0.2052	0.291	1.538
Acenaphthene	83-32-9	90	0.09	0.000280	0.0897	0.009252	0.0791	0.0022	0.121	0.641
Acrolein	107-02-8	3	0.003	0.006500	0.0000	0.0065	0.0556	0.0515	0.007	0.034
Acrylonitrile**	107-13-1	70	0.070	0.000750	0.0693	0.007675	0.1440	0.0136	0.206	1.087
Anthracene**	120-12-7	400	0.400	0.000220	0.3998	0.040198	0.7540	0.0040	1.183	6.255
Benzene**	71-43-2	160	0.16	0.000075	0.1599	0.0160675	0.3014	0.0014	0.473	2.502
Benzidine**	92-87-5	0.11	0.00011	0.000155	0.0000	0.000	0.0029	0.0028	0.000	0.001
Benzo(a)anthracene**	56-55-3	0.013	0.000013	0.000080	0.00000	0.00008	0.0015	0.0014	0.0001	0.0004
Benzo(a)pyrene**	50-32-8	0.0013	0.0000013	0.000215	0.00000	0.00022	0.0040	0.0039	0.0002	0.0011
Benzo(b)fluoranthene**	205-99-2	0.013	0.000013	0.000220	0.00000	0.00022	0.0041	0.0040	0.0002	0.0012
Benzo(k)fluoranthene**	207-08-9	0.13	0.00013	0.000175	0.00000	0.00018	0.0033	0.0032	0.0002	0.0009
Bis(2-chloroethyl) ether**	111-44-4	22	0.02200	0.000120	0.02188	0.00231	0.0433	0.0022	0.0649	0.3429
Bis(2-ethylhexyl) phthalate**	117-81-7	3.7	0.00370	0.000090	0.00361	0.00045	0.0085	0.0016	0.0108	0.0570
Bromoform**	75-25-2	1,200	1.200	0.000170	1.19983	0.12015	2.2538	0.0031	3.5501	18.7711
Butylbenzyl phthalate**	85-68-7	1	0.001	0.000180	0.00082	0.00026	0.0049	0.0033	0.0026	0.0138
Carbon tetrachloride**	56-23-5	50	0.050	0.000090	0.04991	0.00508	0.0953	0.0016	0.1478	0.7813
Chlorobenzene**	108-90-7	800	0.800	0.000080	0.79992	0.08007	1.5020	0.0014	2.3668	12.5144
Chlorodibromomethane**	124-48-1	210	0.210	0.000125	0.20988	0.02111	0.3960	0.0023	0.6211	3.2840
Chloroform**	67-66-3	2,000	2.0000	0.000090	1.99991	0.20008	3.7531	0.0016	5.9171	31.2872
2-Chloronaphthalene**	91-58-7	1,000	1.0000	0.000115	0.99989	0.10010	1.8777	0.0021	2.9584	15.6429
2-Chlorophenol**	95-57-8	800	0.800	0.000160	0.79984	0.08014	1.5033	0.0029	2.3666	12.5136

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

	Antidegradation Analysis				
Pollutant	**Average (Geomean) Effluent Data,** *mg/L*	**Proposed load based on current effluent data,** *lbs/day*	**Proposed Discharge: if > Allowable Effluent Load @ 10% of AC Daily, then Further Degradation Analysis Required**	**Pollutants Reported at MDL or Non-Detect (ND) (Only considered for pollutants Further Degradation Analysis Needed)**	**Flagging Pollutants Reported at MDL, all others No Additional Degradation Analysis Required**
Aluminum, dissolved	0.00078	0.00412	No Additional Degradation Analysis Required	*Aquatic life WQS only applies when the concurrent pH is less than 6.6 or greater than 9.0 S.U.*	
Aluminum, total recoverable*	0.01357	0.07176	No Additional Degradation Analysis Required		
Antimony, dissolved**	0.00040	0.00212	No Additional Degradation Analysis Required		
Arsenic, dissolved**	0.00037	0.00198	No Additional Degradation Analysis Required		
Boron, dissolved	0.00000	0.00000	No Additional Degradation Analysis Required		
Cadmium, dissolved *	0.00004	0.00020	No Additional Degradation Analysis Required		
Chromium, dissolved	0.00052	0.00275	No Additional Degradation Analysis Required		
Cobalt, dissolved	0.00000	0.00000	No Additional Degradation Analysis Required		
Copper, dissolved *	0.00067	0.00356	No Additional Degradation Analysis Required		
Lead, dissolved *	0.00007	0.00038	No Additional Degradation Analysis Required		
Manganese, dissolved *	0.10000	0.52876	No Additional Degradation Analysis Required		
Mercury, total	0.00002	0.00012	No Additional Degradation Analysis Required		
Mercury, dissolved	0.00002	0.00012	No Additional Degradation Analysis Required		
Molybdenum, dissolved	1.00000	5.28756	No Additional Degradation Analysis Required		
Molybdenum, total recoverable	1.21861	6.44345	No Additional Degradation Analysis Required		
Nickel, dissolved *	0.00086	0.00455	No Additional Degradation Analysis Required		
Selenium, dissolved	0.00140	0.00740	No Additional Degradation Analysis Required		
Selenium, total recoverable	0.00140	0.00740	No Additional Degradation Analysis Required		
Silver, dissolved *	0.00007	0.00038	No Additional Degradation Analysis Required		
Thallium, dissolved**	0.00050	0.00264	No Additional Degradation Analysis Required		
Uranium, dissolved	0.02000	0.10575	No Additional Degradation Analysis Required		
Vanadium, dissolved	0.00340	0.01798	No Additional Degradation Analysis Required		
Zinc, dissolved *	0.00229	0.01212	No Additional Degradation Analysis Required		
Acenaphthene	0.00094	0.00500	No Additional Degradation Analysis Required		
Acrolein	0.00274	0.01448	No Additional Degradation Analysis Required		
Acrylonitrile**	0.00274	0.01448	No Additional Degradation Analysis Required		
Anthracene**	0.00574	0.03033	No Additional Degradation Analysis Required		
Benzene**	0.00087	0.00458	No Additional Degradation Analysis Required		
Benzidine**	0.00472	0.02498	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(a)anthracene**	0.00149	0.00790	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(a)pyrene**	0.00149	0.00790	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(b)fluoranthene**	0.00048	0.00255	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(k)fluoranthene**	0.00149	0.00790	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Bis(2-chloroethyl) ether**	0.00116	0.00612	No Additional Degradation Analysis Required		
Bis(2-ethylhexyl) phthalate**	0.00574	0.03033	No Additional Degradation Analysis Required		
Bromoform**	0.00087	0.00458	No Additional Degradation Analysis Required		
Butylbenzyl phthalate**	0.00472	0.02496	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Carbon tetrachloride**	0.00087	0.00458	No Additional Degradation Analysis Required		
Chlorobenzene**	0.00071	0.00374	No Additional Degradation Analysis Required		
Chlorodibromomethane**	0.00071	0.00374	No Additional Degradation Analysis Required		
Chloroform**	0.00112	0.00591	No Additional Degradation Analysis Required		
2-Chloronaphthalene**	0.00149	0.00790	No Additional Degradation Analysis Required		
2-Chlorophenol**	0.00149	0.00790	No Additional Degradation Analysis Required		

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

							Mixing Calculation		Loading Calculation	
Pollutant	**CAS**	**20.6.4 NMAC Water Quality Standard (Cwqs),** *ug/L*	**20.6.4 NMAC Water Quality Standard (Cwqs),** *mg/L*	***Baseline Concentration (Cbwq) In-Stream,*** *mg/L*	**Assimilative Capacity (AC) (Cwqs-Cbwq),** *mg/L*	**Significant degradation (Cbwq+10% AC),** *mg/L*	**Calculated Effluent Concentration (Cd)** ((Cwqs-Cbwq) x 0.1 + Cbwq) x (Qd + Qs), *mg/L*	**Cs*Qs**	**Calculated Effluent Concentration @ 10% of AC Daily Max (Cd_{10}),** *mg/L*	**Allowable Effluent Load @ 10% of AC Daily Max,** *mg/L*
Chrysene**	218-01-9	1.3	0.0013	0.000130	0.00117	0.00025	0.0046	0.0024	0.0036	0.0190
Dibenzo(a,h)anthracene**	53-70-3	0.0013	0.0000013	0.000330	0.00000	0.00033	0.0062	0.0060	0.0003	0.0017
Dibutyl phthalate**	84-74-2	30	0.030	0.000295	0.02971	0.00327	0.0613	0.0053	0.0882	0.4663
1,2-Dichlorobenzene**	95-50-1	3,000	3.000	0.000119	2.99988	0.30011	5.6294	0.0022	8.8757	46.9310
1,3-Dichlorobenzene**	541-73-1	10	0.010	0.000146	0.00985	0.00113	0.0212	0.0026	0.0293	0.1549
1,4-Dichlorobenzene**	106-46-7	900	0.900	0.000144	0.89986	0.09013	1.6906	0.0026	2.6625	14.0782
Dichlorobromomethane**	75-27-4	270	0.27	0.000100	0.26990	0.02709	0.5082	0.0018	0.7986	4.2229
3,3'-Dichlorobenzidine**	91-94-1	1.5	0.0015	0.000225	0.00128	0.00035	0.0066	0.0041	0.0040	0.0211
1,2-Dichloroethane**	107-06-2	6,500	6.500	0.000075	6.49993	0.65007	12.1939	0.0014	19.2311	101.6858
2,4-Dichlorophenol**	120-83-2	60	0.060	0.000145	0.05986	0.00613	0.1150	0.0026	0.1772	0.9371
1,2-Dichloropropane**	78-87-5	310	0.310	0.000060	0.30994	0.03105	0.5825	0.0011	0.9171	4.8490
Diethyl phthalate**	84-66-2	600	0.600	0.000175	0.59983	0.06016	1.1284	0.0032	1.7749	9.3846
Dimethyl phthalate**	131-11-3	2,000	2.000	0.000130	1.99987	0.20012	3.7538	0.0024	5.9171	31.2868
2,4-Dimethylphenol**	105-67-9	3,000	3.000	0.000215	2.99979	0.30019	5.6310	0.0039	8.8756	46.9300
2,4-Dinitrophenol**	51-28-5	300	0.300	0.000210	0.29979	0.03019	0.5663	0.0038	0.8872	4.6910
2,4-Dinitrotoluene**	121-14-2	17	0.017	0.000090	0.01691	0.00178	0.0334	0.0016	0.0501	0.2650
Ethylbenzene**	100-41-4	130	0.130	0.000070	0.12993	0.01306	0.2450	0.0013	0.3845	2.0330
Fluoranthene**	206-44-0	20	0.020	0.000140	0.01986	0.00213	0.0399	0.0025	0.0589	0.3114
Fluorene**	86-73-7	70	0.070	0.000180	0.06982	0.00716	0.1343	0.0033	0.2068	1.0932
Hexachlorobenzene**	118-74-1	0.00079	0.00000079	0.000115	0.00000	0.00012	0.0022	0.0021	0.0001	0.0006
Hexachlorobutadiene**	87-68-3	0.1	0.0001	0.000145	0.00000	0.00015	0.0027	0.0026	0.0001	0.0008
Hexachlorocyclopentadiene**	77-47-4	4	0.004	0.000160	0.00384	0.00054	0.0102	0.0029	0.0115	0.0609
Hexachloroethane**	67-72-1	1	0.001	0.000100	0.00090	0.00019	0.0036	0.0018	0.0028	0.0146
Ideno(1,2,3-cd)pyrene**	193-39-5	0.013	0	0.000205	0.00000	0.00021	0.0038	0.0037	0.0002	0.0011
Isophorone**	78-59-1	18,000	18	0.000215	17.99979	1.80019	33.7678	0.0039	53.2554	281.5913
3-Methyl-4-chlorophenol**	59-50-7	2,000	2	0.000160	1.99984	0.20014	3.7543	0.0029	5.9170	31.2865
2-Methyl-4,6-dinitrophenol**	534-52-1	30	0.03	0.000130	0.02987	0.00312	0.0585	0.0024	0.0885	0.4680
Methylene chloride**	75-09-2	10,000	10	0.000050	9.99995	1.00005	18.7587	0.0009	29.5865	156.4403
Nitrobenzene**	98-95-3	600	0.600	0.000604	0.59940	0.06054	1.1357	0.0109	1.7740	9.3802
N-Nitrosodimethylamine**	62-75-9	30	0.030	0.000180	0.02982	0.00316	0.0593	0.0033	0.0884	0.4675
N-Nitrosodi-n-propylamine**	621-64-7	5.1	0.0051	0.000200	0.00490	0.00069	0.0129	0.0036	0.0147	0.0777
N-Nitrosodiphenylamine**	86-30-6	60	0.060	0.000155	0.05985	0.00614	0.1152	0.0028	0.1772	0.9370
Pentachlorophenol**	87-86-5	0.4	0.0004	0.000135	0.00027	0.00016	0.0030	0.0024	0.0009	0.0049
Phenol**	108-95-2	300,000	300.000	0.000290	299.99971	30.00026	562.7417	0.0053	887.5969	4693.2217
Pyrene**	129-00-0	30	0.030	0.000105	0.02990	0.00309	0.0580	0.0019	0.0886	0.4682
1,1,2,2-Tetrachloroethane**	79-34-5	30	0.030	0.000095	0.02991	0.00309	0.0579	0.0017	0.0886	0.4683
Tetrachloroethylene**	127-18-4	290	0.290	0.000095	0.28991	0.02909	0.5456	0.0017	0.8578	4.5358
Toluene**	108-88-3	520	0.520	0.000070	0.51993	0.05206	0.9766	0.0013	1.5384	8.1342
1,2-Trans-dichloroethylene**	156-60-5	4,000	4	0.000085	3.99992	0.40008	7.5046	0.0015	11.8345	62.5754
1,2,4-Trichlorobenzene**	120-82-1	0.76	0.00076	0.000131	0.00063	0.00019	0.0036	0.0024	0.0020	0.0105
1,1,1-Trichloroethane**	71-55-6	200,000	200	0.000115	199.99989	20.00010	375.1598	0.0021	591.7314	3128.8153

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

	Antidegradation Analysis				
Pollutant	**Average (Geomean) Effluent Data,** *mg/L*	**Proposed load based on current effluent data,** *lbs/day*	**Proposed Discharge: if > Allowable Effluent Load @ 10% of AC Daily, then Further Degradation Analysis Required**	**Pollutants Reported at MDL / Non-Detect (ND) (Only considered for pollutants Further Degradation Analysis Needed)**	**Flagging Pollutants Reported at MDL, all others No Additional Degradation Analysis Required**
Chrysene**	0.00116	0.00612	No Additional Degradation Analysis Required		
Dibenzo(a,h)anthracene**	0.00116	0.00612	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Dibutyl phthalate**	0.00257	0.01356	No Additional Degradation Analysis Required		
1,2-Dichlorobenzene**	0.00116	0.00612	No Additional Degradation Analysis Required		
1,3-Dichlorobenzene**	0.00094	0.00500	No Additional Degradation Analysis Required		
1,4-Dichlorobenzene**	0.00094	0.00500	No Additional Degradation Analysis Required		
Dichlorobromomethane**	0.00071	0.00374	No Additional Degradation Analysis Required		
3,3'-Dichlorobenzidine**	0.00574	0.03033	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
1,2-Dichloroethane**	0.00071	0.00374	No Additional Degradation Analysis Required		
2,4-Dichlorophenol**	0.00299	0.01580	No Additional Degradation Analysis Required		
1,2-Dichloropropane**	0.00050	0.00264	No Additional Degradation Analysis Required		
Diethyl phthalate**	0.00508	0.02688	No Additional Degradation Analysis Required		
Dimethyl phthalate**	0.00116	0.00612	No Additional Degradation Analysis Required		
2,4-Dimethylphenol**	0.00299	0.01580	No Additional Degradation Analysis Required		
2,4-Dinitrophenol**	0.00472	0.02498	No Additional Degradation Analysis Required		
2,4-Dinitrotoluene**	0.00149	0.00790	No Additional Degradation Analysis Required		
Ethylbenzene**	0.00087	0.00458	No Additional Degradation Analysis Required		
Fluoranthene**	0.00257	0.01356	No Additional Degradation Analysis Required		
Fluorene**	0.00211	0.01117	No Additional Degradation Analysis Required		
Hexachlorobenzene**	0.00002	0.00012	No Additional Degradation Analysis Required		
Hexachlorobutadiene**	0.00149	0.00790	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Hexachlorocyclopentadiene**	0.00332	0.01757	No Additional Degradation Analysis Required		
Hexachloroethane**	0.00149	0.00790	No Additional Degradation Analysis Required		
Ideno(1,2,3-cd)pyrene**	0.00149	0.00788	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Isophorone**	0.00094	0.00500	No Additional Degradation Analysis Required		
3-Methyl-4-chlorophenol**	0.00029	0.00151	No Additional Degradation Analysis Required		
2-Methyl-4,6-dinitrophenol**	0.00332	0.01757	No Additional Degradation Analysis Required		
Methylene chloride**	0.00112	0.00591	No Additional Degradation Analysis Required		
Nitrobenzene**	0.00149	0.00790	No Additional Degradation Analysis Required		
N-Nitrosodimethylamine**	0.00299	0.01580	No Additional Degradation Analysis Required		
N-Nitrosodi-n-propylamine**	0.00116	0.00612	No Additional Degradation Analysis Required		
N-Nitrosodiphenylamine**	0.00574	0.03033	No Additional Degradation Analysis Required		
Pentachlorophenol**	0.00672	0.03552	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Phenol**	0.00299	0.01580	No Additional Degradation Analysis Required		
Pyrene**	0.00211	0.01117	No Additional Degradation Analysis Required		
1,1,2,2-Tetrachloroethane**	0.00087	0.00458	No Additional Degradation Analysis Required		
Tetrachloroethylene**	0.00087	0.00458	No Additional Degradation Analysis Required		
Toluene**	0.00071	0.00374	No Additional Degradation Analysis Required		
1,2-Trans-dichloroethylene**	0.00087	0.00458	No Additional Degradation Analysis Required		
1,2,4-Trichlorobenzene**	0.00094	0.00500	No Additional Degradation Analysis Required		
1,1,1-Trichloroethane**	0.00087	0.00458	No Additional Degradation Analysis Required		

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

							Mixing Calculation		Loading Calculation	
Pollutant	**CAS**	**20.6.4 NMAC Water Quality Standard (Cwqs), u**g/L	**20.6.4 NMAC Water Quality Standard (Cwqs),** mg/L	**Baseline Concentration (Cbwq)** In-Stream, mg/L	**Assimilative Capacity (AC) (Cwqs-Cbwq),** mg/L	**Significant degradation (Cbwq+10% AC),** mg/L	**Calculated Effluent Concentration (Cd)** ((Cwqs-Cbwq) x 0.1 + Cbwq) x (Qd + Qs), mg/L	**Cs*Qs**	**Calculated Effluent Concentration @ 10% of AC Daily Max (Cd_{10}),** mg/L	**Allowable Effluent Load @ 10% of AC Daily Max,** mg/L
1,1,2-Trichloroethane**	79-00-5	89	0.089	0.000050	0.08895	0.00895	0.1678	0.0009	0.2632	1.3918
Trichloroethylene**	79-01-6	70	0.07	0.000075	0.06993	0.00707	0.1326	0.0014	0.2070	1.0943
2,4,5-Trichlorophenol**	95-95-4	600	0.600	0.000155	0.59985	0.06014	1.1281	0.0028	1.7749	9.3848
2,4,6-Trichlorophenol**	88-06-2	28	0.028	0.000115	0.02789	0.00290	0.0545	0.0021	0.0826	0.4368
Vinyl chloride**	75-01-4	16	0.016	0.000075	0.01593	0.00167	0.0313	0.0014	0.0472	0.2495

* hardness-based criteria

** Human health-organism only (HH-OO) criteria

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 002 Antidegradation Analysis

	Antidegradation Analysis				
Pollutant	**Average (Geomean) Effluent Data,** mg/L	**Proposed load based on current effluent data,** lbs/day	**Proposed Discharge: if > Allowable Effluent Load @ 10% of AC Daily, then Further Degradation Analysis Required**	**Pollutants at MDL (Only for Further Degradation Analysis Needed, AWSD Effluent Data)**	**Flagging Pollutants Reported at MDL, all others No Additional Degradation Analysis**
1,1,2-Trichloroethane**	0.00050	0.00264	No Additional Degradation Analysis Required		
Trichloroethylene**	0.00087	0.00458	No Additional Degradation Analysis Required		
2,4,5-Trichlorophenol**	0.00019	0.00100	No Additional Degradation Analysis Required		
2,4,6-Trichlorophenol**	0.00116	0.00612	No Additional Degradation Analysis Required		
Vinyl chloride**	0.00050	0.00264	No Additional Degradation Analysis Required		