MOLYCORP INC - QUESTA
QUESTA NM

NM0000022306
NP PE VOL 01

205C .NM0022306 0001
~~MOLYCORP INC~~
QUESTA NM

chevron

00000000087545 WA/N

REP
5/27/00
Wilson

PNM/KJ
DEC - 9
Ivi/SOI

3-4-13-1 FTW-01-01-032-2-014-01-003

Transfer#: PT-412-2010-1848 **Box:2 CC:R6**

ARR1-626901945 **Asset#:** AAC1-304444619 **Whole Container: N**

C/F: NM22306 VOL 2 CHEVRON MINING $00087546 **Created:** 3/1/2013

THOUSE General Reference Temporary Loan of Records

Standard Other (contact FRC to arrange) BILL OUR UPS ACCOUNT

To: PATRICIA VINCENT
EPA / DALLAS , 1445 ROSS AVE., SUITE 1200
DALLAS, TX, 75202
P : (214) 665-6532 F :

9389781

ACTION/EVENT SUMMARY SHE

PERMIT ACTION REP, PNM

PERMIT NUMBER NM22306

NAME Molycorp, Inc.

LOCATION Questa, NM

PRIMARY SIC 1061

ENGINEER Humke

NEWSPAPER CODE NM01

MAJOR/MINOR

INDUSTRIAL/MUNICIPAL

DATE	
	APPLICATION RECEIVED (0201)
	APPLICATION COMPLETE (1120)
	APPLICATION INCOMPLETE
	APPLICATION SENT FOR REVIEW TO NOAA, COE, BSFW, STATES
	EID COMPLETE (NEW SOURCE PERMITS)
	FNSI COMPLETE (NEW SOURCE PERMITS)
	PUBLIC NOTICE OF DETERMINATION (NEW SOURCE/NEW DISCHARGE
APR 17 1993 SEP 11 1993	PUBLIC NOTICE ISSUED (0501)
APR 17 1993	AGENCY COMMENTS & DETERMINATION REQUEST (MAILING LIS
APR 17 1993	STATE CERTIFICATION REQUESTED (0701)
	STATE CERTIFICATION RECEIVED (0705)
SEP 11 1993	PUBLIC NOTICE OF MODIFICATION ISSUED
	EVIDENTIARY HEARING REQUESTED
	EVIDENTIARY HEARING GRANTED
	EVIDENTIARY HEARING DENIED
	PUBLIC HEARING
10-15-93	PERMIT EFFECTIVE DATE (1107)
10-14-98	PERMIT EXPIRATION DATE (0921)

ADDITIONAL COMMENTS:

Ian Hoffman
c/o Albuquerque Journal
328 Galisteo
Santa Fe, NM 87501

Factors

① Smith is appealing state certification

② Public hearing requested but main issue is groundwater seepage into the Red River.

③ U.S. Fish & Wildlife talks to state. Not to us.

NPDES PERMIT SUMMARY

Rev. 04-14-93

NPDES No. NM0022306 Primary SIC 1061

Permittee Molycorp, Inc.

Location or Plant Name Questa, NM.

Permit Drafted By Humke State Drafter N/A

Average Design Flow _____ Stream Segment 2-119

Check ALL Appropriate box(es)

- [x] Industrial
- [ ] Federal
- [ ] Municipal
- [ ] Private Domestic
- [ ] New Discharger
- [ ] New Source
- [x] Major
- [ ] Minor
- [x] Primary Industry
- [ ] Secondary Industry
- [ ] First Time Issue (FTI)
- [x] Reissue of Expiring/ Expired Permit (REP)
- [ ] Modification of an Issued Permit (MIP)
- [ ] EPA Pretreatment Program (1,2,3,4,5,6)
- [ ] Pretreatment Program Request for Approval (IPTRA)
- [x] Water Quality Based Limits for Toxics are Included for -- over
- [ ] Whole Effluent Toxicity Limits
- [ ] MWPP Requirements ?
- [x] Biomonitoring Requirements
- [ ] Priority Sludge Facility (Has PT Program, or land applies or Incinerates Sludge)
- [ ] Sludge Monitoring Requirements (ALL Major POTWs)
- [ ] Expected to be Controversial
- [ ] Additional Names (provide address) to be Notified other than General Public Notice Mailing List (indicate on a separate sheet).
- [ ] Discharge May Impact Waters in a downstream State; the following State(s) and/or Indian Tribes (provide address) should be placed on PN Mailing List

_____

Final Permit Decision

- [x] Public Notice of Final Decision
- [ ] No changes to the draft permit
- [ ] Minor changes to the draft permit
- [x] Substantial changes to the draft permit
- [x] All changes from the proposed permit have been discussed with Permittee and Glenn Sayms (state contact).

The state . (Explain disagreement on a separate sheet).

Attached

Water Quality Based Limits for:

Total Cadmium
Total lead
~~Total mercury~~
Total silver
Total Residual Chlorine
Total aluminum
~~Total cobalt~~
~~Total selenium~~
~~Total vanadium~~
~~Total beryllium~~
Chlordane

Mulyeurf plans to appeal the State certification.

There have been requests for a public hearing. See Item 18 in RTC.

COMMENTS RECEIVED

NPDES Permit No. NM22306

Upon issuance of one or more of the following ~~actions, please~~ mail copies ~~of the~~ indicated event to the party(s) listed below: Public Notice, Determination, Permit (circle appropriate event).

	NAME AND ADDRESS		NAME AND ADDRESS
Date Posted 5.25.93	Reed D. Bensen	Date Posted 5.25.93	Brian Shields
Comm. Date	Land and Water Fund of the Rockies	Comm. Date	Projects Director
	2260 Baseline Road		Amigos Bravos
Date Mailed	Suite 200	Date Mailed	Box 238
Mailed 8/9/10	Boulder, Co. 80302	Mailed 8/9/10	Taos, NM 87571

Date Posted 5.25.93	Antonio J. Trujillo	Date Posted	
Comm. Date	P.O. Box 828	Comm. Date	
	Questa, NM 87556		
Date Mailed		Date Mailed	
Mailed 8/9/10			

Date Posted 5.25.93	Concerned Citizens Del Norte	Date Posted	
Comm. Date	P.O. Box 1179	Comm. Date	
	Questa, NM 87556		
Date Mailed		Date Mailed	
Mailed 8/9/10			

Date Posted 5.25.93	A. Wilfred Rael	Date Posted	
Comm. Date	P.O. Box 603	Comm. Date	
	Questa, NM 87556		
Date Mailed		Date Mailed	
Mailed 8/10			

Enforcement
has
concurred

NPDES PERMIT SUMMARY

Rev. 5-11-92

NPDES No. NM0022306 Primary SIC 1061

Permittee Molycorp, Inc.

Location or Plant Name questa, NM

Permit Drafted By HumKO State Drafter N/A

Average Design Flow _____ Stream Segment 2-119

Check ALL Appropriate box(es)

- [x] Industrial
- [ ] Federal
- [ ] Municipal
- [ ] Private Domestic
- [ ] New Discharger
- [ ] New Source
- [x] Major
- [ ] Minor
- [ ] Primary Industry
- [ ] Secondary Industry
- [ ] First Time Issue (FTI)
- [x] Reissue of Expiring/ Expired Permit (REP)
- [ ] Modification of an Issued Permit (MIP)
- [ ] EPA Pretreatment Program (1,2,3,4,5,6)
- [ ] Pretreatment Program Request for Approval (IPTRA)
- [x] Water Quality Based Limits for Toxics are Included for -- Over ~~Cadmium, Lead~~
- [ ] Whole Effluent Toxicity Limits
- [x] Biomonitoring Requirements
- [ ] Bioaccumulation Requirements(CSRS) are included for --
- [ ] Priority Sludge Facility (Has PT Program, or land applies or Incinerates Sludge)
- [ ] Sludge Monitoring Requirements (ALL Major POTWs)
- [ ] Expected to be Controversial
- [ ] Additional Names (provide address) to be Notified other than General Public Notice Mailing List (indicate on a separate sheet).
- [ ] Discharge May Impact Waters in a downstream State; the following State(s) and/or Indian Tribes (provide address) should be placed on PN Mailing List

Final Permit Decision

- [ ] Public Notice of Final Decision
- [ ] No changes to the draft permit
- [ ] Minor changes to the draft permit
- [ ] Substantial changes to the draft permit
- [ ] All changes from the proposed permit have been discussed with Permittee and _____ (state contact).

The state . (Explain disagreement on a separate sheet).

WQ based limit for

Total silver
Total residual chlorine
Total Cadmium
Total lead
Total aluminum
Total cobalt
Total selenium
Total Vanadium
Total Beryllium
Chlordane

ACTION/EVENT SUMMARY SHEET

PERMIT ACTION PNM, REP

PERMIT NUMBER NM0022806

NAME Molycorp, Inc. (Questa Division)

LOCATION Questa, NM

PRIMARY SIC 1061

ENGINEER Huerke

NEWSPAPER CODE NM01

MAJOR/MINOR

INDUSTRIAL/MUNICIPAL

DATE	
	APPLICATION RECEIVED (0201)
	APPLICATION COMPLETE (1120)
	APPLICATION INCOMPLETE
	APPLICATION SENT FOR REVIEW TO NOAA,COE,BSFW,STATES
	EID COMPLETE (NEW SOURCE PERMITS)
	FNSI COMPLETE (NEW SOURCE PERMITS)
	PUBLIC NOTICE OF DETERMINATION (NEW SOURCE/NEW DISCHARGE)
MAY 21 1988 JAN 16 1988	PUBLIC NOTICE ISSUED (0501)
JAN 16 1988	AGENCY COMMENTS & DETERMINATION REQUEST (MAILING LIST
JAN 16 1988	STATE CERTIFICATION REQUESTED (0701)
3-18-88	STATE CERTIFICATION RECEIVED (0705)
MAY 21 1988	PUBLIC NOTICE OF MODIFICATION ISSUED
	EVIDENTIARY HEARING REQUESTED
	EVIDENTIARY HEARING GRANTED
	EVIDENTIARY HEARING DENIED
	PUBLIC HEARING
	PERMIT EFFECTIVE DATE (1107)
	PERMIT EXPIRATION DATE (0921)

ADDITIONAL COMMENTS:

SW-P CONTROL FOR NPDES PERMITS

Permittee Molycorp, Inc NPDES NM0022306
Location or plant name Questa, N.M.

[X] Maj. [ ] Min. [ ] Sig. Min. [ ] New Sig. Min. [ ] Fed. Fac. BAT Prom. date ____

[ ] Primary Industry [ ] Secondary Industry [ ] New Source [ ] New Discharge

[X] Reissuance of expiring permit [ ] Modification for cause Start up date ____

PEREXP 8/30/88 New PEREFF ____ New PEREXP 5 Year

Date of application ____ State drafter ____ EPA Engineer Humko

Date of Public Notice (Draft permit) ____

Code 0503 PERTYP

[ ] General (GENERL)
[ ] New Source (NEWSOR)
[ ] Energy related (ENERGY)
[ ] Primary reissued by BPJ (PRIBPJ)
[X] Primary reissued by guidelines (PRIGDE)
[ ] Primary energy related - BPJ (PRENBJ)
[ ] Primary energy related - guidelines (PRENGD)

Code 1533 PPA

[ ] B30601-BAT major primary permits reissued by BPJ
[ ] B30602-Major primary permits extended
[X] B30603-BAT major primary permits reissued by guidelines
[ ] B30604-Major secondary permits reissued
[ ] B30610-New Source permits issued
[ ] B30620-Energy related permits issued
[ ] B30621-General permits issued

Expected to be controversial? [X] NO [ ] YES

Should anyone other than general Public Notice Mailing List be notified? [X] NO [ ] YES

PLEASE INDICATE ON REVERSE SIDE!

COMMENTS

[ ] Received - Final permit decision required

[ ] Not received - Send permit immediately [ ] With minor changes

FINAL PERMIT DECISION

[ ] Public hearing held
[ ] Substantial changes to the draft permit
[ ] Minor changes to the draft permit
[ ] No changes to the draft permit
[ ] SD-067 prepared [ ] SD-059 prepared
[ ] Response to comments prepared

Date extension letter sent ____ Code 1117 EXTEND
Application determined complete ____ Code 1120 APPCOM
Notice to Federal Register ____ Code 1554 SENTFR
Publication in Federal Register ____ Code 1556 PUBLFR
Permit Completed by Humko
Date permit is completed 8/5/87 Code 1555 DRFFIN
First supervisory concurrence by ____ Date ____

NPDES PERMIT SUMMARY

NPDES No. NM0022306 Primary SIC 1061

Permittee Molycorp, Inc.

Location or Plant Name Questa, N.M.

Permit Drafted By Humke State Drafter N/A

Check the Appropriate box(es)

[X] Industrial [ ] Federal [ ] Municipal [ ] Private Domestic

[X] Major [ ] Minor [ ] New Discharger

[X] Primary Industry [ ] Secondary Industry [ ] New Source

[ ] First Time Issue (FTI) [X] Reissue of Expiring/Expired Permit (REP)

[ ] Modification of an Issued Permit (MIP)

[ ] Public Notice of Final Decision - Response to Comments (PNM)

[ ] Pretreatment Program Request for Approval (IPTRA)

[ ] Toxicity Based Limits Included [X] Stream Segment 2-120

[X] Biomonitoring Requirements

[ ] Sludge Monitoring

[ ] Expected to be Controversial

[ ] Additional Names to be Notified other than General Public Notice Mailing List (indicate below or on back)

[ ] Discharge May Impact Waters in a downstream State; the following State(s) and/or Indian Tribes should be placed on Public Notice Mailing List

Final Permit Decision

[ ] No changes to the draft permit

[X] Minor changes to the draft permit

[ ] Substantial changes to the draft permit

MOK

AGREEMENT w/
NMEID ON A 3rd
ROUND APPROACH. !
WOW!!

J

P.S. Molycorp is
shut-down - not
expected to open for
some time -

Charger made - 1/quarter
biomonitoring for combined
outfalls 001 and 002. One
time biomonitoring for the
seep only (outfall 002). Both
Molycorp & NMEID in
agreement. JOM
4/25

J

ACTION/EVENT SUMMARY SHEET

PERMIT ACTION PNM, MIP

PERMIT NO. NM0022306

NAME Molycorp, Inc.

LOCATION Taos, NM.

PRIMARY SIC 1061

ENGINEER Humke

NEWSPAPER CODE NM01

MAJOR / MINOR

INDUSTRIAL / MUNICIPAL

DATE	ACTION
	APPLICATION RECEIVED (0201)
	APPLICATION COMPLETE (1120)
	APPLICATION INCOMPLETE
	APPLICATION SENT FOR REVIEW TO NOAA, COE, BSFW, STATES
	EID COMPLETE (NEW SOURCE PERMITS)
	FNSI COMPLETE (NEW SOURCE PERMITS)
	PUBLIC NOTICE OF DETERMINATION (NEW SOURCE/NEW DISCHARGE
JUL 06 1985	PUBLIC NOTICE ISSUED (0501)
	AGENCY COMMENTS & DETERMINATION REQUEST (MAILING LIST)
	STATE CERTIFICATION REQUESTED (0701)
	STATE CERTIFICATION RECEIVED (0705)
JUL 06 1985	PUBLIC NOTICE OF MODIFICATION ISSUED
	EVIDENTIARY HEARING REQUESTED
	EVIDENTIARY HEARING GRANTED
	EVIDENTIARY HEARING DENIED
	PUBLIC HEARING
Aug 6, 1985	PERMIT EFFECTIVE DATE (1107)
Aug 30, 1988	PERMIT EXPIRATION DATE (0921)

ADDITIONAL COMMENTS:

PERMIT ACTION MIP PTI

PERMIT NO. NM0022306

NAME Molycorp, Inc.

LOCATION Questa, NM

ACTION - EVENT SUMMARY

PRIMARY S I C 1061

SECONDARY SIC

DATE	ACTION	COMMENTS
	APPLICATION RECEIVED (02/01)	
	CONFIDENTIAL INFORMATION	
	DRAFT PERMIT PREPARED (04/15)	
MAR 09 1985	PUBLIC NOTICE ISSUED (05/01)	
	/__/ PERMIT TO APPLICANT & STATE	
	/__/ PUBLIC NOTICE PUBLISHED	
	/__/ STATE CERTIFICATION REQUESTED (07/01)	MAR 09 1985
	/__/ STATE CERTIFICATION RECEIVED (07/05)	
MAR 09 1985	COE DETERMINATION REQUESTED	
MAR 09 1985	BSFW COMMENTS REQUESTED	
	NOAA COMMENTS REQUESTED	
	PUBLIC HEARING	
	/__/ PUBLIC NOTICE OF MODIFICATION ISSUED	
4-8-85	EVIDENTIARY HEARING REQUESTED	
	/__/ EVIDENTIARY HEARING GRANTED	
	/__/ EVIDENTIARY HEARING DENIED	5-25-85
	PERMIT ISSUED AND EFFECTIVE (09/07)	
	PERMIT EXPIRATION DATE	
	ENGINEER Hunke	
	NEWSPAPER CODE NM01	

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Molycorp, Inc.
P. O. Box 469
Questa, New Mexico 87556

is authorized to discharge from a facility located at Questa, Taos County, New Mexico

to receiving waters named Red River, Waterbody Segment Code No. 2-119 of the Rio Grande Basin, from

Outfall 001: Latitude - N36°41'49"; Longitude - W105°37'53"
Outfall 002: Latitude - N36°41'29"; Longitude - W105°37'53"
Outfall 004: Latitude - N36°41'08"; Longitude - W105°31'51"
Outfall 005: Latitude - N36°41'41"; Longitude - W105°31'48"

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I (11 pages), II (8 pages), and III (7 pages) hereof.

This permit supersedes and replaces NPDES Permit No. NM0022306 issued May 20, 1988.

This permit shall become effective on October 15, 1993.

This permit and the authorization to discharge shall expire at midnight, October 14, 1998

Prepared by:

Signed this 10thday of September 1993

Frederick O. Humke, P.E.
Environmental Engineer
Industrial Permits Section (6W-PI)

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 001

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 001 - process water from milling operations and tailings disposal.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	(*1)	(*1)	60	90
Total Suspended Solids	(*1)	(*1)	20	30
Total Arsenic	(*1)	(*1)	0.5	1.0
Total Cadmium	(*1)	(*1)	0.05	0.05
Total Copper	(*1)	(*1)	0.15	0.30
Total Cyanide	(*1)	(*1)	0.025	0.05
Fluoride	(*1)	(*1)	3.0	3.0
Total Iron	(*1)	(*1)	0.6	0.6
Total Lead	(*1)	(*1)	0.3	0.6
Total Manganese	(*1)	(*1)	1.0	1.5
Total Mercury	(*1)	(*1)	0.001	0.002
Total Molybdenum	(*1)	(*1)	1.0	2.0
Total Zinc	(*1)	(*1)	0.2	0.2
Total Aluminum	(*1)	(*1)	(*1)	(*1)
Total Cobalt	(*1)	(*1)	(*1)	(*1)
Total Selenium	(*1)	(*1)	(*1)	(*1)
Total Vanadium	(*1)	(*1)	(*1)	(*1)
Total Beryllium	(*1)	(*1)	(*1)	(*1)
Total Silver	(*1)	(*1)	(*1)	(*1)
Chlordane	(*1)	(*1)	(*1)	(*1)
Total Residual Chlorine	(*1)	(*1)	(*1)	(*1)
Temperature	N/A	N/A	(*1)°F	(*1)°F
Biomonitoring	N/A	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (MGD)	(*2)	Record
Chemical Oxygen Demand	1/Week	Composite(*3)
Total Suspended Solids	1/Week	Composite(*3)
Total Arsenic(*5)	1/Week	Composite(*3)
Total Cadmium(*5)	1/Week	Composite(*3)
Total Copper(*5)	1/Week	Composite(*3)
Total Cyanide(*5)	1/Week	Composite(*3)
Fluoride	1/Week	Composite(*3)
Total Iron	1/Week	Composite(*3)
Total Lead(*5)	1/Week	Composite(*3)
Total Manganese	1/Week	Composite(*3)
Total Mercury(*5)	1/Week	Composite(*3)
Total Molybdenum	1/Week	Composite(*3)

Total Zinc(*5)	1/Week	Composite(*3)
Total Aluminum	1/Month	Composite(*3)
Total Cobalt	1/Month	Composite(*3)
Total Selenium(*5)	1/Month	Composite(*3)
Total Vanadium	1/Month	Composite(*3)
Total Beryllium(*5)	1/Month	Composite(*3)
Total Silver(*5)	1/Month	Composite(*3)
Chlordane(*5)	1/Month	Composite(*3)
Total Residual Chlorine(*5)	1/Month	Composite(*3)
Temperature	1/Week	Grab
Biomonitoring	1/Quarter	(*4)

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Outfall 001, which is the discharge spillway from Pope Lake.

FOOTNOTES

(*1) Report.
(*2) Continuous and totalized monitoring.
(*3) See Part II, Paragraph A.
(*4) See Part II, Paragraph E.
(*5) See Part II, Paragraph D.

OUTFALLS 002

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 002 - seepage from tailings impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	(*1)	(*1)	60	90
Total Suspended Solids	(*1)	(*1)	20	30
Total Arsenic	(*1)	(*1)	0.5	1.0
Total Cadmium	(*1)	(*1)	0.05	0.05
Total Copper	(*1)	(*1)	0.15	0.30
Total Cyanide	(*1)	(*1)	0.025	0.05
Fluoride	(*1)	(*1)	3.0	3.0
Total Iron	(*1)	(*1)	0.6	0.6
Total Lead	(*1)	(*1)	0.3	0.6
Total Manganese	(*1)	(*1)	(*1)	(*1)
Total Mercury	(*1)	(*1)	0.001	0.002
Total Molybdenum	(*1)	(*1)	(*1)	(*1)
Total Zinc	(*1)	(*1)	0.2	0.2
Total Aluminum	(*1)	(*1)	(*1)	(*1)
Total Cobalt	(*1)	(*1)	(*1)	(*1)
Total Selenium	(*1)	(*1)	(*1)	(*1)
Total Vanadium	(*1)	(*1)	(*1)	(*1)
Total Beryllium	(*1)	(*1)	(*1)	(*1)
Total Silver	(*1)	(*1)	(*1)	(*1)
Chlordane	(*1)	(*1)	(*1)	(*1)
Total Residual Chlorine	(*1)	(*1)	(*1)	(*1)
Temperature	N/A	N/A	(*1)°F	(*1)°F
Biomonitoring	N/A	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (MGD)	(*2)	Record
Chemical Oxygen Demand	1/Week	Composite(*3)
Total Suspended Solids	1/Week	Composite(*3)
Total Arsenic(*5)	1/Week	Composite(*3)
Total Cadmium(*5)	1/Week	Composite(*3)
Total Copper(*5)	1/Week	Composite(*3)
Total Cyanide(*5)	1/Week	Composite(*3)
Fluoride	1/Week	Composite(*3)
Total Iron	1/Week	Composite(*3)
Total Lead(*5)	1/Week	Composite(*3)
Total Manganese	1/Week	Composite(*3)
Total Mercury(*5)	1/Week	Composite(*3)
Total Molybdenum	1/Week	Composite(*3)
Total Zinc(*5)	1/Week	Composite(*3)
Total Aluminum	1/Month	Composite(*3)
Total Cobalt	1/Month	Composite(*3)
Total Selenium(*5)	1/Month	Composite(*3)
Total Vanadium	1/Month	Composite(*3)

Total Beryllium(*5)	1/Month	Composite(*3)
Total Silver(*5)	1/Month	Composite(*3)
Chlordane(*5)	1/Month	Composite(*3)
Total Residual Chlorine(*5)	1/Month	Composite(*3)
Total Zinc(*5)	1/Week	Composite(*3)
Temperature	1/Week	Grab
Biomonitoring	1/Quarter	(*4)

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Outfall 002, which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) By gauging on a daily basis.
(*3) See Part II, Paragraph A.
(*4) See Part II, Paragraph E.
(*5) See Part II, Paragraph D.

OUTFALLS 004 and 005

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge individually from Outfalls 004 and 005 - periodic mine drainage consisting only of all mine contacted surface stormwater runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
CONVENTIONAL	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
Flow (MGD)	----	----	(*1)	(*1)
Total Suspended Solids	(*1)(*2)	(*1)	20	30
Chemical Oxygen Demand	N/A	N/A	125	125
Total Arsenic	N/A	N/A	(*1)	(*1)
Total Cadmium	(*1)(*2)	(*1)	0.05	0.10
Total Copper	(*1)(*2)	(*1)	0.15	0.30
Total Zinc	(*1)(*2)	(*1)	0.75	1.5
Total Lead	(*1)(*2)	(*1)	0.3	0.6
Total Mercury	(*1)(*2)	(*1)	0.001	0.002
Total Aluminum	(*1)(*2)	(*1)	(*1)	(*1)
Total Cobalt	(*1)(*2)	(*1)	(*1)	(*1)
Total Selenium	(*1)(*2)	(*1)	(*1)	(*1)
Total Vanadium	(*1)(*2)	(*1)	(*1)	(*1)
Total Beryllium	(*1)(*2)	(*1)	(*1)	(*1)
Total Silver	(*1)(*2)	(*1)	(*1)	(*1)
Chlordane	(*1)(*2)	(*1)	(*1)	(*1)
Total Residual Chlorine	(*1)(*2)	(*1)	(*1)	(*1)
Biomonitoring	N/A	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
CONVENTIONAL	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (MGD)	1/Day(*3)	Measure(*7)
Total Suspended Solids	1/Day(*3)	Composite(*6)
Chemical Oxygen Demand	1/Day(*3)	Composite(*6)
Total Arsenic(*5)	1/Day(*3)	Composite(*6)
Total Cadmium(*5)	1/Day(*3)	Composite(*6)
Total Copper(*5)	1/Day(*3)	Composite(*6)
Total Zinc(*5)	1/Day(*3)	Composite(*6)
Total Lead(*5)	1/Day(*3)	Composite(*6)
Total Mercury(*5)	1/Day(*3)	Composite(*6)
Total Aluminum	1/Month(*3)	Composite(*6)
Total Cobalt	1/Month(*3)	Composite(*6)
Total Selenium(*5)	1/Month(*3)	Composite(*6)
Total Vanadium	1/Month(*3)	Composite(*6)
Total Beryllium(*5)	1/Month(*3)	Composite(*6)
Total Silver(*5)	1/Month(*3)	Composite(*6)
Chlordane(*5)	1/Month(*3)	Composite(*6)
Total Residual Chlorine(*5)	1/Month(*3)	Composite(*6)
Biomonitoring	1/Quarter	(*4)

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day(*1) by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge from the settling basins.

FOOTNOTES

(*1) Report
(*2) Daily discharges averaged over the number of days in the monthly period.
(*3) During periods of discharge.
(*4) See Part II, Paragraph E.
(*5) See Part II, Paragraph D.
(*6) See Part II, Paragraph A.
(*7) By calibrated weir.

INTERIM LIMITATIONS SUM1

During the period beginning the effective date and lasting through June 30, 1996, the permittee is authorized to discharge combined loads, SUM1 - Sum total of Outfalls 001 and 002 (technology levels) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
	(*2)			
Chemical Oxygen Demand	2364	N/A	N/A	N/A
Total Suspended Solids	788	N/A	N/A	N/A
Total Arsenic	19.6	N/A	N/A	N/A
Total Cadmium	2.00	N/A	N/A	N/A
Total Copper	5.88	N/A	N/A	N/A
Total Cyanide	0.98	N/A	N/A	N/A
Flouride	118	N/A	N/A	N/A
Total Iron	23.6	N/A	N/A	N/A
Total Lead	11.8	N/A	N/A	N/A
Total Manganese	39.4	N/A	N/A	N/A
Total Mercury	0.04	N/A	N/A	N/A
Total Molybdenum	25.0(*1)	N/A	N/A	N/A
Total Zinc	7.84	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Chemical Oxygen Demand	1/Month	Calculate
Total Suspended Solids	1/Month	Calculate
Total Arsenic	1/Month	Calculate
Total Cadmium	1/Month	Calculate
Total Copper	1/Month	Calculate
Total Cyanide	1/Month	Calculate
Flouride	1/Month	Calculate
Total Iron	1/Month	Calculate
Total Lead	1/Month	Calculate
Total Manganese	1/Month	Calculate
Total Mercury	1/Month	Calculate
Total Molybdenum	1/Month	Calculate
Total Zinc	1/Month	Calculate

FOOTNOTES

(*1) Calculate the average of monthly reported daily averages for Outfall 001 for six months preceeding the reporting period end date, then calculate the average of monthly reported daily averages for Outfall 002 for six months preceeding the reporting period end date. The stated discharge limitation applies to the sum total of these two calculated values.

(*2) Sum total of daily average mass loads for Outfalls 001 and 002.

FINAL LIMITATIONS SUM1

During the period beginning July 1, 1996, and lasting through the expiration date, the permittee is authorized to discharge combined loads, SUM1 - Sum total of Outfalls 001 and 002 (technology levels) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG (*2)	DAILY MAX	DAILY AVG	DAILY MAX
Chemical Oxygen Demand	2364	N/A	N/A	N/A
Total Suspended Solids	788	N/A	N/A	N/A
Total Arsenic	19.6	N/A	N/A	N/A
Total Cyanide	0.98	N/A	N/A	N/A
Flouride	118	N/A	N/A	N/A
Total Iron	23.6	N/A	N/A	N/A
Total Manganese	39.4	N/A	N/A	N/A
Total Mercury	0.04	N/A	N/A	N/A
Total Molybdenum	25.0(*1)	N/A	N/A	N/A
Total Zinc	7.84	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Chemical Oxygen Demand	1/Month	Calculate
Total Suspended Solids	1/Month	Calculate
Total Arsenic	1/Month	Calculate
Total Cyanide	1/Month	Calculate
Flouride	1/Month	Calculate
Total Iron	1/Month	Calculate
Total Mercury	1/Month	Calculate
Total Manganese	1/Month	Calculate
Total Molybdenum	1/Month	Calculate
Total Zinc	1/Month	Calculate

FOOTNOTES

(*1) Calculate the average of monthly reported daily averages for Outfall 001 for six months preceeding the reporting period end date, then calculate the average of monthly reported daily averages for Outfall 002 for six months preceeding the reporting period end date. The stated discharge limitation applies to the sum total of these two calculated values.

(*2) Sum total of daily average mass loads for Outfalls 001 and 002.

INTERIM LIMITATIONS SUM2

During the period beginning the effective date and lasting through June 30, 1996, the permittee is authorized to discharge combined loads, SUM2 - Sum total of Outfalls 001, 002, 004 and 005 (water quality standard levels)) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
	(*2)	(*3)		
Total Cadmium	(*1)	(*1)	N/A	N/A
Total Copper	(*1)	(*1)	N/A	N/A
Total Lead	(*1)	(*1)	N/A	N/A
Total Silver	(*1)	(*1)	N/A	N/A
Total Residual Chlorine	(*1)	(*1)	N/A	N/A
Total Aluminum	(*1)	(*1)	N/A	N/A
Chlordane	(*1)	(*1)	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Cadmium	1/Month	Calculate
Total Copper	1/Month	Calculate
Total Lead	1/Month	Calculate
Total Silver	1/Month	Calculate
Total Residual Chlorine	1/Month	Calculate
Total Aluminum	1/Month	Calculate
Chlordane	1/Month	Calculate

FOOTNOTES

(*1) Report.
(*2) Sum total of daily average mass loads for Outfalls 001, 002, 003 and 004.
(*3) Sum total of maximum daily mass loads for Outfalls 001, 002. 003 and 004.

FINAL LIMITATIONS SUM2

During the period beginning July 1, 1996, and lasting through the expiration date, the permittee is authorized to discharge combined loads, SUM2 - Sum total of Outfalls 001, 002, 004 and 005 (water quality standard levels) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
	(*2)	(*3)		
Total Cadmium	(*1)	0.90	N/A	N/A
Total Copper	(*1)	4.39	N/A	N/A
Total Lead	(*1)	4.63	N/A	N/A
Total Silver	(*1)	0.005	N/A	N/A
Total Residual Chlorine	(*1)	0.35	N/A	N/A
Total Aluminum	(*1)	4.31	N/A	N/A
Chlordane	(*1)	0.0008	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Cadmium	1/Month	Calculate
Total Copper	1/Month	Calculate
Total Lead	1/Month	Calculate
Total Silver	1/Month	Calculate
Total Residual Chlorine	1/Month	Calculate
Total Aluminum	1/Month	Calculate
Chlordane	1/Month	Calculate

FOOTNOTES

(*1) Report.
(*2) Sum of daily average mass loads for Outfalls 001, 002, 003 and 004.
(*3) Sum of daily maximum mass loads for Outfalls 001, 002, 003 and 004.

B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Mass limitations for SUM1 and SUM2

Status Report	12/31/93
Status Report	3/31/94
Status Report	6/30/94
Status Report	9/30/94
Status Report	12/31/94
Status Report	3/31/95
Status Report	6/30/95
Status Report	9/30/95
Status Report	12/31/95
Status Report	3/31/96
Achieve Compliance	7/01/96

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

C. REPORTING OF MONITORING RESULTS

Monitoring results shall be reported in accordance with the provisions of Part III.D.4 of the permit. Monitoring results obtained during the previous month shall be summarized and reported on a Discharge Monitoring Report form postmarked no later than the 15th day of the month following the completed reporting period.

The first report is due on November 15, 1993 .

PART II
OTHER CONDITIONS

A. The term "composite sample" means a sample consisting of a minimum of two grab samples of effluent collected not less than four hours apart over a normal eight hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a normal eight hour operating day. All such samples shall be typical and representative of effluent generated during the period since the last sample was collected.

B. The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless susequently determined to be inappropriate by the NMED or EPA.

C. As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;

(2) Approximately 100 feet below the point where tailings enter the river; and

(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand
Total Suspended Solids
Total Arsenic
Total Cadmium
Total Copper
Total Cyanide
Fluoride
Total Iron
Total Lead
Total Manganese
Total Mercury
Total Molybdenum
Total Zinc
Total Aluminum
Total Boron
Total Chromium
Total Cobalt
Total Selenium
Total Vanadium
Total Beryllium
Total Nickel
Total Silver
Un-ionized Ammonia (as N)
Total Residual Chlorine
Temperature
pH

The results of the analysis shall be submitted to the EPA Water Division Enforcement Branch (6W-EA) and the NMED within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and the Contingency Action and Reporting Plan (June 1975), a written report containing the following information will be sent to the EPA (6E) and the NMED within ten (10) days following any spill:

(1) Date of Spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that caused the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

D. MINIMUM QUANTIFICATION LEVELS

If any individual analytical test result is less than the minimum quantification level (MQL), a value of zero (0) may be reported for that individual result for the Discharge Monitoring Report (DMR) calculation and reporting requirements.

PARAMETER	MQL
Total Arsenic	0.01 mg/l
Total Beryllium	0.005 mg/l
Total Cadmium	0.001 mg/l
Total Chromium	0.01 mg/l
Total Copper	0.01 mg/l
Total Lead	0.005 mg/l
Total Mercury	0.0002 mg/l
Total Selenium	0.005 mg/l
Total Zinc	0.02 mg/l
Total Cyanide	0.01 mg/l
Total Nickel	0.04 mg/l
Total Silver	0.002 mg/l
Chlordane	0.0002 mg/l
Total Residual Chlorine	0.011 mg/l

This permit may be reopened if MQLs change during the term of the permit.

E. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS (Chronic, Freshwater)

1. SCOPE, FREQUENCY AND METHODOLOGY

a. The provisions of this section are individually applicable to Outfall(s) 001, 002, 004 and 005 for whole effluent toxicity.

b. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. This testing will determine if an appropriately dilute effluent sample adversely affects the survival, reproduction or growth of the test organism.

c. The permittee shall complete the first toxicity test for each species within sixty (60) days of the effective date of the permit.

d. The permittee shall implement all toxicity tests utilizing the test organisms, procedures and quality assurance requirements specified in this section of the permit and in accordance with the EPA manual, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most recent update thereof. The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied. A repeat test shall be conducted within the required reporting period of any test determined to be invalid.

e. The permittee shall utilize the Ceriodaphnia dubia chronic static renewal survival and reproduction test (Method 1002.0 or the most recent publication). This test should be terminated when 60% of the surviving females in the control produce three broods. The permittee shall conduct the Ceriodaphnia dubia toxicity test at a frequency of once per quarter.

f. The permittee shall utilize the fathead minnow (Pimephales promelas) chronic static renewal 7-day larval survival and growth test (Method 1000.0 or the most recent publication). A minimum of five (5) replicates with eight (8) organisms per replicate must be used for this test. The permittee shall conduct the fathead minnow toxicity test at a frequency of once per quarter.

g. The permittee shall use five effluent dilution concentrations in addition to a control (0% effluent) in each toxicity test. These additional effluent concentrations shall be 9%, 12%, 17%, 22%, and 29%. The low-flow effluent concentration (critical dilution) is defined as the 22% effluent.

h. The NOEC (No Observed Effect Concentration) is defined as the greatest effluent dilution which does not elicit lethality that is statistically different from the control (0% effluent) at the 95% confidence level.

i. This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.

2. PERSISTENT LETHALITY

If the testing frequency in item 1 is monthly for a species, the permittee shall initiate the Toxicity Reduction Evaluation requirements as specified under Part II, Section F of this permit when any two of three consecutive monthly toxicity tests exhibit significant lethal effects at the 22% effluent concentration.

3. REQUIRED TOXICITY TESTING CONDITIONS

a. Test Acceptance

The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fails to meet any of the following criteria:

i. The toxicity test control (0% effluent) must have survival equal to or greater than 80%.

ii. The mean number of Ceriodaphnia dubia neonates produced per surviving female in the control (0% effluent) must be 15 or more.

iii. The minimum mean dry weight of surviving fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater.

iv. The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for: the young of surviving females in the Ceriodaphnia dubia reproduction test; fathead minnow growth test; and fathead minnow survival test.

v. The percent coefficient of variation between replicates shall be 40% or less in the 22% effluent concentration, unless significant lethal or nonlethal effects are exhibited for the young of surviving females in the Ceriodaphnia dubia reproduction test; fathead minnow growth test; and fathead minnow survival test.

b. Statistical Interpretation

i. For the Ceriodaphnia dubia survival test, the statistical analyses used to determine if there is a significant difference between the control and the low flow (critical dilution) shall be Fisher's Exact Test as described in the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most recent update thereof.

ii. For the Ceriodaphnia dubia reproduction test and the fathead minnow larval survival and growth test, the statistical analyses used to determine if there is a significant difference between the control and the low flow (critical dilution) effluent concentration shall be in accordance with the methods for determining the No Observed Effect Concentration (NOEC) as described in the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most recent update thereof.

c. Dilution Water

i. Dilution water used in the toxicity tests will be receiving water from the Red River collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness and alkalinity to the closest downstream perennial water for;

A. toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and

B. toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.

ii. If the receiving water is unsatisfactory as a result of preexisting instream toxicity (fails to fulfill the test acceptance criteria of item 3.a.), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:

A. a synthetic dilution water control which fulfills the test acceptance requirements of item 3.a. was run in addition to the receiving water control;

B. the test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);

C. the permittee includes all test results indicating receiving water toxicity with the full report and information required by item 4. below; and

D. the synthetic dilution water shall have a pH, hardness and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

d. Samples and Composites

i. The permittee shall collect a minimum of three flow-weighted 24-hour composite samples each from Outfall(s) **001, 002, 004 and 005.** A 24-hour composite sample consists of a minimum of four effluent portions collected at equal time intervals representative of a 24-hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a 24-hour operating day.

ii. The permittee shall collect second and third 24-hour composite samples for use during 24-hour renewals of each dilution concentration for each test. The permittee must collect the 24-hour composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.

iii. The permittee must collect the 24-hour composite samples so that the maximum holding time for any effluent sample shall not exceed 72 hours. The permittee must have initiated the toxicity test within 36 hours after the collection of the last portion of the first 24-hour composite sample. Samples shall be chilled to 4 degrees Centigrade during collection, shipping and/or storage.

iv. If the flow from the outfall(s) being tested ceases during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions and the sample holding time are waived during that sampling period. However, the permittee must collect an effluent composite sample volume during the period of discharge that is sufficient to complete the required toxicity tests with daily renewal of effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The effluent composite sample collection duration and the static renewal protocol associated with the

abbreviated sample collection must be documented in the full report required in item 4. of this section.

4. REPORTING

a. The permittee shall prepare a full report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most current publication, for every valid or invalid toxicity test initiated whether carried to completion or not. The permittee shall retain each full report pursuant to the provisions of Part III.C. of this permit. The permittee shall submit full reports only upon the specific request of the Agency.

b. The permittee shall submit the results of each valid toxicity test on the subsequent monthly DMR for that reporting period in accordance with Part III. D. of this permit, as follows:

Pimephales promelas (Fathead Minnow)

i. If the Fathead minnow No Observed Effect Concentration (NOEC) for survival is less than the 22% effluent dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP6C.

ii. Report the Fathead minnow NOEC value for survival, Parameter No. TOP6C.

iii. Report the Fathead minnow NOEC value for growth, Parameter No. TPP6C.

iv. Report the % coefficient of variation (Largest of low flow and control dilutions), Parameter No. TQP6C.

Ceriodaphnia dubia

i. If the *Ceriodaphnia dubia* NOEC for survival is less than the 22% effluent dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP3B.

ii. Report the *Ceriodaphnia dubia* NOEC value for survival, Parameter No. TOP3B.

iii. Report the *Ceriodaphnia dubia* NOEC value for reproduction, Parameter No. TPP3B.

iv. Report the % coefficient of variation (Largest of low flow and control dilutions), Parameter No. TQP3B.

F. TOXICITY REDUCTION EVALUATION

1. Within ninety (90) days OF CONFIRMING LETHALITY IN THE RETESTS, the permittee shall submit a **TRE Action Plan and Schedule** for conducting a Toxicity Reduction Evaluation (TRE). The **TRE Action Plan** shall specify the approach and methodology to be used in performing the TRE. A

Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The **TRE Action Plan** shall lead to the successful elimination of effluent toxicity at the low flow dilution and include the following:

a. Specific Activities. The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures the permittee shall perform multiple characterizations and follow the procedures specified in the documents **"Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003)** and **"Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005)**, or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents **"Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures" (EPA/600/3-88/035)** and **"Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures" (EPA/600/3-88/036)**, as appropriate;
The documents referenced above may be obtained through the National Technical Information Service (NTIS) by phone at (703) 487-4650, or by writing:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

b. Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.). The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified;

Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where lethality was demonstrated within 48 hours of test initiation, each 24 hour composite sample shall be analyzed independently. Otherwise the permittee may substitute a composite sample, comprised of equal portions of the individual 24 hour composite samples, for the chemical specific analysis;

c. Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and

d. Project Organization (e.g., project staff, project manager, consulting services, etc.).

2. The permittee shall initiate the **TRE Action Plan** within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.

3. The permittee shall submit a quarterly **TRE Activities Report**, with the Discharge Monitoring Report in the months of January, April, July and October, containing information on toxicity reduction evaluation activities including:

   a. any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;

   b. any studies/evaluations and results on the treatability of the facility's effluent toxicity; and

   c. any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no lethality at the critical low flow effluent concentration.

   A copy of the **TRE Activities Report** shall be also be submitted to the **New Mexico Environment Department.**

4. The permittee shall submit a **Final Report on Toxicity Reduction Evaluation Activities** no later than twenty-eight (28) months from confirming lethality in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no lethality at the critical low flow effluent concentration. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.

   A copy of the **Final Report on Toxicity Reduction Evaluation Activities** shall also be submitted to the **New Mexico Environment Department.**

PART III
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Introduction
In accordance with the provisions of 40 CFR Part 122.41, et. seq., this permit incorporates by reference ALL conditions and requirements applicable to NPDES Permits set forth in the Clean Water Act, as amended, (hereinafter known as the "Act") as well as ALL applicable regulations.

2. Duty to Comply
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

3. Toxic Pollutants

a. Notwithstanding Part III.A.5, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition.

b. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

4. Duty to Reapply
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR Part 122.6 and any subsequent amendments.

5. Permit Flexibility
This permit may be modified, revoked and reissued, or terminated for cause in accordance with 40 CFR 122.62-64. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Property Rights
This permit does not convey any property rights of any sort, or any exclusive privilege.

7. Duty to Provide Information
The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. Criminal and Civil Liability
Except as provided in permit conditions on "Bypassing" and "Upsets", nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of the permit, the Act, or applicable regulations, which avoids or effectively defeats the regulatory purpose of the Permit may subject the Permittee to criminal enforcement pursuant to 18 U.S.C. Section 1001.

9. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

10. State Laws
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

11. Severability
The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

SECTION B. PROPER OPERATION AND MAINTENANCE

1. Need to Halt or Reduce not a Defense
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failure either by means of alternate power sources, standby generators or retention of inadequately treated effluent.

2. Duty to Mitigate
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

3. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants and will achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar

systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

b. The permittee shall provide an adequate operating staff which is duly qualified to carry out operation, maintenance and testing functions required to insure compliance with the conditions of this permit.

4. Bypass of Treatment Facilities

a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.B.4.b. and 4.c.

b. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall, within 24 hours, submit notice of an unanticipated bypass as required in Part III.D.7.

c. Prohibition of bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required by Part III.B.4.b.

(2) The Director may allow an anticipated bypass after considering its adverse effects, if the Director determines that it will meet the three conditions listed at Part III.B.4.c(1).

5. Upset Conditions

a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Part III.B.5.b. are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required by Part III.D.7; and,

(4) The permittee complied with any remedial measures required by Part III.B.2.

c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances
Solids, sewage sludges, filter backwash, or other pollutants removed in the course of treatment or wastewater control shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. Percent Removal
For publicly owned treatment works, the 30-day average percent removal for Biochemical Oxygen Demand and Total Suspended Solids shall not be less than 85 percent unless otherwise authorized by the permitting authority in accordance with 40 CFR 133.103.

SECTION C. MONITORING AND RECORDS

1. Inspection and Entry
The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

2. Representative Sampling
Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. Retention of Records
The permittee shall retain records of all monitoring information, including all calibration and maintenance

records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

4. Record Contents
Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) and time(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

5. Monitoring Procedures

a. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.

b. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instruments at intervals frequent enough to insure accuracy of measurements and shall maintain appropriate records of such activities.

c. An adequate analytical quality control program, including the analyses of sufficient standards, spikes, and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory.

6. Flow Measurements
Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from true discharge rates throughout the range of expected discharge volumes.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

a. Industrial Permits
The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b); or,

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements listed at Part III.D.10.a.

b. Municipal Permits
Any change in the facility discharge (including the introduction of any new source or significant discharge or significant changes in the quantity or quality of existing discharges of pollutants) must be reported to the permitting authority. In no case are any new connections, increased flows, or significant changes in influent quality permitted that will cause violation of the effluent limitations specified herein.

2. Anticipated Noncompliance
The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements

3. Transfers
This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

4. Discharge Monitoring Reports and Other Reports
Monitoring results must be reported on Discharge Monitoring Report (DMR) Form EPA No. 3320-1 in accordance with the "General Instructions" provided on the form. The permittee shall submit the original DMR signed and certified as required by Part III.D.11 and all other reports required by Part III.D. to the EPA at the address below. Duplicate copies of DMR's and all other reports shall be submitted to the appropriate State agency(ies) at the following address(es):

EPA:
Water Management Division
Enforcement Branch (6W-E)
U.S. Environmental Protection
Agency, Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

New Mexico:
Program Manager
Surface Water Quality Bureau
New Mexico Environment Department
1190 Saint Francis Drive
Santa Fe, NM 87501-4182

Oklahoma (Industrial Permits Only):
Director
Oklahoma Water Resources Board
P.O. Box 150
Oklahoma City, OK 73101-0150

Louisiana:
Assistant Secretary for Water
Water Pollution Control Division
Louisiana Department of
Environmental Quality
P.O. Box 82215
Baton Rouge, LA 70884-2215

5. Additional Monitoring by the Permittee
If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this

permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.

6. Averaging of Measurements
Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

7. Twenty-Four Hour Reporting

a. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall be provided within 5 days of the time the permittee becomes aware of the circumstances. The report shall contain the following information:

(1) A description of the noncompliance and its cause;

(2) The period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and,

(3) Steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. The following shall be included as information which must be reported within 24 hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Any upset which exceeds any effluent limitation in the permit; and,

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part II (industrial permits only) of the permit to be reported within 24 hours.

c. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

8. Other Noncompliance
The permittee shall report all instances of noncompliance not reported under Parts III.D.4 and D.7 and Part I.B (for industrial permits only) at the time monitoring reports are submitted. The reports shall contain the information listed at Part III.D.7.

9. Other Information
Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

10. Changes in Discharges of Toxic Substances
All existing manufacturing, commercial, mining, and silvacultural permittees shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 µg/L);
(2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4 -dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Director.

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 µg/L);
(2) One milligram per liter (1 mg/L) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Director.

11. Signatory Requirements
All applications, reports, or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation - by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or,

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency - by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or an individual occupying a named position; and,

(3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports
Except for applications, effluent data, permits, and other data specified in 40 CFR 122.7, any information submitted pursuant to this permit may be claimed as confidential by the submitter. If no claim is made at the time of submission, information may be made available to the public without further notice.

SECTION E. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS

1. Criminal

a. Negligent Violations
The Act provides that any person who negligently violates permit conditions implementing Section 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations
The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment
The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

d. False Statements
The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309.c.4 of the Clean Water Act)

2. Civil Penalties
The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. Administrative Penalties
The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

a. Class I Penalty
Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

b. Class II Penalty
Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

SECTION F. DEFINITIONS
All definitions contained in Section 502 of the Act shall apply to this permit and are incorporated herein by reference. Unless otherwise specified in this permit, additional definitions of words or phrases used in this permit are as follows:

1. "Act" means the Clean Water Act (33 U.S.C. 1251 et. seq.), as amended.

2. "Administrator" means the Administrator of the U.S. Environmental Protection Agency.

3. "Applicable effluent standards and limitations" means all state and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards or performance, toxic effluent standards and prohibitions, and pretreatment standards.

4. "Applicable water quality standards" means all water

quality standards to which a discharge is subject under the Act.

5. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

6. "Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be arithmetic average (weighted by flow value) of all samples collected during that sampling day.

7. "Daily Average" (also known as monthly average) discharge limitations means the highest allowable average of "daily discharge(s)" over a calendar month, calculated as the sum of all "daily discharge(s)" measured during a calendar month divided by the number of "daily discharge(s)" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharge(s)" of concentration determined during the calendar month where C = daily concentration, F = daily flow and n = number of daily samples; daily average discharge =

$$\frac{C_1F_1 + C_2F_2 + \ldots + C_nF_n}{F_1 + F_2 + \ldots + F_n}$$

8. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

9. "Director" means the U.S. Environmental Protection Agency Regional Administrator or an authorized representative.

10. "Environmental Protection Agency" means the U.S. Environmental Protection Agency.

11. "Grab sample" means an individual sample collected in less than 15 minutes.

12. "Industrial user" means a nondomestic discharger, as identified in 40 CFR 403, introducing pollutants to a publicly owned treatment works.

13. "National Pollutant Discharge Elimination System" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the Act.

14. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

15. "Sewage sludge" means the solids, residues, and precipitates separated from or created in sewage by the unit processes of a publicly owned treatment works. Sewage as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff, that are discharged to or otherwise enter a publicly owned treatment works.

16. "Treatment works" means any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage and industrial wastes of a liquid nature to implement Section 201 of the Act, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, sewage collection systems, pumping, power and other equipment, and their appurtenances, extension, improvement, remodeling, additions, and alterations thereof.

17. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

18. For fecal coliform bacteria, a sample consists of one effluent grab portion collected during a 24-hour period at peak loads.

19. The term "MGD" shall mean million gallons per day.

20. The term "mg/L" shall mean milligrams per liter or parts per million (ppm).

21. The term "µg/L" shall mean micrograms per liter or parts per billion (ppb).

22. Municipal Terms:

    a. "7-day average", other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The 7-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

    b. "30-day average", other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. The 30-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar month.

    c. "24-hour composite sample" consists of a minimum of 12 effluent portions collected at equal time intervals over the 24-hour period and combined proportional to flow or a sample collected at frequent intervals proportional to flow over the 24-hour period.

    d. "12-hour composite sample" consists of 12 effluent

portions collected no closer together than one hour and composited according to flow. The daily sampling intervals shall include the highest flow periods.

e. "6-hour composite sample" consists of six effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

f. "3-hour composite sample" consists of three effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

Permit No. NM0022306

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C... 1251 et. seq; the "Act"),

Molycorp, Inc.
P.O. Box 469
Questa, New Mexico 87556

is authorized to discharge from a facility located at Questa, Taos County, New Mexico

to receiving waters named Red River, Segment 2-119 of the Upper Rio Grande Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I (6 pages), II (14 pages), and III (10 pages) hereof.

This permit shall become effective on June 21, 1988

This permit and the authorization to discharge shall expire at midnight, June 20, 1993

Signed this 20th day of May 1988

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 002

During the period beginning the effective date and lasting until mill start-up, the permittee is authorized to discharge from Outfall 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	0.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	(*1) mg/l	(*1) mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	N/A	N/A	(*1) mg/l	(*1) mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Daily	Estimate
Chemical Oxygen Demand	1/Month	Composite
Total Suspended Solids	1/Month	Composite
Total Arsenic	1/Month	Composite
Total Cadmium	1/Month	Composite
Total Copper	1/Month	Composite
Total Cyanide	1/Month	Composite
Fluoride	1/Month	Composite
Total Iron	1/Month	Composite
Total Lead	1/Month	Composite
Total Manganese	1/Month	Composite
Total Mercury	1/Month	Composite
Total Molybdenum	1/Month	Composite
Total Zinc	1/Month	Composite
Biomonitoring	One-time	(*2)

OUTFALL 002

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 002 Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) See Part III, Paragraph D.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALLS 001 & 002

During the period beginning mill start-up and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 001 - process water from milling operation and tailings disposal; 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	0.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	1.0 mg/l	1.5 mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	25 (*4)	50 (*3)	1.0 mg/l	2.0 mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	(*5)	Record
Chemical Oxygen Demand	1/Week	Composite (*2)
Total Suspended Solids	1/Week	Composite (*2)
Total Arsenic	1/Week	Composite (*2)
Total Cadmium	1/Week	Composite (*2)
Total Copper	1/Week	Composite (*2)
Total Cyanide	(*6)	Composite (*2)
Fluoride	1/Week	Composite (*2)
Total Iron	1/Week	Composite (*2)
Total Lead	1/Week	Composite (*2)
Total Manganese	1/Week	Composite (*2)
Total Mercury	1/Week	Composite (*2)
Total Molybdenum	1/Week	Composite (*2)
Total Zinc	1/Week	Composite (*2)
Biomonitoring	1/Quarter	(*7)

OUTFALLS 001 & 002

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001 Latitude 36° 40' 61" and Longitude 105° 38' 30" which is the discharge spillway from Pope Lake.

Outfall 002 Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) See Part III, Paragraph B.
(*3) Sum total for Outfalls 001 & 002.
(*4) Sum total average for Outfalls 001 & 002 for six months preceeding reporting period end date; also report daily average mass for each month.
(*5) Continuous and totalized monitoring for Outfall 001; daily estimate for Outfall 002.
(*6) 2/week for Outfall 001; 1/week for Outfall 002.
(*7) See Part III, Paragraph C.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Report mill start-up.

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or a permanent reduction or elimination of the authorized discharge; or,

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

4. Toxic Pollutants

Notwithstanding Part II.A.3, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II.B.4.b) and "Upsets" (Part II.B.5.b), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Definitions

The following definitions shall apply unless otherwise specified in this permit:

a. "Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that sampling day.

b. "Daily Average" (also known as monthly average) discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharges" of concentration determined during the calendar month.

c. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

d. The term "MGD" shall mean million gallons per day.

e. The term "mg/l" shall mean milligrams per liter or parts per million (ppm).

f. The term "ug/l" shall mean micrograms per liter or parts per billion (ppb).

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.B.4.c and 4.d.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.D.6 (24-hour notice).

d. Prohibition of bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occured during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required by Part II.B.4.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed at Part II.B.4.d.(1).

5. <u>Upset Conditions</u>

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Part II.B.5.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required by Part II.D.6; and,

(4) The permittee complied with any remedial measures required by Part II.B.3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

a. "A Guide to Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421).

b. "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027).

c. "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

d. "NPDES Compliance Sampling Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp.

(Available from the General Services Administration [8FFS], Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) Form EPA No. 3320-1. Monitoring results obtained during the previous month shall be summarized and reported on a DMR form post-marked no later than the 15th day of the month following the completed reporting period. The first report is due on July 15, 1988. Duplicate copies of DMR's signed and certified as required by Part II.D.11 and all other reports required by Part II.D (Reporting Requirements) shall be submitted to the Director and to the State (if listed) at the following address(es):

WATER MANAGEMENT DIVISION
ENFORCEMENT BRANCH (6W-E)
U.S. ENVIRONMENTAL PROTECTION
AGENCY, REGION VI
FIRST INTERSTATE BANK TOWER
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

Program Manager
Surface Water Section
Surface Water Quality Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased monitoring frequency shall also be indicated on the DMR.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and,

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984]; or,

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified at Part II.C.5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit;

b. Any upset which exceeds any effluent limitation in the permit; and,

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Part II.D.4, 5, and 6 at the time monitoring reports are submitted. The reports shall contain the information listed at Part II.D.6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occured or will occur which would result in the discharge, in a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

b. That any activity has occured or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that

discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(2) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984).

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR Part 122.6 [48 FR 14153, April 1, 1983] and any subsequent amendments.

11. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation - by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or,

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency - by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and,

(3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of the Director. As required by the Clean Water Act, the name and address of any permit applicant or permittee, permit applications, permits, and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER CONDITIONS

A. The term "composite sample" means a sample consisting of a minimum of two grab samples of effluent collected not less than four hours apart over a normal eight hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a normal eight hour operating day. All such samples shall be typical and representative of effluent generated during the period since the last sample was collected.

B. Analysis and reporting for Outfalls 001 and 002 shall be accomplished separately for each outfall. In addition, the permittee shall report the flow weighted average results for Outfalls 001 plus 002. Effluent limitations on weight of total molybdenum shall be the sum total for Outfalls 001 and 002. For determination of compliance with other effluent limitations the following shall apply:

1. Discharge from Outfall 001 shall be in compliance.

2. A composite sample of discharges from Outfalls 001 and 002 monitoring samples combined in flow weighted proportion shall be in compliance, except that concentration limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001.

   During periods when no flow occurs from Outfall 001, monthly average reporting of concentration for molybdenum and manganese shall be based on the average of all composite samples obtained in the month for Outfalls 001 and 002; and monthly maximum reporting of concentration for molybdenum and manganese shall be based on the maximum composite sample obtained in that month for Outfalls 001 and 002. In conjunction with the DMR for each month, the permittee shall report periods, if any, when no flow exists at Outfall 001.

C. <u>CHRONIC BIOMONITORING REQUIREMENTS</u> - Combined Outfalls 001 and 002

a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. Such testing will determine if an appropriately dilute effluent sample affects the survival and reproduction or growth of the appropriate test organism. The permittee shall initiate the following series of tests within 60 days after mill start up to evaluate

wastewater toxicity. All test organisms, procedures, and water quality assurance criterion used shall be in accordance with the latest revision of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-85/014. The following tests shall be used:

1) The permittee shall conduct a 7-day Ceriodaphnia dubia survival and reproduction test (Method 1002.0).

2) The permittee shall conduct a 7-day fathead minnow (Pimephales promelas) larval survival and growth test (Method 1000.0).

b. A minimum of 5 dilutions must be performed in addition to an appropriate control, using a minimum dilution factor of 0.3. Three dilutions consisting of 100%, 31%, and 18% of the final effluent must be contained in the test series.

c. The samples shall be collected at a point following the last treatment unit. Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than 20% mortality in the control), the permittee must substitute reconstituted dilution water, with hardness and alkalinity similar to that of the receiving stream water. The permittee shall also report to EPA the toxicity of the upstream receiving water.

d. Flow-weighted 24-hour composite samples representative of dry weather flows during normal operation will be collected from Outfalls 001 and 002. These composites shall be combined in proportion to the average flow from each outfall for the day the sample was collected. The toxicity tests shall be performed on the flow-weighted composite of outfall samples.

e. The toxicity tests specified in paragraphs (a) and (b) above shall be conducted once per quarter. The permittee shall prepare a full report of the results according to EPA/600/4-85/014, Section 10, Report Preparation. This full report need not be submitted unless requested and shall be retained following the provisions of Part II.C.8 of this permit.

f. The permittee shall submit the toxicity testing information contained in Table 1 of this permit to EPA along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting period following the toxicity test.

g. Should no toxicity occur within the first year of toxicity testing, in accordance with paragraph (h) below, for both species tested at the effluent dilution equivalent to 1/2 of low flow (31%), the permittee shall certify this information in writing to EPA Region VI and these biomonitoring requirements shall expire.

h. For the purpose of this biomonitoring requirement, chronic toxicity is defined as a statistically significant difference at the 95% confidence level between the survival and growth or reproduction in the appropriate test organism exposed to the control and to an effluent dilution.

i. This permit shall be reopened to require further monitoring studies and/or effluent limits if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream. Modification or revocation of the permit is subject to the provisions of 40 CFR Part 122.62. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

D. CHRONIC BIOMONITORING REQUIREMENTS - Outfall 002

a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. Such testing will determine if an appropriately dilute effluent sample affects the survival and reproduction or growth of the appropriate test organism. The permittee shall initiate the following series of tests within 60 days of the effective date of this permit to evaluate wastewater toxicity. All test organisms, procedures, and water quality assurance criterion used shall be in accordance with the latest revision of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-85/014. The following tests shall be used:

1) The permittee shall conduct a 7-day *Ceriodaphnia dubia* survival and reproduction test (Method 1002.0).

2) The permittee shall conduct a 7-day fathead minnow (*Pimephales promelas*) larval survival and growth test (Method 1000.0).

b. A minimum of 5 dilutions must be performed in addition to an appropriate control, using a minimum dilution factor of 0.3. Three dilutions consisting of 100%, 5.5%, and 2.8% of the final effluent must be contained in the test series.

c. The samples shall be collected at a point following the last treatment unit. Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than 20% mortality in the control), the permittee must substitute reconstituted dilution water, with hardness and alkalinity similar to that of the receiving stream water. The permittee shall also report to EPA the toxicity of the upstream receiving water.

d. Samples representative of dry weather flows during normal operation will be collected from Outfall 002. The toxicity tests shall be performed on the outfall samples.

e. The toxicity tests specified in paragraphs (a) and (b) above shall be conducted once. The permittee shall prepare a full report of the results according to EPA/600/4-85/014, Section 10, Report Preparation. This full report need not be submitted unless requested and shall be retained following the provisions of Part II.C.8 of this permit.

f. The permittee shall submit the toxicity testing information contained in Table 1 of this permit to EPA along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting period following the toxicity test.

g. For the purpose of this biomonitoring requirement, chronic toxicity is defined as a statistically significant difference at the 95% confidence level between the survival and growth or reproduction in the appropriate test organism exposed to the control and to an effluent dilution.

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: _____ am/pm _____ date

Dilution water used: ☐ Receiving water ☐ Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	1%	3%	10%	30%	100%	% at low flow %	% at 1/2 low flow %
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	1%	3%	10%	30%	100%	% at low flow %	% at 1/2 low flow %
24h								
48h								
7-day								

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL reproduction = _____ % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: ____

7. Enter response to item 6 on DMR Form, Parameter No. TFP3B.

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: _____ am/pm _____ date

Dilution water used: ☐ Receiving water ☐ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers				MEAN DRY WEIGHT	
	A	B	C	D	mg	CV%*
0%						
1%						
3%						
10%						
30%						
100%						
Low Flow %						
1/2 Low Flow %						

* coefficient of variation = standard deviation x 100/mean

1. Dunnett's Procedure:

   Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
0%								
1%								
3%								
10%								
30%								
100%								
Low Flow %								
1/2 Low Flow %								

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL growth = _____ % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: ____

7. Enter response to item 6 on DMR Form, Parameter No. TFP6C.

D. The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless subsequently determined to be inappropriate by the NMEID or EPA.

E. As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;

(2) Approximately 100 feet below the point where tailings enter the river; and

(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand (COD)
Total Suspended Solids (TSS)
Cyanide (CN)
Total Iron (Fe)
Manganese, Dissolved (Mn)
Total Molybdenum (Mo)
pH
Temperature
Conductivity
Total Zinc (Zn)

The results of the analyses shall be submitted to the United States Environmental Protection Agency and the New Mexico Environmental Improvement Division within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and Contingency Action and Reporting Plans (June 1975), a written report containing the following information will be sent to the U.S. EPA and NMEID within ten (10) days following any spill:

(1) Date of spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that caused the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

Permit No. NM0022306
Application No. NM0022306

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Molycorp, Inc.
P.O. Box 469
Questa, New Mexico 87556

is authorized to discharge from a facility located at Questa, Taos County, New Mexico

to receiving waters named Red River, Segment 2-119 of the Upper Rio Grande Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on August 6, 1985

This permit and the authorization to discharge shall expire at midnight, August 30, 1988

Signed this 5th day of July 1985

Myron O. Knudson

Myron O. Knudson, P.E.
Director, Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 001 & 002

During the period beginning the effective date and lasting through ***** the permittee is authorized to discharge from Outfall(s) serial number(s) 001, process water from milling operation and tailings disposal; 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	*	*
Temperature	N/A	N/A	* °C (*°F)	* °C(* °F)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	1.0 mg/l	1.5 mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	35(78)****	71(156)***	* mg/l	* mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	(1)	Record
Temperature	1/week	In Situ
Chemical Oxygen Demand	1/week	Composite**
Total Suspended Solids	1/week	Composite**
Total Arsenic	1/week	Composite**
Total Cadmium	1/week	Composite**
Total Copper	1/week	Composite**

Continued from page 2

Total Cyanide	(2)	Composite**
Fluoride	1/week	Composite**
Total Iron	1/week	Composite**
Total Lead	1/week	Composite**
Total Manganese	1/week	Composite**
Total Mercury	1/week	Composite**
Total Molybdenum	1/week	Composite**
Total Zinc	1/week	Composite**
Biomonitoring	(3)	(4)

* Report
** See Part III, Paragraph B
*** Sum total for Outfalls 001 & 002
**** Sum total average for Outfalls 001 & 002 for six months preceeding reporting period end date; also report daily average mass for each month.
(1) Continuous and totalized monitoring for Outfall 001; daily estimate for Outfall 002
(2) 2/week for Outfall 001; 1/week for Outfall 002.
(3) See Part III, Paragraph D.
(4) See Part III, Paragraph E.
***** One year from date of mill start-up.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

<u>Outfall 001</u> Latitude 36° 40' 61" and Longitude 105° 38' 30" which is the discharge spillway from Pope Lake.

<u>Outfall 002</u> Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 001 & 002

During the period beginning ***** and lasting through the expiration date, the permittee is authorized to discharge from Outfall(s) serial number(s) 001, process water from milling operation and tailings disposal; 002, seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	*	*
Temperature	N/A	N/A	* °C (*°F)	* °C (*°F)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	1.0 mg/l	1.5 mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	11(25)****	23(50)***	1.0 mg/l	2.0 mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	(1)	Record
Temperature	1/week	In-Situ
Chemical Oxygen Demand	1/week	Composite**
Total Suspended Solids	1/week	Composite**
Total Arsenic	1/week	Composite**
Total Cadmium	1/week	Composite**
Total Copper	1/week	Composite**
Total Cyanide	(2)	Composite**

Continued from page 4

Fluoride	1/week	Composite**
Total Iron	1/week	Composite**
Total Lead	1/week	Composite**
Total Manganese	1/week	Composite**
Total Mercury	1/week	Composite**
Total Molybdenum	1/week	Composite**
Total Zinc	1/week	Composite**
Biomonitoring	(3)	(4)

* Report
** See Part III, paragraph B.
*** Sum total for Outfalls 001 & 002.
**** Sum total average for Outfalls 001 & 002 for six months preceeding reporting period end date; also report daily average mass for each month.
(1) Continuous and totalized monitoring for Outfall 001; daily estimate or Outfall 002.
(2) 2/week for Outfall 001; 1/week for Outfall 002.
(3) See Part III, Paragraph D.
(4) See Part III, Paragraph E.
***** One year from date of mill start-up.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

<u>Outfall 001</u> Latitude 36° 40' 61" and Longitude 105° 38' 30" which is the discharge spillway from Pope Lake.

<u>Outfall 002</u> Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Report mill start-up

Progress Report	3 mos. after mill start-up
Progress Report	6 mos. after mill start-up
Progress Report	9 mos. after mill start-up
Achieve Compliance	12 mos. after mill start-up

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions inplementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or a permanent reduction or elimination of the authorized discharge; or

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

4. Toxic Pollutants

Notwithstanding Section A, paragraph 3 above, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, paragraph 4.b. and "Upsets" Section B, paragraph 5.b., nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Definitions

The following definitions shall apply unless otherwise specified in this permit:

a. "Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that sampling day.

b. "Daily Average" discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

c. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Section B, paragraphs 4.c. and 4.d. of this section.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Section B, paragraph 5.c. are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in Section D, paragraph 6.

(4) The permittee complied with any remedial measures required under Section B, paragraph 3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, paragraph 6 (24-hour notice).

d. Prohibition of bypass.

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occured during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under Section B, paragraph 4.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in Section B, paragraph 4.d.(1).

5. <u>Upset Conditions</u>

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored dishcarge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

a. "A Guide to Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421).

b. "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027).

c. "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

d. "NPDES Compliance Sampling Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication

MCD-51, 1977, 140 pp. (Available from the General Services Administration [8FFS], Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) Form EPA No. 3320-1. Monitoring results obtained during the previous month shall be summarized and reported on a DMR form postmarked no later than the 15th day of the month following the completed reporting period. The first report is due September 15, 1985 Duplicate copies of DMR's signed and certified as required by Section D, paragraph 11, and all other reports required by Section D. Reporting Requirements, shall be submitted to the Director and to the State (if listed) at the following address(es):

Director
Water Management Division (6W)
U.S. Environmental Protection Agency
Region VI
InterFirst Two Building
1201 Elm Street
Dallas, Texas 75270

Ann Young, Acting Program Manager
Surface Water Section
Surface Water Quality Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased monitoring frequency shall also be indicated on the DMR.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984]; or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1,1983, as amended at 49 FR 38046, September 26, 1984].

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified in Section C, paragraph 5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit.

b. Any upset which exceeds any effluent limitation in the permit.

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Section D, paragraphs 4, 5, and 6, at the time monitoring reports are submitted. The reports shall contain the information listed in Section D, paragraph 6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occured or will occur which would result in the discharge, in a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

b. That any activity has occured or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if

that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(2) [48 FR 14153, April 1,1983, as amended at 49 FR 38046, September 26, 1984).

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

11. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or

(ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) The chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above.

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and

(3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of the Director. As required by the Clean Water Act, the name and address of any permit applicant or permittee, permit applications, permits, and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER CONDITIONS

A. The "daily average" concentration means the arithmetic average (weighted by flow value) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during that calendar day.

The "daily maximum" concentration means the daily determination of concentration for any calendar day.

B. The term " composite sample" means a sample consisting of a minimum of two grab samples of effluent collected not less than four hours apart over a normal eight hour operating day and combined proportional to flow or a sample continously collected proportional to flow over a normal eight hour operating day. All such samples shall be typical and representative of effluent generated during the period since the last sample was collected.

C. Analysis and reporting for Outfalls 001 and 002 shall be accomplished separately for each outfall. In addition, the permittee shall report the flow weighted average results for Outfalls 001 plus 002. Effluent limitations on weight of total molybdenum shall be the sum total for Outfalls 001 and 002. For determination of compliance with other effluent limitations the following shall apply:

1. Discharge from Outfall 001 shall be in compliance.

2. A composite sample of discharges from Outfalls 001 and 002 monitoring samples combined in flow weighted proportion shall be in compliance, except that concentration limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001.

   During periods when no flow occurs from Outfall 001, monthly average reporting of concentration for molybdenum and manganese shall be based on the average of all composite samples obtained in the month for Outfalls 001 and 002; and monthly maximum reporting of concentration for molybdenum and manganese shall be based on the maximum composite sample obtained in that month for Outfalls 001 and 002. In conjuction with the DMR for each month, the permittee shall report periods, if any, when no flow exists at Outfall 001.

D. The permittee shall determine if eighty (80) percent or greater of the culture of test organisms will survive by use of the "Range-Finding Screening Test," set out in "Methods for Measuring the Acute Toxicity of Effluents to

Aquatic Organisms, "EPA-600/4-78-012 (Rev. July, 1978). Organisms for this test shall be Daphnia sp. if the effluent is less than five (5) parts per thousand salinity or Mysidopsis sp. if the effluent is equal to or greater than five (5) parts per thousand salinity. This screening test will be conducted within sixty (60) days of effectiveness of the biomonitoring requirements. Tests will be conducted once each quarter for a duration of two years utilizing a static method for 24 hours and following this dilution scheme only:

Effluent sample* - 100 percent by volume
Dilution water - 0 percent by volume

*24-hour composite; refrigerated after collection

If at any time during the two year testing period a test shows a survival of eighty (80) percent or less of the test organisms, the permittee shall within twenty-four (24) hours conduct a replacement static 48-hour median lethal concentration (LC50) test on the orginially collected sample. Replacement of effluent samples shall be once per 24 hours. Organisms for this test shall be Daphnia sp. if the effluent is less than five (5) parts per thousand salinity and reconstituted fresh water (EPA-600/4-78-012 Section 4) shall be used for dilution. If the effluent is equal to or greater than five (5) parts per thousands salinity, Mysidopsis sp. shall be used as the test organism, and reconstituted seawater will be used as dilution water (EPA-600/4-78-012 Section 4). The remaining LC50 methodology is available in EPA-600/4-78-012.

All screening and LC50 test results shall be reported with the Discharge Monitoring Reports. The test results should include the chemical and physical data as specified in Section 7 of EPA-600/4-78-012.

E. Sample taken in compliance with this section shall consist of 24-hour composite samples taken at the discharge spillway from Pope Lake.

F. The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless subsequently determined to be inappropriate by the NMEID or EPA.

G. As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;
(2) Approximately 100 feet below the point where tailings enter the river; and
(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand (COD)
Total Suspended Solids (TSS)
Cyanide (CN)
Total Iron (Fe)
Manganese, Dissolved (Mn)
Total Molybdenum (Mo)
pH
Temperature
Conductivity
Total Zinc (Zn)

The results of the analyses shall be submitted to the United States Environmental Protection Agency and the New Mexico Environmental Improvement Division within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and Contingency Action and Reporting Plans (June 1975), a written report containing the following information will be sent to the US EPA and NMEID within ten (10) days following any spill:

(1) Date of spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that cuased the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

NM 22306

JUL 23 1999

P/C

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 483 657 367)

Mr. David R. Shoemaker
Mine Manager
Molycorp, Inc.
P.O. Box 469
Questa, NM 87556

Re: NPDES Permit Application No. NM0022306
Molycorp, Inc - Questa Mine
308 information request for Biological Evaluation and effluent characterization

Dear Mr. Shoemaker:

The United States Environmental Protection Agency (EPA) has a statutory mandate to protect public health and the environment. We are currently processing your NPDES permit application for the discharges from Molycorp's Questa mine. In order for EPA to develop permit conditions protective of water quality and listed endangered and threatened species in your area, an evaluation of the effects of the permit on endangered species is needed. Therefore, under the authority of Section 308 of the Clean Water Act (Office of Management and Budget Information collection request No. 2040-0086), you must submit the following information within 90 days of receipt of this letter:

1. A list of anticipated or demonstrated pollutants from your discharges and their concentrations.
2. Description of environmental baseline, including any previous Environmental Assessments or Evaluations, or consultations concerning other actions in the area.
3. A determination of the species present and for each species:
   a. Description of current conditions for each species (range-wide, in project area, cumulative effects of State and private actions in project area, other consultations in area to date)
   b. Description of critical habitat
   c. A review and an analysis of the effects of the action on the endangered species in terms of individuals and populations, including consideration of the indirect and cumulative effects of the action on the species and habitat.
   d. Analysis of alternative actions that would reduce, eliminate and/or minimize the facility's potential to adversely affect listed endangered species or critical habitat.

e. Any other relevant available information on the action, the affected listed species, or critical habitat.

4. Conclusions of effects determination for each species
5. Literature cited
6. List of contacts made/preparers/sources
7. Maps/photographs if available

EPA will be glad to share our experience with you on endangered species consultations. As an aid in collecting the required information, please find enclosed a copy of the FWS's Ecological Services office recommended format and information package on that part of the process. A list of the species in question for your county is also enclosed.

We appreciate your time and efforts to reply to this request. We look forward to working with Molycorp to protect water quality and threatened and endangered species in New Mexico. If you have any questions regarding the consultation or permitting process, please contact Scott Wilson of my staff at (214) 665-7511.

Sincerely yours,

Original signed by
Oscar Ramirez Jr.

William B. Hathaway
Director
Water Quality Protection Division

Enclosures

cc (without enclosures):
Ms. Jennifer Fowler-Propst, US Fish and Wildlife Service

Permit file NM0022306

Advertising Order No. OT-3107, 3108, 3109, 3110-NNLX

U.S. Environmental Protection Agency, Region 6
Public Notice of Public Meeting and Public Hearing

June 9, 2000

This is to give notice that the National Pollutant Discharge Elimination System (NPDES) Permits Branch of the U.S. Environmental Protection Agency, Region 6 has developed a draft NPDES permit for Molycorp, Inc., an industrial mine facility. Development of the draft permit was based on preliminary staff review by EPA, Region 6, and consultation with the State of New Mexico.

EPA contact person for submitting written comments, requesting information regarding the draft permit, public hearing, and/or obtaining copies of the draft permit and fact sheet is:

Ms. Evelyn Rosborough
Customer Service Branch (6WQ-CA)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-7515

This is to give notice that the Regional Administrator of the U.S. Environmental Protection Agency (EPA), Region 6, or Presiding Officer designated by him, will conduct a public hearing on the draft NPDES permit. There will be a public information meeting and a question and answer session starting at 2:00 p.m. and the hearing for public comments will be held starting at 7:00 p.m. Thursday, July 13, 2000 at the following location below:

Alta Vista School
1.5 Miles North of Highway 522
Questa, New Mexico 87556

Registration for the hearing will be thirty (30) minutes before the start of the hearing. Any person requiring special arrangements should notify EPA through the contact person listed above within ten (10) days of receipt of this notice so arrangements can be made to provide assistance to them.

EPA comments and public hearing procedures may be found at 40 CFR Parts 124.10 and 124.12 (48 Federal Register 1426, April 1, 1983, as amended at 49 Federal Register 38051, September 26, 1984).

EPA will notify the applicant and each person who has submitted comments or requested notice, of the final permit decision. A final permit decision means a final decision to issue a permit. Any person may petition the Environmental Appeals Board to review any condition of the Agency's

final permit decision. However, the request must be submitted within 30 days of the date of the final permit decision and be in accordance with the requirements of 40 CFR Part 124.19. Any condition(s) requested to be reviewed will be stayed pending the decision of the Board if the request is granted.

The administrative record, containing all documents relating to the permit may be viewed at the above address between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, except holidays. It is recommended that you write or call to the contact above for an appointment, so the record(s) will be available at your convenience.

State Certification Request
Proposed Effective Date July 6, 2000

PN DATE	NPDES NO.	FACILITY NAME	TYPE	MAJOR	ACTION
05/27/00	NM0000124	PUBLIC SERVICE CO-NM (B	Ind	No	Reissue
05/27/00	NM0022306	MOLYCORP INC - QUESTA	Ind	Yes	Reissue
05/27/00	NM0023311	LAS CRUCES, CITY OF	Mun	Yes	Reissue
05/27/00	NM0027375	RIO DE ARENAS MOBILE MANOR	Ind	No	Reissue
05/27/00	NM0029459	PITTSBURG & MIDWAY COAL MINING	Ind	No	Reissue
05/27/00	NM0029581	LEE RANCH COAL COMPANY	Ind	No	Reissue

P 118 193 724

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PS Form **3800**, April 1995

MAY 26 2000

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 110 193 724)

Mr. David Shoemaker
Mine Manager
Molycorp, Inc., Questa Division
P.O. Box 469
Questa, NM 87556

Re: NPDES Permit No. NM0022306
Public Notice of Draft Permit

Dear Mr. Shoemaker:

Please find enclosed a copy of a draft National Pollutant Discharge Elimination System (NPDES) permit the Environmental Protection Agency's NPDES Permits Branch has developed. The fact sheet explaining the basis for the permit conditions and the public notice for this permit are also enclosed. Upon final issuance, the permit will authorize the discharge of pollutants from your facility in accordance with the requirements of the Clean Water Act.

Any formal comments you wish to make should be submitted in writing by the due date stated in the public notice to Ms. Evelyn Rosborough (6WQ-C) at the above address. After all public comments have been received and carefully evaluated, the Agency will make a final permit issuance decision. A copy of the final permit will be mailed to you at that time.

If you have any questions or would like to discuss any aspect of this draft permit, please feel free to contact the permit writer, Scott Wilson, at VOICE:214-665-7511, FAX:214-665-2191, or EMAIL:wilson.js@epa.gov.

Sincerely yours,

Jack V. Ferguson, P.E.
Chief
NPDES Permits Branch

Enclosures
cc (w/enclosures): New Mexico Environment Department

bcc: wilson (6WQ-PP) READING FILE (6WQ-P)

CONCURRENCES ORIG: wilson (6WQ-PP) [01/31/0 (1:34PM)] JVF

OFFICIAL FILE COPY

CODE: 6WQ-PP
NAME: JWATSON
DATE: 4/27/00

Advertising Order Number OT-3099-NNLX
U.S. Environmental Protection Agency
Public Notice of Draft NPDES Permit(s)

MAY 27, 2000

This is to give notice that the U.S. Environmental Protection Agency, Region 6, has formulated a Draft Permit for the following facility (facilities) under the National Pollutant Discharge Elimination System (NPDES). Development of the draft permit(s) was based on a preliminary staff review by EPA, Region 6, and consultation with the State of New Mexico. The State of New Mexico is currently reviewing the draft permit(s) for the purpose of certifying or denying certification of the permit(s). The permit(s) will become effective no sooner than 30 days after the close of the comment period unless:

A. The State of New Mexico denies certification, or requests an extension for certification prior to that date.

B. Comments received by JULY 26, 2000, in accordance with §124.20, warrant a public notice of EPA's final permit decision.

C. A public hearing is held requiring delay of the effective date.

EPA's contact person for submitting written comments, requesting information regarding the draft permit, and/or obtaining copies of the permit and the Statement of Basis or Fact Sheet is:

Ms. Evelyn Rosborough
Customer Service Branch (6WQ-CA)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-7515

EPA's comments and public hearing procedures may be found at 40 CFR 124.10 and 124.12 (48 Federal Register 14264, April 1, 1983, as amended at 49 Federal Register 38051, September 26, 1984). The comment period during which written comments on the draft permit may be submitted extends for 33 days from the date of this Notice. During the comment period, any interested person may request a Public Hearing by filing a written request which must state the issues to be raised. A public hearing will be held when EPA finds a significant degree of public interest.

2A

EPA will notify the applicant and each person who has submitted comments or requested notice of the final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke or reissue, or terminate a permit. Any person may request an Evidentiary Hearing on the Agency's final permit decision. However, the request must be submitted within 33 days of the date of the final permit decision and be in accordance with the requirements of 40 CFR 124.74. Any condition(s) contested in a request for an evidentiary hearing are granted on a New Source, New Discharger, or Recommencing Discharger, the applicant shall be without a permit.

Further information including the administrative record may be viewed at the above address between 8 a.m. and 4:30 p.m., Monday through Friday. It is recommended that you write or call to the contact above for an appointment, so the record(s) will be available at your convenience.

2. AUTHORIZATION TO DISCHARGE TO WATERS OF THE UNITED STATES, NPDES PERMIT NO. NM0022306.

The applicant's mailing address is:

Molycorp, Inc.
P.O. Box 469
Questa, New Mexico 87556

The discharge(s) from this existing discharger are made to the receiving water body named the Red River, a water of the United States classified for Secondary Contact Recreation, Fish Culture, Coldwater Fishery, Irrigation, Livestock Watering, and Wildlife Habitat. The discharger is located near Questa. A fact sheet is available. Under the Standard Industrial Classification (SIC) Code(s) 1061, the applicant currently operates a mine and mill producing molybdenum.

It is proposed that the current permit be reissued for a 5-year term.

The changes from the current permit issued September 10, 1993 with an effective date of October 15, 1993 and an expiration date of October 14, 1998 are:

(A) At Outfalls 001 and 002, limits for aluminum, arsenic, cadmium, copper, cyanide, lead, mercury, and molybdenum were recalculated and are proposed to be revised based on water quality standards.

(B) The discharge of pollutants traceable to point source mine operations through a hydrologic connection to the Red River is prohibited. Best Management Practices are required for capturing those hydrologically connected discharges. A compliance schedule to accomplish those practices is also included.

(C) Monitoring requirements for beryllium, chlordane, cobalt, selenium, silver, total residual chlorine, temperature, and vanadium, are proposed to be discontinued at Outfalls 001 and 002.

(D) Limits for chlordane, silver, and total residual chlorine are proposed to be removed at Outfalls 001 and 002.

(E) A compliance schedule of two years is proposed for new, more stringent limits at Outfalls 001 and 002 for aluminum, arsenic, cadmium, copper, cyanide, lead, and mercury.

(F) Limits at storm water Outfalls 004 and 005 for cadmium, copper, mercury, aluminum, silver, chlordane, and total residual chorine were revised based on water quality standards.

(G) Limits for COD, TSS, fluoride, iron, manganese, molybdenum, and zinc were recalculated based on current discharge rates.

IV. RECEIVING WATER USES

The known uses of the receiving water(s) are:

Secondary Contact
Fish Culture
Coldwater Fishery
Irrigation
Livestock Watering
Wildlife Habitat

V. STREAM STANDARDS

The general and specific stream standards are provided in "Water Quality Standards for Interstate and Intrastate Streams in New Mexico," (20NMAC6.1, effective 2/15/00).

VI. FACILITY DESCRIPTION

Molycorp's mine is located in the southern margin of the Questa Caldera. The Caldera was formed in relation to regional continental rifting and the Rio Grande rift which is located to the west. The mine area consists of Pre-Cambrian igneous rocks and sedimentary and igneous based metamorphic rocks. Overlaying those rocks is a thick layer of Tertiary ashflow tuffs and andesitic lava flows. The area also has intrusions of granitic rocks containing mineralized quartz veins which were formed in the late magmatic, post-caldera hydrothermal stage. Those intrusions and the resulting hydrothermal fluid circulation caused intense fracturing of the area's formations and alteration along the margin of the caldera (Allen, et.al., 1999, SPRI, 1995, Molycorp, 1998). The alteration led to widespread pyritization and the deposition of economically important deposits of Molybdenum (Allen, et.al., 1999). In the area of Molycorp's mine, the rock formations contain 1% to 5% Iron Pyrite (Molycorp, Sept. 15, 1998). The presence of Pyrite and other rocks containing sulfide is of concern because chemical reactions which take place during weathering result in acidic drainage which severely impacts water quality.

Operations at Molycorp's Molybdenum mine located near Questa, New Mexico initially began in 1918 and were limited to underground mining until 1965. During those first 46 years, ore milling operations were conducted at the southeast corner of mine's property, near the Red River. Waste rock from those operations was deposited near the mill. In 1965, open pit mining was initiated at the site. During operation of the open pit mine, an estimated 328 million tons of waste rock were removed and deposited in piles, known as waste rock dumps, located on mine property. A new mill was built at the facility, and a pipeline was constructed to carry milling waste to tailings ponds located on Bureau of Land Management lands west of Questa. Open pit mining was discontinued in 1983. Operations since that time have consisted solely of

underground mining. All tailings and spent ore are presently piped as a slurry to the tailings ponds.

Mining can be a fairly volatile industry due to fluctuations in the price of minerals. Molycorp has placed the mine on standby on several instances in reaction to depressed prices of Molybdenum. In recent times the Molycorp Questa mine has existed under shut down operations from 1986 until 1989 and from 1992 until 1995. During the more recent period when the mine was shut down (1992-1995) pumping of ground water from the underground workings was also halted. Water filled the underground workings to an elevation of 7,600 feet. They extend down to 7,099 feet whereas the elevation of the portal of the Molycorp tunnel is 7,972 feet and the elevation of the Red River nearest the portal is 7,940 feet.

VII. DISCHARGE DESCRIPTION

Molycorp has discharges in two distinctly different locations, the mine located in the Red River Canyon east of the town of Questa, and at the tailings ponds located just west of Questa. Discharges at the tailings ponds are made through Outfalls 001 and 002. A quantitative description of the discharges at Outfalls 001 and 002, as described in the EPA Permit Application Forms 1 and 2C dated April 13, 1998, are presented in Appendix A of this Fact Sheet. The previous permit authorizes the discharge of storm water from the mine area at outfalls 004 and 005. Molycorp has not discharged at Outfalls 004 or 005; therefore analytical data are not available and are not presented for those outfalls.

In addition to the authorized discharges listed above, other potential discharges to the Red River from seeps and springs in the vicinity of the mine have been raised as issues of concern. Some sources suggest that there is a discharge of waste water originating from waste rock piles and flowing through shallow aquifers in a direct hydrologic connection to the seeps and springs. A discussion of the available information and literature which are relevant to this issue follows.

Direct Hydrologic Connection

In many cases the Clean Water Act does not authorize the regulation of discharges to ground water by an NPDES permit. An example of this is a discharge to non-tributary ground water. Non-tributary ground water is an isolated pocket of ground water which does not flow into surface waters. Those types of discharges to ground water do not have a direct hydrologic connection to Waters of the United States and are not thought to be subject to the NPDES program. Conversely, instances where discharges to ground water have been regulated under NPDES permits are where there is a direct hydrological connection between the discharge, which flows into ground water, and a receiving stream. Such as a case where the soils and/or underground formations are simply a conduit between the discharge and a surface water. NPDES permits and court cases relevant to this issue are discussed later in this Fact Sheet.

Discharges at the Molycorp facility, which have the potential to result from a direct hydrologic connection between waste materials and waters of the United States, have been raised as issues of concern at both the tailings ponds and the mine site. EPA received several comments on discharges from seeps when the permit authorizing Molycorp's discharges was last reissued in 1993. The permit writer for that action responded that the discharges were not believed to be point source discharges and referred commentors to the New Mexico Environment Division. Since that time more information on the seeps has become available and EPA has gained a much more thorough understanding of the seeps at both the Mine and tailings ponds. This is made evident in later correspondence from the 1993 permit's author to Molycorp's attorney (Humke, 1997). That letter discusses the 1993 Response to Comments and more recent case law on the hydrologic connection issue. It states that at the time of issuance in 1993 EPA did not recognize seepages associated with waste rock piles at the mine, but in future permitting actions they may be considered "point sources" subject to permitting.

From the tailings ponds, leachate infiltrates to groundwater which flows toward the Red River (Abshire, 1998). Vail (September 4, 1993, August 24, 1989) documented this direct hydrologic connection between the tailings ponds and the Red River. Molycorp has installed interception wells to capture the plume from the tailings pond and discharges that water at Outfall 002 as authorized by its NPDES permit. Available information suggests that the ground water plume from the tailings ponds is successfully captured by Molycorp and is not an issue at this time. Therefore, historic seeps to the Red River in the vicinity of the tailings ponds are not proposed to be addressed in the reissued permit.

Seeps in the vicinity of the mine site have been investigated extensively during the time since the last permit was issued. Much has been learned about their characteristics, origin, and effects on water quality in the Red River. Molycorp has hired consultants to produce numerous studies of seeps located at the mine and their possible impacts to the Red River (Vail, 1993, South Pass Resources, Inc.[SPRI], 1995, SRK, 1995, Hutchison, 1997, Schafer, 1997, Chadwick, 1997, Chadwick, 1998, and Robertson, 1999). The State of New Mexico has also examined the mine and its impacts to the Red River (Kent, 1995 and Allen, et.al., 1999). Additional information on the mine and potential impacts to the Red River has also become available through expert testimony for the plaintiffs from the Amigos Bravos versus Molycorp, Inc. case in the United States District Court for the State of New Mexico (Kelsey, 1997, Mink, 1997, and Williams, 1997). Citizens' concerns about water quality in the Red River and impacts resulting from the mine have also prompted EPA to study the issue of mine related seeps in greater detail. In addition to reviewing the various studies on Molycorp's mine and its seeps, EPA had a staff geologist examine the available information on the mine and conduct a site visit (see Abshire, 1998).

Specifically, the issue of concern at Molycorp's mine site is acid rock drainage, which could potentially originate from waste rock piles, flow through the soils and strata at the site, and discharge to the Red River from seeps. During open pit mining, Molycorp significantly modified the mine's rocks by blasting and excavating the pit. The rock was placed in waste piles presently

described as: the Sugar Shack West Pile, Sugar Shack South Pile, Spring Gulch Pile, Sulphur Gulch Waste Rock Pile, Capulin Waste Rock Pile, Goathill Waste Rock Pile, and the Middle Waste Rock Pile. This alteration greatly increased the surface area of the rock and made it susceptible to oxidation in the presence of atmospheric oxygen (Allen, et.al., 1999). The result of oxidation is that sulfide in the waste rock becomes sulfuric acid. The chemical reaction for oxidation of pyrite can be represented as follows:

$$4FeS_2 + 15O_2 + 8H_2O = 2Fe_2O_3 + 8SO_4^{-2} + 16H^+$$

The actual reaction in the field involves intermediate reactions and bacterial catalysts; however, the basic result is that sulfur is reduced to sulfate ions and acidity is increased (Allen, et.al., 1999 and Robertson GeoConsultants, Inc., 1999). As a result of this process, if water from rainfall or snow melt percolates through the waste rock piles it can become highly acidic and metals from the rocks can dissolve in the solution. Acid rock drainage such as this is a nationally significant long term environmental threat (USEPA, June, 1997). At many mine sites across the country acid rock drainage has caused severe water quality impacts. In the National Forests there are estimated to be 5,000 to 10,000 miles of acid drainage impacted streams resulting from mining (USEPA, Sept., 1997).

Several studies have suggested that acid rock drainage from Molycorp's waste rock piles may flow through a direct hydrologic connection to the Red River (Abshire, 1998; Kelsey, 1997; Mink, 1997; SRK, 1995; SPRI, 1995; and Williams, 1997). Those studies all seem to agree that the potential exists for waste water to flow from waste rock piles, through the soils and strata and discharge to the River. The studies also note that the natural hydrothermal scar areas can contribute acidic drainage and metals loading to the river and the greatest concentration of scaring is located in the vicinity of the mine .

Hydrologic Cone of Depression

In its permit renewal application Molycorp asserts that by pumping water from the underground workings it is drawing local groundwater toward the mine and creating a cone of depression (Molycorp, 1998). Such a cone of depression could potentially draw a portion of ground water, which would normally enter the Red River, toward the underground workings instead. Molycorp (1998) suggests that its activities, such as mine de-watering cause reductions of pollutant loadings to the Red River. Data from Molycorp's groundwater monitoring wells indicate that some of the ground water is redirected toward the mine and that portions of the bedrock aquifer may be affected by mine de-watering (Abshire, 1998, SPRI, 1995, and SRK, 1995). Those sources also suggest that ground water may flow from the waste rock piles to the Red River through the more permeable shallow alluvial and upper fractured bedrock perched water systems (see also Schafer, 1997). However, site visits to the mine area and communications with New Mexico Environment Division personnel show that some of the historic springs and seeps to the Red River are not presently flowing (Wilson, February 1, 2000

and February 28, 2000). Whether this change is the result of mine de-watering or other variables such as a change in the precipitation pattern is not known for certain.

Potential Sources of Pollutant Loadings to the Red River

Hydrothermal alteration scars exist in the north side of the Red River Canyon at the mine site as well as both upstream and downstream from the site. The scars are made up of rhyolite and andesite and contain varying amounts of sulfide bearing minerals such as pyrite (Shoemaker, 1998). Erosion of the scars is cited as a source of contaminants (acidic drainage, metals, sediments, and sulfates) to the Red River throughout the available literature (Abshire, 1998; Allen et. Al., 1999; Hutchison, 1997; Kent, 1995; Molycorp, 1998; SRK, 1995; and SPRI, 1995).

Several sources site the waste rock piles at the Molycorp mine as a potential additional source of contaminant loading to the Red River (Abshire, 1998; Allen et.al., 1999; Kelsey, 1997; Kent, 1995; Mink, 1997; SPRI, 1995; SRK, 1995; and Williams, 1997). It is however difficult to differentiate pollutant loadings to the Red River from the alteration scars as opposed to those resulting from Molycorp's mining activities or waste rock piles. There are several reasons for this complication. The highest predominance of alteration scars exists in the area of the mine. Molycorp's waste rock piles contain many of the same minerals found in the erosional scars and could potentially contribute many of the same contaminants to the river as contributed by the scars. In some places, Molycorp laid the waste rock piles directly on top of alteration scars. Also, the waste rock piles are made up partly of scar material. Molycorp has made the assertion that pollutant contributions to the river are not resulting from activities or waste materials at the mine but are instead solely contributed by erosion of the alteration scars (Molycorp, 1998). Other sources have suggested that there may potentially be a contribution of pollutants from Molycorp's waste rock to the Red River (Abshire, 1998; Allen et.al., 1999; Kelsey, 1997; Kent, 1995; Mink, 1997; SPRI, 1995; SRK, 1995; and Williams, 1997).

Several studies of the mine site have attempted to collect data which would show the differences in loadings from the hydrothermal alterations scars as opposed to those from Molycorp's waste rock piles. Kent (1995) collected and analyzed samples of waste rock, scar material, and surrounding soils in an attempt to quantify the impacts from both sources. That study reported average concentrations of molybdenum, zinc, copper, and manganese which were two to five times higher in the samples from the waste rock piles than those from the alteration scars. Kent's report also compared analyses of water from hydrothermal scars with leachate from Molycorp's waste rock piles. That comparison showed significantly higher concentrations of metals in the waste rock pile leachate than in water draining to the Red River from the alteration scars. SRK (1995) also found higher concentrations of sulfate and metals in mine impacted drainage as opposed to scar impacted drainage. The most notable of those were sulfate, aluminum, manganese, and zinc.

Another, more recent, study of Molycorp's impact on the Red River was produced by the New Mexico Natural Resources Trustee (Allen et.al, 1999). The intent of the study was to determine whether there is a difference in the pollutant loading to the Red River from Molycorp's activities compared to those naturally occurring in the vicinity of the mine. Historic effects, before and after Molycorp's open pit mining, were also examined as a part of the study. Sampling conducted for the study included stream water, modern and older stream sediments, pond sediments, stream bed crusts and cements, and macroinvertebrates. Results of these analyses show that, while there is a general increase in the concentration of most metals in the downstream direction, there is a significant increase corresponding to the area of the mine. The Superfund division of EPA Region 6 is presently studying the issue of potential mine related impacts to the Red River versus potential impacts from the erosional scars in the area.

As described later in this Fact Sheet, Best Management Practice are included in the proposed permit to minimize the potential to discharge process related pollutants via seeps located adjacent to the Red River.

VIII. DRAFT PERMIT RATIONALE

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other necessary explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under 40CFR122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. REASON FOR PERMIT REISSUANCE (EXPIRING PERMIT)

It is proposed that the current permit be reissued for a 5-year term following regulations promulgated at 40CFR122.46(a). The current permit was issued September 10, 1993 with an effective date of October 15, 1993 and an expiration date of October 14, 1998. The permit renewal application was dated April 13, 1998.

B. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at 40CFR122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to 40CFR122.44(a) or on State water quality standards and requirements pursuant to 40CFR122.44(d), whichever are more stringent.

C. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. GENERAL COMMENTS

Regulations promulgated at 40CFR122.44(a) require technology-based effluent limitations to be placed in NPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgment) in the absence of guidelines, or on a combination of the two.

(B) EFFLUENT LIMITATIONS

This facility is covered by the Ore Mining and Dressing Effluent Limitations Guidelines Subpart J - Copper, Lead, Zinc, Gold, Silver, and Molybdenum Subcategory at 40 CFR PART 440.

a. OUTFALLS 001 and 002

Outfall 001, located at the tailings ponds, discharges treated process waste water from milling operations and tailings disposal as well as mine drainage, runoff from waste rock piles, and water from interceptor wells. Outfall 002 discharges seepage from the tailings ponds which has been captured in the seepage interception system. The draft permit includes technology-based effluent limitations for chemical oxygen demand, total suspended solids, arsenic, fluoride, iron, manganese, and molybdenum which were developed using the technology basis established in the expired permit. Mass limits were calculated using the concentration limits and representative discharge rates reported on the permit renewal application and discharge monitoring reports of 4.29 MGD at Outfall 001 and 0.35 MGD at Outfall 002. Molycorp has requested changes to the concentration basis of the permit's limits for fluoride and molybdenum. No clear rationale of how the previous limitations were determined appears in the administrative record.

Although limited, available effluent data for Outfall 001 show that the concentration limits for both fluoride and molybdenum are achievable with the existing treatment. The maximum reported value for fluoride is 2 mg/l whereas the limit is 3 mg/l. For molybdenum, the maximum reported effluent concentration is 0.68 mg/l, while the daily maximum limit is 2 mg/l and the monthly average limit is 1 mg/l. Changes to the concentration limits at Outfall 001 do not appear justifiable and are not proposed.

At Outfall 002 Molycorp has requested fluoride limitations of 19.9 mg/l for a monthly average and 35 mg/l for a daily maximum and molybdenum limits of 3.3 mg/l for a monthly average and 5.03 mg/l for a daily maximum. Analysis of that request was made based on available effluent data. The requested molybdenum concentration limits appear to be reasonable and are proposed to be included in the permit for Outfall 002. The concentration of molybdenum

was not limited in the previous permit at Outfall 002 only the sum of the mass from the combined discharge from outfalls 002 and 001. In the previous permit the concentration of fluoride was limited to 3 mg/l for both a daily maximum and monthly average at Outfall 002. Like at Outfall 001, available data show that fluoride limits are achievable. The concentration of fluoride is generally less than 2 mg/l and the maximum reported is 2.25 mg/l.

The expired permit applied mass limits to the sum of the discharges at Outfalls 001 and 002. Since Molycorp has not discharged at Outfall 001 recently, mass limits for the sum of the two discharges are not appropriate and are not proposed to be continued in the reissued permit. Technology based mass limits were calculated for the two separate outfalls as follows:

Outfall 001

	Concentration (mg/l)		Mass (lbs/day)	
Pollutant	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.
Chemical Oxygen Demand	60	90	2147	3220
Total Suspended Solids	20	30	716	1073
Arsenic	0.5	1.0	17.9	35.8
Fluoride	3.0	3.0	107	107
Iron	0.6	0.6	21.5	21.5
Manganese	1.0	1.5	35.8	53.7
Molybdenum	1.0	2.0	35.8	71.6
Zinc	0.2	0.2	7.16	7.16

Outfall 002

	Concentration (mg/l)		Mass (lbs/day)	
Pollutant	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.
Chemical Oxygen Demand	60	90	175	263
Total Suspended Solids	20	30	58	87.6
Arsenic	0.5	1.0	1.46	2.9
Fluoride	3.0	3.0	8.75	8.75
Iron	0.6	0.6	1.75	1.75
Manganese	1.0	1.5	2.9	4.38
Molybdenum	3.3	5.03	9.6	14.7
Zinc	0.2	0.2	0.58	0.58

A comparison of the expired permit's mass technology based limits and those included in the proposed permit follows. For the sake of comparison, the old limits were divided between the two outfalls based on the discharge rates used to derive the limits. In the expired permit, mass limits were calculated based on the combined flow from Outfall 001 (4.29 MGD) and Outfall 002 (0.41 MGD).

Outfall 001

	Expired permit's Limits (lbs/day)	Proposed Permit's Limits (lbs/day)	
Parameter	Monthly Avg.	Monthly Avg.	Daily Max.
COD	2,158	2147	3220
TSS	719	716	1073
Arsenic	17.9	17.9	35.8
Fluoride	107.7	107	107
Iron	21.5	21.5	21.5
Manganese	36	35.8	53.7
Molybdenum	22.8	35.8	71.6
Zinc	7.16	7.16	7.16

Outfall 002

	Expired permit's Limits (lbs/day)	Proposed Permit's Limits (lbs/day)	
Parameter	Monthly Avg.	Monthly Avg.	Daily Max.
COD	206	175	263
TSS	68.7	58	87.6
Arsenic	1.71	1.46	2.9
Fluoride	10.3	8.75	8.75
Iron	2.06	1.75	1.75
Manganese	3.44	2.9	4.38
Molybdenum	2.18	9.6	14.7
Zinc	0.68	0.58	0.58

Water quality based limits for arsenic, cadmium, copper, cyanide, lead, mercury, and molybdenum are more stringent than the technology based limits established in the previous permit and are discussed later in this Fact Sheet. The previous permit also limited silver, chlordane, and total residual chlorine and required monitoring for cobalt, selenium, beryllium, vanadium, and temperature based on water quality. Those limits and monitoring requirements are discussed later in this Fact Sheet.

b. OUTFALLS 004 AND 005

Outfalls 004 and 005 were included in the previous permit for storm water discharges at the mine site. Molycorp has not discharged at these outfalls and no effluent data are available. Technology based limits and monitoring requirements at Outfalls 004 and 005 are not proposed to be changed in the reissued permit.

3. MONITORING FREQUENCIES FOR LIMITED PARAMETERS

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [40CFR122.48(b)] and to assure compliance with permit

limitations [40CFR122.44(i)(1)]. Based on available effluent data for Outfall 001 the monitoring frequency for chemical oxygen demand, total suspended solids, and iron are proposed to be reduced to once per month. The discharge has been compliant with the existing permit's limits and analysis presented later in this Fact Sheet do not show exceedances of water quality standards for these parameters. The quality of the discharge is not expected to be highly variable; thus, once per month monitoring is sufficient to measure changes in the effluent over time. Monitoring for molybdenum and fluoride is proposed to be required at a frequency of once per week as it was in the expired permit.

Similarly, the monitoring frequency for chemical oxygen demand, total suspended solids, arsenic, fluoride, manganese, molybdenum, and zinc at Outfall 002 is proposed to be reduced to once per month based on the facility's compliance history. Effluent data demonstrate a low degree of variability in this discharge which also support a reduced monitoring frequency. The monitoring frequency for parameters which are limited based on water quality standards is discussed later in this Fact Sheet.

Monitoring frequencies at Outfalls 004 and 005 are not proposed to be changed, as data are not available on which to base a change in frequencies.

D. BEST MANAGEMENT PRACTICES

Seeps of waters in mine impacted areas to surface waters have been an issue throughout the United States. When exposed to oxygen and precipitation, sulfide minerals at mines often have the potential to produce acid mine drainage. Such drainage consists of low pH water which can contain high concentrations of metals. In many cases acid mine drainage flows into ground water which is hydrologically connected to surface waters. Seep like discharges can then result which heavily impact surface waters.

EPA Regions VIII and IX have dealt extensively with the issue of seeps at mine sites. Region VIII's position on this issue is described in a 1993 letter to the Montana Water Quality Bureau which states that facilities discharging through such hydrologically connected seeps are required to obtain NPDES permits for those discharges. This includes ground water discharges determined to be hydrologically connected to surface waters (Dodson, 1993). Region IX has regulated seeps from mines in several NPDES permits (see AZ0022705, 1999, AZ0020389, 2000, and AZ0020516, 2000). Those permits require implementation of Best Management Practices to identify and inspect potential seep zones, analyze water flowing from mine area seeps, and ensure compliance with State water quality standards.

EPA Region 6 has issued several permits which address discharges having the potential to flow into ground water which is hydrologically connected to surface waters. Three such permits are: the NPDES General Permit for Discharges from Concentrated Animal Feeding Operations (CAFO) (USEPA, 1993), the NPDES permit for US Liquids of Louisiana, Ltd.

(USEPA, 1999), and the NPDES permit for Texas Eastman (USEPA, 1976). Those permits require operators of facilities to implement management practices to control or eliminate discharges to ground water which have direct hydrologic connections to waters of the United States.

EPA's authority to regulate discharges resulting from a direct hydrologic connection between ground water and surface waters has been the subject of several court cases. In the following cases, the courts have ruled that EPA has the authority to regulate discharges, such as seeps, which result from a direct hydrologic connection:

Williams Pipe Line Co. v. Bayer Corp., 964 F. Supp. 1300, 1319-20 (S.D. Iowa, 1997)
Friends of the Coast Fork v. County of Lane, 1997 U.S. Dist. LEXIS 22705 (D. Ore. 1997)
Washington Wilderness Coalition v. Hecla Mining Co., 870 F. Supp. 983, 990 (E.D. Wash. 1994)
Sierra Club v. Colorado Refining Co., 838 F. Supp. 1428, 1434 (D. Colo. 1993)
U.S. v. Earth Sciences, Inc., 599 F.2d 368, 374 (10th Cir. 1979).

At Molycorp's Questa mine, pollutants resulting from mining activities may have the potential to be discharged to surface waters of the United States, through a direct hydrologic connection. In order to prevent this type of potential discharge, Best Management Practices (BMPs) are proposed to be required by the permit. The proposed BMPs, which are described in detail in the draft permit, consist of french drains and a ground water withdrawal well to intercept ground water at seeps located just upstream of the mouth of Capuline Canyon, near the mouth of Goathill Gulch, and below the Sugar Shack South waste rock pile. The water collected by the interception systems may be pre-treated as necessary to ensure the integrity of the tailings pipeline and then pumped into the tailings pipeline and sent to the tailings ponds located west of Questa or pumped to the mine for use as process water. When installed, the seepage interception systems described in the permit will prevent the potential discharge of pollutants traceable to point source mining operations to the Red River.

Along with a detailed description of the seepage interception system required as best management practices, the draft permit includes corresponding language prohibiting the discharge of pollutants traceable to point source mining operations, except in trace amounts. EPA has determined that installation and operation of the interception system will sufficiently eliminate the potential for such discharges and comply with the proposed permit's prohibition. A compliance schedule of two years has also been included in the permit to allow time to construct the seepage interception system. Two years is a sufficient amount of time to obtain necessary permits or modifications of permits required by other Federal or State agencies, construct the system, and bring it into operation. As part of that construction Molycorp will be required to conduct an evaluation of the ground water to determine its elevation, direction of flow, and gradient. That information will be used to verify the efficiency of the seepage interception system and determine potential improvements to the proposed design. The permittee will be

required to submit the results of the ground water evaluation to EPA Region 6. Any changes to the system design will require written approval from the Agency.

Monitoring requirements are also included in the proposed permit. The permittee will be required to visually inspect the Red River on a monthly basis to determine the effectiveness of the seepage interception system and identify potential seepage areas.

E. WATER QUALITY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. GENERAL COMMENTS

Effluent limitations and/or conditions established in the draft permit are in compliance with State water quality standards and the applicable water quality management plan.

2. POST THIRD ROUND POLICY AND STRATEGY

Section 101 of the Clean Water Act (CWA) states that "...it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited..." To insure that the CWA's prohibitions on toxic discharges are met, EPA has issued a "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants (49 FR 9016-9019, 3/9/84)." In support of the national policy, Region 6 adopted the "Policy for Post Third Round NPDES Permitting" and the "Post Third Round NPDES Permit Implementation Strategy" on October 1, 1992. The Regional policy and strategy are designed to insure that no source will be allowed to discharge any wastewater which (1) results in in-stream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical State water quality standard resulting in nonconformance with the provisions of 40CFR122.44(d); (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation which threatens human health.

3. IMPLEMENTATION

The Region is currently implementing its post third round policy (Appendix C) in conformance with the Regional strategy (Appendix D). The 5-year NPDES permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, additional water quality-based effluent limitations and/or conditions are included in the NPDES permits. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

4. STATE WATER QUALITY NUMERICAL STANDARDS

a. GENERAL COMMENTS

The Red River is classified for the uses of Secondary Contact Recreation, Fish Culture, Coldwater Fishery, Irrigation, Livestock Watering, and Wildlife Habitat. A spread sheet Analysis of the effluent and its potential to exceed State water quality standards is presented in Appendix B of this Fact Sheet. The calculation of the limits is also shown.

b. WATER QUALITY ANALYSIS - OUTFALLS 001 AND 002

Molycorp is presently only discharging at Outfall 002 but intends to also discharge at Outfall 001 in the future. Since the two outfalls will discharge to the Red River in relatively close proximity, they are in the same mixing zone and water quality based limits will apply to the combined discharges when they are discharging concurrently. Therefore, two water quality analyses were conducted, one for Outfall 002 separately and another for the combined discharge from both outfalls. Those analyses are shown in Appendix B-1 of this Fact Sheet. Based on the potential to exceed water quality standards, limits are required on the separate discharge from Outfall 002 for: aluminum, arsenic, cadmium, copper, cyanide, lead, and mercury. Limits are also required on the combined discharge of Outfalls 001 and 002 for: aluminum, arsenic, cadmium, copper, cyanide, gross alpha particles, lead, mercury, and molybdenum. The previous permit required limits and/or monitoring for beryllium, chlordane, cobalt, selenium, silver, total residual chlorine, temperature, and vanadium based on State water quality standards. Available data for these parameters do not show a potential to exceed water quality standard; therefore, those limits and monitoring requirements are not proposed to be retained in the reissued permit.

A comparison of the proposed concentration limits with those contained in the expired permit follows. In cases where the expired permit only contains mass limitations the concentration basis for the limit was obtained from the Response to Comments for the expired permit.

Outfalls 001 and 002 Combined Discharges

	Expired permit's Limits (ug/l)		Proposed Limits (ug/l)	
Parameter	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
Total Aluminum		87	58	87
Total Arsenic	500	1000	254	381
Total Cadmium	50	50	3.58	5.37
Total Copper	150	300	32.5	48.7
Total Cyanide	25	50	7	10
Gross Alpha			20.1 (pCi/l)	30.1 (pCi/l)
Total Lead	300	600	23.8	35.7
Total Mercury	1	2	0.0161	0.024
Total Molybdenum			1341	2011
Total Zinc	200	200	200	200

The expired permit's limits for arsenic, cadmium, copper, lead, and mercury are based on effluent limitations guidelines and will be replaced by the more stringent water quality based limitations. The cyanide and zinc limits listed in the expired permit were developed based on the best professional judgement of the permit writer as a technology based limits. The zinc limits are not proposed to be changed; however, the cyanide limits are proposed to be replaced by the more stringent water quality based limits. Cyanide is no longer used in Molycorp's milling process and there is no known source of cyanide at the facility. However, analysis of available effluent data shows a potential to cause an exceedance of water quality standards and limits are required. If the permittee can supply more current effluent data during the comment period which show there is no longer a potential to cause violations of water quality standards, the cyanide limits will not be required in the final permit. Technology based limits for Molybdenum at Outfall 001 are more stringent than the water quality based limits shown above; however, the water quality based limits are more stringent at Outfall 002 when both discharges are occurring simultaneously. The more stringent water quality based limits for molybdenum are proposed at Outfall 002 which are effective after commencement of discharge at Outfall 001.

d. WATER QUALITY ANALYSIS - OUTFALLS 004 AND 005

The previous permit contained mass water quality based limits for the sum of the discharges from Outfalls 001, 002, 004, and 005. Those limits were calculated based on the discharge rate for Outfalls 001 and 002. Mass limits are not appropriate for Outfalls 004 and 005 because they discharge solely storm water. These discharges are intermittent in nature and the volume of water discharged is solely the result of the quantity of precipitation and is not related to any plant process. Concentration limits are included in the proposed permit for Outfalls 004 and 005 which are based on the acute water quality standards shown in Appendix B.

e. SCHEDULE OF COMPLIANCE

Part I.B of the draft permit establishes a schedule of compliance and reporting requirements leading to the attainment no later than two (2) years from the effective date of the permit of state water quality standards-based effluent limitations established for aluminum, cadmium, copper, lead, mercury, and cyanide at Final Outfalls 001 and 002.

f. MONITORING FREQUENCIES FOR LIMITED PARAMETERS

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [40CFR122.48(b)] and to assure compliance with permit limitations [40CFR122.44(i)(1)].

MONITORING OPTION-NEW WQ LIMITS - OUTFALLS 001 AND 002

Aluminum, arsenic, cadmium, copper, cyanide, lead, mercury, and zinc are limited under the expired permit and have a required monitoring frequency of 1/week. That frequency is not proposed to be changed. The calculated water quality standards based limits for arsenic, cadmium, copper, cyanide, lead, mercury, and molybdenum (in some cases) are more stringent than the existing limits. A compliance schedule of two years is proposed for Molycorp to meet the new limits; however, since the existing monitoring frequency is 1/week no change in frequency is proposed.

5. AQUATIC TOXICITY TESTING

a. GENERAL COMMENTS

The provisions of this section apply to Final Outfall(s) 001 and 002.

EPA has determined that there may be pollutants present in the effluent(s) which have the reasonable potential to cause, or contribute to, an instream excursion above the narrative criterion within the applicable State water quality standards in violation of Section 101(a)(3) of the Clean Water Act. In addition, EPA is required under 40CFR122.44(d)(1) to include conditions as necessary to achieve the States' water quality standards as established under Section 303 of the Clean Water Act. The State has established narrative criteria which, in part, state that

> "Surface waters of the State shall be free of toxic substances attributable to point or non-point source discharge in amounts, concentrations or combinations which are toxic to fish or other aquatic organisms; ..." (NMWQS 1102.F)

b. PERMIT ACTION

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity.

(1) TESTING AND REPORTING REQUIREMENTS

The draft permit establishes the following testing and reporting requirements:

TOXICITY TESTS	FREQUENCY
Chronic static renewal 7-day survival and reproduction test using Ceriodaphnia dubia [Method 1002.0]	1/Six (6) Months
Chronic static renewal 7-day larval survival and growth test using fathead minnow (Pimephales promelas) [Method 1000.0]	1/Year

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-89/001, March 1989." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards.

The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at 40CFR122.48. Toxicity testing established in the current permit has not demonstrated ambient aquatic toxicity; however, the discharges result in exceedances of State water quality standards. Therefore, a minimum monitoring frequency of 1/six months is established in the draft permit as allowed by 40CFR122.44(i)(2). Toxicity testing is retained in the draft permit to assure compliance with state water quality standards narrative requirements governing ambient aquatic toxicity.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. This full report need not be submitted unless requested. However, the full report is to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of 40CFR124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

(2) DILUTION SERIES

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 21%, 28%, 38%, 50%, and 67% based on a 0.75 dilution series with the low-flow effluent concentration (critical low-flow dilution) defined as 50% effluent. The effluent dilution series were obtained from the implementation guidance for New Mexico's Standards (USEPA, 1995).

6. WATER QUALITY SCREENING FOR EPA HUMAN HEALTH PROTECTION BIOACCUMULATION CRITERIA

a. GENERAL COMMENTS

Where an exceedance of the EPA bioaccumulation water quality criteria for aquatic organism consumption is discovered and no state human health standard has been promulgated for that pollutant, the permitting sections will take the following three actions:

Notify the EPA Region 6 Watershed Management Section (6WQ-EW) of the potential exceedance upon issuance of the final permit.

Require effluent monitoring in the permit for the parameter of concern at a frequency of 1/month. The monitoring requirements shall expire one (1) year after the effective date of the permit.

Place a reopener clause in the permit. This will allow EPA to modify the permit for inclusion of a limit for the parameter of concern after the state has adopted an appropriate water quality standard.

The Watershed Management Section (6WQ-EW) will be provided the information generated through the effluent monitoring to assist in determining where additional state standards are necessary.

In conducting effluent screening, the permitting sections will utilize all EPA human health criteria for which the state has not adopted standards. Specifically, EPA will use the values promulgated by the National Toxics Rule (57 FR 60848, 12/22/92). This is currently the most reliable toxicity information available presented in a readily accessible format. The National Toxics Rule criteria have been based on Gold Book values updated by IRIS. These values have the added advantage of public notice and comment.

For evaluation purposes, the permitting sections will utilize the state assigned values for carcinogen risk factor and fish consumption rate. The EPA default assumptions for a 10^{-6} risk factor for carcinogens and a fish consumption rate of 6.5 g/day will be used in their absence. The

permitting sections will utilize the appropriate critical dilution at the edge of the human health mixing zone.

The water quality screening for EPA human health protection bioaccumulation criteria is presented at Appendix B. EPA aquatic organism consumption criteria are exceeded for the following pollutants: arsenic for the combined discharges at Outfalls 001 and 002.

b. PERMIT ACTION

Molycorp is presently required to monitor for arsenic; therefore, no additional monitoring requirements are proposed. A permit re-opener clause has been added to the permit stating "Should the State adopt a State water quality standard, this permit may be reopened to established effluent limitations for the parameter(s) to be consistent with that approved State standard in accordance with 40CFR122.44(d). Modification of the permit is subject to the provisions of 40CFR124.5."

X. ENDANGERED SPECIES

The Environmental Protection Agency has evaluated the potential effects of reissuance of this permit upon listed or proposed endangered or threatened species. Using available tools, primarily the Biota Information System of New Mexico (BISON-M), Version 9/97, EPA finds data which lead to a determination of "no effect" upon listed or proposed endangered or threatened species or their critical habitat as a result of this permit reissuance. The facility currently holds an NPDES permit with USEPA which limits aluminum, cadmium, chromium, copper, fluoride, iron, lead, mercury, molybdenum, silver, chlordane, and total residual chlorine in its discharges. The proposed permit includes more stringent limits for many of those pollutants as well as requirements for biomonitoring. It also contains new requirements to prevent the discharge of pollutants from seeps located near the mine.

Six species are listed or proposed to be listed as threatened or endangered in Taos County. These are the Black-footed ferret, Bald eagle, Mexican spotted owl, Southwestern willow flycatcher, Mountain plover, and Chiricahua dock.

Review of available material reveals that the primary cause for population declines leading to threatened or endangered status for all six species to be destruction of habitat. Reissuance of this permit is found to have no impact on the habitat of the species since no construction is authorized by this permitting action. All pollutants in the discharges proposed to be authorized, which have the potential to impact the habitat of the species are proposed to be limited by the permit to ensure compliance with New Mexico's water quality standards. In addition, the reissued permit proposes to limit pollutants in seep discharges at the mine which were previously not limited. Therefore, EPA has determined that reissuance of the permit will have no effect on listed or proposed threatened or endangered species.

XI. VARIANCE REQUESTS

No variance requests have been received.

XII. 303(d) LIST

The 1998-2000 Clean Water Act section 303(d) list for New Mexico indicates the uses not fully supported in the stream segment 2-119 are cold water fishery. The specific pollutants of concern are aluminum (acute and chronic), cadmium (acute), copper (acute), and zinc (acute and chronic) as well as stream bottom deposits. Discharges from the facility are likely to contribute to exceedances of water quality standards. Therefore, the proposed permit contains limitations and conditions at Outfalls 001 and 002 which reduce the impact of these discharges. Additionally, the proposed new seep interception system will help to ensure that potential mine related discharges of 303(d) listed metals are prevented.

EPA understands that based on more current data the New Mexico Environment Division plans to update the 303(d) list in the near future. Cadmium, copper, and zinc, which are presently listed for the Red River (Segment Number 2119), are expected to be proposed to be removed. However, effluent data show a potential to exceed water quality standards for cadmium and copper. Copper and zinc are required to be limited by effluent limitations guidelines. Therefore, a change in the 303 (d) list will not effect the final permit's limits or monitoring requirements.

XIII. ADMINISTRATIVE RECORD

The following section is a list of the fact sheet citations to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record required by 40CFR124.9:

A. PERMIT(S)

NPDES Permit No. NM0022306 effective October 15, 1993, expired October 14, 1998.

NPDES Permit No. AZ0022705, Phelps Dodge, Morenci Mine, effective October 3, 1999.

NPDES Permit No. AZ0022389, BHP Copper, Superior Operations, effective February 13, 2000.

NPDES Permit No. AZ0020516, Cyprus Miami Mining Corp., Christmas Facility, effective February 13, 2000.

NPDES Permit No. TX0000949, Texas Eastman, November, 18, 1976.

NPDES Permit No. LA0068420, US Liquids of Louisiana, Ltd., Permit Number, August 6, 1999.
NPDES General Permit and Reporting Requirements for Discharges from Concentrated Animal Feeding Operations, 58 FR 7610, February 8, 1993.

B. APPLICATION(S)

EPA Application Forms 1 and 2C and Supplemental Information, dated April 13, 1998.

C. CLEAN WATER ACT CITATIONS

Section 101
Section 101(a)(3)
Section 303
Section 304(e)
Section 308
Section 401(a)(1)
Section 401(a)(2)

D. 40CFR CITATIONS

STANDARD CITATIONS
122.44
122.44(a)
122.44(d)
122.44(d)(1)
122.44(i)(1)
122.44(i)(2)
122.44(l)(2)(ii)
122.45(c)(3)
122.46(a)
122.47
122.48
122.48(b)
124.5
124.53
131 amended at 57FR60848, 12/22/92

E. STATE WATER QUALITY REFERENCES

STATE ADMINSTRATIVE CODE

The general and specific stream standards are provided in "Water Quality Standards for Interstate and Intrastate Streams in New Mexico," (20NMAC6.1, effective 2/23/00)

WATER QUALITY STANDARDS IMPLEMENTATION

USEPA, Region 6 Implementation Guidance for State of New Mexico Standards for Interstate and Intrastate Stream, 5/5/95.

F. MISCELLANEOUS REFERENCES

Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants [49FR9016-9019, 3/9/84]

EPA Region 6 "Policy for Post Third Round NPDES Permitting" and "Post Third Round NPDES Permit Implementation Strategy," 1October 1, 1992.

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National Toxics Rule, 57FR60848, December 22, 1992.

Abshire, D, *Report on Hydrological Connection Associated with Molycorp Mining Activity, Questa, New Mexico,* USEPA, Region 6, February 13, 1998.

Allen, B.D., A.R. Groffman, M.C. Moles Jr., R.Y. Anderson, and L.J. Crossey, *Geochemistry of the Red River Stream System Before and After Ope-Pit Mining, Questa Area, Taos County, New Mexico,* October, 1999.

Avanti Corporation, *Compliance Costs and Pollutant Removals for Coastal Gulf of Mexico Produced Water Assuming Compliance with Zero Discharge Under the EPA Region 6 General Permit,* September 16, 1996.

Chadwick Ecological Consultants, Inc., *Aquatic Biological Assessment of the Red River, New Mexico, in the Vicinity of the Questa Molybdenum Mine*, April, 1997.

Chadwick Ecological Consultants, Inc., *Fall, 1998 Data Addendum, Red River Aquatic Biological Assessment,* February, 1998.

Hutchison, I, *Questa Mine Site Expert Report,* TRC Environmental Solutions, Inc., April 23, 1997.

Kelsey, R.K., Plaintiffs Rule 26(a)(2)(B) Expert Report, U.S. District Court, New Mexico, March 17, 1997

Kent, S., *Expanded Site Inspection Report on Molycorp, Inc., Questa Division, Taos County, New Mexico,* New Mexico Environment Department, 1995

Mink, L.L., Plaintiffs Rule 26(a)(2)(B) Expert Report, U.S. District Court, New Mexico, March 17, 1997.

Molycorp, Inc., NPDES Permit Renewal Application and Supporting Documentation, April 13, 1998.

Molycorp, Inc., Letter from Shoemaker (Molycorp) to Wilson (EPA, Region 6) commenting on the Abshire (1998) report, September 15, 1998.

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Robertson GeoConsultants, Inc., *Three Dimensional Geometric Model of Molycorp's Questa Tailings Facility*, October, 1997.

Schafer, W.M., *Expert Report,* April 23, 1997.

Smolka, L.R., *Special Water Quality Survey of the Red River*, Taos County, New Mexico, February - December, 1992.

Souder, Miller, and Associates, *Evaluation of Tailings Area Seepage Interception*

System, Molycorp, Inc., Questa, New Mexico, September 30, 1998.

South Pass Resources, Inc. (SPRI), *Progress Report on the Geology, Hydrology, and Water Quality of the Mine Area, Molycorp Facility, Taos County, New Mexico,* April 21, 1995.

South Pass Resources, Inc. (SPRI), *Discussion of Geology, Hydrology, and Water Quality of the Tailings Area, Molycorp Facility, Taos County, New Mexico,* April 13, 1995.

South Pass Resources, Inc. (SPRI), *Remediation Plan for the Tailings Area, Molycorp Facility, Taos County, New Mexico,* April 13, 1995.

South Pass Resources, Inc. (SPRI), *Hydrogeologic Evaluation of Tailings Ponds, Molycorp, Questa Division, Questa, New Mexico,* September 23, 1993.

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U.S. Environmental Protection Agency (USEPA), *EPA's National Hardrock Mining Framework,* September, 1997.

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U.S. Environmental Protection Agency (USEPA), *Development Document for Effluent Limitations Guidelines and Standards for the Ore Mining and Dressing Point Source Category,* Effluent Guidelines Division, EPA 440/1-82/061, November, 1982.

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Vail Engineering, Inc., *Interim Study of the Acidic Drainage to the Middle Red River, Taos County, New Mexico,* July 9, 1993.

Williams, B.C., Plaintiffs Rule 26(a)(2)(B) Expert Report, U.S. District Court, New Mexico, March 17, 1997

Schafer, W, *Expert Report,* April 23, 1997

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G. LETTERS/MEMORANDA/RECORDS OF COMMUNICATION, ETC.

Dodson, M.H. (EPA Region VIII), Letter to Dan Fraser (Water Quality Bureau, Montana Department of Health), concerning permitting at mine sites, December 22, 1993

Humke. F.O. (EPA), Letter to Brian Shields (Amigos Bravos), concerning seeps associated with waste rock piles at Molycorp, April 30, 1997.

Humke, Frederick O. (EPA), Letter to Richard E. Schwartz (Attorney for Molycorp), concerning seepage associated with Molycorp's waste rock piles, May 6, 1997.

Rae, S. (Vail Engineering), Letter to Molycorp, September 11, 1979.

Sacrison, C.R. (Molycorp), Letter to Dick Whittington (EPA), Concerning process changes and achievability of molybdenum limits, November 26, 1984.

Saums, G.E. (NMED), Letter to Jane Watson, Ph.D. (USEPA), concerning applicable State Water Quality Standards and flows for the Red River, June 3, 1999.

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H. LEGAL PROCEEDINGS.

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Friends of the Coast Fork v. County of Lane, 1997 U.S. Dist. LEXIS 22705 (D. Ore. 1997)

Friends of Santa Fe County v. LAC Minerals, Inc., 892 F. Supp. 1333, 1357-58 (D.N.M.. 1995)

Washington Wilderness Coalition v. Hecla Mining Co., 870 F. Supp. 983, 990 (E.D. Wash. 1994)

Sierra Club v. Colorado Refining Co., 838 F. Supp. 1428, 1434 (D. Colo. 1993)

U.S. v. Earth Sciences, Inc., 599 F.2d 368, 374 (10th Cir. 1979).

APPENDICES DIRECTORY

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APPENDIX A

EFFLUENT ANALYSIS

OUTFALL NO: 001
FREQUENCY: Continuous
SOURCE: EPA Form 2C Dated April 13, 1998

		FORM 2C NO.	UNITS	MONTH AVG	DAILY MAX
TSS		A.1.d	mg/L	3.5	5
Flow		A.1.f	MGD	0.7	4.29
COD		A.1.b	mg/L	10.4	12.8
Fluoride		B.1.e	ug/L	2150	2400
Iron	(T)	B.1.s	ug/L	195	290
Molybdenum	(T)	B.1.u	ug/L	630	770
Manganese	(T)	B.1.v	ug/L	85	130
Arsenic	(T)	2M	ug/L	NA	< 10
Cadmium	(T)	4M	ug/L	NA	20
Copper	(T)	6M	ug/L	65	80
Lead	(T)	7M	ug/L	105	110
Mercury	(T)	8M	ug/L	NA	0.24
Zinc	(T)	13M	ug/L	14	17
Cyanide	(T)	14M	ug/L	NA	< 1

OUTFALL NO: 002
FREQUENCY: Continuous
SOURCE: EPA Form 2C Dated April 13, 1998

	FORM 2C NO.	UNITS	MONTH AVG	DAILY MAX
BOD5	A.1.a	mg/L	NA	< 3
TSS	A.1.d	mg/L	10.8	20
Flow	A.1.f	MGD	0.35	0.48
COD	A.1.b	mg/L	12.4	18
TOC	A.1.c	mg/L	NA	2
Ammonia (as N)	A.1.e	mg/L	NA	0.07
Chlorine (Total Residual)	B.1.b	ug/L	NA	< 11
Fluoride	B.1.e	ug/L	1900	2100
Nitrate-Nitrite (N)	B.1.f	ug/L	NA	140
Phosphorus, Total (as P)	B.1.i	ug/L	NA	40
Radioactivity: Alpha, Total	B.1.j.(1)	pCi/L	NA	31.7
Radioactivity: Beta, Total	B.1.j.(2)	pCi/L	NA	10.2
Radioactivity: Radium, Total	B.1.j.(3)	pCi/L	NA	0.7
Radioactivity: Radium 226, Total	B.1.j.(4)	pCi/L	NA	0.01
Sulfate (as SO4)	B.1.k	ug/L	NA	900000
Sulfide (as S)	B.1.i	ug/L	NA	< 20
Sulfite: (as SO3)	B.1.m	ug/L	NA	2000
Aluminum (T)	B.1.o	ug/L	70	70
Barium (T)	B.1.p	ug/L	NA	26

Cobalt	(T)	B.1.r	ug/L	NA	< 10
Iron	(T)	B.1.s	ug/L	130	200
Magnesium	(T)	B.1.t	ug/L	NA	48300
Molybdenum	(T)	B.1.u	ug/L	2500	2600
Manganese	(T)	B.1.v	ug/L	1800	1900
Phenolics	(Total Recoverable)	15M	ug/L	NA	10
Antimony	(T)	1M	ug/L	NA	2
Arsenic	(T)	2M	ug/L	NA	5
Beryllium	(T)	3M	ug/L	NA	5
Cadmium	(T)	4M	ug/L	3.7	5
Chromium	(T)	5M	ug/L	NA	10
Copper	(T)	6M	ug/L	6	20
Lead	(T)	7M	ug/L	30	80
Mercury	(T)	8M	ug/L	0.2	0.2
Nickel	(T)	9M	ug/L	NA	10
Selenium	(T)	10M	ug/L	NA	5
Silver	(T)	11M	ug/L	NA	2
Thallium	(T)	12M	ug/L	NA	2
Zinc	(T)	13M	ug/L	27	39
Cyanide	(T)	14M	ug/L	8	40

APPENDIX B

New Mexico Water Quality Standards Analysis

CALCULATIONS OF NEW MEXICO WATER QUALITY-BASED EFFLUENT LIMITATIONS - Outfall 002

IMPLEMENTATION PROCEDURES

Limits based on New Mexico's water quality standards for Interstate and Intrastate streams of the State of New Mexico are calculated as follows:

FACILITY	DATA INPUT
Outfall No.(s)	002
Plant Effluent Flow (MGD)	0.35
Plant Effluent Flow (cfs)	0.5425

RECEIVING STREAM	DATA INPUT
Receiving Stream Name	Red River
Is a publicly owned lake or reservoir (enter "1" if yes 0 if no)	0
Are acute aquatic life criteria considered (1= yes, 0= no)	1
Are chronic aquatic life criteria considered (1= yes, 0= no)	1
Are domestic water supply criteria considered (1= yes)	1
Are irrigation water supply criteria considered (1= yes)	1
Livestock and wildlife habitat criteria apply to all streams	
Receiving Stream TSS (mg/l)	10
Receiving Stream Hardness (mg/l as CaCOs)	127
Receiving Stream Critical Low Flow (4Q3) (cfs)	7.05
Avg. Water Temperature (C)	5
pH (Avg)	7.72
Fraction of stream allowed for mixing (F)	1

Values below detection level which is smaller than the minimum quantification level will be counted as "0".
Values reported as "less than" but greater than MQL, the reported value is used.
Value below detection level and reported as "ND" will be counted as "0".

The following formula is used to calculate the In-stream Waste Concentration (Cd)

$$Cd = [(F*Qa*Ca) + (Qe*2.13*Ce)] / (F*Qa + Qe)$$

Where:
- Cd = In-stream Waste Concentration
- F = Fraction of stream allowed for mixing (see NM Implementation Guidance)
- Ce = Reported concentration in effluent
- Ca = Ambient stream concentration upstream of discharge
- Qe = Plant effluent flow
- Qa = Critical low flow of stream at discharge point expressed as the 4Q3

	"Ambient Stream Conc		"Effluent Conc.		Instream Waste Concentration, Cd (ug/l)			
POLLUTANT	Ca (ug/l)	Ca > MQL?	Ce (ug/l)	Ce > MQL?	2.13* Ce	100% 4Q3	F= 1	MQL
Total Phenols (4AAP)	NO DATA	NO DATA	NO DATA	NO DATA	0	0	0	5
Aluminum (T)	3822	3822	70	70	149.1	3553.912	3553.912	100
Barium (T)	0	0	26	26	55.38	1.857754	1.857754	100
Boron (T)	0	0	0	0	0	0	0	100
Chlorine Residual (T)	0	0	0	0	0	0	0	100
Chlordane (T)	0	0	0	0	0	0	0	0.2
Cobalt (T)	2.6	2.6	0	0	0	2.414225	2.414225	50
Molybdenum (T)	0	0	5030	5030	10714	349.2832	349.2832	10
Nitrate (as N) (T) (mg/l)	0	0	140	140	298.2	9.7216	9.7216	0.1
Uranium (T)	0	0	0	0	0	0	0	
Radium-226+Radium 228 (pCi/l)	0	0	0.01	0.01	0.0213	0.000715	0.000715	
Strontium-90 (pCi/l)	0	0	0	0	0	0	0	
Tritium (pCi/l)	0	0	0	0	0	0	0	
Gross Alpha (pCi/l)	0	0	0	0	0	0	0	
Vanadium	0	0	0	0	0	0	0	50
Antimony	0	0	2	2	4.26	0.142904	0.142904	60
Arsenic	0	0	1000	1000	2130	69.44	69.44	10
Beryllium	0	0	5	5	10.65	0.35726	0.35726	5
Cadmium	0	0	100	100	213	6.944	6.944	1
Chromium	0	0	10	10	21.3	0.6944	0.6944	10

Copper	3.5	3.5	300	300	639	24.0889	24.0889	10
Lead	0	0	600	600	1278	41.664	41.664	5
Mercury	0	0	0.2	0.2	0.426	0.01388	0.01388	0.2
Nickel	12	12	10	10	21.3	11.8571	11.8571	5
Selenium	0	0	5	5	10.65	0.35726	0.35726	5
Silver	0	0	2	2	4.26	0.142904	0.142904	2
Thallium	0	0	2	2	4.26	0.142904	0.142904	10
Zinc	196	196	200	200	426	196.278	196.278	20
Cyanide (T)	0	0	40	40	85.2	2.858084	2.858084	20

Effluent data for arsenic, cadmium, copper, lead, and zinc are based on the technology based limits for those parameters.

STEP 2: CALCULATE HARDNESS DEPENDENT CRITERIA CONVERT DISSOLVED METALS TO TOTAL FORM
This step calculate hardness dependent criteria, then convert these criteria from dissolved form to total form
The following formula is used to convert dissolved metals criteria to total form

Kp = Kpo * (TSS**a)

Where:
Kp = Linear partition coefficient
Kpo and a can be found in table below
C/Ct = 1/ (1 + Kp*TSS* 1.0E-6)
TSS = Total suspended solids concentration found in receiving stream
C/Ct = Fraction of metal dissolved
Cr = Dissolved criteria value

Stream Linear Partition Coefficient

Metals	Kpo	alpha (a)	Kp	C/Ct
Arsenic	480000	-0.73	89380.18	0.528038
Chromium	3360000	-0.93	394765.6	0.202116
Copper	1040000	-0.74	189248.9	0.345723
Lead	2800000	-0.8	443770.1	0.183901
Nickel	490000	-0.57	131885.2	0.431248
Zinc	1250000	-0.7	249407.8	0.286199

The following formula is used to calculate hardness dependent criteria

			Dissolved WQC (ug/l)	Total Stream WQC (ug/l)
Cadmium (D)	Acute	e(1.128[ln(hardness)]-3.6867)*C	5.5249	
	Chronic	e(0.7852[ln(hardness)]-2.715)*C	2.670283	
Chromium (D)	Acute	e(0.819[ln(hardness)]+2.5736)	692.9717	3428.586
	Chronic	e(0.819[ln(hardness)]+0.534)	90.14227	445.9929
Copper (D)	Acute	e(0.9422[ln(hardness)]-1.7408)	16.83387	48.69179
	Chronic	e(0.8545[ln(hardness)]-1.7428)	10.9853	31.77485
Lead (D)	Acute	e(1.273[ln(hardness)]-1.46)*CF	83.6939	455.1024
	Chronic	e(1.273[ln(hardness)]-4.705)*CF	3.261431	17.73469
Nickel (D)	Acute	e(0.846[ln(hardness)]+2.253)	573.17	1329.096
	Chronic	e(0.846[ln(hardness)]+0.0554)	63.66165	147.6219
Zinc (D)	Acute	e(0.8473[ln(hardness)]+0.8618)	143.4921	501.3724
	Chronic	e(0.8473[ln(hardness)]+0.8699)	144.6591	505.4501
Silver (D)	Acute	e(1.72[ln(hardness)]-6.6825)	5.204386	

STEP 3: SCAN POTENTIAL IN-STREAM WASTE CONCENTRATIONS AGAINST WATER QUALITY CRITERIA AND ESTABLISH EFFLUENT LIMITATIONS FOR ALL APPLICABLE PARAMETERS

No limits are established if the potential in-stream waste concentrations are less than the chronic water quality criteria.
The most applicable stringent criteria are used to establish effluent limitations for a given parameter.
Water quality criteria apply at the end-of-pipe for acute aquatic life criteria and discharges to public lakes.
If background concentration exceeds the water quality criteria, water quality criteria apply.
Monthly avg concentration = daily max. / 1.5.

TABLE OF NM WATER QUALITY STANDARDS

STREAM CRITERIA	Potential IWC, (ug/l) Conc. ug/100% 4Q3		IWC (ug/l)	Livestock Wildlife	Irrigation Criteria	Domestic Criteria	Aquatic Life Criteria Acute	Chronic
PARAMETERS	(2.13*Ce)	(Cd)	F=1	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum (T)	149.1	3561.461	3561.461	5000	5000	*******	750	87
Barium (T)	55.38	1.80544	1.80544	********	*********	2000	********	********
Boron (T)	0	0	0	5000	750	*******	********	********
Chlorine Residual (T)	0	0	0	11	*********	*******	19	11
Chlordane (T)	0	0	0	********	*********	*******	2.4	0.0043
Cobalt (T)	10.65	2.766656	2.766656	1000	50	*******	********	********
Molybdenum (T)	10713	349.2832	349.2832	********	1000	*******	********	********
Nitrate (as N) (T) (mg/l)	298.2	9.7216	9.7216	********	*********	10	********	********
Uranium (T)	0	0	0	********	*********	5000	********	********
Radium-226+Radium 228 (pCi/l)	0.0213	0.000694	0.000694	30	*********	5	********	********
Strontium-90 (pCi/l)	0	0	0	********	*********	8	********	********
Tritium (pCi/l)	0	0	0	20000	*********	20000	********	********
Gross Alpha (pCi/l)	67.521	2.2012	2.2012	15	*********	15	********	********
Vanadium	0	0	0	100	100	********	********	********
Antimony	4.26	0.13888	0.13888	********	*********	6	********	********
Arsenic (T)	2130	69.44	69.44	378.7604	189.3802	94.69009	643.8926	284.0703
Beryllium	10.65	0.3472	0.3472	********	*********	4	130	5.3
Cadmium	10.65	0.35726	0.35726	50	10	5	5.5249	2.670283
Chromium (T)	213	6.944	6.944	4947.656	494.7656	494.7656	3428.586	445.9929
Copper (T)	639	24.0889	24.0889	1446.244	578.4978	********	48.69179	31.77485
Lead (T)	1278	41.664	41.664	543.7701	27188.5	271.885	455.1024	17.73469
Mercury	0.426	0.01388	0.01388	0.77	*********	2	2.4	0.012
Nickel (T)	21.3	11.8612	11.8612	********	*********	231.8852	1329.096	147.6219
Selenium	10.65	0.3472	0.3472	5	130	50	20	5
Silver	4.26	0.13888	0.13888	********	********	********	5.204386	********
Thallium	4.26	0.13888	0.13888	********	********	2	********	********
Zinc	426	196.278	196.278	87351.95	6988.156	********	501.3724	505.4501
Cyanide (T)	85.2	2.858084	2.858084	5.2	*********	200	22	5.2

APPLICABLE WATER QUALITY-BASED LIMITS

The following formula is used to calculate the allowable daily maximum effluent concentration

Daily Max. Conc. = Cs + (Cs - Ca)(F*Qa/Qe)
Monthly Avg. Conc. = Daily Max. Conc. / 1.5

Where:
Cs = Applicable water quality standard
Ca = Ambient stream concentration
F = Fraction of stream allowed for mixing
Qe = Plant effluent flow
Qa = Criteria low flow (4Q3)

PARAMETERS	Livestock/ Wildlife Lim ug/l	Irrigation Limits ug/l	Domestic Limits ug/l	Aquatic Life Criteria Acute Limits ug/l	Chronic Limits ug/l	Limiting Criteria Daily Max. ug/l	Daily Avg. ug/l	Max. Mass LBS/Day	Avg. Mass LBS/Day
Aluminum (T)	No Limit	No Limit	No Limit	No Limit	87	87	58	0.253953	0.169302
Barium (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Boron (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Chlorine Residual (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Chlordane (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Cobalt (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Molybdenum (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Nitrate (as N) (T) (mg/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Uranium (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Radium-226+228(pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Strontium-90 (pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Tritium (pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Gross Alpha (pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Vanadium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Antimony	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Arsenic	No Limit	No Limit	No Limit	643.8926	No Limit	643.8926	429.2618	1.879523	1.253015

Beryllium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Cadmium	No Limit	No Limit	No Limit	5.5249	38.45454	5.5249	3.683267	0.016127	0.010751
Chromium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Copper	No Limit	No Limit	No Limit	48.69179	No Limit	48.69179	32.46119	0.144213	0.094754
Lead	No Limit	No Limit	No Limit	455.1024	255.3958	255.3958	170.2639	0.74551	0.497
Mercury	No Limit	No Limit	No Limit	No Limit	0.172811	0.172811	0.115207	0.000504	0.000336
Nickel	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Selenium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Silver	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Thalllium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Zinc	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Cyanide (T)	No Limit	No Limit	No Limit	22	No Limit	22	14.66667	0.064218	0.042812

Outfalls 001 and 002 Combined

CALCULATIONS OF NEW MEXICO WATER QUALITY-BASED EFFLUENT LIMITATIONS

IMPLEMENTATION PROCEDURES: Limits based on New Mexico's water quality standards for Interstate and Intrastate streams of the State of New Mexico are calculated as follows:

FACILITY	DATA INPUT
Outfall No.(s)	001 and 002
Plant Effluent Flow (MGD)	4.64 (Based on the monthly average flows reported in the permit renewal application)
Plant Effluent Flow (cfs)	7.192

RECEIVING STREAM	DATA INPUT
Receiving Stream Name	Red River
Waterbody Segment Code No.	2119
Is a publicly owned lake or reservoir (enter "1" if yes	0
Are acute aquatic life criteria considered (1= yes, 0= no)	1
Are chronic aquatic life criteria considered (1= yes)	1
Are domestic water supply criteria considered (1= yes)	0
Are irrigation water supply criteria considered (1= yes)	1
Livestock watering and wildlife habitat criteria applied to all streams	
Receiving Stream TSS (mg/l)	10
Receiving Stream Hardness (mg/l as CaCOs)	127
Receiving Stream Critical Low Flow (4Q3) (cfs)	7.05
Avg. Water Temperature (C)	5
pH (Avg)	7.72
Fraction of stream allowed for mixing (F)	1

Value below detection level which is smaller than the minimum quantification level will be counted as "0".
Value reported as "less than" but greater than MQL, the reported value is used.
Value below detection level and reported as "ND" will be counted as "0".

The following formula is used to calculate the In-stream Waste Concentration (Cd)

Cd = [(F*Qa*Ca) + (Qe*2.13*Ce)] / (F*Qa + Qe)

Where:
Cd = In-stream Waste Concentration
F = Fraction of stream allowed for mixing (see NM Implementation Guidance)
Ce = Reported concentration in effluent
Ca = Ambient stream concentration upstream of discharge
Qe = Plant effluent flow
Qa = Critical low flow of stream at discharge point expressed as the 4Q3

	Ambient Stream Conc.		Effluent Conc.			In-stream Waste Conc., Cd (ug/l)		
POLLUTANTS	Ca (ug/l)	Ca > MQL?	Ce (ug/l)	Ce > MQL?	2.13* Ce	100% 4Q3	F= 1	MQL
Total Phenols (4AAP)	NO DATA	NO DATA	0	0	0	0	0	5
Aluminum (T)	3822	3822	70	70	149.1	1956.118	1956.118	100
Barium (T)	0	0	26	26	55.38	12.92988	12.92988	100
Boron (T)	0	0	0	0	0	0	0	100
Chlorine Residual (T)	0	0	0	0	0	0	0	100
Chlordane (T)	0	0	0	0	0	0	0	0.2
Cobalt (T)	2.6	2.6	5	5	10.65	3.79353	3.79353	50
Molybdenum (T)	0	0	2229 *	2229 *	4748	1108.489	1108.489	10
Nitrate (as N) (T) (mg/l)	0	0	140	140	298.2	69.62246	60.62246	0.1
Uranium (T)	0	0	0	0	0	0	0	

Radium-226+Radium 228 (pCi/l)	0	0	0.7	0.7	1.491	0.348112	0.348112	
Strontium-90 (pCi/l)	0	0	0	0	0	0	0	
Tritium (pCi/l)	0	0	0	0	0	0	0	
Gross Alpha (pCi/l)	0	0	31.7	31.7	67.521	15.76451	15.76451	
Vanadium	0	0	0	0	0	0	0	50
Antimony	0	0	2	2	4.26	0.994607	0.994607	60
Arsenic	0	0	1000 *	1000 *	2130 *	497.3033	497.3033	10
Beryllium	0	0	5	5	10.65	2.48652	2.48652	5
Cadmium	0	0	100 *	100 *	213	49.7303	49.7303	1
Chromium	0	0	10	10	21.3	4.97303	4.97303	10
Copper	3.5	3.5	300 *	300 *	639	150.95	150.95	10
Lead	0	0	100 *	100 *	213	49.7303	49.7303	5
Mercury	0	0	0.23	0.23	0.4899	0.114379	0.114379	0.2
Nickel	12	12	10	10	21.3	11.00539	11.00539	5
Selenium	0	0	5	5	10.65	2.48652	2.48652	5
Selenium (SO4 >500 mg/l)	0	0	5	5	10.65	2.48652	2.48652	5
Silver	0	0	2	2	4.26	0.994607	0.994607	2
Thallium	0	0	2	2	4.26	0.994607	0.994607	10
Zinc	196	196	200 *	200 *	426	197.989	197.989	20
Cyanide (T)	0	0	40	40	85.2	19.89213	19.89213	20

* Effluent concentrations for molybdenum, lead and zinc are based on technology based limitations.

STEP 2: CALCULATE HARDNESS DEPENDENT CRITERIA CONVERT DISSOLVED METALS TO TOTAL FORM

This step calculate hardness dependent criteria, then convert these criteria from dissolved form to total form
The following formula is used to convert dissolved metals criteria to total form

Kp = Kpo * (TSS**a)

Where: Kp = Linear partition coefficient
Kpo and a can be found in table below
C/Ct = 1/ (1 + Kp*TSS* 1.0E-6)
TSS = Total suspended solids concentration found in receiving stream
C/Ct = Fraction of metal dissolved
Cr = Dissolved criteria value

Stream Linear Partition Coefficient

Metals	Kpo	alpha (a)	Kp	C/Ct
Arsenic	480000	-0.73	89380.18	0.528038
Chromium	3360000	-0.93	394765.6	0.202116
Copper	1040000	-0.74	189248.9	0.345723
Lead	2800000	-0.8	443770.1	0.183901
Nickel	490000	-0.57	131885.2	0.431248
Zinc	1250000	-0.7	249407.8	0.286199

The following formula is used to calculate hardness dependent criteria

			Dissolved WQC (ug/l)	Total Stream WQC (ug/l)
Cadmium (D)	Acute	e(1.128[ln(hardness)]-3.6867)*CF	5.5249	
	Chronic	e(0.7852[ln(hardness)]-2.715)*CF	2.670283	
Chromium (D)	Acute	e(0.819[ln(hardness)]+2.5736)	692.9717	3428.586
	Chronic	e(0.819[ln(hardness)]+0.534)	90.14227	445.9929
Copper (D)	Acute	e(0.9422[ln(hardness)]-1.7408)	16.83387	48.69179
	Chronic	e(0.8545[ln(hardness)]-1.7428)	10.9853	31.77485
Lead (D)	Acute	e(1.273[ln(hardness)]-1.46)*CF	83.6939	455.1024
	Chronic	e(1.273[ln(hardness)]-4.705)*CF	3.261431	17.73469
Nickel (D)	Acute	e(0.846[ln(hardness)]+2.253)	573.17	1329.096
	Chronic	e(0.846[ln(hardness)]+0.0554)	63.66165	147.6219
Zinc (D)	Acute	e(0.8473[ln(hardness)]+0.8618)	143.4921	501.3724
	Chronic	e(0.8473[ln(hardness)]+0.8699)	144.6591	505.4501

Silver (D) Acute e(1.72[ln(hardness)]-6.6825) 5.204386

STEP 3: SCAN POTENTIAL IN-STREAM WASTE CONCENTRATIONS AGAINST WATER QUALITY CRITERIA AND ESTABLISH EFFLUENT LIMITATIONS FOR ALL APPLICABLE PARAMETERS

No limits are established if the potential in-stream waste concentrations are less than the applicable water quality criteria.

The most stringent applicable criteria are used to establish effluent limitations for a given parameter.
Water quality criteria apply at the end-of-pipe for acute aquatic life criteria.
If background concentration exceeds the water quality criteria, water quality criteria apply.

TABLE OF NM WATER QUALITY STANDARDS

STREAM CRITERIA	Potential IWC, (ug/l) Conc. ug/100% 4Q3		IWC (ug/l F=1	Livestock Wildlife	Irrigation Criteria	Domestic Criteria	Aquatic Life Criteria Acute	Chronic
PARAMETER	(2.13*Ce)	(Cd)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum (T)	149.1	1956.118	1956.118	5000	5000	*******	750	87
Barium (T)	55.38	12.92989	12.92989	********	********	2000	*******	********
Boron (T)	0	0	0	5000	750	*******	*******	********
Chlorine Residual (T)	0	0	0	11	********	*******	19	11
Chlordane (T)	0	0	0	********	********	*******	2.4	0.0043
Cobalt (T)	10.65	3.79353	3.79353	1000	50	*******	*******	********
Molybdenum (T)	4747	1108.489	1108.489	********	1000	*******	*******	********
Nitrate (as N) (T) (mg/l)	298.2	69.62246	69.62246	********	********	10	*******	********
Uranium (T)	0	0	0	********	********	5000	*******	********
Radium-226+228 (pCi/l)	1.491	0.348112	0.348112	30	********	5	*******	********
Strontium-90 (pCi/l)	0	0	0	********	********	8	*******	********
Tritium (pCi/l)	0	0	0	20000	********	20000	*******	********
Gross Alpha (pCi/l)	67.521	15.76451	15.76451	15	********	15	*******	********
Vanadium	0	0	0	100	100	********	*******	********
Antimony	4.26	0.994607	0.994607	********	********	6	*******	********
Arsenic (T)	2130	497.303	497.303	378.7604	189.3802	94.69009	643.8926	284.0703
Beryllium	10.65	2.48652	2.46852	********	********	4	130	5.3
Cadmium	213	49.7303	49.7303	50	10	5	5.5249	2.670283
Chromium (T)	21.3	4.97303	4.97303	4947.656	494.7656	494.7656	3428.586	445.9929
Copper (T)	639	150.95	150.95	1446.244	578.4978	********	48.69179	31.77485
Lead (T)	213	49.7303	49.7303	543.7701	27188.5	271.885	455.1024	17.73469
Mercury	0.4899	0.114379	0.114379	0.77	********	2	2.4	0.012
Nickel (T)	21.3	11.00539	11.00539	********	********	231.8852	1329.096	147.6219
Selenium	10.65	2.48651	2.48651	5	130	50	20	5
Silver	4.26	0.994607	0.994607	********	********	********	5.204386	********
Thallium	4.26	0.994607	0.994607	********	********	2	*******	********
Zinc	426	197.989	197.989	87351.95	6988.156	********	501.3724	505.4501
Cyanide (T)	85.2	19.89213	19.89213	5.2	********	200	22	5.2

APPLICABLE WATER QUALITY-BASED LIMITS

The following formula is used to calculate the allowable daily maximum effluent concentration

Daily Max. Conc. = Cs + (Cs - Ca)(F*Qa/Qe)
Monthly Avg. Conc. = Daily Max. Conc. / 1.5

Where: Cs = Applicable water quality standard
Ca = Ambient stream concentration
F = Fraction of stream allowed for mixing
Qe = Plant effluent flow
Qa = Criteria low flow (4Q3)

STREAM	Livestock/ Wildlife Lim	Irrigation Limits	Domestic Limits	Aquatic Life Criteria Acute Limits	Chronic Limits	Limiting Criteria Daily Max.	Monthly Avg.	Max. Mass	Avg. Mass
PARAMETER	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	LBS/Day	LBS/Day
Aluminum (T)	No Limit	No Limit	No Limit	No Limit	87	87	58	3.366691	2.244461
Barium (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Boron (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Chlorine Residual (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit

Chlordane (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Cobalt (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Molybdenum (T)	No Limit	2010.845	No Limit	No Limit	No Limit	2010.845	1340.564	77.8149	51.876
Nitrate (as N)(mg/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Uranium (T)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Radium-226+228 (pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Strontium-90 (pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Tritium (pCi/l)	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Gross Alpha (pCi/l)	30.16268	No Limit	No Limit	No Limit	No Limit	30.1628	20.10845	1.167223	0.778149
Vanadium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Antimony	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Arsenic	761.6285	380.8143	No Limit	643.8926	571.2214	380.8143	253.8762	14.73659	9.824398
Beryllium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Cadmium	No Limit	No Limit	No Limit	5.5249	5.36952	5.36952	3.579684	0.207787	0.138525
Chromium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Copper	No Limit	No Limit	No Limit	48.69179	No Limit	48.69179	32.46119	1.884255	1.25617
Lead	No Limit	No Limit	No Limit	No Limit	35.66172	35.66172	23.77448	1.380023	0.920015
Mercury	No Limit	No Limit	No Limit	No Limit	0.02413	0.02413	0.016087	0.00093	0.0006225
Nickel	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Selenium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Silver	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Thallium	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Zinc	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
Cyanide (T)	27.72535	No Limit	No Limit	22	10.45639	10.45639	6.97093	0.404637	0.269758

STEP 4: EPA HUMAN HEALTH CRITERIA SCREENING

Stream harmonic flow is used to calculate the dilution fraction.
EOP Criteria = EPA Criteria / Dilution Fraction

Enter the stream harmonic flow (cfs): 25
HHC Dilution Fraction 1

	Ambient Stream Ca (ug/l)	Effluent Conc. Ce (ug/l)	Potential Effluent 2.13* Ce	Potential In-stream Conc. (ug/l)	EPA Criteria (ug/l)	potential effluent conc. greater than instream criteria 1=YES; 0 = NO
Antimony	0	2	4.26	0.9517247	4300	0
Arsenic	0	5	10.65	2.3793116	0.14	1
Mercury	0	0.23	0.4899	0.1094483	0.15	0
Nickel	12	10	21.3	14.077709	4600	0
Thallium	0	2	4.26	0.9517247	6.3	0
Cyanide (T)	0	40	85.2	19.034493	220000	0

APPENDIX C

POLICY FOR POST THIRD ROUND NPDES PERMITTING

Original document signed September 9, 1992, by Myron O. Knudson, Director, Water Management Division, U.S. EPA Region 6

I. EPA NATIONAL POLICY

The Water Quality Act states that "...it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." In addressing this, the Environmental Protection Agency's national policy for issuance of third round NPDES permits was published in the Federal Register in March 9, 1984. This policy states that, "... the Environmental Protection Agency (EPA) will use an integrated strategy consisting of both biological and chemical methods to address toxic and nonconventional pollutants from industrial and municipal sources. In addition to enforcing specific numerical criteria, EPA and the States will use biological techniques and available data on chemical effects to assess toxicity impacts and human health hazards..."

II. EPA REGULATORY AUTHORITY

On June 2, 1989, EPA promulgated national regulations for the issuance of third round NPDES permits. Section 122.44(d)(1) of Title 40 of the Code of Federal Regulations requires EPA and the delegated states to evaluate each NPDES permit for the potential to exceed state numerical or narrative water quality standards, including those for toxics, and to establish effluent limitations for those facilities with the "reasonable potential" to exceed those standards. These regulations require both chemical specific limits, based on the state numerical water quality standards or other criteria developed by EPA, and whole effluent toxicity effluent limits, where appropriate.

III. EPA REGION 6 POLICY

A. The Region 6 implementation strategy is designed to support and implement the national policy. The regional policy is that no source (industrial, municipal, or federal facility) will be allowed to discharge any wastewater which:

1. Results in the endangerment of a drinking water supply;
2. Results in aquatic bioaccumulation which threatens human health;
3. Results in instream acute or chronic aquatic toxicity; or
4. Causes a violation of an applicable general or numerical state water quality standard.

B. In order to accomplish these objectives Region 6 will, as part of the post third round permit issuance procedures:

1. Ensure that no source will cause, or significantly contribute to, an exceedance of state water quality standards which protect public drinking water supplies;
2. Ensure that no source will cause, or significantly contribute to, an exceedance of state water quality standards for aquatic bioaccumulation which threatens human health;
3. Identify and address sources which may exceed EPA Water Quality Criteria for human health protection;
4. Address known aquatic toxicity by applying appropriate chemical specific and/or whole effluent toxicity limitations or toxicity reduction requirements when a reasonable potential for toxic conditions exists.

APPENDIX D
POST THIRD ROUND NPDES PERMIT IMPLEMENTATION STRATEGY

Adopted October 1, 1992

Original document signed September 9, 1992, by Jack V. Ferguson, Chief, Permits Branch, Water Management Division, U.S. EPA Region 6

I. PREAMBLE

A. BACKGROUND

Over the history of the NPDES permit program, the Environmental Protection Agency (EPA) has focused on two primary concepts to abate the discharge of pollutants. First, EPA has utilized a technology-based control approach. This was reflected in permits originally issued with requirements for secondary treatment (municipalities) and Best Practicable Control Technology Currently Available (industries). More recently permits have required implementation of the Best Conventional Pollutant Control Technology, Best Available Technology Economically Achievable (industries) and pretreatment program development (municipalities).

Secondly, EPA has addressed water quality as impacted primarily by conventional (or oxygen demanding) parameters. This has occurred through the use of specific state water quality standards (and the resulting water quality management plans) for specific pollutants.

EPA Region 6 moved into the "third round" of NPDES permits in 1987. The focus of these "post BAT" permits is to move beyond our first two phases of control and insure that adequate controls are being implemented to confirm that human health and aquatic life are being adequately protected on a site-specific receiving stream basis. Region 6 developed its third round policy on March 11, 1987, and adopted a strategy to implement this policy on April 1, 1987, revised October 31, 1989.

B. EPA NATIONAL POLICY

The Clean Water Act states that "...it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." In addressing this, the EPA outlined the national policy objectives for development of post-BAT NPDES permit limitations (third round) in the March 9, 1984, Federal Register. This policy states that "to control pollutants beyond Best Available Technology Economically Achievable (BAT), secondary treatment, and other Clean Water Technology-based requirements in order to meet state water quality standards, the EPA will use an integrated strategy consisting of

both biological and chemical methods to address toxic and nonconventional pollutants from industrial and municipal sources. Where State standards contain numerical criteria for toxic pollutants, NPDES permits will contain limits as necessary to assure compliance with these standards. In addition to enforcing specific numerical criteria, EPA and the States will use biological techniques and available data on chemical effects to assess toxicity impacts and human health hazards based on the general standard of 'no toxic materials in toxic amounts'."

Where violations of water quality standards are identified or projected, EPA and the States will develop water quality based effluent limits for inclusion in any issued permit. Where there is a significant likelihood of toxic effects to biota in the receiving stream, EPA and the States may impose permit limits on effluent toxicity and may require an NPDES permittee to conduct a toxicity reduction evaluation. Where toxic effects are present but there is a significant likelihood that compliance with technology based requirements will sufficiently mitigate the effects, EPA and the States may require chemical and toxicity testing after installation of treatment and may reopen the permit to incorporate additional limitations if needed to meet water quality standards.

C. NATIONAL REGULATIONS

Section 122.44(d)(1) of Title 40 of the Code of Federal Regulations requires EPA and the delegated states to evaluate each NPDES permit for the potential to exceed a state numerical or narrative water quality standards, including those for toxics, and to establish effluent limits for those facilities with the "reasonable potential" to exceed those standards. These regulations require chemical specific limits, based on state numerical water quality standards or other criteria developed by EPA, and whole effluent toxicity effluent limits.

D. EPA REGION 6 IMPLEMENTATION STRATEGY

The Region 6 implementation strategy is designed to support and implement the regional policy of March 11, 1987. The intent of this strategy is that there shall be no discharge of any wastewater from any source (industrial, municipal, or federal facility) which:

1. Results in the endangerment of any drinking water supply;

2. Results in aquatic bioaccumulation which endangers human health;

3. Results in any instream acute or chronic aquatic toxicity after dilution; or

4. Violates any other applicable general or numerical state water quality standard.

II. OVERVIEW

A. GOAL

The goal of the regional policy is to assure that there are "no toxic materials in toxic amounts" in waters of the United States; this is stated in the Water Quality Act as the national policy. The specific areas of concern are human health protection and aquatic biota protection. The goal of the Office of Water Third Round Permit Issuance Strategy (to eliminate toxics as expeditiously as possible) will be achieved by industrial, municipal, and federal discharges in Region 6.

B. GENERAL IMPLEMENTATION PROCEDURE

1. In accordance with the priorities listed below, all potential significant contributors to toxicity will be evaluated at permit issuance, or when modifications are requested for new processes or expansions. Also, discharges in known areas of ambient toxicity will be evaluated. This evaluation will consist of a review of both specific chemical data and toxicity testing data representative of the facility's discharge into the receiving water. The review will consist of a projection of ambient impacts at appropriate critical low river flow conditions or at the appropriate mixing zone conditions for bays, lakes, and estuaries.

2. Routine biomonitoring and, where appropriate, chemical specific monitoring of discharges will be required for all major dischargers. New sources shall be required to comply with appropriate whole effluent toxicity limits.

3. Increased monitoring of discharges may be required in areas of suspected ambient toxicity problems to confirm the presence and causes of ambient toxicity. Suspected toxicity will be verified by toxicity testing, specific chemical evaluations and/or bio-assessments.

4. Appropriate controls will be established to correct identified problems at permit reissuance, or by reopening the permit, if necessary to prevent ambient toxicity.

C. PRIORITIES

The regional policy will be implemented to the maximum extent possible given available EPA and state resources in accordance with the following priorities:

1. Facilities with known or suspected toxicity problems.

2. Facilities discharging to priority water bodies.

3. Other major industrial, municipal and federal facilities.

4. Other minor industrial and federal facilities.

5. Other minor municipal facilities.

6. Storm water only facilities.

D. CONTROL MEASURES

The following general control measures will be utilized to implement the policy:

1. Specific chemical effluent limits, and/or

2. Whole effluent toxicity testing on a flow weighted composite sample of all discharges from a facility into a receiving stream. The results of such testing may trigger a requirement to conduct a toxicity reduction evaluation and/or the imposition of whole effluent toxicity limitations; and/or

3. Pollution prevention measures and best management practices; and/or

4. No facility will be allowed to discharge in excess of the technology based limit for that specific chemical and discharge type.

III. HUMAN HEALTH PROTECTION (SPECIFIC CHEMICAL)

A. STATE NUMERICAL STANDARDS

Permits written under this strategy will establish effluent limits, if specific chemical state water quality standards, established for protection of human health, have a reasonable potential to be exceeded. Permits will implement all waste load allocations as specified in the water quality management plan.

B. FOOD CONSUMPTION

For pollutants for which there are no applicable state water quality standards:

1. EPA will calculate the instream concentrations of all pollutants for which EPA has published human health criteria in the current edition of EPA's "Quality Criteria for Water", or National Toxics Standards, as

promulgated, or for which EPA has identified human health toxicological properties in EPA's Integrate Risk Information System (IRIS). These calculations will use an appropriate flow or mixing zone condition.

2. In using these criteria and information, EPA will follow the cancer risk level and fish consumption rate provided by the appropriate state regulatory agency. In the event no policy is provided by the state, EPA policy and/or guidance will be utilized, such as the manual "Assessment and Control of Bioconcentratable Contaminants in Surface Waters".

3. Where these dilution calculations indicate that instream pollutant concentrations may exceed the criteria referenced in paragraphs III.B.1 and III.B.2 above, the facility will be required to monitor for those pollutants. The State will be requested to consider the stream as a "priority water body" and to develop state water quality standards and a waste load allocation where appropriate. NPDES permits may be reopened for point sources that are shown to cause or significantly contribute to these ambient problems, when state water quality standards and waste load allocations are established.

C. FISH TISSUE INFORMATION

1. If available fish or shellfish tissue information identifies the potential threat to human health at a cancer risk greater than those specified in III.B.2, permittees discharging into the water body may be required, by way of a permit requirement or request for information under Section 308 of the Clean Water Act, to analyze their effluents for the subject pollutants and/or identify using a laboratory test the actual bioaccumulation or bioconcentration of the pollutant in fish tissue. The permits for facilities found to be causing or significantly contributing to this problem may be reopened to establish effluent limits based on the appropriate state water quality standards.

2. Enforcement action will be considered under Sections 309 and/or 504 of the Clean Water Act if available fish or shellfish flesh information confirms the existence of an imminent and substantial endangerment to the health or welfare of persons, such as an exceedance of the FDA Action Levels.

IV. CHEMICAL SPECIFIC CONTROLS FOR AQUATIC BIOTA PROTECTION

A. STATE NUMERICAL STANDARDS

Permits written under this strategy will establish effluent limits, if specific chemical water quality standards are or have a reasonable potential to be exceeded, and implement all waste load allocations as specified in the water quality management plan.

B. CHLORINE

Permits for facilities with the potential for a continuous discharge of chlorine will include water quality based effluent limits for Total Residual Chlorine. Water quality based limits will be derived from the state water quality standards giving consideration to appropriate dilution factors, state implementation procedures, or federal criteria if no state standard has been approved.

C. PRETREATMENT

POTWs with approved pretreatment programs controlling indirect discharges of toxic pollutants will be required to develop and adopt technically based local limits (or demonstrate that they are not necessary) which will protect against pass-through, interference and sludge contamination. Additionally POTWs with approved pretreatment programs will be required to monitor the influent, effluent and sludge concentration of toxic and hazardous pollutants, as applicable, in order to evaluate the adequacy of the local limits on an ongoing basis. Some non-pretreatment POTWs with substantial industrial contributions may be required to monitor influent and effluent for toxic pollutants on a case-specific basis.

V. BIOLOGICAL CONTROLS FOR AQUATIC BIOTA PROTECTION

A. Specific state required effluent limits or monitoring for whole effluent toxicity will be imposed as required by the state water quality standards and implementation plan.

B. Where ambient toxicity is identified as a result of a facility discharge, the Region will proceed with permit effluent limits to regulate controllable pollutants.

1. Effluent limits will be established using available state water quality standards and implementation procedures.

2. "Toxicity Reduction Evaluations" may be initially required to identify the source(s) of the toxicity and determine how the toxicity can be reduced as a part of a schedule leading to compliance with effluent limits.

C. Permits issued to dischargers with a potential for causing ambient toxicity will require that the permittee perform periodic toxicity screening using whole effluent biomonitoring techniques.

1. Permittees will typically be required to monitor for the duration of the permit. The monitoring frequency will be based on toxicity potential and effluent variability.

2. State mixing zone procedures will determine the applicability of acute or chronic test methods.

3. Discharge samples used for biomonitoring analysis will consist of flow weighted composite samples of all dry weather flows discharged into overlapping mixing zones within a receiving stream. Storm water flows may be considered if a significant threat of contamination exists. If a facility discharges (or may discharge) into two or more receiving streams, testing will be required for each stream.

4. Required biomonitoring will be performed in accordance with methods published in references 2, 3, and 4 in the attached bibliography. The permit will require a dilution series necessary to calculate the NOEL. One dilution will be reflective of the critical low flow dilution.

5. Tests on more than one species will be required. Some combination of the following test methods or methods specified in approved state water quality standards will be required for biomonitoring:

   *Freshwater receiving streams (salinity <2000 ppm)
   -- 48 hour Daphnia acute survival
   -- 48 hour Fathead Minnow acute survival
   -- 7 day Ceriodaphnia chronic survival/reproduction
   -- 7 day Fathead Minnow chronic survival/growth

   *Saline receiving streams (salinity >2000 ppm)
   -- 48 hour Mysid acute survival
   -- 48 hour Silverside Minnow acute survival
   -- 7 day Mysid chronic survival/growth
   -- 7 day Silverside Minnow chronic survival/growth

6. Dilution water used in the biomonitoring test will be receiving stream water collected at a point upstream of the discharge point(s) or other stream water if approved by the permitting authority. Synthetic laboratory

water will be used if the upstream water is shown to already be toxic or if there is no acceptable natural water.

D. When the biomonitoring data shows actual or potential toxicity after dilution with the receiving stream, permittees will be required to retest their effluent to determine if toxicity is consistent or occurs on a periodic basis. If effluent toxicity is persistent, whole effluent toxicity limits and/or a TRE requirement will be applied, as appropriate.

VI. BIBLIOGRAPHY

1. "Quality Criteria for Water 1986," EPA 440/5-86-001, United States Environmental Protection Agency, May 1, 1986.

2. "Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms," EPA 600/4-90/027, U.S. Environmental Protection Agency, September, 1991.

3. "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," EPA 600/4-89/001, U.S. Environmental Protection Agency, February 1989.

4. "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms", EPA 600/4-87/028, U.S. Environmental Protection Agency, May 1988.

5. "Technical Support Document for Water Quality-based Toxics Control," EPA/505/2-90-001, PB91-127415, U.S. Environmental Protection Agency, March 1991.

6. "Permit Writer's Guide to Water Quality-based Permitting for Toxic Pollutants," EPA 440/4-87-005, U.S. Environmental Protection Agency, 1987.

7. National Policy for Development of Water Quality-based Permit Limitations for Toxic Pollutants, 49 Federal Register 9016, March 9, 1984.

8. "Methods for Aquatic Toxicity Identification Evaluations, Phase I: Toxicity Characterization Procedures", EPA 600/6-91/003, U.S. Environmental Protection Agency, February, 1991.

9. "Methods for Aquatic Toxicity Identification Evaluations, Phase II: Toxicity Identification Procedures", EPA 600/3-88/035, U.S. Environmental Protection Agency, February 1989.

10. "Methods for Aquatic Toxicity Identification Evaluations, Phase III: Toxicity Confirmation Procedures", EPA 600/3-88/036, U.S. Environmental Protection Agency, February 1989.

11. "Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs)", EPA 600/2-88/070, U.S. Environmental Protection Agency, March 1989.

12. "Toxicity Reduction Evaluation Protocol for Municipal Wastewater Treatment Plants", EPA 600/2-88/062, U.S. Environmental Protection Agency, April 1989.

13. "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I", EPA-600/6-91/005, U.S. Environmental Protection Agency, June, 1991.

PROPOSED PERMIT

Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

NPDES Permit No. NM0022306

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Molycorp, Inc.

P.O. Box 469

Questa, New Mexico 87556

is authorized to discharge from a facility located near Questa in Taos County,

to receiving waters named the Red River, Waterbody Segment Code No. 2119 of the Rio Grande Basin,

in accordance with this cover page and the effluent limitations, monitoring requirements, and other conditions set forth in Parts I [Requirements for NPDES Permits - 18 pages], II [Other Conditions - 15 pages], and III [Standard Conditions for NPDES Permits - 8 pages] hereof.

This permit supersedes and replaces NPDES Permit No. NM0022306 issued September 10, 1993

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Issued on

William B. Hathaway
Director
Water Quality Protection Division (6WQ)

Prepared by

J. Scott Wilson
Environmental Scientist
NPDES Permits Branch (6WQ-P)

PART I - REQUIREMENTS FOR NPDES PERMITS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 001

Discharge Type: Intermittent
Latitude 36°41'49"N, Longitude 105°37'53"W

During the period beginning the effective date of the permit and lasting through the expiration date of the permit (unless otherwise noted),

the permittee is authorized to discharge process water from milling operations and tailings disposal, including mine de-watering and interceptor wells, to the Red River in Segment No. 2119 of the Rio Grande Basin.

Such discharges shall be limited and monitored by the permittee as specified below:

pH RANGE

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS QUALITY (UNITS AS STATED) MINIMUM	MAXIMUM
pH (Standard Units) STORET: 00400	6.0	9.0

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS FREQUENCY OF ANALYSIS	SAMPLE TYPE
pH (Standard Units) STORET: 00400	1/Week	Grab

CHEMICAL/PHYSICAL/BIOCHEMICAL

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS QUANTITY/LOADING (LBS/DAY UNLESS STATED) MONTHLY AVG	DAILY MAX	QUALITY/CONCENTRATION (mg/L UNLESS STATED) MONTHLY AVG	DAILY MAX
Flow STORET: 50050	Report MGD	Report MGD	****	****
Chemical Oxygen Demand STORET: 00340	2147	3220	60	90
Total Suspended Solids STORET: 00530	716	1073	20	30
Total Arsenic (*1)	17.9	35.77	0.5	1.0

STORET: 01002				
Total Arsenic (*2)	9.08	13.63	0.25	0.38
STORET: 01002				
Total Cadmium (*1)	0.55	0.82	0.05	0.05
STORET: 01027				
Total Cadmium (*2)	0.12	0.192	0.0036	0.0054
STORET: 01027				
Total Copper (*1)	2.67	4.0	0.15	0.3
STORET: 01042				
Total Copper (*2)	1.16	1.174	0.032	0.0487
STORET: 01042				
Total Cyanide (*1)	0.9127	1.37	0.025	0.05
STORET: 00720				
Total Cyanide (*2)	0.249	0.374	0.007	0.01
STORET: 00720				
Fluoride	107	107	3.0	3.0
STORET: 00951				
Total Iron	21.5	21.5	0.6	0.6
STORET: 01045				
Total Lead (*1)	2.8	4.23	0.3	0.6
STORET: 01051				
Total Lead (*2)	0.85	1.276	0.0238	0.0357
STORET: 01051				
Total Manganese	35.8	53.7	1.0	1.5
STORET: 01055				
Total Mercury (*1)	0.036	0.072	0.001	0.002
STORET: 71900				
Total Mercury (*2)	0.00057	0.00086	0.000016	0.000024
STORET: 71900				
Total Molybdenum	35.8	71.6	1.0	2.0
STORET: 01062				
Total Zinc	7.16	7.16	0.2	0.2
STORET: 01092				
Total Aluminum (*1)	2.6	3.93	Report	Report
STORET: 01105				
Total Aluminum (*2)	2.075	3.11	0.058	0.087
STORET: 01105				
Gross Alpha (*1)	N/A	N/A	Report pCi/l	Report pCi/l
STORET: 01501				
Gross Alpha (*2)	N/A	N/A	0.78 pCi/l	1.17 pCi/l
STORET: 01501				

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	Continuous	Record
STORET: 50050		
Chemical Oxygen Demand	1/Month	24-Hr. Composite (*3)
STORET: 00340		
Total Suspended Solids	1/Month	24-Hr. Composite (*3)
STORET: 00530		

Total Arsenic STORET: 01002	1/Month	24-Hr. Composite (*3)
Total Cadmium STORET: 01027	1/Week	24-Hr. Composite (*3)
Total Copper STORET: 01042	1/Week	24-Hr. Composite (*3)
Total Cyanide STORET: 00720	1/Month	24-Hr. Composite (*3)
Fluoride STORET: 00951	1/Month	24-Hr. Composite (*3)
Total Iron STORET: 01045	1/Month	24-Hr. Composite (*3)
Total Lead STORET: 01051	1/Week	24-Hr. Composite (*3)
Total Manganese STORET: 01055	1/Month	24-Hr. Composite (*3)
Total Mercury STORET: 71900	1/Week	24-Hr. Composite (*3)
Total Molybdenum STORET: 01062	1/Month	24-Hr. Composite (*3)
Total Zinc STORET: 01092	1/Month	24-Hr. Composite (*3)
Total Aluminum (*1) STORET: 01105	1/Month	24-Hr. Composite (*3)
Total Aluminum (*2) STORET: 01105	1/Week	24-Hr. Composite (*3)
Radiation: Gross Alpha (*1) STORET: 01501	1/Month	Grab
Radiation: Gross Alpha (*2) STORET: 01501	1/Week	Grab

WHOLE EFFLUENT TOXICITY TESTING

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS	
	QUALITY (PERCENT % UNLESS STATED)	
	MONTHLY AVG MINIMUM	7-DAY MINIMUM
Whole Effluent Toxicity Testing (*4) (7-Day Static Renewal) Pimephales promelas		
STORET: TLP6C	****	Report
STORET: TOP6C	****	Report
STORET: TPP6C	****	Report

Ceriodaphnia dubia		
STORET: TLP3B	****	Report
STORET: TOP3B	****	Report
STORET: TPP3B	****	Report

Species Quality Reporting Units: Pass = 0, Fail = 1

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Whole Effluent Toxicity Testing (7-Day Static Renewal)		
Pimephales promelas		
STORET: TLP6C	1/year	24-Hr. Composite (*3)
STORET: TOP6C	1/year	24-Hr. Composite (*3)
STORET: TPP6C	1/year	24-Hr. Composite (*3)
Ceriodaphnia dubia		
STORET: TLP3B	1/six months	24-Hr. Composite (*3)
STORET: TOP3B	1/six months	24-Hr. Composite (*3)
STORET: TPP3B	1/six months	24-Hr. Composite (*3)

SAMPLING LOCATION(S) AND OTHER REQUIREMENTS

SAMPLING LOCATION(S)

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after final treatment and prior to discharge to the Red River.

DEFINITIONS

The term "runoff" shall mean the flow of storm water resulting from precipitation or snow/ice melt coming into contact with the industrial facility property.

The term "uncontaminated runoff" shall mean runoff which does not come into contact (other than incidental) with any raw material, intermediate product, finished product, by-product, or waste product located on the industrial facility property.

NO DISCHARGE REPORTING

If there is no discharge event at this outfall during the sampling month, place an "X" in the NO DISCHARGE box located in the upper right corner of the preprinted Discharge Monitoring Report.

FLOATING SOLIDS OR VISIBLE FOAM

There shall be no discharge of floating solids or visible foam in other than trace amounts.

FLOW MEASUREMENTS

"Estimate" flow measurements shall not be subject to the accuracy provisions established at Part III.C.6. The daily flow value may be estimated using best engineering judgment.

FOOTNOTES

*1 Requirements for this parameter are effective during the period beginning the effective date of the permit and lasting through one (1) day prior to two (2) years from the effective date of the permit.

*2 Requirements for this parameter are effective during the period beginning two (2) years from the effective date of the permit and lasting through the expiration date of the permit.

*3 See Part II.C.

*4 See Part II.G.

OUTFALL 002
Discharge Type: Continuous
Latitude 36°41'29"N, Longitude 105°37'53"W

During the period beginning the effective date of the permit and lasting until commencement of discharge at Outfall 001(unless otherwise noted),

the permittee is authorized to discharge seepage from the tailings impoundment to the Red River in Segment No. 2119 of the Rio Grande Basin.

Such discharges shall be limited and monitored by the permittee as specified below:

pH RANGE

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS	
	QUALITY (UNITS AS STATED)	
	MINIMUM	MAXIMUM
pH (Standard Units) STORET: 00400	6.0	9.0

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
pH (Standard Units) STORET: 00400	1/Week	Grab

CHEMICAL/PHYSICAL/BIOCHEMICAL

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS			
	QUANTITY/LOADING (LBS/DAY UNLESS STATED)		QUALITY/CONCENTRATION (mg/L UNLESS STATED)	
	MONTHLY AVG	DAILY MAX	MONTHLY AVG	DAILY MAX
Flow STORET: 50050	Report MGD	Report MGD	****	****
Chemical Oxygen Demand STORET: 00340	175	263	60	90
Total Suspended Solids STORET: 00530	58	87.6	20	30
Total Arsenic (*1) STORET: 01002	1.46	2.9	0.5	1.0
Total Arsenic (*2) STORET: 01002	1.25	1.88	0.429	0.644
Total Cadmium (*1) STORET: 01027	0.146	0.146	0.05	0.05
Total Cadmium (*2) STORET: 01027	0.011	0.016	0.0037	0.0055
Total Copper (*1) STORET: 01042	0.438	0.876	0.15	0.3

Total Copper (*2) STORET: 01042	0.095	0.144	0.0325	0.0487
Total Cyanide (*1) STORET: 00720	0.073	0.146	0.025	0.05
Total Cyanide (*2) STORET: 00720	0.0429	0.064	0.0147	0.022
Fluoride STORET: 00951	8.75	8.75	3.0	3.0
Total Iron STORET: 01045	1.75	1.75	0.6	0.6
Total Lead (*1) STORET: 01051	0.876	1.75	0.3	0.6
Total Lead (*2) STORET: 01051	0.497	0.746	0.17	0.255
Total Manganese STORET: 01055	2.9	4.38	1.0	1.5
Total Mercury (*1) STORET: 71900	0.0029	0.0058	0.001	0.002
Total Mercury (*1) STORET: 71900	0.000336	0.0005	0.00011	0.00017
Total Molybdenum STORET: 01062	9.6	14.7	3.3	5.03
Total Zinc STORET: 01092	0.58	0.58	0.2	0.2
Total Aluminum (*1) STORET: 01105	0.25	0.376	Report	Report
Total Aluminum (*2) STORET: 01105	0.169	0.254	0.058	0.087

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow STORET: 50050	Continuous	Record
Chemical Oxygen Demand STORET: 00340	1/Month	24-Hr. Composite (*3)
Total Suspended Solids STORET: 00530	1/Month	24-Hr. Composite (*3)
Total Arsenic STORET: 01002	1/Month	24-Hr. Composite (*3)
Total Cadmium STORET: 01027	1/Month	24-Hr. Composite (*3)
Total Copper STORET: 01042	1/Month	24-Hr. Composite (*3)
Total Cyanide STORET: 00720	1/Month	24-Hr. Composite (*3)
Fluoride STORET: 00951	1/Month	24-Hr. Composite (*3)
Total Iron STORET: 01045	1/Month	24-Hr. Composite (*3)
Total Lead	1/Month	24-Hr. Composite (*3)

STORET: 01051		
Total Manganese	1/Month	24-Hr. Composite (*3)
STORET: 01055		
Total Mercury	1/Month	24-Hr. Composite (*3)
STORET: 71900		
Total Molybdenum	1/Month	24-Hr. Composite (*3)
STORET: 01062		
Total Zinc	1/Month	24-Hr. Composite (*3)
STORET: 01092		
Total Aluminum	1/Month	24-Hr. Composite (*3)
STORET: 01105		

WHOLE EFFLUENT TOXICITY TESTING

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS QUALITY (PERCENT % UNLESS STATED) MONTHLY AVG MINIMUM	7-DAY MINIMUM
Whole Effluent Toxicity Testing (*4)		
(7-Day Static Renewal)		
Pimephales promelas		
STORET: TLP6C	****	Report
STORET: TOP6C	****	Report
STORET: TPP6C	****	Report
Ceriodaphnia dubia		
STORET: TLP3B	****	Report
STORET: TOP3B	****	Report
STORET: TPP3B	****	Report

Species Quality Reporting Units: Pass = 0, Fail = 1

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS FREQUENCY OF ANALYSIS	SAMPLE TYPE
Whole Effluent Toxicity Testing		
(7-Day Static Renewal)		
Pimephales promelas		
STORET: TLP6C	1/year	24-Hr. Composite (*3)
STORET: TOP6C	1/year	24-Hr. Composite (*3)
STORET: TPP6C	1/year	24-Hr. Composite (*3)
Ceriodaphnia dubia		
STORET: TLP3B	1/six months	24-Hr. Composite (*3)
STORET: TOP3B	1/six months	24-Hr. Composite (*3)
STORET: TPP3B	1/six months	24-Hr. Composite (*3)

SAMPLING LOCATION(S) AND OTHER REQUIREMENTS

SAMPLING LOCATION(S)

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): After collection of the combined seepage from the tailings impoundment and prior to discharge to the Red River.

DEFINITIONS

The term "runoff" shall mean the flow of storm water resulting from precipitation or snow/ice melt coming into contact with the industrial facility property.

The term "uncontaminated runoff" shall mean runoff which does not come into contact (other than incidental) with any raw material, intermediate product, finished product, by-product, or waste product located on the industrial facility property.

NO DISCHARGE REPORTING

If there is no discharge event at this outfall during the sampling month, place an "X" in the NO DISCHARGE box located in the upper right corner of the preprinted Discharge Monitoring Report.

FLOATING SOLIDS OR VISIBLE FOAM

There shall be no discharge of floating solids or visible foam in other than trace amounts.

FLOW MEASUREMENTS

"Estimate" flow measurements shall not be subject to the accuracy provisions established at Part III.C.6. The daily flow value may be estimated using best engineering judgment.

FOOTNOTES

*1 Requirements for this parameter are effective during the period beginning the effective date of the permit and lasting through one (1) day prior to two (2) years from the effective date of the permit.

*2 Requirements for this parameter are effective during the period beginning two (2) years from the effective date of the permit and lasting through the expiration date of the permit.

*3 See Part II.D.

*4 See Part II.I.

OUTFALL 002
Discharge Type: Continuous
Latitude 36°41'29"N, Longitude 105°37'53"W

During the period beginning after commencement of discharge at Outfall 001 and lasting through the expiration date of the permit (unless otherwise noted),

the permittee is authorized to discharge seepage from the tailings impoundment to the Red River in Segment No. 2119 of the Rio Grande Basin.

Such discharges shall be limited and monitored by the permittee as specified below:

pH RANGE

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS	
	QUALITY (UNITS AS STATED)	
	MINIMUM	MAXIMUM
pH (Standard Units) STORET: 00400	6.0	9.0

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
pH (Standard Units) STORET: 00400	1/Week	Grab

CHEMICAL/PHYSICAL/BIOCHEMICAL

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS			
	QUANTITY/LOADING (LBS/DAY UNLESS STATED)		QUALITY/CONCENTRATION (mg/L UNLESS STATED)	
	MONTHLY AVG	DAILY MAX	MONTHLY AVG	DAILY MAX
Flow STORET: 50050	Report MGD	Report MGD	****	****
Chemical Oxygen Demand STORET: 00340	175	263	60	90
Total Suspended Solids STORET: 00530	58	87.6	20	30
Total Arsenic (*1) STORET: 01002	1.46	2.9	0.5	1.0
Total Arsenic (*2) STORET: 01002	0.73	1.1	0.25	0.38
Total Cadmium (*1) STORET: 01027	0.146	0.146	0.05	0.05
Total Cadmium (*2) STORET: 01027	0.01	0.016	0.0036	0.0054
Total Copper (*1) STORET: 01042	0.438	0.876	0.15	0.3

Total Copper (*2) STORET: 01042	0.093	0.142	0.032	0.0487
Total Cyanide (*1) STORET: 00720	0.073	0.146	0.025	0.05
Total Cyanide (*2) STORET: 00720	0.02	0.029	0.007	0.01
Fluoride STORET: 00951	8.75	8.75	3.0	3.0
Total Iron STORET: 01045	1.75	1.75	0.6	0.6
Total Lead (*1) STORET: 01051	0.876	1.75	0.3	0.6
Total Lead (*2) STORET: 01051	0.069	0.1	0.0238	0.0357
Total Manganese STORET: 01055	2.9	4.38	1.0	1.5
Total Mercury (*1) STORET: 71900	0.0029	0.0058	0.001	0.002
Total Mercury (*2) STORET: 71900	0.000047	0.00007	0.000016	0.000024
Total Molybdenum (*1) STORET: 01062	9.6	14.7	3.3	5.03
Total Molybdenum (*2) STORET: 01062	4.13	6.2	1.34	2.01
Total Zinc STORET: 01092	0.58	0.58	0.2	0.2
Total Aluminum (*1) STORET: 01105	0.25	0.376	Report	Report
Total Aluminum (*2) STORET: 01105	0.169	0.25	0.058	0.087

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow STORET: 50050	Continuous	Record
Chemical Oxygen Demand STORET: 00340	1/Month	24-Hr. Composite (*3)
Total Suspended Solids STORET: 00530	1/Month	24-Hr. Composite (*3)
Total Arsenic STORET: 01002	1/Month	24-Hr. Composite (*3)
Total Cadmium STORET: 01027	1/Month	24-Hr. Composite (*3)
Total Copper STORET: 01042	1/Month	24-Hr. Composite (*3)
Total Cyanide STORET: 00720	1/Month	24-Hr. Composite (*3)
Fluoride STORET: 00951	1/Month	24-Hr. Composite (*3)
Total Iron	1/Month	24-Hr. Composite (*3)

STORET: 01045		
Total Lead	1/Month	24-Hr. Composite (*3)
STORET: 01051		
Total Manganese	1/Month	24-Hr. Composite (*3)
STORET: 01055		
Total Mercury	1/Month	24-Hr. Composite (*3)
STORET: 71900		
Total Molybdenum	1/Month	24-Hr. Composite (*3)
STORET: 01062		
Total Zinc	1/Month	24-Hr. Composite (*3)
STORET: 01092		
Total Aluminum	1/Month	24-Hr. Composite (*3)
STORET: 01105		

WHOLE EFFLUENT TOXICITY TESTING

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS QUALITY (PERCENT % UNLESS STATED) MONTHLY AVG MINIMUM	7-DAY MINIMUM
Whole Effluent Toxicity Testing (*4)		
(7-Day Static Renewal)		
Pimephales promelas		
STORET: TLP6C	****	Report
STORET: TOP6C	****	Report
STORET: TPP6C	****	Report
Ceriodaphnia dubia		
STORET: TLP3B	****	Report
STORET: TOP3B	****	Report
STORET: TPP3B	****	Report

Species Quality Reporting Units: Pass = 0, Fail = 1

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS FREQUENCY OF ANALYSIS	SAMPLE TYPE
Whole Effluent Toxicity Testing		
(7-Day Static Renewal)		
Pimephales promelas		
STORET: TLP6C	1/year	24-Hr. Composite (*3)
STORET: TOP6C	1/year	24-Hr. Composite (*3)
STORET: TPP6C	1/year	24-Hr. Composite (*3)
Ceriodaphnia dubia		
STORET: TLP3B	1/six months	24-Hr. Composite (*3)
STORET: TOP3B	1/six months	24-Hr. Composite (*3)
STORET: TPP3B	1/six months	24-Hr. Composite (*3)

SAMPLING LOCATION(S) AND OTHER REQUIREMENTS

SAMPLING LOCATION(S)

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): After collection of the combined seepage from the tailings impoundment and prior to discharge to the Red River.

DEFINITIONS

The term "runoff" shall mean the flow of storm water resulting from precipitation or snow/ice melt coming into contact with the industrial facility property.

The term "uncontaminated runoff" shall mean runoff which does not come into contact (other than incidental) with any raw material, intermediate product, finished product, by-product, or waste product located on the industrial facility property.

NO DISCHARGE REPORTING

If there is no discharge event at this outfall during the sampling month, place an "X" in the NO DISCHARGE box located in the upper right corner of the preprinted Discharge Monitoring Report.

FLOATING SOLIDS OR VISIBLE FOAM

There shall be no discharge of floating solids or visible foam in other than trace amounts.

FLOW MEASUREMENTS

"Estimate" flow measurements shall not be subject to the accuracy provisions established at Part III.C.6. The daily flow value may be estimated using best engineering judgment.

FOOTNOTES

*1 Requirements for this parameter are effective during the period beginning the effective date of the permit and lasting through one (1) day prior to two (2) years from the effective date of the permit.

*2 Requirements for this parameter are effective during the period beginning two (2) years from the effective date of the permit and lasting through the expiration date of the permit.

*3 See Part II.D.

*4 See Part II.I.

OUTFALL 004 and 005
Discharge Type: Intermittent
Outfall 004: Latitude 36°41'08"N, Longitude 105°31'51"W
Outfall 005: Latitude 36°41'41"N, Longitude 105°31'48"W

During the period beginning the effective date of the permit and lasting through the expiration date of the permit (unless otherwise noted),

the permittee is authorized to discharge periodic mine drainage consisting only of mine contacted surface storm water runoff to the Red River in Segment No. 2119 of the Rio Grande Basin.

Such discharges shall be limited and monitored by the permittee as specified below:

pH RANGE

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS	
	QUALITY (UNITS AS STATED)	
	MINIMUM	MAXIMUM
pH (Standard Units) STORET: 00400	6.0	9.0

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
pH (Standard Units) STORET: 00400	1/Day (*1)	Grab

CHEMICAL/PHYSICAL/BIOCHEMICAL

PARAMETERS/STORET CODES	DISCHARGE LIMITATIONS/REPORTING REQUIREMENTS			
	QUANTITY/LOADING (LBS/DAY UNLESS STATED)		QUALITY/CONCENTRATION (mg/L UNLESS STATED)	
	MONTHLY AVG	DAILY MAX	MONTHLY AVG	DAILY MAX
Flow STORET: 50050	Report MGD	Report MGD	****	****
Chemical Oxygen Demand STORET: 00340	****	****	125	125
Total Suspended Solids STORET: 00530	****	****	20	30
Total Arsenic STORET: 01002	****	****	0.5	1.0
Total Cadmium STORET: 01027	****	****	0.0034	0.0051
Total Copper STORET: 01042	****	****	0.043	0.064
Total Lead STORET: 01051	****	****	0.083	0.125
Total Mercury	****	****	0.000043	0.000064

STORET: 71900				
Total Zinc	****	****	0.2	0.2
STORET: 01092				
Total Aluminum	****	****	0.058	0.087
STORET: 01105				
Total Silver	****	****	0.004	0.006
STORET: 01077				
Chlordane	****	****	0.000015	0.000023
STORET: 39350				
Total Residual Chlorine	****	****	0.0127	0.019
STORET: 50060				

PARAMETERS/STORET CODES	MONITORING REQUIREMENTS	
	FREQUENCY OF ANALYSIS	SAMPLE TYPE
Flow	1/Day (*1)	Measure (*3)(*2)
STORET: 50050		
Chemical Oxygen Demand	1/Day (*1)	24-Hr. Composite (*2)
STORET: 00340		
Total Suspended Solids	1/Day (*1)	24-Hr. Composite (*2)
STORET: 00530		
Total Arsenic	1/Day (*1)	24-Hr. Composite (*2)
STORET: 01002		
Total Cadmium	1/Day (*1)	24-Hr. Composite (*2)
STORET: 01027		
Total Copper	1/Day (*1)	24-Hr. Composite (*2)
STORET: 01042		
Total Lead	1/Day (*1)	24-Hr. Composite (*2)
STORET: 01051		
Total Mercury	1/Day (*1)	24-Hr. Composite (*2)
STORET: 71900		
Total Zinc	1/Day (*1)	24-Hr. Composite (*2)
STORET: 01092		
Total Aluminum	1/Month (*1)	24-Hr. Composite (*2)
STORET: 01105		
Total Silver	1/Month (*1)	24-Hr. Composite (*2)
STORET: 01077		
Chlordane	1/Month (*1)	24-Hr. Composite (*2)
STORET: 39350		
Total Residual Chlorine	1/Month (*1)	24-Hr. Composite (*2)
STORET: 50060		

SAMPLING LOCATION(S) AND OTHER REQUIREMENTS

SAMPLING LOCATION(S)

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge from the settling basins.

DEFINITIONS

The term "runoff" shall mean the flow of storm water resulting from precipitation or snow/ice melt coming into contact with the industrial facility property.

The term "uncontaminated runoff" shall mean runoff which does not come into contact (other than incidental) with any raw material, intermediate product, finished product, by-product, or waste product located on the industrial facility property.

NO DISCHARGE REPORTING

If there is no discharge event at this outfall during the sampling month, place an "X" in the NO DISCHARGE box located in the upper right corner of the preprinted Discharge Monitoring Report.

FLOATING SOLIDS OR VISIBLE FOAM

There shall be no discharge of floating solids or visible foam in other than trace amounts.

FLOW MEASUREMENTS

"Estimate" flow measurements shall not be subject to the accuracy provisions established at Part III.C.6. The daily flow value may be estimated using best engineering judgment.

FOOTNOTES

*1 When discharging

*2 See Part II.C.

*3 By calibrated weir.

B. PROHIBITIONS

The discharge of pollutants traceable to point source mine operations through a hydrologic connection to the Red River shall be prohibited except in trace amounts. Implementation of the Best Management Practices required by PART II.A. of this permit will constitute compliance with this prohibition at Spring 13, Spring 39, and springs in the vicinity of the old mill site below the Sugar Shack South deposit. Compliance with this prohibition shall be accomplished as soon as practicable but in no case later than two years after the effective date of this permit.

C. SCHEDULE OF COMPLIANCE

The permittee shall comply with the following schedule of activities for construction of the seepage interception system required by PART I.B. of this permit and attainment of state water quality standards-based final effluent limitations for total arsenic, total cadmium, total copper, total cyanide, total lead, total mercury, total aluminum at Outfall 001 and total arsenic, total cadmium, total copper, total cyanide, total lead, total mercury, and total aluminum at Outfall 002:

a. Determine exceedance cause(s);
b. Develop control options;
c. Evaluate and select control mechanisms;
d. Implement corrective action; and
e. Attain final effluent limitations no later than two (2) years from the effective date of the permit.

The permittee shall submit quarterly progress reports in accordance with the following schedule. The requirement to submit quarterly progress reports shall expire two (2) years from the effective date of the permit.

PROGRESS REPORT DATE
January 31
April 30
July 31
October 31

The quarterly progress reports shall include a discussion of the interim requirements that have been completed at the time of the report and shall address the progress towards constructing the seepage interception system and attaining the state water quality standards-based final effluent limitations for total cadmium, total copper, total cyanide, total lead, total mercury, total aluminum, total silver, chlordane, and total residual chlorine at Outfall 001 and total cadmium, total copper, total cyanide, total lead, total mercury, total aluminum, and chlordane at Outfall 002 no later than two (2) years from the effective date of the permit.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fifteen (15) days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

D. REPORTING OF MONITORING RESULTS

Monitoring information shall be on Discharge Monitoring Report Form(s) EPA 3320-1 as specified in Part III.D.4 of this permit and shall be submitted monthly.

1. Reporting periods shall end on the last day of the month.

2. The permittee is required to submit regular monthly reports as described above postmarked no later than the following day of the month following each reporting period.

STATE	DAY
New Mexico Permits	15th

PART II - OTHER CONDITIONS

A. BEST MANAGEMENT PRACTICES

The permittee shall install the following seepage interception and management system to comply with the prohibition against the discharge to the Red River of pollutants traceable to point source mine operations except in trace amounts. Implementation of these Best Management Practices (described below) is considered compliance with this prohibition.

The permittee shall install seepage interception systems to prevent discharges of process related ground water to the Red River at Spring 13 and Spring 39. The permittee shall also install a ground water withdrawal well below the toe of the Sugar Shack South deposit at a location approximately 100 yards southwest of the old mill site.

Spring 13 is defined as the seepage zone located on the north side of the Red River at the southwest base of Goathill, just east of Capulin Canyon.

Spring 39 is defined as the seepage zone located on the north side of the Red River approximately 500 feet downstream of Thunder Bridge.

The Spring 13 seepage interception system shall consist of a 400 foot long french drain designed and operated for a pumping rate of at least 50 gallons per minute. The french drain shall be placed at a depth at least two feet below the low water river surface and a minimum of ten feet north of the river channel. An additional french drain shall be installed which extends 800 feet downstream from the Spring 13 french drain and is designed, constructed, and operated to capture shallow seepage flow along the river reach of the mouth of Capulin Canyon. Orifices in the french drains shall be evenly spaced at a distance of 2 to 3 feet apart.

The Spring 39 seepage interception system shall consist of a 400 foot long french drain which is centered around the spring and is designed and operated for a 35 gallon per minute pumping rate. The french drain shall be placed at a depth of at least two feet below the low water river surface and a minimum of ten feet outside of the stream channel. Orifices in the french drain shall be evenly spaced at a distance of 2 to 3 feet apart.

The ground water withdrawal well shall be constructed and pumped to capture potential discharges from point source mine operations through a hydrologic connection in the vicinity of the old mill site. Water from the well shall be pumped to the mine or mill for use in operations.

The permittee shall conduct a field investigation to determine available alterations in the seepage interception system design listed above which will potentially enhance its collection efficiency. The field investigation must at a minimum include:

a. Determination of the groundwater elevation, direction of flow, and gradient in the vicinity of spring 13, spring 39, and below the Sugar Shack deposit in the vicinity of the old mill site.

b. Determination of the hydrological characteristics of the shallow ground water aquifer.

c. Pilot testing of a 100 foot long collection system located at Spring 13 and determination of necessary changes to the french drain orifice size and spacing, pipe depth, and distance from river.

Field investigations conducted to determine changes to the seepage interception system design criteria described above shall be submitted to EPA Region 6 prior to implementation of those changes. Any changes must be made only after written approval from the Agency. Progress reports on field investigation and construction of the seepage interception system shall be submitted quarterly to EPA Region 6 and the New Mexico Environment Department (NMED).

Upon completion of the seepage interception system, the permittee shall evaluate the system to determine its effectiveness. The evaluation shall include a determination of the ground water yield relative to the volume and flow rate observed in the field investigation described above and a visual examination of the Red River and its northern bank in the vicinity of Spring 13, Spring 39, Portal Springs, and Cabin Springs. An analysis of existing ground water monitoring wells shall be used to determine the effectiveness of the ground water withdrawal well. A report of those evaluations shall be submitted to EPA Region 6 and NMED within three months after completion of the interception system and ground water withdrawal well. Should the seepage interception system or the ground water withdrawal well prove ineffective at capturing discharges of pollutants traceable to mine operations, the permittee shall make any necessary alterations to the system which are required to capture such discharges. The permit may be reopened to address such discharges.

The permittee shall conduct monthly visual inspections of the Red River and its banks in the vicinity of the facility, to identify any significant discharge or seepage which may be directly from or hydrologically connected to the permittee's mining operations. A report summarizing the monthly inspections shall be submitted quarterly beginning January 15th, 2001 to EPA Region 6 and NMED. In the event that such a discharge or seepage is found it shall be reported to the Agencies within fourteen days of detection of any significant discharge or seepage. This fourteen day reporting requirement applies to Spring 13, Spring 39, and below the Sugar Shack deposit in the vicinity of the old mill only after installation of the seepage interception system. This permit may be reopened if any significant discharge or seepage occurs.

B. MINIMUM QUANTIFICATION LEVEL (MQL)

If any individual analytical test result is less than the minimum quantification level listed below, a value of zero (0) may be used for that individual result for the Discharge Monitoring Report (DMR) calculations and reporting requirements.

	MQL (ug/L)
Aluminum	100
Chlorine (Total Residual)	100
Arsenic (Total)	10
Cadmium (Total)	1
Chromium (Total)	10
Copper (Total)	10
Lead (Total)	5
Mercury (Total)	0.2
Nickel (Total)	5
Silver (Total)	2
Zinc (Total)	20
Cyanide (Total)	20
Cyanide (Amenable)	20
Chlordane	0.2

The permittee may develop an effluent specific method detection limit (MDL) in accordance with Appendix B to 40CFR136. For any pollutant for which the permittee determines an effluent specific MDL, the permittee shall send to the EPA Region 6 NPDES Permits Branch (6WQ-P) a report containing QA/QC documentation, analytical results, and calculations necessary to demonstrate that the effluent specific MDL was correctly calculated. An effluent specific minimum quantification level (MQL) shall be determined in accordance with the following calculation:

$$MQL = 3.3 \times MDL$$

Upon written approval by the EPA Region 6 NPDES Permits Branch (6WQ-P), the effluent specific MQL may be utilized by the permittee for all future Discharge Monitoring Report (DMR) calculations and reporting requirements.

C. 24-HOUR ORAL REPORTING: DAILY MAXIMUM LIMITATION VIOLATIONS

Under the provisions of Part III.D.7.b.(3) of this permit, violations of daily maximum limitations for the following pollutants shall be reported orally to EPA Region 6, Compliance and Assurance Division, Water Enforcement Branch (6EN-W), Dallas, Texas, within 24 hours from the time the permittee becomes aware of the violation followed by a written report in five days.

D. COMPOSITE SAMPLING (24-HOUR)

Unless otherwise specified in this permit, the term "24-hour composite sample" means a sample consisting of a minimum of three (3) aliquots of effluent collected at regular intervals over a normal 24-hour operating period and combined in proportion to flow or a sample continuously collected in proportion to flow over a normal 24-hour operating period.

E. CYANIDE EFFLUENT TEST PROCEDURES

To comply with the sampling and analysis requirements for total cyanide and cyanide amenable to chlorination, the permittee shall use an approved test procedure at 40CFR136. If the analysis of cyanide amenable to chlorination is subject to matrix interferences, the weak acid dissociable cyanide method (Method 4500 CN I - Standard Methods, latest edition approved in 40CFR136) may be substituted for this parameter. The permittee may use ion chromatographic separation - amperometric detection (IC method) as a substitute for the colorimetric detection steps in any of the above cyanide methods. No other modifications of the above methods are authorized by this provision unless such modifications are approved in writing by the permitting authority.

F. MOLYBDENUM EFFLUENT TEST PROCEDURES

The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless subsequently determined to be inappropriate by the NMED or EPA.

G. TAILINGS SPILL MONITORING REQUIREMENTS

As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;

(2) Approximately 100 feet below the point where tailings enter the river; and

(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand
Total Suspended Solids
Total Arsenic
Total Cadmium
Total Copper
Total Cyanide
Fluoride
Total Iron

Total Lead
Total Manganese
Total Mercury
Total Molybdenum
Total Zinc
Total Aluminum
Total Boron
Total Chromium
Total Cobalt
Total Selenium
Total Vanadium
Total Beryllium
Total Nickel
Total Silver
Un-ionized Ammonia (as N)
Total Residual Chlorine
Temperature
pH

The results of the analysis shall be submitted to the EPA and the NMED within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and the Contingency Action and Reporting Plan (June 1975), a written report containing the following information will be sent to the EPA and the NMED within ten (10) days following any spill:

(1) Date of Spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that caused the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

H. REOPENER CLAUSE

The permit may be modified or revoked and reissued if any of the following events occurs:

1. The effluent limitations in this permit are consistent with, or more stringent than, the State of New Mexico Standards for Interstate and Intrastate Surface Waters or the limits established for dischargers in the same water body in the 1985 State Water Quality Management Plan (WQMP). The State is presently reevaluating and updating the final effluent limitations necessary to protect water quality standards. When final effluent limitations are established in an approved WQMP and if they are more stringent than those listed in this permit, or controls a pollutant not listed in this permit, then the permit may be modified or revoked and reissued to conform with the approved WQMP final effluent limitations.

2. Effluent monitoring requirements for the following parameter(s) have been established in this permit based on an exceedance of the EPA water quality criteria for the protection of human health from consumption of contaminated fish and shellfish:

PARAMETER	STORET
Arsenic	01002

Should the State adopt a State water quality standard, this permit may be reopened for modification or revocation and reissuance to established effluent limitations for the parameter(s) to be consistent with that approved State standard in accordance with 40CFR122.44(d). Modification or revocation and reissuance of the permit shall follow regulations listed at 40CFR124.5.

3. If EPA determines that the reissuance of this permit may affect federally listed endangered or threatened species or modify the critical habitats of those species, EPA would initiate an consultation with the US Fish and Wildlife Service (FWS), in accordance with the Endangered Species Act (ESA.) The permit may be modified or revoked and reissued if EPA finds, during the ESA consultation with the FWS, that more stringent conditions are warrant for the protection of those species and/or their critical habitats.

4. Should evaluation of the seepage interception system field investigation, required in Part II.A. of this permit, show that substantial changes to the seepage interception system design are necessary, this permit may be modified or revoked and reissued to incorporate relevant changes to the design of the system.

5. Should monitoring required under PART II.A. of this permit show that the seepage interception system is ineffective or find seepage traceable to point source mine operations, this permit may be modified or revoked and reissued to address those discharges.

I. WHOLE EFFLUENT TOXICITY TESTING (7-DAY CHRONIC NOEC FRESHWATER)

1. SCOPE AND METHODOLOGY

a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section.

APPLICABLE TO FINAL OUTFALL(S): 001 and 002 combined
REPORTED ON DMR AS FINAL OUTFALL:
TXS

CRITICAL DILUTION (%):	50
EFFLUENT DILUTION SERIES (%):	21, 28, 38, 50, and 67
COMPOSITE SAMPLE TYPE:	Defined at PART I
TEST SPECIES/METHODS:	40CFR136

Ceriodaphnia dubia chronic static renewal survival and reproduction test, Method 1002.0, EPA/600/4-91/002 or the most recent update thereof. This test should be terminated when 60% of the surviving adults in the control produce three broods.

Pimephales promelas (Fathead minnow) chronic static renewal 7-day larval survival and growth test, Method 1000.0, EPA/600/4-91/002, or the most recent update thereof. A minimum of five (5) replicates with eight (8) organisms per replicate must be used in the control and in each effluent dilution of this test.

b. The NOEC (No Observed Effect Concentration) is defined as the greatest effluent dilution which does not result in lethality that is statistically different from the control (0% effluent) at the 95% confidence level.

c. This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.

2. PERSISTENT LETHALITY

The requirements of this subsection apply only when a toxicity test demonstrates significant lethal effects at the critical dilution. Significant lethal effects are herein defined as a statistically significant difference at the 95% confidence level between the survival of the appropriate test organism in a specified effluent dilution and the control (0% effluent).

a. PART I TESTING FREQUENCY OTHER THAN MONTHLY

i. The permittee shall conduct a total of two (2) additional tests for any species that demonstrates significant lethal effects at the critical dilution. The two additional tests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute either of the two additional tests in lieu of routine toxicity testing. The full report shall be prepared for each test required by this section in accordance with procedures outlined in Item 4 of this section.

ii. If one or both of the two additional tests demonstrates significant lethal effects at the critical dilution, the permittee shall initiate Toxicity Reduction Evaluation (TRE) requirements as specified in Item 5 of this section. The permittee shall notify EPA in writing within 5 days of the failure of any retest, and the TRE initiation date will be the test completion date of the first failed retest.

iii. If one or both of the two additional tests demonstrates significant lethal effects at the critical dilution, the permittee shall henceforth increase the frequency of testing for this species to once per quarter for the life of the permit.

iv. The provisions of Item 2.a are suspended upon submittal of the TRE Action Plan.

b. PART I TESTING FREQUENCY OF MONTHLY

The permittee shall initiate the Toxicity Reduction Evaluation (TRE) requirements as specified in Item 5 of this section when any two of three consecutive monthly toxicity tests exhibit significant lethal effects at the critical dilution.

3. REQUIRED TOXICITY TESTING CONDITIONS

a. TEST ACCEPTANCE

The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied, including the following additional criteria:

i. The toxicity test control (0% effluent) must have survival equal to or greater than 80%.

ii. The mean number of Ceriodaphnia dubia neonates produced per surviving adult in the control (0% effluent) must be 15 or more.

iii. The mean dry weight of surviving Fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater.

iv. The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for: the young of surviving adults in the Ceriodaphnia dubia reproduction test; the growth and survival endpoints of the Fathead minnow test.

v. The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or nonlethal effects are exhibited for: the young of surviving adults in the Ceriodaphnia dubia reproduction test; the growth and survival endpoints of the Fathead minnow test.

Test failure may not be construed or reported as invalid due to a coefficient of variation value of greater than 40%. A repeat test shall be conducted within the required reporting period of any test determined to be invalid.

b. STATISTICAL INTERPRETATION

i. For the Ceriodaphnia dubia survival test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be Fisher's Exact Test as described in EPA/600/4-91/002 or the most recent update thereof.

If the conditions of Test Acceptability are met in Item 3.a above and the percent survival of the test organism is equal to or greater than 80% in the critical dilution concentration and all lower dilution concentrations, the test shall be considered to be a passing test, and the permittee shall report an NOEC of not less than the critical dilution for the DMR reporting requirements found in Item 4 below.

ii. For the Ceriodaphnia dubia reproduction test and the Fathead minnow larval survival and growth test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be in accordance with the methods for determining the No Observed Effect Concentration (NOEC) as described in EPA/600/4-91/002 or the most recent update thereof.

c. DILUTION WATER

i. Dilution water used in the toxicity tests will be receiving water collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness, and alkalinity to the closest downstream perennial water for;

(A) toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and

(B) toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.

ii. If the receiving water is unsatisfactory as a result of instream toxicity (fails to fulfill the test acceptance criteria of Item 3.a), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:

(A) a synthetic dilution water control which fulfills the test acceptance requirements of Item 3.a was run concurrently with the receiving water control;

(B) the test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);

(C) the permittee includes all test results indicating receiving water toxicity with the full report and information required by Item 4 below; and

(D) the synthetic dilution water shall have a pH, hardness, and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

d. SAMPLES AND COMPOSITES

i. The permittee shall collect a minimum of three flow-weighted composite samples from the outfall(s) listed at Item 1.a above.

ii. The permittee shall collect second and third composite samples for use during 24-hour renewals of each dilution concentration for each test. The permittee must collect the composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.

iii. The permittee must collect the composite samples so that the maximum holding time for any effluent sample shall not exceed 72 hours. The permittee must have initiated the toxicity test within 36 hours after the collection of the last portion of the first composite sample. Samples shall be chilled to 4 degrees Centigrade during collection, shipping, and/or storage.

iv. If the flow from the outfall(s) being tested ceases during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions and the sample holding time are waived during that sampling period. However, the permittee must collect an effluent composite sample volume during the period of discharge that is sufficient to complete the required toxicity tests with daily renewal of effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The effluent composite sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report required in Item 4 of this section.

v. MULTIPLE OUTFALLS: If the provisions of this section are applicable to multiple outfalls, the permittee shall combine the composite effluent samples in proportion to the average flow from the outfalls listed in Item 1.a above for the day the sample was collected. The permittee shall perform the toxicity test on the flow-weighted composite of the outfall samples.

4. REPORTING

a. The permittee shall prepare a full report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of EPA/600/4-91/002, or the most current publication, for every valid or invalid toxicity test initiated whether carried to completion or not. The permittee shall retain each full report pursuant to the provisions of PART III.C.3 of this permit. The permittee shall submit full reports only upon the specific request of the Agency.

b. A valid test for each species must be reported on the DMR during each reporting period specified in PART I of this permit unless the permittee is performing a TRE which may increase the frequency of testing and reporting. Only ONE set of biomonitoring data for each species is to be recorded on the DMR for each reporting period. The data submitted should reflect the LOWEST Survival results for each species during the reporting period. All invalid tests, repeat tests (for invalid tests), and retests (for tests previously failed) performed during the reporting period must be attached to the DMR for EPA review.

c. The permittee shall submit the results of each valid toxicity test on the subsequent monthly DMR for that reporting period in accordance with PART III.D.4 of this permit, as follows below. Submit retest information clearly marked as such with the following month's DMR. Only results of valid tests are to be reported on the DMR.

i. *Pimephales promelas* (Fathead Minnow)

(A) If the No Observed Effect Concentration (NOEC) for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TLP6C.

(B) Report the NOEC value for survival, Parameter No. TOP6C.

(C) Report the NOEC value for growth, Parameter No. TPP6C.

ii. Ceriodaphnia dubia

(A) If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TLP3B.

(B) Report the NOEC value for survival, Parameter No. TOP3B.

(C) Report the NOEC value for reproduction, Parameter No. TPP3B.

5. TOXICITY REDUCTION EVALUATION (TRE)

a. Within ninety (90) days of confirming lethality in the retests, the permittee shall submit a Toxicity Reduction Evaluation (TRE) Action Plan and Schedule for conducting a TRE. The TRE Action Plan shall specify the approach and methodology to be used in performing the TRE. A Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The TRE Action Plan shall lead to the successful elimination of effluent toxicity at the critical dilution and include the following:

i. Specific Activities. The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures the permittee shall perform multiple characterizations and follow the procedures specified in the documents "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005F), or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity

Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081), as appropriate.

The documents referenced above may be obtained through the National Technical Information Service (NTIS) by phone at (703) 487-4650, or by writing:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

ii. Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.). The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified;

Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where lethality was demonstrated within 48 hours of test initiation, each composite sample shall be analyzed independently. Otherwise the permittee may substitute a composite sample, comprised of equal portions of the individual composite samples, for the chemical specific analysis;

iii. Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and

iv. Project Organization (e.g., project staff, project manager, consulting services, etc.).

b. The permittee shall initiate the TRE Action Plan within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.

c. The permittee shall submit a quarterly TRE Activities Report, with the Discharge Monitoring Report in the months of January, April, July and October, containing information on toxicity reduction evaluation activities including:

i. any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;

ii. any studies/evaluations and results on the treatability of the facility's effluent toxicity; and

iii. any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution.

A copy of the TRE Activities Report shall also be submitted to the state agency.

d. The permittee shall submit a Final Report on Toxicity Reduction Evaluation Activities no later than twenty-eight (28) months from confirming lethality in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no significant lethality at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.

A copy of the Final Report on Toxicity Reduction Evaluation Activities shall also be submitted to the state agency.

PART III - STANDARD CONDITIONS FOR NPDES PERMITS

A. GENERAL CONDITIONS

1. INTRODUCTION
In accordance with the provisions of 40 CFR Part 122.41, et. seq., this permit incorporates by reference ALL conditions and requirements applicable to NPDES Permits set forth in the Clean Water Act, as amended, (hereinafter known as the "Act") as well as ALL applicable regulations.

2. DUTY TO COMPLY
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

3. TOXIC POLLUTANTS

   a. Notwithstanding Part III.A.5, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition.

   b. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

4. DUTY TO REAPPLY
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR Part 122.6 and any subsequent amendments.

5. PERMIT FLEXIBILITY
This permit may be modified, revoked and reissued, or terminated for cause in accordance with 40 CFR 122.62-64. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. PROPERTY RIGHTS
This permit does not convey any property rights of any sort, or any exclusive privilege.

7. DUTY TO PROVIDE INFORMATION
The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. CRIMINAL AND CIVIL LIABILITY
Except as provided in permit conditions on "Bypassing" and "Upsets", nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of the permit, the Act, or applicable regulations, which avoids or effectively defeats the regulatory purpose of the Permit may subject the Permittee to criminal enforcement pursuant to 18 U.S.C. Section 1001.

9. OIL AND HAZARDOUS SUBSTANCE LIABILITY
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

10. STATE LAWS
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

11. SEVERABILITY
The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

B. PROPER OPERATION AND MAINTENANCE

1. NEED TO HALT OR REDUCE NOT A DEFENSE
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failure either by means of alternate power sources, standby generators or retention of inadequately treated effluent.

2. DUTY TO MITIGATE
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

3. PROPER OPERATION AND MAINTENANCE

a. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants and will achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

b. The permittee shall provide an adequate operating staff which is duly qualified to carry out operation, maintenance and testing functions required to insure compliance with the conditions of this permit.

4. BYPASS OF TREATMENT FACILITIES

a. BYPASS NOT EXCEEDING LIMITATIONS
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.B.4.b. and 4.c.

b. NOTICE

(1) ANTICIPATED BYPASS

If the permittee knows in advance of the need for a bypass, it shall submit prior notice to EPA Region 6 and NMED, if possible at least ten days before the date of the bypass.

(2) UNANTICIPATED BYPASS
The permittee shall, within 24 hours, submit notice of an unanticipated bypass as required in Part III.D.7.

c. PROHIBITION OF BYPASS

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required by Part III.B.4.b.

(2) The Director may allow an anticipated bypass after considering its adverse effects, if the Director determines that it will meet the three conditions listed at Part III.B.4.c(1).

5. UPSET CONDITIONS

a. EFFECT OF AN UPSET
An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Part III.B.5.b. are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. CONDITIONS NECESSARY FOR A DEMONSTRATION OF UPSET
A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required by Part III.D.7; and,

(4) The permittee complied with any remedial measures required by Part III.B.2.

c. BURDEN OF PROOF
In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. REMOVED SUBSTANCES
Unless otherwise authorized, solids, sewage sludges, filter backwash, or other pollutants removed in the course of treatment or wastewater control shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. PERCENT REMOVAL (PUBLICLY OWNED TREATMENT WORKS)
For publicly owned treatment works, the 30-day average (or Monthly Average) percent removal for Biochemical Oxygen Demand and Total Suspended Solids shall not be less than 85 percent unless otherwise authorized by the permitting authority in accordance with 40 CFR 133.103.

C. MONITORING AND RECORDS

1. INSPECTION AND ENTRY
The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

2. REPRESENTATIVE SAMPLING
Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. RETENTION OF RECORDS
The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

4. RECORD CONTENTS
Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) and time(s) analyses were performed;
d. The individual(s) and laboratory who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

5. MONITORING PROCEDURES

a. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.

b. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instruments at intervals frequent enough to insure accuracy of measurements and shall maintain appropriate records of such activities.

c. An adequate analytical quality control program, including the analyses of sufficient standards, spikes, and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory.

6. FLOW MEASUREMENTS
Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from true discharge rates throughout the range of expected discharge volumes.

D. REPORTING REQUIREMENTS

1. PLANNED CHANGES

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b); or,

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements listed at Part III.D.10.a.

2. ANTICIPATED NONCOMPLIANCE
The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. TRANSFERS
This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

4. DISCHARGE MONITORING REPORTS AND OTHER REPORTS
Monitoring results must be reported on Discharge Monitoring Report (DMR) Form EPA No. 3320-1 in accordance with the "General Instructions" provided on the form. The permittee shall submit the original DMR signed and certified as required by Part III.D.11 and all other reports required by Part III.D. to the EPA at the address below. Duplicate copies of DMR's and all other reports shall be submitted to the appropriate State agency(ies) at the following address(es):

EPA:
Compliance Assurance and Enforcement Division
Water Enforcement Branch (6EN-W)
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

New Mexico:
Program Manager
Surface Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
1190 Saint Francis Drive
Santa Fe, NM 87502

5. ADDITIONAL MONITORING BY THE PERMITTEE
If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.

6. AVERAGING OF MEASUREMENTS
Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

7. TWENTY-FOUR HOUR REPORTING

a. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall be provided within 5 days of the time the permittee becomes aware of the circumstances. The report shall contain the following information:

(1) A description of the noncompliance and its cause;

(2) The period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and,

(3) Steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. The following shall be included as information which must be reported within 24 hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Any upset which exceeds any effluent limitation in the permit; and,

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part II (industrial permits only) of the permit to be reported within 24 hours.

c. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

8. OTHER NONCOMPLIANCE
The permittee shall report all instances of noncompliance not reported under Parts III.D.4 and D.7 and Part I.B (for industrial permits only) at the time monitoring reports are submitted. The reports shall contain the information listed at Part III.D.7.

9. OTHER INFORMATION
Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

10. CHANGES IN DISCHARGES OF TOXIC SUBSTANCES
All existing manufacturing, commercial, mining, and silvacultural permittees shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any

toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 µg/L);
(2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitro-phenol and for 2-methyl-4,6-dinitrophenol; and one milligramper liter (1 mg/L) for antimony;
(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Director.

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 µg/L);
(2) One milligram per liter (1 mg/L) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Director.

11. SIGNATORY REQUIREMENTS
All applications, reports, or information submitted to the Director shall be signed and certified.

a. ALL PERMIT APPLICATIONS shall be signed as follows:

(1) FOR A CORPORATION - by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or,

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) FOR A PARTNERSHIP OR SOLE PROPRIETORSHIP - by a general partner or the proprietor, respectively.

(3) FOR A MUNICIPALITY, STATE, FEDERAL, OR OTHER PUBLIC AGENCY - by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. ALL REPORTS required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or an individual occupying a named position; and,

(3) The written authorization is submitted to the Director.

c. CERTIFICATION
Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. AVAILABILITY OF REPORTS
Except for applications, effluent data, permits, and other data specified in 40 CFR 122.7, any information submitted pursuant to this permit may be claimed as confidential by the submitter. If no claim is made at the time of submission, information may be made available to the public without further notice.

E. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS

1. CRIMINAL

a. NEGLIGENT VIOLATIONS
The Act provides that any person who negligently violates permit conditions implementing Section 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. KNOWING VIOLATIONS
The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. KNOWING ENDANGERMENT
The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

d. FALSE STATEMENTS
The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309.c.4 of the Clean Water Act)

2. CIVIL PENALTIES
The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $27,500 per day for each violation.

3. ADMINISTRATIVE PENALTIES
The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

a. CLASS I PENALTY
Not to exceed $11,000 per violation nor shall the maximum amount exceed $27,500.

b. CLASS II PENALTY
Not to exceed $11,000 per day for each day during which the violation continues nor shall the maximum amount exceed $137,500.

F. DEFINITIONS
All definitions contained in Section 502 of the Act shall apply to this permit and are incorporated herein by reference. Unless otherwise specified in this permit, additional definitions of words or phrases used in this permit are as follows:

1. ACT means the Clean Water Act (33 U.S.C. 1251 et. seq.), as amended.

2. ADMINISTRATOR means the Administrator of the U.S. Environmental Protection Agency.

3. APPLICABLE EFFLUENT STANDARDS AND LIMITATIONS means all state and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards or performance, toxic effluent standards and prohibitions, and pretreatment standards.

4. APPLICABLE WATER QUALITY STANDARDS means all water quality standards to which a discharge is subject under the Act.

5. BYPASS means the intentional diversion of waste streams from any portion of a treatment facility.

6. DAILY DISCHARGE means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be arithmetic average (weighted by flow value) of all samples collected during that sampling day.

7. DAILY MAXIMUM discharge limitation means the highest allowable "daily discharge" during the calendar month.

8. DIRECTOR means the U.S. Environmental Protection Agency Regional Administrator or an authorized representative.

9. ENVIRONMENTAL PROTECTION AGENCY means the U.S. Environmental Protection Agency.

10. GRAB SAMPLE means an individual sample collected in less than 15 minutes.

11. INDUSTRIAL USER means a nondomestic discharger, as identified in 40 CFR 403, introducing pollutants to a publicly owned treatment works.

12. MONTHLY AVERAGE (also known as DAILY AVERAGE) discharge limitations means the highest allowable average of "daily discharge(s)" over a calendar month, calculated as the sum of all "daily discharge(s)" measured during a calendar month divided by the number of "daily discharge(s)" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharge(s)" of concentration determined during the calendar month where C = daily concentration, F = daily flow, and n = number of daily samples; daily average discharge =

$$\frac{C_1F_1 + C_2F_2 + \ldots + C_nF_n}{F_1 + F_2 + \ldots + F_n}$$

13. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the Act.

14. SEVERE PROPERTY DAMAGE means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

15. SEWAGE SLUDGE means the solids, residues, and precipitates separated from or created in sewage by the unit processes of a publicly owned treatment works. Sewage as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff, that are discharged to or otherwise enter a publicly owned treatment works.

16. TREATMENT WORKS means any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage and industrial wastes of a liquid nature to implement Section 201 of the Act, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, sewage collection systems, pumping, power and other equipment, and their appurtenances, extension, improvement, remodeling, additions, and alterations thereof.

17. UPSET means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

18. FOR FECAL COLIFORM BACTERIA, a sample consists of one effluent grab portion collected during a 24-hour period at peak loads.

19. The term "MGD" shall mean million gallons per day.

20. The term "mg/L" shall mean milligrams per liter or parts per million (ppm).

21. The term "µg/L" shall mean micrograms per liter or parts per billion (ppb).

22. MUNICIPAL TERMS
    a. 7-DAY AVERAGE or WEEKLY AVERAGE, other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The 7-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

    b. 30-DAY AVERAGE or MONTHLY AVERAGE, other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. The 30-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar month.

    c. 24-HOUR COMPOSITE SAMPLE consists of a minimum of 12 effluent portions collected at equal time intervals over the 24-hour period and combined proportional to flow or a sample collected at frequent intervals proportional to flow over the 24-hour period.

    d. 12-HOUR COMPOSITE SAMPLE consists of 12 effluent portions collected no closer together than one hour and composited according to flow. The daily sampling intervals shall include the highest flow periods.

e. 6-HOUR COMPOSITE SAMPLE consists of six effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

f. 3-HOUR COMPOSITE SAMPLE consists of three effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To LaDonna Walker	From Maura Henning
Co. EPA	Co. NMED
Dept. Superfund	Phone # 505-827-2922
Fax # 214-665-6660	Fax # 505-827-2965

Santa Fe

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THE SANTA FE NEW MEXICAN

Sunday

APRIL 11, 1999

Questa mine considered for Superfund status

By BEN NEARY
The New Mexican

QUESTA — The U.S. Environmental Protection Agency is investigating whether to declare Molycorp's molybdenum mine a federal Superfund site, a designation that could require a massive cleanup at the company's expense.

David Shoemaker, mine manager, maintains the mine doesn't contribute to water pollution in the area and says a Superfund listing is unnecessary.

"We don't feel it is a viable candidate," Shoemaker said. The underground mine and associated milling operation employ 140 people — a significant economic presence in chronically depressed northern Taos County.

Dennis Slifer of the New Mexico Environment Department wrote a report in 1996 examining mine operations. He concluded that of the various sources of pollution in the Red River, acid rock drainage was having the greatest impact.

"Source of acid rock drainage from the Molycorp mine include sulfide material in the waste-rock dumps, open pit, underground workings and tailings deposits near the mill," Slifer wrote.

Once a site is added to the list, the EPA investigates who is responsible for the pollution and how best to clean it up.

Amigos Bravos, a Taos-based environmental group that has sued both Molycorp and the EPA over what the group sees as the company's contamination of the Red River, wants the government to proceed with the Superfund listing.

"Here we have an opportunity to designate it, to put the onus on the responsible party and make sure it's cleaned up right," said Ernie Atencio, Amigos Bravos' executive director.

Two officials from the EPA's Dallas office toured the Molycorp site early this month at the request of state officials.

EPA spokesman Dave Bary said Friday that state Environment Department has invited federal officials to investigate the mine.

Bary said. "We will be gathering as much information as we can over the next months to see if the Molycorp mine at Questa warrants placement," Bary said.

Generally, to be declared a Superfund

Please see SUPERFUND, Page B-3

SUPERFUND

Continued from Page B-1

site, the EPA has to determine a site is polluted and it poses a threat to public health and the environment. The agency looks at the site's proximity to a residential population and also considers how pollution could travel from the site to the residents.

All of those elements are given a numerical value, and if a site's score exceeds a certain figure it is added to the Superfund list. Once a site is added to the list, the EPA investigates who is responsible for the pollution and how best to clean it up.

If the responsible party won't agree to clean up a site once it's identified, the EPA itself may clean up the site and sue to recover costs.

Molycorp now digs ore from an underground mine east of Questa, upstream on the Red River. In years past, the company dug a huge open pit mine in the area that resulted in huge piles of waste rock. In places, the piles slope steeply down to the edge of N.M. 38, which runs between Questa and the village of Red River.

Amigos Bravos last month filed a lawsuit against the EPA seeking a court order to force the federal agency to stop the flow of pollutants from the waste rock piles. A federal judge last year dismissed a similar lawsuit that the environmental group had filed against Molycorp itself.

Lynn Sferrazza, staff lawyer with the Western Environmental Law Center, which represents Amigos Bravos, said Friday the mine should be placed on the Superfund list.

But even if the mine operation doesn't make the list, Sferrazza said the federal government must enforce a water discharge permit forbidding Molycorp from releasing any water from its rock piles that fails to meet federal Clean Water Act standards.

"The site is contaminated, and our concern is that the site be cleaned up and that it stop causing harm to the Red River," Sferrazza said.

The Environment Department last year demanded that Molycorp submit a plan spelling out how it intends to deal with the discharge of pollutants into groundwater from the waste rock piles.

Although Molycorp agreed to submit the plan, Shoemaker has said he disagrees that such a plan should be required at all. He and others with the company have said they don't believe the mine contributes to the degradation of the Red River.

Beiling Liu, an Environment Department geologist who handles Molycorp, said Friday that although Molycorp doesn't want to see the operation designated as a Superfund site, the state is committed to seeing the area cleaned up.

"If that's not the course that Molycorp wants to take, then we have to get the site cleaned up one way or another," Liu said. "We're still looking at it, we think it has a serious problem there."

Liu said not all areas of the Molycorp operation need to be cleaned up. Although she said the state has investigated the site for years, she said her office has no estimate of how much it would cost to clean up the site.

Bary said the EPA is in close contact with the state Environment Department and said it's not unusual for the state to request investigations of whether sites would qualify for inclusion on the Superfund list. He said such investigations typically take at least six months.

"I think there's enough concern about the Molycorp corporation's activities that it's prudent for them to ask the EPA to evaluate it," Bary said of state Environment Department officials.

AMIGOS BRAVOS

Friends of the Wild Rivers

July 28, 1998
October?

Scott Wilson
Permits Branch (NPDES)
US Environmental Protection Agency—Region 6
1445 Ross Ave.
Dallas, TX 75202-2733

Dear Scott,

I am writing to follow up on our meeting last week regarding Molycorp's NPDES permit, and to request written verification that EPA plans to include the waste rock area in the permit renewal. We really appreciate your visit and your willingness to talk openly with Amigos Bravos about this important issue.

We are very encouraged to hear that EPA recognizes Molycorp's 230 million tons of waste rock as a point source and plans to include it in the NPDES permit renewal. This is also critical information for New Mexico State agencies to consider in their own regulatory proceedings.

Please send us a letter verifying EPA's plans to include Molycorp's waste rock in the NPDES permit, so that we can share this information with State agencies. The New Mexico Mining and Minerals Division is currently under deadline to complete its permitting for the mine, and this information would be particularly timely for that process.

As we said at the meeting, we are happy to provide contacts with technical consultants or any other information we can to help with the process. It was a pleasure to meet you, and thanks again for your efforts.

Sincerely,

Ernest Atencio
Projects Director

cc: Grove Burnett, Western Environmental Law Center

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DRAFT

Work Plan For

Geochemistry and Hydrology of the Red River Stream System Before and After Open-Pit Mining, Questa Area, Taos County, New Mexico

Submitted to:
Office of Natural Resource Trustee
P. O. Box 26110
Santa Fe, NM 87502-6110

Submitted by:

Principal Investigators:
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28 January, 1997

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Introduction and Project Summary

Although a number of investigations and evaluations have been done on the effects of underground and open-pit mining on the stretch of the Red River between the towns of Red River and Questa (Slifer, 1996), these investigations have not clearly defined the degree to which mining operations are responsible for impairment of the river system. Some of the high metal loadings in this stretch of the river are the result of the natural weathering of hydrothermal alteration scars, some can be attributed to the effects mining. Changes in climate also may have contributed to the present degree of impairment.

We propose to conduct a focused investigation to determine the degree to which mining operations are responsible for contamination of the river system. This information can be obtained by a study which integrates previously collected data with direct observation of groundwater seeps and loadings and surface water flow and sediment loadings at key locations in the river system and mine area. These sites will be established at locations adjacent to and within the river channel, and which represent contributions ranging from non-mineralized and vegetated areas, from active hydrothermal scars, and from areas disturbed by mining.

An important component of the proposed investigation is an assessment of the composition of sediments and metal loadings before and after mining operations. Inspection of the river valley has identified several natural impoundments adjacent to the river channel where records of sediment have accumulated in recent years and probably over the historical period prior to, during, and after mining activity. Terraces and deposits flanking the stream have been identified which appear to contain datable sediments which can provide base-line data for pre-mining conditions along the river. In addition, living pine trees are rooted near active seeps bearing heavy metals in both mined and unmined areas. Although there is no assurance that trace metals in wood from such trees occur in concentrations sufficient for detection, the potential for obtaining historical data from such a source will be evaluated and applied, if feasible.

In order to isolate pre-mining from post-mining responses, assessment will require the collection and analysis of source materials and also collection and analysis of both water and sediment samples at key sites at regular intervals over most of an annual cycle. Water samples will be regularly collected from the main channel, and also from seeps and springs, as needed to supplement data obtained from previous investigations. Sediment samples will be collected from the channel directly under different conditions of flow, and also in a series of sediment-trapping devices deployed within and adjacent to the channel.

Analyses of water and sediment samples are expected to provide data for mined and unmined areas under conditions of base flow and pulse flow (Spring snowmelt and flash flooding). Data collected at key localities by this investigation, supplemented by data from previous investigations, will provide a basis for interpreting historical records collected from sites adjacent to the active river channel.

Preliminary examination of the Red River canyon between Red River and Questa has identified 5 sites where impoundment of water and sediment has occurred in the recent historic past. Sediment samples will be collected from these and other sites by standard coring practices or by excavation, as needed. Samples will be analyzed for metal content and dated, when possible, by AMS radiocarbon methods in order to compare metal loading above and below and before and after mining activity.

Other aspects of this investigation will follow after the basic observational studies, outlined above, are put into effect. Changes in the local surface/subsurface hydrology induced my mining have important consequences for stream geochemistry. We will use numerical simulation of surface and subsurface flow paths from the vicinity of the mine to the Red River, in conjunction with environmental isotopic data, to examine the ramifications of changes in hydrology. The modelling approach, in conjunction with data for climate variability in the region, will allow us to examine changes in metal loadings under differing climatic conditions. In addition, previous investigations concerning the effects of changes in geochemistry on river

biota will be examined in terms of new observations of seasonal and other discharges to the river and compared with model estimates of loadings under altered climatic conditions.

The objective of the complete investigation is to determine the contribution of metal loadings to the Red River system from mining activity, to evaluate the potential for contamination and its effect on the river biota from continued disturbance of the hydrologic system, and to provide baseline data for remediation measures, should they be needed.

Site

The study area is within the drainage of the Red River, east of Questa, NM, at elevations ranging from ~2300m to ~2600m, with a river elevation at the mine of 2470 m. The west-flowing Red River is flanked by fluvial terraces within a canyon dissecting the Sangre de Cristo Mountains. Temperature extemes range from -25° F in winter to 90° F. in summer. Climate is semi-arid, with precipitation mainly as snow in winter and thundershowers in summer. Long-term precipitation at Cerro, NM is 31.65 cm per year, with August (4.88 cm) the wettest month and March (1.47 cm) the driest month.

Plan of Investigation

The investigation will assemble all available records and pertinent data related to the distribution and transport of trace metals which are associated with the study area. It will establish a network of sampling sites at representative localities in the Red River drainage, characterize the distribution of trace metals at these localities, and collect and analyze water and sediment samples associated with the Red River at periodic intervals through an annual cycle. The site network will include localities which contain datable accumulations of sediment which span the interval of mining, or other evidence of historical changes associated with mining activity. In addition, a topographic hydrologic model, using new and existing data, will be applied to the disturbed area and the output evaluated in terms of potential impact on river geochemistry and biota under changing climate conditions. Results, along with specific conclusions and recommendations will be presented in a final report. The proposed study is divided into specific tasks, as follows:

Task 1.1 Preparation of detailed work plan

A supplemental work plan which anticipates known tasks will be prepared for the investigation. The work plan will be approved by the Office of Natural Resource Trustee before work commences.

Task 1.2 Compilation and evaluation of existing water quality data

All surface water and groundwater data and geochemical analyses which are available from published and unpublished governmental and industrial sources will be compiled into a database early in the investigation.

Task 1.3. Collection and measurement of dissolved chemical species in surface and ground waters

Water samples will be collected from approximately 2 upstream sites and 4 downstream sites at approximately monthly intervals for all or most of one annual cycle. Chemical analyses will be performed, using standard environmental methods, for potentially environmentally toxic trace elements such as aluminum, beryllium, molybdenum, selenium, arsenic, antimony, lead, nickel, zinc, copper, manganese, cadmium and cobalt in surface waters.

Task 1.4 Collection and measurement of trace elements in terrace and soil deposits

Distribution of trace elements will be characterized from approximately 12 sites above, within, and below the active mining area. Iron oxyhydroxides, soils, and other accumulative deposits directly associated with modern and older seeps, as well as other representative localities, will be collected and analyzed using standard analytical methods for a suite of potentially environmentally toxic elements such as aluminum, beryllium, molybdenum, selenium, arsenic, antimony, lead, nickel, zinc, copper, manganese, cadmium and cobalt. Measurement of the distribution of selected trace elements within Fe crusts and other associated materials will also be accomplished by microprobe analysis.

Task 1.5 Collection and measurement of trace elements in surficial deposits, stream-channel deposits, and temporary ponds and reservoirs

Sediment trapping devices will be deployed in and adjacent to stream channels, temporary ponds, and reservoirs. Samples will be collected at approximately monthly intervals for all or most of one annual cycle. Materials collected will be analyzed for a suite of potentially environmentally toxic elements such as aluminum, beryllium, molybdenum, selenium, arsenic, antimony, lead, nickel, zinc, copper, manganese, cadmium and cobalt. Sites which are associated with accumulations of sediment will be excavated, described stratigraphically, sampled, and examined for datable materials. Sites with suitable materials will be radiocarbon dated to provide estimates of rates of accumulation and historical context. The wood of trees rooted in highly mineralized and non-mineralized areas will be collected with an increment borer, analyzed for a suite of possible indicators of contamination, and results evaluated in terms of potential for providing historical records of contamination related to mining.

Task 1.6 Hydrologic flow path determination/evaluation of biotic response

A topographically driven watershed model (TOPMODEL), which simulates surface and subsurface waterflow paths to the river channel, will be used to determine flow paths before and after excavation of the mine. Numerical modeling results will be corroborated with environmental isotopic data (deuterium and oxygen -18). A geochemical reaction path model will then be used to assess the effects, if any, of mining operations on stream geochemistry. Climatic records will be compiled and numerical simulations of the watershed flow model will be run under a range of reasonable climate changes (ppt inputs) in order to quantify a range of climate-dependent contamination scenarios. Results of prior studies of river biota will be evaluated and interpreted in terms of potential changes in the subrheic environment and its impact on river biota under a range of climate-dependent streamflows and metal loadings.

Task 1.7 Preparation of technical report

The final report will include a compilation of base-line data for the distribution of a suite of potentially toxic trace elements. These data will include information acquired from Task 1.2. Included will be estimates of seasonal changes in the distribution of trace elements in surface waters and transportable sediments. The report will examine possible linkages between the modern hydrologic system and the movement of potentially toxic trace elements, and will include an evaluation of both the natural distribution of trace metals and distributions which can be attributed to mining activity, as provided by historical and geologic records. Also included will be an

evaluation of the potential for changes in climate and streamflow to affect metal loadings and biota in the Red River.

Budget and Contract Arrangements

Budget details are presented in Appendices 1 and 2. Administrative operations such as purchasing, salary payments, reimbursements, financial reports, etc., will be carried out under two separate contracts with the New Mexico Bureau of Mines, New Mexico Institute of Mining and Technology (B. D. Allen , PI), and the University of New Mexico (R. Y. Anderson, M. E. Campana, and L. J. Crossey,PIs).

Time Constraints

The deliverable package will be the final report (Task 1.7), to be submitted within 3 months of the expiration of the grant. A starting date of 1 March, 1997, and an ending date of 28 February, 1998 is anticipated. Observational studies will be implemented at the earliest possible date, to be followed by evaluation of prior investigations and modeling. If necessary, investigations can be phased in concordance with budget requirements. It is expected that meaningful data and understanding of the systems involved can be acquired during approximately a one-year period of collection and observation. It is recognized, however, that a longer period of collection and observation may be indicated for an accurate examination and evaluation of the distribution and movement of trace elements.

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RECORD OF COMMUNICATION

1-14-00

From: Scott Wilson, Region 6

To: Stephen Hoffman, EPA Headquarters, National Mining Coordinator

I called Stephen to see if he could direct me to help in estimating the cost for intercepting and pre-treating seeps at the Molycorp mine. He offered the following based on 5 seeps with a combined total flow of 0.5 MGD.

Interception barriers	$2,000 to $3,000 each
Impoundments at seeps (200,000 gallons)	$50,000 each
Lime settling treatment	$500,000
Emergency impoundment (1,000,000 gal)	$250,000

Operation and maintenance cost is probably approx. 10% of the cost of the system.

He also said he would send me a document "Costs of Remediation at Mine Sites", which he said is a very good source.

RECORD OF COMMUNICATION

1-21-00

From: Scott Wilson EPA Region 6

To: Bill Anderson, EPA Headquarters, Engineering and Analysis Division

I called Bill to discuss the economic analysis needed for my BPJ limits for Molycorp. He said the way they do the economic achievability analysis in Guidelines is to compare the revenue of the facility with the cost of the treatment. If the annual cost of the treatment is less than 1% of the annual revenue then it meets the test. In the case of Molycorp revenue would be considered to be the dollar value of the amount of molybdenite they produce.

RECORD OF COMMUNICATION

January 18, 2000

From: Scott Wilson, EPA, Region 6

To: Rebecca Thomas, EPA, Region 8

I called Rebecca to get information on the Leadville Superfund site, specifically what they had dealt with by way of seeps from waste rock piles.

They have one in the site in California Gulch operative unit 10 (Oregon Gulch). In that case the seep collection system cost $14,000; sumps and overflow cost $13,000; pumps and piping 1000 feet to the treatment plant cost $11,000; and maintenance is $20,000 per year.

RECORD OF COMMUNICATION

From: Scott Wilson (EPA)

To: Gayza Lorenci (Molycorp)

1/11/00 4:10 p.m.

I called Gayza to let him know I was drafting the permit and wanted to know if anything had changed since they submitted the application. He said nothing had changed.. They are still hoping for some relaxation in the limits for molybdenum and fluoride. He also said that they are planning to develop a new higher quality ore body by the end of the year and expect to increase production to 12,000 tons per day. They may increase production to as high as 18,000 tons per day. This increase is even though the price is low ($2.50 per pound). He said stockpiles of molybdenum are low so they don't understand why the price is still low. Their present production is 6,000 tons per day.

I told Gayza that I expect to have the permit drafted later this spring and would come out there to meet with them and answer questions about the draft when it was prepared.

1/13/00 called Gayza again. To get information on the groundwater collection system below the tailings ponds. He is sending the latest report on it's efficiency. I also varified the amount of production. It is 6000 tons per day of ore which he said contains 0.3% Molybdenite.

SW

scott

August 7, 1998

Jane Watson, Section Chief
Permits Branch
US Environmental Protection Agency Region 6
1445 Ross Ave.
Dallas, TX 75202-2733

/re Molycorp permits: State Mining Permit, N.M. Groundwater Discharge Permits DP-933 (tailings) and DP-1055 (waste rock piles), and National Pollution Discharge Elimination System permit.

I am submitting the following as part of the public comment process in regard to the upcoming Molycorp permit renewal applications. I trust you will find them helpful in dealing with this significant public policy matter.

A. The highest priority should be given to health factors affecting the human community and its natural environment, specifically air, water, soil, plant and animal habitat. Human activites that pollute, deteriorate or destroy these factors must be kept to an absolute minimum acceptable to the affected communities as well as meeting national health standards.

B. Economic considerations should be give secondary priority.
1. The citizenry/taxpayers of a community, be that municipal, county, state or federal, do not exist to guarantee, enhance or subsidize the profitability of businesses, corporations, commercial or agricultural enterprises.
2. Specifically, if Molycorp were to close its operation rather than control its destructive environmental impacts, in all likelihood the economic impact/cost to the taxpayers would be less to pay for temporary support, retraining and relocation of unemployed Molycorp workers than the eventual, overall cost of undoing the environmental health damage attributable to Molycorp's mining operation.

3. Times and conditions change. Appeals to past rulings, permits, contracts, treaties, etc. are, at best, questionable in logic, if not law. The destructive consequences that are so glaringly apparent today may well have been unforseeable, not well understood, or simply ignored in the recent or distant past. Current decisions must be made on the basis of current knowlege and considerations.

Respectfully,

Gary M. Heymann, Ph.D.

Gary M. Heymann, Ph.D.
3001 Calle Del Bosque NW
Albuquerque, NM 87104

RECEIVED
AUG 12 1998
6WQ-PP

Gary M. Heymann, Ph D.
3001 Calle Del Bosque NW
Albuquerque, NM 87104

ALBUQUERQUE, NM 87108
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UWQ-P

Jane Watson, Section Chief
Permits Branch
US Environmental Protection Agency, Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

75202/2812

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

P/C

NMO022306 981014
MOLYCORP INC. QUESTA DIV.
DAVID R SHOEMAKER, GEN. SUPT.
P. O. BOX 469
QUESTA NM 87556

Dear Permittee:

A review of our records indicates that your National Pollutant Discharge Elimination System (NPDES) permit will soon expire. If you wish to continue to discharge subsequent to the expiration date of your permit, you must re-apply for your permit not less than 180 days prior to the permit expiration date. Please submit one original and one copy of the application.

This will be the only notice you will receive from the Agency advising you of the need for re-applying for your permit. If you anticipate your facility will be discharging after your permit expires, you should submit the enclosed application forms not less than 180 days prior to the expiration date on your current permit.

Failure to submit a timely application will cause your facility to be noncompliant and subject to enforcement action. Please take the necessary steps to have the application submitted on time. Future enforcement actions could include administrative compliance orders, administrative penalty orders, and/or referral to the United States Department of Justice for judicial action with monetary fines.

Enclosed for your use is a copy of the Analytical Testing Requirements for Permit Applications. Since reapplication may require extensive laboratory work and laboratories often have extensive backlogs, it is important that you have all required laboratory work completed as quickly as possible in order to met the 180 deadline.

Also enclosed are the appropriate application forms for your use, including an Application Form 2F for the discharge of stormwater associated with an industrial activity. Please include the required information on all stormwater discharges, which are associated with an industrial activity, from your facility on the Application Form 2F. This should include copies of any individual application Form 2F previously submitted, information which may have been submitted as part of a stormwater group application, or any stormwater discharges for which a Notice of Intent (NOI) was submitted to request coverage under the general permit for the discharge of stormwater associated with an industrial activity. It is the goal of EPA Region 6 to cover all discharges from your facility under one NPDES permit.

If however, you determine a permit will no longer be required for your facility, you should notify the Agency of this fact. Your cooperation in this matter is appreciated. If you have any questions, please contact me at the above address or telephone (214) 665-7514.

Sincerely yours,

Jenaie Franke

Jenaie Franke
Customer Service Branch
Administrative Support (6WQ-CA)

Enclosures

ENCLOSURE 1

ANALYTICAL TESTING REQUIREMENTS FOR PERMIT APPLICATIONS

New Mexico

EPA Region 6 has established the following requirements for all NPDES permit applications. The permittee shall provide data that will meet the following requirements. The analytical methods specified in 40 CFR Part 136 shall be used in analyzing the plant effluent. Region 6 has established the following minimum quantification levels (MQL) based upon the analytical methods in 40 CFR Part 136. Applicants should be capable of achieving these MQL's in performing the effluent analyses required for completing the NPDES permit application. The results of the effluent analysis will be utilized in evaluating the necessity for both technology-based and water quality-based effluent limitations. Applications that report only "Not Detected (ND)" or "Below Detection Limit (BDL)" will be judged to be incomplete. The applicant must report pollutants that are not detected as "Less than the MDL (<MDL)", citing the numerical value of the appropriate MDL. All pollutants analyzed by a method with a MDL higher than the MQL listed below will be considered to be present in the effluent at the numerical value of the reported MDL. Any individual pollutant analysis with a value less than the MQL (<MQL) will be considered as not being present (concentration = 0) in the effluent.

MINIMUM QUANTIFICATION LEVELS (MQLs)

SM = Standard Methods, 16th Edition

METALS AND CYANIDE	MQL (µg/L)	BASED ON EPA METHOD
Antimony (Total)	60	200.7
Arsenic (Total)	10	206.2
Beryllium (Total)	5	200.7
Cadmium (Total)	1	213.2
Chromium (Total)	10	200.7
Chromium (3+)	10	200.7
Chromium (6+)	10	200.7
Copper (Total)	10	220.2
Lead (Total)	5	239.2
Mercury (Total)	0.2	245.1
Nickel (Total) [Freshwater]	40	200.7
Nickel (Total) [Marine]	5	249.2
Selenium (Total)	5	270.2
Silver (Total)	2	272.2
Thallium (Total)	10	279.2
Zinc (Total)	20	289.2
Cyanide (Total)	10	335.2
DIOXIN		
2,3,7,8-TCDD	0.00001	1613
VOLATILE COMPOUNDS		
Acrolein	50	624
Acrylonitrile	50	624
Benzene	10	624
Bromoform	10	624
Carbon Tetrachloride	10	624
Chlorobenzene	10	624
Chlorodibromomethane	10	624
Chloroethane	50	624
2-Chloroethyl Vinyl Ether	10	624
Chloroform	10	624

Dichlorobromomethane	10	624
1,1-Dichloroethane	10	624
1,2-Dichloroethane	10	624
1,1-Dichloroethylene	10	624
1,2-Dichloropropane	10	624
1,3-Dichloropropylene	10	624
Ethylbenzene	10	624
Methyl Bromide [Bromomethane]	50	624
Methyl Chloride [Chloromethane]	50	624
Methylene Chloride	20	624
1,1,2,2-Tetrachloroethane	10	624
Tetrachloroethylene	10	624
Toluene	10	624
1,2-trans-Dichloroethylene	10	624
1,1,1-Trichloroethane	10	624
1,1,2-Trichloroethane	10	624
Trichloroethylene	10	624
Vinyl Chloride	10	624
ACID COMPOUNDS		
2-Chlorophenol	10	625
2,4-Dichlorophenol	10	625
2,4-Dimethylphenol	10	625
4,6-Dinitro-o-Cresol [2-Methyl-4,6-Dinitrophenol]	50	625
2,4-Dinitrophenol	50	625
2-Nitrophenol	20	625
4-Nitrophenol	50	625
p-Chloro-m-Cresol [4-Chloro-3-Methylphenol]	10	625
Pentachlorophenol	50	625
Phenol	10	625
2,4,6-Trichlorophenol	10	625
BASE/NEUTRAL COMPOUNDS		
Acenaphthene	10	625
Acenaphthylene	10	625
Anthracene	10	625
Benzidine	50	625
Benzo(a)anthracene	10	625
Benzo(a)pyrene	10	625
3,4-Benzofluoranthene	10	625
Benzo(ghi)perylene	20	625
Benzo(k)fluoranthene	10	625
Bis(2-chloroethoxy) Methane	10	625
Bis(2-chloroethyl) Ether	10	625
Bis(2-chloroisopropyl) Ether	10	625
Bis(2-ethylhexyl) Phthalate	10	625
4-Bromophenyl Phenyl Ether	10	625
Butyl Benzyl Phthalate	10	625
2-Chloronapthalene	10	625
4-Chlorophenyl Phenyl Ether	10	625
Chrysene	10	625
Dibenzo(a,h)anthracene	20	625
1,2-Dichlorobenzene	10	625
1,3-Dichlorobenzene	10	625
1,4-Dichlorobenzene	10	625
3,3'-Dichlorobenzidine	50	625
Diethyl Phthalate	10	625
Dimethyl Phthalate	10	625
Di-n-Butyl Phthalate	10	625
2,4-Dinitrotoluene	10	625
2,6-Dinitrotoluene	10	625
Di-n-octyl Phthalate	10	625

1,2-Diphenylhydrazine	20	625
Fluoranthene	10	625
Fluorene	10	625
Hexachlorobenzene	10	625
Hexachlorobutadiene	10	625
Hexachlorocyclopentadiene	10	625
Hexachloroethane	20	625
Indeno (1,2,3-cd) Pyrene [2,3-o-Phenylene Pyrene]	20	625
Isophorone	10	625
Naphthalene	10	625
Nitrobenzene	10	625
n-Nitrosodimethylamine	50	625
n-Nitrosodi-n-Propylamine	20	625
n-Nitrosodiphenylamine	20	625
Phenanthrene	10	625
Pyrene	10	625
1,2,4-Trichlorobenzene	10	625
PESTICIDES		
Aldrin	0.05	608
Alpha-BHC	0.05	608
Beta-BHC	0.05	608
Gamma-BHC [Lindane]	0.05	608
Delta-BHC	0.05	608
Chlordane	0.2	608
4,4'-DDT	0.1	608
4,4'-DDE [p,p-DDX]	0.1	608
4,4'-DDD [p,p-TDE]	0.1	608
Dieldrin	0.1	608
Alpha-Endosulfan	0.1	608
Beta-Endosulfan	0.1	608
Endosulfan Sulfate	0.1	608
Endrin	0.1	608
Endrin Aldehyde	0.1	608
Heptachlor	0.05	608
Heptachlor Epoxide [BHC-Hexachlorocyclohexane]	0.05	608
PCB-1242	1.0	608
PCB-1254	1.0	608
PCB-1221	1.0	608
PCB-1232	1.0	608
PCB-1248	1.0	608
PCB-1260	1.0	608
PCB-1016	1.0	608
Toxaphene	5.0	608

The permittee may develop an effluent specific method detection limit (MDL) in accordance with Appendix B to 40 CFR Part 136. For any pollutant for which the permittee determines an effluent specific MDL, the permittee shall send to EPA Region 6 a report containing QA/QC documentation, analytical results, and calculations necessary to demonstrate that the effluent specific MDL was correctly calculated. An effluent specific minimum quantification level (MQL) shall be determined in accordance with the following calculation:

$$MQL = 3.3 \times MDL$$

Upon written approval by EPA Region 6, the effluent specific MQL may be utilized by the permittee for permit application reporting requirements.

Permit File - C
NM 22306

Molycorp, Inc.
A Unocal Company
Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

January 9, 1998

UNOCAL 76
MOLYCORP

U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Attention: Mr. Fred Humke, PE
Senior Environmental Engineer
Industrial Permits Section, 6W-P1

Re: NPDES Permit No. NM0022306 Renewal Application

Dear. Mr. Humke:

Molycorp is in the process of drafting the facility NPDES renewal application and we are defining the required sampling and analytical program to support the application. We have noted that in our previous renewal application, which was submitted to your office in December 1992, the analysis for priority organics (Volatile Compounds, Acid Compounds, Base/Neutral Compounds, and Pesticides) showed non-detectible levels for all categories.

As you are aware, at Outfall 002 we discharge seepage and shallow well water from the base of our tailings area. We are not surprised that the priority organics showed a non-detect in that we do not employ any chemicals anywhere in our operations that would contain any priority organics, therefore, we have no reason to believe that any of these constituents would be present in waters at Outfall 002.

With this in mind, we request approval to forego priority organic analysis at 002 as part of the renewal application. Since there is a considerable lag time in sampling and analysis of priority organics, together with our intent to file the renewal application prior to the due date, a prompt response to this request would be appreciated. We can certainly include the historic data in the renewal application.

Sincerely,

Geyza I. Lorinczi
Environmental Manager

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JAN 13 1998
6WQ-PP

xc: David Shoemaker
Fred Martinez

NM 22306

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FACSIMILE (202) 628-5116

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180 FLEET STREET
LONDON EC4A 2HD
44-171-413-0011
FACSIMILE 44-171-413-0333

RICHARD E. SCHWARTZ
(202) 624-2905
rschwartz@cromor.com

May 9, 1997

288:rls
89371.011

VIA FEDERAL EXPRESS

Mr. Sam Coleman
U.S. Environmental Protection Agency
Region 6
Suite 1200
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Amigos Bravos et al. v. Molycorp, Inc.
(D.N.M. No. CIV 95-1497 JP/DJS)

Dear Mr. Coleman:

We represent Molycorp, Inc. in the above-captioned citizen's suit brought by two citizen groups, Amigos Bravos and New Mexico Citizens For Clean Air and Water, under the Clean Water Act. Molycorp operates the Questa molybdenum mine in Taos County, New Mexico. In this suit, the plaintiffs have alleged that certain discharges to ground water at the Questa mine require an NPDES permit. We understand that the plaintiffs recently contacted your office and made the same allegations.

EPA Region 6 has issued and reissued NPDES permits for this mine since 1977, most recently on October 15, 1993. The plaintiffs' allegations in the citizen suit are identical to allegations regarding alleged discharges to ground water raised by various public commenters (including the plaintiffs) before EPA Region 6 in Molycorp's last permit reissuance proceeding in 1993. EPA clearly rejected those allegations when it stated, in part:

> Various commenters have expressed concern with ground water seepage to the Red River and suggest that this ground water may be infiltrated from the mine and the tailings areas, in addition to natural sources....

> While EPA understands the concern of these commenters for the possible impact of ground water seepage on the Red River, we do not agree that these are "point sources" under the NPDES permitting program.

EPA, Response to Comments, NPDES Permit No. NM 0022306 (1993).

EPA can, of course, reevaluate these issues when Molycorp's permit comes up for renewal in 1998. In the meantime, we are concerned that the representatives of Amigos Bravos may be presenting a misleading portrayal of the facts. Accordingly, we are enclosing copies of the reports recently prepared by expert witnesses for Molycorp in the defense of the pending citizens' suit. The key conclusions of the enclosed reports are briefly set forth below.

The report by Dr. William Schafer, dated April 23, 1997, concludes:

> Based on these studies, changes in metal concentrations within a river system can be attributed to a number of factors including deposition in the stream bed, resuspension of previously deposited precipitates, adsorption onto bed sediments or dissolution from bed sediments. Consequently, changes in concentration in metals in the Red River cannot be reliably attributed to the Molycorp mine without proper consideration of these processes. When surface water data are properly interpreted, there is no indication that the Molycorp mine, currently, or at any time, has contributed metal loads to the Red River. [p. 16].

Another report, dated April, 1997, was prepared by biologists James Chadwick and Steve Canton of Chadwick Ecological Associates. It concludes as follows:

> The trends for both fish and benthic invertebrates indicate that the cumulative impacts of sediment from a number of sources, and possibly decreased water quality, substantially decrease the suitability of the Red River to sustain aquatic biota in the reaches upstream of the Molycorp Questa mine. This pattern was evident during both baseline [early 1960s] and present

> conditions. In the reaches of the Red River adjacent to the mine and downstream of Capulin Canyon, the suitability of the river to sustain aquatic biota does not improve. This pattern was established prior to open-pit mining during baseline conditions and continues to the present. The open pit mine and waste rock piles do not appear to have measurably impacted the suitability of the Red River to support aquatic biota. [p.66].

We suggest that you review Chadwick's figures which illustrate these findings, such as at pages 36, 40 and 63.

The report by Dr. Ian Hutchison, dated April 23, 1997, includes the following major opinions:

- **Constituent sources and conveyances:** There are no discernible, confined and discrete conveyances of constituents from the overburden piles (also referred to as waste rock piles) to the Red River.

- **Hydraulic connection:** Conditions at the mine site are not well enough understood to determine whether there is a direct hydraulic connection between the overburden piles and the Red River.

- **Red River Water Quality:** The available data does not support the conclusion that there has been a general reduction in the water quality of the Red river cause by mining activities between the mid-1960s and the mid-1990s.

- **Sources of constituents in Red River:** The available data does not allow for a determination of whether constituent loadings in Red River are derived from overburden piles, scar area, or from alluvial deposits in tributary and Red River channels. [pp. 2-3].

Finally, Mr. Richard Reavis, who has spent 18 years implementing the NPDES program with EPA (Region 9) and the State of Nevada, concludes in his report dated April 23, 1997, as follows:

> No unpermitted point sources of pollution as defined in 40 C.F.R. Sec. 122.2 exist at the Questa molybdenum mine (Molycorp mine)...The seepage zones that occur along the south boundary of the Molycorp property in the north bank of the Red River are unconfined seeps of groundwater that do not meet the definition of 40 C.F.R. Sec. 122.2, and must be considered non-point sources of pollution. [p. 2].

Please contact either of us if you have further questions regarding these matters.

Very truly yours,

Richard E. Schwartz
R. Timothy McCrum

Enclosures

cc: Mr. Jack Ferguson (w/o encs.)
Caroline Kirksey, Esq. (w/encs.)
Mr. Frederick Humke (w/encs.)

NM 22 306

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FACSIMILE 44-171-413-0333

RICHARD E. SCHWARTZ
(202) 624-2905
rschwartz@cromor.com

November 7, 1997

Mr. Frederick O. Humke
Environmental Engineer
Permits Branch (6WQ-P)
U.S. Environmental Protection Agency - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Proposed Modification of Multi-Sector Permit

Dear Mr. Humke:

Enclosed is a copy of the published Federal Register version of EPA's "Proposed Modification of National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities." 62 Fed. Reg. 54950 et seq. (October 22, 1997). I believe that it is very similar to the version you read earlier. You are listed as the EPA Region 6 contact for further information.

Assuming that the courts will agree that the NPDES program applies to discharges to ground water (which remains in doubt), Molycorp believes that the modified Multi-Sector permit would still not apply to drainage into ground water from Molycorp's waste rock piles because:

a) there is no "direct hydrological connection" between pollutants from the waste rock piles and the Red River; and

b) the drainage is not a "point source."

The preamble to the enclosed Notice suggests that even if drainage into ground water from the waste rock piles were a directly connected point source discharge, that drainage would not be covered by the Multi-Sector Permit:

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> The Multi-Sector Permit does not authorize point source dry weather discharges, such as from . . . contaminated springs or seeps, which are not storm water. . . . Note that such dry weather discharges are not affected by today's clarification.

62 Fed. Reg. 54954 (Col. 2) (October 22, 1997).

Please let me know if EPA would like any additional information related to drainage or other flows from the Molycorp Questa mine site or the tailings disposal area.

Sincerely,

Richard E. Schwartz

1439299

McCorm

ENVIRONMENTAL PROTECTION AGENCY

[WH-FRL-5912-3]

Proposed Modification of National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities

AGENCY: Environmental Protection Agency.

ACTION: Notice of proposed modification of NPDES general permits; notice of interpretation.

SUMMARY: Today's action proposes clarification of an interpretation of the technology-based effluent limitations applicable to point sources of "mine drainage" at ore mining and dressing operations, which was contained in a recently-issued NPDES general permit for storm water associated with industrial activity. With this notice, EPA intends to provide a more definitive interpretation of the applicability of those recently-issued general permits, specifically, as they apply to certain storm water discharges at ore mining and dressing operations. To incorporate today's proposed interpretation, EPA only proposes to modify the NPDES general permits issued by EPA Regions 1, 6, 9 and 10 because the Agency does not anticipate that the mining-related storm water discharges at issue occur in the other States where EPA is the NPDES permit issuance authority. The Agency, however, would take final action to modify the general permits applicable in the other States where EPA issues permits if public comments demonstrate the need to do so.

DATES: Comments on today's proposed interpretation and proposed modification must be received or post-marked by midnight no later than December 8, 1997.

ADDRESSES: Send written comments to: W-97-13, Comment Clerk, Water Docket (MC-4101), U.S. EPA, 401 M Street, SW, Washington, DC 20460. Please submit the original and three copies of your comments and enclosures (including references).

Commenters who want EPA to acknowledge receipt of their comments should enclose a self-addressed stamped envelope. No facsimiles (faxes) will be accepted. Comments may also be submitted electronically to: ow-docket@epamail.epa.gov. Electronic comments must be submitted as an ASCII file avoiding the use of special characters and forms of encryption. Electronic comments must be identified by the docket number W-97-13. Comments and data will also be accepted on disks in WordPerfect 5.1 format or ASCII file format. Electronic comments on this notice may be filed online at many Federal Depository Libraries.

The record for this action has been established under docket number W-97-13, and includes supporting documentation as well as printed paper versions of elctronic comments. The record is available for inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding legal holidays at the Water Docket, Room M2616, U.S. EPA, 401 M Street SW, Washington, DC 20460. For access to docket materials, please call 202-260-3027 to schedule an appointment. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For further information, contact Gary Hudiburgh, Office of Wastewater Management, Office of Water at (202) 260-4926 or the appropriate EPA Regional Office. For EPA Region 1, covering discharges in the State of Maine and Federal Indian reservations in Maine, in the Commonwealth of Massachusetts and Federal Indian reservations in Massachusetts, in the State of New Hampshire and Federal Indian reservations in New Hampshire, as well as Federal Indian reservations in the States of Vermont, Connecticut, and Rhode Island, and Federal facilities in Vermont, contact Thelma Hamilton at (617) 565-3569. For EPA Region 6, covering discharges in the State of Texas and Federal Indian reservations in Texas, in the State of New Mexico and Federal Indian reservations in New Mexico (except Navajo Reservation lands, which are covered by EPA Region 9 and Ute Reservation lands, which are covered by EPA Region 8 and were not covered by the Multi-Sector General Permit), as well as Federal Indian reservations in Oklahoma and Louisiana, contact Fred Humke at (214) 665-7503. For EPA Region 9, covering the State of Arizona and Federal Indian reservations in Arizona, and Federal Indian reservations in California and Nevada, as well as the Duck Valley, Fort McDermitt, Goshute Reservations and Navajo Reservations, each of which cross State boundaries, contact Eugene Bromley at (415) 744-1906. For EPA Region 10, covering the State of Alaska and Federal Indian reservations in Alaska, the State of Idaho and Federal Indian reservations in Idaho (except the Duck Valley Reservation, which is covered by EPA Region 9), Federal Indian reservations in Washington and Oregon (except the Fort McDermitt Reservation, which is covered by EPA Region 9), as well as Federal facilities in Washington, contact Steven Bubnick at (206) 553-5171.

SUPPLEMENTARY INFORMATION:

Authority

EPA issues NPDES permits under the authority of CWA section 402, 33 U.S.C. section 1342. Today's proposed modification would be based on an interpretation of rules published under the authority of CWA sections 301, 304, and 501(a), 33 U.S.C. sections 1311, 1314, and 1361(a). Today's action would modify a table that was initially published in conjunction with NPDES permits for storm water associated with industrial activity issued pursuant to CWA section 402, 33 U.S.C. section 1342.

In today's notice, EPA announces and invites public comment on its interpretation of the technology-based effluent limitations applicable to point sources of "mine drainage" at ore mining and dressing operations under the Clean Water Act ("CWA"), 33 U.S.C. 1251 *et seq.* This interpretation updates and replaces an earlier interpretation published in the fact sheet for the final National Pollutant Discharge Elimination System ("NPDES") Storm Water Multi-Sector General Permit for Industrial Activities at 60 FR 50804 (Sept. 29, 1995)("Multi-Sector Permit"). The interpretation in today's notice supplements EPA's interpretation in Table G-4 of the Multi-Sector Permit regarding the applicability of the "mine drainage" provisions of regulations found at 40 CFR part 440, 60 FR at 50897.

EPA has reviewed the administrative record supporting the Part 440 regulations, as well as Agency statements made during the course of litigation over those regulations, and is revising Table G-4 accordingly. In litigation challenging the Multi-Sector Permit, *National Mining Association* v. *EPA*, No. 95-3519 (8th Cir.), the National Mining Association (NMA) has argued that the regulatory interpretation contained in Table G-4 was overly expansive and not supported by appropriate economic and technological evaluation. To support its argument, NMA cited Agency statements made during the course of litigation approximately twenty years earlier. Those statements were not raised and presented to the Agency during the public comment period of the permit. In response to NMA's arguments in the current litigation, EPA has re-evaluated the underlying record supporting the Part 440 regulations and is

supplementing its interpretation of the "mine drainage" provisions contained in Table G–4. Today's action supersedes the Agency interpretation contained in the Fact Sheet to the Multi-Sector Permit, as original issued.

Upon review of those documents, the Agency believes the documents (including judicial caselaw) speak for themselves. Therefore, the Agency is proposing to withdraw portions of the Table that discuss applicability of the part 440 regulations—i.e., those portions of the Table that do not specify applicability of the Multi-Sector permit. By today's action, EPA also proposes a slight expansion of the applicability of the Multi-Sector permit (consistent with the interpretation in today's notice) and, therefore, invites public comment.

The interpretation in today's notice provides clarification regarding the scope of the effluent guidelines initially promulgated in 1978. As explained more fully below, however, the Agency's communication of its 1978 intention was not fully clarified through publication in the **Federal Register** or other readily available documents. In addition to 1978 preamble statements in the **Federal Register** explaining the scope of the effluent guidelines, the Agency prepared other documents explaining the guideline's scope that were not published in the **Federal Register**. These other documents (including parts of the administrative record, the denial of an administrative petition for reconsideration, the Agency's litigation brief, and a guidance document for permit writers) contain statements about the applicability of the guidelines that NMA argued were inconsistent with Table G–4. Today's notice proposes to modify Table G–4 consistent with those statements and now would only address applicability of the Multi-Sector Permits.

I. Effluent Guidelines for Ore Dressing and Mining Point Source Category

A. Background

Congress enacted the Clean Water Act to establish a comprehensive program to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" through the reduction, and eventual elimination, of the discharge of pollutants into those waters. CWA Section 101(a); 33 U.S.C. 1251(a). To achieve its objective, the CWA provides for a permit program to control "point source" pollution. The CWA point source permitting program is known as the National Pollutant Discharge Elimination System ("NPDES"), under which EPA or authorized States issue permits for point source discharges. Except in accordance with an NPDES permit, a point source discharge of a pollutant is unlawful. CWA Section 301(a); 33 U.S.C. 1311(a). All NPDES permits must, at a minimum, contain technology-based effluent limitations established in effluent guidelines or standards or, if no such guidelines have been established, limitations derived on the basis of best professional judgment.

Individual NPDES permits contain substantive restrictions, called "effluent limitations," which are aimed at controlling the level of pollutants in point source discharges. CWA 402(a); 33 U.S.C. 1342(a). Effluent limitations may be "technology-based" or "water quality-based." [1] For some industrial point source categories, EPA has published technology-based effluent limitations that apply on a nationwide basis, pursuant to CWA Sections 304(b) and 306(b)(1)(B); 33 U.S.C. 1314(b) and 1316(b)(1)(B). [2] These limitations are called national effluent limitations guidelines or standards. EPA has published best practicable control technology currently available ("BPT"), best conventional pollutant control technology ("BCT"), best available technology economically achievable ("BAT") effluent guidelines, and new source performance standards ("NSPS") for point sources in over fifty different industrial categories. Among the effluent guidelines and standards which EPA has established are those applicable to the ore mining and dressing industry. These guidelines are known as the "Effluent Guidelines for the Ore Mining and Dressing Point Source Category" (hereinafter referred to as the "Guidelines"). The Guidelines are published at 40 CFR part 440.

EPA first published the Guidelines on an interim final basis on November 6, 1975. 40 FR 51722. On July 11, 1978, after substantially expanding the data base supporting the Guidelines, and after considering comments submitted since initial promulgation, EPA republished the Guidelines in modified form. 43 FR 29771 (July 11, 1978). Both the initial and republished Guidelines established BPT effluent limitations for discharges for ore mining and dressing operations.

B. Storm Water Regulation Under the Guidelines [3]

The Guidelines establish industry-wide effluent limitations for two types of mine discharges: (1) Mill discharges and (2) mine drainage. "Mine drainage" means "any water drained, pumped, or siphoned from a mine." 40 CFR 440.132(h). A "mine," in turn, is defined as:

> *an active mining area*, including all land and property placed under, or above the surface of such land, used in or resulting from the work of extracting metal ore or minerals from their natural deposits by any means or method, including secondary recovery of metal ore from refuse or other storage piles, wastes, or rock dumps and mine tailings derived from the mining, cleaning, or concentration of metal ores.

40 CFR 440.132(g) (emphasis added). An "active mining area," in turn, is defined as:

> a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.

40 CFR 440.132(a).

In statements in the administrative record supporting the Guidelines, EPA indicated an intent to include a broad range of discharges within the scope of the Guidelines. The 1975 Preamble to the Interim Final Guidelines expressly indicated that the Guidelines definition of the term "mine" was intended to be sufficiently broad "to cover all point source pollution resulting from all the activities related to the operation of the mine including drainage tunnels, haul roads, storage piles, etc." 40 FR 51727. Consistent with this, in the 1978 Development Document (prepared by EPA before the Guidelines were republished in 1978), EPA stated that:

> A mine is an area of land upon which or under which minerals or metal ores are extracted from natural deposits in the earth by any means or methods. A mine includes the total area upon which such activities occur or where such activities disturb the natural land surface. A mine shall also include land affected by such ancillary operations which disturb the natural land surface, and any adjacent land the use of which is incidental to such activities; all lands affected by the construction of new roads or the improvements or use of existing roads to gain access to the site of such

[1] Water quality based effluent limitations are included in permits when necessary to assure compliance with water quality standards.

[2] If no such guidelines have been established, technology-based limits are developed on a case-by-case basis based on the best professional judgment of the permit writer.

[3] The definitions of and discussion of these terms in this notice are within the use of these terms under the NPDES program and the Clean Water Act. These definitions are not specifically applicable to the use of these terms under other federal environmental laws, including under the Resources Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.* (RCRA) and its implementing regulations.

activities and for haulage and excavations, workings, impoundments, dams, ventilation shafts, drainage tunnels, entryways, refuse banks, dumps, stockpiles, overburden piles, spoil banks, culmbanks, tailings, holes or depressions, repair areas, storage areas and other areas upon which are site structures, facilities, or other property or materials resulting from or incident to such activities.

1978 Development Document at 146.

1. Petition for Reconsideration

After EPA promulgated the Guidelines on July 11, 1978, a number of mining companies filed petitions for judicial review challenging the Guidelines. (The judicial challenges are discussed below.) During the pendency of its judicial challenge, one of those companies, Kennecott Copper Corporation ("Kennecott") filed an administrative petition with EPA (dated September 26, 1978) requesting that the Agency reconsider and clarify the Guidelines. Kennecott amended its petition on November 9, 1978. Kennecott identified five areas of alleged deficiencies and concerns with the Guidelines. One of these issues related to the storm water runoff provisions of the Guidelines.

Kennecott objected to the storm water runoff provisions, which it argued were overly vague and capable of being interpreted in a manner that would violate applicable law. Among other things, Kennecott was particularly concerned about applicability of the Guidelines to what it referred to as "non-process" areas at mining operations. Kennecott further argued that the Guidelines, if applied in the manner suggested by Kennecott, would entail exorbitant costs not considered during the rulemaking. Kennecott presented EPA with cost estimates that Kennecott believed it would have to incur to comply with the Guidelines. Kennecott estimated costs to control storm water drainage flows from what Kennecott referred to as the "process" and "non-process" areas at two Kennecott mining operations, the Ray Mine and the Chino Mine. As discussed more fully below, the Agency's decision on Kennecott's petition is at the core of the NMA litigation over the Multi-Sector Permit.

In partial response to the Kennecott petition, EPA published a notice in the **Federal Register** that clarified the scope of the Guidelines' applicability to storm water runoff. 44 FR 7953–7954 (Feb. 8, 1979). That notice of clarification explained that the Guidelines applied only to point sources in the active mining area. The Notice clarified EPA's interpretation that the "mine drainage" provisions applied to "water which contacts an active mining area and flows into a point source." *Id.* EPA further explained that mining operations are not required to "collect and contain diffuse storm [water] runoff which would not otherwise be collected in or does not otherwise drain into a point source." *Id.* at 7954. In other words, diffuse storm water (from an active mining area) that was collected or contained in, or that naturally flowed into, a point source was subject to the Guidelines. Other storm water drainage flows were not subject to the Guidelines.

EPA denied Kennecott's petition on February 21, 1979. In doing so, EPA relied in part on the notice of clarification. The decision on the reconsideration petition discussed the applicability of the Guidelines to Kennecott's Ray Mine. For storm water drainage flows from what Kennecott called "non-process" areas at the Ray Mine, EPA concluded that Kennecott would incur no additional costs. Kennecott had, for the purposes of its petition, defined "non-process" area to mean "overburden dumps, material too low in mineral content even to leach, and exposed benches at the mine." Citing to the notice of clarification, EPA concluded that the definition of "mine drainage" did not include diffuse storm water runoff from overburden dumps and material too low in mineral content to leach. As that notice of clarification explained, "[a]ll water which contacts an 'active mining area * * *' and either does not flow, or is not channeled by the operator, to a point source, is considered runoff, and it is not the regulations' intent to require the mine operator to collect and treat such runoff." 44 FR at 7954. On the matter of storm water contacting the exposed benches, EPA could not determine whether such discharges would constitute point source discharges and thus, concluded that the issue would best be addressed by the permitting authority in the context of a permit proceeding.

After comprehensive review of these documents, there are several matters that are clear. EPA did not grant any portion of Kennecott's petition for reconsideration. In fact, EPA denied the petition and in so doing the Agency rejected Kennecott's cost estimates for what Kennecott called "non-process" areas because, based on the Ray Mine data submitted by Kennecott, EPA found that the Ray Mine would incur no costs with respect to runoff from those areas. Therefore, the Agency did not adopt or incorporate Kennecott's proposed distinction between "process" and "non-process" areas at mine sites. This conclusion alone, however, does not fully resolve all possible questions about applicability of the guidelines.

In responding to the portions of Kennecott's petition related to the Ray Mine, the Agency did not explain why the diffuse storm water runoff from "overburden dumps and material which is too low [] to leach and other areas of the Ray Mine property where work or other activity related to the the [sic] extraction, removal or recovery of of [sic] metal ore is not being conducted" was not subject to the Guidelines. These Agency statements merely repeated phraseology used in Kennecott's petition. Upon review of these statements, as well as re-review of Kennecott's original administrative petition, the Agency cannot determine with certainty, for example, whether the statement means that runoff was not subject to the Guidelines (1) because it was "diffuse" (i.e., nonpoint source), (2) because the drainage was already being contained at Ray Mine, (3) because the overburden at Ray Mine was outside of Ray Mine's active mining area, (4) because no activity related to the extraction, removal or recovery of metal ore was currently (or recently) being conducted at the Ray Mine site at that time as identified by Kennecott in its petition for reconsideration. The statements certainly, however, do not indicate that water which contacts overburden dumps in active mining areas is not subject to the Guidelines nor does any other subsequent Agency statement vacillate on this question. Runoff from overburden dumps within the active mining area is mine drainage subject to Guidelines.

2. Judicial Challenge

The Guidelines rule was ultimately upheld by the U.S. Court of Appeals for the Tenth Circuit. *Kennecott Copper Corp.* v. *EPA*, 612 F.2d 1232 (10th Cir. 1979). In affirming the Guidelines, the Tenth Circuit relied on the language of the Notice of Clarification and considered moot the Petitioner's challenges to storm water runoff provisions, which were based on the argument that the Guidelines were overbroad and included "nonpoint" as well as "point sources." *Kennecott Copper Corp.*, 612 F.2d at 1242. The court further found that "* * * EPA is entirely within its authority in regulating [discharges of] storm runoff that falls within [the definition of] a 'point source.'" *Id.* at 1243. Additionally, the court reasoned that the determination of whether a particular discharge constitutes a point source is best made in the context of permit proceedings, guided by the broad

definition of "point source" provided in the CWA.[4] The Court recognized that it is "unrealistic, if not altogether impossible" to provide an "absolute and unequivocal" definition of "point source" and rule of applicability, further supporting case-by-case or site-specific determinations on applicability of the Guidelines.

Congress has purposefully phrased this definition broadly. This is as it should be given its contemplated applicability to literally thousands of pollution sources. To cast such definitions in absolute, unequivocal terms would be unrealistic, if not altogether impossible. As we observed in *American Petroleum Institute*, 540 F.2d at 1032: "On the road to attainment of the no discharge objective some flexibility is needed."

612 F.2d at 1243.

The court did not say anything further in response to Kennecott's arguments complaining that the Guidelines would improperly regulate nonpoint source discharges at mine sites. The court did not rely on or cite to any other references in the administrative record before it. In response to any remaining arguments before it, the court simply noted that "careful examination of petitioner's remaining arguments has persuaded us that they are without merit." *Id.* at 1243. Thus, the court either summarily rejected Kennecott's arguments that the guidelines were vague and overbroad, or affirmatively upheld the regulations against Kennecott's challenges based on reasons explained in the decision.[5]

While, over the course of the intervening years, the federal courts have refined their interpretations of "point source," EPA's conclusions about point sources at mining operations has remained constant. In upholding the Guidelines in *Kennecott Copper Corp.*, the Tenth Circuit specifically cited to one of the seminal cases upon which courts rely for the proposition that the term "point source" should be interpreted broadly, *United States* v. *Earth Sciences, Inc.*, 599 F.2d 368 (10th Cir. 1979). 612 F.2d at 1241, 1243. In the *Earth Sciences* case, the Tenth Circuit concluded that uncollected surface runoff was a point source, specifically, groundwater seeps from under a combination of sumps, ditches, hoses, and pumps in a closed "heap leach" gold mining operation. *Earth Sciences*, 599 F.2d at 374. Therefore, the court recognized that even seemingly "uncollected runoff" from point sources were and could be regulated under the CWA and subject to the Guidelines limitations.

3. Subsequent Agency Action

Apart from the Agency statements made during the course of the *Kennecott Copper Corp.* litigation, EPA staff has not been able to locate evidence of subsequent Agency action referring to those statements. In an undated guidance package (circa early 1980's) prepared by EPA Headquarters for EPA and State NPDES permit writers, the Agency interpreted the term "active mining area" broadly to exclude only areas unaffected by mining or milling. The document also identified parts of the "active mining area" to include the excavations of deep mines and surface mines; leach areas; refuse, middling, and tailings areas; tailings ponds, holding and settling basins; and other ancillary areas to a mine or mill. Additionally, that document also explains that an "active mining area" can include mine areas where there is actually no extraction, removal, or recovery of metal ore, including where mine drainage is removed from a deep mine to protect present and future working areas, pumping out and rehabilitation of a closed mine prior to reentry, and pumping of an adjacent mine to protect present and future workings in an active mining area. This document suggests that contemporaneous Agency intent was to include certain areas, such as waste rock piles, within the scope of the active mining area.

Since that time, EPA and authorized NPDES States have issued permits to a significant number of ore mining and dressing operations. No party has ever identified or presented any of the Agency litigation statements from the *Kennecott Copper Corp.* case as evidence that the Agency does not interpret the term "mine drainage" very broadly.

A subsequent judicial case, which EPA cited in the 1990 storm water regulations, further clarifies that storm water associated with industrial activity at mining sites may result in point source discharges. See *Sierra Club* v. *Abston Construction Co., Inc.*, 620 F.2d 41 (5th Cir. 1980); 55 FR at 47997. In that case, the court determined that whether a point source discharge was present due to rainfall causing sediment basin overflow and erosion of piles of discarded material, even without direct action by coal miners, was a question of fact. 620 F.2d at 45. The ultimate question was whether the discharge is from a "discernible, confined, discrete conveyance," whether by gravitational or non-gravitational means. *Id.* It was irrelevant that operators did not construct the conveyances, so long as those conveyances were reasonably likely to be the means by which pollutants were ultimately deposited into a navigable body of water. *Id.* Conveyances of pollution formed either as a result of natural erosion or by material means may fit the statutory definition of point source. *Id.*

II. NPDES Storm Water General Multi-Sector Permit for Industrial Activities

A. Background

In 1987, Congress amended the CWA by adding, among other things, several provisions concerning the control of point source discharges composed entirely of storm water. In the 1987 amendments, Congress directed EPA to publish permit application regulations for "discharges of storm water associated with industrial activity." CWA section 402(p)(4)(A), 33 U.S.C. 1342(p)(4)(A). On November 16, 1990, EPA published those regulations. In doing so, EPA defined "storm water" as storm water runoff, snow melt runoff, and surface runoff and drainage. It also defined "[s]torm water discharge associated with industrial activity" to mean the discharge of pollutants from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. See 40 CFR 122.26(b)(14). Included among these discharges were discharges from conveyances at mining facilities. 40 CFR 122.26(b)(14)(iii). Upon challenge, this part of the regulations was upheld by the U.S. Court of Appeals for the Ninth Circuit. *American Mining Congress* v. *EPA*, 965 F.2d 759 (9th Cir. 1992) (regulations upheld against industry challenge that the rules, among other things, imposed retroactive liability for storm water discharges from existing mine sites). The issues in that case are related to, but different from, the issues addressed in today's action. That case involved inactive mines; today's action involves active mining operations.

The NPDES regulations for storm water describe three mechanisms by which dischargers of storm water

[4] "Point source" is defined at Clean Water Act § 502(14) to mean "any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. *See also* 40 CFR 122.2.

[5] In litigation over the Multi-Sector Permit, NMA now suggests that the 10th Circuit relied on the Agency statements concerning the status of storm water drainage flows at the Ray Mine to uphold the Guidelines and that the Agency cannot now conclude that the court independently found the storm water runoff provisions of the Guidelines acceptable. EPA disagrees. The court's decision never cites or discusses any of these statements.

associated with industrial activity could apply for permits. 40 CFR 122.26(c)(1). First, dischargers can apply for "individual permits." Second (prior to 1992), dischargers could apply for permits through a "group application." Third, dischargers can apply for coverage under an "EPA promulgated storm water general permit." Dischargers from numerous industries applied for permits through the group application process. Among them were dischargers from the ore mining and dressing industry.

On March 10, 1993, EPA accepted group applications from ore mining and dressing industry applicants and began processing those group applications. On November 19, 1993, EPA proposed to issue a single "general" permit (for each State where EPA issues permits) based on all of the group applications accepted and received from group applicants in various covered industries. 58 FR 61146, 61236–61251 (November 19, 1993). EPA issued that set of general permits on September 29, 1995, and took subsequent action concerning these general permits on February 9, 1996, February 20, 1996 and September 24, 1996. These general permits are entitled the NPDES Storm Water Multi-Sector General Permits for Industrial Activities (hereinafter referred to in the singular as the "Multi-Sector Permit"). The Multi-Sector Permit applies in most States, Territories, and Indian Country where EPA administers the NPDES permitting program.

The Multi-Sector Permit contains requirements that are specifically tailored to the types of industrial activity occurring at facilities represented by various industry groups applicants. Unlike much of the Ore Mining and Dressing Guidelines, the Multi-Sector Permit incorporates narrative effluent limitations for storm water discharges. These narrative effluent limitations are referred to as "best management practices" ("BMPs"). BMPs are designed to represent the pollution reductions achievable through application of BAT and BCT. Permits include BMPs to control or abate the discharge of pollutants when, for example, numeric effluent limitations are infeasible. 40 CFR 122.44(k).

B. Multi-Sector Permit Coverage of Mining Activity

By its terms, the Multi-Sector Permit provides authorization for some storm water discharges from ore (metal) mining and dressing facilities. Authorization is limited, however, to storm water discharges from or off of: topsoil piles; offsite haul/access roads outside the active mining area; onsite haul roads if not constructed of waste rock or spent ore (except if mine drainage is used for dust control); runoff from tailings dams/dikes when not constructed of waste rock/tailings and no process fluids are present; concentration buildings, if no contact with material piles; mill sites, if no contact with material piles; chemical storage areas; docking facilities, if no excessive contact with waste product; explosive storage areas; reclaimed areas released from reclamation bonds prior to December 17, 1990; and partially/inadequately reclaimed areas or areas not released from reclamation bonds.

The Multi-Sector Permit covers discharges composed of entirely storm water flows, as well as certain allowable non-storm water discharges. 60 FR at 51114; Part III.A. The Multi-Sector Permit does not authorize point source dry weather discharges, such as from mine adits, tunnels, or contaminated springs or seeps, which are not storm water. *Id.*; Part III.A.2.a.; 60 FR at 51155. Note that such dry weather discharges are not affected by today's clarification.

Under the Multi-Sector Permit at Part I.B.3.g., permit coverage is available for storm water discharges covered by some, but not all, of the various effluent guidelines that address storm water, including, for example, some of the storm water discharges under the Mineral Mining and Processing Guidelines at 40 CFR part 436. 60 FR at 51112. The Multi-Sector Permit does not, however, cover storm water discharges from point sources that are subject to the Ore Mining and Dressing Guidelines. 60 FR at 51155; Part XI.G.1.a.

Table G–4 of the Multi-Sector Permit, entitled "Applicability of 40 CFR Part 440 Effluent Limitations Guidelines to Storm Water," identifies various discharge sources associated with ore mining and dressing operations. The Table then indicated EPA's view concerning standards of regulatory control for those discharges. The different standards of regulatory control include: "mine drainage" effluent limitations guidelines, found in the Guidelines; "mill discharge process water" effluent limitations guidelines, also found in the Guidelines; "storm water," which could, for example, be found in the Multi-Sector Permit; and "unclassified," indicating discharges not regulated under the Guidelines or the Multi-Sector Permit.

As EPA said in adopting the Multi-Sector Permit: "Table G–4 clarifies the applicability of the Effluent Limitations Guidelines found in 40 CFR part 440. *This Table does not expand or redefine these Effluent Limitations Guidelines.*" 60 FR at 50897 (emphasis added). EPAs intent in publishing Table G–4, therefore, was merely to reiterate the interpretation that EPA issued when it promulgated the Guidelines.

III. Legal Challenge Concerning Table G–4

On October 10, 1995, the National Mining Association (hereinafter referred to as "NMA" or the "Petitioners") petitioned the U.S. Court of Appeals for the Eighth Circuit for judicial review of the Multi-Sector Permit. Specifically, Petitioners challenged EPAs determination that storm water runoff from a number of ancillary mine sources identified in Table G–4 of the Multi-Sector Permit would constitute sources of "mine drainage" under the Guidelines. The particular mining activities of concern include overburden piles, haul roads made of overburden and other ancillary mine areas that fall within the Guidelines definition of "mine drainage," or drainage from the active "mining area." As noted above, EPA excluded storm water runoff from these sources from coverage under the Multi-Sector Permit. The Petitioners contended that this determination reflects a new, more expansive interpretation of the Guidelines.

NMA presented documents from the prior *Kennecott* litigation, namely: EPAs 1979 decision responding to Kennecott's petition for reconsideration of the Guidelines; a letter of EPA counsel which was attached to a decision responding to the Kennecott petition for *reconsideration of the Guidelines*; and a brief that EPA filed before the Tenth Circuit. NMA cited these documents to support its argument that EPA's interpretation prior to publishing the Multi-Sector Permit was that "overburden" ("waste rock/overburden piles") would be outside the scope of the Guidelines. NMA asserted that certain entries in Table G–4 were incorrect to the extent that the table categorically identified discharges from overburden-related sources as covered by the Guidelines. NMA argued that, based on EPA statements made during the course of the *Kennecott* litigation, *no* overburden-related areas are covered by the Guidelines.

EPA has reviewed the Agency statements made during the 1979 litigation challenging the Guidelines rulemaking. While disagreeing with NMAs categorical conclusion that no overburden-related areas are covered by the Guidelines, EPA believes the earlier Agency statements reflect an EPA interpretation that storm water discharges from "waste rock/overburden

piles" would be subject to the Guidelines only if the "waste rock/overburden piles" are within the "active mining area" and the resulting storm water flows drain into a point source. This may include, but would not be limited to, such flows that combine with either process waters (i.e., mill drainage) or other mine drainage. This clarification was not obvious from the face of Table G–4 as presented in the Multi-Sector Permit.

NMAs challenge to the Multi-Sector Permit is currently under the advisement of the Eighth Circuit. Both parties have submitted briefs. A coalition of citizens interest groups, the Western Mining Action Project and Sierra Club Legal Defense Fund, also filed an *amicus curiae* brief with the Court. On March 10, 1997, the Eighth Circuit heard oral argument in *National Mining Association* v. *EPA*, No. 95–3519. At that time, counsel for EPA represented to the court that EPA intended to prepare a clarification of the Agencys interpretation of the technology-based effluent limitations applicable to point source discharges from various areas at ore mining and dressing operations. Todays notice provides that clarification and would revise the Table so that it reflects only sources to which the Permit would apply.

IV. Interpretation

Upon fuller review of the underlying record, EPA now believes that, in 1978–79, the Agency did not consider certain point source discharges of storm water associated with "waste rock and overburden" to be subject to the Ore Mining and Dressing Guidelines. Specifically, EPA did not conduct a complete economic and technological assessment of diverting drainage flows from "waste rock or overburden" outside the active mining area into the active mining area. Therefore, the Agency did not consider such discharges to be sources of mine drainage. First, discharges from "waste rock/overburden piles" would be outside the scope of the Guidelines if they consist "entirely of diffuse runoff which contacts overburden piles, which did not either normally flow to, or by design drain to a point source." Such diffuse runoff would not even be subject to the NPDES permit program if it was not added to waters of the United States through a discrete, confined, discernable conveyance. *See* 44 FR 7953 (Feb. 8, 1979). Second, such discharges would be outside the scope of the Guidelines if storm water runoff from overburden-related sources was not within the "active mine area." In light of the above, EPA believes that, to the extent that a reader could misinterpret the Table as categorically including all "waste rock/overburden" sources to be within the "active mining area," Table G–4 did not accurately reflect the scope of the applicability of the Guidelines.

Todays action does not change in any way EPAs interpretation of the coverage of the Guidelines set forth in the 1979 Notice of Clarification, which provides that the Guidelines "are not intended to require the operator to collect and contain diffuse storm water runoff which would not otherwise be collected in or does not otherwise drain into a point source." Todays notice articulates the 1979 interpretation to the fact situation contained in Table G–4 of the Multi-Sector Permit.

Discharges from overburden-related sources that are outside of the "active mining area" are not covered by the Guidelines. Like all "point source" discharges, however, these discharges require NPDES permit authorization to be in compliance with the CWA. If these discharges are entirely composed of storm water (and are not covered by the Guidelines), then they may be authorized under an EPA general permit for storm water (if it otherwise meets the eligibility provisions), or an individual permit with BPJ-based controls, which may include either numeric limitations and/or narrative limitations (in the form of BMPs).

Discharges from haul roads constructed of waste rock or spent ore are subject to the Guidelines only if the haul roads so constructed are within the "active mining area" and the resulting storm water flows drain into a point source. Such discharges would be outside the scope of the Guidelines if they are outside the "active mining area." Point source discharges consisting entirely of storm water from haul road-related sources outside the active mining area would be addressed in the same manner as "waste rock and overburden" outside the active mining area (see above). As noted above, such discharges would be outside the scope of the NPDES program if they consist entirely of diffuse runoff which does not flow to a point source.

Though EPA notes that overburden piles (thus, runoff from overburden) are sometimes outside the "active mining area," NPDES permit coverage is still required when such flows are channeled or drain to a point source. Under todays clarification, determinations about whether numeric effluent limitations similar to those in the Ore Mining and Dressing Guidelines should apply to discharges from overburden piles and haul roads outside the active mining area are ones to be made on a site-by-site basis based on the "best professional judgment" of the permit writer (according to regulations at 40 CFR § 125.3(d)). Such permits might include effluent limitations similar to the effluent limitations for "mine drainage" under the Guidelines. If determined feasible, EPA acknowledges that compliance with such limits may necessitate diversion of flows from such sources into the active mining area for treatment. EPA provides additional guidance below.

V. Guidance to Permit Applicants and Permit Writers

Based on the foregoing discussion, EPA is proposing Table G–4 in a revised form today. In its earlier form, Table G-4 could have been misinterpreted. Consistent with earlier EPA statements made in the preamble to the Guidelines, the Development Document, the Notice of Clarification and other documents discussed above, the Table G–4 references to discharges from "waste rock/overburden" and "onsite haul roads constructed of waste rock or spent ore" at active ore mining and dressing sites are hereby modified. The Agency does not consider those discharges to be subject to the Guidelines on a categorical basis unless they are within the "active mining area" and the resulting storm water flows drain into a point source. Although not compelled by the Guidelines, numeric effluent limitations may be appropriate for these discharges (i.e., point source drainage from outside the active mining area) if the permit writer so determines on a BPJ basis or if the discharge would cause or contribute to a violation of water quality standards.

The Agency still presumes that "active mining area" should be interpreted as broadly as the plain language of the regulations suggests; however, application of the definition may vary from mine to mine. As the Tenth Circuit recognized in the *Kennecott Corp.* case, "to cast such definitions in absolute, unequivocal terms would be unrealistic, if not altogether impossible." 612 F.2d at 1243. The regulations define "active mining area" as "a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun." 40 CFR 440.132(a). The Agency continues to reject any distinction between "process" and "nonprocess" areas at mining operations to determine the nature and

scope of the active mining area. Many areas that some might consider to be "nonprocess" areas do constitute part of the active mining area provided that work or other activity related to extraction, removal, or recovery of metal ore *is being* conducted (until the mining operation finishes recontouring and begins reclamation).

Today's proposed interpretation and guidance describe a distinct class of discharges that was not distinct from the face of Table G–4 when the Agency published the Multi-Sector Permit. Specifically, today's proposed interpretation identifies some discharges that could have been interpreted to be "mine drainage" under the plain language of the Guidelines and, therefore, within the applicability of the Guidelines and ineligible for coverage under the ore mining and dressing portion of the Multi-Sector General Permit (and under Table G–4) even though the Agency did not evaluate the technological feasibility and cost impacts of diverting drainage from those sources into the active mining area when it developed the Ore Mining and Dressing Guidelines. Based on today's proposed clarification, such an interpretation would be inaccurate because EPA did not require diversion of flows from outside the active mining area into the active mining area for treatment. For this distinct and limited class of discharges described by today's notice, i.e., those overburden/waste rock sources outside the active mining area, authorization under an EPA general permit for storm water may be available.

Note that the permit applicant bears the initial responsibility to determine whether its discharges are eligible for coverage under an EPA-issued general permit. Discharges of "mine drainage" from the "active mining area" are not eligible for authorization under either the NPDES Baseline General permit or the Multi-Sector Permit because such discharges are subject to the Guidelines. For this reason, EPA encourages permit applicants to contact the NPDES permit issuance authority if there is any doubt regarding the nature and scope of the "active mining area" at the site of their operations. In many cases, modifications to individual permits may be more appropriate for longer-term authorization of the storm discharges in question. Of course, as indicated in the Table, there may be other such point sources of drainage from within the active mining area that would not be "mine drainage." Such discharges may be appropriately regulated under EPA general permits for storm water.

EPA also recommends that permit applicants contact the relevant NPDES authority for assistance in determining the appropriate permitting vehicle to address the class of discharges described in today's notice. Individual permits provide the opportunity to tailor controls appropriate for the discharge, for example, through the use of best professional judgment (BPJ) according to 40 CFR 125.3(d) or analogous State law, and where necessary to assure compliance with water quality standards. If the NPDES permitting authority has data, for example, which indicate that discharges outside the active mining area only present pollution concerns associated with solids (e.g., settleable solids or total suspended solids), the permit requirements for those discharges may be limited to controlling those solids. However, if discharges contain heavy metals, the permitting authority, using BPJ, should establish appropriate technology-based metals effluent limitations. Further, if the permitting authority has data to indicate a reasonable potential to cause or contribute to an excursion of water quality standards for other pollutants, including pH and/or heavy metals, then the permit must include those more stringent requirements to assure compliance with water quality standards. EPA recommends ongoing monitoring for both pH and metals because the complex geochemistry at many mine sites presents difficulty in predicting the quality of storm water into the future.

In cases where there is a dry weather discharge outside the scope of the Guidelines, EPA strongly recommends that the permitting authority issue an individual NPDES permit using BPJ to establish appropriate technology-based limits or more stringent limitations necessary to assure compliance with water quality standards. The permitting authority should consider the degree of pollutant discharges (especially, whether the discharge contains heavy metal pollutants) and must consider the impact on the receiving water when establishing appropriate water quality-based controls on the discharge.

Finally, the Agency cautions that today's interpretation should not be read as a license for mine operators to convert point source discharges into "nonpoint" sources in order to avoid regulation under the NPDES permit program. If a mining operation has a discernable, confined, discrete conveyance, any attempt to avoid regulation by intentional "diffusion" of that waste water stream, for example by spraying it over a hill side or inserting diffusing devices at the ends of drainage culverts, would still constitute a point source discharge if the waste water ultimately enters waters of the United States (as opposed to appropriate land application of such waste waters). While such diffusion may beneficially reduce the potential for erosion and instream sedimentation, it would not eliminate the need for treatment where necessary, for example, where the discharge contains metals contributing to a violation of State water quality standards.

VI. Regulation Assessment Requirements

A. Executive Order 12866

Under Executive Order 12866 (58 FR 51735; October 4, 1993), the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Because the Agency takes the position that NPDES general permits are not "rules" or "regulations" subject to the rulemaking requirements of Administrative Procedure Act section 553, it has been determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review.

B. Regulatory Flexibility Act

The Agency has determined that the permit modification being published today is not subject to the Regulatory Flexibility Act ("RFA"), which generally requires an agency to conduct a regulatory flexibility analysis of any significant impact the rule will have on a substantial number of small entities. By its terms, the RFA only applies to rules subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act ("APA")

or any other statute. Today's permit modification is not subject to notice and comment requirements under the APA or any other statute because the APA defines "rules" in a manner that excludes permits. See APA section 551 (4), (6), and (8).

APA section 553 does not require public notice and opportunity for comment for interpretative rules or general statements of policy. In addition to proposing modification of the general permit, today's action repeats an interpretation of existing regulations promulgated almost twenty years ago. The action would impose no new or additional requirements.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), P.L. 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year.

For reasons explained in the discussion regarding the Regulatory Flexibility Act, the UMRA only applies to rules subject to notice-and-comment rulemaking requirements under the APA or any other statute. Today's permit modification is not subject to notice and comment requirements under the APA or any other statute because the APA defines "rules" in a manner that excludes permits. See APA section 551 (4), (6), and (8).

Today's proposed permit modification contains no Federal mandates (under the regulatory provisions of Title II of the UMRA) for State, local, or tribal governments or the private sector. Today's proposed modification merely announces an Agency interpretation of existing regulations. EPA has determined that this permit modification does not contain any Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. Therefore, today's proposed permit modification is not subject to the requirements of section 202 of the UMRA.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements. Because today's proposed modification is based on an interpretation of existing regulations and because EPA anticipates that extremely few, if any, small governments operate mining operations, EPA has determined that this action contains no regulatory requirements that might significantly or uniquely affect small governments.

D. Paperwork Reduction Act

The proposed permit modification contains no requests for information and consequently is not subject to the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

Signed this 26th day of September, 1997.
Patricia L. Meany,
Acting Regional Administrator, Region 1.

Signed this 26th day of September, 1997.
Jerry Clifford,
Acting Regional Administrator, Region 6.

Signed this 25th day of September, 1997.
Deborah Jordan,
Acting Regional Administrator, Region 9.

Signed this 25th day of September, 1997.
Philip S. Millam,
Acting Regional Administrator, Region 10.

1. For the reasons set forth in this preamble, the table published on September 29, 1995, at 60 FR 50897 would be modified to read as follows:

TABLE G–4.—APPLICABILITY OF THE MULTI-SECTOR GENERAL PERMIT TO STORM WATER RUNOFF FROM ACTIVE ORE (METAL) MINING AND DRESSING SITES

Discharge/source of discharge	Note/comment
Piles (seepage and/or runoff):	
Waste rock/overburden	If not in active mining area and composed entirely of storm water. See Note below.
Topsoil	
Roads constructed of waste rock or spent ore:	
Onsite haul roads	If not in active mining area and composed entirely of storm water. See Note below.
Offsite haul/access roads	If outside of the active mining area.
Roads not constructed of waste rock or spent ore:	
Onsite haul roads	Except if "mine drainage" is used for dust control.
Offsite haul/access roads	
Milling/concentrating:	
Runoff from tailings dams/dikes when constructed of waste rock/tailings.	Except if process fluids are present and only if not in active mining area and composed entirely of storm water. See Note below.
Runoff from tailings dams/dikes when not constructed of waste rock/tailings.	Except if process fluids are present.
Concentration building	If storm water only and no contact with piles.
Mill site	If storm water only and no contact with piles.
Ancillary areas:	
Office/administrative building and housing	If mixed with storm water from the industrial area.
Chemical storage area	
Docking facility	Except if excessive contact with waste product that would otherwise constitute "mine drainage."
Explosive storage	
Fuel storage (oil tanks/coal piles)	
Vehicle/equipment maintenance area/building	
Parking areas	But coverage unnecessary if only employee and visitor-type parking.

TABLE G–4.—APPLICABILITY OF THE MULTI-SECTOR GENERAL PERMIT TO STORM WATER RUNOFF FROM ACTIVE ORE (METAL) MINING AND DRESSING SITES—Continued

Discharge/source of discharge	Note/comment
Power plant	
Truck wash area	Except when excessive contact with waste product that would otherwise constitute "mine drainage."
Reclamation-related areas:	
Any disturbed area (unreclaimed)	Only if not in active mining area.
Reclaimed areas released from reclamation bonds prior to Dec. 17, 1990	
Partially/inadequately reclaimed areas or areas not released from reclamation bond	

Storm water runoff from these sources are subject to the NPDES program for storm water unless mixed with discharges subject to the 440 CFR Part 440 that are not regulated by another permit prior to mixing. Non-storm water discharges from these sources are subject to NPDES permitting and may be subject to the effluent limitation guidelines under 40 CFR Part 440.

Note: Discharges from overburden/waste rock and overburden/waste rock-related areas are subject to 40 CFR part 440 if the source of the drainage flows is within the "active mining area" and the resulting storm water flows drain to a point source. For such sources outside the active mining area, coverage under this permit would be available if the discharge is composed entirely of storm water and not subject to 40 CFR Part 440, as well as meeting other eligibility criteria contained in Part I.B. of the permit. Permit applicants bear the initial responsibility for determining the applicable technology-based standard for such discharges. EPA recommends that permit applicants contact the relevant NPDES permit issuance authority for assistance to determine the nature and scope of the "active mining area" on a mine-by-mine basis, as well as to determine the appropriate permitting mechanism for authorizing such discharges.

2. The third sentence in the first paragraph in permit eligibility provision for Storm Water Discharges Associated with Industrial Activity from Metal Mining (Ore Mining and Dressing), Section XI.G.1. (introductory language), previously published on September 29, 1995, at 60 FR 51155, would be modified and a fourth and fifth sentence would be added to read as follows:

1. Discharges Covered Under This Section

* * * All storm water discharges from inactive metal mining facilities and storm water discharges from the following areas of active, and temporarily inactive, metal mining facilities are the only discharges covered by this permit: waste rock/overburden piles outside the active mining area; topsoil piles; offsite haul/access roads if outside of the active mining area; haul/access roads constructed of waste rock/overburden if outside of the active mining area; onsite haul/access roads not constructed of waste rock/overburden/ spent ore except if mine water is used for dust control; runoff from tailings dams/dikes when not constructed of waste rock/tailings and no process fluids are present; runoff from tailings dams/dikes when constructed of waste rock/tailings and no process fluids are present if outside the active mining area; concentration building if no contact with material piles; mill site if no contact with material piles; office/administrative building and housing if mixed with storm water from industrial area; chemical storage area; docking facility except if excessive contact with waste product; explosive storage; fuel storage; vehicle/equipment maintenance area/building; parking areas (if necessary); power plant; truck wash areas except when excessive contact with waste product; unreclaimed, disturbed areas outside of active mining area; reclaimed areas released from reclamation bonds prior to December 17, 1990; and partially/inadequately reclaimed areas or areas not released from reclamation bond. Note: Discharges from overburden/waste rock and overburden/waste rock-related areas are subject to 40 CFR part 440 if the source of the drainage flows is within the "active mining area" and the resulting storm water flows drain to a point source. For such sources outside the active mining area, coverage under this permit would be available if the discharge is composed entirely of storm water and not subject to 40 CFR part 440, as well as meeting other eligibility criteria contained in Part I.B. of the permit.

[FR Doc. 97–27854 Filed 10–21–97; 8:45 am]

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Permit File
NM22306

P/C

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RICHARD E. SCHWARTZ
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May 5, 1997

RECEIVED
MAY - 6 1997
6W-P

By Facsimile and Federal Express

Mr. Frederick O. Humke
Environmental Engineer
Permits Branch (6WQ-P)
U.S. Environmental Protection Agency - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Molycorp's NPDES permit No. NM0022306

Dear Mr. Humke:

I am writing to ask you to confirm our telephone conversation of this morning, in which I asked you to clarify your April 30, 1997 letter to Mr. Brian Shields, which I received on Friday afternoon. I have three specific topics that I hope you will address.

1. Seepage sources described to you by Mr. Shields and Mr. Burnett. You told me the basis for the statement in your April 30 letter that "...EPA did not consider discharges or seepages associated with mine wasterock piles." Specifically, Mr. Shields and Mr. Grove Burnett told you that the waste rock piles were sources of discrete *above-ground* seeps from the waste rock piles which flowed across the ground surface into the Red River. That was type of seepage from waste rock piles that you were referring to in your letter. (As you will recall, EPA did permit storm water discharges from the waste rock piles in 1993; see Response to comments, Final Permit Decision re Molycorp, Issues Nos. 2 and 13; September 10, 1993.) I would appreciate it if you would confirm that this was the type of discrete seepage you were referring to in your April 30 letter.

2. Seepage sources that EPA considered in 1993. Second, you told me that in 1993 EPA *did* consider seepage from the waste rock piles at the mine that percolated into *ground water*. The enclosed comments describe the seepage as emerging in springs or seeps which then enter the Red River. I would appreciate it if you would confirm that in the 1993 permit proceeding EPA considered this subject.

3. Mine area seepage. In your April 30 letter, you indicated that EPA's consideration of seepage (reflected in its Response to Comments, Issue No. 9) included both the mine area and the tailings area, but primarily the latter. I am enclosing some of the comments to which EPA was responding, to refresh your recollection on that subject. I would be appreciative if you could let me know whether the major focus of EPA's consideration was the mine area.

Thank you very much for your help in clarifying the issues raised in your April 30, 1997 letter. We need your assistance to set the record straight.

Sincerely,

Richard E. Schwartz

Attorney for Molycorp, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

NM0022306 921218
MOLYCORP INC. QUESTA DIV.
DAVID R SHOEMAKER, GEN. SUPT.
P. O. BOX 469
QUESTA NM 87556

DECEMBER 4, 1996

Dear Laboratory Director:

On January 23, 1996, the Environmental Protection Agency (EPA) proposed in the *Federal Register* to amend the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* under section 304(h) of the Clean Water Act. This amendment will replace existing gravimetric procedures for the conventional pollutant "oil and grease" (40 CFR 401.16) with EPA method 1664 as part of EPA's effort to reduce dependency on the use of chlorofluorocarbons (CFCs). Method 1664 uses normal hexane (n-hexane) as the extraction solvent in place of 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113; Freon-113). Freon-113 is used in the methods currently approved at Table 1B of 40 CFR 136.3. These methods are EPA Method 413.1 in *Methods for Chemical Analysis of Water and Wastes* (EPA 600/4-79-020) and Method 5520B in *Standard Methods for the Examination of Water and Wastewater*, 18th edition.

Because oil and grease is a method-defined analyte, the amount of oil and grease determined in an environmental sample depends upon the solvent used for extraction. Between 1991 and 1995, EPA conducted a multiphase Freon Replacement Study. The study employed different solvents to extract oil and grease from a variety of industry matrices. A general conclusion from this study was that when all sample matrices were collectively considered, none of the solvents produced results statistically equivalent to results produced by Freon-113. The decision of which alternative solvent was best suited for the new method was therefore based on the potential effects of the new solvent on compliance monitoring, logistical and analytical considerations, and health and safety concerns.

Of the solvents evaluated in the two phases of the Freon Replacement Study, n-hexane was chosen for the following reasons: 1) it had been used previously as the extraction solvent for determination of oil and grease and total petroleum hydrocarbons prior to the advent of Freon-113, 2) n-hexane produces results that are as or more comparable to results produced by Freon-113 than the other solvents tested, 3) the Phase II study showed that there was no significant difference in results produced by n-hexane and Freon-113 for the analysis of reagent water spiked with reference standards, and 4) comparison of the Phase I and Phase II data suggested that any change in oil and grease concentration that may result from using n-hexane instead of Freon-113 would be obscured by the variability that was observed

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in the currently approved methods that did not impose the thorough quality control requirements contained in Method 1664.

As stated above, no alternative solvent tested in the Freon Replacement Study produced results equivalent to results produced by Freon-113. On average, though, the n-hexane/Freon-113 ratio from the study data demonstrates that n-hexane extracts the same amount of materials as Freon-113. It must be emphasized that this is an average result; *i.e.*, for some samples, Freon-113 extracts less oil and grease than n-hexane and for others, more. EPA believes, however, that for most environmental samples, the difference in results produced by the two solvents will not be substantial.

In addition, Method 1664 contains extensive quality control procedures to assure that precise and accurate results are produced. If use of the currently approved methods is continued, the possibility exists that analytical results could indicate a permit violation due to the greater variability of results produced by currently approved methods when compared to results produced by proposed Method 1664. For example, if a permit limit is 20 mg/L and the true concentration of oil and grease in the discharge is slightly less than this limit, Method 1664 is more likely to produce a result closer to the true value than the currently approved methods because of the improved precision of the method and is, therefore, less likely to show a violation than the currently approved methods. It is for this reason and the reasons stated above that EPA (1) has proposed a "direct replacement" of currently approved methods by Method 1664, (2) has not proposed use of a conversion factor between results produced by the two methods, and (3) will disallow continued use of currently approved methods. EPA proposed disallowance of continued use of currently approved methods to take effect exactly <u>six</u> months after promulgation of Method 1664 in order to allow depletion of existing stocks of Freon-113.

Furthermore, though written as a separatory funnel extraction procedure, Method 1664 allows the use of alternative extraction and concentration techniques, such as solid phase extraction, provided that all performance specifications are met. Demonstration of acceptable performance consists of analyzing reagent water aliquots that have been spiked with reference standards by the modified procedure and comparing these results to the specifications in Method 1664. In addition, *if the modified method is to be used in compliance monitoring, a comparative study <u>must</u> be performed on each specific discharge to demonstrate that the modified method recovers an amount of oil and grease and/or total petroleum hydrocarbons equivalent to the amount recovered by Method 1664.* Details of these procedures are specified in Method 1664. EPA's intent is to provide flexibility in analysis while ensuring that the precise and accurate determination of oil and grease is not compromised.

EPA acknowledges that due to the diverse nature of the discharges, there may be instances in which n-hexane will extract an amount of oil and grease greater or less than the amount extracted by Freon-113. If these instances affect compliance, the permitting authority may wish to consider establishing a conversion factor, multiplier, or divisor to account for these differences in the permit. EPA emphasizes that few, if any, instances will likely be found in which the differences affect compliance and, therefore, urges direct substitution of the presently approved methods with Method 1664 when the date of substitution is announced in the *Federal Register.*

The proposal of Method 1664 in the January 23, 1996 *Federal Register* allowed for a 60-day comment period. The original comment period closed on March 25, 1996. During this comment period, EPA received several requests for an extension of time to comment on the proposed rule on the grounds that several issues addressed in the rule required additional time for data gathering and evaluation. The Agency determined that an extension of time was in the public interest and reopened the comment period on May 24, 1996 to provide an extra 60-day comment period that closed on July 23, 1996.

EPA is aware that by allotting this additional time to comment, current concerns about the increased cost and decreased availability of Freon-113 will be exacerbated. Therefore, I approve the interim limited use of Method 1664 as an alternative test procedure in EPA Region 6. This approval will expire at the time of the publication in the *Federal Register* of the final rule governing the use of Method 1664. This approval includes all of the analytical options within Method 1664 provided that the equivalency demonstration is performed and all performance specifications are met. Should you have any questions, please feel free to contact Charles Ritchey at (214) 665-8344 or by facsimile at (214) 665-2168; if you wish, he also may be reached by e-mail at RITCHEY.CHARLES@EPAMAIL.EPA.GOV.

Sincerely yours,

Gerald Fontes

for Samuel Coleman, P.E.
Director
Compliance Assurance and Enforcement
Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

May 6, 1997

Mr. Richard E. Schwartz
Attorney for Molycorp, Inc.
Crowell & Moring LLP
1001 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2595

Re: Molycorp, NPDES No. NM0022306

Dear Mr. Schwartz:

In response to your letter dated May 5, 1997, we have the following comments.

In the 1993 Response to Comments, it was the position of EPA Region 6 that percolation or infiltration from mine and tailings areas into groundwater did not constitute "point sources" under NPDES. However, we are aware that more recent U.S. District Court decisions are divided over this matter where "hydrologic connection" to surface waters is involved.

The only surface discharge sources from the mine areas which we considered in the 1993 reissuance in accordance with the application and our interpretation of other inputs are those associated with Outfalls 004 and 005. At that time we did not recognize and consider other surface discharges or surface seepage associated with mine wasterock piles. It was understood then that any other mine sources including the mine spoil piles percolated into groundwater. If other mine surface discharges or surface seeps exist, these would be "point sources" subject to the need for applications and permitting.

If I can add any further clarification, please contact me at voice (214) 665-7503 or FAX (214) 665-2191.

Sincerely,

Frederick O. Humke, P.E.
Environmental Engineer
Permits Branch (6WQ-PP)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

April 30, 1997

Mr. Brian Shields
Executive Director
Amigos Bravos
P.O. Box 238
Taos, New Mexico 87671

Dear Mr. Shields:

This letter is in response to your FAX of April 21, 1997, to Dr. Oscar Ramirez, Deputy Director of the Water Quality Management Division of the EPA Region 6 office relative to Molycorp, near Questa, New Mexico. You further explained to me the specific issue in our telephone conversation of April 29, 1997.

A review of the record shows that in the permit reissuance dated September 10, 1993, EPA did not consider discharges or seepages associated with mine wasterock piles. You have indicated that these discharges are essentially discrete sources. Issue No. 9 of the associated Response to Comments was concerned with a different and more complex matter related to possible infiltration to existing groundwater sources primarily associated with the tailings areas although possibly to a much lesser extent also associated with the mine.

We hope that this clarifies the matter. If you have further questions, please contact me at (214) 665-7503.

Sincerely,

Frederick O. Humke, P.E.
Environmental Engineer
Permits Branch (6WQ-P)

OPERATIONS SUPPORT OFFICE (6WQ-O)
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TO BE PICKED UP BY: LA GAYLA HALL 5-7517

From: Fred Humke
To: R6DAL01.R6TOXLAN.KIRKSEY-CAROLINE
Date: Monday, April 28, 1997 8:03 am
Subject: Molycorp, NM0022306

The point source issue at Molycorp may place NPDES in overlap with RCRA in some instances. What we are dealing with at Molycorp is principally "milling wastes", not "mining wastes". Under the NPDES regulations (Part 440, Ore Mining and Dressing Point Source Category) Subpart J specifically distinguishes between mining and milling activities; as does the associated development document.

A review of the RCRA regulations beginning at 40 CFR 241.100 confirms that "mining wastes" are exempted. However, the preamble further states "Concerning the specific practice of land disposal of milled solid wastes, EPA guidance is contained in a position statement issued in November 1972." It would seem that there may be some question relative to the applicability of RCRA to groundwater matters resulting from the disposal of "milled wastes". A further review of this aspect may be worthwhile.

Thanks!

CC: WATSON-JANE, FERGUSON-JACK

ROUTING AND TRANSMITTAL SLIP

Date 1/10/96

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Fred		1/12/96
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3.		
4.		
5.		

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	As Requested		For Correction		Prepare Reply
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	Coordination		Justify		

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5041-103

OPTIONAL FORM 41 (Rev. 1-94)
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Bob - FYI

Here's a copy of what I have received from New Mexico. If you need more information, I can put you in touch with someone at NMED. Sorry we ~~did not~~ played phone tag.

Laura Talbot
x6678

Ben

considering an appeal to state Supreme Court

The Public Service Company of New Mexico may take the controversial Ojo Line Extension all the way to the New Mexico Supreme Court.

On Monday, the three-member New Mexico Public Utility Commission unanimously rejected PNM's bid for permission to build the 50-mile power line through the allow the project to go forward. In so doing, it apparently ended one of Northern New Mexico's longest running environmental disputes.

But within two hours of the ruling, PNM spokesman Rick Brinneman said the utility giant may appeal the decision to the Supreme Court. Brinneman said PNM had two months to make a decision

Brinneman said that in making their decision about whether to appeal the ruling, PNM officials would scrutinize the recommendation of hearing examiner Peter Springer that the PUC's decision is based on — particularly a section that lists alternatives to OLE that have been suggested by critics of the project.

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THE SANTA FE NEW MEXICAN TUES. NOV 21, 1995 pgs A1 + A3

Trying to save the 'dead' Red River

Photos by Laurent Guerin/For The New Mexican

State geologist Michael Coleman takes a reading for acidity where metals such as iron and manganese are seeping into the Red River.

Trenches catch acidic metals

By CATHERINE WALSH
For The New Mexican

QUESTA — Citing a desire to be "a good neighbor," Molycorp Inc. has teamed up with the state Environment Department and others in an effort to stop contaminated water from seeping into the Red River.

The mining company used its giant backhoe to dig four drainage trenches along the northern bank of the river near Capulin Canyon last month, said Dave Shoemaker, manager of Molycorp's molybdenum mine.

The company also has purchased several tons of limestone that was put into the trenches to leach out acidic fluids seeping into the river.

These limestone trenches were dug 13 to 15 feet deep, at or below the groundwater table. The trenches are part of a new technology that "neutralizes" water carrying acidic metals such as calcium and aluminum.

As water seeps through the limestone toward the river, the metals "drop out," Shoemaker said.

He said Molycorp's actions weren't motivated by accusations the company has turned the Red River into a dead river.

"We feel we don't have an impact on the river," he said. "We're controlling natural drainage (from the mine) and any problems we have are caught by interceptive barriers."

An environmental group in Taos said it holds Molycorp responsible for much of the pollu-

Please see **RIVER**, Page A-3

Test strips measure acidity at a seepage spot. Green algaes are not natural to the Red River and their presence is due to the high content of metals such as iron and manganese. The white deposit is calcium, aluminum and silica from the river fixed and crystallized by the metals of the seepage.

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Rangers at Bandelier National Monument issued a record number of citations last week, m[illegible] to people who apparently decided the federal [illegible]rnment shutdown was their chance to visit the monument without encountering cops or crowds.

"People were surprised we were working," Bandelier chief Ranger Carl Newman said.

Newman said park rangers and law enforcement officers issued 27 citations over the six-day period the park was closed. The National Park Service closed parks nationwide Tuesday and together with most other federal agencies furloughed all but the most essential workers during a standoff in budget negotiations.

During a comparable period, rangers could expect to issue only two or three citations for violations of park rules, Newman said.

"A lot of people seemed to look (at the monument closure) as an opportunity to go when no one else was there."

Newman said people ignored signs posted at all Bandelier trail heads and the monument entrance, then climbed over fences and gates. Some even let a personal best," Newman said, "but not a very pleasant experience."

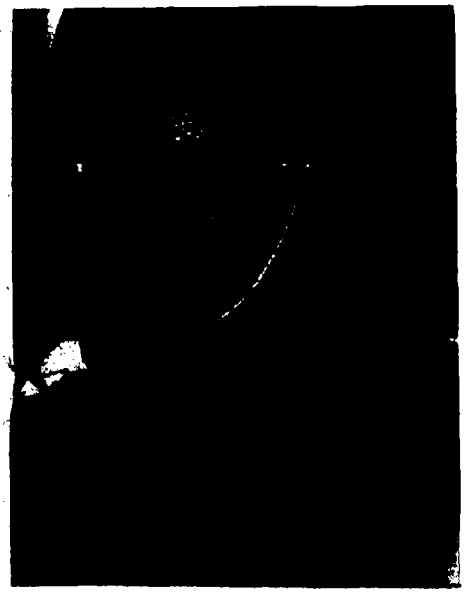
Newman said that when confronted by [illegible]ers, most trespassers were cooperative.

"There was no ugliness that I've heard about," he said. "Most people weren't frustrated with us — they understood we were doing our job."

At the Santa Fe National Cemetery, burials went on as scheduled last week, cemetery director Gloria Gomez said. When the full staff returned to the office Monday, Gomez said, "it was just the paperwork we were behind on. We can do that anytime."

It appeared Monday as if furloughed employees would get paid for their time off last week. That might make the furlough look like an "extra" paid vacation, but that's not the attitude most federal workers have, said Jerry Rogers, superintendent of the National Park Service Southwest Regional Office in Santa Fe.

Newman said some workers at Bandelier returned to work frustrated Monday. "There's a lot of dedicated folks here," he said. "They came in today and said, 'Jeez, I'm a week behind on this project.' "



RIVER

Continued from Page A-1

tion in the Red River.

But the group, Amigos Bravos, welcomed the mine's "wonderful gesture" of digging the trenches.

The first thing a visitor notices about the Red River a couple of miles east of Questa is the milky color of the water.

A closer look reveals a white glaze coating rocks in the stream.

But a check under dozens of these white rocks won't reveal any insect larvae clinging to the rocks. Few bugs live in this portion of the Red River.

There are almost no fish, as those stocked each year are either caught by fishermen or swim to the Rio Grande.

"Some people say this portion of the Red River is dead," said Michael Coleman, a geologist with the state Environment Department. "But we call it an impacted zone."

Standing above river's north bank Monday afternoon, Coleman pointed out a couple of rust-colored pools of water along the north edge of the river.

"That's seep water and these seeps are contaminated," he said.

Whether contamination is caused solely by water interacting with natural, hydrothermal clays in the area or by Molycorp's waste rock and tailings isn't clear, Coleman said.

"The mine could be a contributor," he said. "But water coming into contact with sulfides in the clay causes them to become loaded with (acidic) metals."

When acidic seep water "hits the river along the seep zones, it changes chemistry," Coleman said. The water drops calcium, aluminum and silica into the stream in a dissolved state that forms a paste, he said.

"The paste sort of cements the bottom of the stream and doesn't allow bugs to live," he said. "Bugs, of course, are necessary for fish survival."

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1190 St. Francis Drive, P.O. Drawer 26110
Santa Fe, New Mexico 87502-0110
(505) 827-2855
Fax: (505) 827-2836

MARK E. WEIDLER
Secretary

EDGAR T. THORNTON, III
Deputy Secretary

FOR IMMEDIATE RELEASE

Contact Bill Williams, 827-2855

ENVIRONMENT DEPARTMENT PROTECTS RED RIVER

New Mexico Environment Department (NMED) staff members Michael Coleman, Dennis Slifer and Peter Monahan initiated a cooperative plan involving NMED, the Molycorp Questa Mine, the State Highway and Transportation Department (NMSHTD), the Questa Ranger District-Carson National Forest and the U.S. EPA.

"The project involved the implementation of a relatively new technology: anoxic alkaline trenches acting as a passive treatment system to intercept and arrest acidic, metal-loaded groundwater or acid mine drainage," said Michael Coleman of NMED. "The project is situated along the Red River, between Questa and the town of Red River, Taos County."

"The impacted area was identified during our current EPA Grant project (Red River Groundwater Investigation. FY-92-A, 319(h))," said Dennis Slifer of NMED. "The objectives of the Grant project are to determine ground water and aquifer characteristics in order to identify, and ultimately eliminate, impairment of both the aquifer and the designated uses of the river. The alkaline trenches represent the Best Management Practice (BMP) which was selected to improve obvious water quality impairments: the perennial, steady state seepage of acid waters into the river, effects upon macroinvertibrate and fish populations and the overall negative impact on water quality."

"Trenches 25' to 70' long, 5' to 8' wide, and 13' to 15' deep were dug into the highway shoulder, adjacent to the north bank of the river," explained Peter Monahan of NMED. "Four segments, totaling 170 linear feet, were placed directly up grade from active seep areas, presently delivering a steady pH 3.4 to the stream. The trenches were half filled with limestone cobble, and a polyethylene mat vapor barrier was placed over the carbonates. The system is sealed by an overlying layer of bentonite clay and filled back to grade with clean soil. The areas were then leveled, seeded and covered with a chopped straw mulch."

"Molycorp covered the cost of the raw materials and provided a large track hoe and operator to dig the deep trenches," explained Ed Kelley, Water and Waste Management Division Director at NMED. "The Highway Department assigned a full crew with a smaller back hoe, a loader, dump trucks and traffic control. The Forest Service expedited all necessary NEPA clearance. The Environment Department costs were limited to staff time for planning and project oversite and a few minor supplies." Kelley is in charge of the division in which Coleman, Slifer and Monahan work.

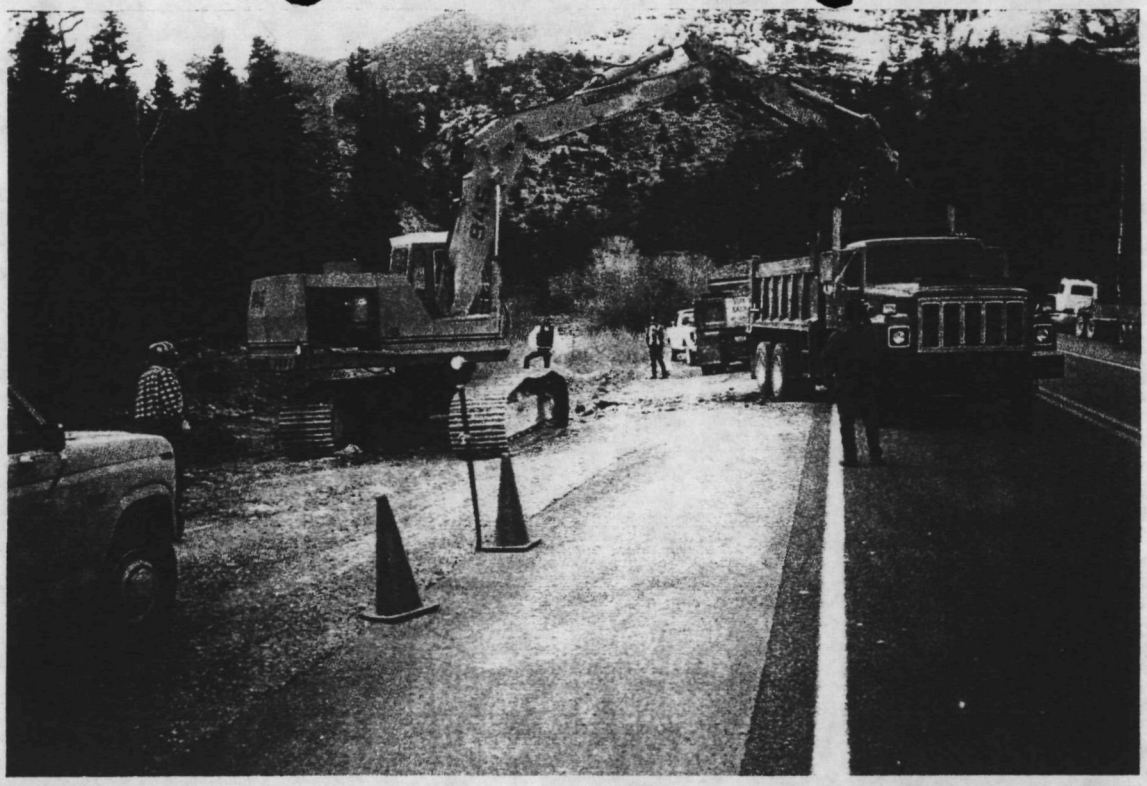
"The project was a beautiful example of industry and State agencies working together in complete harmony towards a goal which could be of benefit to the entire state," said Bill Williams, Communications Director of NMED.

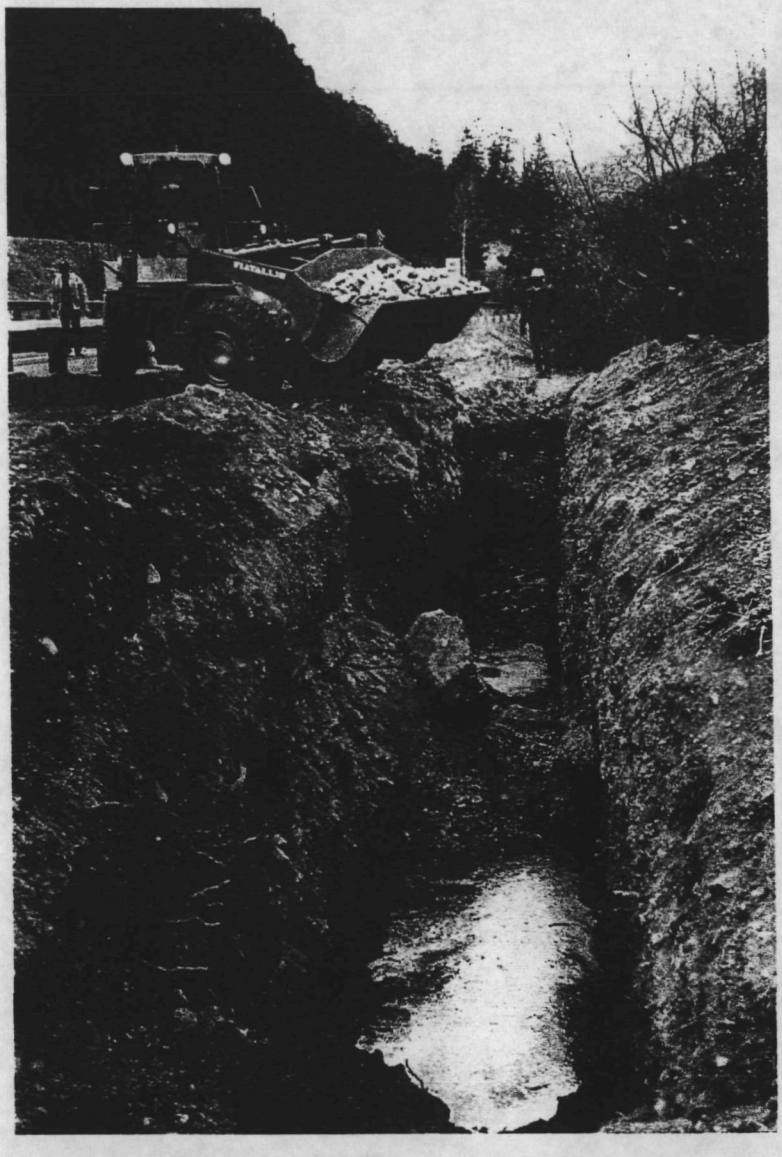
"The demonstration project, if it proves to be successful, will have widespread application around abandoned or active mines or in natural geologic areas where acid rock drainage is occuring," added Williams.

NMED acquired over an hour and a half of video documenting the field operations and have plans to shoot additional scripted footage which will explain the watershed setting, BMP concept and expected results. NMED is planning to do a professional editing job with voiceover narration. NMED has a complete set of color slides and photos documenting the work. The NPS Section's newsletter, *Clearing The Waters*, is planning to feature the project in a future issue.

Still photos can be made available to print media by calling Michael Coleman at NMED.

-30-





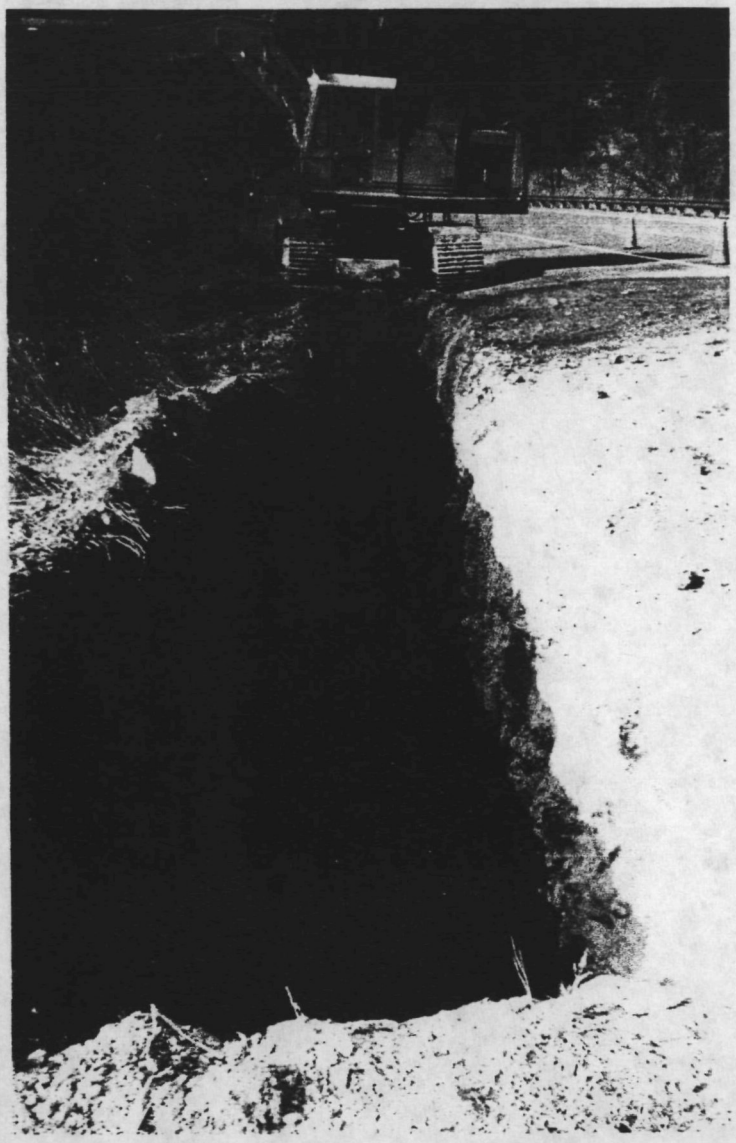


Photo Captions

Red River at Capulin Canyon:
Molycorp and N.M. Highway Department heavy equipment installing trenches along Highway 38, adjacent to Red River, Taos Co., New Mexico. Trenches are filled with limestone and clay. They intercept and neutralize acidic, metal-loaded ground water seeping into this stretch of the Red River. The process is known as "Anoxic Alkaline Drain Passive Treatment".

Filling trench with limestone cobble - note the accumulation of ground water in the trench. The water quality precisely matched the streamside seeps: pH of 3.6, conductivity of 1700 umhos.

Partially completed trench, with limestone layer, polyethylene vapor barrier and first load of bentonitic clay in place. A complete 3' layer of clay cap, and 2-3 ft. of clean fill dirt completed the trench.

15 November 1995

Submittal of abstract for the 1996 NM Conference on the Environment, March, 1996.

ABSTRACT: Alkaline Drain Treatment of Acidic Seeps on the Red River

Michael W. Coleman
Dennis W. Slifer
Surface Water Quality Bureau
Nonpoint Source Pollution Section
(505)827-0505

The New Mexico Environment Department (NMED) conducted a two-year water quality investigation, funded by a U.S. Environmental Protection Agency 319(h) Grant, along the Red River, Taos County. The project culminated in a cooperative field demonstration project to mitigate and prevent future impacts of highly acidic, metal loaded ground water seeps entering the Red River, near Questa. The NMED - Surface Water Quality Bureau, Nonpoint Source Pollution Section identified more than twenty sites where springs or perennial, steady state seeps deliver acid rock drainage via ground water in contact with sulfide-rich hydrothermal rock scar areas and historic or recent mine waste and processing piles within the watershed. The seeps have a direct effect on the physical and chemical water quality and designated uses of the waterway, including impacts on stream acidity , precipitation of calcium-aluminum precipitates, impairment of macroinvertibrate and fish habitat, and transport of a variety of dissolved and suspended heavy metals.

The field project involved the installation of selected Best Management Practices (BMPs) consisting of a series of anoxic alkaline drain passive treatment systems at a site along the Red River where several of the seeps are particularly active. One hundred seventy lateral feet (170') of trenches were dug below the local ground water level. The trenches were filled with limestone cobble, capped with a layer of clay, and reclaimed to road shoulder grade. Physical parameter and water chemistry monitoring is underway to measure an anticipated increase in pH levels and a corresponding decrease in the heavy metal content of the seeps. Favorable results may point the way to implementing this technology on several sites in this watershed, and around other abandoned mine or mill sites, or geologically active source areas throughout the state where acid rock drainage presents a pollution problem.

The project was a cooperative effort between NMED (project inception,design, coordination and followup monitoring), the Unocal Molycorp Questa Molybdenum Mine (donated materials, equipment, and labor), the State Highway and Transportation Department (labor, heavy equipment and safety crews) and the Questa Ranger District, Carson National Forest (permitting).

Molycorp Digs 4 Drainage Trenches

QUESTA — Molycorp has dug four drainage trenches along the northern bank of the Red River near Capulin Canyon to stop contaminated water from seeping in.

Dave Shoemaker, manager of the Molycorp molybdenum mine, also put several tons of limestone in the trenches last month to leach out acidic fluids and keep them from seeping into the river. As water drains through the limestone, the metals "drop out," he said.

A Taos environmental group said it holds Molycorp responsible for much of the pollution in the Red River. But the group, Amigos Bravos, welcomed the company's "wonderful gesture" of digging the trenches.

"We hope it's a sign that they are moving forward to clean up the Red River and providing jobs to do it," said Sawnie Morris, Amigos Bravos co-director.

ABQ. JOURNAL
11/22/95

NM22306

OPERATIONS SUPPORT OFFICE (6WQ-O)
FILE REVIEW FORM

REVIEWER: Kathy S. Allegra

TITLE: Sr Legal Asst.

FIRM OR PARTY REPRESENTED: UNOCAL

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Senior Legal Assistant

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REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

JAN 21 1992

Mr. Brian Shields
Projects Director
Amigos Bravos, Friends of the Wild River
P.O. Box 238
Taos, New Mexico 87571

Dear Mr. Shields:

With reference to your letter of December 30, 1991, relative to the closing of the Molycorp molybdenum mine in Questa, New Mexico, we have contacted Mr. David R. Shoemaker, Mine Manager for Molycorp.

Mr. Shoemaker advised us that there is no acid mine discharge associated with Molycorp mining and that Molycorp will divert any excess mine water through the tailings lines to the tailings pond where treatment will be maintained in accordance with the National Pollutant Discharge Elimination System (NPDES) permit prior to discharge from the permitted outfalls. Mr. Shoemaker stated that Molycorp intends to maintain the NPDES permit (NM0022306) in accordance with all permit provisions. Mr. Shoemaker states that the mine is not being permanently closed, but is on standby, and will be reopened when market conditions warrant.

This permit has been issued under Section 402 of the Clean Water Act. The Environmental Protection Agency (EPA) is the permitting authority and utilizes the assistance of the New Mexico Environment Department (NMED) in the oversight of this facility. We are requesting that the NMED evaluate any possible ground water impact since this is a State matter.

This facility does not require a written closure plan to discontinue pumping operations in the underground mine. The Enforcement Branch of the Water Management Division is aware of your concerns and will continue to monitor the status of the facility to assure that all EPA regulations and requirements are met.

Sincerely yours,

/s/ Joe D. Winkle for

B. J. Wynne
Regional Administrator

cc: New Mexico Environment Department

Mr. David R. Shoemaker

PN 1-16-88
Humke 3-18-88

Mr. Robert Layton Jr., Regional Administrator
Environmental Protection Agency
Allied Bank Tower at Fountain Place
1445 Ross Avenue
Dallas, TX 75202-2733

March 16, 1988

STATE CERTIFICATION

Re: Molycorp, Inc., Questa Division
P. O. Box 469
Questa, New Mexico 87556
NM0022306, January 16, 1988

Dear Mr. Layton:

The New Mexico Environmental Improvement Division has examined the application for and the proposed NPDES permit NM0022306 above. The following conditions are necessary to assure compliance with the applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law. Compliance with the terms and conditions of the permit and this certification, will provide reasonable assurance that the permitted activities, will be conducted in a manner [illegible] will not violate applicable water quality standards.

The State of New Mexico

( ) includes the following more stringent conditions and [illegible] the State or Federal requirements upon which those conditions [illegible] based (see attachments).

(X) certifies that the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of State [illegible] (see cover letter)

( ) waives its right to certify

( ) denies certification for the reasons stated in the attachment

In order to meet the requirements of State law, including water quality standards and the State Water Quality Management Plan, each of the [illegible] cited in the draft permit and the State certification, shall not be [illegible] stringent.

Please contact Mike Saladen at (505) 827-2798 if you have any [illegible] concerning this certification. Comments pertaining to this Draft [illegible] are included on a separate page.

Sincerely,

Kathleen M. Sisneros
Bureau Chief
Surface Water Quality Bureau

RECEIVED
MAR 18 1988
6W-PS

Conditions of State Certifications
Molycorp, Inc., Questa Division
NM0022306

NONE.

Comments That Are Not Conditions Of State Certification
Molycorp, Inc., Questa Division
NM0022306

Summary

1. The EPA should reconsider and possibly recalculate ISCs as found on page 5 of the fact sheet. Outfalls 001 and 002 are in different stream segments and numeric water quality standards for some of the parameters listed do in fact exist in one of the stream segments. See detail 1 below.

2. The EPA should reconsider confusing requirements regarding molybdenum and manganese limitations at outfall 002. See detail 2 below.

Details

Detail 1
In the Public Notice of draft permit NM0022306 and in the draft permit itself, the receiving stream is cited as stream segment 2-119 of the Rio Grande Basin. The fact sheet for the same draft permit documents stream segment 2-120 of the Rio Grande Basin as the receiving stream.

In fact, outfall 001 is to stream segment 2-119 of the Rio Grande Basin, while outfall 002 is located in stream segment 2-120 of the same basin. Stream segments referenced are found in the current Water Quality Control Commission (WQCC) adopted and EPA approved Water Quality Standards for Interstate and Intrastate Streams in New Mexico, as amended through January 8, 1985.

The fact sheet indicates that the designated uses for stream segment 2-120 are as follows: coldwater fishery, fish culture, livestock watering, and secondary contact recreation.

In fact, the designated uses for stream segment 2-120 are: domestic water supply, fish culture, high quality coldwater fishery, irrigation, livestock and wildlife watering, and secondary contact recreation. Stream segment 2-119 designated uses are: coldwater fishery, fish culture, livestock watering, and secondary contact recreation.

Page 5 of the Fact Sheet states that "No numeric WQS criteria exist".

This statement is incorrect. Outfall 002 is located in stream segment 2-120 of the Rio Grande Basin. The designated uses for segment 2-120 include domestic water supply. According to Section 3-101.B. of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico, as amended through January 8, 1985, the standards applicable for stream segments with designated uses assigned as domestic water supplies are as follows: "Waters used for domestic water supplies shall not contain substances in concentrations that exceed drinking water standards set forth in Section 202.B. of the New Mexico Regulations Governing Water Supplies." The following are the applicable maximum concentration levels for inorganic chemicals as found on page 15 of New Mexico Regulations Governing Water Supplies and should be included as the water quality standards:

Contaminants	Level Milligrams Per Liter
Arsenic	0.05
Cadmium	0.010
Copper	N/A
Cyanide	N/A
Lead	0.050
Mercury	0.002
Zinc	N/A

The Fact Sheet of the draft permit states "The ISC's do not exceed human health criteria."

The Fact Sheet documents arsenic in the effluent as 0.56 mg/l, and in the downstream river concentration as 0.103 mg/l. The MCL for arsenic is 0.05 mg/l and the chronic aquatic biota level is 0.048 mg/l. The water quality standard for segment 2-120 is 0.05 mg/l. The effluent quality and downstream concentrations as calculated by EPA exceed the MCL, the chronic aquatic biota levels and water quality standards in segment 2-120. However, the EID recalculated the ISC for Arsenic at outfall 002 using data in the fact sheet and found that the ISC should not exceed the water quality standard. EID calculations are as follows:

$$\text{Instream concentration} = C_r = \frac{QrC_u + (QeCe)}{Qr + Qe}$$

where C_e = effluent concentration (outfall 002 = N.D.)
C_u = upstream river concentration (N/A)
C_r = downstream concentration
Q_e = effluent flow (outfall 002 = 0.29 MGD)

Since C_u and C_e are zero, the result C_r = zero.

The water quality standard of 0.05 mg/l does not apply to stream segment 2-119 which is not designated for domestic water supply.

Detail 2

The permittee is allowed to average the sampling results for molybdenum from outfalls 001 and 002 when both outfalls are discharging. During periods of no flow from outfall 001, which is the current situation, molybdenum and manganese concentration limits are suspended.

The permit states in Part III, Section B. 2:

> A composite sample of discharges from Outfalls 001 and 002 monitoring samples combined in flow weighted proportion shall be in compliance, except that concentrations limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001.
>
> During periods when no flow occurs from Outfall 001, monthly average reporting of concentration for molybdenum and manganese shall be

based on the average of all composite samples obtained in the month for Outfalls 001 and 002; and monthly maximum reporting of concentration for molybdenum and manganese shall be based on the maximum composite sample obtained in that month for Outfalls 001 and 002. In conjunction with the DMR for each month, the permittee shall report periods, if any, when no flow exists at Outfall 001.

In the Division's opinion the intent of this paragraph is unclear. Is this para aph only applicable after the start-up of the mill, and therefore the initiation of effluent limits for outfalls 001 and 002 as stated on page 4 of Part I? If this paragraph is applicable prior to mill start-up, it contradicts the molybdenum and manganese effluent limitations for outfall 002 as stated on page 2 of Part I. Specifically the phrase "... that concentration limits for molybdenum and manganese are suspended during periods of zero flow from outfall 001" (emphasis added). It is the opinion of NMEID that with these stipulations, the permittee can never violate the permit limits for molybdenum or manganese as stated on page 2 of Part I. The Division believes that this section must be clarified and that discharge of molybdenum and manganese should not go unregulated at outfall 002. If EPA maintains the effluent limit suspension, it should be noted on page 2 of Part I, perhaps through the use of asterisks. Would this suspension effect monitoring and reporting requirements for molybdenum and manganese? NMEID believes that monitoring and reporting requirements must continue even if effluent limits are suspended.

Page 2 and 4 of Part I.A. Effluent Limitations and Monitoring Requirements of the draft permit documents sample type for flow measurement purposes as "daily estimate." EPA should reconsider changing this sample type to a more appropriate flow measuring methodology, consistent with scientific practices, to ensure the accuracy and reliability of measurements of the volume of monitored discharges. Accurate flow measurements are needed for calculation of loading values as listed on page 4. Review of Discharge Monitoring Reports submitted to our office by the permittee show the average monthly flow for 1987 was .46 MGD, with the maximum flow recorded as .51 MGD.

03/17/88 12:42 HSD/UNS 986 4289

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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DALLAS, TEXAS 75202-2733

CERTIFICATE
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OF AGENCY RECORDS

40 CFR Section 2.406
[F.R.Civ.P. Rule 44]
[28 U.S.C. SECTION 1733]

AUTHENTICATION

I am the Chief of the Customer Service Branch, United States Environmental Protection Agency, Region 6, Dallas, Texas. In that position, I am the legal custodian, under the Regional Administrator, of those official records of the United States Environmental Protection Agency (EPA) which are in the custody of the Director of the Water Quality Protection Division. I attest that the 12 pages of documents to which this Authentication is attached are true and correct copies of the official records which are in the custody of the Water Quality Protection Division of the United States Environmental Protection Agency, Region 6, Dallas, Texas. The official records from which these documents were made consist of seven comments received by this office in response to proposed NPDES permit for MolyCorp, Inc. (NM0022306). The originals of these records are publicly-available information from the Customer Service Branch files in the Water Quality Protection Division Records Center.

2/13/97
Date

Jayne Fontenot
Jayne Fontenot, Chief
Customer Service Branch

CERTIFICATE

I am the Acting Regional Counsel of the Region 6 Office of the United States Environmental Protection Agency in Dallas, Texas. I have official duties within that office in Dallas, Texas, where the official records described above are kept. I certify that Jayne Fontenot, the person who signed the above Authentication, is the Chief of the Customer Service Branch, United States Environmental Protection Agency, Region 6, Dallas, Texas, and that in such position she has the legal custody, under the authority of the Regional Administrator, of the official Agency records described above. I certify that the signature above, of Jayne Fontenot, is genuine.

Witness my signature and the official seal of the United States Environmental Protection Agency.

Walter L. Sutton, Jr.
Walter L. Sutton, Jr.
Acting Regional Counsel

LAND AND WATER FUND

"Legal Aid For The Environment"

May 25, 1993

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To Fred Nisthizer	From Fred Hennige
Co. Molycorp	Co. EPA Reg. 6
Dept.	Phone # (214) 655-7503
Fax # (505) 584-1811	Fax #

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Serving the Rocky Mountain West

Ms. Ellen Caldwell
Permits Branch (6W-PS)
U.S. EPA
1445 Ross Avenue
Dallas, TX 75202
Fax No. 214-655-6490

VIA FAX

Dear Ms. Caldwell:

I am writing on behalf of Concerned Citizens del Norte to comment on the proposed NPDES permit for Molycorp, Inc., No. NM0022306. Concerned Citizens del Norte is a grassroots group based in Questa, New Mexico, which has worked for many years on environmental problems caused by the nearby Molycorp mine and tailings facility. Thank you for extending our comment deadline to May 25.

COMMENTS REGARDING MINE DRAINAGE/STORMWATER RUNOFF

Most of our comments relate to the new outfalls 004 and 005, which are authorized to discharge "periodic mine drainage, including collected stormwater." We understand that Outfall 004 is to be located between the mine and mill site and the town of Questa (apparently in Goat Hill Gulch just above the river), while Outfall 005 is to be located at the mill site. Our comments are as follows:

<u>Daily average loading limits</u>. Discharges from outfalls 004 and 005 are subject to certain loading limits as part of Sum2, which aggregates the discharges from all four outfalls. These limits are expressed as daily averages. The use of a daily average limit appears inappropriate for Outfalls 004 and 005, since these points will primarily discharge stormwater and therefore will discharge at most a few days a month. By imposing only daily average limits, the permit would tend to allow highly toxic episodic discharges in otherwise dry months. Discharges from Outfalls 004 and 005 should also be subject to daily maximum loading limits.

<u>Biomonitoring requirements</u>. The permit requires Whole Effluent Toxicity Testing, but the specified test procedures do not seem to allow an accurate assessment of

the toxicity of the effluent from Outfalls 004 and 005. First, the procedures call for a composite sample of effluent from all four outfalls. Such a composite sample is inappropriate, as several river miles separate Outfalls 004 and 005 from each other and from Outfalls 001 and 002. Moreover, while the permit language is not entirely clear on this point, it appears to allow the composite samples to be collected on days when Outfalls 004 and 005 are not discharging at all. The permit should require biomonitoring testing for individual samples of effluent from Outfalls 004 and 005.

Sum2 loading limitations. The permit contains no Sum2 loading limitations for certain metals which are the subject of concentration-based limits or Sum1 loading limits, such as copper, zinc, molybdenum and manganese. Past studies of the Red River have shown many of these metals to pose problems for the river's water quality and natural communities. The absence of such Sum2 limits reduces the permit's effectiveness in meeting the goals of the Clean Water Act and protecting the Red River.

Compliance deadline/reopener clause. The permit requires Molycorp only to report its Sum2 loadings until June 30, 1996. It is not clear why Molycorp is given three years to come into compliance with the final Sum2 limitations; we would support a shorter deadline. In addition, we believe the permit should contain a reopener clause providing for revision of the Sum2 limits based on Molycorp's monitoring report. Such a reopener clause seems particularly appropriate in this permit, since the existing data on Outfalls 004 and 005 appear to be scant.

COMMENTS REGARDING OUTFALLS 001 AND 002

Loading limits inflated by Outfall 001 flow. Except for molybdenum, the permit's daily average loading limitations for Sum1 "are calculated and limited at 00C [?] based on the daily average concentration and a daily average flow of 4.726 MGD." Thus, the permit assumes an average discharge from Outfall 001 of 4.29 MGD. In fact, Outfall 001 is unlikely to discharge at all during the life of this permit. It discharged only a few days over the past five years, and the mine was operating during most of that time. Now the mine is closed and is not expected to reopen soon, if ever. Thus, to base loading limits on an average Outfall 001 discharge of 4.29 MGD renders those limits largely meaningless. These inflated limits are especially troublesome with respect to manganese, for which the permit does not specify a concentration-based limit at Outfall 002.

Cadmium limit. The Sum1 loading limit for total cadmium, expressed as a daily average, is 2.00 pounds ~~per~~ day. The corresponding Sum2

limit is 1.10 pounds per day. This must be a mistake. The Sum1 limit should be 1.10 pounds per day.

COMMENTS REGARDING ISSUES NOT ADDRESSED IN THE PROPOSED PERMIT

The permit does not address three potential sources of pollution to the Red River. None are typical point source discharges to surface water; rather, they involve the pollution of underground water sources which are, or may be, tributary to the Red River. Relevant case law indicates that these may be "point sources" subject to regulation under the NPDES program. These sources may pose greater problems and risks for surface water quality than for ground water.

Existing seeps below the mine. The Red River is constantly polluted by one or more springs or seeps on its north bank ; st below the Molycorp mine. The condition of the river, particularly the streambottom, worsens visibly in this area and stays bad for several miles; the seeps appear to be a major contributor to the degradation of the river. If, as seems likely, the water issuing from these seeps is draining from the Molycorp mine and spoils piles, then these seeps should be regulated under the NPDES program.

Filling of the deep underground workings. Molycorp has written in an August 10, 1992 letter to New Mexico Environment Secretary Judith Espinosa, that much of the water from the open pit and the spoils piles drains into the mine's upper underground workings. From there, the water drops through a "vertical drill hole" down to the deep underground workings which lie below the level of the river at that point. Molycorp has stated that if the water ever spills out from the underground workings it will be dealt with in accordance with the company's NPDES permit. This scenario raises two questions. First, does the proposed permit adequately address this possibility? Second, has EPA considered that the underground workings and the Red River may be hydrologically connected, and therefore that water from the underground workings could affect the river without reaching the surface?

Uncaptured tailings seepage. Over the years, seepage from the Molycorp tailings facility has contained high levels of solids and sulfates and varying levels of metals. A 1989 Report by Molycorp consultant Vail Engineering notes that a significant part of the Molycorp tailings seepage is not being collected by the existing system leading to Outfall 002. The same report also notes that the seepage appears to be affecting springs near the River. Thus, EPA should address the problem of uncollected seepage through this permit because of the possible affects of such seepage of surface water.

Thank you for considering these comments.

Best regards,

Reed D. Benson
Staff attorney
Land and Water Fund of the Rockies

Attorneys for
Concerned Citizens del Norte
PO Box 1179
Questa, NM 87556
(505)586-1730

P.S. Along with these comments I am transmitting two additional sets of comments, one from Concerned Citizens del Norte themselves and one from Antonio Trujillo, a member of both Concerned Citizens del Norte and Amigos Bravos, a river protection group based in Taos.

Fax Transmittal Memo 7672

To Reed Benson
Company LAW Fund
Location
Fax #
Comments

From Juan Montes
Company CCdN
Location Questa NM
Fax # 586-1241
Original Sent
Review
Return
Call to pick up

Ms. Ellen Caldwell
Permits Branch (6W-PS)
U.S.EPA
1445 Ross Avenue
Dallas, TX 75202

Estimada Ms. Ross,

Please accept these comments on behalf of the Concerned Citizens Del Norte on the proposed NPDES permit for Molycorp, Inc., No. NM0022306. Concerned Citizens Del Norte is a community-based organization that has been monitoring the environmental degradation caused by the unregulated mining practices of Molycorp for the past 20 years.

While the fact that Molycorp is finally being required to apply for an NPDES permit on its discharges is a positive step, the current permit application does not cover all surface and groundwater discharges that we, as members of the affected community know exist. The Red River right at and below the mine site is biologically dead, we know this to be caused by seeps from the mine and all the slag tailings. The mine has pulled its underground pumps and is allowing its underground workings to flood, we know that in time this will seep into the Red River and because of the past mining explosions causing fractures will also contaminate Cabresto Creek our only remaining clean water source. The above two concerns are not addressed in the permit application.

Another major concern is the seepage fromthe mines tailings dump. Arecent court decision and settlement found the mine tailings responsible for contaminating groundwater beneath and around the dumps. We can show you where thereissurface r off flowing from the tailings dump directly inoo the Red River and acequias, our irrigation system. Again, neither of the above concerns are addressed in the permit application.

What the permit application does cover is totally unacceptable. It is incumbent for the EPA to measure the discharges by Molycorp accurately and effectively. By using the "daily average loading limits", you would be condoning inappropriate measures and systematic undercounting of contaminants. High levels of contaminants are discharged in storm runoff and not on a daily basis but by averaging on a daily basis this would bring down the levels released which we know to be excessive during runoff. On the use of Whole Effluent Testing, the use of composite samples from Outfalls miles from each other will result in diluted findings and are again, inappropriate. We request biomonitoring testing for individual samples from each Outfall. We also request that the final permit require loading limits for all the metals such as zinc, manganese, moly, lead, copper, etc., that are known to be dischar

We would appreciate a response to the above concerns and pleqae apprise us of t scheduling of the public hearings.

Attentively,

Juan Montes

Concerned Citizens Del Norte
P.O. Box 1179
Questa, NM 87556
Phone 505/586-1730/fax 586-1241

6W-P
page 335
Rowff (1)

AMIGOS BRAVOS, Box 238, Taos, NM 87571

FAX TRANSMITTAL

To: MS. ELLEN CALDWELL
PERMITS BRANCH
EPA - 6W-P.S.

Fax#: 214-655-6490

From: BRIAN SHIELDS

Fax#: (505) 758-3874

Date: 5/25/93

We only have one line for both phone and fax so when returning fax please call first.

Number of pages including cover sheet: 1

****

Dear Ms. Ellen Caldwell:

It has come to our attention today that Molycorp has made an application for NPDES permits at two new outfalls at their Goat Hill millsite. We were also informed that today is the deadline for comments.

Amigos Bravos has been in communication with EPA over the past five years concerning the Molycorp mine pollution of the Red River. So it came as a surprise that we had not been informed by EPA of this latest development. Amigos Bravos would like to study and submit comments on this permit application. We are requesting a copy of the NPDES draft permit and for an opportunity to offer our insights. *

Amigos Bravos is aware of the complexity of the issues involved and the need for the public to be fully informed of the stipulations and implications of the permit. We therefore ask, on behalf of our 600 members, that a public hearing be held in Questa on this NPDES permit.

Thank you for taking these two requests into consideration. Also, please make sure that we are included in whatever mailing list you have of organizations requesting to be kept informed of Molycorp actions.

Sincerely,

Brian Shields
Projects Director

* Fred/Bob -
Since this seems to be of strong interest, I would suggest letting him comment.

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JUN 02 1993

6W-PS

Penelope Rael
P.O. Box 603
Questa, New Mexico 87556

May 25, 1993

Re: Application to Discharge to Waters of the United States
NPDES Permit No. NM0022306
Draft Permit

Ms. Ellen Caldwell
Permits Branch (6W- PS)
U.S Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 655-7513

Dear Ms. Caldwell:

We appreciate your extending the time limit for submitting our comments until May 25, 1993. Thank you.

I have lived in Questa, New Mexico, in an area along the north bank of the Red River for the past 18 years. Currently, I own land and use waters from the Red River for irrigation.

According to many studies that have been performed by State and Federal Agencies, at least 8 miles of the Red River from MolyCorp to Lama Canyon is essentially a biologically dead reach. This dead zone of the Red River is due in greatest measure to continual metal loading from "steady state" seeps issuing from a number of locations along a 6 mile section of the middle reach beginning below the MolyCorp mill and persisting until about the Questa Ranger District.

MolyCorp Inc. is currently applying for permits for two new outfalls 004 and 005. EPA made an error in plane coordinates for outfall 004 giving a point on the Rio Grande. There was also no description of these discharge points which made it very difficult to make an assessment of these permit application. It is good that EPA has reclassified use of the river to non-industrial use.

Due to the nature of the soils (very porous) between the mine and the Red River most of their discharges from the open pit mine (about 2 1/2 miles wide by 1/2 mile deep) flow into the Red River below the surface of the ground, they must be required to get these discharges permitted because, they created this collection system (open pit). The current NPDES application does not consider these discharges. The old underground workings are next to the Red River and below the open pit mine. This collection system that they developed as a result of the open pit mine seeps through these old workings and flows to the Red River and is not permitted.

The Clean Water Act prohibits the discharge of pollutants from any point source to the waters of the United States. It may be argued that the MolyCorp s open pit and approximately 5 square miles of disturbance are not "point sources". In Sierra

Club v. Abston Construction Co., Inc., 620 F.2d 41 ((5th Cir. 1980). EPA argued that mining pits and collection ponds are point sources, and that seepage from such facilities constitutes a point source discharge. The court agreed. MolyCorp's NPDES permit does not include these discharges.

There is also a potential danger in the filling of the current underground workings because these polluted waters will seep into the Red River before they reach the surface.. This has not been properly addressed in this application.

The current application overestimates the flow from outfall 001 based on DMRs from the period of mine operation. There is little or no flow once the mine is inoperative (as now) this mistake allows unnecessary discharge under SUM1 limits for manganese and molybdenum. This have been two of the most significant pollutants from the mine: this is because there are no concentration based limits for these and an overestimate of flow from 001 gives the mine huge leeway to meet these mass limits. The same is true for cobalt, selenium, beryllium, silver, chlordane and chlorine which are picked up under SUM2. EPA should have concentration limits for all of these. The absence of such limits reduces the permit's effectiveness in meeting the goals of the Clean Water Act and protecting the Red River.

Draft permit provides for insufficient monitoring, discharges from outfalls 001 and 002, there should be daily monitoring for effluents that have concentration limits. Otherwise, episodic large releases of pollutants will not be accounted for, this compounds outfall 001's overestimation problem.

Draft permit whole effluent toxicity testing generally allows too much dilution of mixture for testing, a mixture of 36% should be used for most tests. The permit should require biomonitoring testing for individual samples of effluent from all outfalls. Composite sampling should not be done because there is a large distance between the outfalls.

This permit requires MolyCorp only to report its Sum2 loadings until June 30, 1996, it does not require compliance. Compliance should be required immediately.

Ms. Caldwell, we are confident that EPA will own up to it's responsibilities in protecting the Red River and the Rio Grande (Wild and Scenic Rivers as designated by Congress) from MolyCorp's discharges. The future of our children and our community is at stake here and we are depending on you for our protection.

On the basis of the above issues raised, I request a public hearing on MolyCorp's NPDES Permit No. NM0022306 Application.

Respectfully Submitted,

Penelope Rael

Penelope Rael

A Wilfred Rael
P.O. Box 603
Questa, New Mexico 87556

May 25, 1993

Re: Application to Discharge to Waters of the United States
NPDES Permit No. NM0022306
Draft Permit

Ms. Ellen Caldwell
Permits Branch (6W-PS)
U.S Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 655-7513

Dear Ms. Caldwell;

We appreciate your extending the time limit for submitting out comments till May 25, 1993. Thank you.

I have lived in Questa, New Mexico, in an area along the north bank of the Red River all my life. Currently, I own land and use waters from the Red River for irrigation. I was 15 years old when Moly Corp went from a small underground operation to an open pit mine in 1965. I witnessed many of the spills that occurred after the expansion began. I saw the Red River go from a beautiful mountain stream, full of life, to a polluted dead river. The water looks like it's discharged from a washing machine (Blue). According to many studies that have been performed by State and Federal Agencies, at least 8 miles of the Red River from MolyCorp to Lama Canyon is essentially a biologically dead reach. This dead zone of the Red River is due in greatest measure to continual metal loading from "steady state" seeps issuing from a number of locations along a 6 mile section of the middle reach beginning below the MolyCorp mill and persisting until about the Questa Ranger District. The mine claims that the goethermal scars on the mountain along the river are to blame for what has happened to the river. this is a joke! I strongly feel that the mine is to blame and they are using our state and federal agencies to get away with murder. If you were in my situation I am sure that you would feel the same way. If you studied the records and you investigated the problem further you would probably also draw the same conclusion.

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On the basis of the above issues raised, I request a public hearing on MolyCorp's NPDES Permit No. NM0022306 Application.

Respectfully Submitted.

A. Wilfred Rael

A. Wilfred Rael

State of New Mexico

ENVIRONMENT DEPARTMENT

BRUCE KING
GOVERNOR

JUDITH M. ESPINOSA
SECRETARY

RON CURRY
DEPUTY SECRETARY

Permit File
NM22306

P/C

TELEFAX

March 2, 1993

Fred O. Humke, P.E.
Industrial Permits Section (6W-PI)
U.S. Environmental Protection Agency
1445 Ross Ave.
Dallas, Texas 75202-2733

Re: Molycorp Preliminary Draft Permit Comments

Dear Mr. Humke:

Thank you for the opportunity to review your preliminary copy of the draft permit you are developing for Molycorp, Inc. (NM0022306)

In general the Surface Water Quality Bureau (SWQB) is in agreement with the proposed draft. In particular the addition of the new outfalls 004 & 005 regulating runoff from mine drainage/stormwater runoff is a positive step.

The following is a list of our comments:

* The State is currently developing a revision to its interim implementation guidelines that will assist EPA address background pollutants in regard to calculating water quality based effluent limitations. This revision is being developed in response to Mr. Jack Ferguson's January 26, 1993 letter to Mr. Jim Piatt on this subject. The revision is essentially complete and should be sent to EPA within a week. It is my understanding that background concentrations were not factored into the screening process for this draft of the Molycorp permit.

* (Note this comment is predicated upon our anticipated revision to the interim implementation guidelines discussed above.)

  According to the Fact Sheet you have utilized only the Molycorp data from their samples for screening purposes of water quality (page 6 of 8 para. No. 4). The NMED has

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New Mexico DRUG FREE It's a State of Mind!

Harold Runnels Building • 1190 St. Francis Drive • P.O. Box 26110 • Santa Fe, New Mexico 87502
(505) 827-2850 FAX (505) 827-2836

established a large database of water quality along the Red River. The information is readily accessible through the EPA STORET computer database. There are a number of sampling stations up and down the river. All NMED SWQB ambient water quality data is stored under agency code 21NMEX. While there are several river stations, I suggest you minimally refer to the station just above the Molycorp property (A=21NMEX, S=URG120.028045). For your convenience I have enclosed a copy of a "Browse" summary retrieval and a copy of an "Allparm" detailed retrieval for that station. Effluent data collected by the NMED-SWQB is stored under agency code EFNM1 with the permit number as the station number (A=EFNM1, S=NM0022306). If you have questions on other stations please feel free to contact me.

* The SWQB is seriously concerned about the tactic of utilizing loading limits (i.e., daily average limits in lbs/day) at outfall 00C to protect numeric water quality standards expressed as concentration (i.e., mg/l). While this may be appropriate for constituents which are not toxic to aquatic life (e.g., molybdenum), it is not be the best method of protection for those characterized as toxic. The biota tend to respond to extremes of concentrations of toxic pollutants. The effect of expressing the permit limitations as "average loading" may diminish protection from the threat of episodic biologically threatening high concentrations. High concentrations will not be prohibited by restricting average loads because the concentration extremes can be "average out." We will continue to analyze this permitting approach, but at the moment we would be more comfortable with the direct protection of a water quality standard expressed in concentration through an effluent limit expressed in concentration.

* As you may know, the State is very concerned about mercury contamination in fish tissue. Recently the NMED and the Health Department have issued fish consumption guidelines for many of our reservoirs due to the magnitude of this problem. Therefore we reviewed the mercury limits with special interest. Because of this problem the proposed daily average load of 0.04 lbs/day may be unacceptable. We will review this special case as soon as possible and consult with you. In this case

and with regard to our previous comment we also note that if a dilution calculation is run utilizing the 0.001 mg/l BAT mercury limit, the design flow (for individual or combined outfalls), a zero ambient upstream concentration, and the 4Q3 of the stream, the downstream ambient concentration would exceed the 0.012 ug/l water quality standard.

Again I would like to thank you for the opportunity to review your draft. However, this letter does not represent the State's certification of this permit pursuant to Section 401 of the Clean Water Act. If you have any questions, please contact me at (505) 827-2827.

Sincerely,

Glenn E. Saums
Health Program Manager
Point Source Regulation Section

Enclosure

cc: (w/o enclosure)
Jim Piatt, Chief NMED-SWQB
David F. Tague, NMED-SWQB-SSS

URG120.028045 URG120028045 STORET System
36 41 55.0 105 28 46.0 5
RED RIVER ABOVE MOLYCORPS BOUNDARY
35055 NEW MEXICO TAOS
WESTERN GULF 120900
UPPER RIO GRANDE ABOVE THE PECOS RIVER
21NMEX 13020101 /TYPA/AMBNT/STREAM/BIO
881217 DEPTH 0

Summary Browse of Data
note: remark codes such as "less than" are not printed
see attached "Allparm" retrieval for detailed information

INDEX MILES	PARAMETER			NOBS	AVE	MAX	MIN	BEG-DATE	END-DATE
10	WATER	TEMP	CENT	15	6.8	12.0	0.1	88/03/25	92/11/24
61	STREAM	FLOW,	INST-CFS	1	20	20	20	88/10/25	88/10/25
95	CNDUCTVY	AT 25C	MICROMHO	15	220	381	133	88/03/25	92/11/24
116	INTNSVE	SURVEY	IDENT	15	910173	923506	883508	88/03/25	92/11/24
300	DO		MG/L	15	9.2	10.5	8.0	88/03/25	92/11/24
400	PH		SU	15	7.63	8.10	6.80	88/03/25	92/11/24
410	T ALK	CACO3	MG/L	14	51	59	18	88/09/13	92/11/24
440	HCO3 ION	HCO3	MG/L	14	62	72	22	88/09/13	92/11/24
530	RESIDUE	TOT NFLT	MG/L	15	62	611	3	88/03/25	92/11/24
600	TOTAL N	N	MG/L	14	0.51	0.93	0.33	88/03/25	92/11/24
605	ORG N	N	MG/L	14	0.142	0.450	0.000	88/03/25	92/11/24
610	NH3+NH4-	N TOTAL	MG/L	14	0.154	0.350	0.100	88/03/25	92/11/24
625	TOT KJEL	N	MG/L	14	0.286	0.800	0.100	88/03/25	92/11/24
630	NO2&NO3	N-TOTAL	MG/L	14	0.21	0.36	0.04	88/03/25	92/11/24
640	T INORG.	NITROGEN	MG/L N	14	0.37	0.52	0.19	88/03/25	92/11/24
665	PHOS-TOT		MG/L P	14	0.138	1.000	0.010	88/03/25	92/11/24
680	T ORG C	C	MG/L	13	3.0	8.9	1.0	88/03/25	92/11/24
900	TOT HARD	CACO3	MG/L	14	133	188	66	88/09/13	92/11/24
915	CALCIUM	CA,DISS	MG/L	14	36.6	50.0	20.0	88/09/13	92/11/24
925	MGNSIUM	MG,DISS	MG/L	14	9.3	21.4	4.0	88/09/13	92/11/24
930	SODIUM	NA,DISS	MG/L	14	4.57	7.00	2.00	88/09/13	92/11/24
935	PTSSIUM	K,DISS	MG/L	14	1.71	4.00	1.00	88/09/13	92/11/24
940	CHLORIDE	TOTAL	MG/L	14	6	11	5	88/09/13	92/11/24
945	SULFATE	SO4-TOT	MG/L	4	67	103	46	88/09/13	88/10/25
946	SULFATE	SO4-DISS	MG/L	10	67.0	109.0	25.9	92/02/26	92/11/24
1000	ARSENIC	AS,DISS	UG/L	1	5	5	5	92/02/26	92/02/26
1002	ARSENIC	AS,TOT	UG/L	4	7	12	5	88/09/13	88/10/25
1005	BARIUM	BA,DISS	UG/L	4	100	100	100	88/09/13	92/02/26
1007	BARIUM	BA,TOT	UG/L	4	165	400	60	88/09/13	88/10/25
1010	BERYLIUM	BE,DISS	UG/L	1	100.00	100.00	100.00	92/02/26	92/02/26
1020	BORON	B,DISS	UG/L	1	100	100	100	92/02/26	92/02/26
1025	CADMIUM	CD,DISS	UG/L	4	1	1	1	88/09/13	92/02/26
1027	CADMIUM	CD,TOT	UG/L	4	1	1	1	88/09/13	88/10/25
1030	CHROMIUM	CR,DISS	UG/L	4	6	8	5	88/09/13	92/02/26
1034	CHROMIUM	CR,TOT	UG/L	4	8	17	5	88/09/13	88/10/25
1035	COBALT	CO,DISS	UG/L	1	50	50	50	92/02/26	92/02/26
1040	COPPER	CU,DISS	UG/L	4	63	100	50	88/09/13	92/02/26
1042	COPPER	CU,TOT	UG/L	4	63	100	50	88/09/13	88/10/25
1045	IRON	FE,TOT	UG/L	4	8530	33000	230	88/09/13	88/10/25
1046	IRON	FE,DISS	UG/L	4	63	100	50	88/09/13	92/02/26
1049	LEAD	PB,DISS	UG/L	4	9	10	5	88/09/13	92/02/26
1051	LEAD	PB,TOT	UG/L	4	24	60	5	88/09/13	88/10/25
1055	MANGNESE	MN	UG/L	4	242.5	620.0	100.0	88/09/13	88/10/25
1056	MANGNESE	MN,DISS	UG/L	4	200.0	360.0	90.0	88/09/13	92/02/26
1060	MOLY	MO,DISS	UG/L	4	33	100	10	88/09/13	92/02/26
1062	MOLY	MO,TOT	UG/L	4	10	10	10	88/09/13	88/10/25
1065	NICKEL	NI,DISS	UG/L	4	63	100	50	88/09/13	92/02/26
1067	NICKEL	NI,TOTAL	UG/L	3	50	50	50	88/09/13	88/09/26
1075	SILVER	AG,DISS	UG/L	4	25.8	100.0	1.0	88/09/13	92/02/26
1077	SILVER	AG,TOT	UG/L	4	1.0	1.0	1.0	88/09/13	88/10/25
1080	STRONTUM	SR,DISS	UG/L	1	300	300	300	92/02/26	92/02/26
1085	VANADIUM	V,DISS	UG/L	1	100	100	100	92/02/26	92/02/26
1090	ZINC	ZN,DISS	UG/L	4	63	100	50	88/09/13	92/02/26
1092	ZINC	ZN,TOT	UG/L	4	75	150	50	88/09/13	88/10/25
1100	TIN	SN,DISS	UG/L	1	100	100	100	92/02/26	92/02/26
1105	ALUMINUM	AL,TOT	UG/L	5	2515	8900	600	88/09/13	92/02/26
1106	ALUMINUM	AL,DISS	UG/L	4	98	140	50	88/09/13	92/02/26
1140	SILICON	SI,DISS	UG/L	1	6400	6400	6400	92/02/26	92/02/26
1145	SELENIUM	SE,DISS	UG/L	4	5	5	5	88/09/13	92/02/26
1147	SELENIUM	SE,TOT	UG/L	4	5	5	5	88/09/13	88/10/25
70300	RESIDUE	DISS-180	C MG/L	15	174	246	108	88/03/25	92/11/24
71890	MERCURY	HG,DISS	UG/L	3	0.5	0.5	0.5	88/09/13	88/09/26
71900	MERCURY	HG,TOTAL	UG/L	5	0.5	0.5	0.5	88/09/13	92/02/26
74041	WQF	SAMPLE	UPDATED	15	912526	930204	890201	88/03/25	92/11/24
82079	TURBIDTY	LAB	NTU	14	34.3	320.0	1.1	88/03/25	92/11/24

********** TOP OF DATA **********

STORET RETRIEVAL DATE 93/03/01 PGM=ALLPARM PAGE: 1

URG120.028045 URG120028045
36 41 55.0 105 28 46.0 5
RED RIVER ABOVE MOLYCORPS BOUNDARY
35055 NEW MEXICO TAOS
WESTERN GULF 120900
UPPER RIO GRANDE ABOVE THE PECOS RIVER
21NMEX 881217 13020101
0000 FEET DEPTH 2490 METERS ELEVATION
21M SOUTHERN ROCKIES

/TYPA/AMBNT/STREAM/BIO

INITIAL DATE				88/03/25	88/09/13	88/09/20	88/09/26	88/10/25	92/02/26	92/03/25	92/04/29	92/05/27
INITIAL TIME				1721	1040	1015	0915	1300	1230	1205	1145	1215
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	9.0	8.5	5.8	5.4	6.0	2.1	5.0	7.2	8.5
00011	WATER	TEMP	FAHN	48.2$	47.3$	42.4$	41.7$	42.8$	35.8$	41.0$	45.0$	47.3$
00061	STREAM	FLOW,	INST-CFS					20				
00095	CNDUCTVY	AT 25C	MICROMHO	381	213	166	199	237	217	242	133	146
00116	INTNSVE	SURVEY	IDENT	883508	883508	883508	883508	883508	923506	923506	923506	923506
00300	DO		MG/L	8.4	8.6	9.5	9.1	9.5	10.1	9.6	8.9	9.6
00301	DO	SATUR	PERCENT	72.4$	72.6$	75.8$	71.1$	76.0$	73.2$	75.0$	73.0$	80.7$
00400	PH		SU	6.80	7.25	7.90	7.50	7.80	8.00	7.70	7.50	7.70
00410	T ALK	CACO3	MG/L		18	55	56	58	52	54	42	52
00440	HCO3 ION	HCO3	MG/L		22	67	68	71	63	67	51	63
00530	RESIDUE	TOT NFLT	MG/L	6	611	10	6	3	6	20	206	16
00600	TOTAL N	N	MG/L	.52	.93	.38	.34		.73	.46	.62	.49C
00605	ORG N	N	MG/L	.000	.450	.130	.000		.230	.000	.400	.290C
00610	NH3+NH4-	N TOTAL	MG/L	.250	.350	.100K	.100K		.210	.100K	.100K	.100K
00612	UN-IONZD	NH3-N	MG/L	.0003$	.001$	.001$	.0004$		.002$	.0006$	.0005$	.0008$
00619	UN-IONZD	NH3-NH3	MG/L	.0003$	.001$	.001$	.0005$		.002$	.0008$	.0006$	.0010$
00625	TOT KJEL	N	MG/L	.100	.800	.230	.100K		.440	.100K	.500	.390
00630	NO2&NO3	N-TOTAL	MG/L	.27	.13	.15	.24		.29	.36	.12	.10
00640	T INORG.	NITROGEN	MG/L N	.52	.48	.25	.34		.50	.46	.22	.20C
00665	PHOS-TOT		MG/L P	.018	1.000	.310	.010		.030	.060	.410	.010
00680	T ORG C	C	MG/L	1.3	8.9	4.5	3.5			5.0K	5.0	5.0K
00900	TOT HARD	CACO3	MG/L		183	188	170	134	166	144	69	66
00915	CALCIUM	CA,DISS	MG/L		40.0	40.0	40.0	42.0	50.0	41.0	21.0	20.0
00925	MGNSIUM	MG,DISS	MG/L		20.1	21.4	7.3	7.0	10.0	10.0	4.0	4.0
00930	SODIUM	NA,DISS	MG/L		6.00	4.00	4.00	5.00	6.00	6.00	3.00	2.00
00935	PTSSIUM	K,DISS	MG/L		4.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00
00940	CHLORIDE	TOTAL	MG/L		11	5K	5K	5K	8	7	5K	5K
00945	SULFATE	SO4-TOT	MG/L		103	46	51	67				
00946	SULFATE	SO4-DISS	MG/L						104.0	92.0	27.2	25.9
01000	ARSENIC	AS,DISS	UG/L						5K			
01002	ARSENIC	AS,TOT	UG/L		12	5K	5K	5K				
01005	BARIUM	BA,DISS	UG/L		100K	100K	100K		100K			
01007	BARIUM	BA,TOT	UG/L		400	100K	100K	60				
01010	BERYLIUM	BE,DISS	UG/L						100.00K			
01020	BORON	B,DISS	UG/L						100K			

(SAMPLE CONTINUED ON NEXT PAGE)

URG120.028045 URG120028045
36 41 55.0 105 28 46.0 5
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UPPER RIO GRANDE ABOVE THE PECOS RIVER
21NMEX 881217 13020101
0000 FEET DEPTH 2490 METERS ELEVATION
21M SOUTHERN ROCKIES

(SAMPLE CONTINUED FROM PREVIOUS PAGE)

INITIAL DATE				88/03/25	88/09/13	88/09/20	88/09/26	88/10/25	92/02/26	92/03/25	92/04/29	92/05/27
INITIAL TIME				1721	1040	1015	0915	1300	1230	1205	1145	1215
MEDIUM				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
01025	CADMIUM	CD,DISS	UG/L		1K	1K	1K		1K			
01027	CADMIUM	CD,TOT	UG/L		1K	1K	1K	1K				
01030	CHROMIUM	CR,DISS	UG/L		5K	8	5K		5K			
01034	CHROMIUM	CR,TOT	UG/L		17	5K	5K	5K				
01035	COBALT	CO,DISS	UG/L						50K			
01040	COPPER	CU,DISS	UG/L		50K	50K	50K		100K			
01042	COPPER	CU,TOT	UG/L		100	50K	50K	50K				
01045	IRON	FE,TOT	UG/L		33000	540	350	230				
01046	IRON	FE,DISS	UG/L		50K	50K	50K		100K			
01049	LEAD	PB,DISS	UG/L		10K	10K	10K		5K			
01051	LEAD	PB,TOT	UG/L		60	20	10K	5K				
01055	MANGNESE	MN	UG/L		620.0	100.0	100.0	150.0				
01056	MANGNESE	MN,DISS	UG/L		360.0	90.0	110.0		240.0			
01060	MOLY	MO,DISS	UG/L		10K	10K	10K		100K			
01062	MOLY	MO,TOT	UG/L		10	10K	10K	10K				
01065	NICKEL	NI,DISS	UG/L		50K	50K	50K		100K			
01067	NICKEL	NI,TOTAL	UG/L		50K	50K	50K					
01075	SILVER	AG,DISS	UG/L		1.0K	1.0K	1.0K		100.0K			
01077	SILVER	AG,TOT	UG/L		1.0	1.0K	1.0K	1.0K				
01080	STRONTUM	SR,DISS	UG/L						300			
01085	VANADIUM	V,DISS	UG/L						100K			
01090	ZINC	ZN,DISS	UG/L		50K	50K	50K		100K			
01092	ZINC	ZN,TOT	UG/L		150	50K	50K	50K				
01100	TIN	SN,DISS	UG/L						100K			
01105	ALUMINUM	AL,TOT	UG/L		8900	600	700	1075	1300			
01106	ALUMINUM	AL,DISS	UG/L		50	140	100		100K			
01140	SILICON	SI,DISS	UG/L						6400			
01145	SELENIUM	SE,DISS	UG/L		5K	5K	5K		5K			
01147	SELENIUM	SE,TOT	UG/L		5K	5K	5K	5K				
46570	CAL HARD	CA MG	MG/L		183$	188$	130$	134$	166$	144$	69$	66$
70300	RESIDUE	DISS-180 C	MG/L	214	198	144	150	174	232	230	108	118
71890	MERCURY	HG,DISS	UG/L		.5K	.5K	.5K					
71900	MERCURY	HG,TOTAL	UG/L		.5K	.5K	.5K	.5K	.5K			
74041	WQF	SAMPLE	UPDATED	890201	890217	890217	890217	890217	930204	920609	920707	920825
82079	TURBIDTY	LAB	NTU	9.9	320.0	5.0	4.5		3.8	13.5	87.0	13.0

URG120.028045 URG120028045
36 41 55.0 105 28 46.0 5
RED RIVER ABOVE MOLYCORPS BOUNDARY
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21M SOUTHERN ROCKIES

	INITIAL DATE			92/06/30	92/07/29	92/08/26	92/09/30	92/10/28	92/11/24
	INITIAL TIME			1205	1200	1145	1015	0905	1155
	MEDIUM			WATER	WATER	WATER	WATER	WATER	WATER
00010	WATER	TEMP	CENT	11.0	12.0	12.0	5.3	3.9	.1
00011	WATER	TEMP	FAHN	51.8$	53.6$	53.6$	41.5$	39.0$	32.2$
00095	CNDUCTVY	AT 25C	MICROMHO	164	227	204	266	255	255
00116	INTNSVE	SURVEY	IDENT	923506	923506	923506	923506	923506	923506
00300	DO		MG/L	8.4	8.5	8.0	9.6	9.7	10.5
00301	DO	SATUR	PERCENT	75.7$	78.7$	74.1$	75.0$	74.0$	71.9$
00400	PH		SU	7.70	8.10	8.10	7.60	7.30	7.50
00410	T ALK	CACO3	MG/L	45	54	59	59	55	51
00440	HCO3 ION	HCO3	MG/L	55	65	72	70	67	62
00530	RESIDUE	TOT NFLT	MG/L	7	6	9	8	8	8
00600	TOTAL N	N	MG/L	.33C	.45C	.67C	.35C	.33C	.51C
00605	ORG N	N	MG/L	.000C	.260C	.210C	.000C	.000C	.020C
00610	NH3+NH4-	N TOTAL	MG/L	.100K	.150	.270	.100K	.100K	.130
00612	UN-IONZD	NH3-N	MG/L	.0010$	.004$	.007$	.0005$	.0002$	.0003$
00619	UN-IONZD	NH3-NH3	MG/L	.001$	.005$	.009$	.0006$	.0003$	.0004$
00625	TOT KJEL	N	MG/L	.100K	.410	.480	.100K	.100K	.150
00630	NO2&NO3	N-TOTAL	MG/L	.23	.04K	.19	.25	.23	.36
00640	T INORG.	NITROGEN	MG/L N	.33C	.19C	.46C	.35C	.33C	.49C
00665	PHOS-TOT		MG/L P	.020	.020	.010	.010	.010	.020
00680	T ORG C	C	MG/L	1.0	1.0	1.0	1.0	1.0	1.0
00900	TOT HARD	CACO3	MG/L	86	114	121	135	134	146
00915	CALCIUM	CA,DISS	MG/L	26.0	34.0	37.0	41.0	39.0	42.0
00925	MGNSIUM	MG,DISS	MG/L	5.0	7.0	7.0	8.0	9.0	10.0
00930	SODIUM	NA,DISS	MG/L	3.00	4.00	4.00	5.00	5.00	7.00
00935	PTSSIUM	K,DISS	MG/L	1.00	1.00	2.00	2.00	2.00	2.00
00940	CHLORIDE	TOTAL	MG/L	5K	5K	5K	5K	5K	5
00946	SULFATE	SO4-DISS	MG/L	34.2	53.4	51.8	81.6	90.9	109.0
46570	CAL HARD	CA MG	MG/L	86$	114$	121$	135$	134$	146$
70300	RESIDUE	DISS-180	C MG/L	118	146	145	190	196	246
74041	WQF	SAMPLE	UPDATED	920909	921029	921104	921203	930112	930125
82079	TURBIDTY	LAB	NTU	4.1	3.8	5.5	4.0	1.1	5.5

THAT'S ALL FOLKS

********** BOTTOM OF DATA **********

UNITE TES ENVIRONMENTAL PROTECTIO NCY

FEB 2 6 1988

REPLY TO: 6W-PI

Ms. Kathleen M. Sisneros
Bureau Chief
Surface Water Quality Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Sanfa Fe, New Mexico 87504-0968

Re: NPDES Permit No. NM0022306,
Molycorp

Dear Ms. Sisneros:

In response to your letter dated February 11, 1988, we agree to an extension of the certification period of the permit for NMEID until March 16, 1988.

The only significant change to this proposed permit is the addition of the third round biomonitoring. NMEID has previously been closely involved with EPA in the development of this Molycorp permit and has previously certified these permit conditions.

Please feel free to have your staff contact me at (214) 655-7180 to clarify conditions with which they may have questions.

Sincerely yours,

Fred Humke
Sr. Environmental Engineer

bcc: Reading file (6W-PI)
Fred Humke (6W-PI)

2/24/88

6W-PI:FHUMKE:wt:x7180:2/22/88:Disk WT-22:#12:260

CONCURRENCES

SYMBOL	6W-PI							
SURNAME	Huffman							
DATE	6/4							

EPA Form 1320-1 (12-70)

OFFICIAL FILE C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

JAN 21 1992

Mr. Brian Shields
Projects Director
Amigos Bravos, Friends of the Wild River
P.O. Box 238
Taos, New Mexico 87571

Dear Mr. Shields:

With reference to your letter of December 30, 1991, relative to the closing of the Molycorp molybdenum mine in Questa, New Mexico, we have contacted Mr. David R. Shoemaker, Mine Manager for Molycorp.

Mr. Shoemaker advised us that there is no acid mine discharge associated with Molycorp mining and that Molycorp will divert any excess mine water through the tailings lines to the tailings pond where treatment will be maintained in accordance with the National Pollutant Discharge Elimination System (NPDES) permit prior to discharge from the permitted outfalls. Mr. Shoemaker stated that Molycorp intends to maintain the NPDES permit (NM0022306) in accordance with all permit provisions. Mr. Shoemaker states that the mine is not being permanently closed, but is on standby, and will be reopened when market conditions warrant.

This permit has been issued under Section 402 of the Clean Water Act. The Environmental Protection Agency (EPA) is the permitting authority and utilizes the assistance of the New Mexico Environment Department (NMED) in the oversight of this facility. We are requesting that the NMED evaluate any possible ground water impact since this is a State matter.

This facility does not require a written closure plan to discontinue pumping operations in the underground mine. The Enforcement Branch of the Water Management Division is aware of your concerns and will continue to monitor the status of the facility to assure that all EPA regulations and requirements are met.

Sincerely yours,

/s/ Joe D. Winkle for

B. J. Wynne
Regional Administrator

cc: New Mexico Environment Department

Mr. David R. Shoemaker

bcc: Levine (2 copies)
Humke (6W-PI)
Control File (6W-P)

6W-PI	6W-PI	6W-P	6W-ET	6W-A	6W
Humke	Vickery	Ferguson	Graham	Allen	Knudson
1/14/92	1/14/92	1/15/92	1/15/92	1/15/92	1/16

FROM			CONTROL NO.
Shields, Brain Taos, New Mexico			6AX-007-92
SUBJECT AND DATE 12/30/91 Molycorp Molybdenum Mine - Questa, New Mexico			DATE REC'D 1/6/92 DUE DATE 1/17/92
REFERRED (1) 6W	(2) 6E, 6H, 6A, 6D	(3) Vickery	(4)
DATE			
REPLY SENT TO			DATE RELEASED
REMARKS 6A Reply fred your Copy bcc: Deborah Toledo (6AX)			ACKNOWLEDGED - DATE ☐ NO ANSWER NEEDED ☐ *(Explain in remarks)*

EPA Form 5180-1 (6-72)
REPLACES FWPCA FORM 72 AND HEW-73 WHICH MAY NOT BE USED.

(Remove this copy only, do not separate remainder.)

MAIL CONTROL SCHEDULE

Note: They are required to perform one biomonitoring test on 002. Upon mill startup they will perform quarterly biomonitoring on combined effluent from 001 + 002 outfalls - They have not yet begun 1/4 testing. Have only turned in for 002.

Background Info

BIOMONITORING RESULTS

NPDES #: NM0022306 TEST DATE: _____

INDUSTRIAL/MUNICIPAL (CIRCLE ONE) OUTFALL NO: 001 + 002

PERMITTEE: Molycorp REVIEWER: ROCCHIO

STREAM SEGMENT: Red River 2-119 DILUTION WATER: Upper Rio Grande Basin

PERMIT EFFECTIVE DATE: 6-21-88

CIRCLE ONE CHOICE: ACUTE CHRONIC

CIRCLE ONE CHOICE: FRESHWATER MARINE

BIOMONITORING FREQUENCY: 1/QUARTER (for 001+002) 1/MONTH OTHER: 1 time for 002

	001+002	002
% LOW FLOW (CRITICAL DILUTION): _____ %	18%	2.8%
% 1/2 LOW FLOW (2 X CRITICAL DILUTION): _____ %	31%	5.5%

TEST ORGANISMS (CHECK CORRECT CHOICE):

CHRONIC TESTS:
- ✓ CERIODAPHNIA DUBIA
- ✓ PIMEPHALES PROMELAS
- _____ CYPRINODON VARIEGATUS
- _____ MYSIDOPSIS BAHIA
- _____ OTHER: _____

ACUTE TESTS:
- _____ DAPHNIA PULEX
- _____ PIMEPHALES PROMELAS
- _____ CYPRINODON VARIEGATUS
- _____ MYSIDOPSIS BAHIA
- _____ OTHER: _____

PRETREATMENT REQUIREMENTS INCLUDED? YES NO

TECHNICALLY-BASED LOCAL LIMITS REQUIRED? YES NO

MONTHS FOR LOCAL LIMITS DEVELOPMENT: _____

MONTH TO SUBMIT PRETREATMENT STATUS REPORT: _____

REFERRAL: YES____ NO_____

EXPLANATION:

RECOMMENDATIONS:

Permit File NM22306

July 3, 1991

MEMORANDUM

TO: Permit File

FROM: Maria Martinez (6W-PT)

RE: Molycorp, Inc. NPDES No. NM0022306

Spoke with Mr. Curt Serviss (Molycorp, Inc.) about the biomonitoring requirements Permit No. NM0022306. The following is a listing of the submitted reports up to date:

1st Quarter 1990: Test date 11/28/89, Outfall 002 effluent only used recieving water

Ceriodaphnia - ambient toxicity
Fathead - pass

2nd Quarter 1990: Test date 03/13/90, Outfall 002 effluent only started using synethetic water

Ceriodaphnia - pass
Fathead - pass

3rd Quarter 1990: Test date 09/11/90, Outfall 002 effluent only

Ceriodaphnia - pass
Fathead - pass

4th Quarter 1990: Test date 12/11/90, Outfall 002 effluent only

Ceriodaphnia - pass
Fathead - pass

1st Quarter 1991: Test date 03/12/91, Outfall 002 effluent only

Ceriodaphnia - pass
Fathead - pass

The above results were reviewed based on information provided by the permit file and Fred Humke (6W-PI). Fred Humke assisted Partricia Rocchio in drafting this permit. The low-flow considered for Outfall 002 discharge alone was 2.8% and the half low-flow was 5.5%.

Permittee must still conduct the following biomonitoring tests to fulfill the permit requirements:

Must conduct 2 more quarterly tests using effluent from Outfall 001. The permittee will use the same effluent dilutions required for the combined effluent sampling for Outfall 001 & 002 as described in the permit. It is our understanding that there might not be any discharge from Outfall 001 during all of 1991, however, these tests will be conducted with the next two available quarters during which effluent is discharged from Outfall 001 and must be fulfilled as required by the permit. The decision to use effluent from only Outfall 001 was a mutual decision between Maria Martinez and Bob Vickery (6W-PT) and Mr. Cerviss (Molycorp). This decision was based on the premise that there was sufficient data on Outfall 002.

bcc: Talton (6W-EAT)
Mitz (6W-E)
Desk File (6W-PT)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

PERMIT FILE NM22306

July 18, 1991

Mr. Curt R. Serviss, Jr.
Molycorp, Inc.
Questa Division
P.O. box 469
Questa, New Mexico 87556

RE: NPDES Permit No. NM0022306

Dear Mr. Serviss:

This letter is in response to your conversation with Maria Martinez, of my staff. Questions raised during that conversation were: 1) the cessation of toxicity testing of Outfall 002 effluent, and 2) the outstanding biomonitoring requirements for Outfall 001.

After review of the biomonitoring results submitted, the Agency recommends the following actions. Biomonitoring requirements for Outfall 002 have been fulfilled according to your permit requirements. Therefore, no additional biomonitoring for this outfall is required. Secondly, Molycorp, Inc. must conduct two more quarterly tests using effluent from Outfall 001, using the same effluent dilutions required for the combined effluent sampling for Outfall 001 & Outfall 002 as described in the permit. It is our understanding that there might not be any discharge from Outfall 001 during all of 1991, however, these tests will be conducted the next two quarters during which effluent is discharged from Outfall 001 and must be fulfilled as required by the permit.

All other permit requirements remain in effect as described in NPDES No. NM0022306. If you have further questions or comments please contact, Maria Martinez at (214) 655-7175.

Sincerely yours,

Robert L. Vickery
Acting Section Chief
Toxics Control Section

bcc: Talton (6W-EAT)
Mitz (6W-E)
Desk File (6W-PT) 07/17/91:Martinez:mlycrplt:gerardoseries
Permit File (NPDES No. NM0022306)

PERMIT FILE

COMPLIANCE REVIEW ACTION SHEET
6W-EAT/6W-EAO

____ Information

X Action

X MAJOR

____ MINOR

B = Bypass/Overflows ____
I = Inspection ____
E = VRAC (Effluent) ____
A = A/O Response ____
R = Admin Review ____
S - S/C Report ____
P = Pretreatment ____
T = Toxicity ✓
D = Consent Decree Response ____
C = Correspondence Req. Review ____
L = Sludge ____

NPDES NM0022306

Name Moly Corp Inc

Location

Assistant ADOLPHUS TALTON

Date Received 4/23/91

ROUTED TO	INITIALS	DATE	ACTION RECOMMENDED
ELLISON	CE	4/24/91	
martinez/6w-p	mbm	07/03/91	no action.
ELLISON			
AD TALTON			

REMARKS:

1 - Permit/CD
2 - Adm & AO Instl
3 - DMR's
4 - Vio. Sum. Log
5 - NCR
6 - Correspondence
7 - CRAS
Date Filed
Clerk's Inits.

Molycorp, Inc.
A Unocal Company
Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

RECEIVED
APR 12 1991
6W-EA

Dool

UNOCAL 76
MOLYCORP

April 8, 1991

Enforcement Branch (6W-E)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202-2733

Dear Sirs:

Enclosed are DMR forms for biomonitoring for the first quarter, 1991, Permit No. NM0022306, Outfalls 001 and 002. Please be advised that no flow occurred in Outfall 001 for the entire quarter. There were no adverse effects for Fathead Minnows (Pimephales promelas) or Ceriodaphnia dubia.

Sincerely yours,

David R. Shoemaker

David R. Shoemaker
Mine Manager

Enclosure
cc: NM EID Program Manager
File

BIOMONITORING RESULTS SUMMARY SHEET

NPDES #: NM 22306 TEST DATE: 3/12/91

INDUSTRIAL/MUNICIPAL/FEDERAL (CIRCLE ONE)

OUTFALL #: ~~001~~ 002 REVIEWER: ~~VICKERY~~ M. Martinez

PERMITTEE: Molycorp

STREAM SEGMENT: Red River - Segment 2119 of Rio Grande Basin

DILUTION WATER: reconstituted

PERMIT EFFECTIVE DATE: 6/21/88

CIRCLE ONE CHOICE: ACUTE CHRONIC

CIRCLE ONE CHOICE: FRESHWATER MARINE

BIOMONITORING FREQUENCY: QUARTERLY MONTHLY OTHER

% LOW FLOW (CRITICAL DILUTION) : 2.8% for 002 alone; 18% for 001+002 combined

% HALF LOW FLOW (2 X CRITICAL DILUTION) : 5.5% for 002 alone; 3% for 001+002 combined

IF STANDARD TEST ORGANISMS USED CHECK HERE : ✓

IF NOT STANDARD TEST ORGANISM PLEASE EXPLAIN HERE :

WILL THIS FACILITY BE REFERRED TO ENFORCEMENT?
YES____ NO____

PLEASE WRITE ANY ADDITIONAL COMMENTS BELOW IF NECESSARY:

CHRONIC TOXICITY TEST RESULTS - FRESHWATER

PLEASE CIRCLE APPROPRIATE RESPONSE

CERIODAPHNIA DUBIA - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100
WHAT IS THE NOEL FOR REPRODUCTION? 100

FATHEAD MINNOW - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100
WHAT IS THE NOEL FOR GROWTH? 100

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

RECEIVED
APR 12 1991
OWQ

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 0630/0635 (am) pm 3/11, 3/13, 3/15 date
TO: 1030/1040 (am) pm 3/11, 3/13, 3/15 date

Test initiated: 1415 am/(pm) 3/12/91 date

Dilution water used: [ ] Receiving water [X] Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	9 ~~1%~~	18 ~~2%~~	31 ~~10%~~	50 ~~30%~~	100%	% at low flow 18 %	% at 1/2 low flow 31 %
A	17	32	16	27	15	9	16	27
B	29	34	27	18	14	25	27	18
C	33	30	28	30	27	23	28	30
D	M	M	M	M	M	M	M	M
E	27	30	28	26	29	19	28	26
F	30	30	32	27	24	28	32	27
G	24	25	26	23	24	23	26	23
H	28	28	28	29	24	19	28	29
I	25	28	32	30	27	10	32	30
J	21	31	20	0	12	25	20	0

M = Male

ARS 3/26/91

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

RECEIVED
APR 12 1991
6W-EA

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	9 ~~1~~%	18 ~~3~~%	31 ~~10~~%	50 ~~30~~%	100%	% at low flow 18 %	% at 1/2 low flow 31 %
24h	100	100	100	90	100	100	100	90
48h	100	100	100	90	100	100	100	90
7-day	100	100	100	90	100	100	100	90

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL reproduction = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

3326 3/26/91

RECEIVED
APR 12 1991
GW-FA

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 0630, 0635, 0610 am/pm 3/11, 3/13, 3/15 date
TO: 1030, 1040, 1030 am/pm 3/11, 3/13, 3/15 date

Test initiated: DH 3-25 ~~1415~~ 1400 am/pm 3-12-91 date

Dilution water used: ☐ Receiving water ☑ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers A	B	C	D	MEAN DRY WEIGHT mg	CV%*
0%	0.44	0.50	0.57	0.37	0.480	14.79
~~1%~~ 9	0.51	0.46	0.46	0.54	0.535	11.59
~~3%~~ 18	0.31	0.51	~~0.51~~ 0.53	~~0.53~~ 0.42 DH 3-25	0.475	18.95
~~10%~~ 31	0.51	0.40	0.45	0.36	0.493	12.17
~~30%~~ 50	0.46	0.48	0.46	0.60	0.543	16.57
100%	0.53	0.59	0.44	0.53	0.550	8.90
Low Flow %	0.31	0.51	0.53	0.42	0.48	19.0
1/2 Low Flow %	0.51	0.40	0.45	0.36	0.49	12.2

* coefficient of variation = standard deviation x 100/mean

dh 4/2/91

1. Dunnett's Procedure:

Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

a. LOW FLOW: _____ YES ✓ NO
b. 1/2 LOW FLOW: _____ YES ✓ NO

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

RECEIVED
APR 12 1991
6W-EA

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
0%	90	100	100	90	100	100	95	6.08
9 ~~1~~%	90	90	100	90	100	100	92.5	5.41
18 ~~3~~%	90	100	100	80	100	92.5	92.5	10.35
31 ~~10~~%	90	90	100	70	100	100	87.5	14.38
50 ~~30~~%	100	80	90	90	100	100	90	9.07
100%	100	100	90	80	100	97.5	92.5	10.35
Low Flow %	90	100	100	80	100	92.5	92.5	10.4
1/2 Low Flow %	90	90	100	70	100	100	87.5	14.4

* coefficient of variation = standard deviation x 100/mean

dh 4/2/91

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

PERMIT FILE

COMPLIANCE REVIEW ACTION SHEET
6W-EAT/6W-EAO

____ Information

✓ Action

____ MAJOR

____ MINOR

B = Bypass/Overflows ____
I = Inspection ____
E = VRAC (Effluent) ____
A = A/O Response ____
R = Admin Review ____
S - S/C Report ____
P = Pretreatment ____
T = Toxicity ✓
D = Consent Decree Response ____
C = Correspondence Req. Review ____
L = Sludge ____

NPDES NM0022306

Name Moly Corp

Location ____

Assistant ADOLPHUS TALTON

Date Received 4/24/91

ROUTED TO	INITIALS	DATE	ACTION RECOMMENDED
ELLISON	CC	4/24/91	
Martinez/6WP	MRM	07/03/91	no action.
ELLISON			
AD TALTON			

REMARKS:

1 - Permit/CD
2 - AO & AO matl
3 - DMR's
4 - Vio. Sum. Log
5 - NOR
6 - Correspondence
7 - CRAS
Date Filed
Clerk's Inits.

Molycorp, Inc.
A Unocal Company
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

UNOCAL 76

MOLYCORP

February 15, 1991

RECEIVED
MAR 19 1991
6W-EA

Enforcement Branch (6W-E)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202-2733

Dear Sirs:

Enclosed is the Biomonitoring Report for the Fourth Quarter of 1990, Permit No. NM 0022306, Outfalls 001 and 002.

No flow occurred at Outfall 001 during the entire period, therefore the tests were performed on water from Outfall 002 only.

The results for Ceriodaphnia dubia show a reduction in reproduction in the 31, 50 and 100 percent effluent treatment groups.

There were no adverse effects for Fathead Minnows (Pimephales promelas).

Copies of laboratory reports are attached. Please contact us if you need additional information.

Very truly yours,

David R. Shoemaker
Mine Manager

Enclosures:
Toxicity Report Form
Laboratory Report

cc: NM EID Program Manager

BIOMONITORING RESULTS SUMMARY SHEET

NPDES #: NM 22306 TEST DATE: 12/11/90

INDUSTRIAL/MUNICIPAL/FEDERAL (CIRCLE ONE)

OUTFALL #: ~~001~~ 002 REVIEWER: ~~VICKERY~~ M. Markey

PERMITTEE: Molycorp

STREAM SEGMENT: Red River - Segment 2119 of Rio Grande Basin

DILUTION WATER: reconstituted

PERMIT EFFECTIVE DATE: 6/21/88

CIRCLE ONE CHOICE: ACUTE CHRONIC

CIRCLE ONE CHOICE: FRESHWATER MARINE

BIOMONITORING FREQUENCY: QUARTERLY MONTHLY OTHER

% LOW FLOW (CRITICAL DILUTION) : 2.8% for 002 alone; 18% for 001+002 combined

% HALF LOW FLOW (2 X CRITICAL DILUTION) : 5.5% for 002 alone; 3% for 001+002 combined

IF STANDARD TEST ORGANISMS USED CHECK HERE : ✓

IF NOT STANDARD TEST ORGANISM PLEASE EXPLAIN HERE :

WILL THIS FACILITY BE REFERRED TO ENFORCEMENT?
YES____ NO_____

PLEASE WRITE ANY ADDITIONAL COMMENTS BELOW IF NECESSARY:

CHRONIC TOXICITY TEST RESULTS - FRESHWATER

PLEASE CIRCLE APPROPRIATE RESPONSE

CERIODAPHNIA DUBIA - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100
WHAT IS THE NOEL FOR REPRODUCTION? 18

FATHEAD MINNOW - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100
WHAT IS THE NOEL FOR GROWTH? 100

KRS 1/8/91
HOP. 1/11/91

Permit No. NM0022306

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

RECEIVED
MAR 19 1991
6W-EA

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 0800, 0800, 0730 am/pm 12/10, 12/12, 12/14 date
TO: 1230, 1230, 1200 am/pm 12/10, 12/12, 12/14 date

Test initiated: ~~12-11-90~~ 1545 am/pm 12-11-90 date

Dilution water used: ☐ Receiving water ☑ Reconstituted water RW#443 Rec. H2O Match

NUMBER OF YOUNG PRODUCED PER FEMALE @ 8 DAYS

Percent effluent (%)

REP	0%	9%	18%	31 10%	50 30%	100%	% at low flow 18 %	% at 1/2 low flow 31 %
A	31	23	25	23	23	19	25	23
B	25	24	30	23	24	14	30	23
C	26	23	24	24	23	17	24	24
D	25	27	21	12	24	15	21	12
E	26	22	27	22	19	18	27	22
F	30	24	22	25	22	13	22	25
G	28	26	27	24	24	21	27	24
H	27	23	23	24	22	10	23	24
I	23	23	22	19	24	17	22	19
J	27	25	18	28	24	17	18	28

3505-070-003-011
KRD 1/8/91
SJP 1/11/91

ad

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

RECEIVED
MAR 19 1991
6W-EA

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	9%	18%	31 ~~10%~~	50 ~~30%~~	100%	% at low flow 18 %	% at 1/2 low flow 31 %
24h	100	100	100	100	100	100	100	100
48h	100	100	100	100	100	100	100	100
6~~7~~-day	100	100	100	100	100	100	100	100

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ✓ YES ____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL reproduction = 18 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: F

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

RECEIVED MAR 19 1991 6W-EA

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 0800, 0800, 0730 am/pm 12/10, 12/12, 12/14 date
TO: 1230, 1230, 1200 am/pm 12/10, 12/12, 12/14 date

Test initiated: ~~1545~~ 1600 am/pm 12-11-90 date

Dilution water used: [ ] Receiving water [X] Reconstituted water RW #43 Rec. H2O Match

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers				MEAN DRY WEIGHT	
	A	B	C	D	mg	CV%*
0%	0.30	0.36	0.20	0.18	0.260	32.69
9 ~~8~~%	0.27	0.32	0.32	0.16	0.268	27.99
18%	0.37	0.30	0.30	0.27	0.310	13.55
31 ~~30~~%	0.32	0.43	0.43	0.43	0.403	13.65
50 ~~30~~%	0.37	0.43	0.46	0.36	0.405	11.85
100%	0.22	0.35	0.28	0.39	0.310	24.19
Low Flow 18 %	0.37	0.30	0.30	0.27	0.310	13.55
1/2 Low Flow 31 %	0.32	0.43	0.43	0.43	0.403	13.65

* coefficient of variation = standard deviation x 100/mean

1. Dunnett's Procedure:

Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

a. LOW FLOW: ____ YES ✓ NO
b. 1/2 LOW FLOW: ____ YES ✓ NO

KAD 1/18/91

1/18/91

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

RECEIVED
MAR 10 1991
SW-EA

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers A	B	C	D	MEAN PERCENT SURVIVAL 24h	48h	7-day	CV%*
0%	90	90	70	90	~~100~~ 92.5	90	85	11.76
9 ~~1~~%	90	80	50	70	97.5	97.5	72.5	23.56
18%	90	60	60	70	97.5	92.5	70	20.20
31 ~~10~~%	90	67	77	90	100	97.5	~~81~~ 82	13.78
50 ~~30~~%	90	90	89	70	100	100	~~85~~ 84.8	11.62
100%	80	60	60	90	97.5	97.5	72.5	20.69
Low Flow 18 %	90	60	60	70	97.5	92.5	70	20.2
1/2 Low Flow 31 %	90	67	77	90	100	97.5	82	13.78

KAD 1/18/91

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

MAR 10 1991
SW-EA

PERMIT FILE NM 22306

BIOMONITORING RESULTS SUMMARY SHEET

NPDES #: NM 22306 TEST DATE: 9/11/90

INDUSTRIAL/MUNICIPAL/FEDERAL (CIRCLE ONE)

OUTFALL #: 002 (alone) REVIEWER: M. Martinez

PERMITTEE: Molycorp

STREAM SEGMENT: Red River 2-119

DILUTION WATER: record

PERMIT EFFECTIVE DATE: 6-21-88

CIRCLE ONE CHOICE: ACUTE CHRONIC

CIRCLE ONE CHOICE: FRESHWATER MARINE

BIOMONITORING FREQUENCY: QUARTERLY MONTHLY OTHER_____

% LOW FLOW (CRITICAL DILUTION) : 2.8

% HALF LOW FLOW (2 X CRITICAL DILUTION) : 5.5

IF STANDARD TEST ORGANISMS USED CHECK HERE : ✓

IF NOT STANDARD TEST ORGANISM PLEASE EXPLAIN HERE :

WILL THIS FACILITY BE REFERRED TO ENFORCEMENT?
YES____ NO____

PLEASE WRITE ANY ADDITIONAL COMMENTS BELOW IF NECESSARY:

CHRONIC TOXICITY TEST RESULTS - FRESHWATER

PLEASE CIRCLE APPROPRIATE RESPONSE

CERIODAPHNIA DUBIA - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100
WHAT IS THE NOEL FOR REPRODUCTION? 31

FATHEAD MINNOW - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100
WHAT IS THE NOEL FOR GROWTH? 100

6W-PT

FROM: Curt Servis

Molycorp, Inc.

Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212
Facsimile (505) 586-0811 (verify: ~~0212~~ 7611)

RECEIVED
WATER MANAGEMENT DIVISION
91 JUL 10 PM 12:51

UNOCAL 76
MOLYCORP

DATE: July 10, 1991 TIME: 10:35 Am

TO: Maria Martinez

NO. OF PAGES: 4 (Cover + 3)

OFFICE: EPA (6W-PT)

ROOM NO:

PHONE EXT. NO:

FACIMILE NO: (214) 655-6490

Maria,

Enclosed are the reproduction tables you requested

Curt

KRA 10/11/90

Permit No. NM0022306

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
SWC 10/10	A	B	C	D	24h	48h	7-day	CV%*
0%	100	100	70	100	100	100	92.5	16.22
~~1%~~ 9%	100	100	90	90	97.5	97.5	95.0	6.08
~~3%~~ 18%	100	100	100	90	100	100	97.5	5.13
~~10%~~ 31%	90	100	100	100	100	100	97.5	5.13
~~30%~~ 50%	80	100	100	90	100	100	92.5	10.35
100%	100	—	100	90	100	100	96.7	5.97
Low Flow %	100	100	100	90	100	100	97.5	5.13
1/2 Low Flow %	90	100	100	100	100	100	97.5	5.13

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: KR 10/12/90

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ___ YES ✓ NO
   b. 1/2 LOW FLOW: ___ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

MKS 10/11/90

Permit No. NM0022306 Page 6 of PART III

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 0815 0815 0815 am/pm 9/10 9/12 9/14 date
TO: 1230 1215 1015 am/pm 9/10 9/12 9/14 date

Test initiated: 1545 am/pm 9-11-90 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water (RW#401)

NUMBER OF YOUNG PRODUCED PER FEMALE @ 6 DAYS

Percent effluent (%)

SWC 1% REP	0%	9% ~~1%~~	18% ~~3%~~	31% ~~10%~~	50% ~~30%~~	100%	% at low flow %	% at 1/2 low flow %
A	22	23	24	21	0	12	24	21
B	26	24	27	23	17	15	27	23
C	34	23	23	24	18	15	23	24
D	25	25	31	33	11	15	31	33
E	24	24	28	17	11	12	28	17
F	22	11	20	33	16	12	20	33
G	26	11	26	18	19	7	26	18
H	24	22	19	18	21	10	19	18
I	23	24	24	24	24	15	24	24
J	24	24	23	23	11	8	23	23

KRJ 10/11/90

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading (Sec 10/10)	0%	9% ~~1%~~	18% ~~2%~~	31% ~~10%~~	50% ~~30%~~	100%	% at low flow %	% at 1/2 low flow %
24h	100	100	100	100	100	100	100	100
48h	100	100	100	100	90	100	100	100
6X-day	100	100	100	100	90	80	100	100

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL reproduction = 31 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to Item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

FROM MOLYCORP NM 7. 3.1991 9:3 P. 1

6W-PT

RECEIVED
WATER MANAGEMENT DIVISION

91 JUN 33 PM 12: 47

FROM: Curtis R. Serviss, Jr.

Molycorp, Inc.

Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212
Facsimile (505) 586-0811 (verify: ~~0212~~ 7611)

UNOCAL 76
MOLYCORP

DATE: July 3 TIME: 9:15AM

TO: Maria Martinez (6W-PT) NO. OF PAGES: 3 (including cover)

OFFICE:

ROOM NO:

PHONE EXT. NO:

FACIMILE NO: (214) 655-6490

Maria,

Enclosed are the cover letter and Tox 1 form for the 3rd qtr. 1990 - I had to zerox a blue carbon, hopefully it will FAX readable; if not give me a call

Thanks,
Curt

Molycorp, Inc.
A Unocal Company
Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone. (505) 586-0212

UNOCAL 76
MOLYCORP

October 22, 1990

Enforcement Branch (6W-E)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

Dear Sirs:

Enclosed are DMR forms for biomonitoring for the third quarter, 1990, Permit No. NM0022306, Outfalls 001 and 002. Please be advised that no flow occurred in Outfall 001 for the entire quarter.

No exceedences were observed.

Very truly yours,

David R. Shoemaker
Mine Manager

Enclosure: DMR Report
cc: NM EID Program Manager
Files

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

TITLE NAME/ADDRESS (Include Name/Location if different)
MOLYCORP INC. QUESTA DIV.
P. O. BOX 469
QUESTA NM 87556

(2-16) NM0022306 PERMIT NUMBER

(17-19) TYPE A DISCHARGE NUMBER

F - FINAL
TOXICITY REPORTING

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	90	07	01	TO	90	09	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

MAJOR

NOTE: Read instructions before completing this form.

PARAMETER (33-37)		QUANTITY OR LOADING (3 Card Only) AVERAGE (45-53)	MAXIMUM (54-61)	UNITS	QUALITY OR CONCENTRATION (4 Card Only) MINIMUM (38-45)	AVERAGE (46-53)	MAXIMUM (54-61)	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
P/P STATRE 7DAY C CERIODAPHNIA	SAMPLE MEASUREMENT	******	******		******	0	******		0	1/qtr	compos
P3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT			*** ****		REPORT DAILY AV		PASS=0 FAIL=		ONLY	COMP24
P/P STATRE 7DAY CERIPIMEPHALES	SAMPLE MEASUREMENT	******	******		******	0	******		0	1/qtr	compos
P6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT			*** ****		REPORT DAILY AV		PASS=0 FAIL=		ONLY	COMP7
LF P/P STATRE 7DAY HR CERIODAPHNIA	SAMPLE MEASUREMENT	******	******		******	0	******		0	1/qtr	compos
FP3B 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT			*** ****		REPORT DAILY AV		PASS=0 FAIL=		ONLY	COMP24
LF P/P STATRE 7DAY HR PIMEPHALES	SAMPLE MEASUREMENT	******	******		******	0	******		0	1/qtr	compos
FP6C 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT			*** ****		REPORT DAILY AV		PASS=0 FAIL=		ONLY	COMP2
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE		DATE		
David R. Shoemaker Mine Manager	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C. § 1001 AND 33 U.S.C. § 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)	505	586 0212	90	10	22
TYPED OR PRINTED		AREA CODE	NUMBER	YEAR	MO	DAY
		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT				

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

(PASS = 0 FAIL = 1) REPORT PASS AS '0' REPORT FAIL AS '1' IN CONCENTRATION AND ABOVE.

FROM MOLYCORP NM 7. 3.1991 9:

APR 2 0 1990

REPLY TO: 6W-PT

Mr. Scott Vail
Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 87556

Re: NPDES Permit No. NM0022306

Dear Mr. Vail:

This letter is to confirm our conversation of March 28, 1990, concerning biomonitoring at your facility.

I told you that we are pleased to accept your offer to conduct an additional quarter of biomonitoring that will represent discharges from outfalls 001 and 002. Furthermore, this one additional sample, provided no toxicity is measured in the interim, should satisfy our need for biomonitoring data from your facility.

It is my understanding that permit required biomonitoring will proceed as required by your permit and no discharge will occur from outfall 001 until around August. At that time biomonitoring samples will represent flow from both outfall 001 and 002. It is also my understanding that you are following the low flow (18%) and 1/2 low flow (31%) effluent concentrations specified in Part III C. of your permit.

Sincerely yours,

Robert L. Vickery
Aquatic Biologist
Toxics Control Section (6W-PT)

cc: A. Talton (6W-EAT)

bcc: Vickery (6W-PT)
Permit file NM22306

3/28/90: 6W-PT VICKERY DOC 1 NM22306.LET

4/19/90

Permit file

COMPLIANCE REVIEW ACTION SHEET

☐ MAJOR

☐ MINOR

DMR

Non-compliance

Bypass

Compliance Schedule

Other Biomonitoring Report for June 1990 thru March 1990 1st QTR.

NPDES NM0022306

Name Molycorp

Location

Reviewer SC for AD Talton

Date Routed

Suspense Date

ROUTED TO	INITIALS	DATE	ACTION RECOMMENDED
B. Vickery LWP	RRO	5/29/90	NONE
A.D. Talton bcWEAT			

REMARKS:

Molycorp, Inc.
A Unocal Company
Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

RECEIVED
APR 09 1990
6W-EA

OAD

UNOCAL 76
MOLYCORP

April 2, 1990

Robert Layton, Jr.
Regional Administrator
Region VI (6W-E)
Water Enforcement Branch
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202

Dear Mr. Layton:

Enclosed is the Toxicity Monitoring Report for the first quarter of 1990, Permit No. NM0022306, Outfalls 001 and 002.

No flow occurred at Outfall 001 during the entire period, therefore, the tests were performed on water from Outfall 002 only, as directed by Robert Vickery of EPA.

The NOEC level for Pimephales promelas was 100 percent. Accordingly, the Toxicity Report Form was marked as passing.

The results for Ceriodaphnia dubia show an apparent decrease in reproduction in the 18 and 50 percent effluent groups, despite overall high reproduction rates. The test director for the performing laboratory determined that this was a statistical perturbation resulting from low variance among the samples. In his judgment, the NOEC level was 50 percent. Accordingly, the Toxicity Report Form has been marked as passing for Ceriodaphnia.

Copies of the laboratory reports are attached.

Very truly yours,

David R. Shoemaker

David R. Shoemaker
Mine Manager

Enclosures:
Toxicity Report Form
Laboratory Reports
cc: NM EID Program Manager

ENSR

Formerly ERT

RECEIVED
APR 09 1990
6W-EA

(1) A.D.

ENSR Consulting
and Engineering
1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878

March 23, 1990

Mr. Scott Vail
Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, NM 88005

Dear Mr. Vail:

Enclosed are the reports for Molycorp's effluent biomonitoring studies conducted during March, 1990. As you know, this round of tests was conducted using a reconstituted water which had a hardness, alkalinity and pH similar to the Red River. As a result, I am pleased to report that contrary to the December, 1989 studies, control performance was not a problem in these tests.

The fathead minnow (Pimephales promelas) NOEC was 100 percent effluent. However, the effluent did affect Ceriodaphnia dubia survival in the 100 percent effluent treatment group. The effect on survival was consistent with the December, 1989 study.

In addition, Dunnett's multiple comparison test showed that Ceriodaphnia dubia reproduction was significantly reduced in the 18 and 50 percent effluent treatment groups. I believe that the statistical significance of the reproductive effect is an artifact of low variance among treatment groups. The minimum significant difference for this group of data was 1.9 young/female. My best judgement in this matter is that the groups are not actually different. In addition to the small difference required for significance, the data do not show a predictable concentration response curve. Consequently, I have stated in the report that in my judgement the NOEC should be 50 percent effluent. However, I would suggest that you discuss this conclusion with your USEPA Region VI contact to find out how to report the study on your DMR. I would be happy to discuss the results with USEPA Region VI if you wish.

ENSR

Please contact me if you have any questions or comments regarding the enclosed reports. We appreciate this opportunity to be of service.

Sincerely,

Kurt R. Drottar
Aquatic Toxicology Laboratory Manager

KRD

Enclosures

Ref: 8505-090-003

Study Title
Chronic Toxicity of Molycorp, Inc. Effluent to
Ceriodaphnia dubia Under Static Renewal Test Conditions.

Author
Kurt R. Drottar

Study Completed On
March 19, 1990

Performing Laboratory
ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, CO 80524

Laboratory Project ID
8505-090-003-005

STATEMENT OF GLP COMPLIANCE

This study was conducted and complies with the USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing.

Kurt R. Drottar
Project Manager/Study Director

3/22/90
Date

STATEMENT OF QUALITY ASSURANCE

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

Dan F. Keefe
Quality Assurance Unit

3/23/90
Date

SUMMARY

Sponsor: Molycorp, Inc. (NM0022306)

Project Officer: Scott Vail

Study Director: Kurt R. Drottar

Senior Biomonitoring Technician: Scott J. Patti

Study Task Manager: Susan L. Burnett

Test Facility: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Location of Data: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Test Substance: Final effluent from Outfall 002 (no flow from outfall 001)

Subject: Ceriodaphnia dubia survival and reproduction test

Test Dates: March 13 (14:20) to March 19 (11:30), 1990

Length of Study: 6 days

Test Species: Ceriodaphnia dubia

Source of Organisms: ENSR in-house cultures

Age of Test Organisms: <24 hours

Test Concentrations: 0 (reconstituted water control) 9, 18, 31 50 and 100 percent effluent

Dilution Water: Reconstituted water

Results: NOEC survival = 50 percent effluent, Reproduction: 50 and 18 percent showed a significant reduction in reproduction - It is the best judgement of the Study Director that the NOEC was 50 percent effluent.

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2.1 Effluent	7
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2.3 Test Organisms	9
2.4 Test Methods	9
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1.0 INTRODUCTION

A static renewal toxicity test was conducted at ENSR Consulting and Engineering's Fort Collins Environmental Toxicology Laboratory (FCETL) to determine the chronic toxicity of Molycorp, Inc. effluent to Ceriodaphnia dubia. The criterion for effect was a significant reduction in survival or reproduction as compared to experimental controls. Test results are expressed as a no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV), the geometric mean between the NOEC and the LOEC.

All study data are maintained in the FCETL archives, 1716 Heath Parkway, Fort Collins, Colorado.

2.0 MATERIALS AND METHODS

2.1 Effluent

Three separate composite effluent samples were delivered to the FCETL via Federal Express. Due to the fact that there was no flow from Outfall 001, all samples were collected from Outfall 002 only. Effluent samples were received packed on ice at the laboratory on the following dates: 1) March 13, 1990 (collected at an unspecified time March 11 to 12:10 March 12, 1990) - FCETL sample #1298; 2) March 15, 1990 (collected 06:50 March 14 to 11:20 March 14, 1990) - FCETL sample #1301; and 3) March 17, 1990 (collected at an unspecified time and date) - FCETL Sample #1304. Initial chemical characterization of the effluent samples is given in Table 2-1.

2.2 Dilution Water

Dilution water used in testing was reconstituted water prepared to match the characteristics of the receiving stream (Red River). The Red River water was characterized in an earlier study conducted during December, 1989 (FCETL sample #s 1162, 1169 and 1174): 1) hardness - 209 mg/L as $CaCO_3$, 2) alkalinity - 31 mg/L as $CaCO_3$, and 3) pH - 8.2. Chemical characterization of the reconstituted dilution water is also given in Table 2-1.

Table 2.1. Initial chemical characterization of effluent and reconstituted dilution water used in toxicity testing.

Sample	Alkalinity (mg/L as $CaCO_3$)	Hardness (mg/L as $CaCO_3$)	Conductivity (umhos/cm)	NH_3 (mg/L)	TRC[1] (mg/L)
Effluent					
03/13/90	147	860	1,739	<0.1	<0.01
03/15/90	147	872	1,720	<0.1	<0.01
03/17/90	147	832	1,770	<0.1	<0.01
Dilution Water					
03/13/90	27	194	470	<0.1	<0.01
03/15/90	28	186	442	<0.1	<0.01
03/17/90	29	186	454	<0.1	<0.01

[1]TRC - Total Residual Chlorine

2.3 Test Organisms

Ceriodaphnia dubia were obtained from the FCETL in-house culture. On the day prior to test initiation, gravid females were isolated in dilution water at test temperature. Six hours later <6-hour old neonates were collected for use as test organisms. At test initiation, neonates were <24-hours old (all within 6 hours of the same age). Test organisms used in this study were designated FCETL batch #031290.

2.4 Test Methods

The test was conducted according to FCETL Aquatic Toxicology Protocol No. 40 (Appendix A) based on USEPA method 1002.0 (USEPA 1989). Testing was conducted in 30-ml plastic beakers containing a final volume of 15 ml of test solution. One *Ceriodaphnia dubia* was randomly distributed to each test container and ten replicates were tested per treatment. *Ceriodaphnia dubia* were exposed to 9, 18, 31, 50 and 100 percent effluent (v:v, effluent:dilution water). A dilution water control was also conducted concurrently. Test solutions were renewed daily with freshly prepared dilutions of the most recent effluent samples. *Ceriodaphnia dubia* were fed 0.1 ml each of Yeast-Trout chow-Cerophyl food suspension and *Selenastrum capricornutum* suspension (3.0×10^7 - 3.5×10^7 cells/ml) once daily during the test. The test was conducted at 25°C under fluorescent lighting with a photoperiod of 16 hours light and 8 hours dark.

In addition to the effluent test, a reference toxicant (NaCl) test was also conducted with organisms from the FCETL in house Ceriodaphnia dubia culture during the month of March, 1990 to determine the sensitivity range of the test organisms.

2.5 Data Analysis

All statistical analysis was conducted with an IBM compatible personal computer utilizing Toxstat Version 3.0 software (Gulley et al. 1989). Fisher's exact test was used to compare treatment group survival to control survival. Normality and homogeneity of variance assumptions for reproduction data were verified with the Shapiro-Wilk's test (or chi-square goodness of fit test, depending upon the number of test organisms at test termination) and Bartlett's test, respectively ($p \leq 0.01$). If the data met these assumptions, Dunnett's multiple comparison test was then used to compare reproduction data from only those effluent concentrations where survival was not significantly different from the control. If the data did not meet assumptions of normality and homogeneity, Steel's many-one rank test was used to compare reproduction data. If the presence of males was visually confirmed at test termination, these organisms were excluded from the reproduction comparison. The NOEC, LOEC, and ChV were determined using the most sensitive (i.e. showing significance at the lowest effluent concentration, $p \leq 0.05$) of survival and/or reproduction.

3.0 RESULTS AND DISCUSSION

Ceriodaphnia dubia mortality ranged from 0 percent in the 9, 31 and 50 percent effluent treatment groups to 60 percent in the 100 percent effluent treatment group after 6 days of exposure (Table 3-1). No control mortality was observed during the test. Fisher's exact test showed that survival was significantly reduced in the 100 percent effluent treatment group in comparison to the control. After 6 days of exposure, 100 percent of the control organisms had produced 3 broods resulting in an average reproduction of 24.3 young/female. Accordingly, the Study Director authorized termination of the test on day 6. Dunnett's multiple comparison test showed that reproduction was significantly reduced in the 18 and 50 percent effluent treatment groups. However due to the small amount of variance among treatment groups, the minimum significant difference was low (1.9 young/female). Consequently, it is the best judgement of the Study Director that the NOEC was 50 percent effluent.

Throughout the test all water quality parameters remained within acceptable levels. Dissolved oxygen concentrations remained $\geq$5.6 mg/L (80 percent of saturation at 4,800 feet elevation above sea level). Test temperature was maintained at 25 $\pm$ 1°C and pH ranged from 7.6 - 8.6.

The 24-hour LC50 for the FCETL's March, 1990 reference toxicant test was 1,697 mg/L Cl^- as calculated by the binomial method. the FCETL acceptable range for <24-hour old Ceriodaphnia dubia is 1,161 to 1,925 mg/L Cl^-. Therefore, the test organisms were within the FCETL's historic sensitivity range.

Table 3.1. Survival and reproduction of Ceriodaphnia dubia exposed to Molycorp, Inc. effluent.

	Treatment					
Endpoint	Control	9	18	31	50	100
% survival	100	100	90	100	100	40[1]
# young/female	24.5	24.1	22.4[2]	24.3	22.5[2]	2.7

[1]Indicates a significant difference from the control using Fisher's exact test ($p \leq 0.05$).
[2]Indicates a significant difference from the control using Dunnett's multiple comparison test ($p \leq 0.05$).

LITERATURE CITED

Gulley, D.D., Boelter, A.M., and H.L. Bergman. 1989. Toxstat Version 3.0. Fish Physiology and Toxicology Laboratory. Department of Zoology and Physiology. University of Wyoming. Laramie, Wyoming.

USEPA. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

APPENDIX A

TEST PROTOCOL

Title: Chronic Toxicity of Effluent to Ceriodaphnia dubia Under Static Renewal Test Conditions.

Study Sponsor: Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 88005
(505) 586-0212

Project Officer: Scott Vail

Testing Facility: ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, Colorado 80524
(303) 493-8878, Ext. 372

Project Manager/Study Director: Kurt R. Drottar

Changes made 3/13/90 - Section 3.1

1.0 INTRODUCTION

1.1 Objective

To determine if the effluent is chronically toxic to *Ceriodaphnia dubia* under static renewal test conditions.

1.2 Test Effluent

A minimum of three 24-hour composite samples will be collected by the sponsor. Samples will be collected in disposable cubitainers, placed on ice, and shipped to ENSR via overnight delivery.

2.0 MATERIALS AND METHODS

2.1 Basis

This protocol is designed to comply with USEPA method 1002.0, Cladoceran, *Ceriodaphnia dubia*, Survival and Reproduction Test (USEPA 1989).

2.2 Test Organism

1. Species - *Ceriodaphnia dubia*
2. Age - *Ceriodaphnia dubia* will be less than 24 hours old (all within 8 hours of the same age) at test initiation.
3. Source - *Ceriodaphnia dubia* will be obtained from ENSR's in-house cultures.
4. Feeding - *Ceriodaphnia dubia* will be fed 0.1 mL of a yeast -trout chow-Cerophyl diet and 0.1 ml of *Selenastrum capricornutum* suspension (30,000,000 to 35,000,000 cells/mL) per 15 ml exposure chamber daily.

3.0 TEST SYSTEM

3.1 Dilution Water

Dilution water used in toxicity testing will be the receiving stream collected from a point upstream and unaffected by the discharge. reconstituted water to match receiving stream: Hardness - 200, Alkalinity - 131 & pH - 8.2 KDS 3/13/90

3.2 Temperature

Test temperature will be 25 ± 1°C. Testing will be conducted in an environmental chamber or a temperature controlled water bath.

3.3 Test Containers

Test containers will be 30 ml plastic beakers containing 15-ml of test solution.

3.4 Photoperiod

The photoperiod will be 16-hours light and 8-hours dark.

3.5 Dissolved Oxygen Concentrations

Dissolved oxygen concentrations will be maintained ≥40 percent of saturation. If the dissolved oxygen concentration in the effluent and/or dilution water is low, the effluent and/or dilution water will be aerated prior to preparing the test solutions.

4.0 TEST DESIGN

4.1 Test Concentrations

Test concentrations will be 9, 18, 31, 50 and 100 percent effluent (V:V, effluent:dilution water). A dilution water control and a laboratory culture water control will also be conducted concurrently.

4.2 Number of Test Organisms

One *Ceriodaphnia dubia* will be randomly assigned to each test chamber and ten replicates will be tested per treatment.

4.3 Test Initiation/Renewal Frequency

Testing will be initiated within 36-hours of the time the first sample is collected. Test samples will be renewed on a daily basis with freshly prepared dilutions of the most recent effluent sample.

4.4 Chemical and Physical Monitoring

At a minimum, the following measurements will be made:

1. Dissolved oxygen, temperature and pH will be measured in each treatment and control at the beginning and end of each 24 hour exposure period.
2. Conductivity will be measured in each treatment and control at the beginning of each 24 hour exposure period.
3. Hardness, alkalinity, total ammonia, and total residual chlorine will be measured in 100 percent effluent and the dilution water on the day of each new effluent sample receipt.

4.5 Biological Monitoring

Observations of mortality and production of young in each test chamber will be made daily.

4.6 Test Duration

The *Ceriodaphnia dubia* chronic test generally has a 7 day duration. However, the chronic test is a three brood test. The test will not be terminated until either: 1) Three broods have occurred in 60 percent of the controls, or 2) 2.5 broods have occurred in the surviving controls.

4.7 Calculations

Fisher's exact test will be used to test for a significant difference in the survival of the various effluent concentrations and the controls. Reproduction data will be compared from only those effluent concentrations where the mortality was not significantly different from the controls. Normality and homogeneity assumptions of reproduction data will be evaluated by the Shapiro-Wilk's test (or chi-square test depending upon the number of organisms remaining at test termination) and Bartlett's test, respectively ($p \leq 0.01$). If the data meet the assumptions, Dunnett's procedure will be used to make the comparison ($p \leq 0.05$). If the data do not meet the assumptions, Steel's many-one rank test will be used to make the comparison ($p \leq 0.05$). Reproduction will be determined by the number of young per original female. If the presence of males is visually confirmed at test termination, these organisms will not be used in the reproduction comparison. The no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV) will be calculated, where possible, on the basis of survival and/or reproduction.

4.8 Quality Criterion

The test will not be considered valid if control mortality exceeds 20 percent or average control reproduction is less than 15 young per original female.

5.0 TEST REPORT

The report will be a typed document describing the results of the test and will be signed by the Study Director and Quality Assurance Unit. The report will include, but not be limited to the following:

- USEPA Region VI summary sheets
- A copy of all raw data.
- Name of test, Study Director, and laboratory.
- Test organism scientific name, age, and diet.
- A description of the experimental design and the test chambers, the number of test organisms, replicates per treatment, and the lighting.
- The source and characterization of the dilution water, and a description of any pretreatment.

- A detailed description of the effluent including its source, time of collection, composition, known physical and chemical properties, and any information that appears on the sample container or has been provided by the sponsor.
- A description of any aeration performed on test solutions before or during the test.
- Percentage of test organisms that died in all treatments.
- The calculated NOEC, LOEC, and ChV values and a reference to calculation methods.
- The minimum dissolved oxygen concentration, range in test temperature and pH, and all visual observations of test solutions.
- Any deviations from protocol.

6.0 LITERATURE CITED

USEPA. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

7.0 GOOD LABORATORY PRACTICES

All test procedures, documentation, records, and reports will comply with USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing. To this end, random audits of the test may be scheduled while the test is in progress. The raw data will be checked and compared to protocol requirements and Standard Operating Procedures, and the final report will be audited for accuracy and signed, if satisfactory, by the individual responsible from the Quality Assurance Unit.

8.0 PROTOCOL AMENDMENTS AND DEVIATIONS

All changes (i.e., amendments, deviations, and final report revisions) of the approved protocol plus the reasons for the changes must be documented in writing. The changes will be signed and dated by the Study Director and maintained with the protocol. All amendments must be authorized in advance by the Sponsor.

9.0 SPONSOR AND STUDY DIRECTOR APPROVAL

Sponsor Approval: Verbally approved by Scott Vail Date: 11/28/89

Study Director: [signature] Date: 11/28/89

APPENDIX B

TEST DATA

SSCS-090-003-005
KRJ 3/22/90

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: ① UNK ② 0630 ③ UNK am/pm ① UNK ② UNK ③ UNK date
TO: ① 1210 ② 1120 ③ UNK am/pm ① 3/12/90 ② 3/14/90 ③ 3/16/90 date

Test initiated: 1420 am/pm 3/13/90 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	9 ~~1%~~	18 ~~3%~~	31 ~~10%~~	50 ~~30%~~	100%	% at low flow 18 %	% at 1/2 low flow 31 %
A	24	26	22	22	20	3	22	22
B	24	22	25	26	21	3	25	26
C	25	26	22	22	21	4	22	22
D	25	23	23	24	22	3	23	24
E	23	26	23	27	25	2	23	27
F	24	24	21	23	23	2	21	23
G	24	22	24	23	22	0	24	23
H	26	24	24	27	26	2	24	27
I	26	23	17	25	19	3	17	25
J	24	25	23	24	26	5	23	24

ad 3/23/90

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	9 ~~1%~~	18 ~~3%~~	31 ~~10%~~	50 ~~30%~~	100%	% at low flow 13 %	% at 1/2 low flow 31 %
24h	100	100	100	100	100	100	100	100
48h	100	100	100	100	100	90	100	100
7-day	100	100	90	100	100	40	90	100

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: ✓ YES ____ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 50 % effluent
   b. NOEL reproduction = 50 % effluent - see report for explanation

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: F

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

Page: X8 1 of 5

ERT QA Form No. 17

Effective: 3/87

5/22/90

SUBJECT: CHEMICAL DATA FOR CERIODAPHNIA SP. CHRONIC TEST

SPONSOR: Molycorp

TEST SUBSTANCE: Effluent

PROJECT NUMBER: 8505-090-003-005

BEGINING: DATE 3/13/90 TIME 1420

ENDING: DATE 3/19/90 TIME 1130

CONC.	TEST CONTAINER NO.	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD
Control	A-J	6.5	5.9	6.3	5.7	6.5	5.9	6.1	6.2	6.4	6.0	6.4	6.4	N/A		N/A	
9		6.5	5.8	6.3	5.6	6.5	5.8	6.1	6.1	6.4	5.9	6.5	6.2				
18		6.6	6.0	6.3	5.6	6.5	5.8	6.2	6.1	6.4	5.9	6.5	6.2				
31		6.6	6.0	6.4	5.6	6.5	5.8	6.2	6.0	6.3	6.0	6.5	6.3				
50		6.6	6.0	6.4	5.7	6.6	5.8	6.2	6.0	6.3	6.0	6.6	6.3				
100		6.9	6.1	6.6	5.8	6.8	5.9	6.7	6.1	6.6	6.0	6.6	6.3				
METER #		5	5	5	5	5	5	5	5	5	5	5	5				
DATE		3/13	3/14	3/14	3/15	3/15	3/16	3/16	3/17	3/17	3/18	3/18	3/19				
TIME		1415	1420	1420	1425	1425	1330	1330	1730	1730	2330	2330	1140				
INITIALS		AED	AED	AED	[illegible]	[illegible]	SB	[illegible]	SB	SB	SB	SB	DH				

CONC.	TEST CONTAINER NO.	TEMPERATURE (C) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD
Control	A-J	25	25	25	25	25	25	25	25								
9		25	25	25	25	25	25	25	25								
18		25	25	25	25	25	25	25	25								
31		25	25	25	25	25	25	25	25								
50		25	25	25	25	25	25	25	25								
100		25	25	25	25	25	25	25	25								
METER #		6	6	6	6	6	6	6	6								
DATE		3/13	3/14	3/15	3/16	3/17	3/18	3/19									
TIME		1415	1420	1420	1420	1730	1730	1140									
INITIALS		AED	AED	[illegible]	[illegible]	SB	SB	DH									

CONC.	TEST CONTAINER NO.	pH 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD
Control	A-J	7.9	8.0	8.1	7.9	8.1	8.1	7.6									
9		8.0	8.1	8.0	8.0	8.1	8.2	7.7									
18		8.0	8.1	7.9	8.0	8.1	8.2	7.9									
31		7.9	8.1	7.9	8.1	8.1	8.0	8.0									
50		7.8	8.1	7.8	8.1	8.1	7.6	8.2									
100		7.9	8.0	7.7	7.8	7.8	8.1	8.0									
METER #		26	26	26	26	26	26	26									
DATE		3/13	3/14	3/15	3/16	3/17	3/18	3/19									
TIME		1415	1420	1420	1420	1730	1730	1140									
INITIALS		AED	AED	[illegible]	[illegible]	SB	SB	DH									

CONC.	TEST CONTAINER NO.	ALKALINITY (mg/l) 0	1	2	3	4	5	6
Control	A-J	29		28		29		
9								
18								
31								
50								
100		149		149		149		
METER #		[illegible]		[illegible]		[illegible]		
DATE		3/13		3/15		3/17		
TIME		[illegible]		[illegible]		[illegible]		
INITIALS		AED		[illegible]		[illegible]		

CONC.	TEST CONTAINER NO.	HARDNESS (mg/l) 0	1	2	3	4	5	6
Control	A-J	184		186		182		
9								
18								
31								
50						[illegible]		
100		860		873		[illegible]		
METER #		[illegible]		[illegible]		[illegible]		
DATE		3/13		3/15		3/17		
TIME		[illegible]		[illegible]		[illegible]		
INITIALS		AED		[illegible]		[illegible]		

CONC.	TEST CONTAINER NO.	CONDUCTIVITY (umhos/cm) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD
Control	A-J	440		436		442		444		454		451					
9		588		587		577		591		600		587					
18		720		706		712		717		734		718					
31		907		901		888		892		930		928					
50		1157		1149		1150		1152		1177		1157					
100		1[illegible]		1[illegible]		1229		1[illegible]		1[illegible]		1218					
METER #		9		9		9		9		9		9					
DATE		3/13		3/14		3/15		3/16		3/17		3/18		3/19			
TIME		1415		1420		1420		1420		1730		1730		1140			
INITIALS		AED		AED		[illegible]		[illegible]		SB		SB		DH			

COMMENTS:

DI H_2O = Rw # 303

NaCl # 1298, 1301, 1304

Oxygen # 031290 / 024MS

NaCl LC50 = 1697 Rw = 1161-1925 Gw

3/23/90

Page: 2 of 2

ERT QA Form No. 16
Effective: 3/87

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Molycorp PROJECT NUMBER: 8505-090-003-005
TEST SUBSTANCE: Effluent

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
Control	1	3/14 1430	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	3/15 1210	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3/16 1325	SB	4	4	4	3	3	4	4	4	4	3	37	10	4
	4	3/17 1710	SB	8	7	0	9	8	8	10	9	10	9	78	10	10
	5	3/18 1220	SB	0	0	9	0	0	0	0	0	0	0	9	10	9
	6	3/19 1130	DH	12	13	12	13	12	12	10	13	12	12	121	10	13
	7															
	TOT			24	24	25	25	23	24	24	26	26	24	245		
9	1	3/14 1430	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	3/15 1210	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3/16 1330	SB	4	4	4	4	4	4	4	2	4	4	38	10	4
	4	3/17 1715	SB	8	9	0	8	8	7	0	10	7	9	66	10	10
	5	3/18 1220	SB	0	0	9	0	0	0	8	0	0	0	17	10	9
	6	3/19 1130	DH	14	13	13	11	14	13	10	12	12	12	120	10	14
	7															
	TOT			26	22	26	23	26	24	22	24	23	25	241		
18	1	3/14 1430	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	3/15 1210	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3/16 1330	SB	3	4	4	4	4	4	4	4	4	4	39	10	4
	4	3/17 1720	SB	8	9	7	7	7	8	8	8	7	9	78	10	9
	5	3/18 1225	SB	0	0	0	0	1	0	0	0	0	0	1	10	1
	6	3/19 1130	DH	11	12	11	12	11	9	12	12	6X	10	106	DH 3/20 X 9	12
	7															
	TOT			22	25	22	23	23	21	24	24	17	23	224		

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

dk 3/23/90

ERT

ERT QA Form No. 16
Effective: 3/87

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Molycorp PROJECT NUMBER: 8505-090-003-005
TEST SUBSTANCE: Effluent

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	REPLICATE A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
31	1	3/14 1430	RW	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	3/15 1210	RW	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3/16 1335	SB	4	4	4	4	4	4	4	4	4	4	40	10	4
	4	3/17 1720	SB	7	9	8	0	10	8	8	9	8	0	67	10	10
	5	3/18 1230	SB	0	0	0	8	0	0	0	0	0	9	17	10	9
	6	3/19 1130	DH	11	13	10	12	13	11	11	14	13	11	119	SB 3/20 ~~14~~ 10	14
	7															
	TOT			22	26	22	24	27	23	23	27	25	24	243		
50	1	3/14 1430	RW	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	3/15 1210	RW	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3/16 1335	SB	2	4	3	4	4	4	4	4	2	4	35	10	4
	4	3/17 1725	SB	7	8	8	0	9	7	8	10	6	10	73	10	10
	5	3/18 1230	SB	0	0	0	7	0	0	0	0	0	0	7	10	7
	6	3/19 1130	DH	11	9	10	11	12	12	10	12	11	12	110	10	12
	7															
	TOT			20	21	21	22	25	23	22	26	19	26	225		
100	1	3/14 1430	RW	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	3/15 1210	RW	0	0	0	0	0	0	X	0	0	0	0	9	0
	3	3/16 1340	SB	0	2	0	0	0	1		0	0	0	3	9	2
	4	3/17 1725	SB	2	0	2	2	2X	0		2	3X	3	16	7	3
	5	3/18 1230	SB	1	1	2	1		1		X		2X	5	5	2
	6	3/19 1130	DH	0	X	0	0		0					0	4	0
	7															
	TOT			3	3	4	3	2	2	0	2	3	5	27		

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

3/23/90

ERT

SB 3/12

ERT TOXICOLOGY GROUP
FT. COLLINS, COLORADO

Page: 4 of 5
ERT QA Form No. 15
Effective: 3/87

3/22/90

SUBJECT: DAILY LOG

Molycorp Ceria chromic

ALL ENTRIES MUST BE INITIALLED WITH DATE AND TIME: 8505-090-003-005

3-13-90 TRC (C) <0.01 (100) <0.01 } AT #1 @ 1315 MED
NH_3 (C) <0.1 (100) <0.1

3-13-90 - Dilution H_2O - initial pH: 7.8 / was adjusted to pH of 8.2 @ 1400 (MED)

3-14-90 - Dilution H_2O - initial pH: 7.8 / was adjusted to pH of 8.2 @ 1340 (MED)

3-14-90	C	9	18	31	50	100		
OLD pHs:	7.8	7.9	8.1	8.3	8.4	8.6	#26	@ 1425
OLD Temp:	25	25	25	25	25	25	#6	MED

3/15/90 - Dilution H_2O - initial pH: 7.9 → adjusted to 8.2 @ 1130 MED

3/15/90	C	9	15	31	50	100		
OLD pH:	7.8	7.8	8.0	8.1	8.3	8.6	#26	1215
OLD TEMP:	25	25	25	25	25	25	#6	MED

3/15/90 TRC (C) <0.01 (100) <0.01 } AT #1 @ 1315 1205
NH_3 (C) <0.1 (100) <0.1

3/16/90 - Dilution H_2O - initial pH: 7.9 → adjusted to 8.2 @ 1200 MED

	C	9	18	31	50	100		
OLD pH:	7.7	7.8	7.9	8.1	8.3	8.6	#26	1330
OLD TEMP:	25	25	25	25	25	25	#6	MED

3/17/90 Dilution water initial pH: 7.9, adjusted to 8.2 @ 1630 (SB)

	(C)	(9)	(18)	(31)	(50)	(100)		
OLD pH:	7.8	7.9	8.1	8.2	8.3	8.5	#26	1730
OLD TEMP:	25	25	25	25	25	25	#6	SB

3/17/90 TRC: (C) <0.01 (100) <0.01 AT #1 } 1830 SB
NH_3: (C) <0.1 (100) <0.1

3/18/90 DI. H_2O initial pH - 7.7, adjusted to 8.2 @ 1100 (SB)

3/18/90	(C)	(9)	(18)	(31)	(50)	(100)		
OLD pH:	7.7	7.8	7.9	8.0	8.2	8.4	#26	1235
OLD TEMP:	25	25	25	25	25	25	#6	SB

dh 3/23/90

ERT

SUMMARY OF FISHERS EXACT TESTS

GROUP	IDENTIFICATION	NUMBER EXPOSED	NUMBER DEAD	SIG (P=.05)
	CONTROL	10	0	
1	9	10	0	
2	18	10	1	
3	31	10	0	
4	50	10	0	
5	100	10	6	*

‖ Press any key to continue ‖

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

Shapiro Wilks test for normality

D = 162.400

W = 0.975

Critical W (P = 0.05) (n = 50) = 0.947
Critical W (P = 0.01) (n = 50) = 0.930

Data PASS normality test at P=0.01 level. Continue analysis.

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

Bartletts test for homogeneity of variance

Calculated B statistic = 7.51
Table Chi-square value = 13.28 (alpha = 0.01)
Table Chi-square value = 9.49 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 9.00
Used for Chi-square table value ==> df (#groups-1) = 4

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

KCB 3/22/90

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	10	23.000	26.000	24.500
2	9	10	22.000	26.000	24.100
3	18	10	17.000	25.000	22.400
4	31	10	22.000	27.000	24.300
5	50	10	19.000	26.000	22.500

dk 3/23/90

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	0.944	0.972	0.307
2	9	2.544	1.595	0.504
3	18	4.933	2.221	0.702
4	31	3.567	1.889	0.597
5	50	6.056	2.461	0.778

page 8 of 8
KBJ 3/22/90

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	4	41.920	10.480	2.904
Within (Error)	45	162.400	3.609	
Total	49	204.320		

Critical F value = 2.61 (0.05,4,40)
Since F > Critical F REJECT Ho:All groups equal

dh 3/23/90

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	24.500	24.500		
2	9	24.100	24.100	0.471	
3	18	22.400	22.400	2.472	*
4	31	24.300	24.300	0.235	
5	50	22.500	22.500	2.354	*

Dunnett table value = 2.23 (1 Tailed Value, P=0.05, df=40,4)

8505-090-003-005 Ceriodaphnia Reproduction
File: A:003.5 Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	10			
2	9	10	1.895	7.7	0.400
3	18	10	1.895	7.7	2.100
4	31	10	1.895	7.7	0.200
5	50	10	1.895	7.7	2.000

Study Title

Short-Term Chronic Toxicity of Molycorp, Inc. Effluent to the Fathead Minnow (*Pimephales promelas*) Under Static Renewal Test Conditions.

Author

Kurt R. Drottar

Study Completed On

March 20, 1990

Performing Laboratory

ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, CO 80524

Laboratory Project ID

8505-090-003-006

STATEMENT OF GLP COMPLIANCE

This study was conducted and complies with the USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing.

Kurt R. Drottar
Project Manager/Study Director

3/22/90
Date

STATEMENT OF QUALITY ASSURANCE

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

Dan F. Keefe
Quality Assurance Unit

3/23/90
Date

SUMMARY

Sponsor: Molycorp, Inc. (NM0022306)

Project Officer: Scott Vail

Study Director: Kurt R. Drottar

Senior Biomonitoring Technician: Scott J. Patti

Study Task Manager: Susan L. Burnett

Test Facility: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Location of Data: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Test Substance: Final effluent from Outfall 002 (no flow from outfall 001)

Subject: Fathead Minnow (Pimephales promelas) Larval Survival and Growth Test

Test Dates: March 13 (14:20) to March 20 (14:20), 1990

Length of Study: 7 days

Test Species: Pimephales promelas

Source of Organisms: Florida Bioassay Supply, Gainesville, FL

Age of Test Organisms: <24 hours

Test Concentrations: 0 (reconstituted water control) 9, 18, 31 50 and 100 percent effluent

Dilution Water: Reconstituted water

Results: NOEC = 100 percent effluent

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1.0 INTRODUCTION

A static renewal toxicity test was conducted at ENSR Consulting and Engineering's Fort Collins Environmental Toxicology Laboratory (FCETL) to determine the short-term chronic toxicity of Molycorp, Inc. effluent to the fathead minnow (*Pimephales promelas*). The criterion for effect was a significant reduction in survival or mean dry weight as compared to experimental controls. Test results are expressed as a no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV), the geometric mean between the NOEC and the LOEC.

All study data are maintained in the FCETL archives, 1716 Heath Parkway, Fort Collins, Colorado.

2.0 MATERIALS AND METHODS

2.1 Effluent

Three separate composite effluent samples were delivered to the FCETL via Federal Express. Due to the fact that there was no flow from Outfall 001, all samples were collected from Outfall 002 only. Effluent samples were received packed on ice at the laboratory on the following dates: 1) March 13, 1990 (collected at an unspecified time March 11 to 12:10 March 12, 1990) - FCETL sample #1298; 2) March 15, 1990 (collected 06:50 March 14 to 11:20 March 14, 1990) - FCETL sample #1301; and 3) March 17, 1990 (collected at an unspecified time and date) - FCETL Sample #1304. Initial chemical characterization of the effluent samples is given in Table 2-1.

2.2 Dilution Water

Dilution water used in testing was reconstituted water prepared to match the characteristics of the receiving stream (Red River). The Red River water was characterized in an earlier study conducted during December, 1989 (FCETL sample #s 1162, 1169 and 1174): 1) hardness - 209 mg/L as $CaCO_3$, 2) alkalinity - 31 mg/L as $CaCO_3$, and 3) pH - 8.2. Chemical characterization of the reconstituted dilution water is also given in Table 2-1.

Table 2.1. Initial chemical characterization of effluent and reconstituted dilution water used in toxicity testing.

Sample	Alkalinity	Hardness	Conductivity	NH_3	TRC[1]
	(mg/L as $CaCO_3$)		(umhos/cm)	(mg/L)	(mg/L)
Effluent					
03/13/90	147	860	1,739	<0.1	<0.01
03/15/90	147	872	1,720	<0.1	<0.01
03/17/90	147	832	1,770	<0.1	<0.01
Dilution Water					
03/13/90	27	194	470	<0.1	<0.01
03/15/90	28	186	442	<0.1	<0.01
03/17/90	29	186	454	<0.1	<0.01

[1]TRC - Total Residual Chlorine

2.3 Test Organisms

Fathead minnows were obtained from a commercial supplier (Florida Bioassay Supply, Gainesville, Florida) and were <24 hours old at test initiation. Test organisms (FCETL lot #90-11) appeared to be in good physical condition at test initiation.

2.4 Test Methods

The test was conducted according to FCETL Aquatic Toxicology Protocol No. 41 (Appendix A) based on USEPA method 1000.0 (USEPA 1989. Testing was conducted in 1-L beakers containing a final volume of 250 ml of test solution. Ten fathead minnows were randomly distributed to each test container and four replicates were tested per treatment. Fathead minnows were exposed to 9, 18, 31, 50 and 100 percent effluent (v:v, effluent:dilution water). A dilution water control was also conducted concurrently. Test solutions were renewed daily with freshly prepared dilutions of the most recent effluent samples. Fathead minnows were fed 0.1 ml of a concentrated suspension of newly hatched brine shrimp nauplii three times daily during the test. The test was conducted at 25°C under fluorescent lighting with a photoperiod of 16-hours light and 8-hours dark.

In addition to the effluent test, a reference toxicant (NaCl) test was also conducted with the same lot of fathead minnows to determine the sensitivity range of the test organisms.

2.5 Data Analysis

All statistical analysis was conducted with an IBM compatible personal computer utilizing Toxstat Version 3.0 software (Gulley et al. 1989). The arcsine squareroot transformation was applied to all survival data. Normality and homogeneity of variance assumptions for survival and mean dry weight data were verified with the Shapiro-Wilk's test and Bartlett's test, respectively ($p \leq 0.01$). If the data met these assumptions, Dunnett's multiple comparison test was used to compare treatment group responses to control responses. If the data did not meet assumptions of normality and homogeneity, Steel's many-one rank test was used to make the comparisons. The NOEC, LOEC, and ChV were determined using the most sensitive (i.e. showing significance at the lowest effluent concentration, $p \leq 0.05$) of survival and/or mean dry weight.

3.0 RESULTS AND DISCUSSION

Fathead minnow mortality was ≤12.5 percent in all effluent treatment groups after 7 days of exposure (Table 3-1). Control mortality 2.5 percent during the test. Bartlett's test showed that the variance of the survival data was not homogeneous among treatment groups. Accordingly, Steel's many-one rank test was used to make the comparison. Steel's many-one rank test showed no significant reduction in survival of any effluent treatment group in comparison to the receiving water control. Dunnett's multiple comparison test showed that mean dry weight was not significantly reduced in any effluent treatment group. Consequently, the NOEC was 100 percent effluent.

Throughout the test all water quality parameters remained within acceptable levels (Appendix B). Dissolved oxygen concentrations remained ≥3.9 mg/L (56 percent of saturation at 4,800 feet elevation above sea level). Test temperature was maintained at 25 ± 1°C and pH ranged from 7.3 - 8.4.

The 24-hour LC50 for the reference toxicant test was 6,505 mg/L Cl^- as calculated by the binomial method. The FCETL's acceptable range for ≤7 day old fathead minnows is 3,552 to 7,818 mg/L Cl^-. Therefore, the test organisms were within the FCETL's historic sensitivity range.

Table 3.1. Survival and growth of fathead minnows exposed to Molycorp, Inc. effluent.

	Treatment					
Endpoint	Control	9	18	31	50	100
% survival	97.5	100	100	92.5	90	87.5
mean dry wt. (mg)	0.43	0.45	0.46	0.46	0.51	0.52

LITERATURE CITED

Gulley, D.D., Boelter, A.M., and H.L. Bergman. 1989. Toxstat Version 3.0. Fish Physiology and Toxicology Laboratory. Department of Zoology and Physiology. University of Wyoming. Laramie, Wyoming.

USEPA. Environmental Protection Agency. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

APPENDIX A

TEST PROTOCOL

Title: Short-Term Chronic Toxicity of Effluent to the Fathead Minnow (*Pimephales promelas*) Under Static Renewal Test Conditions.

Study Sponsor: Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 88005
(505) 586-0212

Project Officer: Scott Vail

Testing Facility: ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, Colorado 80524
(303) 493-8878, Ext. 372

Project Manager/Study Director: Kurt R. Drottar

Changes made 3/13/90 - Section 3.1

1.0 INTRODUCTION

1.1 Objective

To determine if the effluent is subchronically toxic to the fathead minnow (*Pimephales promelas*) under static renewal test conditions.

1.2 Test Effluent

A minimum of three 24-hour composite samples will be collected by the sponsor. Samples will be collected in disposable cubitainers, placed on ice, and shipped to ENSR via overnight delivery.

2.0 MATERIALS AND METHODS

2.1 Basis

This protocol is designed to comply with USEPA method 1000.0, Fathead Minnow, *Pimephales promelas*, Larval Survival and Growth Test (USEPA 1989).

2.2 Test Organism

1. Species - Fathead minnows (*Pimephales promelas*)
2. Age - Fathead minnows will be less than 24 hours old.
3. Source - Fathead minnows will be obtained from ENSR's in-house cultures or from a commercial supplier.
4. Feeding - Each fathead minnow test chamber will be fed 0.1-mL of a concentrated suspension of newly hatched brine shrimp nauplii three times daily.

3.0 TEST SYSTEM

3.1 Dilution Water

Dilution water used in toxicity testing will be the receiving stream collected from a point upstream and unaffected by the discharge. Reconstituted water to match effluent: Hardness - 209, Alkalinity - 31 & pH - 8.2

3.2 Temperature

Test temperature will be 25 ± 1°C. Testing will be conducted in an environmental chamber or a temperature controlled water bath.

3.3 Test Containers

Test containers will be 1-L beakers containing 250 ml of test solution.

3.4 Photoperiod

The photoperiod will be 16-hours light and 8-hours dark.

3.5 Dissolved Oxygen Concentrations

Dissolved oxygen concentrations will be maintained ≥40 percent of saturation. If the dissolved oxygen concentration in any test chamber approaches 40 percent saturation, all test chambers will be aerated moderately.

4.0 TEST DESIGN

4.1 Test Concentrations

Test concentrations will be 9, 18, 31, 50 and 100 percent effluent (V:V, effluent:dilution water). A dilution water control and a laboratory culture water control will also be conducted concurrently.

4.2 Number of Test Organisms

Forty fathead minnows will be exposed to each test concentration and control. Ten fathead minnows will be randomly assigned to each test chamber and four replicates will be tested per treatment.

4.3 Test Initiation/Renewal Frequency

Testing will be initiated within 36-hours of the time the first sample is collected. Test samples will be renewed on a daily basis with freshly prepared dilutions of the most recent effluent sample.

4.4 Chemical and Physical Monitoring

At a minimum, the following measurements will be made:

1. Dissolved oxygen, temperature and pH will be measured in each treatment and control at the beginning and end of each 24-hour exposure period.
2. Conductivity will be measured in each treatment and control at the beginning of each 24-hour exposure period.
3. Hardness, alkalinity, total ammonia, and total residual chlorine will be measured in 100 percent effluent and the dilution water on each day of new effluent sample receipt.

4.5 Biological Monitoring

Observations of mortality in each test chamber will be made daily.

4.6 Test Duration

The test duration is seven days. At test termination the larvae in each test chamber will be counted and preserved in 4 percent formalin as a group for later dry weight analysis (if they cannot be weighed immediately). The preserved larvae will be rinsed with distilled water prior to dry weight analysis. The group of rinsed larvae from each test chamber will be transferred to a tared weighing boat and dried at 100°C for a minimum of 2 hours. Immediately after removal from the drying oven, the weigh boats will be placed in a desiccator to prevent absorption of moisture from the air, until weighed. The weights will be measured to the nearest 0.1 mg.

4.7 Calculations

Survival data will be transformed by arcsine squareroot. Growth in each replicate will be determined by the mean dry weight per surviving fish. Normality and homogeneity assumptions of survival and growth data will be evaluated by the Shapiro-Wilk's test and Bartlett's test, respectively ($p \leq 0.01$). If the data meet the assumptions, Dunnett's procedure will be used to make the comparison. If the data do not meet the assumptions Steel's many-one rank test will be used to make the comparison. The no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and ChV will be calculated on the basis of survival and/or growth.

4.8 Quality Criterion

The test will not be considered valid if control mortality exceeds 20 percent or if mean dry weight per surviving control fish is <0.25 mg.

5.0 TEST REPORT

The report will be a typed document describing the results of the test and will be signed by the Study Director and Quality Assurance Unit. The report will include, but not be limited to the following:

- USEPA Region VI summary sheets
- A copy of all raw data.
- Name of test, Study Director, and laboratory.
- Test organism scientific name, age, and diet.
- A description of the experimental design and the test chambers, the number of test organisms, replicates per treatment, and the lighting.
- The source and characterization of the dilution water, and a description of any pretreatment.

- A detailed description of the effluent including its source, time of collection, composition, known physical and chemical properties, and any information that appears on the sample container or has been provided by the sponsor.
- A description of any aeration performed on test solutions before or during the test.
- Percentage of test organisms that died in all treatments.
- The calculated NOEC, LOEC, and ChV values and a reference to calculation methods.
- The minimum dissolved oxygen concentration, range in test temperature and pH, and all visual observations of test solutions.
- Any deviations from protocol.

6.0 LITERATURE CITED

USEPA. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

7.0 GOOD LABORATORY PRACTICES

All test procedures, documentation, records, and reports will comply with USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing. To this end, random audits of the test may be scheduled while the test is in progress. The raw data will be checked and compared to protocol requirements and Standard Operating Procedures, and the final report will be audited for accuracy and signed, if satisfactory, by the individual responsible from the Quality Assurance Unit.

8.0 PROTOCOL AMENDMENTS AND DEVIATIONS

All changes (i.e., amendments, deviations, and final report revisions) of the approved protocol plus the reasons for the changes must be documented in writing. The changes will be signed and dated by the Study Director and maintained with the protocol. All amendments must be authorized in advance by the Sponsor.

9.0 SPONSOR AND STUDY DIRECTOR APPROVAL

Sponsor Approval: Verbally approved by Scott Vail Date: 11/28/89

Study Director: [signature] Date: 11/28/89

APPENDIX B

TEST DATA

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

① 3/11/90 - 13:10 3/12/90
② 06:50 3/14/90 - 11:20 3/14/90
③ unknown

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: 14 20 am/pm 3/13/90 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers A	B	C	D	MEAN DRY WEIGHT mg	CV%*
0%	0.47	0.44	0.36	0.46	0.43	11.6
~~1%~~ 9	0.54	0.49	0.52	0.45	0.45	17.6
~~3%~~ 15	0.43	0.46	0.48	0.47	0.46	4.5
~~10%~~ 31	0.45	0.42	0.52	0.44	0.46	9.3
~~30%~~ 50	0.62	0.53	0.40	0.48	0.51	18.0
100%	0.54	0.52	0.58	0.46	0.52	9.6
Low Flow 18 %	0.43	0.46	0.48	0.47	0.46	4.8
1/2 Low Flow 31 %	0.45	0.42	0.52	0.44	0.46	9.3

* coefficient of variation = standard deviation x 100/mean

1. Dunnett's Procedure:

Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

a. LOW FLOW: _____ YES ✓ NO
b. 1/2 LOW FLOW: _____ YES ✓ NO

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers A	B	C	D	MEAN PERCENT SURVIVAL 24h	48h	7-day	CV%*
0%	90	100	100	100	100	100	97.5	5.1
~~1%~~ 9	100	100	100	100	100	100	100	0
~~3%~~ 18	100	100	100	100	100	100	100	0
~~10%~~ 31	90	100	100	90	100	97.5	92.5	10.4
~~30%~~ 50	80	100	80	100	100	97.5	90	12.8
100%	80	90	90	90	100	97.5	87.5	5.7
Low Flow 18 %	100	100	100	100	100	100	100	0
1/2 Low Flow 31 %	80	100	100	90	100	92.5	92.5	10.4

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

Page: X2 1 of 12
ERT QA Form No. 18
Effective: 3/87

SUBJECT: PHYSICAL & CHEMICAL DATA FOR FATHEAD MINNOW SUBCHRONIC TEST

SUBSTANCE: Effluent
BEGINNING: DATE 3/13/90 TIME 1420
CLIENT: Molycorp
ENDING: DATE 3/20/90 TIME 1420
PROJECT NO. 8525-010-003-095-006 SB 3/12

CH_2N_2O = RW# 303
BWSR# 1298, 1301, 1304
LOT# 90-11 / 434MS
Act/LC50 = 6505 RW# = 3552-7818 (Binomial)

CONC.	TEST CONTAINER NUMBER	NO. OF SURVIVING ORGANISMS 0	1	2	3	4	5	6	7	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD	TEMPERATURE (C) 0 NEW	1	2	3	4	5	6	7 OLD
15	A	10	10	10	10	10	10	10	9	6.5	5.1	6.3	4.3	6.5	–	6.1	4.8	6.4	–	6.4	4.8	7.0	4.8	25	25	25	25	25	25	25	25
	B								10	C	–	C	–	C	4.9	C	–	C	5.5	C	–	C	–	C	C	C	C	C	C	C	–
	C								10		5.1		4.3		–		4.8		–		4.8		4.8		25							25
	D								10		–		–		4.9		–		5.5		–		–		–							–
9	A								10	6.5	5.1	6.3	4.3	6.5	–	6.1	4.8	6.4	–	6.5	4.5	6.9	5.6	25	25	25	25	25	25	25	25
	B								10	C	–	C	–	C	4.9	C	–	C	5.5	C	–	C	–	C	C	C	C	C	C	C	–
	C								10		5.1		4.3		–		4.8		–		4.5		5.6		25							25
	D								10		–		–		4.9		–		5.5		–		–		–							–
18	A								10	6.6	5.0	6.3	4.4	6.5	–	6.2	4.4	6.4	–	6.5	4.3	7.0	5.1	25	25	25	25	25	25	25	25
	B								10	C	–	C	–	C	4.3	C	–	C	5.2	C	–	C	–	C	C	C	C	C	C	C	–
	C								10		5.0		4.4		–		4.4		–		4.3		5.1		25							25
	D								10		–		–		4.3		–		5.2		–		–		–							–
31	A			9	9	8	8	9	9	6.6	5.0	6.4	4.4	6.5	–	6.2	4.6	6.3	–	6.5	4.7	7.0	4.9	25	25	25	25	25	25	25	25
	B			10	10	10	10	10	10	C	–	C	–	C	3.9	C	–	C	5.4	C	–	C	–	C	C	C	C	C	C	C	–
	C			10	10	10	10	10	10		5.0		4.4		–		4.6		–		4.7		4.9		25							25
	D			10	10	10	10	10	9		–		–		3.9		–		5.4		–		–		–							–
	METER NO.	–	–	–	–	–	–	–		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6
	DATE	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/13	3/14	3/14	3/15	3/15	3/16	3/16	3/17	3/17	3/18	3/18	3/19	3/19	3/20	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20
	TIME	1415	1400	1420	1400	1400	1420	1400	1420	1415	1400	1420	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400	1415	1420	1420	1420	1420	1420	1420	1420
	INITIALS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] 3/23/90

Page: 232 of 12
ERT QA Form No. 18
Effective: 3/87

SUBJECT: PHYSICAL & CHEMICAL DATA FOR FATHEAD MINNOW SUBCHRONIC TEST

SUBSTANCE: Effluent

BEGINNING: DATE 3/13/90 TIME 1420

CLIENT: Molycorp

ENDING: DATE 3/20/90 TIME 1420

PROJECT NO. 8505-090-003-~~005~~ 006 SB 3/12

CONC.	TEST CONTAINER NUMBER	NO. OF SURVIVING ORGANISMS 0	1	2	3	4	5	6	7	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD	TEMPERATURE (C) 0	1	2	3	4	5	6	7
																										NEW SOLUTIONS ONLY							OLD
50	A	10	10	9	8	8	8	8	8	6.6	5.8	6.4	4.4	6.6	–	6.2	4.5	6.3	–	6.6	4.3	7.0	5.4	25	25	25	25	25	25	25	25
	B			10	10	10	10	10	10	c	–	c	–	c	4.3	c	–	c	5.3	c	–	c	–	c	c	c	c	c	c	c	–
	C			10	9	9	9	8	8		5.0		4.4		–		4.5		–		4.3		5.4								25
	D			10	10	10	10	10	10		–		–		4.3		–		5.3		–		–								–
100	A			10	10	10	10	8	8	6.9	5.8	6.6	4.3	6.5	–	6.7	4.5	6.6	–	6.6	4.2	7.2	5.6	25	25	25	25	25	25	25	25
	B			10	10	10	10	10	9	c	–	c	–	c	4.2	c	–	c	5.6	c	–	c	–	c	c	c	c	c	c	c	–
	C			9	9	9	9	9	9		5.4		4.3		–		4.5		–		4.2		5.6								25
	D			10	9	9	9	9	9		–		–		4.2		–		5.6		–		–								–
	METER NO.	–	–	–	–	–	–	–	–	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6
	DATE	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20
	TIME	1420	1400	1300	1400	1650	1430	1200	1400	1415	1300	1420	1400	1300	1400	1300	1400	1330	1400	1200	1400	1200	1400	1400	1400	1400	1400	1300	1400	1300	1400	1200	1400
	INITIALS	[illegible]	[illegible]	[illegible]	[illegible]	SB	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	SB	[illegible]	SB	SB	SB	SB	SB	SB	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	SB	SB	SB	[illegible]

ERT

C.V. 3/23/90 * Supersaturated due to rapid warming (SB)

ERT QA Form No. 19
Effective: 3/87

SUBJECT: CHEMICAL DTA FOR FATHEAD MINNOW SUBCHRONIC TEST

KPS 3/22/90

SUBSTANCE: Effluent

BEGINNING: DATE 3/13/90 TIME 1420

CLIENT: Molycorp

ENDING: DATE 3/20/90 TIME 1420

PROJECT NO. 8505-040-003-~~095~~ :006 SB 3/12

CONC.	TEST CONTAINER NUMBER	pH 0 (NEW SOLUTIONS ONLY)	pH 1	pH 2	pH 3	pH 4	pH 5	pH 6	pH 7 (OLD)	CONDUCTIVITY (umhos/cm) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7 (OLD)	ALKALINITY (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7	HARDNESS (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7
Control	A	7.9	8.0	8.0	7.9	8.1	8.1	8.2	7.3	440	436	443	441	455	445	357	440	27		28		29				194		196		198			
	B	C	C	C	C	C	C	C	-	C	C	C	C	C	C	C		C		C		C				C		C		C			
	C	+	+	+	+	+	+	+	7.3	+	+	+	+	+	+	+		+		+		+				+		+		+			
	D								-																								
9	A	8.0	8.1	8.0	8.0	8.1	8.2	8.0	7.5	555	556	572	591	622	587	556																	
	B	C	C	C	C	C	C	C	-	C	C	C	C	C	C	C																	
	C	+	+	+	+	+	+	+	7.5	+	+	+	+	+	+	+																	
	D								-																								
18	A	8.0	8.1	7.9	8.0	8.1	8.2	8.2	7.5	720	700	712	717	734	718	708																	
	B	C	C	C	C	C	C	C	-	C	C	C	C	C	C	C																	
	C	+	+	+	+	+	+	+	7.5	+	+	+	+	+	+	+																	
	D								-																								
31	A	7.9	8.1	7.9	8.1	8.1	8.0	8.2	7.8	921	926	955	952	973	908	888																	
	B	C	C	C	C	C	C	C	-	C	C	C	C	C	C	C																	
	C	+	+	+	+	+	+	+	7.8	+	+	+	+	+	+	+																	
	D								-																								
METER NO.		26	26	26	26	26	26	26	26	9	9	9	9	9	9	9		Tin		Tin		Tin				Tin		Tin		Tin			
DATE		3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/13	3/14	3/15	3/16	3/17	3/18	3/19		3/13		3/15		3/17				3/13		3/15		3/17			
TIME		1420	1420	1420	1420	1420	1420	1420	1420	1425	1420	1420	1420	1420	1420	1420		1425		1420		1420				1425		1420		1420			
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]			

ERT

ch 3/22/90

Page: 4 of 12
ERT QA Form No. 19
Effective: 3/87

SUBJECT: CHEMICAL DTA FOR FATHEAD MINNOW SUBCHRONIC TEST

KB 3/22/90

SUBSTANCE: Effluent

BEGINNING: DATE 3/13/90 TIME 1420

CLIENT: Molycorp

ENDING: DATE 3/20/90 TIME 1420

PROJECT NO. 8505-090-003-~~005~~ 006
SB 3/12

CONC.	TEST CONTAINER NUMBER	pH 0 (NEW SOLUTIONS ONLY)	pH 1	pH 2	pH 3	pH 4	pH 5	pH 6	pH 7 (OLD)	CONDUCTIVITY (umhos/cm) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7 (OLD)	ALKALINITY (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7	HARDNESS (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7
50 Control	A	8.8	8.1	7.8	8.1	8.1	7.6	8.0	8.0	155	149	142	138	137	135	134	N/A																
	B	C	C	C	C	C	C	C	-	C	C	C	C	C	C	C																	
	C	+	+	+	+	+	+	+	8.0	+	+	+	+	+	+	+																	
	D								-																								
100	A	7.7	8.0	7.7	7.8	7.8	8.1	8.2	8.2	149	141	142	138	137	135	134		147		147		147				860		820		850			
	B	C	C	C	C	C	C	C	-	C	C	C	C	C	C	C		C		C		C				C		C		C			
	C	+	+	+	+	+	+	+	8.2	+	+	+	+	+	+	+		+		+		+				+		+		+			
	D								-																								
								SB 3/14																									
METER NO.		26	26	26	26	26	26	26	26	9	9	9	9	9	9	9		Fisher		Fisher		Fisher				Fisher		Fisher		Fisher			
DATE		3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/13	3/14	3/15	3/16	3/17	3/18	3/19		3/14		3/15		3/17				3/13		3/15		3/17			
TIME		1415	1420	1420	1420	1420	1420	1420	1420	1415	1420	1420	1420	1420	1420	1420		1420		1420		1420				1415		1420		1420			
INITIALS		KB	KB	KB	KB	KB	KB	KB	KB	KB	KB	KB	KB	KB	KB	KB		KB		KB		KB				KB		KB		KB			

ERT

KB 3/23/90

ERT TOXICOLOGY GROUP
FT. COLLINS, COLORADO

Page: 5 of 5 :+12
ERT QA Form No. 15
Effective: 3/87
3/22/90

SUBJECT: DAILY LOG Molycorp FHM chronic

ALL ENTRIES MUST BE INITIALLED WITH DATE AND TIME: 8505-090-003-~~005~~ 006 SB 3/12

3-13-90 TRC (c) <0.01 (100) <0.01 AT #1 @ 1315 RDS
NH3 (c) <0.1 (100) <0.1

3-14-90 (c) (9) (18) (31) (50) (100)
OLD pHs: 7.6 7.7 7.9 8.0 8.1 8.4 #26 @ 1400 RDS
OLD Temps: 25 25 25 25 25 25 #6

LATE ENTRY 3-14-90

3-13-90 Dilution H2O - Initial pH: 7.8 / was adjusted to pH of 8.2 @ 1400 (RDS)

3-14-90 Dilution H2O - Initial pH: 7.8 / was adjusted to pH of 8.2 @ 1340 (RDS)

3-15-90 (c) (9) (18) (31) (50) (100)
OLD pHs: 7.4 7.5 7.6 7.8 8.0 8.3 #26 @ 1330 RDS
OLD Temps: 25 25 25 25 25 25 #6

3/15/90 - Dil. H2O - initial pH: 7.9 → adjusted to 8.2 @ 1130 RDS

3/15/90 TRC (c) <0.01 (100) <0.01 AT #1 @ 1335 RDS
NH3 (c) <0.1 (100) <0.1

3/16/90 (c) (9) (18) (31) (50) (100)
OLD pHs: 7.3 7.5 7.7 7.7 8.0 8.2 (#26 1045 SB)
OLD Temps: 25 25 25 25 25 25 (#6 1045 SB)

3/16/90 - Dilution H2O - initial pH: 7.9 → adjusted to 8.2 @ 1100 SB

3/17/90 Dil. H2O initial pH: 7.9 - adjusted to 8.2 @ 1630 (SB)
3/17/90 (c) (9) (18) (31) (50) (100)
OLD pHs: 7.4 7.5 7.6 7.7 7.9 8.2 #26 1100
OLD Temps: 25 25 25 25 25 25 #6 SB
3/17/90 TRC: (c) <0.01 (100) <0.01 AT #1 1830 SB
NH3: (c) <0.1 (100) <0.1
3/18/90 Dil. H2O initial pH: 7.7, adjusted to 8.2 @ 1100 (SB)
3/18/90 OLD pHs: (c) 7.5 (9) 7.6 (18) 7.7 (31) 7.9 (50) 7.6 (100) 8.3 #26 SB
OLD Temps: (c) 25 (9) 25 (18) [illegible] (31) [illegible] (50) [illegible] (100) [illegible] #6

3/19/90 OLD pHs: (c) 7.4 (9) 7.5 (18) 7.6 (31) 7.8 (50) 7.9 (100) 8.1 #26 1115
OLD Temps: " 25 " 25 " 25 " 25 " 25 " 25 #6 SB
3/19/90 Dil H2O initial pH: 7.8, adjusted to 8.2 @ 1120

3/23/90

ERT

SUBJECT: TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

SPONSOR: [illegible] PROJECT NO: [illegible]
TEST SUBSTANCE: [illegible] SPECIES: [illegible]
DATA BY: _____ DATE: [illegible] TIME _____ LOT/BATCH NO: 90-71

NO.	LENGTH TYPE _____	WEIGHT: TYPE _____ TARE	GROSS	NET (mg)	X/+
1	Control-A	1.3374	1.3416	4.2	0.4
2	B	1.3408	1.3452	4.4	0.4
3	C	1.3326	1.3372	3.6	0.3
4	D	1.3357	1.3406	4.6	0.4
5	9 A	1.3212	1.3246	3.4	0.3
6	B	1.3459	1.3508	4.9	0.4
7	C	1.3420	1.3464	5.2	0.5
8	D	1.3392	1.3437	4.5	0.45
9	15 A	1.3354	1.3397	4.3	0.43
10	B	1.3427	1.3473	4.6	0.46
11	C	1.3346	1.3394	4.8	0.48
12	D	1.3172	1.3219	4.7	0.47
13	31 A	1.3376	1.3412	3.6	0.4
14	B	1.3551	1.3593	4.2	0.4
15	C	1.3298	1.3350	5.2	0.5
16	D	1.3246	1.3286	4.0	0.4
17	50 A	1.3442	1.3492	5.0	0.5
18	B	1.3271	1.3324	5.3	0.5
19	C	1.3351	1.3383	3.2	0.4
20	D	1.3145	1.3193	4.8	0.4
RANGE					
MEAN					
S					

TEST SOLUTION VOLUME _____ LOADING RATE _____

Effective: 1/87

SUBJECT: TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

SPONSOR: [illegible] PROJECT NO: [illegible]

TEST SUBSTANCE: [illegible] SPECIES: FHM

DATA BY: _____ DATE: [illegible] TIME: _____ LOG/BATCH NO: 90-11

NO.	LENGTH TYPE _____	WEIGHT: TYPE _____ TARE	GROSS	NET (mg)
21	100 A	1.3173	1.3216	4.3
22	B	1.3125	1.3175	4.7
23	C	1.3625	1.3677	5.2
24	D	1.3601	1.3642	4.1
25	Blank	1.3720	1.3716	0.4
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
RANGE				
MEAN				
S				

TEST SOLUTION VOLUME _____ LOADING RATE _____

page 8 of 12
FPD 3/22/90

8505-090-003-006 Fathead Minnow Survival
File: A:003.6S Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro Wilks test for normality

D = 0.193

W = 0.917

Critical W (P = 0.05) (n = 24) = 0.916
Critical W (P = 0.01) (n = 24) = 0.884

dh 3/23/90

Data PASS normality test at P=0.01 level. Continue analysis.

8505-090-003-006 Fathead Minnow Survival
File: A:003.6S Transform: ARC SINE(SQUARE ROOT(Y))

Hartley test for homogeneity of variance
Bartletts test for homogeneity of variance

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

Page 9 of 12
KAM 3/22/90

8505-090-003-006 Fathead Minnow Survival
File: A:003.6S Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	4	1.249	1.412	1.371
2	9	4	1.412	1.412	1.412
3	18	4	1.412	1.412	1.412
4	31	4	1.107	1.412	1.295
5	50	4	1.107	1.412	1.260
6	100	4	1.107	1.249	1.214

DL 3/23/90

8505-090-003-006 Fathead Minnow Survival
File: A:003.6S Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	0.007	0.081	0.041
2	9	0.000	0.000	0.000
3	18	0.000	0.000	0.000
4	31	0.022	0.147	0.073
5	50	0.031	0.176	0.088
6	100	0.005	0.071	0.035

8505-090-003-006 Fathead Minnow Survival
File: A:003.6S Transform: ARC SINE(SQUARE ROOT(Y))

STEELS MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	Control	1.371				
2	9	1.412	20.00	10.00	4.00	
3	18	1.412	20.00	10.00	4.00	
4	31	1.295	15.50	10.00	4.00	
5	50	1.260	15.00	10.00	4.00	
6	100	1.214	11.50	10.00	4.00	

Critical values use k = 5, are 1 tailed, and alpha = 0.05

ERB 3/22/90

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

Shapiro Wilks test for normality

D = 0.066

W = 0.971

dh 3/23/90

Critical W (P = 0.05) (n = 24) = 0.916
Critical W (P = 0.01) (n = 24) = 0.884

Data PASS normality test at P=0.01 level. Continue analysis.

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

Bartletts test for homogeneity of variance

Calculated B statistic = 5.68
Table Chi-square value = 15.09 (alpha = 0.01)
Table Chi-square value = 11.07 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 3.00
Used for Chi-square table value ==> df (#groups-1) = 5

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

Page 11 of 12
KMD 3/22/90

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	4	0.360	0.470	0.433
2	9	4	0.340	0.520	0.450
3	18	4	0.430	0.480	0.460
4	31	4	0.420	0.520	0.463
5	50	4	0.400	0.620	0.507
6	100	4	0.460	0.580	0.525

DK 3/23/90

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	0.002	0.050	0.025
2	9	0.006	0.079	0.039
3	18	0.000	0.022	0.011
4	31	0.002	0.043	0.022
5	50	0.008	0.092	0.046
6	100	0.002	0.050	0.025

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.025	0.005	1.250
Within (Error)	18	0.066	0.004	
Total	23	0.091		

Critical F value = 2.77 (0.05,5,18)
Since F < Critical F FAIL TO REJECT Ho:All groups equal

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.433	0.433		
2	9	0.450	0.450	-0.391	
3	18	0.460	0.460	-0.615	
4	31	0.463	0.463	-0.671	
5	50	0.507	0.507	-1.677	
6	100	0.525	0.525	-2.068	

Dunnett table value = 2.41 (1 Tailed Value, P=0.05, df=18,5)

8505-090-003-006 Fathead Minnow Mean Dry Weight
File: A:003.6W Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	4			
2	9	4	0.108	24.9	-0.017
3	18	4	0.108	24.9	-0.027
4	31	4	0.108	24.9	-0.030
5	50	4	0.108	24.9	-0.075
6	100	4	0.108	24.9	-0.093

KEW-H File

(1) ~~[illegible]~~ - FYI (2) Permit file

NM - 22306

ROUTING AND TRANSMITTAL SLIP

1 TO (Name, office symbol or location) ~~6A~~ 6E	INITIALS	ACTION X	
	DATE	CIRCULATE	
		COORDINATION	
2 cc: 6H 6T	INITIALS	FILE	
	DATE	INFORMATION	
3 6W✓ 6C	INITIALS	NOTE AND RETURN	
	DATE	PER CONVERSATION	
4 6A 6D	INITIALS	SEE ME	
	DATE	SIGNATURE	

KK
cc: 6WP

90 JAN 31 PM 1:45

REMARKS

~~NECESSARY ACTION. IF REPLY IS PREPARED SEND COPY OF REPLY TO AX.~~

Do NOT use this form as a RECORD of approvals, concurrences, disapprovals, clearances, and similar actions.

FROM (Name, office symbol or location) TWANNA T. TERRELL (A-101) EXECUTIVE COMMUNICATIONS (AX) ROOM 227	DATE 1-23-90
	PHONE 382-4062

OPTIONAL FORM 41
AUGUST 1967
GSA FPMR (41CFR) 100-11.206

GPO 843-10-61418-1 419-015 5041-101

6E
cc: 6H
6T
6W
6C
6A
6D

Brian Shields
73 Jane Street
New York, NY10014

Honorable William K. Reilly
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

12/29/89

Dear Mr. Reilly:

This letter is in reference to Molycorp's proposed Guadalupe Mountain Tailings Disposal Facility in Questa, New Mexico. On 12/21/89, the Bureau of Land Management [BLM] issued a record of decision based on an incomplete Final Environmental Impact Statement [EIS]. The conclusions drawn from this flawed document will have numerous long-term impacts on air and water quality. These impacts will in turn adversely effect the health of both the Questa citizens and the protected fisheries of the Red River.

I am the past Chairman of the Board of Trustees of Amigos Bravos, Friends of the Wild Rivers, a non-profit membership organization dedicated to the preservation of New Mexico's Wild and Scenic Rivers. Amigos Bravos has worked closely with BLM under a cooperative management agreement, and has given generously in both community and financial support to BLM projects along the Rio Grande, the Red River and the Rio Chama. Amigos Bravos has now asked me to spearhead an effort to save Guadalupe Mountain which, as part of an Area of Critical Environmental Concern [ACEC], is an essential buffer for both the Red River and Rio Grande Wild and Scenic Rivers.

The EIS process, despite National Environmental Policy Act requirements to the contrary, did not address alternatives to the proposed action. Molycorp's need for the Guadalupe Mountain site remains questionable as the company possesses ample land that can be used in various ways to meet its tailings disposal requirements. The study that Molycorp did on alternate sites can in no way be construed as a comprehensive study of alternatives.

Under its present plan of operations Molycorp has established a history of exceeding air and water quality standards. Students at the Questa high

school went so far as to walk out of school in protest over air quality. The Red River, including the "Wild and Scenic" section, has been considered "dead" by fishermen for years. Despite these reactions and numerous letters in response to the Draft EIS, the Final EIS does not address the impacts caused by adding the new facility to the already malfunctioning pipeline and operating procedures.

Moreover, the proposed facility will be surrounded, on three sides, by the Guadalupe Mountain ACEC and will be located right in the saddle of Guadalupe Mountain, an integral part of the ACEC. The impacts that this will have on future development of the Wild Rivers Recreation Area and potential income from tourism were not studied in the EIS process. The conclusions that were drawn in the Final EIS on these topics are discretionary with no basis in fact.

Amigos Bravos feels strongly that the sensitive environmental nature of this project, the incomplete data, and the lack of alternatives presented in the Final EIS calls for a thorough review of the EIS.

At present Molycorp has, according to their own calculations, enough storage for 70-110 million tons of tailings in the existing disposal facility. When operating at full production, which the mine has not done since 1985, Molycorp produces 6.5 million tons of tailings per year. Thus the company can continue operating for at least 10 years. Presently the mine is operating on a three months on-off cycle which dramatically increases the life of the existing ponds. The mine claims that they need six years to develop the new site. Therefore there is ample time to undertake a detailed review of this EIS.

We call upon you to undertake such a review.

Thank you for taking this matter into consideration.

Sincerely,

Brian Shields
Eastern States Representative
AMIGOS BRAVOS

cc: Mary Humphrey, Amigos Bravos
Robert Dreher, Sierra Club Legal Defense Fund

Permit file

COMPLIANCE REVIEW ACTION SHEET

☐ MAJOR

☐ MINOR

DMR _____

Non-compliance _____

_____

Bypass _____

Compliance Schedule _____

Other _____

_____

NPDES NM22306

Name Molycorp Inc.

Location Questa, NM

Reviewer Gladys Gordon-Jacobs

Date Routed 2-4-90

Suspense Date _____

ROUTED TO	INITIALS	DATE	ACTION RECOMMENDED
6WQ-PI (~~Reeves~~ VICKERY)	RRB	2/2/90	NONE
6WQAT Jacobs		/ /	

REMARKS:

First Quarterly

BIOMONITORING RESULTS SUMMARY SHEET

NPDES #: NM 22306 TEST DATE: 11/28/89

INDUSTRIAL/MUNICIPAL/FEDERAL (CIRCLE ONE)

OUTFALL #: 001 & 002 REVIEWER: VICKERY

PERMITTEE: Molycorp

STREAM SEGMENT: Red River - Segment 2119 of Rio Grande Basin

DILUTION WATER: [redacted] receiving water

PERMIT EFFECTIVE DATE: 6/21/88

CIRCLE ONE CHOICE: ACUTE CHRONIC

CIRCLE ONE CHOICE: FRESHWATER MARINE

BIOMONITORING FREQUENCY: QUARTERLY MONTHLY OTHER

% LOW FLOW (CRITICAL DILUTION) : 2.8% for 002 alone; 18% for 001&002 combined

% HALF LOW FLOW (2 X CRITICAL DILUTION) : 5.5% for 002 alone; 3% for 001&002 combined

IF STANDARD TEST ORGANISMS USED CHECK HERE : ✓

IF NOT STANDARD TEST ORGANISM PLEASE EXPLAIN HERE :

WILL THIS FACILITY BE REFERRED TO ENFORCEMENT?
YES ____ NO ✓

PLEASE WRITE ANY ADDITIONAL COMMENTS BELOW IF NECESSARY:

Dilution series used is not the same as in the permit tables; however this is not a problem because specific doses were not specified in the permit language.

CHRONIC TOXICITY TEST RESULTS - FRESHWATER

PLEASE CIRCLE APPROPRIATE RESPONSE

CERIODAPHNIA DUBIA - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

RW. control OK
receiving water control not OK

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

data supplied to show receiving water toxicity.

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? _____
WHAT IS THE NOEL FOR REPRODUCTION?_____

FATHEAD MINNOW - TEST INVALID (CIRCLE IF APPROPRIATE)

ARE THERE SIGNIFICANT LETHAL EFFECTS AT LOW FLOW?

control OK

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER

ARE THERE SIGNIFICANT LETHAL EFFECTS AT HALF LOW FLOW?

A). YES
B). NO *
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

ARE THERE SIGNIFICANT NON LETHAL EFFECTS AT LOW FLOW?

A). YES
B). NO
C). DID NOT REPORT
D). NOT APPLICABLE
E). OTHER_____

WHAT IS THE NOEL FOR SURVIVAL? 100%
WHAT IS THE NOEL FOR GROWTH? 100%

the ½LF conc of 31% appears to be significantly different from control, however the 50% & 100% conc. is not.

Molycorp, Inc.

Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

Gladys

union 76
MOLYCORP

1 - Permit/CD
2 - AO & AO mstl
3 - DMR's
4 - Vio. Sum. Log
5 - NOR
6 - Correspondence
7 - CRAS
Date Filed
Clerk's Inits.

December 21, 1989

RECEIVED
DEC 28 1989
6W-EA

Ms. Gladys Jackson
U.S. Environmental Protection Agency
Region VI
Enforcement Branch 6W-E
1445 Ross Avenue
Dallas, Texas 75202

RE: NPDES Permit No. NM0022306

Dear Ms. Jackson:

Enclosed are the first quarterly biomonitoring reports for the Molycorp Questa facility. No flow occurred from outfall 001 for the entire test period. As per your instructions, three 24-hour composite samples from 002 were used in the test program.

You will note that the Ceriodaphnia Dubia test failed, owing to unacceptable control performance in the receiving water. With your permission, reconstituted dilution water will be used in future tests.

Regarding your questions to Scott Vail concerning the 1988 one-time test of outfall 002: Robert Hiller's January 26 letter raises two points which were answered by Molycorp in a letter dated February 3, 1989:

> Minimum of three composite samples: It was stated by Molycorp that three 24-hour composite samples were collected and used in the test.
>
> Toxicity of the receiving water: The results of the current test demonstrate the toxicity of the receiving water. Therefore, it is necessary to conduct tests using reconstituted water. The February 3 letter points out that use of reconstituted water had previously been approved by Fred Humpke.

These issues were discussed by phone as well. As there was no response to Molycorp's February 3 letter, it was assumed that EPA was satisfied with the explanation given in that letter.

Please feel free to contact myself or Scott Vail if we can be of any further assistance in this matter.

Very truly yours,

David R. Shoemaker

David R. Shoemaker
Mine Manager

DRS:em
Enclosure

cc: File

RECEIVED
DEC 28 1989
6W-EA

Study Title
Chronic Toxicity of Molycorp, Inc. Effluent to
Ceriodaphnia dubia Under Static Renewal Test Conditions.

Author
Kurt R. Drottar

Study Completed On
December 5, 1989

Performing Laboratory
ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, CO 80524

Laboratory Project ID
8505-088-003-003

STATEMENT OF GLP COMPLIANCE

This study was conducted and complies with the USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing.

Kurt R. Drottar
Project Manager/Study Director

12/14/89
Date

STATEMENT OF QUALITY ASSURANCE

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

Dan F. Keefe
Quality Assurance Unit

12/14/89
Date

SUMMARY

Sponsor: Molycorp, Inc. (NM0022306)

Project Officer: Scott Vail

Study Director: Kurt R. Drottar

Test Facility: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Location of Data: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Test Substance: Final effluent from Outfall 002 (no flow from outfall 001)

Subject: Ceriodaphnia dubia survival and reproduction test

Test Dates: November 28 (14:00) to December 5 (12:00), 1989

Length of Study: Seven days

Test Species: Ceriodaphnia dubia

Source of Organisms: ENSR in-house cultures

Age of Test Organisms: <24 hours

Test Concentrations: 0 (dilution water control), 0 (reconstituted water control) 9, 18, 31 50 and 100 percent effluent

Dilution Water: Receiving water (Red River)

Results: Test failed due to unacceptable control performance

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1.0 INTRODUCTION

A static renewal toxicity test was conducted at ENSR Consulting and Engineering's Fort Collins Environmental Toxicology Laboratory (FCETL) to determine the chronic toxicity of Molycorp, Inc. effluent to *Ceriodaphnia dubia*. The criterion for effect was a significant reduction in survival or reproduction as compared to experimental controls. Test results are expressed as a no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV), the geometric mean between the NOEC and the LOEC.

All study data are maintained in the FCETL archives, 1716 Heath Parkway, Fort Collins, Colorado.

2.0 MATERIALS AND METHODS

2.1 Effluent

Three separate composite effluent samples were delivered to the FCETL via Federal Express. Due to the fact that there was no flow from Outfall 001, all samples were collected from Outfall 002 only. Effluent samples were received packed on ice at the laboratory on the following dates: 1) November 28, 1989 (collected 07:35 November 27 to 13:10 November 27, 1989) - FCETL sample #1163; 2) November 30, 1989 (collected 07:05 November 29 to 12:15 November 29, 1989) - FCETL sample #1170; and 3) December 2, 1989 (collected 06:30 December 1 to 10:30 December 1, 1989) - FCETL Sample #1175. Initial chemical characterization of the effluent samples is given in Table 2-1.

2.2 Dilution Water

Dilution water used in testing was the actual receiving stream (Red River) collected from a point upstream of the discharge. Chemical characterization of the dilution water is also given in Table 2-1.

2.3 Test Organisms

Ceriodaphnia dubia were obtained from the FCETL in-house culture. On the day prior to test initiation, gravid females were isolated in dilution water at test temperature. Six hours

later <6-hour old neonates were collected for use as test organisms. At test initiation, neonates were <24-hours old (all within 6 hours of the same age). Test organisms used in this study were designated FCETL lot #112789.

Table 2.1. Initial chemical characterization of effluent, dilution water and reconstituted water used in toxicity testing.

Sample	Alkalinity (mg/L as $CaCO_3$)	Hardness (mg/L as $CaCO_3$)	Conductivity (umhos/cm)	NH_3 (mg/L)	TRC[1] (mg/L)
Effluent					
11/28/89	156	904	1,740	<0.1	<0.01
11/30/89	150	872	1,715	0.1	<0.01
12/02/89	155	842	1,737	<0.1	<0.01
Dilution Water					
11/28/89	30	200	403	<0.1	<0.01
11/30/89	39	204	450	0.1	<0.01
12/02/89	24	224	475	<0.1	<0.01
Reconstituted Water Control					
11/28/89	67	88	322	<0.1	<0.01

[1]TRC - Total Residual Chlorine

2.4 Test Methods

The test was conducted according to FCETL Aquatic Toxicology Protocol No. 40 (Appendix A) based on USEPA method 1002.0 (USEPA 1989). Testing was conducted in 30-ml plastic beakers containing a final volume of 15 ml of test solution. One *Ceriodaphnia dubia* was randomly distributed to each test container and ten replicates were tested per treatment. *Ceriodaphnia dubia* were exposed to 9, 18, 31, 50 and 100 percent effluent (v:v, effluent:dilution water). A dilution water control and a moderately hard reconstituted water (USEPA 1989) performance control were also conducted concurrently. Test solutions were renewed daily with freshly prepared dilutions of the most recent effluent and dilution water samples. *Ceriodaphnia dubia* were fed 0.1 ml each of Yeast-Trout chow-Cerophyl food suspension and *Selenastrum capricornutum* suspension (30,000,000 - 35,000,000 cells/ml) once daily during the test. The test was conducted at 25°C under fluorescent lighting with a photoperiod of 16 hours light and 8 hours dark.

In addition to the effluent test, a reference toxicant (sodium dodecyl sulfate) test was also conducted with organisms from the FCETL in house *Ceriodaphnia dubia* culture during the month of November, 1989 to determine the sensitivity range of the test organisms.

2.5 Data Analysis

All statistical analysis was conducted with an IBM compatible personal computer utilizing Toxstat Version 3.0 software (Gulley et al. 1989). Fisher's exact test was used to compare treatment group survival to control survival. Normality and homogeneity of variance assumptions for reproduction data were verified with the Shapiro-Wilk's test (or chi-square goodness of fit test, depending upon the number of test organisms at test termination) and Bartlett's test, respectively ($p \leq 0.01$). If the data met these assumptions, Dunnett's multiple comparison test was then used to compare reproduction data from only those effluent concentrations where survival was not significantly different from the control. If the data did not meet assumptions of normality and homogeneity, Steel's many-one rank test was used to compare reproduction data. If the presence of males was visually confirmed at test termination, these organisms were excluded from the reproduction comparison. The NOEC, LOEC, and ChV were determined using the most sensitive (i.e. showing significance at the lowest effluent concentration, $p \leq 0.05$) of survival and/or reproduction.

3.0 RESULTS AND DISCUSSION

Control mortality in the receiving water treatment group was 50 percent after seven days of exposure and control reproduction averaged only 2.6 young per female (Table 3-1). USEPA (1989) guidelines require that control survival be at least 80 percent and that reproduction average 15 young per female for a test to be considered valid. Consequently, the test failed due to inadequate control performance. No mortality was observed in the performance control group and reproduction averaged 20.4 young per female. Therefore, the receiving water did not appear to be of sufficient quality for testing.

Throughout the test all water quality parameters remained within acceptable levels. Dissolved oxygen concentrations remained $\geq$6.1 mg/L (87 percent of saturation at 4,800 feet elevation above sea level). Test temperature was maintained at 25 $\pm$ 1°C and pH ranged from 7.0 - 8.6.

The 24-hour LC50 for the FCETL's November, 1989, reference toxicant test was 9.8 mg/L sodium dodecyl sulfate as calculated by the binomial method. the FCETL acceptable range for <24-hour old Ceriodaphnia dubia is 3.9 to 20.0 mg/L sodium dodecyl sulfate. Therefore, the test organisms were within the FCETL's historic sensitivity range.

Table 3.1. Survival and reproduction of Ceriodaphnia dubia exposed to Molycorp, Inc. effluent.

	Treatment						
Endpoint	Control[1]	0[2]	9	18	31	50	100
% survival	100	50[3]	100	100	100	100	40
# young/female	20.4	2.6[3]	15.5	20.2	21.0	23.1	5.3

[1]Moderately hard reconstituted water performance control
[2]Receiving water control
[3]Indicates unacceptable control performance

LITERATURE CITED

Gulley, D.D., Boelter, A.M., and H.L. Bergman. 1989. Toxstat Version 3.0. Fish Physiology and Toxicology Laboratory. Department of Zoology and Physiology. University of Wyoming. Laramie, Wyoming.

USEPA. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

APPENDIX A

TEST PROTOCOL

Title: Chronic Toxicity of Effluent to Ceriodaphnia dubia Under Static Renewal Test Conditions.

Study Sponsor: Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 88005
(505) 586-0212

Project Officer: Scott Vail

Testing Facility: ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, Colorado 80524
(303) 493-8878, Ext. 372

Project Manager/Study Director: Kurt R. Drottar

1.0 INTRODUCTION

1.1 Objective

To determine if the effluent is chronically toxic to *Ceriodaphnia dubia* under static renewal test conditions.

1.2 Test Effluent

A minimum of three 24-hour composite samples will be collected by the sponsor. Samples will be collected in disposable cubitainers, placed on ice, and shipped to ENSR via overnight delivery.

2.0 MATERIALS AND METHODS

2.1 Basis

This protocol is designed to comply with USEPA method 1002.0, Cladoceran, *Ceriodaphnia dubia*, Survival and Reproduction Test (USEPA 1989).

2.2 Test Organism

1. Species - *Ceriodaphnia dubia*
2. Age - *Ceriodaphnia dubia* will be less than 24 hours old (all within 8 hours of the same age) at test initiation.
3. Source - *Ceriodaphnia dubia* will be obtained from ENSR's in-house cultures.
4. Feeding - *Ceriodaphnia dubia* will be fed 0.1 mL of a yeast -trout chow-Cerophyl diet and 0.1 ml of *Selenastrum capricornutum* suspension (30,000,000 to 35,000,000 cells/mL) per 15 ml exposure chamber daily.

3.0 TEST SYSTEM

3.1 Dilution Water

Dilution water used in toxicity testing will be the receiving stream collected from a point upstream and unaffected by the discharge.

3.2 Temperature

Test temperature will be 25 ± 1°C. Testing will be conducted in an environmental chamber or a temperature controlled water bath.

3.3 Test Containers

Test containers will be 30 ml plastic beakers containing 15-ml of test solution.

3.4 Photoperiod

The photoperiod will be 16-hours light and 8-hours dark.

3.5 Dissolved Oxygen Concentrations

Dissolved oxygen concentrations will be maintained ≥40 percent of saturation. If the dissolved oxygen concentration in the effluent and/or dilution water is low, the effluent and/or dilution water will be aerated prior to preparing the test solutions.

4.0 TEST DESIGN

4.1 Test Concentrations

Test concentrations will be 9, 18, 31, 50 and 100 percent effluent (V:V, effluent:dilution water). A dilution water control and a laboratory culture water control will also be conducted concurrently.

4.2 Number of Test Organisms

One *Ceriodaphnia dubia* will be randomly assigned to each test chamber and ten replicates will be tested per treatment.

4.3 Test Initiation/Renewal Frequency

Testing will be initiated within 36-hours of the time the first sample is collected. Test samples will be renewed on a daily basis with freshly prepared dilutions of the most recent effluent sample.

4.4 Chemical and Physical Monitoring

At a minimum, the following measurements will be made:

1. Dissolved oxygen, temperature and pH will be measured in each treatment and control at the beginning and end of each 24 hour exposure period.
2. Conductivity will be measured in each treatment and control at the beginning of each 24 hour exposure period.
3. Hardness, alkalinity, total ammonia, and total residual chlorine will be measured in 100 percent effluent and the dilution water on the day of each new effluent sample receipt.

4.5 Biological Monitoring

Observations of mortality and production of young in each test chamber will be made daily.

4.6 Test Duration

The *Ceriodaphnia dubia* chronic test generally has a 7 day duration. However, the chronic test is a three brood test. The test will not be terminated until either: 1) Three broods have occurred in 60 percent of the controls, or 2) 2.5 broods have occurred in the surviving controls.

4.7 Calculations

Fisher's exact test will be used to test for a significant difference in the survival of the various effluent concentrations and the controls. Reproduction data will be compared from only those effluent concentrations where the mortality was not significantly different from the controls. Normality and homogeneity assumptions of reproduction data will be evaluated by the Shapiro-Wilk's test (or chi-square test depending upon the number of organisms remaining at test termination) and Bartlett's test, respectively ($p \leq 0.01$). If the data meet the assumptions, Dunnett's procedure will be used to make the comparison ($p \leq 0.05$). If the data do not meet the assumptions, Steel's many-one rank test will be used to make the comparison ($p \leq 0.05$). Reproduction will be determined by the number of young per original female. If the presence of males is visually confirmed at test termination, these organisms will not be used in the reproduction comparison. The no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV) will be calculated, where possible, on the basis of survival and/or reproduction.

4.8 Quality Criterion

The test will not be considered valid if control mortality exceeds 20 percent or average control reproduction is less than 15 young per original female.

5.0 TEST REPORT

The report will be a typed document describing the results of the test and will be signed by the Study Director and Quality Assurance Unit. The report will include, but not be limited to the following:

- USEPA Region VI summary sheets
- A copy of all raw data.
- Name of test, Study Director, and laboratory.
- Test organism scientific name, age, and diet.
- A description of the experimental design and the test chambers, the number of test organisms, replicates per treatment, and the lighting.
- The source and characterization of the dilution water, and a description of any pretreatment.

- A detailed description of the effluent including its source, time of collection, composition, known physical and chemical properties, and any information that appears on the sample container or has been provided by the sponsor.
- A description of any aeration performed on test solutions before or during the test.
- Percentage of test organisms that died in all treatments.
- The calculated NOEC, LOEC, and ChV values and a reference to calculation methods.
- The minimum dissolved oxygen concentration, range in test temperature and pH, and all visual observations of test solutions.
- Any deviations from protocol.

6.0 LITERATURE CITED

USEPA. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

7.0 GOOD LABORATORY PRACTICES

All test procedures, documentation, records, and reports will comply with USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing. To this end, random audits of the test may be scheduled while the test is in progress. The raw data will be checked and compared to protocol requirements and Standard Operating Procedures, and the final report will be audited for accuracy and signed, if satisfactory, by the individual responsible from the Quality Assurance Unit.

8.0 PROTOCOL AMENDMENTS AND DEVIATIONS

All changes (i.e., amendments, deviations, and final report revisions) of the approved protocol plus the reasons for the changes must be documented in writing. The changes will be signed and dated by the Study Director and maintained with the protocol. All amendments must be authorized in advance by the Sponsor.

9.0 SPONSOR AND STUDY DIRECTOR APPROVAL

Sponsor Approval: Verbally approved by Scott Vail Date: 11/28/89

Study Director: [signature] Date: 11/28/89

APPENDIX B

TEST DATA

Test failed due to unacceptable control performance in receiving water!
12/14/89

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 11-27/11-29/12-1 am/pm 7:35a/7:05a/6:30a date
TO: 11-27/11-29/12-1 am/pm 1:10p/12:10p/10:30a date

Test initiated: 1400 am/pm 11-28-89 date

Dilution water used: [X] Receiving water [ ] Reconstituted water
Concurrent Moshannon Recon (RW#250)

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	RW#250 0%	0% 1%	9% 3%	50% 10%	30%	100%	% at low flow 18 %	% at 1/2 low flow 31 %
A	24	0	20	21		3	11	12
B	19	3	10	27		4	19	26
C	20	2	15	24		4	20	22
D	25	0	20	27		8	24	20
E	21	3	17	24		7	20	16
F	18	0	11	22		3	20	22
G	17	0	19	25		4	25	25
H	17	8	9	24		10	22	30
I	18	10	21	19		0	18	13
J	25	0	13	18		10	23	24

12/14/89

Test failed due to unacceptable control performance in receiving water!
12/14/89

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	RW#250 ~~0%~~	(0%) ~~1%~~	(9%) ~~3%~~	(50%) ~~10%~~	~~30%~~	100%	% at low flow (18%)	% at 1/2 low flow (31%)
24h	100%	100%	100%	100%		100%	100%	100%
48h	100%	100%	100%	100%		100%	100%	100%
7-day	100%	50%	100%	100%		40%	100%	100%

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

ok 12/14/89

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL reproduction = _____ % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: ____

Test Failed
DAS 12/14/89

ERT QA Form No. 17
Effective: 3/87

SUBJECT: CHEMICAL DATA FOR CERIODAPHNIA SP. CHRONIC TEST

SPONSOR: May corp
TEST SUBSTANCE: effluent
PROJECT NUMBER: 5505-088-003 -003
BEGINING: DATE 11-28-89 TIME 1400
ENDING: DATE 12-5-89 TIME 1200

CONC.	TEST CONTAINER NO.	DISSOLVED OXYGEN (mg/l) 12/3/89 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD
Rw#250	A-J	7.2	6.4	6.5	6.8	7.2	6.8	7.0	6.4	6.7	6.3	7.5*	6.8	7.0*		5.5	
Rw H2O	A-J	8.0	6.3	6.8	6.9	7.7	6.7	7.8	6.4	7.0	7.3	7.5	6.9	7.4		6.0	
9	A-J	7.7	6.3	6.7	6.7	7.6	6.5	7.7	6.4	7.4	6.5	7.7	6.9	7.4		6.0	
18	A-J	7.7	6.2	6.6	6.9	7.6	6.4	7.6	6.4	7.2	6.4	7.7	6.9	7.6		6.0	
31	A-J	7.6	6.4	6.7	6.9	7.4	6.4	7.5	6.4	7.3	6.4	7.7	6.8	7.6		6.0	
50	A-J	7.5	6.1	6.6	6.7	7.5	6.6	7.4	6.4	7.2	6.5	7.7	6.8	7.6		5.9	
100	A-J ~~METER #~~	7.6	6.2	6.7	6.7	7.6	6.7	7.7	6.2	7.7	6.5	7.8	6.9	7.7		5.9	
DATE		11/28	11/28	11/29	11/30	11/30	12/1	12/1	12/2	12/2	12/3	12/3	12/4	12/4	12/5		
TIME		1410	1530	1515	1605	1330	1500	1430	1000	0945	0900	1000	1530	1500	1215		
INITIALS		DED	DED	DED	DED	DED	DED	DED	RH	RH	RH	DH	DED	DED	DH		
Meter #		1	1	1	1	1	1	1	1	1	1	1	1	1	1		

CONC.	TEST CONTAINER NO.	TEMPERATURE (C) 0	1 NEW	2 NEW	3 NEW	4 NEW	5 NEW	6 NEW	7 OLD
Rw#250	A-J	25	25	25	25	25	25	25	25
Rw H2O	A-J	25	25	25	25	25	25	25	25
9	A-J	25	25	25	25	25	25	25	25
18	A-J	25	25	25	25	25	25	25	25
31	A-J	25	25	25	25	25	25	25	25
50	A-J	25	25	25	25	25	25	25	25
100	A-J ~~METER #~~	25	25	25	25	25	25	25	25
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5
TIME		1410	1500	1350	1430	0945	0900	1515	1215
INITIALS		DED	DED	DED	DED	RH	RH	DED	DH
Meter #		Thermometer	Thermometer	Thermometer	Thermometer	4	4	4	4

CONC.	TEST CONTAINER NO.	pH 0	1 NEW	2 NEW	3 NEW	4 NEW	5 NEW	6 NEW	7 OLD
Rw#250	A-J	8.2	8.2	8.2	8.2	8.1	8.1	8.0	5.4
Rw H2O	A-J	7.8	7.2	7.2	7.5	7.2	7.0	7.1	7.9
9	A-J	7.8	7.4	7.4	7.6	7.2	7.1	7.1	7.9
18	A-J	7.8	7.5	7.5	7.7	7.2	7.2	7.2	8.0
31	A-J	7.8	7.6	7.6	7.8	7.4	7.3	7.2	8.2
50	A-J	7.8	7.6	7.7	7.9	7.4	7.4	7.3	8.3
100	A-J ~~METER #~~	7.8	7.9	7.7	8.1	7.4	7.5	7.4	8.5
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5
TIME		1410	1515	1350	1430	0945	0900	1515	1215
INITIALS		DED	DED	DED	DED	DED	DED	DED	DH
Meter #		26	26	26	26	26	26	26	26

CONC.	TEST CONTAINER NO.	ALKALINITY (mg/l) 0 NEW	1 NEW	2 NEW	3 NEW	4 NEW	5 NEW	6 NEW
Rw#250	A-J	67				66		
Rw H2O	A-J	30 156		151		124		
9	A-J							
18	A-J							
31	A-J							
50	A-J							
100	A-J ~~METER #~~	156		150		155		
DATE		11/28		11/30		12/2		
TIME		1545		1330		1010		
INITIALS		DED		DED		RDS		
Meter #		Titr		Titr		Titr		

CONC.	TEST CONTAINER NO.	HARDNESS (mg/l) 0 NEW	1 NEW	2 NEW	3 NEW	4 NEW	5 NEW	6 NEW
Rw#250	A-J	88				88		
Rw H2O	A-J	220		224		224		
9	A-J							
18	A-J							
31	A-J							
50	A-J							
100	A-J ~~METER #~~	204		212		212		
DATE		11/28		11/30		12/2		
TIME		1545		1330		1010		
INITIALS		DED		DED		RDS		
Meter #		Titr		Titr		Titr		

CONC.	TEST CONTAINER NO.	CONDUCTIVITY (umhos/cm) 0 NEW	1 NEW	2 NEW	3 NEW	4 NEW	5 NEW	6 NEW	7 OLD
Rw#250	A-J	322	319	329	328	320	305	320	
Rw H2O	A-J	468	458	450	449	475	458	453	
9	A-J	542	549	586	534	616	582	619	
18	A-J	699	681	724	736	715	717	752	
31	A-J	958	878	906	919	826	802	936	
50	A-J	1100	1151	1154	1149	1150	1108	1161	
100	A-J ~~METER #~~	1740	1721	1715	1768	1737	1660	1778	
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	
TIME		1425	1515	1350	1445	0945	0820	1515	
INITIALS		DED	DED	DED	DED	RH	RH	DED	
Meter #		9	9	9	9	9	9	9	

COMMENTS:
Bus# 1163, 1170, 1175
Dil. H_2O = Dil. H_2O (Receiving) Bus# 1162 #1169 1174
Rw# 250
Bucn# 112789
SOS: 50 - 9.77 Rw: 3.59 - 19.97

DJ 12/14/89

* Supersaturated due to rapid warming (RED)

ERT

ERT QA Form No. 16
Effective: 3/87

12/14/89

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Maxcomp PROJECT NUMBER: 8505-085-003-003
TEST SUBSTANCE: EFFLUENT

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
RW #250	1	11/29 1300	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1500	RD	0	0	0	4	0	0	0	0	0	0	4	10	4
	4	12/2 1220	RDS	3	4	3	0	5	2	2	2	3	5	29	10	5
	5	12/3 1010	RH	7	6	5	7	6	4	4	6	5	8	58	10	8
	6	12/4 1550	[illegible]	0	9	12	14	10	12	0	0	0	0	57	10	14
	7	12/5 1200	DH	14	1	0	12	0	0	11	9	10	12	~~69~~ 56	10	14
	TOT			24	~~20~~ 19	20	25	21	18	17	17	18	25	204	[illegible] 12/6	
Rec H_2O	1	11/29 1510	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1500	RD	0	0	0	0	3	0	0	0	4	0	7	10	4
	4	12/2 1000	RH	0	X3	2	X	0	0	0	0	0	X	5	7	3
	5	12/3 0910	[illegible]	0	|	0	|	0	0	0	8	6	|	14	7	8
	6	12/4 1550	RD	0	|	0	|	0	0	0	X	0	|	0	6	0
	7	12/5 1200	DH	X	|	0	|	0	0	0	1	0	|	0	5	0
	TOT			0	3	2	0	3	0	0	8	10	0	26		
9	1	11/29 1540	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1500	RD	3	3	0	4	4	0	0	0	4	0	18	10	4
	4	12/2 1000	RH	0	0	0	0	0	4	1	3	0	0	8	10	4
	5	12/3 0910	[illegible]	6	7	5	8	7	6	9	6	7	0	61	10	9
	6	12/4 1550	RD	11	0	10	8	6	1	9	0	10	8	63	10	11
	7	12/5 1200	DH	0	0	0	11	0	0	0	0	1	5	5	10	11
	TOT			20	10	15	20	17	11	19	9	21	13	155		

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

[illegible] 12/14/89

ERT

ERT QA Form No. 16
Effective: 3/87

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Maycomp
PROJECT NUMBER: 8505-088-003-003
TEST SUBSTANCE: EFF

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
18	1	11/29 1540		0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410		0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1510		0	4	3	4	3	0	0	0	0	0	14	10	4
	4	12/2 1000	RH	4	0	0	0	0	4	4	3	2	4	21	10	4
	5	12/3 0915		6	9	7	9	5	7	9	7	5	8	72	10	9
	6	12/4 1550		1	6	0	11	12	9	12	0	11	11	73	10	12
	7	12/5 1200	DH	0	0	10	0	0	0	0	12	0	0	22	10	12
	TOT			11	19	20	24	20	20	25	22	18	23	202		
31	1	11/29 1540		0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410		0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1510		0	4	4	4	4	0	0	4	3	4	27	10	4
	4	12/2 1000	RH	3	0	0	0	0	4	4	0	3	0	14	10	4
	5	12/3 0915		8	8	7	6	5	9	9	8	7	7	74	10	9
	6	12/4 1550		0	14	11	10	7	9	0	18	0	13	82	10	18
	7	12/5 1200	DH	1	0	0	0	14	0	12	0	10	0	~~25~~ 13	10	14
	TOT			12	26	22	20	16	22	25	30	13	24	210	SWC 12/6	
50	1	11/29 1540		0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410		0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1510		4	4	4	4	4	4	3	0	3	0	30	10	4
	4	12/2 1000	RH	0	0	0	0	0	0	0	4	0	3	7	10	4
	5	12/3 0915		6	9	5	8	5	8	9	7	6	7	70	10	9
	6	12/4 1600		11	14	15	15	15	10	13	13	10	0	116	10	15
	7	12/5 1200	DH	0	0	0	0	11	14	1	0	0	8	8	10	14
	TOT			21	27	24	27	24	22	25	24	19	18	231		

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

12/14/89

ERT

ERT QA Form No. 16
Effective: 3/87

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Maxycorp
PROJECT NUMBER: 8505-085-003-003
TEST SUBSTANCE: Effl

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
				REPLICATE												
100	1	11/29 1540	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	11/30 1410	[illegible]	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	12/1 1515	[illegible]	0	4	4	3	4	0	0	0	X	0	15	9	4
	4	12/2 1000	[illegible]	3X	0	0	0	0	3	4	4	|	4	18	8	4
	5	12/3 0920	[illegible]	|	0	X	2	2	0	X	0	|	3	7	6	3
	6	12/4 1505	[illegible]	|	0	|	3	0	X	|	3	|	0	6	5	3
	7	12/5 1200	[illegible]	|	X	|	0	1	|	|	3	|	3	7	4	3
	TOT			3	4	4	8	7	3	4	10	0	10	53		
	1															
	2															
	3															
	4															
	5															
	6															
	7															
	TOT															
	1															
	2															
	3															
	4															
	5															
	6															
	7															
	TOT															

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

12/14/89

ERT

ERT TOXICOLOGY GROUP
FT. COLLINS, COLORADO

Page: 5 of 5
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Effective: 3/87
12/14/89

SUBJECT: DAILY LOG 8505-088-003-003

ALL ENTRIES MUST BE INITIALLED WITH DATE AND TIME:

11-28-89 TRC (Rec #250) <0.01 (Rec. H_2O) <0.01 (100% Eff.) <0.01 (AT, 1130, RH)

11-28-89 NH_3 (Rec #250) <0.1 (Rec. H_2O) <0.1 (100% Eff.) <0.1 (1, 1230, RH

	MH	C	9	18	31	50	100		
11-29-89									
OLD pHs:	8.1	7.9	8.0	8.1	8.2	8.3	8.5	#26	@1530 MED
OLD Temp:	25	25	25	25	25	25	25	Therm	
11-30-89	MH	C	9	18	31	50	100		
OLD pHs:	8.2	7.9	7.9	8.0	8.1	8.2	8.4	#26	@1350 MED
OLD Temp:	25	25	25	25	25	25	25	Therm	

11-30-89 TRC in [100%] = <0.01 (@ 1510, AT, MED) (C) = <0.01 AT 1550 (S.C)
NH_3 (C): 0.1 (100) = 0.1 #1 1530 SUB (S.C)

	MH	C	9	18	31	50	100		
12-1-89									
OLD pH:	8.2	7.9	8.0	8.1	8.2	8.3	8.3	#26	@1445 MED
OLD Temp:	25	25	25	25	25	25	25	Therm	
12-2-89	MH	C	9	18	31	50	100		
OLD pH:	8.3	7.8	8.0	8.2	8.2	8.4	8.6	#26	@1000 RH
OLD Temp:	25	25	25	25	25	25	25	#4	

12-2-89 NH_3 (C): <0.1 (100) = <0.1 #1 @ 1120 20.5
TRC (Rec H_2O) <0.01 (100) = <0.01 AT 1130 100%

	MH	C	9	18	31	50	100		
12/3/89									
OLD pH:	8.2	7.6	7.6	7.6	8.0	8.1	8.5	#26	@1420 MED
OLD Temp:	25	25	25	25	25	25	25	#1	
12/4/89	MH	C	9	18	31	50	100		
OLD pHs:	8.3	7.6	7.6	7.6	8.0	8.2	8.4	#26	@1555 MED
OLD Temp:	25	25	25	25	25	25	25	#4	

12/14/89

ERT

Study Title
Chronic Toxicity of Molycorp, Inc. Effluent to
<u>Ceriodaphnia</u> sp. Under Static Renewal Test Conditions.

Author
Kurt R. Drottar

Study Completed On
August 16, 1988

Performing Laboratory
ERT, Inc.
1716 Heath Parkway
Fort Collins, CO 80524

Laboratory Project ID
8505-088-003-001

STATEMENT OF GLP COMPLIANCE

This study was conducted and complies with the USEPA (1985) general guidence on good laboratory practices related to effluent toxicity testing.

Kurt R. Drottar
Project Manager/Study Director

8/23/88
Date

STATEMENT OF QUALITY ASSURANCE

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

Dan F. Keefe
Quality Assurance Unit

8/22/88
Date

SUMMARY

Sponsor: Molycorp, Inc.

Study Director: Kurt R. Drottar

Test Facility: ERT, 1716 Heath Parkway, Fort Collins, CO

Location of Data: ERT, 1716 Heath Parkway, Fort Collins, CO

Test Substance: Composite effluent samples from outfall 002

Subject: Ceriodaphnia sp. survival and reproduction test

Test Dates: August 9 (12:00) to August 16 (12:00), 1988

Length of Study: 7 days

Test Species: Ceriodaphnia sp.

Source of Organisms: In-house cultures, ERT, 1716 Heath Parkway, Fort Collins, CO

Age of Test Organisms: < 24 hours

Test Concentrations: 0 (dilution water control), 2.8, 5.5, 15, 50 and 100 percent effluent

Dilution Water: Reconstituted water (USEPA 1985)

Results: NOEC < 2.8 percent effluent

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1.0 Introduction

A static renewal toxicity test was conducted at ERT in Fort Collins, Colorado, to determine the chronic toxicity of Molycorp, Inc. effluent to Ceriodaphnia sp. The criterion for effect was a significant reduction in survival or reproduction as compared to experimental controls. Test results are expressed as a no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV), the geometric mean between the NOEC and the LOEC.

All study data are maintained in ERT's archives, 1716 Heath Parkway, Fort Collins, Colorado.

2.0 Materials and Methods

2.1 Test Effluent

Three separate composite effluent samples from outfall 002 were delivered to ERT via Federal Express. The samples were received at ERT packed on ice on the following dates: 1) August 9, 1988 (collected 08:20 August 7 to 08:20 August 8, 1988) - ERT sample # 434; 2) August 11, 1988 (collected 09:30 August 9 to 09:30 AAugust 10, 1988) - ERT sample # 436; and 3) August 13, 1988 (collected 10:10 August 11 to 10:10 August 12, 1988) - ERT Sample # 438. Initial chemical characterization of the effluent samples is given in Table 2-1.

2.2 Dilution Water

Due to weather conditions and a high dissolved solids concentration in the actual receiving water (personnel communication, Fred Martinez), dilution water used in testing was reconstituted water prepared to obtain a hardness and alkalinity similar to the receiving stream (ERT sample #414: alkalinity, 63 mg/L as $CaCO_3$; and hardness, 150 mg/L as $CaCO_3$). Chemical characterization of the reconstituted water (ERT RW # 100) is also given in Table 2-1.

2.3 Test Organisms

Ceriodaphnia sp. were obtained from ERT's in-house cultures. On the day prior to test initiation, gravid females were isolated in dilution water at test temperature. Six hours later, < 6-hour old neonates were collected for use as test organisms. At test

initiation, neonates were < 24-hours old (all within 6 hours of the same age). Test organisms used in this study were designated ERT lot # 080888.

Table 2-1.

Initial chemical characterization of effluent and reconstituted water used in toxicity testing.

Sample	Alkalinity (mg/L as $CaCO_3$)	Hardness (mg/L as $CaCO_3$)	Conductivity (umhos/cm)
Effluent			
8/09/88	154	884	1,690
8/11/88	153	884	1,700
8/13/88	154	872	1,670
Dilution Water			
8/09/88	62	142	420
8/11/88	60	142	405
8/13/88	60	142	438

2.4 Test Methods

The test was conducted according to ERT Aquatic Toxicology Protocol No. 40 (Appendix A) based on USEPA method 1002.0 (USEPA 1985) and the Proposed Changes in Freshwater Chronic Toxicity Test Conditions (REF: 3324A). Testing was conducted in 30 mL plastic beakers containing a final volume of 15 mL of test solution. One *Ceriodaphnia* sp. was randomly distributed to each test container and ten replicates were tested per treatment. *Ceriodaphnia* sp. were exposed to 2.8, 5.5, 15, 50, and 100 percent effluent (v:v, effluent:reconstituted dilution water). Test solutions were renewed daily with freshly prepared dilutions of the most recent effluent sample. *Ceriodaphnia* sp. were fed 0.1 mL each of Yeast-Trout chow-Cerophyl food suspension and *Selenastrum capricornutum* suspension (31,000,000 - 34,000,000 cells/mL) once daily during the test. The test was conducted at 25° C under fluorescent lighting with a photoperiod of 16 hours light and 8 hours dark.

In addition to the effluent test, a reference toxicant (sodium dodecyl sulfate) test was also conducted with ERT's in house *Ceriodaphnia* sp. culture during the month of August, 1988 to determine the sensitivity range of the test organisms.

2.5 Data Analysis

Where possible, data analysis associated with the chronic effluent test included calculation of the following endpoints: NOEC, LOEC, and ChV. The endpoint used to determine these values was the most sensitive (i.e., showing significant effects at the lowest effluent concentration, $P \leq 0.05$) of either survival or reproduction. Fisher's Exact Test was used to compare treatment group survival to control survival. Dunnett's Multiple Comparison Test was then used to compare reproduction data from only those effluent concentrations where survival was not significantly different from the control. All statistical analysis was conducted with an IBM compatible personal computer utilizing software supplied by the University of Wyoming (Toxstat version 2.1).

2.5 Data Analysis

Where possible, data analysis associated with the chronic effluent test included calculation of the following endpoints: NOEC, LOEC, and ChV. The endpoint used to determine these values was the most sensitive (i.e., showing significant effects at the lowest effluent concentration, $P \leq 0.05$) of either survival or reproduction. Fisher's Exact Test was used to compare treatment group survival to control survival. Dunnett's Multiple Comparison Test was then used to compare reproduction data from only those effluent concentrations where survival was not significantly different from the control. All statistical analysis was conducted with an IBM compatible personal computer utilizing software supplied by the University of Wyoming (Toxstat version 2.1).

Table 3-1.
Survival and reproduction of *Ceriodaphnia* sp. exposed to Molycorp, Inc. effluent.

Endpoint	Treatment					
	Control	2.8	5.5	15	50	100
% survival	100	100	100	100	100	80
# young/female	25.0	20.0*	25.1	23.7	21.9*	10.4*

*indicates significant difference from control using the statistical procedures described in the report text ($P \leq 0.05$).

LITERATURE CITED

U.S. Environmental Protection Agency. 1985. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/600/4-85/014.

APPENDIX A

TEST PROTOCOL

Title: Chronic Toxicity of Molycorp, Inc. Effluent to Ceriodaphnia sp. under Static Renewal Test Conditions

Study Sponsor: Molycorp, Inc.
Questa Division
P. O. Box 469
Questa, NM 87556
(505) 586-0212

Project Officer: Fred Martinez

Testing Facility: ERT
1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878, Ext. 276

Project Manager/Study Director: Kurt R. Drottar

1.0 INTRODUCTION

1.1 Objective

To determine the chronic value (chV) of the effluent to Ceriodaphnia sp. under static renewal test conditions.

1.2 Test Effluent

The effluent samples will be collected by Molycorp, Inc. personnel. Samples will be collected in disposable cubitainers, placed on ice, and shipped to ERT via overnight delivery.

2.0 MATERIALS AND METHODS

2.1 Basis

This protocol is designed to comply with EPA Method 1002.0, Ceriodaphnia sp. survival and reproduction test (U.S. EPA 1985).

2.2 Test Organism

1. Species - Ceriodaphnia sp.

2. Age - Ceriodaphnia sp. will be 2 to 24-h old (all within 6-h of the same age) at test initiation.

3. Source/Acclimation - Ceriodaphnia sp. will be obtained from ERT's in-house cultures. Ceriodaphnia sp. will be gradually acclimated to the dilution water used in testing for at least 7 days prior to test initiation.

4. Feeding - Ceriodaphnia sp. will be fed daily throughout acclimation/testing a trout chow - yeast - Cerophyl® diet (U.S. EPA 1985) supplemented with algae (Selenastrum capricornatum).

3.0 TEST SYSTEM

3.1 Dilution Water

Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than

20 percent mortality in the control), reconstituted dilution water, with hardness and alkalinity similar to the receiving stream water will be substituted.

3.2 Temperature

Test temperature will be 25±1°C. Testing will be conducted in a temperature controlled water bath.

3.3 Test Containers

Test containers will be 30 mL plastic beakers containing 15 mL of test solution.

3.4 Photoperiod

The photoperiod will be 16 hours light and 8 hours dark.

3.5 Dissolved Oxygen Concentration

Dissolved oxygen concentrations will be maintained ≥40 percent of saturation throughout the test. If the dissolved oxygen concentration in the effluent and/or dilution water is low, the effluent and/or dilution water will be aerated before preparing the test solutions.

4.0 TEST DESIGN

4.1 Test Concentrations

Five dilutions will be performed using a minimum dilution factor of 0.3. Two of the five treatments will be tested which approximate the percent effluent at low flow and at 0.5 low flow as determined by the sponsor. A control consisting dilution water only will be tested concurrently.

4.2 Number of Test Organisms

Ten *Ceriodaphnia* sp. will be exposed to each test concentration and control. One *Ceriodaphnia* sp. will be randomly assigned to each test chamber and ten replicates will be tested per treatment.

4.3 Test Initiation/Renewal Frequency

Testing will be initiated within 30 minutes of mixing test solutions. Test solutions will be renewed on a daily basis. All testing/renewals will be initiated within 72 hours of sample collection.

4.4 Chemical and Physical Monitoring

At a minimum, the following measurements will be made:

1. Dissolved oxygen will be measured in each treatment and control at the beginning and end of each 24-hour exposure period.

2. Temperature, pH, and conductivity will be measured in each treatment and control at the beginning of each 24-hour exposure period.

3. Alkalinity and hardness will be measured in 100 percent effluent and the control for each effluent sample received.

4.5 Biological Monitoring

Observations of mortality and production of young will be made daily.

4.6 Test Duration/Termination

The Ceriodaphnia chronic test generally has a 7-day duration. However, the chronic test is a three brood test. The test will not be terminated until either: Three broods have occurred in 60 percent of the controls, or 2.5 broods have occurred in the surviving controls (this should happen by day eight).

4.7 Calculations

Fisher's exact test will be used to test for a significant difference in the survival of the various effluent concentrations and the control. Dunnett's procedure will be used to analyze the reproduction data from only those effluent concentrations where the mortality was not significantly different from the controls. The no observable effect concentration (NOEC), low observable effect concentration (LOEC), and chV will then be calculated on the basis of survival and/or reproduction.

4.8 Quality Criterion

The test will not be valid if control mortality exceeds 20 percent.

5.0 TEST REPORT

The report will be a typed document describing the results of the test and will be signed by the Study Director and Quality Assurance Unit. The report will include, but not be limited to, the following.

- Name of test, investigators, and laboratory.
- A detailed description of the effluent including its source, time of collection, composition, known physical and chemical properties, and any information that appears on the sample container or has been provided by the sponsor.
- The source and characterization of the dilution water, scientific name of test organism, and a description of any pretreatment.
- Age, life stage, source, history, diseases observed and treatments, acclimation procedure, and diet.
- A description of the experimental design and the test chambers, the volume of solution in the chambers, the number of test organisms and, replicates per treatment, and the lighting.
- A description of any aeration performed on test solutions before or during the test.
- Definition of the response criterion used to determine effect.
- Percentage of test organisms that died in all treatments.
- The calculated NOEC, LOEC, and chV values, and a reference to calculation methods.
- All pH, dissolved oxygen concentrations, temperature measurements, and all visual observations of test solutions.
- Any deviations from protocol.

6.0 LITERATURE CITED

U.S. Environmental Protection Agency. 1985. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/600/4-85/014. December 1985.

Good Laboratory Practices (GLP)

All test procedures, documentation, records, and reports are designed to comply with the U.S. Environmental Protection Agency's Good Laboratory Practices as promulgated under the Toxic Substances Control Act (Federal Register, Part III, November 29, 1983) or the Federal Insecticide, Fungicide, and Rodenticide Act (Federal Register, Part IV, November 29, 1983). To this end, random audits of the test may be scheduled while the test is in progress. The raw data will be checked and compared to protocol requirements and standard operating procedures, and the final report will be audited for accuracy and signed, if satisfactory, by the responsible individual from the Quality Assurance Audit.

Protocol Amendments and Deviations

All changes (i.e., amendments, deviations, and final report revisions) of the approved protocol plus the reasons for the changes must be documented in writing. The changes need to be signed and dated by the Study Director and maintained with the protocol. All amendments must be authorized in advance by the Sponsor.

Sponsor Approval: _____ Date: 07/26/88

Study Director: _____ Date: 8/11/88

APPENDIX B

TEST DATA

MOLYCORP, INC.
QUESTA DIVISION

This sheet represents a chain of custody for effluent samples collected

at Outfall 002

located in Taos County, Questa, New Mexico on 08/07,08, 1988 Conposite Samples:

Sample bottles were prepared by Molycorp employees in accordance with guidance set forth by the U.S. Environmental Protection Agency for the existing program permit. Sampling procedures were also followed in accordance with permit requirements.

Sample (s) Identification Outfall 002

Sample (s) collected at: Outfall 002

Last portion of composite 8:20 AM

By: Fred Martinez

MOLYCORP, INC.
QUESTA DIVISION

This sheet represents a chain of custody for effluent samples collected

at Outfall 002

located in Taos County, Questa, New Mexico on 08/ 09, 10, 1988 COMPOSITE SAMPLES

Sample bottles were prepared by Molycorp employees in accordance with guidance set forth by the U.S. Environmental Protection Agency for the existing program permit. Sampling procedures were also followed in accordance with permit requirements.

Sample (s) Identification OUTFALL 002

Sample (s) collected at: OUTFALL 002

Last portion of composite 9:30 AM

By: Fred Martinez

MOLYCORP, INC.
QUESTA DIVISION

This sheet represents a chain of custody for effluent samples collected

at Outfall 002

located in Taos County, Questa, New Mexico on 08/11, 12, 1988 COMPOSITE SAMPLES

Sample bottles were prepared by Molycorp employees in accordance with guidance set forth by the U.S. Environmental Protection Agency for the existing program permit. Sampling procedures were also followed in accordance with permit requirements.

Sample (s) Identification Outfall 002

Sample (s) collected at: Outfall 002

Last portion of composite 10:10AM 8/12/88

By: Fred Martinez

8505-088-003-001
8/16/88

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: ~~UAK~~ 8/23/88 08:20 am/pm 8/7/88 date
TO: ~~UAK~~ 08:20 am/pm 8/8/88 date

Test initiated: 1200 am/pm 8/9/88 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	~~1%~~ 15%	~~3%~~ 50%	~~10%~~	~~30%~~	100%	(2.8%) % at low flow %	(5.5%) % at 1/2 low flow %
A	26	25	20	NA	NA	6	15	26
B	22	24	25			12	24	27
C	29	24	19			12	19	24
D	23	21	23			10	21	23
E	26	22	20			14	21	26
F	26	24	24			10	17	25
G	25	24	22			11	18	28
H	26	25	25			8	23	27
I	24	23	20			10	21	23
J	23	25	21			11	21	22
$\bar{X}$	25.0	23.7	22.7			10.4	20.0	25.1
CV	8.2%	5.6%	5.6%			21.4%	13.7%	8.1%

8/22/88

8505-088-003-001
8/16/88

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	15% ~~1%~~	50% ~~3%~~	~~10%~~	~~30%~~	100%	(2.8%) % at low flow %	(5.5%) % at 1/2 low flow %
24h	100	100	100	NA	NA	100	100	100
48h	100	100	100			100	100	100
7-day	100	100	100			80	100	100

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

dh 8/22/88

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: ✓ YES ____ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL reproduction = < 2.8 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: F

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

ERT QA Form No. 17
Effective: 3/87

SUBJECT: CHEMICAL DATA FOR CERIODAPHNIA SP. CHRONIC TEST

SPONSOR: Molycorp Inc.
TEST SUBSTANCE: Effluent

PROJECT NUMBER: 8505-088-003 - 001
BEGINING: DATE 8-9-88 TIME 1200
ENDING: DATE 8/16/88 TIME 1200

CONC.	TEST CONTAINER NO.	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 OLD
Control	1-10	6.3	6.1	6.4	6.3	6.6	6.3	6.3	6.2	6.3	5.3	6.7	6.3	6.4		6.0
2.8	11-20	6.2	6.1	6.4	6.3	6.7	6.3	6.4	6.2	6.4	5.5	6.7	6.4	6.4		6.0
5.5	21-30	6.2	6.2	6.4	6.4	6.7	6.3	6.5	6.3	6.4	5.6	6.7	6.5	6.4		6.1
15	31-40	6.2	6.1	6.4	6.4	6.7	6.3	6.5	6.4	6.4	5.5	6.8	6.5	6.5		6.4
50	41-50	6.2	6.0	6.5	6.4	6.7	6.4	6.5	6.5	6.6	5.5	7.0	6.6	6.5		6.5
100	51-60	6.3	6.1	7.6	6.4	7.7	6.4	7.4	6.6	7.6	5.6	7.6	6.8	6.9		6.6
METER #		#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5		#5
DATE		8/9	8/10	8/10	8/11	8/11	8/12	8/12	8/13	8/13	8/14	8/14	8/15	8/15		8/16
TIME		1315	1110	1050	1145	1135	1250	1145	1245	1200	1515	1200	1030	0959		1240
INITIALS		SWC	KC-B	KC-B	KC-B	KC-B	KC-B	KC-B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

CONC.	TEST CONTAINER NO.	TEMPERATURE (C) 0	1	2	3	4	5	6	7 OLD	pH 0	1	2	3	4	5	6	7 OLD
		NEW SOLUTIONS ONLY								NEW SOLUTIONS ONLY							
Control	1-10	24	24	24	24	24	25	25	25	8.3	8.4	8.4	8.4	8.3	8.3	8.4	8.3
2.8	11-20	24	24	24	24	24				8.3	8.4	8.3	8.3	8.3	8.2	8.3	8.4
5.5	21-30	24	24	24	24	24				8.2	8.3	8.3	8.3	8.2	8.2	8.2	8.4
15	31-40	24	24	24	24	24				8.1	8.2	8.2	8.1	8.1	8.0	8.1	8.4
50	41-50	24	24	24	24	24				7.9	8.0	8.0	7.9	7.8	7.7	7.8	8.7
100	51-60	24	24	24	24	24				7.7	7.8	7.5	7.5	7.6	7.4	7.5	8.7
METER #		Thar	Thar	Thar	Thar	Thar	Thar	Thar	Thar	#25	#25	#25	#25	#25	#24	#25	#25
DATE		8/9	8/10	8/10	8/11	8/11	8/12	8/12	8/13	8/9	8/10	8/10	8/11	8/12	8/13	8/14	8/16
TIME		1315	1059	1130	1135	1200	1230	0958	1249	1315	1055	1130	1135	1200	1230	0949	1240
INITIALS		SWC	KC-B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	SWC	KC-B	KC-B	KC-B	[illegible]	[illegible]	[illegible]	[illegible]

CONC.	TEST CONTAINER NO.	ALKALINITY (mg/l) 0	1	2	3	4	5	6
			NEW SOLUTIONS ONLY					
Control	1-10	162		160		160		
2.8	11-20	–		–		–		
5.5	21-30	–		–		–		
15	31-40	–		–		–		
50	41-50	–		–		–		
100	51-60	154		153		154		
METER #		TMR		TMR		TMR		
DATE		8/9		8/11		8/13		
TIME		1415		1420		1605		
INITIALS		SWC		KC-B		[illegible]		

CONC.	TEST CONTAINER NO.	HARDNESS (mg/l) 0	1	2	3	4	5	6
			NEW SOLUTIONS ONLY					
Control	1-10	142		142		142		
2.8	11-20	–		–		–		
5.5	21-30	–		–		–		
15	31-40	–		–		–		
50	41-50	–		–		–		
100	51-60	884		884		872		
METER #		TMR		TMR		TMR		
DATE		8/9		8/11		8/13		
TIME		1415		1420		1600		
INITIALS		SWC		KC-B		[illegible]		

CONC.	TEST CONTAINER NO.	CONDUCTIVITY (umhos/cm) 0	1	2	3	4	5	6	7 OLD
		NEW SOLUTIONS ONLY							
Control	1-10	420	389	425	399	438	425	389	
2.8	11-20	457	440	455	455	470	455	441	
5.5	21-30	499	480	442	499	520	500	490	
15	31-40	610	600	609	620	630	610	600	
50	41-50	1100	1050	1060	1100	1120	1050	1070	
100	51-60	1690	1610	1620	1680	1670	1600	1610	
METER #		#7	#7	#7	#7	#7	#7	#7	
DATE		8/9	8/10	8/11	8/12	8/13	8/14	8/15	
TIME		1320	1053	1130	1151	1700	1230	1000	
INITIALS		SWC	KC-B	[illegible]	KC-B	[illegible]	[illegible]	[illegible]	

COMMENTS:
RW #100
BATCH #080888 / 224 HRS
ERT SAMPLE # 434, 436, 439
LC50 = 10.92 BINOMIAL
RANGE 3.65 - 14.31

8/16/88

8/22/88

ERT QA Form No. 16
Effective: 3/87

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Molycorp PROJECT NUMBER: 5505-088-003-001
TEST SUBSTANCE: EFFLUENT

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	REPLICATE A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
Control	1	8-10/1100	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	8-11/1140	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	8-12/1158	KC-B	4	0	3	0	2	3	4	4	4	4	28	10	4
	4	8/13/1710	KS	0	4	0	4	2	1	0	0	0	0	11	10	4
	5	8/14/1240	KS	9	11	10	10	11	9	9	10	10	9	98	10	11
	6	8/15/1010	KS	13	15	13	4	11	13	12	10	10	9	95	10	13
	7	8/16 1225	KS	0	7	3	5	0	0	0	2	0	1	18	10	7
	TOT			26	27	29	23	26	26	25	26	24	23	250		
2.8	1	8-10/1100	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	8-11/1145	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	8-12/1210	KC-B	0	4	0	4	3	0	0	0	0	3	14	10	4
	4	8/13 1715	KS	0	0	4	0	0	0	2	4	5	0	15	10	5
	5	8/14/1250	KS	6	10	8	9	9	11	8	11	9	8	89	10	11
	6	8/15 1010	KS	0	10	0	1	1	0	1	0	1	0	14	10	
	7	8/16 1225	KS	9	0	7	7	8	6	7	8	6	10	68	10	10
	TOT			15	24	19	21	21	17	18	23	21	21	200		
5.5	1	8-10/1100	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	8-11/1155	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	8-12/1225	KC-B	0	4	0	0	0	0	4	0	0	0	8	10	4
	4	8/13/1225	KS	4	0	3	4	5	4	4	0	3	4	31	10	5
	5	8/14/1300	KS	9	9	9	11	10	10	10	10	9	9	96	10	11
	6	8/15 1015	KS	1	14	0	0	1	0	0	15	1	0	32	10	15
	7	8/16 1230	KS	12	0	12	8	10	11	10	2	10	9	84	10	12
	TOT			26	27	24	23	26	25	28	27	23	22	251		

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

5.5% G,H replicates appear to be switched KS 8/13/88

KS 8/16/88

Dan Kude 8/22/88

ERT

ERT QA Form No. 16
Effective: 3/87

SUBJECT: SURVIVAL AND REPRODUCTION DATA FOR CERIODAPHNIA SP. EFFLUENT TOXICITY TEST

SPONSOR: Maxcorp PROJECT NUMBER: 8505-085-003-001
TEST SUBSTANCE: EFFLUENT

EFFLUENT CONC.	DAY NO.	DATE/TIME	IN.	A	B	C	D	E	F	G	H	I	J	TOTAL LIVE	NO. LIVE ADULTS	MOST YOUNG BY ANY ADULT
15	1	8-10/1100	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	8-11/1205	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	8-12/1235	KC-B	0	0	4	4	2	4	4	4	5	4	31	10	5
	4	8/13/1730	KC-B	4	4	0	0	0	0	0	0	0	0	8	10	4
	5	8/14/1310	KC-B	12	12	9	8	10	10	9	9	9	10	98	10	12
	6	8/15/1015	KC-B	0	0	10	9	10	10	11	12	9	11	82	10	12
	7	8/16/1230	KC-B	9	8	1	0	0	0	0	0	0	0	18	10	9
	TOT			25	24	24	21	22	24	24	25	23	25	237		
50	1	8-10/1100	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	8-11/1210	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	8-12/1240	KC-B	0	5	0	4	2	4	0	4	4	0	23	10	5
	4	8/13/1735	KC-B	4	0	4	0	2	0	3	0	0	3	16	10	4
	5	8/14/1315	KC-B	10	10	9	8	9	9	9	11	8	11	94	10	11
	6	8/15/1025	KC-B	0	10	0	11	0	11	1	10	8	2	53	10	11
	7	8/16/1235	KC-B	6	0	6	0	7	0	9	0	0	5	33	10	9
	TOT			20	25	19	23	20	24	22	25	20	21	219		
100	1	8-10/1100	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	2	8-11/1215	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	8-12/1245	KC-B	0	0	0	0	0	0	0	0	0	0	0	10	0
	4	8/13/1745	KC-B	2	3	4	3	3	2	3	3	4	4	31	10	4
	5	8/14/1325	KC-B	4	6	4	5	7	4	5	3	3	3	44	10	7
	6	8/15/1030	KC-B	X	0	0	0	0	0	0	0	0	0	0	9	0
	7	8/16/1235	KC-B	1	3X	4	2	4	4	3	2	3	4	29	8	4
	TOT			6	12	12	10	14	10	11	8	10	11	104		

NOTE: X=Dead Adult, no young produced before death.
1x=Dead Adult, one young produced before death.

KC 8/16/88

Dan Kelly 8/22/88

ERT

8505-088-003-001
8/16/88

FISHERS EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	NUMBER OF TOTAL ANIMALS
CONTROL	10	0	10
2.8	10	0	10
TOTAL	20	0	20

CRITICAL FISHERS VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

FISHERS EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	NUMBER OF TOTAL ANIMALS
CONTROL	10	0	10
5.5	10	0	10
TOTAL	20	0	20

CRITICAL FISHERS VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

dh 8/22/88

8505-088-003-001
8/16/88

FISHERS EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	NUMBER OF TOTAL ANIMALS
CONTROL	10	0	10
15	10	0	10
TOTAL	20	0	20

CRITICAL FISHERS VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

FISHERS EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	NUMBER OF TOTAL ANIMALS
CONTROL	10	0	10
50	10	0	10
TOTAL	20	0	20

CRITICAL FISHERS VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 10.
Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

dk 8/22/88

8505-088-003-001
8/16/88

FISHERS EXACT TEST

IDENTIFICATION	NUMBER OF ALIVE	NUMBER OF DEAD	NUMBER OF TOTAL ANIMALS
CONTROL	10	0	10
100	8	2	10
TOTAL	18	2	20

CRITICAL FISHERS VALUE (10,10,10) (p=0.05) IS 6. b VALUE IS 8.
Since b is greater than 6 there is no significant difference between CONTROL and TREATMENT at the 0.05 level.

SUMMARY OF FISHERS EXACT TESTS

GROUP	IDENTIFICATION	NUMBER EXPOSED	NUMBER DEAD	SIG (P=.05)
	CONTROL	10	0	
1	2.8	10	0	
2	5.5	10	0	
3	15	10	0	
4	50	10	0	
5	100	10	2	

dh 8/22/88

8505-088-003-001
File: B:003.001 Transform: NO TRANSFORM

KM 8/16/88

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	10	22.000	29.000	25.000
2	2.8	10	15.000	24.000	20.000
3	5.5	10	22.000	28.000	25.100
4	15	10	21.000	25.000	23.700
5	50	10	19.000	25.000	21.900
6	100	10	6.000	14.000	10.400

8505-088-003-001
File: B:003.001 Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	4.222	2.055	0.650
2	2.8	7.556	2.749	0.869
3	5.5	4.100	2.025	0.640
4	15	1.789	1.337	0.423
5	50	4.989	2.234	0.706
6	100	4.933	2.221	0.702

8505-088-003-001
File: B:003.001 Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	1542.683	308.537	67.102
Within (Error)	54	248.300	4.598	
Total	59	1790.983		

Critical F value = 2.45 (0.05,5,40)
Since F > Critical F REJECT Ho:All groups equal

dh 8/22/88

8505-088-003-001
File: B:003.001 Transform: NO TRANSFORM 8/16/88

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	25.000	25.000		
2	2.8	20.000	20.000	5.214	*
3	5.5	25.100	25.100	-0.104	
4	15	23.700	23.700	1.356	
5	50	21.900	21.900	3.233	*
6	100	10.400	10.400	15.225	*

Dunnett table value = 2.31 (1 Tailed Value, P=0.05, df=40,5)

8505-088-003-001
File: B:003.001 Transform: NO TRANSFORM

DUNNETTS TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	10			
2	2.8	10	2.215	8.9	5.000
3	5.5	10	2.215	8.9	-0.100
4	15	10	2.215	8.9	1.300
5	50	10	2.215	8.9	3.100
6	100	10	2.215	8.9	14.600

dh 8/22/88

ENSR

Formerly ERT

ENSR Consulting
and Engineering

1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878

December 12, 1989

RECEIVED
DEC 28 1989
6W-EA

Mr. Scott Vail
Molycorp, Inc.
Questa Division
P.O. box 469
Questa, New Mexico

Dear Scott:

Enclosed are the reports for Molycorp's biomonitoring studies conducted during November - December, 1989. The Ceriodaphnia dubia test failed due to unacceptable control performance in the receiving water. However, the laboratory water control organisms exceeded the acceptable criteria for control performance. Consequently, It is my best judgement that the receiving water is not of sufficient quality for testing. I would suggest that in the next round of tests we substitute a reconstituted water which has a hardness, alkalinity and pH similar to the receiving water.

You will be pleased to find that the effluent showed no significant short-term chronic toxicity to fathead minnows (Pimephales promelas).

Please contact me if you have any questions or comments concerning the enclosed reports. We appreciate this opportunity to be of service.

Sincerely,

Kurt R. Drottar
Aquatic Toxicology Laboratory Manager

KRD

Enclosures

Ref: 8505-088-003

Study Title

Short-Term Chronic Toxicity of Molycorp, Inc. Effluent to the Fathead Minnow (*Pimephales promelas*) Under Static Renewal Test Conditions.

Author

Kurt R. Drottar

Study Completed On

December 5, 1989

Performing Laboratory

ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, CO 80524

Laboratory Project ID

8505-088-003-004

STATEMENT OF GLP COMPLIANCE

This study was conducted and complies with the USEPA (1989) general guidance on Good Laboratory Practices related to effluent toxicity testing.

Kurt R. Drottar
Project Manager/Study Director

12/14/89
Date

STATEMENT OF QUALITY ASSURANCE

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

Dan F. Keefe
Quality Assurance Unit

12/14/89
Date

SUMMARY

Sponsor: Molycorp, Inc. (NM0022306)

Project Officer: Scott Vail

Study Director: Kurt R. Drottar

Test Facility: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Location of Data: ENSR Consulting and Engineering, 1716 Heath Parkway, Fort Collins, CO

Test Substance: Final effluent from Outfall 002 (no flow from outfall 001)

Subject: Fathead Minnow (Pimephales promelas) Larval Survival and Growth Test

Test Dates: November 28 (14:00) to December 5 (13:40), 1989

Length of Study: Seven days

Test Species: Pimephales promelas

Source of Organisms: Florida Bioassay Supply, Gainesville, FL

Age of Test Organisms: <24 hours

Test Concentrations: 0 (dilution water control), 0 (reconstituted water control) 9, 18, 31 50 and 100 percent effluent

Dilution Water: Receiving water (Red River)

Results: NOEC = 100 percent effluent

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1.0 INTRODUCTION

A static renewal toxicity test was conducted at ENSR Consulting and Engineering's Fort Collins Environmental Toxicology Laboratory (FCETL) to determine the subchronic toxicity of Molycorp, Inc. effluent to the fathead minnow (Pimephales promelas). The criterion for effect was a significant reduction in survival or mean dry weight as compared to experimental controls. Test results are expressed as a no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV), the geometric mean between the NOEC and the LOEC.

All study data are maintained in the FCETL archives, 1716 Heath Parkway, Fort Collins, Colorado.

2.0 MATERIALS AND METHODS

2.1 Effluent

Three separate composite effluent samples were delivered to the FCETL via Federal Express. Due to the fact that there was no flow from Outfall 001, all samples were collected from Outfall 002 only. Effluent samples were received packed on ice at the laboratory on the following dates: 1) November 28, 1989 (collected 07:35 November 27 to 13:10 November 27, 1989) - FCETL sample #1163; 2) November 30, 1989 (collected 07:05 November 29 to 12:15 November 29, 1989) - FCETL sample #1170; and 3) December 2, 1989 (collected 06:30 December 1 to 10:30 December 1, 1989) - FCETL Sample #1175. Initial chemical characterization of the effluent samples is given in Table 2-1.

2.2 Dilution Water

Dilution water used in testing was the actual receiving stream (Red River) collected from a point upstream of the discharge. Chemical characterization of the dilution water is also given in Table 2-1.

2.3 Test Organisms

Fathead minnows were obtained from a commercial supplier (Florida Bioassay Supply, Gainesville, Florida) and were <24 hours old at test initiation. Test organisms (FCETL lot #89-48) appeared to be in good physical condition at test initiation.

Table 2.1. Initial chemical characterization of effluent, dilution water and reconstituted water used in toxicity testing.

Sample	Alkalinity	Hardness	Conductivity	NH_3	TRC[1]
	(mg/L as $CaCO_3$)		(umhos/cm)	(mg/L)	(mg/L)
Effluent					
11/28/89	156	904	1,740	<0.1	<0.01
11/30/89	150	872	1,715	0.1	<0.01
12/02/89	155	842	1,737	<0.1	<0.01
Dilution Water					
11/28/89	30	200	403	<0.1	<0.01
11/30/89	39	204	450	0.1	<0.01
12/02/89	24	224	475	<0.1	<0.01
Reconstituted Water Control					
11/28/89	67	88	322	<0.1	<0.01

[1]TRC - Total Residual Chlorine

2.4 Test Methods

The test was conducted according to FCETL Aquatic Toxicology Protocol No. 41 (Appendix A) based on USEPA method 1000.0 (USEPA 1989. Testing was conducted in 1-L beakers containing a final volume of 250 ml of test solution. Ten fathead minnows were randomly distributed to each test container and four replicates were tested per treatment. Fathead minnows were exposed to 9, 18, 31, 50 and 100 percent effluent (v:v, effluent:dilution water). A dilution water control and a moderately hard reconstituted water (USEPA 1989) performance control were also conducted concurrently. Test solutions were renewed daily with freshly prepared dilutions of the most recent effluent and receiving water samples. Fathead minnows were fed 0.1 ml of a concentrated suspension of newly hatched brine shrimp nauplii four times daily during the test. The test was conducted at 25°C under fluorescent lighting with a photoperiod of 16-hours light and 8-hours dark.

In addition to the effluent test, a reference toxicant (sodium dodecyl sulfate) test was also conducted with the same lot of fathead minnows to determine the sensitivity range of the test organisms.

2.5 Data Analysis

All statistical analysis was conducted with an IBM compatible personal computer utilizing Toxstat Version 3.0 software (Gulley et al. 1989). The arcsine squareroot transformation was applied to all survival data. Normality and homogeneity of variance assumptions for survival and mean dry weight data were verified with the Shapiro-Wilk's test and Bartlett's test, respectively ($p \leq 0.01$). If the data met these assumptions, Dunnett's multiple comparison test was used to compare treatment group responses to control responses. If the data did not meet assumptions of normality and homogeneity, Steel's many-one rank test was used to make the comparisons. The NOEC, LOEC, and ChV were determined using the most sensitive (i.e. showing significance at the lowest effluent concentration, $p \leq 0.05$) of survival and/or mean dry weight. In addition, the LC1 (the percent effluent estimated to produce 1 percent mortality) was calculated using probit analysis where possible.

3.0 RESULTS AND DISCUSSION

Fathead minnow mortality ranged from 2.5 percent in the 9 percent effluent treatment group to 47.5 percent in the 31 percent effluent treatment group after 7 days of exposure (Table 3-1). Control mortality was 12.5 and 5 percent in the dilution water control and the reconstituted water performance control, respectively. Bartlett's test showed that the variance of the survival data was not homogeneous. Accordingly, Steel's many-one rank test was used to make the comparison. Steel's many-one rank test showed no significant reduction in survival of any effluent treatment group in comparison to the receiving water control. Due to the fact that the mean dry weight data had an unequal number of replicates, the Bonferroni t-test was used to make the growth comparison. The Bonferroni t-test showed no significant reduction in mean dry weight in any effluent treatment group in comparison to the receiving water control (Table 3-1). Therefore, the NOEC was 100 percent effluent.

Throughout the test all water quality parameters remained within acceptable levels (Appendix B). On day six of the test, dissolved oxygen concentrations dropped to 3.2 mg/L in the 31 percent effluent treatment group (38 percent of saturation at sea level, 46 percent of saturation at 4,800 feet elevation above sea level). Consequently, the Study Director initiated mild aeration

to all test containers. After aeration, dissolved oxygen concentrations remained ≥5.6 mg/L (80 percent of saturation at 4,800 feet elevation above sea level). Test temperature was maintained at 25 ± 1°C and pH ranged from 7.0 - 8.4.

The 24-hour LC50 for the reference toxicant test was 4.6 mg/L sodium dodecyl sulfate as calculated by the binomial method. The FCETL's acceptable range for <24 hour old fathead minnows is 3.6 to 5.4 mg/L sodium dodecyl sulfate. Therefore, the test organisms were within the FCETL's historic sensitivity range.

Table 3.1. Survival and growth of fathead minnows exposed to Molycorp, Inc. effluent.

	Treatment						
Endpoint	Control[1]	0[2]	9	18	31	50	100
% survival	95	87.5	97.5	95	52.5	87.5	92.5
mean dry wt. (mg)	0.49	0.41	0.42	0.57	0.44	0.63	0.66

[1]Moderately hard reconstituted water performance control
[2]Receiving water control

LITERATURE CITED

Gulley, D.D., Boelter, A.M., and H.L. Bergman. 1989. Toxstat Version 3.0. Fish Physiology and Toxicology Laboratory. Department of Zoology and Physiology. University of Wyoming. Laramie, Wyoming.

USEPA. Environmental Protection Agency. 1989. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Second Edition. EPA/600/4-89/001.

APPENDIX A

TEST PROTOCOL

Title: Short-Term Chronic Toxicity of Effluent to the Fathead Minnow (*Pimephales promelas*) Under Static Renewal Test Conditions.

Study Sponsor: Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 88005
(505) 586-0212

Project Officer: Scott Vail

Testing Facility: ENSR Consulting and Engineering
Fort Collins Environmental Toxicology Laboratory
1716 Heath Parkway
Fort Collins, Colorado 80524
(303) 493-8878, Ext. 372

Project Manager/Study Director: Kurt R. Drottar

1.0 INTRODUCTION

1.1 Objective

To determine if the effluent is subchronically toxic to the fathead minnow (*Pimephales promelas*) under static renewal test conditions.

1.2 Test Effluent

A minimum of three 24-hour composite samples will be collected by the sponsor. Samples will be collected in disposable cubitainers, placed on ice, and shipped to ENSR via overnight delivery.

2.0 MATERIALS AND METHODS

2.1 Basis

This protocol is designed to comply with USEPA method 1000.0, Fathead Minnow, *Pimephales promelas*, Larval Survival and Growth Test (USEPA 1989).

2.2 Test Organism

1. Species - Fathead minnows (*Pimephales promelas*)
2. Age - Fathead minnows will be less than 24 hours old.
3. Source - Fathead minnows will be obtained from ENSR's in-house cultures or from a commercial supplier.
4. Feeding - Each fathead minnow test chamber will be fed 0.1-mL of a concentrated suspension of newly hatched brine shrimp nauplii three times daily.

3.0 TEST SYSTEM

3.1 Dilution Water

Dilution water used in toxicity testing will be the receiving stream collected from a point upstream and unaffected by the discharge.

3.2 Temperature

Test temperature will be 25 ± 1°C. Testing will be conducted in an environmental chamber or a temperature controlled water bath.

3.3 Test Containers

Test containers will be 1-L beakers containing 250 ml of test solution.

3.4 Photoperiod

The photoperiod will be 16-hours light and 8-hours dark.

3.5 Dissolved Oxygen Concentrations

Dissolved oxygen concentrations will be maintained ≥40 percent of saturation. If the dissolved oxygen concentration in any test chamber approaches 40 percent saturation, all test chambers will be aerated moderately.

4.0 TEST DESIGN

4.1 Test Concentrations

Test concentrations will be 9, 18, 31, 50 and 100 percent effluent (V:V, effluent:dilution water). A dilution water control and a laboratory culture water control will also be conducted concurrently.

4.2 Number of Test Organisms

Forty fathead minnows will be exposed to each test concentration and control. Ten fathead minnows will be randomly assigned to each test chamber and four replicates will be tested per treatment.

4.3 Test Initiation/Renewal Frequency

Testing will be initiated within 36-hours of the time the first sample is collected. Test samples will be renewed on a daily basis with freshly prepared dilutions of the most recent effluent sample.

4.4 Chemical and Physical Monitoring

At a minimum, the following measurements will be made:

1. Dissolved oxygen, temperature and pH will be measured in each treatment and control at the beginning and end of each 24-hour exposure period.
2. Conductivity will be measured in each treatment and control at the beginning of each 24-hour exposure period.
3. Hardness, alkalinity, total ammonia, and total residual chlorine will be measured in 100 percent effluent and the dilution water on each day of new effluent sample receipt.

4.5 Biological Monitoring

Observations of mortality in each test chamber will be made daily.

4.6 Test Duration

The test duration is seven days. At test termination the larvae in each test chamber will be counted and preserved in 4 percent formalin as a group for later dry weight analysis (if they cannot be weighed immediately). The preserved larvae will be rinsed with distilled water prior to dry weight analysis. The group of rinsed larvae from each test chamber will be transferred to a tared weighing boat and dried at 100°C for a minimum of 2 hours. Immediately after removal from the drying oven, the weigh boats will be placed in a desiccator to prevent absorption of moisture from the air, until weighed. The weights will be measured to the nearest 0.1 mg.

4.7 Calculations

Survival data will be transformed by arcsine squareroot. Growth in each replicate will be determined by the mean dry weight per surviving fish. Normality and homogeneity assumptions of survival and growth data will be evaluated by the Shapiro-Wilk's test and Bartlett's test, respectively ($p \leq 0.01$). If the data meet the assumptions, Dunnett's procedure will be used to make the comparison. If the data do not meet the assumptions Steel's many-one rank test will be used to make the comparison. The no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and ChV will be calculated on the basis of survival and/or growth.

4.8 Quality Criterion

The test will not be considered valid if control mortality exceeds 20 percent or if mean dry weight per surviving control fish is <0.25 mg.

5.0 TEST REPORT

The report will be a typed document describing the results of the test and will be signed by the Study Director and Quality Assurance Unit. The report will include, but not be limited to the following:

- USEPA Region VI summary sheets
- A copy of all raw data.
- Name of test, Study Director, and laboratory.
- Test organism scientific name, age, and diet.
- A description of the experimental design and the test chambers, the number of test organisms, replicates per treatment, and the lighting.
- The source and characterization of the dilution water, and a description of any pretreatment.

A detailed description of the effluent including its source, time of collection, composition, known physical and chemical properties, and any information that appears on the sample container or has been provided by the sponsor.
A description of any aeration performed on test solutions before or during the test.
Percentage of test organisms that died in all treatments.
The calculated NOEC, LOEC, and ChV values and a reference to calculation methods.
The minimum dissolved oxygen concentration, range in test temperature and pH, and all visual observations of test solutions.
Any deviations from protocol.

6.0 LITERATURE CITED

. 1989. Short-Term Methods for Estimating the Chronic
Toxicity of Effluents and Receiving Waters to Freshwater
Organisms. Second Edition. EPA/600/4-89/001.

7.0 GOOD LABORATORY PRACTICES

All test procedures, documentation, records, and reports will
y with USEPA (1989) general guidance on Good Laboratory
ices related to effluent toxicity testing. To this end,
n audits of the test may be scheduled while the test is in
ess. The raw data will be checked and compared to protocol
rements and Standard Operating Procedures, and the final
t will be audited for accuracy and signed, if satisfactory,
a individual responsible from the Quality Assurance Unit.

8.0 PROTOCOL AMENDMENTS AND DEVIATIONS

All changes (i.e., amendments, deviations, and final report
ions) of the approved protocol plus the reasons for the
es must be documented in writing. The changes will be signed
ated by the Study Director and maintained with the protocol.
nendments must be authorized in advance by the Sponsor.

9.0 SPONSOR AND STUDY DIRECTOR APPROVAL

or Approval: Verbally approved by Scott [illegible] Date: 11/28/89

Director: [signature] Date: 11/28/89

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: 11-27/11-29/12-1 am/pm 7:35A/7:05A/6:30A date
TO: 11-27/11-29/12-1 am/pm 1:10A/12:50A/10:30A date

Test initiated: 1400 am/pm 11-28-89 date

Dilution water used: [X] Receiving water [ ] Reconstituted water
Concentrator Mod. Hanna Recon (RW #250)

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers A	B	C	D	MEAN DRY WEIGHT mg	CV%*
RW #250 ~~0%~~	0.46	0.57	0.54	0.40	0.49	15.75
0% ~~1%~~	0.36	0.36	0.45	0.43	0.41	14.27
9% ~~3%~~	0.17	0.49	0.49	0.52	0.42	39.43
50% ~~10%~~	0.58	0.66	0.61 ~~0.65~~	0.68 ~~0.67~~	0.63	7.26
~~30%~~						
100%	0.67	0.71	0.63	0.63	0.66	5.80
Low Flow 18 %	0.41	0.70	0.55	0.60	0.57	21.12
1/2 Low Flow 31 %	0.28	0.49	0.56	N/A	0.44	33.12

SAC 12/6/89

AK 12/4/89

* coefficient of variation = standard deviation x 100/mean

1. Dunnett's Procedure:

   Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

   12/14/89

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
Rw ~~250~~ 8%	100	90	100	90	100	98	95	6.1
0% ~~1%~~	70	90	100	90	95	93	88	14.3
9% ~~3%~~	100	100	100	90	100	100	98	5.1
50% ~~10%~~	80	90	90	90	100	98	~~53~~ 88	~~77.6~~ 5.7
~~30%~~	—	—	—	—	—	—	—	—
100%	100	100	70	100	100	100	93	16.1
Low Flow 18 %	90	90	100	100	100	98	95	6.1
1/2 Low Flow 31 %	40	90	80	0	95	95	53	77.6

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

ERT QA Form No. 18
Effective: 3/87

SUBJECT: PHYSICAL & CHEMICAL DATA FOR FATHEAD MINNOW SUBCHRONIC TEST

AD 12/14/89

SUBSTANCE: Effluent

BEGINNING: DATE 11-28-89 TIME 1400

CLIENT: Maxycorp

ENDING: DATE 12-5-89 TIME 1340

PROJECT NO. 5505-088-003-004

EWSR# 1163, 1170, 1125
Dil H_2O = Rec. H_2O 1162, 1169, 1174
RW# 250
LOT# 89-48 / <24 HRS
SASLC50 = 4.6 Rng = 3.6 - 5.4

CONC.	TEST CONTAINER NUMBER	NO. OF SURVIVING ORGANISMS 0	1	2	3	4	5	6	7	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD	TEMPERATURE (C) 0	1	2	3	4	5	6	7
																										NEW SOLUTIONS ONLY							OLD
RW#250	A	10	10	10	10	10	10	10	10	7.2*	4.9	6.5	4.7	7.2*	4.1	10	—	6.7	4.7	6.9	—	7.6*	5.8	25	25	25	25	25	25	25	25
	B		10	9	9	9	9	9	9	C	—	C	—	C	—	C	4.6	C	—	C	2.9	C	—	C	C	C	C	C	C	C	—
	C		10	10	10	10	10	10	10		4.9		4.7		4.1		—		4.6		—		5.8								25
	D		10	10	10	10	10	10	9		—		—		—		4.6		—		2.9		—								—
Rec H2O	A		9	8	7	7	7	7	7	5.0*	5.0	6.8	5.6	7.7*	4.8	7.8*	—	7.0*	5.4	7.8*	—	7.9*	5.7	25	25	25	25	25	25	25	25
	B		9	9	9	9	9	9	9	C	—	C	—	C	—	C	5.1	C	—	C	4.8	C	—	C	C	C	C	C	C	C	—
	C		10	10	10	10	10	10	10		5.0		5.6		4.8		—		5.6		—		5.7								25
	D		10	10	10	10	10	10	9		—		—		—		5.0		—		4.9		—								—
9	A		10	10	10	10	10	10	10	7.2*	4.9	6.9	5.4	7.6*	4.6	7.6*	—	7.4*	5.6	7.7*	—	7.6*	5.6	25	25	25	25	25	25	25	25
	B		10	10	10	10	10	10	10	C	—	C	—	C	—	C	4.6	C	—	C	3.5	C	—	C	C	C	C	C	C	C	—
	C		10	10	10	10	10	10	10		4.9		5.4		4.6		—		5.7		—		5.6								25
	D		10	10	10	10	10	10	9		—		—		—		4.8		—		3.5		—								—
18	A		10	9	9	9	9	9	9	7.7*	4.8	6.6	5.4	7.6*	4.1	7.6*	—	7.2*	5.7	7.7*	—	7.6*	5.8	25	25	25	25	25	25	25	25
	B		10	10	10	10	9	9	9	C	—	C	—	C	—	C	4.4	C	—	C	4.1	C	—	C	C	C	C	C	C	C	—
	C		10	10	10	10	10	10	10		4.8		5.4		4.1		—		5.7		—		5.8								25
	D		10	10	10	10	10	10	10		—		—		—		4.6		—		4.1		—								—
METER NO.		—	—	—	—	—	—			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TMC	TMC	TMC	TMC	4	4	4	4
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	11/28	11/28	11/29	11/29	11/30	11/30	12/1	12/1	12/2	12/2	12/3	12/3	12/4	12/4	12/5	12/5	11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5
TIME		1400	1010	1320	1400	1530	1330	1500	1340	1400	1025	1000	1000	1330	1100	1400	1400	1000	1000	1000	1315	1300	1400	1400	1340	1400	1300	1330	1400	1500	1330	1500	1340
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	DH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	DH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	DH	[illegible]	[illegible]	[illegible]

* Spikes due to rapid water loss (S.C.) 11/28/89

AD 12/14/89

ERT QA Form No. 18
Effective: 3/87

SUBJECT: PHYSICAL & CHEMICAL DATA FOR FATHEAD MINNOW SUBCHRONIC TEST

12/14/89

SUBSTANCE: EFFLUENT

BEGINNING: DATE 11-28-89 TIME 1400

CLIENT: Mobay Corp.

ENDING: DATE 12-5-89 TIME 1340

PROJECT NO. 8505-088-083-004

CONC.	TEST CONTAINER NUMBER	NO. OF SURVIVING ORGANISMS 0	1	2	3	4	5	6	7	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD	TEMPERATURE (C) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD
31	A	10	10	10	10	10	10	7	4	7.6*	4.9	6.1	5.4	7.4*	4.1	9.5*	-	7.3*	5.0	7.7*	-	7.6*	5.6	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	B		10	10	10	10	10	10	9	C	-	C	-	C	-	C	4.5	C	-	C	3.2	C	-	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
	C		9	9	9	9	9	9	8		4.9		5.4		4.1		-		5.0		-		5.6																	25
	D		9	9	9	9	9	9	10		-		-		-		4.3		-		3.2		-																	-
50	A		10	10	9	9	9	7	8	7.5*	4.8	6.6	5.1	7.5*	4.5	7.4*	-	7.2*	5.2	7.7*	-	7.6*	5.1	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	B		10	10	9	9	9	9	9	C	-	C	-	C	-	C	4.5	C	-	C	3.4	C	-	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
	C		9	9	9	9	9	9	9		4.8		5.1		4.5		-		5.0		-		5.1																	25
	D		10	10	10	10	10	7	9		-				-		4.5		-		3.4		-																	-
100	A		10	10	10	10	10	6	10	7.6*	4.7	6.1	4.1	7.6*	4.3	7.7*	-	7.1*	5.3	7.8*	-	7.7*	5.6	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	B		10	10	10	10	10	10	10	C	-	C	-	C	-	C	4.8	C	-	C	4.1	C	-	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
	C		10	10	10	10	10	7	7		4.7		4.1		4.3		-		5.2		-		5.6																	25
	D		10	10	10	10	10	10	10		-		-		-		4.9		-		4.1		-																	-
						RH 12/3																																			
METER NO.		-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TMC	TMC	TMC	TMC	4	4	4	4	4	4	4	4	4	4	4	4
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	11/28	11/28	11/29	11/29	11/30	11/30	12/1	12/1	12/2	12/2	12/3	12/3	12/4	12/4	12/5	12/5	11/28	11/28	11/29	11/29	11/30	11/30	12/1	12/1	12/2	12/2	12/3	12/3	12/4	12/4	12/5	12/5
TIME		1400	1100	1300	1400	1200	1300	1300	1345	1400	1400	1100	1100	1300	1300	1100	1100	1430	1430	1250	1250	1345	1345	1500	1500	0930	0930	1400	1400	1300	1300	1100	1100	1430	1430	1250	1250	1345	1345	1500	1500
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	RH	RH	[illegible]	DH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	RH	RH	[illegible]	[illegible]	DH	DH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	RH	RH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*Supersaturated due to rapid warming (H2O)

RK 12/14/89

ERT QA Form No. 19
Effective: 3/87

SUBJECT: CHEMICAL DTA FOR FATHEAD MINNOW SUBCHRONIC TEST

SUBSTANCE: EDTA

BEGINNING: DATE 11-28-89 TIME 1400

CLIENT: Maycorp

ENDING: DATE 12-5-89 TIME 1340

PROJECT NO. 8505-085-003-004

CONC.	TEST CONTAINER NUMBER	pH 0 (NEW SOLUTIONS ONLY)	pH 1	pH 2	pH 3	pH 4	pH 5	pH 6	pH 7 (OLD)	CONDUCTIVITY (umhos/cm) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7 (OLD)	ALKALINITY (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7	HARDNESS (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7
RW#250		8.2	8.2	8.2	8.2	8.1	8.1	8.0	8.2	322	319	321	326	320	305	350		69				66				88				88			
		C	C	C	C	C	C	C	–	C	C	C	C	C	C	C																	
									8.2																								
									–																								
Rc-N50		7.8	7.2	7.2	7.5	7.2	7.0	7.1	7.6	453	408	452	449	475	438	453		30		39		24				200		204		234			
		C	C	C	C	C	C	C	–	C	C	C	C	C	C	C																	
									7.6																								
									–																								
9		7.8	7.4	7.4	7.6	7.2	7.1	7.1	7.6	542	549	525	589	616	592	609																	
		C	C	C	C	C	C	C	–	C	C	C	C	C	C	C																	
									7.6																								
									–																								
18		7.8	7.5	7.5	7.7	7.2	7.2	7.2	7.9	674	691	724	736	715	717	752																	
		C	C	C	C	C	C	C	–	C	C	C	C	C	C	C																	
									7.9																								
									–																								
METER NO.		26	26	26	26	26	26	26	26	9	9	9	9	9	9	9		Titr		Titr		Titr				Titr		Titr		Titr			
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	11/28	11/29	11/30	12/1	12/2	12/3	12/4		11/28		11/30		12/2				11/28		11/30		12/2			
TIME		1400	1500	1330	1400	1245	1410	1400	1345	1400	1500	1330	1400	1245	1420	1500		1345		1330		1400				1345		1330		1445			
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	RH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	RH	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		RH			

CC 12/14/89

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ERT QA Form No. 19
Effective: 3/87

SUBJECT: CHEMICAL DTA FOR FATHEAD MINNOW SUBCHRONIC TEST

SUBSTANCE: Effl

BEGINNING: DATE 11-28-89 TIME 1400

CLIENT: Alcoy corp

ENDING: DATE 12-5-89 TIME 1340

PROJECT NO. 8505-088-003-004

CONC.	TEST CONTAINER NUMBER	pH 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7 (OLD)	CONDUCTIVITY (umhos/cm) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7 (OLD)	ALKALINITY (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7	HARDNESS (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7
31	A	7.8	7.6	7.6	7.8	7.4	7.3	7.2	7.9	[illegible]	[illegible]	[illegible]	[illegible]	836	903	936																	
	B	C	C	C	C	C	C	C	–	C	C		C	C	C	C																	
	C								7.9																								
	D								–																								
50	A	7.8	7.6	7.7	7.8	7.4	7.4	7.3	8.2	1100	1151	[illegible]	1162	1131	1135	1161																	
	B	C	C	C	C	C	C	C	–	C	C		C	C	C	C																	
	C								8.2																								
	D								–																								
100	A	7.8	7.9	7.7	8.1	7.4	7.5	7.4	8.4	1724	1921	[illegible]	1918	1737	1609	1986		1560		1500		1550				1904		1812		1840			
	B	C	C	C	C	C	C	C	–	C	C		C	C	C	C																	
	C								8.4																								
	D								–																								
METER NO.		26	26	26	26	26	26	26	26	9	9	9	9	9	9	9		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]			
DATE		11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	11/28	11/29	11/30	12/1	12/2	12/3	12/4		11/28		11/30		12/2				11/28		11/30		12/2			
TIME		1400	1500	1355	1400	1345	1400	1300	1340	1425	1500	[illegible]	[illegible]	1345	1320	1300		1545		1355		1000				1545		1355		1000			
INITIALS		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]			

12/14/89

ERT TOXICOLOGY GROUP
FT. COLLINS, COLORADO

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ERT QA Form No. 15
Effective: 3/87

12/14/89

SUBJECT: DAILY LOG 5505-088-003-004

ALL ENTRIES MUST BE INITIALLED WITH DATE AND TIME:

11-28-89 TRC (RW #250) <0.01 (Rec. H_2O) <0.01 (100% Eff.) <0.01 (AT, 1130, RH)

11-28-89 NH_3 (RW #250) <0.1 (Rec. H_2O) <0.1 (100% Eff.) <0.1 (L, 1230, RH)

11-29	(mH)	(C)	(9) NED	(18)	(31)	(50)	(100)		
OLD pH's:	8.0	7.6	7.8	7.9	8.0	8.1	8.4	#26	@1050 NED
OLD temp:	25	25	25	25	25	25	25	Therm	

11-30-89	(MH)	(C)	(9)	(18)	(31)	(50)	(100)		
OLD pH's:	7.7	7.5 JS	7.6	7.7	7.9	8.0	8.1	#26 Therm	@ 9:50 JS
OLD temp:	25	25	25	25	25	25	25		

11-30-89 TRC in [100%] = <0.01 (AT, @ 1510, NED (C) = <0.01 AT 1530 (L)
NH_3 (C) = 0.1 (100%) = 0.1 #1 1530 (SUL)

12-1-89	MH	C	9	18	31	50	100		
OLD pH's	7.9	7.6	7.6	7.7	7.9	8.0	8.2	#26	@1100 NED
OLD Temp	25	25	25	25	25	25	25	Therm	

12/2/89	MH	C	9	18	31	50	100		
OLD pH's	7.8	7.7	7.6	7.6	7.7	7.8	8.1	#26	0740 [illegible]
OLD TEMP	25	25	25	25	25	25	25	Therm #4	

12/3/89	MH	C	9	18	31	50	100		
OLD pH	7.8	7.6	7.6	7.6	7.6	7.9	8.2	#26	0745 [illegible]
OLD TEMP	25	25	25	25	25	25	25	#4	

12/4/89	(mH)	(C)	(9)	(18)	(31)	(50)	(100)		
OLD pH's	7.7	7.3	7.3	7.5	7.5	7.7	8.2	#26 Therm #4	@1300 SUL
OLD Temp-C	25	25	25	25	25	25	25		

* 12/4/89 INITIATED AERATION ON ALL DILUTIONS @ 1515 [illegible] TC
[illegible] NO_3 IN REC. H_2O (SUL) X [illegible] OTHER DILUTIONS AS [illegible] (SUL)

12/14/89

ERT

Effective: 3/87

SUBJECT: TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

SPONSOR: MolyCORP

PROJECT NO: 8505-088-003-004

TEST SUBSTANCE: Effluent

SPECIES: P. promelas

DATA BY: MED DATE 12-3-89 TIME 1030

LOT/BATCH NO: 89-48 <24 hrs

WEIGHT: TYPE Dry

NO.	LENGTH TYPE N/A		TARE	GROSS	NET	X mg/fish
1	Mod Hard	A	1.3338	1.3384	0.0046	0.46
2		B	1.3276	1.3327	0.0051	0.57
3		C	1.3591	1.3645	0.0054	0.54
4		D	1.3411	1.3447	0.0036	0.40
5	Control	A	1.3550	1.3575	0.0025	0.36
6		B	1.3504	1.3536	0.0032	0.36
7		C	1.3362	1.3410	0.0048	0.48
8		D	1.3445	1.3484	0.0039	0.43
9	9	A	1.3324	1.3341	0.0017	0.17
10		B	1.3341	1.3390	0.0049	0.49
11		C	1.3305	1.3354	0.0049	0.49
12		D	1.3333	1.3380	0.0047	0.52
13	18	A	1.3508	1.3545	0.0037	0.41
14		B	1.3496	1.3559	0.0063	0.70
15		C	1.3499	1.3557	0.0058	0.58
16		D	1.3487	1.3547	0.0060	0.60
17	31	A	1.3481	1.3492	0.0011	0.28
18		B	1.3363	1.3407	0.0044	0.49
19		C	1.3401	1.3446	0.0045	0.56
20	MED 12-6-89	~~D~~	~~1.3466~~	~~1.3466~~	N/A	N/A
RANGE					12/14/89	
MEAN						
S						

TEST SOLUTION VOLUME _____ LOADING RATE _____

SUBJECT: TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

SPONSOR: Molycorp
TEST SUBSTANCE: Effluent
DATA BY: MED DATE 12-5-89 TIME 1030
PROJECT NO: 8505-083-003-004
SPECIES: P. promelas
LOT/BATCH NO: 89-48 <24 hrs

NO.	LENGTH TYPE N/A		WEIGHT: TYPE Dry TARE	GROSS	NET	X mg/liter
21	50	A	1.3322	1.3368	0.0046	0.58
22		B	1.3253	1.3312	0.0059	0.66
23		C	1.3238	1.3293	0.0055	0.61
24		D	1.3243	1.3304	0.0061	0.68
25	100	A	1.3290	1.3357	0.0067	0.67
26		B	1.3445	1.3516	0.0071	0.71
27		C	1.3483	1.3527	0.0044	0.63
28		D	1.3459	1.3522	0.0063	0.63
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
RANGE						
MEAN						
S						12/14/89

TEST SOLUTION VOLUME _____ LOADING RATE _____

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12/14/89

5-088-003-004 Fathead Minnow Survival
e: A:003.004 Transform: ARC SINE(SQUARE ROOT(Y))

piro Wilks test for normality

= 1.006

= 0.897

tical W (P = 0.05) (n = 24) = 0.916
tical W (P = 0.01) (n = 24) = 0.884

---

a PASS normality test at P=0.01 level. Continue analysis.

5-088-003-004 Fathead Minnow Survival
e: A:003.004 Transform: ARC SINE(SQUARE ROOT(Y))

rtletts test for homogeneity of variance

---

culated B statistic = 15.31
le Chi-square value = 15.09 (alpha = 0.01)
le Chi-square value = 11.07 (alpha = 0.05)

erage df used in calculation ==> df (avg n - 1) = 3.00
d for Chi-square table value ==> df (#groups-1) = 5

---

a FAIL homogeneity test at 0.01 level. Try another transformation.

E: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

12/14/89

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8505-088-003-004 Fathead Minnow Survival
File: A:003.004 Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	4	0.991	1.412	1.225
2	9	4	1.249	1.412	1.371
3	18	4	1.249	1.412	1.331
4	31	4	0.159	1.249	0.800
5	50	4	1.107	1.249	1.214
6	100	4	0.991	1.412	1.307

8505-088-003-004 Fathead Minnow Survival
File: A:003.004 Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	0.030	0.174	0.087
2	9	0.007	0.081	0.041
3	18	0.009	0.094	0.047
4	31	0.240	0.490	0.245
5	50	0.005	0.071	0.035
6	100	0.044	0.210	0.105

8505-088-003-004 Fathead Minnow Survival
File: A:003.004 Transform: ARC SINE(SQUARE ROOT(Y))

STEELS MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	Control	1.225				
2	9	1.371	22.50	10.00	4.00	
3	18	1.331	21.00	10.00	4.00	
4	31	0.800	13.00	10.00	4.00	
5	50	1.214	17.00	10.00	4.00	
6	100	1.307	21.00	10.00	4.00	

Critical values use k = 5, are 1 tailed, and alpha = 0.05

ck 12/14/89

)-088-003-004 Fathead Minnow Mean Dry Weight
:: A:003.4W Transform: NO TRANSFORMATION

)iro Wilks test for normality

0.189

0.909

tical W (P = 0.05) (n = 23) = 0.914
tical W (P = 0.01) (n = 23) = 0.881

---

a PASS normality test at P=0.01 level. Continue analysis.

5-088-003-004 Fathead Minnow Mean Dry Weight
e: A:003.4W Transform: NO TRANSFORMATION

tletts test for homogeneity of variance

---

culated B statistic = 8.37
le Chi-square value = 15.09 (alpha = 0.01)
le Chi-square value = 11.07 (alpha = 0.05)

rage df used in calculation ==> df (avg n - 1) = 2.83
d for Chi-square table value ==> df (#groups-1) = 5

---

a PASS homogeneity test at 0.01 level. Continue analysis.

E: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

JED 12/14/89

-088-003-004 Fathead Minnow Mean Dry Weight
: A:003.4W Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

IDENTIFICATION	N	MIN	MAX	MEAN
Control	4	0.360	0.480	0.408
9	4	0.170	0.520	0.418
18	4	0.410	0.700	0.573
31	3	0.280	0.560	0.443
50	4	0.580	0.680	0.633
100	4	0.630	0.710	0.660

-088-003-004 Fathead Minnow Mean Dry Weight
: A:003.4W Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

IDENTIFICATION	VARIANCE	SD	SEM
Control	0.003	0.059	0.029
9	0.027	0.166	0.083
18	0.014	0.120	0.060
31	0.021	0.146	0.084
50	0.002	0.046	0.023
100	0.001	0.038	0.019

dh 12/14/89

page 12 of 13
12/14/89

05-088-003-004 Fathead Minnow Mean Dry Weight
le: A:003.4W Transform: NO TRANSFORMATION

ANOVA TABLE

URCE	DF	SS	MS	F
tween	5	0.250	0.050	4.545
thin (Error)	17	0.189	0.011	
tal	22	0.439		

Critical F value = 2.81 (0.05,5,17)
Since F > Critical F REJECT Ho:All groups equal

05-088-003-004 Fathead Minnow Mean Dry Weight
le: A:003.4W Transform: NO TRANSFORMATION

DUNNETTS TEST

****** WARNING ******

This data set has unequal replicates. The Bonferroni T-test should be used instead of the Dunnetts test.

12/14/89

KM 12/14/89

05-088-003-004 Fathead Minnow Mean Dry Weight
le: A:003.4W Transform: NO TRANSFORM

ANOVA TABLE

URCE	DF	SS	MS	F
tween	5	0.250	0.050	4.545
thin (Error)	17	0.189	0.011	
tal	22	0.439		

Critical F value = 2.81 (0.05,5,17)
Since F > Critical F REJECT Ho:All groups equal

505-088-003-004 Fathead Minnow Mean Dry Weight
.le: A:003.4W Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 1 OF 2 Ho:Control<Treatment

ROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.408	0.408		
2	9	0.418	0.418	-0.135	
3	18	0.573	0.573	-2.225	
4	31	0.443	0.443	-0.447	
5	50	0.633	0.633	-3.034	
6	100	0.660	0.660	-3.405	

onferroni T table value = 2.57 (1 Tailed Value, P=0.05, df=17,5)

505-088-003-004 Fathead Minnow Mean Dry Weight
ile: A:003.4W Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 2 OF 2 Ho:Control<Treatment

ROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	4			
2	9	4	0.190	46.7	-0.010
3	18	4	0.190	46.7	-0.165
4	31	3	0.206	50.5	-0.036
5	50	4	0.190	46.7	-0.225
6	100	4	0.190	46.7	-0.253

dh 12/14/89

Study Title

Subchronic Toxicity of Molycorp, Inc. Effluent to the Fathead Minnow (*Pimephales promelas*) Under Static Renewal Test Conditions.

Author
Kurt R. Drottar

Study Completed On
August 16, 1988

Performing Laboratory
ERT, Inc.
1716 Heath Parkway
Fort Collins, CO 80524

Laboratory Project ID
8505-088-003-002

STATEMENT OF GLP COMPLIANCE

This study was conducted and complies with the USEPA (1985) general guidence on good laboratory practices related to effluent toxicity testing.

Kurt R. Drottar
Project Manager/Study Director

8/23/88
Date

STATEMENT OF QUALITY ASSURANCE

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

Dan F. Keefe
Quality Assurance Unit

8/22/88
Date

SUMMARY

Sponsor: Molycorp, Inc.

Study Director: Kurt R. Drottar

Test Facility: ERT, 1716 Heath Parkway, Fort Collins, CO

Location of Data: ERT, 1716 Heath Parkway, Fort Collins, CO

Test Substance: Composite effluent samples from outfall 002

Subject: Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test

Test Dates: August 9 (12:10) to August 16 (12:10), 1988

Length of Study: 7 days

Test Species: *Pimephales promelas*

Source of Organisms: Florida Bioassay Supply, Gainesville, FL

Age of Test Organisms: 5 days

Test Concentrations: 0 (dilution water control), 2.8, 5.5, 15, 50 and 100 percent effluent

Dilution Water: Reconstituted water (USEPA 1985)

Results: NOEC = 100 percent effluent

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1.0 Introduction

A static renewal toxicity test was conducted at ERT in Fort Collins, Colorado, to determine the subchronic toxicity of Molycorp, Inc. effluent to the fathead minnow (*Pimephales promelas*). The criterion for effect was a significant reduction in survival or mean dry weight as compared to experimental controls. Test results are expressed as a no observable effect concentration (NOEC), lowest observable effect concentration (LOEC), and chronic value (ChV), the geometric mean between the NOEC and the LOEC.

All study data are maintained in ERT's archives, 1716 Heath Parkway, Fort Collins, Colorado.

2.0 Materials and Methods

2.1 Test Effluent

Three separate composite effluent samples from outfall 002 were delivered to ERT via Federal Express. The samples were received at ERT packed on ice on the following dates: 1) August 9, 1988 (collected 08:20 August 7 to 08:20 August 8, 1988) - ERT sample # 434; 2) August 11, 1988 (collected 09:30 August 9 to 09:30 AAugust 10, 1988) - ERT sample # 436; and 3) August 13, 1988 (collected 10:10 August 11 to 10:10 August 12, 1988) - ERT Sample # 438. Initial chemical characterization of the effluent samples is given in Table 2-1.

2.2 Dilution Water

Due to weather conditions and a high dissolved solids concentration in the actual receiving water (personnel communication, Fred Martinez), dilution water used in testing was reconstituted water prepared to obtain a hardness and alkalinity similar to the receiving stream (ERT sample #414: alkalinity, 63 mg/L as $CaCO_3$; and hardness, 150 mg/L as $CaCO_3$). Chemical characterization of the reconstituted water (ERT RW # 100) is also given in Table 2-1.

2.3 Test Organisms

Fathead minnows were obtained from a commercial supplier (Florida Bioassay Supply, Gainesville, Florida) and were 5-days old at test initiation. Test organisms (ERT lot #88-40) appeared to be in good physical condition.

Table 2-1.

Initial chemical characterization of effluent and reconstituted water used in toxicity testing.

Sample	Alkalinity	Hardness	Conductivity
	(mg/L as $CaCO_3$)		(umhos/cm)
Effluent			
8/09/88	154	884	1,690
8/11/88	153	884	1,740
8/13/88	154	872	1,700
Dilution Water			
8/09/88	62	142	420
8/11/88	60	142	428
8/13/88	60	142	460

2.4 Test Methods

The test was conducted according to ERT Aquatic Toxicology Protocol No. 41 (Appendix A) based on USEPA method 1000.0 (USEPA 1985) and the Proposed Changes in Freshwater Chronic Toxicity Test Conditions (REF: 3324A). Testing was conducted in 1-L beakers containing a final volume of 800 mL of test solution. Ten fathead minnows were randomly distributed to each test container and three replicates were tested per treatment. Fathead minnows were exposed to 2.8, 5.5, 15, 50 and 100 percent effluent (v:v, effluent:reconstituted dilution water). Test solutions were renewed daily with freshly prepared dilutions of the most recent effluent sample. Fathead minnows were fed 0.1 mL of a concentrated suspension of newly hatched brine shrimp nauplii twice daily during the test. The test was conducted at 25°C under fluorescent lighting with a photoperiod of 16 hours light and 8 hours dark.

In addition to the effluent test, a reference toxicant (sodium dodecyl sulfate) test was also conducted with the same lot of fathead minnows to determine the sensitivity range of the test organisms.

2.5 Data Analysis

Where possible, data analysis associated with the subchronic effluent test included calculation of the following endpoints: NOEC, LOEC, and ChV. The endpoint used to determine these values was the most sensitive (i.e., showing significant effects at the lowest effluent concentration, $P \leq 0.05$) of either survival or mean dry weight. Dunnett's Multiple Comparison Test (with arcsine squareroot transformation) was used to compare treatment group survival to control survival. Dunnett's Multiple Comparison Test was then used to compare mean dry weight of surviving treatment organisms with the mean dry weight of the controls. In addition, the LC1 (the percent effluent estimated to produce 1 percent mortality) was calculated using probit analysis where possible. All statistical analysis was conducted with an IBM compatible personal computer utilizing software supplied by the University of Wyoming (Toxstat version 2.1).

3.0 RESULTS AND DISCUSSION

Mortality was $\leq$ 3.3 percent in all effluent treatment groups after 7-days of exposure (Table 3-1). No control mortality was observed during the test. Dunnett's multiple comparison test showed that survival was not significantly reduced in any effluent treatment group in comparison to the control. Dunnett's multiple comparison test also showed no significant reduction in mean dry weight in any effluent treatment group in comparison to the control (Table 3-1). Therefore the NOEC, based on survival and reproduction, was 100 percent effluent.

Throughout the test all water quality parameters remained within acceptable limits. Dissolved oxygen concentrations remained $\geq$ 5.0 mg/L (71 percent of saturation at 4,800 feet elevation above sea level). Test temperature was maintained at 25 $\pm$ 1°C and pH ranged from 7.6 - 8.4.

The 24-hour LC50 for the reference toxicant test was 3.4 mg/L sodium dodecyl sulfate as calculated by the binomial method. ERT's acceptable range for 3 to 7 day old fathead minnows is 2.8 to 4.0 mg/L sodium dodecyl sulfate. Therefore, the test organisms were within the designated sensitivity range.

Table 3-1.

Survival and growth of fathead minnows exposed to Molycorp, Inc. effluent.

Endpoint	Treatment					
	Control	2.8	5.5	15	50	100
% survival	100	100	100	96.7	100	100
mean dry wt. (mg)	0.41	0.42	0.34	0.39	0.45	0.50

*indicates significant difference from control using Dunnett's multiple comparison test ($P \leq 0.05$).

LITERATURE CITED

U.S. Environmental Protection Agency. 1985. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/600/4-85/014.

APPENDIX A
TEST PROTOCOL

Title: Subchronic Toxicity of Molycorp, Inc. Effluent to Fathead Minnows (*Pimephales promelas*) under Static Renewal Test Conditions

Study Sponsor: Molycorp, Inc.
Questa Division
P. O. Box 469
Questa, NM 87556
(505) 586-0212

Project Officer: Fred Martinez

Testing Facility: ERT
1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878, Ext. 276

Project Manager/Study Director: Kurt R. Drottar

1.0 INTRODUCTION

1.1 Objective

To determine the chronic value (chV) of the effluent to fathead minnows (*Pimephales promelas*) under static renewal test conditions.

1.2 Test Effluent

The effluent samples will be collected by Molycorp, Inc. personnel. Samples will be collected in disposable cubitainers, placed on ice, and shipped to ERT via overnight delivery.

2.0 MATERIALS AND METHODS

2.1 Basis

This protocol is design to comply with EPA Method 1000.0, fathead minnows (*Pimephales promelas*) larval survival and growth test (U.S. EPA 1985).

2.2 Test Organism

1. Species - Fathead minnows (*Pimephales promelas*)
2. Age - Fathead minnows will be 1 to 7 day old larvae with a 48-hour maximum range in age.
3. Source - Fathead minnows will be obtained from a commercial supplier.
4. Feeding - Fathead minnows will be fed 0.1 mL of a concentrated suspension of newly hatched brine shrimp nauplii twice daily.

3.0 TEST SYSTEM

3.1 Dilution Water

Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than

20 percent mortality in the control), reconstituted dilution water, with hardness and alkalinity similar to the receiving stream water will be substituted.

3.2 Temperature

Test temperature will be 25±1°C. Testing will be conducted in a temperature controlled water bath.

3.3 Test Containers

Test containers will be 1-L beakers containing 800 mL of test solution.

3.4 Photoperiod

The photoperiod will be 16 hours light and 8 hours dark.

3.5 Dissolved Oxygen Concentration

Dissolved oxygen concentrations will be maintained ≥40 percent of saturation. If the dissolved oxygen concentration in any test chamber approaches 40 percent of saturation, all test chambers will be aerated moderately.

4.0 TEST DESIGN

4.1 Test Concentrations

Five dilutions will be performed using a minimum dilution factor of 0.3. Two of the five treatments will be tested which approximate the percent effluent at low flow and at 0.5 low flow as determined by the sponsor. A control consisting dilution water only will be tested concurrently.

4.2 Number of Test Organisms

Thirty fathead minnows will be exposed to each test concentration and control. Ten fathead minnows will be randomly assigned to each test chamber and three replicates will be tested per treatment.

4.3 Test Initiation/Renewal Frequency

Testing will be initiated within 30 minutes of mixing test solutions. Test solutions will be renewed on a daily basis. All testing/renewals will be initiated within 72 hours of sample collection.

4.4 Chemical and Physical Monitoring

At a minimum, the following measurements will be made:

1. Dissolved oxygen will be measured in each treatment and control at the beginning and end of each 24-hour exposure period.

2. Temperature, pH, and conductivity will be measured in each treatment and control at the beginning of each 24-hour exposure period.

3. Alkalinity and hardness will be measured in 100 percent effluent and the control for each effluent sample received.

4.5 Biological Monitoring

Observations of mortality in each test chamber will be made daily.

4.6 Test Duration/Termination

The test duration is seven days. At test termination the larvae in each test chamber will be counted and preserved (4 percent formalin) as a group for later dry weight analysis. Immediately prior to dry weight analysis, the preserved larvae will be rinsed in distilled water. The group of rinsed larvae from each test chamber will be transferred to a tared weighing boat and dried at 100°C for a minimum of 2-h. Immediately after removal from the drying oven, the weighing boats will be placed in a dessicator to prevent the absorption of moisture from the air, until dried. The weights will be measured to the nearest 0.1 mg.

4.7 Calculations

Dunnett's procedure will be used to test for a significant difference in the survival and/or growth of the various effluent concentrations and the control. The no observable effect concentration (NOEC), low observable effect concentration (LOEC), and chV will then be calculated on the basis of survival and/or growth. Probit analysis will also be used to determine the concentration causing 1 percent mortality (LC1).

4.8 Quality Criterion

The test will not be valid if control mortality exceeds 20 percent, except where survival in any test concentration is 80 percent or better.

5.0 TEST REPORT

The report will be a typed document describing the results of the test and will be signed by the Study Director and Quality Assurance Unit. The report will include, but not be limited to, the following.

- Name of test, investigators, and laboratory.
- A detailed description of the effluent including its source, time of collection, composition, known physical and chemical properties, and any information that appears on the sample container or has been provided by the sponsor.
- The source and characterization of the dilution water, scientific name of test organism, and a description of any pretreatment.
- Age, life stage, source, history, diseases observed and treatments, acclimation procedure, and diet.
- A description of the experimental design and the test chambers, the volume of solution in the chambers, the number of test organisms and, replicates per treatment, and the lighting.
- A description of any aeration performed on test solutions before or during the test.
- Definition of the response criterion used to determine effect.
- Percentage of test organisms that died in all treatments.
- The calculated NOEC, LOEC, and chV values, and a reference to calculation methods.
- All pH, dissolved oxygen concentrations, temperature measurements, and all visual observations of test solutions.
- Any deviations from protocol.

6.0 LITERATURE CITED

U.S. Environmental Protection Agency. 1985. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. EPA/600/4-85/014. December 1985.

Good Laboratory Practices (GLP)

All test procedures, documentation, records, and reports are designed to comply with the U.S. Environmental Protection Agency's Good Laboratory Practices as promulgated under the Toxic Substances Control Act (Federal Register, Part III, November 29, 1983) or the Federal Insecticide, Fungicide, and Rodenticide Act (Federal Register, Part IV, November 29, 1983). To this end, random audits of the test may be scheduled while the test is in progress. The raw data will be checked and compared to protocol requirements and standard operating procedures, and the final report will be audited for accuracy and signed, if satisfactory, by the responsible individual from the Quality Assurance Audit.

Protocol Amendments and Deviations

All changes (i.e., amendments, deviations, and final report revisions) of the approved protocol plus the reasons for the changes must be documented in writing. The changes need to be signed and dated by the Study Director and maintained with the protocol. All amendments must be authorized in advance by the Sponsor.

Sponsor Approval: _____ Date: 07/24/88

Study Director: _____ Date: 8/1/88

APPENDIX B
TEST DATA

MOLYCORP, INC.
QUESTA DIVISION

This sheet represents a chain of custody for effluent samples collected

at ~~Outfall 002~~ _____ _____

located in Taos County, Questa, New Mexico on 08/07,08, 1988 Conposite Samples:

Sample bottles were prepared by Molycorp employees in accordance with guidance set forth by the U.S. Environmental Protection Agency for the existing program permit. Sampling procedures were also followed in accordance with permit requirements.

Sample (s) Identification Outfall 002

Sample (s) collected at: Outfall 002

Last portion of composite 8:20 AM

By: Fred Martinez

MOLYCORP, INC.
QUESTA DIVISION

This sheet represents a chain of custody for effluent samples collected

at Outfall 002

located in Taos County, Questa, New Mexico on 08/ 09, 10, 1988 COMPOSITE SAMPLES

Sample bottles were prepared by Molycorp employees in accordance with guidance set forth by the U.S. Environmental Protection Agency for the existing program permit. Sampling procedures were also followed in accordance with permit requirements.

Sample (s) Identification OUTFALL 002

Sample (s) collected at: OUTFALL 002

Last portion of composite 9:30 AM

By: Fred Martinez

MOLYCORP, INC.
QUESTA DIVISION

This sheet represents a chain of custody for effluent samples collected

at Outfall 002

located in Taos County, Questa, New Mexico on 08/11, 12, 1988 COMPOSITE SAMPLES

Sample bottles were prepared by Molycorp employees in accordance with guidance set forth by the U.S. Environmental Protection Agency for the existing program permit. Sampling procedures were also followed in accordance with permit requirements.

Sample (s) Identification Outfall 002

Sample (s) collected at: Outfall 002

Last portion of composite 10:10AM 8/12/88

By: Fred Martinez

8505-038-303 002
KM 8/16/88

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

KM 8/23/88

Composite collected FROM: ~~UNK~~ 08:20 am/pm 8/7/88 date
TO: ~~UNK~~ 08:20 am/pm 8/8/88 date

Test initiated: 1210 am/pm 8/9/88 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers				MEAN DRY WEIGHT	
	A	B	C	D	mg	CV%*
0%	0.39	0.49	0.36	NA	0.41	16.48
~~1%~~ 15%	0.34	0.42	0.41		0.39	11.18
~~3%~~ 50%	0.47	0.43	0.44		0.45	4.63
~~10%~~	NA				NA	
~~30%~~	NA				NA	
100%	0.52	0.54	0.44		0.50	10.58
Low Flow 2.8 %	0.43	0.34	0.50		0.42	19.10
1/2 Low Flow 5.5 %	0.36	0.32	0.33		0.34	6.12

* coefficient of variation = standard deviation x 100/mean

ck 9/22/88

1. Dunnett's Procedure:

Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

a. LOW FLOW: _____ YES ✓ NO
b. 1/2 LOW FLOW: _____ YES ✓ NO

8116188

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
0%	100	100	100	NA	100	100	100	0
~~1%~~ 15%	100	90	100		100	100	96.7	5.97
~~3%~~ 50%	100	100	100		100	100	100	0
~~10%~~	NA				NA			NA
~~30%~~	NA				NA			NA
100%	100	100	100		100	100	100	0
Low Flow 2.8 %	100	100	100		100	100	100	0
1/2 Low Flow 5.5 %	100	100	100		100	100	100	0

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

dk 8/22/88

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

ERT QA Form No. 18
Effective: 3/87

SUBJECT: PHYSICAL & CHEMICAL DATA FOR FATHEAD MINNOW SUBCHRONIC TEST

SUBSTANCE: EFFLUENT
BEGINNING: DATE 8-9-88 TIME 1210
CLIENT: Molycorp Inc
ENDING: DATE 8-16-88 TIME 1210
PROJECT NO. 8505-088-003-002

RW#100
LOT # 88-40 / 5 days
ERT Sample # 434, 436, 438
LC 50 = 3.4 mg/L SAS

CONC.	TEST CONTAINER NUMBER	NO. OF SURVIVING ORGANISMS 0	1	2	3	4	5	6	7	DISSOLVED OXYGEN (mg/l) 0 NEW	0 OLD	1 NEW	1 OLD	2 NEW	2 OLD	3 NEW	3 OLD	4 NEW	4 OLD	5 NEW	5 OLD	6 NEW	6 OLD	7 NEW	7 OLD	TEMPERATURE (C) 0	1	2	3	4	5	6	7
																										NEW SOLUTIONS ONLY							OLD
Control	A	10	10	10	10	10	10	10	10	6.3	5.7	6.0	6.0	6.2	5.5	6.1	5.3	6.1	5.3	6.4	5.3	6.1	5.0	24	24	24	24	25	25	25	25
	B	10	10	10	10	10	10	10	10						5.7																
	C	10	10	10	10	10	10	10	10						5.7																
2.8	A	10	10	10	10	10	10	10	10	6.2	5.9	6.1	5.9	6.2	5.7	6.1	5.4	6.1	5.5	6.4	5.6	6.2	5.1	24	24	24	24				
	B	10	10	10	10	10	10	10	10						5.7																
	C	10	10	10	10	10	10	10	10						5.6																
5.5	A	10	10	10	10	10	10	10	10	6.2	5.8	6.2	5.7	6.2	5.7	6.1	5.5	6.1	5.6	6.4	5.5	6.2	5.0	24	24	24	24				
	B	10	10	10	10	10	10	10	10						5.8																
	C	10	10	10	10	10	10	10	10						5.7																
15	A	10	10	10	10	10	10	10	10	6.2	5.8	6.2	5.8	6.2	5.8	6.1	5.5	6.2	5.5	6.6	5.6	6.3	5.2	24	24	24	24				
	B	10	10	10	10	10	10	9*	9																						
	C	10	10	10	10	10	10	10	10																						
50	A	10	10	10	10	10	10	10	10	6.2	5.6	6.3	5.7	6.2	5.8	6.2	5.4	6.4	5.5	6.8	5.6	6.3	5.1	24	24	24	24				
	B	10	10	10	10	10	10	10	10						5.7																
	C	10	10	10	10	10	10	10	10						5.7																
100	A	10	10	10	10	10	10	10	10	6.3	5.6	7.1	6.0	6.7	5.8	6.5	5.4	7.6	5.6	7.0	5.7	6.6	5.1	24	24	24	24				
	B	10	10	10	10	10	10	10	10						5.9																
	C	10	10	10	10	10	10	10	10						5.9																
METER NO.		–	–	–	–	–	–	–	–	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	Therm	Therm	Therm	Therm	Therm	Therm	Therm	Therm
DATE		8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16	8/9	8/10	8/10	8/11	8/11	8/12	8/12	8/13	8/13	8/14	8/14	8/15	8/15	8/16	8/16	8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16
TIME		1210	1035	1125	1110	1640	1220	0945	1210	1345	0840	1130	0925	1525	0905	1446	1410	1610	1150	1220	0945	0930	0830	0830	1345	1130	1525	1446	1410	1220	0930	0830
INITIALS		SWC	SWC	SWC	SWC	[illegible]	[illegible]	SWC	SWC	SWC	SWC	KC-B	SWC	KC-B	KC-B	KC-B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	SWC	SWC	SWC	SWC	KC-B	KC-B	KC-B	[illegible]	[illegible]	[illegible]	SWC

*15% B → 1 NF

[illegible] 8/16/88

[illegible] 8/22/88

ERT QA Form No. 19
Effective: 3/87

SUBJECT: CHEMICAL DTA FOR FATHEAD MINNOW SUBCHRONIC TEST

SUBSTANCE: EFFLUENT BEGINNING: DATE 8-9-88 TIME 1210

CLIENT: Monsanto Inc. ENDING: DATE 8-16-88 TIME 1210

PROJECT NO. 8505-088-003-002

CONC.	TEST CONTAINER NUMBER	pH 0 (NEW SOLUTIONS ONLY)	pH 1	pH 2	pH 3	pH 4	pH 5	pH 6	pH 7 (OLD)	CONDUCTIVITY (umhos/cm) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7 (OLD)	ALKALINITY (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7	HARDNESS (mg/l) 0 (NEW SOLUTIONS ONLY)	1	2	3	4	5	6	7
Control	A	8.3	8.4	8.3	8.2	8.3	8.2	8.3	7.9	420	403	428	420	440	410	420		62		60		60				142		142		142			
	B																	–		–		–				–		–		–			
	C																	–		–		–				–		–		–			
2.8	A	8.3	8.3	8.2	8.2	8.2	8.2	8.3	7.9	453	452	480	469	480	460	454		–		–		–				–		–		–			
	B																	–		–		–				–		–		–			
	C																	–		–		–				–		–		–			
5.6	A	8.2	8.3	8.2	8.2	8.2	8.2	8.2	7.9	499	498	500	500	520	500	497		–		–		–				–		–		–			
	B																	–		–		–				–		–		–			
	C																	–		–		–				–		–		–			
15	A	8.1	8.3	8.2	8.1	8.0	8.0	8.1	8.0	610	610	660	630	650	600	610		–		–		–				–		–		–			
	B																	–		–		–				–		–		–			
	C																	–		–		–				–		–		–			
50	A	7.9	8.1	8.1	8.0	7.9	7.7	7.9	8.2	1100	1100	1120	1120	1130	1100	1100		–		–		–				–		–		–			
	B																	–		–		–				–		–		–			
	C																	–		–		–				–		–		–			
100	A	7.7	7.9	7.8	7.8	7.6	7.6	7.6	8.2	1690	1700	1740	1710	1700	1600	1680		154		153		154				884		884		872			
	B																	–		–		–				–		–		–			
	C																	–		–		–				–		–		–			
METER NO.		#25	#25	#25	#25	#25	#24	#25	#25	#7	#7	#7	#7	#7	#7	#7		TMR		TMR		T				TMR		TMR		T			
DATE		8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16	8/9	8/10	8/11	8/12	8/13	8/14	8/15		8/9		8/11		8/13				8/9		8/11		8/13			
TIME		1315	1132	1527	1417	1650	1225	1200	0839	1520	1135	1530	1449	1650	1250	1000		1415		1420		1605				1415		1420		1600			
INITIALS		SWC	KC-B	KC-B	KC-B	[illegible]	[illegible]	SWC	[illegible]	SWC	KC-B	KC-B	KC-B	[illegible]	[illegible]	[illegible]		SWC		KC-B		[illegible]				SWC		KC-B		[illegible]			

8/16/88

8/22/88

ERT QA Form No. 10
Effective: 3/87

SUBJECT: TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

SPONSOR: Molycorp Inc.
PROJECT NO: 8505-088-003-002
TEST SUBSTANCE: Effluent
SPECIES: Pimephales promelas
DATA BY: VJP DATE 8/16/88 TIME 1140
LOT/BATCH NO: 88-40

NO.	LENGTH ~~TYPE~~ Concentration		WEIGHT: TYPE DRY grams TARE gm	GROSS gm	NET gm
1	Control	A	1.5686	1.5725	0.0039
2		B	1.5404	1.5453	0.0049
3		C	1.5518	1.5554	0.0036
4	2.8%	A	1.5446	1.5489	0.0043
5		B	1.5609	1.5643	0.0034
6		C	1.5305	1.5355	0.0050
7	5.5%	A	1.5369	1.5405	0.0036
8		B	1.5296	1.5328	0.0032
9		C	1.5105	1.5138	0.0033
10	15%	A	1.5489	1.5523	0.0034
11		B	1.5353	1.5391	0.0038
12		C VJP	~~1.5733~~ 1.5310	1.5351	0.0041
13	50%	A 8/16/88	1.5804	~~1.54~~ VJP 8/16/88 1.5851	0.0047
14		B	1.5474	1.5517	0.0043
15		C	1.5414	1.5458	0.0044
16	100%	A	1.5444	1.5496	0.0052
17		B	1.5516	1.5570	0.0054
18		C	1.5733	1.5777	0.0044
19					
20				VJP 8/16/88	
RANGE					
MEAN					
S					

TEST SOLUTION VOLUME _____ LOADING RATE _____

Dan Kube 8/22/88

8505-088-003-002 Survival
File: B:003.2S Transform: ARC SINE(SQUARE ROOT(Y)) 8/16/88

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	3	1.412	1.412	1.412
2	2.8	3	1.412	1.412	1.412
3	5.5	3	1.412	1.412	1.412
4	15	3	1.249	1.412	1.358
5	50	3	1.412	1.412	1.412
6	100	3	1.412	1.412	1.412

8505-088-003-002 Survival
File: B:003.2S Transform: ARC SINE(SQUARE ROOT(Y))

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	0.000	0.000	0.000
2	2.8	0.000	0.000	0.000
3	5.5	0.000	0.000	0.000
4	15	0.009	0.094	0.054
5	50	0.000	0.000	0.000
6	100	0.000	0.000	0.000

8505-088-003-002 Survival
File: B:003.2S Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.007	0.001	1.000
Within (Error)	12	0.018	0.001	
Total	17	0.025		

Critical F value = 3.11 (0.05,5,12)
Since F < Critical F FAIL TO REJECT Ho:All groups equal 8/22/88

8505-088-003-002 Survival
File: B:003.2S Transform: ARC SINE(SQUARE ROOT(Y)) KD 8/16/88

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	1.412	1.000		
2	2.8	1.412	1.000	0.000	
3	5.5	1.412	1.000	0.000	
4	15	1.358	0.967	2.104	
5	50	1.412	1.000	0.000	
6	100	1.412	1.000	0.000	

Dunnett table value = 2.50 (1 Tailed Value, P=0.05, df=12,5)

8505-088-003-002 Survival
File: B:003.2S Transform: ARC SINE(SQUARE ROOT(Y))

DUNNETTS TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	3			
2	2.8	3	0.065	6.5	0.000
3	5.5	3	0.065	6.5	0.000
4	15	3	0.065	6.5	0.033
5	50	3	0.065	6.5	0.000
6	100	3	0.065	6.5	0.000

dh 8/22/88

8505-088-003-002 Mean Dry Weight
File: B:003.2W Transform: NO TRANSFORMATION

8/16/88

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Control	3	0.360	0.490	0.413
2	2.8	3	0.340	0.500	0.423
3	5.5	3	0.320	0.360	0.337
4	15	3	0.340	0.420	0.390
5	50	3	0.430	0.470	0.447
6	100	3	0.440	0.540	0.500

8505-088-003-002 Mean Dry Weight
File: B:003.2W Transform: NO TRANSFORMATION

SUMMARY STATISTICS ON TRANSFORMED DATA TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM
1	Control	0.005	0.068	0.039
2	2.8	0.006	0.080	0.046
3	5.5	0.000	0.021	0.012
4	15	0.002	0.044	0.025
5	50	0.000	0.021	0.012
6	100	0.003	0.053	0.031

8505-088-003-002 Mean Dry Weight
File: B:003.2W Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.045	0.009	3.000
Within (Error)	12	0.033	0.003	
Total	17	0.078		

Critical F value = 3.11 (0.05,5,12)
Since F < Critical F FAIL TO REJECT Ho:All groups equal

dh 8/22/88

8505-088-003-002 Mean Dry Weight
File: B:003.2W Transform: NO TRANSFORMATION

8/16/88

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.413	0.413		
2	2.8	0.423	0.423	-0.224	
3	5.5	0.337	0.337	1.714	
4	15	0.390	0.390	0.522	
5	50	0.447	0.447	-0.745	
6	100	0.500	0.500	-1.938	

Dunnett table value = 2.50 (1 Tailed Value, P=0.05, df=12,5)

8505-088-003-002 Mean Dry Weight
File: B:003.2W Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	3			
2	2.8	3	0.112	27.0	-0.010
3	5.5	3	0.112	27.0	0.077
4	15	3	0.112	27.0	0.023
5	50	3	0.112	27.0	-0.033
6	100	3	0.112	27.0	-0.087

8/22/88

6E

6WP

6W-P

Permit file
Molycorp

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
ALBUQUERQUE DISTRICT OFFICE
435 Montano N.E.
Albuquerque, New Mexico 87107

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
1792 (014)
NM0022306

FEB 14 1989

FEB 07 1989

Dear Reader:

The interest in the DEIS for the proposed Molycorp Guadalupe Mountain Tailings Facility has been very high. Several of the reviewers have requested an extension of time to do a more detailed review. In light of these requests and to assure quality public input it has been determined that the comment period will be extended. Comments may be submitted thru March 9, 1989, and directed to:

RECEIVED
WATER MANAGEMENT DIVISION
89 MAR -2 AM 11:30

Robert T. Dale
Bureau of Land Management
Albuquerque District Office
435 Montano NE
Albuquerque, NM 87107

Your interest is appreciated.

Sincerely,

Robert T. Dale
District Manager

State of New Mexico
ENVIRONMENT DEPARTMENT
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-0187

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

TELECOPIER TRANSMITTAL

DATE: 9/19/95 TIME: _____ PAGE: 1 OF 4

PLEASE DELIVER THE FOLLOWING PAGES TO:

TO: Brian Burgess

LOCATION: US EPA 6WQ-PI

TELEPHONE NUMBER: 214 665 7534

TELECOPIER NUMBER: 214 665 6490

FROM: Glenn Spears

LOCATION: NMED

TELEPHONE NUMBER: 505 827-2827

TELECOPIER NUMBER: 505 827-0160

COMMENTS:

Permit file NM 22306

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BY CERTIFIED MAIL

RECEIVED
SEP 19 1995
SURFACE WATER QUALITY BUREAU

September 15, 1995

David R. Shoemaker
Vice President and Questa Mine Manager
Molycorp, Inc.
P.O. Box 469
Questa, New Mexico 87556

Re: Notice of Intent to File Citizen Suit

Our firm represents Amigos Bravos (c/o Brian Shields, Program Director, P.O. Box 238, Taos, NM 87571 (tel. 505-758-3874)), and New Mexico Citizens for Clean Air and Water (c/o Dr. John Bartlit, State Chairman, 113 Monte Rey Drive, Los Alamos, NM 87544 (tel. 505-672-9792)("the plaintiffs"). On their behalf, we hereby give you notice that the plaintiffs intend to file a citizen suit against Molycorp, Inc.("Molycorp"), pursuant to Section 505 of the Clean Water Act, 33 U.S.C. §1365.

The citizen suit will allege that Molycorp has violated and continues to violate the Clean Water Act by discharging acidic water and heavy metals, including but not limited to aluminum, cadmium, copper, chromium, cobalt, iron, molybdenum, manganese, nickel, lead, and zinc, from mine waste piles at the Questa Mine, either directly or indirectly through ground water, fissures and seeps, into the Red River. Molycorp has violated and continues to violate Section 301(a) of the Clean Water Act, 42 U.S.C. §1311(a), by not obtaining a permit for such discharges pursuant to Section 402 of the Clean Water Act, 42 U.S.C. §1342.

Be advised that the plaintiffs intend to initiate legal action against you at the close of the sixty day notice period to obtain prompt and complete enforcement of the Clean Water Act, as well as civil penalties to the statutory maximum of $25,000 per day of violation,

"Hear within ourselves the sound of the Earth crying." Vietnamese Zen Master Thich Nhat Hanh

100% recycled • 100% postconsumer waste

attorney and expert witness fees, costs, and such other relief as may be appropriate. This letter constitutes notice to you as required by Section 505(b) of the Clean Water Act, 33 U.S.C. §1365(b), to commence civil action authorized by Section 505 of the Clean Water Act, 33 U.S.C. §1365.

During the sixty day notice period, we will be available to discuss an amicable resolution of this matter. The plaintiffs seek a long-term solution to the discharge of acidic water and heavy metals from the mine waste piles. The Plaintiffs believe that such a solution, perhaps coupled with alternative environmental projects, would be preferrable to civil penalties.

Sincerely,

WESTERN ENVIRONMENTAL LAW CENTER

Grove T. Burnett
Eric Ames
P.O. Box 1507
Taos, New Mexico 87571
(505) 751-0351

Attorneys for Plaintiffs

cc by certified mail:

CT Corporation
Registered Agent for Molycorp, Inc.
119 East Marcy Street
Santa Fe, NM 87501

Carol Browner, Administrator
U.S. Environmental Protection Agency
401 M Street
Washington, D.C. 20460

Jane Sagimaw, Regional Administrator, Region VI
U.S. Environmental Protection Agency
1445 Ross Avenue
Suite 1200
Dallas, Texas 75202-2733

Janet Reno
Attorney General of the United States
U.S. Department of Justice
Washington, D.C. 20460

Mark Weidler, Secretary
Department of Environment
P.O. Box 26110
Santa Fe, New Mexico 87502

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Molycorp, Inc.
P. O. Box 469
Questa, New Mexico 87556

is authorized to discharge from a facility located at Questa, Taos County, New Mexico

to receiving waters named Red River, Waterbody Segment Code No. 2-119 of the Rio Grande Basin, from

Outfall 001: Latitude - N36°41'49"; Longitude - W105°37'53"
Outfall 002: Latitude - N36°41'29"; Longitude - W105°37'53"
Outfall 004: Latitude - N36°41'08"; Longitude - W105°31'51"
Outfall 005: Latitude - N36°41'41"; Longitude - W105°31'48"

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I (11 pages), II (8 pages), and III (7 pages) hereof.

This permit supersedes and replaces NPDES Permit No. NM0022306 issued May 20, 1988.

This permit shall become effective on October 15, 1993.

This permit and the authorization to discharge shall expire at midnight, October 14, 1998

Prepared by:

Frederick O. Humke, P.E.
Environmental Engineer
Industrial Permits Section (6W-PI)

Signed this 10thday of September 1993

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 001

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 001 - process water from milling operations and tailings disposal.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	(*1)	(*1)	60	90
Total Suspended Solids	(*1)	(*1)	20	30
Total Arsenic	(*1)	(*1)	0.5	1.0
Total Cadmium	(*1)	(*1)	0.05	0.05
Total Copper	(*1)	(*1)	0.15	0.30
Total Cyanide	(*1)	(*1)	0.025	0.05
Fluoride	(*1)	(*1)	3.0	3.0
Total Iron	(*1)	(*1)	0.6	0.6
Total Lead	(*1)	(*1)	0.3	0.6
Total Manganese	(*1)	(*1)	1.0	1.5
Total Mercury	(*1)	(*1)	0.001	0.002
Total Molybdenum	(*1)	(*1)	1.0	2.0
Total Zinc	(*1)	(*1)	0.2	0.2
Total Aluminum	(*1)	(*1)	(*1)	(*1)
Total Cobalt	(*1)	(*1)	(*1)	(*1)
Total Selenium	(*1)	(*1)	(*1)	(*1)
Total Vanadium	(*1)	(*1)	(*1)	(*1)
Total Beryllium	(*1)	(*1)	(*1)	(*1)
Total Silver	(*1)	(*1)	(*1)	(*1)
Chlordane	(*1)	(*1)	(*1)	(*1)
Total Residual Chlorine	(*1)	(*1)	(*1)	(*1)
Temperature	N/A	N/A	(*1)°F	(*1)°F
Biomonitoring	N/A	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (MGD)	(*2)	Record
Chemical Oxygen Demand	1/Week	Composite(*3)
Total Suspended Solids	1/Week	Composite(*3)
Total Arsenic(*5)	1/Week	Composite(*3)
Total Cadmium(*5)	1/Week	Composite(*3)
Total Copper(*5)	1/Week	Composite(*3)
Total Cyanide(*5)	1/Week	Composite(*3)
Fluoride	1/Week	Composite(*3)
Total Iron	1/Week	Composite(*3)
Total Lead(*5)	1/Week	Composite(*3)
Total Manganese	1/Week	Composite(*3)
Total Mercury(*5)	1/Week	Composite(*3)
Total Molybdenum	1/Week	Composite(*3)

Total Zinc(*5)	1/Week	Composite(*3)
Total Aluminum	1/Month	Composite(*3)
Total Cobalt	1/Month	Composite(*3)
Total Selenium(*5)	1/Month	Composite(*3)
Total Vanadium	1/Month	Composite(*3)
Total Beryllium(*5)	1/Month	Composite(*3)
Total Silver(*5)	1/Month	Composite(*3)
Chlordane(*5)	1/Month	Composite(*3)
Total Residual Chlorine(*5)	1/Month	Composite(*3)
Temperature	1/Week	Grab
Biomonitoring	1/Quarter	(*4)

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Outfall 001, which is the discharge spillway from Pope Lake.

FOOTNOTES

(*1) Report.
(*2) Continuous and totalized monitoring.
(*3) See Part II, Paragraph A.
(*4) See Part II, Paragraph E.
(*5) See Part II, Paragraph D.

OUTFALLS 002

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge from Outfall 002 - seepage from tailings impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	(*1)	(*1)	60	90
Total Suspended Solids	(*1)	(*1)	20	30
Total Arsenic	(*1)	(*1)	0.5	1.0
Total Cadmium	(*1)	(*1)	0.05	0.05
Total Copper	(*1)	(*1)	0.15	0.30
Total Cyanide	(*1)	(*1)	0.025	0.05
Fluoride	(*1)	(*1)	3.0	3.0
Total Iron	(*1)	(*1)	0.6	0.6
Total Lead	(*1)	(*1)	0.3	0.6
Total Manganese	(*1)	(*1)	(*1)	(*1)
Total Mercury	(*1)	(*1)	0.001	0.002
Total Molybdenum	(*1)	(*1)	(*1)	(*1)
Total Zinc	(*1)	(*1)	0.2	0.2
Total Aluminum	(*1)	(*1)	(*1)	(*1)
Total Cobalt	(*1)	(*1)	(*1)	(*1)
Total Selenium	(*1)	(*1)	(*1)	(*1)
Total Vanadium	(*1)	(*1)	(*1)	(*1)
Total Beryllium	(*1)	(*1)	(*1)	(*1)
Total Silver	(*1)	(*1)	(*1)	(*1)
Chlordane	(*1)	(*1)	(*1)	(*1)
Total Residual Chlorine	(*1)	(*1)	(*1)	(*1)
Temperature	N/A	N/A	(*1)°F	(*1)°F
Biomonitoring	N/A	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (MGD)	(*2)	Record
Chemical Oxygen Demand	1/Week	Composite(*3)
Total Suspended Solids	1/Week	Composite(*3)
Total Arsenic(*5)	1/Week	Composite(*3)
Total Cadmium(*5)	1/Week	Composite(*3)
Total Copper(*5)	1/Week	Composite(*3)
Total Cyanide(*5)	1/Week	Composite(*3)
Fluoride	1/Week	Composite(*3)
Total Iron	1/Week	Composite(*3)
Total Lead(*5)	1/Week	Composite(*3)
Total Manganese	1/Week	Composite(*3)
Total Mercury(*5)	1/Week	Composite(*3)
Total Molybdenum	1/Week	Composite(*3)
Total Zinc(*5)	1/Week	Composite(*3)
Total Aluminum	1/Month	Composite(*3)
Total Cobalt	1/Month	Composite(*3)
Total Selenium(*5)	1/Month	Composite(*3)
Total Vanadium	1/Month	Composite(*3)

Total Beryllium(*5)	1/Month	Composite(*3)
Total Silver(*5)	1/Month	Composite(*3)
Chlordane(*5)	1/Month	Composite(*3)
Total Residual Chlorine(*5)	1/Month	Composite(*3)
Total Zinc(*5)	1/Week	Composite(*3)
Temperature	1/Week	Grab
Biomonitoring	1/Quarter	(*4)

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Outfall 002, which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) By gauging on a daily basis.
(*3) See Part II, Paragraph A.
(*4) See Part II, Paragraph E.
(*5) See Part II, Paragraph D.

OUTFALLS 004 and 005

During the period beginning the effective date and lasting through the expiration date, the permittee is authorized to discharge individually from Outfalls 004 and 005 - periodic mine drainage consisting only of all mine contacted surface stormwater runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
CONVENTIONAL	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
Flow (MGD)	----	----	(*1)	(*1)
Total Suspended Solids	(*1)(*2)	(*1)	20	30
Chemical Oxygen Demand	N/A	N/A	125	125
Total Arsenic	N/A	N/A	(*1)	(*1)
Total Cadmium	(*1)(*2)	(*1)	0.05	0.10
Total Copper	(*1)(*2)	(*1)	0.15	0.30
Total Zinc	(*1)(*2)	(*1)	0.75	1.5
Total Lead	(*1)(*2)	(*1)	0.3	0.6
Total Mercury	(*1)(*2)	(*1)	0.001	0.002
Total Aluminum	(*1)(*2)	(*1)	(*1)	(*1)
Total Cobalt	(*1)(*2)	(*1)	(*1)	(*1)
Total Selenium	(*1)(*2)	(*1)	(*1)	(*1)
Total Vanadium	(*1)(*2)	(*1)	(*1)	(*1)
Total Beryllium	(*1)(*2)	(*1)	(*1)	(*1)
Total Silver	(*1)(*2)	(*1)	(*1)	(*1)
Chlordane	(*1)(*2)	(*1)	(*1)	(*1)
Total Residual Chlorine	(*1)(*2)	(*1)	(*1)	(*1)
Biomonitoring	N/A	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
CONVENTIONAL	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (MGD)	1/Day(*3)	Measure(*7)
Total Suspended Solids	1/Day(*3)	Composite(*6)
Chemical Oxygen Demand	1/Day(*3)	Composite(*6)
Total Arsenic(*5)	1/Day(*3)	Composite(*6)
Total Cadmium(*5)	1/Day(*3)	Composite(*6)
Total Copper(*5)	1/Day(*3)	Composite(*6)
Total Zinc(*5)	1/Day(*3)	Composite(*6)
Total Lead(*5)	1/Day(*3)	Composite(*6)
Total Mercury(*5)	1/Day(*3)	Composite(*6)
Total Aluminum	1/Month(*3)	Composite(*6)
Total Cobalt	1/Month(*3)	Composite(*6)
Total Selenium(*5)	1/Month(*3)	Composite(*6)
Total Vanadium	1/Month(*3)	Composite(*6)
Total Beryllium(*5)	1/Month(*3)	Composite(*6)
Total Silver(*5)	1/Month(*3)	Composite(*6)
Chlordane(*5)	1/Month(*3)	Composite(*6)
Total Residual Chlorine(*5)	1/Month(*3)	Composite(*6)
Biomonitoring	1/Quarter	(*4)

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day(*1) by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): Prior to discharge from the settling basins.

FOOTNOTES

(*1) Report
(*2) Daily discharges averaged over the number of days in the monthly period.
(*3) During periods of discharge.
(*4) See Part II, Paragraph E.
(*5) See Part II, Paragraph D.
(*6) See Part II, Paragraph A.
(*7) By calibrated weir.

INTERIM LIMITATIONS SUM1

During the period beginning the effective date and lasting through June 30, 1996, the permittee is authorized to discharge combined loads, SUM1 - Sum total of Outfalls 001 and 002 (technology levels) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG (*2)	DAILY MAX	DAILY AVG	DAILY MAX
Chemical Oxygen Demand	2364	N/A	N/A	N/A
Total Suspended Solids	788	N/A	N/A	N/A
Total Arsenic	19.6	N/A	N/A	N/A
Total Cadmium	2.00	N/A	N/A	N/A
Total Copper	5.88	N/A	N/A	N/A
Total Cyanide	0.98	N/A	N/A	N/A
Flouride	118	N/A	N/A	N/A
Total Iron	23.6	N/A	N/A	N/A
Total Lead	11.8	N/A	N/A	N/A
Total Manganese	39.4	N/A	N/A	N/A
Total Mercury	0.04	N/A	N/A	N/A
Total Molybdenum	25.0(*1)	N/A	N/A	N/A
Total Zinc	7.84	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Chemical Oxygen Demand	1/Month	Calculate
Total Suspended Solids	1/Month	Calculate
Total Arsenic	1/Month	Calculate
Total Cadmium	1/Month	Calculate
Total Copper	1/Month	Calculate
Total Cyanide	1/Month	Calculate
Flouride	1/Month	Calculate
Total Iron	1/Month	Calculate
Total Lead	1/Month	Calculate
Total Manganese	1/Month	Calculate
Total Mercury	1/Month	Calculate
Total Molybdenum	1/Month	Calculate
Total Zinc	1/Month	Calculate

FOOTNOTES

(*1) Calculate the average of monthly reported daily averages for Outfall 001 for six months preceeding the reporting period end date, then calculate the average of monthly reported daily averages for Outfall 002 for six months preceeding the reporting period end date. The stated discharge limitation applies to the sum total of these two calculated values.

(*2) Sum total of daily average mass loads for Outfalls 001 and 002.

FINAL LIMITATIONS SUM1

During the period beginning July 1, 1996, and lasting through the expiration date, the permittee is authorized to discharge combined loads, SUM1 - Sum total of Outfalls 001 and 002 (technology levels) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG (*2)	DAILY MAX	DAILY AVG	DAILY MAX
Chemical Oxygen Demand	2364	N/A	N/A	N/A
Total Suspended Solids	788	N/A	N/A	N/A
Total Arsenic	19.6	N/A	N/A	N/A
Total Cyanide	0.98	N/A	N/A	N/A
Flouride	118	N/A	N/A	N/A
Total Iron	23.6	N/A	N/A	N/A
Total Manganese	39.4	N/A	N/A	N/A
Total Mercury	0.04	N/A	N/A	N/A
Total Molybdenum	25.0(*1)	N/A	N/A	N/A
Total Zinc	7.84	N/A	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Chemical Oxygen Demand	1/Month	Calculate
Total Suspended Solids	1/Month	Calculate
Total Arsenic	1/Month	Calculate
Total Cyanide	1/Month	Calculate
Flouride	1/Month	Calculate
Total Iron	1/Month	Calculate
Total Mercury	1/Month	Calculate
Total Manganese	1/Month	Calculate
Total Molybdenum	1/Month	Calculate
Total Zinc	1/Month	Calculate

FOOTNOTES

(*1) Calculate the average of monthly reported daily averages for Outfall 001 for six months preceeding the reporting period end date, then calculate the average of monthly reported daily averages for Outfall 002 for six months preceeding the reporting period end date. The stated discharge limitation applies to the sum total of these two calculated values.

(*2) Sum total of daily average mass loads for Outfalls 001 and 002.

INTERIM LIMITATIONS SUM2

During the period beginning the effective date and lasting through June 30, 1996, the permittee is authorized to discharge combined loads, SUM2 - Sum total of Outfalls 001, 002, 004 and 005 (water quality standard levels)) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG	DAILY MAX	DAILY AVG	DAILY MAX
	(*2)	(*3)		
Total Cadmium	(*1)	(*1)	N/A	N/A
Total Copper	(*1)	(*1)	N/A	N/A
Total Lead	(*1)	(*1)	N/A	N/A
Total Silver	(*1)	(*1)	N/A	N/A
Total Residual Chlorine	(*1)	(*1)	N/A	N/A
Total Aluminum	(*1)	(*1)	N/A	N/A
Chlordane	(*1)	(*1)	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Cadmium	1/Month	Calculate
Total Copper	1/Month	Calculate
Total Lead	1/Month	Calculate
Total Silver	1/Month	Calculate
Total Residual Chlorine	1/Month	Calculate
Total Aluminum	1/Month	Calculate
Chlordane	1/Month	Calculate

FOOTNOTES

(*1) Report.
(*2) Sum total of daily average mass loads for Outfalls 001, 002, 003 and 004.
(*3) Sum total of maximum daily mass loads for Outfalls 001, 002. 003 and 004.

FINAL LIMITATIONS SUM2

During the period beginning July 1, 1996, and lasting through the expiration date, the permittee is authorized to discharge combined loads, SUM2 - Sum total of Outfalls 001, 002, 004 and 005 (water quality standard levels) for the month.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS			
	MASS (LBS/DAY)		OTHER UNITS (mg/L UNLESS STATED)	
	DAILY AVG (*2)	DAILY MAX (*3)	DAILY AVG	DAILY MAX
Total Cadmium	(*1)	0.90	N/A	N/A
Total Copper	(*1)	4.39	N/A	N/A
Total Lead	(*1)	4.63	N/A	N/A
Total Silver	(*1)	0.005	N/A	N/A
Total Residual Chlorine	(*1)	0.35	N/A	N/A
Total Aluminum	(*1)	4.31	N/A	N/A
Chlordane	(*1)	0.0008	N/A	N/A

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Cadmium	1/Month	Calculate
Total Copper	1/Month	Calculate
Total Lead	1/Month	Calculate
Total Silver	1/Month	Calculate
Total Residual Chlorine	1/Month	Calculate
Total Aluminum	1/Month	Calculate
Chlordane	1/Month	Calculate

FOOTNOTES

(*1) Report.
(*2) Sum of daily average mass loads for Outfalls 001, 002, 003 and 004.
(*3) Sum of daily maximum mass loads for Outfalls 001, 002, 003 and 004.

B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Mass limitations for SUM1 and SUM2

Status Report	12/31/93
Status Report	3/31/94
Status Report	6/30/94
Status Report	9/30/94
Status Report	12/31/94
Status Report	3/31/95
Status Report	6/30/95
Status Report	9/30/95
Status Report	12/31/95
Status Report	3/31/96
Achieve Compliance	7/01/96

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

C. REPORTING OF MONITORING RESULTS

Monitoring results shall be reported in accordance with the provisions of Part III.D.4 of the permit. Monitoring results obtained during the previous month shall be summarized and reported on a Discharge Monitoring Report form postmarked no later than the 15th day of the month following the completed reporting period.

The first report is due on November 15, 1993 .

PART II
OTHER CONDITIONS

A. The term "composite sample" means a sample consisting of a minimum of two grab samples of effluent collected not less than four hours apart over a normal eight hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a normal eight hour operating day. All such samples shall be typical and representative of effluent generated during the period since the last sample was collected.

B. The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless susequently determined to be inappropriate by the NMED or EPA.

C. As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;

(2) Approximately 100 feet below the point where tailings enter the river; and

(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand
Total Suspended Solids
Total Arsenic
Total Cadmium
Total Copper
Total Cyanide
Fluoride
Total Iron
Total Lead
Total Manganese
Total Mercury
Total Molybdenum
Total Zinc
Total Aluminum
Total Boron
Total Chromium
Total Cobalt
Total Selenium
Total Vanadium
Total Beryllium
Total Nickel
Total Silver
Un-ionized Ammonia (as N)
Total Residual Chlorine
Temperature
pH

The results of the analysis shall be submitted to the EPA Water Division Enforcement Branch (6W-EA) and the NMED within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and the Contingency Action and Reporting Plan (June 1975), a written report containing the following information will be sent to the EPA (6E) and the NMED within ten (10) days following any spill:

(1) Date of Spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that caused the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

D. MINIMUM QUANTIFICATION LEVELS

If any individual analytical test result is less than the minimum quantification level (MQL), a value of zero (0) may be reported for that individual result for the Discharge Monitoring Report (DMR) calculation and reporting requirements.

PARAMETER	MQL
Total Arsenic	0.01 mg/l
Total Beryllium	0.005 mg/l
Total Cadmium	0.001 mg/l
Total Chromium	0.01 mg/l
Total Copper	0.01 mg/l
Total Lead	0.005 mg/l
Total Mercury	0.0002 mg/l
Total Selenium	0.005 mg/l
Total Zinc	0.02 mg/l
Total Cyanide	0.01 mg/l
Total Nickel	0.04 mg/l
Total Silver	0.002 mg/l
Chlordane	0.0002 mg/l
Total Residual Chlorine	0.011 mg/l

This permit may be reopened if MQLs change during the term of the permit.

E. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS (Chronic, Freshwater)

1. SCOPE, FREQUENCY AND METHODOLOGY

a. The provisions of this section are individually applicable to Outfall(s) 001, 002, 004 and 005 for whole effluent toxicity.

b. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. This testing will determine if an appropriately dilute effluent sample adversely affects the survival, reproduction or growth of the test organism.

c. The permittee shall complete the first toxicity test for each species within sixty (60) days of the effective date of the permit.

d. The permittee shall implement all toxicity tests utilizing the test organisms, procedures and quality assurance requirements specified in this section of the permit and in accordance with the EPA manual, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most recent update thereof. The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied. A repeat test shall be conducted within the required reporting period of any test determined to be invalid.

e. The permittee shall utilize the Ceriodaphnia dubia chronic static renewal survival and reproduction test (Method 1002.0 or the most recent publication). This test should be terminated when 60% of the surviving females in the control produce three broods. The permittee shall conduct the Ceriodaphnia dubia toxicity test at a frequency of once per quarter.

f. The permittee shall utilize the fathead minnow (Pimephales promelas) chronic static renewal 7-day larval survival and growth test (Method 1000.0 or the most recent publication). A minimum of five (5) replicates with eight (8) organisms per replicate must be used for this test. The permittee shall conduct the fathead minnow toxicity test at a frequency of once per quarter.

g. The permittee shall use five effluent dilution concentrations in addition to a control (0% effluent) in each toxicity test. These additional effluent concentrations shall be 9%, 12%, 17%, 22%, and 29%. The low-flow effluent concentration (critical dilution) is defined as the 22% effluent.

h. The NOEC (No Observed Effect Concentration) is defined as the greatest effluent dilution which does not elicit lethality that is statistically different from the control (0% effluent) at the 95% confidence level.

i. This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.

2. PERSISTENT LETHALITY

If the testing frequency in item 1 is monthly for a species, the permittee shall initiate the Toxicity Reduction Evaluation requirements as specified under Part II, Section F of this permit when any two of three consecutive monthly toxicity tests exhibit significant lethal effects at the 22% effluent concentration.

3. REQUIRED TOXICITY TESTING CONDITIONS

a. Test Acceptance

The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fails to meet any of the following criteria:

i. The toxicity test control (0% effluent) must have survival equal to or greater than 80%.

ii. The mean number of Ceriodaphnia dubia neonates produced per surviving female in the control (0% effluent) must be 15 or more.

iii. The minimum mean dry weight of surviving fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater.

iv. The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for: the young of surviving females in the Ceriodaphnia dubia reproduction test; fathead minnow growth test; and fathead minnow survival test.

v. The percent coefficient of variation between replicates shall be 40% or less in the 22% effluent concentration, unless significant lethal or nonlethal effects are exhibited for the young of surviving females in the Ceriodaphnia dubia reproduction test; fathead minnow growth test; and fathead minnow survival test.

b. Statistical Interpretation

i. For the Ceriodaphnia dubia survival test, the statistical analyses used to determine if there is a significant difference between the control and the low flow (critical dilution) shall be Fisher's Exact Test as described in the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most recent update thereof.

ii. For the Ceriodaphnia dubia reproduction test and the fathead minnow larval survival and growth test, the statistical analyses used to determine if there is a significant difference between the control and the low flow (critical dilution) effluent concentration shall be in accordance with the methods for determining the No Observed Effect Concentration (NOEC) as described in the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most recent update thereof.

c. Dilution Water

i. Dilution water used in the toxicity tests will be receiving water from the Red River collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness and alkalinity to the closest downstream perennial water for;

A. toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and

B. toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.

ii. If the receiving water is unsatisfactory as a result of preexisting instream toxicity (fails to fulfill the test acceptance criteria of item 3.a.), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:

A. a synthetic dilution water control which fulfills the test acceptance requirements of item 3.a. was run in addition to the receiving water control;

B. the test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);

C. the permittee includes all test results indicating receiving water toxicity with the full report and information required by item 4. below; and

D. the synthetic dilution water shall have a pH, hardness and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

d. Samples and Composites

i. The permittee shall collect a minimum of three flow-weighted 24-hour composite samples each from Outfall(s) **001, 002, 004 and 005.** A 24-hour composite sample consists of a minimum of four effluent portions collected at equal time intervals representative of a 24-hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a 24-hour operating day.

ii. The permittee shall collect second and third 24-hour composite samples for use during 24-hour renewals of each dilution concentration for each test. The permittee must collect the 24-hour composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.

iii. The permittee must collect the 24-hour composite samples so that the maximum holding time for any effluent sample shall not exceed 72 hours. The permittee must have initiated the toxicity test within 36 hours after the collection of the last portion of the first 24-hour composite sample. Samples shall be chilled to 4 degrees Centigrade during collection, shipping and/or storage.

iv. If the flow from the outfall(s) being tested ceases during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions and the sample holding time are waived during that sampling period. However, the permittee must collect an effluent composite sample volume during the period of discharge that is sufficient to complete the required toxicity tests with daily renewal of effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The effluent composite sample collection duration and the static renewal protocol associated with the

abbreviated sample collection must be documented in the full report required in item 4. of this section.

4. REPORTING

a. The permittee shall prepare a full report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-89/001, or the most current publication, for every valid or invalid toxicity test initiated whether carried to completion or not. The permittee shall retain each full report pursuant to the provisions of Part III.C. of this permit. The permittee shall submit full reports only upon the specific request of the Agency.

b. The permittee shall submit the results of each valid toxicity test on the subsequent monthly DMR for that reporting period in accordance with Part III. D. of this permit, as follows:

Pimephales promelas (Fathead Minnow)

i. If the Fathead minnow No Observed Effect Concentration (NOEC) for survival is less than the 22% effluent dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP6C.

ii. Report the Fathead minnow NOEC value for survival, Parameter No. TOP6C.

iii. Report the Fathead minnow NOEC value for growth, Parameter No. TPP6C.

iv. Report the % coefficient of variation (Largest of low flow and control dilutions), Parameter No. TQP6C.

Ceriodaphnia dubia

i. If the *Ceriodaphnia dubia* NOEC for survival is less than the 22% effluent dilution, enter a "1"; otherwise, enter a "0". Parameter No. TLP3B.

ii. Report the *Ceriodaphnia dubia* NOEC value for survival, Parameter No. TOP3B.

iii. Report the *Ceriodaphnia dubia* NOEC value for reproduction, Parameter No. TPP3B.

iv. Report the % coefficient of variation (Largest of low flow and control dilutions), Parameter No. TQP3B.

F. TOXICITY REDUCTION EVALUATION

1. Within ninety (90) days OF CONFIRMING LETHALITY IN THE RETESTS, the permittee shall submit a **TRE Action Plan and Schedule** for conducting a Toxicity Reduction Evaluation (TRE). The **TRE Action Plan** shall specify the approach and methodology to be used in performing the TRE. A

Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The **TRE Action Plan** shall lead to the successful elimination of effluent toxicity at the low flow dilution and include the following:

a. Specific Activities. The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures the permittee shall perform multiple characterizations and follow the procedures specified in the documents **"Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003)** and **"Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005)**, or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents **"Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures" (EPA/600/3-88/035)** and **"Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures" (EPA/600/3-88/036)**, as appropriate;
The documents referenced above may be obtained through the National Technical Information Service (NTIS) by phone at (703) 487-4650, or by writing:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

b. Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.). The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified;

Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where lethality was demonstrated within 48 hours of test initiation, each 24 hour composite sample shall be analyzed independently. Otherwise the permittee may substitute a composite sample, comprised of equal portions of the individual 24 hour composite samples, for the chemical specific analysis;

c. Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and

d. Project Organization (e.g., project staff, project manager, consulting services, etc.).

2. The permittee shall initiate the **TRE Action Plan** within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.

3. The permittee shall submit a quarterly **TRE Activities Report**, with the Discharge Monitoring Report in the months of January, April, July and October, containing information on toxicity reduction evaluation activities including:

   a. any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;

   b. any studies/evaluations and results on the treatability of the facility's effluent toxicity; and

   c. any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no lethality at the critical low flow effluent concentration.

   A copy of the **TRE Activities Report** shall be also be submitted to the **New Mexico Environment Department.**

4. The permittee shall submit a **Final Report on Toxicity Reduction Evaluation Activities** no later than twenty-eight (28) months from confirming lethality in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no lethality at the critical low flow effluent concentration. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.

   A copy of the **Final Report on Toxicity Reduction Evaluation Activities** shall also be submitted to the **New Mexico Environment Department.**

PART III
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Introduction
In accordance with the provisions of 40 CFR Part 122.41, et. seq., this permit incorporates by reference ALL conditions and requirements applicable to NPDES Permits set forth in the Clean Water Act, as amended, (hereinafter known as the "Act") as well as ALL applicable regulations.

2. Duty to Comply
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

3. Toxic Pollutants

   a. Notwithstanding Part III.A.5, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition.

   b. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

4. Duty to Reapply
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR Part 122.6 and any subsequent amendments.

5. Permit Flexibility
This permit may be modified, revoked and reissued, or terminated for cause in accordance with 40 CFR 122.62-64. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Property Rights
This permit does not convey any property rights of any sort, or any exclusive privilege.

7. Duty to Provide Information
The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. Criminal and Civil Liability
Except as provided in permit conditions on "Bypassing" and "Upsets", nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of the permit, the Act, or applicable regulations, which avoids or effectively defeats the regulatory purpose of the Permit may subject the Permittee to criminal enforcement pursuant to 18 U.S.C. Section 1001.

9. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

10. State Laws
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

11. Severability
The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

SECTION B. PROPER OPERATION AND MAINTENANCE

1. Need to Halt or Reduce not a Defense
It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failure either by means of alternate power sources, standby generators or retention of inadequately treated effluent.

2. Duty to Mitigate
The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

3. Proper Operation and Maintenance

   a. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants and will achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar

systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

b. The permittee shall provide an adequate operating staff which is duly qualified to carry out operation, maintenance and testing functions required to insure compliance with the conditions of this permit.

4. Bypass of Treatment Facilities

a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.B.4.b. and 4.c.

b. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall, within 24 hours, submit notice of an unanticipated bypass as required in Part III.D.7.

c. Prohibition of bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required by Part III.B.4.b.

(2) The Director may allow an anticipated bypass after considering its adverse effects, if the Director determines that it will meet the three conditions listed at Part III.B.4.c(1).

5. Upset Conditions

a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Part III.B.5.b. are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required by Part III.D.7; and,

(4) The permittee complied with any remedial measures required by Part III.B.2.

c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances
Solids, sewage sludges, filter backwash, or other pollutants removed in the course of treatment or wastewater control shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. Percent Removal
For publicly owned treatment works, the 30-day average percent removal for Biochemical Oxygen Demand and Total Suspended Solids shall not be less than 85 percent unless otherwise authorized by the permitting authority in accordance with 40 CFR 133.103.

SECTION C. MONITORING AND RECORDS

1. Inspection and Entry
The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

2. Representative Sampling
Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. Retention of Records
The permittee shall retain records of all monitoring information, including all calibration and maintenance

records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

4. Record Contents
Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) and time(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

5. Monitoring Procedures

a. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.

b. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instruments at intervals frequent enough to insure accuracy of measurements and shall maintain appropriate records of such activities.

c. An adequate analytical quality control program, including the analyses of sufficient standards, spikes, and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory.

6. Flow Measurements
Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from true discharge rates throughout the range of expected discharge volumes.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

a. Industrial Permits
The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b); or,

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements listed at Part III.D.10.a.

b. Municipal Permits
Any change in the facility discharge (including the introduction of any new source or significant discharge or significant changes in the quantity or quality of existing discharges of pollutants) must be reported to the permitting authority. In no case are any new connections, increased flows, or significant changes in influent quality permitted that will cause violation of the effluent limitations specified herein.

2. Anticipated Noncompliance
The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements

3. Transfers
This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

4. Discharge Monitoring Reports and Other Reports
Monitoring results must be reported on Discharge Monitoring Report (DMR) Form EPA No. 3320-1 in accordance with the "General Instructions" provided on the form. The permittee shall submit the original DMR signed and certified as required by Part III.D.11 and all other reports required by Part III.D. to the EPA at the address below. Duplicate copies of DMR's and all other reports shall be submitted to the appropriate State agency(ies) at the following address(es):

EPA:
Water Management Division
Enforcement Branch (6W-E)
U.S. Environmental Protection
Agency, Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

New Mexico:
Program Manager
Surface Water Quality Bureau
New Mexico Environment Department
1190 Saint Francis Drive
Santa Fe, NM 87501-4182

Oklahoma (Industrial Permits Only):
Director
Oklahoma Water Resources Board
P.O. Box 150
Oklahoma City, OK 73101-0150

Louisiana:
Assistant Secretary for Water
Water Pollution Control Division
Louisiana Department of
Environmental Quality
P.O. Box 82215
Baton Rouge, LA 70884-2215

5. Additional Monitoring by the Permittee
If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this

permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased monitoring frequency shall also be indicated on the DMR.

6. Averaging of Measurements
Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

7. Twenty-Four Hour Reporting

a. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall be provided within 5 days of the time the permittee becomes aware of the circumstances. The report shall contain the following information:

(1) A description of the noncompliance and its cause;

(2) The period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and,

(3) Steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. The following shall be included as information which must be reported within 24 hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Any upset which exceeds any effluent limitation in the permit; and,

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part II (industrial permits only) of the permit to be reported within 24 hours.

c. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

8. Other Noncompliance
The permittee shall report all instances of noncompliance not reported under Parts III.D.4 and D.7 and Part I.B (for industrial permits only) at the time monitoring reports are submitted. The reports shall contain the information listed at Part III.D.7.

9. Other Information
Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

10. Changes in Discharges of Toxic Substances
All existing manufacturing, commercial, mining, and silvacultural permittees shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 µg/L);
(2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4 -dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Director.

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 µg/L);
(2) One milligram per liter (1 mg/L) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
(4) The level established by the Director.

11. Signatory Requirements
All applications, reports, or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation - by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or,

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency - by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or an individual occupying a named position; and,

(3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports
Except for applications, effluent data, permits, and other data specified in 40 CFR 122.7, any information submitted pursuant to this permit may be claimed as confidential by the submitter. If no claim is made at the time of submission, information may be made available to the public without further notice.

SECTION E. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS

1. Criminal

a. Negligent Violations
The Act provides that any person who negligently violates permit conditions implementing Section 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

b. Knowing Violations
The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both.

c. Knowing Endangerment
The Act provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both.

d. False Statements
The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309.c.4 of the Clean Water Act)

2. Civil Penalties
The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation.

3. Administrative Penalties
The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

a. Class I Penalty
Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

b. Class II Penalty
Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

SECTION F. DEFINITIONS
All definitions contained in Section 502 of the Act shall apply to this permit and are incorporated herein by reference. Unless otherwise specified in this permit, additional definitions of words or phrases used in this permit are as follows:

1. "Act" means the Clean Water Act (33 U.S.C. 1251 et. seq.), as amended.

2. "Administrator" means the Administrator of the U.S. Environmental Protection Agency.

3. "Applicable effluent standards and limitations" means all state and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards or performance, toxic effluent standards and prohibitions, and pretreatment standards.

4. "Applicable water quality standards" means all water

quality standards to which a discharge is subject under the Act.

5. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

6. "Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be arithmetic average (weighted by flow value) of all samples collected during that sampling day.

7. "Daily Average" (also known as monthly average) discharge limitations means the highest allowable average of "daily discharge(s)" over a calendar month, calculated as the sum of all "daily discharge(s)" measured during a calendar month divided by the number of "daily discharge(s)" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharge(s)" of concentration determined during the calendar month where C = daily concentration, F = daily flow and n = number of daily samples; daily average discharge =

$$\frac{C_1F_1 + C_2F_2 + \ldots + C_nF_n}{F_1 + F_2 + \ldots + F_n}$$

8. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

9. "Director" means the U.S. Environmental Protection Agency Regional Administrator or an authorized representative.

10. "Environmental Protection Agency" means the U.S. Environmental Protection Agency.

11. "Grab sample" means an individual sample collected in less than 15 minutes.

12. "Industrial user" means a nondomestic discharger, as identified in 40 CFR 403, introducing pollutants to a publicly owned treatment works.

13. "National Pollutant Discharge Elimination System" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the Act.

14. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

15. "Sewage sludge" means the solids, residues, and precipitates separated from or created in sewage by the unit processes of a publicly owned treatment works. Sewage as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff, that are discharged to or otherwise enter a publicly owned treatment works.

16. "Treatment works" means any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage and industrial wastes of a liquid nature to implement Section 201 of the Act, or necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, sewage collection systems, pumping, power and other equipment, and their appurtenances, extension, improvement, remodeling, additions, and alterations thereof.

17. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

18. For fecal coliform bacteria, a sample consists of one effluent grab portion collected during a 24-hour period at peak loads.

19. The term "MGD" shall mean million gallons per day.

20. The term "mg/L" shall mean milligrams per liter or parts per million (ppm).

21. The term "µg/L" shall mean micrograms per liter or parts per billion (ppb).

22. Municipal Terms:

    a. "7-day average", other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The 7-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

    b. "30-day average", other than for fecal coliform bacteria, is the arithmetic mean of the daily values for all effluent samples collected during a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. The 30-day average for fecal coliform bacteria is the geometric mean of the values for all effluent samples collected during a calendar month.

    c. "24-hour composite sample" consists of a minimum of 12 effluent portions collected at equal time intervals over the 24-hour period and combined proportional to flow or a sample collected at frequent intervals proportional to flow over the 24-hour period.

    d. "12-hour composite sample" consists of 12 effluent

portions collected no closer together than one hour and composited according to flow. The daily sampling intervals shall include the highest flow periods.

e. "6-hour composite sample" consists of six effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

f. "3-hour composite sample" consists of three effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.

RESPONSE TO COMMENTS
FINAL PERMIT DECISION

This is our response to comments received on the subject draft permit in accordance with regulations promulgated at 40 CFR Part 124.17.

Permit No.	NM0022306
Applicant:	Molycorp, Inc. P.O. Box 469 Questa, New Mexico 87556
Issuing Office:	U.S. Environmental Protection Agency Region 6 1445 Ross Avenue Dallas, Texas 75202-2733
Prepared By:	Fred Humke Industrial Permits Section (6W-PI) Permits Branch Water Management Division (214) 655-7180
Permit Action:	Final permit decision and response to comments received on the draft reissued permit publicly noticed on April 17, 1993.
Date Prepared:	

Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations, revised as of 7/1/92.

STATE CERTIFICATION

Dated May 27, 1993.

The following effluent limitations and/or conditions are included in the final permit in conformance with regulations listed at 40 CFR Part 122.44(d)(3):

ISSUE No. 1

As conditions of certification, the NMED has specified revised values for Cs (water quality standards based on a hardness of 132 mg/l and a TSS of 59 mg/l) and Ca (ambient stream concentration upstream of discharge based on methodolgy specified by the NMED in a new interim guidance document dated May 3, 1993) to be used in the screening for and the calculation of State water quality standard effluent limitations.

RESPONSE NO. 1

This draft permit was public noticed on April 17, 1993, prior to the revised interim guidance. All permit water quality effluent limitations, as addressed on Page 7 of 10 of the Fact Sheet, issued to Public Notice on April 17, 1993, are recalculated as follows:

$$Cd = (QaCa + QeCe')/(Qa + Qe) \text{ and}$$

and $$Ce = [Cs(Qa + Qe) - CaQa]/Qe$$

where Cd = instream waste concentration (mg/l)

Ce = allowable daily average effluent concentration (mg/l)

Ce'= reported concentration in effluent x 2.13 (mg/l)

Cs = water quality standard (mg/l)

Ca = ambient stream concentration upstream of discharge (mg/l)

Qa = critical low flow of stream = 16.7 MGD

Qe = combined daily average flow of dry weather Outfalls 001 and 002

= 4.7 MGD

and Me = Ce x 8.34 x 4.7

where Me = total daily average water quality based mass limits for combined Outfalls 001, 002, 004 and 005 (lb/day)

WQ PARAMETER	Ca	Cs	Ce'	Cd	Ce	Me
T. Arsenic	0.005	0.049	0.022	0.009(*1)	N/A	N/A
T. Cadmium	0.00	0.005	0.036	0.008	0.023	0.90
T. Copper	0.044	0.059	0.155	0.068	0.112	4.39
T. Lead	0.022	0.043	0.214	0.064	0.118	4.63
T. Zinc	0.058	0.595	0.032	0.051(*1)	N/A	N/A
T. Aluminum	2.500	0.087	0.109	1.975	0.087(*2)	3.41
T. Boron	0.00	0.750	0.214	0.047(*1)	N/A	N/A
T. Chromium	0.006	0.546	0.023	0.010(*1)	N/A	N/A
T. Cobalt	0.00	0.050	0.023	0.005(*1)	N/A	N/A
T. Selenium	0.00	0.005	0.009	0.002(*1)	N/A	N/A
T. Vanadium	0.00	0.100	0.064	0.014(*1)	N/A	N/A
Ra226 + Ra228	0.00	30	3.195	0.702(*1)	N/A	N/A
	pCi/l	pCi/l	pCi/l	pCi/l		
T. Beryllium	0.00	0.005	0.009	0.002(*1)	N/A	N/A
T. Mercury	0.00	0.000012	0.0043	0.00000094(*1)	N/A	N/A
T. Nickel	0.00	0.759	0.041	0.009(*1)	N/A	N/A
T. Silver	0.001	0.00012	0.003	0.001	0.00012(*2)	0.005
Chlordane	N/A	0.0000043	0.00009	0.00002	0.00002	0.0008
Un-ion. Amm.(as N)	N/A	0.03	0.0006	0.0001(*1)	N/A	N/A
T. Resid. Chlorine	N/A	0.002	0.023	0.005	0.009	0.35

(*1) Cd<Cs.
(*2) WQS level.

ISSUE NO. 2

As a condition of certification, the NMED specifies that combined biomonitoring should not be conducted for the four permitted outfalls which are spread over approximately 8.75 river miles; and that individual biomonitoring shall be applied at each outfall.

RESPONSE No. 2

The draft permit was based on the discharges of "periodic mine drainage, including collected stormwater" for Outfalls 004 and 005. Subsequently the permittee has specified that the discharges from Outfalls 004 and 005 be limited to stormwater only, as specified in the Form 2D applications; and that "any acid mine drainage will be diverted and retained in the underground mine, where it will be neutralized, pumped from the underground mine to a tailings line and conveyed to the tailings impoundment area." Therefore, Outfalls 004 and 005 are now designated for "periodic mine drainage consisting only of all

mine contacted surface stormwater runoff." Periodic stormwater only discharges are not subject to biomonitoring under EPA post third round policy which is applied to dry weather flows only. Outfalls 001 and 002, which are in close proximity, presently utilize composite biomonitoring under the June 21, 1988 permit as previously certified by the NMED.

However, the NMED has clarified in subsequent correspondence that they require as a condition of certification, that individual biomonitoring be conducted on Outfalls 001, 002, 004 and 005. This change is included in the permit.

ISSUE NO. 3

The NMED has specified as a condition of certification that for SUM2 the mass limitations be expressed as "DAILY MAX" instead of "DAILY AVG" to assure that numeric water quality standards for attainable and designated uses set forth in 2-119 and 3-101 of the WQS are protected at all times, including episodic events such as rainfall and snowmelt.

RESPONSE NO. 3

As specified in the Fact Sheet on Page 6 of 10, Ce has been calculated and addressed as the "allowable daily average effluent concentration." Daily average flows, daily average reported effluent concentrations and average ambient stream concentration have been applied in the development of Ce. While it is analytically correct to sum the daily average mass loads for Outfalls 001, 002, 003 and 004, there is no correlation in the occurence of daily maximum loads. However, the NMED has specified as a condition of certification that these mass limitations be applied as daily maximums at SUM2. EPA has made this change.

ISSUE NO. 4

The NMED requires as a condition of certification that chemical oxygen demand (COD) limits of 125 mg/l be applied for Outfalls 004 and 005.

RESPONSE NO. 4

EPA has applied COD limits of 125 mg/l daily average and daily maximum for Outfalls 004 and 005.

ISSUE NO. 5

The NMED and others have commented that an apparent error exists in the longitude shown for Outfall 004.

RESPONSE NO. 5

The longitude for Outfall 004 is corrected to W105°31'51".

ISSUE NO. 6

The NMED notes that "flow" monitoring for Outfalls 004 and 005 is shown as "estimate" but that a more reliable basis is needed for determining compliance with effluent limits at "SUM2".

RESPONSE NO. 6

EPA agrees. Flow monitoring for Outfalls 004 and 005 is changed to "Measure" via calibrated weir.

ISSUE No. 7

The NMED notes that the description of Outfalls 004 and 005 utilizes the phrase "including collected stormwater." NMED believes that there may be uncollected storm water which may be subject to NPDES regulation and not covered under the proposed permit.

RESPONSE NO. 7

As previously stated, the description of this discharge is changed to "periodic mine drainage consisting only of all mine contacted surface stormwater runoff."

ISSUE NO. 8

Molycorp objects to the application of the effluent limitations set forth in 40 CFR 440 for Outfalls 004 and 005, and, in particular, to the proposed discharge limitation for Total Suspended Solids. Molycorp believes that these Outfalls are subject to EPA's storm water regulations and not to those limitations which apply to process wastewater discharges.

RESPONSE NO. 8

Stormwater which comes in contact with mine products and wastes is process wastewater. This has been clarified in the recent revised description of the sources being discharged at Outfalls 004 and 005. The total suspended solids (TSS) limits required under the effluent guidelines are consistantly achievable by the mining industry when proper sedimentation and control has been applied.

ISSUE NO. 9

Various commenters have expressed concern with ground water seepage to the Red River; and suggest that this ground water may be infiltrated from the mine and tailings areas, in addition to natural sources. Some commenters believe that seepages of this type represent "point sources" under the NPDES permitting program. Several have cited case law such as Sierra Club v. Abstan Construction Co., Inc., 620 F.2d 41 (5th Cir. 1980).

RESPONSE NO. 9

While EPA understands the concern of these commenters for the possible impact of ground water seepage on the Red River, we do not agree that these are "point sources" under the NPDES permitting program. Ground water is regulated by the State through the NMED.

We are familiar with the case law citation which relates to EPA authority to require the construction and control of surface discharges (proscribed "point sources" of pollution) in instances where the operator has not applied the proper control and construction to the sources. However, the issue of seepage of groundwater which may have been infiltrated through porous soil is a different matter. We recommend that the commenters continue to pursue this issue through the NMED.

ISSUE NO. 10

Some commenters raised objections to the inclusion of a compliance schedule for Molycorp to achieve WQS at SUM2.

RESPONSE NO. 10

A compliance schedule is provided in accordance with Section 1-106.D. of Water Quality Standards for Interstate and Intrastate Streams in New Mexico. A three year schedule is considered reasonable by EPA.

ISSUE NO. 11

A commenter questioned the mass limitations allowed under SUM1, based on a daily average flow of 4.726, since Outfall 001 is not currently discharging.

RESPONSE NO. 11

Both Outfalls 001 and 002 are limited by the concentration technology limitations which are continued from the present permit. In addition, mass technology limitations are applied under SUM1. See 40 CFR 122.45(f). Mass limitations are based on the daily average flows shown in the application. The fact that a particular outfall may not be currently discharging does not negate the allowance of full technology limits under the permit.

ISSUE NO. 12

A commenter questioned the fact that certain metals are not limited under SUM2.

RESPONSE NO. 12

Subject to the screening provisions, as addressed on Page 7 of 10 of the Fact Sheet, all applicable WQS parameters are addressed under SUM2.

ISSUE NO. 13

One commenter stated that Outfalls 004 and 005 may be considered "new sources" because they are both 1.) new discharge points and 2.) "new" - as in previously unregulated-sources or mine drainage points; and that demonstration of the technical capability of the new source outfall works must be required before discharges to waters of the United States are permitted.

RESPONSE No. 13

Outfalls 004 and 005 are not new sources. The associated mines have been in operation prior to the 1982 promulgation of the associated new source performance standards. The associated storm water discharges may have been non-permitted outfalls. The facility is not required to demonstrate any technical capability before discharges; but must meet the best available technology economically achievable (BAT)/best conventional technology (BCT) without any permit compliance schedule. Any issues related to the operation and compliance of these outfalls are enforcement matters and beyond the scope of this permit reissuance process.

ISSUE NO. 14

One commenter stated that there are no concentration based limits for manganese and molybdenum associated with Outfall 001 and SUM1; and for cobalt, selenium, beryllium, silver, chlordane and chlorine. This commenter also questions the allowance of mass loads for outfall 001 because it is not currently in operation.

RESPONSE NO. 14

Technology limitations (BAT/BCT) have been established for Outfalls 001 and 002 for many years and are addressed in the present permit. Cobalt, selenium, beryllium, silver, chlordane and chlorine are not technology limitations. The Technology Based Effluent Limitations and/or Conditions are addressed on page

4 of 10, Paragraph VIII.A. of the Fact Sheet. The application daily average flow for Outfall is addressed on Page 1 of 10, Paragraph V.A. of the Fact Sheet.

ISSUE NO. 15

One commenter questions the dilutions used for biomonitoring; states that the "whole effluent toxicity testing" allows too much dilution of mixture for testing; and states that "a mixture of 36% should be used for most tests."

RESPONSE No. 15

The calculation of the critical dilution of 22% is shown on Page 6 of 10, Paragraph VIII.B.3. of the Fact Sheet. The 0.75 dilution series is applied as specified under the most recent EPA toxics policy.

This issue is in contradiction to another issue raised by commenters. The same daily average effluent flows used to calculate loading limits are used to calculate the critical dilution which constitutes the basis for biomonitoring test dilutions. In the first case the application effluent flow limits result in loading limits which are questioned for being too high; in the second case these same application effluent flow limits result in percent dilutions which are questioned for being too low.

ISSUE NO. 18

Several commenters have requested a public hearing on the draft NPDES permit.

RESPONSE NO. 18

The principal issues which are being raised by most commenters are not relevant to the NPDES permit. These issues relate primarily to a possible impact on the Red River from the seepage of ground water. Other issues have been addressed in this respose to comments. Therefore, it is the judgment of the permitting authority that a public hearing is not justified.

P 774 135 904

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	
Street and No.	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
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Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985

UNITE TATES ENVIRONMENTAL PROTECTIC GENC

MAY 20 1988

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 774 135 904)

REPLY TO: 6W-PI

Mr. David R. Shoemaker
General Superintendent
Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 87556

Re: Application to Discharge to Waters of the United States
Permit No. NM0022306

Dear Mr. Shoemaker:

Enclosed is the public notice of the Agency's final permit decision, a copy of our response to comments and the final permit. This public notice describes any substantial changes from the draft permit.

Should you have any questions, please feel free to contact the Permits Branch at the above address or telephone (214) 655-7180.

Sincerely yours,

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

Enclosures

cc w/permit copy:
New Mexico Environmental Improvement Division

bcc: Humke (6W-PI)
Reading Files (6W-PS, 6W-P)

3/22/88:HUMKE(6W-PI):tn:H-24#11:#563

FOR 3/24/88

CONCURRENCES

SYMBOL	6W-PI	6W-P						
SURNAME	Huffman	Ferguson						
DATE	3-22-88	3-27-88	4/4/88	5/6				

320-1 (12-70)

OFFICIAL FILE CO

This is our response to the comments received on the subject draft NPDES permit in accordance with our regulations.

RESPONSE TO COMMENTS
DRAFT NPDES PERMIT

Permit No.:	NM0022306
Permittee:	Molycorp, Inc.
Facility Name/Location:	Questa, New Mexico
Draft Permit Public Notice Date:	February 16, 1988
Prepared by:	Fred Humke

Issue No. 1

Molycorp has submitted new analytical data for certain parameters which they present as representative of the effluent being discharged from Outfall 001 with the Ion Exchange Treatment plant in operation; and which they believe should justify 1/quarter rather than 1/month biomonitoring.

Response No. 1

EPA has reviewed and accepted this analytical data. The following table compares the new analytical data with MCL, human health and chronic aquatic biota criteria.

Where: Ce = effluent concentration
Cr = downstream river concentration
Df = 4.44 = dilution factor

Parameter/mg/l	Ce	Cr	MCL	Human* Health	Chronic* Aquatic Biota
Arsenic	0.013	0.0029	0.05	N/A	0.048
Cadmium	0.020	0.0045	0.010	0.010	0.00066
Copper	0.075	0.0169	N/A	N/A	0.0065
Cyanide	0.0029	0.0007	N/A	0.200	0.0052
Lead	<0.1	<0.0225	0.050	0.050	0.0013
Mercury	<0.0002	<0.00005	0.002	0.00014	0.0012
Zinc	0.032	0.0072	N/A	N/A	0.047

*Gold book values

This comparison shows that the instream concentrations, Cr, still exceed the chronic aquatic biota criteria for cadmium, copper and lead. However, based on the long retention time of the impoundment, 1/quarter biomonitoring is allowed.

Issue No. 2

Molycorp requests that biomonitoring not be required for Outfall 002.

Response No. 2

Independent biomonitoring was not required for Outfall 002. Under Part III.C.d. of the permit, flow weighted composite samples are required from Outfalls 001 and 002. Based on the analytical data submitted by Molycorp, this could actually be advantageous to Molycorp for some parameters, even with ion exchange treatment levels at Outfall 001. Composite biomonitoring is retained for Outfalls 001 and 002.

However, based on a subsequent agreement with Molycorp, a one-time biomonitoring requirement is established for Outfall 002 alone, to be initiated within 60 days of the effective date of the renewed permit. Based on a daily average discharge of 0.462 MGD from Outfall 002 and the stream low flow of 16 MGD, a dilution of 2.8% at low flow and 5.5% dilution at 1/2 low flow are applied in this test.

Issue No. 3

NMEID recommends that for Outfall 002, from the effective date and lasting until mill start-up that the permit requirements be clarified for manganese and molybdenum.

Response No. 3

EPA has modified the conditions on Page 2 of Part I for manganese and molybdenum. Effluent limitations are deleted for manganese and molybdenum, but monitoring and reporting are required.

Issue No. 4

NMEID recommends that on Page 2 and 4 of Part I, flow measurement requirements be re-evaluated. NMEID questions the sample type of "daily estimate" as being accurate enough to calculate loading values.

Response No. 4

"Daily estimate" applies only to Outfall 002, which is a relatively small seep and constitutes a small flow relative to the normal discharge from Outfall 001. Outfall 001 flow monitoring is based on continuous and totalized flow monitoring. Therefore, the loading values as listed on Page 4 of Part I for molybdenum (25 lbs/day daily average and 50 lbs/day daily maximum) must be achieved for the sum total of Outfalls 001 and 002. Based on the characteristics of the seep at Outfall 002, both NMEID and EPA previously had agreed that it would be very difficult to implement a more precise flow monitoring methodology, and the result on the sum total would not be significant.

Advertising Order Number 8T-3202-NNLX
U.S. Environmental Protection Agency - Region VI
Public Notice of Final Permit Decision

MAY 21, 1988

This is to give notice that the U.S. Environmental Protection Agency, Region VI, has made a final permit decision and will issue the following TWO (2) Proposed Permit(s) under the National Pollutant Discharge Elimination System. The permit(s) will become effective 30 days from the date of this Public Notice. Any substantial changes from the Draft Permit are cited.

This issuance is based on a final staff review of the administrative record and comments received. A Response to Comments is available by writing to:

Ms. Ellen Caldwell
Permits Branch (6W-PS)
U.S. Environmental Protection Agency - Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 655-7190

Any person may request an Evidentiary Hearing on this final permit decision. However, the request must be submitted within 30 days from the date of this Notice. The request should be in accordance with the requirements of 40 CFR 124.74 (Federal Register Vol. 45, No. 98, Monday, May 19, 1980). The original public notice contains the stay provisions of a granted evidentiary hearing request.

Further information including the administrative record may be viewed at the above address between 8 a.m. and 4:30 p.m., Monday through Friday.

1. NPDES authorization to discharge to waters of the United States, Permit No. NM0020389.

The applicant's mailing address is: Homestake Mining Company
P.O. Box 98
Grants, New Mexico 87020

The discharge from this existing uranium mine is made into Arroyo del Puerto to San Mateo Creek in the Rio Grande Basin, a water of the United States classified for no designated uses. The discharge is located on that water in the Ambrosia Lake mining area, approximately 25 miles north of Grants, in McKinley County, New Mexico. Under the standard industrial classification (SIC) code 1094, the applicant's activities are the recovery of uranium from mine water by ion exchange.

There are substantial changes from the draft permit.

1. Biomonitoring requirements are deleted.

2. pH limitations are revised to within the range of 6.0 to 9.0 S.U.

3. Total molybdenum, total selenium, lead-210, polonium-210, barium and manganese monitoring and reporting requirements are retained as in the prior permit.

2. NPDES authorization to discharge to waters of the United States, Permit No. NM0022306.

The applicant's mailing address is: Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 87556

The discharge from this molybdenum milling facility is made into the Red River, a water of the United States classified for coldwater fishing; fish culture; livestock and wildlife watering; and secondary contact recreation. The discharge is located on that water approximately one mile above the bridge at the Red River Fish Hatchery. Under the standard industrial classification (SIC) code 1061, the applicant's activities are mining and milling operations which produce molybdenum disulfide concentrations.

There are substantial changes from the draft permit.

1. For Outfall 002, from the effective date and lasting until mill start-up, effluent limitations for manganese and molybdenum are deleted, and monitoring and reporting only are required.

2. Biomonitoring requirements for combined Outfalls 001 and 002 are changed to 1/quarter.

3. A one-time biomonitoring requirement is established for Outfall 002.

Permit No. NM0022306

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C... 1251 et. seq; the "Act"),

Molycorp, Inc.
P.O. Box 469
Questa, New Mexico 87556

is authorized to discharge from a facility located at Questa, Taos County, New Mexico

to receiving waters named Red River, Segment 2-119 of the Upper Rio Grande Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I (6 pages), II (14 pages), and III (10 pages) hereof.

This permit shall become effective on June 21, 1988

This permit and the authorization to discharge shall expire at midnight, June 20, 1993

Signed this 20th day of May 1988

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 002

During the period beginning the effective date and lasting until mill start-up, the permittee is authorized to discharge from Outfall 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	0.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	(*1) mg/l	(*1) mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	N/A	N/A	(*1) mg/l	(*1) mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	Daily	Estimate
Chemical Oxygen Demand	1/Month	Composite
Total Suspended Solids	1/Month	Composite
Total Arsenic	1/Month	Composite
Total Cadmium	1/Month	Composite
Total Copper	1/Month	Composite
Total Cyanide	1/Month	Composite
Fluoride	1/Month	Composite
Total Iron	1/Month	Composite
Total Lead	1/Month	Composite
Total Manganese	1/Month	Composite
Total Mercury	1/Month	Composite
Total Molybdenum	1/Month	Composite
Total Zinc	1/Month	Composite
Biomonitoring	One-time	(*2)

OUTFALL 002

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 002 Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) See Part III, Paragraph D.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALLS 001 & 002

During the period beginning mill start-up and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 001 - process water from milling operation and tailings disposal; 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	0.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	1.0 mg/l	1.5 mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	25 (*4)	50 (*3)	1.0 mg/l	2.0 mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	(*5)	Record
Chemical Oxygen Demand	1/Week	Composite (*2)
Total Suspended Solids	1/Week	Composite (*2)
Total Arsenic	1/Week	Composite (*2)
Total Cadmium	1/Week	Composite (*2)
Total Copper	1/Week	Composite (*2)
Total Cyanide	(*6)	Composite (*2)
Fluoride	1/Week	Composite (*2)
Total Iron	1/Week	Composite (*2)
Total Lead	1/Week	Composite (*2)
Total Manganese	1/Week	Composite (*2)
Total Mercury	1/Week	Composite (*2)
Total Molybdenum	1/Week	Composite (*2)
Total Zinc	1/Week	Composite (*2)
Biomonitoring	1/Quarter	(*7)

OUTFALLS 001 & 002

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001 Latitude 36° 40' 61" and Longitude 105° 38' 30" which is the discharge spillway from Pope Lake.

Outfall 002 Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) See Part III, Paragraph B.
(*3) Sum total for Outfalls 001 & 002.
(*4) Sum total average for Outfalls 001 & 002 for six months preceeding reporting period end date; also report daily average mass for each month.
(*5) Continuous and totalized monitoring for Outfall 001; daily estimate for Outfall 002.
(*6) 2/week for Outfall 001; 1/week for Outfall 002.
(*7) See Part III, Paragraph C.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Report mill start-up.

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or a permanent reduction or elimination of the authorized discharge; or,

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

4. Toxic Pollutants

Notwithstanding Part II.A.3, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II.B.4.b) and "Upsets" (Part II.B.5.b), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Definitions

The following definitions shall apply unless otherwise specified in this permit:

a. "Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that sampling day.

b. "Daily Average" (also known as monthly average) discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharges" of concentration determined during the calendar month.

c. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

d. The term "MGD" shall mean million gallons per day.

e. The term "mg/l" shall mean milligrams per liter or parts per million (ppm).

f. The term "ug/l" shall mean micrograms per liter or parts per billion (ppb).

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.B.4.c and 4.d.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.D.6 (24-hour notice).

d. Prohibition of bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occured during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required by Part II.B.4.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed at Part II.B.4.d.(1).

5. <u>Upset Conditions</u>

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Part II.B.5.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required by Part II.D.6; and,

(4) The permittee complied with any remedial measures required by Part II.B.3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

a. "A Guide to Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421).

b. "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027).

c. "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

d. "NPDES Compliance Sampling Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp.

(Available from the General Services Administration [8FFS], Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) Form EPA No. 3320-1. Monitoring results obtained during the previous month shall be summarized and reported on a DMR form post-marked no later than the 15th day of the month following the completed reporting period. The first report is due on July 15, 1988. Duplicate copies of DMR's signed and certified as required by Part II.D.11 and all other reports required by Part II.D (Reporting Requirements) shall be submitted to the Director and to the State (if listed) at the following address(es):

WATER MANAGEMENT DIVISION
ENFORCEMENT BRANCH (6W-E)
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VI
FIRST INTERSTATE BANK TOWER
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

Program Manager
Surface Water Section
Surface Water Quality Bureau
New Mexico Environmental Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased monitoring frequency shall also be indicated on the DMR.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and,

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984]; or,

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified at Part II.C.5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit;

b. Any upset which exceeds any effluent limitation in the permit; and,

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Part II.D.4, 5, and 6 at the time monitoring reports are submitted. The reports shall contain the information listed at Part II.D.6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occured or will occur which would result in the discharge, in a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

b. That any activity has occured or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that

discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(2) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984).

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR Part 122.6 [48 FR 14153, April 1, 1983] and any subsequent amendments.

11. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation - by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or,

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency - by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and,

(3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of the Director. As required by the Clean Water Act, the name and address of any permit applicant or permittee, permit applications, permits, and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER CONDITIONS

A. The term "composite sample" means a sample consisting of a minimum of two grab samples of effluent collected not less than four hours apart over a normal eight hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a normal eight hour operating day. All such samples shall be typical and representative of effluent generated during the period since the last sample was collected.

B. Analysis and reporting for Outfalls 001 and 002 shall be accomplished separately for each outfall. In addition, the permittee shall report the flow weighted average results for Outfalls 001 plus 002. Effluent limitations on weight of total molybdenum shall be the sum total for Outfalls 001 and 002. For determination of compliance with other effluent limitations the following shall apply:

1. Discharge from Outfall 001 shall be in compliance.

2. A composite sample of discharges from Outfalls 001 and 002 monitoring samples combined in flow weighted proportion shall be in compliance, except that concentration limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001.

   During periods when no flow occurs from Outfall 001, monthly average reporting of concentration for molybdenum and manganese shall be based on the average of all composite samples obtained in the month for Outfalls 001 and 002; and monthly maximum reporting of concentration for molybdenum and manganese shall be based on the maximum composite sample obtained in that month for Outfalls 001 and 002. In conjunction with the DMR for each month, the permittee shall report periods, if any, when no flow exists at Outfall 001.

C. <u>CHRONIC BIOMONITORING REQUIREMENTS</u> - Combined Outfalls 001 and 002

a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. Such testing will determine if an appropriately dilute effluent sample affects the survival and reproduction or growth of the appropriate test organism. The permittee shall initiate the following series of tests within 60 days after mill start up to evaluate

wastewater toxicity. All test organisms, procedures, and water quality assurance criterion used shall be in accordance with the latest revision of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-85/014. The following tests shall be used:

1) The permittee shall conduct a 7-day Ceriodaphnia dubia survival and reproduction test (Method 1002.0).

2) The permittee shall conduct a 7-day fathead minnow (Pimephales promelas) larval survival and growth test (Method 1000.0).

b. A minimum of 5 dilutions must be performed in addition to an appropriate control, using a minimum dilution factor of 0.3. Three dilutions consisting of 100%, 31%, and 18% of the final effluent must be contained in the test series.

c. The samples shall be collected at a point following the last treatment unit. Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than 20% mortality in the control), the permittee must substitute reconstituted dilution water, with hardness and alkalinity similar to that of the receiving stream water. The permittee shall also report to EPA the toxicity of the upstream receiving water.

d. Flow-weighted 24-hour composite samples representative of dry weather flows during normal operation will be collected from Outfalls 001 and 002. These composites shall be combined in proportion to the average flow from each outfall for the day the sample was collected. The toxicity tests shall be performed on the flow-weighted composite of outfall samples.

e. The toxicity tests specified in paragraphs (a) and (b) above shall be conducted once per quarter. The permittee shall prepare a full report of the results according to EPA/600/4-85/014, Section 10, Report Preparation. This full report need not be submitted unless requested and shall be retained following the provisions of Part II.C.8 of this permit.

f. The permittee shall submit the toxicity testing information contained in Table 1 of this permit to EPA along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting period following the toxicity test.

g. Should no toxicity occur within the first year of toxicity testing, in accordance with paragraph (h) below, for both species tested at the effluent dilution equivalent to 1/2 of low flow (31%), the permittee shall certify this information in writing to EPA Region VI and these biomonitoring requirements shall expire.

h. For the purpose of this biomonitoring requirement, chronic toxicity is defined as a statistically significant difference at the 95% confidence level between the survival and growth or reproduction in the appropriate test organism exposed to the control and to an effluent dilution.

i. This permit shall be reopened to require further monitoring studies and/or effluent limits if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream. Modification or revocation of the permit is subject to the provisions of 40 CFR Part 122.62. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

D. CHRONIC BIOMONITORING REQUIREMENTS - Outfall 002

a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. Such testing will determine if an appropriately dilute effluent sample affects the survival and reproduction or growth of the appropriate test organism. The permittee shall initiate the following series of tests within 60 days of the effective date of this permit to evaluate wastewater toxicity. All test organisms, procedures, and water quality assurance criterion used shall be in accordance with the latest revision of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-85/014. The following tests shall be used:

1) The permittee shall conduct a 7-day *Ceriodaphnia dubia* survival and reproduction test (Method 1002.0).

2) The permittee shall conduct a 7-day fathead minnow (*Pimephales promelas*) larval survival and growth test (Method 1000.0).

b. A minimum of 5 dilutions must be performed in addition to an appropriate control, using a minimum dilution factor of 0.3. Three dilutions consisting of 100%, 5.5%, and 2.8% of the final effluent must be contained in the test series.

c. The samples shall be collected at a point following the last treatment unit. Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than 20% mortality in the control), the permittee must substitute reconstituted dilution water, with hardness and alkalinity similar to that of the receiving stream water. The permittee shall also report to EPA the toxicity of the upstream receiving water.

d. Samples representative of dry weather flows during normal operation will be collected from Outfall 002. The toxicity tests shall be performed on the outfall samples.

e. The toxicity tests specified in paragraphs (a) and (b) above shall be conducted once. The permittee shall prepare a full report of the results according to EPA/600/4-85/014, Section 10, Report Preparation. This full report need not be submitted unless requested and shall be retained following the provisions of Part II.C.8 of this permit.

f. The permittee shall submit the toxicity testing information contained in Table 1 of this permit to EPA along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting period following the toxicity test.

g. For the purpose of this biomonitoring requirement, chronic toxicity is defined as a statistically significant difference at the 95% confidence level between the survival and growth or reproduction in the appropriate test organism exposed to the control and to an effluent dilution.

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: _____ am/pm _____ date

Dilution water used: ☐ Receiving water ☐ Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	1%	3%	10%	30%	100%	% at low flow %	% at 1/2 low flow %
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	1%	3%	10%	30%	100%	% at low flow %	% at 1/2 low flow %
24h								
48h								
7-day								

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL reproduction = _____ % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: ____

7. Enter response to item 6 on DMR Form, Parameter No. TFP3B.

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: _____ am/pm _____ date

Dilution water used: ☐ Receiving water ☐ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers				MEAN DRY WEIGHT	
	A	B	C	D	mg	CV%*
0%						
1%						
3%						
10%						
30%						
100%						
Low Flow %						
1/2 Low Flow %						

* coefficient of variation = standard deviation x 100/mean

1. Dunnett's Procedure:

   Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
0%								
1%								
3%								
10%								
30%								
100%								
Low Flow %								
1/2 Low Flow %								

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL growth = _____ % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: ____

7. Enter response to item 6 on DMR Form, Parameter No. TFP6C.

D. The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless subsequently determined to be inappropriate by the NMEID or EPA.

E. As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;

(2) Approximately 100 feet below the point where tailings enter the river; and

(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand (COD)
Total Suspended Solids (TSS)
Cyanide (CN)
Total Iron (Fe)
Manganese, Dissolved (Mn)
Total Molybdenum (Mo)
pH
Temperature
Conductivity
Total Zinc (Zn)

The results of the analyses shall be submitted to the United States Environmental Protection Agency and the New Mexico Environmental Improvement Division within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and Contingency Action and Reporting Plans (June 1975), a written report containing the following information will be sent to the U.S. EPA and NMEID within ten (10) days following any spill:

(1) Date of spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that caused the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

P-43 655 327

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to	
Street and No.	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985 U.S.G.P.O. 153-606

UNITED ATES ENVIRONMENTAL PROTECTION ENCY

JAN 1 1988

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 483 655 327)

REPLY TO: 6W-PS

Mr. David R. Shoemaker
General Superintendent
Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 87556

Re: Application to Discharge to Waters of the United States
Permit No. NM0022306

Dear Mr. Shoemaker:

Enclosed is the public notice, fact sheet, and a copy of the permit which this Agency has drafted under the authority of the National Pollutant Discharge Elimination System. Please submit any written comments you may have to Ms. Ellen Caldwell (6W-PS) as stated in the enclosed public notice. A copy of the final permit will be mailed to you when the Agency has made a final permit decision.

Should you have any questions concerning any part of the permit, please feel free to contact the Permits Branch at the above address or telephone (214) 655-7190.

Sincerely yours,

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

Enclosures

cc w/permit copy:
New Mexico Environmental Improvement Division

bcc: Humke (6W-PI)
Reading Files (6W-PS, 6W-P)

8/5/87

8/4/87:HUMKE(6W-PI):tn:T-78#1:#563

CONCURRENCES

SYMBOL	6W-PI	6W-P						
SURNAME	Huffman	Ferguson						
DATE	8-7-87	11-19-87	12-22-87	12/23				

EPA Form 1320-1 (12-70)

OFFICIAL FILE COPY

*U.S. GPO : 1986-159-319

Advertising Order Number 8T-3086-NNLX
U.S. Environmental Protection Agency
Public Notice of Draft NPDES Permit(s)
JANUARY 16, 1988

This is to give notice that the U.S. Environmental Protection Agency, Region 6, has formulated a Draft Permit for the following facility (facilities) under the National Pollutant Discharge Elimination System. Development of the draft permit(s) was based on a preliminary staff review by EPA, Region 6, and consultation with the State of NEW MEXICO. The State of NEW MEXICO is currently reviewing the draft permit(s) for the purpose of certifying or denying certification of the permit(s). The permit(s) will become effective within 30 days after the close of the comment period unless:

a. The State of NEW MEXICO denies certification, or requests an extension for certification prior to that date.

b. Comments received prior to FEBRUARY 16, 1988 warrant a public notice of EPA's final permit decision.

c. A public hearing is held requiring delay of the effective date.

EPA's contact person for submitting written comments, requesting information regarding the draft permit, and/or obtaining copies of the permit and the Statement of Basis or Fact Sheet is:

Ms. Ellen Caldwell
Permits Branch (6W-PS)
U.S. Environmental Protection Agency
Allied Bank Tower
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 655-7190

EPA's comments and public hearing procedures may be found at 40 CFR 124.10 and 124.12 (48 Federal Register 14264, April 1, 1983, as amended at 49 Federal Register 38051, September 26, 1984). The comment period during which written comments on the draft permit may be submitted extends for 30 days from the date of this Notice. During the comment period, any interested person may request a Public Hearing by filing a written request which must state the issues to be raised. A public hearing will be held when EPA finds a significant degree of public interest.

EPA will notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke or reissue, or terminate a permit. Any person may request an Evidentiary Hearing on the agency's final permit decision. However, the request must be submitted within 30 days of the date of the final permit decision and be in accordance with the requirements of 40 CFR 124.74. Any condition(s) contested in a request for an evidentiary hearing on an existing Source may be stayed if the request for a hearing is granted. If any condition(s) contested in a request for an evidentiary hearing are granted on a New Source, New Discharger, or Recommencing Discharger the applicant shall be without a permit.

Further information including the administrative record may be viewed at the above address between 8 a.m. and 8:30 p.m., Monday through Friday.

NPDES authorization to discharge to waters of the United States, Permit No. NM0022306.

The applicant's mailing address is: Molycorp, Inc.
Questa Division
P.O. Box 469
Questa, New Mexico 87556

The discharge from this molybdenum milling facility is made into the Red River, a water of the United States classified for coldwater fishing; fish culture; livestock and wildlife watering; and secondary contact recreation. The discharge is located on that water approximately one mile above the bridge at the Red River Fish Hatchery. A fact sheet is available. Under the standard industrial classification (SIC) code 1061, the applicant's activities are mining and milling operations which produce molybdenum disulfide concentrations.

The changes from the previously issued permit are:

1. During the period when the mill is not operating monitoring requirements are reduced to one/month measurement frequency.

2. The permit is reissued to include third round biomonitoring requirements.

c.

Outfall	Parameter	Effluent Characteristics Daily Avg (mg/l)	Daily Max (mg/l)
001	Chemical Oxygen Demand	30	38
001	Total Suspended Solids	11	29
001	Total Arsenic	N/A	0.56
001	Total Cadmium	<0.01	<0.01
001	Total Copper	N/A	0.04
001	Total Cyanide	0.046	0.046
001	Fluoride	2.90	2.90
001	Total Iron	0.56	0.80
001	Total Lead	N/A	0.18
001	Total Manganese	1.20	1.39
001	Total Mercury	<0.06	<0.06
001	Total Molybdenum	4.13	4.36
001	Total Zinc	0.08	0.14
001	pH	within range of 6.6 to 8.3 S.U.	
002	Chemical Oxygen Demand	8	15
002	Total Suspended Solids	7	20
002	Total Arsenic	<0.04	N.D.
002	Total Cadmium	<0.01	<0.01
002	Total Copper	<0.03	N.D.
002	Total Cyanide	0.004	0.005
002	Fluoride	2.20	2.30
002	Total Iron	0.36	0.54
002	Total Lead	N/A	0.21
002	Total Manganese	1.37	1.42
002	Total Mercury	<0.01	N.D.
002	Total Molybdenum	2.71	2.84
002	Total Zinc	0.0	0.09
002	pH	within range of 7.1 to 7.8 S.U.	

6. On the basis of preliminary staff review, the Environmental Protection Agency, after consultation with the State of New Mexico, has made a tentative determination to issue a permit for the discharge described in the application.

7. The proposed effluent limitations for those pollutants proposed to be limited are as follows:

See attached draft permit.

8. A brief explanation follows of the express statutory or regulatory provision on which permit requirements are based, including appropriate supporting references to the Administrative Record required by 40 CFR 124.9:

a. NPDES Permit No. NM0022306 reissued to Molycorp on July 5, 1985.

b. Consolidated NPDES application No. NM0022306 received from Molycorp.

c. Ore Mining & Dressing Point Source Category Guidelines, 40 CFR Part 440, dated December 3, 1982.

d. Water Quality Standards for Interstate and Intrastate Streams in New Mexico, WQCC 85-1, dated February 15, 1985.

e. Modification request from Molycorp for reduced monitoring during the period of mill shut down, dated March 6, 1986.

9. The following is an explanation of calculations or other necessary explanation of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under 40 CFR 122.44 and 122.45 and reasons why these are applicable:

A. Outfalls 001 and 002 - Limitations

The following limitations are continued in the permit for the flow weighted average results for Outfalls 001 and 002.

For chemical oxygen demand, limitations of 60 mg/l daily average and 90 mg/l daily maximum have been established under best professional judgment (BPJ) for best available technology economically achievable (BAT).

For total suspended solids, limitations of 20 mg/l daily average and 30 mg/l daily maximum have been applied for best practicable control technology (BPT) under 40 CFR Part 44.102(b) and under BPJ are considered equivalent to best conventional technology (BCT).

Total arsenic limitations of 0.5 mg/l daily average and 1.0 mg/l daily maximum have been applied for BAT under BPJ.

Total cadmium limitations of 0.05 mg/l daily maximum have been applied for BAT under BPJ.

Total copper limitations of 0.15 mg/l daily average and 0.30 mg/l daily maximum have been applied for BAT under Part 440.13(b).

Total cyanide limitations of 0.025 mg/l daily average and 0.05 mg/l daily maximum have been applied for BAT under BPJ.

Fluoride limitations of 3.0 mg/l daily maximum have been applied for BAT under BPJ.

Total iron limitations of 0.6 mg/l daily maximum have been applied for BAT under BPJ.

Total lead limitations of 0.3 mg/l daily average and 0.6 mg/l daily maximum have been applied under Part 440.103(b).

Total manganese limitations of 1.0 mg/l daily average and 1.5 mg/l daily maximum have been applied for BAT under BPJ.

Total mercury limitations of 0.001 mg/l daily average and 0.002 mg/l daily maximum have been applied for BAT under Part 440.103(b).

Total molybdenum limitations of 1.0 mg/l daily average and 2.0 mg/l daily maximum have been applied for BAT under BPJ. In addition, based on a combined flow of 3.0 MGD for Outfalls 001 and 002, mass limitations of 25 lbs/day daily average and 50 lbs/day daily maximum are applied; except the daily average mass limitation is the average for six months preceeding the reporting period end date.

Total zinc limitations of 0.2 mg/l daily maximum is based on BAT under BPJ.

pH limitations within the range of 6.0 to 9.0 S.U. is based on BCT under BPJ.

B. Instream Water Concentration (IWC)

Daily Average Flow

Outfall 001	3.31 MGD
Outfall 002	0.29 MGD
Total	3.60 MGD

7Q10 Stream Flow

25 cfs = 16 MGD

IWC at 7Q10

$$\frac{3.60}{16 + 3.60} = 18.4\%$$

IWC at 1/2 7Q10

$$\frac{3.60}{8 + 3.60} = 31.0\%$$

C. Instream Calculations (ISC)

Dilution Factor = $D_f = Q_r / Qe$
where Q_r = upstream river flow
= 7Q10 = 16 MGD

Qe = effluent flow = 3.60 MGD
D_f = 16/3.6 = 4.44

Instream concentration = $Cr = \frac{QrCu + (QeCe)}{Qr + Qe}$
where Ce = effluent concentration
Cu = upstream river concentration
Cr = downstream river concentration

Parameter/mg/l	Ce	Cu	Cr	MCL	Human Health	Chronic Aquatic Biota	WQS
Arsenic	0.56	N/A	0.103	0.05	N/A	0.048	N/A
Cadmium	<0.01	N/A	<0.002	0.010	0.010	0.00066	N/A
Copper	0.04	N/A	0.007	N/A	N/A	0.0065	N/A
Cyanide	0.05	N/A	0.009	N/A	0.200	0.0052	N/A
Lead	0.18	N/A	0.033	0.050	0.050	0.0013	N/A
Mercury	N.D.	N/A	N.D.	0.002	0.00014	0.0012	N/A
Zinc	0.08	N/A	0.015	N/A	N/A	0.047	N/A

N.D. - not detected

For drinking water supplies, the ISC for arsenic exceeds the MCL. For the receiving stream segment 2-120 of the Rio Grande River Basin, domestic water supply is a designated use. However, no existing water supply intakes are located at or below this point in the stream segment. None of the lower stream segments in the State of New Mexico have domestic water supply as a designated use.

The ISC's do not exceed human health criteria.

No numerical WQS criteria exist. Although the Gold Book criteria for chronic aquatic biota are exceeded by the ISC's, these will be further evaluated in the biomonitoring program.

Therefore, based on above criteria, monthly toxicity tests are required.

D. Biomonitoring

Based on information contained in the permit application, EPA has determined that there may be pollutants present in the effluent(s) which may have the potential to cause toxic conditions in the receiving stream.

Section 101(a)(3) of the Clean Water Act states that "... it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." In addition, EPA is required under 40 CFR Part 122.44(d)(1) to include conditions as necessary to achieve the States' water quality standards as established under Section 303 of the Clean Water Act. The State has established a narrative criteria which states:

> "toxic substances such as, but not limited to, pesticides, herbicides, heavy metals, and organics, shall not be present in receiving streams to an extent detrimental to man or other organisms of direct or indirect commercial, recreational, or aesthetic value."

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. It is the national policy of EPA to use toxicity tests to evaluate the potential toxic effects of a discharge upon a receiving water (49 Federal Register 9016-9019, March 9, 1984). The Region is now implementing their policy of March 11, 1987 in conformance with the regional strategy issued on April 1, 1987.

Biomonitoring of the effluent is thereby required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit are as follows:

TOXICITY TESTS	FREQUENCY
(a) 7-day *Ceriodaphnia dubia* survival and reproduction test (Method 1002.0)	1/month
(b) 7-day fathead minnow (*Pimephales promelas*) larval survival and growth test (Method 1000.0)	1/month

Toxicity tests shall be performed in accordance with protocols described in "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-85/014. The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge, in accordance with regulations promulgated at 40 CFR Part 122.48.

This permit shall be reopened to require further monitoring studies, and/or effluent limits if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream. Modification or revocation of the permit is subject to the provisions of 40 CFR Part 122.62. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

10. The requested variance(s) N/A appear justified for the following reason(s):

N/A

11. The permit is in the process of certification by the State agency. A draft permit and draft public notice will be sent to the District Engineer, Corps of Engineers, and to the Regional Director of the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, prior to the publication of that notice.

12. The public notice describes the procedures for the formulation of final determinations.

PROPOSED PERMIT

Permit No. NM0022306

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C... 1251 et. seq; the "Act"),

Molycorp, Inc.
P.O. Box 469
Questa, New Mexico 87556

is authorized to discharge from a facility located at Questa, Taos County, New Mexico

to receiving waters named Red River, Segment 2-119 of the Upper Rio Grande Basin

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I (6 pages), II (14 pages), and III (9 pages) hereof.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

Myron O. Knudson

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALL 002

During the period beginning the effective date and lasting until mill start-up, the permittee is authorized to discharge from Outfall 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	0.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	1.0 mg/l	1.5 mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	N/A	N/A	1.0 mg/l	2.0 mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	(*2)	Record
Chemical Oxygen Demand	1/Month	Composite
Total Suspended Solids	1/Month	Composite
Total Arsenic	1/Month	Composite
Total Cadmium	1/Month	Composite
Total Copper	1/Month	Composite
Total Cyanide	1/Month	Composite
Fluoride	1/Month	Composite
Total Iron	1/Month	Composite
Total Lead	1/Month	Composite
Total Manganese	1/Month	Composite
Total Mercury	1/Month	Composite
Total Molybdenum	1/Month	Composite
Total Zinc	1/Month	Composite

OUTFALL 002

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/month by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 002 Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) daily estimate.

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

OUTFALLS 001 & 002

During the period beginning mill start-up and lasting through the expiration date, the permittee is authorized to discharge from Outfalls 001 - process water from milling operation and tailings disposal; 002 - seepage from tailing impoundment.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	Mass(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow (MGD)	N/A	N/A	(*1)	(*1)
Chemical Oxygen Demand	N/A	N/A	60 mg/l	90 mg/l
Total Suspended Solids	N/A	N/A	20 mg/l	30 mg/l
Total Arsenic	N/A	N/A	0.5 mg/l	1.0 mg/l
Total Cadmium	N/A	N/A	N/A	0.05 mg/l
Total Copper	N/A	N/A	0.15 mg/l	0.30 mg/l
Total Cyanide	N/A	N/A	0.025 mg/l	0.05 mg/l
Fluoride	N/A	N/A	N/A	3.0 mg/l
Total Iron	N/A	N/A	N/A	0.6 mg/l
Total Lead	N/A	N/A	0.3 mg/l	0.6 mg/l
Total Manganese	N/A	N/A	1.0 mg/l	1.5 mg/l
Total Mercury	N/A	N/A	0.001 mg/l	0.002 mg/l
Total Molybdenum	25 (*4)	50 (*3)	1.0 mg/l	2.0 mg/l
Total Zinc	N/A	N/A	N/A	0.2 mg/l
Biomonitoring	N/A	N/A	N/A	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow (MGD)	(*5)	Record
Chemical Oxygen Demand	1/Week	Composite (*2)
Total Suspended Solids	1/Week	Composite (*2)
Total Arsenic	1/Week	Composite (*2)
Total Cadmium	1/Week	Composite (*2)
Total Copper	1/Week	Composite (*2)
Total Cyanide	(*6)	Composite (*2)
Fluoride	1/Week	Composite (*2)
Total Iron	1/Week	Composite (*2)
Total Lead	1/Week	Composite (*2)
Total Manganese	1/Week	Composite (*2)
Total Mercury	1/Week	Composite (*2)
Total Molybdenum	1/Week	Composite (*2)
Total Zinc	1/Week	Composite (*2)
Biomonitoring	1/Month	(*7)

OUTFALLS 001 & 002

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):

Outfall 001 Latitude 36° 40' 61" and Longitude 105° 38' 30" which is the discharge spillway from Pope Lake.

Outfall 002 Latitude 36° 40' 61" and Longitude 105° 37' 30" which is the collected and combined seepage from the tailings impoundment.

FOOTNOTES

(*1) Report.
(*2) See Part III, Paragraph B.
(*3) Sum total for Outfalls 001 & 002.
(*4) Sum total average for Outfalls 001 & 002 for six months preceeding reporting period end date; also report daily average mass for each month.
(*5) Continuous and totalized monitoring for Outfall 001; daily estimate for Outfall 002.
(*6) 2/week for Outfall 001; 1/week for Outfall 002.
(*7) See Part III, Paragraph C.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Report mill start-up.

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or a permanent reduction or elimination of the authorized discharge; or,

d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

4. Toxic Pollutants

Notwithstanding Part II.A.3, if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II.B.4.b) and "Upsets" (Part II.B.5.b), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Definitions

The following definitions shall apply unless otherwise specified in this permit:

a. "Daily Discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day. "Daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that sampling day.

b. "Daily Average" (also known as monthly average) discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month. When the permit establishes daily average concentration effluent limitations or conditions, the daily average concentration means the arithmetic average (weighted by flow) of all "daily discharges" of concentration determined during the calendar month.

c. "Daily Maximum" discharge limitation means the highest allowable "daily discharge" during the calendar month.

d. The term "MGD" shall mean million gallons per day.

e. The term "mg/l" shall mean milligrams per liter or parts per million (ppm).

f. The term "ug/l" shall mean micrograms per liter or parts per billion (ppb).

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.B.4.c and 4.d.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.D.6 (24-hour notice).

d. Prohibition of bypass

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occured during normal periods of equipment downtime or preventive maintenance; and,

(c) The permittee submitted notices as required by Part II.B.4.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed at Part II.B.4.d.(1).

5. <u>Upset Conditions</u>

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Part II.B.5.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required by Part II.D.6; and,

(4) The permittee complied with any remedial measures required by Part II.B.3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

a. "A Guide to Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421).

b. "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027).

c. "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

d. "NPDES Compliance Sampling Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp.

(Available from the General Services Administration [8FFS], Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) Form EPA No. 3320-1. Monitoring results obtained during the previous month shall be summarized and reported on a DMR form post-marked no later than the _____ day of the month following the completed reporting period. The first report is due on _____. Duplicate copies of DMR's signed and certified as required by Part II.D.11 and all other reports required by Part II.D (Reporting Requirements) shall be submitted to the Director and to the State (if listed) at the following address(es):

Director
Water Management Division (6W)
U.S. Environmental Protection Agency
Region VI
Allied Bank Tower
1445 Ross Avenue
Dallas, Texas 75202-2733

Program Manager
Surface Water Section
Surface Water Quality Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased monitoring frequency shall also be indicated on the DMR.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and,

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984]; or,

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified at Part II.C.5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit;

b. Any upset which exceeds any effluent limitation in the permit; and,

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Part II.D.4, 5, and 6 at the time monitoring reports are submitted. The reports shall contain the information listed at Part II.D.6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occured or will occur which would result in the discharge, in a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(1) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984].

b. That any activity has occured or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that

discharge will exceed the highest of the "notification levels" described in 40 CFR Part 122.42(a)(2) [48 FR 14153, April 1, 1983, as amended at 49 FR 38046, September 26, 1984).

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated at 40 CFR Part 122.6 [48 FR 14153, April 1, 1983] and any subsequent amendments.

11. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation - by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or,

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency - by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and,

(3) The written authorization is submitted to the Director.

c. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of the Director. As required by the Clean Water Act, the name and address of any permit applicant or permittee, permit applications, permits, and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER CONDITIONS

A. The term "composite sample" means a sample consisting of a minimum of two grab samples of effluent collected not less than four hours apart over a normal eight hour operating day and combined proportional to flow or a sample continuously collected proportional to flow over a normal eight hour operating day. All such samples shall be typical and representative of effluent generated during the period since the last sample was collected.

B. Analysis and reporting for Outfalls 001 and 002 shall be accomplished separately for each outfall. In addition, the permittee shall report the flow weighted average results for Outfalls 001 plus 002. Effluent limitations on weight of total molybdenum shall be the sum total for Outfalls 001 and 002. For determination of compliance with other effluent limitations the following shall apply:

1. Discharge from Outfall 001 shall be in compliance.

2. A composite sample of discharges from Outfalls 001 and 002 monitoring samples combined in flow weighted proportion shall be in compliance, except that concentration limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001.

   During periods when no flow occurs from Outfall 001, monthly average reporting of concentration for molybdenum and manganese shall be based on the average of all composite samples obtained in the month for Outfalls 001 and 002; and monthly maximum reporting of concentration for molybdenum and manganese shall be based on the maximum composite sample obtained in that month for Outfalls 001 and 002. In conjunction with the DMR for each month, the permittee shall report periods, if any, when no flow exists at Outfall 001.

C. <u>CHRONIC BIOMONITORING REQUIREMENTS</u>

a. The permittee shall test the effluent for toxicity in accordance with the provisions in this section. Such testing will determine if an appropriately dilute effluent sample affects the survival and reproduction or growth of the appropriate test organism. The permittee shall initiate the following series of tests within 60 days of the effective date of this

permit to evaluate wastewater toxicity. All test organisms, procedures, and water quality assurance criterion used shall be in accordance with the latest revision of "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", EPA/600/4-85/014. The following tests shall be used:

1) The permittee shall conduct a 7-day Ceriodaphnia dubia survival and reproduction test (Method 1002.0).

2) The permittee shall conduct a 7-day fathead minnow (Pimephales promelas) larval survival and growth test (Method 1000.0).

b. A minimum of 5 dilutions must be performed in addition to an appropriate control, using a minimum dilution factor of 0.3. Three dilutions consisting of 100%, 31%, and 18% of the final effluent must be contained in the test series.

c. The samples shall be collected at a point following the last treatment unit. Dilution water used in toxicity tests will be receiving stream water collected at a point upstream of the discharge. If receiving water is unsatisfactory as a result of pre-existing in-stream toxicity (greater than 20% mortality in the control), the permittee must substitute reconstituted dilution water, with hardness and alkalinity similar to that of the receiving stream water. The permittee shall also report to EPA the toxicity of the upstream receiving water.

d. Flow-weighted 24-hour composite samples representative of dry weather flows during normal operation will be collected from Outfalls 001 and 002. These composites shall be combined in proportion to the average flow from each outfall for the day the sample was collected. The toxicity tests shall be performed on the flow-weighted composite of outfall samples.

e. The toxicity tests specified in paragraphs (a) and (b) above shall be conducted once per month. The permittee shall prepare a full report of the results according to EPA/600/4-85/014, Section 10, Report Preparation. This full report need not be submitted unless requested and shall be retained following the provisions of Part II.C.8 of this permit.

f. The permittee shall submit the toxicity testing information contained in Table 1 of this permit to EPA along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting period following the toxicity test.

g. Should no toxicity occur within the first year of toxicity testing, in accordance with paragraph (h) below, for both species tested at the effluent dilution equivalent to 1/2 of low flow (31%), the permittee shall certify this information in writing to EPA Region VI and these biomonitoring requirements shall expire.

h. For the purpose of this biomonitoring requirement, chronic toxicity is defined as a statistically significant difference at the 95% confidence level between the survival and growth or reproduction in the appropriate test organism exposed to the control and to an effluent dilution.

i. This permit shall be reopened to require further monitoring studies and/or effluent limits if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream. Modification or revocation of the permit is subject to the provisions of 40 CFR Part 122.62. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

TABLE 1

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: _____
NPDES No.: _____

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: _____ am/pm _____ date

Dilution water used: ☐ Receiving water ☐ Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	1%	3%	10%	30%	100%	% at low flow %	% at 1/2 low flow %
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								

TABLE 1 (Continued)

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: _____
NPDES No.: _____

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	1%	3%	10%	30%	100%	% at low flow %	% at 1/2 low flow %
24h								
48h								
7-day								

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL reproduction = _____ % effluent

4. If you answered NO to 1.a. and 2.a., enter [N]; otherwise enter [Y]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TCP3B.

6. If you answered NO to 1.b. and 2.b., enter [N]; otherwise enter [Y]: ____

7. Enter response to item 6 on DMR Form, Parameter No. TDP3B.

TABLE 1 (Continued)

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

Permittee: _____
NPDES No.: _____

Composite collected FROM: _____ am/pm _____ date
TO: _____ am/pm _____ date

Test initiated: _____ am/pm _____ date

Dilution water used: ☐ Receiving water ☐ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers				MEAN DRY WEIGHT	
	A	B	C	D	mg	CV%*
0%						
1%						
3%						
10%						
30%						
100%						
Low Flow %						
1/2 Low Flow %						

* coefficient of variation = standard deviation x 100/mean

1. Dunnett's Procedure:

   Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

TABLE 1 (Continued)

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(Pimephales promelas)

Permittee: _____
NPDES No.: _____

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
0%								
1%								
3%								
10%								
30%								
100%								
Low Flow %								
1/2 Low Flow %								

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES _____ NO
   b. 1/2 LOW FLOW: _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = _____ % effluent
   b. NOEL growth = _____ % effluent

4. If you answered NO to 1.a. <u>and</u> 2.a., enter [N]; otherwise enter [Y]: ____

5. Enter response to item 4 on DMR Form, Parameter No. TCP6C.

6. If you answered NO to 1.b. <u>and</u> 2.b., enter [N]; otherwise enter [Y]: ____

7. Enter response to item 6 on DMR Form, Parameter No. TDP6C.

D. The Molycorp thiocyanate colorimetric method is approved for the analysis of molybdenum unless subsequently determined to be inappropriate by the NMEID or EPA.

E. As soon as practicable after the arrival of Molycorp's environmental staff at the site of a tailings spill that reaches the Red River, but no later than two (2) hours after arrival at the site, water quality sampling shall commence. Samples shall be taken at three sites:

(1) Approximately 100 feet above the point where tailings enter the river;

(2) Approximately 100 feet below the point where tailings enter the river; and

(3) Approximately one-half mile below the point where tailings enter the river.

All samples shall be properly preserved and analyzed for:

Chemical Oxygen Demand (COD)
Total Suspended Solids (TSS)
Cyanide (CN)
Total Iron (Fe)
Manganese, Dissolved (Mn)
Total Molybdenum (Mo)
pH
Temperature
Conductivity
Total Zinc (Zn)

The results of the analyses shall be submitted to the United States Environmental Protection Agency and the New Mexico Environmental Improvement Division within 30 days following a tailings spill.

Consistent with the procedures described in the Preventative Maintenance and Surveillance Plan and Contingency Action and Reporting Plans (June 1975), a written report containing the following information will be sent to the U.S. EPA and NMEID within ten (10) days following any spill:

(1) Date of spill.

(2) Time when the spill was observed and time when tailings flow into the river was stopped.

(3) Location (pipe or coupling number).

(4) Estimated amount of tailings that entered the river.

(5) Sketch and dimension of size of hole or failure that caused the spill.

(6) Position of failure in the pipe or coupling.

(7) Copy of the latest computer printout covering the pipe or coupling which failed.

(8) Comments, if required for clarification.

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

CARRY CARRUTHERS
Governor
GORDON
Secretary
MUTH
Deputy Secretary

March 16, 1988

Mr. Myron Knudson
U.S. Environmental Protection Agency
Allied Bank Tower
1445 Ross Avenue
Dallas, Texas 75202-2733

Re: State Certification

Dear Mr. Knudson:

Enclosed please find the state certification for the following permit:

Molycorp Inc., Permit No. NM0022306

Comments and conditions are enclosed on separate sheets.

Sincerely,

for

Kathleen M. Sisneros
Bureau Chief
Surface Water Quality Bureau

MS/ms

Enclosures

cc: NMEID District II Office
NMEID Taos Field Office
Fred Humke, U.S.EPA (6W-PI)
David Shoemaker, Molycorp Inc.

RECEIVED
MAR 18 1988
OW-PS

Mr. Robert Layton Jr., Regional Administrator
Environmental Protection Agency
Allied Bank Tower at Fountain Place
1445 Ross Avenue
Dallas, TX 75202-2733

March 16, 1988

STATE CERTIFICATION

Re: Molycorp, Inc., Questa Division
P. O. Box 469
Questa, New Mexico 87556
NM0022306, January 16, 1988

Dear Mr. Layton:

The New Mexico Environmental Improvement Division has examined the application for and the proposed NPDES permit NM0022306 above. The following conditions are necessary to assure compliance with the applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law. Compliance with the terms and conditions of the permit and this certification, will provide reasonable assurance that the permitted activities, will be conducted in a manner which will not violate applicable water quality standards.

The State of New Mexico

( ) includes the following more stringent conditions and citation to the State or Federal requirements upon which those conditions are based (see attachments).

(X) certifies that the discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act and with appropriate requirements of State law. (see cover letter)

( ) waives its right to certify

( ) denies certification for the reasons stated in the attachment

In order to meet the requirements of State law, including water quality standards and the State Water Quality Management Plan, each of the conditions cited in the draft permit and the State certification, shall not be made less stringent.

Please contact Mike Saladen at (505) 827-2798 if you have any questions concerning this certification. Comments pertaining to this Draft Permit are included on a separate page.

Sincerely,

for

Kathleen M. Sisneros
Bureau Chief
Surface Water Quality Bureau

RECEIVED
MAR 1 8 1988
6W-PS

Conditions of State Certifications
Molycorp, Inc., Questa Division
NM0022306

NONE.

Comments That Are Not Conditions Of State Certification
Molycorp, Inc., Questa Division
NM0022306

Summary

1. The EPA should reconsider and possibly recalculate ISCs as found on page 5 of the fact sheet. Outfalls 001 and 002 are in different stream segments and numeric water quality standards for some of the parameters listed do in fact exist in one of the stream segments. See detail 1 below.

2. The EPA should reconsider confusing requirements regarding molybdenum and manganese limitations at outfall 002. See detail 2 below.

Details

Detail 1
In the Public Notice of draft permit NM0022306 and in the draft permit itself, the receiving stream is cited as stream segment 2-119 of the Rio Grande Basin. The fact sheet for the same draft permit documents stream segment 2-120 of the Rio Grande Basin as the receiving stream.

In fact, outfall 001 is to stream segment 2-119 of the Rio Grande Basin, while outfall 002 is located in stream segment 2-120 of the same basin. Stream segments referenced are found in the current Water Quality Control Commission (WQCC) adopted and EPA approved Water Quality Standards for Interstate and Intrastate Streams in New Mexico, as amended through January 8, 1985.

The fact sheet indicates that the designated uses for stream segment 2-120 are as follows: coldwater fishery, fish culture, livestock watering, and secondary contact recreation.

In fact, the designated uses for stream segment 2-120 are: domestic water supply, fish culture, high quality coldwater fishery, irrigation, livestock and wildlife watering, and secondary contact recreation. Stream segment 2-119 designated uses are: coldwater fishery, fish culture, livestock watering, and secondary contact recreation.

Page 5 of the Fact Sheet states that "No numeric WQS criteria exist".

This statement is incorrect. Outfall 002 is located in stream segment 2-120 of the Rio Grande Basin. The designated uses for segment 2-120 include domestic water supply. According to Section 3-101.B. of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico, as amended through January 8, 1985, the standards applicable for stream segments with designated uses assigned as domestic water supplies are as follows: "Waters used for domestic water supplies shall not contain substances in concentrations that exceed drinking water standards set forth in Section 202.B. of the New Mexico Regulations Governing Water Supplies." The following are the applicable maximum concentration levels for inorganic chemicals as found on page 15 of New Mexico Regulations Governing Water Supplies and should be included as the water quality standards:

Contaminants	Level Milligrams Per Liter
Arsenic	0.05
Cadmium	0.010
Copper	N/A
Cyanide	N/A
Lead	0.050
Mercury	0.002
Zinc	N/A

The Fact Sheet of the draft permit states "The ISC's do not exceed human health criteria."

The Fact Sheet documents arsenic in the effluent as 0.56 mg/l, and in the downstream river concentration as 0.103 mg/l. The MCL for arsenic is 0.05 mg/l and the chronic aquatic biota level is 0.048 mg/l. The water quality standard for segment 2-120 is 0.05 mg/l. The effluent quality and downstream concentrations as calculated by EPA exceed the MCL, the chronic aquatic biota levels and water quality standards in segment 2-120. However, the EID recalculated the ISC for Arsenic at outfall 002 using data in the fact sheet and found that the ISC should not exceed the water quality standard. EID calculations are as follows:

$$\text{Instream concentration} = C_r = \frac{QrC_u + (QeCe)}{Qr + Qe}$$

where C_e = effluent concentration (outfall 002 = N.D.)
C_u = upstream river concentration (N/A)
C_r = downstream concentration
Q_e = effluent flow (outfall 002 = 0.29 MGD)

Since C_u and C_e are zero, the result C_r = zero.

The water quality standard of 0.05 mg/l does not apply to stream segment 2-119 which is not designated for domestic water supply.

Detail 2

The permittee is allowed to average the sampling results for molybdenum from outfalls 001 and 002 when both outfalls are discharging. During periods of no flow from outfall 001, which is the current situation, molybdenum and manganese concentration limits are suspended.

The permit states in Part III, Section B. 2:

> A composite sample of discharges from Outfalls 001 and 002 monitoring samples combined in flow weighted proportion shall be in compliance, except that concentrations limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001.
>
> During periods when no flow occurs from Outfall 001, monthly average reporting of concentration for molybdenum and manganese shall be

based on the average of all composite samples obtained in the month for Outfalls 001 and 002; and monthly maximum reporting of concentration for molybdenum and manganese shall be based on the maximum composite sample obtained in that month for Outfalls 001 and 002. In conjunction with the DMR for each month, the permittee shall report periods, if any, when no flow exists at Outfall 001.

In the Division's opinion the intent of this paragraph is unclear. Is this paragraph only applicable after the start-up of the mill, and therefore the initiation of effluent limits for outfalls 001 and 002 as stated on page 4 of Part I? If this paragraph is applicable prior to mill start-up, it contradicts the molybdenum and manganese effluent limitations for outfall 002 as stated on page 2 of Part I. Specifically the phrase "... that concentration limits for molybdenum and manganese are suspended during periods of zero flow from outfall 001" (emphasis added). It is the opinion of NMEID that with these stipulations, the permittee can never violate the permit limits for molybdenum or manganese as stated on page 2 of Part I. The Division believes that this section must be clarified and that discharge of molybdenum and manganese should not go unregulated at outfall 002. If EPA maintains the effluent limit suspension, it should be noted on page 2 of Part I, perhaps through the use of asterisks. Would this suspension effect monitoring and reporting requirements for molybdenum and manganese? NMEID believes that monitoring and reporting requirements must continue even if effluent limits are suspended.

Page 2 and 4 of Part I.A. Effluent Limitations and Monitoring Requirements of the draft permit documents sample type for flow measurement purposes as "daily estimate." EPA should reconsider changing this sample type to a more appropriate flow measuring methodology, consistent with scientific practices, to ensure the accuracy and reliability of measurements of the volume of monitored discharges. Accurate flow measurements are needed for calculation of loading values as listed on page 4. Review of Discharge Monitoring Reports submitted to our office by the permittee show the average monthly flow for 1987 was .46 MGD, with the maximum flow recorded as .51 MGD.

RECORD OF COMMUNICATION	☒ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE ☐ OTHER (SPECIFY) (Record of item checked above)	
TO: Jo Roy E. Apodaca (505) 586-0212	FROM: Fred Zumbe	DATE 4/22/88 TIME 10:45 a

SUBJECT
Molycorp, NPDES No. NM0022306

SUMMARY OF COMMUNICATION

I advised that we would cut back biomonitoring for combined outfalls 001 and 002 to 1/quarter but wanted them to run 1 test (biomonitoring) for outfall 002 at dilutions of 2.8% low flow and 5.5% 1/2 low flow. He agreed to these requirements. I advised that we could not reopen the comment period but believe their concerns with the NMEID issue have been resolved.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

4/22/88 - P.M. Discussed with mike Foladier (NMEID). He did not express any objections.

INFORMATION COPIES
TO: Record

R6-123 (2-84)

Engineering PN 1.16.88 Hanke
1 Cy Jayne

Molycorp, Inc.

Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

UNOCAL 76
MOLYCORP

April 14, 1988
CERTIFIED/SHOW TO WHOM/DATE DELIVERED

Regional Administrator
Environmental Protection Agency
Region VI
Allied Bank Tower
1445 Ross Avenue
Dallas, Texas 75202-2733

Dear Sir:

We have received a copy of comments mailed to you by Mike Saladen from the New Mexico Environmental Improvement Division regarding our NPDES permit no. NM0022306. This is to advise you that we plan to respond to those comments. Our comments shall be mailed directly to you as quickly as we can obtain the desired information from the New Mexico Stream Commission. If our response to these comments falls under the regulatory 30 day time period, we are respectfully requesting an extension of the comment period to ensure that we submit the right information.

Thank you for your consideration.

Very truly yours,

David R. Shoemaker

David R. Shoemaker,
Mine Manager

CC: files

RECEIVED
APR 20 1988
OW-PS

Gladys

Permit File NM0022306
TT

Molycorp, Inc.

Questa Division
P.O. Box 469
Questa, New Mexico 87556
Telephone: (505) 586-0212

RECEIVED
EPA REGION VI
SEP 2 1 1988
6W-EA

UNOCAL 76
MOLYCORP

RECEIVED
SEP 2 1 1988
6W-EA

September 13, 1988

1 - Permit/CD
2 - AO & AO matl
3 - DMR's
4 - Vio. Sum. Log
5 - NCR
6 - Correspondence
7 - CRAS
Date Filed
Clerk's Inits.

Mr. Robert Layton, Jr.
Regional Administrator
Region VI - Allied Bank Tower
1445 Ross Avenue
Dallas, Texas 75202-2733

Dear Mr. Layton:

Enclosed are the Discharge Monitoring Reports for the month of August, 1988, Permit No. NM0022306. Please be advised that no flow occurred from Outfall 001 for the entire month.

Enclosed with these reports are the test results for the Chronic Bio Monitoring requirements for Outfall 002, page 3, part III, Section D, under our new NPDES permit effective 6/21/88.

On July 25, 1988, samples of the receiving water, (Red River), were submitted to ERT Test Laboratories to determine if any pre-existing instream toxicity existed. Test results of these waters indicated that it was satisfactory with less than 20% mortality. The Bio Monitoring test work for Outfall 002 was scheduled for the week of August 8, through August 14, 1988, using the receiving water as dilution water. However, on subsequent weeks following the testing of our receiving water, unusually heavy rains occurred resulting in heavy loading of silt, soils, and other debris from the surrounding highly acidic, erodable geological scars along both sides of the Red River upstream of Outfall 002. During heavy rains, these scars contribute very high contents of total suspended solids, total dissolved solids, and high concentrations of heavy metals; creating toxic conditions and high oxygen demand of the river.

As a result of this dramatic change in the quality of the river, we felt we could not use the receiving water as dilution water for the test. On August 3, 1988, Mr. Leroy Apodaca of my staff contacted Mr. Fred Humke, Permit Writer, Region VI, Environmental Protection Agency. Mr. Apodaca informed Mr. Humke about the above circumstances. Mr. Humke, upon learning about the circumstances, advised Mr. Apodaca to use reconstituted water instead of the receiving water. Molycorp proceeded with the test the following week.

If you have any questions regarding procedures used, or the waters ultimately used in the testing, please call me at the telephone number listed on first page.

Very truly yours,

David R. Shoemaker

David R. Shoemaker
Mine Manager

cc: N.M. EID Surface
Water Quality
Bureau

files

TABLE 1

SHEET 1 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

Composite collected FROM: ~~UAK~~ 08:20 am/pm 8/7/88 date
TO: ~~UAK~~ 08:20 am/pm 8/8/88 date

8/23/88

Test initiated: 1200 am/pm 8/9/88 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water

NUMBER OF YOUNG PRODUCED PER FEMALE @ 7 DAYS

Percent effluent (%)

REP	0%	~~1%~~ 15%	~~3%~~ 50%	~~10%~~	~~30%~~	100%	(2.8%) % at low flow %	(5.5%) % at 1/2 low flow %
A	26	25	20	NA	NA	6	15	26
B	22	24	25			12	24	27
C	29	24	19			12	19	24
D	23	21	23			10	21	23
E	26	22	20			14	21	26
F	26	24	24			10	17	25
G	25	24	22			11	18	28
H	26	25	25			8	23	27
I	24	23	20			10	21	23
J	23	25	21			11	21	22
	25±2.05						20±2.7	

8/22/88

8505-088-003-001
8/16/88

TABLE 1

SHEET 2 OF 4

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

PERCENT SURVIVAL

Percent effluent (%)

Time of Reading	0%	15% ~~1%~~	50% ~~3%~~	~~10%~~	~~30%~~	100%	(2.8%) % at low flow %	(5.5%) % at 1/2 low flow %
24h	100	100	100	NA	NA	100	100	100
48h	100	100	100			100	100	100
7-day	100	100	100			80	100	100

1. Fisher's Exact Test:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: ____ YES ✓ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

dh 8/22/88

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to:

   a. LOW FLOW: ✓ YES ____ NO
   b. 1/2 LOW FLOW: ____ YES ✓ NO

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL reproduction = < 2.8 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: F

5. Enter response to item 4 on DMR Form, Parameter No. TEP3B.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

8503-088-003 002
KM 8/16/88

TABLE 1

SHEET 3 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

KM 8/23/88

Composite collected FROM: ~~UAK~~ 08:20 am/pm 8/7/88 date
TO: ~~UAK~~ 08:20 am/pm 8/8/88 date

Test initiated: 1210 am/pm 8/9/88 date

Dilution water used: ☐ Receiving water ☒ Reconstituted water

DATA TABLE FOR GROWTH OF FATHEAD MINNOWS

Effluent Conc. (%)	Average Dry Weight in milligrams in replicate chambers				MEAN DRY WEIGHT	
	A	B	C	D	mg	CV%*
0%	0.39	0.49	0.36	NA	0.41	16.48
~~1%~~ 15%	0.34	0.42	0.41		0.39	11.18
~~3%~~ 50%	0.47	0.43	0.44		0.45	4.63
~~10%~~	NA				NA	
~~30%~~	NA				NA	
100%	0.52	0.54	0.44		0.50	10.58
Low Flow 2.8 %	0.43	0.34	0.50		0.42	19.10
1/2 Low Flow 5.5 %	0.36	0.32	0.33		0.34	6.12

* coefficient of variation = standard deviation x 100/mean

ck 9/22/88

1. Dunnett's Procedure:

Is the mean dry weight (growth) at 7 days effluent significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to:

a. LOW FLOW: _____ YES ✓ NO
b. 1/2 LOW FLOW: _____ YES ✓ NO

TABLE 1

SHEET 4 OF 4

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL TEST
(*Pimephales promelas*)

Permittee: Molycorp, Inc.
NPDES No.: NM0022306

DATA TABLE FOR FATHEAD MINNOW SURVIVAL

Effluent Conc. (%)	Percent Survival in replicate chambers				MEAN PERCENT SURVIVAL			
	A	B	C	D	24h	48h	7-day	CV%*
0%	100	100	100	NA	100	100	100	0
~~1%~~ 15%	100	90	100		100	100	96.7	5.97
~~3%~~ 50%	100	100	100		100	100	100	0
~~10%~~	NA				NA			NA
~~30%~~	NA				NA			NA
100%	100	100	100		100	100	100	0
Low Flow 2.8 %	100	100	100		100	100	100	0
1/2 Low Flow 5.5 %	100	100	100		100	100	100	0

* coefficient of variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate:

   Is the mean survival at 7 days significantly different (p=0.05) than the control survival for the % effluent corresponding to:

   a. LOW FLOW: _____ YES ✓ NO
   b. 1/2 LOW FLOW: _____ YES ✓ NO

dk 8/22/88

3. Enter percent effluent corresponding to each NOEL below and circle lowest number:

   a. NOEL survival = 100 % effluent
   b. NOEL growth = 100 % effluent

4. If you answered NO to 1.a. and 2.a., enter [P]; otherwise enter [F]: P

5. Enter response to item 4 on DMR Form, Parameter No. TEP6C.

6. If you answered NO to 1.b. and 2.b., enter [P]; otherwise enter [F]: P

AE-2A

(1)
(2) Mr. C. R. Jacrison
General Manager
Molycorp, Inc.
P.O. Box 469
Questa, New Mexico
87556
(3) NM0022306
(4) Mr. Jacrison
(5) fact sheet
(6) New Mexico Environmental Improvement Division

B VIII
113 12 UM-01

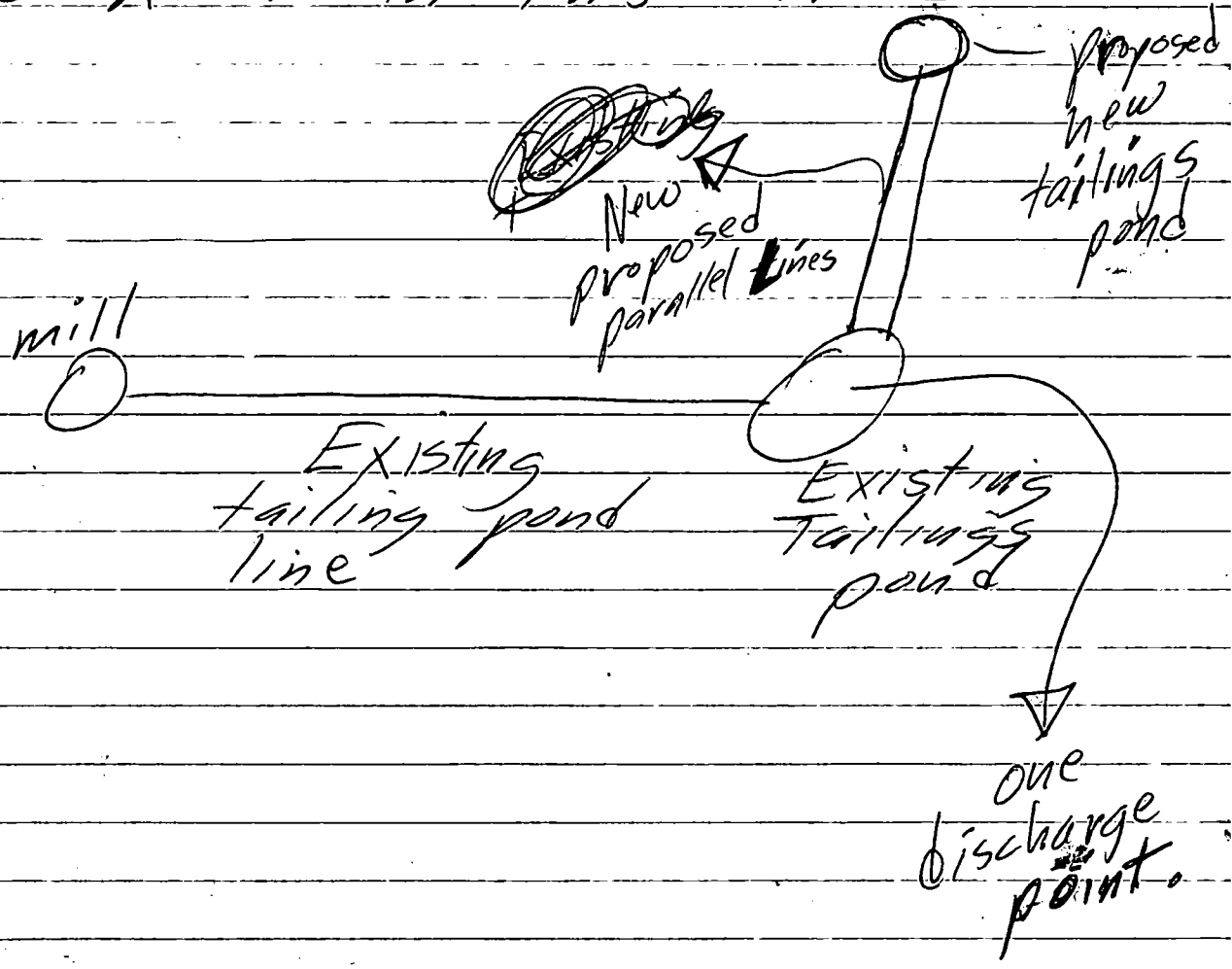
file
NM9-29
NM-22306

Molycorp

3:30 pm 4/30/80

8 mi slurry pipeline across BLM land to a new tailings pond (≈ 800 acres).

New site is 1 ½ mi E. of Rio Grande which is a Wild & Scenic River in this area



MEMORANDUM OF CALL

TO: Fred Henke

☐ YOU WERE CALLED BY— ☐ YOU WERE VISITED BY—

Joe Solvick

OF (Organization)
BLM Santa Fe

☑ PLEASE CALL → PHONE NO. CODE/EXT. 8-476-1468 ☐ FTS

☐ WILL CALL AGAIN ☐ IS WAITING TO SEE YOU

☐ RETURNED YOUR CALL ☐ WISHES AN APPOINTMENT

MESSAGE

Wants to discuss Molycorp and their proposal to establish or construct a new disposal area 8 miles north of present disposal —

RECEIVED BY	DATE	TIME
RBE	4-15-80	11:00

63-109
☆U.S. G.P.O. 1979-281-184/6

STANDARD FORM 63 (Rev. 8-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.6

PERMIT RATIONALE

NPDES No. NM0022306
Molycorp, Inc.

Outfalls 001 and 002

1. In accordance with the modification request, concentration limits for molybdenum and manganese are suspended during periods of zero flow from Outfall 001. When only Outfall 002 is being discharged, the levels of these small flow seepage sources may exceed the concentration limits for the normal composite of Outfalls 001 and 002 without any significant effect on the receiving stream. The economics of re-routing and treatment are not feasible or warranted. Therefore, based on best professional judgment (BPJ), concentration limits only are suspended during periods of zero flow from Outfall 001.

2. In accordance with the modification request, based on BPJ the definition of "composite sample" is revised to "a sample consisting of a minimum of two grab samples of effluents collected not less than four hours apart over a normal operating day-----." This modification is made to allow the permittee to utilize personnel normally available at the monitoring site since the two-part composite sampling has provided representative, consistent samples in the past.

3. In accordance with the modification request and the concurrence of the NMEID, pH monitoring limits are revised to within the range of 6.0 to 9.0 S.U.

Fred Schmidt
6/13/84

Permit Rationale

Prepared by: Fred Humke 3/28/83
Date December 17, 1982

1. Molycorp, Inc.
   Questa facility
   NPDES Permit No. NM0022306

2. Permit being reissued for five year term.

3. a. NPDES Permit No. NM0022306 issued to Molycorp on June 16, 1977.

   b. Consolidated NPDES application No. NM0022306 received from Molycorp on January 29, 1982.

   c. Ore Mining & Dressing Point Source Category Guidelines, 40 CFR Part 440, dated December 3, 1982.

   d. Request for several compliance schedule received from molycorp on March 11, 1983.

4. Receiving stream: The Red River.

   Rio Grande River water quality management plan.
   The effluent is water quality limited for molybdenum and copper.

5. Compliance schedule included for attainment of molybdenum limitations by one year after mill start-up.

6. a. Existing BPJ (best professional judgment) limitations are retained as contained in the existing permit until one year after the mill start-up, except pH is changed to within the range of 6.6 to 8.6 standard units in accordance with the state requirements and concentration limitations for total molybdenum are deleted until one year after the mill start-up. This meets or exceeds BAT (best available technology economically achievable) under Part 440.103(b) of the Ore Mining and Dressing Point Source Category, except for total lead and total mercury. Limitations for total lead of 0.3 mg/l daily average and 0.6 mg/l daily maximum; and for total mercury of 0.001 mg/l daily average and 0.002 mg/l daily maximum are applied on an immediate compliance basis because analytical data contained in reference 8.6 above shows that existing levels are well below these limitations (see item 5.C. above).

   b. In accordance with the request contained in reference 8.d. above, a schedule of compliance is allowed until one year after the mill start-up to achieve final molybdenum limitations. This change in the compliance schedule is necessitated by certain economic and technological circumstances related to the mill start-up, six months of mill operation required to collect sufficient effluent in the tailings pond, and subsequently six months of calibration and testing of the ion exchange plant. The final molybdenum limitations to be achieved one year after mill start-up are:

Effluent Characteristic	Discharge Limitations			
	kg/day (lbs/day)		Other Units (Specify)	
			mg/l	mg/l
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.
Total Molybdenum	11(25)*	23(50)**	1.0***	2.0**

* 6-month average for period preceeding reporting period end date
** 24-hour maximum
*** 30-day average

c. Under the provisions of Sections 101 and 308 of the Clean Water Act, a biomonitoring requirement on the treated effluent has been required. The objective of this requirement is to establish the adequacy of Best Available Technology (BAT) to control toxicity of the treated effluent. Although the effluent may be in compliance with the permitted limits, testing of chemical parameters alone does not measure toxicity which may result when chemicals are combined. The most direct and cost-effective approach to measuring effluent toxicity is to establish the acute toxicity (LC50) of the treated effluent using a static bioassay test.

In addition to determining the adequacy of the treatment process in removing toxic pollutants, the bioassay information will be used by the State and EPA to assist in determining which receiving waters may have existing or potential use impairments. The effluent bioassay information by itself will not be used to derive permit limits nor used to show cause and effect relationships. Other data gathering such as fixed station monitoring, intensive surveys, fate and effect studies and/or chronic testing would be necessary to establish cause and effect relationships. All of this information together would then become a part of the continuing planning process used to direct attainability studies, site specific criteria modification studies, and water quality permitting requirements.

Biomonitoring has been included in this permit because arsenic, cadmium, copper, cyanide, lead, mercury, molybdenum and zinc from this mill are present in the effluent which is discharged to the Red River, a wild and scenic river, and the state fish hatchery (2 miles below) which intakes the river water.