40-8905

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI

RETURN ORIGINAL TO PDR, HQ.

APR 28 1987

REPLY TO: 6W-ET

Mr. J. C. Stauter
Quivara Mining Company
P.O. Box 25861
Oklahoma City, Oklahoma 73125

MAY 1987 RECEIVED

DOCKETED USNRC MAY 07 1987 MAIL SECTION DOCKET CLERK

Re: NPDES Permit No. NM0020532
Ambrosia Lake, New Mexico

Dear Mr. Stauter:

EPA received an excerpt of a report entitled "Ambrosia Lake Mill Tailings Stabilization Report" which was submitted to the Nuclear Regulatory Commission by Quivara Mining Company. The pages of concern have been enclosed. In particular, page A-1.62 shows a chemical analysis of the Mill reservoir final discharge. For the month of July 1986, the report shows a uranium concentration of 7.57 mg/l. The permit limits for uranium are 2.0 mg/l (daily average) and 4.0 mg/l (daily maximum). You reported to EPA in the Discharge Monitoring Report for July 1986, that the total uranium concentrations were 0.909 mg/l (daily average) and 1.06 mg/l (daily maximum).

In order for this Agency to carry out its responsibilities under the Water Quality Act, hereinafter referred to as the Act, you are required under the authority of Section 310 of the Act (P.L. 100-4, February 4, 1987) to submit the following information:

1) A complete description of the sampling and analytical procedures used for the "Ambrosia Lake Mill Tailings Stabilization Report." This description should include sampling points, used for the study and for the NPDES permit. A schematic depicting the flow of wastewater should be included.

2) A complete explanation of the apparent discrepancy between the published report and the DMR for July 1986.

The requested information must be submitted to Mr. James Olander, United States Environmental Protection Agency, Region 6, 1445 Ross Avenue, Dallas, Texas 75202, within fifteen (15) days of receipt of this letter. It must be signed by a duly authorized official of Quivara Mining Company. Section 313 of the Act (P.L. 100-4, February 4, 1987) provides civil and criminal penalties for failing to submit information required under Section 310 of the act and criminal penalties for knowingly making a false statement under Section 310.

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PDR ADOCK 04008905
C PDR

DESIGNATED ORIGINAL
Certified By Mary C. Hood

FEE NOT REQUIRED
87-587

If you have any questions concerning this request, please call James Olander at (214) 655-6475.

Sincerely,

Myron O. Knudson, P.E.
Director
Water Management Division

Enclosures

cc: Ms. Kathleen M. Sisneros
Chief, Surface Water Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

Mr. John Gould
Surface Water Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

Mr. Ed Hawkins
Nuclear Regulatory Commission
Suite 100, 730 Simms
Golden, Colorado 80401

Of the nine mine shafts located in the Ambrosia Lake valley, in one, Section 22, physical mining has been terminated and the future development will depend upon recovery of the residual ore values by old stope leaching. Sections 17, 19, 24, 30, 30W, 33, 35 and 36 are currently in a standby state due to the depressed condition of the uranium market. Some areas of these mines are also worked by old stope leaching methods.

The ore in all of these mines is located in the Westwater Canyon units of the Morrison formation which is an active aquifer. The ore is a grayish colored sandstone averaging approximately 0.15 percent U_3O_8 with occasional high values to 0.5 percent and low values to 0.05 percent. Varying amounts of impurity substances are present in the ores as mined. Only molybdenum exists in sufficient quantity to make recovery a necessary activity as an additional step in the milling. The ore contains a significant amount (2 to 5 percent) of limestone.

Since the ore zone is water saturated, mining can only proceed after provision is made to remove the water. Water is drained from the mine through a series of trenches down each haulage drift and is collected into a central sump near the bottom of the mine shaft and pumped to the surface. Discharge is into a series of settling ponds to remove suspended solids. The mine water contains some uranium and vanadium in solution in addition to other elements. The uranium values are removed by an ion exchange facility. The radium is then removed by treatment with barium chloride which precipitates barium sulphate trapping radium sulfate as a coprecipitate. Water from all the Quivira mines in the Ambrosia Lake area except the Section 35-36 mines is pumped to the mill reservoir for storage as a supply for the mill process. The water from the Section 35-36 mines is treated separately and discharged into an overland drainage canal where it infiltrates the surface and serves to irrigate the adjacent pasture in Sections 1 and 12. All of the Section 35-36 mine water is absorbed

Quantity

For the year of 1979, approximately 2209 gpm were delivered to the mill site. Approximately 237 gpm from the Section 17 mine was removed for separate use and 1971 gpm were made available for mill operations and storage in the mill reservoir. An estimated 30 gpm was lost from the reservoir by evaporation and 203 gpm lost by seepage. During the year, approximately 283 gpm were released from the reservoir to the Arroyo del Puerto after barium chloride treatment.

In processing approximately 5875 tons of ore per day during 1980, the mill used 1381 gpm (about 4.25 tons per gallon of water per minute).

Assuming no water loss in the mill, 1381 gpm was discharged as tailings solution to evaporation ponds for disposal. Discharge also included 100 gpm of ore moisture and 157 gpm derived from the recycle of tailings water within the mill. Discharge to evaporation ponds totaled 1638 gpm (averaged through 1979).

Quality

The water in the mill reservoir is a combination of mine waters with some fluctuation in quality related to changes in storage and mine operations. The reservoir water released to the creek through the barium chloride plant was of the following composition in 1980 and 1986.

TABLE 7. Average Water Quality for 1980. Mill Reservoir Final Discharge

Chemical Parameter	Average 1980	July 1986	Groundwater Standards
SO_4 (mg/l)	1084	1310	600 (mg/l)
Cl (mg/l)	82	260	250 (mg/l)
TDS (mg/l)	1928	2500	1000 (mg/l)
Se (mg/l)	0.158	.053	0.05 (mg/l)
Mo (mg/l)	0.826	0.6	1.0 (mg/l)
Ra-226(total pCi/l)	1.85	1.1	30.0 (pCi/l)
V (mg/l)	0.052	0.6	N/A
Zn (mg/l)	0.023	.019	10.0 (mg/l)
U (mg/l)	1.50	7.57	5.0 (mg/l)
pH	7.9	7.99	6-9

Arroyo del Puerto

Nature of Discharge

Prior to the mining activity in the area, the Arroyo del Puerto was a dry wash. Flow in the creek occurred only in response to significant rainfall events and periods of prolonged snow melt.

Under present-day conditions (1986), the creek is dry until it reaches the United Nuclear-Homestake IX Plant in Section 25, northwest of the mill. At that point, a substantial discharge enters the creek. As the creek flows near the mill site, discharge from the Quivira mill reservoir is added.

In late 1976 the creek was realigned to flow north and east of ponds #4, #5, and #6 and away from ponds #1 and #3 (Figure 1). The new creek rejoins the original creek bed near the northeast corner of pond #9. Drainage from the reach of the abandoned creek is captured behind a small dam and is pumped back to pond #3. Stream flow in the Arroyo del Puerto continues about 4 miles downstream to empty into the San Mateo Creek, which carries periodic flow from precipitation events.

Quantity

Near the Section 25 - Section 30 boundary, the average flow during 1980 was 510 gpm. This flow was increased by the 283 gpm discharged from the mill reservoir (described previously). Flow leaving the Kerr-McGee property in Section 32 was measureu at an average of 743 gpm for the year. This figure reflects evapotranspiration and infiltration occurring along the stream reach.

It has been assumed that local rainfall and runoff which would add to the Arroyo del Puerto outflow is offset by the evaportranspiration associated with the riparian vegetation along the creek bottom and in nearby stillwater areas.

Quality

Water quality analyses for the Arroyo del Puerto date back to early 1960, the time of the first monitoring wells. Fluctuations in quality characteristics have been common with changes in mine and mill operations and with realignment of the creek.

The water course survey made in March 1986 is given in the following table (in mg/l). The survey points are indicated on Figure 1.

TABLE 8. Water Quality Survey Along the Arroyo del Puerto, March, 1985

Sample Point	P1	T1	T-2	P-8	P10	P12	P14	P15	P16
SO_4 (mg/l)	1216	1231	1222	1222	1226	1215	1239	1226	1259
Cl (mg/l)	137.5	151.5	165.5	144.6	123.9	141.2	165.3	165.3	141.2
TDS (mg/l)	2344	2358	2368	1416*	2394	2398	2386	2410	2464
Se (mg/l)	.19	.20	.20	.20	.19	.20	.21	.17	.13
Mo (mg/l)	.42	.58	.57	.56	.55	.57	.61	.64	.49
Ra (pCi/l)	.99	2.50	3.06	7.10	4.81	1.83	5.52	3.77	3.12

*suspected to be an analytical error

A cursory examination of the above values indicates that the quality of the water in the Arroyo del Puerto is relatively constant.

Evaporation Ponds

Nature of Process

Although disposal of tailings solution is by evaporation ponds, a significant percentage of solution loss was by seepage through the pond bottoms in the past.

Evaporation potential is reduced by the presence of dissolved solids; the rule of thumb is that a one-percent increase in dissolved solids

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME QUIVIRA MINING COMPANY
ADDRESS P.O. Box 25861
Oklahoma City, OK 73125
ATTN: J.C. Stauter
FACILITY AMBROSIA LAKE
LOCATION New Mexico

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004
Expires 2-29-84

(2-16) PERMIT NUMBER	(17-19) DISCHARGE NUMBER
NM0020532	~~001~~ 002

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	86	07	01	TO	86	07	31

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
TEMPERATURE	SAMPLE MEASUREMENT	**********	**********		**********	**********	68.	DEG F	---	1/7	INSITU
	PERMIT REQUIREMENT	**********	**********		**********	**********	**********			ONCE/WEEK	INSITU
CHEMICAL OXYGEN DEMAND	SAMPLE MEASUREMENT	**********	**********		**********	6.4	9.0	MG/L	0	1/7	CO[illegible]
	PERMIT REQUIREMENT	**********	**********		**********	100 mg/l	200 mg/l			ONCE/WEEK	COMP24
pH	SAMPLE MEASUREMENT	**********	**********		7.9	**********	8.0	S.U.	0	1/7	GRAB
	PERMIT REQUIREMENT	**********	**********		6.0 S.U.	**********	9.0 S.U.			ONCE/WEEK	GRAB
TOTAL SUSPENDED SOLIDS	SAMPLE MEASUREMENT	**********	**********		**********	5.8	8.0	MG/L	0	1/7	COMP24
	PERMIT REQUIREMENT	**********	**********		**********	20 mg/l	30 mg/l			ONCE/WEEK	COMP24
BARIUM, TOTAL	SAMPLE MEASUREMENT	**********	**********		**********	0.2	0.2	MG/L	---	1/30	COMP24
	PERMIT REQUIREMENT	**********	**********		**********	Report	Report			ONCE/MONTH	COMP24
MANGANESE, TOTAL	SAMPLE MEASUREMENT	**********	**********		**********	0.02	0.02	MG/L	---	1/30	COMP24
	PERMIT REQUIREMENT	**********	**********		**********	Report	Report			ONCE/MONTH	COMP24
MOLYBDENUM, TOTAL	SAMPLE MEASUREMENT	**********	**********		**********	0.6	0.6	MG/L	---	1/3 MO.	COMP24
	PERMIT REQUIREMENT	**********	**********		**********	Report	Report			ONCE/3 MOS.	COMP24

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

H.E. Whitacre, Director
Uranium Mining and Milling
Quivira Mining Company

TYPED OR PRINTED

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.)

J.C. Stauter
J.C. Stauter

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE AREA CODE	NUMBER	DATE YEAR	MO	DAY
405	270-2623	86	08	15

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME QUIVIRA MINING COMPANY
ADDRESS P.O. Box 25861
Oklahoma City, OK 73125
ATTN: J.C. Stauter
FACILITY AMBROSIA LAKE
LOCATION New Mexico

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

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TOTAL DISSOLVED SOLIDS	SAMPLE MEASUREMENT	50,838	51,858	LBS/DAY	******	******	******		---	1/7	COMP24
	PERMIT REQUIREMENT	Report	Report		******	******	******	******	******	******	******
LEAD-210	SAMPLE MEASUREMENT	******	******	******	******			PCI/L	---	ONCE/ 60 DAYS	CC [illegible]
	PERMIT REQUIREMENT	******	******	******	******	Report	Report			ONCE/ 60 DAYS	COMP24
POLONIUM-210	SAMPLE MEASUREMENT	******	******	******	******			PCI/L	---	ONCE/ 60 DAYS	COMP24
	PERMIT REQUIREMENT	******	******	******	******	Report	Report			ONCE/ 60 DAYS	COMP24
CHLORIDES	SAMPLE MEASUREMENT	******	******	******	******	254	260	MG/L	---	1/7	COMP24
	PERMIT REQUIREMENT	******	******	******	******	Report	Report		******	******	******
SULFATES	SAMPLE MEASUREMENT	******	******	******	******	1,320	1,340	MG/L	---	1/7	COMP24
	PERMIT REQUIREMENT	******	******	******	******	Report	Report		******	******	******
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
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