

040wm048120E

Wm-48

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH

4210 East 11th Avenue
Denver, Colorado 80220-3716
Phone (303) 320-8333

Teletax
(303) 322-9076 (Main Building, Denver)
(303) 320-3529 (Plattinon Place, Denver)
(303) 248-7198 (Grand Junction Region)



January 11, 1991

Mr. Ramon E. Hall, Director
U.S. Nuclear Regulatory Commission
Uranium Recovery Office
P.O. Box 25325
Denver, Colorado 80225

RETURN ORIGINAL TO PDR, HQ

DOCKETED
JAN 29 1991
USNRC
MAIL SECTION
DOCKET CLERK

Thomas J. Ramon, M.D.
Executive Director

Subject: Durango UMTRA Processing Site, Bureau of
Reclamation Supplemental Groundwater Data;
File DUR-XIII.U

Dear Mr. Hall:

Attached, for your information and files, you will find a letter from the Bureau of Reclamation and an attached table summarizing the August, 1990 groundwater monitoring data for the Durango Processing Site. This data is provided to you as a supplement to the information already conveyed to you in the report titled "Hydrogeochemical Site Characterization," dated November, 1990.

Please contact Wendy Naugle of my staff at (303) 331-4842 if you have any questions regarding this issue.

Sincerely,

Patricia C. Martinek
Acting UMTRA Technical Manager

HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION

Attachments

cc: M. Stodolski, BOR w/o attachment
S. Hamp, DOE w/ attachment
W. Naugle, CDH w/o attachment

91 JAN 29

RIV DRMA
PDR/CDH/MS

DESIGNATED ORIGINAL

Certified By *Mary C. Hood*

9102280059 910111
PDR WASTE
WM-48 PDR

91-0210 DFOZ



United States Department of the Interior
BUREAU OF RECLAMATION
UPPER COLORADO REGION
DURANGO PROJECTS OFFICE
P.O. BOX 640
DURANGO, COLORADO 81302-0640

DEC 19 1990

IN REPLY
REFER TO

DUR-256
PRJ-10.00

DEC 17 1990

Ms. Pat Martinek
Colorado Department of Health
4210 East 11th Avenue
Denver CO 80220

Subject: Transmittal of Groundwater Chemistry Test Results - Durango Pumping
Plant - Animas-La Plata Project, Colorado and New Mexico
(Geology Data Report)

Dear Ms. Martinek:

Enclosed are laboratory test results of groundwater samples taken by CDS
Laboratories on August 16, 1990 from the Durango Pumping Plant site. The
samples are from drill holes DH-110 through DH-118 and include repeat samples
from drill holes DH-114 and DH-116 for quality assurance.

If you have any questions, please contact Jim Gates of my staff at 385-6559.

Sincerely,

Max J. Stodolski
Projects Manager

Enclosures

LABORATORIES
LITTLE STREET
BOX 2605
DURANGO CO 81302
313 247-4220

CLIENT: BUREAU OF RECLAMATION
P O BOX 640
DURANGO, CO 81302

CDS ID# 6594
SAMPLE DESCRIPTION:
DH 110

SAMPLER: MD
DATE TAKEN: 08/16/90 TIME: 10:50
DATE RECEIVED: 08/16/90 CDC:

ATTN:

HEAVY METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
NAME	CONC. (ug/L)	NAME	CONC. (ug/L)	NAME	CONC. (various units)
ARSENIC	<.001	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
BARIUM	<.5	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	915*
BORON		CARBONATE as CaCO3		COLOR	
BROMINE	<.005	BOD		CONDUCTIVITY at 25	14000*
CADMIUM	<.005	BORDN		DISSOLVED OXYGEN	ug/L
CAESIUM	467	COD		HARDNESS as CaCO3	ug/L
CHLORINE	<.01	CHLORIDE	2200	pH	6.87*
CHROMIUM	<.01	CHLORINE DEMAND		SPECIFIC GRAVITY	
COPPER	.02	COLIFORM-TOTAL/100ml		TEMPERATURE	16*
COPPER	.02	COLIFORM-FECAL/100ml		TOTAL COMBUSTIBLE	ug/L
COPPER	3.4	CYANIDE		TOTAL DISSOLVED SOLIDS	19400
COPPER	<.02***	FLUORIDE		TOTAL FILTERABLE SOLIDS	ug/L
COPPER	656	MBAS		TOTAL SOLIDS	ug/L
COPPER	4.2	AMMONIA-N		TOTAL SUSPENDED SOLIDS	ug/L
COPPER	<.001	NITRATE/NITRITE-N	<.04	TOTAL SETTLEABLE SOLIDS	ml/L
COPPER	<.05	NITRATE-N		TURBIDITY	NTU
COPPER	<.05	NITRITE-N			
COPPER	109	TOTAL KJELDAHL (TKN)-M		GROSS ALPHA	109 +/- 105 pCi/L
COPPER	.007	OIL AND GREASE		GROSS BETA	122 +/- 70.8 pCi/L
COPPER	5170	PHENOLS		RADIUM 226	0.1 +/- 0.1 pCi/L
COPPER		PHOSPHATE-P		RADIUM 228	1.9 +/- 1.5 pCi/L
COPPER		TOTAL PHOSPHORUS-P		URANIUM	331 pCi/L
COPPER		SILICA	17.4	THORIUM 230	0.1 +/- 0.3 pCi/L
COPPER		SULFATE	10300	ENDRIN	ug/L
COPPER		SULFIDE		LINDANE	ug/L
COPPER		SULFITE		METHOXYCHLOR	ug/L
COPPER		H2S as S		TOXAPHENE	ug/L
COPPER		SAR		2, 4, -D	ug/L
COPPER		TOC		2, 4, 5 -TP (silvex)	ug/L
COPPER		+/- BALANCE		TOTAL TRIHALOMETHANES	ug/L

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PROVED BY: Joe Bowden
DR. JOE BOWDEN, DIRECTOR

COMMENTS:
**LITHIUM 20 ug/L
*FIELD DATA
***MATRIX PROBLEM

CHECKED BY: SKD

CDS LABORATORIES
 500 SUTTLE STREET
 P.O. BOX 2605
 DURANGO CO 81302
 (303) 247-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6595
 SAMPLE DESCRIPTION:
 DH 111

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 11:35
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

TRACE METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
TOTAL DISSOLVED	ug/L		ug/L		
ALUMINUM	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
ANTIMONY		HYDROXIDE as CaCO3		ALKALINITY as CaCO3	950*
ARSENIC	<.001	CARBONATE as CaCO3		COLOR	
BARIUM	<.5	BOD		CONDUCTIVITY at 25	6500*
BERYLLIUM		BORON		DISSOLVED OXYGEN	ug/L
BISMUTH		COB		HARDNESS as CaCO3	ug/L
CADMIUM	<.005	CHLORIDE	1230	pH	7.06*
CALCIUM	450	CHLORINE		SPECIFIC GRAVITY	
CHROMIUM	<.01	CHLORINE DEMAND		TEMPERATURE	15*
+3 FORM		COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
+6 FORM		COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	7580
COBALT	<.02	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
COPPER	<.02	FLUORIDE		TOTAL SOLIDS	ug/L
CF <i>Flow</i>	<.05	MBAS		TOTAL SUSPENDED SOLIDS	ug/L
LEAD	<.02***	AMMONIA-N		TOTAL SETTLABLE SOLIDS	ml/L
MAGNESIUM	222	NITRATE/NITRITE-N	<.04	TURBIDITY	NTU
MANGANESE	.13	NITRATE-N			
MERCURY	<.001	NITRITE-N		GROSS ALPHA	6.1+/-38.3 pCi/L
MOLYBDENUM	<.05	TOTAL KJELDAHL (TKN)-N		GROSS BETA	12.2+/-24.1 pCi/L
NICKEL	<.05	OIL AND GREASE		RADIUM 226	0.3+/-0.2 pCi/L
POTASSIUM	14.9	PHENOLS		RADIUM 228	3.1+/-1.7 pCi/L
SELENIUM	<.001	PHOSPHATE-P		URANIUM	1.4 pCi/L
SILVER		TOTAL PHOSPHORUS-P		THORIUM 230	0.1+/-0.2 Ci/l
SODIUM	1760	SILICA	12.5	ENDRIN	ug/L
THALLIUM		SULFATE	3700	LINDANE	ug/L
TIN		SULFIDE		METHOXYCHLOR	ug/L
VANADIUM	<.02	SULFITE		TOXAPHENE	ug/L
ZINC	.05	H2S as S		2, 4, -G	ug/L
OTHER_TEST	**	SAR		2, 4, 5 -TP (silvex)	ug/L
		TOC		TOTAL TRIHALOMETHANES	ug/L
		+/- BALANCE			

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COMMENTS:

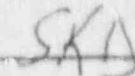
- **LITHIUM .72 ug/L
- *FIELD DATA
- ***MATRIX PROBLEM

APPROVED BY:



DR. JOE BOWDEN, DIRECTOR

CHECKED BY:



LABORATORIES
 TITLE STREET
 BOX 7005
 GO F0 B1302
 747-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS 100 6596
 SAMPLE DESCRIPTION:
 DH 112

SAMPLE: MD
 DATE TAKEN: 08/1/90 TIME: 11:05
 DATE RECEIVED: 08.16/90 CDC:

ATTN:

METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
DISSOLVED	ug/L		ug/L		
ALUMINUM	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
ARSENIC	<.001	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	600*
BARIUM	<.5	CARBONATE as CaCO3		COLOR	
BORON		BOB		CONDUCTIVITY at 25	5000*
BROMINE		BOPON		DISSOLVED OXYGEN	ug/L
CADMIUM	<.005	CuP		HARDNESS as CaCO3	ug/L
CHLORIDE	409	CHLORIDE	835	pH	6.97*
CHLORINE	<.01	CHLORINE DEMAND		SPECIFIC GRAVITY	
CHROMIUM	<.02	COLIFORM-TOTAL/100ml		TEMPERATURE	20*
COPPER	<.02	COLIFORM-FECAL/100ml		TOTAL COMBUSTIBLE	ug/L
CYANIDE	.09	CYANIDE		TOTAL DISSOLVED SOLIDS	6280
DISSOLVED	.006	FLUORIDE		TOTAL FILTERABLE SOLIDS	ug/L
IRON	310	MBAS		TOTAL SOLIDS	ug/L
MANGANESE	.17	AMMONIA-N		TOTAL SUSPENDED SOLIDS	ug/L
MERCURY	<.001	NITRATE/NITRITE-N	.04	TOTAL SETTLEABLE SOLIDS	ml/L
MOYBENIUM	<.05	NITRATE-N		TURBIDITY	NTU
NICKEL	<.05	NITRITE-N		GROSS ALPHA	0.0+/-27.6
NITRATES	16.2	TOTAL KJELDAHL (TKN)-N		GROSS BETA	11.9+/-18.5
PERMANGANATE	.007	OIL AND GREASE		RADIUM 226	0.1+/-0.1
PICNIC ACID	1110	PHENOLS		RADIUM 228	2.7+/-1.7
POTASSIUM	<.02	PHOSPHATE-P		URANIUM	10.6
SILICA	<.05	TOTAL PHOSPHORUS-P		THORIUM 230	0.2+/-0.4
SODIUM	3000	SILICA	13.2	ENDRIN	ug/L
SULFATE	3000	SULFATE	3000	LINDANE	ug/L
SULFIDE		SULFIDE		METHOXYCHLOR	ug/L
SULFITE		H2S as S		TOXAPHENE	ug/L
TEST	**	SAR		2, 4, -D	ug/L
		TOC		2, 4, 5 -TP (silvex)	ug/L
		+/- BALANCE		TOTAL TRIHALOMETHANES	ug/L

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COMMENTS:

**LITHIUM .26 ug/L
 *FIELD DATA

APPROVED BY: DR. JOE BOWDEN
 DR. JOE BOWDEN, DIRECTOR

CHECKED BY: SKD

LABORATORIES
 1000 LITTLE STREET
 BOX 2605
 DENVER CO 81302
 303 247-4226

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6597
 SAMPLE DESCRIPTION:
 DH 113

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 11:50
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

HEAVY METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
AS DISSOLVED	ug/l		ug/L		
ARSENIC	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
BARIUM	<.01	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	44*
BISMUTH	0.5	CARBONATE as CaCO3		COLOR	
BORON		ROD		CONDUCTIVITY at 25	130*
BROMINE		BORON		DISSOLVED OXYGEN	ug/L
CADMIUM	<.005	COB		HARDNESS as CaCO3	ug/L
CAESIUM	30.0	CHLORIDE	<10	pH	8.53*
CHROMIUM	<.01	CHLORINE		SPECIFIC GRAVITY	
COPPER	<.01	CHLORINE DEMAND		TEMPERATURE	15*
CYANIDE	<.02	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
FLUORIDE	<.02	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	160
IRON	.06	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
LITHIUM	<.005	FLUORIDE		TOTAL SOLIDS	ug/L
MANGANESE	2.7	MnAs		TOTAL SUSPENDED SOLIDS	ug/L
MERCURY	.05	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ml/L
NICKEL	<.001	NITRATE/NITRITE-N	.26	TURBIDITY	NTU
NIOBIUM	<.05	NITRATE-N			
ORBITAL	<.05	NITRITE-N		GROSS ALPHA	0.4+/-1.4
POTASSIUM	1.2	TOTAL KJELDAHL (TKN)-N		GROSS BETA	0.3+/-1.3
RADIUM	<.001	OIL AND GREASE		RADIUM 226	0.1+/-0.1
SILICA	5.2	PHENOLS		RADIUM 228	0.0+/-1.5
SODIUM		PHOSPHATE-P		URANIUM	<1
SULFATE		TOTAL PHOSPHORUS-P		THORIUM 230	0.0+/-0.6
SULFIDE		SILICA	2.68	ENDRIN	ug/L
SULFITE		SULFATE	72	LINDANE	ug/L
THALLOIUM		SULFIDE		METHOXYCHLOR	ug/L
THORIUM		SULFITE		TOIAPHENE	ug/L
TUNGSTEN		H2S as S		2, 4, -D	ug/L
URANIUM		SAR		2, 4, 5 -TP (silver)	ug/L
VANADIUM		TOC		TOTAL TRIHALOMETHANES	ug/L
ZINC		+/- BALANCE			

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COMMENTS:

**LITHIUM <.1 ug/L
 *FIELD DATA

APPROVED BY: DR. JOE BOWDEN, DIRECTOR

CHECKED BY: SKA

LABORATORIES
 1000 LITTLE STREET
 BOULDER CO 81302
 (303) 441-2420

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6.98
 SAMPLE DESCRIPTION:
 DH 114

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 10:30
 DATE RECEIVED: 08/16/90 COC:

ATTN:

HEAVY METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
mg/L	mg/L	mg/L	mg/L		
ARSENIC	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	mg/L
BARIUM	<.001	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	410*
BISMUTH	<.5	CARBONATE as CaCO3		COLOR	
CADMIUM	<.005	800		CONDUCTIVITY at 25	2650*
COPPER	386	BOD		DISSOLVED OXYGEN	mg/L
CHROMIUM	<.01	COD		HARDNESS as CaCO3	mg/L
CYANIDE	<.02	CHLORIDE	52	pH	7.09*
FLUORIDE	<.02	CHLORINE		SPECIFIC GRAVITY	
IRON	<.05	CHLORINE DEMAND		TEMPERATURE	16.5*
MANGANESE	139	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	mg/L
MERCURY	<.001	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	3380
SELENIUM	<.05	CYANIDE		TOTAL FILTERABLE SOLIDS	mg/L
SILICA	8.72	FLUORIDE		TOTAL SOLIDS	mg/L
SODIUM	1940	MBAS		TOTAL SUSPENDED SOLIDS	mg/L
SULFATE	1940	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ml/L
SULFIDE		NITRATE-NITRITE-N	.94	TURBIDITY	NTU
SULFITE		NITRATE-N			
TOTAL SULFUR		NITRITE-N			
		TOTAL NITROGEN (TKN)-N		GROSS ALPHA	0.0+/-15.5
		GIL AND GREASE		GROSS BETA	12.8+/-10.9
		PHENOLS		RADIUM 226	0.2+/-0.2
		PHOSPHATE-P		RADIUM 228	0.4+/-1.8
		TOTAL PHOSPHORUS-P		URANIUM	1.4
		SILICA	8.72	THORIUM 230	0.1+/-0.3
		SULFATE	1940	ENDRIN	mg/L
		SULFIDE		LINDANE	mg/L
		SULFITE		METHOXYCHLOR	mg/L
		H2S as S		TOXAPHENE	mg/L
		SAR		2, 4, -D	mg/L
		TOC		2, 4, 5 -TP (silvex)	mg/L
		+/- BALANCE		TOTAL TRIHALOMETHANES	mg/L

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COMMENTS:
 **LITHIUM .15 mg/L
 *FIELD DATA

APPROVED BY: *[Signature]*
 DR. JOE BOWDEN, DIRECTOR

CHECKED BY: *[Signature]*

LABORATORIES
 BUTTE STREET
 BOX 2605
 DURANGO CO 81302
 (313) 247-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6599
 SAMPLE DESCRIPTION:
 DH 114R

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 10:30
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

TRACE METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
ANALYTICAL	CONCENTRATION	PARAMETER	CONCENTRATION	PARAMETER	CONCENTRATION
AL DISSOLVED	ug/L		ug/L		
ALUMINUM	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
ANTIMONY		HYDROXIDE as CaCO3		ALKALINITY as CaCO3	410*
ARSENIC	<.001	CARBONATE as CaCO3		COLOR	
BARIUM	<.5	BOD		CONDUCTIVITY at 25	2650*
BERYLLIUM		BORON		DISSOLVED OXYGEN	ug/L
BISMUTH		COD		HARDNESS as CaCO3	ug/L
CADMIUM	<.005	CHLORIDE	46	pH	7.09*
CALCIUM	386	CHLORINE		SPECIFIC GRAVITY	
CHROMIUM	<.01	CHLORINE DEMAND		TEMPERATURE	16.5*
+3 FORM		COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
+6 FORM		COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	3390
COBALT	<.02	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
COPPER	<.02	FLUORIDE		TOTAL SOLIDS	ug/L
IRON	<.05	MBAS		TOTAL SUSPENDED SOLIDS	ug/L
LEAD	<.005	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ug/L
MAGNESIUM	110	NITRATE/NITRITE-N	.95	TURBIDITY	NTU
MANGANESE	.03	NITRATE-N			
MERCURY	<.001	NITRITE-N		GROSS ALPHA	4.2+/-18.0
MOLYBDENUM	<.05	TOTAL XJELDAHL (TKN)-N		GROSS BETA	18.0+/-11.5
NICKEL	<.05	OIL AND GREASE		RADIUM 226	0.2+/-0.2
POTASSIUM	8.0	PHENOLS		RADIUM 228	0.0+/-1.7
SELENIUM	.058	PHOSPHATE-P		URANIUM	2.1
SILVER		TOTAL PHOSPHORUS-P		THORIUM 230	0.1+/-0.1
SODIUM	429	SILICA	8.86	ENDRIN	ug/L
THALLIUM		SULFATE	1800	LINDANE	ug/L
TIN		SULFIDE		METHOXYCHLOR	ug/L
TUNGSTEN	<.02	SULFITE		TOXAPHENE	ug/L
ZINC	<.05	H2S as S		2, 4, -D	ug/L
OTHER_TEST	**	SAR		2, 4, 5 -TP (silvex)	ug/L
		TQC		TOTAL TRIHALOMETHANES	ug/L
		+/- BALANCE			

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COMMENTS:

**LITHIUM .14 ug/L
 #FIELD DATA

APPROVED BY: DR. JOE BOWDE, DIRECTOR

CHECKED BY: SKA

LABORATORIES
 TITLE STREET
 BOX 2605
 W60 CO P1302
 247-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6600
 SAMPLE DESCRIPTION:
 DH 115

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 09:55
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
DISSOLVED	ug/L		ug/L		
ALUM	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
ARSENIC	<.001	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	740+ ug/L
BARIUM	<.5	CARBONATE as CaCO3		COLOR	
BORON		BOD		CONDUCTIVITY at 25	1450+ umho/cm
BROMINE		BORON		DISSOLVED OXYGEN	ug/L
CADMIUM	<.005	COD		HARDNESS as CaCO3	ug/L
CAESIUM	114	CHLORIDE	115	pH	6.95+
CHLORINE	<.01	CHLORINE		SPECIFIC GRAVITY	
CHROMIUM		CHLORINE DEMAND		TEMPERATURE	13.0+ DEGREES C.
COPPER	<.02	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
COPPER	<.02	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	1360 ug/L
COPPER	.21	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
COPPER	<.005	FLUORIDE		TOTAL SOLIDS	ug/L
COPPER	59.9	IRON		TOTAL SUSPENDED SOLIDS	ug/L
COPPER	.05	NBBS		TOTAL SETTLEABLE SOLIDS	ml/L
COPPER	<.001	AMMONIA-N		TURBIDITY	NTU
COPPER	<.05	NITRATE/NITRITE-N	.23	GROSS ALPHA	0.0+/-7.0 pCi/L
COPPER	<.05	NITRATE-N		GROSS BETA	11.1+/-5.1 pCi/L
COPPER	6.4	NITRITE-N		RADIUM 226	0.1+/-0.1 pCi/L
COPPER	.025	TOTAL KJELDAHL (TKN)-N		RADIUM 228	2.0+/-2.0 pCi/L
COPPER	326	OIL AND GREASE		URANIUM	<1 pCi/L
COPPER	<.02	PHENOLS		THORIUM 230	0.1+/-0.4 pCi/L
COPPER	<.05	PHOSPHATE-P		ENDRIN	ug/L
COPPER	**	TOTAL PHOSPHORUS-P		LINDANE	ug/L
		SILICA	11.1	METHOXYCHLOR	ug/L
		SULFATE	375	TOXAPHENE	ug/L
		SULFIDE		2, 4, -D	ug/L
		SULFITE		2, 4, 5 -TP (silvex)	ug/L
		H2S as S		TOTAL TRIHALOMETHANES	ug/L
		SAR			
		TDC			
		+/- BALANCE			

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COMMENTS:

**LITHIUM .21 ug/L
 +FIELD DATA

APPROVED BY:

DR. JOE BOWDEN, DIRECTOR

CHECKED BY:

SJD

LABORATORIES
 TITLE STREET
 BOX 2605
 SD CO 81302
 247-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6601
 SAMPLE DESCRIPTION:
 DH 116

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 12:32
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
DISSOLVED	ug/L		ug/L		
ALUMINUM	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
ARSENIC	<.001	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	945+ ug/L
BARIUM	<.5	CARBONATE as CaCO3		COLOR	
BORON		BOD		CONDUCTIVITY at 25	12000+ umho/cm
BROMINE		SURON		DISSOLVED OXYGEN	ug/L
CADMIUM	<.005	COD	2210	HARDNESS as CaCO3	ug/L
CALCIUM	476	CHLORIDE		pH	7.46: UNITS
COPPER	<.01	CHLORINE		SPECIFIC GRAVITY	
CYANIDE	<.02	CHLORINE DEMAND		TEMPERATURE	15+ DEGREES C.
FLUORIDE	<.02	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
IRON	<.05	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	15800 ug/L
LITHIUM	<.02***	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
MANGANESE	578	FLUORIDE		TOTAL SOLIDS	ug/L
MERCURY	2.7	MBAS		TOTAL SUSPENDED SOLIDS	ug/L
NICKEL	<.001	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ml/L
NITROGEN	<.05	NITRATE/NITRITE-N	.09	TURBIDITY	NTU
NITRATES	2.7	NITRATE-N			
NITRITES	<.001	NITRITE-N		GROSS ALPHA	68.2+/-103 pCi/L
PHOSPHORUS	<.05	TOTAL KJELDAHL (TKN)-N		GROSS BETA	91.5+/-52.3 pCi/L
POTASSIUM	42.0	OIL AND GREASE		RADIUM 226	0.0+/-0.1 pCi/L
SILICA	4000	PHENOLS		RADIUM 228	1.5+/-1.9 pCi/L
SODIUM	7900	PHOSPHATE-P		URANIUM	91.5 pCi/L
SULFATE	18.6	TOTAL PHOSPHORUS-P		THORIUM 230	0.1+/-0.3 pCi/L
SULFIDE	7900	SILICA	18.6	ENDRIN	ug/L
SULFITE	<.02	SULFATE	7900	LINDANE	ug/L
THIOPHENOL	<.05	SULFIDE		METHOXYCHLOR	ug/L
TOTAL SOLIDS	**	SULFITE		TOXAPHENE	ug/L
		H2S as S		2, 4, -D	ug/L
		SAR		2, 4, 5 -TP (silvex)	ug/L
		TOC		TOTAL TRIHALOMETHANES	ug/L
		+/- BALANCE			

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 connection with advertising of any kind without prior written
 permission from CDS Laboratories. Results are based on analysis
 at the time samples are received at the laboratory

COMMENTS:

**LITHIUM .23 ug/L
 *FIELD DATA
 ***MATRIX PROBLEM

APPROVED BY: Joe Bowden
 DR. JOE BOWDEN, DIRECTOR

CHECKED BY: SKD

LABORATORIES
LITTLE STREET
BOX 2605
DURANGO CO 81302
247-4220

CLIENT: BUREAU OF RECLAMATION
P O BOX 640
DURANGO, CO 81302

CDS ID# 6602
SAMPLE DESCRIPTION:
DH 117

SAMPLER: MD
DATE TAKEN: 08/16/90 TIME: 12:51
DATE RECEIVED: 08/16/90 COC:

ATTN:

HEAVY METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
AS DISSOLVED	ug/L		ug/L		
ARSENIC	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
BARIUM		HYDROXIDE as CaCO3		ALKALINITY as CaCO3	1140*
BISMUTH	.001	CARBONATE as CaCO3		COLOR	
BORON	<.5	BOD		CONDUCTIVITY at 25	12000*
BROMINE		BORDM		DISSOLVED OXYGEN	ug/L
CADMIUM	<.005	COD		HARDNESS as CaCO3	ug/L
CAESIUM	489	CHLORIDE	1690	pH	7.04*
COPPER	<.01	CHLORINE		SPECIFIC GRAVITY	
CHROMIUM		CHLORINE DEMAND		TEMPERATURE	15*
COBALT	.02	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
COPPER	<.02	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	20200
IRON	.52	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
IRON	<.02***	FLUORIDE		TOTAL SOLIDS	ug/L
CADMIUM	620	MBAS		TOTAL SUSPENDED SOLIDS	ug/L
MANGANESE	5.9	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ml/L
MERCURY	<.001	NITRATE/NITRITE-N	<.04	TURBIDITY	NTU
MOLYBDENUM	<.05	NITRATE-N			
NICKEL	<.05	NITRITE-N		GROSS ALPHA	26.0+/-110 pCi/L
POTASSIUM	47.7	TOTAL KJELDAHL (TKM)-N		GROSS BETA	35.1+/-65.1 pCi/L
SELENIUM	<.001	OIL AND GREASE		RADIUM 226	0.1+/-0.1 pCi/L
SILVER		PHENOLS		RADIUM 228	2.4+/-2.1 pCi/L
SODIUM	5350	PHOSPHATE-P		URANIUM	2.8 pCi/L
SODIUM		TOTAL PHOSPHORUS-P		THORIUM 230	0.1+/-0.2 pCi/L
SODIUM		SILICA	14.6	ENDRIN	ug/L
SODIUM		SULFATE	10800	LINDANE	ug/L
SODIUM		SULFIDE		METHOXYCHLOR	ug/L
SODIUM	<.02	SULFITE		TOXAPHENE	ug/L
SODIUM	.06	H2S as S		2, 4, -D	ug/L
SODIUM	**	SAR		2, 4, 5 -TP (silvex)	ug/L
SODIUM		TDC		TOTAL TRIHALOMETHANES	ug/L
SODIUM		+/- BALANCE			

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APPROVED BY: Joe Bowden
DR. JOE BOWDEN, DIRECTOR

COMMENTS:

**LITHIUM .27 ug/L
*FIELD DATA
***MATRIX PROBLEM

CHECKED BY: SKJ

LABORATORIES
 BUTTE STREET
 BOX 2605
 DURANGO CO 81302
 (303) 247-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6603
 SAMPLE DESCRIPTION:
 DH 116R

SAMPLER: MD
 DATE TAKEN: 08/16/90 TIME: 12:32
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

HEAVY METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
ANALYTICAL	CONCENTRATION (ug/L)	PARAMETER	CONCENTRATION (ug/L)	PARAMETER	CONCENTRATION
ARSENIC	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	ug/L
BARIUM	<.001	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	945*
BISMUTH	<.5	CARBONATE as CaCO3		COLOR	
BORON	<.5	BOD		CONDUCTIVITY at 25	12000*
BRILLIUM		BORON		DISSOLVED OXYGEN	ug/L
CADMIUM	<.005	COBALT		HARDNESS as CaCO3	ug/L
CAESIUM	467	CHLORIDE	2010	pH	7.46*
CELESTIUM	<.01	CHLORINE		SPECIFIC GRAVITY	
CHROMIUM	<.01	CHLORINE DEMAND		TEMPERATURE	15*
COPPER	.02	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	ug/L
COPPER	<.02	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	15800
COPPER	.02	CYANIDE		TOTAL FILTERABLE SOLIDS	ug/L
COPPER	<.02	FLUORIDE		TOTAL SOLIDS	ug/L
IRON	<.05	MBAS		TOTAL SUSPENDED SOLIDS	ug/L
IRON	<.02***	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ml/L
MAGNESIUM	580	NITRATE/NITRITE-N	.09	TURBIDITY	NTU
MANGANESE	2.8	NITRATE-N			
MERCURY	<.001	NITRITE-N		GROSS ALPHA	345+/-193 pCi/L
MOYBDENUM	<.95	TOTAL KJELDAHL (TKN)-N		GROSS BETA	161+/-60.7 pCi/L
NICKEL	<.05	OIL AND GREASE		RADIUM 226	0.2+/-0.1 pCi/L
POTASSIUM	51.5	PHENOLS		RADIUM 228	1.5+/-2.1 pCi/L
SELENIUM	.003	PHOSPHATE-P		URANIUM	91.5 pCi/L
SILVER		TOTAL PHOSPHORUS-P		THORIUM 230	0.2+/-0.3 pCi/L
SODIUM	4120	SILICA	18.5	ENDRIN	ug/L
SODIUM		SULFATE	7300	LINDANE	ug/L
SODIUM		SULFIDE		METHOXYCHLOR	ug/L
RADIUM	<.02	SULFITE		TOIAPHENE	ug/L
ZINC	<.05	H2S as S		2, 4, -D	ug/L
ZINC		SAR		2, 4, 5 -TP (silvex)	ug/L
ZINC		TOC		TOTAL TRICHALOMETHANES	ug/L
ZINC		+/- BALANCE			

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APPROVED BY:

J. Bowden

DR. JOE BOWDEN, DIRECTOR

COMMENTS:

**LITHIUM .23 ug/L
 *FIELD DATA
 ***MATRIX PROBLEM

CHECKED BY:

SKD

LABORATORIES
 LITTLE STREET
 BOX 2605
 DURANGO CO 81302
 247-4220

CLIENT: BUREAU OF RECLAMATION
 P O BOX 640
 DURANGO, CO 81302

CDS ID# 6604
 SAMPLE DESCRIPTION:
 DH 118

SAMPLER: MD
 DATE TAKEN: 03/16/90 TIME: 09:25
 DATE RECEIVED: 08/16/90 CDC:

ATTN:

METALS		CHEMICAL PARAMETERS		PHYSICAL PARAMETERS	
UNDISSOLVED	mg/L		mg/L		
ALUMINUM	<2	BICARBONATE as CaCO3		ACIDITY as CaCO3	mg/L
ARSENIC	<.001	HYDROXIDE as CaCO3		ALKALINITY as CaCO3	965* mg/L
BARIUM	<.5	CARBONATE as CaCO3		COLOR	
BORON		BOD		CONDUCTIVITY at 25	1750* umho/cm
BROMINE	<.005	BORON		DISSOLVED OXYGEN	mg/L
CADMIUM	92.5	COD		HARDNESS as CaCO3	mg/L
CALCIUM	<.01	CHLORIDE	90	pH	7.16*
COPPER	<.02	CHLORINE		SPECIFIC GRAVITY	
IRON	<.05	CHLORINE DEMAND		TEMPERATURE	16* DEGREES C.
LEAD	<.005	COLIFORM-TOTAL/100ml		TOTAL COMBUSTIBLE	mg/L
MANGANESE	<.02	COLIFORM-FECAL/100ml		TOTAL DISSOLVED SOLIDS	1700 mg/L
MERCURY	<.001	CYANIDE		TOTAL FILTERABLE SOLIDS	mg/L
NICKEL	<.02	FLUORIDE		TOTAL SOLIDS	mg/L
SILICA	386	MBAS		TOTAL SUSPENDED SOLIDS	mg/L
SODIUM	<.02	AMMONIA-N		TOTAL SETTLEABLE SOLIDS	ml/L
SULFATE	530	NITRATE/NITRITE-N	<.04	TURBIDITY	NTU
SULFIDE		NITRATE-N			
SULFITE		NITRITE-N		GROSS ALPHA	11.2+/-10.2 pCi/L
TOTAL PHOSPHORUS-P		TOTAL KJELDAHL (TKN)-N		GROSS BETA	15.3+/-6.4 pCi/L
		OIL AND GREASE		RADIUM 226	0.1+/-0.1 pCi/L
		PHENOLS		RADIUM 228	2.9+/-2.3 pCi/L
		SILICA	17.2	URANIUM	<1 pCi/L
		SILICA	17.2	THORIUM 230	0.2+/-0.3 pCi/L
		SULFATE	530	ENDRIN	mg/L
		SULFIDE		LINDANE	mg/L
		SULFITE		METHOXYCHLOR	mg/L
		H2S as S		TOXAPHENE	mg/L
		SAR		2, 4, -D	mg/L
		TOC		2, 4, 5 -TP (silvex)	mg/L
		+/- BALANCE		TOTAL TRIHALOMETHANES	mg/L

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COMMENTS:

*LITHIUM .29 mg/L
 *FIELD DATA

APPROVED BY: Joe Bowden
 DR. JOE BOWDEN, DIRECTOR

CHECKED BY: SKD