CONSOL

Consolidation Coal Company
Mid-Continent Region
12755 Olive Boulevard
St. Louis, Missouri 63141
(314) 275-2300

May 26, 1987

Mr. Lowell P. Braxton, Administrator
Mineral Resource Development and
Reclamation Program
Division of Oil, Gas & Mining
3 Triad Center - Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203

RECEIVED
JUN 08 1987
DIVISION OF
OIL, GAS & MINING

RE: Annual Report for 1986
Emery Deep Mine ACT/015/015

Dear Mr. Braxton:

As required by the Division, please find attached the 1986 Annual REport for the Emery Deep Mine.

Should you require any additional information on the above-referenced report, please feel free to contact me.

Sincerely,

Nicolaus P. Neumann

Nicolaus P. Neumann, P.E.
Group Leader - Permits

NPN:vms

Attachments (3)

RECEIVED
JUN 08 1987
DIVISION OF
OIL, GAS & MINING

ANNUAL REPORT FOR 1986

EMERY DEEP MINE

PERMIT ACT/015/015

Submitted May 28, 1987

1986 ANNUAL REPORT
TO
State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
3 Triad Center, Suite 350
355 West North Temple
Salt Lake City, Utah 84180-1203
(801) 538-5340

Operator: CONSOLIDATION COAL COMPANY
Mine Name: EMERY DEEP MINE
Mailing Address: 12755 OLIVE ST., ST. LOUIS, MO 63141
Company Representative: NICOLAUS P. NEUMANN
Permit No.: ACT / 015 / 015
Date of Permanent Program Permit: JANUARY 10, 1986
Quantity of Coal Mined (tonnage) 1986: 502,630 TONS

Attach Most Recent Certificate of Insurance. (Enclosed)

Attach Updated Mine Sequence Map. (Enclosed)

All monitoring activities during the report period must be submitted with this report: (including, but not limited to)

A. Water Monitoring Data (Enclosed)

B. Precipitation Data (Not Monitored)

C. Subsidence Monitoring (Enclosed)

D. Vegetation Data (test plots) or Revegetation Success Monitoring (includes interim and final)
(Submitted in Previous Report to D.O.G.M.)

E. Permit Stipulation Status
(None)

0488R

(COAL)

CERTIFICATE OF LIABILITY INSURANCE
Issued to: State of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining

THIS IS TO CERTIFY, That the Hartford Accident & Indemnity Company
(Name of Insurance Company)
of Hartford Plaza, Hartford, Connecticut 06115
(Home Office Address of Company)
has issued to Consolidation Coal Company
(Name of Permit Applicant)
Consol Plaza, 1800 Washington Rd., Pittsburgh Policy No. 1C CLR P12452E
(Address of Permit Applicant)
effective from January 1, 19, 86 and continuing until cancelled, nonrenewed, or changed as provided herein, which policy provides personal injury and property damage insurance covering the obligations imposed upon such permit applicant with regard to Permit No. ACT/015/015 according to provisions of the coal mining and reclamation program of Utah, (Utah Code Annotated 40-10-1 et seq.), specifically Section UMC/SMC 806.14.

Underwriting Agent: Marsh and McLennan, Incorporated

Company Name: Hartford Accident & Indemnity Co. Phone: 405/767-3897

Address: 123 William Street, New York, NY 10038

The above-named insurance company agrees to notify the Division in writing of any substantive change in the above coverage, including cancellation, failure to renew, or other material change. No change shall be effective until at least thirty (30) days after such notice is received by the Division.

The undersigned affirms that the above information is true and complete to the best of his or her knowledge and belief, and that he or she is an authorized representative of the above-named insurance company.

12-18-85 Frank Prentice Hapgood Frank Prentice Hapgood - Claims Attorney
(Date, Signature, and Title of Authorized Representative of Insurance Company)

Signed and sworn to before me by Frank Prentice Hapgood this the 23rd day of December, 1985.

(Notary)

My Commission Expires: 8-16-89

1986 N.P.D.E.S. REPORT SUMMARY

Permit No. UT0022616 - Emery Deep Mine

Outfall 001 - Sedimentation Pond for Deep Pump Discharges.

The attached sheets summarize the effluent quality by month and quarter for 1986.

Outfall 002 - Mine Yard Area

No discharges occurred during 1986.

Permit No. UT0022624 - Emery Surface Mine

Outfall FAC A

This outfall has not been constructed, thus no discharge occurred during 1986.

Permit No. UT0024040 - Emery Mine Preparation Plant

Outfall 001 & 002

These outfalls have had no discharges for 1986.

POINT 001 DISCHARGES AT THE EMERY DEEP MINE FOR THE FIRST QUARTER 1986
REPORT PREPARED ON 04/29/87 AT 10:32:42

PARAMETER	MINIMUM	ARITHMETIC AVERAGE	MAXIMUM	UNITS	NUMBER EXCEED	NR. MSMTS
POINT 001		FIRST QUARTER 1986				
FLOW INSPECTIONS	0.82	0.99	1.90	CFS	N/A	10
PH	7.6		8.2	STD UNITS		10
TOT SUSP SOLIDS	3	12.4	21	MG/L		10
OIL & GREASE	0.5	1.6	5.0	MG/L		4
TOTAL IRON	0.13	0.19	0.21	MG/L		10
FLOW	0.530	0.640	1.228	MGD	N/A	10
TOT DISS SOLIDS	2534	2710	2862	MG/L		10
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 7.2						
POINT 001		JANUARY 1986				
FLOW INSPECTIONS	0.82	0.82	0.82	CFS	N/A	3
PH	8.0		8.1	STD UNITS		3
TOT SUSP SOLIDS	10	13.7	18	MG/L		3
OIL & GREASE	0.5	0.5	0.5	MG/L		1
TOTAL IRON	0.18	0.19	0.20	MG/L		3
FLOW	0.530	0.530	0.530	MGD	N/A	3
TOT DISS SOLIDS	2828	2847	2862	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 6.3						
POINT 001		FEBRUARY 1986				
FLOW INSPECTIONS	0.94	0.94	0.94	CFS	N/A	3
PH	7.8		8.0	STD UNITS		3
TOT SUSP SOLIDS	14	16.7	21	MG/L		3
OIL & GREASE	0.5	0.5	0.5	MG/L		1
TOTAL IRON	0.20	0.20	0.21	MG/L		3
FLOW	0.608	0.608	0.608	MGD	N/A	3
TOT DISS SOLIDS	2557	2634	2684	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 6.7						
POINT 001		MARCH 1986				
FLOW INSPECTIONS	0.91	1.16	1.90	CFS	N/A	4
PH	7.6		8.2	STD UNITS		4
TOT SUSP SOLIDS	3	8.3	15	MG/L		4
OIL & GREASE	0.5	2.8	5.0	MG/L		2
TOTAL IRON	0.13	0.17	0.20	MG/L		4
FLOW	0.588	0.748	1.228	MGD	N/A	4
TOT DISS SOLIDS	2534	2664	2734	MG/L		4
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 8.3						

FOR THE FIRST QUARTER 1986

FLOW = CALCULATED FLOW IN MILLION GALLONS PER DAY
CFS = FLOW IN CUBIC FEET PER SECOND AS MEASURED IN FIELD
E = EXCEEDENCE

POINT=001

DATE	TIME	CFS	FLOW	PH	TFE	TSS	OANDG	TDS	SS	EPH	ETFE	ETSS	EOANDG	ETDS	ESS	COMMENTS
860115		0.82	0.530	8.0	0.20	13.0		2862								
860115		0.82	0.530	8.1	0.18	18.0	0.5	2828								STD LABS
860131		0.82	0.530	8.1	0.20	10.0		2852								
860226		0.94	0.608	8.0	0.21	15.0	0.5	2557								STD LABS
860226		0.94	0.608	7.9	0.20	14.0		2662								
860228		0.94	0.608	7.8	0.20	21.0		2684								
860312		0.91	0.588	8.0	0.20	4.0		2677								
860312		0.91	0.588	7.6	0.14	15.0	0.5	2534								STD LABS
860324		0.91	0.588	8.0	0.20	11.0		2734								
860326	930	1.90	1.228	8.2	0.13	3.0	5.0	2710								UT HLTH

POINT 001 DISCHARGES AT THE EMERY DEEP MINE FOR THE SECOND QUARTER 1986
REPORT PREPARED ON 04/29/87 AT 10:33:03

PARAMETER	MINIMUM	ARITHMETIC AVERAGE	MAXIMUM	UNITS	NUMBER EXCEED	NR. MSMTS
POINT 001		SECOND QUARTER 1986				
FLOW INSPECTIONS	0.07	0.78	1.62	CFS	N/A	37
PH	7.2		8.3	STD UNITS		12
TOT SUSP SOLIDS	1	12.9	35	MG/L		12
OIL & GREASE	0.5	2.6	6.4	MG/L		5
TOTAL IRON	0.06	0.16	0.20	MG/L		12
FLOW	0.045	0.502	1.047	MGD	N/A	37
TOT DISS SOLIDS	2460	2747	2922	MG/L		12
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 4.4						
POINT 001		APRIL 1986				
FLOW INSPECTIONS	0.90	0.90	0.90	CFS	N/A	3
PH	7.8		8.3	STD UNITS		3
TOT SUSP SOLIDS	9	14.3	19	MG/L		3
OIL & GREASE	0.5	0.5	0.5	MG/L		1
TOTAL IRON	0.06	0.15	0.20	MG/L		3
FLOW	0.582	0.582	0.582	MGD	N/A	3
TOT DISS SOLIDS	2460	2559	2672	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 6.2						
POINT 001		MAY 1986				
FLOW INSPECTIONS	0.09	0.58	1.57	CFS	N/A	4
PH	7.2		8.2	STD UNITS		4
TOT SUSP SOLIDS	3	17.5	35	MG/L		4
OIL & GREASE	0.5	3.4	6.4	MG/L		2
TOTAL IRON	0.07	0.15	0.20	MG/L		4
FLOW	0.058	0.375	1.015	MGD	N/A	4
TOT DISS SOLIDS	2720	2821	2922	MG/L		4
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 2.0						
POINT 001		JUNE 1986				
FLOW INSPECTIONS	0.07	0.79	1.62	CFS	N/A	30
PH	7.8		8.1	STD UNITS		5
TOT SUSP SOLIDS	1	8.3	18	MG/L		5
OIL & GREASE	0.5	2.8	5.0	MG/L		2
TOTAL IRON	0.10	0.16	0.20	MG/L		5
FLOW	0.045	0.511	1.047	MGD	N/A	30
TOT DISS SOLIDS	2738	2801	2836	MG/L		5
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 4.9						

FOR THE SECOND QUARTER 1986

FLOW = CALCULATED FLOW IN MILLION GALLONS PER DAY
CFS = FLOW IN CUBIC FEET PER SECOND AS MEASURED IN FIELD
E = EXCEEDENCE

POINT=001

DATE	TIME	CFS	FLOW	PH	TFE	TSS	OANDG	TDS	SS	EPH	ETFE	ETSS	EOANDG	ETDS	ESS	COMMENTS
860410		0.90	0.582	8.1	0.20	15.0		2460								
860410		0.90	0.582	7.8	0.06	19.0	0.5	2546								STD LABS
860422		0.90	0.582	8.3	0.20	9.0		2672								
860506				8.2	0.07	3.0	6.4	2720								UT HLTH
860528		0.09	0.058	8.0	0.20	15.0		2832								
860528		0.09	0.058	7.2	0.13	17.0	0.5	2808								STD LABS
860530		0.57	0.368	8.2	0.20	35.0		2922								
860531		1.57	1.015													
860601		0.28	0.181													
860602		0.84	0.543													
860603		1.35	0.873													
860604		0.36	0.233													
860605		1.62	1.047													
860606		0.31	0.200													
860607		1.29	0.834													
860608		1.46	0.944													
860609		0.14	0.090													
860610		0.73	0.472													
860611		1.34	0.866													
860612		0.07	0.045	8.0	0.10	5.0	5.0	2798								UT HLTH
860613		1.38	0.892													
860614		0.39	0.252													
860615		0.70	0.452													
860616		0.92	0.595													
860617		0.46	0.297													
860618		0.72	0.465													
860619		1.19	0.769	7.8	0.11	0.5	0.5	2738								STD LABS
860620		0.93	0.601													
860621		0.16	0.103													
860622		1.37	0.885													
860623		0.12	0.078													
860624		0.93	0.601													
860625		1.26	0.814													
860626		0.23	0.149	8.1	0.20	18.0		2796								
860627		0.76	0.491	7.9	0.20	10.0		2836								
860628		0.97	0.627	7.9	0.20	8.0		2836								
860629		1.23	0.795													
860630		0.19	0.123													

POINT 001 DISCHARGES AT THE EMERY DEEP MINE FOR THE THIRD QUARTER 1986
REPORT PREPARED ON 04/29/87 AT 10:33:21

PARAMETER	MINIMUM	ARITHMETIC AVERAGE	MAXIMUM	UNITS	NUMBER EXCEED	NR. MSMTS
POINT 001		THIRD QUARTER 1986				
FLOW INSPECTIONS	0.00	0.52	1.48	CFS	N/A	33
PH	7.3		8.4	STD UNITS		10
TOT SUSP SOLIDS	1	4.9	11	MG/L		11
OIL & GREASE	0.5	2.7	5.0	MG/L		5
TOTAL IRON	0.04	0.14	0.20	MG/L		11
FLOW	0.006	0.373	0.957	MGD	N/A	34
TOT DISS SOLIDS	2701	3187	3878	MG/L		11
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 4.8						
POINT 001		JULY 1986				
FLOW INSPECTIONS	1.42	1.46	1.47	CFS	N/A	4
PH	7.3		8.3	STD UNITS		4
TOT SUSP SOLIDS	1	4.6	8	MG/L		4
OIL & GREASE	1.6	3.3	5.0	MG/L		2
TOTAL IRON	0.04	0.13	0.20	MG/L		4
FLOW	0.918	0.942	0.950	MGD	N/A	4
TOT DISS SOLIDS	2701	2741	2812	MG/L		4
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD EXCEEDED - 10.8						
POINT 001		AUGUST 1986				
FLOW INSPECTIONS	0.08	0.08	0.08	CFS	N/A	3
PH	8.2		8.3	STD UNITS		3
TOT SUSP SOLIDS	3	5.7	11	MG/L		3
OIL & GREASE	0.5	0.5	0.5	MG/L		1
TOTAL IRON	0.05	0.15	0.20	MG/L		3
FLOW	0.052	0.052	0.052	MGD	N/A	3
TOT DISS SOLIDS	2942	3022	3082	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 0.7						
POINT 001		SEPTEMBER 1986				
FLOW INSPECTIONS	0.00	0.44	1.48	CFS	N/A	31
PH	8.0		8.4	STD UNITS		3
TOT SUSP SOLIDS	2	4.6	7	MG/L		4
OIL & GREASE	1.2	3.1	5.0	MG/L		2
TOTAL IRON	0.05	0.13	0.20	MG/L		4
FLOW	0.006	0.324	0.957	MGD	N/A	27
TOT DISS SOLIDS	3686	3757	3878	MG/L		4
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD - 3.3						

FOR THE THIRD QUARTER 1986

FLOW = CALCULATED FLOW IN MILLION GALLONS PER DAY
CFS = FLOW IN CUBIC FEET PER SECOND AS MEASURED IN FIELD
E = EXCEEDENCE

POINT=001

DATE	TIME	CFS	FLOW	PH	TFE	TSS	OANDG	TDS	SS	EPH	ETFE	ETSS	EOANDG	ETDS	ESS	COMMENTS
860701		1.42	0.918													
860729		1.47	0.950	7.3	0.10	0.5	1.6	2701								STD LABS
860729		1.47	0.950	8.3	0.20	7.0		2702								
860729		1.47	0.950	8.1	0.04	3.0	5.0	2812								UT HLTH
860731				8.3	0.20	8.0		2750								
860807		0.08	0.052	8.2	0.20	11.0		2942								
860811		0.08	0.052	8.2	0.20	3.0		3082								
860811		0.08	0.052	8.3	0.05	3.0	0.5	3042								STD LABS
860902		0.00		8.4	0.20	6.5		3686								
860903		0.00														
860904		0.68	0.439													
860904		0.68	0.439		0.07	3.0	5.0	3708								UT HLTH
860905		0.66	0.427													
860906		0.30	0.194													
860907		1.24	0.801													
860908		0.03	0.019													
860909		0.00														
860910		0.05	0.032													
860911		1.48	0.957													
860912		0.63	0.407													
860913		0.01	0.006													
860914		0.72	0.465													
860915		0.85	0.549													
860916		0.01	0.006													
860917		0.00														
860918		0.23	0.149													
860919		1.32	0.853													
860920		0.04	0.026													
860921		0.26	0.168													
860922		0.82	0.530													
860923		0.02	0.013													
860924		0.23	0.149													
860925		1.20	0.776													
860926		0.03	0.019													
860927		0.72	0.465													
860928		0.66	0.427													
860929		0.02	0.013													
860930		0.32	0.207	8.0	0.05	7.0	1.2	3756								STD LABS
860930		0.32	0.207	8.3	0.20	2.0		3878								

POINT 001 DISCHARGES AT THE EMERY DEEP MINE FOR THE FOURTH QUARTER 1986
REPORT PREPARED ON 04/29/87 AT 10:33:35

PARAMETER	MINIMUM	ARITHMETIC AVERAGE	MAXIMUM	UNITS	NUMBER EXCEED	NR. MSMTS
POINT 001		FOURTH QUARTER 1986				
FLOW INSPECTIONS	0.00	0.42	1.63	CFS	N/A	62
PH	7.9		8.3	STD UNITS		9
TOT SUSP SOLIDS	1	3.7	15	MG/L		9
OIL & GREASE	0.5	1.4	2.4	MG/L		2
TOTAL IRON	0.05	0.15	0.20	MG/L		9
FLOW	0.013	0.310	1.053	MGD	N/A	54
TOT DISS SOLIDS	2684	3737	4156	MG/L		9
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD -		3.6				
POINT 001		OCTOBER 1986				
FLOW INSPECTIONS	0.00	0.46	1.63	CFS	N/A	30
PH	8.2		8.3	STD UNITS		3
TOT SUSP SOLIDS	1	2.0	4	MG/L		3
OIL & GREASE	0.5	0.5	0.5	MG/L		1
TOTAL IRON	0.06	0.15	0.20	MG/L		3
FLOW	0.013	0.320	1.053	MGD	N/A	28
TOT DISS SOLIDS	2684	3461	3856	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD -		7.0				
POINT 001		NOVEMBER 1986				
FLOW INSPECTIONS	0.00	0.39	1.55	CFS	N/A	31
PH	8.0		8.2	STD UNITS		3
TOT SUSP SOLIDS	4	7.7	15	MG/L		3
OIL & GREASE				MG/L		0
TOTAL IRON	0.05	0.15	0.20	MG/L		3
FLOW	0.013	0.299	1.002	MGD	N/A	26
TOT DISS SOLIDS	3616	3667	3704	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD -		0.1				
POINT 001		DECEMBER 1986				
FLOW INSPECTIONS	0.00	0.00	0.00	CFS	N/A	1
PH	7.9		8.0	STD UNITS		3
TOT SUSP SOLIDS	1	1.5	3	MG/L		3
OIL & GREASE	2.4	2.4	2.4	MG/L		1
TOTAL IRON	0.05	0.15	0.20	MG/L		3
FLOW				MGD	N/A	0
TOT DISS SOLIDS	3952	4033	4156	MG/L		3
SETTLABLE SOLIDS				ML/L		0
NOTE: AVE DAILY TDS LOAD -						

FOR THE FOURTH QUARTER 1986

FLOW = CALCULATED FLOW IN MILLION GALLONS PER DAY
CFS = FLOW IN CUBIC FEET PER SECOND AS MEASURED IN FIELD
E = EXCEEDENCE

POINT=001

DATE	TIME	CFS	FLOW	PH	TFE	TSS	OANDG	TDS	SS	EPH	ETFE	ETSS	EOANDG	ETDS	ESS	COMMENTS
861001		1.25	0.808	8.3	0.20	1.0		3856								
861002		0.12	0.078													
861003		0.06	0.039													
861004		0.06	0.039													
861005		0.18	0.116													
861006		1.42	0.918													
861007		0.17	0.110													
861008		0.53	0.343													
861009																
861010		0.44	0.284	8.3	0.20	4.0		3842								
861011		0.56	0.362													
861012		0.90	0.582													
861013		0.03	0.019													
861014		0.00														
861015		0.06	0.039													
861016		1.55	1.002													
861017		0.11	0.071													
861018		0.00														
861019		1.63	1.053													
861020		0.26	0.168													
861021		0.02	0.013													
861022		0.26	0.168													
861023		1.52	0.982													
861024		0.08	0.052													
861025		0.02	0.013													
861026		0.20	0.129													
861027		0.25	0.162													
861028		1.50	0.969													
861029		0.10	0.065													
861030		0.49	0.317	8.2	0.06	1.0	0.5	2684								STD LABS
861031		0.09	0.058													
861101		0.27	0.175													
861102		1.55	1.002													
861103		0.11	0.071													
861104		0.29	0.187													
861105		0.96	0.620													
861106		0.02	0.013													
861107		1.11	0.717													
861108		0.05	0.032													
861109		0.00														
861110		0.00														
861111		0.00														
861112		0.68	0.439													
861113		0.02	0.013													
861114		0.02	0.013													
861115		0.91	0.588													
861116		0.38	0.246													
861117		0.04	0.026													

FOR THE FOURTH QUARTER 1986

FLOW = CALCULATED FLOW IN MILLION GALLONS PER DAY
CFS = FLOW IN CUBIC FEET PER SECOND AS MEASURED IN FIELD
E = EXCEEDENCE

POINT=001

DATE	TIME	CFS	FLOW	PH	TFE	TSS	OANDG	TDS	SS	EPH	ETFE	ETSS	EOANDG	ETDS	ESS	COMMENTS
861118		0.03	0.019													
861119		0.02	0.013	8.2	0.05	15.0		3616								• STD LABS
861119		0.02	0.013	8.0	0.20	4.0		3682								
861120		0.87	0.562													
861121		1.07	0.692													
861122		0.00														
861123		0.00		8.1	0.20	4.0		3704								
861124		1.24	0.801													
861125		0.20	0.129													
861126		0.21	0.136													
861127		0.09	0.058													
861128		0.75	0.485													
861129		1.10	0.711													
861130		0.02	0.013													
861201		0.00														
861204				7.9	0.20	3.0		3952								
861218				8.0	0.05	0.5	2.4	4156								STD LABS INST Q=0.54CFS
861218				8.0	0.20	1.0		4142								
861219																INST Q=4.21CFS

EMERY DEEP MINE - MONITORING WELL DATA

The following monitoring wells were sampled in 1986. The summary of the data follows:

Well Name	Water Bearing Unit(s)
Bryant	Upper Ferron S.S.
Emria 2	Bluegate Shale Upper Ferron S.S. Middle Ferron S.S. Lower Ferron S.S.
Kemmer	Lower Ferron S.S.
Lewis	Upper Ferron S.S.
TP	Upper Ferron S.S.
USGS 1-2	Upper Ferron S.S.
ZZ	Lower Ferron S.S.
TI	Blue Gate Shale
CSPRG	Upper Ferron S.S.

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA = WELL=T1 WATER BEARING UNIT =BG

	01OCT86
WATER DEPTH	
WATER LEVEL ELEV	
SP COND - LAB	26000
PH - LAB	7.2
TDS	23957.0
ACIDITY,TOT	0.00
ALKALINITY(CACO3)	
TOTAL	459.00
NONCARBONATE	0.00
ANIONS	
HCO3	559.98
CO3	0.00
CL	212.00
SO4	16000
NO3(N)	0.05
CATIONS	
NA	6570.00
K	61.00
CA	404.00
MG	435.00
FE,TOT	7.60
MN	0.04
TRACE IONS	
AS	
B	
BA	
CD	
CR	
CU	
HG	
MO	
NI	
PB	
SE	
SR	5.15
ZN	
OTHER IONS	
AL	
F	0.72
FE,DISS	0.00
S	0.00
NH3(N)	
NO2(N)	0.05
P-ORTHO	0.07
P,TOT	
SIO2	4.20
CALCULATED DATA	
HARDNESS	2800
NC HARDNESS	
SAR	54
IONIC RATIOS(%)	
NA+K	84
CA	6
MG	10
HCO3+CO3	3
CL	2
SO4	96
TDS(SUM)	24247.0
TDS(SUM)/SP COND	0.93
TDS(CALC)	23962.4
TDS/TDS(CALC)	1.00
TOTAL CATIONS	343.30
TOTAL ANIONS	348.33
CAT-AN BALANCE	-0.70

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA = WELL=T1 WATER BEARING UNIT =BG

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH				0.0	
WATER LEVEL ELEV				0.0	
SP COND - LAB	26000	26000	26000	1	
PH - LAB	7.2	7.2	7.2	1.0	
TDS	23957.0	23957.0	23957.0	1.0	
ACIDITY,TOT	0.00	0.00	0.00	1.00	
ALKALINITY(CACO3)					
TOTAL	459.00	459.00	459.00	1.00	
NONCARBONATE	0.00	0.00	0.00	1.00	
ANIONS					
HCO3	559.98	559.98	559.98	1.00	
CO3	0.00	0.00	0.00	1.00	
CL	212.00	212.00	212.00	1.00	
SO4	16000	16000	16000	1.00	
NO3(N)	0.05	0.05	0.05	1.00	
CATIONS					
NA	6570.00	6570.00	6570.00	1.00	
K	61.00	61.00	61.00	1.00	
CA	404.00	404.00	404.00	1.00	
MG	435.00	435.00	435.00	1.00	
FE,TOT	7.60	7.60	7.60	1.00	
MN	0.04	0.04	0.04	1.00	
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	5.15	5.15	5.15	1.00	
ZN				0.00	
OTHER IONS					
AL				0.00	
F	0.72	0.72	0.72	1.00	
FE,DISS	0.00	0.00	0.00	1.00	
S	0.00	0.00	0.00	1.00	
NH3(N)				0.00	
NO2(N)	0.05	0.05	0.05	1.00	
P-ORTHO	0.07	0.07	0.07	1.00	
P,TOT				0.00	
SIO2	4.20	4.20	4.20	1.00	
CALCULATED DATA					
HARDNESS	2800	2800	2800	1	
NC HARDNESS				0	
SAR	54	54	54	1	
IONIC RATIOS(%)					
NA+K	84	84	84	1	
CA	6	6	6	1	
MG	10	10	10	1	
HCO3+CO3	3	3	3	1	
CL	2	2	2	1	
SO4	96	96	96	1	
TDS(SUM)	24247.0	24247.0	24247.0	1.0	
TDS(SUM)/SP COND	0.93	0.93	0.93	1.00	
TDS(CALC)	23962.4	23962.4	23962.4	1.0	
TDS/TDS(CALC)	1.00	1.00	1.00	1.00	
TOTAL CATIONS	343.30	343.30	343.30	1.00	
TOTAL ANIONS	348.33	348.33	348.33	1.00	
CAT-AN BALANCE	-0.70	-0.70	-0.70	1.00	

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=EMRIA2 WATER BEARING UNIT =BGUML

	RAW DATA				
	13MAR86	24JUN86	04SEP86	15SEP86	23DEC86
WATER DEPTH	24.0	26.7	23.5		19.1
WATER LEVEL ELEV	6058.3	6055.6	6058.8		6063.2
SP COND - LAB		5000		4710	
PH - LAB		7.0		6.8	
TDS		4786.0		4473.0	
ACIDITY,TOT		0.00		0.00	
ALKALINITY(CACO3)					
TOTAL				414.00	
NONCARBONATE		0.00		0.00	
ANIONS					
HCO3		503.86		505.08	
CO3		0.00		0.00	
CL		50.00		53.00	
SO4		3100.00		3100.00	
NO3(N)		0.83		0.24	
CATIONS					
NA		248.00		249.00	
K		19.00		20.00	
CA		488.00		452.00	
MG		466.00		491.00	
FE,TOT		0.00		0.05	
MN		0.30		0.03	
TRACE IONS					
AS					
B					
BA					
CD					
CR					
CU					
HG					
MO					
NI					
PB					
SE					
SR		4.40		4.55	
ZN					
OTHER IONS					
AL					
F		0.36		0.35	
FE,DISS		0.00		0.05	
S		0.20		0.00	
NH3(N)					
NO2(N)		0.01		0.01	
P-ORTHO		0.08		0.03	
P,TOT					
SIO2		3.50		3.60	
CALCULATED DATA					
HARDNESS		3138		3150	
NC HARDNESS					
SAR		2		2	
IONIC RATIOS(%)					
NA+K		15		15	
CA		33		30	
MG		52		54	
HCO3+CO3		11		11	
CL		2		2	
SO4		87		87	
TDS(SUM)		4879.9		4874.4	
TDS(SUM)/SP COND		0.98		1.03	
TDS(CALC)		4623.7		4617.6	
TDS/TDS(CALC)		1.04		0.97	
TOTAL CATIONS		73.97		74.29	
TOTAL ANIONS		74.29		74.35	
CAT-AN BALANCE		-0.20		0.00	

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: WAL=WUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=EMRIA2 WATER BEARING UNIT =BGUML

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	23.3	19.1	26.7	4.0	3.1
WATER LEVEL ELEV	6059.0	6055.6	6063.2	4.0	3.1
SP COND - LAB	4855	4710	5000	2	205
PH - LAB	6.9	6.8	7.0	2.0	0.1
TDS	4629.5	4473.0	4786.0	2.0	221.3
ACIDITY,TOT	0.00	0.00	0.00	2.00	0.00
ALKALINITY(CACO3)					
TOTAL	414.00	414.00	414.00	1.00	
NONCARBONATE	0.00	0.00	0.00	2.00	0.00
ANIONS					
HCO3	504.47	503.86	505.08	2.00	0.86
CO3	0.00	0.00	0.00	2.00	0.00
CL	51.50	50.00	53.00	2.00	2.12
SO4	3100.00	3100.00	3100.00	2.00	0.00
NO3(N)	0.53	0.24	0.83	2.00	0.42
CATIONS					
NA	248.50	248.00	249.00	2.00	0.71
K	19.50	19.00	20.00	2.00	0.71
CA	470.00	452.00	488.00	2.00	25.46
MG	478.50	466.00	491.00	2.00	17.68
FE,TOT	0.02	0.00	0.05	2.00	0.04
MN	0.16	0.03	0.30	2.00	0.19
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	4.47	4.40	4.55	2.00	0.11
ZN				0.00	
OTHER IONS					
AL				0.00	
F	0.35	0.35	0.36	2.00	0.01
FE,DISS	0.02	0.00	0.05	2.00	0.04
S	0.10	0.00	0.20	2.00	0.14
NH3(N)				0.00	
NO2(N)	0.01	0.01	0.01	2.00	0.00
P-ORTHO	0.05	0.03	0.08	2.00	0.04
P,TOT				0.00	
SIO2	3.55	3.50	3.60	2.00	0.07
CALCULATED DATA					
HARDNESS	3144	3138	3150	2	8
NC HARDNESS				0	
SAR	2	2	2	2	0
IONIC RATIOS(%)					
NA+K	15	15	15	2	0
CA	32	30	33	2	2
MG	53	52	54	2	2
HCO3+CO3	11	11	11	2	0
CL	2	2	2	2	0
SO4	87	87	87	2	0
TDS(SUM)	4877.1	4874.4	4879.9	2.0	3.9
TDS(SUM)/SP COND	1.01	0.98	1.03	2.00	0.04
TDS(CALC)	4620.7	4617.6	4623.7	2.0	4.3
TDS/TDS(CALC)	1.00	0.97	1.04	2.00	0.05
TOTAL CATIONS	74.13	73.97	74.29	2.00	0.23
TOTAL ANIONS	74.32	74.29	74.35	2.00	0.04
CAT-AN BALANCE	-0.10	-0.20	0.00	2.00	0.14

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=KEMMER WATER BEARING UNIT =L

	RAW DATA			
	12MAR86	24JUN86	04SEP86	15SEP86
WATER DEPTH	-32.0	-32.0	-32.0	
WATER LEVEL ELEV	6316.7	6316.7	6316.7	
SP COND - LAB		1080		
PH - LAB		8.5		53.0
TDS		611.0		0.2
ACIDITY,TOT		0.00		0.00
ALKALINITY(CACO3)				
TOTAL				
NONCARBONATE		0.00		0.00
ANIONS				
HCO3		225.70		
CO3		34.80		91.80
CL		17.00		104.00
SO4		230.00		9.10
NO3(N)		0.04		
CATIONS				
NA		218.00		
K		4.00		
CA		8.00		
MG		11.00		8.00
FE,TOT		0.21		
MN		0.01		
TRACE IONS				
AS				441.00
B				
BA				250.00
CD				
CR				
CU				
HG				
MO				
NI				0.75
PB				
SE				8.00
SR		1.10		3.30
ZN				5.00
OTHER IONS				
AL				619.00
F		0.66		1020.00
FE,DISS		0.06		
S		0.00		0.05
NH3(N)				
NO2(N)		0.01		1020.00
P-ORTHO		0.05		
P,TOT				0.12
SIO2		3.50		0.05
CALCULATED DATA				
HARDNESS		65		23
NC HARDNESS				209
SAR		12		
IONIC RATIOS(%)				
NA+K		88		
CA		4		
MG		8		
HCO3+CO3		48		49
CL		5		47
SO4		47		3
TDS(SUM)		752.8		2877.8
TDS(SUM)/SP COND		0.70		
TDS(CALC)		638.1		
TDS/TDS(CALC)		0.96		
TOTAL CATIONS		10.89		0.66
TOTAL ANIONS		10.17		132.73
CAT-AN BALANCE		3.40		-99.00

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =DEEP MINE WELL=KEMMER WATER BEARING UNIT =L

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	-32.0	-32.0	-32.0	3.0	0.0
WATER LEVEL ELEV	6316.7	6316.7	6316.7	3.0	0.0
SP COND - LAB	1030	1080	1080	1	
PH - LAB	30.8	3.5	53.0	2.0	31.5
TDS	305.6	0.2	611.0	2.0	431.9
ACIDITY,TOT	0.00	0.00	0.00	2.00	0.00
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	2.00	0.00
ANIONS					
HCO3	225.70	225.70	225.70	1.00	
CO3	63.30	34.80	91.80	2.00	40.31
CL	60.50	17.00	104.00	2.00	61.52
SO4	119.55	9.10	230.00	2.00	156.20
NO3(N)	0.04	0.04	0.04	1.00	
CATIONS					
NA	218.00	218.00	218.00	1.00	
K	4.00	4.00	4.00	1.00	
CA	8.00	8.00	8.00	1.00	
MG	9.50	8.00	11.00	2.00	2.12
FE,TOT	0.21	0.21	0.21	1.00	
MN	0.01	0.01	0.01	1.00	
TRACE IONS					
AS	441.00	441.00	441.00	1.00	
B				0.00	
BA	250.00	250.00	250.00	1.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI	0.75	0.75	0.75	1.00	
PB				0.00	
SE	8.00	8.00	8.00	1.00	
SR	2.20	1.10	3.30	2.00	1.56
ZN	5.00	5.00	5.00	1.00	
OTHER IONS					
AL	619.00	619.00	619.00	1.00	
F	510.33	0.66	1020.00	2.00	720.78
FE,DISS	0.06	0.06	0.06	1.00	
S	0.02	0.00	0.05	2.00	0.04
NH3(N)				0.00	
NO2(N)	510.00	0.01	1020.00	2.00	721.24
P-ORTHO	0.05	0.05	0.05	1.00	
P,TOT	0.12	0.12	0.12	1.00	
SIO2	1.77	0.05	3.50	2.00	2.44
CALCULATED DATA					
HARDNESS	44	23	65	2	30
NC HARDNESS	209	209	209	1	
SAR	12	12	12	1	
IONIC RATIOS(%)					
NA+K	38	88	88	1	
CA	4	4	4	1	
MG	8	8	8	1	
HCO3+CO3	49	48	49	2	1
CL	26	5	47	2	30
SO4	25	3	47	2	31
TDS(SUM)	1815.3	752.8	2877.8	2.0	1502.6
TDS(SUM)/SP COND	0.70	0.70	0.70	1.00	
TDS(CALC)	638.1	638.1	638.1	1.0	
TDS/TDS(CALC)	0.96	0.96	0.96	1.00	
TOTAL CATIONS	5.77	0.66	10.89	2.00	7.24
TOTAL ANIONS	71.45	10.17	132.73	2.00	86.67
CAT-AN BALANCE	-47.30	-99.00	3.40	2.00	72.41

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=LEWIS WATER BEARING UNIT =U

	RAW DATA				
	02MAY86	24JUN86	04SEP86	15SEP86	18DEC86
WATER DEPTH	257.6		263.5		267.3
WATER LEVEL ELEV	5760.9		5755.0		5751.2
SP COND - LAB		1510		1500	
PH - LAB		8.5		8.3	
TDS		887.0		903.0	
ACIDITY,TOT		0.00		0.00	
ALKALINITY(CACO3)					
TOTAL				307.00	
NONCARBONATE		0.00		0.00	
ANIONS					
HCO3		326.96		374.54	
CO3		18.00		0.00	
CL		31.00		44.00	
SO4		370.00		380.00	
NO3(N)		0.03		0.02	
CATIONS					
NA		342.00		334.00	
K		1.00		2.00	
CA		4.00		4.00	
MG		1.00		1.00	
FE,TOT		0.00		0.05	
MN		0.00		0.00	
TRACE IONS					
AS					
B					
BA					
CD					
CR					
CU					
HG					
MO					
NI					
PB					
SE					
SR		0.60		0.65	
ZN					
OTHER IONS					
AL					
F		0.87		0.86	
FE,DISS		0.00		0.00	
S		0.00		0.00	
NH3(N)					
NO2(N)		0.00		0.00	
P-ORTHO		0.05		0.06	
P,TOT					
SIO2		4.10		4.60	
CALCULATED DATA					
HARDNESS		13		14	
NC HARDNESS					
SAR		40		39	
IONIC RATIOS(%)					
NA+K		98		98	
CA		1		1	
MG		1		1	
HCO3+CO3		41		40	
CL		6		8	
SO4		53		52	
TDS(SUM)		1099.0		1145.0	
TDS(SUM)/SP COND		0.73		0.76	
TDS(CALC)		932.8		954.6	
TDS/TDS(CALC)		0.95		0.95	
TOTAL CATIONS		15.18		14.86	
TOTAL ANIONS		14.59		15.34	
CAT-AN BALANCE		2.00		-1.60	

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=LEWIS WATER BEARING UNIT =U

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	262.8	257.6	267.3	3.0	4.9
WATER LEVEL ELEV	5755.7	5751.2	5760.9	3.0	4.9
SP COND - LAB	1505	1500	1510	2	7
PH - LAB	8.4	8.3	8.5	2.0	0.2
TDS	897.5	887.0	908.0	2.0	14.8
ACIDITY,TOT	0.00	0.00	0.00	2.00	0.00
ALKALINITY(CACO3)					
TOTAL	307.00	307.00	307.00	1.00	
NONCARBONATE	0.00	0.00	0.00	2.00	0.00
ANIONS					
HCO3	350.75	326.96	374.54	2.00	33.64
CO3	9.00	0.00	18.00	2.00	12.73
CL	37.50	31.00	44.00	2.00	9.19
SO4	375.00	370.00	380.00	2.00	7.07
NO3(N)	0.02	0.02	0.03	2.00	0.01
CATIONS					
NA	338.00	334.00	342.00	2.00	5.66
K	1.50	1.00	2.00	2.00	0.71
CA	4.00	4.00	4.00	2.00	0.00
MG	1.00	1.00	1.00	2.00	0.00
FE,TOT	0.02	0.00	0.05	2.00	0.04
MN	0.00	0.00	0.00	2.00	0.00
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	0.62	0.60	0.65	2.00	0.04
ZN				0.00	
OTHER IONS					
AL				0.00	
F	0.86	0.86	0.87	2.00	0.01
FE,DISS	0.00	0.00	0.00	2.00	0.00
S	0.00	0.00	0.00	2.00	0.00
NH3(N)				0.00	
NO2(N)	0.00	0.00	0.00	2.00	0.00
P-ORTHO	0.05	0.05	0.06	2.00	0.01
P,TOT				0.00	
SIO2	4.35	4.10	4.60	2.00	0.35
CALCULATED DATA					
HARDNESS	14	13	14	2	1
NC HARDNESS				0	
SAR	39	39	40	2	1
IONIC RATIOS(%)					
NA+K	98	98	98	2	0
CA	1	1	1	2	0
MG	1	1	1	2	0
HCO3+CO3	41	40	41	2	1
CL	7	6	8	2	1
SO4	52	52	53	2	1
TDS(SUM)	1122.0	1099.0	1145.0	2.0	32.6
TDS(SUM)/SP COND	0.75	0.73	0.76	2.00	0.03
TDS(CALC)	943.7	932.8	954.6	2.0	15.5
TDS/TDS(CALC)	0.95	0.95	0.95	2.00	0.00
TOTAL CATIONS	15.02	14.86	15.18	2.00	0.23
TOTAL ANIONS	14.96	14.59	15.34	2.00	0.53
CAT-AN BALANCE	0.20	-1.60	2.00	2.00	2.55

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=TP WATER BEARING UNIT =U

	RAW DATA				
	12MAR86	30JUN86	05SEP86	30SEP86	31DEC86
WATER DEPTH	333.0		349.2		356.4
WATER LEVEL ELEV	5668.9		5652.7		5645.5
SP COND - LAB		1780		2000	
PH - LAB		9.5		10.9	
TDS		948.0		1013.0	
ACIDITY,TOT		0.00		0.00	
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE		0.00			
ANIONS					
HCO3		163.36		0.00	
CO3		187.20		316.80	
CL		46.00		61.20	
SO4		150.00		200.00	
NO3(N)		0.02		0.02	
CATIONS					
NA		396.00		401.00	
K		2.00		2.30	
CA		4.00		2.00	
MG		1.00		1.00	
FE,TOT		0.12		12.12	
MN		0.04		0.13	
TRACE IONS					
AS					
B					
BA					
CD					
CR					
CU					
HG					
MO					
NI					
PB					
SE					
SR		0.10		0.16	
ZN					
OTHER IONS					
AL					
F		1.13		1.04	
FE,DISS		0.11		0.08	
S		0.00		0.00	
NH3(N)					
NO2(N)		0.00		0.03	
P-ORTHO		0.06		0.08	
P,TOT					
SIO2		2.00		3.10	
CALCULATED DATA					
HARDNESS		13		10	
NC HARDNESS					
SAR		46		58	
IONIC RATIOS(%)					
NA+K		98		99	
CA		1		1	
MG		0		0	
HCO3+CO3		67		54	
CL		10		10	
SO4		23		25	
TDS(SUM)		957.9		988.7	
TDS(SUM)/SP COND		0.54		0.49	
TDS(CALC)		872.3		988.7	
TDS/TDS(CALC)		1.09		1.02	
TOTAL CATIONS		17.56		17.69	
TOTAL ANIONS		13.48		16.51	
CAT-AN BALANCE		13.20		3.50	

WATER BEARING UNITS: JAL=JUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=TP WATER BEARING UNIT =U

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	346.2	333.0	356.4	3.0	12.0
WATER LEVEL ELEV	5655.7	5645.5	5668.9	3.0	12.0
SP COND - LAB	1890	1780	2000	2	156
PH - LAB	10.2	9.5	10.9	2.0	1.0
TDS	980.5	948.0	1013.0	2.0	46.0
ACIDITY,TOT	0.00	0.00	0.00	2.00	0.00
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	1.00	
ANIONS					
HCO3	84.18	0.00	168.36	2.00	119.05
CO3	252.00	187.20	316.80	2.00	91.64
CL	53.60	46.00	61.20	2.00	10.75
SO4	175.00	150.00	200.00	2.00	35.36
NO3(N)	0.02	0.02	0.02	2.00	0.00
CATIONS					
NA	398.50	396.00	401.00	2.00	3.54
K	2.15	2.00	2.30	2.00	0.21
CA	3.00	2.00	4.00	2.00	1.41
MG	1.00	1.00	1.00	2.00	0.00
FE,TOT	6.12	0.12	12.12	2.00	8.49
MN	0.08	0.04	0.13	2.00	0.06
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	0.13	0.10	0.16	2.00	0.04
ZN				0.00	
OTHER IONS					
AL				0.00	
F	1.08	1.04	1.13	2.00	0.06
FE,DISS	0.09	0.08	0.11	2.00	0.02
S	0.00	0.00	0.00	2.00	0.00
NH3(N)				0.00	
NO2(N)	0.01	0.00	0.03	2.00	0.02
P-ORTHO	0.07	0.06	0.08	2.00	0.01
P,TOT				0.00	
SIO2	2.55	2.00	3.10	2.00	0.78
CALCULATED DATA					
HARDNESS	12	10	13	2	2
NC HARDNESS				0	
SAR	52	46	58	2	8
IONIC RATIOS(%)					
NA+K	99	98	99	2	0
CA	1	1	1	2	0
MG	0	0	0	2	0
HCO3+CO3	66	64	67	2	2
CL	10	10	10	2	1
SO4	24	23	25	2	1
TDS(SUM)	973.3	957.9	988.7	2.0	21.8
TDS(SUM)/SP COND	0.52	0.49	0.54	2.00	0.03
TDS(CALC)	930.5	872.3	988.7	2.0	82.3
TDS/TDS(CALC)	1.06	1.02	1.09	2.00	0.04
TOTAL CATIONS	17.63	17.56	17.69	2.00	0.09
TOTAL ANIONS	15.00	13.48	16.51	2.00	2.14
CAT-AN BALANCE	8.35	3.50	13.20	2.00	6.86

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =DEEP MINE WELL=T1 WATER BEARING UNIT =BG

	RAW DATA			
	12MAR86	30JUN86	05SEP86	31DEC86
WATER DEPTH	9.9	9.7	9.6	10.1
WATER LEVEL ELEV	5991.0	5991.2	5991.3	5990.8
SP COND - LAB		25500		
PH - LAB		7.6		
TDS		24232.0		
ACIDITY,TOT		0.00		
ALKALINITY(CACO3)				
TOTAL				
NONCARBONATE		0.00		
ANIONS				
HCO3		545.34		
CO3		0.00		
CL		228.00		
SO4		16000		
NO3(N)		0.08		
CATIONS				
NA		6630.00		
K		52.00		
CA		408.00		
MG		472.00		
FE,TOT		0.24		
MN		0.36		
TRACE IONS				
AS				
B				
BA				
CD				
CR				
CU				
HG				
MO				
NI				
PB				
SE				
SR		6.10		
ZN				
OTHER IONS				
AL				
F		0.68		
FE,DISS		0.12		
S		0.40		
NH3(N)				
NO2(N)		0.00		
P-ORTHO		0.05		
P,TOT				
SIO2		3.80		
CALCULATED DATA				
HARDNESS		2960		
NC HARDNESS				
SAR		53		
IONIC RATIOS(%)				
NA+K		33		
CA		6		
MG		11		
HCO3+CO3		3		
CL		2		
SO4		96		
TDS(SUM)		24340.4		
TDS(SUM)/SP COND		0.95		
TDS(CALC)		24063.2		
TDS/TDS(CALC)		1.01		
TOTAL CATIONS		348.94		
TOTAL ANIONS		348.53		
CAT-AN BALANCE		0.10		

WATER BEARING UNITS: WAL=WUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=T1 WATER BEARING UNIT =BG

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	9.3	9.6	10.1	4.0	0.2
WATER LEVEL ELEV	5991.1	5990.8	5991.3	4.0	0.2
SP COND - LAB	25500	25500	25500	1	
PH - LAB	7.6	7.6	7.6	1.0	
TDS	24232.0	24232.0	24232.0	1.0	
ACIDITY.TOT	0.00	0.00	0.00	1.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	1.00	
ANIONS					
HCO3	545.34	545.34	545.34	1.00	
CO3	0.00	0.00	0.00	1.00	
CL	228.00	228.00	228.00	1.00	
SO4	16000	16000	16000	1.00	
NO3(N)	0.08	0.08	0.08	1.00	
CATIONS					
NA	6630.00	6630.00	6630.00	1.00	
K	52.00	52.00	52.00	1.00	
CA	408.00	408.00	408.00	1.00	
MG	472.00	472.00	472.00	1.00	
FE.TOT	0.24	0.24	0.24	1.00	
MN	0.36	0.36	0.36	1.00	
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	6.10	6.10	6.10	1.00	
ZN				0.00	
OTHER IONS					
AL				0.00	
F	0.68	0.68	0.68	1.00	
FE.DISS	0.12	0.12	0.12	1.00	
S	0.40	0.40	0.40	1.00	
NH3(N)				0.00	
NO2(N)	0.00	0.00	0.00	1.00	
P-ORTHO	0.05	0.05	0.05	1.00	
P.TOT				0.00	
SIO2	3.80	3.80	3.80	1.00	
CALCULATED DATA					
HARDNESS	2960	2960	2960	1	
NC HARDNESS				0	
SAR	53	53	53	1	
IONIC RATIOS(%)					
NA+K	83	83	83	1	
CA	6	6	6	1	
MG	11	11	11	1	
HCO3+CO3	3	3	3	1	
CL	2	2	2	1	
SO4	96	96	96	1	
TDS(SUM)	24340.4	24340.4	24340.4	1.0	
TDS(SUM)/SP COND	0.95	0.95	0.95	1.00	
TDS(CALC)	24063.2	24063.2	24063.2	1.0	
TDS/TDS(CALC)	1.01	1.01	1.01	1.00	
TOTAL CATIONS	348.94	348.94	348.94	1.00	
TOTAL ANIONS	348.53	348.53	348.53	1.00	
CAT-AN BALANCE	0.10	0.10	0.10	1.00	

WATER BEARING UNITS: DAL=DUTCHMAN ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=USGS1-2 WATER BEARING UNIT =U

	RAW DATA				
	13MAR86	24JUN86	04SEP86	24SEP86	23DEC86
WATER DEPTH	88.0	87.8	87.7		87.7
WATER LEVEL ELEV	5957.7	5957.9	5958.0		5958.0
SP COND - LAB		1250		1300	
PH - LAB		7.1		7.3	
TDS		736.0		803.0	
ACIDITY,TOT		0.00		0.00	
ALKALINITY(CACO3)					
TOTAL				335.00	
NONCARBONATE		0.00		0.00	
ANIONS					
HCO3		409.92		408.70	
CO3		0.00		0.00	
CL		17.00		24.00	
SO4		260.00		320.00	
NO3(N)		0.04		0.02	
CATIONS					
NA		240.00		258.00	
K		3.00		4.00	
CA		26.00		30.00	
MG		11.00		15.00	
FE,TOT		0.36		0.50	
MN		0.06		0.08	
TRACE IONS					
AS					
B					
BA					
CD					
CR					
CU					
HG					
MO					
NI					
PB					
SE					
SR		1.50		2.76	
ZN					
OTHER IONS					
AL					
F		1.24		1.33	
FE,DISS		0.00		0.09	
S		0.00		0.00	
NH3(N)					
NO2(N)		0.04		0.05	
P-ORTHO		0.07		0.07	
P,TOT					
SIO2		5.30		5.40	
CALCULATED DATA					
HARDNESS		109		135	
NC HARDNESS					
SAR		10		10	
IONIC RATIOS(%)					
NA+K		83		81	
CA		10		11	
MG		7		9	
HCO3+CO3		53		48	
CL		4		5	
SO4		43		47	
TDS(SUM)		973.6		1066.7	
TDS(SUM)/SP COND		0.78		0.82	
TDS(CALC)		765.2		858.9	
TDS/TDS(CALC)		0.96		0.93	
TOTAL CATIONS		12.72		14.06	
TOTAL ANIONS		12.68		14.11	
CAT-AN BALANCE		0.10		-0.20	

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: AL=WOITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=USGS1-2 WATER BEARING UNIT =U

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	87.8	87.7	88.0	4.0	0.1
WATER LEVEL ELEV	5957.9	5957.7	5958.0	4.0	0.1
SP COND - LAB	1275	1250	1300	2	35
PH - LAB	7.2	7.1	7.3	2.0	0.1
TDS	769.5	736.0	803.0	2.0	47.4
ACIDITY.TOT	0.00	0.00	0.00	2.00	0.00
ALKALINITY(CACO3)					
TOTAL	335.00	335.00	335.00	1.00	
NONCARBONATE	0.00	0.00	0.00	2.00	0.00
ANIONS					
HCO3	409.31	408.70	409.92	2.00	0.86
CO3	0.00	0.00	0.00	2.00	0.00
CL	20.50	17.00	24.00	2.00	4.95
SO4	290.00	260.00	320.00	2.00	42.43
NO3(N)	0.03	0.02	0.04	2.00	0.01
CATIONS					
NA	249.00	240.00	258.00	2.00	12.73
K	3.50	3.00	4.00	2.00	0.71
CA	28.00	26.00	30.00	2.00	2.83
MG	13.00	11.00	15.00	2.00	2.83
FE.TOT	0.43	0.36	0.50	2.00	0.10
MN	0.07	0.06	0.08	2.00	0.01
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	2.13	1.50	2.76	2.00	0.89
ZN				0.00	
OTHER IONS					
AL				0.00	
F	1.28	1.24	1.33	2.00	0.06
FE.DISS	0.04	0.00	0.09	2.00	0.06
S	0.00	0.00	0.00	2.00	0.00
NH3(N)				0.00	
NO2(N)	0.04	0.04	0.05	2.00	0.01
P-ORTHO	0.07	0.07	0.07	2.00	0.00
P.TOT				0.00	
SIO2	5.35	5.30	5.40	2.00	0.07
CALCULATED DATA					
HARDNESS	122	109	135	2	18
NC HARDNESS				0	
SAR	10	10	10	2	0
IONIC RATIOS(%)					
NA+K	82	81	83	2	1
CA	10	10	11	2	0
MG	8	7	9	2	1
HCO3+CO3	51	48	53	2	4
CL	4	4	5	2	1
SO4	45	43	47	2	3
TDS(SUM)	1020.1	973.6	1066.7	2.0	65.8
TDS(SUM)/SP COND	0.80	0.78	0.82	2.00	0.03
TDS(CALC)	812.1	765.2	858.9	2.0	66.2
TDS/TDS(CALC)	0.95	0.93	0.96	2.00	0.02
TOTAL CATIONS	13.39	12.72	14.06	2.00	0.95
TOTAL ANIONS	13.40	12.68	14.11	2.00	1.01
CAT-AN BALANCE	-0.05	-0.20	0.10	2.00	0.21

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=ZZ WATER BEARING UNIT =L

	RAW DATA				
	06MAR86	30JUN86	05SEP86	30SEP86	23DEC86
WATER DEPTH	142.8	143.5	143.3		149.3
WATER LEVEL ELEV	5922.9	5922.2	5922.4		5916.4
SP COND - LAB		1310		1410	
PH - LAB		7.9		7.5	
TDS		754.0		756.0	
ACIDITY,TOT		0.00		0.00	
ALKALINITY(CACO3)					
TOTAL				491.00	
NONCARBONATE		0.00		0.00	
ANIONS					
HCO3		605.12		599.02	
CO3		0.00		0.00	
CL		15.00		17.10	
SO4		170.00		170.00	
NO3(N)		0.41		0.04	
CATIONS					
NA		290.00		300.00	
K		4.00		4.10	
CA		14.00		14.00	
MG		6.00		0.00	
FE,TOT		0.00		0.11	
MN		0.00		0.00	
TRACE IONS					
AS					
B					
BA					
CD					
CR					
CU					
HG					
MO					
NI					
PB					
SE					
SR		0.60		0.66	
ZN					
OTHER IONS					
AL					
F		2.36		2.51	
FE,DISS		0.00		0.09	
S		0.00		0.00	
NH3(N)					
NO2(N)		0.09		0.04	
P-ORTHO		0.08		0.07	
P,TOT					
SIO2		5.60		6.00	
CALCULATED DATA					
HARDNESS		60		35	
NC HARDNESS					
SAR		16		22	
IONIC RATIOS(%)					
NA+K		91		95	
CA		5		5	
MG		4		0	
HCO3+CO3		71		71	
CL		3		3	
SO4		25		26	
TDS(SUM)		1112.6		1112.9	
TDS(SUM)/SP COND		0.85		0.79	
TDS(CALC)		805.0		808.4	
TDS/TDS(CALC)		0.94		0.94	
TOTAL CATIONS		13.91		13.86	
TOTAL ANIONS		14.04		13.98	
CAT-AN BALANCE		-0.50		-0.40	

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: DAL=DUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =DEEP MINE WELL=ZZ WATER BEARING UNIT =L

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	144.7	142.8	149.3	4.0	3.1
WATER LEVEL ELEV	5921.0	5916.4	5922.9	4.0	3.1
SP COND - LAB	1360	1310	1410	2	71
PH - LAB	7.7	7.5	7.9	2.0	0.3
TDS	755.0	754.0	756.0	2.0	1.4
ACIDITY,TOT	0.00	0.00	0.00	2.00	0.00
ALKALINITY(CACO3)					
TOTAL	491.00	491.00	491.00	1.00	
NONCARBONATE	0.00	0.00	0.00	2.00	0.00
ANIONS					
HCO3	602.07	599.02	605.12	2.00	4.31
CO3	0.00	0.00	0.00	2.00	0.00
CL	16.05	15.00	17.10	2.00	1.48
SO4	170.00	170.00	170.00	2.00	0.00
NO3(N)	0.22	0.04	0.41	2.00	0.26
CATIONS					
NA	295.00	290.00	300.00	2.00	7.07
K	4.05	4.00	4.10	2.00	0.07
CA	14.00	14.00	14.00	2.00	0.00
MG	3.00	0.00	6.00	2.00	4.24
FE,TOT	0.05	0.00	0.11	2.00	0.08
MN	0.00	0.00	0.00	2.00	0.00
TRACE IONS					
AS				0.00	
B				0.00	
BA				0.00	
CD				0.00	
CR				0.00	
CU				0.00	
HG				0.00	
MO				0.00	
NI				0.00	
PB				0.00	
SE				0.00	
SR	0.63	0.60	0.66	2.00	0.04
ZN				0.00	
OTHER IONS					
AL				0.00	
F	2.43	2.36	2.51	2.00	0.11
FE,DISS	0.04	0.00	0.09	2.00	0.06
S	0.00	0.00	0.00	2.00	0.00
NH3(N)				0.00	
NO2(N)	0.06	0.04	0.09	2.00	0.04
P-ORTHO	0.07	0.07	0.08	2.00	0.01
P,TOT				0.00	
SIO2	5.30	5.60	6.00	2.00	0.28
CALCULATED DATA					
HARDNESS	48	35	60	2	18
NC HARDNESS				0	
SAR	19	16	22	2	4
IONIC RATIOS(%)					
NA+K	93	91	95	2	2
CA	5	5	5	2	0
MG	2	0	4	2	3
HCO3+CO3	71	71	71	2	0
CL	3	3	3	2	0
SO4	26	25	26	2	0
TDS(SUM)	1112.7	1112.6	1112.9	2.0	0.2
TDS(SUM)/SP COND	0.82	0.79	0.85	2.00	0.04
TDS(CALC)	806.7	805.0	808.4	2.0	2.4
TDS/TDS(CALC)	0.94	0.94	0.94	2.00	0.00
TOTAL CATIONS	13.88	13.86	13.91	2.00	0.04
TOTAL ANIONS	14.01	13.98	14.04	2.00	0.04
CAT-AN BALANCE	-0.45	-0.50	-0.40	2.00	0.07

EMERY MINE GROUNDWATER MONITORING REPORT 14:07 WEDNESDAY, APRIL 29, 1987 33
FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =SURFACE MINE(1) WELL=CSPRG WATER BEARING UNIT =U

	RAW DATA			
	31MAR86	30JUN86	30SEP86	23DEC86
WATER DEPTH				
WATER LEVEL ELEV				
SP COND - LAB	6500	880		
PH - LAB	4.0	7.6		
TDS	5392.0	523.0	2932.0	3142.0
ACIDITY,TOT	347.00	0.00	0.00	
ALKALINITY(CACO3)				
TOTAL			150.00	
NONCARBONATE		0.00	123.50	0.00
ANIONS				
HCO3	0.00	312.32	0.00	42.70
CO3	0.00	0.00	15.90	0.00
CL	59.00	8.00		24.70
SO4	4000.00	180.00	2000.00	2000.00
NO3(N)	6.22	0.02	1.37	2.74
CATIONS				
NA	494.00	42.00	136.00	130.00
K	10.00	6.00	7.80	10.10
CA	488.00	78.00	502.00	474.00
MG	331.00	42.00	169.00	180.00
FE,TOT	0.33	0.23	0.25	4.51
MN	4.54	0.00	0.60	1.42
TRACE IONS				
AS			0.00	0.01
B			0.06	1.02
BA			0.00	0.10
CD			0.00	0.00
CR			0.00	0.05
CU			0.03	0.03
HG			0.00	0.00
MO			0.00	0.20
NI			0.00	0.06
PB			0.00	0.05
SE			0.00	0.00
SR	3.14	0.60		
ZN			0.22	0.40
OTHER IONS				
AL			0.00	0.05
F	0.04	0.35	0.30	0.11
FE,DISS	0.33	0.05		
S	0.00	0.00	0.22	0.20
NH3(N)			0.09	0.50
NO2(N)	0.18	0.00	0.03	0.06
P-ORTHO	0.08	0.06		0.11
P,TOT			0.04	
SIO2	15.20	6.40		
CALCULATED DATA				
HARDNESS	2580	366	1950	1925
NC HARDNESS				
SAR	4	1	1	1
IONIC RATIOS(%)				
NA+K	30	21	14	13
CA	33	42	56	53
MG	37	37	31	33
HCO3+CO3	0	56	1	2
CL	2	2		2
SO4	98	41	99	97
TDS(SUM)	5413.5	675.1	2833.6	2872.0
TDS(SUM)/SP COND	0.83	0.77		
TDS(CALC)	5418.5	516.4	2833.6	2850.3
TDS/TDS(CALC)	1.00	1.01	1.03	1.10
TOTAL CATIONS	73.50	9.33	45.10	44.59
TOTAL ANIONS	85.69	9.11	44.76	43.24
CAT-AN BALANCE	-7.70	1.20	0.40	1.50

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: JAL=JUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =SURFACE MINE(1) WELL=CSPRG WATER BEARING UNIT =U

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH				0.0	
WATER LEVEL ELEV				0.0	
SP COND - LAB	3690	880	6500	2	3974
PH - LAB	5.8	4.0	7.6	2.0	2.6
TDS	2997.3	523.0	5392.0	4.0	1990.1
ACIDITY,TOT	115.67	0.00	347.00	3.00	200.34
ALKALINITY(CACO3)					
TOTAL	150.00	150.00	150.00	1.00	
NONCARBONATE	41.17	0.00	123.50	3.00	71.30
ANIONS					
HCO3	38.75	0.00	312.32	4.00	150.40
CO3	3.97	0.00	15.90	4.00	7.95
CL	33.90	8.00	69.00	3.00	31.52
SO4	2045.00	180.00	4000.00	4.00	1560.37
NO3(N)	2.59	0.02	6.22	4.00	2.66
CATIONS					
NA	200.50	42.00	494.00	4.00	200.33
K	8.47	6.00	10.10	4.00	1.96
CA	385.50	78.00	502.00	4.00	205.32
MG	180.50	42.00	331.00	4.00	118.27
FE,TOT	1.33	0.23	4.51	4.00	2.12
MN	1.64	0.00	4.54	4.00	2.02
TRACE IONS					
AS	0.00	0.00	0.01	2.00	0.01
B	0.54	0.06	1.02	2.00	0.68
BA	0.05	0.00	0.10	2.00	0.07
CD	0.00	0.00	0.00	2.00	0.00
CR	0.02	0.00	0.05	2.00	0.04
CU	0.03	0.03	0.03	2.00	0.00
HG	0.00	0.00	0.00	2.00	0.00
MO	0.10	0.00	0.20	2.00	0.14
NI	0.03	0.00	0.06	2.00	0.04
PB	0.02	0.00	0.05	2.00	0.04
SE	0.00	0.00	0.00	2.00	0.00
SR	1.87	0.60	3.14	2.00	1.80
ZN	0.31	0.22	0.40	2.00	0.13
OTHER IONS					
AL	0.02	0.00	0.05	2.00	0.04
F	0.20	0.04	0.35	4.00	0.15
FE,DISS	0.19	0.05	0.33	2.00	0.20
S	0.10	0.00	0.22	4.00	0.12
NH3(N)	0.29	0.09	0.50	2.00	0.29
NO2(N)	0.07	0.00	0.18	4.00	0.08
P-ORTHO	0.08	0.06	0.11	3.00	0.03
P,TOT	0.04	0.04	0.04	1.00	
SIO2	10.80	6.40	15.20	2.00	6.22
CALCULATED DATA					
HARDNESS	1705	366	2580	4	943
NC HARDNESS				0	
SAR	2	1	4	4	2
IONIC RATIOS(%)					
NA+K	19	13	30	4	8
CA	46	33	56	4	10
MG	35	31	37	4	3
HCO3+CO3	15	0	56	4	28
CL	2	2	2	3	0
SO4	84	41	99	4	28
TDS(SUM)	2949.8	675.1	5418.5	4.0	1939.8
TDS(SUM)/SP COND	0.80	0.77	0.83	2.00	0.05
TDS(CALC)	2904.7	516.4	5418.5	4.0	2002.6
TDS/TDS(CALC)	1.04	1.00	1.10	4.00	0.05
TOTAL CATIONS	43.13	9.33	73.50	4.00	26.27
TOTAL ANIONS	45.70	9.11	85.69	4.00	31.33
CAT-AN BALANCE	-1.15	-7.70	1.50	4.00	4.39

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA1 WATER BEARING UNIT =QAL

	RAW DATA			
	12MAR86	25JUN86	30SEP86	18DEC86
WATER DEPTH	14.7	13.3	10.4	11.3
WATER LEVEL ELEV	5943.1	5944.5	5947.4	5946.5
SP COND - LAB	5050	4550	4300	4600
PH - LAB	6.8	7.4	7.3	7.3
TDS	3686.0	3788.0	3870.0	3900.0
ACIDITY,TOT				
ALKALINITY(CACO3)				
TOTAL				
NONCARBONATE	0.00	0.00	0.00	0.00
ANIONS				
HCO3	602.68	583.16		
CO3	0.00	0.00		
CL	136.00	131.00		
SO4	2300.00	2200.00	2100.00	2160.00
NO3(N)	0.03	0.02		
CATIONS				
NA	537.00	530.00	494.00	514.00
K	14.00	16.00		
CA	460.00	412.00		
MG	173.00	163.00		
FE,TOT				
MN				
TRACE IONS				
AS	0.00	0.00		
B	0.40	0.60		
BA	0.00	0.00		
CD	0.00	0.00		
CR	0.00			
CU	0.00			
HG	0.00	0.00		
MO	0.00	0.10		
NI	0.00	0.00		
PB	0.00	0.00		
SE	0.00	0.00		
SR	5.15	4.00		
ZN	0.01	0.05		
OTHER IONS				
AL	0.00	0.00		
F	0.42	0.45		
FE,DISS	0.05	0.00	0.07	0.05
S				
NH3(N)	0.00	0.00		
NO2(N)				
P-ORTHO				
P,TOT	0.11	0.10		
SIO2				
CALCULATED DATA				
HARDNESS	1860	1702		
NC HARDNESS	0	0	0	1
SAR	5	6		
IONIC RATIOS(%)				
NA+K	39	43	100	100
CA	38	34		
MG	23	22		
HCO3+CO3	16	16		
CL	6	6		
SO4	78	78	100	100
TDS(SUM)	4223.7	4036.4	2594.1	2674.0
TDS(SUM)/SP COND	0.84	0.90	0.54	0.58
TDS(CALC)	3917.4	3790.0		
TDS/TDS(CALC)	0.94	1.00		
TOTAL CATIONS	60.90	59.61	21.49	22.36
TOTAL ANIONS	61.63	59.08	43.72	44.97
CAT-AN BALANCE	-0.60	0.40	-34.10	-33.60

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=R0A1 WATER BEARING UNIT =QAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	12.4	10.4	14.7	4.0	1.9
WATER LEVEL ELEV	5945.4	5943.1	5947.4	4.0	1.9
SP COND - LAB	4750	4550	5050	4	227
PH - LAB	7.2	6.8	7.4	4.0	0.3
TDS	3811.0	3686.0	3900.0	4.0	95.8
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	4.00	0.00
ANIONS					
HCO3	592.92	583.16	602.68	2.00	13.80
CO3	0.00	0.00	0.00	2.00	0.00
CL	133.50	131.00	136.00	2.00	3.54
SO4	2190.00	2100.00	2300.00	4.00	84.06
NO3(N)	0.02	0.02	0.03	2.00	0.01
CATIONS					
NA	531.25	494.00	580.00	4.00	36.94
K	15.00	14.00	16.00	2.00	1.41
CA	436.00	412.00	460.00	2.00	33.94
MG	168.00	163.00	173.00	2.00	7.07
FE,TOT				0.00	
MN				0.00	
TRACE IONS					
AS	0.00	0.00	0.00	2.00	0.00
B	0.50	0.40	0.60	2.00	0.14
BA	0.00	0.00	0.00	2.00	0.00
CD	0.00	0.00	0.00	2.00	0.00
CR	0.00	0.00	0.00	1.00	
CU	0.00	0.00	0.00	1.00	
HG	0.00	0.00	0.00	2.00	0.00
MO	0.05	0.00	0.10	2.00	0.07
NI	0.00	0.00	0.00	2.00	0.00
PB	0.00	0.00	0.00	2.00	0.00
SE	0.00	0.00	0.00	2.00	0.00
SR	4.57	4.00	5.15	2.00	0.81
ZN	0.03	0.01	0.05	2.00	0.02
OTHER IONS					
AL	0.00	0.00	0.00	2.00	0.00
F	0.43	0.42	0.45	2.00	0.02
FE,DISS	0.04	0.00	0.07	4.00	0.03
S				0.00	
NH3(N)	0.00	0.00	0.00	2.00	0.00
NO2(N)				0.00	
P-ORTHO				0.00	
P,TOT	0.10	0.10	0.11	2.00	0.01
SIO2				0.00	
CALCULATED DATA					
HARDNESS	1781	1702	1860	2	112
NC HARDNESS	0	0	1	4	0
SAR	6	5	6	2	0
IONIC RATIOS(%)					
NA+K	70	39	100	4	34
CA	36	34	38	2	2
MG	23	22	23	2	1
HCO3+CO3	16	16	16	2	0
CL	6	6	6	2	0
SO4	89	78	100	4	13
TDS(SUM)	3394.6	2594.1	4223.7	4.0	880.5
TDS(SUM)/SP COND	0.71	0.54	0.90	4.00	0.18
TDS(CALC)	3853.7	3790.0	3917.4	2.0	90.1
TDS/TDS(CALC)	0.97	0.94	1.00	2.00	0.04
TOTAL CATIONS	41.09	21.49	60.90	4.00	22.14
TOTAL ANIONS	52.35	43.72	61.63	4.00	9.31
CAT-AN BALANCE	-16.97	-34.10	0.40	4.00	19.49

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=ROA2 WATER BEARING UNIT =QAL

	RAW DATA				
	15JAN86	12MAR86	25JUN86	30SEP86	18DEC86
WATER DEPTH		14.0	14.1	14.2	12.9
WATER LEVEL ELEV		5940.5	5940.4	5940.3	5941.6
SP COND - LAB	5000	5800	5020	5025	5100
PH - LAB	7.2	7.2	7.4	7.3	7.5
TDS	4388.0	4174.0	4293.0	4450.0	4636.0
ACIDITY,TOT					
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00	0.00	0.00	0.00
ANIONS					
HCO3		417.24	502.64		
CO3		0.00	0.00		
CL		154.00	152.00		
SO4	2700.00	2700.00	2600.00	2800.00	2800.00
NO3(N)		0.06	0.03		
CATIONS					
NA	615.00	595.00	638.00	615.00	601.00
K		11.00	13.00		
CA		520.00	456.00		
MG		195.00	187.00		
FE,TOT					
MN					
TRACE IONS					
AS		0.00	0.00		
B		0.44	0.58		
BA		0.00	0.00		
CD		0.00	0.00		
CR		0.00	0.00		
CU		0.00	0.00		
HG		0.00	0.00		
MO		0.00	0.20		
NI		0.00	0.00		
PB		0.00	0.00		
SE		0.00	0.00		
SR		6.25	4.20		
ZN		0.03	0.00		
OTHER IONS					
AL		0.00	0.00		
F		0.51	0.48		
FE,DISS	0.12	0.05	0.00	0.07	0.05
S					
NH3(N)		0.00	0.00		
NO2(N)					
P-ORTHO					
P,TOT		0.11	0.09		
SIO2					
CALCULATED DATA					
HARDNESS		2100	1910		
NC HARDNESS	0	0	0	0	0
SAR		6	6		
IONIC RATIOS(%)					
NA+K	100	38	42	100	100
CA		38	34		
MG		24	23		
HCO3+CO3		10	12		
CL		6	6		
SO4	100	83	81	100	100
TDS(SUM)	3315.1	4593.4	4549.8	3415.1	3401.0
TDS(SUM)/SP COND	0.66	0.79	0.91	0.68	0.67
TDS(CALC)		4381.4	4294.3		
TDS/TDS(CALC)		0.95	1.00		
TOTAL CATIONS	26.76	68.15	66.22	26.76	26.15
TOTAL ANIONS	56.21	67.43	66.69	58.30	58.30
CAT-AN BALANCE	-35.50	0.50	-0.30	-37.10	-38.10

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
#####

MONITORING AREA =REFUSE DISPOSAL WELL=RDA2 WATER BEARING UNIT =QAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	13.8	12.9	14.2	4.0	0.6
WATER LEVEL ELEV	5940.7	5940.3	5941.6	4.0	0.6
SP COND - LAB	5189	5000	5800	5	344
PH - LAB	7.3	7.2	7.5	5.0	0.1
TDS	4388.2	4174.0	4636.0	5.0	173.3
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	5.00	0.00
ANIONS					
HCO3	459.94	417.24	502.64	2.00	60.39
CO3	0.00	0.00	0.00	2.00	0.00
CL	153.00	152.00	154.00	2.00	1.41
SO4	2720.00	2600.00	2800.00	5.00	83.67
NO3(N)	0.04	0.03	0.06	2.00	0.02
CATIONS					
NA	612.80	595.00	638.00	5.00	16.59
K	12.00	11.00	13.00	2.00	1.41
CA	488.00	456.00	520.00	2.00	45.25
MG	191.00	187.00	195.00	2.00	5.66
FE,TOT				0.00	
MN				0.00	
TRACE IONS					
AS	0.00	0.00	0.00	2.00	0.00
B	0.51	0.44	0.58	2.00	0.10
BA	0.00	0.00	0.00	2.00	0.00
CD	0.00	0.00	0.00	2.00	0.00
CR	0.00	0.00	0.00	2.00	0.00
CU	0.00	0.00	0.00	2.00	0.00
HG	0.00	0.00	0.00	2.00	0.00
MO	0.10	0.00	0.20	2.00	0.14
NI	0.00	0.00	0.00	2.00	0.00
PB	0.00	0.00	0.00	2.00	0.00
SE	0.00	0.00	0.00	2.00	0.00
SR	5.22	4.20	6.25	2.00	1.45
ZN	0.01	0.00	0.03	2.00	0.02
OTHER IONS					
AL	0.00	0.00	0.00	2.00	0.00
F	0.49	0.48	0.51	2.00	0.02
FE,DISS	0.06	0.00	0.12	5.00	0.04
S				0.00	
NH3(N)	0.00	0.00	0.00	2.00	0.00
NO2(N)				0.00	
P-ORTHO				0.00	
P,TOT	0.10	0.09	0.11	2.00	0.01
SIO2				0.00	
CALCULATED DATA					
HARDNESS	2005	1910	2100	2	134
NC HARDNESS	0	0	0	5	0
SAR	6	6	6	2	1
IONIC RATIOS(%)					
NA+K	76	38	100	5	33
CA	36	34	38	2	3
MG	23	23	24	2	0
HCO3+CO3	11	10	12	2	2
CL	6	6	6	2	0
SO4	93	81	100	5	10
TDS(SUM)	3854.9	3315.1	4593.4	5.0	655.6
TDS(SUM)/SP COND	0.74	0.66	0.91	5.00	0.11
TDS(CALC)	4337.8	4294.3	4331.4	2.0	61.5
TDS/TDS(CALC)	0.98	0.95	1.00	2.00	0.03
TOTAL CATIONS	42.81	26.15	68.15	5.00	22.27
TOTAL ANIONS	61.38	56.21	67.43	5.00	5.26
CAT-AN BALANCE	-22.10	-38.10	0.50	5.00	20.29

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA3 WATER BEARING UNIT =QAL

	RAW DATA				
	15JAN86	12MAR86	25JUN86	30SEP86	18DEC86
WATER DEPTH		21.9	20.9	22.1	21.6
WATER LEVEL ELEV		5923.5	5924.5	5923.3	5923.8
SP COND - LAB	4350	5850	4300	4700	4500
PH - LAB	7.1	7.0	7.5	7.2	7.3
TDS	3683.0	4368.0	3665.0	3850.0	3900.0
ACIDITY,TOT					
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00	0.00	0.00	0.00
ANIONS					
HCO3		599.02	563.64		
CO3		0.00	0.00		
CL		192.00	103.00		
SO4	2500.00	2700.00	2250.00	2400.00	2400.00
NO3(N)		0.03	0.02		
CATIONS					
NA	423.00	565.00	442.00	410.00	440.00
K		8.00	8.00		
CA		428.00	336.00		
MG		294.00	250.00		
FE,TOT					
MN					
TRACE IONS					
AS		0.00	0.00		
B		0.66	0.94		
BA		0.00	0.10		
CD		0.00	0.00		
CR		0.00	0.00		
CU		0.02	0.00		
HG		0.00	0.00		
MO		0.00	0.20		
NI		0.00	0.00		
PB		0.00	0.00		
SE		0.00	0.00		
SR		6.44	4.40		
ZN		0.01	0.00		
OTHER IONS					
AL		0.00	0.00		
F		0.45	0.52		
FE,DISS	0.17	0.06	0.00	0.10	0.05
S					
NH3(N)		0.00	0.00		
NO2(N)					
P-ORTHO					
P,TOT		0.12	0.09		
SIO2					
CALCULATED DATA					
HARDNESS		2280	1870		
NC HARDNESS	0	0	0	0	0
SAR		5	5		
IONIC RATIOS(%)					
NA+K	100	35	34	100	100
CA		30	30		
MG		34	36		
HCO3+CO3		14	16		
CL		8	5		
SO4	100	79	79	100	100
TDS(SUM)	2923.2	4787.4	3954.2	2310.1	2840.0
TDS(SUM)/SP COND	0.67	0.82	0.92	0.60	0.63
TDS(CALC)		4482.9	3667.7		
TDS/TDS(CALC)		0.97	1.00		
TOTAL CATIONS	18.41	70.33	56.76	17.84	19.14
TOTAL ANIONS	52.05	71.48	59.02	49.97	49.97
CAT-AN BALANCE	-47.80	-0.80	-1.90	-47.40	-44.60

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA3 WATER BEARING UNIT =QAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	21.6	20.9	22.1	4.0	0.5
WATER LEVEL ELEV	5923.8	5923.3	5924.5	4.0	0.5
SP COND - LAB	4740	4300	5850	5	640
PH - LAB	7.2	7.0	7.5	5.0	0.2
TDS	3893.2	3665.0	4368.0	5.0	284.4
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	5.00	0.00
ANIONS					
HCO3	581.33	563.64	599.02	2.00	25.02
CO3	0.00	0.00	0.00	2.00	0.00
CL	147.50	103.00	192.00	2.00	62.93
SO4	2450.00	2250.00	2700.00	5.00	165.83
NO3(N)	0.02	0.02	0.03	2.00	0.01
CATIONS					
NA	456.00	410.00	565.00	5.00	62.33
K	8.00	8.00	8.00	2.00	0.00
CA	382.00	336.00	428.00	2.00	65.05
MG	272.00	250.00	294.00	2.00	31.11
FE,TOT				0.00	
MN				0.00	
TRACE IONS					
AS	0.00	0.00	0.00	2.00	0.00
B	0.80	0.66	0.94	2.00	0.20
BA	0.05	0.00	0.10	2.00	0.07
CD	0.00	0.00	0.00	2.00	0.00
CR	0.00	0.00	0.00	2.00	0.00
CU	0.01	0.00	0.02	2.00	0.01
HG	0.00	0.00	0.00	2.00	0.00
MO	0.10	0.00	0.20	2.00	0.14
NI	0.00	0.00	0.00	2.00	0.00
PB	0.00	0.00	0.00	2.00	0.00
SE	0.00	0.00	0.00	2.00	0.00
SR	5.42	4.40	6.44	2.00	1.44
ZN	0.01	0.00	0.01	2.00	0.01
OTHER IONS					
AL	0.00	0.00	0.00	2.00	0.00
F	0.48	0.45	0.52	2.00	0.05
FE,DISS	0.08	0.00	0.17	5.00	0.06
S				0.00	
NH3(N)	0.00	0.00	0.00	2.00	0.00
NO2(N)				0.00	
P-ORTHO				0.00	
P,TOT	0.10	0.09	0.12	2.00	0.02
SIO2				0.00	
CALCULATED DATA					
HARDNESS	2075	1870	2280	2	290
NC HARDNESS	0	0	0	5	0
SAR	5	5	5	2	0
IONIC RATIOS(%)					
NA+K	74	34	100	5	36
CA	30	30	30	2	1
MG	35	34	36	2	1
HCO3+CO3	15	14	16	2	1
CL	6	5	8	2	2
SO4	92	79	100	5	11
TDS(SUM)	3463.0	2810.1	4737.4	5.0	880.5
TDS(SUM)/SP COND	0.73	0.60	0.92	5.00	0.14
TDS(CALC)	4075.3	3667.7	4482.9	2.0	576.4
TDS/TDS(CALC)	0.99	0.97	1.00	2.00	0.02
TOTAL CATIONS	36.50	17.84	70.33	5.00	25.16
TOTAL ANIONS	56.50	49.97	71.48	5.00	9.16
CAT-AN BALANCE	-28.50	-47.80	-0.80	5.00	24.82

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA4 WATER BEARING UNIT =QAL

	RAW DATA				
	15JAN86	12MAR86	25JUN86	30SEP86	18DEC86
WATER DEPTH		21.3	22.9	21.6	19.2
WATER LEVEL ELEV		5921.8	5920.2	5921.5	5923.9
SP COND - LAB	8000	9000	8000	8100	8900
PH - LAB	7.3	7.4	7.7	7.2	7.3
TDS	7532.0	6780.0	6594.0	6692.0	7752.0
ACIDITY,TOT					
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00	0.00	0.00	0.00
ANIONS					
HCO3		688.08	650.26		
CO3		0.00	0.00		
CL		298.00	224.00		
SO4	5500.00	4300.00	4100.00	5000.00	6000.00
NO3(N)		0.25	0.44		
CATIONS					
NA	1200.00	1220.00	1125.00	1100.00	1190.00
K		7.00	7.00		
CA		424.00	408.00		
MG		435.00	411.00		
FE,TOT					
MN					
TRACE IONS					
AS		0.00	0.00		
B		0.94	1.18		
BA		0.00	0.00		
CD		0.00	0.00		
CR		0.07	0.00		
CU		0.02	0.00		
HG		0.00	0.00		
MO		0.00	0.00		
NI		0.00	0.00		
PB		0.00	0.00		
SE		0.00	0.00		
SR		7.73	6.10		
ZN		0.01	0.01		
OTHER IONS					
AL		0.00	0.00		
F		0.76	0.80		
FE,DISS	0.15	0.05	0.00	0.07	0.05
S					
NH3(N)		0.00	0.10		
NO2(N)					
P-ORTHO					
P,TOT		0.12	0.08		
SIO2					
CALCULATED DATA					
HARDNESS		2850	2712		
NC HARDNESS	0	0	0	0	0
SAR		10	9		
IONIC RATIOS(%)					
NA+K	100	48	48	100	100
CA		19	20		
MG		32	33		
HCO3+CO3		10	10		
CL		8	6		
SO4	100	82	83	100	100
TDS(SUM)	6700.1	7374.3	6927.8	6100.1	7190.0
TDS(SUM)/SP COND	0.84	0.82	0.87	0.75	0.81
TDS(CALC)		7024.6	6597.2		
TDS/TDS(CALC)		0.97	1.00		
TOTAL CATIONS	52.21	110.19	103.28	47.85	51.77
TOTAL ANIONS	114.51	109.27	102.41	104.10	124.92
CAT-AN BALANCE	-37.40	0.40	0.40	-37.00	-41.40

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA4 WATER BEARING UNIT =QAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	21.2	19.2	22.9	4.0	1.5
WATER LEVEL ELEV	5921.8	5920.2	5923.9	4.0	1.5
SP COND - LAB	8400	8000	9000	5	505
PH - LAB	7.4	7.2	7.7	5.0	0.2
TDS	7070.0	6594.0	7752.0	5.0	532.0
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	5.00	0.00
ANIONS					
HCO3	669.17	650.26	688.08	2.00	26.74
CO3	0.00	0.00	0.00	2.00	0.00
CL	261.00	224.00	298.00	2.00	52.33
SO4	4980.00	4100.00	6000.00	5.00	798.12
NO3(N)	0.34	0.25	0.44	2.00	0.13
CATIONS					
NA	1167.00	1100.00	1220.00	5.00	51.67
K	7.00	7.00	7.00	2.00	0.00
CA	416.00	408.00	424.00	2.00	11.31
MG	423.00	411.00	435.00	2.00	16.97
FE,TOT				0.00	
MN				0.00	
TRACE IONS					
AS	0.00	0.00	0.00	2.00	0.00
B	1.06	0.94	1.18	2.00	0.17
BA	0.00	0.00	0.00	2.00	0.00
CD	0.00	0.00	0.00	2.00	0.00
CR	0.03	0.00	0.07	2.00	0.05
CU	0.01	0.00	0.02	2.00	0.01
HG	0.00	0.00	0.00	2.00	0.00
MO	0.00	0.00	0.00	2.00	0.00
NI	0.00	0.00	0.00	2.00	0.00
PB	0.00	0.00	0.00	2.00	0.00
SE	0.00	0.00	0.00	2.00	0.00
SR	6.91	6.10	7.73	2.00	1.15
ZN	0.01	0.01	0.01	2.00	0.00
OTHER IONS					
AL	0.00	0.00	0.00	2.00	0.00
F	0.78	0.76	0.80	2.00	0.03
FE,DISS	0.07	0.00	0.15	5.00	0.05
S				0.00	
NH3(N)	0.05	0.00	0.10	2.00	0.07
NO2(N)				0.00	
P-ORTHO				0.00	
P,TOT	0.10	0.08	0.12	2.00	0.03
SIO2				0.00	
CALCULATED DATA					
HARDNESS	2791	2712	2850	2	98
NC HARDNESS	0	0	0	5	0
SAR	10	9	10	2	0
IONIC RATIOS(%)					
NA+K	79	48	100	5	29
CA	19	19	20	2	0
MG	33	32	33	2	0
HCO3+CO3	10	10	10	2	0
CL	7	6	8	2	1
SO4	93	82	100	5	9
TDS(SUM)	6858.5	6100.1	7374.3	5.0	495.2
TDS(SUM)/SP COND	0.82	0.75	0.87	5.00	0.04
TDS(CALC)	6810.9	6597.2	7024.6	2.0	302.2
TDS/TDS(CALC)	0.98	0.97	1.00	2.00	0.02
TOTAL CATIONS	73.06	47.85	110.19	5.00	30.89
TOTAL ANIONS	111.04	102.41	124.92	5.00	9.09
CAT-AN BALANCE	-23.00	-41.40	0.40	5.00	21.43

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA5 WATER BEARING UNIT =QAL

	RAW DATA				
	15JAN86	12MAR86	25JUN86	30SEP86	18DEC86
WATER DEPTH		19.6	19.8	19.0	19.5
WATER LEVEL ELEV		5921.6	5921.4	5922.2	5921.7
SP COND - LAB	27000	34200	51100	32500	36500
PH - LAB	7.6	7.3	7.8	7.5	7.6
TDS	26772.0	21118.0	32792.0	31688.0	32240.0
ACIDITY,TOT					
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00	0.00	0.00	0.00
ANIONS					
HCO3		750.30	710.04		
CO3		0.00	0.00		
CL		2530.00	2160.00		
SO4	20000	20000	20500	21500	20800
NO3(N)		0.04	0.22		
CATIONS					
NA	6300.00	7340.00	7410.00	7330.00	6780.00
K		10.00	10.00		
CA		432.00	440.00		
MG		1985.00	1923.00		
FE,TOT					
MN					
TRACE IONS					
AS		0.00	0.00		
B		1.76	2.40		
BA		0.00	0.00		
CD		0.00	0.00		
CR		0.20	0.00		
CU		0.10	0.06		
HG		0.00	0.00		
MO		0.00	0.20		
NI		0.00	0.00		
PB		0.00	0.00		
SE		0.00	0.00		
SR		12.00	10.80		
ZN		0.02	0.01		
OTHER IONS					
AL		0.00	0.00		
F		1.23	1.27		
FE,DISS	0.39	0.19	0.14	0.43	0.17
S					
NH3(N)		0.00	0.23		
NO2(N)					
P-ORTHO					
P,TOT		0.13	0.09		
SIO2					
CALCULATED DATA					
HARDNESS		9240	9010		
NC HARDNESS	0	0	0	0	0
SAR		33	34		
IONIC RATIOS(%)					
NA+K	100	63	64	100	100
CA		4	4		
MG		32	31		
HCO3+CO3		2	2		
CL		14	12		
SO4	100	83	85	100	100
TDS(SUM)	26300.4	33051.0	33157.2	28830.4	27580.2
TDS(SUM)/SP COND	0.97	0.97	0.65	0.89	0.76
TDS(CALC)		32669.6	32796.3		
TDS/TDS(CALC)		0.65	1.00		
TOTAL CATIONS	274.06	504.40	502.74	318.87	294.94
TOTAL ANIONS	416.40	500.14	499.47	447.63	433.06
CAT-AN BALANCE	-20.60	0.40	0.30	-16.80	-19.00

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA5 WATER BEARING UNIT =QAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	19.5	19.0	19.8	4.0	0.3
WATER LEVEL ELEV	5921.7	5921.4	5922.2	4.0	0.3
SP COND - LAB	36260	27000	51100	5	9006
PH - LAB	7.6	7.3	7.8	5.0	0.2
TDS	28922.0	21113.0	32792.0	5.0	4979.0
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	5.00	0.00
ANIONS					
HCO3	730.17	710.04	750.30	2.00	28.47
CO3	0.00	0.00	0.00	2.00	0.00
CL	2345.00	2160.00	2530.00	2.00	261.63
SO4	20560	20000	21500	5.00	626.90
NO3(N)	0.13	0.04	0.22	2.00	0.13
CATIONS					
NA	7032.00	6300.00	7410.00	5.00	481.11
K	10.00	10.00	10.00	2.00	0.00
CA	436.00	432.00	440.00	2.00	5.66
MG	1954.00	1923.00	1985.00	2.00	43.84
FE,TOT				0.00	
MN				0.00	
TRACE IONS					
AS	0.00	0.00	0.00	2.00	0.00
B	2.08	1.76	2.40	2.00	0.45
BA	0.00	0.00	0.00	2.00	0.00
CD	0.00	0.00	0.00	2.00	0.00
CR	0.10	0.00	0.20	2.00	0.14
CU	0.08	0.06	0.10	2.00	0.03
HG	0.00	0.00	0.00	2.00	0.00
MO	0.10	0.00	0.20	2.00	0.14
NI	0.00	0.00	0.00	2.00	0.00
PB	0.00	0.00	0.00	2.00	0.00
SE	0.00	0.00	0.00	2.00	0.00
SR	11.40	10.80	12.00	2.00	0.85
ZN	0.01	0.01	0.02	2.00	0.01
OTHER IONS					
AL	0.00	0.00	0.00	2.00	0.00
F	1.25	1.23	1.27	2.00	0.03
FE,DISS	0.26	0.14	0.43	5.00	0.14
S				0.00	
NH3(N)	0.11	0.00	0.23	2.00	0.16
NO2(N)				0.00	
P-ORTHO				0.00	
P,TOT	0.11	0.09	0.13	2.00	0.03
SIO2				0.00	
CALCULATED DATA					
HARDNESS	9125	9010	9240	2	163
NC HARDNESS	0	0	0	5	0
SAR	34	33	34	2	1
IONIC RATIOS(%)					
NA+K	86	63	100	5	20
CA	4	4	4	2	0
MG	32	31	32	2	1
HCO3+CO3	2	2	2	2	0
CL	13	12	14	2	1
SO4	94	83	100	5	9
TDS(SUM)	29783.8	26300.4	33157.2	5.0	3160.4
TDS(SUM)/SP COND	0.85	0.65	0.97	5.00	0.14
TDS(CALC)	32733.0	32669.6	32796.3	2.0	89.6
TDS/TDS(CALC)	0.82	0.65	1.00	2.00	0.25
TOTAL CATIONS	379.00	274.06	504.40	5.00	114.81
TOTAL ANIONS	459.34	416.40	500.14	5.00	38.56
CAT-AN BALANCE	-11.14	-20.60	0.40	5.00	10.58

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
#####

MONITORING AREA =REFUSE DISPOSAL WELL=RDA6 WATER BEARING UNIT =QAL

	RAW DATA				
	15JAN86	12MAR86	25JUN86	30SEP86	18DEC86
WATER DEPTH		13.4	13.6	13.9	14.3
WATER LEVEL ELEV		5927.0	5926.8	5926.5	5926.1
SP COND - LAB	21000	19500	30100	16000	21850
PH - LAB	7.6	7.2	7.8	7.6	7.6
TDS	19588.0	15212.0	19920.0	13824.0	21676.0
ACIDITY,TOT					
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00	0.00	0.00	0.00
ANIONS					
HCO3		484.34	603.90		
CO3		0.00	0.00		
CL		939.00	1124.00		
SO4	15000	10500	12500	9000.00	14000
NO3(N)		6.00	4.25		
CATIONS					
NA	4700.00	3650.00	4590.00	2880.00	4995.00
K		21.00	25.00		
CA		452.00	460.00		
MG		795.00	924.00		
FE,TOT					
MN					
TRACE IONS					
AS		0.00	0.00		
B		1.04	1.10		
BA		0.00	0.00		
CD		0.00	0.00		
CR		0.12	0.09		
CU		0.05	0.03		
HG		0.00	0.00		
MO		0.00	0.20		
NI		0.00	0.00		
PB		0.00	0.00		
SE		0.00	0.00		
SR		11.27	11.30		
ZN		0.00	0.01		
OTHER IONS					
AL		0.00	0.00		
F		0.72	0.70		
FE,DISS	0.26	0.11	0.08	0.14	0.11
S					
NH3(N)		0.00	0.06		
NO2(N)					
P-ORTHO					
P,TOT		0.12	0.10		
SIO2					
CALCULATED DATA					
HARDNESS		4400	4950		
NC HARDNESS	0	0	0	0	0
SAR		24	28		
IONIC RATIOS(%)					
NA+K	100	64	67	100	100
CA		9	8		
MG		26	25		
HCO3+CO3		3	3		
CL		10	11		
SO4	100	86	86	100	100
TDS(SUM)	19700.3	16849.5	20233.3	11880.1	18995.1
TDS(SUM)/SP COND	0.94	0.86	0.67	0.74	0.87
TDS(CALC)		16603.3	19926.3		
TDS/TDS(CALC)		0.92	1.00		
TOTAL CATIONS	204.46	247.27	299.27	125.29	217.29
TOTAL ANIONS	312.30	253.51	302.20	187.38	291.48
CAT-AN BALANCE	-20.90	-1.20	-0.50	-19.90	-14.60

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =REFUSE DISPOSAL WELL=RDA6 WATER BEARING UNIT =QAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	13.8	13.4	14.3	4.0	0.4
WATER LEVEL ELEV	5926.6	5925.1	5927.0	4.0	0.4
SP COND - LAB	21690	16000	30100	5	5206
PH - LAB	7.6	7.2	7.8	5.0	0.2
TDS	18044.0	13824.0	21676.0	5.0	3351.2
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	5.00	0.00
ANIONS					
HCO3	544.12	484.34	603.90	2.00	84.54
CO3	0.00	0.00	0.00	2.00	0.00
CL	1031.50	939.00	1124.00	2.00	130.81
SO4	12200	9000.00	15000	5.00	2464.75
NO3(N)	5.13	4.25	6.00	2.00	1.24
CATIONS					
NA	4163.00	2880.00	4995.00	5.00	876.38
K	23.00	21.00	25.00	2.00	2.83
CA	456.00	452.00	460.00	2.00	5.66
MG	859.50	795.00	924.00	2.00	91.22
FE,TOT				0.00	
MN				0.00	
TRACE IONS					
AS	0.00	0.00	0.00	2.00	0.00
B	1.07	1.04	1.10	2.00	0.04
BA	0.00	0.00	0.00	2.00	0.00
CD	0.00	0.00	0.00	2.00	0.00
CR	0.10	0.09	0.12	2.00	0.02
CU	0.04	0.03	0.05	2.00	0.01
HG	0.00	0.00	0.00	2.00	0.00
MO	0.10	0.00	0.20	2.00	0.14
NI	0.00	0.00	0.00	2.00	0.00
PB	0.00	0.00	0.00	2.00	0.00
SE	0.00	0.00	0.00	2.00	0.00
SR	11.28	11.27	11.30	2.00	0.02
ZN	0.01	0.00	0.01	2.00	0.01
OTHER IONS					
AL	0.00	0.00	0.00	2.00	0.00
F	0.71	0.70	0.72	2.00	0.01
FE,DISS	0.14	0.08	0.26	5.00	0.07
S				0.00	
NH3(N)	0.03	0.00	0.06	2.00	0.04
NO2(N)				0.00	
P-ORTHO				0.00	
P,TOT	0.11	0.10	0.12	2.00	0.01
SIO2				0.00	
CALCULATED DATA					
HARDNESS	4675	4400	4950	2	389
NC HARDNESS	0	0	0	5	0
SAR	26	24	28	2	3
IONIC RATIOS(%)					
NA+K	86	64	100	5	19
CA	8	8	9	2	1
MG	26	25	26	2	1
HCO3+CO3	3	3	3	2	0
CL	10	10	11	2	0
SO4	95	86	100	5	8
TDS(SUM)	17531.7	11880.1	20233.3	5.0	3411.3
TDS(SUM)/SP COND	0.82	0.67	0.94	5.00	0.11
TDS(CALC)	18264.8	16603.3	19926.3	2.0	2349.7
TDS/TDS(CALC)	0.96	0.92	1.00	2.00	0.06
TOTAL CATIONS	218.71	125.29	299.27	5.00	63.72
TOTAL ANIONS	269.37	187.38	312.30	5.00	50.95
CAT-AN BALANCE	-11.42	-20.90	-0.50	5.00	9.94

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =SURFACE MINE(1) WELL=SM1-1 WATER BEARING UNIT =CAL

	RAW DATA				
	20MAR86	30JUN86	04SEP86	15SEP86	23DEC86
WATER DEPTH	2.3	3.2	3.7		
WATER LEVEL ELEV	6068.0	6067.1	6066.6		
SP COND - LAB					
PH - LAB					
TDS	21996.0	21143.0		25531.0	36488.0
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00		0.00	0.00
ANIONS					
HCO3	1058.96	1091.90		1063.34	1651.88
CO3	0.00	0.00		0.00	0.00
CL	839.00	760.00		1066.00	1140.00
SO4	15500	15000		16500	24000
NO3(N)	1.34	4.07		4.15	33.80
CATIONS					
NA	5350.00	4810.00		5220.00	7500.00
K	43.00	36.00		45.00	85.80
CA	404.00	460.00		380.00	448.00
MG	1462.00	1573.00		1797.00	2444.00
FE,TOT		0.16		0.26	0.45
MN		1.00		1.13	1.12
TRACE IONS					
AS	0.00	0.00		0.00	0.00
B	0.74	0.99		0.90	1.61
BA	0.00	0.00		0.00	0.10
CD	0.00	0.00		0.00	0.00
CR	0.00	0.08		0.00	0.05
CU	0.07	0.04		0.14	0.09
HG	0.00	0.00		0.00	0.00
MO	0.00	0.20		0.00	0.20
NI	0.00	0.06		0.06	0.05
PB	0.00	0.00		0.00	0.05
SE	0.00	0.01		0.01	0.01
SR					
ZN	0.01	0.02		0.01	0.09
OTHER IONS					
AL	0.00	0.00		0.00	0.05
F	0.30	0.27		0.22	0.24
FE,DISS	0.88				
S	0.40	0.20		0.00	0.10
NH3(N)	0.08	0.17		0.10	0.50
NO2(N)	0.66	0.93		0.85	0.20
P-ORTHO					0.06
P,TOT	0.13	0.10		0.06	
SIO2					
CALCULATED DATA					
HARDNESS	7020	7620		8340	11170
NC HARDNESS	0				
SAR	28	24		25	31
IONIC RATIOS(%)					
NA+K	62	58		58	60
CA	5	6		5	4
MG	32	36		37	36
HCO3+CO3	5	5		4	5
CL	7	6		8	6
SO4	89	89		88	89
TDS(SUM)	24661.1	23738.6		26079.6	37307.5
TDS(SUM)/SP COND					
TDS(CALC)	24122.8	23183.6		25538.9	36467.8
TDS/TDS(CALC)	0.91	0.91		1.00	1.00
TOTAL CATIONS	374.28	362.55		395.05	551.90
TOTAL ANIONS	363.90	352.01		391.41	561.36
CAT-AN BALANCE	1.40	1.50		0.50	-0.80

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =SURFACE MINE(I) WELL=SM1-1 WATER BEARING UNIT =CAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	3.1	2.3	3.7	3.0	0.7
WATER LEVEL ELEV	6067.2	6066.6	6068.0	3.0	0.7
SP COND - LAB				0	
PH - LAB				0.0	
TDS	26289.5	21143.0	36488.0	4.0	7059.4
ACIDITY,TOT	0.00	0.00	0.00	1.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	4.00	0.00
ANIONS					
HCO3	1216.64	1058.96	1651.88	4.00	290.52
CO3	0.00	0.00	0.00	4.00	0.00
CL	951.25	760.00	1140.00	4.00	180.71
SO4	17750	15000	24000	4.00	4213.07
NO3(N)	10.84	1.34	33.80	4.00	15.36
CATIONS					
NA	5720.00	4810.00	7500.00	4.00	1208.77
K	52.45	36.00	85.80	4.00	22.57
CA	423.00	380.00	460.00	4.00	37.43
MG	1819.00	1462.00	2444.00	4.00	439.35
FE,TOT	0.29	0.16	0.45	3.00	0.15
MN	1.08	1.00	1.13	3.00	0.07
TRACE IONS					
AS	0.00	0.00	0.00	4.00	0.00
B	1.06	0.74	1.61	4.00	0.38
BA	0.02	0.00	0.10	4.00	0.05
CD	0.00	0.00	0.00	4.00	0.00
CR	0.03	0.00	0.08	4.00	0.04
CU	0.08	0.04	0.14	4.00	0.04
HG	0.00	0.00	0.00	4.00	0.00
MO	0.10	0.00	0.20	4.00	0.12
NI	0.04	0.00	0.06	4.00	0.03
PB	0.01	0.00	0.05	4.00	0.02
SE	0.01	0.00	0.01	4.00	0.00
SR				0.00	
ZN	0.03	0.01	0.09	4.00	0.04
OTHER IONS					
AL	0.01	0.00	0.05	4.00	0.02
F	0.26	0.22	0.30	4.00	0.04
FE,DISS	0.88	0.88	0.88	1.00	
S	0.17	0.00	0.40	4.00	0.17
NH3(N)	0.21	0.08	0.50	4.00	0.20
NO2(N)	0.66	0.20	0.93	4.00	0.33
P-ORTHO	0.06	0.06	0.06	1.00	
P,TOT	0.10	0.06	0.13	3.00	0.04
SIO2				0.00	
CALCULATED DATA					
HARDNESS	8538	7020	11170	4	1836
NC HARDNESS	0	0	0	1	
SAR	27	24	31	4	3
IONIC RATIOS(%)					
NA+K	59	58	62	4	2
CA	5	4	6	4	1
MG	35	32	37	4	2
HCO3+CO3	5	4	5	4	0
CL	7	6	8	4	1
SO4	39	88	89	4	1
TDS(SUM)	27946.7	23738.6	37307.5	4.0	6314.4
TDS(SUM)/SP COND				0.00	
TDS(CALC)	27328.3	23183.6	36467.8	4.0	6169.5
TDS/TDS(CALC)	0.96	0.91	1.00	4.00	0.05
TOTAL CATIONS	420.95	362.55	551.90	4.00	88.33
TOTAL ANIONS	417.17	352.01	561.36	4.00	97.53
CAT-AN BALANCE	0.65	-0.80	1.50	4.00	1.07

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
#####

MONITORING AREA =SURFACE MINE(1) WELL=SM1-2 WATER BEARING UNIT =CAL

	RAW DATA				
	13MAR86	30JUN86	04SEP86	15SEP86	23DEC86
WATER DEPTH	0.2	-2.1	-1.6		
WATER LEVEL ELEV	6048.0	6050.3	6049.8		
SP COND - LAB					
PH - LAB					
TDS	6928.0	2863.0		1243.0	6926.0
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00		0.00	0.00
ANIONS					
HCO3	761.28			529.26	847.90
CO3	0.00	322.80		0.00	0.00
CL	172.00	0.00		40.00	143.00
SO4	4700.00	1600.00		550.00	4200.00
NO3(N)	0.02	0.15		0.19	1.35
CATIONS					
NA	855.00	529.00		234.00	740.00
K	14.00	13.00		9.00	99.10
CA	392.00	148.00		60.00	340.00
MG	710.00	179.00		90.00	667.60
FE,TOT		0.25		5.32	46.90
MN		0.34		0.55	2.85
TRACE IONS					
AS	0.00	0.00		0.01	0.03
B	0.22	0.35		0.41	0.61
BA	0.00	0.00		0.00	0.10
CD	0.00	0.00		0.00	0.00
CR	0.08	0.00		0.00	0.05
CU	0.04	0.00		0.00	0.05
HG	0.00	0.00		0.00	0.00
MO	0.00	0.00		0.00	0.20
NI	0.00	0.00		0.00	0.05
PB	0.00	0.00		0.00	0.05
SE	0.00	0.00		0.00	0.00
SR					
ZN	0.02	0.01		0.02	0.18
OTHER IONS					
AL	0.00	0.00		0.00	0.05
F	0.35	0.63		0.66	0.40
FE,DISS	0.10				
S	0.20	0.00		0.00	0.20
NH3(N)	0.00	0.09		0.07	0.50
NO2(N)	0.06	0.14		0.16	0.85
P-ORTHO					0.10
P,TOT	0.11	0.07		0.17	
SIO2					
CALCULATED DATA					
HARDNESS	3900	1108		520	3595
NC HARDNESS	2				
SAR	6	7		5	5
IONIC RATIOS(%)					
NA+K	33	51		50	33
CA	17	16		14	16
MG	51	32		36	52
HCO3+CO3	11	24		41	13
CL	4	0		5	4
SO4	85	76		54	83
TDS(SUM)	7605.3	2793.7		1518.7	7091.0
TDS(SUM)/SP COND					
TDS(CALC)	7218.3			1250.2	6660.0
TDS/TDS(CALC)	0.96			0.99	1.04
TOTAL CATIONS	115.52	45.47		21.02	108.39
TOTAL ANIONS	115.21	44.13		21.30	105.56
CAT-AN BALANCE	0.10	1.50		-0.70	1.30

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =SURFACE MINE(1) WELL=SM1-2 WATER BEARING UNIT =CAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	-1.2	-2.1	0.2	3.0	1.2
WATER LEVEL ELEV	6049.4	6048.0	6050.3	3.0	1.2
SP COND - LAB				0	
PH - LAB				0.0	
TDS	4490.0	1243.0	6928.0	4.0	2890.7
ACIDITY,TOT	0.00	0.00	0.00	1.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	4.00	0.00
ANIONS					
HCO3	712.48	528.26	847.90	3.00	165.31
CO3	80.70	0.00	322.80	4.00	161.40
CL	88.75	0.00	172.00	4.00	81.91
SO4	2762.50	550.00	4700.00	4.00	2005.57
NO3(N)	0.43	0.02	1.35	4.00	0.62
CATIONS					
NA	589.50	234.00	855.00	4.00	272.75
K	33.77	9.00	99.10	4.00	43.60
CA	235.00	60.00	392.00	4.00	156.92
MG	411.65	90.00	710.00	4.00	322.55
FE,TOT	17.49	0.25	46.90	3.00	25.60
MN	1.25	0.34	2.85	3.00	1.39
TRACE IONS					
AS	0.01	0.00	0.03	4.00	0.01
B	0.40	0.22	0.61	4.00	0.16
BA	0.02	0.00	0.10	4.00	0.05
CD	0.00	0.00	0.00	4.00	0.00
CR	0.03	0.00	0.08	4.00	0.04
CU	0.02	0.00	0.05	4.00	0.03
HG	0.00	0.00	0.00	4.00	0.00
MO	0.05	0.00	0.20	4.00	0.10
NI	0.01	0.00	0.05	4.00	0.02
PB	0.01	0.00	0.05	4.00	0.02
SE	0.00	0.00	0.00	4.00	0.00
SR				0.00	
ZN	0.06	0.01	0.18	4.00	0.08
OTHER IONS					
AL	0.01	0.00	0.05	4.00	0.02
F	0.51	0.35	0.66	4.00	0.16
FE,DISS	0.10	0.10	0.10	1.00	
S	0.10	0.00	0.20	4.00	0.12
NH3(N)	0.16	0.00	0.50	4.00	0.23
NO2(N)	0.30	0.06	0.85	4.00	0.37
P-ORTHO	0.10	0.10	0.10	1.00	
P,TOT	0.12	0.07	0.17	3.00	0.05
SIO2				0.00	
CALCULATED DATA					
HARDNESS	2281	520	3900	4	1715
NC HARDNESS	2	2	2	1	
SAR	6	5	7	4	1
IONIC RATIOS(%)					
NA+K	42	33	51	4	10
CA	16	14	17	4	1
MG	43	32	52	4	10
HCO3+CO3	22	11	41	4	14
CL	3	0	5	4	2
SO4	74	54	85	4	14
TDS(SUM)	4752.2	1518.7	7605.3	4.0	3049.6
TDS(SUM)/SP COND				0.00	
TDS(CALC)	5042.9	1250.2	7218.3	3.0	3296.4
TDS/TDS(CALC)	1.00	0.96	1.04	3.00	0.04
TOTAL CATIONS	72.60	21.02	115.52	4.00	46.62
TOTAL ANIONS	71.55	21.30	115.21	4.00	45.97
CAT-AN BALANCE	0.55	-0.70	1.50	4.00	1.04

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =SURFACE MINE(1) WELL=SM1-3 WATER BEARING UNIT =CAL

	RAW DATA				
	13MAR86	30JUN86	04SEP86	15SEP86	23DEC86
WATER DEPTH	7.8	7.5	7.4		
WATER LEVEL ELEV	6048.2	6048.5	6048.6		
SP COND - LAB					
PH - LAB					
TDS	53563.0	59522.0		59611.0	59130.0
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00		0.00	0.00
ANIONS					
HCO3	818.62			835.70	878.40
CO3	0.00	407.40		0.00	0.00
CL	1540.00	0.00		1640.00	1376.00
SO4	37500	40000		40000	41000
NO3(N)	3.50	7.23		7.47	36.80
CATIONS					
NA	14550	14870		14580	15440
K	93.00	106.00		120.00	30.30
CA	488.00	480.00		440.00	448.00
MG	2544.00	2439.00		2420.00	2437.00
FE,TOT		0.18		0.22	3.61
MN	0.46	0.57		0.87	1.33
TRACE IONS					
AS	0.00	0.00		0.00	0.00
B	0.15	0.40		0.19	0.67
BA	0.00	0.00		0.00	0.10
CD	0.00	0.00		0.00	0.00
CR	0.26	0.16		0.00	0.05
CU	0.15	0.10		0.16	0.13
HG	0.00	0.00		1.98	0.00
MO	0.22	0.20		0.00	0.20
NI	0.00	0.00		0.00	0.05
PB	0.00	0.00		0.00	0.05
SE	0.01	0.00		0.00	0.01
SR					
ZN	0.04	0.03		0.03	0.12
OTHER IONS					
AL	0.00	0.00		0.00	0.05
F	0.59	0.64		0.60	0.59
FE,DISS	0.46				
S	0.20	0.40		0.00	0.10
NH3(N)	0.06	0.23		0.25	0.50
NO2(N)	5.50	1.27		0.53	3.20
P-ORTHO					0.06
P,TOT	0.13	0.07		0.03	
SIO2					
CALCULATED DATA					
HARDNESS	11680	11230		11050	11140
NC HARDNESS	0				
SAR	59	61		60	64
IONIC RATIOS(%)					
NA+K	73	74		74	75
CA	3	3		3	2
MG	24	23		23	22
HCO3+CO3	2	2		2	2
CL	5	0		5	4
SO4	93	98		93	94
TDS(SUM)	57544.9	58313.0		60047.8	61656.4
TDS(SUM)/SP COND					
TDS(CALC)	57128.8			59623.0	61209.9
TDS/TDS(CALC)	0.94			1.00	0.97
TOTAL CATIONS	868.96	874.17		858.36	895.42
TOTAL ANIONS	838.29	847.02		893.37	909.73
CAT-AN BALANCE	1.30	1.60		-2.00	-0.80

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =SURFACE MINE(1) WELL=SM1-3 WATER BEARING UNIT =CAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	7.6	7.4	7.8	3.0	0.2
WATER LEVEL ELEV	6048.4	6048.2	6048.6	3.0	0.2
SP COND - LAB				0	
PH - LAB				0.0	
TDS	57957.8	53568.0	59611.0	4.0	2934.0
ACIDITY,TOT	0.00	0.00	0.00	1.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	4.00	0.00
ANIONS					
HCO3	844.24	818.62	878.40	3.00	30.79
CO3	101.85	0.00	407.40	4.00	203.70
CL	1139.00	0.00	1640.00	4.00	767.09
SO4	39625	37500	41000	4.00	1493.04
NO3(N)	13.75	3.50	36.80	4.00	15.47
CATIONS					
NA	14860	14550	15440	4.00	412.71
K	87.32	30.30	120.00	4.00	39.58
CA	464.00	440.00	488.00	4.00	23.55
MG	2460.00	2420.00	2544.00	4.00	56.65
FE,TOT	1.34	0.18	3.61	3.00	1.97
MN	0.31	0.46	1.33	4.00	0.39
TRACE IONS					
AS	0.00	0.00	0.00	4.00	0.00
B	0.35	0.15	0.67	4.00	0.24
BA	0.02	0.00	0.10	4.00	0.05
CD	0.00	0.00	0.00	4.00	0.00
CR	0.12	0.00	0.26	4.00	0.12
CU	0.13	0.10	0.16	4.00	0.03
HG	0.50	0.00	1.98	4.00	0.99
MO	0.15	0.00	0.22	4.00	0.10
NI	0.01	0.00	0.05	4.00	0.02
PB	0.01	0.00	0.05	4.00	0.02
SE	0.01	0.00	0.01	4.00	0.00
SR				0.00	
ZN	0.05	0.03	0.12	4.00	0.04
OTHER IONS					
AL	0.01	0.00	0.05	4.00	0.02
F	0.60	0.59	0.64	4.00	0.02
FE,DISS	0.46	0.46	0.46	1.00	
S	0.17	0.00	0.40	4.00	0.17
NH3(N)	0.26	0.06	0.50	4.00	0.18
NO2(N)	2.62	0.53	5.50	4.00	2.22
P-ORTHO	0.06	0.06	0.06	1.00	
P,TOT	0.08	0.03	0.13	3.00	0.05
SIO2				0.00	
CALCULATED DATA					
HARDNESS	11275	11050	11680	4	280
NC HARDNESS	0	0	0	1	
SAR	61	59	64	4	2
IONIC RATIOS(%)					
NA+K	74	73	75	4	1
CA	3	2	3	4	0
MG	23	22	24	4	1
HCO3+CO3	2	2	2	4	0
CL	4	0	5	4	2
SO4	95	93	98	4	2
TDS(SUM)	59390.5	57544.9	61656.4	4.0	1837.9
TDS(SUM)/SP COND				0.00	
TDS(CALC)	59320.5	57123.8	61209.9	3.0	2057.3
TDS/TDS(CALC)	0.97	0.94	1.00	3.00	0.03
TOTAL CATIONS	874.23	858.36	895.42	4.00	15.58
TOTAL ANIONS	872.10	838.29	909.73	4.00	34.83
CAT-AN BALANCE	0.15	-2.00	1.80	4.00	1.86

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL

*****

MONITORING AREA =SURFACE MINE(1) WELL=SM1-4 WATER BEARING UNIT =CAL

	RAW DATA				
	20MAR86	30JUN86	04SEP86	15SEP86	23DEC86
WATER DEPTH	16.2	3.6	10.9		
WATER LEVEL ELEV	5923.0	5935.6	5928.3		
SP COND - LAB					
PH - LAB					
TDS	3520.0	2372.0		2441.0	2031.0
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL					
NONCARBONATE	0.00	0.00		0.00	0.00
ANIONS					
HCO3	395.28	425.78		416.02	397.72
CO3	0.00	0.00		0.00	0.00
CL	66.00	50.00		51.00	36.00
SO4	2100.00	1400.00		1500.00	1200.00
NO3(N)	2.60	0.06		0.06	0.16
CATIONS					
NA	440.00	345.00		323.00	265.20
K	6.00	7.00		9.00	27.90
CA	292.00	216.00		208.00	200.00
MG	209.00	145.00		146.00	132.50
FE,TOT		0.00		0.40	8.77
MN		0.01		0.21	0.44
TRACE IONS					
AS	0.00	0.00		0.00	0.01
B	0.19	0.40		0.54	0.48
BA	0.00	0.00		0.00	0.10
CD	0.00	0.00		0.00	0.00
CR	0.00	0.00		0.00	0.05
CU	0.00	0.00		0.00	0.05
HG	0.00	0.00		0.00	0.00
MO	0.00	0.00		0.00	0.20
NI	0.00	0.00		0.00	0.05
PB	0.00	0.00		0.00	0.05
SE	0.00	0.00		0.00	0.00
SR					
ZN	0.00	0.01		0.01	0.11
OTHER IONS					
AL	0.00	0.00		0.00	0.05
F	0.44	0.64		0.70	0.60
FE,DISS	0.00				
S	0.30	0.00		0.00	2.00
NH3(N)	0.06	0.10		0.00	0.50
NO2(N)	0.00	0.01		0.00	0.14
P-ORTHO					0.06
P,TOT	0.05	0.07		0.12	
SIO2					
CALCULATED DATA					
HARDNESS	1590	1138		1120	1045
NC HARDNESS	0				
SAR	5	5		4	4
IONIC RATIOS(%)					
NA+K	38	40		39	37
CA	29	28		28	30
MG	34	31		33	33
HCO3+CO3	12	19		17	20
CL	4	4		4	3
SO4	84	78		79	77
TDS(SUM)	3511.6	2590.0		2655.1	2270.3
TDS(SUM)/SP COND					
TDS(CALC)	3310.6	2373.6		2443.6	2068.1
TDS/TDS(CALC)	1.06	1.00		1.00	0.98
TOTAL CATIONS	51.06	37.89		36.69	33.46
TOTAL ANIONS	52.27	37.58		39.53	32.57
CAT-AN BALANCE	-1.20	0.40		-3.70	1.30

FOR ALL DATA FROM 860101 THROUGH 861231

WATER BEARING UNITS: QAL=QUITCHUPAH ALLUVIUM CAL=CHRISTIANSEN ALLUVIUM BG=BLUEGATE SHALE
U=UPPER FERRON SS M=MIDDLE FERRON SS L=LOWER FERRON SS
NOTE ON WATER DEPTH: NEGATIVE VALUE INDICATES A FLOWING WELL
*****

MONITORING AREA =SURFACE MINE(1) WELL=SM1-4 WATER BEARING UNIT =CAL

	STATISTICS				
	MEAN	MIN	MAX	N	STD
WATER DEPTH	10.2	3.6	16.2	3.0	6.3
WATER LEVEL ELEV	5929.0	5923.0	5935.6	3.0	6.3
SP COND - LAB				0	
PH - LAB				0.0	
TDS	2591.0	2031.0	3520.0	4.0	644.7
ACIDITY,TOT	0.00	0.00	0.00	1.00	
ALKALINITY(CACO3)					
TOTAL				0.00	
NONCARBONATE	0.00	0.00	0.00	4.00	0.00
ANIONS					
HCO3	408.70	395.28	425.78	4.00	14.67
CO3	0.00	0.00	0.00	4.00	0.00
CL	50.75	36.00	66.00	4.00	12.26
SO4	1550.00	1200.00	2100.00	4.00	387.30
NO3(N)	0.72	0.06	2.60	4.00	1.25
CATIONS					
NA	343.30	265.20	440.00	4.00	72.72
K	12.47	6.00	27.90	4.00	10.36
CA	229.00	200.00	292.00	4.00	42.50
MG	158.13	132.50	209.00	4.00	34.47
FE,TOT	3.06	0.00	8.77	3.00	4.95
MN	0.22	0.01	0.44	3.00	0.22
TRACE IONS					
AS	0.00	0.00	0.01	4.00	0.00
B	0.40	0.19	0.54	4.00	0.15
BA	0.02	0.00	0.10	4.00	0.05
CD	0.00	0.00	0.00	4.00	0.00
CR	0.01	0.00	0.05	4.00	0.02
CU	0.01	0.00	0.05	4.00	0.02
HG	0.00	0.00	0.00	4.00	0.00
MO	0.05	0.00	0.20	4.00	0.10
NI	0.01	0.00	0.05	4.00	0.02
PB	0.01	0.00	0.05	4.00	0.02
SE	0.00	0.00	0.00	4.00	0.00
SR				0.00	
ZN	0.03	0.00	0.11	4.00	0.05
OTHER IONS					
AL	0.01	0.00	0.05	4.00	0.02
F	0.59	0.44	0.70	4.00	0.11
FE,DISS	0.00	0.00	0.00	1.00	
S	0.57	0.00	2.00	4.00	0.96
NH3(N)	0.16	0.00	0.50	4.00	0.23
NO2(N)	0.04	0.00	0.14	4.00	0.07
P-ORTHO	0.06	0.06	0.06	1.00	
P,TOT	0.08	0.05	0.12	3.00	0.04
SIO2				0.00	
CALCULATED DATA					
HARDNESS	1223	1045	1590	4	248
NC HARDNESS	0	0	0	1	
SAR	4	4	5	4	1
IONIC RATIOS(%)					
NA+K	38	37	40	4	1
CA	29	28	30	4	1
MG	33	31	34	4	1
HCO3+CO3	17	12	20	4	3
CL	4	3	4	4	0
SO4	79	77	34	4	3
TDS(SUM)	2756.7	2270.3	3511.6	4.0	530.6
TDS(SUM)/SP COND				0.00	
TDS(CALC)	2549.0	2068.1	3310.6	4.0	533.3
TDS/TDS(CALC)	1.01	0.98	1.06	4.00	0.04
TOTAL CATIONS	39.78	33.46	51.06	4.00	7.75
TOTAL ANIONS	40.49	32.57	52.27	4.00	8.39
CAT-AN BALANCE	-0.30	-3.70	1.30	4.00	2.19

WELL=AA AQUIFER=BG

DATE	READING	WLELEV
06MAR86	58.8	5910.9
27JUN86	59.0	5910.7
03SEP86	59.5	5910.2
23DEC86	60.0	5909.7

WELL=AA AQUIFER=L

DATE	READING	WLELEV
06MAR86	84.6	5884.0
27JUN86	82.9	5885.7
03SEP86	83.1	5885.5
23DEC86	87.8	5880.8

WELL=AA AQUIFER=M

DATE	READING	WLELEV
06MAR86	69.0	5900.2
27JUN86	72.5	5896.7
03SEP86	72.6	5896.6
23DEC86	91.5	5877.7

WELL=AA AQUIFER=U

DATE	READING	WLELEV
06MAR86	109.6	5860.2
27JUN86	108.8	5861.0
03SEP86	108.5	5861.3
23DEC86	109.0	5860.8

WELL=BRYANT AQUIFER=U

DATE	READING	WLELEV
02MAY86	301.6	5722.9
03SEP86	310.4	5714.1
23DEC86	318.2	5706.3

WELL=EMRIA1 AQUIFER=UM

DATE	READING	WLELEV
13MAR86	138.4	6017.3
26JUN86	138.8	6016.9
04SEP86	139.6	6016.1
23DEC86	139.5	6016.2

WELL=EMRIA2 AQUIFER=BGUML

DATE	READING	WLELEV
13MAR86	25.1	6058.3
24JUN86	27.8	6055.6
04SEP86	24.6	6058.8
23DEC86	20.2	6063.2

WELL=EMRIA3 AQUIFER=BGU

DATE	READING	WLELEV
13MAR86	70.3	6021.5
26JUN86	66.2	6025.6
04SEP86	62.9	6028.9
23DEC86	62.9	6028.9

WELL=FC346WW AQUIFER=UM

DATE	READING	WLELEV
13MAR86	64.5	6058.7
26JUN86	65.5	6057.7
04SEP86	62.5	6060.7
23DEC86	65.0	6058.2

WELL=H AQUIFER=BG

DATE	READING	WLELEV
20MAR86	32.5	6199.1
30JUN86	32.6	6199.0
04SEP86	31.8	6199.8
31DEC86	31.7	6199.9

WELL=H AQUIFER=L

DATE	READING	WLELEV
20MAR86	23.9	6206.5
30JUN86	24.2	6206.2
31DEC86	30.0	6200.4

WELL=H AQUIFER=M

DATE	READING	WLELEV
20MAR86	62.5	6167.9
30JUN86	61.8	6168.6
31DEC86	73.4	6157.0

WELL=H AQUIFER=U

DATE	READING	WLELEV
20MAR86	57.3	6173.1
30JUN86	57.8	6172.6
04SEP86	57.3	6173.1
31DEC86	57.0	6173.4

WELL=I AQUIFER=BG

DATE	READING	WLELEV
20MAR86	21.0	6088.6
30JUN86	21.8	6087.8
04SEP86	23.4	6086.2
31DEC86	22.4	6087.2

WELL=I AQUIFER=L

DATE	READING	WLELEV
20MAR86	13.4	6095.3
30JUN86	13.6	6095.1
04SEP86	13.0	6095.7
31DEC86	12.6	6096.1

WELL=I AQUIFER=M

DATE	READING	WLELEV
20MAR86	205.3	5903.6
30JUN86	204.6	5904.3
04SEP86	216.1	5892.8
31DEC86	222.4	5886.5

WELL=KEMMER AQUIFER=L

DATE	READING	WLELEV
12MAR86	-30.0	6316.7
24JUN86	-30.0	6316.7
04SEP86	-30.0	6316.7

WELL=KEMMERER AQUIFER=L

DATE	READING	WLELEV
23DEC86	27.0	.

WELL=LEWIS AQUIFER=U

DATE	READING	WLELEV
02MAY86	259.5	5760.9
04SEP86	265.4	5755.0
18DEC86	269.2	5751.2

WELL=MUDDY1 AQUIFER=U

DATE	READING	WLELEV
06MAR86	127.8	5940.4
30JUN86	129.0	5939.2
04SEP86	128.6	5939.6
23DEC86	128.4	5939.8

WELL=MUDDY2 AQUIFER=U

DATE	READING	WLELEV
13MAR86	90.6	5956.2
26JUN86	91.5	5955.3
04SEP86	89.0	5957.8
23DEC86	91.2	5955.6

WELL=RDA1 AQUIFER=QAL

DATE	READING	WLELEV
12MAR86	15.4	5943.1
25JUN86	14.0	5944.5
30SEP86	11.1	5947.4
18DEC86	12.0	5946.5

WELL=RDA2 AQUIFER=QAL

DATE	READING	WLELEV
12MAR86	15.2	5940.5
25JUN86	15.3	5940.4
30SEP86	15.4	5940.3
18DEC86	14.1	5941.6

WELL=RDA3 AQUIFER=QAL

DATE	READING	WLELEV
12MAR86	23.0	5923.5
25JUN86	22.0	5924.5
30SEP86	23.2	5923.3
18DEC86	22.7	5923.8

WELL=RDA4 AQUIFER=QAL

DATE	READING	WLELEV
12MAR86	22.2	5921.8
25JUN86	23.8	5920.2
30SEP86	22.5	5921.5
18DEC86	20.1	5923.9

WELL=RDA5 AQUIFER=QAL

DATE	READING	WLELEV
12MAR86	20.8	5921.6
25JUN86	21.0	5921.4
30SEP86	20.2	5922.2
18DEC86	20.7	5921.7

WELL=RDA6 AQUIFER=QAL

DATE	READING	WLELEV
12MAR86	15.0	5927.0
25JUN86	15.2	5926.8
30SEP86	15.5	5926.5
18DEC86	15.9	5926.1

WELL=R1 AQUIFER=L

DATE	READING	WLELEV
12MAR86	-295.7	6329.9
27JUN86	-272.6	6306.8
04SEP86	-272.6	6306.8
18DEC86	-263.3	6297.5

WELL=R2 AQUIFER=BG

DATE	READING	WLELEV
12MAR86	48.3	5983.4
27JUN86	45.0	5986.7
04SEP86	48.2	5983.5
18DEC86	52.2	5979.5

WELL=R2 AQUIFER=M

DATE	READING	WLELEV
12MAR86	-107.4	6138.5
27JUN86	-87.8	6118.9
04SEP86	-70.5	6101.6
18DEC86	-67.0	6098.1

WELL=R2 AQUIFER=U

DATE	READING	WLELEV
12MAR86	.	.
27JUN86	210.0	5821.7
04SEP86	210.5	5821.2
23DEC86	209.8	5821.9

WELL=SM1-1 AQUIFER=CAL

DATE	READING	WLELEV
20MAR86	3.6	6068.0
30JUN86	4.5	6067.1
04SEP86	5.0	6066.6
23DEC86	4.4	6067.2

WELL=SM1-2 AQUIFER=CAL

DATE	READING	WLELEV
13MAR86	3.8	6048.0
30JUN86	1.5	6050.3
04SEP86	2.0	6049.8
23DEC86	3.7	6048.1

WELL=SM1-3 AQUIFER=CAL

DATE	READING	WLELEV
13MAR86	8.3	6048.2
30JUN86	8.0	6048.5
04SEP86	7.9	6048.6
23DEC86	8.7	6047.8

WELL=SM1-4 AQUIFER=CAL

DATE	READING	WLELEV
20MAR86	18.6	5923.0
30JUN86	6.0	5935.6
04SEP86	13.3	5928.3
23DEC86	10.5	5931.1

WELL=TP AQUIFER=U

DATE	READING	WLELEV
12MAR86	333.8	5668.9
05SEP86	350.0	5652.7
31DEC86	357.2	5645.5

WELL=T1 AQUIFER=BG

DATE	READING	WLELEV
12MAR86	12.2	5991.0
30JUN86	12.0	5991.2
05SEP86	11.9	5991.3
31DEC86	12.4	5990.8

WELL=T1 AQUIFER=U

DATE	READING	WLELEV
12MAR86	348.0	5655.2
30JUN86	348.5	5654.7
31DEC86	358.2	5645.0

WELL=T2 AQUIFER=BG

DATE	READING	WLELEV
12MAR86	12.6	5990.4
30JUN86	13.0	5990.0
05SEP86	12.5	5990.5
31DEC86	12.5	5990.5

WELL=T2 AQUIFER=U

DATE	READING	WLELEV
12MAR86	313.9	5683.8
30JUN86	327.0	5670.7
05SEP86	333.3	5664.4
31DEC86	340.0	5657.7

WELL=USGS1-2 AQUIFER=U

DATE	READING	WLELEV
13MAR86	88.6	5957.7
24JUN86	88.4	5957.9
04SEP86	88.3	5958.0
23DEC86	88.3	5958.0

WELL=USGS4-1 AQUIFER=BG

DATE	READING	WLELEV
12MAR86	18.0	6029.5
26JUN86	18.0	6029.5
04SEP86	19.1	6028.4
23DEC86	29.2	6018.3

WELL=WW1 AQUIFER=L

DATE	READING	WLELEV
12MAR86	64.7	5855.3
30JUN86	64.9	5855.1
05SEP86	66.3	5853.7
23DEC86	65.7	5854.3

WELL=ZZ AQUIFER=L

DATE	READING	WLELEV
06MAR86	145.8	5922.9
30JUN86	146.5	5922.2
05SEP86	146.3	5922.4
23DEC86	152.3	5916.4

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SITE=S01

	RAW DATA		
	20MAY86	16JUL86	06OCT86
FLOW			
SP COND - LAB	1000	1400	1870
PH - LAB	7.2	7.8	8.0
TSS	1047.0	9898.0	1172.0
TDS	645.0	812.0	1109.0
OIL & GREASE	0.0	1.3	0.0
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	248.00	236.00	267.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	302.56	287.92	325.74
CO3	0.00	0.00	0.00
CL	22.00	33.00	44.50
SO4	270.00	450.00	560.00
NO3(N)	0.20	0.06	0.12
CATIONS			
NA	80.00	116.00	156.00
K	3.00	8.00	6.30
CA	80.00	116.00	108.00
MG	43.00	50.00	74.00
FE,DISS			
MN	0.16	1.00	0.15
OTHER IONS			
B	0.15	0.28	0.35
SR	0.82	1.80	1.32
F	0.28	0.40	0.40
FE,TOT	0.44	0.12	0.61
P-ORTHO	0.11	0.11	0.21
SIO2	4.00	5.20	5.00
CALCULATED DATA			
HARDNESS	377	495	575
NC HARDNESS			
SAR	2	2	3
IONIC RATIOS(%)			
NA+K	32	35	38
CA	36	38	29
MG	32	27	33
HCO3+CO3	44	31	29
CL	6	6	7
SO4	50	62	64
TDS(SUM)	805.8	1068.0	1281.2
TDS(SUM)/SP COND	0.81	0.76	0.69
TDS(CALC)	652.0	921.6	1115.6
TDS/TDS(CALC)	0.99	0.88	0.99
TOTAL CATIONS	11.11	15.19	18.45
TOTAL ANIONS	11.23	15.05	18.28
CAT-AN BALANCE	-0.60	0.50	0.50

FOR ALL DATA FROM 860101 THROUGH 861231

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SITE=S01

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	1423	1000	1870	3	435
PH - LAB	7.7	7.2	8.0	3.0	0.4
TSS	4039.0	1047.0	9898.0	3.0	5074.4
TDS	855.3	645.0	1109.0	3.0	235.0
OIL & GREASE	0.4	0.0	1.3	3.0	0.8
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	250.33	236.00	267.00	3.00	15.63
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	305.41	287.92	325.74	3.00	19.07
CO3	0.00	0.00	0.00	3.00	0.00
CL	33.17	22.00	44.50	3.00	11.25
SO4	426.67	270.00	560.00	3.00	146.40
NO3(N)	0.13	0.06	0.20	3.00	0.07
CATIONS					
NA	117.33	80.00	156.00	3.00	38.02
K	5.77	3.00	8.00	3.00	2.54
CA	101.33	80.00	116.00	3.00	18.90
MG	55.67	43.00	74.00	3.00	16.26
FE,DISS				0.00	
MN	0.44	0.15	1.00	3.00	0.49
OTHER IONS					
B	0.26	0.15	0.35	3.00	0.10
SR	1.31	0.82	1.80	3.00	0.49
F	0.36	0.28	0.40	3.00	0.07
FE,TOT	0.39	0.12	0.61	3.00	0.25
P-ORTHO	0.14	0.11	0.21	3.00	0.06
SIO2	4.73	4.00	5.20	3.00	0.64
CALCULATED DATA					
HARDNESS	482	377	575	3	100
NC HARDNESS				0	
SAR	2	2	3	3	1
IONIC RATIOS(%)					
NA+K	35	32	38	3	3
CA	34	29	38	3	5
MG	31	27	33	3	3
HCO3+CO3	35	29	44	3	8
CL	6	6	7	3	1
SO4	59	50	64	3	8
TDS(SUM)	1051.6	805.8	1281.2	3.0	238.1
TDS(SUM)/SP COND	0.75	0.69	0.81	3.00	0.06
TDS(CALC)	896.4	652.0	1115.6	3.0	232.8
TDS/TDS(CALC)	0.95	0.88	0.99	3.00	0.06
TOTAL CATIONS	14.92	11.11	18.45	3.00	3.68
TOTAL ANIONS	14.85	11.23	18.28	3.00	3.53
CAT-AN BALANCE	0.13	-0.60	0.50	3.00	0.64

FOR ALL DATA FROM 860101 THROUGH 861231

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SITE=SO2

	RAW DATA		
	20MAY86	16JUL86	06OCT86
FLOW			
SP COND - LAB	1400	2000	920
PH - LAB	7.2	7.5	7.6
TSS	2540.0	6390.0	3460.0
TDS	916.0	1274.0	629.0
OIL & GREASE			
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	252.00	259.00	227.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	307.44	315.98	276.94
CO3	0.00	0.00	0.00
CL	19.00	33.00	15.30
SO4	460.00	750.00	280.00
NO3(N)	0.74	0.16	0.21
CATIONS			
NA	134.00	190.00	80.00
K	5.00	11.00	3.00
CA	86.00	128.00	68.00
MG	61.00	87.00	47.00
FE,DISS			
MN	0.36	1.04	0.28
OTHER IONS			
B	0.15	0.28	0.14
SR	0.84	1.70	0.78
F	0.29	0.33	0.31
FE,TOT	0.94	0.70	0.45
P-ORTHO	0.17	0.18	0.24
SIO2	4.60	5.80	4.00
CALCULATED DATA			
HARDNESS	465	678	365
NC HARDNESS			
SAR	3	3	2
IONIC RATIOS(%)			
NA+K	39	39	33
CA	28	29	31
MG	33	32	36
HCO3+CO3	33	24	42
CL	4	4	4
SO4	63	72	54
TDS(SUM)	1079.5	1523.3	775.6
TDS(SUM)/SP COND	0.77	0.76	0.84
TDS(CALC)	923.2	1362.7	634.9
TDS/TDS(CALC)	0.99	0.93	0.99
TOTAL CATIONS	15.31	22.15	10.84
TOTAL ANIONS	15.22	21.75	10.83
CAT-AN BALANCE	0.30	0.90	0.00

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SITE=S02

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	1440	920	2000	3	541
PH - LAB	7.4	7.2	7.6	3.0	0.2
TSS	4130.0	2540.0	6390.0	3.0	2010.5
TDS	939.7	629.0	1274.0	3.0	323.2
OIL & GREASE				0.0	
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	246.00	227.00	259.00	3.00	16.82
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	300.12	276.94	315.98	3.00	20.52
CO3	0.00	0.00	0.00	3.00	0.00
CL	22.43	15.30	33.00	3.00	9.34
SO4	496.67	280.00	750.00	3.00	237.14
NO3(N)	0.37	0.16	0.74	3.00	0.32
CATIONS					
NA	134.67	80.00	190.00	3.00	55.00
K	6.33	3.00	11.00	3.00	4.16
CA	94.00	68.00	128.00	3.00	30.79
MG	65.00	47.00	87.00	3.00	20.30
FE,DISS				0.00	
MN	0.56	0.28	1.04	3.00	0.42
OTHER IONS					
B	0.19	0.14	0.28	3.00	0.08
SR	1.11	0.78	1.70	3.00	0.51
F	0.31	0.29	0.33	3.00	0.02
FE,TOT	0.70	0.45	0.94	3.00	0.25
P-ORTHO	0.20	0.17	0.24	3.00	0.04
SIO2	4.80	4.00	5.80	3.00	0.92
CALCULATED DATA					
HARDNESS	503	365	678	3	160
NC HARDNESS				0	
SAR	3	2	3	3	1
IONIC RATIOS(%)					
NA+K	37	33	39	3	3
CA	29	28	31	3	2
MG	34	32	36	3	2
HCO3+CO3	33	24	42	3	9
CL	4	4	4	3	0
SO4	63	54	72	3	9
TDS(SUM)	1126.1	775.6	1523.3	3.0	376.0
TDS(SUM)/SP COND	0.79	0.76	0.84	3.00	0.04
TDS(CALC)	973.6	634.9	1362.7	3.0	366.5
TDS/TDS(CALC)	0.97	0.93	0.99	3.00	0.03
TOTAL CATIONS	16.10	10.84	22.15	3.00	5.70
TOTAL ANIONS	15.94	10.83	21.75	3.00	5.50
CAT-AN BALANCE	0.40	0.00	0.90	3.00	0.46

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SITE=S03

	RAW DATA		
	20MAY86	17JUL86	06OCT86
FLOW			
SP COND - LAB	1150	1990	1420
PH - LAB	7.4	8.0	7.8
TSS	1754.0	1866.0	2078.0
TDS	744.0	1158.0	1026.0
OIL & GREASE			
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	243.00	283.00	255.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	296.46	345.26	311.10
CO3	0.00	0.00	0.00
CL	24.00	44.00	33.80
SO4	340.00	680.00	520.00
NO3(N)	0.33	0.02	0.13
CATIONS			
NA	103.00	193.00	158.00
K	4.00	10.00	4.60
CA	78.00	116.00	88.00
MG	49.00	81.00	68.00
FE,DISS			
MN	0.36	0.31	0.19
OTHER IONS			
B	0.19	0.86	0.30
SR	0.97	1.30	1.34
F	0.32	0.39	0.39
FE,TOT	0.30	0.22	0.65
P-ORTHO	0.14	0.14	0.28
SIO2	4.20	6.20	4.60
CALCULATED DATA			
HARDNESS	397	623	500
NC HARDNESS			
SAR	2	3	3
IONIC RATIOS(%)			
NA+K	37	41	41
CA	31	27	26
MG	32	32	33
HCO3+CO3	39	27	30
CL	5	6	6
SO4	56	67	64
TDS(SUM)	900.2	1477.3	1189.8
TDS(SUM)/SP COND	0.78	0.74	0.84
TDS(CALC)	749.5	1301.8	1031.6
TDS/TDS(CALC)	0.99	0.89	0.99
TOTAL CATIONS	12.53	21.12	17.01
TOTAL ANIONS	12.66	21.08	16.91
CAT-AN BALANCE	-0.50	0.10	0.30

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SITE=S03

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	1520	1150	1990	3	429
PH - LAB	7.7	7.4	8.0	3.0	0.3
TSS	1899.3	1754.0	2078.0	3.0	164.6
TDS	976.0	744.0	1158.0	3.0	211.5
OIL & GREASE				0.0	
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	260.33	243.00	283.00	3.00	20.53
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	317.61	296.46	345.26	3.00	25.04
CO3	0.00	0.00	0.00	3.00	0.00
CL	33.93	24.00	44.00	3.00	10.00
SO4	513.33	340.00	680.00	3.00	170.10
NO3(N)	0.16	0.02	0.33	3.00	0.16
CATIONS					
NA	151.33	103.00	193.00	3.00	45.37
K	6.20	4.00	10.00	3.00	3.30
CA	94.00	78.00	116.00	3.00	19.70
MG	66.00	49.00	81.00	3.00	16.09
FE,DISS				0.00	
MN	0.29	0.19	0.36	3.00	0.09
OTHER IONS					
B	0.45	0.19	0.86	3.00	0.36
SR	1.20	0.97	1.34	3.00	0.20
F	0.37	0.32	0.39	3.00	0.04
FE,TOT	0.39	0.22	0.65	3.00	0.23
P-ORTHO	0.19	0.14	0.28	3.00	0.08
SIO2	5.00	4.20	6.20	3.00	1.06
CALCULATED DATA					
HARDNESS	507	397	623	3	113
NC HARDNESS				0	
SAR	3	2	3	3	1
IONIC RATIOS(%)					
NA+K	40	37	41	3	3
CA	28	26	31	3	3
MG	32	32	33	3	1
HCO3+CO3	32	27	39	3	6
CL	6	5	6	3	0
SO4	62	56	67	3	6
TDS(SUM)	1189.1	900.2	1477.3	3.0	288.6
TDS(SUM)/SP COND	0.79	0.74	0.84	3.00	0.05
TDS(CALC)	1027.6	749.5	1301.8	3.0	276.2
TDS/TDS(CALC)	0.96	0.89	0.99	3.00	0.06
TOTAL CATIONS	16.89	12.53	21.12	3.00	4.30
TOTAL ANIONS	16.88	12.66	21.08	3.00	4.21
CAT-AN BALANCE	-0.03	-0.50	0.30	3.00	0.42

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SITE=S04

	RAW DATA		
	20MAY86	17JUL86	06OCT86
FLOW			
SP COND - LAB	1500	1710	2280
PH - LAB	7.6	7.8	7.9
TSS	989.0	5136.0	1932.0
TDS	968.0	1004.0	1164.0
OIL & GREASE	0.0	0.5	0.0
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	257.00	257.00	303.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	313.54	313.54	369.66
CO3	0.00	0.00	0.00
CL	36.00	43.00	66.20
SO4	465.00	550.00	900.00
NO3(N)	0.22	0.03	0.10
CATIONS			
NA	174.00	160.00	298.00
K	4.00	8.00	8.30
CA	84.00	118.00	112.00
MG	51.00	61.00	98.00
FE,DISS			
MN	0.16	0.51	0.12
OTHER IONS			
B	0.19	0.39	0.50
SR	1.45	1.50	2.52
F	0.38	0.41	0.49
FE,TOT	0.53	0.75	0.58
P-ORTHO	0.08	0.10	0.30
SIO2	4.50	5.20	5.30
CALCULATED DATA			
HARDNESS	421	545	685
NC HARDNESS			
SAR	4	3	5
IONIC RATIOS(%)			
NA+K	48	40	49
CA	26	33	21
MG	26	28	30
HCO3+CO3	32	29	23
CL	6	7	7
SO4	61	64	70
TDS(SUM)	1133.5	1260.8	1859.2
TDS(SUM)/SP COND	0.76	0.74	0.82
TDS(CALC)	974.1	1101.5	1671.4
TDS/TDS(CALC)	0.99	0.91	0.70
TOTAL CATIONS	16.08	18.12	26.85
TOTAL ANIONS	15.87	17.83	26.70
CAT-AN BALANCE	0.70	0.80	0.30

FOR ALL DATA FROM 860101 THROUGH 861231

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SITE=S04

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	1830	1500	2280	3	404
PH - LAB	7.8	7.6	7.9	3.0	0.2
TSS	2685.7	989.0	5136.0	3.0	2173.8
TDS	1045.3	968.0	1164.0	3.0	104.3
OIL & GREASE	0.2	0.0	0.5	3.0	0.3
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	272.33	257.00	303.00	3.00	26.56
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	332.25	313.54	369.66	3.00	32.40
CO3	0.00	0.00	0.00	3.00	0.00
CL	48.40	36.00	66.20	3.00	15.81
SO4	638.33	465.00	900.00	3.00	230.56
NO3(N)	0.12	0.03	0.22	3.00	0.10
CATIONS					
NA	210.67	160.00	298.00	3.00	75.96
K	6.77	4.00	8.30	3.00	2.40
CA	104.67	84.00	118.00	3.00	18.15
MG	70.00	51.00	98.00	3.00	24.76
FE,DISS				0.00	
MN	0.26	0.12	0.51	3.00	0.21
OTHER IONS					
B	0.36	0.19	0.50	3.00	0.16
SR	1.82	1.45	2.52	3.00	0.60
F	0.43	0.38	0.49	3.00	0.06
FE,TOT	0.62	0.53	0.75	3.00	0.12
P-ORTHO	0.16	0.08	0.30	3.00	0.12
SIO2	5.00	4.50	5.30	3.00	0.44
CALCULATED DATA					
HARDNESS	550	421	685	3	132
NC HARDNESS				0	
SAR	4	3	5	3	1
IONIC RATIOS(%)					
NA+K	46	40	49	3	5
CA	27	21	33	3	6
MG	28	26	30	3	2
HCO3+CO3	28	23	32	3	5
CL	7	6	7	3	0
SO4	65	61	70	3	5
TDS(SUM)	1417.9	1133.5	1859.2	3.0	387.5
TDS(SUM)/SP COND	0.77	0.74	0.82	3.00	0.04
TDS(CALC)	1249.0	974.1	1671.4	3.0	371.3
TDS/TDS(CALC)	0.87	0.70	0.99	3.00	0.15
TOTAL CATIONS	20.35	16.08	26.85	3.00	5.72
TOTAL ANIONS	20.13	15.87	26.70	3.00	5.77
CAT-AN BALANCE	0.60	0.30	0.80	3.00	0.26

EMERY MINE SURFACE WATER MONITORING REPORT
FOR ALL DATA FROM 860101 THROUGH 861231

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SITE=S05

	RAW DATA		
	21MAY86	17JUL86	06OCT86
FLOW			
SP COND - LAB	1000	2190	980
PH - LAB	7.3	8.2	7.9
TSS	2199.0	191.0	2678.0
TDS	628.0	1417.0	656.0
OIL & GREASE			
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	234.00	306.00	229.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	285.48	373.32	279.38
CO3	0.00	0.00	0.00
CL	13.00	45.00	16.40
SO4	280.00	800.00	300.00
NO3(N)	0.42	0.03	0.24
CATIONS			
NA	69.00	220.00	79.00
K	4.00	11.00	2.70
CA	74.00	110.00	68.00
MG	48.00	105.00	53.00
FE,DISS			
MN	0.53	0.09	0.28
OTHER IONS			
B	0.13	0.28	0.22
SR	0.81	1.10	0.84
F	0.30	0.36	0.33
FE,TOT	0.54	0.73	0.83
P-ORTHO	0.12	0.09	0.37
SIO2	4.40	7.10	4.10
CALCULATED DATA			
HARDNESS	382	708	390
NC HARDNESS			
SAR	2	4	2
IONIC RATIOS(%)			
NA+K	29	41	31
CA	34	23	30
MG	37	36	39
HCO3+CO3	43	25	41
CL	3	5	4
SO4	54	69	55
TDS(SUM)	779.8	1672.9	804.5
TDS(SUM)/SP COND	0.78	0.76	0.82
TDS(CALC)	634.7	1483.2	662.5
TDS/TDS(CALC)	0.99	0.96	0.99
TOTAL CATIONS	10.78	24.01	11.30
TOTAL ANIONS	10.92	24.07	11.32
CAT-AN BALANCE	-0.60	-0.10	-0.10

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SITE=S05

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	1390	980	2190	3	693
PH - LAB	7.8	7.3	8.2	3.0	0.5
TSS	1689.3	191.0	2678.0	3.0	1319.5
TDS	900.3	628.0	1417.0	3.0	447.7
OIL & GREASE				0.0	
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	256.33	229.00	306.00	3.00	43.09
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	312.73	279.38	373.32	3.00	52.56
CO3	0.00	0.00	0.00	3.00	0.00
CL	24.80	13.00	45.00	3.00	17.58
SO4	460.00	280.00	800.00	3.00	294.62
NO3(N)	0.23	0.03	0.42	3.00	0.20
CATIONS					
NA	122.67	69.00	220.00	3.00	84.44
K	5.90	2.70	11.00	3.00	4.46
CA	84.00	68.00	110.00	3.00	22.72
MG	68.67	48.00	105.00	3.00	31.56
FE,DISS				0.00	
MN	0.30	0.09	0.53	3.00	0.22
OTHER IONS					
B	0.21	0.13	0.28	3.00	0.08
SR	0.92	0.81	1.10	3.00	0.16
F	0.33	0.30	0.36	3.00	0.03
FE,TOT	0.70	0.54	0.83	3.00	0.15
P-ORTHO	0.19	0.09	0.37	3.00	0.15
SIO2	5.20	4.10	7.10	3.00	1.65
CALCULATED DATA					
HARDNESS	493	382	708	3	186
NC HARDNESS				0	
SAR	2	2	4	3	1
IONIC RATIOS(%)					
NA+K	34	29	41	3	6
CA	29	23	34	3	6
MG	37	36	39	3	1
HCO3+CO3	36	25	43	3	10
CL	4	3	5	3	1
SO4	59	54	69	3	9
TDS(SUM)	1085.7	779.8	1672.9	3.0	508.7
TDS(SUM)/SP COND	0.79	0.76	0.82	3.00	0.03
TDS(CALC)	926.8	634.7	1483.2	3.0	482.0
TDS/TDS(CALC)	0.98	0.96	0.99	3.00	0.02
TOTAL CATIONS	15.36	10.78	24.01	3.00	7.49
TOTAL ANIONS	15.44	10.92	24.07	3.00	7.48
CAT-AN BALANCE	-0.27	-0.60	-0.10	3.00	0.29

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SITE=S08

	RAW DATA		
	20MAY86	16JUL86	06OCT86
FLOW			
SP COND - LAB	1900	2030	18300
PH - LAB	7.8	8.2	8.3
TSS	157.0	813.0	118.0
TDS	1297.0	1297.0	17700.0
OIL & GREASE			
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	301.00	277.00	443.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	367.22	337.94	540.46
CO3	0.00	0.00	48.00
CL	58.00	67.00	950.00
SO4	650.00	680.00	11000
NO3(N)	0.20	0.00	1.55
CATIONS			
NA	244.00	238.00	4555.00
K	7.00	9.00	31.00
CA	78.00	96.00	300.00
MG	80.00	77.00	687.00
FE,DISS			
MN	0.04	0.02	0.09
OTHER IONS			
B	0.22	0.22	0.57
SR	0.85	1.30	4.28
F	0.35	0.30	0.31
FE,TOT	0.66	0.11	0.30
P-ORTHO	0.12	0.16	0.18
SIO2	4.70	4.70	3.10
CALCULATED DATA			
HARDNESS	524	558	3575
NC HARDNESS			
SAR	5	4	33
IONIC RATIOS(%)			
NA+K	51	49	74
CA	18	22	6
MG	31	29	21
HCO3+CO3	28	26	4
CL	8	9	10
SO4	64	66	86
TDS(SUM)	1490.4	1510.3	18117.4
TDS(SUM)/SP COND	0.78	0.74	0.99
TDS(CALC)	1303.7	1338.5	17842.7
TDS/TDS(CALC)	0.99	0.97	0.99
TOTAL CATIONS	21.29	21.71	270.43
TOTAL ANIONS	21.22	21.60	266.41
CAT-AN BALANCE	0.20	0.30	0.70

FOR ALL DATA FROM 860101 THROUGH 861231

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SITE=S03

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	7410	1900	18300	3	9431
PH - LAB	8.1	7.8	8.3	3.0	0.3
TSS	362.7	118.0	813.0	3.0	390.5
TDS	6764.7	1297.0	17700.0	3.0	9470.3
OIL & GREASE				0.0	
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	340.33	277.00	443.00	3.00	89.72
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	415.21	337.94	540.46	3.00	109.46
CO3	16.00	0.00	48.00	3.00	27.71
CL	358.33	58.00	950.00	3.00	512.42
SO4	4110.00	650.00	11000	3.00	5966.93
NO3(N)	0.58	0.00	1.55	3.00	0.84
CATIONS					
NA	1679.00	238.00	4555.00	3.00	2490.69
K	15.67	7.00	31.00	3.00	13.32
CA	158.00	78.00	300.00	3.00	123.30
MG	281.33	77.00	687.00	3.00	351.32
FE,DISS				0.00	
MN	0.05	0.02	0.09	3.00	0.04
OTHER IONS					
B	0.34	0.22	0.57	3.00	0.20
SR	2.14	0.85	4.28	3.00	1.86
F	0.32	0.30	0.35	3.00	0.03
FE,TOT	0.36	0.11	0.66	3.00	0.28
P-ORTHO	0.15	0.12	0.18	3.00	0.03
SIO2	4.17	3.10	4.70	3.00	0.92
CALCULATED DATA					
HARDNESS	1552	524	3575	3	1752
NC HARDNESS				0	
SAR	14	4	33	3	17
IONIC RATIOS(%)					
NA+K	58	49	74	3	14
CA	15	6	22	3	9
MG	27	21	31	3	5
HCO3+CO3	19	4	28	3	13
CL	9	8	10	3	1
SO4	72	64	86	3	12
TDS(SUM)	7039.4	1490.4	18117.4	3.0	9593.9
TDS(SUM)/SP COND	0.84	0.74	0.99	3.00	0.13
TDS(CALC)	6828.3	1303.7	17842.7	3.0	9538.7
TDS/TDS(CALC)	0.99	0.97	0.99	3.00	0.01
TOTAL CATIONS	104.48	21.29	270.43	3.00	143.72
TOTAL ANIONS	103.08	21.22	266.41	3.00	141.45
CAT-AN BALANCE	0.40	0.20	0.70	3.00	0.26

FOR ALL DATA FROM 860101 THROUGH 861231

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SITE=S09

	RAW DATA		
	21MAY86	16JUL86	06OCT86
FLOW			
SP COND - LAB	440	2200	1600
PH - LAB	7.4	7.6	7.9
TSS	335.0	4.0	5.0
TDS	256.0	1525.0	1104.0
OIL & GREASE			
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	129.00	160.00	295.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	157.38	195.20	359.90
CO3	0.00	0.00	0.00
CL	19.00	120.00	100.00
SO4	75.00	840.00	500.00
NO3(N)	0.09	0.06	0.06
CATIONS			
NA	14.00	136.00	69.00
K	3.00	9.00	5.20
CA	50.00	184.00	146.00
MG	18.00	111.00	107.00
FE,DISS			
MN	0.15	0.13	0.03
OTHER IONS			
B	0.09	0.33	0.35
SR	0.28	1.10	0.93
F	0.15	0.26	0.20
FE,TOT	1.22	2.20	0.14
P-ORTHO	0.08	0.07	0.06
SIO2	8.00	7.80	7.10
CALCULATED DATA			
HARDNESS	201	915	805
NC HARDNESS			
SAR	0	2	1
IONIC RATIOS(%)			
NA+K	15	25	16
CA	54	38	38
MG	32	37	46
HCO3+CO3	55	13	31
CL	11	14	15
SO4	33	73	54
TDS(SUM)	346.1	1606.0	1295.0
TDS(SUM)/SP COND	0.79	0.73	0.81
TDS(CALC)	266.1	1506.8	1112.0
TDS/TDS(CALC)	0.96	1.01	0.99
TOTAL CATIONS	4.71	24.54	19.23
TOTAL ANIONS	4.69	24.09	19.15
CAT-AN BALANCE	0.20	0.90	0.20

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SITE=S09

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	1413	440	2200	3	895
PH - LAB	7.6	7.4	7.9	3.0	0.3
TSS	114.7	4.0	335.0	3.0	190.8
TDS	961.7	256.0	1525.0	3.0	646.4
OIL & GREASE				0.0	
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	194.67	129.00	295.00	3.00	88.26
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	237.49	157.38	359.90	3.00	107.68
CO3	0.00	0.00	0.00	3.00	0.00
CL	79.67	19.00	120.00	3.00	53.48
SO4	471.67	75.00	840.00	3.00	383.29
NO3(N)	0.07	0.06	0.09	3.00	0.02
CATIONS					
NA	73.00	14.00	136.00	3.00	61.10
K	5.73	3.00	9.00	3.00	3.04
CA	126.67	50.00	184.00	3.00	69.06
MG	78.67	18.00	111.00	3.00	52.58
FE,DISS				0.00	
MN	0.10	0.03	0.15	3.00	0.06
OTHER IONS					
B	0.26	0.09	0.35	3.00	0.14
SR	0.77	0.28	1.10	3.00	0.43
F	0.20	0.15	0.26	3.00	0.06
FE,TOT	1.19	0.14	2.20	3.00	1.03
P-ORTHO	0.07	0.06	0.08	3.00	0.01
SIO2	7.63	7.10	8.00	3.00	0.47
CALCULATED DATA					
HARDNESS	640	201	915	3	384
NC HARDNESS				0	
SAR	1	0	2	3	1
IONIC RATIOS(%)					
NA+K	19	15	25	3	6
CA	43	38	54	3	9
MG	38	32	46	3	7
HCO3+CO3	33	13	55	3	21
CL	13	11	15	3	2
SO4	53	33	73	3	20
TDS(SUM)	1082.3	346.1	1606.0	3.0	656.3
TDS(SUM)/SP COND	0.78	0.73	0.81	3.00	0.04
TDS(CALC)	961.6	266.1	1506.8	3.0	633.9
TDS/TDS(CALC)	0.99	0.96	1.01	3.00	0.03
TOTAL CATIONS	16.16	4.71	24.54	3.00	10.27
TOTAL ANIONS	15.98	4.69	24.09	3.00	10.08
CAT-AN BALANCE	0.43	0.20	0.90	3.00	0.40

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SITE=S10

	RAW DATA		
	20MAY86	17JUL86	06OCT86
FLOW			
SP COND - LAB	1450	4620	4050
PH - LAB	7.4	7.1	7.9
TSS	992.0	67344.0	154.0
TDS	972.0	3240.0	3471.0
OIL & GREASE			
ACIDITY,TOT			
ALKALINITY(CACO3)			
TOTAL	201.00	220.00	241.00
NONCARBONATE	0.00	0.00	0.00
ANIONS			
HCO3	245.22	268.40	294.02
CO3		0.00	0.00
CL	59.00	187.00	245.00
SO4	510.00	2400.00	2100.00
NO3(N)	0.06	0.09	0.06
CATIONS			
NA	88.00	358.00	406.00
K	6.00	21.00	12.00
CA	106.00	516.00	248.00
MG	83.00	209.00	316.00
FE,DISS			
MN	0.19	2.00	0.10
OTHER IONS			
B	0.22	0.63	0.86
SR	1.07	4.10	2.70
F	0.22	0.36	0.30
FE,TOT	0.86	0.05	0.27
P-ORTHO	0.10	0.15	0.11
SIO2	8.00	8.30	6.20
CALCULATED DATA			
HARDNESS	608	2184	1920
NC HARDNESS			
SAR	2	3	4
IONIC RATIOS(%)			
NA+K	25	27	32
CA	33	44	22
MG	42	29	46
HCO3+CO3	25	7	9
CL	10	9	12
SO4	65	84	79
TDS(SUM)	1106.8	3970.8	3628.8
TDS(SUM)/SP COND	0.76	0.86	0.90
TDS(CALC)	982.1	3834.4	3479.4
TDS/TDS(CALC)	0.99	0.84	1.00
TOTAL CATIONS	16.14	59.13	56.35
TOTAL ANIONS	16.32	59.67	55.47
CAT-AN BALANCE	-0.60	-0.50	0.80

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SITE=S10

	STATISTICS				
	MEAN	MIN	MAX	N	STD
FLOW				0.0	
SP COND - LAB	3373	1450	4620	3	1690
PH - LAB	7.5	7.1	7.9	3.0	0.4
TSS	22830.0	154.0	67344.0	3.0	38552.5
TDS	2561.0	972.0	3471.0	3.0	1381.0
OIL & GREASE				0.0	
ACIDITY,TOT				0.00	
ALKALINITY(CACO3)					
TOTAL	220.67	201.00	241.00	3.00	20.01
NONCARBONATE	0.00	0.00	0.00	3.00	0.00
ANIONS					
HCO3	269.21	245.22	294.02	3.00	24.41
CO3	0.00	0.00	0.00	2.00	0.00
CL	163.67	59.00	245.00	3.00	95.17
SO4	1670.00	510.00	2400.00	3.00	1015.73
NO3(N)	0.07	0.06	0.09	3.00	0.02
CATIONS					
NA	284.00	88.00	406.00	3.00	171.43
K	13.00	6.00	21.00	3.00	7.55
CA	290.00	106.00	516.00	3.00	208.20
MG	202.67	83.00	316.00	3.00	116.63
FE,DISS				0.00	
MN	0.76	0.10	2.00	3.00	1.07
OTHER IONS					
B	0.57	0.22	0.86	3.00	0.32
SR	2.62	1.07	4.10	3.00	1.52
F	0.29	0.22	0.36	3.00	0.07
FE,TOT	0.39	0.05	0.86	3.00	0.42
P-ORTHO	0.12	0.10	0.15	3.00	0.03
SIO2	7.50	6.20	8.30	3.00	1.14
CALCULATED DATA					
HARDNESS	1571	608	2184	3	844
NC HARDNESS				0	
SAR	3	2	4	3	1
IONIC RATIOS(%)					
NA+K	28	25	32	3	4
CA	33	22	44	3	11
MG	39	29	46	3	9
HCO3+CO3	14	7	25	3	10
CL	11	9	12	3	2
SO4	76	65	84	3	10
TDS(SUM)	2902.1	1106.8	3970.8	3.0	1564.2
TDS(SUM)/SP COND	0.84	0.76	0.90	3.00	0.07
TDS(CALC)	2765.3	982.1	3834.4	3.0	1554.4
TDS/TDS(CALC)	0.94	0.84	1.00	3.00	0.09
TOTAL CATIONS	43.87	16.14	59.13	3.00	24.06
TOTAL ANIONS	43.82	16.32	59.67	3.00	23.91
CAT-AN BALANCE	-0.10	-0.60	0.80	3.00	0.78

SUBSIDENCE MONITORING - 1986

Mining Activities - During 1986 the First Federal Mains were advanced 1,600 feet, the 4-East panel 1,400 feet, 7-South 1,200 feet, and the 4-Right and 5-Right panels developed to the Quichapah Creek subsidence barrier and then pillared on retreat.

Subsidence Surveys - Table Sm-1 summarizes the survey data obtained for the stations surveyed in 1986 and includes initial baseline survey data, survey elevations from the latest 1986 survey and the most recent previous check survey.

Table Sm-2 lists the new subsidence stations established during 1986, with all baseline data.

Subsidence Restoration Activities

"Jensen Fields" - irrigation ditches have been moved or recontoured to facilitate irrigating the acreage that was under irrigation prior to mining but had been disrupted due to subsidence. A culvert will be installed in the spring of 1986 to drain irrigation waste water from the west field.

"Lewis Field" - field was resloped during fall of 1986 to provide uniform grade for flood irrigation. Seed bed preparation, fertilization and seeding to land owners specifications (with SCS concurrence) will take place during Spring 1987.

Final "as completed" maps of the fields will be made when work is completed spring of 1987.

TABLE SM-1 SUBSIDENCE MONITORING STATIONS - SURVEY 1986

STATION	LOCATION	DATE	BASELINE NORTHING	SURVEY DATA EASTING	ELEVATION	PRIOR DATE	CHECK SURVEY ELEVATION	DATE	CHECK SURVEY ELEVATION
SMK-2	1-East	2/81	197,094.12	2,069,844.82	6,099.91	10/85	6,099.47	5/86	6,099.46
H-6	1-East	12/81	196,403.18	2,070,884.42	6,092.21	10/85	6,092.24	5/86	6,092.32
SMK-3	2-East	6/81	197,304.72	2,071,450.90	6,083.56	10/85	6,078.33	5/86	6,078.33
83-1	3-East	6/83	197,431.73	2,072,907.02	6,062.29	10/85	6,062.15	5/86	6,062.10
E	3-East	5/81	197,803.76	2,072,023.67	6,079.67	10/85	6,079.71	5/86	6,079.79
Q	1-Left	6/81	191,929.15	2,066,753.80	5,931.20	5/85	5,931.20	5/86	5,931.05
N	2-Right	12/82	193,874.72	2,065,955.61	5,948.67	5/85	5,948.40	5/86	5,948.11
W	2-Right	1/81	194,616.64	2,065,467.15	5,957.05	5/86	5,955.07	10/86	5,955.09
85-1	5-Right	12/85	194,958.12	2,063,444.68	5,974.25			5/86	5,973.66
85-2	5-Right	12/85	195,463.95	2,063,363.96	5,978.85			5/86	5,978.21
83-3	3-Right	5/84	194,594.74	2,064,492.11	5,962.25	2/86	5,961.34	5/86	5,961.10
83-4	3-Right	5/84	194,929.82	2,064,644.95	5,966.22	2/86	5,965.70	5/86	5,965.57
83-5	4-Right	5/84	194,627.68	2,063,887.44	5,969.53	5/86	5,968.65	10/86	5,968.63
83-6	4-Right	5/84	194,965.20	2,064,059.57	5,971.07	5/86	5,968.43	5/86	5,968.20

Note: Stations 83-3, 4, 5, & 6 were destroyed during resloping of the Lewis field during 4th quarter 1986.

TABLE SM-2 SUBSIDENCE MONITORING STATIONS - ESTABLISHED 1986

Station	Location	Date	Baseline Northing	Survey Data Easting	Elevation
86-1	1-Federal	9/86	196,195.95	2,066,451.12	5,999.53
86-2	1-Federal	9/86	196,991.96	2,065,342.60	6,036.66
86-3	1-Federal	9/86	199,162.30	2,067,668.46	6,147.18
86-4	1-Federal	9/86	199,177.18	2,062,679.70	6,074.13
86-5	1-Federal	9/86	198,495.12	2,064,069.40	6,159.24
86-6	4-East	9/86	199,025.80	2,073,046.70	6,075.64
86-7	5-East	9/86	199,752.34	2,073,666.90	6,099.96
86-8	6-East	8/86	200,823.57	2,073,450.93	6,121.41
86-9	4-East	9/86	198,236.28	2,074,137.07	6,069.17
86-10	5-East	9/86	198,804.10	2,075,063.22	6,074.13
86-11	2-Federal	10/86	198,669.66	2,066,811.32	6,149.97
86-12	2-Federal	10/86	199,324.35	2,065,857.05	6,168.57
86-13	1-Federal	10/86	197,515.26	2,064,041.37	6,032.25