

04008714100E

40-8714



RETURN ORIGINAL TO PDR, HQ.

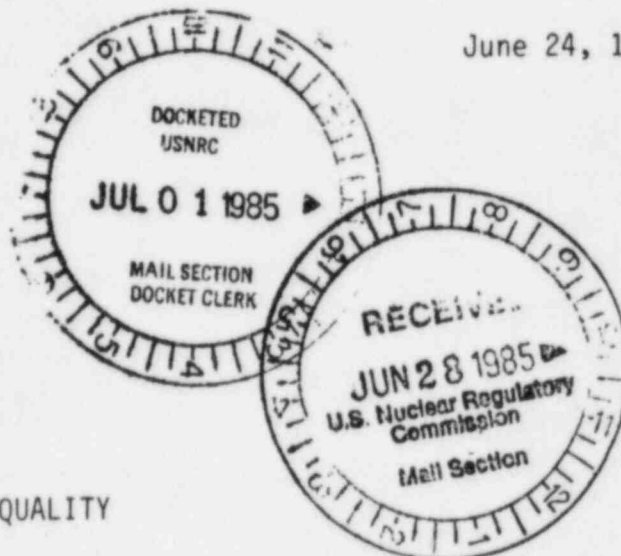
Western Division

818 Taughenbaugh Boulevard
P.O. Box 1211, Rifle, CO 81650
Phone: 303-625-2445

June 24, 1985

✓
Ms. Sandra Wastler
Uranium Recovery Field Office
U.S. NUCLEAR REGULATORY COMMISSION
P.O. Box 25325
Denver, Colorado 80225

Mr. Roger Shaffer
Administrator-Land Quality Division
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
Hershler Building, Third Floor
122 West 25th Street
Cheyenne, Wyoming 82002



RE: SOURCE MATERIAL LICENSE SUA1352
DOCKET NO. 040-08714
RESEARCH AND DEVELOPMENT LICENSE NO. 3RD
COLLINS DRAW PROJECT

Dear Ms. Wastler and Mr. Shaffer:

The enclosed Exhibits I and II respectively, contain groundwater stability monitoring data for the 11 key groundwater quality parameters in the A-1 and B well fields at the Collins Draw Project site. Also enclosed (Exhibits III and IV) are the analyses data for the Guideline 8 (Wyoming DEQ) parameters for both well fields after a 6-month stability period. Following is a brief discussion of the average groundwater stability for each well field.

A-1 Well Field: Sulfate, pH, nitrate, arsenic, uranium, and vanadium have all stabilized below the Wyoming DEQ Class I - Domestic Standard (Chapter VIII, Quality Standards for Wyoming Groundwaters, Water Quality Rules and Regulations, Wyoming Department of Environmental Quality). Except for one anomaly (May 9, 1984) nitrite has also stabilized below the Class I Standard. Total dissolved solids have stabilized within 10 percent of the Class I Standard. Ammonia, selenium, and radium have stabilized at approximately 35 mg/l, approximately 0.10 mg/l, and below 100 pCi/l, respectively. Even though there is some variability in the concentration of ammonia, selenium, and radium in the groundwater, it appears that these parameters have stabilized and are not increasing in concentrations.

DESIGNATED ORIGINAL

8507240041 850624
PDR ADOCK 04008714
C PDR

Certified By Mary C. Horn

Add Info
00691

Ms. Sandra Wastler
Mr. Roger Shaffer

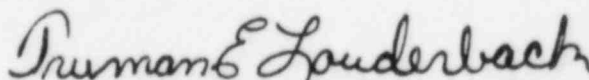
-2-

June 24, 1985

B Well Field: Sulfate, pH, nitrate, nitrite, arsenic, and vanadium have all stabilized below the Wyoming DEQ Class I Standard. Radium has stabilized below 50 pCi/l which is considered by the Wyoming DEQ to be at a concentration which is treatable to meet the Class I Standard. Total dissolved solids and uranium have stabilized within approximately 10 percent of the respective Class I Standards. Selenium has stabilized at approximately 1 mg/l with nominal variability and is not increasing in concentration. Except for one anomaly during 1984 (December 11, 1984), the ammonia concentration has stabilized at approximately 50 mg/l.

Conclusion: It is Cleveland-Cliffs' conclusion that based on the enclosed groundwater stability data, the groundwater in the A-1 and B well fields has adequately stabilized. If you do not concur or if the results of the June 5 sampling are significantly different than the enclosed data, please contact me personally at your earliest convenience in order to discuss the stability data or to schedule a meeting if necessary.

Sincerely,



Truman E. Louderback
Director of Environmental Affairs

TEL:ms

Enclosures

cc w/encs: Richard C. Chancellor, Wyoming DEQ

EXHIBIT I

COLLINS DRAW PROJECT
A-1 WELL FIELD
AVERAGE GROUNDWATER STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	680	575	596	684	620	729	605	590	544	516	528	530
SO ₄	mg/l	264	215	247	295	225	290	235	232	214	210	236	244
pH		8.8	8.9	8.8	8.8	8.2	8.8	9.1	9.1	8.9	8.0	8.4	8.3
NH ₃	mg/l	27.7	18.6	27.4	35.4	33.3	35.8	37.2	35.5	33.0	5.7	45	26
NO ₃	mg/l	0.15	0.07	0.12	1.83	0.17	0.05	0.09	0.13	0.07	0.58	0.43	0.17
NO ₂	mg/l	0.34	0.14	0.39	0.10	0.07	0.18	0.09	0.02	0.54	0.29	0.07	2.38
As	mg/l	0.01	0.02	0.07	0.07	0.27	0.14	0.42	0.33	0.05	0.01	0.01	0.03
Se	mg/l	1.78	0.42	0.53	0.86	0.88	0.19	0.60	0.79	0.39	0.03	0.16	0.10
U ₃ O ₈	mg/l	2.41	2.58	1.48	2.30	1.48	3.55	4.87	2.66	3.52	10.3	1.83	2.14
V ₂ O ₅	mg/l	0.51	0.09	0.64	0.51	0.49	0.36	0.10	0.29	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	171	229	109	242	166	181	103	102	110	76	92	69

LT = Less Than

COLLINS DRAW PROJECT
A-1 WELL FIELD
WELL NO. 242 STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	683	457	405	759	575	1132	533	482	463	476	448	447
SO ₄	mg/l	292	188	178	364	246	428	242	221	216	204	210	210
pH		8.4	8.5	8.0	8.1	7.5	8.2	8.8	8.8	8.9	7.6	7.9	7.9
NH ₃	mg/l	21.7	17.2	14.6	33.3	17.9	18.1	31.1	28.0	0.5	1.2	5.7	19.0
NO ₃	mg/l	0.05	LT0.05	LT0.05	2.5	LT0.05	LT0.05	LT0.05	0.06	LT0.05	0.38	LT0.05	LT0.05
NO ₂	mg/l	0.50	0.50	1.0	9.25	0.05	0.03	0.03	LT0.01	0.03	0.17	0.02	4.48
As	mg/l	LT0.01	LT0.01	0.01	0.02	0.03	0.02	0.23	0.14	0.01	LT0.01	LT0.01	0.01
Se	mg/l	4.16	0.09	0.98	0.68	0.85	0.19	0.82	0.52	0.04	0.04	0.05	0.01
U ₃ O ₈	mg/l	5.75	6.20	1.63	0.97	0.75	1.70	7.30	3.46	4.30	0.82	0.92	3.01
V ₂ O ₅	mg/l	0.35	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	76	58	47	298	312	679	280	237	320	102	183	157

LT = Less Than

COLLINS DRAW PROJECT
A-1 WELL FIELD
WELL NO. 246 STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	849	633	699	703	628	682	670	683	566	512	581	569
SO ₄	mg/l	298	176	284	286	222	282	242	236	205	222	238	252
pH		8.8	9.1	9.2	8.9	8.2	8.9	9.3	9.2	8.9	8.3	9.0	8.9
NH ₃	mg/l	70.3	55.4	77.0	77.7	71.8	73.9	81.2	79.8	75.6	1.0	65	42
NO ₃	mg/l	0.05	0.05	0.30	2.0	LT0.05	LT0.05	LT0.05	0.32	0.10	0.29	0.46	0.39
NO ₂	mg/l	LT0.01	LT0.01	1.0	0.10	0.10	LT0.01	0.12	0.02	0.10	0.01	0.01	0.02
As	mg/l	LT0.01	0.03	0.11	0.11	0.38	0.05	0.57	0.50	0.02	0.01	LT0.01	0.04
Se	mg/l	2.03	0.76	0.46	2.00	0.65	0.44	1.25	1.70	1.72	0.01	0.55	0.44
U ₃ O ₈	mg/l	2.80	2.93	2.75	5.40	2.80	6.50	7.40	5.51	4.50	16.5	3.85	3.31
V ₂ O ₅	mg/l	0.97	LT0.10	1.49	1.31	1.30	1.06	LT0.10	1.50	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	611	1,111	306	225	361	134	128	198	211	59	52	117

LT = Less Than

COLLINS DRAW PROJECT
A-1 WELL FIELD
WELL NO. 248 STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	819	573	543	592	558	569	656	645	642	523	570	564
SO ₄	mg/l	315	152	164	171	144	172	162	200	220	227	220	234
pH		9.1	9.3	9.2	9.3	8.7	9.2	9.5	9.5	9.0	8.6	9.0	8.8
NH ₃	mg/l	33.9	25.6	4.1	29.7	32.6	38.8	34.9	35.4	36.4	9.9	85	45
NO ₃	mg/l	0.30	0.05	LT0.05	1.00	LT0.05	LT0.05	LT0.05	0.12	0.10	0.44	0.13	0.12
NO ₂	mg/l	0.50	0.03	LT0.01	LT0.01	LT0.05	LT0.01	LT0.01	LT0.01	0.26	0.83	LT0.01	0.02
As	mg/l	0.01	0.04	0.11	0.10	0.41	0.23	0.45	0.50	0.06	0.10	0.02	0.03
Se	mg/l	1.68	0.35	0.47	0.75	0.76	0.15	0.37	0.69	0.06	0.06	0.19	0.09
U ₃ O ₈	mg/l	2.20	2.90	2.50	4.60	2.40	4.90	5.10	2.38	2.48	13.0	1.66	1.56
V ₂ O ₅	mg/l	0.79	LT0.10	1.40	1.33	1.13	0.70	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	147	20	72	76	80	74	56	86	56	72	91	37

LT = Less Than

COLLINS DRAW PROJECT
A-1 WELL FIELD
WELL NO. 252 STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	796	639	439	485	449	454	498	545	685	597	573	624
SO ₄	mg/l	335	306	213	244	166	192	234	260	315	163	306	340
pH		8.5	8.5	8.5	8.6	8.0	8.6	8.8	8.7	8.5	7.8	7.8	7.2
NH ₃	mg/l	15.4	5.6	26.5	24.5	27.4	26.5	30.4	26.6	26.6	15.1	92	22
NO ₃	mg/l	0.05	0.10	0.10	1.00	LT0.05	LT0.05	0.31	0.05	0.06	1.94	1.80	0.37
NO ₂	mg/l	0.05	0.05	0.10	LT0.01	LT0.05	LT0.01	0.29	0.04	2.85	0.41	0.39	6.16
As	mg/l	LT0.01	0.02	0.07	0.03	0.13	0.10	0.43	0.16	0.04	LT0.01	LT0.01	0.02
Se	mg/l	1.85	0.34	0.39	0.45	1.01	0.07	0.22	0.26	0.04	0.05	0.10	0.01
U ₃₀₈	mg/l	2.50	2.35	0.53	0.99	1.60	4.20	2.80	1.44	2.07	14.3	1.27	1.87
V ₂₀₅	mg/l	0.27	LT0.10	0.22	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	106	40	27	718	34	22	40	28	43	131	127	39

LT = Less Than

COLLINS DRAW PROJECT
A-1 WELL FIELD
WELL NO. 254 STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	520	557	529	518	465	493	489	529	491	495	505	492
SO ₄	mg/l	180	180	196	194	138	172	180	200	188	225	223	218
pH		9.2	9.1	9.1	9.0	8.4	9.0	9.3	9.3	8.9	7.8	8.4	8.3
NH ₃	mg/l	21.0	5.2	23.5	25.9	29.8	29.3	28.0	26.6	28.0	3.6	9.9	18.0
NO ₃	mg/l	0.05	LT0.05	LT0.05	0.50	LT0.05	LT0.05	LT0.05	0.10	LT0.05	0.33	0.06	LT0.05
NO ₂	mg/l	0.02	0.03	LT0.01	LT0.01	LT0.05	LT0.01	LT0.01	LT0.01	LT0.01	0.30	0.02	3.58
As	mg/l	0.04	0.02	0.07	0.13	0.55	0.42	0.61	0.41	0.09	LT0.01	LT0.01	0.03
Se	mg/l	0.29	0.28	0.19	0.32	1.20	0.05	0.32	0.58	0.14	0.02	LT0.01	LT0.01
U ₃ O ₈	mg/l	0.49	0.50	0.71	0.87	0.52	1.30	3.60	1.80	2.20	1.02	1.36	1.49
V ₂ O ₅	mg/l	0.43	0.22	0.48	LT0.10	0.23	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	17	29	31	46	26	20	14	20	9	28	21	12

LT = Less Than

COLLINS DRAW PROJECT
A-1 WELL FIELD
WELL NO. 297 STABILITY DATA

		09/03/81 2 days	09/17/81 2 wk	10/14/81 6 wk	11/15/81 10 wk	12/15/81 14 wk	01/15/82 18 wk	02/15/82 22 wk	03/03/82 6 mo	08/25/82 12 mo	05/13/83	01/25/84	05/09/84
TDS	mg/l	412	593	959	1,047	1,042	1,043	784	657	417	493	494	482
SO ₄	mg/l	166	292	450	516	436	498	350	276	140	220	217	209
pH		8.9	9.0	8.9	8.9	8.3	9.0	9.1	9.1	8.9	8.0	8.3	8.5
NH ₃	mg/l	4.2	2.2	19.0	21.0	20.3	28.3	17.8	15.4	0.45	3.3	9.9	12.0
NO ₃	mg/l	0.40	0.10	0.20	4.00	1.00	0.06	0.05	0.14	0.07	0.09	0.10	LT0.05
NO ₂	mg/l	1.00	0.25	0.25	0.25	0.10	1.03	0.07	0.03	LT0.01	0.01	LT0.01	LT0.01
As	mg/l	0.01	LT0.01	0.02	0.02	0.15	0.03	0.22	0.30	0.07	LT0.01	0.01	0.03
Se	mg/l	0.68	0.69	0.72	0.94	0.84	0.26	0.62	0.96	0.33	0.02	0.07	0.04
U ₃ O ₈	mg/l	0.73	0.60	0.79	0.96	0.83	2.70	3.00	1.37	5.55	16.5	1.90	1.63
V ₂ O ₅	mg/l	0.23	LT0.10	0.22	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	66	114	170	86	184	158	100	40	23	55	75	54

LT = Less Than

EXHIBIT II

COLLINS DRAW PROJECT
B WELL FIELD
AVERAGE GROUNDWATER STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	423	441	458	492	489	538	539	561	567	598	606	594	592
SO ₄	mg/l	186	187	188	199	196	214	226	215	232	253	250	252	260
pH		7.8	7.9	8.0	8.2	8.2	8.4	8.5	8.7	8.8	8.7	8.7	8.7	8.5
NH ₃	mg/l	1	1	2	5	7	10	4	19	27	37	31	34	37
NO ₃	mg/l	1.14	1.11	1.33	0.40	0.44	0.24	0.22	0.24	0.30	0.41	0.35	0.28	0.32
NO ₂	mg/l	0.18	0.56	0.83	0.37	0.38	0.22	0.20	0.11	0.25	0.20	0.19	0.31	0.29
As	mg/l	LT0.01	LT0.01	LT0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.04	0.04	0.03	0.12	0.33	0.21	0.23	.72	0.54	0.55	0.83	1.02	1.49
U ₃ O ₈	mg/l	1.0	1.9	2.4	2.9	3.2	3.9	4.9	5.3	6.5	6.4	6.4	6.2	5.4
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	65	93	83	72	59	64	61	54	34	43	17	36	42
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	576	582	573	606	587	599	580	602	538	598	580	568	566
SO ₄	mg/l	260	237	234	239	221	236	226	228	195	205	237	222	210
pH		8.5	8.6	8.7	8.7	8.7	8.7	8.6	8.6	8.8	8.7	8.9	8.9	8.9
NH ₃	mg/l	37	49	50	43	49	43	45	49	53	53	51	51	58
NO ₃	mg/l	0.29	0.28	0.34	0.33	0.29	0.27	0.29	0.52	0.46	0.57	0.62	0.44	0.42
NO ₂	mg/l	0.29	0.26	0.41	0.32	0.29	0.31	0.40	0.38	0.37	0.40	0.65	0.44	0.44
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.02	0.03	0.02
Se	mg/l	1.08	1.03	0.85	0.93	0.88	1.22	0.92	0.97	1.00	0.88	0.50	1.01	1.04
U ₃ O ₈	mg/l	5.6	6.9	8.1	6.2	6.2	5.8	6.1	6.2	6.5	6.7	6.4	6.6	6.1
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	33	39	47	43	55	33	36	34	26	36	32	36	32

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 190 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	365	385	409	475	470	579	556	630	750	795	785	725	698
SO ₄	mg/l	149	153	155	187	185	219	222	239	312	352	332	312	294
pH		7.8	7.7	7.8	8.3	8.2	8.6	8.3	8.7	9.0	8.9	8.8	9.0	8.8
NH ₃	mg/l	LT0.1	LT0.1	LT0.1	4.7	4.5	12.4	1.1	24.0	37.4	51	34	36	41
NO ₃	mg/l	1.80	1.37	1.44	0.40	0.55	0.14	0.35	0.43	0.65	0.51	0.47	0.30	0.30
NO ₂	mg/l	LT0.01	0.10	0.07	0.24	0.68	0.11	0.11	0.07	0.30	0.28	0.26	0.18	0.10
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.02	0.02	0.02	0.02	0.04	0.04	0.03	1.45	0.64	0.99	1.06	1.59	2.56
U ₃ O ₈	mg/l	0.29	0.19	0.63	3.01	3.40	4.00	3.20	3.43	5.30	4.76	5.30	5.60	4.24
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	61	55	43	39	35	35	35	35	32	45	50	40	74

		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	625	651	644	723	666	680	668	675	593	648	647	636	639
SO ₄	mg/l	298	246	238	270	222	244	236	244	200	206	244	212	200
pH		8.8	9.0	9.1	8.9	9.1	9.0	9.0	8.8	9.1	9.1	9.3	9.2	9.3
NH ₃	mg/l	47	53	51	49	74	60	57	61	64	65	74	80	81
NO ₃	mg/l	0.29	0.32	0.31	0.23	0.36	0.42	0.57	0.78	0.62	0.80	0.45	0.49	0.37
NO ₂	mg/l	0.09	0.22	0.02	0.17	0.02	0.01	0.06	0.86	0.81	0.78	0.57	0.61	0.50
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	1.85	1.66	1.58	1.41	1.21	3.40	1.61	1.58	1.73	1.22	0.64	1.33	1.37
U ₃ O ₈	mg/l	4.79	5.8	7.0	5.3	5.4	4.9	4.4	5.1	4.9	5.4	5.4	5.9	6.3
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	34	61	58	57	73	5	41	27	29	24	10	51	52

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 231 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	467	486	500	488	485	535	504	515	473	486	489	472	471
SO ₄	mg/l	218	217	219	216	197	227	234	216	219	232	227	230	235
pH		7.6	7.5	7.5	7.6	7.5	7.6	7.4	7.5	7.6	7.5	7.7	7.6	7.3
NH ₃	mg/l	1.1	LT0.1	LT0.1	1.2	1.2	2.4	0.9	3.6	3.3	3.3	4.5	4.0	4.5
NO ₃	mg/l	0.40	0.05	0.42	0.15	0.13	0.14	0.14	0.08	LT0.05	0.08	0.12	0.06	0.07
NO ₂	mg/l	0.09	0.31	1.43	0.04	0.12	0.01	0.03	0.03	0.02	0.01	0.02	LT0.01	0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
U ₃ O ₈	mg/l	4.27	7.95	7.75	7.60	6.35	6.70	6.70	6.10	5.15	4.90	5.20	5.20	3.22
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	29	14	13	12	20	11	20	22	13	16	27	12	31
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	444	452	437	458	439	474	436	447	405	455	446	425	417
SO ₄	mg/l	224	218	222	213	209	225	210	212	177	195	196	206	204
pH		7.3	7.5	7.6	7.8	7.5	7.8	7.5	7.6	7.7	7.5	7.5	7.5	7.5
NH ₃	mg/l	7.4	11	7.4	5.0	6.5	11	6.5	6.1	8.0	8.5	9.2	10.7	7.0
NO ₃	mg/l	0.13	0.17	0.12	0.12	0.10	0.10	0.09	0.25	0.47	0.39	0.74	0.31	0.12
NO ₂	mg/l	0.01	0.01	0.02	0.11	0.13	0.27	0.38	0.22	0.26	0.43	2.52	0.71	0.58
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
U ₃ O ₈	mg/l	3.65	4.0	4.2	3.0	2.9	2.6	2.9	2.7	2.7	3.0	3.0	3.3	2.7
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	22	23	27	27	44	25	25	30	10	34	35	27	5

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 232 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	478	476	483	474	435	461	427	417	447	454	457	442	446
SO ₄	mg/l	213	215	205	193	182	189	186	164	165	174	169	171	174
pH		7.9	8.0	7.9	8.2	8.3	8.5	8.6	8.9	9.0	8.9	8.9	8.9	8.7
NH ₃	mg/l	LT0.1	LT0.1	0.7	6.5	9.2	11.6	1.7	18.0	33.6	40	31	57	57
NO ₃	mg/l	1.39	1.59	3.49	0.84	0.59	0.32	0.13	0.17	0.34	0.33	0.29	0.25	0.25
NO ₂	mg/l	LT0.01	0.08	0.20	0.31	0.49	0.29	0.11	0.02	0.48	0.36	0.28	1.23	0.37
As	mg/l	LT0.01	LT0.01	LT0.01	0.02	0.01	0.01	0.01	0.03	0.02	0.02	0.02	0.03	0.03
Se	mg/l	0.01	LT0.01	0.01	0.03	0.04	0.05	0.05	0.06	0.09	0.14	0.20	0.21	0.24
U ₃ O ₈	mg/l	0.28	1.13	2.53	3.63	4.70	6.25	8.10	9.77	12.5	13.7	11.7	10.6	12.6
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	148	142	87	81	33	58	59	15	40	19	36	15	17
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	439	439	437	471	450	503	447	463	395	469	465	452	453
SO ₄	mg/l	173	160	163	163	153	162	153	159	133	141	168	147	147
pH		8.7	8.9	9.0	8.9	9.0	8.9	8.9	8.9	9.0	9.0	9.2	9.2	9.2
NH ₃	mg/l	45	50	74	61	85	60	42	56	57	65	82	65	60
NO ₃	mg/l	0.30	0.18	0.24	0.16	0.23	0.12	0.12	0.39	0.47	0.33	0.29	0.22	0.25
NO ₂	mg/l	0.39	0.36	0.36	0.26	0.36	0.52	0.27	0.29	0.23	0.29	0.33	0.37	0.32
As	mg/l	0.03	0.03	0.03	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.09	0.11	0.10
Se	mg/l	0.23	0.22	0.20	0.16	0.14	0.27	0.15	0.12	0.16	0.12	0.11	1.05	1.10
U ₃ O ₈	mg/l	10.5	15.9	18.8	13.9	12.9	12.2	12.2	12.9	14.1	14.6	14.8	14.6	13.4
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	2.2	19	23	25	33	29	30	34	8	29	33	18	18

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 233 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	480	492	502	494	470	501	485	479	499	505	522	506	505
SO ₄	mg/l	210	215	208	205	197	199	193	165	186	198	193	198	203
pH		7.8	7.8	7.9	8.3	8.3	8.5	8.6	9.0	8.9	8.9	8.5	8.8	8.5
NH ₃	mg/l	LT0.1	LT0.1	0.7	6.2	7.4	11	2.1	28	30	33	28	32	37
NO ₃	mg/l	1.42	1.89	3.36	0.80	0.71	0.59	0.48	0.37	0.45	0.63	0.48	0.61	0.72
NO ₂	mg/l	LT0.01	0.02	0.55	0.21	0.42	0.21	0.23	0.25	0.42	0.55	0.74	1.16	1.92
As	mg/l	LT0.01	LT0.01	LT0.01	0.02	LT0.01	LT0.01	LT0.01	0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.03	LT0.01	0.02	0.05	0.12	0.13	0.13	0.05	0.37	0.55	0.57	0.48	0.97
U ₃ O ₈	mg/l	0.33	0.71	1.42	1.92	2.40	3.55	5.55	9.00	8.70	8.20	8.55	6.10	7.29
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	50	174	161	131	87	147	113	60	4	25	27	32	46
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	495	500	496	522	507	557	507	523	472	526	520	513	509
SO ₄	mg/l	205	192	191	187	175	188	190	188	164	171	177	176	180
pH		8.5	8.7	8.8	8.8	8.8	8.7	8.8	8.7	8.9	8.8	8.9	8.9	8.9
NH ₃	mg/l	37	47	37	36	58	55	36	41	46	49	63	68	52
NO ₃	mg/l	0.72	0.72	0.78	0.76	0.60	0.53	0.64	1.55	1.30	1.09	1.26	0.76	1.04
NO ₂	mg/l	1.97	1.91	3.24	2.10	1.88	1.84	2.22	2.00	2.06	2.34	2.93	2.44	2.91
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.01	0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.52	0.57	0.45	0.48	0.46	0.77	0.80	0.65	0.82	0.56	0.58	0.49	0.51
U ₃ O ₈	mg/l	7.8	10.4	10.8	9.5	9.5	9.7	10.2	10.5	10.2	11.0	10.7	11.2	10.0
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	29	42	41	37	48	24	40	36	23	41	33	33	33

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 234 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	386	444	508	592	679	760	767	847	964	999	1007	968	981
SO ₄	mg/l	158	190	207	232	260	283	318	312	372	390	386	388	382
pH		7.7	7.7	7.8	8.6	8.9	9.2	9.2	9.5	9.5	9.5	9.5	9.5	9.3
NH ₃	mg/l	LT0.1	LT0.1	LT0.1	5.1	12	11	12	20	58	65	52	46	53
NO ₃	mg/l	2.16	1.95	0.71	0.38	0.33	0.29	0.40	0.45	0.64	0.84	0.73	0.62	0.50
NO ₂	mg/l	LT0.01	LT0.01	LT0.01	1.00	1.07	0.95	0.86	0.71	0.62	0.54	0.50	0.49	0.48
As	mg/l	LT0.01	LT0.01	LT0.01	0.02	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.04	0.06	0.02	0.12	0.37	0.24	0.22	0.68	0.37	0.39	0.60	0.75	1.06
U ₃ O ₈	mg/l	0.44	0.96	0.63	2.48	2.40	2.15	1.76	1.23	1.40	1.14	1.38	1.61	1.19
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	28	50	49	29	21	23	27	14	36	41	11	23	17
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	956	950	921	989	933	933	884	993	796	955	878	847	839
SO ₄	mg/l	388	360	342	348	318	334	306	312	260	268	300	300	266
pH		9.3	9.4	9.4	9.4	9.4	9.3	9.3	9.2	9.4	9.4	9.6	9.6	9.6
NH ₃	mg/l	54	91	85	70	69	13	74	67	77	74	67	74	85
NO ₃	mg/l	0.44	0.32	0.37	0.69	0.31	0.34	0.30	0.64	0.48	0.59	0.38	0.46	0.31
NO ₂	mg/l	0.47	0.08	0.39	0.37	0.38	0.32	0.20	0.27	0.12	0.12	0.11	0.03	0.02
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	1.04	1.01	0.04	0.80	0.80	0.93	0.93	1.39	1.58	1.13	0.92	2.21	2.23
U ₃ O ₈	mg/l	1.19	1.3	1.4	1.2	1.2	1.2	1.6	1.4	1.5	1.9	1.8	2.0	1.7
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	26	22	30	29	23	24	30	24	14	19	20	24	67

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 237 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	360	372	403	424	436	499	496	526	502	535	551	547	550
SO ₄	mg/l	150	148	152	159	165	196	212	222	223	254	257	254	292
pH		8.0	8.0	8.0	8.2	8.3	8.4	8.5	8.6	8.7	8.7	8.7	8.7	8.5
NH ₃	mg/l	2.4	3.0	2.7	6.5	9.9	11.6	9.9	20.0	23.2	37	35	37	33
NO ₃	mg/l	0.69	0.12	0.11	0.07	0.17	0.07	0.12	0.18	0.23	0.39	0.22	0.16	0.32
NO ₂	mg/l	0.02	0.03	0.07	0.09	0.07	LT0.01	LT0.01	LT0.01	0.40	0.22	0.03	0.01	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.08	LT0.01	0.02	0.11	1.05	0.31	0.52	1.90	0.84	0.66	1.47	1.86	3.78
U ₃ O ₈	mg/l	1.88	2.70	2.40	2.75	3.60	3.50	3.95	3.40	4.95	5.10	5.60	5.40	4.75
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	169	241	266	157	226	149	137	197	107	102	8	82	94

		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	546	535	518	541	529	536	517	528	488	526	508	507	511
SO ₄	mg/l	270	252	240	242	232	244	228	228	175	204	248	224	200
pH		8.5	8.7	8.8	8.7	8.8	8.7	8.7	8.6	8.9	8.8	9.0	9.1	9.0
NH ₃	mg/l	42	56	42	46	53	53	69	59	62	46	62	71	67
NO ₃	mg/l	0.24	0.23	0.24	0.22	0.26	0.25	0.17	0.38	0.27	0.41	0.23	0.19	0.20
NO ₂	mg/l	LT0.01	LT0.01	0.03	0.03	0.12	0.14	0.03	0.02	0.01	0.01	LT0.01	0.01	0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.02	0.04	0.04
Se	mg/l	2.85	2.96	1.94	1.89	1.70	1.80	1.51	2.03	1.27	1.48	0.27	1.30	1.27
U ₃ O ₈	mg/l	5.43	6.3	7.9	6.1	5.7	5.7	6.1	6.1	6.1	6.8	5.3	5.8	5.1
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	51	74	97	87	115	65	75	64	56	72	63	53	22

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 260 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	535	532	547	552	534	576	571	557	544	550	556	547	538
SO ₄	mg/l	246	241	245	229	225	241	248	231	234	245	248	245	264
pH		7.6	7.6	7.7	7.6	7.4	7.6	8.0	7.8	7.7	7.4	8.0	7.7	7.2
NH ₃	mg/l	0.5	0.7	0.7	0.7	0.7	1.0	0.6	1.0	1.1	1.1	1.2	1.2	1.4
NO ₃	mg/l	0.79	0.63	0.41	0.35	0.30	0.47	0.17	0.11	0.06	0.24	0.13	0.09	0.07
NO ₂	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.06	0.07	0.03	0.04	0.04	0.03	0.02	0.04	0.03	0.02	0.02	0.02	0.02
U ₃ O ₈	mg/l	2.34	2.45	2.68	2.58	2.80	2.95	3.30	2.80	2.95	3.40	3.06	3.20	2.20
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	39	13	12	12	20	11	17	35	14	24	4	11	24

		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	535	541	527	548	529	535	527	538	500	543	531	524	516
SO ₄	mg/l	264	248	234	248	228	250	238	246	230	217	278	248	224
pH		7.3	7.5	7.7	7.9	7.7	8.0	7.7	7.7	8.0	7.5	7.6	7.9	7.6
NH ₃	mg/l	1.5	8	1.7	1.6	1.7	1.7	2.2	1.2	3.0	2.5	1.7	2.1	9.0
NO ₃	mg/l	0.05	0.06	0.08	0.14	0.07	LT0.05	LT0.05	0.06	0.28	0.84	2.02	1.16	1.05
NO ₂	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.21	LT0.01	LT0.01	0.22	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.02	LT0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	LT0.01	0.02	0.02
U ₃ O ₈	mg/l	2.37	2.7	3.0	2.5	2.4	2.1	2.4	1.9	2.2	2.2	1.9	2.2	1.9
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	9	20	10	21	24	21	12	16	18	11	16	17	15

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 276 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	376	395	332	490	478	523	561	636	552	683	709	770	797
SO ₄	mg/l	155	150	150	205	197	219	216	195	216	257	265	300	320
pH		7.8	8.0	8.5	7.9	7.8	8.6	8.9	9.2	9.1	9.1	9.0	9.1	8.9
NH ₃	mg/l	0.5	LT0.1	2.7	1.2	2.0	8.5	7.4	24	17	29	25	28	32
NO ₃	mg/l	0.74	0.72	0.56	0.58	0.85	0.05	0.06	0.22	0.23	0.41	0.39	0.39	0.44
NO ₂	mg/l	0.13	2.03	2.80	0.31	0.01	0.05	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.04	0.06	0.04	0.03	0.02	0.02	0.02	0.80	0.65	0.71	1.35	1.68	2.13
U ₃ O ₈	mg/l	0.17	1.55	2.93	0.66	0.99	2.95	7.25	6.36	6.90	6.70	6.48	7.10	4.83
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	71	121	96	149	59	100	63	66	40	43	2	60	67
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	795	832	855	869	910	892	939	973	922	961	932	958	969
SO ₄	mg/l	318	292	314	314	306	328	324	334	294	306	348	342	336
pH		8.9	9.1	9.2	9.1	9.2	9.1	9.1	9.0	9.3	9.2	9.4	9.5	9.4
NH ₃	mg/l	33	47	42	35	49	48	45	51	60	46	51	36	63
NO ₃	mg/l	0.41	0.40	0.59	0.50	0.53	0.50	0.42	0.65	0.38	0.61	0.54	0.46	0.45
NO ₂	mg/l	LT0.01	LT0.01	0.01	0.16	0.01	0.02	0.06	0.11	0.01	LT0.01	0.02	0.01	0.06
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.02	LT0.01	0.06	0.07
Se	mg/l	1.48	1.25	1.47	1.39	1.25	1.73	1.42	1.42	1.47	1.42	1.25	1.20	1.31
U ₃ O ₈	mg/l	6.44	7.9	10.3	6.9	6.8	6.9	8.1	7.6	8.5	7.6	6.8	7.6	7.3
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	55	71	93	75	24	66	49	49	62	68	64	78	74

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 277 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 6 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	422	423	448	433	401	423	400	371	325	341	349	341	324
SO ₄	mg/l	198	187	190	182	163	168	172	156	150	162	159	165	160
pH		7.9	8.0	7.9	8.1	8.2	8.5	8.6	8.8	9.0	9.0	9.0	9.0	8.7
NH ₃	mg/l	6.5	5.7	5.7	6.5	7.4	10.7	1.7	22	37	57	55	50	57
NO ₃	mg/l	0.50	0.90	2.61	0.27	0.54	0.16	0.09	0.08	LT0.05	0.20	0.11	LT0.05	0.08
NO ₂	mg/l	1.46	1.73	0.26	1.30	0.94	0.46	0.68	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.01	0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.04	0.08	0.05	0.05	0.06	0.08	0.04	0.02	0.05	0.29	0.48	0.45	0.50
U ₃₀₈	mg/l	0.17	1.45	1.58	1.75	2.15	3.25	3.90	4.97	11.0	9.46	9.43	9.65	7.80
V ₂₀₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	17	67	62	61	49	51	55	45	9	21	5	21	21
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	328	329	328	340	320	308	326	316	294	322	312	299	307
SO ₄	mg/l	163	149	153	157	148	155	153	147	126	133	165	150	147
pH		8.8	8.9	9.0	8.9	8.9	8.8	8.8	8.7	8.9	8.9	9.1	9.2	9.1
NH ₃	mg/l	52	67	85	57	52	65	57	75	80	85	51	57	81
NO ₃	mg/l	LT0.05	0.06	0.18	0.06	0.11	0.06	0.14	0.06	0.06	0.12	0.05	LT0.05	0.11
NO ₂	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	0.05	0.04	0.04
Se	mg/l	0.47	0.42	0.43	0.39	0.39	0.56	0.52	0.48	0.56	0.31	0.24	0.32	0.37
U ₃₀₈	mg/l	7.46	8.2	9.3	6.6	9.3	6.5	6.7	8.4	9.2	8.5	8.5	8.0	8.2
V ₂₀₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	53	24	24	21	26	27	17	19	8	17	8	20	19

LT = Less Than

COLLINS DRAW PROJECT
B WELL FIELD
WELL NO. 285 STABILITY DATA

		01/05/83 2 wk	01/20/83 4 wk	02/02/83 6 wk	02/15/83 8 wk	03/15/83 3 mo	04/14/83 4 mo	05/11/83 5 mo	06/15/83 5 mo	07/13/83 7 mo	08/10/83 8 mo	09/12/83 9 mo	10/10/83 10 mo	11/09/83 11 mo
TDS	mg/l	366	404	450	497	500	522	624	630	612	627	639	627	609
SO ₄	mg/l	161	150	150	180	187	194	254	250	245	269	263	257	272
pH		7.5	8.2	8.5	8.8	8.8	8.8	8.9	8.9	8.9	8.9	8.8	8.8	8.6
NH ₃	mg/l	0.3	LT0.1	5.1	11.6	16.8	18.7	1.7	26.0	27.6	51	48	52	49
NO ₃	mg/l	1.55	1.86	0.17	0.16	0.18	0.20	0.31	0.29	0.29	0.45	0.54	0.31	0.46
NO ₂	mg/l	0.07	1.26	2.92	0.24	LT0.01	0.09	LT0.01	LT0.01	0.25	0.01	0.01	LT0.01	LT0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	0.04	0.05	0.11	0.58	1.20	1.20	1.00	2.24	2.36	1.74	2.58	3.17	3.63
U ₃ O ₈	mg/l	0.04	0.04	1.89	2.87	3.07	3.42	5.60	5.59	6.35	7.06	7.21	7.80	5.94
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	0.33	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	41	49	45	49	35	55	83	54	44	93	2	68	24
		12/07/83 12 mo	01/11/84 13 mo	02/17/84 14 mo	03/14/84 15 mo	04/11/84 16 mo	05/09/84 17 mo	06/06/84 18 mo	07/11/84 19 mo	08/15/84 20 mo	09/10/84 21 mo	10/15/84 22 mo	11/12/84 23 mo	12/11/84 24 mo
TDS	mg/l	596	586	570	603	584	568	553	561	518	572	557	524	505
SO ₄	mg/l	276	252	242	252	216	232	220	210	194	208	242	212	200
pH		8.6	8.8	8.9	8.8	8.9	8.8	8.7	8.7	9.0	8.9	9.1	9.2	9.1
NH ₃	mg/l	55	58	74	66	46	68	61	69	73	85	46	51	78
NO ₃	mg/l	0.27	0.29	0.48	0.39	0.36	0.35	0.45	0.45	0.31	0.50	0.26	0.33	0.27
NO ₂	mg/l	LT0.01	0.03	0.01	LT0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
As	mg/l	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01	LT0.01
Se	mg/l	2.35	2.17	2.36	2.82	2.84	2.76	2.29	1.99	2.39	2.54	0.94	2.14	2.21
U ₃ O ₈	mg/l	5.94	6.9	8.3	6.9	5.4	5.5	5.9	5.4	5.4	6.1	5.6	4.9	4.8
V ₂ O ₅	mg/l	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10	LT0.10
Ra-226	pCi/l	51	38	67	54	78	49	41	45	35	44	36	38	10

LT = Less Than

EXHIBIT III

WAMCO LAB

P.O. BOX 3632 • CASPER, WYOMING 82602

ANALYSIS REPORT

COMPANY: CLEVELAND CLIFFS IRON COMPANY

DATE: March 16, 1982

AMCO NO.	SAMPLE DESCRIPTION						Mg/L
3087	Water	1	2	3	4	5	Detecti
Analysis reported in Milligrams Per Liter except where noted:							Limit
	Total Dissolved Solids *	482	683	645	545	529	
	Sodium (Na)	91	184	169	109	135	
	Potassium (K)	10	50	57	26	26	
	Calcium (Ca)	35	3	6	24	8	
	Magnesium (Mg)	12	3	1	11	2	
	Sulfate (SO ₄)	221	236	200	260	200	
	Chloride (Cl)	22	9	18	26	5	
	Carbonate (CO ₃)	48	216	160	53	96	
	Bicarbonate (HCO ₃)	59	0	0	61	15	
	Hydroxide (OH)	0	5	20	0	0	
	pH, Units	8.75	9.20	9.48	8.74	9.33	
	Conductivity, Micromhos ^{cm} 25°C.	740	1160	970	850	785	
	Total Milliequiv, Major Cation	6.96	9.68	9.19	7.51	7.19	
	Total Milliequiv, Major Anions	7.79	12.65	11.17	8.90	7.73	
	Absolute Value, Charged Bal.	**	**	**	**	**	
	Ammonia (NH ₃ as N)	28.0	79.8	36.4	26.6	26.6	
	Nitrate (NO ₃ as N)	0.06	0.32	0.12	0.05	0.10	0.05
	Nitrite (NO ₂ as N)	LT.001	.021	.005	.037	LT.001	0.001
	Fluoride (F)	0.36	0.51	0.45	0.33	0.51	0.1
	Total Alkalinity as CaCO ₃	129	375	325	138	172	
	Total Hardness as CaCO ₃	137	20	19	105	33	
	Boron (B)	0.09	0.07	0.11	0.11	0.09	0.01

REMARKS: *Determined by evaporation @ 180° C **charged balance not feasible

1. A-1 #242 3-2-82
2. A-1 #246 3-2-82
3. A-1 #248 3-2-82
4. A-1 #252 3-2-82
5. A-1 #254 3-2-82

WAMCO LAB

P.O. BOX 3632 • CASPER, WYOMING 82602

ANALYSIS REPORT

COMPANY: CLEVELAND CLIFFS IRON COMPANY

DATE: March 16, 1982

WAMCO NO.	SAMPLE DESCRIPTION						Mg/l
3087	Water	1	2	3	4	5	Detecti
Analysis in Milligrams per Liter except where noted:							Limit
	Aluminum (Al)	LT.10	LT.10	LT.10	LT.10	LT.10	0.10
	Arsenic (As)	C.143	0.496	0.496	0.160	0.412	0.001
	Barium (Ba)	LT.10	LT.10	LT.10	LT.10	LT.10	0.10
	Cadmium (Cd)	LT.002	LT.002	LT.002	LT.002	LT.002	0.002
	Chromium (Cr)	LT.01	LT.01	LT.01	LT.01	LT.01	0.01
	Copper (Cu)	LT.01	LT.01	LT.01	LT.01	LT.01	0.01
	Iron (Fe)	LT.01	LT.01	LT.01	LT.01	LT.01	0.01
	Lead (Pb)	LT.05	LT.05	LT.05	LT.05	LT.05	0.05
	Manganese (Mn)	LT.01	LT.01	LT.01	LT.01	LT.01	0.01
	Mercury (Hg)	LT.0002	LT.0002	LT.0002	LT.0002	LT.0002	0.0002
	Nickel (Ni)	LT.02	LT.02	LT.02	LT.02	LT.02	0.02
	Selenium (Se)	0.560	1.70	0.690	0.260	0.580	0.001
	Zinc (Zn)	LT.005	LT.005	LT.005	LT.005	LT.005	0.005
	Molybdenum (Mo)	LT.10	LT.10	LT.10	LT.10	LT.10	0.10
	Uranium (U ₃ O ₈) PPB	3456	5508	2376	1440	1800	1 PPB
	Vanadium (V ₂ O ₅)	LT.10	1.5	LT.10	LT.10	LT.10	0.10
	Radium (Ra-226) pCi/l ± Prec.	237±8	198±8	86±5	28±3	20±2	0.2 pCi

REMARKS:

Analysis performed according to EPA Manual, 1979 and/or Standard Methods for Examination of Water and Wastewater, 14th Edition.

WAMCO LAB

P.O. BOX 3632 • CASPER, WYOMING 82602

ANALYSIS REPORT

COMPANY: CLEVELAND CLIFFS IRON COMPANY

DATE: March 16, 1982

WAMCO NO.	SAMPLE DESCRIPTION						Mg/L
3087	Water	6					Detecti
Analysis reported in Milligrams Per Liter except where noted:							Limit
	Total Dissolved Solids *	607					
	Sodium (Na)	147					
	Potassium (K)	51					
	Calcium (Ca)	14					
	Magnesium (Mg)	2					
	Sulfate (SO ₄)	276					
	Chloride (Cl)	45					
	Carbonate (CO ₃)	36					
	Bicarbonate (HCO ₃)	20					
	Hydroxide (OH)	0					
	pH, Units	9.09					
	Conductivity, Micromhos ^{/cm} @ 25°C.	895					
	Total Milliequiv, Major Cations	8.56					
	Total Milliequiv, Major Anions	8.54					
	Absolute Value, Charged Bal.	0.12					
	Ammonia (NH ₃ as N)	15.4					
	Nitrate (NO ₃ as N)	0.14					0.05
	Nitrite (NO ₂ as N)	0.03					0.001
	Fluoride (F)	0.36					0.1
	Total Alkalinity as CaCO ₃	77					
	Total Hardness as CaCO ₃	43					
	Boron (B)	0.03					0.01

REMARKS: *Determined by evaporation @ 180° C

6. A-1 #297 3-2-82

WAMCO LAB

P.O. BOX 3632 • CASPER, WYOMING 82602

ANALYSIS REPORT

COMPANY: CLEVELAND CLIFFS IRON COMPANY

DATE: March 16, 1982

WAMCO NO.	SAMPLE DESCRIPTION						Mg/l
3087	Water	6					Detect
Analysis in Milligrams per Liter except where noted:							Limit
	Aluminum (Al)	LT.10					0.10
	Arsenic (As)	0.302					0.001
	Barium (Ba)	LT.10					0.10
	Cadmium (Cd)	LT.002					0.002
	Chromium (Cr)	LT.01					0.01
	Copper (Cu)	LT.01					0.01
	Iron (Fe)	LT.01					0.01
	Lead (Pb)	LT.05					0.05
	Manganese (Mn)	LT.01					0.01
	Mercury (Hg)	LT.0002					0.0002
	Nickel (Ni)	LT.02					0.02
	Selenium (Se)	0.960					0.001
	Zinc (Zn)	LT.005					0.005
	Molybdenum (Mo)	LT.10					0.10
	Uranium (U ₃₀₈) PPB	1368					1 PPB
	Vanadium (V ₂₀₅)	LT.10					0.10
	Radium (Ra-226) pCi/l ± Prec.	40±3					0.2 pCi

REMARKS:

Analysis performed according to EPA Manual, 1979 and/or Standard Methods for Examination of Water and Wastewater, 14th Edition.

EXHIBIT IV

B Well Field
Guideline 8 - 6th Month Stability Results
Collins Draw Project - June 21, 1983

Parameter mg/l Unless Otherwise Specified	Well Field Average	Well 190	Well 231	Well 232	Well 233	Well 234
Total Dissolved Solid	561	630	515	417	479	847
Sodium (Na)	107	120	105	89	93	113
Potassium (K)	87	127	6	71	89	235
Calcium (Ca)	19	14	38	6	16	9
Magnesium (Mg)	2.5	2	4	2	3	2
Sulfate (SO ₄)	215	239	216	164	165	312
Chloride (Cl)	29.5	50	20	20	21	52
Carbonate (CO ₃)	77	78	0	82	130	170
Bicarbonate (HCO ₃)	79	81	100	71	54	22
pH, Units	8.70	8.67	7.52	8.91	9.04	9.50
Conductivity μ Mhos/cm 25°C	866	1,047	686	733	849	1,256
Major Cations, Millieq.	8.04	11.04	6.95	7.44	9.38	12.98
Major Anions, Millieq.	9.16	10.34	6.69	7.87	8.74	13.59
Absolute Value, Chg. Balance	1.02	3.27	1.91	2.81	3.53	3.82
Ammonia (NH ₃ as N)	18.66	24	3.6	18	28	20
Nitrate (NO ₃ as N)	0.24	0.43	0.08	0.17	0.37	0.45
Nitrite (NO ₂ as N)	0.11	0.065	0.028	0.023	0.253	0.708
Fluoride (F)	0.39	0.40	0.36	0.33	0.40	0.45
Total Alkalinity (CaCO ₃)	194	197	82	195	261	301
Total Hardness (CaCO ₃)	58	43	112	23	53	31
Boron (B)	0.12	0.11	0.10	0.16	0.16	0.12
Aluminum (Al)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	0.009	0.002	<0.001	0.029	0.015	0.009
Barium (Ba)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Ca)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium (Cr)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper (Cu)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron (Fe)	0.12	0.03	0.90	0.08	0.02	0.02
Lead (Pb)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese (Mn)	0.02	<0.01	0.06	<0.01	<0.01	<0.01
Mercury (Hg)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel (Ni)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Selenium (Se)	0.724	1.450	0.011	0.058	0.045	0.680
Zinc (Zn)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum (Mo)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium (U ₃₀)	5.27	3.433	6.100	9.767	9.000	1.227
Vanadium (V ₈)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Radium-226 pCi/l	54.3	35±7	22±5	14.9±4.5	60±9	14.1±4.4

B Well Field
Guideline 8 - 6th Month Stability Results
Collins Draw Project - June 21, 1983

Page 2

Parameter mg/l Unless Otherwise Specified	Well 237	Well 260	Well 276	Well 277	Well 285
Total Dissolved Solids	526	557	636	371	630
Sodium (Na)	119	120	116	92	99
Potassium (K)	40	6	140	20	139
Calcium (Ca)	18	48	12	11	17
Magnesium (Mg)	1	4	2	2	3
Sulfate (SO ₄)	222	231	195	156	250
Chloride (Cl)	28	18	29	13	44
Carbonate (CO ₃)	48	0	118	48	98
Bicarbonate (HCO ₃)	85	139	81	88	71
pH, Units	8.62	7.78	9.24	8.78	8.92
Conductivity μ Mhos/cm 25°C	814	744	919	616	1,000
Major Cations, Millieq.	8.61	8.10	11.10	6.79	10.83
Major Anions, Millieq.	8.41	7.59	10.16	6.66	10.98
Absolute Value, Chg. Balance	1.18	3.25	4.42	0.97	0.23
Ammonia (NH ₃ as N)	20	0.99	24	22	26
Nitrate (NO ₃ as N)	0.18	0.11	0.22	0.08	0.29
Nitrite (NO ₂ as N)	0.008	0.001	0.005	0.008	0.003
Fluoride (F)	0.36	0.45	0.36	0.30	0.45
Total Alkalinity (CaCO ₃)	150	114	263	152	221
Total Hardness (CaCO ₃)	49	137	38	36	55
Boron (B)	0.09	0.10	0.12	0.10	0.16
Aluminum (Al)	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (As)	<0.001	<0.001	0.015	0.015	<0.001
Barium (Ba)	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Ca)	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium (Cr)	<0.01	<0.01	<0.01	<0.01	<0.01
Copper (Cu)	<0.01	<0.01	<0.01	<0.01	<0.01
Iron (Fe)	0.03	0.05	0.03	0.02	0.02
Lead (Pb)	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese (Mn)	<0.01	0.02	<0.01	<0.01	<0.01
Mercury (Hg)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel (Ni)	<0.02	<0.02	<0.02	<0.02	<0.02
Selenium (Se)	1.90	0.035	0.802	0.021	2.24
Zinc (Zn)	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum (Mo)	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium (U ₃₀₈)	3.40	2.80	6.36	4.967	5.593
Vanadium (V ₈₀)	<0.10	<0.10	<0.10	<0.10	<0.10
Radium-226 pCi/l	197±16	35±7	66±10	45±8	54±9