Docket 40-8768
PDR

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KERR-McGEE NUCLEAR CORPORATION
KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

September 15, 1981

Ms. Kristin Westbrook
U. S. Nuclear Regulatory Commission
Mail Stop 483 SS
7915 Eastern Avenue
Silver Springs, MD 20910

Dear Ms. Westbrook:

Docket No. 40-8768
NRC License SUA - 1387
Q-Sand Project

Attached is the baseline data for the monitor wells for Kerr-McGee's Q-sand in-situ leach project. Data for the wells completed in the Q-sand, wells QM-1 through QM-8, has been formated by parameter as requested. Data for monitor wells completed in other aquifers is presented on a well by well basis.

As we discussed last Friday, Kerr-McGee believes that the upper control limits (UCLs) proposed in our June 26 response to license condition 44 provides the sensitivity necessary to ensure that an excursion would be detected if one occurred. This method of setting UCLs has been accepted by the Wyoming Department of Environmental Quality as indicated in our application to the State of Wyoming and their license which was issued in August 1980. Using techniques such as the suggested two standard deviations from the mean value, does not provide significant additional protection, but will create an additional burden for both NRC and Kerr-McGee. NRC Regulation Guide 4.14 (appendix) specifies the use of 4.66 standard deviations when testing for a change of significance in a set of data. The problem centers on false excursion reports due to unreasonably low UCLs. For example, with two standard deviations, the UCL for chloride on well QM-3 would be only 1 part per million above the mean value, and laboratory variations could easily result in data requiring an excursion report to NRC. Other methods such as the Student-T test using the four most recent analyses as the second data set are feasible, but are much more cumbersome than the method proposed by Kerr-McGee and approved by Wyoming.

We again request that Alkalinity, Selenium, Sulfates, and TDS be deleted from the list of primary excursion parameters. The Alkalinity analyses essentially duplicates the bicarbonate-carbonate analyses and should not be required. Selenium concentrations in the leach zone are expected to remain in the parts per billion range, whereas, bicarbonates, chlorides, sodium and uranium will be in the hundred to several hundred parts per million range, therefore, selenium will not be an effective indicator for

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Add'l Info

the early detection of excursions. Sulfates and TDS are less objectionable than alkalinity and selenium, but are still considered unnecessary, and are expected to provide little, if any, aid in the detection of excursions.

Please call me if you have any questions on the attached data. Your further consideration of these requests is greatly appreciated.

Sincerely,

M. D. Freeman
Director - Chemical Mining

MDF:ms

Attachments

Monitor Well Baseline Data
Q-Sand Aquifer
NRC Docket 40-8768

Well No.	7/80	5/81	6/81	6/81	6/81
			Bicarbonates mg/L		
QM-1	232	41	58	52	240
QM-1*	-	-	241	241	-
QM-2	172	-	-	-	235
QM-3	227	-	202	224	231
QM-4	143	-	-	-	200
QM-5	204	220	-	-	232
QM-6	184	187	184	194	184
QM-7	197	54	49	49	-
QM-8	211	65	31	2	196
			Carbonates mg/L		
QM-1	-	36	28	33	-
QM-1*	-	-	-	-	-
QM-2	-	-	-	-	-
QM-3	-	-	-	-	-
QM-4	-	-	-	-	-
QM-5	-	-	-	-	-
QM-6	-	-	-	-	-
QM-7	-	-	-	-	-
QM-8	-	-	13	29	-
			Chlorides mg/L		
QM-1	6	6	6	5	9
QM-1*	9	9	6	6	-
QM-2	8	39	39	35	5
QM-3	6	6	6	5	-
QM-4	6	53	59	54	7
QM-5	7	4	6	7	5
QM-6	7	8	10	9	10
QM-7	12	21	16	17	-
QM-8	12	14	17	15	7
			Uranium mg/L		
QM-1	.1	.03	.016	.1	.101
QM-1*	.002	.003	.079	.082	-
QM-2	.12	.01	.002	.002	.062
QM-3	.12	.05	.4	.04	-
QM-4	.12	.01	.004	.002	.076
QM-5	.31	.02	.003	.002	.096
QM-6	.20	.02	-	.02	.017
QM-7	.19	.003	.01	.003	-
QM-8	.08	.004	.002	.005	.028

* Samples in 1979 and 1980

Well No.	7/80	5/81	6/81	6/81	6/81
			Sodium mg/L		
QM-1	22	53	54	54	23
QM-1*	43	39	22	20	-
QM-2	22	41	42	42	23
QM-3	27	26	24	24	-
QM-4	22	32	31	31	29
QM-5	22	25	36	36	23
QM-6	22	26	25	25	25
QM-7	23	44	42	42	-
QM-8	24	40	39	39	25
			Sulfates mg/L		
QM-1	124	100	120	140	120
QM-1*	200	146	120	116	-
QM-2	136	140	140	140	120
QM-3	124	140	135	130	-
QM-4	126	70	75	71	140
QM-5	118	120	160	130	120
QM-6	123	100	120	110	120
QM-7	132	140	123	120	-
QM-8	125	100	112	110	180
			TDS mg/L		
QM-1	391	322	339	299	378
QM-1*	518	394	384	357	-
QM-2	386	298	298	165	375
QM-3	412	395	410	405	-
QM-4	337	259	244	224	336
QM-5	380	383	271	276	355
QM-6	359	362	299	335	299
QM-7	396	317	295	274	-
QM-8	384	252	257	245	332
			Selenium mg/L		
QM-1	.011	.024	.011	.003	.032
QM-1*	.007	.002	.002	.002	-
QM-2	.028	.014	.003	.016	.023
QM-3	.009	.019	.015	.030	-
QM-4	.008	.041	.019	.006	.032
QM-5	.009	.048	.012	.012	.025
QM-6	.001	.008	.012	.02	.612
QM-7	.001	.006	.011	.011	-
QM-8	.015	.003	.006	.018	.036

* Samples in 1979 and 1980

Alkalinity meq/L

Well No.	7/80	5/81	6/81	6/81	6/81
QM-1	-	1.87	1.88	1.95	3.94
QM-2	-	.55	.62	3.32	3.86
QM-3	-	3.32	3.68	3.78	-
QM-4	-	.79	.54	.5	3.28
QM-5	-	3.62	1.46	1.40	3.80
QM-6	-	3.07	-	3.18	3.02
QM-7	-	.89	.81	.80	-
QM-8	-	1.06	.95	.98	3.32

Note: Bicarbonates, carbonates and alkalinity in the 5/81 and first two 6/81 samples for some of the wells appear affected by lime leached from the cement.

Monitor Well Baseline Data
Overlying and Underlying Aquifers
NRC Docket No. 40-8768

Well QMS-1

Parameter (1)	12/79	12/79	3/80	3/80	6/80	5/81	6/81	6/81
Bicarbonate	-	-	248	247	193	220	208	216
Carbonate	-	-	-	-	-	-	-	-
Chloride	5	6	29	17	7	4	6	7
Uranium	.002	.002	.042	.047	.017	.02	.01	.009
Sodium	118	131	21	23	39	25	25	24
Sulfate	48	53	147	147	140	120	180	170
TDS	636	944	432	444	408	383	371	371
Selenium	.001	.001	.002	.002	.005	.048	.011	.018
Alkalinity	-	-	-	-	-	3.62	3.41	3.55

Well QMW-1

	7/80	5/81	6/81	6/81
Bicarbonate	172	128	130	133
Carbonate	-	-	-	-
Chloride	4	17	18	18
Uranium	.042	.03	.02	.025
Sodium	15	8	8	8
Sulfate	66	130	140	155
TDS	265	329	357	307
Selenium	.018	.063	.069	.055
Alkalinity	-	2.1	2.13	2.18

Well QMO-1

	12/79	12/79	3/80	3/80	7/80	5/81	6/81	6/81
Bicarbonate	-	-	194	203	206	195	180	175
Carbonate	-	-	-	-	-	-	-	-
Chloride	23	25	23	31	3	3	3	3
Uranium	.002	.002	.018	.019	.024	.05	.008	.01
Sodium	70	70	24	25	27	31	30	30
Sulfate	4	94	220	224	234	240	260	280
TDS	836	849	512	522	535	550	521	501
Selenium	.001	.001	.002	.002	.004	.003	.048	.019
Alkalinity	-	-	-	-	-	3.2	2.95	2.88

(1) All values are in milligrams per liter except alkalinity which is milliequivalents per liter.