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IN REPLY

REFER TO: H12-79-263

MAIL STOP: 495

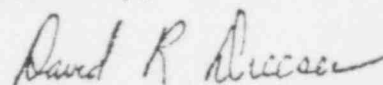
June 26, 1979

Mr. Ross A. Scarano, Section Leader
New Facilities Section, Uranium
Recovery Licensing Branch
Division of Waste Management
US Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Scarano:

I am writing to summarize the sampling trip made by Los Alamos Scientific Laboratory (LASL) personnel to Canon City, Colorado to investigate possible trace element contamination near the Cotter Corporation uranium mill. Ernie Gladney and Dan Perrin from LASL were assisted by Ken Weaver of the Colorado Department of Health during the week of June 10 in obtaining surface and ground water, surface and subsoils as well as vegetation samples. Enclosed is a list of samples collected with an accompanying map to illustrate sampling locations. A total of 12 water, 17 soils, and 10 vegetation samples were collected. As of June 25, uranium, sulfate, chloride and some molybdenum and selenium analyses were completed. Within a few days you should be receiving the initial set of LASL analytical results. If you have any questions please let me know (FTS-843-3004).

Sincerely,



David R. Dreesen
Group H-12
Environmental Sciences Group

DRD:tj (F217)

Enc: a/s

xc: Mr. Ray Cooperstein, NRC (enc. LA-UR-78-2147)

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Water Samples

1. Sand Creek Dam - pond behind dam
2. Sand Creek Dam - seep below dam
3. Bosco House Well - pumped
4. Bosco Field Well - bailed
5. Ransom Well - pumped
6. Peterson Well - pumped
7. Dye Irrigation Ditch - near Peterson house
8. McKellar Well - hand pumped
9. Interception Trench - below Cotter Mill above Sand Creek Dam
10. Arkansas River - background station (same as used by Cotter Corp.)
11. Boughton Well
12. Arkansas River - downstream at Fourmile Bridge

Soil Samples

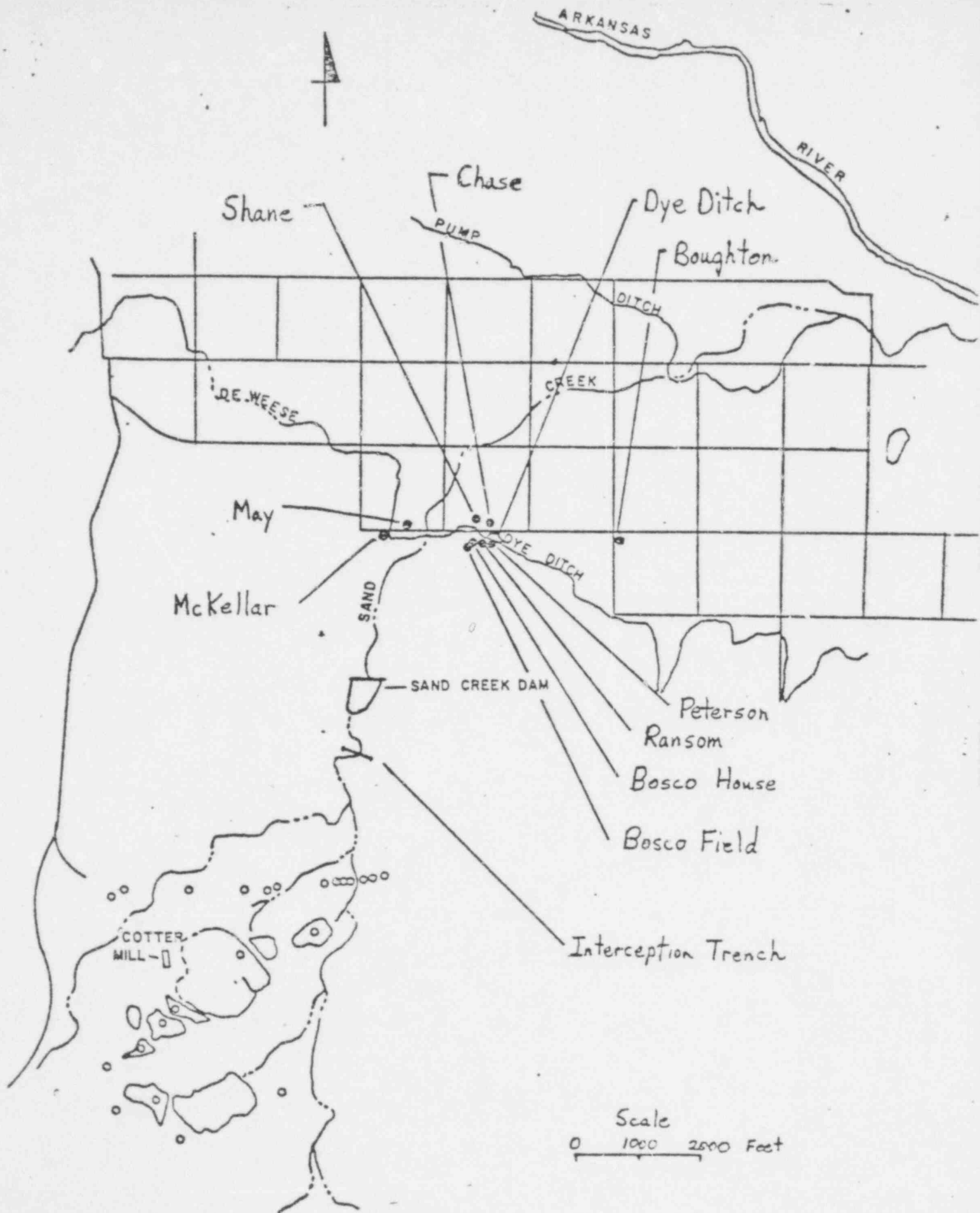
1. Sand Creek Dam - base of dam 15cm depth
2. Sand Creek Dam - base of dam 45cm depth
3. 100m Downstream from Sand Creek Dam - 15cm depth
4. 100m Downstream from Sand Creek Dam - 45cm depth
5. Bosco Field - 15cm depth
6. Bosco Field - 45cm depth
7. Ransom Field - 15cm depth
8. Ransom Field - 45cm depth
9. Peterson Flower Bed - 15cm depth
10. McKellar Pasture - dry channel in pasture - 15cm depth
11. McKellar Pasture - dry channel in pasture - 45cm depth
12. May Residence - 15cm depth
13. May Residence - 45cm depth
14. Boughton Residence - 15cm depth
15. Boughton Residence - 45cm depth
16. Chase Residence (1429 Cedar) - 15cm depth
17. Chase Residence (1429 Cedar) - 45cm depth

Vegetation Samples

1. Rye Grass - Bosco field
2. Grama Grass - Ransom field
3. Grass - Peterson flower bed
4. Grass - Dye irrigation ditch
5. Vegetation - May residence
6. Apples - Boughton residence
7. Cherries - Boughton residence
8. Asparagus - Chase residence (1429 Cedar)
9. Cherries - Chase residence (1429 Cedar)
10. Apples - Shane residence (1427 Cedar)

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LITERATURE CITED

1. S. Amiel, Anal. Chem. 34,1683 (1962)
2. E. S. Gladney, W. K. Hensley, M. M. Minor, Anal. Chem. 50, 652 (1978).
3. L. D. Baver, Soil Physics, 3rd ed., John Wiley, New York, 1956.
4. E. Sawicki, J. D. Mulik, E. Wittgenstein, Ion Chromatographic Analysis of Environmental Pollutants, Ann Arbor Science Publishers, Ann Arbor, Michigan, 1978.
5. D. R. Dressen, E. S. Gladney, J. W. Owens, "Interlaboratory Comparison of As, Mo, and Se Analyses in Uranium Mill Tailings Waters," J. Water Pollution Control Assoc., in press, 1979.
6. E. S. Gladney, D. R. Perrin, J. W. Owens, D. Knab, "Elemental Concentrations in the United States Geological Survey's Geochemical Exploration Reference Samples," Anal. Chem., in press, 1979.

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TABLE I: WATER SAMPLES FROM CANON CITY, CO.

#	pH	U (ppb)	SO ₄ ⁼ (ppm)	Cl ⁻ (ppm)	Mo (ppm)
W-1	7.7 ± 0.1	5790 ± 100	3600 ± 300	320 ± 30	25 ± 2
W-2	8.3 ± 0.1	2800 ± 100	4600 ± 500	370 ± 40	15 ± 1
W-3	7.6 ± 0.1	640 ± 30	580 ± 60	34 ± 3	2.3 ± 0.8
W-4	7.7 ± 0.1	2160 ± 100	2400 ± 200	120 ± 10	24 ± 2
W-5	7.5 ± 0.1	460 ± 25	390 ± 40	31 ± 3	1.0 ± 0.8
W-6	7.6 ± 0.1	540 ± 25	550 ± 60	37 ± 4	3.8 ± 0.8
W-7	8.5 ± 0.1	2.8 ± 0.1	24 ± 2	7.8 ± 0.8	0.08 ± 0.08
W-8	7.2 ± 0.1	39.9 ± 2.0	93 ± 9	32 ± 3	0.08 ± 0.08
W-9	7.6 ± 0.1	4400 ± 100	2200 ± 200	220 ± 20	11.0 ± 1.0
W-10	8.2 ± 0.1	3.8 ± 0.1	20 ± 2	2.2 ± 0.2	0.08 ± 0.08
W-11	7.4 ± 0.1	54.3 ± 2.2	90 ± 9	12 ± 1	0.70 ± 0.08
W-12	7.8 ± 0.1	2.7 ± 0.1	21 ± 2	2.1 ± 0.2	0.08 ± 0.08
NBS 950a (1000 ppb U)		1020 ± 50			
		1031 ± 50			
		1023 ± 50			
EPA Quality Control Samples for Mineral Analyses #1			11.4 ± 1.0	32 ± 3	
			11.0 ± 1.0	33 ± 3	
			9.7 ± 1.0	32 ± 3	
			11.4 ± 1.0	31 ± 3	
			10.8 ± 0.9	29 ± 3	

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TABLE II: SOIL SAMPLES FROM CANON CITY, CO.*

#	Water Content (%)	U (ppm)	SO ₄ ⁼ (ppm)	Cl ⁻ (ppm)	Mo (ppm)
S-1	15.6	13.8 ± 0.7	2300 ± 200	34 ± 3	24 ± 2
S-2	7.0	6.4 ± 0.3	3200 ± 300	49 ± 5	9.5 ± 1.0
S-3	10.0	6.1 ± 0.3	63 ± 6	45 ± 4	4.0 ± 0.5
S-4	4.1	4.2 ± 0.2	1200 ± 100	4200 ± 400	3.2 ± 0.5
S-5	11.6	6.6 ± 0.3	3500 ± 400	32 ± 3	15 ± 2
S-6	9.3	9.1 ± 0.4	3800 ± 400	16 ± 2	24 ± 2
S-7	17.1	3.5 ± 0.2	120 ± 10	130 ± 10	5.9 ± 0.8
S-8	15.1	3.5 ± 0.2	130 ± 10	28 ± 3	2.6 ± 0.5
S-9	13.8	3.9 ± 0.2	210 ± 20	55 ± 6	3.3 ± 0.5
S-10	3.9	7.6 ± 0.3	25 ± 2	8.0 ± 0.8	2.2 ± 0.5
S-11	4.6	3.8 ± 0.2	28 ± 3	16 ± 2	2.3 ± 0.5
S-12	7.4	3.3 ± 0.2	55 ± 6	52 ± 5	1.9 ± 0.5
S-13	5.6	2.8 ± 0.2	42 ± 4	37 ± 4	1.6 ± 0.5
S-14	19.6	4.3 ± 0.2	38 ± 4	24 ± 2	3.6 ± 0.5
S-15	15.3	3.7 ± 0.2	55 ± 6	19 ± 2	2.2 ± 0.5
S-16	15.1	4.2 ± 0.2	470 ± 50	37 ± 4	4.9 ± 0.8
S-17	16.0	4.4 ± 0.2	430 ± 40	130 ± 10	1.5 ± 0.5
CANMET DL-1 (41 ppm U)		41.2 ± 1.2 42.2 ± 1.2			
USGS GxR-5 (30 ± 4 ppm Mo)					29 ± 2 25 ± 3

* Data reported on a dry weight basis

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TABLE III: VEGETATION SAMPLES FROM CANON CITY, CO.*

#	U (ppb)	SO ₄ ⁼ (ppm)	Cl ⁻ (ppm)	Mo (ppm)
V-1	110 ± 10	6000 ± 600	16000 ± 1000	60 ± 5
V-2	90 ± 10	390 ± 40	3000 ± 300	3.4 ± 0.5
V-3	390 ± 40	720 ± 70	1100 ± 100	7.1 ± 0.8
V-4	60 ± 10	4200 ± 400	17000 ± 1000	3.2 ± 0.5
V-5	30 ± 10	1200 ± 100	4200 ± 400	3.3 ± 0.5
V-6	80 ± 10	4100 ± 400	2600 ± 300	1.9 ± 0.5
V-7	60 ± 10	4500 ± 400	1800 ± 200	1.2 ± 0.5
V-8	60 ± 10	420 ± 40	15000 ± 1000	1.6 ± 0.5
V-9	10 ± 10	1800 ± 200	450 ± 40	3.2 ± 0.5
V-10	20 ± 10	6900 ± 700	1800 ± 200	0.5 ± 0.5

*Data reported on a dry weight basis

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