

PDR File Cotter  
M-6

LAW OFFICES  
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(301) 340-0600

June 14, 1979



Mr. Ross Scarano  
Senior Fuel Cycle Licensing  
Specialist  
U.S. Nuclear Regulatory Commission  
Washington, D.C.

Re: Cotter Corporation  
Canon City Mill Expansion Project

Dear Mr. Scarano:

Enclosed is a copy of a letter dated June 6, 1979 from John Logan, consulting geohydrologist to W.A. Wahler & Associates, responding to the matters treated in Dr. Williams letter to you, dated May 24, 1979.

Should you have any questions concerning the enclosure, please advise.

All persons concerned with the deep monitor wells will be closely advised during the conduct of operations, and I believe that matters which arise during drilling can be resolved by on-site discussion.

Sincerely yours,

Edward J. McGrath

cc: Dr. R. Williams  
J. Montgomery

**FEE EXEMPT**

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P.O. BOX 2096, CARMEL, CALIF. 93921 • PHONE (408) 624-8204

June 6, 1979

W. A. Wahler & Associates  
1023 Corporation Way  
P. O. Box 10023  
Palo Alto, California 94303

Attention: R. H. Lubina

Reference: Cotter Project; comments on R. E. Williams' letter  
to Ross Scarano dated May 24, 1979

Gentlemen:

The several items in Dr. Williams' referenced letter are numbered and I will use his numbering scheme, below:

Point 1

The identical suite of borehole logging that is to be obtained in the northernmost monitor well has been recommended for the southernmost. See also my letter to Dr. Muriel Robinette of 14 May 1979.

Dr. Williams suggests the use of flowmeter logging. I doubt that this can be done in 2" or 1.5" IPS with fluid being extracted by air lift, but I will discuss this matter with Dr. Williams at my first opportunity.

Point 2

The southernmost monitor is to be drilled at the site of the OW-5 series of piezometers, where three separated shallow zones are now under observation.

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Point 3

I agree.

Point 4

The proposed completion schedule for the southernmost monitor (presented in B5i of my letter of 6 May) was only an illustration of one possible method. I agree with the second sentence of Dr. Williams' comment, but I am more optimistic about the theme of his third sentence than he is.

Point 5

The type of packer that I have recommended uses a proven procedure. No bentonitic layer is needed: it would only add to the cost of the packer without contributing to the efficiency. Further, I would prefer ordinary rather than "10 minute" grout, although sand-cement grout with additives for shrinkage control and some acceleration of set would be acceptable.

Point 6

I agree with the third sentence: the option is to be left open. My suggested completion schedule was only illustrative.

Point 7

Both monitors are designed only for the gathering of information. Should "pump-back" ever be needed at either location, it should be done through a full-fledged water well, especially constructed for optimum yield.

Point 8

Again, the suggested completion schedule of my A2di was only illustrative. As indicated in the heading of A2d, the actual schedule must be prepared in the field and will be based on the core and borehole-logging records.

Point 9

As indicated on the cross-section in my letter of 29 March on "The Deep Path", the northernmost monitor will penetrate sections of the Vermejo formation that are stratigraphically far below the Wolf Park coal seams. The coals reportedly encountered in wells 56, 36, 38 and 41, and in Hershey's D-6 are not yet identified, and I am only guessing that they represent the Royal gorge or Radiant horizons. Should I be correct in that guess, I would be exceptionally surprised if any raffinates contained in the former Wolf Park mine workings have migrated stratigraphically downward and have worked their way hence updip to the affected area in Lincoln Park. Such surprise would be based on (1) my own personal observations of Vermejo lithology in the area and on (2) the reasonably detailed record given by Hershey of the Vermejo lithology in the Silengo test hole.

Obviously, I can be wrong, and that's what this entire exercise is all about. To monitor any possible migration of raffinates into the affected area along the so-called "deep path" -- i.e., along the Royal gorge horizon -- I suggest that a total depth of 350' at the northern monitor is both adequate and sufficient.

Why did I recommend 350' as the TD of the northernmost monitor? It was a guess, based on the cross-section presented in my letter of 29 March. I am open to suggestions for revision.

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At 15h45 PDT today, John Ivey of Amuedo and Ivey reported the results of that firm's electrical-resistivity profiling to me by phone. He stated that the center of the conductivity anomaly was found at a point approximately 70' W and 755' S of the NE corner of section 9 and I have recommended that the northern monitor be drilled there, land ownership permitting. At that location, I will further guess that the interstitial fluids in the Vermejo formation will be highly conductive, whether they contain raffinates or not, and I will stick out my neck and additionally guess that the conductivities may exceed 4,000 - 5,000 microsiemen/cm without the presence of raffinates, below some 150' of depth. How then will we recognize the presence of raffinates? By the molybdenum content, of course, and that explains my earlier recommendation to have a portable Mo-tester at the site during the air-lift "pumping".

Point 10

I have no objections whatsoever to the use of dyes for the purposes suggested by Dr. Williams, and I am sorry that I had not thought of this myself. If time permits, a Rhodamine dye should be used. But should the dye indicate that the borehole is "clean" at a lower volume of water, "pump" 15-20 times the computed volume anyway.

An additional comment; not one of Dr. Williams' points

This afternoon, Dr. Williams and I discussed the deep drilling program by phone. We agree that someone should be on site to interpret the core and bore-hole logging record, and to designate the depths at which the packers are to be set. If I were there, I would be exceptionally pleased to receive and consider recommendations from representatives of the CDH, CGS and NRC, and I would hope that such representatives would be present. Specifically, I would be certain to profit from any advice given by NRC representatives such as Dr. Williams or Dr. Robinette. At the same time, however, the person

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in charge of the operation -- be it myself or someone else -- must retain  
the responsibility for the final decisions.

Respectfully submitted,

**ORIGINAL SIGNED BY**

John Logan

JL:kau

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