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ENVIRONMENTAL
CONSULTING, L.C.

March 23, 2005

Jeff Myrom, Deputy Bureau Chief
Energy and Waste Management Bureau
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, IA 50319

Re: Comments – Alternative Liners

Dear Jeff:

Thank you for inviting input on the questions being posed relative to Alternative Liners. Many of us in Iowa's solid waste industry are not trained or experienced in the computer modeling programs and cannot specifically respond to your questions. However, I do have basic geology and hydrogeology training and understand the relationship and effect solid waste has on some of Iowa's soils.

No one is stating that all of Iowa's landfills must use or even should use an Alternative Liner concept. Neither should all landfills be required to use the FML composite ("default") liner when an alternative liner has the ability to be superior to the composite liner. Every site is unique and IDNR should take the approach that every site should utilize for the best practical liner design in the same manner that other regulated facilities (air pollution, wastewater treatment, etc) are allowed to design and construct. However, the best liner does not necessarily mean an FML liner.

An "engineered" clay alternative liner has the ability to limit the downward leakage of any leachate through the soil's natural ability to absorb, expand, and attenuate. A FML has none of this ability.

Current, regulations restrict hydraulic downward pressure through the limiting of leachate to no more than one foot of head. However, a leak in an FML liner may allow in even a fraction of an inch of leachate to flow towards that opening and seep through it. That site then has only two feet of soil to intercept and protect the underlying groundwater. With an alternative liner, the clay soils can absorb and even seal off the leak as well as having at least four foot of soil providing twice the security for the underlying groundwater. How can allowing the recirculation of leachate on FML liners be allowed but not allow it on alternative liners? Logically, it should be the other way around. One foot of leachate head on an alternative liner will have negligible

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impact but will have significant impact below a leaking FML liner. And FML liner systems are now reportedly designed with at least some leaks anticipated.

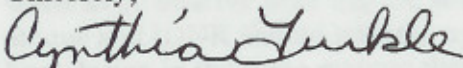
In addition, the clay soils serve to attenuate the leachate contaminants, something no FML can do. In fact, it is very questionable whether an FML can hold up to the leachate contaminants in the anticipated post-closure period. An FML is also less likely to hold up under differential settlement, but an alternative clay liner is negligibly affected.

I believe the responses from Hal Morton and from FOX Engineering address your questions in more details than I can. I fully support their comments and their supporting references. It is my feeling that IDNR needs to hire someone with geologic and hydrologic training and experience to evaluate the existing modeling programs and to assist in the development of acceptable rules that will hold all types of liners to the same evaluating requirements and standards.

Have we placed the cart before the horse? It is my belief that IDNR should have resolved these issues and finalized the Chapter 113 rules prior to establishing a deadline date for landfills to move from vertical expansions to the horizontal expansions. With so much uncertainly trickling down from the IDNR about whether alternative liners will be allowed and whether recirculation of leachate will be allowed on them, many planning areas are having a difficult time choosing the best liner technology for their site. Planning areas are faced with spending hundreds of thousands of dollars and IDNR is faced with approving future designs. All of this could and should have been done more logically by having the rules finalized prior to the planning areas committing to a specific site design and prior to IDNR approving those design plans.

Thank you for this opportunity to respond. If you wish to discuss my comments further, please feel free to contact me.

Sincerely,



Cindy Turkle

President and Senior Environmental Professional