MARVIN E. WHITE, JR, PE
—o—
1019 TEAKWOOD LANE ENOLA, PA 17025
717-732-7970 FAX 732-7012

March 30, 2006

At the request of Mrs. Deana Weaver, we have reviewed selected material related to the Michael Sunday municipal waste disposal site and offer the following comments:

1. ARM Group, Inc. Testing Program, December 2005.

ARM Group (ARM) performed a soil testing program for the York County Solid Waste and Refuse Authority. The scope of work was very limited and on December 13, 2005 they submitted a letter report to the Authority.

ARM used a commercial "Geoprobe" device for testing. This type of equipment is limited for soil analysis under specific conditions. The device does not have the capability of penetrating or testing bedrock and certain soils can create difficult to impossible conditions; ie, soils having large cobbles or boulders and certain hard clays that act similar to bedrock. Soils at the site are Lehigh channery silt loam. Soils below the 36-inches can have as much as 80 percent stones.

ARM noted their equipment limitation in their proposal. Basically the proposal was to determine the depth to ground water and was further qualified that any water table contacted was to be within the soil.. Specifically, ARM was to verify that an 8 feet separation was between the AggRite fill and groundwater.

If the groundwater level was within bedrock, which is not unusual, the ARM testing did not go deep enough to locate water. In all test borings the Geoprobe did not contact the water table in the soil. ARM could not report the actual depth to the water table. below the waste site. There are other soil analysis probes available that do have the capability to penetrate bedrock.

However, the ARM report does identify the lack of attenuating soil at the site.
Test borings indicate the depth of attenuating soil between the AggRite and bedrock is maintained at very shallow depths:

P1	6 ft	P2	3.5 ft	P3	5.5 ft	P4	1.8 ft
P5	**	P6	**	P7	**	P8	**
P9	4.5 ft	** Borehole is apparently beyond the AggRite disposal area limits.					

Depth to bedrock

P5	7.7 ft	P6	6 ft	P7	9.2 ft	P8	8.2 ft

PA Code Title 25, Section 288.624 discusses attenuating soils and states there must be 8 feet of soil above the lowest waste elevation and that the regional groundwater level shall not be within the soil base. Seasonable table may rise to within 4 feet but still may not be located within the soil base. None of the test borings taken with the actual waste disposal area show the minimum required attenuating soil thickness.

The Regulations go further to identify acceptable attenuating soils. Lehigh does not meet the soil requirements and there is no evidence that acceptable soils were imported to the site.

There is a groundwater sampling program in place during December 2005 and ground water was detected in P7 and P8. The depth to water varied, but averaged about 6.4 feet below the surface.

ARM reported contact with a weathered diabase, which may be subject to question. Geology maps of the area do not show diabase present at the surface. The bedrock, as mapped, is a metamorphosed shale (porcelanite). It is conceivable that diabase could possibly be present several hundred feet below the landfill.

Diabase, traditionally, is a poor to very poor aquifer. .Wells traditionally exceed 800 feet to find useable water sources. CR Wood, PaGS W-49 shows the presence of fracture traces (lineaments) in the general vicinity of the fill site. Wells located on or near a fracture trace typically indicate higher ground water tables and significant yields.

2. The permit the maximmum pH for the waste product at 11.0. It should be noted that products with a pH greater than 9.0 cannot sustain a vegetative growth. When the pH is 11.0, the alkalinity is 100 times greater and any vegetation coming in contact will simply burn. A substantial soil cover is required to both encapsulate the waste and provide a suitable matrix that will sustain vegetation.

The General Permit issued to American Ash does not discuss details regarding the type of cover to be used or the thickness it is to be placed. We understand that the landowner is operating under a beneficial use permit. It appears that the owner has not adapted the permit to fit the site. There are questions about daily operations that go beyond a beneficial use permit that need to be addressed.

We understand that the York County Conservation District has visited the site and has made comments under the auspices of erosion control.

There have been only the very basic attempts to address geology or hydrology concerns. There is a sampling programs for leachate but It would appear that the testing is performed from a test sample that is leached in the laboratory and may not be relative to actual field events. There apparently is no permanent groundwater monitoring program.

3. The General Permit issued to American Ash Recycling Corporation of America, 12/23/1997 does identify maximum limits for the leachate.

Tables 1 and 2 provides a listing of several products and identifies their leachable limits. We have taken the liberty to compare these limits to the Pennsylvania Code Title 25 Section 93., Water Quality Standards for the Waters of the Commonwealth.

Table 1	Permit Limit	Chapter 93 Limit
pH	11.0	6.0 to 9.0
2,3,7,8-Tetrachlorodibenzo-p-dioxon	120 ppt = 0.00012 mg/l	

Table 2	Permit Limit mg/l	Chapter 93 Limit Section 93.7 Table 3 mg/l	Drinking Water Standard Mg/l
Arsenic	1.25	*	0.01
Barium	50	*	2.0
Beryllium	0.1	*	0.004
Cadmium	0.25	*	0.005
Chromium	1.25	*	0.1
Copper	32.5	*	AL = 1.3
Lead	1.25	*	AL = 0.015
Mercury	0.05	*	0.002
Nickel	2.5	*	0.001
Selenium	1.0	*	0.05
Sulfate	2500	250	
Zinc	125	*	
Chloride	2500	250	MRDL = 0.8
Manganese**		1.0	

AL = Action Level MRDL = Maximum Residual Disinfectant Level

* Section 93.8a, Toxic Substances, states that the Waters of the Commonwealth may not contain toxic substances attributable to point or nonpoint discharges.. Pa Code 25, Chapter 16 provides a detailed listing of toxic substances and the respective water quality management criteria.

** Manganese is used by as an indicator fo the presence of other heavy metals. If Mn is below 1 mg/l then the heavy metal concentrations are generally below limits.

It would appear that the limits set by the beneficial use permit are 50 to 100 times higher than groundwater criteria from other programs. It would also appear the permit writers have placed a large degree of reliance on the attenuating soil to cleanse any waste leachate entering the groundwater. We would remind you that the recent drilling records do not indicate the proper soil thickness or even the proper type of soil being used on the site.