

October 27, 2009

Mr. Stanley Meiburg
Acting Regional Administrator
US Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Re: Deficiencies of the Operating Permit of the Perry County (Arrowhead) Landfill and the Need for Meaningful Public Involvement

Dear Mr. Meiburg:

This letter expresses our concerns regarding the potential exposure of residents of Perry County, Alabama to hazardous substances resulting from the disposal of metal-laden coal ash at the Perry County ("Arrowhead") Landfill. The ongoing transport of millions of tons of coal ash from the Tennessee Valley Authority (TVA) Superfund site in Kingston, Tennessee to the Arrowhead Landfill in Uniontown, Alabama threatens to place those living near the permanent coal ash disposal site at great risk. According to TVA officials, approximately 10,000 tons of coal ash arrive daily at the landfill. The TVA's announced increase in the rate of rail shipments to the landfill by over 20% -- to 110 cars of coal ash daily--will increase this risk of exposure.

The Arrowhead Landfill poses a potential threat to the residents of Uniontown. According to U.S. Census Bureau statistics for 2000, 317 Uniontown residents live within one half mile of the landfill. Within 5.0 miles of the landfill there are 1,300 households comprising over 3500 people. The residents of Perry County are 69% African-American with more than 32% living in poverty. *See* Attachment 1. The EPA is allowing the transport of millions of tons of a hazardous substance, namely coal ash, to a state that has *no* regulations governing the disposal of the waste. Yet it is the EPA's responsibility to ensure that the residents of Uniontown are protected from both short-term and long-term exposure to the hazardous constituents of the TVA coal ash.

The current operating permit of the Arrowhead Landfill, however, is deficient in critical areas, and these deficiencies potentially place this community at risk for air and water contamination. In sum, nothing in either the landfill's operating permit, the Administrative Order and Agreement on Consent (AOC) signed by TVA and the U.S. Environmental Protection Agency (EPA), or the State of Alabama's regulations governing solid waste disposal specifically requires the landfill owner or operator: (1) to eliminate, minimize, or monitor exposure from fugitive dust; (2) to monitor groundwater or surface water for the most common contaminants from coal ash; or (3) to guarantee long-term monitoring of the ash landfill after the completion of the disposal. In view of the seriousness of the health threat to Perry County residents, we request the EPA's

immediate attention to these matters and the amendment of the AOC to address these threats.

1. *Threats from Fugitive Dust at the Arrowhead Landfill*

a. *Documented Threat from Inhalation of the TVA Coal Ash*

The threat to human health from inhalation of the coal ash released from the Kingston facility has been recently examined by scientists from Duke's Nicholas School of the Environment, Duke's Pratt School of Engineering, the Duke Comprehensive Cancer Center, and the Georgia Institute of Technology. Their double-blind, peer-reviewed study was published on August 15, 2009 in the journal *Environmental Science and Technology*. See Ruhl, L. Vengosh, A, Dwyer, G. Hsu-Kim, H, Deonarine, A, Bergin, M., Kravchenko, J. Survey of the Potential Environmental and Health Impacts in the Immediate Aftermath of the Coal Ash Spill in Kingston, Tennessee. *Environ.Sci. Technol.* **2009**, 43(22), 6326–6333.(Attachment 2) This study examined the potential human health impacts from inhalation of the coal ash released from the TVA plant. According to the authors, the study “highlights the high probability of atmospheric resuspension of fine fly ash particulates, which are enriched in toxic metals and radioactivity, and could have a severe health impact on local communities and workers.” *Id.* at 6331.

In the study, the scientists analyzed the toxic elements of the TVA coal ash that is currently being disposed at the Arrowhead Landfill. Their analysis of ash samples revealed that the Kingston ash contains high levels of toxic metals and radioactivity, including 75 parts per million of arsenic, 150 parts per billion of mercury, and 8 picocuries per gram of total radium. According to the study, the high concentrations of trace metals and radioactivity in the bulk TVA coal ash “are expected to magnify, as fine fractions of fly ash (which may be resuspended and deposited in the human respiratory system) are typically 4-10 times enriched in metals relative to the bulk ash and the coarse size fraction.” *Id.* In addition, the study notes that the “toxic metal content in coal ash, the sizes of fly ash particulates, and the ionizing radiation (IR) exposure (both incorporated and external) may act synergistically or, less frequent, antagonistically, affecting human health directly (predominantly through inhalation of contaminated air).” *Id.*

The study also notes that coal ash is a Group I human carcinogen associated with increased risks of skin, lung, and bladder cancers. Arsenic and radium exposures in humans are associated with increased risks of skin, lung, liver, leukemia, breast, bladder, and bone cancers for exposure predominantly due to chronic ingestion or chronic inhalation, with the dose-response curve dependent on location, sources, and population susceptibility and/or tolerance. *Id.* The study states that coal ash particulates:

affect lung epithelial and red blood cells in animal studies and human in vitro models, causing inflammation, changing the sensitivity of epithelia, altering immunological mechanisms and lymphocyte blastogenesis, and

increasing the risk of cardiopulmonary disease (e.g., pulmonary vasculitis/hypertension). Individuals with pre-existing chronic obstructive pulmonary disease, lung infection, or asthma are more susceptible to the coal ash affliction. Several epidemiological studies have proved the significant health hazards (such as enhanced risk for adverse cardiovascular events) of fine-particulate air pollution for individuals with type II diabetes mellitus and people with genetic and/or disease-related susceptibility to vascular dysfunction, who are a large part of the population.

Id. (Citations omitted.)

Lastly, in addition to the threats posed by inhalation of trace metals such as arsenic and lead, the study also identifies risk from inhalation of radium in the Kingston ash:

Radium-226 and 228Ra, which are the main sources of low-dose IR exposure in coal ash, can remain in the human lung for several months after their inhalation, gradually entering the blood circulation and depositing in bones and teeth with this portion remaining for the lifetime of the individual. When inhaled, the radionuclides can affect the respiratory system even without the presence of the other coal ash components. Thus, the airborne particles containing radioactive elements inhaled by cleanup workers of the nuclear accident at the Chernobyl nuclear power plant caused bronchial mucosa lesions, in some cases preneoplastic, with an increased susceptibility to the invasion of microorganisms in bronchial mucosa. Consequently, the combined radioactivity of coal ash at the TVA spill, together with other enriched trace metals such as Ni, Pb, and As, may increase the overall health impact in exposed populations, depending on duration of exposure, and particularly for susceptible groups of the population.

Id. (Citations omitted.) Thus, it is imperative that the landfill permit and the AOC require that adequate safeguards be established to eliminate or minimize exposure to airborne coal ash from disposal operations.

b. Deficiencies in the Arrowhead Landfill Permit relating to Fugitive Dust Control Place Residents at Risk

Nothing in the current permit requires the owner or operator of the landfill to take any specific precautions to eliminate the threat of airborne ash. While the permit does require placement of “daily cover,” the permit specifically allows the use of *coal ash* as an “alternative daily cover material” to cover the TVA ash. See Section III.H.2. of the Permit Modification for the Arrowhead Landfill, dated July 20, 2009, <http://www.arrowheadlandfill.com/Solid%20Waste%20Permit.pdf>. (Attachment 3) In

view of the absence of any specific permit conditions requiring control of fugitive dust, the allowance of *coal ash as a daily cover* creates a further potential for injury.

c. Residents of Perry County Need Protection Consistent with Safeguards Employed at the Kingston Disaster Site

In line with the recommendations set forth in the Duke Study, the TVA's remediation activities at the Kingston disaster site have focused directly on preventing the spilled ash from becoming airborne. According to TVA officials, an aggressive dust suppression and control program has been implemented that includes the use of road vacuums and water trucks to suppress dust generation by vehicle traffic, wetting ash areas with truck-mounted water cannons, and establishing vegetative cover for longer-term dust management. Also according to the TVA, a comprehensive air-monitoring program has been established in the spill area. Residents of Perry County are potentially exposed to the same dangerous ash as the Tennessee residents, and they deserve at least a commensurate, if not greater level of protection, because those residing near the final disposal site—the Arrowhead Landfill—face a much longer-term health threat. To establish a commensurate level of protection, the EPA should require, in an amendment to the AOC, that disposal of coal ash be terminated at any landfill that does not guarantee adequate control of fugitive dust.

2. The Operating Permit's Groundwater Monitoring Parameters Are Inadequate to Protect Health and the Environment in Perry County

Groundwater monitoring parameters for the Arrowhead Landfill do not include several contaminants found commonly in leachate generated by coal ash disposal. According to Table IV.3 of the Permit Modification for the Arrowhead Landfill, the parameters to be monitored on a semi-annual basis are those parameters listed in Appendix I of Chapter 335-13-4 of the Alabama Administrative Code. These parameters do *not* include boron, manganese, molybdenum or sulfate, four very common coal ash pollutants. See U.S. Environmental Protection Agency, Report to Congress on the Wastes from the Combustion of Fossil Fuels, March 1999 at 3-17. In fact, EPA's list of 67 "damage cases," defined as sites contaminated by coal combustion waste, include 38 sites contaminated by sulfate, 24 sites contaminated by manganese, 10 sites contaminated by boron, and 3 sites contaminated by molybdenum. See U.S. EPA, *Coal Combustion Waste Damage Case Assessments*, July 2007. Lastly, the EPA's draft Human Health and Ecological Risk Assessment for Coal Combustion Wastes (July 2007) specifically identified elevated risk to human health and the environment from the leaching of both boron and molybdenum from coal ash landfills. *Id.* at ES 1-2. We therefore request that the AOC be amended to require that any landfill accepting coal ash provide baseline data for these pollutants, sample for these additional parameters, and perform monitoring quarterly rather than semi-annually for all contaminants.

3. The Operating Permit's Post-Closure Requirements Fail to Require At Least 30 Years of Post-Closure Monitoring

According to Section VIII of the Permit Modification for the Arrowhead Landfill,

the length of the period of post-closure groundwater and surface water monitoring is left to the discretion of the Alabama Department of Environmental Management (ADEM). It is essential, however, for the protection of the community that at least 30 years of post-closure groundwater and surface water monitoring be required at the Arrowhead Landfill. According to the EPA's Human Health and Ecological Risk Assessment for Coal Combustion Wastes, the risk of leachate migration and contamination of underlying groundwater increases with time. Therefore monitoring must continue for a substantial period after disposal ends to make sure that pollutants do not migrate from the landfill and contaminate the underlying groundwater or surface water. According to the operating permit and Alabama regulations, the ADEM has authority to decrease the length of the post-closure care period. *See* ADEM Rule 335-13-4-.20(3)b. While 30 years is the standard period of post-closure monitoring for non-hazardous waste, it would be preferable to monitor the wells in perpetuity, unless it can be demonstrated that monitoring is no longer necessary to protect human health and the environment. Thus the EPA should amend the AOC to permit coal ash disposal only at a landfill that provides sufficient long-term post-closure monitoring.

Further, according to an August 19, 2009 memorandum from Wesley S. Edwards of ADEM's Hydrogeology Section, Groundwater Branch to Phillip D. Davis, Chief of ADEM's Solid Waste Branch, groundwater monitoring at the landfill has already resulted in a statistically significant increase (SSI) for concentrations of barium in two of the landfill's downgradient monitoring wells. *See* ADEM Memorandum, Attachment 4. There is nothing in the record that indicates that the Arrowhead Landfill owner or operator has submitted the notice required by state regulations or that enhanced "assessment monitoring" has been initiated to determine the extent of the elevated barium. In view of the ADEM's determination that groundwater contamination may already be occurring, it is essential that adequate monitoring be immediately required and that the period of monitoring be sufficient to detect contamination over the long-term. We thus ask, in addition, that the EPA investigate whether the landfill is in compliance with ADEM regulations that require specific measures be taken by the operator of the landfill following the determination of a SSI. *See* ADEM Rule 335-13-4-27.

4. Request for a Technical Assistance Grant

Our rudimentary review of the Arrowhead Landfill's operating permit uncovered the deficiencies noted in this letter. This review, however, did not and could not address many of the technical issues presented by the massive disposal operation. A comprehensive technical review of the construction of the landfill and its operating permit is necessary and should be completed by an engineer with the requisite skills and experience. Such a review will assist the community to understand and address both the short and long-term impacts of the coal ash disposal in their community. This review is essential to enabling the community to participate meaningfully in subsequent decisions by your agency and the ADEM as the disposal operation moves forward. We therefore request that the EPA make available a Technical Assistance Grant to help the Concerned Citizens of Perry County engage a technical advisor to perform this review. We hope that this grant may be made expeditiously in light of the unprecedented pace of the ongoing disposal of the coal ash in Uniontown.

5. Request for a Public Meeting on the Engineering Evaluation/Cost Analysis (EE/CA) Work Plan for the TVA Fossil Plant Release Site

On October 21, 2009, the TVA released the “Kingston Fly Ash Recovery Project Non-Time Critical Removal Action Scope and Engineering Evaluation/Cost Analysis (EE/CA) Work Plan,” completed pursuant to the EPA/TVA AOC. According to regulations promulgated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in the National Oil and Hazardous Substances Contingency Plan, the EPA must provide the opportunity “for submission of written and oral comments” following the publication of the EE/CA. *See* 40 C.F.R. § 300.415(n)(4)(iii). Consequently, we request that the EPA hold a public hearing on the Kingston Fly Ash Recovery Project Plan in Uniontown, Alabama. As is readily apparent by the ongoing disposal at the Arrowhead Landfill, the residents of Uniontown are acutely affected by the cleanup of the Kingston site. The cleanup alternatives proposed in the TVA plan range from onsite disposal of the ash to 6.3 million cubic yards of additional coal ash disposed off-site (and likely in Uniontown). CERCLA regulations provide for the involvement of affected citizens in the cleanup planning stages of non-time critical removal actions like the Kingston cleanup. A public hearing prior to the close of the EE/CA comment period is specifically guaranteed in the regulations.

In addition, the provision of a hearing in Uniontown is inconsistent with and arguably required by Section 2-2 of Executive Order 12898. Section 2-2 directs each Federal agency to conduct its programs

that substantially affect human health or the environment in a manner that ensures that such programs... do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies and activities because of their race color or national origin.

See Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629 (February 16, 1994).

In sum, we respectfully request your prompt action to address the serious gaps in the safeguards at the Arrowhead Landfill and the need for meaningful community involvement. First, it is essential that these safeguards, including adequate water and air monitoring, be put in place as soon as possible. Deposition of coal ash at the Arrowhead Landfill is likely to continue at a rapid pace for many months to come. Consequently all reasonable measures must be taken immediately to eliminate potential threats posed by the coal ash. Secondly, decisions continue to be made that significantly impact the lives, health and livelihood of the residents of Perry County, without an opportunity for their meaningful input. Thus we respectfully request that the EPA move swiftly to provide a

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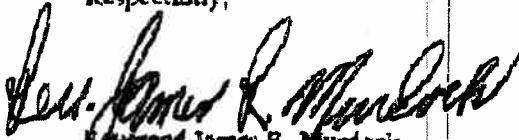
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Technical Assistance Grant and facilitate a public meeting to ensure the community's genuine and substantive involvement in the decisions that are so vital to their welfare.

Thank you in advance for your timely consideration of these important matters.

Respectfully,



Reverend James R. Murdock
President
Concerned Citizens of Perry County
Uniontown, Alabama
(334) 216-2490



Lisa Evans
Senior Administrative Counsel
Earthjustice
Marblehead, MA
(781) 631-4119
levans@earthjustice.org