BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF AMEREN ENERGY	)	AS 09-_____
GENERATING COMPANY FOR ADJUSTED	)	(Adjusted Standard – Land)
STANDARDS FROM 35 ILL. ADM. CODE	)	
PARTS 811, 814, AND 815	)	

NOTICE OF FILING

To: John Therriault, Acting Clerk
Pollution Control Board
100 West Randolph St.
Suite 11-500
Chicago, Illinois 60601

William Ingersoll
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19267
Springfield, IL 62795-9276

Kyle Davis
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19267
Springfield, IL 62795-9276

Please take notice that on August 11, 2008, we filed electronically with the Office of the Clerk of the Illinois Pollution Control Board, the attached Petition of Ameren Energy Generating Company for Adjusted Standards from 35 Ill. Adm. Code, Parts 811, 814, and 815, Certificate of Service, and Appearance, copies of which are served upon you.

Ameren Energy Generating Company

Amy Antoniolli

By: Amy Antoniolli

August 11, 2008

Amy Antoniolli
Schiff Hardin LLP
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606
Telephone: 312-258-5550
Email: aantoniolli@schiffhardin.com

CERTIFICATE OF SERVICE

I, the undersigned attorney, certify that I have filed the documents described above electronically with the Illinois Pollution Control Board and served the Illinois Environmental Protection Agency with the same documents by First Class Mail, postage prepaid, on August 11, 2008.

Amy Antoniolli

August 11, 2008

Amy Antoniolli
Schiff Hardin LLP
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606
Telephone: 312-258-5550
Email: aantoniolli@schiffhardin.com

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF AMEREN ENERGY	)	AS 09-_____
GENERATING COMPANY FOR ADJUSTED	)	(Adjusted Standard – Land)
STANDARDS FROM 35 ILL. ADM. CODE	)	
PARTS 811, 814, AND 815	)	

APPEARANCE

Schiff Hardin LLP, by its attorneys, Amy Antoniolli and Joshua More, files its appearance on behalf of Ameren Energy Generating Company.

Amy Antoniolli

Joshua More

Amy Antoniolli
Telephone: 312-258-5550
Email: aantoniolli@schiffhardin.com

Joshua More
Telephone: 312-258-5769
Email: jmore@schiffhardin.com

Schiff Hardin LLP
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606

BEFORE THE
ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF AMEREN ENERGY	)	AS 09-_____
GENERATING COMPANY FOR ADJUSTED	)	(Adjusted Standard – Land)
STANDARDS FROM 35 ILL. ADM. CODE	)	
PARTS 811, 814, AND 815	)	

PETITION FOR ADJUSTED STANDARDS FROM CERTAIN REGULATIONS GOVERNING EXISTING LANDFILLS

Submitted on behalf of
Ameren Energy Generating Company

St. Louis, Missouri

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF AMEREN ENERGY	)	AS 09-_____
GENERATING COMPANY FOR ADJUSTED	)	(Adjusted Standard – Land)
STANDARDS FROM 35 ILL. ADM. CODE	)	
PARTS 811, 814, AND 815	)	

PETITION FOR ADJUSTED STANDARDS

Ameren Energy Generating Company ("Ameren" or "the Company"), by and through its attorneys, Schiff Hardin, LLP, and pursuant to Section 28.1 of the Environmental Protection Act, 415 ILSC 5/28.1 (the "Act"), and 35 Ill. Adm. Code 104, requests that the Illinois Pollution Control Board (the "Board") adopt adjusted standards from certain solid waste landfill standards set forth in 35 Ill. Adm. Code Parts 811, 814, and 815 as those Parts apply to closure of a former ash impoundment located at the Hutsonville Power Station (the "Facility" or "Station").

I.
INTRODUCTION

The Station contains a coal-fired electrical generating plant and a wastewater disposal system for management of coal-combustion wastes, including fly ash. The wastewater disposal system consists of five surface impoundments, denominated Pond A, Pond B, Pond C, Pond D, and the bottom ash pond. Pond D, the subject of this petition, was constructed as a surface impoundment in 1968, and was operated and permitted as such.

Ameren seeks this relief in order to complete the closure of Pond D. The pond is no longer receiving coal combustion wastes and has been dewatered. According to the Illinois Environmental Protection Agency (the "Agency"), the pond must now be closed consistent with the landfill regulations contained in 35 Ill. Adm. Code Parts 811 through 815, as they apply to the closure of Pond D. Because Pond D was created, operated, and managed throughout its operating life as a surface impoundment, no landfill permit was required pursuant to Section

21(d) of the Act. 415 ILCS 5/21(d) (2006); 35 Ill. Adm. Code 810.103; *see* In re: Conversion Systems, Inc., PCB AS 93-4, slip op. at 1, fn. 3 (Aug. 26, 1993), ("the definition of landfill in the Board's landfill regulations presently does not include the surface impoundments commonly used by utilities for disposal").

Upon final disposition of this petition, Ameren will initiate closure of Pond D. Ameren considers Pond D at closure as an "existing" facility under the applicable landfill regulations because it accepted wastes prior to September 18, 1990, the effective date of the landfill regulations. 415 ILCS 5/810.103 (2006); Development, Operating and Reporting Requirements for Non-Hazardous Waste Landfills, R88-7 (Aug. 17, 1990). Because Ameren operated Pond D as a water pollution treatment facility and Pond D has received only wastes generated by Ameren within the Site, no landfill permit is required pursuant to Section 21(d) of the Act at closure. 35 Ill. Adm. Code 810.103. As an existing facility exempt from permitting requirements under Section 21(d)(1)(i) of the Act (415 ILCS 5/21(d)(1)(i)), Pond D is subject to 35 Ill. Adm. Code 814.302(a) and (b), as well as the applicable Part 811 and Part 815 requirements, at closure.

Because these regulations were drafted to manage solid waste landfills, many of the landfill regulations are not applicable to a previously operated surface impoundment, permitted as a water pollution control facility. Plainly, the circumstances applicable to this ash pond are very different from those contemplated by the Board in adopting Parts 811 through 815.[1]

As discussed below, granting the proposed relief will not result in any environmental or health effects substantially or significantly more adverse than the effect considered by the Board

---

[1] The need for regulatory relief for the closure of ash ponds is not unique to Ameren's Hutsonville Power Station. Many more coal combustion electric generating facilities throughout Illinois will face a similar need for relief as their on-site ash ponds reach capacity and are taken out of operation.

in adopting the landfill regulations. For the reasons discussed in this Petition, Ameren respectfully requests that the Board grant this relief.

II.
REGULATIONS FROM WHICH ADJUSTED STANDARDS ARE SOUGHT
(35 Ill. Adm. Code 104.406(a))

Ameren requests adjustments to the following sections of 35 Ill. Adm. Code Parts 811[2], 814, and 815:

(1) Final cover requirements (35 Ill. Admin Code 811.314(b)(3);

(2) Standards prescribing a leachate collection and management system (35 Ill. Adm. Code 814.302(b)) and 811.309;

(3) Groundwater impact assessment requirements (35 Ill. Adm. Code 811.317 and 319(c));

(4) Maximum allowable predicted concentration ("MAPC") requirements (35 Ill. Adm. Code 811.318 and 811.319);

(5) Groundwater quality standards as applied to boron, sulfate, manganese, pH and total dissolved solids ("TDS") and the groundwater quality standards as they define the zone of attenuation (35 Ill. Adm. Code 811.320);

(6) Groundwater monitoring requirements for selected inorganic and all organic constituents (35 Ill. Adm. Code 811.319);

(7) Monitoring well location requirements(35 Ill. Adm. Code 811.318(b));

(8) The following operating conditions do not apply:

35 Ill. Adm. Code 811.105 - compaction of waste
35 Ill. Adm. Code 811.106 - daily cover
35 Ill. Adm. Code 811.107(a) - phasing of operations
35 Ill. Adm. Code 811.107(b) - working face
35 Ill. Adm. Code 811.107(i) - vector control
35 Ill. Adm. Code 811.310, 811.311, 811.312 - landfill gas monitoring and management
35 Ill. Adm. Code 811.313 - intermediate cover

---

[2] As amended by Proposed Amendments to Solid Waste Landfill Rules, 35 Ill. Adm. Code 811 and 814, R07-8 (Nov. 15, 2007) (eff. Dec. 7, 2007, 31 Ill. Reg. 49, 16167, 16172).

35 Ill. Adm. Code 811.321 - waste placement
35 Ill. Adm. Code 811.322 - final slopes and stabilization
35 Ill. Adm. Code 815.202(a) - Initial facility report filing deadline
35 Ill. Adm. Code 815.302(b) - Permit information requirements
35 Ill. Adm. Code 815.303(a) - Annual report information requirements

II.
THE REGULATIONS OF GENERAL APPLICABILITY DO NOT IMPLICATE STATE IMPLEMENTATION OF FEDERAL PROGRAMS (35 Ill. Adm. Code 104.406(b))

The regulations described above do not implement the requirements of the Clean Water Act, the Safe Drinking Water Act, the Comprehensive Environmental Response Compensation and Liability Act or the state Resources Conservation and Recovery Act ("RCRA"), Underground Injection Control ("UIC"), or National Pollutant Discharge Elimination System ("NPDES") programs. *See* 415 ILCS 5/28.1 (2006).

III.
THE LEVEL OF JUSTIFICATION REQUIRED FOR THESE ADJUSTED STANDARDS (35 Ill. Adm. Code 104.406(c))

The regulations from which Ameren seeks the adjusted standards do not specify a level of justification. Therefore, the level of justification specified by Section 28.1 of the Act applies:

(1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;

(2) the existence of those factors justifies an adjusted standard;

(3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and

(4) The adjusted standard is consistent with any applicable federal law. 415 ILCS 5/28.1(c) (2006).

Ameren must also justify all of the requested adjustments consistent with Section 27(a) of the Act. 415 ILCS 5/28.1(a) (2006). Section 27(a) of the Act requires the Board to consider the following factors in promulgating regulations:

> [T]he Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. 415 ILCS 5/27(a) (2006).

V.
DESCRIPTION OF THE NATURE OF PETITIONER'S ACTIVITIES
(35 Ill. Adm. Code 104.406(d))

For more than sixty years, Ameren or its corporate predecessor[3] has generated electricity at a power plant known as the Hutsonville Power Station ("the facility" or "the Station"). The Station is located in Crawford County, near Hutsonville, Illinois, on approximately 205 acres (the "Site"). The Wabash River forms its eastern border while farmland comprises the southern and western borders. The northern border is undeveloped, wooded land. The closest residence is approximately one-half mile from the Station. (*See* Site Map, attached hereto and incorporated herein as Exhibit 1). Fifty-eight employees work at the Station which is staffed twenty-four hours per day, seven days per week. The Station is part of Ameren's generation system which provides electricity to residential and commercial customers in Illinois.

Principal equipment at the Station includes coal-fired boilers for steam production and steam driven turbine generators. The facility draws water from the Wabash River through a

---

[3] On May 1, 2000, as required by and pursuant to the terms of a sale transfer agreement, Central Illinois Public Service Company d/b/a AmerenCIPS transferred its generating assets, including the Hutsonville Power Station, to Ameren Energy Generating Company. Both AmerenCIPS and Ameren Generating Company are subsidiaries of Ameren Corporation.

circulating water system that is used in the boiler and turbine equipment systems. Ash, a by-product of coal combustion, is removed from the boilers and sluiced to an ash impoundment system via pipelines. This current impoundment system is comprised of a series of Ponds (Ponds A-C) and the bottom ash pond in which solids settle and sluicewater decants from pond to pond before discharging to the Wabash River via an NPDES permitted outfall. The ash ponds accept only coal combustion waste (fly ash and bottom ash) and low-volume waste from the Hutsonville facility. A diagram depicting the various site features is appended hereto as Exhibit 2.

The subject of this petition, the unlined ash impoundment ("Pond D"), is located in the center of the S 1/2 of Section 17, Township 8N, Range 11W, Crawford County, Illinois, on the west bank of the Wabash River, and is as close as one hundred (100) feet to the river. It covers an area of approximately twenty-two (22) acres. Pond D was constructed from indigenous earthen materials in 1968 and operated as the Station's wastewater treatment unit (receiving bottom and fly ash transport water and miscellaneous low-volume wastes) until the construction of a synthetically-lined pond ("Pond A") in 1986. In 2000, Ameren excavated all coal ash from the former laydown area and constructed two lined ponds ("Ponds B and C") to supplement the ash management capabilities and to improve surface water management at the property. Upon completion of Ponds B and C, Pond D was removed from service and allowed to dewater. Because Ameren intends to leave the ash in Pond D it intends to close Pond D in accordance with applicable landfill regulations as set forth more fully in this Petition. Ameren estimates that during its 30- years of active operation, Pond D accumulated approximately 750,000 cubic yards of ash and approximately one-third of this volume (280,000 cubic yards) lies below the water table.[4] An additional 200,000 cubic yards of ash were added to Pond D since it was taken out of

[4] *See* Exhibit 3, Table 3-2.

service (with Illinois Environmental Protection Agency approval) to establish an acceptable grade in anticipation of constructing the proposed cap at closure.

VI.
DESCRIPTION OF THE IMPACT OF PETITIONER'S ACTIVITIES ON THE ENVIRONMENT
(35 Ill. Adm. Code 104.406(g))

The following discussion summarizes relevant technical details concerning site geology and groundwater quality and the environmental impacts of Pond D. More comprehensive descriptions of geology and groundwater conditions are provided in the August 1999 Hydrogeologic Assessment Report attached and incorporated as Exhibit 4, the January 2000 Groundwater Model Evaluation Report of Impoundment Closure Options attached and incorporated as Exhibit 5, the 2005 Alternative Analysis Report, Section 2 (Exhibit 3), and the proposed groundwater monitoring plan (Exhibit 11).

A. SITE GEOLOGY

Site geology consists of four hydrostratigraphic units: (1) unlithified sand overlying lithified Pennsylvanian-age sandstone, present in upland areas, with a combined thickness that is typically between 15 and 35 feet; (2) unlithified fine-grained alluvial sediments within the Wabash River bedrock valley that are approximately 20 feet thick; (3) coarse-grained alluvial sediments within the Wabash River bedrock valley that are as much as 70 or more feet thick; and (4) Pennsylvanian-age shale that underlies the sandstone in the upland areas and the coarse-grained alluvium in the bedrock valley. The western portion of Pond D overlies the upland sand. The eastern portion of Pond D overlies the fine-grained alluvium in the Wabash River Valley. The upland sand and underlying sandstone beneath the western portion of Pond D and thin sand lenses within the fine-grained alluvium that lies under the eastern portion of Pond D are collectively referred to as the "upper migration zone." The coarse-grained alluvial deposits at

depth in the Wabash River bedrock valley are referred to as the "deep alluvial aquifer." Included in Exhibit 11 are cross-section diagrams that illustrate the stratigraphic relationships of these formations.

The fine-grained alluvial deposits overlying the deep alluvial aquifer occur over an elevation range that overlaps the upland shale (*see* Exhibit 11, Figure 2), combining to form a confining layer that restricts vertical migration of groundwater between the upper migration zone and deep alluvial aquifer. As a result, the uppermost aquifer at the Site is the upper migration zone. The efficacy of the confining layer is supported by the concentration data because, as explained below, the only ash leachate impacts observed in the deep alluvial aquifer are highly localized, and at concentrations lower than Class I standards and much lower than in the upper migration zone, despite the fact that Pond D was fist placed in service more than 40 years ago.

Groundwater flow direction in both the upper migration zone and the deep alluvial aquifer is eastward, toward the Wabash River. Maps depicting groundwater flow in these units over four consecutive quarterly measurements are provided in Exhibit 11.

The upper migration zone is not used for water supply at or downgradient of the Site, because this zone is not sufficient for power plant operational uses, agricultural irrigation purposes or domestic uses.[5] Only the deep alluvial aquifer at depth in the Wabash River bedrock valley has sufficient thickness and hydraulic conductivity to yield adequate groundwater supplies for power plant and agricultural irrigation purposes.

---

[5] Shallow sandstone provides limited groundwater yield adequate for domestic uses in other parts of the county, but there are no such wells at or downgradient of Pond D, and deep formations are saline (see the ISWS State Aquifer Map, a copy of which is attached and incorporated here as Exhibit 7).

B. GROUNDWATER QUALITY

1. Parameters of Concern

Coal ash is comprised of non-combustible inorganic materials (aluminum, clay, iron, limestone, silica sand and trace quantities of oxidized naturally occurring elements[6]) that are impurities within the coal. Since 1984, and as a condition of its State Operating Permit (currently Permit # 2005-EO-3689[7]), Ameren's permit requires monitoring for the following constituents around Pond A: boron, sulfate, manganese, pH, and TDS.[8] All of these constituents occur naturally in Illinois groundwater to varying degrees. Boron and sulfate are considered primary indicators of coal ash leachate due to their consistently high concentrations in coal ash leachate, persistence in the environment, and mobility in groundwater.[9] As set forth more fully below, groundwater samples reflect elevated levels of boron and sulfate at discrete locations at the Site.

2. Groundwater Monitoring Network

The Company has monitored groundwater quality at the Site, via a monitoring well network, since 1984 to define groundwater flow direction, monitor groundwater quality, and to characterize hydrogeologic conditions. In addition to the well network , Ameren collected direct-push (GeoProbe) samples near the ash impoundments and at off-site locations and collected soil, leachate, and groundwater samples. Exhibit 2 depicts the well and direct-push locations. As a result of these activities, the Company is able to fully characterize and delineate

---

6 American Coal Ash Association, 2003, "ACAA Glossary of Terms," found at the following address: http://acaa.affiniscape.com/displaycommon.cfm?an=8.

7 NPDES Permit # 2005-EO-3689, effective June 14, 2005.

8 Groundwater monitoring commenced prior to initiation of ash management operations in Pond A.

9 Environmental Performance of CCPs, Murarka, 2002, http://www.mcrcc.osmre.gov/PDF/Forums/CCB3/4-6.pdf

hydraulic properties, groundwater flow, and the extent of groundwater impacts associated with Pond D at the Site. (*See* Exhibits 3 and 4).

3. Localization of Upper Migration Zone Impacts

Groundwater within the upper migration zone immediately surrounding and adjacent to Pond D shows evidence of ash leachate impacts.[10] Monitoring well data from the upper migration zone along the southern property line suggest the potential for off-site migration. Ameren investigated the extent of off-site impact by obtaining direct-push samples as close to Pond D as possible (approximately 1,300 feet) in the actively farmed agricultural field immediately south of the property line and determined that the upper migration zone was not impacted at these locations because the concentrations of boron and sulfate reflected expected background concentrations. (Exhibit 4, Table 6). Because access to the neighboring property was limited, Ameren, used a calibrated groundwater flow and transport model to estimate the extent of off-site contamination in the upper migration zone. The modeling results suggest that the extent of off-site impacts in the upper migration zone extends approximately 500 feet from the southern property line downgradient of Pond D. (Exhibit 5, Figure 7) As set forth more fully in this petition, the past dewatering together with the future capping of the unlined pond will result in a dramatic improvement of groundwater quality south of Pond D: meeting Class I groundwater standards.

4. Description of Deep Alluvial Aquifer Impacts

Groundwater in the deep alluvial aquifer of the Wabash River valley has been minimally impacted from Pond D. Sulfate and boron concentrations at MW-14 are higher than background

---

[10] In particular, boron and sulfate concentrations exceed 35 Ill. Adm. Code Part 620 groundwater quality standards . *See* Exhibit 4, Figure 10.

concentrations calculated for the deep alluvial aquifer (*see* Exhibit 11 for the background calculation), yet lower than their respective Class I standards. Because sulfate is a mobile indicator parameter for coal ash impacts, the elevated concentrations at MW-14 suggest localized impact from Pond D. No other well screened in the deep alluvial aquifer shows evidence of impacts from coal ash operations. Accordingly, groundwater quality impacts to the deep alluvial aquifer are minimal and localized to an area near MW-14 (immediately southeast of Pond D).

Groundwater data from the deep alluvial aquifer reveal elevated concentrations of manganese. These concentrations are consistent throughout the deep alluvial aquifer and are attributable to natural geochemical conditions, which cause a release of manganese from the aquifer soils.[11]

C. IMPACTS TO THE WABASH RIVER

Ameren has determined potential impacts of groundwater discharge to the Wabash River by two different methods and determined that it is unlikely to result in a measurable change in river water quality. First, the Company used a calibrated groundwater flow and transport model to calculate the boron loading rate to the Wabash River, which is the regional destination for groundwater flow in the basin. The model calculations determined that when in service (prior to 2000), Pond D discharged twenty-five (25) pounds of boron daily into the Wabash River. (Exhibit 5, Figure 14) The model calculation further indicated that dewatering of Pond D, would decrease the boron loading rate to the Wabash River by approximately eighty-five percent (85%) (Exhibit 5, p. 17) reducing the estimated daily loading rate for boron from twenty-five (25) pounds to less than five (5) pounds. These loading rates were used to conservatively estimate the

---

[11] See Table 2 for a comparison of background concentrations of contaminants in the deep alluvial aquifer to Class I standards.

effect of groundwater discharge on river water concentrations under worst case, low flow, conditions.

The results of this calculation indicate that the boron loading rate both before and after dewatering was not sufficient to significantly increase the boron concentration in river water (Ameren prepared a spreadsheet showing concentration change at low flow, a copy of which is attached and incorporated as Exhibit 8).

Second, river water quality data obtained from the USEPA STORET database for the closest downstream monitoring station (at Hutsonville, one-mile south of the impoundment) confirm the model calculation. The STORET data indicate boron concentrations lower than median concentrations in the upper migration zone upgradient of Pond D, suggesting little or no impacts to the river (Ameren attaches and incorporates a copy of a memo regarding this finding as Exhibit 9).

D. GROUNDWATER USAGE

Groundwater usage near the Station is limited. A review of Illinois State Geological Survey water well records within one-mile of Pond D identified 20 water well logs pumping groundwater from depths of 14 to 105 feet (*see* Exhibit 4, Appendix D). A follow-up search was performed using the Illinois State Geological Survey ILWATER database, which identified six wells within ½ mile of Pond D. Two of these wells are the plant production wells, and the other four are irrigation wells (*see* Well Survey Report, attached and incorporated herein as Exhibit 7).[12] All six wells pump from the deep alluvial aquifer, which as discussed above, shows only minimal and highly localized impacts from Pond D (at MW-14). In addition, the City of

[12] Exhibit 8 was created in 2005. The database was rechecked on February 26, 2008 and no changes were noted.

Hutsonville's public water supply wells draw groundwater from the deep alluvial aquifer approximately one mile south of Pond D. However, considering the relatively large distance to these wells, the observed easterly groundwater flow direction in the deep alluvial aquifer at the Site, and the fact that only one monitoring well in this aquifer has experienced ash leachate impacts, and those impacts have been low-level after 40 years of operation, it seems unlikely that the Hutsonville wells could ever be impacted by ash leachate from Pond D.

There are no wells drawing groundwater from the upper migration zone downgradient or sidegradient of the Site. The Station's nearest residential neighbor to the south, who owns the field above the area of impacted groundwater, is connected to the City of Hutsonville's public water supply system.

VII.
DESCRIPTION OF EFFORTS TO COMPLY
(35 Ill. Adm. Code 104.406(e))

The Board regulations require Ameren to describe the efforts necessary to comply with the regulations of general applicability. Ameren discusses various compliance alternatives below. Costs corresponding to the cover system and leachate management alternatives are discussed and set forth in more detail in Exhibit 3.

A. THE COMPANY'S CLOSURE PLANS AND COVER SYSTEMS 35 Ill. Adm. Code 811.314

Section 811.314 prescribes a process of final cover. Acceptable technologies include compacted earth, geomembranes, or similarly performing material. 35 Ill. Adm. Code Part 811.314(b)(3)(A)(iii) allows Ameren to use alternative low permeability layer construction techniques or materials, provided that they provide equivalent or superior performance to the Section 811.314 requirements. Part 816 (Alternative Standards for Coal Combustion Power Generating Facilities Waste Landfills) contains alternative standards for coal combustion power

generating facility waste landfill. In promulgating 35 Ill. Adm. Code Part 816, the Board approved a proprietary process called Poz-O-Tec as an alternative means for satisfying liner and cap requirements for coal ash monofills, such as Pond D upon closure. Part 816 allows coal combustion waste landfills to utilize a pozzolanic cap instead of those required by Section 811.314. Under Part 816, flue gas desulfurization (FGD) sludge and coal combustion waste may be used for cap construction to meet Section 811.314 requirements. 35 Ill. Adm. Code 816.510.

Ameren proposes to use an alternative low permeability layer construction material and seeks an adjusted standard to 811.314(b)(3)(A)(iii) to construct a pozzolanic cap that substantially complies with the strength and permeability standards set forth in 35 Ill. Adm. Code Part 816.

Ameren's proposed cap is a variation of the conceptual process endorsed by the Board in Part 816. Under Ameren's approach, ash from Pond A is mixed with stabilizing reagents to form a material that can be used to construct a final cover for Pond D. As documented in Exhibit 10, Ameren performed extensive laboratory research to evaluate cap performance for coal ash from Pond A when mixed with different stabilizing reagents: Portland cement; Class C fly ash; fluidized bed residue; quicklime; FGD scrubber sludge; and native soils. The various mixes were cured for eighty-four (84) days and evaluated for unconfined compressive strength, hydraulic conductivity, economics and constructability issues. Four (4) optimal mixes were then tested for leachate characteristics using the TCLP leaching procedure.

Results of this research indicated that hydraulic performance of the mixes varied considerably; while leaching performance, as determined using the TCLP procedure, resulted in low or non-detectable metals concentrations for all mixes (Exhibit 10, Table 4). Based on these results, Ameren has determined that a mix containing at least five percent (5%) Portland cement

best meets performance, workability, and economic criteria. Performance characteristics of the selected mix (Mix 2 in Exhibit 10) include an 84-day laboratory hydraulic conductivity value of 4.7×10^{-6} centimeters per second (cm/s) and a compressive strength of 165 pounds per square inch (psi).

Part 811.314(b)(3)(A)(iii) allows for alternative specifications provided that the performance of the low permeability layer is equal to or superior to the performance of a three-foot (3 ft) thick cap with hydraulic conductivity of 1.0×10^{-7} cm/s based upon a geometric average of permeability testing results. Part 816.510(g) requires that a Poz-O-Tec cap be at least three feet thick. 35 Ill. Adm. Code 816.510(g). Ameren proposes to construct a cap with a low permeability pozzolanic layer at least three feet thick. The hydraulic conductivity of this pozzolanic layer, as constructed in the field, will be lower than 5.0×10^{-6} cm/s. While this value is greater than 1.0×10^{-7} cm/s, it will provide equivalent protection as discussed below and as documented in Exhibit 3.

Ameren performed groundwater transport modeling using hydraulic conductivity values ranging from of 1.0×10^{-5} to 1.0×10^{-7} cm/s for the pozzolanic layer (*see* Exhibit 3, Appendix D, Figures D-4a and D-4b, graph lines CO-3a, CO-3b, and CO-3c). While there were differences in cap percolation predicted for this range of hydraulic conductivity values, there was no significant difference in predicted concentrations for groundwater downgradient of Pond D. The similar performance of the modeled cap scenarios under a range of cap hydraulic conductivity values reflect the following facts: (1) the volume of water percolating through the cap, regardless of its modeled hydraulic conductivity value, is less than five percent (5%) of the volume of water that

percolated through Pond D when it was active and receiving sluicewater;[13] and (2) the dominant mechanism for leachate generation, since dewatering of Pond D in 2000, is groundwater seepage through saturated coal ash (i.e., ash below the water table), rather than percolation of surface water (precipitation, snow melt) through the cap.

Once a cap is installed, the relatively minor changes in cap percolation will have little effect on the volume of leachate generated in Pond D, and subsequently, little effect on downgradient concentrations in groundwater. Moreover, because Pond D has no underlying barrier liner, and the hydraulic conductivity of the coal ash contained in Pond D is estimated to be greater than 5.0×10^{-6} cm/s, the proposed cap will not result in accumulation of water (*i.e.*, "bathtub effect") within Pond D. In summary, the cap constructed over Pond D will not influence the primary mechanism of leachate generation: groundwater seepage through saturated ash. Accordingly, the hydraulic characteristics of the cap will have minimal effect on downgradient groundwater quality.

Finally, Ameren recognizes that the hydraulic conductivity values of the test mixes are laboratory derived, and a field-derived value may be higher. Ameren, therefore, seeks an adjusted standard from 811.314(b)(3)(A)(iii) to construct a pozzolanic cap that will meet a performance standard hydraulic conductivity of 5.0×10^{-6} cm/s. This hydraulic conductivity is based upon a geometric average of permeability testing results and a performance standard of 150 psi based upon an arithmetic average of the strength testing results as determined during construction of a test pad using a testing methodology substantially equivalent to that outlined in Part 816. If the five percent (5%) cement mix does not achieve the performance standard, then

---

[13] Percolation for the active, ponded Pond D was estimated at 360 inches per year (Exhibit 4, Table 3), while percolation for the Pond D with a pozzolanic cap is estimated at less than 10 inches per year (Exhibit 11, Table D-2).

up to 10% cement will be added to the mixture to achieve a 5.0 x 10^{-6} cm/s hydraulic conductivity.

For final cover, Section 816.510(g) defers to the low permeability layer requirement of Section 811.314. Accordingly, the cap will be covered with three feet of soil to support vegetative growth and function as a final protective layer as required by 35 Ill. Adm. Code 811.314(c). Exhibit 10 (a report prepared by VFL regarding the construction of the cap is attached and incorporated here) includes a diagram of a representative cross-section of Pond D and depicting the top soil cover, granular drainage layer[14] and pozzolanic cap. (Exhibit 10, Figure 1.)

Overall capital costs as well as the annualized capital and operating costs of the closure alternatives investigated for Pond D are set forth in Exhibit 3, Table 5-1.

B. LEACHATE MONITORING AND MANAGEMENT SYSTEMS 35 Ill. Adm. Code Parts 814.302(b) and 811.309

Section 814.302(b) requires a "system which will effectively drain and collect leachate and transport it to a leachate management system." 35 Ill. Adm. Code 814.302(b). Section 811.309 establishes the standards generally applicable to the leachate management system. The landfill regulations define leachate as any "liquid that has been or in direct contact with a solid waste." 35 Ill. Adm. Code 810.103.

Because Pond D has been operated as a surface impoundment, rather than as a landfill, Pond D has not been subject to the leachate standards of the landfill regulations. Accordingly, no leachate control, transport or management system currently exists at Pond D. As described in

---

[14] The granular drainage layer was not considered in the modeling of pozzolonic cap performance documented in Exhibit 3. This was a conservative assumption because a drainage layer would reduce the volume of water percolating through the cap.

more detail below, the implementation of new leachate control, transport and management system at Pond D at closure is unnecessary and prohibitively expensive. Accordingly, Ameren asks the Board to find that compliance with the leachate standards of 35 Ill. Adm. Code 811.309 and 814.302(b) is not required for Pond D at closure.

1. Leachate Monitoring

The regulations require leachate monitoring to "'help determine the degree to which a landfill poses a threat to the groundwater by ascertaining what types of contaminants are leaching out of the wastes that have been disposed in the landfill and in what concentrations.'" Proposed Amendments to Solid Waste Landfill Rules, 35 Ill. Adm. Code 810 and 811, R07-8, slip op. at 3 (Oct. 4, 2007). Leachate monitoring requirements address monitoring parameters, locations, and frequency. The materials disposed in Pond D are exclusively coal-combustion waste material, the contaminants from which have been documented. Further, because Pond D is unlined, there is no separation between the coal ash leachate and groundwater at the Site. As discussed in more detail below, Ameren has a network of wells in place at the Site to monitor groundwater quality. For these reasons, Ameren requests that the proposed groundwater quality monitoring plan apply in lieu of the leachate monitoring requirements of Section 811.309.

2. Leachate Management

In promulgating its leachate drainage, collection, and management standards, the Board did not prescribe a specific system that must be used to collect and manage leachate at an existing landfill.[15] Rather, the Board's rules are premised upon the goal of "preventing a discharge to groundwater by using the best economically available containment and leachate removal technology." *See* Recommendations For a Non-Hazardous Waste Disposal Program in

[15] Leachate is defined as "liquid that has been or is in direct contact with solid waste."

Illinois and Back Ground Report. Scientific/ Technical Section (STS Recommendations), R84-17 Docket D, slip op. at 8 (Mar. 7, 1988). At the time the Board issued its regulations, the best available containment and leachate removal technology was the installation of a "compacted earth liner three feet thick with a leachate drainage layer and collection system." *Id.* With such a design, leachate is contained by the bottom liner, directed through a system of drains to a collection system from which it could be routed to a treatment system. Such a design is inapplicable to Pond D at closure.

The Board recognized that, due to the technical impracticability, existing units are not required to comply with the requirements set forth in Sections 811.306, 811.307 and 811.308. *See* 35 Ill. Adm. Code 814.302(a)(1); *see also* STS Recommendations, (Mar. 7, 1988). As the Scientific/ Technical Section of the Board noted: "[a]n existing facility cannot retrofit a foundation or liner." *Id.* at p. 110. Part 814 does not prescribe specific standards for leachate management systems. Rather, existing facilities must implement a system that will "effectively drain and collect leachate and transport it to a leachate management system." 35 Ill. Adm. Code 814.302(b)(1). A leachate management system can consist of any combination of storage, treatment, pretreatment and disposal options. Treatment of leachate is not necessary if the leachate constituents do not exceed wastewater effluent standards. 35 Ill. Adm. Code 811.309(h)(2).

Approximately 280,000 cubic yards of coal ash in Pond D are in continual contact and saturated by groundwater. As described more fully herein, it is not possible to "effectively drain and collect leachate" from Pond D at closure. Dewatering the impoundment reduced the volume of leachate discharged to the Wabash River by more than 80 percent, and capping will further

reduce this volume, although to a much lesser extent than dewatering. Exhibit 3, Appendix D, Figure D-3.

For the reasons set forth below, Ameren seeks an adjusted standard from the leachate management and disposal requirements of Section 811.309 because they are technically impracticable and unwarranted at the Site.

a. Leachate At The Site Complies With Wastewater Effluent Standards

As a preliminary matter, and given the various closure and monitoring activities proposed in the Company's Petition, it is simply unnecessary to treat leachate associated with Pond D. All point source discharges from the Site must comply with effluent standards set forth in the Station's NPDES permit and 35 Ill. Adm. Code 304.124, 304.125 and 304.126. The Company has analyzed groundwater that would be extracted near Pond D as part of an external leachate collection system and determined that it would not cause exceedences of effluent standards at the NPDES discharge. Accordingly, assuming that the leachate could be collected and managed at the Site, it could be discharged without treatment and meet effluent standards.

Moreover, given the relatively low toxicity associated with Petitioner's coal combustion waste,[16] the collection and management of any incremental amount of leachate generated below the water table would result in little, if any, discernable environmental benefit. In effect, the leachate would be collected from groundwater flowing toward the Wabash River, channeled through the existing ash pond wastewater management system, and discharged into the Wabash River, along with the Station's sluice waters, via the NPDES outfall. As the Board's technical section noted: "[I]f leachate is approximately the same as any other treated effluent, then there is

---

[16] Relevant portions of the USEPA's determination that coal ash is not a hazardous waste is attached as Exhibit 12. Final Regulatory Determination on Four Large-Volume Wastes from the Combustion of Coal by Electric Utility Power Plants, 58 FR 42466 (Aug. 9, 1993).

no logical reason to pump it out of the ground, only to discharge it directly to a surface water body." STS Recommendations, at p. 45.

b. Traditional Leachate Drainage and Collection Technologies Will Not Work At the Site

In attempting to comply with Section 814.302(b)(1) requirements, Ameren examined the following technologies and/or strategies: ash removal (both on-site redeposition and off-site disposal), perimeter trenching, and barrier wall containment. These compliance alternatives were rejected for the reasons set forth below.

(i) Ash Removal And On vs. Off-Site Disposal

As part of its analysis, Ameren considered the traditional leachate drainage and collection technologies, including ash removal. Two strategies of ash removal were reviewed: temporary ash removal and installation of an underdrainage system[17], and ash removal with off-site disposal. Both strategies require removal of the saturated ash and the result would be a reduction in leachate and an improvement in groundwater quality. The alternative requiring ash removal and off-site disposal would eliminate the need to comply with the landfill requirements at Pond D. However, an analysis of alternatives by NRT concluded that ash removal, regardless of its end use, is neither technically feasible nor economically reasonable. Exhibit 3, Table 3-1.

Whether considering on-site redeposition after drainage system installation or off-site disposal, removal of the approximately 750,000[18] cubic yards of ash from the unlined pond creates significant logistical hurdles. The saturated ash alone would require unconventional

---

17 Installing an underdrainage system above the ash waste would not effectively address leachate escaping from waste already placed in the impoundment. Groundwater would continue to generate leachate from the saturated ash. Thus, such an underdrainage system would have no impact on leachate generated at the Site.

18 An additional 200,000 cubic yards of ash have been added to Pond D since the pond was dewatered per Illinois Environmental Protection Agency approval.

excavation techniques such as dredging, or mechanical sluicing (*i.e.*, mudcat auger excavation). The physical configuration of the Site and the narrow access around the impoundment significantly limit implementation of these unconventional excavation techniques. Such techniques would be ineffective in removing the ash. The on-site disposal alternative poses an additional technical feasibility challenge because there is insufficient land on the Site to construct dewatering and storage facilities large enough to handle the ash. Use of the lined pond (Pond A) is not feasible because it would completely fill Pond A causing Hutsonville to cease burning coal, and generating electricity.

Also importantly, ash removal is not economically reasonably for Ameren. The cost of excavation and off-site disposal of the total volume of ash is estimated to cost approximately $34 million. Exhibit 3, Appendix B. Further, the replacement of excavated ash on top of clean fill is estimated at approximately $22 million. *Id.* The latter estimate does not even include the cost of installing an underdrainage system which could cost well over $1 million, nor does it include the cost of temporary storage of ash at some location because on-site temporary storage is not feasible. Further, the cost analysis was completed in 2005 and noted that if general fill or ash disposal costs increase, the capital costs for these alternatives could double. Exhibit 3, Table 3-1. Thus, although considered, ash removal does not present a viable strategy for closure of Pond D.

(ii) Perimeter Leachate Collection Trench or Recovery Wells

Under appropriate circumstances, a perimeter collection trench or recovery wells (Exhibit 3, p. 3-3) could be used to collect leachate from a landfill to reduce the off-site migration of contaminants. Such a trench is typically constructed by excavating downgradient of a contamination source, and installing a drainage pipe surrounded by permeable granular soil backfill. Ameren considered the construction of a trench system along the southern border of

Pond D to mitigate off-site impacts to the neighboring property to the south, and performed groundwater transport modeling to evaluate its effectiveness. Exhibit 3, Section 4, Table 4-2, and Appendix D of Exhibit 3. A leachate collection trench, however, is not economically viable or environmentally justified because it would not remove the contaminants from the environment. Rather, such a system would simply divert groundwater, which currently slowly discharges to the Wabash River, immediately and directly to the river via the NPDES outfall. Ameren has concluded this alternative is not economically reasonable given the lack of environmental benefit of pumping water out of the ground only to discharge it directly to the Wabash River. Further, Ameren expects groundwater offsite will meet Class I standards within 16 years of dewatering and installing the proposed cover system (Exhibit 3, Table 4-2).

(iii) Containment Using a Barrier Wall

Ameren also evaluated the alternative of constructing a low-permeability barrier wall around the impoundment to prevent lateral migration of ash leachate. Construction of a vertical barrier or "slurry wall" is dependent upon keying into a geologic formation with low hydraulic conductivity such as shale bedrock or clay that would prevent vertical migration of contaminants. As the Board's technical staff noted: "[t]he slurry wall must extend into the lower confining layer to a depth necessary to maintain a continuous hydraulic barrier and prevent seepage." STS Response to Comments, p. 37. The sandstone bedrock beneath the western portion of Pond D does not provide a sufficient key-in layer for an impermeable barrier wall. Without a low permeability formation in which to key the barrier wall, proper containment cannot be achieved. (*See* Exhibit 3, pp. 3-5). This alternative is, therefore, technically infeasible.

c. Description of Ameren's Proposed Leachate Management System Alternative

Ameren has designed a final cover and surface water management system that will limit the amount of leachate generated from Pond D. The percolating effect of precipitation will be reduced by designing and constructing a final cover system for Pond D with low hydraulic conductivity to limit vertical infiltration, and with a slope sufficient to divert runoff from the final cover surface. Such a system should divert the vast majority of controllable water from the closed impoundment and reduce the amount of leachate generated at the Site.

Under these circumstances, the proposed surface water collection system and pozzolonic cap will effectively drain and control precipitation into Pond D and thus reduce leachate volume. The incremental costs and technical hurdles associated with installing a leachate collection system far outweigh any discernable environmental benefit. Accordingly, Ameren requests that the Board issue an adjusted standard that allows the closure of Pond D through the construction of a pozzolanic cap to divert surface flow without the construction of a leachate collection system, as outlined more fully herein.

C. GROUNDWATER IMPACT ASSESSMENT & PREDICTIVE CONTAMINANT TRANSPORT MODEL - Section 811.317

The regulations envision that before designing and constructing a landfill, "an integrated evaluation of the entire landfill site and design be performed using site-specific data, a contaminant transport model, and reasonable operational assumptions. A point of compliance some distance away from the edge of a unit is specified, as are maximum contaminant levels acceptable at the compliance point." STS Recommendations, p. 60. If the assessment shows that the design and performance standards in Part 811 are inadequate to prevent contamination of the groundwater outside the zone of attenuation ("ZOA"), then additional protection can be

considered such as multiple collection or liner systems or even relocation to a more suitable site. *Id.*, at 61.

Section 811.317 requires a person seeking a landfill permit to predict the potential impacts caused by leachate seepage from the landfill. The regulation requires a groundwater impact assessment using a groundwater contaminant model incorporating site-specific hydrogeologic information, and landfill design standards (liners, leachate collection system, final cover, etc.) to demonstrate that concentrations of all constituents in groundwater outside the ZOA will be less than the groundwater quality standards of 35 Ill. Adm. Code 811.320. Based on this model, the permittee determines the leachate amount, the constituent concentrations in the leachate, and the constituent concentrations over time.

This regulation is inapplicable here because the groundwater impact assessment is intended as a tool to aid in conceptual design of a new landfill, rather than closure of an existing site. Furthermore, impacts to the groundwater and the migration of contaminants from Pond D have already occurred, and as a result a groundwater impact assessment, as prescribed by the landfill regulations, cannot be performed. The pond was constructed long before the regulations were in place and Ameren has conducted sampling to characterize groundwater adjacent to Pond D as a result of those operations (*see* Exhibits 3 and4). Further, Ameren has performed modeling, calibrated using this sampling, to predict the movement of the plume under different closure scenarios. Thus, Ameren has performed modeling consistent with the technical requirements of Section 811.317 but with the purpose of identifying closure scenarios rather than developing maximum allowable predicted concentrations ("MAPCs") which would not be relevant to the Site's current conditions.

Ameren has determined the impacts of leachate seepage from Pond D following implementation of final cover and slope configuration by using techniques different than those specified in Section 811.317 (*see* Exhibit 3). Ameren has also analyzed leachate from Pond D and determined the constituents found within that leachate (*see* Exhibit 4, Table 6). *See* 35 Ill. Adm. Code 811.317(a)(2). Ameren must seek relief from Section 811.317 because that section requires the operator to predict contaminant concentrations in leachate when no release has yet occurred in order to derive MAPCs.

The purpose of the groundwater contaminant transport model ("GTM") is to predict whether leachate from the landfill will result in a statistically significant increase over background concentrations beyond the ZOA for 100 years after the close of the landfill. 35 Ill. Adm. Code 811.317(b). In adopting the groundwater impact assessment and predictive modeling requirements, the Board clearly intended the groundwater impact assessment be performed prior to the placement of waste in a landfill unit. Petition of Carus Chemical Co.for an Adjusted Standard from 35 Ill. Adm. Code 814, Subpart D, AS 98-1, slip op. at 12 (Sept. 19 1997). "In this regard, the Board noted that it would be inappropriate to assess the potential for contamination of landfill design after the landfill is placed into operation and contamination occurs." *Id.*; *see also*, In the Matter of : Development, Operation and Reporting Requirements for Non-Hazardous Waste Landfills, R88-7, Appendix A-1 at 65 (Aug. 17, 1990) ("It would be inappropriate to assess the potential for contamination of a design after the landfill is placed in operation and the contamination occurs. The opinion should show that the facility is unlikely to cause groundwater contamination before a permit is issued, not after contamination has occurred.").

Predictive modeling is unnecessary where the conditions sought to be predicted have occurred and actual data are available. Ameren has performed modeling to evaluate the reduction in leachate volume, and its migration in groundwater under different closure scenarios and proposed monitoring to demonstrate that the closure scenario approved here will conform to the modeling predictions. Rather than predictive modeling, Ameren proposes to use a monitoring network to assess constituent data and transport from Pond D. Ameren proposes that in lieu of the specific requirements set forth in Section 811.317, the Company will continue to gather actual groundwater data from the monitoring network proposed in this petition to measure the impact to groundwater.

D. DESIGN, CONSTRUCTION AND OPERATION OF GROUNDWATER MONITORING SYSTEMS - SECTIONS 811.318 and 811.319

The regulations envision that in selecting a new site a landfill operator will develop a groundwater monitoring program that identifies and compares upgradient (background) water quality to downgradient water quality. Monitoring wells are to be established both within and outside the ZOA. The specific requirements of these regulations are not necessary at a surface impoundment in existence prior to the time the regulations were adopted and in operation for many years before those regulations became applicable. Ameren has already characterized the groundwater contamination from Pond D and proposes to implement the groundwater monitoring program described below.

Ameren has maintained a monitoring well network on Site and has sampled wells periodically over many years. As described above and in Exhibits 3, 4, and 13 this sampling has allowed Ameren to characterize the extent of the plume. Ameren has also performed modeling to identify the impacts of various closure scenarios. Ameren has dewatered Pond D, thus removing the hydraulic head causing mounding and subsequent migration of constituents to the

south of Pond D. Finally as described below, Ameren proposed a groundwater monitoring program to document the diminished plume over time. While this plan generally complies with the requirements of Sections 811.318, Ameren requests relief from parts of that Section.

1. Monitoring Well Locations

Set forth in Exhibit 11 is a groundwater monitoring plan for Pond D which Ameren believes substantially complies with Section 811.318 monitoring requirements. Ameren requests adjusted standards from Sections 811.318(b)(3) to allow the continued use of the current monitoring well network:

Section 811.318(b)(3) requires that

* * *

> Monitoring wells shall be established as close to the potential source of discharge as possible without interfering with the waste disposal operations, and within half the distance from the edge of the potential source of discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source.

The physical configuration of the Site precludes compliance with this particular location requirement because of buried utilities and access necessary for plant operations.

Additional monitoring wells outside the current coverage area is also not feasible because areas east of the current monitoring system are in the flood plain of the Wabash River where monitoring wells are subject to flooding and damage by flotsam during flood period, and the area south of the impoundment is an actively farmed agricultural field for which the land owner has refused to allow Ameren to install permanent monitoring wells on their property.

2. Maximum Allowable Predicted Concentrations - Section 811.318(c)

Under the typical landfill setting envisioned by the Design, Construction and Operation of Groundwater Monitoring Requirements, groundwater monitoring wells are to be installed at

various downgradient locations within a ZOA, to identify the migration of contaminants approaching the edge of the ZOA. 35 Ill. Adm. Code 811.318(b). The landfill operator must then calculate MAPCs for each monitoring point. *Id.* at 811.318(c); STS Recommendations, at 70. MAPCs may be thought of as breakthrough points - concentrations below which there will be no groundwater quality violations at the ZOA's edge. *Id.* "The maximum allowable concentration at any monitoring point is established by predicting the concentrations at that point and time with a groundwater containment model." *Id.*

As for the groundwater impact assessment, MAPCs are factually inapplicable because Site conditions defeat the purpose of MAPCs. Section 811.318(c) requires that MAPCs be based on the "same methods, data, and assumptions as used in the groundwater impact assessment." 35 Ill. Adm. Code 811.318(c). An MAPC is a trigger point, above which assessment monitoring must be implemented. The goal of MAPCs is to predict groundwater exceedences outside the ZOA. STS Recommendations, at 70. Because Pond D is only becoming regulated as a landfill at the closure stage, there is nothing to predict. Ameren already possesses actual monitoring data. Establishing MAPCs would not serve the predictive function envisioned by the Board in adopting Section 811. Accordingly, Ameren requests relief from Section 811.318(c). Instead, the Company proposes to implement the monitoring plan set forth in Exhibit 11, extend the ZOA eastward to the Wabash River and eastern property boundary, and request adjusted standards for boron and other constituents that do not meet applicable groundwater quality standards at specified wells.

The MAPC-related requirements of Section 811.319 are equally inapplicable. Instead, Ameren proposes that monitoring wells MW-6, MW-7, MW-8, MW-11R, MW-14, MW-115s,

and MW-115d serve as points for determining compliance with the applicable groundwater quality standard ("AGQS") as required by 811.318(b)(5) (*see* Exhibit 2 for well locations).

3. Constituent Monitoring

Section 811.319 of the generally applicable landfill standards requires Ameren to monitor the Site groundwater for:

(1) Constituents that appear in, or are expected to be in, the leachate (35 Ill. Adm. Code 811.319(a)(2)(A)(i));

(2) A list of 14 indicator contaminants (35 Ill. Adm. Code 811.319(a)(2)(A)(ii));

(3) For facilities collecting more than 50% by volume non-municipal waste, additional indicator parameters based upon leachate characteristic and waste content (35 Ill. Adm. Code 811.319(a)(2)(A)(iv));

(4) Fifty-one (51) organic chemicals in drinking water described at 40 C.F.R. 141.40 (1988) and 40 C.F.R. 258.Appendix I (2006), as incorporated by 35 Ill. Adm. Code 810.104 (35 Ill. Adm. Code 811.319(a)(3)(A)(i)); and

(5) A specific list of organic chemicals for which groundwater must be monitored (35 Ill. Adm. Code 811.319(a)(3)(A)(i)). 35 Ill. Adm. Code 811.319.

The Board's groundwater monitoring program is intended to ensure that constituents from waste deposited in a landfill do not migrate into and degrade groundwater. The Board's regulations require broad-based organic and inorganic constituent monitoring. While such an approach is appropriate for municipal landfills where wastes originate from a variety of sources, it is unnecessary at monofill facilities such as Hutsonville's Pond D, where there has only been one generator and the waste constituents have been characterized. In lieu of broad-based monitoring, one or more indicator constituents that are representative of leachate transport may be chosen for monitoring. 35 Ill. Adm. Code 811.319(a)(2)(B). Ameren proposes that boron and sulfate be utilized as the primary indicators for coal ash leachate due to their consistently high concentration in coal ash leachate and due to their persistence and high mobility in groundwater.

Based upon the ash and groundwater sampling results, Ameren seeks an adjusted standard from Section 811.319(a) and proposes that it sample only those constituents identified in its groundwater monitoring plan described below. Ameren asserts that there is no need to sample for organic constituents since the combustion process destroys volatile organic compounds that exist in the coal before burning (Exhibit 11). Ameren believes that the homogenous nature of the ash disposed in the impoundment supports this request for reduced monitoring. Similarly, Ameren asserts that sampling for boron and sulfate is sufficient to document the extent of the plume for all other inorganic constituents. Since these constituents are the most mobile of the constituents expected to be associated with coal ash combustion leachate, Ameren believes that they serve as valid indicators. As described more fully in Exhibit 11, Ameren proposes to monitor for the constituents required in the Facility's State Operating and NPDES Permits (pH, temperature, specific conductance, groundwater depth, boron, sulfate, manganese, and TDS) at the following monitoring well locations: MW-1, MW-6, MW-7, MW-8, MW-10, MW-11R, MW-7D, MW-14, MW-115s, MW-115d, MW-121.

The cost for the full monitoring required by the Board's rule is expected to be approximately $29,000 per year. The cost for Ameren's proposed monitoring is $4,300. Ameren believes the monitoring program required by Section 811.319 is not economically reasonable given the known content of the ash in Pond D.

E. GROUNDWATER QUALITY STANDARDS - SECTION 811.320

Landfills regulated under 35 Ill. Adm. Code Part 811 are subject to the applicable groundwater quality standard. 35 Ill. Adm. Code Part 811.320(a). The AGQS has been interpreted to mean "the ambient concentration determined by a statistical analysis of the existing groundwater quality." Solid Waste Landfill Rules, R07-8, slip op. at 6 (Nov. 15, 2007). Further, the AGQS applies "'at the edge of the zone of attenuation or compliance boundary (100

feet from the edge of the waste or the property boundary, if closer).' If natural background concentrations are lower that those allowed by any standard, then the landfill must meet the lower concentration."[19] *Id.*

1. Zone of Attenuation Around Pond D

Groundwater within the ZOA is Class IV groundwater that must meet Class II groundwater quality standards "except for concentrations of contaminants within leachate released from a permitted unit." 35 Ill. Adm. Code 811.320; 35 Ill. Adm. Code 620.440. Pond D qualifies as a "permitted unit" because it was permitted under a water pollution control permit until dewatering in 2000. Furthermore, Section 811.320(c) confirms that leachate within the ZOA may exceed the AGQS:

> The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste. 35 Ill. Adm. Code 811.320(c).

Any other reading of the landfill regulations and Part 620.440 would contravene the intent of the ZOA: "to provide a buffer area between the source of the discharge and the point at which the applicable groundwater standards are enforced."[20] STS Recommendations, at 76.

---

[19] In conflict with this testimony, however, Appendix C to the Illinois Environmental Protection Agency's Landfill Development Permit Application form (LPC-PA2) states: "If the background concentration for a groundwater constituent exceeds a 'Board established standard' as defined in 811.320(a)(3)(B) an adjusted groundwater quality standard is not required. The background concentration is the applicable standard." LPC-PA2, Appendix C at C-5. If the approach set forth in the landfill application form applies, then Ameren would need less relief from the groundwater quality standards.

[20] In the event that the Board determines that groundwater within the ZOA must meet Class II groundwater quality standards, Ameren also requests that the constituent concentrations at the monitoring wells as identified in Table 3 apply in lieu of the AGQS.

Ameren seeks to extend the ZOA eastward to the property boundary along the Wabash River. Pond D was constructed in 1968, prior to promulgation of modern landfill and impoundment design standards, and as a result leachate has been released from the unit. However, attenuation is occurring within the ZOA, as demonstrated by boron and sulfate concentrations in MW-7 that are a factor of two or more lower than in downgradient monitoring wells closer to the facility (*see* Figures 5a and 5b, Exhibit 11). Extending the ZOA eastward to the Wabash river will allow for continued attenuation. Finally, the proposed AGQS wells would then lie near, at, or beyond the proposed boundaries of the ZOA in appropriate locations for determining compliance.

2. Background Concentrations of Constituents

Groundwater outside of the ZOA must be maintained at each constituent's background concentration or the applicable groundwater quality standard set forth in Part 620, whichever is lower.[21] *See* STS Response to Comments on Proposed Parts 807 Through 815, R88-7, slip op. at 160-61 (Mar. 1, 1990). Alternatively, the applicable standard could be a Board adjusted standard. *Id.*

In promulgating the landfill regulations, the Board has highlighted the importance of establishing background concentrations of contaminants: "[b]ecause a non-degradation groundwater standard is applied at the compliance point it is in the operator's best interest to establish, beyond all reasonable doubt, the background water quality. All groundwater down to the uppermost aquifer should be evaluated to determine stratigraphic variations." STS Recommendations, at 90. Accordingly, Ameren has calculated background for both the upper migration zone and deep alluvial aquifer. The background concentrations of constituents, Class I

[21] See, however, footnote 19 above for a conflicting Illinois Environmental Protection Agency interpretation.

standards, and AGQS[22] outside of the ZOA for each constituent as required by Section 811.320 are set forth in the following tables.

Table 1: AGQS in the Upper Migration Zone

Constituent	Background* Concentration	Class I Standard**	AGQS
Boron, Total (mg/L)	0.22	2.0	0.22
Manganese, Total (mg/L)	1.9	0.15	0.15
pH, field, (SU)	6.7 – 7.7	6.5 – 9.0	6.7 – 7.7
Sulfate, Total (mg/L)	97	400	97
TDS (mg/L)	566	1,200	566

* See Exhibit 11 for explanation of background concentrations.

Table 2: AGQS in the Deep Alluvial Aquifer

Constituent	Background* Concentration	Class I Standard	AGQS
Boron, Total (mg/L)	0.27	2.0	0.27
Manganese, Total (mg/L)	2.4	0.15	0.15
pH, field, (SU)	7.0 – 7.8	6.5 – 9.0	7.0 – 7.8
Sulfate, Total (mg/L)	84	400	84
TDS (mg/L)	500	1,200	500

* See Exhibit 11 for explanation of background concentrations.

3. Requested Relief from Groundwater Quality Standards

Several constituents exceed the AGQS that apply outside of the ZOA. As discussed above, Ameren proposes to use MW-6, MW-7, MW-8, MW-11R, MW-14, MW-115d, and MW-115s as AGQS wells. Accordingly, Ameren seeks adjustments to the AGQS for boron,

[22] See footnote 19 above.

manganese, pH, sulfate, and TDS at some of these wells. Ameren acknowledges that all of the wells that Ameren proposes as AGQS wells, except MW-14, MW-115d, and MW-115s, lie within the ZOA. Ameren nonetheless requests that for the purposes of this petition, these wells serve as AGQS wells as required by Section 811.318(b)(5). Therefore, a confirmed exceedence of the constituent concentrations in the following table (Table 3) triggers the assessment monitoring requirements of Section 811.319(b). 35 Ill. Adm. Code 811.319(a)(4)(B). MW-115d and MW-115s are not included in the table below because data from these two wells show that groundwater meets the AGQS. The limits included in the table are based on 99 percent tolerance intervals (Exhibit 11).

Table 3: Requested Relief from Applicable Groundwater Quality Standards (mg/L)

Constituent	MW-6	MW-7	MW-8	MW-11R	MW-14
Boron, Total	21.5	2.6	16.2	11.6	2.30
Manganese, Total	3.6	1.9	6.1	9.5	0.67
pH, (Field)	6.1 – 7.9	6.4 – 7.7	none	6.0 – 7.7	6.8 – 7.8
Sulfate, Total	576	416	1241	720	305
TDS	1,128	1262	1800	1300	830

Within the ZOA (MW-6, MW-7, MW-8, and MW-11R), fewer than half of the proposed adjusted standards are more than 10 percent higher than the applicable Class II standard.[23] Outside of the ZOA (MW-14), the adjusted standard for boron is slightly higher (2.29 vs 2.0 mg/L) than the Class I standard, the adjusted standards for sulfate and TDS are lower than the Class I standard, and the adjusted standard for manganese is based on a background concentration that is higher than the Class I standard.

[23] Seven of the proposed adjusted standards are lower than or within 10% of the Class II standard, the four adjusted standards for pH do not have a Class II standard, and eight are higher than the Class II standard.

Ameren requests that these wells will serve as compliance points required by the landfill regulations because they will provide the necessary mechanism for detecting groundwater exceedences in lieu of calculating and monitoring for MAPCs.

The requested relief is justified for several reasons. Elevated concentrations are highly localized and discharge to the Wabash River. The impacted groundwater does not effect the nearest public water supply in Hutsonville and the only offsite groundwater impacts are limited to shallow groundwater. No groundwater supply wells, including the plant wells that are in the deep alluvial aquifer within 100 feet of Pond D, are impacted even though the impoundment was in service for more than 40 years.

Ameren proposes that the Board approve the groundwater quality standards for parameters in Table 3. These parameters have been monitored at this facility, and are incorporated within the current monitoring plan approved with the recent operating permit for Pond A (Permit # 2005-EO-3689).

F. ADDITIONAL OPERATING STANDARDS THAT DO NOT APPLY TO POND D

Because Ameren's Pond D becomes subject to Section 811, 814, and 815 regulations only upon closure, certain operating standards simply do not apply to the facility. Compliance costs for these activities cannot be estimated since these tasks cannot be performed at the Site. These regulations are as follows:

35 Ill. Adm. Code 811.105 - compaction of waste
35 Ill. Adm. Code 811.106 - daily cover
35 Ill. Adm. Code 811.107(a) - phasing of operations
35 Ill. Adm. Code 811.107(b) - working face
35 Ill. Adm. Code 811.107(i) - vector control
35 Ill. Adm. Code 811.310, 811.311, 811.312 - landfill gas monitoring and management
35 Ill. Adm. Code 811.313 - intermediate cover
35 Ill. Adm. Code 811.321 – waste placement
35 Ill. Adm. Code 811.322 - final slopes and stabilization

35 Ill. Adm. Code 815.202(a) - Initial facility report filing deadline
35 Ill. Adm. Code 815.302(b) - Permit information requirements
35 Ill. Adm. Code 815.303(a) - Annual report information requirements

In Petition of Commonwealth Edison Co. for an Adjusted Standard from 35 Ill. Adm. Code Parts 811 and 814 (Petition of Commonwealth Edison Co.), AS 96-9 (Aug. 15, 1996), the Board found that "none of these standards are reasonably applicable to the circumstances encountered in the Lincoln Quarry disposal system." Likewise, these requirements do not apply to Ameren's closed Pond D. These rules were intended to apply to a working landfill handling putrescible waste which would create issues regarding vectors and landfill gas to be addressed by cover, vector control and landfill gas management. Pond D is being closed and has been operated as a monofill containing only coal combustion waste. As with the Lincoln Quarry, there is no need at Pond D for these requirements to apply. Accordingly, Ameren requests an adjustment from these standards or a determination from the Board that these regulations do not apply.

VIII.
NARRATIVE DESCRIPTION OF PROPOSED ADJUSTED STANDARD
(35 Ill. Adm. Code 104.406(f))

Petitioner requests that the Board grant the following relief.

(1) Pursuant to Section 28.1 of the Environmental Protection Act (Act) (415 ILCS 5/28.1 (2006)), the Board grants Ameren Energy Generating Company (Ameren) adjusted standards from the following Sections of the Board's landfill regulations as they apply to the closure of Pond D at the Hustonville facility: 35 Ill. Adm. Code Sections ; 814.302(b)(1); 811.309; 811.314(b)(3)(A)(ii); 811.317; 811.318(b), (c); 811.319(b)(4) and (c); 811.320(a), (b), (c); and 811.319(a) as applied to organic constituents.

(2) The regulations described above are replaced with the following standards:

(a) In lieu of the cap and cover requirements provided for in 35 Ill. Adm. Code 811.314, Ameren must construct a pozzolanic cap as described in Exhibit 10 to cover the former ash impoundment, Pond D. The pozzolanic

cover will substantially comply with the performance requirements set forth in 35 Ill. Adm. Code 816.

(b) The existing leachate monitoring, management, and disposal requirements of 35 Ill. Adm. Code 814.302(b)(1) and 35 Ill. Adm. Code 811.309 are replaced with the monitoring plan described in Exhibit 11.

(c) In lieu of calculating maximum allowable predicted concentrations (MAPC), the following groundwater monitoring points are considered applicable groundwater quality standard locations: MW-6, MW-7, MW-8, MW-11R, MW-14, MW-115d, and MW-115s. A confirmed exceedance, based on an analysis of assessment monitoring data, at the monitoring wells as set forth in the following table will constitute a violation.

Constituent	MW-6*	MW-7*	MW-8*	MW-11R*	MW-14*	MW-115s**	MW-115d**
Boron, Total	21.5	2.6	16.2	11.6	2.30	0.27	0.27
Manganese, Total	3.6	1.7	6.1	9.5	0.67	0.15	0.15
pH, (Field)	5.4-8.6	6.5-7.4	6.9-7.4	4.1-9.4	6.8-7.3	7.0 – 7.8	7.0 – 7.8
Sulfate, Total	576	416	1241	720	305	84	84
TDS	1,128.0	1262	1800	1300	830	500	500

* Requested adjustments from the groundwater quality standards required pursuant to 35 Ill. Adm. Code 811.320.

** The applicable groundwater quality standard for the deep alluvial aquifer calculated in accordance with 35 Ill. Adm. Code 811.320.

(d) The existing groundwater impact assessment requirements of 35 Ill. Adm. Code 811.317 and 811.319(c), groundwater sampling requirements of 35 Ill. Adm. Code 811.319(a)(1), and groundwater monitoring program provided in 35 Ill. Adm. Code 811.319(a)(2) and (3) are replaced with the groundwater monitoring program described in Exhibit 11.

(e) The groundwater monitoring plan described in Exhibit 11 applies in lieu of the groundwater monitoring locations set forth in 35 Ill. Adm. Code 811.318(b)(5).

(f) The zone of attenuation for Ameren's Pond D, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standards set forth at 35 Ill. Adm. Code 811.320, is a volume bounded by a vertical plane at the property boundary to the east of the unit, the property boundary to the south of the unit, and 100 feet from the unit to the north and west of the unit, and extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste.

(3) The following operating conditions do not apply:

35 Ill. Adm. Code 811.105 - compaction of waste
35 Ill. Adm. Code 811.106 - daily cover
35 Ill. Adm. Code 811.107(a) - phasing of operations
35 Ill. Adm. Code 811.107(b) - working face
35 Ill. Adm. Code 811.107(i) - vector control
35 Ill. Adm. Code 811.310, 811.311, 811.312 - landfill gas monitoring and management
35 Ill. Adm. Code 811.313 - intermediate cover
35 Ill. Adm. Code 811.321 – waste placement
35 Ill. Adm. Code 811.322 - final slopes and stabilization
35 Ill. Adm. Code 815.202(a) - Initial facility report filing deadline
35 Ill. Adm. Code 815.302(b) - Permit information requirements
35 Ill. Adm. Code 815.303(a) - Annual report information requirements

IX.
STATEMENT OF JUSTIFICATION
(35 Ill. Adm. Code 104.406(h))

Consistent with Section 28.1(c) of the Act, Petitioner has demonstrated that it is entitled to adjusted standards from the Board's landfill regulations. 415 ILCS 5/28.1(c) (2006). In 1990, the Board promulgated new regulations that imposed stringent design and operating requirements on non-hazardous waste landfills.

A. Factors Relating to Petitioner are Substantially Different from Factors Relied Upon by Board in the General Landfill Rules

Pond D was designed and constructed to function as a water treatment impoundment more than twenty years before the Board promulgated its landfill regulations. Since the pond predated solid waste regulations, design and engineering criteria set forth in the regulations were not and could not be taken into account during construction. Retrofitting the impoundment to comply with current regulatory requirements is both technically infeasible and cost-prohibitive. Many of the operating standards for existing landfills were formulated to regulate units that accept dry waste for disposal in engineered cells, rather than to address the sluicing of coal ash to a surface impoundment. Accordingly, many miscellaneous operating standards relating to vector control, etc., are inapplicable to the Station's operations.

Further, the landfill regulations only become applicable to Pond D after the end of its active life and upon closure of the unit. Therefore, many of the landfill regulations that would ordinarily serve the purpose of predicting compliance or an impact to groundwater in anticipation of accepting additional waste at the facility are equally inapplicable. Pond D no longer accepts ash and has already been dewatered.

The Agency and the Board have recognized that factors relating to an ash pond closure are substantially and significantly different from factors relied on by the Board in adopting the generally applicable Parts 811, 814, and 815 of the Board's landfill regulations, and that those factors warrant an adjusted standard. Petition of Commonwealth Edison Co., AS 96-9 slip op. at 18 (Aug. 15, 1996).

B. The Requested Standard Will Not Result in Substantially and Significantly More Adverse Environmental or Health Effects

As a result of historical operations at the Site, concentrations of various constituents in excess of the Section 811.320 Groundwater Quality Standards have been documented in the shallow groundwater inside and outside of the ZOA defined by 35 Adm. Code 811.320(c). Yet these concentrations have no impacts to human health because there are no users of the impacted groundwater, nor is there evidence of vegetative impacts, since the area supports crops in the upland and woody vegetation in the lowland. Further, neither the Wabash River nor the Village of Hutsonville show impacts from the elevated levels of constituents at Pond D. All of the leachate collection systems evaluated have proven economically unreasonable given the minimal environmental benefit they could provide. This is true especially because meeting the ground water quality requirements is possible without installing an expensive, inefficient and ineffective leachate collection and management system.

The coal ash generated at the station does not contain organic constituents for which many drinking water or other groundwater quality standards have been established. Furthermore, the composition of the ash material and associated constituents are well-defined and the extent of the plume can be determined and monitored with certain indicator constituents.

The requested cap also does not result in environmental or health effects any more adverse than the effects considered by the Board in adopting the Section 811.314 cap requirements. The proposed pozzolonic cap does not achieve the same hydraulic conductivity as a Section 811.314 cap, yet it provides equivalent protection. The existence of ash below the water table will continue to produce leachate, though at greatly reduced rates, regardless of whether a Section 811.314-equivalent or the proposed pozzolonic cap is used. The pozzolonic cap provides the added environmental benefit of utilizing ash that would otherwise be disposed of in a landfill.

X.
CONSISTENCY WITH FEDERAL LAW
(35 Ill. Adm. Code 104.406(i))

Ameren's proposed standards are consistent with federal law. The standards which Ameren seeks to adjust do not implement federal or federally delegated regulatory programs as applied to the Site. Hutsonville does not accept municipal waste and, therefore, federal standards pertaining to municipal landfills do not apply. Furthermore, ash and slag byproducts from the combustion of coal by electric utilities are not subject to regulation under Subtitle C RCRA or other federal standards and fall within the hazardous waste exemption set forth in RCRA Section 3001(b)(3)(c). 65 Fed. Reg. 32214 (May 22, 2000). Accordingly, the Board can grant the requested adjusted standard consistent with federal law

XI.
WAIVER OF RIGHT TO A HEARING
(35 Ill. Adm. Code 104.406(j))

Ameren believes that this Petition and attached documents will suffice to apprise the Board of the issues involved in this matter without the need for a hearing. Pursuant to the Board's procedural rules, Ameren conditionally waives its right to a hearing before the Board on this Petition. Should the Agency file a negative recommendation or the Board require additional information, however, Ameren reserves its right to request a hearing at that time.

XII.
DOCUMENTS RELIED UPON
(35 Ill. Adm. Code 104.406(k))

Ameren has either provided web addresses for or attached as exhibits relevant portions of the sources relied upon in this petition. Ameren will provide hard copies upon request should any of the electronic sources become unavailable.

WHEREFORE, for all the foregoing reasons Ameren Energy Generating Company respectfully requests that its Petition for adjusted standards be granted and the Board provide Ameren the relief requested herein.

Respectfully submitted,

AMEREN ENERGY GENERATING COMPANY

By: Amy Antoniolli

Amy Antoniolli
Joshua R. More
Schiff Hardin LLP
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606
Telephone: 312-258-5500

EXHIBIT LIST

Exhibit 1	Site Map
Exhibit 2	Site Diagram
Exhibit 3	Alternatives Analysis Report July 19, 2005
Exhibit 4	8/99 Hydro Assessment Report
Exhibit 5	1/00 NRT Groundwater Report
Exhibit 6	State Aquifer Map
Exhibit 7	Well Survey Report
Exhibit 8	Boron Mixing Calculations
Exhibit 9	NRT memo regarding Ambient Water Quality
Exhibit 10	VFL Report
Exhibit 11	Hutsonville Pond D Monitoring Program 2008
Exhibit 12	USEPA Determination Regarding CCW from Electric Utility Power Plants