BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	R14-10
COAL COMBUSTION WASTE (CCW)	)	
SURFACE IMPOUNDMENTS AT POWER	)	(Rulemaking- Water)
GENERATING FACILITIES: PROPOSED	)	
NEW 35 ILL. ADM. CODE 841	)	

NOTICE OF FILING

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board ILLINOIS ENVIRONMENTAL PROTECTION AGENCY'S POST HEARING COMMENTS, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/Joanne M. Olson
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Date: October 20, 2014

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THIS FILING IS SUBMITTED ELECTRONICALLY AND SERVED ON RECYCLED PAPER

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY'S POST HEARING COMMENTS

NOW COMES the ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, (Illinois EPA or Agency) by and through its counsel, and hereby submits its Post Hearing Comments as directed by the Hearing Officer Order entered on July 25, 2014, in the above captioned rulemaking.

PROCEDURAL BACKGROUND

On October 28, 2013, the Illinois EPA filed its proposal to adopt a new Part 841 with the Illinois Pollution Control Board (Board). See Illinois EPA's Statement of Reasons & Proposed New 35 Ill. Adm. Code Part 841. The proposed rule is one of general applicability, governing coal combustion waste (CCW) surface impoundments at power generating facilities (units), that allows the owner or operator of each unit to develop a site-specific plan for groundwater monitoring, preventive response, corrective action and closure. The Agency's proposal was motivated, in part, by Ameren Energy Resources (AER) site-specific rulemaking for the closure of 16 ash ponds at eight different facilities. See R2013-09. On November 7, 2013, the Board accepted the Agency's proposal for hearing.

The other participants in this rulemaking include Ameren Missouri, AmerenEnergy Medina Valley Cogen, L.L.C. (Medina Valley Cogen), Midwest Generation, L.L.C., City Water

Light and Power (CWLP), the Office of the Attorney General, Grand Tower Energy Center, L.L.C., Dynegy Midwest Generation, L.L.C., Illinois Power Generating Company, Illinois Power Resources Generating, L.L.C., Electric Energy, Inc, and the Environmental Groups. The Environmental Groups include the Environmental Law & Policy Center, Environmental Integrity Project, Sierra Club, and Prairie Rivers Network.

The first hearing in this matter was held on February 26 and 27, 2014 in Springfield, Illinois. The Illinois EPA presented four witnesses: Rick Cobb, William Buscher, Lynn Dunaway, and Amy Zimmer. On May 13, 2014, the Environmental Groups filed a counterproposal. The second hearing began in Chicago on May 14 and 15, 2014, and continued on June 18-19, 2014 and July 24, 2014. On July 21, 2014, Ameren Missouri and Medina Valley Cogen filed proposed amendments to Section 841.105 and Section 841.110 (Ameren's counterproposal). Gary King, on behalf of Ameren Missouri and Medina Valley Cogen, prefiled testimony. Keir Soderberg and Traci Barkley prefiled testimony on behalf of the Environmental Groups. Andrew Armstrong also testified on behalf of the Environmental Groups during the May, June and July hearings. At the close of hearings in this matter, the Hearing Officer set an October 20, 2014 deadline for post hearing comments.

The Environmental Groups filed amendments to its counterproposal, most recently on July 21, 2014. Envtl. Groups' Proposed Amendments to Proposed New 35 Ill. Adm. Code Part 841, R14-10, July 21, 2014. Within these comments, the Illinois EPA refers to the July 21, 2014 draft when it refers to the Environmental Groups counterproposal. Additionally, the Illinois EPA amended its proposed rule language, on March 25, 2014 (Draft 2), and on July 17, 2014 (Draft 3). See Attach. B, IEPA's Prefiled Answers, July 17, 2014; Attach. 2, IEPA's Post Hr'g

Comments, Mar. 25, 2014. References to Illinois EPA's proposed amendments are to the Agency's Draft 3, dated July 17, 2014 draft, unless otherwise noted.

COMMENTS

I. APPLICABILITY

The Illinois EPA proposes straightforward criteria for determining which units are subject to the proposed rules. First, Section 841.105(a)(1) provides that all units operated on or after the effective date of these rules are subject to these rules. Second, Part 841 applies to units known to cause an exceedence of the groundwater quality standards even if the unit was not operated after the effective date of Part 841. See proposed Section 841.105(a)(2). Finally, this Part should apply to units within a groundwater management zone, where releases from the unit caused an exceedence of the groundwater quality standards, and the corrective action process has not been completed and alternative groundwater quality standards have not been attained. See proposed Section 841.105(a)(3).

A. GROUNDWATER MANAGEMENT ZONES

During the June 18, 2014 hearing, Mr. Armstrong testified that: "If there is a groundwater management zone in place, I'm not sure that corrective action for [sic] closure requirements of these rules would come into play." Hr'g Tr., June 18, 2014 at 225. He further testified:

> Section 841.300 refers to the results of groundwater monitoring conducted pursuant to this part showing exceedance of the groundwater quality standards in 35 Ill. Adm. Code 620. So, again, 620 includes 620.250 for groundwater management zones. If there is not an exceedance of—if you have a groundwater management zone in place, the numeric water quality standards elsewhere in part 60—620 I don't see an exceedance of those numeric standards then triggering the closure standard under our rule—

Id. at 227. Section 620.450(a)(3) provides that prior to the completion of corrective action within a groundwater management zone, groundwater quality standards in Sections 620.410, 620.420, 620.430, 620.440 (hereinafter "numeric standards") are not applicable to such released

chemical constituents. In these situations, there is not a groundwater quality standard for the released chemical constituent.

It was not the Illinois EPA's intent to exclude units within a groundwater management zone whose corrective action has not been completed from the applicability of rule, including the requirement to perform corrective action under proposed Section 841.310 or closure under proposed Section 841.410. On July 17, 2014, the Agency proposed Section 841.105(a)(3) to clarify its intent that those units within a groundwater management zone should still be subject to the proposed rules. Many of these units are located within a groundwater management zone, and if the Environmental Groups' interpretation explained above is adopted, these units may not be subject to the proposed rule.

Illinois EPA acknowledges the rule as proposed does not specifically address how units with groundwater management zones are to comply. For example, numerous proposed sections[1] refer to exceedences of the "applicable groundwater quality standards under 35 Ill. Adm. Code 620.Subpart D" and do not explain how these sections apply to units within a groundwater management zone where the numeric standards are not applicable during the pendency of the corrective action to the released chemical constituent. The Agency intended that units within a groundwater management zone, where the release is attributable to the unit, should follow Subpart C, Corrective Action and Subpart D, Closure. The Illinois EPA anticipated that the owners or operators of these units would select between corrective action or closure, and follow the corresponding requirements of proposed Part 841. The Agency believes additional language is necessary to clarify its intent. Therefore, in addition to proposed Section 841.105(a)(3), the Illinois EPA proposes the following in Section 841.130, Compliance Period:

[1] See proposed Section 841.300 Confirmation Sampling, proposed Section 841.305 Alternative Cause Demonstration, proposed Section 841.310 Corrective Action Plan, and proposed Section 841.405 Closure Prioritization.

c) If the unit is within a groundwater management zone established pursuant to 35 Ill. Adm. Code 620.250 and the groundwater quality standard exceedence for which the groundwater management zone was established was attributable to a release from the unit, the owner or operator shall, within 1 year after the effective date of this Part:

1) submit a corrective action plan pursuant to Section 841.310;

2) submit a closure plan pursuant to Section 841.410; or

3) demonstrate that the unit has been closed in accordance with Sections 841.415 and 841.420, and submit a post-closure care plan in accordance with Section 841.435.

When closure or corrective action has not been completed in accordance with the requirements of proposed Sections 841.415 and 841.420, the Agency believes that the corrective action or closure plans developed under a groundwater management zone should be resubmitted under these rules because the chosen corrective action or closure may need to be reevaluated. The groundwater management zone may have been established numerous years ago,[2] and the chosen corrective action under that groundwater management zone may not have reduced the chemical constituent's concentration below the numeric standards in Part 620. The Agency routinely reviews the adequacy of corrective actions under Section 620.250, and requiring submission of the corrective action plan or closure plan under these rules would not create a new obligation for owners or operators.

The Illinois EPA proposes a one year window to resubmit corrective action or closure plans or demonstrate that the unit has been closed. This is aligned with the other requirements that must be completed within one year of the rule's effective date (conduct a hydrogeologic site characterization, establish background values, develop a groundwater monitoring system, and submit a groundwater monitoring plan).

[2] For example, the groundwater management zone for Hennepin site was established in November 1996.

The Agency also now proposes that the closure plan need not be resubmitted if closure is completed in accordance with Sections 841.415 and 841.420 within one year after the effective date of these rules. Instead, the owner or operator would have to submit a post-closure care plan. Agency review and public notice of completed closure plans that conform to proposed Part 841 are not beneficial to either the Agency or the public. See infra Section XI. Ameren's Counterproposal.

B. ILLINOIS EPA'S PROPOSED APPLICABILITY SECTION SHOULD BE ADOPTED

The Illinois EPA encourages the Board to adopt its proposed language in Section 841.105 governing the applicability of proposed Part 841. The Agency's proposal clearly delineates the universe of units within the scope of the rule by doing two things: first, subsection (a) states which units are within the rule's applicability; and second, subsection (b) sets forth exclusions. The Agency carefully constructed subsection (a) to capture those sites causing or potentially causing water pollution—namely, those that are currently operating and those with known exceedences of the numeric standards. When drafting the proposed language, many questions were raised about so-called "legacy" CCW surface impoundments. Arguments from stakeholders claimed that regulation of these legacy units would be retroactive. The Illinois EPA believes its proposal balances these concerns, while at the same time encompassing those sites that are causing water pollution. Subsection (a) is not retroactive as it would apply only to those units currently in operation or currently causing groundwater contamination.

The Environmental Groups' counterproposal broadens the applicability and narrows the exemptions. This is done by expanding the definition of surface impoundment, removing explicit exemptions proposed by the Agency, and defining the term “operation” differently from its plain meaning.

Under the Environmental Groups' proposal, Part 841 applies to all coal combustion waste surface impoundments at power generating facilities. The definition of surface impoundment, under the Environmental Groups' proposal, includes "natural topographical depression, man-made excavation or diked area that is designed to hold liquid waste or wastes containing free liquids, and which is not a landfill permitted under Illinois Solid Waste Disposal rules at 35 Ill. Adm. Code Parts 813 and 814." Although the Environmental Groups claim that unpermitted landfills are not within the scope of their proposal, the plain language of the proposal leaves the possibility that unpermitted landfills could fall within the proposed rule's applicability. Envtl. Groups' Answers to IEPA's Questions at 1. Their proposed definition of surface impoundment specifically excludes landfills permitted under 35 Ill. Adm. Code 813 and 814, but does not exclude unpermitted landfills regulated under 35 Ill. Adm. Code 815. The Environmental Groups propose to remove the Agency's proposed exemption for landfills exempt from permits under 35 Ill. Adm. Code 815. See Envtl. Groups' proposed Section 841.105(b)(2). The Environmental Groups' testimony contradicts their proposed language, and the Board should reject their proposed changes to the definition of surface impoundment in Section 841.110.

In addition, the Agency is concerned that the Environmental Groups' proposed definition removes the following language: "where earthen materials provide structural support for the containment of the liquid wastes or wastes containing free liquids." The Environmental Groups propose removing this language to broaden the scope of this rule to include "wet ash transfer facilities—that are intended [sic] to the impoundments and, therefore, a structural support by earthen materials did not necessarily jive with [their] original interests." Hr'g Tr. July 24, 2014 at 16.[3] The Agency intentionally drafted the definition of surface impoundment such that it

[3] In the Environmental Groups' August 19, 2014, Post Hearing Comments, the following statement is made: "The Environmental Groups do not object to referencing 'earthen materials' in the definition of 'surface impoundment'."

would not include ditches or other conveyance systems. The Agency does not believe these transfer facilities should be included within the proposed rule because they are not waste water treatment or CCW disposal units. The federal definition and Board's definition in 35 Ill. Adm. Code 720.110 contains the following language "formed primarily of earthen materials (although it may be lined with man-made materials)". The Environmental Groups' proposed definition of surface impoundment expands the common sense meaning of surface impoundment to include structures other than surface impoundments (waste transfer facilities, ditches, conveyance systems); this only creates confusion, and the Agency recommends against the Board's adoption of the language proposed by the Environmental Groups.

Instead of plainly stating that waste transfer facilities are included within the rule's scope and applicability in proposed Section 841.105, the Environmental Groups attempt to make a seemingly innocuous change to the definition of surface impoundment, with the practical implication being that proposed Part 841 applies much more broadly than appears from reading proposed Section 841.105. The Illinois EPA encourages the Board to reject this proposal and, instead, to adopt the Agency's proposed definition of surface impoundment.

The Environmental Groups also assign an unothrodox meaning to the word "operate". They propose "operate" to mean "receiving waste or stormwater flow. A surface impoundment that is open to receive stormwater as direct precipitation, runoff, or process waste water is receiving waste or stormwater flow." The Environmental Groups testified that their proposed definition expands the scope of proposed Part 841 to include any surface impoundment that is open to the atmosphere. Envtl. Groups' Answers to IEPA's Questions at 4. Therefore, any

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Based on this assertion, the Illinois EPA concludes that they have realigned their interests. The Illinois EPA sees no reasons why the Environmental Groups would be opposed to the Agency's proposed definition.

surface impoundment open to the atmosphere is operating pursuant to the Environmental Groups' proposal even if the surface impoundment does not receive any waste or waste water.

The term "operate" as defined by the Environmental Groups causes confusion within their own proposal. In Section 841.105(b)(2), the Environmental Groups create an exemption for those units that have initiated closure consistent with the requirements of proposed Part 841 before the effective date of these rules, that are not operated, and are not causing groundwater quality standard exceedences. As drafted by the Environmental Groups, this exemption will be extinguished with the first rain fall. No facility in the middle of closure will be nonoperational because it will most likely rain at some point before closure is completed. With the rain fall, the unit is considered operational, and subject to Proposed Part 841. Although the Environmental Groups' use the term "initiated" closure, "initiated" seems to mean "completed"; this exemption could only apply to units where closure has been completed because of the inevitably of rainfall. This regulatory scheme creates confusion and uncertainty; the Board should reject the definition of operate, as well as Environmental Groups' proposed exemption in Section 841.105(b)(2).

In response to the Agency's request to explain which surface impoundments fall within the Environmental Groups' proposed rule, the Environmental Groups stated: "All surface impoundments at power generating facilities that contain CCW or leachate from CCW are subject to the proposed rules in some respect." Envtl. Groups' Answers to IEPA's Questions at 4. The Illinois EPA believes the Environmental Groups' proposed applicability is confusing, and Illinois EPA is unsure how to determine when certain units are subject to the Environmental Groups' proposed rule and when units are not subject to the proposed rules. The Agency believes that, under the Environmental Groups' proposal, all units are subject to these rules because even exempt units must keep records demonstrating how the unit qualifies for an

exemption. While keeping records is a good practice, the Agency does not believe this requirement is necessary. If an owner or operator at a unit cannot show how it is exempt from these rules upon Agency request or investigation, the owner or operator of the unit may be subject to an enforcement action under the Environmental Protection Act (Act). The Illinois EPA believes its proposed Board Note and enforcement authority under the Act accomplishes the same objective as the Environmental Groups' proposed Section 841.105(c), without expanding the scope of the rule to cover all units "in some respect." Therefore, the Agency requests the Board reject proposed Section 841.105(c), Section 841.200(c)(16), and Section 841.210(b)(4) of the Environmental Groups' proposal.

II. GROUNDWATER PROTECTION

The Illinois Groundwater Protection Act (IGPA) required the Board to adopt regulations establishing comprehensive water quality standards specifically for the protection of groundwater. 415 ILCS 55/8(a). The Board adopted groundwater quality standards in 35 Ill. Adm. Code Part 620. See R89-14. The IGPA directed the Board to consider how groundwater differs from surface water, and develop a classification system for groundwater based on its utility as a resource or susceptibility to contamination. 415 ILCS 55/8(b). Under the IGPA, the Board's regulations were required to include nondegradation provisions including preventive notification and response activities. *Id*. Key terms such as "potable resource groundwater" and "resource groundwater" are defined and used within the IGPA to distinguish between groundwaters with differing characteristics. 415 ILCS 55/3. Studies around the State have documented a variety of conditions including the existence of very pristine waters on one end of the spectrum to waters heavily contaminated from human activities and waters whose quality is adversely affected by natural geologic conditions on the other end. Part 620 includes resource

based classification to account for the different conditions of groundwater and its utility as a resource. Class I groundwater is groundwater that occurs more than 10 feet below land surface, with a natural quality and quantity that makes it ideal as a current or future source of drinking water. 35 Ill. Adm. Code 620.210. Class II groundwater includes groundwater in non-aquifer geologic materials. 35 Ill. Adm. Code 620.220. Class III groundwater includes groundwater that is demonstrably unique, vital for a particularly sensitive ecological system, or groundwater, listed by the Agency, that contributes to a dedicated nature preserve. 35 Ill. Adm. Code 620.230. Class IV groundwater is other groundwater including groundwater within a zone of attenuation, groundwater with high amounts of total dissolved solids, groundwater underneath a primary source, secondary source or a coal mine refuse area, or groundwater within a previously mined area.

Under Part 620, degradation of the groundwater that would require treatment or additional treatment for continued use or that would preclude an existing or potential use of groundwater is prohibited. 35 Ill. Adm. Code 620.301. The Board also established numeric groundwater quality standards for Class I and Class II groundwater, and exceedence of these numeric standards is prohibited. See 35 Ill. Adm. Code 620.Supbart D. For certain groundwater classes, additional obligations are triggered when contaminant levels increase but have not yet reached the numeric groundwater quality standards. This is commonly referred to as preventive notification and preventive response. Under the Board's rules in Part 620, preventive notification and preventive response does not apply to Class II and Class IV groundwater. 35 Ill. Adm. Code 620.302(a).

A. HIGH PRIORITY RESOURCE GROUNDWATER

The Agency's proposed Part 841 incorporates and relies upon the Board's existing groundwater quality standards in Part 620, including the nondegradation and preventive response provisions. In drafting the proposal, the Agency initially listed the classes of groundwater wherein a statistically significant increase would trigger further investigation and preventive response under Part 620 in proposed Section 841.235. These facilities include: Class I groundwater under 35 Ill. Adm. Code 620.210(a)(1), (a)(2) or (a)(3), or Class III groundwater under 35 Ill. Adm. Code 620.230. See Illinois EPA's Statement of Reasons & Proposed New 35 Ill. Adm. Code Part 841, (Oct. 28, 2013). This language is somewhat cumbersome, and the Agency later proposed to define "high priority resource groundwater" as "Class I groundwater under 35 Ill. Adm. Code 620.210(a)(1), (a)(2) or (a)(3), or Class III groundwater under 35 Ill. Adm. Code 620.230", and use the term "high priority resource groundwater" in p roposed Section 841.235. See Attach. 2, IEPA's Post Hr'g comments, Mar. 25, 2104.

The Environmental Groups, however, propose striking any reference to both "Class I groundwater under 35 Ill. Adm. Code 620.210(a)(1), (a)(2) or (a)(3), or Class III groundwater under 35 Ill. Adm. Code 620.230" or "high priority resource groundwater". See Envtl. Groups' proposed Amendments, Sections 841.235, 841.110. The Agency does not agree with the Environmental Groups' proposed revisions. The Agency based its proposal on the Board's groundwater quality standards in Part 620 which have been operating effectively since 1991. While the Environmental Groups testified that it was appropriate for the Board to establish different classes of groundwater in Part 620, and that groundwater capable of use as drinking water deserves a higher level of protection, they also stated that further investigation and

preventive response should be required regardless of the class of groundwater. Hr'g Tr., June 18, 2014 at 25-27; Hr'g Tr., July 24, 2014 at 82; Envtl. Groups' Answers to IEPA's Questions at 34.

The following testimony further illustrates the Environmental Groups' position:

> MR. RIESER: Thank you. 66.1 you all were asked a question about how does the class of groundwater impact whether a preventive response is required and you responded by saying the class of groundwater does not impact whether preventive response is required. Instead, the response is determined based on the existing or potential use of the water. Is it your contention that the Boards classifications of different types of groundwaters set out in 620 aren't related to the existing or potential use of the water?
>
> MR. ARMSTRONG: No.
>
> MR. RIESER: Okay. Then could you explain the answer that you gave?
>
> MR. ARMSTRONG: Sure. The classes of groundwater under the Boards rules do relate to types of existing or potential uses. However, our proposal is not based upon looking at uses reflected through the class of groundwater, but rather simply the use itself.
>
> MR. RIESER: I don't understand what that means. How is the use of groundwater itself different from the uses identified by the Board as part of this classification system?
>
> MR. ARMSTRONG: Our point was rather to say you should take a preventive -- you should undertake a preventive response if a Class 1 water is impacted, we expanded that to include any use or potential use of any class of groundwater regardless of the class.
>
> MR. RIESER: So the Boards classifications of groundwater are really irrelevant to the requirement to perform preventive response?
>
> MR. ARMSTRONG: In our proposed Section 841.235(c)(2), correct, we took out the reference to classes of groundwater.

Hr'g Tr., July 24, 2014 at 82-84. The Environmental Groups propose a much broader preventive response requirement than what currently exists in Part 620. Aligned with the Board's current regulations in Part 620, the Agency does not believe preventive response is necessary in Class II or Class IV groundwater. For Class IV, preventive response is not appropriate because the existing concentration of the chemical constituent is then the applicable groundwater standard for those constituents. When the existing concentration in Class IV is exceeded, the numeric

groundwater quality standard is exceeded and "corrective action" is required because contamination levels are already elevated above the numerical standards. The phrase "preventive response" only applies to concentrations of contaminants below the numerical standard for the same constituent. Although Class IV groundwater cannot be used as a source of drinking water, the numeric groundwater quality standards in Part 620 and the general prohibition against water pollution under the Act applies to prevent further degradation of Class IV groundwater. Applying preventive response requirements to Class IV groundwater is not beneficial.

Preventive response applies to existing potable water supply wells and saturated geologic materials that are aquifers (i.e. unconsolidated sand, gravel, or sand and gravel, sandstone and fractured carbonates), and Class III groundwater. The Agency does not apply preventive response to Class II groundwater (i.e. non-aquifer geologic materials) due to the low potential yield of such geologic materials. First, such a low potential yield groundwater does not have the capability of being used as a drinking water source. Second, the movement of contaminants in Class II groundwater is significantly impeded due to the low hydraulic conductivity and low effective porosity of Class II geologic materials (e.g., clay and shale). Therefore, the urgency of applying a preventive response due to the concern about migration of contaminants is addressed via natural geologic attenuation properties.

For the above stated reasons, the Agency recommends that the Board adopt the definition of "high priority resource groundwater" and retain its use in Part 841 as proposed by the Agency, ensuring consistency between Part 620 and Part 841.

B. CLOSURE PRIORITIZATION

Illinois EPA proposed different closure schedules for units depending on two factors: the class of groundwater the unit is over; and whether the unit is active or inactive. As stated above, the class of groundwater reflects the quality of the groundwater. Class IV groundwater is of lower quality than the other classes, and, generally speaking, the groundwater quality standards are the existing contaminant concentrations. When a facility is deciding which CCW surface impoundments to close and in what order to close multiple surface impoundments, the Agency believes units located in areas of Class IV groundwater (e.g. previously mined areas) should be given the lowest priority. Therefore, the Agency proposed giving CCW surface impoundments in areas of Class IV groundwater the longest time to close following the approval of a closure plan. The Agency believes that this approach is aligned with the IGPA and the Board's classification of groundwater based on utility, and should be adopted by the Board in proposed Part 841.

The Agency also created a different time frame for closure for CCW surface impoundments that are active versus inactive. The Agency believes the distinction between active and inactive is important because if a CCW surface impoundment scheduled to be closed because of a groundwater quality standards exceedence is actively being used, the owner or operator will have to make alternative arrangements for the CCW generated at the site. This may require building a new landfill or surface impoundment. The Agency therefore believes that owners and operators should be given a longer schedule for closing active CCW surface impoundments than inactive surface impoundments.

When asked why the Environmental Groups reduced the number of categories for closure prioritization from four to two, the Environmental Groups responded that the Agency's proposal

is "arbitrary". Envtl. Groups' Answers to IEPA's Questions at 6-7. Contrary to the Environmental Groups' assertions, the Agency's proposal is intentional and drafted in anticipation of issues that the regulated community will face when closing multiple units at the same time. Additionally, the Agency's proposal takes into consideration the Board's current groundwater classification system. The Illinois EPA believes that the Board should adopt its closure prioritization schedules in proposed Section 841.405

III. MONITORING REQUIREMENTS AND SURFACE WATER ISSUES

The Illinois EPA's proposed regulations provide for careful surveillance of CCW surface impoundments by comparing groundwater water quality at these impoundments with the numeric standards, the site specific background water quality, which includes the naturally occurring and anthropogenic background water quality data and requiring the evaluation of trends in the chemical makeup of the groundwater at these impoundments over time. In addition, emphasis is placed on the evaluation of the potential for offsite movement of groundwater. The groundwater quality information, the identified potential migration pathways, and monitoring groundwater wells will provide the Agency with the necessary information to assess the potential for impacts to waters of the State.

The Agency's proposal focuses on groundwater protection, and includes comprehensive groundwater monitoring requirements. Under the Agency's proposal, owners and operators are required to monitor for groundwater contamination at the compliance point, located within 25 feet from the edge of the unit. If a groundwater quality standard at the compliance point is exceeded and this exceedence is confirmed, the owner or operator has two options: (1) perform corrective action; or (2) close the unit. The Agency believes this remediation process will keep releases from units from reaching surface water. Therefore, the Illinois EPA did not initially

propose monitoring surface water impacts. In its July 17, 2014 Draft, the Agency did, however, propose an alternative impact assessment requirement for closure and corrective action plans. See proposed Section 841.310(e)(6) and Section 841.410(a)(6). This alternative impact assessment includes potential impacts of the corrective action or closure on surface water. In light of this change, the Agency acknowledges that impacts to surface waters should be considered when developing a corrective action or closure plan as the corrective action or closure plan may have a discharge to waters of the state.

A. HYPORHEIC ZONE MONITORING

For the above stated reasons, the Agency agrees that the Environmental Groups' proposed additions to proposed Section 841.200(b) are reasonable. Illinois EPA, however, believes the Environmental Groups' remaining proposed changes to Section 841.200 should not be adopted by the Board. In particular, the Illinois EPA asks the Board to reject the requirement to identify downgradient hyporheic zones in proposed Section 841.200(c)(3). The Agency does not support a hyporheic zone monitoring requirement, and believes that this type of assessment is in its infancy and is geared toward scientific research at this time. This type of assessment monitoring is not currently part of any USEPA regulatory monitoring requirements. In lue of hyporheic zone monitoring requirements, groundwater monitoring and modeling can be used to adequately measure or predict if a unit will cause, threaten, or allow contamination of the Board's surface water quality standards.

During the hearings, the Environmental Groups' expert witness testified that hyporheic zone monitoring in a major river system is difficult and expensive. Hr'g Tr., July 24, 2014 at 41. Seventy percent of the electric generating facilities in Illinois are located adjacent to major river

systems.[4] In hearing exhibit 40, entitled *Proceedings of the Ground-Water/Surface-Water Interactions Workshop*, the precision of the studied hyporheic zone monitoring methods was "generally between 20-40%." See Exhibit 40 at p. 42. D. Dudley Williams states: "Regrettably, the holy grail of a perfect hyporehic sampler still seems to evade use, and indeed may never be attainable." *Id*. Hyporheic zone monitoring should not be a requirement in this rule because modeling and the monitoring well network can be used to assess the flux between surface water and groundwater. Envtl. Groups Answers to IEPA's Questions at 9. Further the Environmental Groups' expert[5] witness testified that water in the hyporheic zone meets the definition of groundwater as defined in proposed Part 841 and the Act. Hr'g Tr., May 14, 2014 at 260. Therefore, hyporheic zone monitoring amounts to nothing more than an expensive, hard to install, inaccurate groundwater monitoring system. The Agency's proposed Part 841 already requires groundwater monitoring from a non-experimental monitoring well system. Hyporheic zone monitoring is not likely to provide additional useful data, and the Agency is unsure what will be done with data collected from hyporheic zone monitoring.

B. NEARBY SURFACE WATERS AND PUMPING WELLS

The Environmental Groups' proposed language in Section 841.200(c)(4) is unnecessary and confusing. The Illinois EPA proposes "nearby" pumping wells be included in the hydrogeologic site characterization. The Environmental Groups propose adding "including but not limited to all down gradient or downstream community water supplies"; it is not clear if

[4] The Hyporheic Handbook, referenced in Dr. Soderberg's prefiled testimony, explains a monitoring well, piezometer and mini-piezometer. Prefiled Test. of Keir Soderberg, PH.D,; Hr'g Ex. 19, Reference Set 2 at 141. Dr. Soderberg's testimony focused on the installation of minipiezometers. Hr'g Tr., July 24, 2014 at 39-42. Installing minipiezometers in a major river system (i.e. navigable stream) via a boat while also trying to maintain an annular seal to prevent surface water (non-hyporheic water) from contaminating the same appears to be very difficult. Further, maintaining these minipiezometers above a major river systems' high water level would appear to be problematic in a navigable stream with major barge and ship traffic. For example, see Prefiled Test. of Keir Soderberg, PH.D,; Hr'g Ex. 19, Reference Set 2 at 143, figure 8.1.

[5] None of the witnesses testifying on behalf of the Environmental Groups has done hyporheic zone sampling before. Envtl. Groups Answers to IEPA's Questions at 6, question 10.3.

"down gradient or downstream community water supplies" refers to only those with "pumping wells" or includes community water supplies with surface water as its source. Regardless of the Environmental Groups' intended meaning, the inclusion of this information is unnecessary because the Agency issues permits for community water supplies, and therefore, knows the locations of all community water supplies in the State.

The Environmental Groups propose that the word "nearby" actually means "could be impacted". Envtl. Groups' Answers to IEPA's Questions at 6. Most recently, they have changed the language of their proposal to reflect this meaning. See Envtl. Groups Post Hr'g Comments, Aug. 19, 2014 at 2-3. Unfortunately, "could be impacted" is not a quantifiable distance; it is possible that releases from these units could reach and have a small impact on surface waters far away from the unit. The Environmental Groups testified that "impacted" does not mean violating the groundwater or surface water quality standard. Hr'g Tr., July 24, 2014 at 24-25. The Illinois EPA would not have an objective standard to determine whether a surface water or pumping well is impacted by a unit. This proposed regulatory scheme provides neither the regulated community nor the Agency guidance on how to prepare and review a hydrogeologic site characterization. Therefore, the Agency requests the Board reject the Environmental Groups proposed change.

Instead, the Agency asks that the Board adopt the Agency's proposed language in Section 841.200(c). When reviewing hydrogeologic site characterizations for these sites the Agency utilizes geographic information system (GIS) software to consider the Natural Resource Conservation Service (NRCS) 12 digit hydrologic unit boundaries. The Agency believes these sub-watershed boundaries combined with digital stream and lake layers, in GIS, is appropriate to determine what surface waters are nearby CCW impoundments. Therefore, the Agency can

evaluate a submission to determine if an owner or operator has properly identified nearby surface water. Further, low withdrawal rates at potable water supply wells, other than community water supply wells, have little or no cone of depression when pumping; therefore, the area of capture is quite small. Thus, the Agency believes the 200 foot minimum setback zone intersecting the site property boundary adequately represents nearby private, semi-private and non-community wells. Further, for community water supply wells, the Agency believes the well head protection areas, defined in Part 620, intersecting a site property boundary appropriately represent nearby community wells. The Agency also has this information in a digital format that can be evaluated using GIS.

C. POTENTIAL HYDROLOGIC CONNECTION

The Environmental Groups' proposed language in 841.200(c)(5) is also unnecessary. They propose requiring the hydrogeological site characterization identify any potential hydrologic connection between the unit and nearby surface water bodies and nearby wells. In response to questions by the Illinois EPA as to the meaning of the phrase "any potential hydrologic connection", the Environmental Groups responded that it means <u>any hydrologic connection</u>. Hr'g Tr. July 24, 2014 at 27. When asked whether this hydrologic connection had to be significant, the Environmental Groups responded "hydrologic connection" actually means "could be impacted". Hr'g Tr. July 24, 2014 at 28; Envtl. Groups' Answers to IEPA's Questions at 9. As stated above, the Agency believes the Board should not adopt regulations where the meanings of key words are not clearly stated. The Illinois EPA also feels that Section 841.200(c)(5) is not necessary because the hydrologic site characterization will already contain information on nearby surface waters and pumping wells. The Agency's proposed requirements

are clear and straightforward, and do not require speculation as to what could be impacted, or whether any hydrologic connection exists.

For the reasons stated above regarding the hyporheic zones and all hydrogeologic connections, the Agency also requests that the Board reject the Environmental Groups' proposed Section 841.210(a) and (b)(4).

D. GROUNDWATER MONITORING SYSTEM

The Environmental Groups also propose similar, unnecessary requirements in Section 841.205(c)(5). The Environmental Groups' Section 841.205(c)(5) states that the groundwater monitoring system must consist of a sufficient number of wells to "assess the overall groundwater flow and direction at the site, as well as changes to the flow regime due to leachate from the unit." The Environmental Groups' proposed Section 841.205(c)(5) is repetitive and unnecessary. The Agency's proposal, Section 841.200(b)(1), includes a description of the uses of the hydrogeologic site characterization. This section states that one of the uses is:

> Providing information to define hydrogeology, including a map of the potentiometric surface and background groundwater quality concentrations, and to assess whether there are any impacts to groundwater quality or surface water quality attributable to any releases from the unit.

In addition, the Agency's proposed Section 841.200(c)(15)(E), which describes minimum information to include in the hydrogeologic site characterization, lists for inclusion a "Map of the potentiometric surface". Looking at the above required information to be included in proposed Sections 841.200(b)(1) and 841.200(c)(15)(E), it is apparent that the hydrogeologic site characterization is required to include a map of the potentiometric surface, background groundwater quality concentrations, and an assessment of whether there are any impacts attributable to any releases from the unit. Any professional hydrogeologist would be able to use the totality of the information listed above as part of the hydrogeologic site characterization to

"assess the overall groundwater flow and direction at the site, as well as changes to the flow regime due to leachate from the unit". There is no need to repeat this requirement in proposed Section 841.205(c)(5) as part of the groundwater monitoring system as this information is already provided as part of the hydrogeologic site characterization. In fact, a proper potentiometric surface map, required under the hydrogeologic site characterization, by itself should provide much of this information. Therefore, the Agency requests the Board reject Section 841.205(c)(5) of the Environmental Groups' proposal.

Likewise, the Environmental Groups' proposed Section 841.205(c)(6) requires the groundwater monitoring system to include a sufficient number of wells to establish the hydraulic gradient between the unit and any nearby surface water. The Agency believes, for the reasons stated above, that the information required to be submitted under the hydrogeologic site characterization section sufficiently allows the Agency or any professional hydrogeologist to determine the gradient between the unit and surface waters. Therefore, the Illinois EPA requests the Board adopt Section 841.205 as proposed by the Agency.

E. ANNUAL STATISTICAL ANALYSIS

In Section 841.235, the Illinois EPA proposed that owners and operators complete an annual statistical analysis for each monitoring well, for each chemical constituent monitored. The Environmental Groups have proposed amendments such that a statistical analysis of the groundwater monitoring data is required every time samples are collected and analyzed (semi-annually or quarterly monitoring). The Agency does not support this proposed change. Though differences can be seen between two individual samples through simple observation, one additional data point is not adequate to analyze trends in chemical constituent concentrations. The 2009 Unified Guidance does not recommend that background statistics be updated any more

frequently than once per year so that data used will be statistically relevant. The Agency believes a comparable set of circumstances exist with regard to on-going groundwater monitoring results. While the statistical characteristics of all monitored chemicals would have to be submitted, it is not by accident that the Agency's proposed Section 841.235 incorporates both annual statistical analysis and preventive response. Preventive response applies to chemical constituents that are below a numerical standard, but demonstrate statistically significant changes. The analysis of significant changes in concentrations that may be only slightly above the level of detection requires observations of trends and changes that cannot be adequately evaluated with one additional data point. Even if a chemical is well above the level of detection and groundwater quality does not change at all, well calibrated laboratory equipment allows for variation in the reported chemical constituent concentration. Analyzing multiple data points takes these minor variations into account without unnecessary confirmation sampling and potentially corrective action or closure.

When developing the statistical analysis section, the Agency determined, for the above stated reasons, that the statistical analysis should be performed annually. Therefore, the Agency proposed a requirement that the annual statistical analysis be submitted annually. Had the Agency proposed more frequent statistical analysis be performed, it would have also proposed that those statistical analysis be submitted when performed. The Agency assumed that under the Environmental Groups' proposal, the statistical analysis would be submitted with the same frequency with which they are done. The Illinois EPA was confused by testimony from the Environmental Groups to the contrary that more frequent statistical analysis would only need to be submitted once a year. The Agency was unaware of the Environmental Groups' intention

regarding submission of the statistical analysis until the Environmental Groups responded to Illinois EPA's prefiled questions:

> **67. Do the Environmental Groups propose that a CCW surface impoundment with quarterly monitoring submit a potentiometric surface map every quarter?**
>
> No. Under proposed Section 841.235(g), statistical analyses, including the potentiometric surface map, shall be submitted to the Agency in accordance with a schedule approved by the Agency in the groundwater monitoring plan pursuant to Section 841.210 of this Part. The Environmental Groups' proposal retains the Agency's request for annual statistical reports in proposed Section 841.210(b)(9). The Environmental Groups' proposed Section 841.235(g) does require the production of a potentiometric surface map every quarter, though.

Envtl. Groups Answers to IEPA's Questions at 36 (emphasis added). Prior to the Environmental Groups' responses, and looking at the plain language of the Environmental Groups' proposal, the Agency believed the statistical analysis had to be submitted within 60 days after completion of sampling pursuant to Environmental Groups' proposed Section 841.210(d). During the July hearing, the Environmental Groups clarified that the statistical analysis and potentiometric surface map must be produced with each sampling event, but must only be submitted to the Agency annually per proposed Section 841.210(b)(9). Hrg. Tr. July 24, 2014 at 85-87. However, upon examination of Environmental Groups' proposed Section 841.235(g), the statistical analysis is required to be submitted to the Agency in accordance with a schedule approved by the Agency in the groundwater monitoring plan pursuant to Section 841.210. Unfortunately, the Environmental Groups' proposed Section 841.235(g) does not specify the subsection that governs when the statistical analysis must be submitted. Confusion about when the statistical analysis must be submitted might arise because Section 841.210 does not specifically mention "statistical analysis", but instead refers to "annual reports" in subsection (b)(9) (yearly submission) and "sampling and analysis data from groundwater monitoring" in subsection (d) (submission within 60 days of quarterly or semi-annually sampling). Both the

schedule of quarterly or semi-annually sampling and the schedule for annual report submissions must be approved by the Agency. It is unclear whether submission of the statistical analysis and potentiometric surface map is expected with the monitoring data (quarterly or semi-annually), annually as per testimony, or if some other frequency of submission would be allowed if the Agency required a different reporting schedule for a potentiometric surface map.

The Agency's proposal does not suffer from this same confusion. The statistical analysis is labeled "annual statistical analysis" throughout proposed Part 841 making it clear that the statistical analysis must be performed annually. Therefore, the reference to annual reports in proposed Section 841. 210(b)(9) encompasses the "annual statistical analysis" and any other report required to be submitted to the agency annually (annual progress reports for corrective action, closure and post-closure care). The Agency's proposal also does not link a potentiometric surface map with the statistical analysis.

The Illinois EPA also notes that the requirement to submit a potentiometric surface map is repeated throughout the Environmental Groups' proposal. See Envt'l Groups' Counterproposal, Sections 841.200(c)(15)(E), 841.210(b)(4) and Section 841.235(d). The Agency does not believe it is necessary to prepare a potentiometric surface map every time monitoring is conducted until the completion of post-closure care. A potentiometric surface map is a useful tool and the data to create the map will be collected just prior to collecting groundwater for analysis. The Agency anticipates there will be situations when a potentiometric surface map will be needed and required every quarter. This need will be site specific, based on unit and site dynamics, preventive responses, corrective actions or closures that may be underway at the site. The Agency believes the frequency of potentiometric surface map submission should be a site specific determination the Agency makes and should not be included

in the rule as proposed by the Environmental Groups. The Environmental Groups' proposal to link statistical analysis and potentiometric surface maps, followed by their testimony attempting to unlink them, leads the Agency to conclude that the Environmental Groups have a poor understanding of statistical analysis, the purpose of potentiometric surface maps and the proposed rule to which they proposed modifications. Therefore, the Agency recommends that the Board adopt Section 841.235 as proposed by the Agency. The Agency also recommends the Board retain all references to "annual" statistical analysis throughout Part 841, including the Agency's proposed Sections 841.220, 841.235, 841.310 and 841.410.

F. REDUCED MONITORING

Based on questions presented by the industrial participants and the Board, the Agency proposed revisions to Sections 841.220, 841.230 and 841.235 in its post-hearing comments that would allow conditional reductions in groundwater monitoring. Hr'g Tr., Feb. 26, 2014 at 71, 73-74; IEPA's Post Hr'g Comments, Mar. 24, 2104. The Agency proposed that at least five years of data be collected on a large set of inorganic chemical constituents before the monitoring frequency could be reduced for chemical constituent(s) that had not been detected during that time period. This allows the development of an overall picture of groundwater quality that includes chemical constitutes of varying mobility in groundwater. The Agency only proposed these reductions when the CCW surface impoundments are adequately lined[6]. The Agency further safeguarded groundwater quality by stipulating that the detection of a chemical constituent whose sampling frequency had been reduced to once every five years is considered statistically significant, which would then automatically trigger investigation pursuant to proposed Section 841.235(c) or monitoring pursuant to proposed Section 841.230(b)(1), depending on the concentration of the chemical constituent. The Environmental Groups

[6] The Agency described in testimony what it considers to be an adequate liner. Hr'g Tr. Feb. 26, 2014 at 223.

proposed three major modifications to the reduced sampling proposal by the Agency. First, the Environmental Groups rephrased the Agency's proposed liner requirement to only allow units with composite liners and leachate collection systems to be eligible for reduced monitoring. This change ignores the fact that based on available monitoring data, single liner systems which have been installed in units appear to be protecting groundwater quality. Further, the Environmental Groups proposed amendment expands the prohibition of reduced sampling to include instances when any CCW surface impoundment at a site is unlined. This completely ignores the possibility that a groundwater monitoring system could be designed so that releases from unlined CCW surface impoundments can be distinguished from potential releases from lined CCW surface impoundments. Second, the Environmental Groups proposed that arsenic, boron, manganese, sulfate and total dissolved solids never have a reduced sampling frequency. With the exception of arsenic, these chemical constituents are rarely consistently below detection. Hence, under the Agency's proposed reduced sampling, these constituents would most likely not have a reduced sampling frequency. Even under rare circumstances when these constituents may go undetected for the five years required for reduced sampling, the Environmental Groups provided no explanation in their post hearing comments that explains why these constituents should be treated differently form the other chemical constituents for which the Agency is requiring monitoring. Envtl. Groups Post Hr'g Comments, June 9, 2014. Finally, the Environmental Groups proposed that any owner or operator that meets the much more stringent construction criteria they proposed could only have a reduction in monitoring to annually. Since chemical constituents under the Agency's proposal that occur above the standard must be monitored quarterly and detected constituents that do not exceed a standard must always be monitored at least semi-annually, a reduction to an annual schedule does not provide much relief

for chemical constituents that have been shown to be below detection limits for at least five years. Therefore, the Agency recommends that the Board adopt the Illinois EPA's proposed Section 841.230.

IV. CLOSURE & CORRECTIVE ACTION

The Illinois EPA's proposal provides the owners and operators of CCW surface impoundments with a choice between corrective action and closure when there is a groundwater quality standards violation. If the owner or operator chooses closure, the closure plan must include a plan for remediating the groundwater in addition to closing the unit. The Agency did not want to prescribe closure when it would be possible to perform corrective action resulting in groundwater remediation. The Illinois EPA, however, would not approve a corrective action plan unlikely to lead to containment of the CCW and attainment of the applicable groundwater quality standards. See proposed Section 841.500(c)(a). In these instances, closure may be the only appropriate remedy. The Agency does not propose to prescribe in these regulations when closure would be required because such a determination is highly dependent on the facts of each case and cannot be translated easily into a one-size-fits-all rule.

For the below stated reasons, the Illinois EPA requests the Board reject the Environmental Groups' proposed changes to Section 841.300, 841.305, 841.405, and 841.410.

A. CLOSURE SHOULD NOT BE TRIGGERED BY A GROUNDWATER QUALITY EXCEEDENCE

The Environmental Groups initially proposed requiring closure within 5 years of the confirmation of a groundwater quality standard exceedence if corrective action has not resulted in attainment of the groundwater quality standards for four consecutive quarters during that five year period. Effectively, since four quarters of monitoring are required, owners and operators must come into compliance with the groundwater quality standards within four years of the

confirmed exceedence to avoid the closure requirement. When considering the time allotted to the owner or operator to prove an alternative cause, develop a corrective action, and the Agency's time to review and approve the corrective action, an owner or operator is left with approximately 32 months to remediate groundwater to achieve the numeric standards in Part 620.[7] Hr'g Tr., July 24, 2014 at 50-53. When asked whether it is realistic to remediate groundwater in 32 months, the Environmental Groups' expert, Dr. Keir Soderberg, testified "that would be a short time frame." *Id.* at 52. The Environmental Groups' proposed time frame for corrective action appears especially short considering Dr. Soderberg has not completed groundwater remediation on any of his 17 projects, over the course of his 10 years of field experience and 5 years consulting experience. See Envtl. Groups' Post Hr'g Comments, Aug. 19, 2014 at 4-5; Prefiled Test. of Keir Soderberg, PH.D, at 1; Hr'g Ex. 19.

The Environmental Groups describe corrective actions that do not result in attainment of the groundwater quality standard within five years of the confirmed exceedence as "non-viable". Hr'g Tr. June 18, 2014 at 219; Envtl. Groups' Answers to IEPA's Questions at 24. They claim: "the Agency proposed rule allows continued contamination of groundwater, putting it into conflict with the Illinois Groundwater Protection Act because the Agency's rule lacks provisions to address ongoing contamination from impoundments where there has been an unsuccessful attempt at corrective action." See Envtl. Groups' Post Hr'g Comments, June 9, 2014 at 18. The Illinois EPA disagrees with their assertion that its proposal conflicts with the Illinois Groundwater Protection Act. To the contrary, the Agency's proposed Part 841, if adopted, would in fact "restore, protect, and enhance the groundwaters of the State, as a natural and public

[7] An owner or operator has 180 days after the confirmed exceedence to submit an alternative cause demonstration. The Agency has 90 days to respond. If the Agency denies the alternative cause demonstration, the owner or operator then has 90 days to submit a closure or corrective action plan. The Agency then is given 120 days, as proposed by the Environmental Groups, to review the plan.

resource." The Agency also disagrees with the Environmental Groups artificial time restrictions on corrective actions. Groundwater moves slowly.[8] The Illinois EPA believes that a corrective action plan that takes longer than five years can be viable, and can result in restoration of the groundwater. The time restriction proposed by the Environmental Groups is arbitrary and does not consider the technical aspects of groundwater remediation.

The Environmental Groups, in their latest draft, proposed a change to the interplay between the corrective action and closure under their proposed rule. They propose that closure would not be required within five years if the unit is designed according to the Environmental Groups' proposed design standards in Section 841.450. This additional requirement creates tremendous confusion in the rule because the Environmental Groups' proposed design criteria are not discretionary for units remaining in operation and performing corrective action. For the sake of clarity, the Board should reject the Environmental Groups' proposed requirement that closure occur within five years of the confirmed groundwater exceedence. The Illinois EPA also believes whether existing units must meet new design standards or close is an issue that should be addressed in the subdocket after the federal coal combustion residue proposal has been finalized. See 75 Fed. Reg. 35128 (June 21, 2010).

B. CONFIRMATION SAMPLING AND NATURAL CAUSES

In their third draft proposal, the Environmental Groups propose that the natural causes should not be considered in determining the applicable groundwater quality standard when doing confirmation sampling under proposed Section 841.300. Envtl. Groups' Answers to IEPA's Questions, Agency Exhibit A. They claim this change is necessary based on the Agency's question at the May 25, 2014, hearing. "It is the Environmental Groups' understanding that the Agency is taking the position that, if the concentration of a chemical constituent is elevated due

[8] Fast groundwater movement is typically a few feet per day, while streams will typically flow a few miles per day.

to natural causes, then there is no exceedence of the groundwater quality standards in Part 620, Subpart D." Envtl. Groups' Answers to IEPA's Questions at 16. They are correct, that pursuant to Part 620, chemical constituent concentrations elevated due to natural causes are not violations of the numeric groundwater quality standard. When asked what this language means, Mr. Armstrong testified:

> What that means is that in determining whether under 841.300, it is necessary to confirm the detection of an exceedance of a groundwater quality standard, the groundwater quality standard that should be applied would be the numeric standard rather than a standard that is elevated due to natural causes and the reason for that is that if natural causes were responsible for an exceedance that had to be confirmed under 841.300, then that should be resolved later under Section 841.305 in an alternative cause demonstration.

Hr'g Tr. July 24, 2014 at 63-64. Mr. Armstrong further stated that the rule should require "owner or operator to show that there is not a violation because [sic] due to natural causes." *Id.* at 66. When questioned by the Agency, however, the Environmental Groups' expert witness, Dr. Soderberg, testified that owners and operators would know what chemical constituents were naturally occurring after determining background values. *Id.* at 69-70. According to Dr. Soderberg, if the monitoring done subsequent to determining background did not show an exceedence of naturally occurring background concentrations, further information or documentation by the owner or operators would be unnecessary. The Agency agrees with Dr. Soderberg on this point, and does not believe that the Board's rules should exclude naturally occurring chemical constituents when determining the applicable groundwater quality standards in proposed Section 841.300.

The Illinois EPA suspects confusion surrounds how natural causes could be an alternative cause. See Envtl. Groups' Post Hr'g Comments, June 9, 2014 at 16-18. The Agency's proposal specifically provides that an exceedence of the groundwater quality standards is not attributable to the unit when the exceedence is due to natural causes. The Environmental Groups question

how this is possible because exceedences due to natural causes are not groundwater quality standards violations, and alternative cause demonstrations are therefore not required. *Id.* The Environmental Groups fail to understand that in most instances establishing background will allow an owner or operator to create a statistical representation of naturally occurring chemical concentrations for comparison to monitoring at points of compliance. Unfortunately, however, the owner or operator may not always know that the exceedence is due to natural causes. As Dr. Soderberg testified, it is possible that increases above background could be due to natural causes. Hr'g. Trans. July 24, 2014 at 71; see also, Envtl. Groups' Answers to IEPA's Questions at 15-16. In cases where the chemical concentration is above previously known naturally occurring levels, the owner or operator has the option to show the recent increase is naturally occurring and not attributable to a release from the unit. The Environmental Groups also agreed that an owner or operator would not be precluded from showing a future exceedence of the groundwater quality standards is due to natural causes. Envtl. Groups' Answers to IEPA's Questions at 16.

The Illinois EPA does not believe the Environmental Groups' proposed changes to Section 841.300 are necessary; the Agency believes their proposed change would require every owner or operator with naturally occurring levels to perform confirmation sampling, and complete an alternative cause demonstration, even when the Agency and the owner or operator know that the exceedence is due to natural causes. This proposed change wastes the resources of both the Illinois EPA and the regulated community, and the Board should reject the Environmental Groups' proposal.

C. ALTERNATIVE CAUSE DEMONSTRATION

The Environmental Groups propose in Section 841.305(a) that the alternative cause demonstration be supported by a report that "must describe and justify a specific cause, with

documentation that establishes the existence of the asserted error, natural cause, or alternate contamination source" (emphasis added). This language causes the Agency concern as it establishes a requirement that if on-site data collection shows that a confirmed exceedence of a groundwater quality standard at a compliance point is due to an off-site source, a specific cause still must be identified. This also could be read to establish a requirement that the owner or operator of the unit must conduct an off-site investigation on another entity's property. This could put enormous financial and legal burdens associated with such an investigation to gain access upon an owner or operator when, in the Agency's view, all that must be shown is that the groundwater exceedence is not emanating from the unit(s) in question. If data shows that the exceedence is from an off-site source, there should be no need to require further investigation on the part of the owner or operator to show a potential or specific cause in order to keep operating the unit. The unit is not out of compliance.

In their prefiled responses to Agency questions, the Environmental Groups provided further clarification of their view:

> **24. Do the Environmental Groups propose requiring an owner or operator of a CCW surface impoundment to identify the specific cause of contamination even if that cause is offsite?**
>
> No. This question does not reflect the language of the Environmental Groups' proposal. The exact language from the Environmental Groups' proposed section 841.305(a) is that:
>
> > In order to demonstrate an alternative cause, the report must describe and justify a specific cause, with documentation that establishes the existence of the asserted error, natural cause, or alternative contamination source.
>
> In order to meet this standard, the report "must describe and justify a specific cause," including an asserted error, natural cause, or alternate contamination source. There is no requirement that the report "identify the specific cause of contamination." Rather, if the owner or operator claims that an exceedance is due to an offsite contamination source (or sources), then the owner or operator should supply the documentation available to it that supports its theory. This does not

> require the owner or operator to "identify" or "prove" that any specific source is responsible for contamination to any level or certainty – just "describe" and "justify" the claimed "alternative cause."

Envtl. Groups' Answers to IEPA's Questions at 13-14. At hearing, the Environmental Groups clarified that they are "not proposing that an owner or operator have to point the finger at a specific source," but instead require "describing or justifying the reason for the owner or operator's belief that this is an alternative source." Hr'g. Trans. July 24, 2014 at 59-60. The Agency is confused by this response because the Agency's proposal already required this description or justification. See proposed Section 841.305(a)("The owner or operator shall submit a report to the Agency that demonstrates an alternative cause.") The Illinois EPA does not believe that the language proposed by the Environmental Groups matches their explained meaning. The plain language of their proposal requires the owner or operator to justify a specific cause. The Agency believes "cause" here means source of contamination, and not "the reason for the owner or operator's belief that there is an alternative source". It is logical for one to conclude that "cause" means source of contamination given the title of this section is "Alternative Cause Demonstration" and the purpose of the section is to provide the owner or operator with an opportunity to show a the groundwater quality standard exceedence is not attributable to a release from the CCW surface impoundment. To the Illinois EPA's confusion, the Environmental Groups insist they mean that the "specific cause" does not need to be identified. The Illinois EPA believes its proposed language in Section 841.305 should be adopted by the Board because the Agency's proposal accomplishes the Environmental Groups' desired objective without the creating confusion over what is meant by "specific cause".

In addition, when asked to clarify their position, the Environmental Groups provided the following explanation:

24.2 If the owner or operator of a CCW surface impoundment was denied access to an offsite property and, as a result, was unable to identify the specific alternative contamination source, would the owner or operator be unable to make an alternative cause demonstration?

> No. Again, there is no requirement to "identify" the specific alternative contamination source, just to "describe and justify" the claimed alternative cause. Publicly available records can establish the historic uses of nearby properties. If the owner or operator claims that an alternative cause is contamination from an offsite operation, then the owner or operator should state, for example, what offsite operation (or operations) are claimed could have cause the contamination.

Envtl. Groups' Answers to IEPA's Questions at 13-14. The above answer is essentially making the justification of an off-site alternative source dependent upon the existence of a historic record of all of the existing uses of nearby off-site properties. If there is not an "identified" historic use of nearby off-site property that could potentially cause the groundwater exceedence at the unit, then the owner would have to conduct corrective action or closure, even if they show that the contamination is from an "unidentified" off-site source. The Agency believes this puts an unfair burden upon the owner or operator of the unit(s). Historic documentation of every use or potential contamination source for every property that could potentially affect a unit(s) may not be available. Therefore, the Agency requests the Board reject changes to Section 841.305(a) in the Environmental Groups' proposal.

D. CLOSURE PLANS SHOULD BE SUBMITTED AFTER A CONFIRMED EXCEEDENCE

The Agency requests the Board reject the Environmental Groups' proposal to require that closure and post closure plans be submitted within one year of the effective date of the proposed rule. The Agency has proposed that the submission of closure and post closure plans be linked to the need to address groundwater contamination caused by an impoundment. The Agency's proposal requires the owner or operator to conduct a hydrogeologic site characterization, develop a groundwater monitoring system, establish background values, and submit a groundwater

monitoring plan within one year of the effective date of this part. The information gathered through these activities will allow the owner or operator to assess the performance of each unit, and for units that have impacted groundwater, prioritize unit closure or corrective action.

For the first year after effective date of the Agency's proposed rule, the owner or operator is assessing groundwater quality at each impoundment. Until this information is available, the owner or operator may not know which impoundments to prioritize for corrective action or closure. A closure plan submitted before the groundwater quality is available may need to be revised. When the Environmental Groups were questioned about the revisions to the closure plans needing further review multiple times throughout the life expectancy of an impoundment and that these reviews would require additional resources, the Environmental Groups answered that they had not considered the additional Agency resource needs. Hr'g Tr., July 24, 2014 at 73. The Environmental Groups failed to consider the full ramifications of their proposal to require that closure and post closure plans be submitted within one year of the effective date the proposed rule.

Should the Board adopt the Environmental Groups' proposal, the Agency would need to review closure plans for 91 impoundments within one year of the effective date of the rule. Hr'g Tr., July 24, 2014 at 74-75. If, under the Environmental Groups' proposed rules, a hearing was requested for each impoundment, Agency personnel would have little time to review the closure plans for the 91 impoundments within the 120 days allowed under the Environmental Groups' proposed rule to review the closure plan because they would be attending public hearings for the 91 impoundments. Assuming that a single closure plan was submitted for every two CCW surface impoundments, the Agency would have to review 45 closure and post-closure care plans within 120 days. The estimated total review time for 45 closure applications is 450 days (3,375

hours), assuming that each application takes approximately 10 days (75 hours). An Agency work year consists of 261 days, after subtracting for weekends and holidays. Currently, the Agency's Hydrogeology and Compliance Unit (HCU) has four full time staff and one part time intern, and therefore has approximately 4.5 work years or 1,174.5 days, available each year. The HCU unit, however, cannot dedicate all 4.5 work years to reviewing closure plans. Approximately three years are devoted to assisting with implementation of programs required under the Illinois Groundwater Protection Act[9] and federal and state drinking water program,[10] developing legislative proposals, providing technical assistance to the Bureau of Water, Division of Water Pollution Control, and reviewing groundwater and surface water threats of all reported emergencies. Therefore, approximately 1.5 work years (391 days) are available to focus on CCW related work, including but not limited to hydrogeologic assessment, monitoring, statistical evaluation, groundwater modeling, preventive response, corrective action/closure plans, and public meetings. It is estimated that concurrently reviewing the closure plans for all 45 CCW surface impoundment units will require 450 days. This does not include the time it will take to consider public comments.

Agency resources would be best allocated reviewing corrective action or closure plans for units which have impacted groundwater. The Agency requests the Board reject the Environmental Groups' proposal to require that closure and post closure plans be submitted within one year of the effective date the proposed rule for existing CCW surface impoundments.

[9] e.g., setback zones, waivers, exceptions, Class III groundwater designations, groundwater standards amendments, technology control regulations, minimal hazard certification, enforcement, etc.
[10] e.g., groundwater rule, new well permit review, wellhead protection area delineation and modeling, etc.

V. POST CLOSURE CARE

A. POST CLOSURE CARE ANNUAL REPORT

The Environmental Groups' proposal requires owners and operators to certify each year that there are no tears, rips, punctures or other damage to the geosynthetic membrane. See Environmental Groups' proposed Section 841.445(b). Under both the Illinois EPA's proposal and the Environmental Groups' proposal, the geosynthetic membrane must be covered by a final protective layer that is at least three feet thick. See proposed Section 841.420(b)(2). Illinois EPA asked the Environmental Groups how an owner or operator will certify that the geosyntehic membrane is free from tears, rips, punctures or other damage when it is covered by three feet of soil and vegetation. In response, the Environmental Groups stated that the language it proposes in Section 841.445(b)(1) are direct quotes from the Agency's proposal. Envtl. Groups' Answers to IEPA's Questions at 38. The Illinois EPA has not proposed and does not support the Environmental Groups' proposal requiring a certification of the condition of the geosynthetic membrane. An owner or operator will be unable to see the geosynthetic membrane, and will be unable to certify that there are no rips, tears, punctures or other damage. Further, the Agency does not believe a certification is necessary in this instance, as the post-closure care maintenance is required pursuant to proposed Section 841.330, and proposed Section 841.445(b)(4) of the Illinois EPA's proposal requires the annual report to list all post-closure care activities performed during the preceding year. False information submitted to the Agency is a criminal offense. 415 ILCS 5/44 (2012).

B. POST CLOSURE CARE PERIOD

The Environmental Groups premise many parts of their proposal, including the rationale for a 30 year post closure care period, on the USEPA projections of the arrival of peak well

concentrations for coal ash pollutants decades or centuries after a coal ash disposal operation begins. The Agency recommends that the Environmental Groups' 30 year post closure care plan be rejected. The post-closure care period proposed by the Agency is a minimum of 10 years which may be lengthened depending on site specific groundwater conditions. The Agency's proposal should be adopted by the Board based on the following.

The Environmental Groups' expert, Dr. Soderberg, testified that according to USEPA's 2010 risk assessment, the median time to peak boron concentration was 74 years from unlined impoundments and 90 years from clayed-lined impoundments. Dr. Soderberg, however, admitted that the results of U.S. EPA's 2010 risk assessment do not represent any particular power generating facility in Illinois. Hr'g Tr., May 15, 2014 at 234. He further admitted that he did not know the median hydraulic conductivity used to establish the 74 year time frame for peak boron concentration. Hr'g Tr., May 15, 2014 at 237. After the May 2014 hearings, the Agency followed up with U.S. EPA to obtain a copy of the database that was used to predict peak contaminant travel times. A statistical evaluation of this data was performed by the Agency, and it was determined that the median hydraulic conductivity (K) used by USEPA was 1×10^{-5} centimeters per second (cm/sec). The Agency included contaminant data in the record of this rulemaking which shows that twelve facilities are above Class I groundwater quality standards. See Prefiled Test. of Richard Cobb; Attach. II – XIV (Jan. 15, 2014); Hr'g Ex. 19. Class I groundwater has a hydraulic conductivity of more than or equal to 1×10^{-4} cm/sec. Therefore, at a minimum, the site-specific hydraulic conductivity in Illinois is one order of magnitude (10 times) greater at 12 facilities in Illinois with Class I groundwater standards exceedences.

In order to illustrate the significance of this to the proposed regulations, the Agency believes it is important to highlight the significance of hydraulic conductivity in the governing

equations used in groundwater flow and contaminant mass transport models. The groundwater velocity (Vx) (i.e. advection) is directly proportional to the hydraulic conductivity, the greater the hydraulic conductivity the greater the groundwater velocity, as follows:

$$Vx = -\frac{\boldsymbol{K}dh}{n_e\, dl}$$

Where:

V_x = average liner velocity in meters per day (m/d)

***K* = hydraulic conductivity (cm/sec)**

n_e = effective porosity (dimensionless)

dh = change in hydraulic head elevation (m)

dl = change in distance (m)

$\frac{dh}{dl}$ = hydraulic gradient (dimensionless)

The relationship of the groundwater velocity (V_x = U) is shown in the following advection dispersion equation:

$$C_{(x)} = C_{source} \bullet \exp\left[\left(\frac{X}{2\alpha_x}\right) \bullet \left(1 - \sqrt{1 + \frac{4\lambda \bullet \alpha_x}{U}}\right)\right] \bullet erf\left[\frac{S_w}{4 \bullet \sqrt{\alpha_y \bullet X}}\right] \bullet erf\left[\frac{S_d}{2 \bullet \sqrt{\alpha_z \bullet X}}\right]$$

Where:

X = distance from the planar source to the location of concern, along the centerline of the groundwater plume (i.e., y=0, z=0)

C_x = the concentration of the contaminant at a distance X from the source, along the centerline of the plume

C_{source} = the greatest potential concentration of the contaminant of concern in the groundwater at the source of the contamination, based on the

concentrations of contaminants in groundwater due to the release and the projected concentration of the contaminant migrating from the soil to the groundwater. As indicated above, the model assumes a planar source discharging groundwater at a concentration equal to C_{source}.

a_x = dispersivity in the x direction

a_y = dispersivity in the y direction

a_z = dispersivity in the z direction

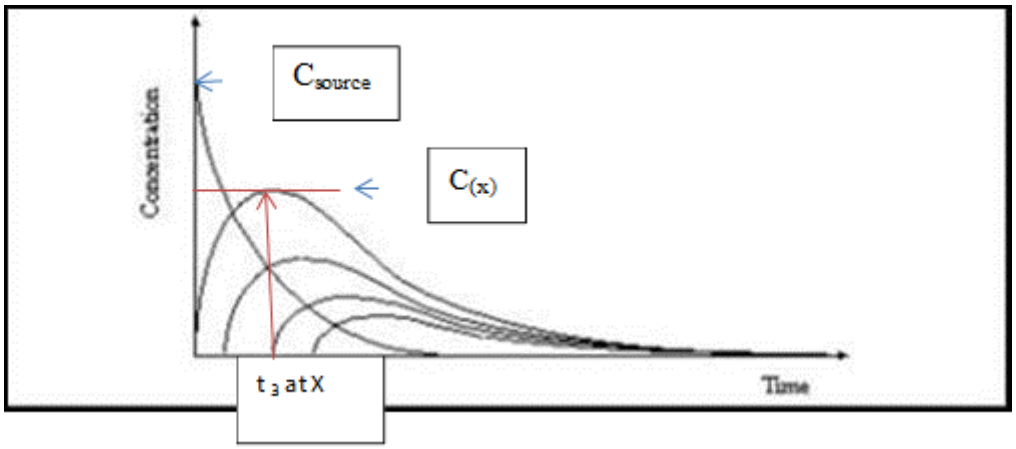
U =specific discharge (i.e., actual groundwater flow velocity through a porous medium; takes into account the fact that the groundwater actually flows only through the pores of the subsurface materials) where the aquifer hydraulic conductivity (K), the hydraulic gradient (dh/dl) and the total soil porosity q_T must be known

λ = first order degradation constant

S_w = width of planar groundwater source in the y direction

S_d = depth of planar groundwater source in the z direction

The advection dispersion equation is what is used to predict contaminant mass per unit volume ($C_{(x)}$) (e.g. milligrams per liter (mg/L)) relative to time (*t*) as it is transported down gradient from the source (C_{source}). The equation above, illustrates the relationship of the groundwater velocity (*U*), to predicting $C_{(x)}$ over time (e.g., t_1, t_2, t_3…etc.). Further, predicted $C_{(x)}$ concentration is graphed in relation to the distance (*X*) in meters down gradient along the center line of the plume:



The graph above predicts the *t* (time) where the peak $C_{(x)}$ will occur. The faster the groundwater travel time, the sooner peak $C_{(x)}$ will occur. Hydraulic conductivity values 10 to 100 times greater are going to result in significantly shorter contaminant peak arrival times than what was determined via the U.S. EPA modeling. This is an important fact that supports a shorter flexible post closure care period as proposed by the Agency.

The Agency approval of corrective action plans under the Agency's proposal is not open ended and includes contaminant transport modeling run to steady state conditions that predict the time when standards will be achieved. Based on the information presented herein, we recommend that the Board adopt the 10 year minimum post-closure care period proposed by the Agency.

VI. PUBLIC NOTICE

A public outreach session was held by the Illinois EPA in June 2013 to collect stakeholder input for what would become proposed Part 841. During this outreach, representatives of Environmental Groups requested that public participation be included in the proposed rule. When asked what type of participation was being requested, the response was that public notice be provided with the ability for the public to submit comments on corrective action plans and closure plans. Industry questioned whether such an inclusion would set a precedent.

Indeed, 35 Ill. Adm. Code 740 and 35 Ill. Adm. Code 742, pursuant to which the majority of corrective actions are completed in Illinois do not include a provision for public input relative to corrective actions proposed to or approved by the Agency. However, given the degree of public interest in the handling and disposal of coal combustion waste, the Agency took the unprecedented step of including proposed Section 841.165 Public Notice.

The Environmental Groups filed, without explanation, proposed amendments to proposed Part 841 which significantly expanded the scope of the Agency's proposed public notice section. Most significantly, the Environmental Groups proposed a requirement for the Agency to hold a public informational meeting any time significant public interest in one of the plans to be reviewed is submitted to the Agency. Further, the Environmental Groups proposed the addition of alternative cause demonstrations and post-closure care plans as documents subject to posting, public meetings and public comment. The Environmental Groups also proposed to double the time from 30 to 60 days that public comments must be accepted by the Agency for consideration. After extensive questioning by the Agency, the Environmental Groups did concede that the Agency currently has the discretion to hold a public hearing pursuant to 35 Ill. Adm. Code 164, any time the Agency's Director finds there is significant public interest in an Agency decision. Hr'g. Trans. June 18, 2014 at 71-76. In light of the applicability of the procedures for informational public hearings set forth in Part 164, the Illinois EPA believes the Environmental Groups' proposal is unnecessary.

The Agency has committed in its proposed Section 841.165 to consider public comments when rendering its final decision on corrective action plans and closure plans. See Illinois EPA proposed Section 841.165(d)("The Agency shall take any comments received into consideration in making its final decision"). The Agency believes that corrective action plans and closure

plans are the most appropriate plans about which to accept public comments. These two plans have the greatest potential for long term benefit to local residents and the environment. Consequently, local input that improves upon what is submitted by an owner or operator, or is required by law, may be beneficial to the area. As a practical matter, the Agency's proposed Section 841.435 requires that a post-closure care plan be submitted with a closure plan. Therefore, under the Agency's proposal, the Agency will accept and consider comments on both the closure plan and post-closure care plan during a single public comment period. The Agency does not believe public participation in alternative cause demonstrations will be useful and may be counter-productive. Such demonstrations are likely to involve discussions of either site specific hydrogeologic conditions, or documentation that laboratory or sampling error has occurred. Hydrogeologic data will be in the form of numbers and maps presented by the owner or operator explaining why a monitoring constituent has unexpectedly increased. Documentation confirming errors adequately proves the data in question is not acceptable. Therefore, neither set of circumstances benefits from public comments.

For the reasons discussed above the Agency does not believe the Environmental Groups' proposed changes should be adopted into Part 841. However, in consideration of the difficulty associated with reviewing complex technical documents and rendering relevant comments regarding their aspects, the Agency is willing to provide the public with additional time for review provided an equal adjustment in review time is provided to the Agency under proposed Section 841.500.

VII. DAM SAFETY

The Environmental Groups have reason to be concerned about the stability of the dams which impound CCW. Requiring the installation, monitoring and maintenance of instruments to

monitor water content or pore pressure at each impoundment, however, is overly prescriptive and unnecessary. The Illinois Department of Natural Resources (IDNR) has promulgated rules for the regulation of dams in the state as directed by the Illinois legislature. See 615 ILCS 5/23a. The IDNR's rules appear at 17 Ill. Adm. Code 3702. All technical aspects of dam design and construction, operation, maintenance and removal are covered by this regulation. Therefore, the Agency requests the Board reject the Environmental Groups' proposal requiring the installation, monitoring and maintenance of instruments to monitor water content or pore pressure at each and every earthen impoundment covered by the proposed rule and further explains the reasons for this request below.

Neither the United States Army Corps of Engineers (USACE) guidance documents nor the IDNR Office of Water Resources' dam safety regulations require this specific instrumentation at each earthen impoundment they regulate. The design basis for ash impoundment "embankments" is usually that they are saturated. See USACE, Engineering and Design: Slope Stability, Engineer Manual No. 1110-2-1902, §2-4(d), (2003). The use of piezometers to measure the pore pressure in an embankment is not needed when the design criteria includes a saturated embankment. The Board asked if the Environmental Groups' were proposing a water content or pore pressure threshold above which the owner or operator would need to take action. The Environmental Groups responded that they are not proposing a specific threshold over which a response action would need to be taken. Envtl. Groups' Answers to IPCB's Questions at 3. The Environmental Groups further indicate that these instruments needed to be installed in the embankments to obtain the pore pressure and water content data relevant to assessing the embankment's stability and make it available for the Agency and the public to review. The Environmental Groups failed to explain where the data needed to be collected, how

the data would be used or how it could be analyzed and tracked over time to monitor the stability of the embankments utilized to store CCW in Illinois. *Id.*

Depending on the specific criteria used to design an embankment, the pore pressure data may not be relevant. When questioned about dam design criteria, specifically designing a dam to withstand high pore pressures (i.e. saturated conditions) Dr. Soderberg responded that he could not recall why it could be important to design an embankment for high pore pressure (i.e. saturated conditions). Hr'g Tr. July 24, 2014 at 118-119. If an embankment is designed to be fully functional even when it is saturated (i.e. designed to withstand high pore pressures) there may not be any relevance to the data obtained indicating the dam is saturated (has high pore pressures). The Environmental Groups are proposing for instrumentation to be installed in all impoundment embankments and maintained for the life of the impoundments. The Environmental Groups do not appear to be able explain the relevance of the data the instruments will record.

The following testimony was provided by the Environmental Groups at the July 24, 2014 hearing:

> MS. OLSON: So my first question is 15 is asking about the installation of monitoring and dams to monitor the pore water pressures. So my first question is do you know whether it is possible that dams can be designed or constructed such that it is intentional that there is a high pore pressure?
>
> MR. SODERBERG: I believe that there is somewhat -- from what I've seen some design some portion of the dam to have a high pore pressure.
>
> MS. OLSON: Why would a dam be designed that way? What are some of the reasons?
>
> MR. SODERBERG: Well, I'm not prepared to go into the reasons for why there would be high pore pressure in earth and dams. The intent here was to point to the water content as water potential as an indicator of potential failure and this is from a US EPA Tailings Dam document that I referenced in my testimony.

MS. OLSON: Do you think it is an important consideration that some dams are designed to have high water pore content pore water pressure?

MR. SODERBERG: From what I recall from that guidance document, I don't recall, you know, why that would be important to have that high water content.

MS. OLSON: One of the other questions the Board asked was, was there a threshold, a moisture content or pore water threshold, and the response is that they're not proposing a specific threshold. My question is for the Environmental Groups as the Agency will be implementing these regulations, how should the Agency evaluate the information submitted about the water content or the pore water pressure if there is not a threshold contained in these rules?

MR. SODERBERG: I think the threshold would depend on the type of material. I don't think that the guidance document that I referenced had thresholds, but it did reference some dynamics of the soil moisture or the moisture within the earth and dams. So you would potentially rather than looking at a threshold be looking at the changes in the water content over time.

MS. OLSON: Can you elaborate on what you mean there?

MR. SODERBERG: Depending on the earth and dam and maybe the vegetation that is the type of material and the vegetation that might be growing on earth and dam, there could be some seasonal dynamics within the moisture content within the earth and dam and it would also depend on the amount of hydraulic head that is in the impoundment itself. Monitoring that zone of having more saturated conditions in the earth and dam and movement of that zone would be an important indicator of change within the earth and dam and potentially some failure.

MS. OLSON: Would the Agency have to know if the dam would was designed to have a high pore water pressure to evaluate this information?

MR. SODERBERG: Yes.

MS. OLSON: Do you believe that you would have to have a geotechnical specialty, civil engineering background, to evaluate this information?

MR. SODERBERG: Certainly the design of the system would be would be something that would be reviewed by a professional engineer. So, for example, the CQA officer referenced in the proposed rules.

* * *

MS. OLSON: Dr. Soderberg, did you author the proposed revisions to the Environmental Groups' Section 841.170 specifically Subsection (e)?

MR. ARMSTRONG: Dr. Soderberg discussed that with The Environmental Groups. I think he might have proposed some of this language at least. I can't recall the exact authorship of it, though. It is definitely in consultation with Dr. Soderberg, though.

MS. OLSON: But Dr. Soderberg didn't write this, is that right?

MR. ARMSTRONG: That's not what I said, but he had a part in writing it, yes.

MS. OLSON: Does anybody who authored Subsection (e) have experience with designed earthen dams?

MR. SODERBERG: No.

MR. ARMSTRONG: No.

* * *

MS. OLSON: Do you know what the design basis is for requiring each earth earthen dam to have instruments for monitoring the water content or the pore pressure?

MR. SODERBERG: That was based on the guidance document from Tailings Dams from the US EPA.

MS. OLSON: What is that guidance document?

MR. SODERBERG: I referenced it in my pre-filed testimony.

MR. SODERBERG: So this is a US EPA 1994 Technical Report: Design and Evaluation of Tailings Dams.

MS. OLSON: Is it attached to your testimony?

MR. ARMSTRONG: Yes.

MS. OLSON: Can you give us the page number where the design basis is and explain it?

MR. ARMSTRONG: So we have the document. I will seek to locate that.

MS. OLSON: Would you guys mind answering that question in post-hearing comment so we can move on?

MR. ARMSTRONG: Sure.

Hr'g Tr. July 24, 2014 at 118- 124. Dr. Soderberg's testimony, cited above, highlights his experience with measuring water content and also references a guidance document entitled Technical Report: Design and Evaluation of Tailings Dams. See EPA530-R-94-038 (1994). This document does not appear to apply to the nature of the majority of the CCW impoundment embankments which have been constructed in Illinois. The following paragraph is taken from the Introduction section of the guidance document:

> In order to obtain the metals and other minerals needed for industrial processes, fertilizers, homes, cars, and other consumer products, **large quantities of rock** are mined, crushed, pulverized, and processed to recover metal and other mineral values. A fine grind is often necessary to release metals and minerals, so the mining industry produces enormous quantities of fine rock particles, in sizes ranging from sand-sized down to as low as a few microns. These fine-grained wastes are known as "tailings."

USEPA, Technical Report: Design and Evaluation of Tailings Dams, EPA530-R-94-038, 1, (1994) (attached to Prefiled Test. of Keir Soderberg, PH.D; Hr'g Ex. 19.). The embankments of CCW impoundments in Illinois are not typically constructed of pulverized rock because there is usually more suitable material available on site with which to construct an embankment. There is an abundance of very fine grained low permeability, cohesive material in Illinois which can readily be found in glacial till or alluvial deposits in flood plains along rivers.

The Agency would like to note that in their post-hearing comments the Environmental Groups did provide the page number in the Technical Report: Design and Evaluation of Tailings Dams document referenced above in an attempt to identify the design basis for requiring each and every earthen dam embankment to have instruments for monitoring the water content or the pore pressure. The Environmental Groups did not identify the design basis for requiring water content or pore pressure monitoring for each and every ash impoundment in the state.

The Design Section which the Environmental Groups did not reference is found on page 15 of the Technical Report: Design and Evaluation of Tailings Dams document notes:

> One of the basic principles used in the design of impoundments and their embankments is the maintenance of the phreatic surface within the embankment. The phreatic surface is the level of saturation in the impoundment and embankment (the surface along which pressure in the fluid equals atmospheric pressure (CANMET 1977)); in natural systems it is often called the water table. The phreatic surface exerts a large degree of control over the stability of the embankment, under both static and seismic loading conditions (Vick1990). The major design precept is that the phreatic surface should not emerge from the embankment and should be as low as possible near the embankment face (Vick 1990). This basically maintains a pore pressure at the face of the embankment lower than atmospheric pressure plus the weight of the embankment particles and maintains the face of the dam. Thus any factors that might affect the phreatic surface in the embankment may also affect stability of the embankment. The primary method of maintaining a low phreatic surface near the embankment face is to increase the relative permeability (or hydraulic conductivity, since water is the fluid) of the embankment in the direction of flow.

EPA530-R-94-038 at 7. In summary, the design basis for this type of embankment noted in the paragraph above is “to minimize the water level in the impoundment embankment” and will be referred to as a "dry design." There are, however, alternative designs for embankments as noted earlier in this discussion. A design basis generally used for embankments at ash impoundments is “that the embankments are saturated” this will be referred to as a "saturated design basis" in this discussion. USACE, Engineering and Design: Slope Stability, Engineer Manual No. 1110-2-1902, §2-4(d), (2003). Most importantly there are drastic differences in these two design bases, and the means by which one would design an appropriate instrumentation system to monitor these embankments would differ greatly. For the dry design, proper instrumentation in the portions of the embankment which have been designed to be dry could be crucial. If an area designed to remain dry becomes saturated and this information is available from the monitoring system the owner or operator would continue to monitor and take appropriate remedial measures to maintain the structural integrity of the embankment if needed (i.e. keep it from failing by

installing relief wells to drain the area). In contrast, to require monitoring of a saturated design would be of little value because the design basis is to have a fully functional saturated embankment.

Mr. Gary King also noted in his questions during the July 24, 2014 hearing that the Environmental Groups' have not successfully articulated how the information which they propose to have collected at every impoundment embankment at each and every coal burning power plant in the state would be used.

> MR. KING: Just following up on 15. I'm not sure that the series of questions that I heard really got to the fundamental question of what is the point of gathering this information because I don't see that it connects up with any other further decision-making. So I was just looking for what this what is the purpose of gathering this information?
>
> MR. SODERBERG: Right. The primary purpose would be a way of tracking in realtime slope stability and potential for change in slope stability.
>
> MR. KING: But then what is there some action that is supposed to be taken with regards to when this information is changed?
>
> MR. SODERBERG: In my pre-filed testimony, it was in reference to an inspection as a potential for giving useful information to the inspector maybe to pinpoint areas of the earthen dam for further inspection.
>
> MR. KING: But then there is no further follow up that is required relative to the regulations, relative to this information?
>
> MR. ARMSTRONG: It's a requirement for acquiring information as opposed to –
>
> MR. KING: Doing anything with the information?
>
> MR. ARMSTRONG: It's a requirement to gather information which can be used for inspections, to form the closure plan and to alert the regulators, the owner/operator, whether there is a chance of a failure in the impoundment.

Hr'g Tr. July 24, 2014 at 126- 128. Requiring the installation, monitoring and maintenance of instruments to monitor water content or pore pressure at each and every earthen impoundment is overly prescriptive and unnecessary. As noted earlier in this discussion neither the US Army

Corps of Engineers nor the IDNR Office of Water Resources dam safety regulations mandate the installation of specific instrumentation at each earthen impoundment they regulate. The following paragraph is taken from the US Army Corps of Engineers guidance document entitled Engineering and Design: Slope Stability:

> 3-3. Characteristics of Geotechnical Instrumentation
>
> Field instrumentation is more vital to the practice of geotechnical engineering than to most other branches of engineering, in which designers have greater control over the materials utilized for construction. Therefore, geotechnical engineers must have more than casual knowledge of instrumentation. However, geotechnical engineers must recognize that, although instrumentation is a valuable tool that can be utilized for monitoring performance and safety, it is not a stand-alone solution to monitoring embankment performance. The determination of the need for instrumentation must be kept in perspective. In the words of Dr. Ralph Peck (as cited by Dunnicliff 1988)"**Every instrument on a project should be selected and placed to assist with answering a specific question; if there is no question, there should be no instrumentation**." Instrumentation cannot guarantee good design, trouble-free construction, or long-term maintenance-free operation. The wrong type of instruments placed in inappropriate locations can provide information that may be confusing, or divert attention away from other signs of potential distress. **It is not appropriate to mandate instrumentation at every dam or levee with the expectation that some unknown defect will be revealed during monitoring and provide a warning of an impending failure. Instruments cannot indicate signs of pending deterioration or failure unless they happen to be placed at the right location**. Geotechnical instrumentation is not intended to be a sole basis for embankment evaluation; it is intended to provide data for evaluation within a comprehensive embankment safety inspection and surveillance program.

USACE, Engineer Manual No. 1110-2-1902, §3-3(emphasis added). The Illinois General Assembly authorized the IDNR to promulgate rules for the regulation of dams in the state. See 615 ILCS 5/23a. The IDNR adopted these rules, first effective September 2, 1980, in 17 Ill. Adm. Code 3702. See also Hr'g Ex. 5, Ex. I. All technical aspects of dam design, construction, operation, maintenance and removal are covered in the regulation. The rules define a dam as any manmade structure intended to impound or divert water. With regard to the proposed Part 841 rules, all impoundments that will be constructed above grade, or that currently exist above grade

for the purpose of collecting or retaining coal combustion waste (CCW) transported by water will be regulated under IDNR's Part 3702 rules.

For the foregoing reasons, the Agency asks the Board to reject the Environmental Groups proposal requiring the installation, monitoring and maintenance of instrumentation to monitor water content or pore pressure at each and every earthen impoundment covered by the proposed rule.

VIII. DESIGN STANDARDS

A. DESIGN STANDARDS SHOULD BE EXPLORED IN A SUBDOCKET

The Environmental Groups suggest adding design standards in proposed Section 841.450. The Agency made a motion to sever design standards from this docket to properly engage and receive input from the regulated community and the environmental community on design standards for impoundments. The Agency requests the Board reject the Environmental Groups' design standards for new and existing impoundments contained in the Environmental Groups' proposed Section 841.450 and reaffirms its request that the Board address design standards in a sub-docket.

The Environmental Groups' proposed the following for new and existing CCW impoundments in Section 841.450

a) No later than five years after the effective date of this Part, all operating units shall be constructed:

1) With a composite liner, as defined in paragraph (a)(2) of this section, and a leachate collection system, or with a liner system of equivalent or superior performance. The design shall be in accordance with a design prepared by, or under the direction of, and certified by an independent registered professional engineer.

2) For purposes of this section, "composite liner" means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane line (FML), and the

lower component must consist of at least two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component.

3) Any impoundment that was in operation on or before the effective date of this Part shall be lined with a composite liner system as defined in paragraph (a)(2) of this Section and leachate collection system, or with a liner system of equivalent or superior performance, within five years of the effective date of this Part or have been closed in accordance with this Subpart.

The Environmental Groups' proposed language does not specify where the leachate collection system is required to be constructed. When Environmental Groups were asked where they would recommend that a leachate collection system be placed, they did not recommend the installation of a leachate collection system above or below the liner system. Envtl. Groups' Answers to IEPA's Questions at 44-45; Hr'g Tr. July 24, 2014 at 81-82. The Environmental Groups state their intent is to be consistent with USEPA's proposed rule. Unfortunately, the proposed USEPA rule which contains leachate collection system design language is flawed and cannot be constructed as written. Illinois EPA has contacted USEPA regarding their proposed design standards, and USEPA indicates they are aware of this drafting error.

The proposed USEPA language which the Environmental Groups' refer to is as follows:

(a) New CCR surface impoundments and lateral expansions of CCR landfills or surface impoundments shall be constructed:

(1) With a composite liner, as defined in paragraph (a)(2) of this section and a leachate collection system between the upper and lower components of the composite liner. The design of the composite liner and leachate collection system must be prepared by, or under the direction of, and certified by an independent registered, professional engineer.

(2) For purposes of this section, composite liner means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least

> a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10−7cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. **The FML component must be installed in direct and uniform contact with the compacted soil component**.

75 Fed. Reg. 35244 (June 21, 2010)(emphasis added). The proposed USEPA design criteria, with which the Environmental Groups seek to be consistent, calls for a leachate collection system to be placed between the upper and lower components of the composite liner. *Id*. A leachate collection system of this type cannot be built because the USEPA specifications for the composite liner require that the flexible membrane component of the composite liner be installed in direct and uniform contact with the compacted soil component of the composite liner. *Id.* If an owner or operator cannot place the leachate collection system between the upper and lower components of the composite liner, the leachate collection system would need to be placed either above or below the composite liner. The Environmental Groups indicate the purpose of placing a leachate collection system below a liner is to collect leachate which has penetrated the liner and serve as a leakage detection system.

Envtl. Groups' Answers to IEPA's Questions at 45. There are important design considerations which must be evaluated with placing the leachate collection system below the liner. The effectiveness of operating a leachate collection system placed below the liner would be indeterminate. This system may collect a portion of the leachate which has penetrated the liner above it. However, because there is no liner below the leachate collection system, the fugitive leachate would be free to migrate into the native soils and into groundwater.

The other location to place a leachate collection system would be on top of the liner. The Environmental Groups indicate the purpose of a leachate collection system above a liner is to maintain a low hydraulic head on the liner. Envtl. Groups' Answers to IEPA's Questions at 45. When Environmental Groups were asked if they were proposing the leachate collection system

be designed to limit the depth of leachate above the liner to one foot or less, they failed to answer the question and instead simply referred to the USEPA proposed rule language which remains silent on the issue. Envtl. Groups' Answers to IEPA's Questions at 44. If the depth of the leachate is not required to be held to some minimum value, the hydraulic head on a liner is not reduced. The Environmental Groups have proposed the construction of a leachate collection system and have chosen not to require the system to be operated in manner that is protective of groundwater.

Assuming that an owner or operator is contemplating building a new impoundment and fully complies with the Environmental Groups' proposed design standards, the owner or operator may reasonably wonder what it may need to do with the leachate which will accumulate in the leachate collection system which it wishes to design and build. The Board asked the Environmental Groups whether their proposed design standards should include a standard for leachate drainage and collection. The Environmental Groups responded their intent was to propose design standards consistent with USEPA's proposed rule requiring both a composite liner and leachate collection system. Envtl. Groups' Answers to IPCB's Questions at 8. Again, when provided the opportunity to further specify what exactly they were proposing, the Environmental Groups referenced the USEPA's proposed rule which remains silent on the issue of leachate drainage, treatment and disposal.

The Environmental Groups' proposal requires all operating units to have a composite liner system and a leachate collection system or for the Agency to determine on a case-by-case basis that an existing liner has equivalent performance to the Environmental Groups' proposed design standard. When asked to specify the number of units which would be required to construct a new liner the Environmental Groups' stated:

> No units would be required to construct a new liner. First, the proposed rule allows the Agency to determine on a case-by-case basis that an existing liner has equivalent performance to the design standard. Second, an owner or operator could elect to close the impoundment as an alternative to constructing a new liner. Until owners and operators make a decision as to how to proceed, and until the Agency assesses whether any units meet or exceed performance, it is uncertain how many existing units would be required to construct a new liner.

Envtl. Groups' Answers to IEPA's Questions at 42. It is difficult if not impossible to determine if a liner system has the equivalent or superior performance of a composite liner system as defined in the Environmental Groups' proposed Section 841.450(a)(1) and (2). They do not specify whether the leachate collection system needs to be placed above or below the composite liner. They refer to the USEPA's proposed rule which calls for the construction of a leachate collection system placed between the upper and lower components of the composite liner (USEPA 257.72(a)(1)), a system which cannot be built. The Environmental Groups have based their proposed design standards on a USEPA proposed rule which is flawed, and when provided the opportunity to further specify what exactly they were proposing, the Environmental Groups elected not to do so.

The vague manner in which the Environmental Groups have proposed and supported Section 841.450 leads the Agency to conclude that the Environmental Groups proposal is unreasonable because it does not provide the appropriate technical basis to support such proposal. Further, the Environmental Groups proposed amendments to Part 841.450 appear to provide little flexibility for the owner or operator to utilize existing impoundments with engineered liners which are protective of groundwater.

The Illinois EPA believes outreach to the Environmental Groups and industrial participants as part of the proposed sub-docket will allow all participants' concerns to be fully discussed and lead to the adoption of well-planned and protective design standards. Therefore,

the Agency requests the Board reject the Environmental Groups' proposed design standards in proposed Section 841.450 for the above stated reasons, and instead grant the Agency's motion to sever.

B. CLARIFICATION REGARDING ADEQUACY OF EXISTING LINERS

The Environmental Groups stated, in prefiled, written answers filed with the Board:

> The Agency has testified that earlier in this proceeding that it is expected that the liners at some Midwest Generation impoundments were, in fact, incapable of severing the connection between the impoundment and groundwater.

Envtl. Groups' Answers to IEPA's Questions at 10. During the hearing, the Environmental Groups were asked to provide a citation to the transcript where the Agency provided such testimony. Hr'g Tr. July 24, 2014 at 37. The Environmental Groups responded in post hearing comments:

> **3. What is the Environmental Groups' citation for the following prefiled answer: "The Agency has testified that earlier in this proceeding that it suspected that the liners at some Midwest Generation impoundments were, in fact, incapable of severing the connection between the impoundment and groundwater."? (July 24, 2014 Transcript at 37-38.)**
>
> The exchange in question can be found in the transcript for the Board's February 26, 2014 hearing, at page 227, line 21, to page 228, line 9. The exchange reads as follows:
>
> MR. ARMSTRONG: And my question was that with respect to the impoundments at the Midwest Generation facilities that the Agency through a compliance agreement required to be relined, those impoundments. During the time that they were, what the Agency considers to be inadequately lined, does the Agency believe, suspect, that they caused contaminants to leach into groundwater?
>
> MS. FRANZETTI: Same objection.
>
> MR. DUNAWAY: The Agency did issue violation notices on certain facilities so, therefore, we had suspicion that there may have been a leak from one or more of their impoundments.

Envtl. Groups' Post Hr'g Comments, Aug. 19, 2014 at 3. The response by the Environmental Groups mischaracterizes the full exchange that took place regarding lined units and groundwater contamination. The full discussion occurs over nine pages of transcript. Hr'g Tr. Feb. 26, 2014 at 223-231. The Illinois EPA testified it was not aware of any units it suspected to be leaking when they were lined with two feet of clay with a permeability (hydraulic conductivity) of 1x 10^{-7} centimeters per second or less, or a synthetic liner that provides equivalent protection. Hr'g Tr. Feb. 26, 2014 at 226-228. The full discussion can be summarized as follows: the Environmental Groups asked if the Agency was aware of any lined impoundments that had caused groundwater contamination. The Agency's response was no. The Environmental Groups questioned this response since the Illinois EPA had required Midwest Generation to reline several of their ponds at locations where the Agency had issued violation notices. The Agency explained that it did not consider the impoundments for which relining was required to have adequate liners prior to relining. The Agency also described what it considers to be an adequate liner (at least two feet of compacted clay with a permeability of $1x10^{-7}$ centimeters per second or a synthetic liner that provides equivalent protection) See Hr'g Tr. Feb. 26, 2014 at 228. The Illinois EPA provided additional discussion that in the early 1990's not all of the plans for lined impoundments had been reviewed by hydrogeologists. The Agency notes that the Agency's proposed Section 841.210(b)(3)(D) attempts to collect additional information from owners and operators regarding any engineered liners that have been installed. The Agency expects this information will be useful to further assess impoundment integrity and groundwater protection.

IX. MODIFICATION OF EXISTING PERMITS

The Environmental Groups suggested revising proposed Section 841.150 to include the following language:

> If any activities required under the proposed preventive response, corrective action, or closure plan cannot be completed because of the denial of an operating permit or NPDES permit revision, then the owner or operator must submit a revised preventive response, corrective action, or closure plan to the Agency within 90 days of the denial or the conclusion of an unsuccessful subsequent appeal by the owner or operator, whichever is later.

The Environmental Groups' proposed revision is unclear as drafted. The text of the revision could be read to require an owner or operator to submit a revised preventive response, corrective action, or closure plan if the Agency denies the application for any permit referenced in that plan, even if the permit application could be revised and resubmitted in a manner that is consistent with the relevant plan. Such a reading ignores the fact that the Agency's denial of a permit application does not necessarily foreclose the owner or operator from obtaining that permit; rather, the owner or operator may be able to address the Agency's permit application denial by revising the permit application. During the hearings, Mr. Armstrong testified that the Environmental Groups intended this revision to "apply to cases where the denial of a permit means you cannot fulfill the corrective action, closure or preventive response plan as has been submitted and approved by the Agency." Hr'g. Trans. July 24, 2014 at 90. In addition, Mr. Armstrong testified that "[i]f [an owner or operator] ha[s] an NPDES permit that is denied and then [the owner or operator] want[s] to go back and . . . reapply for the permit and either one of these applications is consistent with the original closure plan, then this section doesn't apply." *Id*. at 93-94. However, the Environmental Groups' proposal does not specifically allow for the exception Mr. Armstrong described in his testimony. Because of this disconnect between Mr. Armstrong's testimony and the Environmental Groups' proposed revision, the Agency does not support the adoption of this text.

In addition to the clarity issue outlined above, the Agency does not favor this revision for several reasons. First, this revision is unnecessary. Proposed Part 841 requires an owner or

operator to, under certain circumstances, submit a preventive response, corrective action, or closure plan that outlines how groundwater contamination at a unit will be addressed. See 35 Ill. Admin. Code 841.310(c); 841.400(a)(1). These plans may include the receipt of one or more Agency-issued permits in order to address groundwater issues at a unit. It necessarily follows that if an owner or operator is unable to obtain an Agency-issued permit that is required to complete a plan, that plan would need to be revised. Because the Agency's proposal already requires all plans to address groundwater issues at a unit, an independent requirement that an owner or operator submit new plans merely because the Agency denied a permit application is not necessary within the context of this rule.

Second, the Environmental Groups' proposed revision greatly limits the flexibility of an owner or operator to determine the appropriate manner by which to address groundwater issues at its unit(s). The Agency intended this rule to establish a flexible process by which groundwater issues at units could be addressed that enables an owner or operator to account for the numerous site-specific variations. This includes the flexibility for an owner or operator to determine how to proceed if the Agency denies a permit application. The Agency believes that an owner or operator may be in the best position to determine whether it can modify its permit application in a manner that is consistent with its preventive response, corrective action, or closure plan because the owner or operator will likely have the best information regarding the unique characteristics of its unit(s). The Environmental Groups acknowledged that the owner or operator may be in a position to determine whether a revised permit application or a revised corrective action or closure plan is necessary to address the Agency's denial of a permit application during the following exchange:

MS. OLSON: Do you believe it should be left to the applicant to determine whether or not to modify its proposed NPDES permit application or to modify the corrective action plan?

MR. ARMSTRONG: Do you mean left to the applicant to make a choice between those two options?

MS. OLSON: Yes.

MR. ARMSTRONG: I believe the applicant could make that call, yes.

Hr'g. Tr. June 18, 2014 at 60-61. Therefore, requiring an owner or operator to submit a series of revised plans because the Agency denied a permit application is inconsistent with the Agency's intent in proposing the rule, but also with the Environmental Groups' understanding of an owner or operator's capacity to make this determination.

X. TACO SHOULD NOT APPLY TO REMEDIATION UNDER PART 841

The Agency does not believe that the Tiered Approach to Corrective Action Objectives (TACO) or another similar risk-based approach would be appropriate to identify and exclude migration pathways and related human and ecological receptors when determining the appropriate method of closure of a unit subject to Part 841. The Agency crafted its proposal to, among other things, "restore, enhance and maintain the purity of the waters of this State," as set forth in Section 11(b) of the Act. 415 ILCS 5/11(b). As a result, the Agency employed Part 620 to serve as the appropriate groundwater quality standard. Under Part 620, after corrective action is completed, a facility will be entitled to alternative groundwater quality standards above the numeric limits, but only after the exceedence has been minimized and beneficial use as been returned. The use of TACO or another similar risk-based approach would not necessarily facilitate the minimization of groundwater degradation or return the beneficial use of groundwater impacted by a unit. Rather, a risk-based approach similar to TACO would allow an owner or operator to exclude a migration pathway without remediating the impacted

groundwater to the maximum extent possible. Although such an approach may sufficiently protect human receptors and certain ecological receptors, the Agency does not believe it would sufficiently protect groundwater. Consequently, the Agency favors an approach in which the owner or operator of a unit takes steps to return the beneficial use of contaminated groundwater, rather than excluding an exposure pathway by eliminating access to and future beneficial use of that groundwater.

The Agency recognizes that in some instances an institutional control may be necessary because the Part 620 numeric standards are not achievable following corrective action. Therefore, under the Agency's proposal, the owner or operator of a unit may use an institutional control or other mechanism to exclude a migration pathway only as evidence that threats to the public and environment have been minimized, in order to obtain an alternative groundwater standard.

XI. AMEREN'S COUNTERPROPOSAL

Ameren's counterproposal seeks to limit the applicability of Part 841 to exclude surface impoundments at the Venice Power Station (Venice) and Hutsonville Power Station (other than Pond D). Ameren has invested time and money in closing Venice and "seeks assurances" that those efforts are recognized. Closure of the surface impoundments at Venice was completed on October 31, 2012. The Agency has not yet received a closure plan for the surface impoundments (other than Pond D) at Hutsonville.

The Illinois EPA believes sites similar to Ameren-Venice, wherein closure has been completed, need to be considered. For example, the surface impoundment at the Pearl Power Station (Pearl), owned and operated by Prairie Power, Inc., has established a groundwater

management zone, and completed the construction of a cover system pursuant to a compliance commitment agreement.

The Agency acknowledges the work at both the Venice and Pearl power stations is significant. The Illinois EPA believes that submission of closure plans for the work already performed at those power stations is unnecessary, so long as closure was completed in accordance with proposed Sections 841.415 and 841.420. If closure has been completed, the Agency would expect the owner or operator to continue monitoring pursuant to proposed Subpart B, but would not expect the owner or operator to conduct a hydrogeologic site characterization as required by proposed Section 841.200. The Agency believes these facilities that have completed closure should be required to follow the post-closure care requirements of proposed Part 841.

Similarly, owners or operators having a surface impoundment within a groundwater management zone, wherein corrective action or closure has been initiated, should be required to resubmit their closure or corrective action plans, but those plans should be approved if they are consistent with the requirements of Part 841. Providing mandated approval in these situations would provide certainty to the regulated community while also providing protection to the environment.

In light of the above, the Agency requests the Board adopt the following language in Section 841.130, Section 841.145 and Section 841.505 instead of the Ameren's counterproposal:

Section 841.130 Compliance Period

a) Except as provided in this Section, the compliance period begins when the unit first receives coal combustion waste, or leachate from coal combustion waste, or on the effective date of this Part, whichever occurs later, and ends when the post-closure care period ends. The post-closure care period for a unit is the time period described in Section 841.440(a) of this Part.

b) If the unit was in operation on or before the effective date of this Part, the owner or operator shall conduct a hydrogeologic site characterization, establish background values, develop a groundwater monitoring system, and submit a groundwater monitoring plan within one year of the effective date of this Part. If, pursuant to subsection (c)(3), the owner or operator has demonstrated that the unit has been closed in accordance with Section 841.415 and 841.420, the owner or operator is not required to conduct a hydrogeologic site characterization in accordance with Section 841.200. If the owner or operator wishes to use previous site investigations or characterization, plans or programs to satisfy the requirements of this Part pursuant to Section 841.145, the owner or operator must submit the previous investigations, characterizations, plans or programs in accordance with Section 841.140 of this Part to the Agency for approval pursuant to Section 841.145 of this Part within one year of the effective date of this Part.

c) If the unit is within a groundwater management zone established pursuant to 35 Ill. Adm. Code 620.250 and the groundwater quality standard exceedence for which the groundwater management zone was established was attributable to a release from the unit, the owner or operator shall, within 1 year after the effective date of this Part:

1) submit a corrective action plan pursuant to Section 841.310;

2) submit a closure plan pursuant to Section 841.410; or

3) demonstrate that the unit has been closed in accordance with Sections 841.415 and 841.420, and submit a post-closure care plan in accordance with Section 841.435.

Section 841.145 Previous Investigations, Plans and Programs

a) The Agency may approve the use of any hydrogeologic site investigation or characterization, groundwater monitoring well or system, groundwater monitoring plan, groundwater management zone or preventive response plan, compliance commitment agreement, or court or Board order existing prior to the effective date of these rules to satisfy the requirements of this Part.

b) If the unit is within a groundwater management zone established pursuant to 35 Ill. Adm. Code 620.250 and the groundwater quality standard exceedence for which the groundwater management zone was established was attributable to a release from the unit, the Agency shall approve previously submitted corrective action plans or closure plans that satisfy the requirements of this Part. If the owner or operator has demonstrated that the unit has been closed in accordance with Sections 841.415 and 841.420, and has submitted a post-closure care plan in accordance with Section 841.435, the Agency shall deem closure complete and approve the post-closure care plan.

Section 841.505 Review and Approval of Reports and Certifications

The corrective action report, certification of corrective action, closure report, certification of closure, demonstration pursuant to Section 841.130(c)(3), post-closure report, and certification of completion of post-closure care prepared and submitted to the Agency in accordance with this Part must be reviewed and approved by the Agency prior to the completion of corrective action, closure, or post-closure care.

a) Corrective action, closure and post-closure activities will not be deemed complete until the reports are approved by the Agency.

b) Submission, review, and approval procedures and deadlines, notification requirements, and rights of appeal shall be the same as those set forth in Section 841.500 of this Part.

c) When reviewing a corrective action report and certification of corrective action, the Agency must consider whether the documentation demonstrates that the activities, structures and devices approved in the corrective action plan have been completed, operated and maintained in accordance with this Part and the approved corrective action plan.

d) When reviewing a closure report and certification of completion of closure, the Agency must consider whether the documentation demonstrates that the activities, structures and devices approved in the closure plan have been completed in accordance with this Part and the approved closure plan.

e) When reviewing a demonstration pursuant to Sections 841.130(c)(3), the Agency must consider whether the unit has been closed in accordance with Section 841.415 and 841.420.

f)~~e)~~ When reviewing a post-closure report and certification of completion of post-closure care plan, the Agency must consider whether the documentation demonstrates that the activities, structures and devices approved in the post-closure care plan have been completed, operated and maintained in accordance with this Part and the approved post-closure care plan.

XII. CHANGES TO ILLINOIS EPA'S PROPOSAL

The following section of the Illinois EPA's Post Hearing Comments summarizes the changes to the Agency's third proposed draft that the Board should make before proceeding to First Notice. See Attach. B, IEPA 's Prefiled Answers, July 17, 2104

Section 841.110

The Agency notes that Draft 3 contains a typo in the definition of "fault". The word "displace" should be "displaced".

Additionally, the definition of natural water table also contains a typo that should be corrected: "standard" should be "standing."

Section 841.125(b)

The Illinois EPA notes that reference to 35 Ill. Adm. Code 650.450(a)(4)(B)(ii) should be 35 Ill. Adm. Code 620.450(a)(4)(B)(ii). Additionally, the following "an alternative instrument authorized or environmental uses" should be "an alternative instrument authorized for environmental uses."

Section 841.130

As discussed previously in these Comments, the Agency believes these proposed rules should specify when a closure plan or corrective action plan must be submitted for units in a groundwater management zone. Additionally, the Agency does not believe a hydrogeologic site characterization must be done for units that have completed closure within 1 year of the effective date of these rules. Therefore, the Agency proposes the following changes to Section 841.130:

b) If the unit was in operation on or before the effective date of this Part, the owner or operator shall conduct a hydrogeologic site characterization, establish background values, develop a groundwater monitoring system, and submit a groundwater monitoring plan within one year of the effective date of this Part. If, pursuant to subsection (c)(3), the owner or operator has demonstrated that the unit has been closed in accordance with Section 841.415 and 841.420, the owner or operator is not required to conduct a hydrogeologic site characterization in accordance with Section 841.200. If the owner or operator wishes to use previous site investigations or characterization, plans or programs to satisfy the requirements of this Part pursuant to Section 841.145, the owner or operator must submit the previous investigations, characterizations, plans or programs in accordance with Section 841.140 of this Part to the Agency for approval pursuant to Section 841.145 of this Part within one year of the effective date of this Part.

c) If the unit is within a groundwater management zone established pursuant to 35 Ill. Adm. Code 620.250 and the groundwater quality standard exceedence for which the groundwater management zone was established was attributable to a release from the unit, the owner or operator shall, within 1 year after the effective date of this Part:

1) submit a corrective action plan pursuant to Section 841.310;

2) submit a closure plan pursuant to Section 841.410; or

3) demonstrate that the unit has been closed in accordance with Sections 841.415 and 841.420, and submit a post-closure care plan in accordance with Section 841.435.

Section 841.135(a)

In response to prefiled questions by the Board, Attachment A, Hearing Officer Order, April 30, 2014, the Agency agreed to make changes to this subsection. See Hearing Exhibit 32 at 5. The Agency inadvertently omitted these suggested changes from Draft 3. The proposed change is as follows:

a) the owner or operator of the unit must maintain paper copies of the following onsite or another site approved by the Agency:

The Illinois EPA requests that this change be included the Board's First Notice Opinion.

Section 841.145

Based on the Agency's Comments on Ameren's counterproposal, the Agency proposes the following changes to Section 841.145:

a) The Agency may approve the use of any hydrogeologic site investigation or characterization, groundwater monitoring well or system, groundwater monitoring plan, groundwater management zone or preventive response plan, compliance commitment agreement, or court or Board order existing prior to the effective date of these rules to satisfy the requirements of this Part.

b) If the unit is within a groundwater management zone established pursuant to 35 Ill. Adm. Code 620.250 and the groundwater quality standard exceedence for which the groundwater management zone was established was attributable to a release from the unit, the Agency shall approve previously submitted corrective action plans or closure plans that satisfy the requirements of this Part. If the

owner or operator has demonstrated that the unit has been closed in accordance with Section 841.415 and 841.420, and has submitted a post-closure care plan in accordance with Section 841.435, the Agency shall deem closure complete and approve the post-closure care plan.

Section 841.165

In consideration of the difficulty associated with reviewing complex technical documents and developing comments, the Agency proposes the Board extend both the public comment period and the Agency's review time. Additionally, post-closure care plans must be submitted with the closure plan, under the rule as proposed by the Agency, and therefore, the Agency believes these should be posted for public comment as well. The Agency recommends the following changes:

a) The Agency shall post all proposed corrective action plans, ~~and~~ closure plans and post-closure care plans, or modifications thereto, on the Agency's webpage for a period not shorter than 60~~30~~ days.

b) The Agency shall accept written comments for a period of 60~~30~~ days beginning on the day the proposed corrective action or closure plan and post-closure care plan, or modification thereto, was posted on the Agency's webpage.

c) While the Agency may respond to the comments received pursuant to subsection (b) of this Section, such response is not required.

d) The Agency shall take any comments received into consideration in making its final decision and shall post its final decisions on the proposed corrective action plans, or ~~and~~ closure plans and post-closure care plans, or modifications thereto, on the Agency's webpage for a period not shorter than 30 days.

Section 841.170

In response to Board Question 5, in Attachment A, Hearing Officer Order, June 11, 2014, the Illinois EPA proposed a Board Note be included in the proposed Section 841.170. The Illinois EPA, however, inadvertently left this proposed Board note out of Draft 3. The Agency now requests that this Board Note be included the Board's First Notice Opinion. The Board note is as follows:

BOARD NOTE: Dam safety regulation is under the purview of the Illinois Department of Natural Resources pursuant to 17 Ill. Adm. Code 3702.

Section 841.200(d):

In response to prefiled questions by the Board, Attachment A, Hearing Officer Order, April 30, 2014, the Agency agreed to add a new subsection (d). See Hearing Exhibit 32 at 5. The Agency inadvertently omitted these suggested changes from Draft 3. The new proposed subsection (d) is as follows:

d) Existing site and regional information may be used to fulfill all or part of the requirements of subsections (c)(12), (c)(13) and (c)(14) of this Section.

The Illinois EPA requests that this change be included the Board's First Notice Opinion.

Section 841.210(b)(7)

The Agency believes this section should read as follows:

7) An explanation of sample size, sample procedure and statistical method used to determine background concentrations and to conduct monitoring~~, assessment monitoring and compliance monitoring~~.

Section 841.210(b)(9)

Illinois EPA's proposed Section 841.235 provides that the groundwater monitoring report shall include a schedule for the submission of annual reports pursuant to Section 841.235. When looking at proposed Section 841.235, the Agency noticed that it refers to "annual statistical analysis" and not "annual reports." Therefore, the Agency proposes the following revision to Section 841.210(b)(9) to maintain consistency and reduce confusion:

(9) A schedule for the submission of the annual statistical analysis~~reports~~ pursuant to Section 841.235 of this Part.

Section 841.215

In this section, "groundwater elevation" must be monitored. The Agency believes "static groundwater elevation" should be reported because the static groundwater elevation represents

the natural elevation of the groundwater surface prior to disturbance by well purging or sampling procedures. The Agency requests the following change to Section 841.215.

> The owner or operator of a unit shall monitor for all chemical constituents identified in 35 Ill. Adm. Code 620.410(a) and (e) except, perchlorate, radium-226 and radium-228. Field parameters of specific conductance, static groundwater elevation, monitoring well depth and field pH must be determined and recorded with the collection of each sample, and does not need to be analyzed by a certified laboratory.

Section 841.220(c)

In response to prefiled questions by the Board, Attachment A, Hearing Officer Order, April 30, 2014, the Agency agreed to make changes to this subsection. See Hearing Exhibit 32 at 5. The Agency inadvertently omitted these suggested changes from Draft 3. The proposed change is as follows:

> c) Where wells up-gradient of the unit could be affected by activities at the site or by off-site activities, the owner or operator may, with Agency approval, use the intrawell statistical method as specified in the 2009 Unified Guidance to determine background values.

The Illinois EPA requests that this change be included the Board's First Notice Opinion.

Section 841.230(c)

The Agency proposes the following changes to proposed Subsection 841.230(c) to make the rule more clear.

> c) Reduced monitoring. Monitoring frequency may be reduced at~~for~~ individual monitoring wells for particular chemical constituents. Reduced monitoring is prohibited when the unit or units associated with a monitoring well does not have a liner with two feet of compacted earthen material with a hydraulic conductivity of less than or equal to 1 $x10^{-7}$ centimeters per second or a synthetic liner that provides equivalent protection.
>
> 1) If the monitoring well is up gradient from a unit, the monitoring frequency at~~for~~ that monitoring well may be reduced to once every five years for a chemical constituent that has not been detected in that monitoring well in the last five years so long as the chemical constituent has not been detected in all monitoring wells located down gradient from the unit.

2) If the monitoring well is down gradient from a unit, the monitoring frequency at~~for~~ that monitoring well may be reduced to once every five years for a chemical constituent that has not been detected in that monitoring well in the last five years.

Section 841.310(h)(2)

The Illinois EPA notes that Draft 3 contains the following typo in this section: "35 Ill. Adm. Code 62.450(a)(4)." This reference should be "35 Ill. Adm. Code 620.450(a)(4)."

Section 841.435

The Illinois EPA notes that under subsection (a) of proposed Section 841.435, a post closure care plan must be submitted at the same time as a closure plan. Therefore, the requirements of subsection (c)(3), that the post closure care plan contain all the information and documents in the closure plan ,is unnecessary. Therefore, the Agency proposes striking subsection (c)(3).

c) The post-closure care plan, or modification of the plan, must include, at a minimum, the following elements:

1) description of the post-closure care activities required by Section 841.430 of this Part;

2) description of the operation and maintenance that will be required for the groundwater collection system and discharge systems, if applicable;

3) ~~the information and documents required in the closure plan pursuant to Section 841.410 of this Part; and~~

~~4)~~ a description of the planned uses of the property during the postclosure care period; and~~.~~

4)~~5)~~ the signature and seal of the professional engineer supervising the preparation of the post-closure care plan.

Section 841.400(b)

Upon review of this Section after subsequent proposed amendments, the Agency realized that the language is repetitive. It now proposes:

> b) If closure is to be by removal of all impounded coal combustion waste~~,~~ and leachate from coal combustion waste, all ~~the owner or operator shall remove all coal combustion waste. All~~ coal combustion waste and leachate from coal combustion waste must be properly disposed in accordance with the applicable laws and regulations unless beneficially reused.

Section 841.400(d)(2)

The Illinois EPA believes this Section has a typo. It should read as follows: "The notation on the deed or other instrument must be made in such a way that will in perpetuity notify any potential purchaser of the property that:"

Section 841.405(b)

The Agency believes the following language should be added to 841.405(b) to clarify that this subsection applies to units operated after the effective date of the proposed rules: "Whenever the applicable groundwater standards under 35 Ill. Adm. Code 620 Subpart D are not exceeded and the owner or operator elects to close a~~the~~ unit operated after the effective date of this Part,"

Section 841.410(b)

When preparing Draft 3 of the proposed rules, the Agency inadvertently deleted subsection (b) from Draft 2. This subsection provides: "The Agency may request additional information from the owner or operator when necessary to evaluate the proposed closure plan." See Attach. 2, IEPA's Post Hr'g Comments, Mar. 25, 2014. The Agency requests the Board includes Section 841.410(b) in its First Notice Opinion.

Section 841.420(b)(1)

In reviewing its proposed language in this Section, the Agency realized that there is an incorrect cross reference.

1) Standards for the low permeability layer. The low permeability layer must have a permeability less than or equal to 1 X 10^{-7} cm/sec. If the CCW unit has a liner system, the low permeability layer must have a permeability less than or equal to the permeability of any bottom liner system. The low permeability layer must be constructed in accordance with the following standards in either subsections (b)(1)(A) or (b)(1)(B)~~(b)(2)(B)~~ of this Section, unless the owner or operator demonstrates that another low permeability layer construction technique or material provides equivalent or superior performance to the requirements of either subsections (b)(1)(A) or (b)(1)(B)~~(b)(2)(B)~~ of this Section and is approved by the Agency.

Section 841.440

During the July 24, 2014 hearing, the Board asked the Agency whether it intended the supervision of post closure care activities by a professional engineer or professional geologist to be optional. The Board also asked why a professional geologist was not included in subsection (e). The Illinois EPA recognizes this oversight, and now proposes the following:

(c) Either a professional engineer or a professional geologist ~~may~~must supervise post-closure care activities, as appropriate under the Professional Engineering Practices Act [225 ILCS 325] or the Professional Geologist Licensing Act [225 ILCS 745]

(e) The post-closure certification must be made on forms prescribed by the Agency and must contain a certification by a professional engineer or professional geologist that the post-closure care period for the unit was performed in accordance with the specifications in the approved post-closure plan required by Section 841.435 of this Part and the requirements set forth in this Part. The certification must be signed by the owner or operator and by the certifying registered professional engineer or professional geologist.

Section 841.500(a)

The Illinois EPA is willing to extend the public comment period from 30 days to 60 days in proposed Section 841.165 provided that additional time for Agency review is included in

proposed Section 841.500. The Agency requests the Board extend the Agency's review time from 90 days to 120 days.

a) The Agency will have 120~~90~~ days from the receipt of a plan or proposed modification to conduct a review and make a final determination to approve or disapprove a plan or modification or to approve a plan or modification with conditions.

Section 841.500(c)(3)(B)(i)

The Illinois EPA draft language should be as follows: "wetland, flood plain, fault area, or unstable area;"

Section 841.500(c)(3)(B)(vii)

In reviewing its proposed language in this Section, the Agency realized that there is an incorrect cross reference.

vii) the long-term and short-term effectiveness and protectiveness of the alternative corrective action or closure options evaluated in the alternative impact assessment as required by Section 841.310(e)(6)~~841.410(e)(6)~~ or Section 841.410(a)(6);

Section 841.500(f)

The Agency added a new subsection 841.145(b) that specifies when a closure plan or corrective action plan must be submitted for units within a groundwater management zone. The owner or operator should have to resubmit denied plans, if an appeal is not sought, within 90 days. Also, the Agency noticed that this Section references 841.405, but Section 841.405(b) applies to voluntary closure. If an owner or operator is closing voluntary, the owner or operator should not be required to resubmit a denied plan. Therefore, the Illinois EPA draft language should be as follows: " If the Agency disapproves any plan submitted pursuant to Sections 841.130(c), 841.130(b), 841.310(d), "or 841.405(a)".

Section 841.505

Based on the Agency's Comments on Ameren's counterproposal, the Agency proposes the following changes to Section 841.505:

The corrective action report, certification of corrective action, closure report, certification of closure, demonstration pursuant to Section 841.130(c)(3), post-closure report, and certification of completion of post-closure care prepared and submitted to the Agency in accordance with this Part must be reviewed and approved by the Agency prior to the completion of corrective action, closure, or post-closure care.

a) Corrective action, closure and post-closure activities will not be deemed complete until the reports are approved by the Agency.

b) Submission, review, and approval procedures and deadlines, notification requirements, and rights of appeal shall be the same as those set forth in Section 841.500 of this Part.

c) When reviewing a corrective action report and certification of corrective action, the Agency must consider whether the documentation demonstrates that the activities, structures and devices approved in the corrective action plan have been completed, operated and maintained in accordance with this Part and the approved corrective action plan.

d) When reviewing a closure report and certification of completion of closure, the Agency must consider whether the documentation demonstrates that the activities, structures and devices approved in the closure plan have been completed in accordance with this Part and the approved closure plan.

e) When reviewing a demonstration pursuant to Sections 841.130(c)(3), the Agency must consider whether the unit has been closed in accordance with Section 841.415 and 841.420.

f)~~e)~~ When reviewing a post-closure report and certification of completion of post-closure care plan, the Agency must consider whether the documentation demonstrates that the activities, structures and devices approved in the post-closure care plan have been completed, operated and maintained in accordance with this Part and the approved post-closure care plan.

CONCLUSION

WHEREBY, the Illinois EPA respectfully submits these comments and requests the Board proceed expeditiously to First Notice on its proposal, and sever financial assurance and design standards into a subdocket.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
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CERTIFICATE OF SERVICE

Joanne M. Olson, Assistant Counsel for the Illinois EPA, herein certifies that she has served a copy of the foregoing NOTICE OF FILING and ILLINOIS ENVIRONMENTAL PROTECTION AGENCY'S POST HEARING COMMENTS upon persons listed on the Service List by mailing, unless otherwise noted on the Service List, a true copy thereof in an envelope duly addressed bearing proper first class postage and deposited in the United States mail at Springfield, Illinois on October 20, 2014.

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