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SUBMISSION DATE: August 17, 2012

SUBMITTED VIA E-MAIL TO: RegComments@pa.gov The Environmental Quality Board P.O. Box 8477 Harrisburg, PA 17105-8477

Attention Docket ID Triennial Review of Water Quality Standards

SUBJECT: Triennial Review of Water Quality Standards, 25 *PA CODE Chapter* 93, as published in the July 7, 2012 Pa Bulletin.

Document Type: Proposed Regulation

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Dear Environmental Quality Board:

I. Introduction

ARIPPA, on behalf of its member companies, hereby provides comments on PADEP's Proposed Regulation, "Triennial Review of Water Quality Standards, 25 *PA CODE Chapter* 93, as published in the July 7, 2012 Pa Bulletin". ARIPPA appreciates this opportunity to comment.

II. Historical Significance and Background

ARIPPA plants are designed and operated to convert large quantities of coal refuse into alternative electricity, serving the energy needs of hundreds of thousands of households and businesses. Among the many benefits realized by the operation of the ARIPPA plants' circulating fluidized bed ("CFB") technology, coal refuse is converted into energy and the by-product ash residue is utilized in a managed, regulated manner to reclaim vacant and damaged abandoned mine lands and streams.

The coal refuse-to-alternative energy industry is truly unique, constituting one of the few fully-viable, environmentally-beneficial alternative energy industries. The Pennsylvania Department of Environmental Protection ("PADEP") recently confirmed our industry's environmental benefits:

- **Pennsylvania Department of Environmental Protection (PADEP) Keith Brady, P.G.** Chief, Surface Mining Section Bureau of Mining and Reclamation March 2011 Comments to EPA on

Solid Waste Rule-Identification of Non-Hazardous Secondary Materials That Are Solid Waste *"Coal refuse piles that are not removed (i.e., burned for fuel) generally create severe acid mine drainage, with pH in the 2.5 range and elevated metals, including arsenic"... "It is important for Pennsylvania's environmental wellbeing that these dangerous polluting features (i.e. Coal refuse piles steep slopes and unstable landforms) be reclaimed"... "the biggest environmental benefit is the reduction or elimination of pollution load to steams through removing the coal waste piles"... "Pennsylvania has relied on industry to address the water pollution caused by legacy refuse piles by removing these piles"... "The most effective means of reclaiming these coal refuse piles is through the use of coal refuse as a fuel. Everything should be done to encourage this practice"*

ARIPPA plant members have collectively, since 1988, removed over 189 million tons of coal refuse and converted it into much needed alternative electricity. The refuse removal figure combined with industry totals of reclaiming and restoring over 6700 acres of damaged mine lands and hundreds of miles of formerly dead streams serves as further proof of the industry's commitment (without the aid of tax dollars) to beneficially improve our environment and the landscape of our nation. ARIPPA plant members have collectively donated over $40,000 to various deserving volunteer watershed and conservancy groups to aid them in their ongoing battle to improve Pennsylvania's largest environmental problems; Abandoned Mine Lands (AML) and Acid Mine Drainage (AMD).

Understanding the unique environmental advantages of the continued beneficial use of coal refuse is pivotal to understanding not only the issues discussed below, but also the true partnership our industry shares with the goals and ideals of various volunteer watershed groups, state environmental protection departments, and the EPA. Accordingly, we ask and appreciate PADEP's special attention to our industry, and the following comments on the Proposed Regulation.

III. Description of ARIPPA Member Facilities

Organized in 1988, ARIPPA is a non-profit trade association based in Camp Hill, Pennsylvania. Its membership is comprised of electric generating plants, producing alternative electrical energy and/or steam. Most ARIPPA member plants are currently located in or near the anthracite or bituminous coal regions of the United States. ARIPPA plants generate approximately 3-4% of the total electricity produced in the Pennsylvania-West Virginia region. Hundreds to thousands of citizen-workers, who are directly or indirectly employed by the ARIPPA industry, live, along with their children, families, and extended families, in communities within close proximity of the alternative energy ARIPPA plants. The surrounding communities, lands, and streams have experienced vast environmental and economic improvements due mainly to the decades of hard work and dedication these workers the ARIPPA electric generating industry has provided.

ARIPPA plants generate electricity for sale at a minimum capacity of more than 25 MWe using environmentally-friendly CFB technologies to convert coal refuse and/or other alternative fuels such as biomass into alternative energy and steam. Such plants have operated in Pennsylvania, West Virginia, Kentucky, Illinois, Montana, Utah and New York

The ARIPPA coal refuse to alternative energy plants were originally constructed as Qualifying Facilities ("QFs"), subject to size restrictions pursuant to the Public Utility Regulatory Policy Act ("PURPA"). As a result, these facilities are relatively small in size, ranging in size from 30 MW, and averaging between 80 and 85 megawatts each. Moreover, expansion of such plants is severely

constrained by federal, state and local regulatory requirements, including but not limited to, those imposed through permitting programs. More than half of the member plants operate under a long term "Power Purchase Agreement" ("PPA"), supplying alternative energy to utility companies at a fixed price. Accordingly, ARIPPA member facilities have continued to meet or exceed the increasingly stringent environmental compliance standards by directly absorbing increased compliance costs, without the ability to increase the fees assessed to electric utility rate payers.

- **Pennsylvania Governor Edward G. Rendell, 2007** "*Pennsylvania's heritage as a major coal producer has left us with billions of tons of waste coal that is piled in communities across the state. These piles are domestic energy sources that have significant value when put into production in CFB cogeneration plants. When left on the ground, waste coal presents a grave environmental threat. Runoff from these piles contributes to the "abandoned mine drainage" that is the second leading water pollution problem in the commonwealth, literally killing all life in some 2000 stream miles in the state. Moreover, waste coal piles are a public health and safety hazard. Every year people are injured and killed while climbing or recreating on theses waste mountains, and, in many places, the piles also are smoldering or on fire, destroying the quality of life in communities burdened by them.*"

ARIPPA facilities provide a unique environmental benefit by utilizing state-of-the-art CFB technology to convert coal refuse into energy. ARIPPA facilities utilize coal refuse from both past and current mining activities, and thereby reclaim idle/abandoned strip mines and abate acid mine drainage from coal refuse piles, at no cost to taxpayers. By converting coal refuse into alternative energy, ARIPPA members are removing one of the principal sources of contamination to surface water and groundwater in coal mining regions of the United States.

This industry provides an option for removing coal refuse piles from the environment without shifting such costs to public sources. Should that option become unavailable, the entire responsibility for removal and clean up would fall on the tax payers and our government, a task the PADEP has testified would cost billions of dollars and take over 500 years to accomplish. ARIPPA plants work closely with various local watershed groups as well as Earth Conservancy to reclaim abandoned mine lands and convert polluted streams into clean and usable waterways.

EPA's comments found in various proposed rules demonstrate that the Agency recognizes the environmental benefits provided by these plants:

- **Environmental Protection Agency (EPA) 2011** "*Data also shows that <u>emissions levels</u> from some facilities burning coal refuse (namely those equipped with circulating fluidized beds (CFBs)) <u>are lower</u> than most existing pulverized coal utility boilers.*" (Solid Waste Rule- Identification of Non-Hazardous Secondary Materials That Are Solid Waste March 21, 2011 Federal Register Vol. 76, No. 54)

- **Environmental Protection Agency (EPA) 2011** "*Units that burn coal refuse provide <u>environmental benefits</u> by combining the production of energy with the removal of coal refuse piles and by reclaiming land for productive use. Consequently, because of the <u>unique environmental benefits</u> that coal refuse-fired EGUs provide these units warrant special consideration...*" (Utility MACT Rule- National Emission Standards for Hazardous Air Pollutants From Coal and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance May 3, 2011 Federal Register Vol. 76, No. 85)

With this background in mind, ARIPPA requests that PADEP consider the comments below, submitted on behalf of ARIPPA's environmentally-beneficial, alternative energy electric generating member plants, prior to finalizing the Triennial Review of Water Quality Standards, 25 *PA CODE Chapter* 93, as published in the July 7, 2012 Pa Bulletin.

IV. Executive Summary of Rule-Comments

ARIPPA has serious concerns with the process and methodologies utilized in this triennial review, including, but not limited to, (1) the lack of involvement of the regulated community; (2) the reluctance of the PA Department of Environmental Protection (the Department or PADEP) to supply the Water Resources Advisory Committee (WRAC) with needed information to allow them to make timely informed decisions; and (3) not providing adequate scientific data associated with the process (specifically the scientific data to that supports the changes being proposed relative to Molybdenum, Chlorides, and Sulfates.

ARIPPA has concerns about the process used by PADEP for what appears to be a random approach to add constituents to the Triennial Review without providing sufficient scientific data in the form of PADEP studies, reports, and analysis, instead relying on the studies of others to justify its recommendations. ARIPPA is concerned that the applicability of "the science of using the studies of others to justify change" without fully vetting the studies as they relate to Pennsylvania's hydro-chemical systems. Section 6.1.6 of the EPA Water Quality Handbook acknowledges that EPA's laboratory-derived criteria may not be accurate and addresses the need for site-specific criteria stating:

> *"EPA's laboratory-derived criteria may not always accurately reflect the bioavailability and/or toxicity of a pollutant because of the effect of local physical and chemical characteristics or varying sensitivities of local aquatic communities. Similarly, certain compounds may be more or less toxic in some waters because of differences in temperature, hardness, or other conditions. Setting site-specific criteria is appropriate where:*
>
> - *Back ground water quality parameters, such as pH, hardness, temperature. color, appear to differ significantly from the laboratory water used in developing the section 304(a) criteria; or*
> - *The types of local aquatic organisms differ significantly from those actually tested in developing the section304 (a) criteria."*

Thus, raising the following concerns:

- Did PADEP conduct such studies or did they simply rely on EPA reports and documents prepared in other states to support such recommendations without completing a comprehensive review and analysis of these studies and their applicability, including appropriate field sampling, testing, and demonstrations.
- Has PADEP published such PADEP conducted studies, If so, where are these reports including the data and analysis completed by PADEP? (ARIPPA understands that WRAC also made these requests.)
- PADEP's position, as stated at WRAC meetings, is that there is to be no economic considerations allowed in the setting of water quality standards. However, Chapter 6 of the EPA Water Quality Handbook (Section 6.1.5) suggests the following:

  > *"Economic Impact Assessment - The Water Quality Standards Regulation allows States to establish uses that are inconsistent with the section 101(a)(2) goals of the Act if the more stringent technology required to meet the goals will cause substantial and wide spread economic and social impact. These are impacts resulting specifically from imposition of the*

pollution controls and reflect such factors as unemployment plant closures, and changes in the governmental fiscal base. The analysis should address the incremental effects of water quality standards beyond technology-based or other State requirements. If the requirements are not demonstrated to have an incremental, substantial, and widespread impact on the affected community, the standard must be maintained or made compatible with the goals of the Act."

- In addition, EPA has prepared a report entitled Interim Economic Guidance for Water Quality Standards Workbook (EPA-823-B-95-002; March, 1995). A memo from Tudor Davis, Director Office of Science and Technology to Water Management Division Directors Regions I-X describes the purpose of the Workbook by making the following point:

  "The purpose of this memorandum is to transmit the Interim Economic Guidance for Water Quality Standards Workbook for use by the States and Regions in considering economics at various points in the process of setting or revising water quality standards."*

- At the WRAC Meetings, PADEP stated that they did not have to consider economics in setting water quality standards. ARIPPA suggests that PADEP can and should consider the economic impacts as part of the process to set or revising water quality standards especially in the case of Molybdenum, Chlorides and Sulfates. (Chlorides and sulfates, addressed the issue in 25 PA CODE 95.10 dealing with TDS.)
  See:http://water.epa.gov/scitech/swguidance/standards/upload/2007_06_18_standards_econworkbook_complete.pdf

Based on the above, it would appear that PADEP is not mandated to establish or revise water quality standards if the imposition of such would require the use of more stringent technology or will cause substantial and wide spread economic and social impacts (including, but not limited to, factors such as unemployment, plant closures, or changes in the government fiscal base).

Further, ARIPPA must question whether the quality of the streams today reflects a problem related to these proposed standards. PADEP has the ability to establish discharge limits for constituents on a case-by-case basis if it is determined that a discharge at a certain level would impact the regulated uses set forth in 25 Pa Code Chapter 93.

In the case of Sulfates and Chlorides, ARIPPA believes that requirement of 25 PA Code Chapter 95.10 (Treatment requirement for new and expanding mass loadings of Total Dissolved Solids (TDS)) provides adequate protections to insure water quality and its uses are protected on a statewide basis.

V. Specific Comments

ARIPPA opposes the inclusions of sulfate, chlorides and molybdenum in the Triennial Review for the following reasons:

- Specific data that demonstrates a pressing threat to aquatic life that would possibly justify PADEP's need to establish statewide water quality standards for sulfate, chloride and molybdenum is non-exsostant.

- At this time, since there is a lack of published data to establish statewide water quality standards, the Department's rationale for statewide water quality standards for chloride and sulfate should be

removed from this rule making. While the initial driver for the rule (25 PA Code Chapter 95.10 regarding Total Dissolved Solids) dealt with potential discharges from the oil and gas rule; the rule as proposed now establishes a broader based discharge standard covering most industrial sectors (with Industrial Discharges) and Sewage Treatment Plants.

- PADEP has relied on non-state specific studies for justifying the proposed water quality standard for Molybdenum, Chlorides, and Sulfates. PADEP has not provided its own independent analysis and evaluation comparing and applying these studies to Pennsylvania's hydro-chemical – biological systems (Both lab and field work-See comments on Sulfates below)

Sulfates – No National Standard

EPA has not developed a national standard for Sulfates. In its letter of May 15, 2012, to Deputy Secretary Kelly Heffner in regarding EPA's initial input on the Triennial Review, EPA stated it was "working on a national standard". Accordingly it seems clear that PADEP is proposing a rule in advance of EPA that potentially establishes standards more stringent then federal standards (that have yet to be developed).

While there may be some unknown advantages to EPA if states such as Pennsylvania implement a sulfate standard, why would Pennsylvania do so without having developed a scientifically based, justifiable standard, including water quality studies of Pennsylvania Streams. PADEP in justifying its proposed Sulfate Standards uses the work completed in Illinois and Iowa as the basis for their conclusions

Dr. Soucek Ph.D., Illinois Natural History Survey, and University of Illinois at Urbana-Champaign on the Subject of "Triennial Review of Water Standards" (the author of the study) has raised concern about its applicability to Pennsylvania. His concerns are that PADEP did not complete a similar study and analysis was suggested in an email dated Tuesday, July 17, 2012, in which he states:

> "...is that, for the Illinois standard, all the experiments that were performed were conducted to investigate the relationship between hardness and sulfate toxicity were performed using sodium sulfate. Therefore, even though we tested hardness up to 600 mg/l as CaCO3, sodium concentrations in toxic solutions were always much higher than the calcium or magnesium concentrations. For example, at a hardness of 500, the LC50 for C. dubia was 3,516 mg/l SO4/L. The calcium and magnesium concentrations in the dilution water were on the order of 117 and 50 mg/L respectively, but the LC50 SO4 concentrations, the sodium concentration would be about 1,500 mg/L. It is my understanding that in many if not most Pennsylvania streams with elevated sulfate, calcium concentration is much greater than that of sodium. There have been a number of studies that have shown in the specific ionic composition of a high TDS solution determine its toxicity and I'm afraid there is not a lot of information in the published literature on toxicity of calcium and sulfate dominated solutions. Therefore, I fear that if the ionic composition used to develop the Illinois sulfate standards is not reflective of the ionic composition of Pennsylvania of Pennsylvania streams with high sulfate, the standard could be under protective (or overprotective for all we know)..."

ARIPPA's suggestion therefore is that PADEP should not simply **rely on an Illinois study** that Dr. Soucek (who was contracted to complete the work on Iowa/Illinois) to propose and justify a Department water standard affecting many industries. Instead **PADEP should conduct its own comprehensive study including lab work and looking at the existing impact on Pennsylvania Streams.** This is

consistent with a point made by EPA regarding the use of studies and laboratory results in setting water quality standards as described above.

ARIPPA member alternative energy plants remove and convert coal refuse into electricity. In many cases, this coal refuse was placed in side hill or valley fills at or near the head waters. There are cases where the headwaters are impacted by runoff and discharges from these sites. Besides being impact by acidity, iron, and sediment, they could be impacted if the sulfate levels in the headwaters would exceed the proposed standards. The imposition of sulfate standards on discharges from these operations would make these operations suffer serious negative economic impacts. Such standards may actually discourage or negate remining and reclamation opportunities. AIRPPA member plants have consistently demonstrated proven water quality improvements through current operations. These opportunities could be lost through the imposition of these proposed regulatory standards The impact of a water quality standard for sulfates could have serious consequences by providing disincentives for remining and reclamation of unreclaimed mine sites.

- **Pennsylvania Department of Environmental Protection (PADEP) Kathleen A. McGinty, Secretary 2004** *"Pennsylvania's existing waste coal industry has and continues to provide tremendous environmental and economic benefits to the Commonwealth's citizens*

Chlorides

The proposed standard for Chlorides is based on EPA recommendations and equations. The existing chloride criterion was developed primarily for the protection of potable water supplies and is not applied in all surface waters of the Commonwealth, but rather only at the point of water supply intake, under § 96.3(d) (relating to water quality protection requirements).

The proposed aquatic life criteria (230 mg/l = chronic; 860 mg/l = acute) mirror the National recommended aquatic life criteria which were published in February 1988 by the EPA in Ambient Water Quality Criteria for Chloride. The proposed rulemaking was published at 40 PA.Bulletin 2264 (May 1, 2010) with a comment period that closed on June 15, 2010. Based on comments received, the Department, in this new proposed rulemaking, has re-evaluated the science used in the determination of the chloride criterion. Prior to the 2010 proposed rulemaking, the Department was aware that the EPA, along with the Great Lakes Environmental Center (GLEC) in Columbus, OH, and the Illinois Natural History Survey (INHS) in Champaign, IL, was in the process of developing chloride criteria. During the comment period for the 2010 proposed rulemaking, commentators referred the Department to the science under development in Iowa, which used the same science as the EPA, the GLEC and INHS. The Department reviewed the equation-based aquatic life criteria for chloride as developed by the EPA and successfully implemented in Iowa. The researchers at the GLEC and INHS worked collaboratively under a contract with the EPA to determine the toxicity of chloride in freshwater invertebrate species. The research demonstrated a strong correlation between chloride toxicity and hardness. The final results of this toxicity testing were published in the report "Acute Toxicity of Chloride to Select Freshwater invertebrates," EPA, October 28, 2008.

As in the case of Sulfates discussed above, like Illinois, it appears that the sodium levels are higher than the calcium levels and the applicability to calcium based hardness needs to be further studied and analyzed.

What will the impact of this chloride standard have on publicly or privately owned waste water treatment plants and what will the impact be on food processing facilities with discharges?

Again 25 PA Code 95.10 regarding TDS should have hopefully addressed the concern. Also, the Department can establish more stringent discharge limits if needed to protect use on a case-by-case basis.

Molybdenum

As part of the rationale for proposing statewide water quality standards for molybdenum, the Department indicated a review of available stream sampling data maintained in its statewide stream monitoring system was part of the basis as well as a request regarding reportedly 3-sites in Pennsylvania where Molybdenum would be in the discharge.

It was indicated in testimony at the hearing that a review of that data, which was obtained through a FOIA request, shows that the molybdenum rarely exceeded the proposed statewide standards and, in the handful of instances where this did occur, it occurred almost exclusively in one location in the Commonwealth.

The Department claims that this same data shows that historic and current coal mining activities are the source of a statewide molybdenum problem. This is completely inaccurate as the data shows that molybdenum was NOT present at levels anywhere near the proposed standards and certainly not at levels that exceeded the proposed standards in areas where coal mining is, or has historically been conducted.

The Department conducted a literature search to collect relevant molybdenum toxicity data for aquatic life dating through 2009. The review included the following: the EPA's ECOTOX database; Aquatic Life Water Quality Criteria for Molybdenum prepared for the Nevada Division of Environmental Protection by Tetra Tech, Inc. (July 9, 2009); and EURAS (2008), International Molybdenum Association, Freshwater effects assessment of molybdenum: data evaluation and PNEC-deviation. Interestingly, a review of the Department's proposed water quality standards for Molybdenum by Tetra Tech raises concerns about the applicability of the applying the Nevada results to establishing a criteria for Pennsylvania.

V. Conclusion

The following recommendations are made by ARIPPA:

1. The Department removes the statewide water quality standards for Molybdenum, Chlorides and Sulfates from this proposed rule making.
2. PADEP conduct needed PA specific studies on the water chemistry in Pennsylvania (especially in using hardness as part of any equation) to establish water quality standards. (This is confirmed by comparing harness related quality issues from Iowa and Illinois that have higher sodium than calcium and magnesium levels when compared to Pennsylvania.)

ARIPPA appreciates the opportunity to provide these comments and looks forward to continuing to work with PADEP as the Proposed Regulation finalized. Should you have any questions or need any additional information in considering these comments, please feel free to contact me.

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