

BEFORE THE TENNESSEE WATER QUALITY CONTROL BOARD

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In the Matter of:)	Case No. _____
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Tennessee Department of Environment and Conservation)	Docket No. _____
Division of Water Pollution Control)	
)	
NPDES Permit Number TN0005436)	
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)	

PETITION FOR STATUTORY APPEAL

1. The Tennessee Valley Authority’s (“TVA”) coal plants have spilled more than one billion gallons of coal ash and 10,000 gallons of gypsum slurry into the waters of the Tennessee Valley within the past three years. These spills, which occurred at TVA’s Kingston and Widows Creek Fossil Plants, were caused by the failure of unlined impoundments that TVA uses to store coal ash and other solid and liquid coal combustion wastes (“CCWs”) laden with toxic metal pollutants including arsenic, mercury, hexavalent chromium, and selenium. Although the U.S. Environmental Protection Agency (“EPA”) has stated repeatedly that impoundments, also known as settling ponds, do not effectively control toxic metals pollution, they provide the sole means of “treatment” for all of TVA’s coal-fired power plants. In recent permitting decisions, the Tennessee Department of Environmental Conservation (“TDEC”) has expressly authorized TVA to continue to rely on these precarious impoundments at its Bull Run, John Sevier, and Johnsonville Fossil Plants. Petitioners Tennessee Clean Water Network (“TCWN”), Sierra Club, and Southern Alliance for Clean Energy (“SACE”) bring this appeal to compel a solution to longstanding pollution problems associated with TVA’s settling ponds.

2. This petition for statutory appeal concerns State of Tennessee National Pollutant Discharge Elimination System (“NPDES”) Permit Number TN0005436 (the “Permit”), which authorizes TVA’s John Sevier Fossil Plant (“John Sevier” or the “plant”) to discharge 5.77 million gallons per day of toxic coal combustion wastewaters to Polly Branch, a tributary that flows into the Holston River, and 667 million gallons per day of very hot once-through cooling water to the Holston River. These waters are part of the Cherokee Reservoir, which is a popular fishing and recreation area used by thousands of people. In fact, TVA operates a “reservation” surrounding John Sevier that hosts a campground for fishermen, soccer fields, a walking track, and boating ramps. Moreover, the waters surrounding and downstream from the plant provide drinking water for tens of thousands of Tennessee residents.

3. In issuing the Permit, TDEC has committed multiple violations of the Clean Water Act (“CWA”), the Tennessee Water Quality Control Act (“WQCA”), and implementing regulations. First, although the Permit imposes WQBELs for arsenic and selenium, these limits are insufficient to protect water quality because they do not become effective for 29 months; the Permit provides no interim measures to protect water quality, aside from TVA’s discretionary use of Best Management Practices (“BMPs”); and TVA eventually may avoid these WQBELs entirely by rerouting the outfall of its settling pond. Second, the Permit’s daily maximum WQBEL for arsenic is double the allowable standard. Third, the Permit fails to impose a water quality-based effluent limit (“WQBEL”) for mercury, despite the fact that the receiving waters and the surrounding reservoir have been impaired by mercury pollution for years. Fourth, although TDEC is obligated to set stringent limits that consider the reduction or elimination of pollutants that can be achieved by available and affordable technologies, the Permit does not evaluate alternative technologies. Fifth, the Permit fails to impose numeric TBELs on metals or

other nonconventional pollutants or to subject the undefined future BMPs to public notice and comment. By failing to consider alternative technologies and calculate numeric TBELs, the Permit fails to demonstrate the WQBELs for arsenic and selenium are more stringent than the appropriate TBELs would be. Finally, the Permit provides an unjustified thermal variance, which will allow the plant to continue to discharge very hot once-through cooling water into the Holston River without assuring that such discharges will protect aquatic life.

4. TVA's plans to shut down two of the four generating units at John Sevier should not excuse it from being subject to all applicable state and federal laws designed to protect and maintain water quality.

JURISDICTION

5. Petitioners TCWN and SACE appeal the Permit pursuant to Tenn. Code Ann. § 69-3-105(i), which gives the Tennessee Water Quality Control Board (the "Board") the duty and authority to "review the commissioner's permit decision and [] reverse or modify the decision upon finding that it does not comply with any provisions of [the Tennessee Water Quality Control Act]."

6. Under Tennessee's Water Quality Control Act, a petition for permit appeal may be filed by any person who participated in the public comment period or by any person who appeals material changes included in a final permit that were not made available for public comment on the draft. *Id.* Petitioners submitted written comments during the public comment period on the draft permit. Additionally, Petitioners base this appeal on the material changes set forth in the Permit that were not made available for public comment on the draft, including the compliance schedule for arsenic and selenium WQBELs. Petitioners therefore have satisfied the preconditions for filing the instant appeal.

7. Pursuant to Tenn. Code Ann. § 69-3-105(i), a permit appeal must be filed within thirty (30) days after public notice of the Commissioner's decision to issue or deny the permit. The permit was issued on April 29, 2011, and Petitioners received notice the same day. This petition for permit appeal is filed 30 days from permit issuance.

PARTIES

8. Petitioner TCWN is a nonprofit corporation organized under the laws of the State of Tennessee with its principal office at 625 Market Street, 8th Floor, P.O. Box 1521, Knoxville, Tennessee 37901. TCWN was organized to advocate for strong policies and programs that result in more effective protection and restoration of Tennessee waters; to educate organizations, decision-makers, and the public about important water resource issues; and to ensure the protection and restoration of Tennessee's waters. TCWN organizes Tennesseans to claim their right to clean water and healthy communities by fostering civic engagement, building coalitions, and advancing water policy. TCWN is a membership organization with member(s) who are injured by John Sevier's discharges.

9. Petitioner SACE promotes responsible energy choices that create global warming solutions and ensure clean, safe, and healthy communities throughout the Southeast. Headquartered at P.O. Box 1842, Knoxville, Tennessee 37901, SACE has long focused on clean water issues, particularly with respect to TVA operations. SACE has many interested and active members who are directly impacted by the failure to adequately treat John Sevier's CCW effluent prior to discharge. Members of SACE live near the plant and recreate in the Holston River downstream from John Sevier. John Sevier's uncontrolled discharges of pollution directly harm SACE members' ecological, aesthetic, and recreational interests in the Holston River and Polly Branch.

10. Petitioner Sierra Club is a national nonprofit environmental organization dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Sierra Club has approximately 700,000 members, with 6,000 members living in Tennessee, including members affected by John Sevier's discharges.

11. Respondent is the TDEC Division of Water Pollution Control, which is the agency responsible for administering the Clean Water Act NPDES program in the State of Tennessee.

STATUTORY BACKGROUND

12. Congress passed the Clean Water Act in 1972 "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The Clean Water Act protects all navigable waters of the United States, including surface waters that supply drinking water, support fish and wildlife, and provide aesthetic and recreational opportunities for current and future generations of Americans.

13. Tennessee adopted the Water Quality Control Act in 1977 recognizing that waters of the state "are held in public trust for the use of the people of the state" and "the people of Tennessee, as beneficiaries of this trust, have a right to unpolluted waters." Tenn. Code Ann. § 69-3-102(a).

14. The Clean Water Act's goal is to eliminate all discharges of pollution into navigable waters. *See id.* § 1251(a)(1). To this end, the Clean Water Act establishes the NPDES permit program, which is managed by EPA in partnership with state environmental agencies, including TDEC, which are authorized to issue NPDES permits. *See id.* § 1342; *see also* Tenn. Code Ann. § 69-3-108; Tenn. Comp. R. & Regs. 1200-4-10-.03(1). Tennessee enacted the

Water Quality Control Act in part to obtain and exercise this delegation of NPDES permitting authority. Tenn. Code Ann. § 69-3-102(c). When it issues NPDES permits pursuant to its delegated authority under the Clean Water Act, TDEC must comply with applicable federal statutes and regulations. Tenn. Code Ann. § 69-3-108(g)(1); *see also* 40 C.F.R. § 123.25 (listing specific federal regulations applicable to the states).

15. The Clean Water Act prohibits point sources from discharging pollutants to surrounding waters without a NPDES permit. 33 U.S.C. §§ 1311(a), 1342(a). A point source is “any discernible, confined and discrete conveyance” and includes effluent pipes and other channels “from which pollutants are or may be discharged.” *Id.* § 1362(14). A discharge is the “addition of any pollutant to navigable waters from any point source.” *Id.* § 1362(12).

16. Every NPDES permit must contain effluent limits sufficient to both “restore” and “maintain” water quality in the receiving waters. *Id.* § 1251(a). To this end, the Clean Water Act requires permitting agencies to set TBELs that reflect the ability of available technologies to reduce or eliminate pollution discharges. *See id.* §§ 1311 (establishing TBELs), 1342(a)(1) (requiring that NPDES permits incorporate TBELs). TBELs should be based on the best available technology economically achievable for toxic and nonconventional pollutants such as metals and thermal discharges. 33 U.S.C. §§ 1311(b)(2)(A) & (F), 1314(a)(4) (excluding thermal discharges from the definition of conventional pollutants); Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(a) (requiring that TDEC establish effluent limits in NPDES permits applying the best available technology economically achievable in accordance with the requirements of the Clean Water Act).

17. To help implement the Clean Water Act’s TBEL requirements, EPA is required to promulgate effluent limitations and guidelines (collectively “ELGs”) to control discharges of

pollutants into the waters of the United States from industrial point sources. 33 U.S.C. §§ 1311(b), 1314(b). These ELGs establish an absolute minimum level of pollution control that must be achieved by industrial point sources. *See Natural Res. Def. Council v. EPA*, 859 F.2d 156, 183 (D.C. Cir. 1988). State permitting agencies look first to these nationally-promulgated ELGs when setting TBELs.

18. Where ELGs do not exist for a particular pollutant or class of pollutants to be discharged from a point source, states are required to exercise their best professional judgment (“BPJ”) to set case-by-case TBELs for these pollutants in NPDES permits. *Id.*; 33 U.S.C. §§ 1311(b)(2)(A), 1342(a)(1)(A); 40 C.F.R. § 125.3(c); *see also Am. Petroleum Inst. v. EPA*, 787 F.2d 965, 969 (5th Cir. 1986) (“Where EPA has not promulgated applicable technology-based effluent limitations guidelines, the permits must incorporate, on a case-by-case method, ‘such conditions as the Administrator determines are necessary to carry out the provisions of the Act.’”) (citations omitted).

19. As TDEC acknowledges, the BPJ analysis should evaluate BAT, among other factors. *See Permit at R-61*. In determining BAT on a case-by-case basis, state permitting agencies such as TDEC must consider statutory and corresponding regulatory factors, including the production process in use and the possibility of changing processes, the non-water quality environmental impacts of controlling pollution, the age of equipment, the costs of pollution control, and the engineering aspects of various control techniques. 33 U.S.C. § 1314(b)(2)(B); 40 C.F.R. § 125.3(d)(3) (codifying statutory factors). “BAT should represent ‘a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges.’” *Natural Res. Def. Council v. EPA*, 863 F.2d 1420, 1426 (9th Cir. 1988) (citing *EPA v. Nat’l Crushed Stone Ass’n*, 449 U.S. 64, 74 (1980)).

20. BAT-based numeric effluent limits “*shall require the elimination of discharges of all pollutants* if the Administrator finds, on the basis of information available to him [sic] . . . that such elimination is technologically and economically achievable.” 33 U.S.C. § 1311(b)(2)(A) (emphasis added). Thus, a state permitting agency must set effluent limits that eliminate pollution to the greatest extent possible using technology that is “available” and “economically achievable.” *Id.* Where technology exists to achieve zero liquid discharge, BPJ standards require that BAT-based effluent limits be set at zero.

21. A technology is “available” where there is evidence that its use is practicable within the relevant industry, even if such technology is not yet in use in the relevant industry. *Hooker Chems. & Plastics Corp. v. Train*, 537 F.2d 620, 636 (2d Cir. 1976) (“That no plant in a given industry has adopted a pollution control device which could be installed does not mean that the device is not ‘available.’”). The use of technology is “economically achievable” if it is affordable by other plants in the industry. As the Supreme Court has explained, “[n]o one who can afford the best available technology can secure a variance” from stringent BAT-based limits. *EPA v. Nat’l Crushed Stone Ass’n*, 449 U.S. at 75.

22. Importantly, EPA regulations promulgated pursuant to the Clean Water Act mandate that state agencies impose TBELs in numeric form at all times except where “numeric effluent limitations are infeasible.” 40 C.F.R. § 122.44(k)(3); *see also* Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(i) (echoing language of 40 C.F.R. § 122.44 and indicating that narrative effluent limits are acceptable in lieu of numeric limits only when “when numeric effluent limitations are infeasible”). Because EPA itself has repeatedly demonstrated that affordable and available technology exists to reduce or eliminate toxic pollutants discharged from coal-fired power plants,

state agencies must take this technology into consideration when performing their BPJ analysis and impose numeric TBELs based upon the demonstrated BAT-based standards in the industry.

23. All sources and all pollutants must be subject to BAT-based TBELs, 33 U.S.C. § 1311(b)(2)(A), unless more stringent WQBELs are required to avoid exceedances of water quality standards, *id.* § 1312(a). Under both the CWA and the WQCA, if it is found that TBELs will not maintain water quality standards, TDEC must impose more stringent WQBELs in a NPDES permit. 33 U.S.C. §§ 1312(a), 1342; Tenn. Code Ann. § 69-3-108(g)(1). Thus, for each discharge authorized by a NPDES permit, TDEC must also evaluate whether that discharge has the reasonable potential to cause or contribute to exceedances of in-stream water quality standards. 40 C.F.R. §§ 122.44(d)(1)(i) & (ii), and 123.25. If, as is the case for John Sevier, the reasonable potential exists, then NPDES permits must include WQBELs sufficiently stringent to prevent water quality violations. 33 U.S.C. §§ 1342(b)(1)(C) and 1312(a); 40 C.F.R. §§ 122.44(d)(1)(vii)(A) and 123.25; Tenn. Comp. R. & Regs. 1200-4-5-.04(f).

24. WQBELs are necessary to ensure that discharges do not “interfere with the attainment or maintenance of” applicable water quality standards. 33 U.S.C. § 1312(a). Violations of water quality standards may occur as a result of a high concentration of pollutants in a point source discharge, an impairment of the receiving water body, or a combination of both. In order to ensure that existing impairments are identified and remedied, the Clean Water Act requires that impaired water bodies be listed under § 303(d) of the Clean Water Act. *See* 33 U.S.C. § 1313(d). Pursuant to the requirements of § 303(d), TDEC publishes a “303(d) List” that identifies all streams and lakes in Tennessee that are “water quality limited” or are expected to exceed water quality standards within the next two years.

25. By definition, “water quality limited” streams are in violation of one or more water quality standards. Once a stream is listed on the 303(d) list, TDEC cannot authorize additional loadings of the pollutant(s) that are causing impairment. *See* 33 U.S.C. §§ 1313(d)(1)(A), (D); *see also* TDEC, Division of Water Pollution Control, Final Year 2008 303(d) List 1 (June 2008), http://www.state.tn.us/environment/wpc/publications/pdf/2008_303d.pdf (“2008 303(d) List”) (“If a stream is on the 303(d) List, [TDEC] cannot authorize additional loadings of the same pollutant(s).”). Instead, TDEC must establish a total maximum daily load (“TMDL”) for all pollutants that violate water quality criteria. *See* 33 U.S.C. § 1313(d)(1)(D). TMDLs are used in determining the necessary WQBELs for discharge of the 303(d)-listed pollutants in NPDES permits. Until a TMDL is issued for the 303(d)-listed pollutants – which can take years – a state permitting agency either must prohibit discharges or set WQBELs on a case-by-case basis to prevent further degradation of the impaired stream. *See* 33 U.S.C. § 1312(a).

26. Both the Clean Water Act and the WQCA provide a possible exception that may allow for compliance schedules in limited circumstances. Such compliance schedules may be permissible, but only when necessary and appropriate, and when full compliance with the final effluent limit is required as soon as possible. 40 C.F.R. § 122.47; *see also* Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(h). Draft permits must provide notice and full opportunity for public comment on any “proposed schedule of compliance, including interim dates and requirements.” Tenn. Comp. R. & Regs. 1200-4-5-.06(2).

27. The Clean Water Act creates a limited exception to the WQBEL requirement for thermal discharges. Pursuant to Section 316(a) of the Clean Water Act, TDEC may issue a variance allowing discharges that will exceed state water quality standards only if the applicant

affirmatively demonstrates that the proposed effluent limit is “more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made.” 33 U.S.C. § 1326(a). EPA regulations require a demonstration that “the alternative effluent limitation desired by the discharger, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected” will assure a balanced indigenous population of aquatic organisms. 40 C.F.R. § 125.73(a). Tennessee has incorporated this variance process into its water quality standards. Tenn. Comp. R. & Regs. 1200-4-3-.03(3)(e) (“A successful determination as determined by the state conducted for thermal discharge limitations under Section 316(a) of the Clean Water Act...shall constitute compliance with” the temperature criteria for fish and aquatic life); *see also id.* § 123.25(35) (state agencies may grant or deny thermal variances in accordance with CWA section 316(a) and 40 C.F.R. § 124.62).

28. The Clean Water Act and the WQCA both provide for meaningful public participation in the establishment of all effluent limitations. *See* 33 U.S.C. § 1251(e); Tenn. Comp. R. & Regs. 1200-4-5-.06.

FACTUAL BACKGROUND

A. Polly Branch and The Holston River

29. John Sevier is located in Hawkins County, Tennessee, near mile 106 of the Holston River on the Cherokee Reservoir. The Permit authorizes John Sevier to discharge 5.77 million gallons per day (“MGD”) of CCW effluent from a settling pond via Outfall 001 into Polly Branch, which is tributary that empties into the Holston River. The Permit further authorizes the discharge of 667 MGD of condenser cooling water – at an average temperature of 97 degrees Fahrenheit – from Outfall 002 to the Holston River at mile 106.7.

30. The Holston River is classified for domestic and industrial water supply. There are two public water supply intakes located on the Holston River downstream from the plant. The nearest, Persia Water Utility, serves a local population of 4,414. Thirty-one miles downstream from the plant is the Morristown municipal water intake, which serves approximately 60,000 people in Morristown, Bean Station, Rutledge, Russellville, Whitesburg, Bulls Gap, White Pine, and Mooresburg. The Morristown utility “does not have a secondary source of water should an environmental event occur that would force the intake to discontinue operation for more than 24 hours.” TVA, Final Environmental Assessment, John Sevier Fossil Plant Units 1 Through 4 Control Systems for Reduction of Nitrogen Oxides, at 32 (Mar. 2006), http://www.tva.gov/environment/reports/sevier_fossil/ea.pdf.

31. Polly Branch and the Holston River also are classified for fish and aquatic life, recreation, livestock watering and wildlife, and irrigation. Both waterbodies are popular areas for recreational fishing due to their healthy stocks of channel catfish, hybrid striped/white bass, spotted bass, and striped bass, as well as less ample stocks of largemouth bass, smallmouth bass, sauger, and crappie. As TVA has explained, “[r]ecreational fishing occurs in close proximity to the plant’s water intake channel, the CCW discharge channel, the Polly Branch outlet to the Holston River, the receiving stream for the ash pond discharge and overflow from the plant alternate boiler makeup supply pond (now abandoned for this use) at the head of Polly Branch.” *Id.* To promote fishing in the area, TVA operates a “reservation” encompassing much of John Sevier, which includes a campground, a soccer field, a walking track, and a boat ramp for fishermen.

32. The Holston River has a flow of 4,500 cubic feet per second at the point of converge at the Cherokee Dam, approximately 50 miles downstream from John Sevier. Polly

Branch, on the other hand, is a small tributary of the Holston River known as a “zero” or “low flow” stream because it is characterized as experiencing a seven-day average flow of zero MGD once every ten years (“7Q10”). Because Polly Branch has a 7Q10 flow of 0 MGD, all discharges from John Sevier’s settling pond must meet water quality criteria at Outfall 001. *See* Permit at A-5.

33. All of the waters surrounding and downstream from John Sevier, including the 1,024 acres encompassing the John Sevier Detention Reservoir in the Holston River, the 2,816 acres encompassing the Cherokee Reservoir in the Holston River, and 14.6 miles of the Holston River in Hawkins County, are impaired for mercury. Specifically, each of these waterbodies is listed as being impaired for mercury on TDEC’s 2008 303(d) list, which was approved by EPA, as well as on TDEC’s Proposed 2010 303(d) list, which is awaiting approval by EPA. *See* 2008 303(d) List at 53-54; TDEC, Division of Water Pollution Control, Proposed Final Version Year 2010 303(d) List 55-56 (Aug. 2010), http://www.tn.gov/environment/wpc/publications/pdf/2010proposed_final_303dlist.pdf.

B. The John Sevier Fossil Plant

34. The John Sevier Fossil Plant, which was completed in 1957, is one of TVA’s least efficient coal-powered plants. Its four generating units have a total capacity of 823 megawatts and collectively burn up to 5,700 tons of coal per day. In keeping with a proposed Clean Air Act Settlement between TVA, EPA, the Sierra Club, the State of Tennessee, and others, two of these units are slated for retirement by December 31, 2012. For the remaining two units, TVA must either retire them or install state-of-the-art air pollution control equipment by December 31, 2015. In either case, TVA must remove all of four these units from service (either temporarily or permanently) by December 31, 2012.

35. John Sevier discharges ash transport water, landfill leachate, metal cleaning wastewater, and coal pile runoff from a settling pond that discharges through Outfall 001 into Polly Branch and subsequently to the Holston River. This 40.6-acre ash pond is required to maintain a minimum free water volume of 15.9 million gallons at all times. John Sevier also discharges main condenser cooling water, non-process wastewater, and storm water runoff from Outfall 002 to the Holston River at mile 106.7.

36. John Sevier currently dry handles fly ash and wet handles bottom ash. Permit at R-60. TVA has represented that it will convert its remaining CCWs at John Sevier to dry handling by October 1, 2016. *See* Progress Report on TVA Facilities Pursuant to SJR 784 (March 30, 2011). This eventual conversion will eliminate the discharge of bottom ash transport waters from the settling pond, but the conversion to dry handling is not slated to occur until more than two years after the Permit expires on June 30, 2014, and could easily be delayed beyond then.

C. Coal Combustion Wastes Include Toxic Pollutants.

37. Permitted discharges from the John Sevier plant will contribute significant pollution to Tennessee waterways. Settling ponds at coal-fired power plants, such as John Sevier's settling pond, generally hold and discharge millions of gallons of toxic CCWs, which comprise a variety of wastes from the coal combustion process, including fly ash and bottom ash. Combusting coal in steam electric boilers creates both fly ash, which consists of the finer ash particles that are light enough to be transferred out of the boiler with the flue gas exhaust, and bottom ash, which consist of the heavier ash particles that collect in the bottom of the boiler. If the plant runs a "wet" disposal method, as John Sevier does for bottom ash, the ash is transported from the boiler as a liquid waste stream.

38. As EPA has recognized, effluent associated with CCWs are highly concentrated with toxic metals. Bottom ash transport waters in particular typically contain significant concentrations of total suspended solids (“TSS”), total dissolved solids, and heavy metals. Based upon a survey of discharges at TVA’s Widows Creek Fossil Plant, EPA identified 20 total routine metals, 10 dissolved metals, six total low-level metals, and two total low-level dissolved metals in ash transport waters transferred to a settling pond. *See* EPA, Steam Electric Power Generating Point Source Category: Final Detailed Study Report 5-7 to 5-9 (Oct. 2009) (“EPA Report”), *available at* <http://www.epa.gov/waterscience/guide/steam/finalreport.pdf>. Among the routine metals identified in Widows Creek’s ash transport water were aluminum, arsenic, barium, boron, iron, lead, manganese, mercury, and selenium. *See id.* The “bioaccumulative properties [of many of these metals]” make them a serious potential threat, especially given the “long recovery times associated with many of the ecological impacts” that flow from metals pollution. *Id.* at 6-2.

39. Many of the metals present in CCW effluent pose significant health risks. Selenium is extremely toxic to aquatic organisms and endangers human health when ingested at elevated levels. Drinking water containing high selenium concentrations can cause hair and fingernail loss, numbness in extremities, and problems with circulation. Like mercury, selenium is a bioaccumulative pollutant, and “[a]s a result, selenium-related environmental impacts can linger for years even after exposure to coal combustion wastewater has ceased.” *Id.* at 6-4. Selenium poses a particularly grave threat to fish. Elevated levels of selenium affect the growth and survival of juvenile fish, and offspring of adult fish that were exposed to excessive selenium have been found to suffer skeletal deformities.

40. Arsenic, a known human carcinogen that causes cancer of the skin, bladder, and lungs, also has been found in significant concentrations in CCWs. “[A]rsenic is highly mobile and is frequently observed at elevated concentrations at sites located downstream from coal combustion wastewater impoundments.” *Id.* at 6-5. Like mercury and selenium, arsenic bioaccumulates in aquatic communities, and it has been associated with “biological impacts such as liver tissue death, developmental abnormalities, and reduced growth.” *Id.*

41. Mercury is a well-known toxin. Mercury serves no beneficial physiological function in humans and is generally considered dangerous at levels above one microgram per liter. Exposure to mercury in pregnant women can cause serious damage to the brain and nervous system of a developing fetus, and children exposed to mercury can suffer from impaired nervous systems as well as pulmonary and nephritic damage. Adults exposed to elevated levels of mercury can experience impairment of peripheral vision; disturbances in sensations (“pins and needles” usually in the hands, feet, and around the mouth); lack of coordination of movements; impairment of speech, hearing, and walking; and muscle weakness. As a bioaccumulative pollutant, mercury becomes increasingly toxic as it moves up the food chain.

42. Hexavalent chromium, long known to be a carcinogen by inhalation, is now known to be a carcinogen by ingestion as well. EPA, Draft Toxicological Review of Hexavalent Chromium (Sept. 2010), *available at* http://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=221433. Health effects found in animal studies include anemia and damage to the gastrointestinal tract, lymph nodes and liver. Hexavalent chromium also has ecological effects including diminished growth and other sublethal effects in fish and other aquatic species. EPA Report at 6-3, 6-15

43. Other metals present in CCWs also pose significant human health risks. Cadmium exposure can result in diarrhea, stomach pains, severe vomiting, bone fracture, adverse reproductive effects, nerve damage, immune system damage, or psychological disorders. Exposure to elevated levels of manganese in drinking water has caused adverse neurotoxic effects in children and adults. Exposure to lead in drinking water has resulted in serious damage to nervous system and kidney functioning as well as to red blood cells.

44. TDS is a catch-all category of pollutants that includes common chemical salts such as sulfates and chlorides and also the toxic metals discussed above. Dissolved pollutants are considerably harder to treat and are often beyond the capability of drinking water systems to remove because they are dissolved in water and not merely suspended within it. TDS at concentrations above water quality standards make water taste and smell bad and also increase corrosion in pipes, industrial machinery, and household appliances. Additionally, elevated TDS levels can be toxic to aquatic organisms and adversely impact agriculture and wetlands.

45. While all of the pollutants present in CCWs pose serious threats to human health and the environment when analyzed in isolation, their capacity for toxic pollution increases exponentially when combined in settling ponds. EPA has recognized that:

[T]he practice of commingling coal combustion wastewater with other waste streams from the plant in surface impoundments can result in a chemically complex effluent that is ultimately released into the environmentExposure to coal combustion wastewater has been associated with fish kills, reductions in the growth and survival of aquatic organisms, behavioral and physiological effects in wildlife and aquatic organisms, potential impacts to human health (i.e., drinking water contamination), and changes to local habitat.

Id. at 6-2. Settling ponds such as John Sevier's pond that commingle multiple waste streams such as coal ash transport water with coal ash pile runoff, metal cleaning wastewaters, landfill leachate, stormwater runoff, and other wastewater before discharging them in bulk into

surrounding waterways therefore pose an especially great risk to human health and the environment.

D. There Are No National Standards for CCW Discharges from Power Plants.

46. There are no national standards regulating the toxic metals routinely discharged from power plants in CCW effluent. The current effluent limits in the Steam Electric Power Generating Category that apply to low volume wastes and ash transport waters were promulgated in 1982 and limit only the following parameters: (1) pH and PCBs, (2) total suspended solids (“TSS”), and (3) oil and grease. *See* 40 C.F.R. § 423.12. In the ensuing 29 years since EPA first promulgated these standards, EPA has never undertaken revisions to address metals, even though the agency acknowledges these discharges to be a major concern. EPA Report at xii; 47 Fed. Reg. 52,290, 52,291 (Nov. 19, 1982). As EPA has made clear, the current effluent limits have been ineffective for over 25 years, and “EPA’s review of wastewater discharges from power plants, and the treatment technologies available to reduce pollutant discharges, has indicated the need to update the current national effluent guidelines regulations.” 74 Fed. Reg. 55,837, 55,839 (Oct. 29, 2009).

47. EPA recently announced that it plans to revise the existing standards in the Steam Electric Power Generating Category and create effluent limits that regulate the full suite of toxins discharged by power plants. *See* Press Release, EPA Expects to Revise Rules for Wastewater Discharges from Power Plants (Sept. 15, 2009), *available at* <http://www.epa.gov/newsroom/newsreleases.htm#date> (follow “2009” hyperlink). Further, the agency has entered into a consent decree that sets forth court enforceable deadlines for promulgating the new rules.

48. EPA’s revised standards will not be finalized until January, 2014. In the meantime, it is the duty of state permitting agencies to use their best professional judgment to set

stringent, BAT-based TBELs for all metals present in CCW discharges. *See* 33 U.S.C. § 1311(b)(2)(A); Memorandum from James A. Hanlon, Director of Office of Wastewater Management, to EPA Water Division Directors, Regions 1-10 (“EPA Memorandum”) Attachment A - Technology-based Effluent Limits, Flue Gas Desulfurization (FGD) Wastewater at Steam Electric Facilities, (June 7, 2010) at 2, *available at* <http://www.epa.gov/npdes/pubs/steamelectricbpjguidance.pdf>.

49. To clarify this obligation, EPA recently issued guidance restating the Clean Water Act’s requirement that state agencies “must include technology-based effluent limitations in its permits *for pollutants* not addressed by the effluent guidelines for that industry.” EPA Memorandum, Attachment A at 2 (emphasis added). Thus, although there are ELGs that apply to this point source category, TDEC is nonetheless required to establish TBELs *for the pollutants* – in this case, toxic metals and TDS - that are not addressed by the ELGs.

50. To aid state agencies in establishing BAT-based TBELs, EPA’s guidance identifies a number of effective treatment technologies currently in use at power plants throughout the United States that have demonstrated capability to reduce or eliminate pollutant concentrations in CCW effluent. Specifically, EPA identified several available “[t]echnologies [that are] more advanced than settling ponds . . . and more effective at removing both soluble and particulate forms of metals, and for removing other pollutants such as . . . total dissolved solids.” *Id.* at 3. EPA’s guidance also identifies several of the advanced technologies that EPA discussed in its 2009 Report. Relevant zero liquid discharge technologies include evaporation ponds, conditioning dry fly ash, underground injection, and vapor-compression evaporation. *See* EPA Report at 4-36; EPA Memorandum, Attachment A at 5. Other technologies include clarifiers, constructed wetlands, chemical precipitation technology, which is capable of reducing

concentrations of toxic metals such as mercury, and biological treatment technologies, which can be effective at reducing concentrations of metals such as selenium. And, as TDEC is aware, timely conversion to dry handling would be a viable alternative to eliminate, or dramatically reduce, liquid discharges.

51. In contrast to these demonstrated technologies that effectively reduce concentrations of toxic metals in CCW effluent or eliminate liquid waste streams entirely, settling ponds are not designed for, and are completely ineffective at, reducing the amount of dissolved metals present in CCW wastewater. EPA has made clear that “ash ponds are not designed to treat dissolved metals from sluiced ash or other wastewater sources.” Permit at R

E. The John Sevier Permit Violates Federal and State Law.

52. The John Sevier Permit does not set effluent limit require by the Clean Water Act and governing state law in Tennessee. Although the Permit was issued with WQBELs for arsenic and selenium, TDEC added a 29-month compliance schedule for these limits without explanation or providing the required public notice and opportunity to comment. In addition, the Permit’s delayed daily maximum WQBEL for arsenic is double the allowable in-stream concentration, and is thus not sufficiently stringent to protect water quality. The Permit entirely fails to include a WQBEL for mercury, even though the state water quality criteria for mercury currently is exceeded at all points surrounding the plant. The Permit does not impose any numeric TBELs, and it does not demonstrate that the WQBELs for arsenic and selenium are more restrictive than TBELs would be. Finally, the Permit allows TVA to continue to discharge extremely hot once-through cooling water based on outdated ecological data.

(1) The Improperly Noticed Compliance Schedule Violates the CWA and WQCA.

53. The draft permit proposed to impose numeric WQBELs for arsenic and selenium to ensure protection of water quality in Polly Branch effective immediately upon permit issuance. In its comments on the draft, TVA requested the elimination of these WQBELs or, in the alternative, a compliance schedule. Permit at A-1. In the final Permit, TDEC acknowledged “the reasonable potential to violate water quality criteria” but, without explanation, provided a 29-month compliance schedule during which time there would be no limits. *Id.*

54. This compliance schedule allows the possibility of an open-ended extension by providing that “[c]ompliance with permit limits will be obtained by July 31, 2013 *unless the facility requests a permit modification for a different course of action (i.e. outfall shutdown, relocation of outfall.)*” Permit at 13 (emphasis added). Thus, TVA could both eliminate the need for compliance with the WQBELs and continue to discharge excessive arsenic and selenium to Polly Branch merely by applying for a permit modification.

55. Compliance schedules may be allowable, but only “when appropriate” and when they require compliance “as soon as possible” and no later than the statutory deadline.¹ 40 C.F.R. § 122.47; *see also* Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(h). To impose a compliance schedule, the permitting authority “has to make a reasonable finding, adequately supported by the administrative record and described in the fact sheet . . . , that a compliance schedule is ‘appropriate’ and that compliance with the final WQBEL is required ‘as soon as possible,’ . . . [and] that the discharger cannot immediately comply with the WQBEL upon the effective date of the permit.” James Hanlon, Office of Wastewater Management, EPA, Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits, at 2 (May 10, 2007),

¹ The statutory deadline appears to be July 1, 1977. 33 U.S.C. § 1342(b)(1)(C). Thus, it is possible that no compliance schedule is allowable in this situation.

http://www.epa.gov/npdes/pubs/memo_complianceschedules_may07.pdf. TDEC made no findings documenting that the compliance schedule is appropriate, necessary, or requires compliance as soon as possible. *Id.*

56. In addition, TDEC did not include the compliance schedule in the draft permit or provide an opportunity for public comment on the proposed compliance schedule. Tennessee rules for public participation in NPDES permitting expressly require draft permits to include “a proposed schedule of compliance, including interim dates and requirements.” Tenn. Comp. R. & Regs. 1200-4-5-.06(2). These conditions must be put on public notice, with an opportunity for comment. *See id.*

(2) The Permit Fails to Impose a WQBEL for Arsenic That Will Prevent Violations of the Daily Maximum Water Quality Standard.

57. The numeric WQBELs for arsenic – to the extent they ever become effective – are .01 mg/L as a monthly average and .02 mg/L as a daily maximum. Permit at 2. However, as TDEC admits, in-stream water quality standards must be met at the discharge point for Outfall 001 because Polly Branch has a low flow of zero. *Id.* at A-5. Polly Branch is designated for recreational use. *Id.* at R-20. The only arsenic standard for recreational use is .01 mg/L. Tenn. Comp. R. & Regs. 1200-4-3-.03(4)(j). This in-stream limit cannot be exceeded at any point in time. The Permit’s monthly average (chronic) limit complies with this standard, but the daily maximum (acute) limit would allow arsenic discharges of .02 mg/L, which is double the applicable standard. By failing to impose a daily maximum effluent limit for arsenic at the water quality criteria of .01 mg/L, TDEC failed to set a sufficiently stringent WQBEL.

(3) The Permit Violates the CWA and the WQCA by Failing to Impose a WQBEL for Mercury.

58. The Permit also violates the Clean Water Act and implementing state regulations because it does not set a WQBEL to ensure that discharges of mercury will not cause or

contribute to water quality violations. *See* 33 U.S.C. §§ 1312(a), 1313(d); Tenn. Comp. R. & Regs. § 1200-4-5-.04(1)(g) (a permit may not be issued if the proposed discharges “will cause or contribute to the violation of water quality standards”). TDEC identified all of the waters surrounding John Sevier – including the Holston River, the Cherokee Reservoir, and the John Sevier Detention Reservoir – as impaired by mercury on the EPA-approved 303(d) List. In the absence of a TMDL for mercury, TDEC is required to set a WQBEL for mercury that will prevent John Sevier discharges from contributing to ongoing violations of Tennessee water quality standards. *Id.*

(4) TDEC’s BPJ Analysis Is Inadequate and Does Not Consider Available and Affordable Technology Alternatives to John Sevier’s Settling Pond.

59. Because no federal ELGs exist for the toxic metals known to be present in CCWs discharged from TVA’s plants, TDEC has acknowledged that it must conduct a BPJ analysis in connection with issuing NPDES permits to all of TVA’s coal fleet. *See, e.g.*, permit at R-61. However, TDEC’s BPJ analysis in the Permit does not consider any technology-based alternatives to reliance on John Sevier’s existing settling pond. If TVA is ever required to meet arsenic and selenium WQBELs at John Sevier, it likely will have to employ new water pollution control technologies in order to meet those limits. However, nothing in TDEC’s analysis demonstrates that the level of treatment required to meet the WQBELs would satisfy BAT requirements.

60. In part, TDEC declined to consider alternative technologies on grounds that TVA has announced its intention to convert its wet bottom ash handling system to dry ash handling systems at John Sevier. Permit at R-60, R-66. If TVA, in fact, did convert to a completely dry system, the conversion would largely, but not completely, eliminate the discharge of CCW effluent, assuming no new effluent stream results from the possible installation of air emission

control equipment. However, TVA is currently under no legal obligation to convert to dry ash handling at John Sevier, or any other plant, nor to complete a conversion within any particular timeline.

61. Given that TVA has yet to deliver on a promise that it made in 1988 to convert to dry handling, there is no reason to expect that the conversion will be accomplished on a voluntary basis, much less on an expeditious schedule. In the absence of any binding requirement on TVA, TDEC's reliance on the prospect of dry handling is unwarranted.

If it is feasible to accomplish a dry conversion during the permit term, TDEC could have set BAT-based TBELs that reflect the pollution reductions achievable through dry handling and imposed an enforceable schedule in the permit to achieve compliance with these effluent limits. However, TDEC never considered this — or any other — option that could effectively address the discharge of TDS and metals.

(5) TDEC Failed to Set Numeric BAT-Based Limits for the Full Suite of Toxic Metals Present in the CCWs Discharged from John Sevier.

62. Having failed to undertake a meaningful BPJ analysis to determine BAT, TDEC declined to calculate or impose numeric TBELs for either TDS or any toxic metals, including, but not limited to, arsenic, selenium, mercury, and hexavalent chromium, stating that such limits are “infeasible pending EPA publication of revised Effluent Limitations Guidelines.” Permit at R-65. Because TDEC never attempted to evaluate pollution reduction achievable by alternative technologies, it failed to make the required demonstration that numeric BAT-based effluent limits are infeasible for this Permit.

63. In response to Petitioners' comments requesting numeric TBELs, TDEC argued that these are not applicable to John Sevier given that the plant “discharges its ash pond wastewater to a stream that has a 7Q10 flow of 0 MGD. Therefore, the facility is required to

meet water quality criteria at the discharge point.” Permit at A-5. However, as TDEC correctly states in the Rationale, the proper procedure involves “determining a technology-based limit and evaluating if that limit protects the water quality of the receiving stream.” Permit at R-3. While the John Sevier permit does contain WQBELs, these limits only address arsenic and selenium, and TDEC remains obligated to derive TBELs for TDS and all other metals in CCW wastewater. Moreover, because zero liquid discharge might constitute BAT, the arsenic and selenium WQBELs are not necessarily more restrictive than the applicable numeric TBEL would be. Finally, the Permit’s WQBELs for arsenic and selenium may never compel effective wastewater treatment because TVA could choose instead to relocate its ash pond outfall to the Holston River, *see* Permit at 13, where more mixing is available.

64. Instead of imposing numeric effluent limits, TDEC authorized TVA to develop its own BMPs “as permit conditions” 90 days after the Permit becomes final. Permit at 31, R-66. The Permit gives TVA broad discretion to specify its BMPs so long as they “address controls on toxic metals in ash pond discharges” and “document the relationship between operations and effluent metals concentrations.” Permit at 31. Thus, the Permit leaves pollution controls for TDS and toxic metals completely up to the future discretion of TVA and TDEC without affording any opportunity for public review or comment.

65. Even if it were appropriate to use narrative limits in lieu of numeric limits for TDS and metals, the Permit’s undefined BMP plan does not constitute a properly derived effluent limit. Nothing in the Permit requires the BMPs to satisfy *any* technology-based requirement, so the future BMP plan is not a BAT-based TBEL. Finally, the Permit does not provide for required public participation in the review of these BMPs, which constitute an

effluent limit or plan subject to public review requirements of the Clean Water Act and Tennessee regulations.

(6) TDEC Failed to Impose Applicable Thermal Pollution Limits.

66. The Permit allows TVA to discharge 667 million gallons per day of main condenser cooling water at temperatures up to 36.1 degrees Celsius (97 degrees Fahrenheit) from Outfall 2. Based on a tentative determination made in 1986, this thermal limit is the maximum allowable under the CWA through a variance. Permit at R-11. Twenty-five years later, TDEC still permits TVA to continue operating under a thermal variance pursuant to Section 316(a) of the CWA, 33 U.S.C. § 1326(a).

67. TDEC allowed TVA to continue to use this variance based on TVA's assertions "that no significant change in the operation of the John Sevier Fossil Plant occurred which would increase the quantity or degree of heated water discharged to the Holston River" and that "to the best of its knowledge, significant improvements has occurred to the aquatic biological community of the Holston River (Cherokee Reservoir) in the vicinity of the John Sevier Fossil Plant outfall as a result of various fish stocking programs." Permit at R-11. However, to grant a variance under Section 316(a) and its implementing regulations, the relevant inquiry is not simply whether operations at John Sevier have changed since 1986 or whether an artificial fish stocking program has been successful, but instead whether other conditions impacting the river and its aquatic populations have changed such that the cumulative impact of John Sevier's thermal discharges in conjunction with other environmental factors may be detrimental to the health of balanced, *indigenous* populations. See 40 C.F.R. § 125.73. A fish stocking program does not necessarily promote either a balanced or an indigenous population, and most such programs are instead targeted to promote recreational fishing. The agreement between TVA and

the Tennessee Wildlife Resources Agency calls for propagation of “appropriate fish species” without any definition of what that means, and also requires TVA to provide recreational access. Contract No. TV-92520V at 2-6. Nevertheless, TDEC authorized TVA to continue discharging millions of gallons of exceedingly hot water every day instead of requiring TVA to undertake studies prior to renewal of the thermal variance documenting the current status of native fish, shellfish, and wildlife in this stretch of the Holston River, including the Cherokee Reservoir.

LEGAL VIOLATIONS

68. The addition of a compliance schedule for arsenic and selenium WQBELs without including the proposed provisions in the draft permit for public review and comment violates Tenn. Comp. R. & Regs. 1200-4-5-.06(2).

69. The Permit’s failure to demonstrate that the compliance schedule is appropriate, necessary, and requires compliance as soon as possible violates 40 C.F.R. § 122.47 and Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(h).

70. The Permit violates Sections 402 and 302 of the CWA, 33 U.S.C. §§ 1342(b)(1)(A) and 1312(a), Tenn. Code Ann. § 69-3-108(g), and Tenn. Comp. R. and Regs. 1200-4-5-.04(1)(f) & (g) by failing to impose effluent limits that are sufficiently stringent to attain and maintain applicable water quality criteria for arsenic as a daily maximum concentration. *See also* 40 C.F.R. §§ 122.44(d)(1)(vii)(A) and 123.25.

71. The Permit violates Sections 402 and 302 of the CWA, 33 U.S.C. §§ 1342(b)(1)(A) and 1312(a), Tenn. Code Ann. § 69-3-108(g), and Tenn. Comp. R. and Regs. 1200-4-5-.04(1)(f) & (g) by failing to impose a WQBEL for mercury that is sufficiently stringent to attain and maintain applicable water quality criteria for mercury. *See also* 40 C.F.R. §§ 122.44(d)(1)(vii)(A) and 123.25.

72. By issuing the Permit without undertaking a meaningful BPJ analysis, evaluating alternative technologies, and imposing BAT-based TBELs for TDS, metals and other pollutants that are not covered by the current ELGs, TDEC violated the Clean Water Act and the Tennessee Water Quality Control Act. *See* 33 U.S.C. §§ 1311(b)(2)(A), 1311(e), 1342(a)(1); *see also* Tenn. Code Ann. § 69-3-108(g)(1) (requiring TDEC to comply with federal statutes when issuing NPDES permits), Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(a).

73. TDEC's provision for an undefined future BMP plan in lieu of numeric effluent limitations violates CWA and TDEC regulations requiring TDEC to impose numeric effluent limits except when it is infeasible to do so. 33 U.S.C. § 1311(b)(2)(A); 40 C.F.R. § 122.44(k)(3); Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(i).

74. The Permit violates the public participation requirements of CWA and TDEC regulations by authorizing TVA to develop BMPs without public notice, comment, or hearing. 33 U.S.C. § 1251(e) ("public participation in the development ... of any ... effluent limitation ... shall be provided for, encouraged, and assisted by the ...States"); Tenn. Comp. R. & Regs. 1200-4-5-.06.

75. The Permit violates Section 316(a) of the CWA by failing to support the issuance of a variance with current analysis demonstrating that the cumulative impact of John Sevier's thermal discharges combined with all other impacts on affected species will not interfere with "the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife." *See* 33 U.S.C. § 1326(a); 40 C.F.R. §§ 125.73 & 123.25(a)(33).

PRAYER FOR RELIEF

Petitioners request that:

76. The Water Quality Control Board take jurisdiction over this appeal as a contested case pursuant to Tenn. Code Ann. § 4-5-301 *et seq.*;

77. The Board provide public notice of the contested case by publication in the Tennessee Administrative Register as has been the Board's practice in declaratory ruling cases, the method previously used for public contests of permit issuances;

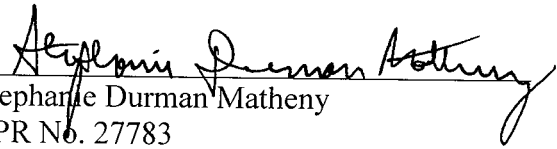
78. The Board direct TDEC to file a response to this Petition no later than 30 days following the publication of notice in the Tennessee Administrative Register;

79. The Board direct that a hearing be conducted in this matter;

80. The Board promptly request the assignment of an Administrative Law Judge by the Office of Administrative Procedures and that a single judge be designated for all purposes prior to the hearing and to conduct the hearing of this matter; and

81. The Board reverse the issuance of this Permit.

Respectfully submitted on this 27th day of May, 2011.


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