Washington University in St. Louis
SCHOOL OF LAW

Civil Justice Clinic
Interdisciplinary Environmental Clinic

Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, Missouri 65102
ATTN: NPDES Permits and Engineering Section/Permit Comments
Via email at publicnoticenpdes@dnr.mo.gov

Re: Sierra Club Comment on **Draft Revised NPDES Permit No. MO-0004812**

To Whom It May Concern:

Please accept these comments submitted on behalf of the Sierra Club on the draft revised National Pollutant Discharge Elimination System/Missouri State Operating System ("NPDES") permit for Ameren Missouri's ("Ameren") coal-fired power plant in Labadie, Missouri ("Labadie plant"), Permit No. MO-0004812 (the "Draft Permit").

The Labadie plant is the largest coal-fired power plant in Missouri and one of the largest in the nation. Its environmental impacts are of great consequence to public health and the environment, particularly in light of the fact that this 45-year-old plant continues to operate largely with 1970s-vintage pollution controls - or lack thereof. It discharges enormous quantities of polluted wastewater to the Missouri River virtually without limit, and it is likely discharging harmful pollutants to the groundwater beneath the site – thus far with impunity.

The Labadie plant is currently operating under an NPDES permit that the Missouri Department of Natural Resources ("MDNR") issued in 1994, with a 1999 expiration date. Unfortunately, neither MDNR nor Ameren has used the intervening 21 years to study the extent of the plant's impacts or to modernize the plant's pollution controls. Instead, the Draft Permit largely reflects business as usual for this aging, high-impact plant.

This comment letter addresses the following concerns regarding the Draft Permit:

1. Cooling Water: The Labadie plant takes in over one billion gallons of water from the Missouri River each day, uses it to transfer heat from the plant to the water, and discharges the heated water to the River – without any practical limit on the temperature of the discharge. The intake structure and the heated discharge harm and kill aquatic life in the River, and the heated discharge also poses a threat to people

using the River for fishing and boating. Instead of this "once-through cooling" employed by the Labadie plant, Ameren could recycle its intake water with closed-cycle cooling (e.g., cooling tower), all-but-eliminating the impacts of both the intake structure and the thermal discharge. Remarkably, the Draft Permit and associated Fact Sheet make no mention of the availability of cooling towers. Nor do they acknowledge that the federally-endangered pallid sturgeon and the state-endangered lake sturgeon inhabit the area and are known to be sensitive to thermal pollution.

a. Thermal discharge:
   i. MDNR's decision to re-issue the thermal discharge variance – exempting the plant from temperature limits on its billion gallons per day thermal discharge – violates the federal Clean Water Act[1] and Missouri Clean Water Law.
   ii. The Draft Permit violates the Clean Water Act's anti-backsliding prohibition because it replaces a permit that requires compliance with water quality standards for temperature with a permit that does not.

b. Cooling Water Intake Structure ("CWIS"):
   i. The Draft Permit fails to ensure the timely performance and completion of studies and analyses required by EPA's new CWIS regulations.
   ii. The Draft Permit fails to state that it does not authorize a "take" under the Endangered Species Act.

2. Ash ponds: The Labadie plant has two ash ponds – a 45-year-old unlined pond and a 22-year-old lined pond – that it uses as on-site trash disposal facilities. The plant dumps into the ash ponds large quantities of coal ash, runoff from the huge coal pile, wastewater from the sewage treatment facility, and waste chemicals used for plant operations and maintenance. After "treating" the ash ponds by gravity (allowing some sediments to settle to the bottom) and adjusting for pH, the plant discharges approximately 16 million gallons per day of otherwise-untreated ash pond wastewater into the Missouri River.

   a. Groundwater monitoring: MDNR is appropriately – if belatedly – requiring Ameren to conduct groundwater monitoring at the unlined ash pond. However, the Draft Permit's failure to require groundwater monitoring at the lined ash pond violates MDNR's obligations under the Missouri Clean Water Law and regulations to protect subsurface waters and does not comply with new Environmental Protection Agency ("EPA") coal ash regulations.[2] In addition, the Draft Permit gives Ameren a considerably longer period of time

[1] This letter refers primarily to the federal Clean Water Act and implementing regulations. Missouri law requires that NPDES permits issued by MDNR comply with the federal Clean Water Act and implementing regulations. § 644.051(3), R.S.Mo. and 10 CSR 20-6.010(9)(A).
[2] EPA, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities, Final Rule, ___ Fed. Reg. ___ (Dec. 19, 2014) ("EPA, CCR Regulations"), available at http://www2.epa.gov/sites/production/files/2014-12/documents/ccr_finalrule_prepub.pdf .

to implement a groundwater monitoring program than is necessary and appropriate and is at odds with the shorter timetable in the EPA's CCR Regulations.

b. Ash pond wastewater discharge: The Draft Permit contains no limitations on the toxic pollutants in the ash pond discharge, and requires routine monitoring for only one of the numerous toxic and nonconventional pollutants in the discharge (i.e., boron).
   i. In evaluating possible discharge limits, MDNR failed to consider dry ash disposal as best available technology economically achievable, in violation of the Clean Water Act sections 301(b) and 402, 33 U.S.C. §§ 1311(b) and 1342, and the Missouri Clean Water Act, § 644.051(3), R.S.Mo. and 10 CSR 20-6.010(9)(A).
   ii. The Draft Permit fails to require monitoring for toxic pollutants in the ash pond discharge.

3. Stormwater: The stormwater provisions in the Draft Permit are less stringent than those in the current permit, in violation of both state and federal anti-backsliding laws, 33 U.S.C. § 1342(o), 40 C.F.R. § 122.44, and 10 CSR 20-6.010(9)(A).
   a. The Draft Permit removes all effluent limitations and monitoring requirements for outfalls 007 and 008.
   b. The Draft Permit replaces directly enforceable effluent limitations with virtually-unenforceable "benchmarks" for outfalls 003 – 006.
   c. The "benchmarks" in the Draft Permit are less stringent than the effluent limitations in the current permit for the stormwater discharges.
   d. The Draft Permit reduces the monitoring frequency for stormwater discharges from quarterly to semi-annually

I. THE DRAFT PERMIT WOULD UNLAWFULLY RENEW THE LABADIE PLANT'S THERMAL DISCHARGE VARIANCE.

The Draft Permit would renew the Labadie plant's thermal discharge variance, which was originally issued in 1977 and relaxed further in 1994. Pursuant to the variance, the thermal discharge "limit" places no actual limit on the plant's ability to discharge as much heat as it generates and adds to the cooling water. While MDNR acknowledges that Ameren has the burden of proving that it is entitled to a thermal discharge variance under § 316(a) of the Clean Water Act, and that Ameren has not gathered any aquatic impact data since 2001, MDNR attempts to justify renewing the variance for at least the next 10 years because (1) that is Ameren's "preference" and (2) the plant's "operations and generating capacity have not changed significantly since the variance was granted."[3]

[3] MDNR, Fact Sheet for the Purpose of Renewal of MO-0004812, Ameren Missouri – Labadie Energy Center, Jan. 2, 2015 ("MDNR Fact Sheet"), Part IV, 316(a) Thermal Variance.

The Draft Permit's renewal of the Labadie plant's thermal discharge variance is unlawful because:

A. MDNR failed to determine, and failed to notify the public of, the effluent limits that would apply under Clean Water Act § 301(b) in the absence of a § 316(a) variance;
B. Ameren did not demonstrate, and MDNR did not determine, that the otherwise-applicable limits are more stringent than necessary to assure the protection and propagation of a balanced, indigenous population ("BIP");
C. Ameren did not demonstrate, and MDNR did not determine, that the variance is sufficient to assure the protection and propagation of a BIP;
D. MDNR's justification for renewing the variance is not based on applicable statutory requirements; and
E. The Draft Permit would renew the variance for at least 10 years even though the permit is issued for a 5-year term under federal and state law.

A. MDNR Failed to Determine, and Failed to Notify the Public of, the Effluent Limits That Would Apply under Clean Water Act § 301(b) in the Absence of a § 316(a) Variance.

In the absence of a thermal discharge variance, the Clean Water Act requires sources to reduce the heat in their discharge based, at the least, on the best available technology economically available ("BAT").[4] Permit limits must be more stringent than BAT where necessary to ensure that the discharge will not cause or contribute to a violation of applicable water quality standards.[5] If an agency grants a variance under § 316(a) of the Clean Water Act, it is a variance from these otherwise-applicable limits.

Before MDNR considers a thermal discharge variance, it is required to determine the technology-based and, if applicable, water quality-based limits that would apply to the thermal discharge in the absence of a variance. This is the first part of a three-part test that must be satisfied before a thermal variance can be lawfully issued:

> (1)[T]he Agency must determine what the applicable technology and WQS [water quality standards]-based limitations should be for a given permit; (2) the applicant must demonstrate that these otherwise applicable effluent limitations are more stringent than necessary to assure the protection and propagation of the BIP [balanced indigenous population of shellfish, fish, and wildlife]; (3) the applicant must demonstrate that its proposed variance will assure the protection and propagation of the BIP.[6]

Variances granted in the past are not automatically renewed. The burden remains on the discharger to prove that it a variance renewal meets these legal tests.[7]

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[4] Clean Water Act § 301(b)(2); 33 U.S.C. § 1311(b)(2).
[5] Clean Water Act § 301(b)(1)(C); 33 U.S.C. § 1311(b)(1)(C).
[6] *In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490 (EPA), 2006 WL 3361084 (Feb. 1, 2006), at *9 (copy attached hereto as Exhibit 1).
[7] 40 C.F.R. § 125.72(c); EPA, Implementation of Clean Water Act Section 316(a) Thermal Variances in NPDES Permits (Review of Existing Requirements), Oct. 28, 2008, available at http://www.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-338.pdf.

Finally, the public notice accompanying a draft permit that contains a thermal variance must inform the public of the limits that would apply in the absence of the variance, as well as the proposed variance limits.[8]

None of the above requirements was met in this case.

1. MDNR Did Not Determine, And Has Never Determined, the Technology-Based Effluent Limitations for the Labadie Plant's Thermal Discharge in the Absence of a Variance.

As a starting point, the Clean Water Act subjects the Labadie plant's thermal discharge to effluent limits reflecting, at least, the best available technology economically achievable ("BAT"). That is because the Labadie plant is an "existing source" subject to the technology-based effluent limits in Clean Water Act § 301(b), and heat is a non-conventional, non-toxic pollutant[9] subject to BAT-based effluent limits under that section.[10] Where EPA regulations do not specify BAT, as is the case for the plant's thermal discharge, MDNR must use its best professional judgment to determine BAT-based limits when issuing individual permits.[11]

However, MDNR has never determined BAT technology-based effluent limits for the Labadie plant's thermal discharge and did not do so for this Draft Permit. As described below, instead of determining the best available technology for *reducing* the heat in the plant's discharge, MDNR has set the plant's thermal discharge limits based on the *maximum amount of heat that the plant could possibly add to the discharge*.

The Labadie plant commenced operation in 1970. Two years later, Congress enacted the Clean Water Act in its modern form, prohibiting facilities from discharging pollutants into the nation's waterways without permits designed to ensure compliance with both technology-based effluent limitations and water quality standards.[12] In 1974, the EPA promulgated Clean Water Act effluent limitation regulations requiring existing power plants such as Labadie to adopt closed-cycle cooling for their thermal discharges.[13] In 1976, EPA promulgated Clean Water Act § 316(b) regulations specifying a process for determining "best technology available for minimizing adverse environmental impact" of power plants' cooling water intake structures

[8] 40 C.F.R. § 124.57(a) (applicable to state permits per 40 CF.R. § 123.25(a)(33). All requirements of the federal Clean Water Act and regulations apply to this state-issued permit. See, e.g., 10 CSR 20-6.010(9)(A).
[9] Clean Water Act § 502(6) (heat as pollutant); 40 C.F.R. §§ 401.15 - .16 (lists of pollutants classified as toxic and conventional); *American. Petroleum Institute. v. EPA*, 787 F.2d 965, 969-70 & n.5 (5th Cir. 1986) (all pollutants not classified as conventional or toxic are "non-conventional/non-toxic" pollutants).
[10] Clean Water Act §§ 301(b)(2)(A) and (F) or 33 U.S.C. §§ 1311(b)(2)(A) and (F); 40 C.F.R. § 125.3(a)(2)(v)(B).
[11] Clean Water Act § 402(a)(1)(B) or 33 U.S.C. § 1342(a)(1)(B). See also 40 C.F.R. § 125.3(c)(2) (where EPA has not published regulations establishing technology-based effluent limits, technology-based limits to be set on case-by-case basis).
[12] Clean Water Act §§ 301(a)-(b) and 402, 33 U.S.C. §§ 1311(a)-(b), 1342.
[13] EPA, Part 423 – Steam Electric Power Generating Point Source Category, 39 Fed. Reg. 36186 (Oct. 8, 1974); remanded in part by *Appalachian Power Co. v. Train*, 545 F.2d 1351 (4th Cir 1976).

("CWIS"), including the use of closed-cycle cooling.[14] While the Fourth Circuit U.S. Court of Appeals subsequently required EPA to revise both sets of regulations on narrow (1974 thermal discharge regulations) and procedural (1976 CWIS regulations) grounds, neither court decision undermines the key fact that EPA recognized some four decades ago the feasibility of existing power plants retrofitting to closed-cycle cooling.

In 1975, MDNR issued the Labadie plant's first NPDES permit. It set a temperature limit of 118°F on the thermal discharge, and required Ameren to switch from once-through cooling to off-stream cooling by July 1981 pursuant to the EPA's 1974 regulations.[15] As Ameren's attorneys explained, the 118°F temperature "limit" was not, in fact, a limit; it was keyed to the maximum temperature that the plant was capable of discharging:

> The present discharge temperature limit of 118°F is based on design operating conditions, assuming full plant load.[16]

Although the court decision negated the 1975 permit's requirement to switch to off-stream cooling, Ameren nevertheless sought a thermal discharge variance under Clean Water Act § 316(a) to avoid the 118°F temperature "limit." Ameren's attorney explained the basis for the variance request:

> The occasional loss of either of the two circulating water pumps on one of the units reduces cooling water flow and raises discharge temperatures above design conditions. These occurrences, which result from mechanical failures and pump maintenance requirements, may produce discharge temperatures above 118°F on infrequent occasions. … In order to account for departures from design condenser discharge temperatures, the Company requests that a limit of 10.63×10^9 Btu/hr be inserted in place of the maximum discharge temperature. … *This value is the combined heat rejection from all four units operating at full capacity*.[17]

In 1977, MDNR granted Ameren's variance request and modified the Labadie plant's NPDES permit to replace the 118°F "limit" with a heat rejection "limit" of 10.63×10^9 Btu/hr – based on the plant's maximum possible heat rejection with all four units operating at design capacity and a circulating pump down, causing discharge temperatures above design conditions.[18] MDNR issued NPDES permit renewals in 1982 and 1987, each time renewing the thermal discharge

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[14] EPA, Part 402 – Best Technology Available for the Location, Design, Construction, and Capacity of Cooling Water Intake Structures for Minimizing Adverse Environmental Impact, 41 Fed. Reg. 17387 (Apr. 26, 1976), remanded in part by *Appalachian Power Co. v. Train*, 566 F.2d 451 (4th Cir. 1977).
[15] A copy of the Labadie plant's 1975 NPDES permit is attached hereto as Exhibit 2.
[16] Letter from William A. Anderson, II, Hunton & Williams, to MDNR, Apr. 7, 1977, attached comments, para. 2 (emphasis supplied). The letter and its attachment are attached hereto as Exhibit 3.
[17] *Id*. (emphasis supplied).
[18] As discussed in section II below, the modified permit and all subsequent renewals also required Ameren to comply with the state's water quality standards for temperature.

variance.[19] In 1994, when it last renewed the permit, MDNR increased the heat rejection "limit" to 11.16 x 10^9 Btu/hr at Ameren's request, "to more accurately reflect thermal releases."[20]

In late 2012, MDNR provided Ameren a pre-publication draft renewal permit that would have changed the nature of the variance. While it would have required Ameren to ensure that its thermal discharge does not cause or contribute to a violation of the state's water quality standards for temperature at the edge of the mixing zone, it would have expanded the mixing zone to accommodate nearly all of Ameren's discharge. Nevertheless, Ameren objected to this proposed change in the variance, and MDNR retreated. Both the draft permit published by MDNR in February 2013 and subsequently withdrawn as well as the current Draft Permit would renew the existing variance unchanged from its 1994 form (i.e., a heat rejection "limit" of 11.16 x 10^9 Btu/hr).

It is entirely possible that the Best Available Technology for treating the heat in the plant's cooling water discharge is closed-cycle or off-stream cooling. Indeed, EPA determined in 1974 – more than 40 years ago – that closed-cycle cooling was BAT for existing power plants.[21] More recently, EPA determined that closed-cycle cooling was BAT for the Brayton Point plant in Massachusetts, a plant similar in size to Labadie,[22] and for the Merrimack Station in New Hampshire.

> EPA has determined that upgrading Merrimack Station's decades-old open-cycle cooling system to a closed-cycle system is the best available technology for reducing the facility's discharges of waste heat.[23]

2. <u>MDNR Has Never Determined Whether Otherwise-Applicable Effluent Limits Must Be More Stringent Than BAT in Order to Protect Water Quality Standards.</u>

Under the Clean Water Act, effluent limits must be more stringent than the technology-based limits (e.g., BAT-based limits) if necessary to ensure that the discharge does not cause or contribute to violations of applicable water quality standards.[24] Because MDNR has never determined the Best Available Technology for reducing the heat in the Labadie plant's cooling water discharge, it has never determined whether a BAT-based limit is sufficient to ensure that the discharge will not cause or contribute to a violation of the water quality standards for temperature in the Missouri River.

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[19] MDNR Fact Sheet, Part IV, Section 316(a) Thermal Variance, History of the 316(a) Variance at Labadie.
[20] *Id.*
[21] EPA, Part 423 – Steam Electric Power Generating Point Source Category, 39 Fed. Reg. 36186 (Oct. 8, 1974); remanded in part by *Appalachian Power Co. v. Train*, 545 F.2d 1351 (4th Cir 1976).
[22] *In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490 (EPA), 2006 WL 3361084 (EPA Env.App.Bd. Feb. 1, 2006) ("Brayton Point Decision") at *12.
[23] EPA, Merrimack Station Draft NPDES Permit, Major Permit Conditions, Reduced Thermal Discharges, available at http://www.epa.gov/region1/npdes/merrimackstation/. See also EPA-New England, Clean Water Act NPDES Permitting Determinations for the Thermal Discharge and Cooling Water Intake Structures at Merrimack Station in Bow, New Hampshire, NPDES Permit No. NH 0001465, available at http://www.epa.gov/region1/npdes/merrimackstation/pdfs/MerrimackStationAttachD.pdf.
[24] Clean Water Act § 301(b)(1)(C) or 33 U.S.C. § 1311(b)(1)(C).

The fact that the Draft Permit sets the state's water quality standards for temperature as the "final" effluent limits (to take effect 10 years after the renewal permit is finalized – unless MDNR approves another variance request before then) reflects a misunderstanding of the effluent limits that apply to the Labadie plant's thermal discharge in the absence of a variance. Water quality standards-based effluent limits only come into play if technology-based effluent limits are insufficient to ensure that a discharge does not cause or contribute to water quality standards violations. In this case, a BAT-based effluent limit keyed to the use of closed-cycle cooling would likely be more than sufficient to protect water quality standards. The Clean Water Act requires dischargers to comply with technology-based effluent limits regardless of whether the treatment on which the limits are based is necessary – or more protective than necessary – to ensure compliance with water quality standards.[25]

In addition, an agency's decision to grant a thermal discharge variance (which is not appropriate here) does not excuse first determining the technology-based or water quality-based effluent limits that would otherwise apply in the absence of a variance. Clean Water Act § 316(a), the statutory provision authorizing thermal variances, makes clear that before a discharger may propose a variance, the agency must determine the effluent limits that would otherwise apply under Clean Water Act § 301. Pursuant to the statutory requirement, EPA prepared a lengthy document in the Brayton Point case to explain that it had first derived baseline thermal effluent limitations based upon BAT, which baseline limitations would essentially require the use of closed-cycle cooling, before it conducted a § 316(a) variance analysis.

Finally, while the Fact Sheet claims that "Ameren … indicate[s] that these [variance] limitations are protective of Water Quality Standards on the Missouri River,"[26] that statement is both irrelevant and erroneous. First, it is irrelevant because the otherwise-applicable limits must be derived from both technology-based (BAT) limits and, if applicable, more stringent water quality-based effluent limits. The Fact Sheet simply ignores technology-based effluent limits. Second, the statement is erroneous because the Draft Permit renews the variance "limits" for 10 years, and does not require Ameren's thermal discharge to meet the Missouri River water quality standards for temperature for 10 years – if ever, because the Draft Permit clearly contemplates that Ameren will apply again for a variance after conducting aquatic studies. Furthermore, the Fact Sheet provides no support for Ameren's "indication" that the variance "limits" will protect water quality standards.

3. <u>The Public Notice Issued by MDNR for the Draft Permit Failed to Notify the Public of the Effluent Limitations That Would Apply to the Labadie Plant's Thermal Discharge in the Absence of a Variance.</u>

EPA regulations reinforce the requirement that MDNR must determine the effluent limitations that would apply to the Labadie plant's thermal discharge even if it ultimately decides to issue a thermal variance.

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[25] *See, e.g., Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1041-1045 (D.C. Cir. 1978).
[26] MDNR Fact Sheet, Part IV, Temperature Limits Considerations.

> [P]ublic notice of an NPDES draft permit for a discharge where a CWA section 316(a) request has been filed under § 122.21(l) shall include:
>
> > (1) *A statement that the thermal component of the discharge is subject to effluent limitations under CWA section 301 or 306 and a brief description, including a quantitative statement, of the thermal effluent limitations proposed under section 301 or 306.*[27]

In this case, however, the public notice provides no information and no quantitative statement of the effluent limitations that would apply to the Labadie plant's thermal discharge under Clean Water Act § 301 (i.e., technology-based limits under § 301(b)(2) or, if necessary, water quality-based limited under § 301(b)(1)(C)).

B. Ameren Did Not Demonstrate, and MDNR Did Not Determine, That the Otherwise-Applicable Limits are More Stringent than Necessary to Assure the Protection and Propagation of a Balanced, Indigenous Population ("BIP") of Fish and Wildlife in the Missouri River.

Clean Water Act § 316(a) requires that an applicant requesting a thermal discharge variance must demonstrate to the satisfaction of the Administrator (or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations 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 …[28]

As MDNR has never determined the otherwise-applicable effluent limits for the Labadie plant's thermal discharge under Clean Water Act § 301, Ameren failed to demonstrate that such unidentified otherwise-applicable effluent limits are more stringent than necessary to assure the protection and propagation of a balanced, indigenous population ("BIP").

C. Ameren Did Not Demonstrate, and MDNR Did Not Determine, that the Variance in the Draft Permit is Sufficient to Assure the Protection and Propagation of a BIP.

1. Ameren Failed to Define and Identify a Balanced, Indigenous Population of Aquatic Life in the Missouri River in the Vicinity of the Labadie plant.

In order to determine the impact of a thermal discharge Ameren must first define the population of fish, shellfish, and wildlife that may be impacted. Thus, a key component of a § 316(a) variance application is the identification of the BIP in the Missouri River in the vicinity of the discharge.

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[27] 40 C.F.R. § 124.57(a)(1) (emphasis supplied).
[28] Clean Water Act § 316(a) or 33 U.S.C. § 1326(a).

EPA regulations define the BIP as follows:

> [A] biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollution tolerant species. Such a community may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a community will not include species whose presence or abundance is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act; and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a).[29]

While Ameren's original § 316(a) variance demonstration was approved by MDNR and the Clean Water Commission, Ameren's biomonitoring in support of its variance application did not establish the BIP in the Missouri River near the Labadie Plant. To be sure, the biomonitoring collected fish, macroinvertebrates, phytoplankton, zooplankton, and periphyton.[30] However, the demonstration did not adequately identify the biotic community present in the waters in the vicinity of the Labadie plant. In order to draw any meaningful conclusion regarding whether a BIP is established in the vicinity of the Labadie power plant, it is necessary to determine not simply how many species are present but which species are present. Further, the demonstration must determine whether the species present represent the biodiversity that would be present in this reach of the river absent the plant's thermal discharge.[31]

Ameren's data are deficient and cannot be relied upon for several reasons. Ameren conducted biomonitoring in 1974-1975 for plankton, habitat formers, periphyton, macroinvertebrates, and some fish.[32] However, Ameren's biomonitoring for fish yielded only 27 species.[33] Ameren's 316(a) variance demonstration lacked a list of species constituting the BIP. By comparison, in the same year that Ameren was collecting data, William Pflieger's comprehensive publication, THE FISHES OF MISSOURI, was published. Pflieger identified 47 fish species that inhabit the lower Missouri River.[34] The difference in number of species identified in Ameren's original biomonitoring data compared to Pflieger's documentation (27 species vs. 47 species) is

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[29] 40 C.F.R. § 125.71(c).
[30] Thermal Discharge Effects on Biological Populations of the Missouri River, Equitable Environmental Health, Inc., July 1976.
[31] Brayton Point Decision at 67. In the Brayton Point case, Dominion Energy attempted to define the BIP as the one "currently occupying" the bay into which it was discharging. The EPA Environmental Appeals Board found that such a definition was far from adequate, because the definition promulgated by the EPA "envisions a consideration of more than the population of organisms currently inhabiting the water body…it explicitly excludes certain currently present species whose presence or abundance is attributable to avoidable pollution or previously-granted section 316(a) variances."
[32] Section 316(a) Demonstration, Labadie Power Plant, NPDES Permit No. MO-0004812, Union Electric Company, November 1976.
[33] Thermal Discharge Effects on Biological Populations of the Missouri River, Equitable Environmental Health, Inc., July 1976. Table 23, p 113 summarizes the species collected from July 24, 1974 through June 12, 1975.
[34] Pflieger, William L., THE FISHES OF MISSOURI, Missouri Department of Conservation, 1976.

significant. Ameren makes repeated comparisons between its data and that of another study and notes that "Thirteen species of fish were collected from the lower Missouri River by Munger et al. (1974) but not by EEH during the present study."[35] The Ameren report, by EEH, discusses these thirteen species but never draws any conclusions regarding their absence from Ameren's biomonitoring study. Perhaps that is why Ameren did not even attempt to define a BIP. Ameren simply relied on the species it found without asking what species were missing and why.

Because Ameren relies on the "prior appreciable harm" test to attempt to demonstrate that the BIP is being protected and propagated, it is necessary to ascertain both what the BIP is for the waters in the vicinity of the Labadie plant, and if the current population reflects that BIP. In order to obtain baseline data and make an objective determination of what constitutes a BIP in an un-impacted reach of the river in the Labadie vicinity, it is necessary to determine the precise list of candidate species that should be present. In addition, it would be desirable to consider the relative abundance of each species in the un-impacted reach so that a better picture of the structure of the un-impacted community could be obtained. Once this is done, in order to determine whether a similar community is being maintained in the impacted reach of the River in the vicinity of the Labadie plant, a thorough biomonitoring program must be implemented. A thorough biomonitoring program in this instance would mean a program intentionally designed to sample all species and determine both health and relative abundance of each, and would necessarily include sampling with varied gear, at regular intervals, by trained biologists capable of identifying all species collected down to the species level. As to this latter point, any study that lists a taxon as an "unidentified chub" or a "YOYF" (presumably a "young of year fish") is too vague and unscientific to document a BIP. Only after conducting such a thorough study could one reasonably assess whether or not a BIP was being maintained in the reach of the River that is impacted by the Labadie plant. The biomonitoring data provided by Ameren for permit renewal lacks these key components of a thorough biomonitoring program. In short, not only has Ameren failed to demonstrate that a BIP is being maintained in the vicinity of the thermal plume and downstream, it has also failed to demonstrate what a BIP in an un-impacted reach of the River would contain in terms of both diversity and abundance of fish species.

A comparison Ameren's biomonitoring studies to other sources of data shows that Ameren did not identify the BIP for fish in the lower Missouri River, collecting significantly fewer fish species than other reliable sources. Specifically, Pflieger collected significantly more fish species than Ameren collected for its 316(a) variance demonstration. Further, the U.S. Fish and Wildlife Service between 2003 and 2011 collected more fish species in the lower Missouri River than Ameren collected in any of its biomonitoring studies. The table below shows the number of fish species collected by Ameren, Pflieger, and state and federal agencies.[36]

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[35] Thermal Discharge Effects on Biological Populations of the Missouri River, Equitable Environmental Health, Inc., July 1976, p 120.

[36] Exhibit 4, prepared by the Interdisciplinary Environmental Clinic, contains a more extensive presentation of the data summarized in the table.

Comparison of Species Collection Efforts								
	Ameren 1974-1975[37]	Ameren 1980-1984[38]	Ameren 1996-2001[39]	Ameren 2005-2006[40]	MDC 1982[41]	Pflieger 1975[42]	FWS 2003-2011[43]	MoRAP 2005[44]
# Fish Species Collected	27	37	39	37	37	47	67	83

Ameren cannot simply collect fish species and assume that the species collected constitute a BIP, although that is what it appeared to do in its original § 316(a) variance demonstration.

Additionally, since its initial demonstration, Ameren collected absolutely no data, either qualitative or quantitative, that addresses the composition of the macroinvertebrate community upon which any fish assemblage is ultimately reliant.

2. Neither Ameren nor MDNR Determined that Renewing the § 316(a) Variance Supports the Protection and Propagation of the BIP.

a. Ameren Has Not Provided Support that Renewing its 316(a) Variance Assures the Protection and Propagation of the BIP.

Ameren failed to meet the burden of proof that the BIP would be protected and propagated through an Absence of Prior Appreciable Harm demonstration.[45] Such a demonstration must show either:

[37] Thermal Discharge Effects on Biological Populations of the Missouri River, Equitable Environmental Health, Inc., July 1976, Table 24.
[38] Comparison of Labadie Power Plant Biomonitoring Results, 1980-1985 vs. 1996 – 2001, Ameren, January 2002, Table 2.
[39] *Id.*
[40] Updated NPDES Permit MO-0004812 Renewal Application, Ameren Missouri Labadie Energy Center, December 20, 2011, Table G1.
[41] The Status and Distribution of Commercial and Forage Fish in the Missouri River and Their Utilization of Selected Habitats, Missouri Department of Conservation, 1985.
[42] Pflieger, William L., *The Fishes of Missouri*, Missouri Department of Conservation, 1975.
[43] US Fish & Wildlife Service fish survey data, 2003-2011, obtained from MDNR via Sunshine Law Request.
[44] A Gap Analysis for Riverine Ecosystems of Missouri, Fish of Missouri, United States Geological Survey and Missouri Resource Assessment Partnership (MoRAP), September 30, 2005. This MORAP project predicts aquatic species distributions. Using the MoRAP species distribution prediction, 83 species were predicted to inhabit the lower Missouri River. This far exceeds the number of species collected in the Ameren biomonitoring studies indicating that Ameren's biomonitoring data does not reflect a BIP in the Missouri River near the Labadie Plant. More likely, comparing the Ameren biomonitoring data with the MoRAP model indicates that a BIP may not be maintained due to the impacts of the cooling water system at the Labadie Plant.
[45] 40 C.F.R. § 125.73(c)(1).

> (i) That no appreciable harm has resulted from the normal component of the discharge taking into account the interaction of such thermal component with other pollutants and the additive effect of other thermal sources to a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge has been made; or
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> (ii) That despite the occurrence of such previous harm, the desired alternative effluent limitations (or appropriate modifications thereof) will nevertheless assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made.[46]

Ameren failed to meet its burden of proof because it did not offer any adequate retrospective or prospective demonstrations which would allow MDNR to conclude that there is an absence of prior appreciable harm.

EPA guidance states: "With respect to renewal of a prior 316(a) thermal variance, it is essential that permitting authorities require applicants to provide as much of the information described in 30 C.F.R. § 125.72(a) and (b) as necessary to demonstrate that the alternative effluent limit assures the protection and propagation of the BIP."[47] Although Ameren has operated the Labadie plant steadily since obtaining the 316(a) variance in 1977, it has not used the intervening 38 years to obtain reliable biomonitoring data necessary to support its variance renewal request. Ameren has not conducted any studies or provided any information to assure the protection and propagation of the BIP. It has provided only sporadic and insufficient biomonitoring studies.

Ameren has conducted biomonitoring on an apparently ad hoc basis, with some data obtained during the periods 1980-1984 and 1996-2001. These data collection efforts fail to support a variance demonstration for several reasons. First, the biomonitoring only considered those species that were actually collected and made no effort to determine if any species are missing, possibly eliminated from the area due to Ameren's cooling water intake and/or discharge or not collected by the sampling methods employed. Second, the studies are deficient because they primarily rely on electrofishing as a sampling method, which collects only certain fish species.[48] Electrofishing is ineffective at sampling smaller species of benthic fishes such as darters. Third, these biomonitoring studies sample only fish and omit macroinvertebrates and other aquatic life. Finally, Ameren provides a comparison of the species collected by its biomonitoring efforts in 1980-1984 and 1996-2001, but fails to analyze these data with the data obtained from its 1974-75 biomonitoring.

Ameren points to the impingement mortality data it obtained with respect to its cooling water intake system during 2005-2006 as assurance of the protection and propagation of the BIP. Presumably, Ameren is relying on its impingement data to distract from the fact that it has not

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[46] *Id.*
[47] EPA, Implementation of Clean Water Act Section 316(a) Thermal Variances in NPDES Permits (Review of Existing Requirements), Oct. 28, 2008, available at http://www.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-338.pdf.
[48] Comparison of Labadie Power Plant Biomonitoring Results, 1980-1985 vs. 1996 – 2001, Ameren, January 2002, p 6.

conducted any biomonitoring in the last 14 years. It is comical to consider a comparison of impingement mortality data between 1974-75 and 2005-06 as demonstration of the maintenance of a balanced, indigenous population. Impingement is not a recognized sampling method, and mortality certainly does not represent "protection and propagation" of the BIP. The methodologies employed and results obtained from these monitoring activities fail to provide a reasonable description of the BIP in the lower Missouri River near the Labadie plant, and fail to demonstrate that the protection and propagation of the BIP in this area. While Ameren has relied on its thermal discharge variance for 37 years, it has failed during that time to implement a consistent program designed to study and evaluate the full array of aquatic biodiversity that are and that should be present, both in terms of the total list of species present and their relative abundances.

b. Even Though the Burden of Proof is on Ameren, MDNR Made an Unsuccessful Effort to Demonstrate that a BIP is Protected in the Lower Missouri River Near the Labadie Plant.

Apparently recognizing that Ameren has not provided adequate data to support its variance renewal request, MDNR attempts to demonstrate that a variance is justified based on "absence of prior appreciable harm."[49] This is inappropriate because, as MDNR acknowledges, the burden of proof is Ameren's to support its variance request.[50] Given the inadequacy of Ameren's biomonitoring data, MDNR attempts to rely on a data set compiled by the United States Fish and Wildlife Service ("FWS"). None of the data collected by FWS was meant to be used to define and identify a BIP, or to assess impacts to the BIP.

John Ford of MDNR analyzed the results of the FWS monitoring efforts between 2003 and 2011 and concluded that the data "did not present convincing evidence of greater species richness upstream of the Labadie Power plant" and that "this data does not present convincing evidence of greater numbers of fish upstream of the Labadie plant than downstream."[51] Although these interpretations of the data are accurate (in as far as they go), they are also misleading and largely irrelevant with respect to the critical issue of whether a BIP is being maintained. Simply counting up the number of species present in a habitat (a metric that biologists refer to as species richness) is a very poor approach to determining the overall health of that system. High richness values can be obtained in an altered ecosystem with a collection of species that do not belong in the system. Richness measures only total numbers of species present; even improvements on metrics of richness that take into consideration relative abundances – so called species diversity measures – still fail to take into consideration whether the species found are "natives" that might appropriately be considered part of the BIP, or are "exotics" that do not belong in the habitat being sampled. An example of the potential problem that results is as follows: Having a set of 35 species, 10 of which are not a natural component of the biodiversity that belongs in the habitat being sampled, is without question less desirable than having only 25 species which are all a logical component of the native diversity in that habitat. Nonetheless, the former community, while being the more impacted and less natural, has a higher richness value and very

[49] MDNR Fact Sheet, Part IV, 316(a) Thermal Variance.
[50] *Id.*
[51] MDNR Fact Sheet accompanying Draft Permit at 35.

well may have a higher species diversity measure than the latter, which is a healthier and more natural community.)

MDNR's reliance on the FWS data is misplaced not only because it relies solely on numbers of species present, but also because it looks at a relatively large, 22-mile segment of the Missouri River (approximately 11 miles upstream and 11 miles downstream of the Labadie plant's thermal discharge) and overlooks impacts to the aquatic community close to the thermal discharge. MDNR never provides a rationale for selecting this 22-mile segment, nor does MDNR state why an upstream/downstream analysis is appropriate. A breakdown of the FWS data reveals that the FWS data fail to demonstrate that a BIP is maintained in the vicinity of the Labadie plant's thermal discharge.

Focusing on FWS data for the larger 22-mile segment of the Missouri River hides the fact that there are reduced numbers of species in the more immediate vicinity of the thermal discharge. The table below shows significant disparity in species numbers when looking at the FWS data for not only the 22-mile, but also the 4-mile, 3-mile and 2-mile segments bracketing the plant's thermal discharge.[52] As indicated in the table below, the areas closer to the Labadie plant and the thermal discharge have significantly fewer species than in the much larger area MDNR considered.

River segment bracketing river mile 57.5	Total species Identified
22 mile river segment	68
4 mile river segment	42
3 mile river segment	32
2 mile river segment	24

This point is reinforced by comparing the data from the smaller 2- and 4-mile river segments bracketing the Labadie plant's thermal discharge at river mile 57.5 with 2- and 4-mile river segments at both the upper and lower end of the FWS data set, as summarized in the table below.

River segment	Total species identified
Upper-most 2 mile segment (RM 67.0-60.0)	53
Lower-most 2 mile segment (RM 47.0-49.0)	51
4 mile segment near plant (RM 55.5-59.5)	42
2 mile segment near plant (RM 56.6-58.5)	24

In addition, the number of species collected by FWS at the lower and upper ends of the 22-mile segment underscores the point made above that Ameren has not established the background conditions against which to analyze the biomonitoring data that Ameren has collected in the vicinity of the thermal discharge. It is impossible to determine if the protection and propagation of the BIP is assured without knowing what that BIP is or should be in the first instance.

[52] FWS data was used for this analysis. This is the same data that MDNR used in its analysis in the Draft Permit Fact Sheet. The data was obtained from MDNR via Sunshine request. The analysis uses river mile 57.5 as the location of outfall 001. River mile 57.5 is the median point of each of the river segments. For example, the 2 mile segment includes the one mile stretch above river mile 57.5 and the one mile stretch below river mile 57.5.

The 53 species found in the upper segment of the FWS data suggest that Ameren's biomonitoring data set (finding no more than 39 species) is incomplete or that a BIP is not maintained near the Labadie plant. In either case, MDNR has no grounds to reissue the 316(a) variance.

3. Neither Ameren nor MDNR Acknowledged or Evaluated the Presence of Federal and State Endangered Species in the Missouri River in the Vicinity of the Labadie Plant, Rendering the § 316(a) Variance Application Incomplete and the Renewal Fatally Flawed.

Neither Ameren nor MDNR acknowledged the presence of federal and state endangered species in the vicinity of the Labadie plant, and neither evaluated the plant's impact on those species. These failures underscore the fact that a BIP has not been adequately defined and the absence of "prior appreciable harm" has not been demonstrated.

The pallid sturgeon (*Scaphirhynchus albus*) is a federally listed endangered species.[53] The shovelnose sturgeon is listed as threatened due to similarity of appearance with the pallid sturgeon.[54] The lake sturgeon is listed as rare and endangered by the Missouri Department of Conservation.[55] These sturgeon should be included as part of the BIP, and the impacts of the plant's thermal discharge on their survival and potential recovery should be evaluated before MDNR can lawfully issue another thermal discharge variance for the Labadie plant.

First recognized as a separate species in 1905,[56] the pallid sturgeon is endemic to the Mississippi River basin and the Missouri River from Montana to Missouri, the middle and lower Mississippi River downstream from the confluence of the Missouri River.[57] Although pallid sturgeon date back to the age of the dinosaurs, the population declined so dramatically in recent decades that the FWS listed it as endangered under the Endangered Species Act in 1990. Elevated temperatures are among the threats to the survival of pallid sturgeon.[58]

Temperature significantly influences aquatic life. A 2011 synthesis of the effects of temperature on biological process in water systems states that "temperature is the single most important

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[53] U.S. Dept. of the Interior, Fish and Wildlife Service, Final Rule, Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Pallid Sturgeon, 55 Fed. Reg. 36641 (Sept. 6, 1990).
[54] U.S. Dept. of the Interior, Fish and Wildlife Service, Final Fule, Endangered and Threatened Wildlife and Plants; Threatened Status for Shovelnose Sturgeon Under the Similarity of Appearance Provisions of the Endangered Species Act, 75 Fed. Reg. 53598 (Sept. 1, 2010).
[55] 3 C.S.R. 10-4.111(3)(E). See also Missouri Department of Conservation, Lake Sturgeon Fact Sheet, available at http://mdc.mo.gov/discover-nature/field-guide/lake-sturgeon.
[56] Forbes, S.A. and R.E. Richardson, "On a New Shovelnose Sturgeon from the Mississippi River," *Bulletin of the Illinois State Laboratory of Natural History* Vol. 7, 1905, pp.37-44, attached as Exhibit 15.
[57] Revised Recovery Plan for the Pallid Sturgeon (Scaphirhynchus albus), U.S. Fish & Wildlife Service, January 2014, at 3, available at http://ecos.fws.gov/docs/recovery_plan/Pallid%20Sturgeon%20Recovery%20Plan%20First%20Revision%20signed%20version%20012914_3.pdf.
[58] *Id.* at 11.

environmental condition affecting the lives of organisms." [59] The study elaborated that climate change and human impacts that raise water temperature are of particular concern since growth is more often sensitive to temperatures above optimum than below it.

Sturgeon are notably sensitive to river temperature. A four year reproductive assessment by the U.S. Geological Survey of sturgeon in the lower Missouri River found that water temperature is the most likely cue to inducing spawning.[60] Kapperman's study of juvenile shovelnose sturgeon demonstrated statistically higher mortality rates starting at water temperatures above 26°C (79°F). Mortality of day 2 though day 75 juvenile sturgeon for temperatures at 28-30°C (82-86°F) were approximately 10%.[61] A comprehensive four-year study examining the effects of water temperature and river stage on the mortality, abundance, hatch timing, and growth rate of age-0 sturgeon in the Middle Mississippi River found that temperature was a key factor in sturgeon survival. Highest age-0 sturgeon mortality occurred between 28-30°C (82-86°F) and mortality increased with the number of days during which water temperature exceeded 28°C (82°F).[62] Thus, elevated river temperatures are detrimental to the survival of these endangered sturgeon.

The Labadie plant's thermal discharge may put larval sturgeon at particular risk. Post hatch, larval sturgeon can drift in the current of the river for hundreds of kilometers. Larval sturgeon tend to drift passively in the thalweg (the deepest and fastest part of the river) of the river.[63] The thermal discharge form outfall 001 is directed into the channelized section of the river and any larval or juvenile sturgeon in the channelized section could be harmed or killed. Exhibit 5 shows the thalweg of the river as it intersects the thermal discharge from the Labadie Energy Center.[64]

Analysis of the Labadie plant's reported effluent temperatures for the thermal discharge shows that ambient river temperatures at the edge of the mixing zone frequently exceed temperatures that cause increased mortality in larval and juvenile sturgeon. Looking at the temperature range associated with increased mortality in young sturgeon as indicated by the Phelps and Kappenman's studies, the analysis shows 734 instances where the ambient water temperature at the edge of the mixing zone exceeded 82°F and 363 instances where the ambient water temperature at the edge of the mixing zone exceeded 86°F. Calculations also show 123 violations of the state water quality standard of 90°F.[65] Thus, there is substantial information demonstrating

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[59] Hester, E.T., M.W. Doyle, "Human Impacts to River Temperature and Their Effects on Biological Process: A Quantitative Synthesis," Journal of the American Water Resources Association, Vol. 47 (3), 2011), p. 571-587.
[60] Papoulias, D.M., et al, "characterization of Environmental Cues for Initiation of Reproductive Cycling and Spawning in Shovelnose Sturgeon in the Lower Missouri River, USA," USGS, Journal of Applied Ichthyology, Vol. 27 (2011), p. 340, attached as Exhibit 16.
[61] Kappenman, Kevin M., et al, "Effect of Temperature on Growth, Condition, and Survival of Juvenile Shovelnose Sturgeon," Transactions of the American Fisheries Society, Vol. 138, 927-937, 2009, attached as Exhibit 17.
[62] Phelps, Quinton E., et al, "Water Temperature and River Stage Influence Mortality and Abundance of Naturally Occurring Mississippi River *Scaphirhynchus* Sturgeon," North American Journal of Fisheries management, Vol. 30, 767-775, 2010, attached as Exhibit 18.
[63] Braaten, P.J., et al, "An Experimental Test and Models of Drift and Dispersal Process of Pallid Sturgeon (Scaphirhynchus Albus) Free Embryos in the Missouri River," *Environmental Biology of Fishes*, Vol. 93, 2011, 377-392, attached as Exhibit 19.
[64] Exhibit 6: Map of Labadie General Habitat—Channel Crossover, Obtained through Sunshine Law request.
[65] Through Sunshine Law requests the IEC obtained DMRs for the Labadie Energy Center from January 2005 through November 2014. However, DNR did not provide a few months of DMRs. The IEC used DNR's temperature

that sturgeon recovery may be compromised by the Labadie plant's thermal discharge, and that MDNR's decision to renew the thermal discharge variance is unlawful and unwarranted.

The FWS's rationale for protecting the shovelnose sturgeon is that by treating the shovelnose sturgeon as a threatened species where their ranges overlapped, the pallid sturgeon would also be protected from potential takings due to misidentification. The pallid and shovelnose sturgeon are very similar in appearance and extremely difficult to differentiate. Biologists require up to 13 morphometric body measurements, multivariate analysis, meristic counts (number of dorsal and anal fin rays), and genetic reliability to differentiate between the two species. These series of tests are complex, and could result in an error rate (misidentification) of 1.9% even with the inclusion of genetic analysis.[66] Difficult differentiation between the pallid and shovelnose sturgeon is another reason that a BIP must include both the shovelnose and pallid sturgeons. Ameren's biomoniotoring studies include records of shovelnose sturgeon.[67] Due to the difficulty differentiating between pallid and shovelnose sturgeon, any of the sturgeon Ameren identified as shovelnose sturgeon could have been pallid sturgeon.

Ameren's impingment data demonstrate that lake sturgeon also inhabit the lower Missouri River at the Labadie plant. Nine lake sturgeon mortalities were noted in Ameren's 2005-2006 impingement data. Lake sturgeon are also threatened by the high temperature cooling water discharged from the plant. Studies on thermal sensitivity of lake sturgeon from embryonic stages indicate that egg incubation between the temperatures of 14-16° (57-61°F) results in the highest survival and uniform hatching. Temperatures between 18-20°C (64-68°F) may cause significant mortalities to embryonic sturgeon and temperatures greater than 20°C (68°F) is lethal. Temperature is an important determinant of successful development, growth, and survival during early life stages of lake sturgeon. Laboratory tests produced survival curves of lake sturgeon at various stages of embryonic development based on variable temperature; higher temperatures ranging from 20-22°C (68-72°F) during embryonic cleavage and 18-20°C (64-68°F) during embryonic organogenesis resulted in lower survival.[68] Due to its status as a state endangered species and residence in the lower Missouri River in the vicinity of the Labadie plant, the lake sturgeon must also be included as part of the BIP and the impact of the plant on its survival evaluated.

The shovelnose sturgeon must still be included in the analysis for BIP and cumulative impacts because firstly, there have been a number of documented kills of shovelnose sturgeon in Ameren's 2005-2006 impingement studies, and secondly, the similarities in appearance between the shovelnose and pallid sturgeon could very well have obscured the accurate documentation of pallid sturgeon. Ameren's impingement data from 2005-2006 indicate that 11 shovelnose

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calculation methodology (Temperature Limits Derivation, General & Limited Warm-Water Fisheries) to determine the ambient river temperature at the edge of the mixing zone.

[66] Department of Interior, "Endangered and Threatened Wildlife and Plants: Threatened Status for Shovelnose Sturgeon Under the Similarity of Appearance Provisions of the Endangered Species Act," 50 C.F.R. Part 17, Vol. 75 (2010), p.53602.

[67] Draft Permit Fact Sheet, Part IV, 316(a) Thermal Variance, Table 5.

[68] Wang, Y.L, F.P Binkowski, S.I Doroshov, "Effects of temperature on early development of white and lake sturgeon, *Acipenser transmontanus* and *A. fulvescens," Environmental Biology of Fishes*, Vol. 14, 1985, p. 43-47, attached as Exhibit 20.

sturgeon were killed on the intake structure of the cooling water system, consisting 0.2% of total fish impingement. It is not clear if all the shovelnose sturgeon recorded were indeed accurately classified as shovelnose sturgeon rather than as pallid sturgeon. It is also important to note that out of the 46 species documented in the impingement study, 63% of species impinged individually consisted of 0.2 or less % of the total collected.[69] It is also important to note that the impingement data included in Ameren's 2011 NPDES renewal application (appended to the Fact Sheet) underestimate the number of species that could be impinged. The data represent the number of fish Ameren collected on the plant's intake structures. However, Ameren provides no information regarding how often data was collected. Clearly it would matter if the 11 shovelnose sturgeon and 9 lake sturgeon listed by Ameren as killed by the intake structure were collected in two sampling days over the two year period, or if they were collected over a weekly basis for the same two year period that would most likely also yield higher impingement numbers. From its sampling, Ameren estimated that 167 shovelnose sturgeon and 121 lake sturgeon are impinged annually by the plant's intake structure.[70] Presumably some of those annually-impinged shovelnose sturgeon could be pallids.

4. MDNR Unlawfully Failed to Consider the Cumulative Effects of Other Significant Impacts on Affected Species.

Federal regulations require that any demonstration in support of a 316(a) variance must also consider cumulative impacts.

> This demonstration must show 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 the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made.[71]

Neither in its initial variance application nor in any of its subsequent permit renewal applications has Ameren analyzed the cumulative impacts on the BIP from other sources in addition to the thermal discharge. The cooling water intake structure represents another significant impact to the aquatic life in the vicinity of the Labadie plant. As noted above, the thermal discharge potentially impacts the endangered pallid sturgeon. The cooling water intake also has the potential to adversely impact pallid sturgeon. Impingement and entrainment of larval, juvenile, and adult pallid sturgeon threatens the species recovery.[72] Ameren's impingement data from 2005-06 show that 9 lake sturgeon and 11 shovelnose sturgeon were killed by impingement on the intake structure. Ameren has not yet provided any data on entrainment of aquatic life in the cooling water intake structure.

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[69] Comparison of Impingement Studies at Labadie Energy Center p. 14 of Ameren Labadie Energy Center, MO-0004812 Fact Sheet.
[70] Updated NPDES Permit MO-0004812 Renewal Application (December 2011). Index of Attachments, Table G1, p. 17.
[71] 40 C.F.R. § 125.73(a) (emphasis supplied).
[72] Revised Recovery Plan for the Pallid Sturgeon (Scaphirhynchus albus), U.S. Fish & Wildlife Service, January 2014, p. 29-31.

Pallid sturgeon embryos begin drifting downstream immediately after hatching, and may drift from 245-530 km during the initial 9 to 11 day post hatch dispersal period. This dispersal drive is innate in sturgeon and evolved by early life intervals to carry the sturgeons from the egg deposition site to a suitable rearing area.[73] As a result of their long distance, long duration drift and dispersal requirement, pallid sturgeon are particularly vulnerable in their early life stages and during ontogenetic development. As noted earlier, larval pallid sturgeon drift in the main channel current until developed enough to overcome the current. As shown in Exhibit 6, the main channel identified by the thalweg flows directly past the cooling water intake structure. Given that the intake structure draws over one billion gallons of water from the river every day, there is the strong potential for larval pallid sturgeon to be entrained and killed in the cooling water intake structure. If they survive that, their survival may be threatened a bit downstream as they encounter the plant's thermal discharge. The recent discovery of two larval pallid sturgeon in the lower Missouri River reinforces the threat that the Labadie plant poses to the recovery of the species.[74] Ameren and MDNR fail to consider the cumulative impacts of the cooling water intake structure and the thermal discharge on the pallid sturgeon as well as on other constituents of the BIP.

D. MDNR's Justification for Renewing the Variance is Not Based on Applicable Statutory Requirements.

As noted above, MDNR attempts to justify its decision to renew the variance on the grounds that the variance is Ameren's "preference" and because "operations and generating capacity have not changed significantly since the variance was granted."[75] These considerations bear no relation to the factors specified by the Clean Water Act § 316(a). They are wholly insufficient to support a variance decision.

In addition, MDNR's statement that "generating capacity ha[s] not changed significantly since the variance was granted" neglects to note that, in fact, generating capacity has increased during this timeframe. The Labadie plant's 1975 NPDES permit states that the plant had 2400 MW generating capacity, and the draft renewal permit states that the plant now has 2407 MW generating capacity. While 7 MW is a small percentage of a huge 2400 MW plant, it is significant enough that Ameren has been crowing about the 5.7 MW solar installation it recently constructed in O'Fallon, MO.[76]

E. The Draft Permit Would Unlawfully Renew the Variance for At Least 10 Years Even Though the Permit is Valid for a 5-Year Term.

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[73] Braaten, P.J., Fuller D.B., Lott R.D., Ruggles M.P., Brandt T.F., Legare R.G., Holm R.J., "An experimental test and models of drift and dispersal processes of pallid sturgeon (*Scaphirhynchus albus*) free embryos in the Missouri River" (2012). *Environ Biol Fish* 93: 377-392, attached as Exhibit 19.
[74] *See* US Army Corps of Engineers press release at http://www.nwk.usace.army.mil/Media/NewsReleases/tabid/2710/Article/560464/confirmed-collection-of-larval-pallid-sturgeon-on-the-missouri-river.aspx.
[75] MDNR Fact Sheet, Part IV, 316(a) Thermal Variance.
[76] Ameren, O'Fallon Renewable Energy Center, available at https://www.ameren.com/missouri/solar/ofallon-solar.

The Clean Water Act specifies that NPDES permits issued by states must be for a fixed period, not to exceed five years.[77] Therefore, it is unlawful for MDNR to grant Ameren a variance for a period of at least 10 years.

II. THE DRAFT PERMIT VIOLATES THE CLEAN WATER ACT'S ANTI-BACKSLIDING PROHIBITION BECAUSE IT REPLACES A PERMIT THAT REQUIRES COMPLIANCE WITH WATER QUALITY STANDARDS FOR TEMPERATURE WITH A PERMIT THAT DOES NOT.

The draft permit actually *weakens* the limits applicable to the plant's thermal discharge. Ever since MDNR first issued Ameren a thermal discharge variance in 1977, it has included in the permit the following language:

> Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the following:
>
> (1) Water temperatures and temperature differentials specified in Missouri Water Quality Standards shall be met.[78]

The same language appeared in the 1982 and 1987 renewal permits,[79] and in the current permit issued in 1994.[80]

Ameren confirmed at the outset that it understood the thermal variance to consist of both a heat-throughput limit and the requirement to comply with the state's water quality standards for temperature.

> In accordance with Section 316(a), the Missouri Department of Natural Resources, with the concurrence of U.S.E.P.A.-Region VII, … established an alternative thermal effluent limitation for the Labadie Plant cooling water discharge. The permit was thereupon modified to incorporate the alternate limitation. *The modified permit limits the plant discharge of heat to 10.63 x 109 Btu/hr* ***and requires the discharge to comply with applicable water quality standards for temperature***.[81]

Yet the draft renewal permit would lift the current requirement to comply with water quality standards – which has been in place throughout the history of the Labadie plant's thermal discharge variance – and convert it into a potential future requirement. The draft permit sets forth

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[77] Clean Water Act § 402(b)(1)(B) or 33 U.S.C. § 1342(b)(1)(B).
[78] MDNR, Modified NPDES Permit No. MO-0004812, paragraph D.1.c.(1), revised page 3 of 4 (July 15, 1977) The MDNR cover letter and modified pages 2 and 3 submitted herewith as Exhibit 7.
[79] 1982 Permit, paragraph E.2.a, page 4 of 4 (Sept. 3, 1982); 1987 Permit, paragraph D.2.a, page 3 of 4 (Aug. 28, 1987). The 1982 and 1987 Permits are submitted herewith as Exhibits 8 and 9.
[80] 1994 Permit, paragraph C.5.(a), page 10 of 11 (Mar. 18, 1994, as amended Sept. 1994 to correct typographical errors on pages 3 and 11). The current, 1994 Permit is submitted herewith as Exhibit 10.
[81] Labadie Plant, Demonstration in Support of Alternate Effluent Limitation on the Thermal Discharge, Prepared for Union Electric Company by J.E. Edinger and Associates, Inc., Hunton and Williams, and Union Electric Company (March 1980), at Introduction, p. 2 (emphasis supplied).

the water quality standards for temperature as "final effluent limitations," with which Ameren need not comply until 10 days after the final permit is issued – unless Ameren applies for and MDNR grants a renewal of the variance in the interim.[82] In addition, the draft permit drops the permit condition, quoted above, that expressly required compliance with the state's water quality standard for temperature. Instead, the draft permit contains a generic requirement to comply with water quality standards, but limits it with the phrase "to the extent required by law." Because the permit does not require compliance with the water quality standards for temperature for at least another 10 years, the permit shield would protect Ameren from having to comply with the water quality standards for temperature throughout the period of this permit – and for another five years thereafter.

In short, the draft permit substantially weakens the effluent limits in the current permit, in violation of the Clean Water Act's anti-backsliding prohibition.[83]

III. THE DRAFT PERMIT FAILS TO ENSURE THAT AMEREN WILL TIMELY UPGRADE ITS COOLING WATER INTAKE STRUCTURE AND FAILS TO PROTECT ENDANGERED SPECIES.

To comply with section 316(b) of the Clean Water Act, the Draft Permit's provisions regarding the plant's cooling water intake structure should be modified as follows:

A. MDNR should specify a compliance schedule whereby Ameren submits the studies as required by 40 C.F.R. § 122.21 and 40 C.F.R. § 125 Subpart J, MDNR makes BTA decisions, and Ameren undertakes required upgrades.
B. MDNR should specify the information that Ameren must include in annual status reports as it conducts the required studies.
C. The Draft Permit failed to include required language stating that the permit does not authorize a "take" under the Endangered Species Act.

A. MDNR Should Specify a Compliance Schedule Whereby Ameren Submits the Studies Required by the New 316(b) Regulations, MDNR Makes BTA Decisions, and Ameren Undertakes Upgrades to the Cooling Water Intake Structure.

While appropriately requiring Ameren to conduct the studies prescribed by EPA's 316(b) Regulations,[84] the Draft Permit does not require Ameren to submit its studies, including its proposals for defining Best Technology Availability ("BTA") to minimize entrainment and impingement by the cooling water intake structure ("CWIS"), until four-and-one-half years after the final permit is issued (i.e. with Ameren's next NPDES renewal application).[85] That is far too long.

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[82] Draft Permit, Table A-2 at page 4 of 12 and paragraph D.2.(h), page 12 of 12.
[83] Clean Water Act § 402(o) or 33 U.S.C. § 1342(o); 10 CSR 20-6.010(9)(A).
[84] EPA, National Pollutant Discharge Elimination System, Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities, 79 Fed. Reg. 48300 (Aug. 15, 2014) ("EPA's 316(b) Regulations").
[85] Draft Permit, Special Condition 15(d).

EPA estimates that the required studies can be completed within 39 months,[86] but notes that many facilities will be able to submit the required studies "within a few months" because they were required by the prior version of the 316(b) Regulations to collect "most of the data and information" required by the new Regulations.[87]

The Labadie plant was covered by the prior version of the 316(b) Regulations and obtained MDNR approval on April 1, 2005 to collect information for a Comprehensive Demonstration Study required by those Regulations. Because the prior version of the 316(b) Regulations took effect in February 2004 and were not suspended until July 2007,[88] Ameren should have collected much of the information required by the new version of the Regulations.

Given the enormous size of the Labadie plant, the fact that with once-through cooling it sucks more than one billion gallons of water daily from the Missouri River, and the presence of endangered species in the area, among other factors, upgrading the CWIS at this plant should be a high priority for MDNR. Moreover, although Ameren collected some impingement mortality data in 2005-2006, neither Ameren nor MDNR has performed a BTA analysis for entrainment and impingement since the original BTA determination in 1977 – 38 years ago.

With a compliance schedule for timely completion and submittal to MDNR of all required studies, MDNR could make a BTA determination and issue a modified permit requiring any necessary CWIS upgrades before the next permit cycle. We note that MDNR accommodated Ameren by modifying the original 1975 permit in 1977 to incorporate the thermal discharge variance. There is no reason why MDNR cannot also modify the next permit mid-cycle to make its BTA determinations and impose any necessary CWIS upgrades.

B. MDNR Should Specify the Information that Ameren Must Include in Annual Status Reports.

The Draft Permit requires Ameren to submit annual status reports "detailing the progress of the previous year."[89] From the context – the previous two paragraphs direct Ameren to complete the studies and BTA determinations required by EPA's new 316(b) Regulations – "progress" presumably refers to Ameren's efforts to comply with the EPA Regulations. Given the extent of the studies required and the significance of the BTA determinations on which they will be based, the Draft Permit is far too vague to ensure that MDNR will have the studies and evaluations necessary to make the required BTA determinations.

Instead, the final permit should spell out the type of information that Ameren must include in its status reports, such as:

[86] EPA's 316(b) Regulations, 79 Fed. Reg. at 48359.
[87] *Id.* at 48360.
[88] *Id.*, n.85.
[89] Draft Permit, Special Condition 15(c).

- all efforts taken to design, implement, and complete each of the studies required by EPA's 316(b) Regulations;
- all difficulties encountered and efforts undertaken to overcome such difficulties;
- advance identification of peer reviewers so that MDNR would have sufficient time to disapprove a peer reviewer or require additional reviewers;[90] and
- copies of all studies when and as they are completed, rather than waiting until all studies are completed before submitting them to MDNR.

C. The Draft Permit Failed to Include Required Language that the Permit Does Not Authorize any "Take" Under the Endangered Species Act.

The Draft Permit lacks the following permit condition required by the EPA's 316(b) Regulations:

> Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act.[91]

In light of the confirmed presence of endangered pallid sturgeon in the vicinity of the Labadie plant, and the confirmed death-by-impingement to sturgeon at the plant's cooling water intake structure, this permit condition is far from surplusage. The final permit must contain the above-quoted permit condition.

IV. GROUNDWATER MONITORING REQUIREMENTS IN THE DRAFT PERMIT DO NOT FULFILL MDNR'S OBLIGATIONS TO PROTECT SUBSURFACE WATERS AND ARE LESS STRINGENT THAN THE NEW EPA REGULATIONS FOR COAL COMBUSTION RESIDUES ("CCR").

There are two ash ponds at the Labadie power plant, one lined (constructed 1993) and one unlined (in operation since 1970). Together, they occupy 233 acres.[92] MDNR was aware of leakage of approximately 50,000 gallons per day from the unlined pond before the current permit was renewed in 1994.[93] Despite the clear risk of contamination due to the leakage, neither in the 1994 permit nor in the intervening 21 years has MDNR required groundwater monitoring at the ash ponds. 13.21 million gallons of groundwater are withdrawn every day in Franklin County, Missouri, according to USGS's (U.S Geological Survey) latest water usage report, and all residents near the Labadie plant rely on groundwater for domestic usage including drinking water.[94]

Missouri is behind the times regarding groundwater monitoring at ash ponds. Many states, including Illinois, have been requiring groundwater monitoring at ash pond sites for several years. The Illinois Environmental Protection Agency ("IEPA") instructed Ameren's Illinois

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[90] EPA's 316(b) Regulations, 79 Fed. Reg. at 48362.
[91] 40 C.F.R. § 125.98(b)(1).
[92] MDNR Fact Sheet, Part I – Facility Information.
[93] Ameren UE Labadie NPDES Permit Renewal Application, Attachment A, February 27, 1992. The application identified two seeps with estimated discharges of 30 gallons per minute and 2-5 gallons per minute.
[94] http://water.usgs.gov/watuse/data/2010/, data files, United States, county level, Excel format, cell D.

affiliate in 2009 to commence groundwater monitoring at unlined ash ponds.[95] In 2012, IEPA sent Ameren Violation Notices because the monitoring revealed concentrations of arsenic, total dissolved solids, iron, manganese, boron, and sulfate in groundwater affected by the ash ponds violated groundwater quality standards at multiple Ameren power plant sites in Illinois.[96] The conditions at Ameren's Illinois ash ponds that led to groundwater contamination – unlined ash ponds in wet environments – are present at Labadie as well.

In addition, the data collected from groundwater monitoring at the proposed Labadie Utility Waste Landfill ("UWL") site adjacent to the plant and ash ponds shows groundwater contamination. The same pollutants detected at the Ameren's power plant in Illinois were detected in the UWL groundwater monitoring at Labadie. Many contaminants found at UWL groundwater are in concentrations higher than federal drinking water standards and Missouri groundwater quality standards. Ameren's Detailed Site Investigation indicated that the proposed landfill site is downgradient from the ash ponds.

While the Draft Permit appropriately – and finally – includes groundwater monitoring requirements, they are insufficient to fulfill MDNR's duty to protect subsurface waters and are weaker than the ash pond monitoring requirements in new EPA CCR regulations.[97]

A. The Draft Permit requires groundwater monitoring only at the unlined ash pond. The final permit should require groundwater monitoring at both the lined and unlined ponds.
B. The Draft Permit allows an unnecessarily-long time to establish a groundwater monitoring system.
C. The Draft Permit should include specific groundwater monitoring, reporting, and corrective action requirements consistent with EPA's CCR Regulations.

MDNR should include in the final permit more stringent groundwater monitoring requirements consistent with EPA's CCR regulations.

A. <u>MDNR Must Require Groundwater Monitoring at Both the Lined and Unlined Ash Ponds.</u>

While both the lined and unlined ash ponds are actively accepting coal ash and even the "newer" lined pond is 25 years old. The Draft Permit requires monitoring at only the unlined ash pond.[98] However, because all surface impoundments, lined and unlined, the potential to leak and contaminate groundwater, the final permit must require groundwater monitoring at both the lined and unlined ash ponds at the Labadie plant.

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[95] Letters from Illinois Environmental Protection Agency to Ameren Energy Generating Company and Ameren Services, March –May 2009, included as part of Attachment B to IEPA's proposed rulemaking, *In re Coal Combustion Waste Surface Impoundments at Power Generating Facilities: Proposed New 35 Ill. Adm. Code 841*, R2014-010, *available at* http://www.ipcb.state.il.us/documents/dsweb/Get/Document-82135.
[96] The Violation Notices, together with subsequent Notices of Intent to Pursue Legal Action, are available at https://www.efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=935793876.
[97] 40 C.F.R. § 257.90.
[98] Draft Permit Special Condition 14.(d).

In July 2013, MDNR committed to requiring groundwater monitoring at both lined and unlined coal ash ponds as part of NPDES permit renewals. In response to a letter from the Clinic, on behalf of the Sierra Club and the Labadie Environmental Organization, requesting that MDNR promptly require groundwater monitoring at the ash ponds at Ameren's Labadie, Meramec, and Rush Island plants, MDNR's Director stated as follows:

> Regarding the renewal to the NPDES permits; while the state does not have explicit requirements pertaining to groundwater monitoring for these facilities, groundwater is considered a "water of the state." Therefore, it is within the Department's authority to consider groundwater when issuing permits. … *The Water Protection Program is developing permits that will require evaluation of both lined and unlined ash ponds to help determine if impacts to groundwater exist.* [99]

Due to the threat that ash ponds pose to groundwater, EPA's CCR Regulations require groundwater monitoring at *all* active ash ponds (also known as surface impoundments):

> Except as provided for in 257.100 for inactive CCR surface impoundments, all CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under 257.90 through 257.98.[100]

The fact that EPA published its CCR Regulations under the Resource Conservation and Recovery Act does not in any way impair MDNR's ability to write NPDES permit conditions consistent with the CCR Regulations. MDNR is responsible under state law for ensuring that waters of the state, including groundwater, are not contaminated.[101] MDNR clearly has the authority to require groundwater monitoring at lined and unlined ash ponds through the NPDES program. In exercising that authority, it would be rational and responsible for MDNR to heed EPA's determinations as to the minimum national requirements of coal ash pond monitoring that are necessary to protect public health and the environment.

Thus the draft permit should require groundwater monitoring at both the lined and unlined ash ponds.

B. <u>The Draft Permit Includes an Unnecessarily Extended Period for Implementation of Groundwater Monitoring.</u>

The Draft Permit allows up to 36 months from the date of issuance of the final permit for

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[99] Letter from Sara Parker Pauley, MDNR Director, to Maxine Lipeles and Peter Goode, Interdisciplinary Environmental Clinic, Jul. 20, 2013 (emphasis supplied). Submitted herewith as Exhibit 11.
[100] 40 C.F.R. § 257.90 Applicability.
[101] Sections 644.051.1(1) and (2): "It is unlawful for any person: (1) To cause pollution of any waters of the state or to place or cause or permit to be placed any water contaminant in a location where it is reasonably certain to cause pollution of any waters of the state; (2) To discharge any water contaminants into any waters of the state which reduce the quality of such waters below the water quality standards established by the commission." See also 10 CSR 20-6.010(8)(A)4.

implementation of groundwater monitoring.[102] This schedule is unduly long.

The EPA's CCR Regulations require Ameren to do much more in a shorter period of time. Within thirty months from publication of the final rule in the Federal Register, the CCR Regulations require Ameren (and all other coal ash pond and landfill operators) to:

> (i) Install the groundwater monitoring system …;
> (ii) Develop the groundwater sampling and analysis program to include selection of the statistical procedures used for evaluating groundwater monitoring data …;
> (iii) Initiate the detection monitoring program to include obtaining a minimum of eight independent samples for each background and downgradient well …; and
> (iv) Begin evaluating the groundwater monitoring data for statistically significant increases over background levels ….[103]

The Draft Permit would grant Ameren a longer time – 36 months – to get only to the beginning of step (iii). Whereas the CCR Regulations require Ameren to conduct at least eight rounds of sampling and begin evaluating the monitoring data within 30 months from publication of the Regulations in the Federal Register (presumably any day, given that they were signed December 19, 2014), the Draft Permit would give Ameren 36 months from the publication of the final permit (date uncertain) just to commence groundwater monitoring. Assuming the eight rounds of sampling required by the CCR Regulations are conducted quarterly, then the EPA Regulations require Ameren to commence groundwater monitoring within six months after the Regulations are published in the Federal Register, whereas the Draft Permit would not require Ameren to commence groundwater monitoring until three years after the permit is issued in final form.

MDNR can obviously compress the groundwater monitoring schedule in the final permit. Given the history of ash pond leakage at Labadie, and the fact that everyone in the area relies on groundwater for drinking water, there is no excuse for delaying groundwater monitoring any longer than feasible. MDNR should incorporate the schedule of the CCR Regulations, 40 C.F.R. § 257.90(b)(1), into the final permit. Ameren is required directly by the CCR Regulations to meet that schedule, so it makes sense to harmonize its CCR obligations with its NPDES obligations.

C. The Draft Permit's Groundwater Monitoring Requirements Lack Key Provisions from EPA's CCR Rule.

In the final permit, MDNR should include specific requirements that mirror the groundwater monitoring requirements in the EPA CCR regulation. These specific sections of the CCR regulation are sections 257.90 through 257.98. These are the key requirements that will ensure that groundwater monitoring at the ash ponds is consistent with federal requirements that will be implemented across the country at similar facilities.

EPA regulations specify that groundwater monitoring wells must be located above the uppermost

[102] Draft Permit, Special Condition 14(f).
[103] 40 C.F.R. § 257.90(b)(1).

aquifer at the waste unit boundary. However, the Draft Permit only mentions the number of wells required. MDNR should specify that the wells must be constructed at locations that can accurately depict groundwater quality. For example, in order to obtain accurate upgradient data, the chosen locations should not be affected by leakage from the ash ponds. For the downgradient wells, MDNR should require Ameren to monitor all potential contaminant pathways caused by the leaking ash ponds. The Draft Permit only requires four downgradient wells for the unlined ash pond that has been leaking for decades. While the EPA Regulations require a minimum of three downgradient wells, they also require

> (a) …a sufficient number of wells, installed at appropriate locations and depth, to … Accurately represent the quality of groundwater passing the waste boundary of the CCR unit. … All potential contaminant pathways must be monitored.[104]

In addition, the final permit should also require casing for monitoring wells to avoid contamination of samples and groundwater by other sources besides ash ponds.[105]

Unlike the CCR Regulations, the Draft Permit does not impose corrective action in the event that contamination is detected. Given the history of ash pond leakage at Labadie, MDNR should include corrective action requirements including timelines identical to 40 CFR sections 257.96 through 257.98 to avoid delays if contamination is found. The corrective action should include assessment of corrective measures, selection of remedy, and implementation of the corrective action.[106]

Finally, the final permit should include the requirement from the CCR Regulations that Ameren post its groundwater monitoring program and data on the internet.[107]

In conclusion, MDNR should include conditions in the final permit that are adequate to ensure the protection of groundwater at and affected by the Labadie plant. These requirements are already identified in EPA's CCR regulation. They include groundwater monitoring at both the lined and unlined ash ponds and timely implementation of groundwater monitoring.

V. THE BAT ANALYSIS AND BPJ DETERMINATION FOR THE ASH POND DISCHARGE ARE INCOMPLETE AND ALLOW THE ASH POND EFFLUENT TO REMAIN UNTREATED

The two ash ponds at the Labadie plant discharge effluent into the Missouri River at a rate of 15.8 million gallons per day.[108]

The Draft Permit includes effluent limitations on oil and grease, suspended solids, and pH, and monitoring-only requirements for sulfate, chloride, boron, nitrogen, and phosphorus.[109] It lacks

[104] 40 C.F.R. § 257.91(a)(2).
[105] 40 C.F.R. § 257.91.
[106] 40 C.F.R. §§ 257.96-98.
[107] 40 C.F.R. § 257.107(h).
[108] Draft Permit, Facility Description, p. 2.

discharge limits and monitoring requirements for all of the toxic pollutants in the ash pond discharge.

The Clean Water Act requires Ameren to treat toxic and nonconventional pollutants in the ash pond discharge at least to the extent achievable by "best available technology economically achievable" ("BAT").[110] Where, as here, EPA has not published regulations specifying BAT for a discharge, MDNR must use its best professional judgment ("BPJ") to determine BAT for treating the toxic and nonconventional pollutants in the ash pond discharge.

MDNR identified boron (a nonconventional pollutant) as a pollutant of concern using the *Central Wastewater Treatment Category Technical Development Document*. MDNR determined that "establishing a monitoring-only requirement for boron… is the most appropriate mechanism to carry out the provisions of the Clean Water Act at this time."[111] However, MDNR based its BPJ determination on an incomplete BAT analysis. Further, MDNR had insufficient data to thoroughly analyze the ash pond effluent for all potential pollutants of concern.

A. <u>The BAT Analysis Does Not Consider All Available Technologies.</u>

In its BAT analysis, MDNR considered the technological options for the treatment of coal ash wastewater contaminated by boron and other pollutants. The Fact Sheet indicates that MDNR evaluated reverse osmosis, ion exchange, electrocoagulation, and vapor compression evaporation.[112] MDNR deemed all of these options too inefficient and costly.[113] However, this analysis failed to consider available dry handling technologies that are widely used in coal-fired power plants across the country. Dry handling techniques keep coal ash from coming into contact with water, thereby drastically reducing or eliminating the production and discharge of water pollution.

In 2013, the EPA published in the Federal Register proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category ("Proposed ELG Rule").[114] These regulations would "strengthen the controls on discharges from certain steam electric power plants by revising technology-based effluent limitations guidelines."[115] In these proposed rules, EPA conducted general BAT analyses for all coal ash handling technologies and identified four preferred options that are both available and economically achievable. All four of these regulatory options require dry handling of fly ash, and one option also requires dry handling of bottom ash.[116]

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[109] *Id.* at Table A-2, p. 6.
[110] Clean Water Act §§ 301(b)(2)(A), (C), (D) and 402(a)(1)(A) or 33 U.S.C. §§ 1311(b)(2)(A), (C), (D) and 1342(a)(1)(A).
[111] MDNR Fact Sheet accompanying Draft Permit, Appendix C.
[112] *Id.*
[113] *Id.*
[114] EPA Proposed Rule, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, Federal Register, June 7, 2013, Vol. 78, No. 110, 34432. The proposed rule is submitted herewith as Exhibit 12.
[115] *Id.* at 34432.
[116] *Id.* at 34458.

The EPA considered the following options for the dry handling of fly ash: wet and dry vacuum pneumatic systems, pressure systems, and combined pressure and vacuum systems.[117] A wet vacuum pneumatic system incorporates water-powered hydraulic vacuums to withdraw and transport fly ash, instead of sluicing to surface impoundments. The ash withdrawn by vacuum is captured in a filter receiver and deposited in a silo. A dry vacuum pneumatic system works similarly, but instead of hydraulic power to move the ash, a mechanical exhauster creates an air pressure gradient to transport the ash. Pressure systems convey ash to silos using a positive displacement blower and a series of airlock valves. A combined system uses dry vacuum to pull ash from the hoppers and a positive displacement blower to convey it to the silo.[118]

Bottom ash is collected below the boiler and, unlike fly ash, must be cooled before it can be transported to storage. The EPA describes several technologies that are available and have significantly less environmental impact than simple sluicing and ash pond storage. Mechanical drag systems cool the ash with quench water, which is recycled, and the ash is dewatered before removal to a collection area.[119] A complete recycle system uses the same process as wet sluicing, but the transport and quench water is treated and reused, drastically reducing the necessity for water intake and discharge. Dry vacuum, pressure and vibratory belt systems use air to cool the ash and transport it with a vacuum, pressure gradient or vibratory conveyer trough—no water is used in these systems.[120]

The EPA has determined all the aforementioned technologies are currently available, and are economically achievable for the majority of coal-fired power plants in the country.[121] The proposed rule states in part:

> EPA found that technologies that do not use water to transport ash are available for handling the fly ash (a combustion residual of fine ash particles entrained in the flue gases) generated at plants, and that such technologies do not generate nor discharge wastewater associated with handling fly ash (i.e., fly ash transport water). Most of these systems are operated at newer electric generating units because the current NSPS regulations, which were promulgated in 1982, prohibit the discharge of pollutants in fly ash transport water. Many older generating units have also converted to dry fly ash handling systems that use air (i.e., pneumatic systems that use air pressure and/or vacuum) to transport fly ash to storage silos instead of using water to sluice the ash (i.e., pump as a mixture of water and ash) to surface impoundments.[122]

The proposed ELG rule was published in sufficient time for MDNR to consider the dry handling systems included in EPA's proposed options. MDNR must include these technologies in the

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[117] *Id.* at Part VI, Section C, Subsection 2 at 34452.
[118] *Id.* at Part VI, Section C, Subsection 2 at 34453.
[119] *Id.* at Part VI, Section C, Subsection 3 at 34453.
[120] *Id.*
[121] *Id.* at Part III, Section D.
[122] *Id.*

BAT analysis for the coal ash ponds at the Labadie plant; failure to do so is a significant omission that renders the analysis incomplete.

B. The BAT Analysis Must Consider Additional Flows of Leachate and Stormwater from the Proposed Adjacent Landfill.

Ameren obtained a construction permit to build a utility waste landfill to dispose of coal combustion residuals, which would theoretically reduce flows from outfall 002.[123] However, the utilization of a landfill would not reduce the requirement to establish effluent limits through a BAT analysis for this outfall, as Ameren intends to dispose of stormwater and leachate from the landfill through the ash ponds. In the 2011 permit renewal application, Ameren states that excess flows from the landfill "will be routed to the plant for ultimate discharge via outfall 002."[124] It is clear that even if ash is no longer disposed in the ponds, Ameren plans to continue discharging toxic coal ash pollutants into the River via outfall 002. The additional flows may alter the contaminant concentration from the ash pond outfall. Other pollutants may be pollutants of concern and require treatment. Thus, MDNR must consider these flows in its BAT analysis.

C. The BPJ Determination Is Based on Insufficient Effluent Data.

MDNR identifies boron as the only pollutant of concern in the ash pond discharge. This determination is based on one set of data obtained from a single water sample provided by Ameren in its 2011 permit renewal application.[125] The potential for effluent variability is high in a single data point; many points must be gathered and analyzed for statistical significance before the data can be used to inform decisions.

The effluent data used for MDNR's BPJ determination is also insufficient compared to EPA's proposed ELGs. For example, the EPA proposed effluent limitation on mercury in some waste streams is measured in ng/L;[126] however, the laboratory analysis technique used by Ameren were not sufficiently sensitive to detect concentrations less than 0.001 mg/L in their sample from the ash pond discharge.[127] Therefore, the ash pond discharge needs to be monitored consistently, thoroughly, and with sufficiently sensitive analytical methods, in order to determine pollutant concentrations in the ash pond discharge. Such monitoring requirements were included in the retracted 2013 draft NPDES permit,[128] and it is unclear why MDNR did not include these monitoring requirements in the current 2015 draft since no additional monitoring data was submitted in the interim. MDNR should to require Ameren to conduct monitoring at the ash pond discharge for all pollutants present in coal and coal ash.

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[123] MDNR Fact Sheet accompanying Draft Permit at Appendix C, Section 7.
[124] Updated NPDES Permit MO-0004812 Renewal Application, Ameren Missouri Labadie Energy Center, December 20, 2011, Attachment H.
[125] Updated NPDES Permit MO-0004812 Renewal Application, Ameren Missouri Labadie Energy Center, December 20, 2011, Form D, Table II, p. 2.
[126] EPA Proposed ELGs, 40 CFR chapter I proposed amendment, § 423.13(g)(1).
[127] Updated NPDES Permit MO-0004812 Renewal Application, Ameren Missouri Labadie Energy Center, December 20, 2011, Form D, Table II, p. 2.
[128] Draft NPDES Permit MO-0004812, 2013, Special Condition 23.

Wastewater associated with coal ash ponds is known to contain many other substances in addition to boron that are detrimental to human and environmental health. A study of coal combustion residue effluent in North Carolina water bodies demonstrated that coal ash pollutants such as cadmium, antimony, arsenic, selenium, and thallium are accumulating in the surface waters studied.[129] The data collected in the study "clearly show high contaminant levels that suggest the need for enhanced removal/wastewater treatment."[130] There is no reason to believe that the wastewater at the Ameren Labadie plant is an exception. MDNR should require thorough monitoring of pollutants in the ash pond effluent.

D. MDNR Should Consider the Impact on Endangered Species of Metals Discharged from the Ash Pond.

The protection of endangered species is another concern particular to the Labadie region that is not adequately addressed in the Draft Permit. The Missouri River is home to the pallid sturgeon, which as noted earlier is listed as endangered under the Endangered Species Act.[131] Bio-accumulative toxic metals present in coal combustion wastewater are known to affect aquatic life both lethally and sub-lethally, potentially causing histopathological, morphological, metabolic, and behavioral changes in fish populations.[132] Metals such as those discharged from ash ponds have been detected in shovelnose sturgeon in the Missouri River. Pallid sturgeon maybe at greater risk than shovelnose sturgeon to contaminants that bioaccumulate because they eat more fish in their diet, live longer, and have a longer reproductive cycle.[133] According to the FWS Pallid Sturgeon Recovery Plan, tissue samples from pallid sturgeon in the Missouri River contained metals such as mercury, cadmium, and selenium at concentrations of concern.[134] The endangered pallid sturgeon may be suffering from the negative effects of the ash pond discharge, and should be considered in the BAT analysis for the ash ponds.

VI. THE DRAFT PERMIT REMOVES EFFLUENT LIMITATIONS AND REDUCES MONITORING REQUIREMENTS FOR STORMWATER OUTFALLS, IN VIOLATION OF THE CLEAN WATER ACT'S PROHIBITION ON ANTI-BACKSLIDING.

The Draft Permit weakens the stormwater provisions in the existing permit, in violation of the Clean Water Act's prohibition on anti-backsliding. While the Fact Sheet states that the Clean Water Act's anti-backsliding rules apply to the Draft Permit's stormwater provisions, it fails to justify the elimination and relaxation of stormwater requirements.

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[129] Ruhl, Laura et al, "The Impact of Coal Combustion Residue Effluent on Water Resources: A North Carolina Example." ACS Publications, Environmental Science and Technology, 2012. p. 12228. The study is attached herewith as Exhibit 13.
[130] *Id.* at 12229.
[131] Revised Recovery Plan for the Pallid Sturgeon (Scaphirhynchus albus), U.S. Fish & Wildlife Service, January 2014, Executive Summary. Attached herewith as Exhibit 14.
[132] EPA proposed ELGs, Part XIII.
[133] Revised Recovery Plan for the Pallid Sturgeon (Scaphirhynchus albus), U.S. Fish & Wildlife Service, January 2014, p. 27.
[134] *Id.*

The Clean Water Act's anti-backsliding prohibition prevents renewed, reissued, or modified permits from containing less stringent effluent limitations, permit conditions, or standards than those established in the previous permit.[135] Neither the Draft Permit nor the Fact Sheet cites any of the recognized exceptions to the anti-backsliding prohibition, and none applies.

The Draft Permit impermissibly backslides on the current permit in several key respects:

A. The current permit contains monitoring requirements and effluent limitations for all of the stormwater outfalls. The Draft Permit eliminates all monitoring requirements and effluent limitations for stormwater outfalls 007 and 008.
B. The Draft Permit replaces enforceable effluent limitations in the current permit with virtually unenforceable "benchmarks" for stormwater outfalls 003 - 006, effectively allowing Ameren to police itself.
C. The Draft Permit's benchmark numbers are less stringent than the current permit's effluent limitations, in violation of the anti-backsliding prohibition.
D. Finally, the Draft Permit reduces the monitoring requirements from quarterly in the current permit to just twice per year for stormwater outfalls 003 - 006.

MNDR must revise the Draft Permit to strengthen the stormwater protections and make them at least as stringent as those in the current permit. Specifically, MDNR must revise the Draft Permit to: reinstate the monitoring requirements and effluent limitations for outfalls 007 and 008; reinstate the classification of numeric limits on stormwater discharges as enforceable effluent limitations instead of benchmarks, and remove the language indicating that exceedances do not constitute violations; reinstate the daily maximum effluent limitations in addition to monthly average limits; and reinstate quarterly monitoring requirements for the stormwater outfalls.

A. <u>Removing Effluent Limitations and Monitoring Requirements for Outfalls 007 and 008 Renders the Draft Permit Less Stringent than the Current Permit.</u>

The current permit establishes effluent limitations and monitoring requirements for the stormwater outfalls,[136] but the Draft Permit impermissibly backslides by removing all effluent limitations and monitoring requirements for outfalls 007 and 008. MDNR's stated justifications for doing so are not supported by the facts and are not permissible exceptions to the anti-backsliding rules.

The current permit set effluent limitations and monitoring requirements for stormwater outfalls 003 - 007. In 2011, Ameren identified stormwater outfall 008 as another existing stormwater outfall in the company's updated NPDES renewal application (appended to the MDNR Fact Sheet). The Draft Permit, however, would remove all effluent limitations and monitoring requirements for outfalls 007 and 008. Needless to say, the elimination of all effluent limitations

[135] Clean Water Act § 402(o) or 33 U.S.C. § 1342(o); 40 C.F.R. § 122.44(l); § 644.051, R.S.Mo.; 10 CSR 20 - 6.010(9)(A), (8)(B). *See also*, *Citizens for a Better Environment-California v. Union Oil Co. of California*, 83 F.3d 1111 (9th Cir. 1996).
[136] *See* Part D *infra.*

and monitoring requirements for these outfalls renders the Draft Permit significantly less stringent than the current permit, in violation of the Clean Water Act's prohibition on anti-backsliding.

MDNR's only stated justifications for removing these requirements for outfalls 007 and 008 are that these outfalls are "remote" from routine plant operations and there is only a "small chances for discharges."[137] These justifications are not valid exceptions to the anti-backsliding prohibition.

Additionally, MDNR's justifications suggest that these outfalls are unlikely to come into contact with pollutants and should therefore be regarded as insignificant. That is erroneous. Outfalls 007 and 008 are located along the Labadie power plant's access road and railroad tracks.[138] Thus, they discharge stormwater where large quantities of coal are transported to the plant in uncovered railroad cars. The trains that deliver the coal to the plant typically consist of 140 bottom-dump cars.[139] Spilled coal that falls along these tracks and coal dust that settles on the tracks is washed into the Missouri River and surrounding waterways via these outfalls.[140] Studies show that a significant amount of coal is lost in the form of coal dust when coal is transported along rail systems.[141] One study found "coal losses along a ~500 mile-long rail corridor of up to 0.6 tons/car, with typical losses of 0.2 to 0.4 tons/car."[142] The Labadie plant burns approximately two trains, or 280 cars, of coal per day, resulting in potentially significant quantities of coal and coal dust in the discharges from these outfalls. In fact, Ameren's1992 NPDES permit application noted appreciable quantities of coal dust in the stormwater samples from outfall 007. At the time, Ameren referred to outfall 007 as SW005.[143] Ameren found 154mg/l of coal dust and soil as part of the total suspended solids analysis for samples collected from SW005.[144] By contrast, Ameren found 82 mg/l of coal dust and soil in the total suspended solids analysis for SW001,[145] which is now referred to as outfall 003.[146] Ameren also reported small quantities of PCBs, or polychlorinated biphenyls, in what is now labeled outfall 007.[147] It is worth noting that special condition #7 of the Draft Permit prohibits the discharge of PCB compounds.[148] Based on this information, it is clear that the possibility of discharges from outfalls 007 and 008 is very real

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[137] MDNR Fact Sheet, Part I Facility Information.
[138] MDNR Fact Sheet, Part I Facility Information.
[139] 2011 NPDES Permit Application, Attachment J, Bulk Materials Loading Area, p. 25.
[140] MDNR Fact Sheet, Part I Facility Information. Some of the outfalls technically discharge into the Labadie Creek and a nearby wetland mitigation area. However, these water bodies ultimately flow to the Missouri River.
[141] When coal is transported along railways, a certain percentage of that coal is broken down into coal dust. *See* Cope D, Wituschek W, Poon D et al. "Report on the Emission and Control of Fugitive Coal Dust from Coal Trains," Regional Program Report 86 – 11. Environmental Protection Service, Pacific Region British Columbia Canada (1994).
[142] E.M. Calvin, G.D. Emmitt, et. al. "A Rail Emission Study: Fugitive Coal Assessment and Mitigation," (1996) *available at* http://www.powerpastcoal.org/wp-content/uploads/2011/08/A-RAIL-EMISSION-STUDY-FUGITIVE-COAL-DUST-ASSESSMENT-AND-MITIGATION.pdf.
[143] 1992 NPDES Permit Application, Attachment SW-B and Appendix A: Photographic Log of Outfalls.
[144] 1992 NPDES Permit Application, Form 2F, Section VII.
[145] *Id.*
[146] 1992 NPDES Permit Application, Attachment SW-B and Appendix A: Photographic Log of Outfalls.
[147] 1992 NPDES Permit Application, Form 2F, Section VII.
[148] Draft Permit, Special Condition 7(page 8 of 12). "There shall be no discharge of polychlorinated biphenyl (PCB) compounds..."

and that MDNR has no legitimate basis for relinquishing its regulatory authority over those outfalls, in violation of the anti-backsliding prohibition.

Ameren's 1992 NPDES renewal application also stated that "the railroad tracks are cleaned every six months to remove any coal that may have been deposited on the tracks during delivery."[149] Its 2011 application, however, indicated that Ameren might implement, as part of its Best Management Practices, an "annual cleaning of the on-site railroad tracks, to remove accumulated coal lost from the cars."[150] These statements suggest that Ameren is actually reducing the number of times the railroad tracks are cleaned to remove coal deposits from twice per year to just once per year. With less frequent cleanings, it is likely that additional coal and other pollutants will accumulate on the railroad tracks and surrounding areas before being washed into the Missouri River. Despite these reductions in annual cleanings and the greater likelihood for discharges, MDNR has unlawfully proposed to remove all effluent limitations and monitoring requirements for outfalls 007 and 008.[151]

B. Replacing Enforceable Effluent Limitations with Virtually-Unenforceable "Benchmarks" for Outfalls 003 - 006 Renders the Draft Permit Less Stringent than the Current Permit.

Replacing enforceable effluent limitations with virtually-unenforceable "benchmarks" renders the Draft Permit less stringent than the current permit, in violation of the anti-backsliding rules. The current permit establishes enforceable effluent limitations for outfalls 003 - 006. In contrast, the Draft Permit would replace them with "benchmarks" that are less stringent than the current permit's effluent limitations and leave Ameren to police itself as to compliance.

As noted above, the current permit establishes effluent limitations for outfalls 003 - 006. Under the Clean Water Act, exceedances of effluent limitations constitute permit violations.[152] The current permit requires Ameren to report exceedances of effluent limitations to MDNR.[153] Furthermore, under the current permit, MDNR is responsible for overseeing and administering the enforcement process if and when such exceedances occur.[154] By contrast, the Draft Permit

[149] 1992 NPDES Permit Application, Attachment SW-B, Outfall Descriptions and Control Measures.
[150] 2011 NPDES Permit Application, Attachment J, Management Practices, at 27.
[151] Draft Permit, Fact Sheet, Part I - Facility Information.
[152] Furthermore, "[u]nder the Clean Water Act, a violation of a NPDES permit, including the monitoring and reporting requirements, constitutes a violation of the Act itself." *Pub. Interest Research Grp. of New Jersey, Inc. v. New Jersey Expressway Auth.*, 822 F. Supp. 174, 184 (D.N.J. 1992), citing 33 U.S.C. §§ 1311, 1318, 1319, 1365; *PIRG v. Rice,* 774 F.Supp. 317, 325 (D.N.J.1991); *SPIRG v. P.D. Oil & Chemical Storage, Inc.,* 627 F.Supp. 1074, 1090 (D.N.J.1986), *aff'd in part and rev'd in part,* 913 F.2d 64 (3d Cir.1990), *cert. denied,* 498 U.S. 1109, 111 S.Ct. 1018, 112 L.Ed.2d 1100 (1991); *SPIRG v. AT & T Bell Labs,* 617 F.Supp. 1190, 1203 (D.N.J.1985).
[153] The current permit establishes procedures for Ameren to report exceedences of effluent limitations to MDNR. For example, the permit requires Ameren to routinely test samples to ensure compliance with the effluent limitations. The permit states that Ameren must report all failing test results within 14 days of learning of the failure. 1994 NPDES Permit at 7. MDNR also learns of exceedances of effluent limitations through Discharge Monitoring Reports and Quarterly Noncompliance Reports.
[154] MDNR, *The Compliance Manual for the Missouri Department of Natural Resources*, Chapter 2: Enforcement Process (August, 2007).

states that "benchmarks do not constitute direct numeric effluent limitations; therefore a benchmark exceedance alone is not a permit violation."[155]

The "benchmark" provisions of the Draft Permit would effectively turn over the enforcement process to Ameren. If Ameren exceeds a benchmark, it is only required to review its Stormwater Pollution Prevention Plan and Best Management Practices "to determine what additional controls are needed to reduce that pollutant."[156] These additional measures are recorded in a "corrective action plan," which need not be submitted to MDNR. [157] Ameren would only violates the permit if it "[fails] to take corrective action to address a benchmark exceedance and to make measurable progress towards achieving the benchmark."[158] As explained above, Ameren has wide discretion to define corrective action for itself. Additionally, because the Draft Permit does not define "measurable progress," Ameren could avoid a permit violation so long as it was making some "measurable" progress toward complying –even if it did not actually achieve the benchmark. As a result, benchmark exceedances could continue indefinitely so long as Ameren is making incremental improvements and following its self-prescribed corrective action plan.

By replacing the–current permit's effluent limitations for outfalls 003 – 006 with such benchmarks, the Draft Permit impermissibly backslides from the current permit.

C. <u>The Draft Permit's Benchmark Numbers Are Less Stringent Than The Current Permit's Effluent Limitations, in Violation of the Anti-Backsliding Prohibition.</u>

1. <u>The Benchmarks Appear to Eliminate Daily Maximum Effluent Limitations Altogether.</u>

The current permit contains both daily maximum effluent limitations and monthly average effluent limitations for settleable solids and oil and grease discharged through each of the plant's stormwater outfalls.[159] The benchmarks" in the Draft Permit, however, have only one set of numbers for those parameters.[160] Although the benchmark numbers are not labeled as to whether they are daily maximum, monthly average, or measured in some other format, the benchmark for oil and grease is identical to the current permit's monthly average limit for oil and grease. If the "benchmarks" in the Draft Permit are intended to serve as monthly averages, then the Draft Permit is eliminating entirely the daily maximum limitations for the stormwater outfalls. Daily maximum effluent limitations serve an essential function in the regulation of stormwater

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[155] Draft Permit, Special Condition 13(page 9 of 12).
[156] *Tualatin Riverkeepers v. Oregon DEQ*, 230 P. 3d 599 (Or. App. 2010).
[157] The Draft Permit states that the Stormwater Prevention Plan ("SWPPP"), Best Management Practices ("BMPs"), and Corrective Action Plans ("CARs'') should be maintained at the facility and "not sent to DNR unless specifically requested." 2015 DRAFT NPDES PERMIT at 10. Furthermore, while the 2015 draft permit lists certain minimum best practices and conditions that should be included as part of the SWPPP and BMPs, the 2015 draft permit does not require MDNR to review Ameren's completed SWPPP or BMPs to determine their adequacy. This review process is important. The minimum best practices and conditions listed are vague and contain common sense items such as "prevent[ing] the spillage or loss of fluids." *Id.*
[158] Draft Permit, Special Condition 13 (page 9 of 12).
[159] 1994 NPDES Permit, Effluent Limitations and Monitoring Requirements for Outfalls 003 - 007 (page 5 of 11). In addition, both the current permit and the Draft Permit set limits on the pH range; pH sample results are not averaged.
[160] Draft Permit, Special Condition 13 (page 9 of 12).

discharges. Unlike other forms of wastewater discharges, which remain relatively stable, stormwater discharges can be highly variable. Thus, daily maximum effluent limits serve to ensure that excessive quantities of pollutants are not discharged with great frequency.

Insofar as the Draft Permit would eliminate altogether the daily maximum effluent limitations for all of the stormwater outfalls, that would constitute yet another clear violation of the anti-backsliding prohibition.

2. The Benchmark for Settleable Solids (Assuming Monthly Average) is Higher Than the Monthly Average Effluent Limitation for Settleable Solids.

Whereas the current permit sets effluent limitations for settleable solids at 1.0 ml/L/hr (monthly average) (2.0 ml/L/hr (daily maximum)), the Draft Permit would set the benchmark for settleable solids at 1.5 ml/L/hr. This may be an oversight, as the Fact Sheet erroneously states that the current monthly average effluent limitation for settleable solids is 1.5 ml/L/hr (monthly average implied from context).[161] If it is not corrected, then it would provide yet another example of impermissible anti-backsliding – apart from the larger issue of backsliding from enforceable effluent limitations to virtually-unenforceable benchmarks.

D. Reducing the Stormwater Monitoring Frequency from Quarterly to Semi-Annually Renders the Draft Permit Less Stringent than the Current Permit.

The current permit requires Ameren to monitor each of the stormwater outfalls once per quarter, specifically during the months of February, May, August, and November. The Draft Permit, however, would reduce monitoring frequency to just twice per year, once between January and June and once between July and December. This reduction in monitoring frequency means that fewer samples will be collected, and Ameren will have greater discretion over when to collect samples. As a result, it is less likely that a benchmark exceedance will be detected.

This reduction in monitoring frequency renders the Draft Permit less stringent than the current permit, in violation of the anti-backsliding prohibition. Additionally, this reduction contravenes EPA guidance on performance-based reductions in monitoring frequency.[162] This guidance has since been incorporated into the EPA's Permit Writers' Manual.[163] The EPA guidance describes various factors permit writers may consider when determining a facility's eligibility for reduced monitoring requirements. According to this guidance, a facility must have a good history of compliance to receive reductions in monitoring frequency.[164] Among other things, facilities

[161] MDNR Fact Sheet, Part V: Effluent Limits Determination, Outfalls #003-#006 – Derivation and Discussion of Limits, Outfalls #003-006, Effluent Limitations Table.
[162] EPA, *Interim Guidance on Performance-Based Reductions of NPDES Permit Monitoring Frequencies* (1996), *available at* http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/Interim-Guidance-for-Performance-Based-Reductions-of-NPDES-Permit-Monitoring-Frequencies.pdf.
[163] EPA, *NPDES Permit Writers' Manual*, Chapter 8 (2010), *available at* http://water.epa.gov/polwaste/npdes/basics/upload/pwm_chapt_08.pdf.
[164] EPA, *Interim Guidance on Performance-Based Reductions of NPDES Permit Monitoring Frequencies* (1996).

should be able to demonstrate that they are able to "consistently reduce pollutants in their discharge below the levels necessary to meet existing permit requirements."[165]

Although certain performance-based reductions in monitoring frequency are permissible, this guidance "does not advocate any reductions for parameters that are currently monitored only once/quarter."[166] Furthermore, facilities generally should not "be considered for reductions in monitoring frequencies below once per quarter, except in unusual circumstances of reliable performance at the requisite levels and *outstanding* compliance/enforcement histories."[167]

Ameren has not demonstrated the "outstanding compliance/enforcement histor[y]" necessary to support a request to relax monitoring frequency. Multiple MDNR annual inspection reports found "numerous" exceedances of the effluent limitations at the stormwater outfalls for settleable solids.[168] In January 1999, MDNR staff recommended initiating a formal enforcement action due to the Labadie plant's repeated exceedances at the stormwater outfalls.[169] Ultimately, MDNR did not take enforcement action, opting instead to work with Ameren to weaken the permit's stormwater requirements.[170]

In August 1999, MDNR prepared a draft renewal permit that "waived" stormwater monitoring requirements and removed the effluent limitations for the stormwater outfalls.[171] Although the 1999 draft permit was never finalized and the 1994 permit was never modified, both Ameren and MDNR began operating under the modified stormwater provisions contained in the 1999 draft permit. Numerous MDNR annual inspection reports after the publication of the 1999 draft permit state, "Per Special Condition #18 of the facility's *draft* operating permit, monitoring for storm water discharges from Outfalls 003, 004, 005, 006, & 007 are waived for the permit cycle."[172] MDNR did not remove this language from its inspection reports until 2013, allowing Ameren to ignore the stormwater monitoring requirements under the current permit for at least 14 years.

In sum, MDNR's willingness to excuse Ameren's history of stormwater violations by eliminating requirements and relaxing those requirements that remain is unlawful and inappropriate. MDNR should revise the Draft Permit to maintain, and not weaken, the stormwater requirements in the current permit.

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[165] *Id.*
[166] *Id.*
[167] *Id.* (emphasis added).
[168] *See*, Inspection Reports for the Labadie Power Plant dated June 11, 1996; April 17, 1997; May 6, 1998; April 8, 1999; June 29, 2000; and May 17, 2001.
[169] Letter from Robert Eck, Regional Director, MDNR St. Louis Regional Office, to Edwin D. Knight, MDNR Water Pollution Control Program (January 28, 1999).
[170] Letter from Paul Dickerson, Unit Chief, Compliance & Enforcement Section, Water Protection Program, MDNR to Elena M. Seon, Environmental Specialist, Compliance & Enforcement Section, Water Protection Program, MDNR (October 20, 2008).
[171] 1999 Draft NPDES Permit at 10.
[172] *See*, Inspection Reports for the Labadie Power Plant dated February 6, 2006; May 7, 2008; February 18, 2009; December 3, 2009; and December 29, 2009. MDNR did not remove this language from its Inspection Reports until 2013.

Conclusion

On behalf of the Sierra Club, we appreciate MDNR's decision to hold a public hearing on this matter and the opportunity to submit these written comments. We request that MDNR make the changes identified above to the Draft Permit before issuing the final permit. We also request that MDNR issue the final permit promptly, in light of the fact that Labadie continues to operate under an NPDES permit that was issued in 1994 and has been expired since 1999.

Sincerely yours,

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