

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF OKLAHOMA

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STATE OF OKLAHOMA, <i>et al.</i> ,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	Case No. 05-cv-329-GKF-SH
	)	
TYSON FOODS, INC., <i>et al.</i> ,	)	
	)	
Defendants.	)	

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**DEFENDANTS' BRIEF IN OPPOSITION TO  
THE STATE'S PROPOSED FINAL JUDGMENT**

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## INTRODUCTION<sup>1</sup>

After failing repeatedly at either trial to present substantial evidence supporting an appropriate and permissible remedy, the Attorney General now asks this Court to impose a vastly overbroad, mandatory injunction; to assess more than \$100 million in standardless civil penalties; and otherwise to outsource the remedial phase of this litigation, along with a blank check, to a private special master. Each and every element of General Drummond's<sup>2</sup> proposal lacks a legal or evidentiary basis, and it should be rejected *in toto*.

General Drummond's proposed remedy would run roughshod over Oklahoma law and public policy. Oklahoma's legislature and governor have determined that the environmental and economic considerations of poultry litter are best balanced via a comprehensive-permitting regime administered by the State's technical experts. General Drummond's proposed judgment would displace that regime, replacing it with a special master unbounded by any legal, policy, or financial mandate.

General Drummond holds himself out as a friend to industry and a careful steward of the environment. Doc. 3163 at 1. In truth, he is neither.<sup>3</sup> He proposes crushing liability for an industry thousands of Oklahomans rely on for their livelihoods, yet seeks remedies that have not been proven to protect the environment. General Drummond's proposal is most notable for what it elides—

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<sup>1</sup> Defendants continue to object to the Court's determination of liability and all findings of fact and conclusions of law necessary to that determination. For purposes of this filing, Defendants accept the Court's findings and conclusions but in proposing potential remedies Defendants make no admissions and waive no claims or objections. Defendants preserve all such claims and objections and all bases for appeal.

<sup>2</sup> Attorney General Drummond has informed Defendants that Secretary of the Environment Starling has asked to be removed as a plaintiff in this matter. *See* Ex. 3, Email from Jennifer L. Lewis to Defendants' Counsel (July 7, 2025). Defendants consented to that removal weeks ago but Secretary Starling remains in the case. It is therefore unclear to Defendants the extent to which the proposed judgment reflects just General Drummond's preferences, or also reflects the considered judgment of the chief environmental regulator for the State of Oklahoma. Defendants respectfully urge the Court to also hear from Secretary Starling, particularly with respect to the imposition of penalties under state environmental laws.

<sup>3</sup> *See* Curtis Killman, *Case Against State Attorney General Candidate Dismissed After Settlement Over Killing of Trees on Federal Land*, Tulsa World (Dec. 17, 2021), [tinyurl.com/498es7t3](https://www.tulsa.com/story/news/politics/2021/12/17/case-against-state-attorney-general-candidate-dismissed-after-settlement-over-killing-of-trees-on-federal-land/).

responsibility for imposing any specific prospective remedy, which it punts to a special master; and responsibility for transferring tens of millions of public funds to out-of-state plaintiffs' lawyers, which his proposed judgment would necessarily do.

Ultimately, however, any remedy must be cabined by the law and evidence actually presented in the case, and must balance the harms of an injunction and reflect the public interest. Focusing on those bases, the Court should enter a take-nothing judgment or, at most, enter a judgment consistent with the laws and policies of the States of Oklahoma and Arkansas, that does not trammel Defendants' legitimate business operations, and that respects the rights of the many impacted third parties not before the Court.

## BACKGROUND

Remedy evidence in this matter is scant. At trial in 2009, the State presented a single remedies witness, Mr. Todd King, who offered only a "preliminary" study of the remedial "options." Trial Tr. 7990:18–7991:7.<sup>4</sup> Mr. King excused his noncommittal testimony on the basis that he had been given neither enough time nor information to offer conclusive opinions. *See Id.* at 8022:12–8023:15. The Court admonished Mr. King that, "this being a lawsuit, the decision has to be made" based on evidence submitted at trial. *Id.* at 8012:9–10. Yet trial came and went without Mr. King or any other witness offering a firm opinion as to the appropriate remedy in light of its efficacy, costs and benefits, and burdens imposed on the defendants and people of Oklahoma and Arkansas. Based on that shortcoming, Defendants moved for judgment under Rule 50(c), but the Court ruled that the issue was not properly part of a Rule 50(c) motion and could be addressed later. *Id.* at 8475:7–21.

Fifteen years later, that evidentiary gap remains. To be sure, the Court initially required that this past December's trial would include presentation of evidence on "the specific terms of the

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<sup>4</sup> In this brief, "Trial Tr." refers to transcripts from the trial in 2009–10, while "Hr'g Tr." refers to transcripts from the December 2024 evidentiary hearing.

injunctive relief . . . upon which plaintiffs bear the burden of proof.” Doc. 3040, Hr’g Tr. 5:9–22 (Sep. 13, 2024). In late November, however, the Court announced that the December hearing “shall not address remedies.” Doc. 3098, Status Conf. Tr. 4:4–5 (Nov. 26, 2024). As the Court explained, “wrestl[ing] with the issue of remedies would be premature,”<sup>5</sup> and in any event the “plaintiff had adequate opportunity to address its requested remedies at trial.” *Id.* at 4:9–12. At the December hearing the Court excluded evidence addressing remedies, *e.g.*, Hr’g Tr. 66:17–25, 69:12–15, 610:3–25, and also rejected the State of Arkansas’ attempt to address the impacts of anticipated remedial orders. Doc. 3159. In view of the Court’s rulings, Defendants have had no opportunity to tender their remedies evidence. *See* Ex. 5, Expert Report of T. McDonnell & T. Sullivan, at 2.

The Court has now elected to forego any evidence regarding remedies, and the Attorney General apparently agrees. Doc. 3162. Instead, General Drummond has submitted a proposed judgment that seeks: (1) a prohibitory injunction providing that “the Poultry Waste generated by the Defendants’ Birds shall not be applied in the IRW, or in any other Nutrient-Sensitive Watershed, on land having an STP of 65 lbs./acre or greater”; (2) a mandatory remediation injunction, accompanied by the 30-year appointment of a special master to investigate, recommend, and enforce remediation efforts; and (3) over \$100 million in civil penalties. Doc. 3163-1 (“Proposed Final J.”). General Drummond did not offer any evidence to justify his proposal, and the record is now closed.

## ARGUMENT

### I. The Remedies Oklahoma Requests Are Unlawful and Unwarranted.

For reasons already briefed at great length, Defendants maintain that the record does not support a finding of liability. But even accepting *arguendo* the Court’s findings and conclusions, the record still lacks evidence to support the imposition of any remedies. And even if some remedy were

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<sup>5</sup> General Drummond concurred. *See* Ex. 4, Oct. 4, 2024 Letter to John H. Tucker at 2 (“[A]ddressing the details of remedies is a subject for a later date—not the focus of the evidentiary hearing.”).

theoretically warranted, the Court should reject General Drummond's judgment. The proposed injunction is overly broad, miscalculates the balances of equities, and would harm the public interest. General Drummond has not proven any entitlement to extensive remediation, and the proposed special master would violate both Article III and the rules of civil procedure. Finally, the Court should not award any civil penalties at all, let alone penalties based on General Drummond's excessive calculation.

**A. Enjoining land application of poultry litter on fields exceeding 65 lbs./acre STP is not warranted.**

The Court should rebuff General Drummond's blanket request to enjoin land application of poultry litter on all fields exceeding 65 lbs./acre STP. To be entitled to a permanent injunction, plaintiffs must show: "(1) actual success on the merits; (2) irreparable harm unless the injunction is issued; (3) the threatened injury outweighs the harm that the injunction may cause the opposing party; and (4) the injunction, if issued, will not adversely affect the public interest." *Prairie Band Potawatomi Nation v. Wagnon*, 476 F.3d 818, 822 (10th Cir. 2007) (cleaned up). General Drummond has not made this showing.

He has failed to show irreparable harm for three reasons: (1) the record lacks any current evidence showing a causal link between litter applications and phosphorous levels in the IRW; (2) the State of Oklahoma has an alternative remedy through its existing permitting authority; and (3) in any event, his proposal wrongly equates STP levels with pollution of the waters of the IRW, and is thereby overbroad. General Drummond also gets the balance of equities all wrong, providing minimal relief while severely burdening economically critical operations. And his proposal takes no account of the public interest, running roughshod over state-mandated permitting procedures and the interests of numerous parties not before the Court.

**1. General Drummond has not proven irreparable harm.**

**a. The record lacks current causation evidence.**

Prospective injunctive relief requires current evidence. *Horne v. Flores*, 557 U.S. 433, 447–48 (2009); *Agostini v. Felton*, 521 U.S. 203, 215 (1997); *United States v. Or. State Med. Soc’y*, 343 U.S. 326, 333 (1952). In a case like this, the requirement for current evidence includes reliable fate and transport evidence connecting the conduct to be prospectively enjoined to the alleged injury. *See Att’y Gen. of Okla. v. Tyson Foods, Inc.*, 565 F.3d 769, 778 (10th Cir. 2009).<sup>6</sup> The record lacks any such evidence.

Causation evidence from 15–20 years ago is neither current nor reliable. Hr’g Tr. 1169:23–1171:17. Nor is the evidence presented at the December 2024 trial, particularly as to causation, sufficient to justify any prospective relief. The Court properly excluded the opinions of the State’s only causation witness, Kate Mendoza, as scientifically unreliable. Doc. 3095 (Dec. 1, 2024 Order Excluding Kate Mendoza Opinions). No other witness presented any evidence connecting current water quality conditions in the IRW today to the farms raising birds today in the IRW, much less to land where litter is actually being applied today. *See, e.g.*, Hr’g Tr. 615:8–616:15 (Scott); *id.* at 1169:23–1171:17 (McDonnell).<sup>7</sup>

The causation evidence is particularly lacking when evaluated for each individual defendant. Consider, for example, the George’s Defendants. The only witness to address recent litter application

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<sup>6</sup> The requirement of proof of “fate and transport” is simply the concept of specific causation applied in the context of a watershed. “[S]pecific causation’ is not established if an expert offers an opinion that an injury ‘could have’ resulted from a particular cause—the expert must provide testimony that it actually *did* result from that cause.” *Bristow First Assembly of God v. BP p.l.c.*, No. 15-CV-523-GKF-CDL, 2022 WL 1811200, at \*4 (N.D. Okla. Apr. 13, 2022) (Frizzell, J.) (quoting *Hall v. Conoco*, 886 F.3d 1308, 1317 (10th Cir. 2018)).

<sup>7</sup> Although the Court’s June 2025 Opinion includes findings about the number of poultry houses in the IRW still raising birds for the Defendants in 2023 and the volume of poultry litter *generated* within the IRW during that same year (*see* 2023 FOF ¶¶ 22–24), that evidence does not prove a link between recent or ongoing poultry litter *applications* in the IRW and water quality impacts. General Drummond’s own witnesses concede this point. Hr’g Tr. 488–90 (S. Phillips) (admitting that phosphorus concentrations in streams cannot be predicted merely by proximity to or density of poultry houses and that “there would be other factors you’d have to consider.”).

in the IRW was ODAFF employee Lynette Jordan. Her testimony included a presentation of data through 2023 from a “[Poultry Feeding Operations] access database” or “litter spreadsheet,” which purported to show the disposition of poultry litter generated on IRW poultry farms. Hr’g Tr. 674:10–675:1; 698–714; *see also* Hr’g Ex. OKLA\_PX\_230 (database exhibit). That dataset fails to identify any instance in which a grower contracted with George’s land applied litter in the IRW in recent years. In fact, PX230 does not mention George’s or even the sole grower specifically identified by the Court as still actively raising poultry for George’s in the Oklahoma portion of the IRW. *See* Doc. 3161, n.7 (discussing “Pugh Farms”). The uncontroverted evidence shows that Pugh Farms has been consistently exporting its litter to Kansas. *See* Hr’g Ex. OKLA\_PX\_0104 at 00008, 00012, 00014, & 00028. General Drummond failed to present causation evidence tying any farm location where George’s birds are being raised today, or have been raised in the past, to ongoing injuries to the waters of the IRW.

A similar evidentiary gap exists for each and every defendant.<sup>8</sup> That failure of proof alone mandates denial of General Drummond’s request for any prospective injunction as to future litter applications by growers under contract with any Defendant.

**b. The State has an adequate, alternative remedy.**

An injunction should also not issue if the moving party has an adequate alternative remedy. *See, e.g., Deborah G. Mallow IRA SEP Inv. Plan v. McClendon*, No. CIV-12-436-M, 2012 WL 2036748, at

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<sup>8</sup> As another example, General Drummond has not presented evidence supporting specific causation and failed to acknowledge the complexity of field-specific agronomic needs reflected in Nutrient Management Plans. General Drummond introduced a 2023 Nutrient Management Plan for former Cargill-contracted growers Keith and Jerri Mitchell, but that document indicates that all fields in their operation had “Low” Soil Test Phosphorus Index Levels, indicating an agronomic need for additional phosphorus. DJX-0228, at 8. Even General Drummond does not dispute that, when soil phosphorus is low, poultry litter can be applied to meet crop needs without posing a risk of any phosphorus runoff. *Id.* at 11–12. General Drummond has similarly failed to introduce any evidence indicating how excess phosphorus would have entered the waters of the IRW from the specific fields of growers under contract with specific Defendants. This illustrates that, in the absence of evidence tracing phosphorus from applied litter to the waters of the IRW—especially where agronomic need exists—the evidence provided by the State does not establish causation between land-applied poultry litter and heightened phosphorus levels in the IRW.

\*3 (W.D. Okla. Jun. 6, 2012). Oklahoma already has broad authority to issue, modify, and enforce litter application permits. The proposed injunction is therefore unnecessary.

The Attorney General here asks the Court for authority Oklahoma already has. Indeed, the State can and already has adopted a more comprehensive remedy than General Drummond proposes; the State could adopt new regulations governing all poultry litter application anywhere in the state. The problem is not a lack of authority, but the fact that the State's executive and regulatory agencies disagree with General Drummond's claims and proposed relief. In the 20 years of this litigation, neither ODAFF nor ODEQ has chosen to impose any of the restrictions that General Drummond now asks this Court to impose.

General Drummond's inability to impose these restrictions himself does not alter the fact that his client can. "Adequate remedy at law means a remedy vested in the complainant, to which he may at all times resort at his own option, fully and freely, without let or hindrance." *Com. State Bank of Roseville v. Gidney*, 174 F. Supp. 770, 779–80 (D.D.C 1959), *aff'd*, 278 F.2d 871 (D.C. Cir. 1960) (cleaned up). Here, Oklahoma could at any time implement the demanded remedy but has chosen not to. General Drummond cannot use his own client's unwillingness to act to justify judicial relief that would override his own client's decisions and usurp his own client's power.

**c. General Drummond's proposed injunction goes far further than necessary to redress the injury.**

"Injunctive relief should be no more burdensome to the defendant than necessary to provide complete relief to the plaintiffs." *Madsen v. Women's Health Ctr., Inc.*, 512 U.S. 753, 765 (1994) (citation omitted). An injunction thus must be "tailor[ed]" to prevent the "specific violations" proven. *Dayton Bd. of Ed. v. Brinkman*, 433 U.S. 406, 417 (1977). In other words, courts cannot "enjoin conduct that has not been found to violate any law," *Skydive Ariz., Inc. v. Quattrocchi*, 673 F.3d 1105, 1116 (9th Cir. 2012), or that "bear[s] no relationship to [plaintiff's] injuries," *Street v. City of Harrisonville*, No. 18-00477, 2018 WL 4088083, at \*4 (W.D. Mo. Aug. 27, 2018).

The only harm recognized in this case is “injury to the waters of the IRW.” Doc. 2979, 2023 Conclusion of Law (“COL”) ¶ 93; Doc. 3161, 2024 COL ¶ 63. To redress this harm, General Drummond proposes barring application of poultry waste on any “land having an STP of 65 lbs./acre or greater.” Proposed Final J. ¶ 4(b). But not all such land contributes to pollution of the IRW’s waters, nor has any specific field been shown to contribute. As General Drummond’s own witness agreed, “one can’t simply look at STP records and say . . . this field has high STP, and therefore, this field is likely contributing [phosphorous] to that . . . river or lake over there.” Hr’g Tr. 643:18–23 (Scott). In fact, the State’s runoff expert testified that a majority of the pollution comes from a small portion of the land. *Id.* at 643:12–17 (“most” phosphorous in the waters of the IRW “comes from a fairly small number of places”), 654:3–7 (same). Oklahoma policymakers agree, which is why they directed the State Board of Agriculture to account for “site conditions” when determining appropriate “land-application rates of poultry waste.” Okla. Stat. tit. 2, § 10-9.7.

General Drummond’s proposed injunction ignores his own expert’s testimony that, whatever a field’s STP measurement, there must be “hydrologic connectivity from field to stream for [phosphorous] to move from that field to that stream.” Hr’g Tr. 640:7–642:24 (Scott). Yet no witness for the State at any point “undert[ook] to trace phosphorous from any land application of poultry litter that may be associated with any poultry-grower associated with any of these defendants . . . through the Illinois River watershed.” *Id.* at 615:8–616:15.

It is no answer that this Court has found that “run off from land-applied poultry waste . . . caus[es] injuries to the waters of the IRW.” 2023 Finding of Fact (“FOF”) ¶ 543; 2024 FOF ¶ 60. Even accepting for liability purposes that some runoff from *some* fields caused *some* harm to *some* waters of the state (general causation), that is insufficient to support an injunction against *all* application on *all* fields owned by *all* farmers under contract with any Defendant (specific causation). Such an injunction improperly would enjoin conduct that has not been proven to contribute to the claimed harm.

*See Brinkman*, 433 U.S. at 417. Having failed to prove that land application of poultry waste on any field—must less every field—with an STP exceeding 65 lbs./acre contributes to contamination of the waters of the IRW, General Drummond cannot now obtain an injunction prohibiting all such conduct.

Lastly, the proposal to enjoin conduct in “any other Nutrient-Sensitive Watershed” lacks any support in the record. Proposed Final J. ¶ 4(b). The record before the Court concerns “injury to the waters of the IRW” only. 2023 COL ¶ 93; 2024 COL ¶ 63. The record contains no evidence regarding other watersheds, let alone Defendants’ operations or alleged injuries in such watersheds. The Court again should resist the invitation to “enjoin conduct that has not been found to violate any law.” *United Tactical Sys., LLC v. Real Action Paintball, Inc.*, No. 14-cv-04050, 2014 WL 6788310, at \*24 (N.D. Cal. Dec. 2, 2014).

## **2. The balance of the equities favors defendants.**

To secure permanent injunctive relief, General Drummond must prove “that, considering the balance of hardships between the plaintiff and defendant[s], a remedy in equity is warranted.” *eBay v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). “[T]he threatened injury [must] outweigh [ ] the harm that the injunction may cause the opposing party” in order to warrant issuing an injunction. *Prairie Band*, 476 F.3d at 822 (citation omitted). He has not carried his burden.

**a.** General Drummond’s proposed injunction is unlikely to prevent the relevant injury as it ignores the many other sources that contribute phosphorous to the waters of the IRW. *Michigan v. U.S. Army Corps of Eng’rs*, 667 F.3d 765, 789–92 (7th Cir. 2011) (injunction properly denied where evidence failed to show relief would significantly reduce harm at issue). These include cattle ranching, urbanization, and many other point and non-point sources.<sup>9</sup> *See* 2023 FOF ¶¶ 570–71, 563, 566, 573–

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<sup>9</sup> It is no answer to claim all of these activities release “legacy phosphorous” originally sourced from poultry litter, as the record contains no evidence quantifying or sourcing “legacy phosphorous” in the IRW, tracing it back to poultry litter application, or tracking its contributions to harm to the waters of the IRW.

78, 581–84.

Nor does the proposed injunction even address all poultry farming. Rather, it would omit the many poultry operations in the IRW that were not parties to this suit. The excluded operations would be free to continue applying poultry litter unabated by Court order and subject only to their State-approved nutrient management plans. No one should be surprised if these businesses enjoy substantial growth from the competitive windfall of an injunction against Defendants only. Growers may well elect to move to non-Defendant producers to avoid judicial constraints on how they can use their poultry litter on their land, further reducing the impact of injunctive relief on water quality. This likely outcome further illustrates the flawed basis of the requested relief.

b. As noted, Defendants have had no opportunity to offer evidence as to the balance of harms relating to the proposed injunction, but such evidence as there is suggests the burdens placed on Defendants will be immense. Limiting application of poultry litter to fields measuring below 65 STP is tantamount to ordering thousands of tons of poultry litter to be trucked out of the IRW each year. The proposed relief will also burden growers. General Drummond concedes as much in proposing that defendants “hold their Contract Growers harmless” for the losses associated with his proposed injunction and fully fund all litter storage and removal operations, Proposed Final J. ¶ 4(h)–(i)—a naked attempt to manufacture compensation for what would otherwise be an illegal taking, and to insulate the Attorney General from reaping the consequences of his proposal at the ballot box. But this provides no mechanism for evaluating costs, determining which are compensable, or deciding which Defendant or Defendants must contribute.<sup>10</sup> The 65-STP rule may hamper Defendants’ ability

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<sup>10</sup> For example, if a grower uses synthetic fertilizer in lieu of poultry litter, is the cost of buying the synthetic fertilizer a loss? Does it net against the revenue from selling poultry litter? What if the farmer could sell the poultry litter but instead chooses to buy a truck and haul it to his own land outside the IRW—does he then get to claim the entire cost of the synthetic fertilizer as a loss? Do the Defendants have to pay for his new truck? What of the Defendants who will no longer operate in the IRW by the time relief is issued? Are they on the hook for indemnifying growers, too? General Drummond’s

to profitably conduct business in the IRW at all, to their detriment and to the detriment of their employees, agents, and those with whom they contract. The balance of equities favors Defendants.

**3. The State’s injunction would harm the public interest.**

The State’s proposed injunction is also inappropriate because it will “adversely affect the public interest.” *Prairie Band*, 476 F.3d at 822; *see also Beasley v. Tex. & P. Ry. Co.*, 191 U.S. 492, 498 (1903) (this consideration alone may justify “refus[ing]” an injunction). Here too, General Drummond has failed to present any evidence on the public impact of his proposal. What we know from the existing record, though, is that accepting General Drummond’s proposed 65-STP rule would ignore the interests of the many stakeholders not before this Court and end run the State’s regulatory process.

a. Granting General Drummond’s requested injunction would amount to a de facto modification of hundreds of poultry growers’ Nutrient Management Plans (“NMPs”)—replacing the existing STP limit with 65 lbs./acre—without regard to any site-specific characteristics and without the process mandated by Oklahoma law. If the State of Oklahoma wanted to achieve this result, it could do so by legislation or regulation or by revising individual field-specific plans as they come up for renewal under Oklahoma’s recently revised environmental standards.<sup>11</sup> *See* Okla. Stat. tit. 2, § 10-9.7.

Either way, the process would be a public one; interested stakeholders would be on notice and have a chance to share their view with decisionmakers. *See* Okla. Stat. tit. 75, § 303 (requiring public notice and opportunity for comment for “adoption,” “amendment,” or “revocation” of a regulation). Those procedures matter. At the state level no less than the federal, the opportunity for public comment “gives affected parties fair warning of potential changes in the law and an opportunity to be

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proposed “hold harmless” provision is so flimsy and unworkable that it seems designed only to allow General Drummond to blame the Court for any complaints from any constituents about remedies imposed by this Court.

<sup>11</sup> Ironically, the simplest and fairest way to achieve General Drummond’s stated goals in this case would be to enjoin the State of Oklahoma from approving NMPs allowing poultry litter to be spread on any property in the IRW with an STP above 65 lbs./acre. But the State of Oklahoma has already determined that such a restriction does not properly balance the many competing interests involved.

heard on those changes—and it affords the [decisionmaker] a chance to avoid errors and make a more informed decision.” *Azar v. Allina Health Servs.*, 587 U.S. 566, 582 (2019).

By inviting this Court to impose a 65-STP limit, General Drummond hopes to amend the law without any opportunity for public comment, and in the process to “avoid the political accountability that would attend [his] own policy reversal.” *Guedes v. ATF*, 920 F.3d 1, 23 (D.C. Cir. 2019). “Few public interests have a higher claim upon the discretion of a federal chancellor than the avoidance of needless friction with state policies,” *R.R. Comm’n of Tex. v. Pullman Co.*, 312 U.S. 496, 500 (1941), so the Court should reject General Drummond’s request on this basis alone.

**b.** General Drummond’s proposed end run would impact not only Defendants but also thousands of businesses and individuals not before the Court. Most notable of these is the State of Arkansas. As this Court has recognized with respect to other interested sovereigns, Arkansas has an “interest, as a sovereign, in governing and regulating resources within its jurisdiction,” including the waters and lands surrounding the IRW. *Oklahoma v. Tyson Foods, Inc.*, 258 F.R.D. 472, 481 (N.D. Okla. 2009).

[Arkansas] has enacted several legislative acts for land use over the past 25 years that balances agricultural and environmental considerations. These laws require site specific nutrient management plans written by technical experts that provide detailed instructions on locations, amounts, and timing of poultry litter applications.

Doc. 3053 (letter from Arkansas Secretary of Agriculture). General Drummond would have this Court replace those laws with a blanket 65-STP mandate, and in the process “impair and impede” Arkansas’s sovereign judgment about the appropriate way to regulate poultry litter application on land within its borders. *Tyson Foods*, 258 F.R.D at 481.

The same is true as to many non-sovereigns not before the Court yet who will nonetheless be impacted by any judgment imposed. Poultry farmers or growers—including those who contract with Defendants here and the other growers, cattlemen, and hay farmers not included in Oklahoma’s suit—as well as litter brokers or haulers—all have a vested stake in the outcome of this litigation. Hr’g Tr. 1160:14–21, 1202:7–1203:2 (McDonnell) (growers have developed economically beneficial

practices to transfer or store litter); *id.* at 1004:19–1005:8 (Fisk) (discussing cost sharing programs for poultry growers premised on investment in stacking sheds and new facilities); *id.* at 1168:12–23 (McDonnell) (OSU Extension advertises 19 different entities that provide litter export services); *id.* at 1037:14–24 (Fisk) (selling litter may be profitable); DJX2-0040, 0212, 0212-B, 0213, 0214, & 0215 (indicating that 73% of litter produced in Oklahoma today passes through the export market and is applied outside of the IRW).

These actors have made investments and entered into contracts premised on existing poultry-litter regulations—not General Drummond’s proposed scheme. *See Hisp. Affs. Project v. Perez*, 141 F. Supp. 3d 60, 74 (D.D.C. 2015) (substantial harms to absent third parties weighs against injunctive relief). Impairing those contracts and destabilizing the livelihoods of countless individuals is not in the public interest. But it is precisely what the Attorney General asks this Court to do.

Ironically, in a suit alleging trespass, General Drummond asks the Court effectively to facilitate trespass onto private property, and the seizure of private property. *See Free the Nipple-Fort Collins v. City of Fort Collins*, 916 F.3d 792, 807 (10th Cir. 2019) (“It’s always in the public interest to prevent the violation of a party’s constitutional rights.” (cleaned up)); *Texas v. DHS*, 123 F.4th 186, 213 (5th Cir. 2024) (“[T]he public interest supports clear protections for property rights from government intrusion and control.”). Poultry farmers, cattle ranchers, and other private landowners, not Defendants, own the land on which poultry houses are located, cattle are grazed, and poultry litter may be applied. Yet the Attorney General asks the Court to permit a special master and his team to enter private property to take soil samples and conduct other monitoring activities. So too, by ordering Defendants to “take control” of poultry litter produced by their birds, Proposed Final J. ¶ 4(f), the Attorney General proposes a “physical appropriation” of the growers’ personal property, a *per se* taking if done directly.

*Horne v. Dep't of Agric.*, 576 U.S. 350, 361 (2015).<sup>12</sup> Nor does the proposed injunction afford third parties any opportunity to be heard. *Cf. Nat'l Wildlife Fed'n v. Burford*, 835 F.2d 305, 315–16 (D.C. Cir. 1987). The proposed injunction's impacts on third parties strongly weigh against approval.

**4. Any injunction would improperly punish Defendants for conduct invited and allowed by the State of Oklahoma.**

In all events, Defendants should not be enjoined because Oklahoma has unclean hands. “Where, as here, the plaintiff has sovereign powers, and deliberately permits discharges similar to those of which it complains, it not only offers a standard to which the defendant has the right to appeal, but . . . it warrants the defendant in demanding the strictest proof that the plaintiff's own conduct does not produce the result, or at least so conduce to it, that courts should not be curious to apportion the blame.” *Missouri v. Illinois*, 200 U.S. 496, 522 (1906). Defendants so demand here, and this Court must deny any equitable relief on that basis.

It is undisputed that Oklahoma and Arkansas recognize that land application of poultry litter is “beneficial” and expressly authorize it. Okla. Admin. Code § 35:17-5-1; *see also* 138-00-021 Ark. Code R. § 2201.1 (same). Both also regulate litter application practices to capture benefits while minimizing harms. *See* Doc. 2979 at 4–6, 24–25; Okla. Stat. tit. 2, §§ 10-9.1(B)(1), 10-9.7(B)–(C)(5), 10-9.19a(1) (2010); Okla. Admin. Code § 35:17-5-2 (2010). Defendants and growers have tailored their conduct to these regulations. Indeed, this Court expressly recognized that “the defendants themselves comply with state and federal regulations—including litter application rates and instructions set forth in Animal Waste Management Plans (“AWMPs”) or NMPs—on company-owned or operated farms.” 2023 FOF ¶ 95.

Nevertheless, General Drummond proposes an injunction that would have this Court reach

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<sup>12</sup> The Attorney General's suggestion to order construction of “buffer strips,” “bank stabilization,” and “constructed wetlands,” Proposed Final J. ¶ 2(d), would likewise amount to a *per se* taking. *See Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 430 (1982) (“permanent physical occupation” of real property is *per se* taking).

across state lines into the sovereign territory of Arkansas and prohibit conduct that his home state of Oklahoma still authorizes.<sup>13</sup> See 2023 FOF ¶¶ 71, 78. This unconscionably puts Defendants in a trap of the State’s own making. See *Purzel Video GmbH v. Smoak*, 11 F. Supp. 3d 1020, 1030 (D. Colo. 2014) (doctrine of unclean hands applies when the party seeking equitable relief is guilty of unconscionable conduct directly related to the matter at issue). That “closes the doors of a court of equity” to General Drummond, who is “tainted with inequitableness or bad faith relative to the matter in which he seeks relief, however improper may have been the behavior of the defendant[s].” *Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co.*, 324 U.S. 806, 814 (1945).

**B. General Drummond has failed to prove any basis for remediation.**

In addition to a prohibitory injunction, General Drummond also seeks a mandatory remedial injunction, which similarly lacks any evidentiary basis. At trial, when the Attorney General “had adequate opportunity to address its requested remedies,” Doc. 3098 at 4:11–12, he called a single witness, Mr. King, who offered nothing more than a “preliminary” menu of remedial “options.” Tr. 7990:18–7991:7. Mr. King admitted offering nothing more, explaining that the Attorney General’s office had not provided the time or information necessary for a proper analysis. See *id.* at 8022:12–8023:15; Fed. R. Civ. P. 16(b)(4), 34. At the end of the 2010 trial, the State’s remedy evidence remained a menu of “remedial options” to “be investigated.” 2023 FOF ¶ 594.

General Drummond has shunned any opportunity to fill that gap. He opposed efforts to include remedies evidence in the December trial, *supra* at 3, and opposed Defendants’ attempts to make a remedies record, Hr’g Tr. 66:17–25, 1234:21–1235:3, 1236:22–23. And, despite his earlier view that remedies would be addressed at “a later date,” General Drummond has now proposed sweeping injunctive relief without a scintilla of additional evidence to supplement the existing stale and inadequate

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<sup>13</sup> In fact, Oklahoma has continued to issue AWMPs throughout this lawsuit, and it candidly acknowledged that its suit “reflects a disagreement with current State law and regulations.” 2023 FOF ¶ 86.

record.

The inadequacies in the current record are evident in General Drummond’s attempt to argue around the balance-of-harms and public interest elements. *See* Doc. 3163 at 7–8. He baldly asserts that “the Defendants will not be greatly harmed by an injunction,” *id.* at 7, but cannot be more specific because he cannot say what that injunction would be. Likewise, General Drummond vaguely asserts that reducing the phosphorus levels in the IRW and improving water quality would not “adversely affect the public interest,” *id.* at 8—but how can anyone know that without knowing what methods will accomplish these ends? The Attorney General’s own expert Todd King “expect[ed] there to be significant [public] concerns with many of th[e] remedial alternatives” he proposed. Trial Tr. 8114:18–8117:7. And because General Drummond has refused to propose any specific remediation order or offer any evidence in support of such relief, the Defendants have had no opportunity to challenge the assertions concerning the balance of harms or the public interest, or to present their own evidence. Defendants previously moved for judgment under Rule 50(c) in 2009, but the Court ruled that the issue was not properly part of a Rule 50(c) motion and could be addressed later. Trial Tr. 8475:7–13. The issue is once again before the Court, and the same evidentiary gap precludes the State’s requested relief.

Fault for the evidentiary shortfall lies at General Drummond’s feet. It is his burden, after all, to prove not only Defendants’ liability but also his entitlement to an injunction, *Tyson Foods*, 565 F.3d at 776, a burden that is even “greater” here since “the requested injunction is ‘mandatory’ rather than ‘prohibitory,’” *Trial Lawyers Coll. v. Gerry Spence Trial Lawyers Coll. at Thunderhead Ranch*, 23 F.4th 1262, 1274 (10th Cir. 2022). As explained below, General Drummond cannot pass off that responsibility to a special master; he must make his case in court. Nor can he meet his burden by simply refusing to state what the proposed injunction will be; the Court cannot evaluate the balance of equities or public interest of granting an injunction if the party seeking the injunction does not state its terms. *See*

*Michigan*, 667 F.3d at 789 (“In light of the multifarious ideas the states have for an injunction in this case, there can be no doubt that caution must be our word of the day.”).<sup>14</sup>

To be clear, had General Drummond attempted to make his remedial case, Defendants were fully prepared to meet his submission with expert testimony that the “preliminary” remedial “options” proposed by Mr. King are untenable. *See* Ex. 5 (McDonnell & Sullivan report). But he did not do so, and now the record is closed. Having failed to present any evidence on the appropriate remedial steps, the Court should deny General Drummond’s request for remediation of any sort.

**C. The Court should not refer the case to a special master.**

Cognizant of these evidentiary shortcomings, the Attorney General proposes to outsource fact finding and remedy-crafting to a special master.<sup>15</sup> This proposal, however, is contrary to law. Referral on General Drummond’s terms—with authority to effectively craft an injunction and determine compliance—would defy the Constitution’s requirement that only Article III judges wield judicial power. Deferring the terms of the remedial plan to a master also contravenes Rule 65’s requirement that any injunction specifically define the conduct to be restrained or required. The proposed referral would also not be justified under Rule 53, because it would unduly waste resources and time on matters that this Court is capable of handling itself.

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<sup>14</sup> General Drummond’s assessment of the public interest is not apparently shared by his co-plaintiff, Secretary Starling, *see supra* n.2; by Governor Stitt, Press Conference Remarks of Gov. Kevin Stitt at 10:46–14:15 (Apr. 23, 2025), [tinyurl.com/6jxcnmrs](https://tinyurl.com/6jxcnmrs); or by the elected lawmakers in Arkansas, *see, e.g.*, Ark. Act of Apr. 17, 2025, No. 820 (H.B. 1928) (no liability for actions consistent with NMPs); Doc. 3053, Oct. 25, 2024 Letter from Arkansas Secretary of Agriculture; Doc. 3159, Arkansas Attorney General’s Motion for Leave to File Amicus Brief.

<sup>15</sup> The Attorney General’s need to secure expensive remediation has little to do with the needs of Oklahomans and much to do with the needs of his private attorneys. Plaintiffs’ counsel are also entitled to take up to 33.33% of any cash award, and up to 33.33% of the cash value of any remedial relief entered (not to exceed 50% of the total cash payment). *See* Doc. 1085-4. Manufacturing expensive relief thus gives the Attorney General’s private lawyers a greater claim to take millions of dollars of public funds.

**1. Referral would violate Article III.**

Article III’s command is plain: If a suit is “within the bounds of federal jurisdiction, the responsibility for deciding that suit rests with Article III judges in Article III courts.” *Stern v. Marshall*, 564 U.S. 462, 484 (2011). No more may Congress “withdra[w] from judicial cognizance” matters entrusted to the Third Branch, *SEC v. Jarkesy*, 603 U.S. 109, 127 (2024), than a court can itself “refer the entire decision of a case” to someone else, *Kimberly v. Arms*, 129 U.S. 512, 524 (1889). A court, to be sure, may seek “aid . . . in the performance of specific judicial duties” from special masters and others, *Ex parte Peterson*, 253 U.S. 300, 312 (1920), but a special master cannot “displace the court,” *La Buy v. Howes Leather Co.*, 352 U.S. 249, 256 (1957). Rather, the court must “determine by its own judgment the controversy presented.” *Kimberly*, 129 U.S. at 524.

a. General Drummond’s proposed special master violates these legal limitations. To start, the proposed delegation of “broad power” to the special master “to determine the content of an injunction” poses “[s]erious constitutional” concerns—all the more so because the master would “effectively wield the court’s power of contempt” as well. *City of New York v. Mickalis Pawn Shop, LLC*, 645 F.3d 114, 145 (2d Cir. 2011); see *Field v. Holland*, 10 U.S. (6 Cranch) 8, 21 (1810) (Marshall, C.J.) (“agents and officers of the court” like auditors “do not decree”); *Untied States v. Microsoft Corp.*, 147 F.3d 935, 954 (D.C. Cir. 1998) (“The concern about nonconsensual references turns on the determination of rights . . .”). Under the Attorney General’s proposal, the master is not only to undertake an investigation, serve as fact finder, and develop a remedial plan—“without limitation” on what that would entail—but also “to implement and oversee th[e] judgment.” Proposed Final J. ¶¶ 2(d), 3(a)–(b). What’s more, the master is to “report” and “determine” compliance. *Id.* ¶¶ 3(f), 4(j). It is hard to think of a more central Article III power than the “extraordinary powe[r]” of the injunction. *Petroleum Exploration v. Pub. Serv. Comm’n of Ky.*, 304 U.S. 209, 222 (1938); see *Wilver v. Fisher*, 387 F.2d 66, 69 (10th Cir. 1967) (appointing master to supervise interrogatory answers “border[ed] on an abdication of

judicial function”). Here, the special master would determine the scope and enforceability of any injunction.

Even more troubling is General Drummond’s proposal to empower the special master to determine compliance with “all applicable laws, rules, and regulations.” *E.g.*, Proposed Final J. ¶ 3(f)(iii)–(v). Delegating the power to determine such compliance is tantamount to determining liability, and “[n]onconsensual reference of fundamental issues of liability to a master for adjudication is not consonant with . . . Article III.” *Stauble v. Warrob, Inc.*, 977 F.2d 690, 696 (1st Cir. 1992); *see Microsoft*, 147 F.3d at 955–56 (similar). That is especially true because the scope of “all applicable laws, rules, and regulations” extends well beyond those already raised and addressed in this suit. “A court’s equitable power lies only over the merits of the case or controversy before it” and does not authorize relief for “claims not pled in the complaint.” *Pac. Radiation Oncology, LLC v. Queen’s Med. Ctr.*, 810 F.3d 631, 633 (9th Cir. 2015).

Compounding these problems is the proposal to give the special master power to “recruit, train, oversee, and monitor” a whole team, no matter its number, salaries, or duties. Proposed Final J. ¶ 3(e). The master’s appointment is to last for at least 30 years, and Defendants are to pay \$10 million up front, and \$5 million more whenever the master’s coffers run dry. *Id.* ¶¶ 3(j), (m)–(n). Such blank-check authority is far beyond what a special master is legally allowed to do.

In short, General Drummond’s special master would determine the scope of its own investigation, hire whatever team he wants, make whatever factual findings he wants, determine whatever injunctive remedies he wants, and enforce the terms of that injunctive relief—all without any judicial guidance, but with an unlimited budget. Good work if you can find it. Fortunately, Article III does not permit such wholesale abdication of the judicial role.

**b.** The fact that the Court might reserve power to review the special master’s work is no cure. For one thing, under the Attorney General’s proposal, the master would have authority to make

numerous decisions without independent action of the Court. *See, e.g.*, Proposed Final J. ¶ 3(j) (permitting Defendants to move to end their obligations early “if the master determines after ten years that [they] have achieved full compliance”); *id.* ¶ 4(c) (prohibiting certain land applications of litter without prior testing by master); *id.* ¶ 4(e) (prohibiting placing birds “with any Contract Grower who has been determined by the master to not be in compliance with the provisions of Section 4(b)–(d)”). In any event, since “the record in this case is voluminous, the factual issues are tangled, and the legal issues are largely factbound, . . . even the most searching review” of a master’s determinations “would not be a satisfactory substitute for” proceeding in the first instance before an Article III court. *Stauble*, 977 F.2d at 698 (addressing possibility of appellate review); *cf. Burlington N.R.R. Co. v. Dep’t of Revenue*, 934 F.2d 1064, 1072 (9th Cir. 1991) (stating that “no circumstances [would] justify so extreme a delegation of judicial power” where “the district court would ‘make the final determination’” after receiving a special master’s report and the parties’ objections).

## 2. Referral would violate Rule 65.

The proposed referral would also violate Rule 65’s proscription on vague injunctions. Rule 65 requires “every” injunction to “state its terms specifically” and “describe in reasonable detail—and not by referring to the complaint or other document—the act or acts restrained or required.” Fed. R. Civ. P. 65(d)(1). An injunction is not specific enough if it does not “adequately inform a defendant of its obligations” or allow courts “to determine whether the defendant is complying.” *M.G. ex rel. Garcia v. Armijo*, 117 F.4th 1230, 1249 (10th Cir. 2024).

General Drummond’s proposed judgment comes up short. The judgment describes injunctive terms generally and permits the special master, not the Court, to fill in the details. *See, e.g.*, Proposed Final J. ¶¶ 4(a)–(c) (restricting waste application on to-be-determined land); *id.* ¶ 4(e) (prohibiting bird placement with to-be-determined growers). Until the master speaks, Defendants will have no yardstick by which to measure conduct or compliance. Such an injunction is no better than one impermissibly

“referring to [a separate] document.” Fed. R. Civ. P. 65(d)(1)(C). Indeed, some provisions of the judgment would require compliance with unspecified “laws, rules, and regulations” by reference. Proposed Final J. ¶ 4(f). A party seeking an injunction cannot “eschew any effort to give content” to the relief sought, as General Drummond proposes to do here, thus leaving the terms at a “stratospheric level of abstraction.” *Vallario v. Vandehey*, 554 F.3d 1259, 1268 (10th Cir. 2009) (citation omitted).

### 3. Referral is not justified under Rule 53.

The proposed referral also fails Rule 53. When a judge is available in the district, the court may appoint a master without consent to try all or part of a case only if there’s “some exceptional condition” or “the need to perform an accounting or resolve a difficult computation of damages.” Fed. R. Civ. P. 53(a)(1)(B). “The core of” Rule 53 is “that appointment of a master must be the exception and not the rule.” *Id.* (advisory committee note to 2003 amendment); see *Bartlett-Collins Co. v. Surinam Navigation Co.*, 381 F.2d 546, 550 (10th Cir. 1967).

The Supreme Court’s decision in *La Buy* is instructive. There, the Court rejected that “unusual complexity of issues of both fact and law” amounted to exceptional circumstances justifying a special master. 352 U.S. at 259. “On the contrary,” complexity “is an impelling reason for trial before a regular, experienced trial judge rather than before a temporary substitute appointed on an ad hoc basis and ordinarily not experienced in judicial work.” *Id.* Further, congestion of the Court’s docket, the possibility of lengthy proceedings, and even all three factors combined could not justify referral. See *id.* The attempted delegation warranted the extraordinary remedy of mandamus. See *id.* at 256. Accordingly, “[b]eyond matters of account, difficult computation of damages, and unusual discovery, ‘it is difficult to conceive of a reference of a nonjury case that will meet the rigid standards of the *La Buy* decision.’” *Liptak v. United States*, 748 F.2d 1254, 1257 (11th Cir. 1984) (per curiam) (quoting 9 C. Wright & A. Miller, *Federal Practice and Procedure* § 2605, at 791 (1971)); accord *In re United States*, 816 F.2d 1083, 1087 (6th Cir. 1987); *Microsoft*, 147 F.3d at 956.

The circumstances of this case are not “exceptional” within the meaning of Rule 53. The Court is fully able—and duty-bound—to decide all legal questions that may arise based on the evidence. *Cf. Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 392 (2024). The Court has *more* familiarity than a master with the factual issues that may arise during the implementation of any remedy the Court may order. If resolving the remedies stage proves difficult, this Court can do what every court does “whenever faced with unfamiliar factual or legal issues”—“educate [it]self” with the help of the adversarial system. *Madrigal Audio Labs., Inc. v. Cello, Ltd.*, 799 F.2d 814, 818 n.1 (2d Cir. 1986). General Drummond’s proposed referral thus does not direct a special master to address discovery disputes or arcane matters that “cannot be effectively and timely addressed by an available district judge or magistrate judge.” Fed. R. Civ. P. 53(a)(1)(C). Rather, he would have the Court impermissibly direct the special master to conduct the trial of the remedies portion of General Drummond’s case against the Defendants.

Finally, referral would cause “unreasonable expense [and] delay.” Fed. R. Civ. P. 53(a)(3). Under General Drummond’s proposed judgment, defendants have to pay not only for remediation efforts but also tens of millions of dollars for a special master. Further, any matters that cannot be settled by the parties before the master will have to come before this Court for resolution, so referral just adds an extra layer of proceedings and, therefore, delay. *See* Fed. R. Civ. P. 53(f) (de novo review for factual and legal issues); *Meeropol v. Meese*, 790 F.2d 942, 961 (D.C. Cir. 1986) (“If the master makes significant decisions without careful review by the trial judge, judicial authority is effectively delegated to an official who has not been appointed pursuant to article III of the Constitution; if the trial judge carefully reviews each decision made by the master, it is doubtful that judicial time or resources will have been conserved to any significant degree.”).

Against all this, one can only wonder whether referral to a special master is ultimately aimed not at saving judicial resources, but at insulating the Attorney General from political accountability while generating a payday for his outside lawyers. General Drummond surely knows that his continued

pursuit of this case is deeply unpopular with many of his constituents, and his approach shifts responsibility for the burdens to come to the Court and an unelected, unaccountable special master. *Cf. Printz v. United States*, 521 U.S. 898, 930 (1997) (“By forcing state governments to absorb the financial burden of implementing a federal regulatory program, Members of Congress can take credit for ‘solving’ problems without having to ask their constituents to pay for the solutions with higher federal taxes.”); *New York v. United States*, 505 U.S. 144, 169 (1992) (“But where the Federal Government directs the States to regulate, it may be state officials who will bear the brunt of public disapproval, while the federal officials who devised the regulatory program may remain insulated from the electoral ramifications of their decision.”).

Neither Article III, nor Rule 65, nor a reasonable exercise of Rule 53 authority justifies referral to a special master on General Drummond’s proposed terms.

**D. General Drummond’s Civil Penalty Demands Are Unwarranted.**

The Court should also reject the demand for civil penalties. As an initial matter, the evidence bearing on penalties is practically non-existent because there has been no hearing on remedies, and despite prior requests for earlier disclosure, the State has only now indicated the amount of penalties it seeks. The Court has discretion to refuse to impose penalties. *See* Okla. Stat. tit. 27A, § 2-3-504(A)(2) (penalties “may” be assessed). In exercising that discretion, § 2-3-504(H) requires the Court to consider several factors. But the parties have had no opportunity to offer evidence bearing on those factors. Evidence from the original trial is outdated, and the Court did not take evidence on remedies at the December 2024 hearing. With such a slim record, any award of penalties would be impermissible. *See, e.g., In re Ames Dep’t Stores, Inc.*, 76 F.3d 66, 70 (2d Cir. 1996) (“[D]ue process requires that courts provide notice and opportunity to be heard before imposing *any* kind of sanctions.”). The slim record we do have shows that Defendants acted in good faith and have minimal culpability, rendering any penalty unjustified. Even if some penalty were permissible, General Drummond’s request is grossly

excessive and exceeds constitutional bounds.

**1. Due process and agency principles prohibit imposing civil penalties based on conduct Defendants did not personally commit.**

Most, if not all, of the conduct on which General Drummond seeks to impose civil penalties is not Defendants' conduct. General Drummond is asking for penalties to be imposed on Defendants for actions taken by growers, farmers, cattle ranchers, litter applicators, and other third parties. Under General Drummond's view, the only thing Defendants did personally was fail to use their economic leverage to require different conduct from some of these company-contracted growers. This is not a basis for imposing any civil penalties, for several reasons.

First, "agency principles limit vicarious liability for punitive awards." *Kolstad v. Am. Dental Ass'n*, 527 U.S. 526, 541 (1999); *see also* Restatement (Second) of Torts § 909 (limiting circumstances where punitive damages can "properly be awarded against a master or other principal because of an act by an agent"). Penalties are meant to punish those who engage in misconduct, so they are presumptively limited to those who committed the misconduct. The misconduct the Attorney General alleges is applying poultry litter to fields under certain conditions. Defendants took no such actions, and imposing civil penalties on Defendants based on third-party conduct is legally unsupported. *See Fitzgerald v. Mountain States Tel. & Tel. Co.*, 68 F.3d 1257, 1264 (10th Cir. 1995) (rejecting request for punitive damages against company based on actions of the company's agent, in part because the facts giving rise to alleged misconduct only became known to defendant "many years later").<sup>16</sup>

Nor can penalties be imposed on Defendants for failing to prohibit others from engaging in state-approved nutrient management activities that become unlawful only when aggregated with other

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<sup>16</sup> Oklahoma has allowed one exception to the ordinary rule that punishment is imposed on a party only for its own conduct, holding employers liable for their employees' conduct. *See Bierman v. Aramark Refreshment Servs., Inc.*, 198 P.3d 877, 884 (Okla. 2008). Here, the State has never contended that the growers were Defendants' employees—and, indeed, growers, ranchers, and others who use fertilizer are independent business owners.

approved litter applications. Nor, for that matter, may they be imposed for failing to prevent growers from simply owning fields measuring above a judicially-announced STP threshold. Courts seldom penalize one party for failing to control a third-party's behavior. *Cf., e.g., Lentz v. Mason*, 961 F. Supp. 709, 715–16 (D.N.J. 1997) (defendant not an “operator” under CERCLA where no “actual control” of property); *id.* at 716 (“CERCLA casts its net wide, but it does not draw in persons or entities who have no connection to hazardous waste disposal, other than the knowledge that it is going on.”). Defendants are not aware of any authority in the environmental context imposing civil penalties for failing to prevent a third party from taking otherwise lawful action—especially action expressly permitted under state law and regulations. For these reasons alone, the Court should decline to impose any civil penalty.

**2. Defendants’ good-faith, minimally culpable conduct does not warrant civil penalties.**

In any event, no penalties are warranted on this thin record. In deciding whether to award civil penalties, the Court must consider “any good faith efforts to comply with the applicable requirements . . . [and] the defendant’s degree of culpability.” Both factors counsel against imposing penalties.

a. Defendants had a good-faith belief that their conduct was lawful given their compliance (and their growers’ compliance) with Oklahoma’s and Arkansas’s regulatory permit schemes. Indeed, both States’ comprehensive regulatory regimes have been in place and operating effectively for years. Both States require all poultry feeding operations to register with the state and to comply with a nutrient management plan. Okla. Stat. tit. 2, §§ 10-9.1(B)(14); 10-9.3; 10-9.7; Ark. Admin. R. 138.00.05-001 (ANRC Rules, tit. XIX); Ark. Admin. R. 138.00.05-004 (ANRC Rules, tit. XXII). Both states also just updated the protections offered to those who comply with their plans. *See* Okla. Stat. tit. 2, §§ 10-9.7, 10-9.11, and Ark. Code Ann. § 15-20-1108. The evidence at trial established that Defendants have a near-perfect track record of compliance with these regimes. Indeed, plaintiffs’ witnesses admitted that there are few to no documented incidents in which “a poultry grower or a certified litter applicator

or any other individual or entity has land applied poultry litter in the Illinois River Watershed in violation of a nutrient management plan.” *See* Hr’g Tr. 551:24–552:5 (S. Phillips). A grower complying with the “[r]ecommended application rate” listed on one of those plans would have believed in good faith that he was fully complying with state law. State’s Trial Ex. 2739A at 2. Additionally, with the track record of compliance detailed above, Defendants, whose growers relied on the technical expertise of the state in determining the limit of any land application in the watershed pursuant to their approval of nutrient management plans, should receive credit for complying, not be punished when the plaintiff in this case controls the instrumentalities to lower the application rates with which Defendants and their growers have demonstrated a clear propensity to comply. If Defendants are to be held liable for growers’ conduct, they also ought to receive the benefit of growers’ good-faith belief.

Even though the Court concluded that permit compliance “does not immunize defendants from liability,” 2023 COL ¶ 28, that conclusion does not preclude a finding that defendants’ permit compliance demonstrates a good-faith effort to comply with the law. *See, e.g., United States v. Cox*, 906 F.3d 1170, 1195 (10th Cir. 2018) (noting that defendants may receive “the benefit of their good-faith reliance” on the law even where mistake of law is not a defense to liability). Given the extensive evidence of Defendants’ good-faith compliance, penalties are not appropriate.

**b.** Likewise, the degree of culpability of any individual defendant is minimal. Rather than distinguishing among individual Defendants, this Court made a finding that thousands of individually lawful litter applications by growers caused harm in the aggregate when combined with phosphorous from other sources, *see, e.g., 2024 FOF ¶ 46*—a finding which the Oklahoma legislature expressly rejected as against the public policy of Oklahoma, Okla. Stat. tit. 2, § 10-9.11. The Court could not have made individualized findings because the Attorney General presented no evidence at that level. *See, e.g., Hr’g Tr. 645:5–11* (Scott admitting he failed to perform any site-specific analysis of phosphorus “with respect to any of these [D]efendants”); *id.* at 21:14–19 (Fite making similar concession). Nor

can the Court merely assume that each Defendant contributed to the State’s harm equally. Defendants’ operations vary in scale, location, and duration, *see id.* at 39:16–22 (Fite); *id.* at 689:6–14; 690:19–24 (Jordan), and yet state witnesses conceded that they did not “analyze whether any of the phosphorous in any of those rivers that [the parties] were talking about came from any of the fields that are owned or operated by growers who are affiliated with the defendants in this case.” *Id.* at 324:22–325:8 (L. Phillips); *id.* at 437:5–17 (S. Phillips).

General Drummond’s failure to differentiate culpability among defendants precludes imposition of civil penalties under § 2-3-504(A)(2) because such penalties cannot be imposed jointly and severally. Section 2-3-504 allows for the imposition against “*the* defendant”—singular—based on “*each* violation.” *See* Okla. Stat. tit. 27A, § 2-3-504(A)(2), (H); *see also SEC v. Pentagon Cap. Mgmt. PLC*, 725 F.3d 279, 287–88 (2d Cir. 2013) (securities law does not permit joint-and-several penalties based on similar language). And when the Oklahoma legislature “wishes to” impose joint-and-several penalties, “it knows how to say just that.” *Trump v. Hawaii*, 585 U.S. 667, 692 (2018); *see, e.g.*, Okla. Stat. tit. 45, § 729 (entities that mine without a permit and its agents are “jointly and severally liable” for “resulting fines”). Accordingly, General Drummond must prove each individual Defendant’s responsibility for specific injuries. He has not and cannot. There is no basis for civil penalties on this record.

c. Even if some penalties were warranted, General Drummond’s request for “the maximum amount allowed”—\$10,000 per violation—vastly exceeds penalties awarded under these laws. Doc. 3163 at 16. Oklahoma cases involving violations of Okla. Stat. tit. 27A, § 2-6-105 have resulted in penalties ranging from \$300 to \$235,000, even for violations spanning several years. *See, e.g., ODEQ v. Rehya*, No. CJ-2021-309 (Okla. Dist. Ct. Payne Cnty. Feb. 17, 2022) (\$5,250 penalty for violating prior administrative order by dumping solid waste); *ODEQ v. Frye*, No. CV-2013-139 (Okla. Dist. Ct. Canadian Cnty. Feb. 14, 2014) (\$300 penalty for violating prior administrative order by land-applying untreated sewage); *United States v. City of Okmulgee*, No. 6:06-CV-00009 (E.D. Okla. Apr. 14, 2006)

(\$470,000 penalty for seven years of unlawful discharges of untreated sewage and other pollutants into protected waters). That’s a far cry from \$10,000 daily for over a decade.

The trend is the same on the federal side. In considering the statutory penalty factors under the Clean Water Act, which are materially identical to those applicable here, *compare* Okla. Stat. tit. 27A, § 2-3-504(H), *with* 33 U.S.C. § 1319(d), federal courts routinely impose awards far below the statutory maximum. *See, e.g., Kleinman v. City of Austin*, 310 F. Supp. 3d 770, 782–83 (W.D. Tex. 2018) (ordering a “nominal” civil penalty of \$25,000 based on several factors balanced in favor of defendant despite total mitigation cost of \$12.5 million); *Catskill Mountains Chapter of Trout Unlimited, Inc. v. City of New York*, 244 F. Supp. 2d 41, 49–54 (N.D.N.Y. 2003) (identifying mitigating factors to reduce defendants’ civil penalty from the maximum \$57,500,500 down to \$5,749,000); *In re Oil Spill by Oil Rig “Deepwater Horizon” in Gulf of Mexico, on Apr. 20, 2010*, 148 F. Supp. 3d 563, 583 (E.D. La. 2015) (identifying mitigating factors warranting civil penalty of “only 4.5% of the maximum penalty”).

### **3. There is no basis for awarding daily penalties.**

General Drummond’s penalties request is grossly excessive. Far from taking “a conservative approach,” Doc. 3163 at 16, General Drummond requests over \$100 million in total penalties. But General Drummond’s definition of a “violation” of Okla. Stat. tit. 27A, § 2-6-105(A) is overbroad, and even under his strained definition, fatal failures of proof persist.

**a.** General Drummond contends that a defendant committed a discrete “violation” of Okla. Stat. tit. 27A, § 2-6-105(A) on each day that one of its growers possessed “one or more fields having an STP value of greater than 65 lbs./acre.” Proposed Final J. ¶ 5(h). That definition is flawed in two critical ways.

First, this again improperly conflates field STP values with “pollution of any waters of the state.” Okla. Stat. tit. 27A, § 2-6-105(A). As discussed, whatever its STP value, land application of poultry litter to a field cannot contribute to phosphorous pollution of the waters of the IRW unless

there is a hydrological connection between that field and the IRW's waters. And as General Drummond's own witness conceded, only a small portion of the fields in the IRW have such a connection. *See supra* § I.A.1.a. General Drummond's 65 STP criterion is thus vastly overbroad.

Second, even if an over-65-STP field has the requisite hydrological connection, General Drummond wrongly equates a grower's mere possession of such a field to a violation of § 2-6-105(A) by a Defendant. The text of § 2-6-105(A) is clear that it is violated only by taking some "action"—either (1) "caus[ing] pollution of any waters of the state" or (2) "plac[ing] or caus[ing] to be placed any wastes in a location where they are likely to cause pollution of any air, land or waters of the state." Merely owning property on a given day does not "d[o] anything to cause . . . pollution," and so cannot be the basis of a violation under § 2-6-105(A). *Moore v. Texaco, Inc.*, 244 F.3d 1229, 1231–32 (10th Cir. 2001). And General Drummond has not pointed to any record evidence from which this Court could draw conclusions about the specific days on which phosphorus in a given field more likely than not ran off into the IRW.

Likewise, the Court did not find that the mere ownership of a particular field caused pollution; rather, it found that an action—"land application of poultry litter . . . in excess of" 65 lbs./acre STP—harmed the waters of the IRW. 2023 FOF ¶ 81. Consistent with § 2-6-105(A), this Court's prior findings, and the State's own evidence, the only "violation" that could arguably qualify for a civil penalty is an instance of land application of poultry litter on a field with hydrological connectivity to the waters of the IRW and an STP measurement over 65 lbs./acre. General Drummond has no evidence of any such instance. Once again, proof of general causation is insufficient to prove specific causation.

**b.** Even accepting General Drummond's overbroad conception of a statutory violation, critical failures of proof undermine his \$103,260,000 total penalty request. He relies on a single item of "evidence": an appendix attached to his proposed findings of fact, which purportedly shows a list of growers (and the associated defendant) who had a field measuring above 65 STP at some point

between 1993 and 2005. *See* Doc. 2873-1. This appendix was neither offered as evidence nor admitted by the Court. *Cf.* Trial Tr. 8134:3–8144:6; 8625:4–8630:13 (admitting “various ODAFF documents,” but not General Drummond’s proffered appendix). And General Drummond has not established that the document could meet the requirements of a summary document under Rule of Evidence 1006.

But even assuming the appendix were properly before the Court, it does not prove that the grower applied poultry litter to each of those fields, either before or after the STP reading.<sup>17</sup> Nor do the records prove that each of those fields exceeded 65 lbs./acre STP for each and every one of the days General Drummond seeks penalties. Nor could they have. The State’s ODAFF records purport to show various dates on which the individual Defendants’ or their growers’ “fields in Oklahoma [had] soil test results in excess of 65 lbs./acre STP.” Proposed Final J. ¶ 5(j). These records, however, are far too sparse to support continuous daily penalties. For instance, with respect to the Tyson Defendants, ODAFF records were taken only on 37 discrete dates within the range General Drummond requests maximum penalties for. Doc. 2873, FOF ¶ 395, App’x A at 1–5. This represents just 1.3% of those 2,891 days. Put differently, General Drummond requests maximum penalties for 2,854 days on which he has not proven that: (i) any Tyson-contracted grower’s fields exceeded 65 lbs./acre STP; (ii) any Tyson-contracted grower applied poultry litter to such a field; or (iii) any phosphorous from such a field ran off into the IRW.<sup>18</sup> This record cannot support the State’s requested nine-figure penalty.

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<sup>17</sup> It would be error to merely assume that poultry litter was applied. For example, Cargill-contracted grower Clyde Masters had a field above the 65 STP threshold on August 27, 2001 and October 11, 2002, but his Registered Feeding Operation Inspection Checklists from 2003 and 2004 confirm he did not apply litter to the field after being directed not to by ODAFF. Trial Ex. CARGILL 79B at 3, 5, 8, 12, 18.

<sup>18</sup> The same problem applies to each Defendant. For Cargill, the appendix includes just seven dates of soil test results in excess of 65 lbs./acre STP from December 18, 1998 to June 13, 2005, or 0.3% of the days for which he has requested maximum civil penalties. For George’s, it’s four dates or 0.75% of penalty days requested; for Simmons, it’s 20 dates or 0.7% of penalty days requested; and for Cal-Maine, it’s eight dates or 0.43%. Doc. 2873, FOF ¶ 395, App’x A at 6–9. In the case of Peterson Farms, the appendix makes no reference to any soil tests whatsoever.

**4. The Attorney General’s total penalty request violates Defendants’ rights to due process and protection against excessive fines.**

Furthermore, General Drummond’s maximum penalty request of over \$100 million violates multiple protections under both the federal and Oklahoma constitutions.

First, if the Court were to award anything approaching General Drummond’s request for \$100 million in penalties, it would violate Defendants’ due process rights. *See* U.S. Const. amend. XIV, § 1; Okla. Const. art. II, § 7. Courts have consistently held that punitive awards that are “grossly excessive” violate due process. *See, e.g., BMW of N. Am., Inc. v. Gore*, 517 U.S. 559, 568 (1996) (noting constitutional limits on punitive damages); *TXO Prod. Corp. v. Alliance Res. Corp.*, 509 U.S. 443, 453–54 (1993) (collecting cases). Courts use a similar excessiveness standard to evaluate the constitutionality of statutory damages. *See, e.g., St. Louis, I.M. & S. Ry. Co. v. Williams*, 251 U.S. 63, 67 (1919) (statutory damages award violates due process where penalty is “so severe and oppressive as to be wholly disproportioned to the offense or obviously unreasonable”); *King v. State*, 130 P.2d 105, 108 (Okla. Crim. App. 1942) (statutory penalty unconstitutional where “it is so excessive as to shock the sense of mankind” (citation omitted)). Here, because Defendants did not personally commit the violations identified in the Court’s January 2023 order (only the growers applied litter, and always with state permission), coupled with Defendants’ good-faith, minimally culpable conduct, imposing General Drummond’s request for over \$100 million in civil penalties would constitute a “grossly excessive” penalty because it would be “wholly disproportioned” to Defendants’ conduct.

Second, General Drummond’s penalty request violates Defendants’ right to be free from excessive fines. *See* U.S. Const. amend. VIII; Okla. Const. art. II, § 9. The federal constitution’s Excessive Fines Clause “limits the government’s power to extract payments, whether in cash or in kind, ‘as punishment for some offense.’” *United States v. Bajakajian*, 524 U.S. 321, 328 (1998) (quoting *Austin v. United States*, 509 U.S. 602, 609–10 (1993)). The Excessive Fines Clause has been incorporated against the States. *See Timbs v. Indiana*, 586 U.S. 146, 150 (2019). “[A] civil sanction that cannot fairly be said

*solely* to serve a remedial purpose, but rather can only be explained as also serving either retributive or deterrent purposes, is punishment[.]” *United States v. Halper*, 490 U.S. 435, 448 (1989) (emphasis added). For the punishment not to be excessive, it “must bear some relationship to the gravity of the offense it is designed to punish.” *Bajakajian*, 524 U.S. at 334. A punitive sanction violates the Excessive Fines Clause “if it is grossly disproportional to the gravity of a defendant’s offense.” *Id.* Here, the civil penalties under § 2-3-504 are punitive—the plain text of § 2-3-504 says so. *See* Okla. Stat. tit. 27A , § 2-3-504(A)(2) (“[A]ny person who violates any of the provisions of, or who fails to perform any duty imposed by, the Oklahoma Environmental Quality Code . . . [m]ay be punished in civil proceedings in district court by assessment of a civil penalty” of not more than \$10,000 per violation (emphasis added)); *see also* *Tull v. United States*, 481 U.S. 412, 423 (1987) (ruling that substantively similar penalties in CWA were punitive “to further retribution and deterrence” and “to impose punishment”). And for the reasons described above, imposing General Drummond’s request for over \$100 million in civil penalties would be grossly disproportional to Defendants’ conduct.

#### **E. Defendant-specific Arguments<sup>19</sup>**

##### **1. Defendants who no longer have poultry operations or contracts in the IRW are not subject to certain forms of injunctive relief.**

Some of the injunctive relief General Drummond proposes can only apply to entities with ongoing poultry operations or contracts in the IRW. As of July 23, 2025, Defendants Cal-Maine Foods, Inc., Peterson Farms, Inc., Cargill Inc., and Cargill Turkey Production LLC (collectively, “the

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<sup>19</sup> As the Court has directed Defendants to file a single brief, certain Defendants (Cal-Maine; Peterson Farms; Cargill, Inc.; Cargill Turkey Production; and George’s) raise Defendant-specific arguments here. Each of these arguments is raised on behalf of only the Defendant(s) identified in the section header or opening paragraph of the section. Any Defendant that does not join a particular Defendant-specific argument requests an opportunity to address any modifications that may be subsequently proposed by AG Drummond or adopted by the Court in response to the arguments raised in this section. The Defendants raising these individual arguments otherwise join the balance of this brief in full, and in raising these additional arguments as to their unique circumstances in no way concede that Attorney General Drummond is entitled to, or the Court has sufficient basis to order, any of the relief sought.

Withdrawn Defendants”) do not have such operations or contracts. Hence, some of the injunctive relief cannot be ordered as to them.

**a. The Withdrawn Defendants will have no ongoing connection to or relationship with poultry operations in the IRW.**

The Court has already recognized that Defendants Cal-Maine Foods, Inc., Peterson Farms, Inc., and Cargill, Inc. have had no contracts with poultry growers in the IRW for over a decade. *See* Doc. 2979 at 1, n.1 (Cal-Maine), 2, n.1 (Peterson), 1–2, n.1 (Cargill, Inc.).<sup>20</sup> Cargill Turkey Production (CTP) will likewise have exited the IRW as of July 23, 2025. *See* Ex. 6, Declaration of Trevor Stahl (“Stahl Decl.”) ¶¶ 2–18. In January 2025, CTP notified all of its poultry growers in the IRW that their contracts would be terminated effective on or before August 1, 2025, and that Cargill was closing its poultry processing facility in Arkansas. Stahl Decl. ¶ 2 & Ex. A.<sup>21</sup> The last turkey flock from a contract grower in the IRW was processed by CTP on July 23, 2025. Stahl Decl. ¶ 6. Thus, as of July 23, 2025, none of the Withdrawn Defendants will have any “leverage” over any grower to influence how it manages its litter or land, or any other continuing contact with the IRW. Stahl Decl. ¶ 18; *see generally id.* ¶¶ 9–17 & Exs. A–B thereto (explaining the completeness and extent of CTP’s withdrawal from the IRW).

**b. The proposed injunctive relief mostly does not apply to companies without ongoing poultry operations or contracts.**

General Drummond proposes three categories of injunctive relief, of which only one could possibly apply to the Withdrawn Defendants.

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<sup>20</sup> Despite this acknowledgement, the Court’s January 18, 2023, Findings of Fact and Conclusions of Law often mistakenly uses the term “the Withdrawn Defendants” to attribute characteristics or conduct of one Cargill entity to both Cargill Inc. and Cargill Turkey Production LLC. *See, e.g.*, 2023 FOF ¶ 291 (“The Cargill Defendants began poultry operations in the IRW in the mid-1960s.”); *id.* (“Between 2000 and 2007, more than 23 million birds belonging to the Cargill Defendants were raised in the IRW.”). Any judgment should accurately reflect the separate identities of the two Cargill entities; it would be clear error to attribute any action to Cargill, Inc. after 2004.

<sup>21</sup> Many of the 1000+ terminated employees have been offered opportunities to transfer to operations in other states. Stahl Decl. ¶ 3.

*First*, General Drummond seeks relief aimed at the future application of poultry litter, including bans on application, restrictions on bird placement, and the handling and removal of litter. None of this applies to Defendants no longer operating in the IRW. *Second*, General Drummond seeks relief aimed at individual growers and their land, including buffer strips, excavation, alum application, to fields, crop and nutrient management with nitrogen supplementation, bank stabilization, and constructed wetlands. Proposed Final J. at 8. All these options require altering the growers' land or interfering with their farming operations. Hence, and for similar reasons, they cannot apply to the Withdrawn Defendants, who have no ongoing relationships with any growers in the IRW. *Third*, General Drummond seeks non-grower-specific relief aimed at remediating the continuing impacts of past actions. These might include drinking water treatment, and alum application, sediment removal, and layered aeration of Lake Tenkiller. Proposed Final J. ¶ 2(d). Only this third category of non-grower-specific remedial relief could possibly apply to the Withdrawn Defendants.

For the following reasons, the Court may not impose other types of injunctive relief on the Withdrawn Defendants.

**Prospective Relief:** The Court lacks the power to impose on the Withdrawn Defendants any prospective injunctive relief addressing future poultry operations and future contracts in the IRW. As of the date of the Court's ruling on the Plaintiffs' request for injunctive relief, the Withdrawn Defendants will have no poultry operations in the IRW and no contracts with IRW contract growers. Hence, as to those non-existent operations and non-existent contracts, there is no risk to the plaintiffs, nothing to enjoin, and nothing to be gained from an injunction.

On these facts, the Court lacks Article III power to issue an injunction. "A federal court has neither the power to render advisory opinions nor to decide questions that cannot affect the rights of litigants in the case before them." *Preiser v. Newkirk*, 422 U.S. 395, 401 (1975) (cleaned up). General Drummond's claim for prospective injunctive relief against the Withdrawn Defendants can no longer

provide practical relief, and the claim is therefore moot and must be dismissed. *See Facio v. Jones*, 929 F.2d 541, 544 (10th Cir. 1991) (“plaintiff cannot maintain a declaratory or injunctive action unless he or she can demonstrate a good chance of being likewise injured [by the defendant] in the future.”); *Bagnell v. Floyd*, No. 17-CV-049-GKF-JFJ, 2018 WL 1177413, at \*4 (N.D. Okla. Mar. 6, 2018) (Frizzell, J.) (where prisoner has been transferred from facility allegedly creating inhumane conditions, claim for “prospective injunctive relief” must be dismissed as moot) (citing *Jordan v. Sosa*, 654 F.3d 1012, 1027–28 (10th Cir. 2011)); *see also Schell v. OXY USA, Inc.*, 814 F.3d 1107, 1114–21 (10th Cir. 2016) (dismissing appeal as moot after appellant sold its interests in leases affected by the declaratory judgment appealed, noting appeal was “an effort to secure an impermissible advisory opinion”). Viewed another way, the claims for *prospective* injunctive relief against the Withdrawn Defendants must be dismissed because General Drummond no longer has standing to assert them. *See Phelps v. Hamilton*, 122 F.3d 1309, 1316 (10th Cir. 1997) (“[T]he Supreme Court [has] made clear that plaintiffs may lack standing to seek prospective relief when the challenged conduct is no longer continuing.”).

The Court should therefore reject that portion of General Drummond’s proposed judgment that seeks prospective injunctive relief against the Withdrawn Defendants.

**Grower-specific Remedial Relief:** The Court also lacks the power to impose on the Withdrawn Defendants any grower-specific remedial relief addressing the consequences of past poultry operations in the IRW, because the Withdrawn Defendants have no current grower contracts or relationships to be used by the Court (properly or not) to try to effectuate such relief.

Courts cannot and will not issue injunctions that require a party to do the impossible—to do what it has no legal right or practical ability to do. Courts cannot do so because an injunction ordering the impossible will not provide any redress to the plaintiff, and the plaintiff thus lacks standing to seek it. *See, e.g., Bronson v. Swensen*, 500 F.3d 1099, 1111–12 (10th Cir. 2007) (holding that “[t]he redressability prong [of the standing test] is not met when a plaintiff seeks relief against a defendant with no power”

to correct the challenged activity). And courts will not order a defendant to perform the impossible because doing so violates basic principles of equity. *Hudson v. Sch. Dist. of Kansas City*, 578 S.W.2d 301, 312 (Mo. Ct. App. 1979) (“It is ... a principle of the equity jurisprudence surrounding the use of injunctive relief that the court will not issue an injunction when the order of the court to be embodied in an injunction is impossible of performance.”) (citing *Hribernik v. Reorganized Sch. Dist. R-3*, 276 S.W.2d 596 (Mo. App. 1955)); *Reg'l Multiple Listing Serv. of Minn., Inc. v. Am. Home Realty Network, Inc.*, 960 F. Supp. 2d 988, 995 (D. Minn. 2013) (granting motion to modify consent decree “to relieve [party] of a requirement that cannot feasibly be accomplished”).

Here, all Defendants dispute the notion that they have any legal right, ability, or obligation to enter onto land of growers with whom they have contractual relationships for the purpose of dictating practices that are not integral to the poultry production. But even if they did, no such ability can exist for the Withdrawn Defendants. General Drummond’s suggested grower-specific “remediation options” (e.g., buffer strips, alum applications to fields) all require entering onto and altering the contract growers’ farmland. The Court’s January 2023 Findings of Fact and Conclusions of Law rested on findings that “by virtue of their contracts and the vertically integrated structure of the business, each defendant maintains control over virtually all essential aspects of poultry production, including the activities of their contract growers.” Doc. 2979 at 82–89, 182–83.<sup>22</sup> Whatever the prior validity of those narrow findings, they have no purchase now as those business relationships no longer exist.

The Withdrawn Defendants cannot be ordered to force poultry growers in the IRW to do anything, because that would require them to do the impossible. Nor could such an order be enforced.

As the D.C. Circuit has noted:

The sound discretion of an equity court does not embrace enforcement through

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<sup>22</sup> The Court did not find that the Defendants possessed either control or legal authority as to growers’ lands or agricultural practices that are not essential to poultry production (e.g., pasture management or riparian access for cattle operations). And, the record before the Court would not support such a finding.

contempt of a party's duty to comply with an order that calls him to do an impossibility. ...It would be unreasonable and unjust to hold in contempt a defendant who demonstrated that he was powerless to comply.

*SEC v. Ormont Drug & Chem. Co.*, 739 F.2d 654, 656 (D.C. Cir. 1984) (citing *NRDC v. Train*, 510 F.2d 692, 713 (D.C. Cir. 1975) and *Maggio v. Zeitz*, 333 U.S. 56, 59, 69 (1948)) (cleaned up). In short, the Court should reject all grower-specific remedial injunctive relief against the Withdrawn Defendants, including any direction to any special master to consider such grower-specific remedial injunctive relief as a "remediation option." *See* Proposed Final J. ¶ 2(d).

**Costs:** Given that only a small fraction of the injunctive relief General Drummond seeks could possibly be imposed on the Withdrawn Defendants, the Court should also reject the provisions in General Drummond's proposed judgment that seek to impose joint and several liability on *all* Defendants for *all* costs of remediation and of the special master and related expenses. *See* Proposed Final J. at 9, 17. Although the Court has held that the phosphorus level in the waters of the IRW is an "indivisible injury," *see* Doc. 2979 at 184–85, the remedies suggested in the proposed judgment are clearly divisible. If the Court were to order any injunctive relief that costs money (which all Defendants disagree with, for reasons stated above), it should limit responsibility for the costs of any such relief to the Defendant or Defendants subject to them.

For example, General Drummond's proposed judgment contemplates that the proposed special master would regulate the future application of any poultry litter generated by Defendants' birds. Proposed Final J. at 18–19.<sup>23</sup> The Withdrawn Defendants will have no birds and produce no poultry litter in the IRW, so they should not be ordered to pay any of the costs of special master monitoring and regulation. Such costs can be readily identified with and assigned to the entities that are involved.

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<sup>23</sup> Although the wording of the State's proposed judgment is broad and imprecise, the Withdrawn Defendants assume that this passage intends to make each Defendant responsible for the poultry litter generated by its own contract growers. It is difficult to see how any Defendant could be responsible for poultry litter generated by any other Defendant, or indeed would even know of its existence.

General Drummond's supporting brief offers no reason or authority for ordering the Withdrawn Defendants to pay the costs of monitoring and regulating other entities' ongoing operations.

Similarly, the Withdrawn Defendants should not be ordered to pay for the costs of grower-specific remedial injunctive relief for growers they have no contracts or business relationships with. Again, it can be readily identified which entities a grower has contracts and ongoing business with. Only those entities, if they are a Defendant, could conceivably be ordered to pay for steps that grower takes. The Withdrawn Defendants should not be held jointly and severally liable for the costs of a Special Master's consideration of "remediation options" that could not possibly ever apply to the Withdrawn Defendants, and General Drummond offers no analysis or authority suggesting otherwise.

In sum, given the absence of any current growers or operations in the IRW connected to Defendants Cal-Maine Foods, Inc., Peterson Farms, Inc., Cargill Inc., or Cargill Turkey Production LLC, the only injunctive relief that the Court could possibly grant against the Withdrawn Defendants would be non-grower specific remediation. Any judgment should therefore limit any joint and several liability for costs of remediation or costs incurred by the special master to costs related to such non-grower-specific remediation.

## **2. George's**

Without implying that the evidence is sufficient to support a penalty award as to any defendant, George's respectfully submits that evidence before this Court compels rejection of General Drummond's request for a penalty based upon the conduct of its former growers in Oklahoma. Ignoring for now the question of whether the statutes during the relevant time period even authorized vicarious liability against parties who contract with Oklahoma farmers, it strains credulity to suggest that the farmers relevant to the George's penalty calculation acted with any culpability.

General Drummond's penalty claim rests entirely on a post-trial compilation of STP values supposedly gleaned from ODAFF records (hereinafter, the "STP Appendix"). *See* Proposed Final J.

¶ 5(l) (citing Doc. 2873, FOF ¶ 395, App'x A). The STP Appendix lists *two* farmers (Ricky Reed and Kenneth Glenn) as allegedly having been associated with “Defendant-Integrator George’s” at some point in time. STP App'x A at 7. According to General Drummond that document shows test results in excess of 65 lbs./acre STP on “fields in Oklahoma” associated with those two farmers.<sup>24</sup> Proposed Final J. ¶ 5(j). There is no evidence presented as to what sources of phosphorus produced the STP levels claimed to have existed in 2004 through 2007.

Importantly, General Drummond has not proven that poultry litter continued to be applied by these growers to those fields after they reached whatever threshold of concern or regulatory standard he now seeks to impose retroactively. Neither of these farmers testified at either trial conducted in this case but some facts cutting strongly against their culpability can be gleaned from ODAFF records admitted during the 2010 trial.

As to Ricky Reed, George’s would point this Court to his Animal Waste Management Plan which was admitted as evidence during the examination of Teena Gunter. *See* DJX3480. That plan was prepared in November 2006, which is *after* the soil sample dates reported for this farm in the STP Appendix. Even a cursory review of DJX3480 shows that the technical expert assigned by ODAFF to assess the potential for Mr. Reed’s farm to cause pollution to the waters of the State had far more information available to him about Mr. Reed’s farm management practices than General Drummond has attempted to present to this Court. And based on that information, ODAFF authorized Mr. Reed to continue land applying litter to fields including fields with STP levels above 65 lbs./acre. DJX3480-0004 (application rates). The plan issued by ODAFF to Mr. Reed informed him that “[t]he law requires that Natural Resources Conservation Service (NRCS) recommendations for litter application rates be followed.” DJX3480-0003. Those rates were formulated based on STP ranges of up to 250 (for full

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<sup>24</sup> If to believed at all, the compilation also shows that several fields for these two farmers reported STP levels below the 120 lbs./acre threshold this Court previously selected as an important threshold for reviewing STP levels shown in this same compilation. *See* 2023 FOF ¶ 358.

application rates) or 400 (for half rate applications) rather than General Drummond's 65 lbs./acre new litigation standard. Clearly, ODAFF assessed no culpability on the part of Mr. Reed for the STP levels upon which General Drummond's penalty request rests. This Court should reach the same conclusion.

Mr. Glenn's Animal Waste Management Plan was not introduced as evidence, but the Court can be confident that he too received one from ODAFF after the soil sample dates reported for this farm in the STP Appendix. *See* OK. Ex. 2644B, ODAFF records for Kenneth Glenn's farm including at Bates ODAFF\_SUPP\_05-08\_002084, 2008 Annual Inspection Checklist (indicating inspector's on-site review of an Animal Waste Management Plan dated June 18, 2007). This Court was not asked to inspect this farm (nor should it be expected to have done so), but ODAFF did between the time when the soils were tested and the first trial conducted in 2010. And, after reviewing soil test results, waste handling procedures, litter storage facilities, and other information pertinent to the management of this farm (*see id.*), ODAFF issued a report finding ***no violations*** at this farm. *Id.* Perhaps General Drummond believes his judgment is superior to that of the ODAFF inspector. But, when it comes to culpability for a civil penalty, the question is what conclusion a reasonable farmer, or the integrator they contract with, would reach about the behavior in question based upon the information available to them at the time. The record evidence as to Kenneth Glenn strongly suggests that his interactions with ODAFF inspectors would cause a reasonable person to conclude that he was acting responsibly as long as he followed the terms of his state-issued Animal Waste Management Plan. This Court has previously found an absence of proof that poultry growers in the Oklahoma portion of the IRW violated the terms of their Animal Waste Management Plans. 2023 FOF ¶¶ 88–98. Certainly, General Drummond has presented no such evidence specific to Mr. Glenn. In the absence of such evidence, this Court should assess no culpability on the part of Mr. Glenn and George's, and, therefore, deny the penalty request to the extent it is based on the management of his farm.

### 3. Peterson Farms

Peterson Farms submits that it is entitled to a judgment of no liability. General Drummond would fix 65 STP as the bright line for causing pollution, and therefore, incurring liability. Yet the record is devoid of evidence against Peterson Farms respecting this standard, and thus, judgment for Peterson Farms is necessary. Specifically, General Drummond's STP Appendix makes no reference to any Peterson Farms-associated applications over 65 STP. Hence, General Drummond made no record that any Peterson Farms associated applications caused any pollution that requires remediation or a prospective injunction prohibiting applications over 65 STP. Furthermore, Peterson Farms cannot be liable for any attorneys' fees, as any such fees stem from the recovery of civil penalties, a claim that General Drummond has dismissed against Peterson Farms.

## II. The Court Should Enter a Take-Nothing Judgment or, at Most, Order Defendants to Take Reasonable and Modest Future Action in the IRW.

Defendants continue to object on numerous grounds to the Court's finding of liability. Regardless, Defendants submit for the Court's consideration two proposed final judgments.

**A.** Exhibit 1 is the judgment to which General Drummond is entitled (again, *arguendo*) based on the evidence in the record: a declaration of defendants' liability, and nothing else. As explained above, the State has never presented competent evidence on the appropriate remedy in this case. *See supra* Background, § I.B. The result of that failure of proof should be the take-nothing judgment proposed in Exhibit 1. Such a judgment would acknowledge the value of Oklahoma's natural resources while giving Oklahoma's newly-updated state laws the opportunity to protect those resources according to the balance of interests that Oklahoma's elected representatives adopted.

**B.** If the Court is willing to excuse General Drummond's evidentiary shortcomings, the proposed judgment attached as Exhibit 2 goes as far as this record could even arguably support. Under this judgment, for a period of 10 years (subject to extension), Defendants who continue to operate in the IRW would, among other things: (1) withhold placement of flocks with growers who have

materially violated certain permit terms; (2) not place birds in newly-constructed broiler houses in the IRW unless the grower agrees to transport all litter out of the IRW; (3) fund a \$4 per ton subsidy to be applied toward the purchase and transport costs for each ton of litter their IRW broiler growers agree to export from the IRW; and (4) on certain grower lands and with the growers' consent, fund 50% of the cost of constructing riparian buffers on the growers' land.<sup>25</sup>

Such an order would strike an appropriate balance between protecting the waters of the IRW and burdening Defendants' operations, while meaningfully accounting for the many interested public stakeholders. This proposal places primary responsibility for regulating land application of poultry litter on those best equipped to regulate: the experts in the state agencies in charge of poultry litter permitting. If the State of Oklahoma believes, now or in the future, that its nutrient management plans are not sufficiently protective of the environment, then it can change them pursuant to well-established legal processes. This proposal, in short, provides General Drummond, and the State of Oklahoma whose interests he claims to represent, everything necessary to obtain complete relief.

Defendants' proposal also best accounts for the public interest. It respects the property rights of growers by allowing them to control what happens on their land and with their poultry litter, yet provides economic incentives for those growers to make decisions that may reduce phosphorous loading in the IRW. And it respects the rights of Oklahomans and Arkansans to have public policy decided by their elected representatives, rather than a single Oklahoma politician or an unaccountable special master. Disputes over how best to protect Oklahoma's natural resources are an unavoidably political question. The "right" answer cannot be obtained solely by laboratory experiments or legal reasoning. It requires balancing competing interests, weighing value propositions, and hearing from the people. Defendants' proposal does so by handing the remainder of this dispute to the institutions

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<sup>25</sup> This is intended only as a summation of the terms of the proposed final judgment provided as Exhibit 2. To the extent this summary conflicts with the terms of the proposed judgment provided as Exhibit 2, the terms of Exhibit 2 control.

that can most legitimately and capably handle that task.

**III. The Court Should Defer Ruling on Any Award of Attorneys' Fees, Including Any Fees the State Owes Defendants.**

Defendants agree that an award of costs and attorneys' fees, if any, should be determined after the Court enters final judgment on the merits. The amount of a fee award will depend on, among other things, the extent of relief obtained, *see Hensley v. Eckerhart*, 461 U.S. 424, 440 (1983), and would be offset by any fees the State owes defendants as the prevailing parties on the State's RCRA and nuisance per se claims, *see* 42 U.S.C. § 6972(e); Okla. Stat. tit. 12, § 940(A).

**CONCLUSION**

For the foregoing reasons, this Court should reject the Attorney General's proposed judgment and should enter a take-nothing judgment or, failing that, enter a proposed order requiring Defendants to take steps to ensure that their growers comply with state poultry-litter laws.

July 30, 2025

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I certify that on July 30, 2025, I caused this document to be filed with the Clerk of Court through CM/ECF, which will serve copies on all registered counsel.

/s/ Gordon D. Todd  
Gordon D. Todd

# **EXHIBIT 1**

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF OKLAHOMA

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STATE OF OKLAHOMA, <i>et al.</i> ,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	Case No. 05-cv-329-GKF-SH
	)	
TYSON FOODS, INC., <i>et al.</i> ,	)	
	)	
Defendants.	)	

---

**[Proposed] FINAL JUDGMENT**

Consistent with the accompanying memorandum opinion, it is hereby:

**DECLARED** that Defendants’ contribution to phosphorous loading in the Illinois River Watershed was a nuisance in violation of 50 Okla. Stat. §§ 1–2 and federal common law; constituted a trespass in violation of Oklahoma common law; and caused pollution of the waters of the State of Oklahoma in violation of 27A Okla. Stat. § 2-6-105 and 2 Okla. Stat. § 2-18.1.

All relief not granted here is denied. The clerk of court is directed to enter this document on the docket as a final judgment.

Dated: August \_\_, 2025

\_\_\_\_\_  
Gregory K. Frizzell  
United States District Court Judge

## **EXHIBIT 2**

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF OKLAHOMA

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STATE OF OKLAHOMA, <i>et al.</i> ,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	Case No. 05-cv-329-GKF-SH
	)	
TYSON FOODS, INC., <i>et al.</i> ,	)	
	)	
Defendants.	)	

---

**[Proposed] FINAL JUDGMENT**

Consistent with the accompanying memorandum opinion, it is hereby **ORDERED** that judgment shall enter in favor of the State and against Defendants on the State’s claims of statutory public nuisance, federal common law nuisance, trespass, for violation of 27A Okla. Stat. § 2-6-105, and for violation of 2 Okla. Stat. § 2-18.1.

It is further **ORDERED** that the Non-Withdrawing Defendants shall comply with the following:

1. **Definitions**

- a. “Withdrawing Defendants” includes Peterson Farms, Inc; Cal-Maine Foods, Inc; Cargill, Inc.; and Cargill Turkey Production LLC.
- b. “Non-Withdrawing Defendants” includes Tyson Foods, Inc.; Tyson Poultry, Inc.; Tyson Chicken, Inc.; Cobb-Vantress, Inc.; George’s, Inc.; George’s Farms, Inc.; and Simmons Foods, Inc.
- c. “IRW” means the Illinois River Watershed.

- d. “NMP” means a State-issued nutrient management plan or animal waste management plan.

2. **Requirements**

- a. Upon written notice from the Oklahoma Department of Agriculture, Food, and Forestry or the Arkansas Natural Resources Commission that a grower located in the IRW and contracted with a Non-Withdrawing Defendant has land applied poultry litter in material violation of the terms of their NMP or has been cited for failing to obtain an NMP as required, Non-Withdrawing Defendants will withhold placement of flocks with that grower until the grower has met the issuing agency’s requirements, including any corrective actions.
- b. Defendants shall not place birds in any new broiler house(s) constructed in the IRW under a letter of intent and/or contract executed after the entry of this judgment unless the Defendant’s contract with the growers covering such broiler house(s) requires all litter generated in such broiler house(s) to be transported out of the IRW during all periods prior to the expiration or termination of this judgment.
- c. Each Non-Withdrawing Defendant will fund (or obtain funding from a public or private source for) a \$4 per ton subsidy to be applied toward the purchase/transport cost of each ton of litter their IRW growers agree to export from the IRW.

d. For any grower with land abutting Lake Tenkiller or a designated Scenic river in the IRW who continues to land apply poultry litter to such lands as permitted by an NMP after the entry of this judgment, and who is required by their NMP or voluntarily elects to install a vegetative riparian buffer on such lands, the Non-Withdrawing Defendant contracting with such grower at that time will fund (or obtain funding from a public or private source for) 50% of the costs to construct and install riparian buffer strips on that grower's farm in the areas adjacent to the fields where litter is applied or adjacent to the applicable water body, provided that (1) the proposed riparian buffer strip does not constitute a bio-security risk with respect to Defendant's birds, (2) the proposed riparian buffer strip meets the Defendant's contractual setback requirements, if any, and (3) the total cost for construction of any individual riparian buffer strip does not exceed the greater of \$10,000 dollars per acre or \$250,000 in total. Costs associated with fencing cattle, ongoing maintenance and/or improvements beyond the initial construction and installation of the riparian vegetative buffers described above will not be included in a Non-Withdrawing Defendant's financial obligation under this provision.

- e. Each Non-Withdrawing Defendant will annually communicate in writing to its growers located in the IRW the immediately preceding financial commitments.
  - f. Upon a joint request by the Oklahoma Secretary of the Environment and the Oklahoma Attorney General, but no more than once per calendar year, each Non-Withdrawing Defendant will submit a written report with the following information: (1) the number of times flocks were withheld from their IRW growers because litter was applied in violation of an NMP; (2) the total amount in subsidies paid for litter exports under this judgment; (3) the number of farms that applied for the riparian buffer strip financial assistance available under this judgment; (4) the total square feet of riparian buffer strips installed under this judgment; and (5) the total square feet of riparian buffer strips approved under this judgment but not yet installed and the anticipated installation date for such riparian buffer strip.
3. **Term.** The Non-Withdrawing Defendants' obligations hereunder shall automatically expire ten years after the date this judgment is entered unless Plaintiffs prove willful noncompliance by a defendant, in which case the injunction may be extended by the Court as to the non-complying Defendant(s) for a term of three years. During any such three-year extension term, the Court may terminate the injunction upon a showing of substantial compliance by the Defendant(s) subject to the extension.

All relief not granted here is denied. The clerk of court is directed to enter this document on the docket as a final judgment.

Dated: August \_\_, 2025

---

Gregory K. Frizzell  
United States District Court Judge

## **EXHIBIT 3**

**From:** [Jennifer Lewis](#)  
**To:** [Todd, Gordon D.](#); [Hopson, Mark D.](#); [Mundel, Benjamin](#); [Volpe, Frank R.](#); ["Vicki Bronson"](#); [Robert George](#); ["John Elrod"](#); ["Bylund, Jacob D."](#); [smcdaniel@ok-counsel.com](mailto:smcdaniel@ok-counsel.com); ["kc.tucker"](#); ["John Tucker"](#); [kristy.boehler](mailto:kristy.boehler); [rredemann@pmrlaw.net](mailto:rredemann@pmrlaw.net)  
**Cc:** [Gentner Drummond](#); [Garry Gaskins](#); [Baker, Fred](#); [Hermiz, Kristen M.](#); [Solomon, Cindi](#); [Becker, Madeline](#); [Kristopher E. Koepsel](#); [M. David Riggs](#); [Robert A. Nance](#); [Louis Bullock](#)  
**Subject:** [EXTERNAL] State v. Tyson et al. - Oklahoma Secretary of Energy and Environment request to withdraw  
**Date:** Monday, July 7, 2025 12:09:19 PM

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**CAUTION (O365):** This email originated from outside of George's network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Counsel,

The Oklahoma Secretary of Energy and Environment, Jeffrey F. Starling, has requested that the State of Oklahoma withdraw him as a relator in the case *State of Oklahoma v. Tyson Foods, Inc., et al.* On behalf of Oklahoma Attorney General Drummond, I write to ask if Defendants will consent to this withdrawal, and if not, to schedule a meet and confer to discuss the reasons for Defendants' refusal to consent. I look forward to hearing from you at your earliest convenience.

Thank you,

Jennifer L. Lewis  
Deputy Attorney General  
Conservation Unit  
Oklahoma Office of the Attorney General  
313 NE 21st Street  
Oklahoma City, OK 73105  
(405) 522-3109  
[jennifer.lewis@oag.ok.gov](mailto:jennifer.lewis@oag.ok.gov)

## **EXHIBIT 4**



**GENTNER DRUMMOND  
ATTORNEY GENERAL**

October 4, 2024

*Via Email*

John H. Tucker  
Rhodes, Hieronymus, Jones, Tucker & Gable, P.L.L.C.  
jtucker@rhodesokla.com

Mr. Tucker:

In response to Defendants' October 2, 2024, letter, it is my understanding that Defendants are seeking to conduct discovery and to amend the schedule for expert witness identification and exchange of expert reports, which differs from the approach the Court directed in its September 13 and 16, 2024 rulings. *See* Dkt# 3038 and 3039. With all due respect for Defendants' request, the processes ordered by the Court are consistent with the authority granted to the Court in Rule 26(b)(1). Therefore, the State must respectfully decline any efforts to overturn the Court's orders in this matter.

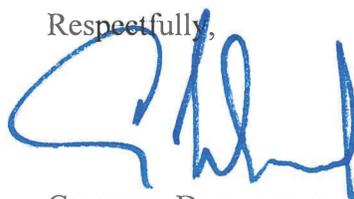
The Court set the schedule for deadlines leading up to the December 2024 hearing, and the State intends to follow the Court's schedule. Revising the Court's schedule would substantially and unfairly limit the timeframe for the State to prepare its expert reports by eliminating three weeks of the time allotted by the Court for the identification of expert witnesses and the submission of their respective reports. As the Court expressed during the September 13, 2024, hearing, "the defendants bear the burden of proof insofar as they seek to reurge the issue" of prudential mootness. *See* Transcript of Status Conference, September 13, 2024, p. 5, ln. 23 through p. 6, ln. 1. ("[D]efendants have the burden to the extent that they wish to continue to urge prudential mootness." Transcript p. 10, ln. 1-2.). The Court's order, which sets a schedule for the parties' simultaneous identification and exchange of expert witness information is consistent with the Court's view that both sides of the case have a burden of proof at the December 2024 hearing. Adjusting the schedule solely with regard to an issue where the State will present evidence and not doing so with regard to those areas that Defendants must carry the burden of proof constitutes an obstacle to a fair trial of the issues from the State's perspective. From the State's point of view, Defendants have extended a one-sided request that the State cannot accept.

Further, I am concerned that Defendants' letter misunderstands the purpose of the December 2024 hearing. The State's reading of the letter is that Defendants believe the overarching purpose of the December 2024 hearing is to address remedies. The State disagrees that the hearing has such a focus. In accord with the Court's direction at the September 13, 2024, status conference, the State intends to show that there is continuing harm from the past and current overapplication of poultry waste by Defendants in the IRW.

Despite the Court having denied discovery without objection by Defendants, Defendants' letter seeks discovery as to the presentation of evidence at the hearing in relation to remedies being sought by the State. But addressing the details of remedies is a subject for a later date – not the focus of the evidentiary hearing. To the extent remedies are relevant to the evidentiary hearing, the State intends to argue that remedies exist to address the pollution caused by overapplication of poultry waste. Beyond that threshold, the State does not need to show more with respect to remedies at the upcoming evidentiary hearing. To the extent Defendants aim to argue prudential mootness, it is the Defendants' burden to establish a showing of no possible remedy.

I acknowledge that the parties do not see eye-to-eye on this matter. As I have said before, it is not my aim to injure the poultry companies. I simply want to find a solution. I continue to have an open door for discussions that would resolve this matter between the parties.

Respectfully,



GENTNER DRUMMOND  
*Attorney General*

## **EXHIBIT 5**

*State of Oklahoma v. Tyson Foods, Inc., et al*

Expert Report

November 18, 2024

Prepared by:

Todd C. McDonnell  
Timothy J. Sullivan  
E&S Environmental Chemistry, Inc.  
Corvallis, OR



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Figure 1. National Land Cover Database (NLCD) data for the northeastern portion (i.e., headwaters) of the Illinois River Watershed (IRW) from 2001, 2008, and 2021. ....5

## 1 INTRODUCTION

### 1.1 Qualifications

E&S Environmental Chemistry, Inc. (E&S), based in Corvallis, Oregon, has conducted environmental research and consulting projects nationwide for government, industry, and stakeholder groups since 1988. Clients have included nearly all federal agencies with natural resource responsibility, three national laboratories, and environmental quality departments in seven states. E&S has substantial expertise and experience in water quality monitoring, environmental compliance, nonpoint source pollution assessment, elemental mass balance, geospatial applications, watershed characterization, statistical and process-based modeling, environmental education, and terrestrial and aquatic effects research. The E&S team has developed numerous watershed analyses and assessments using federal and state methodologies. Each assessment has explored such issues as fisheries, wetlands, aquatic and riparian habitats, sedimentation, hydrology, water use, water quality, land use, channel habitat types, and stream channel modifications. E&S has leveraged extensive use of spatial data for resource evaluation, assessment, and linking of watershed conditions to current and historical land use patterns within watersheds.

Dr. Todd McDonnell is the President and Principal Scientist of E&S and has worked collaboratively with E&S co-founder Dr. Timothy Sullivan for more than 20 years. Sullivan and McDonnell collaborated on the development of Sullivan's 2009 Expert Report related to this Illinois River Watershed (IRW) litigation. McDonnell and Sullivan co-authored the Expert Report contained here.

Dr. McDonnell is an environmental scientist with 25 years of experience in water quality assessment, environmental modeling, harmful algal blooms, and agricultural best management practices. He has extensive experience with risk assessment to inform decision making related to anthropogenic impacts on a wide range of environmental components including water and soil chemistry, fisheries, and vegetation. Dr. McDonnell has developed watershed assessments to evaluate physiochemical and biological conditions including aspects of hydrology, water quality, soils, fisheries, wildlife, vegetation, and land use throughout the United States. Dr. McDonnell is experienced with implementation and monitoring related to agricultural best management practices for nutrient pollution reduction. He has served as the principal investigator and technical lead on a wide variety of collaborative environmental research and restoration projects conducted by E&S in cooperation with federal agency scientists and academic researchers throughout North America and Europe. Most have focused on environmental pollution and its effects on aquatic and terrestrial systems.

Dr. Sullivan is an environmental scientist with expertise in the areas of environmental chemistry, ecology, and zoology. He has 45 years of experience studying the influence of land use on the water quality of lakes, rivers, and streams. This includes about 35 years of experience conducting watershed assessment and research to determine relationships between human activities in the watershed and the quality of surface waters.

## 1.2 Purpose

E&S Environmental previously prepared an expert report in this matter addressing various aspects of phosphorous and bacteria in the IRW, and in January 2010 Dr. Timothy Sullivan testified at trial based on that report. E&S Environmental has now been asked by the Defendants to prepare a further report addressing the current state of the IRW, including anthropogenic changes and nutrient management practices, and to assess the availability, suitability, and efficacy of various remedies that may be proposed by the Plaintiff, the State of Oklahoma (“the State”), at a forthcoming hearing.

This report proceeds in two steps. First, we describe some of the significant changes that have occurred in the IRW since trial ended in 2010. We do not attempt to offer a comprehensive catalog of all changes in the watershed, or a complete assessment of poultry farming in the IRW. Doing so would have been challenging under any circumstances, and would have been impossible in the roughly 12-week timeframe we were provided. Instead, we focused on issues that have the potential to confound an assessment of the presence of any current injury and any remedies proposed to address any such injury. As the discussion below shows, the IRW has changed in significant ways including aspects related to human population, land use, and poultry farming.

Second, the Report discusses “remedies” that might be proposed by the State. The Court has required the parties to disclose expert reports simultaneously, and we understand the State refused to share in advance what remedies, if any, it might raise at the hearing. Accordingly, this report focuses on the 11 remedies discussed previously by the State’s expert Mr. Todd King. As discussed below, the State has failed to demonstrate that any of Mr. King’s remedies would alleviate harm purported to have been caused by the Defendants. None of Mr. King’s remedies are available for use or are likely to have a significant impact on water quality in the IRW. In our view, no remedy proposed to this Court would have a superior positive impact on water quality as compared with the regulatory programs the States of Oklahoma and Arkansas already have in place. We will address any new or different testimony offered by the State at the hearing.

## 1.3 Summary of Findings

**Finding 1:** A robust framework for safely managing poultry litter in the Illinois River Watershed has been established through various laws and regulations, agreements, watershed management plans, educational outreach, and conservation partnerships.

**Finding 2:** The poultry litter industry has undergone extensive changes in relation to how poultry litter is managed in the Illinois River Watershed. These changes have minimized risk of phosphorus runoff to surface waters that could result from land application of poultry litter.

**Finding 3:** For the various reasons described in the “Missing Required Information” portions of Section 3 associated with each remedy proposed by King, no remedy is available to address purported phosphorus runoff related to land application of poultry litter in the Illinois River Watershed.

**Finding 4:** The State has presented no evidence that legacy phosphorus from land application of poultry litter is contributing to injury in the Illinois River Watershed. As such, any remedy associated with treatment or removal of existing phosphorus in sediments is not available.

**Finding 5:** The existing framework for managing land application of poultry litter includes penalties to ensure its rules and regulations are followed in a manner that prevents injury to the Illinois River Watershed from land application of poultry litter.

**Finding 6:** Any efforts to strengthen the rules and regulations related to managing land application of poultry litter should be implemented through the existing poultry litter management framework, which is being led by the natural resource agencies in Oklahoma and Arkansas, in coordination with stakeholders.

**Finding 7:** Urbanization and increased human population have been rapidly occurring in the headwaters of the Illinois River Watershed for several decades and will continue to increase. This increasing urbanization and human population have contributed and will continue to contribute phosphorus to surface waters of the Illinois River Watershed each day, rain or shine.

**Finding 8:** Remedies for urban point and non-point sources of pollution should continue to be addressed through the existing 2018 Memorandum of Understanding between the Oklahoma and Arkansas, and respective Watershed Management Plans and Watershed Improvement Plans developed by natural resource management agencies of the two states.

## 2 CURRENT WATERSHED CONDITIONS

### 2.1 Urban Land Cover and Humans

Over the past two decades, the IRW has experienced significant changes in land cover. These changes have been most pronounced in Northwest Arkansas. According to the National Land Cover Dataset, urban land cover in the headwaters of the IRW increased by 64% (+29 sq. miles) between 2001 and 2021 and by 12% (+8 sq. miles) between 2008 and 2021 (Figure 1). The four largest cities in the IRW (Bentonville, Rogers, Springdale, and Fayetteville) are predominately located in the headwaters of the watershed (Figure 1). According to estimates from the U.S. Census Bureau, the combined population of these cities increased by approximately 30% from 2001 to 2008 (173,154 in 2001 to 224,718 in 2008) and approximately 40% from 2008 to 2021 (224,718 in 2008 to 313,410 in 2021). The large increases in human population and urban land use would be expected to cause increases in phosphorus concentrations in surface water via multiple mechanisms, including application of lawn fertilizer, pet waste, soil disturbances, road construction, and wastewater treatment, among others. This area is estimated to reach 1 million residents by 2050.<sup>1</sup>

Urbanization and increase in human populations have several significant impacts on water quality, particularly through increasing phosphorus levels in surface waters. Numerous interconnected factors contribute to this effect. Two phases of urbanization cause adverse effects on receiving water quality. During the initial phase, a pulse of sediment and associated nutrients moves from disturbed land on construction sites to nearby surface waters. A subsequent more sustained phase is associated with increased runoff from impervious surfaces. This results in increases in transport of accumulated particulate and dissolved constituents during storm events, among other human-induced impacts to water quality year-round. Surface waters impacted by urbanization can suffer from increased turbidity, organic matter, temperature, and nutrient loads; as well as bacterial contamination (WEF/ASCE, 1998).

Urban development involves large-scale soil disruption, which increases soil erosion and runoff. Eroded soils are transported to surface waters, increasing phosphorus concentrations and promoting eutrophication. The expansion of urban areas leads to more impervious surfaces, such as roads, rooftops, sidewalks, and parking lots. These surfaces prevent natural infiltration of rainwater, leading to increased runoff that rapidly collects pollutants, including phosphorus, from the urban landscape. This runoff contributes to phosphorus loading in surface waters, as water can flow directly into streams and rivers without filtration by soils. Additional land use within urban areas can include residential lawns and landscaping, which often rely on phosphorus-containing fertilizers to enhance growth. This additional phosphorus source enters surface waters through stormwater runoff, further exacerbating phosphorus pollution. Over-application of fertilizers in urban areas or rainfall following fertilizer application can increase phosphorus contributions to nearby surface waters including streams, rivers, and lakes. The commercial fertilizers used in urban areas contain water-soluble phosphorus that is immediately bioavailable, unlike most of

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<sup>1</sup> Worth Sparkman, *Northwest Arkansas' Population on Track for a Million by 2050*, Axios NW Arkansas (Apr. 2, 2024), <http://bit.ly/4fP1QxT>

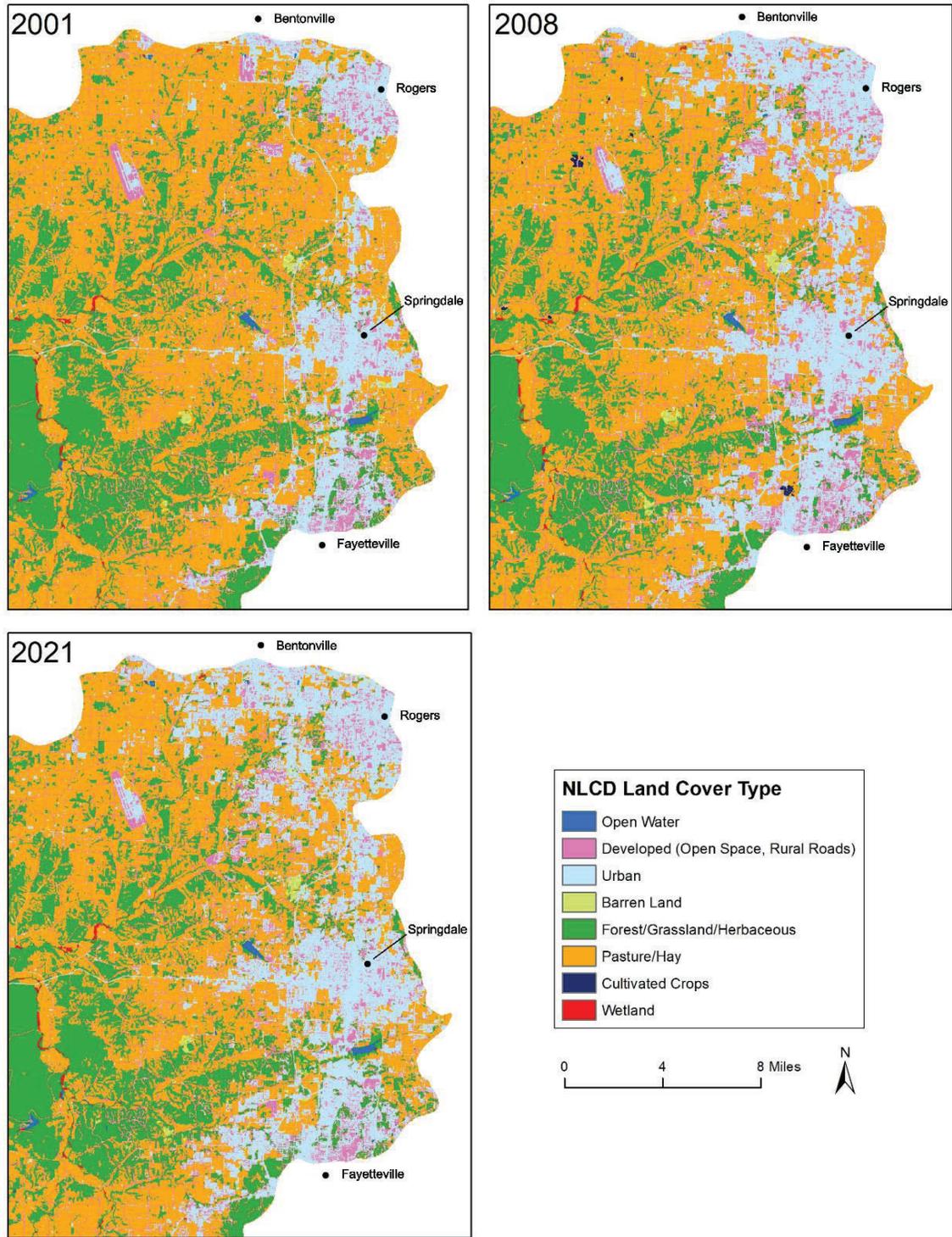


Figure 1. National Land Cover Database (NLCD) data for the northeastern portion (i.e., headwaters) of the Illinois River Watershed (IRW) from 2001, 2008, and 2021. Urban land cover in the headwaters of the IRW increased by 64% (+29 sq. miles) between 2001 and 2021 and 12% (+8 sq. miles) between 2008 and 2021.

the phosphorus in poultry litter. As human population density increases, wastewater production increases as well. Although phosphorus concentrations in wastewater effluent may remain somewhat stable during population growth, the overall volume of treated effluent entering receiving waters increases with the human population, leading to greater cumulative phosphorus loads. This additional phosphorus loading can degrade water quality and stimulate algal growth in downstream receiving waters.

These developments have changed the nature, location, and quantity of nutrient inputs into the waters of the IRW from the time of trial in 2009 and prior.

## 2.2 Poultry Production in the IRW

The number and location of poultry farms associated with most Defendants has changed significantly over the past 15 years. Prior to trial in 2008-2009, each Defendant identified to the Plaintiff the number and location of poultry farms raising birds for it. In the intervening years, that has changed significantly, and many farms that were growing birds for various defendants at that time are no longer doing so (Table 1).

Defendant	Growers Identified in 2008-09 by Defendant	Of those, remaining in the IRW in 2024
Cobb-Vantress, Inc.	89	18
Tyson Chicken, Inc.	243	42
Tyson Foods, Inc.	91	3
Tyson Poultry, Inc.	300	30
Peterson Farms, Inc.	40	0
Georges Farms, Inc.	51	7
Cargill	45	6

Thus, with respect to each defendant, poultry are being raised in different quantities and/or at different locations, and poultry litter is being generated and used or transported from different locations. Poultry houses have been removed from some farms. Some of those locations were converted into non-agricultural uses such as residential subdivisions and other urban landscapes. Some of the Defendants have replaced former IRW farms with farms located outside the IRW.

## 2.3 Arkansas and Oklahoma Programs for Poultry Growers and Litter Applicators

In the IRW today, pursuant to the laws of Oklahoma and Arkansas, land application of poultry litter is governed by nutrient management plans. These site-specific nutrient management plans permit land application of poultry litter to portions of fields that are not prone to surface transport because they do not routinely flood, are not frozen at the time of litter application, and are not located in close proximity to a stream. Additionally, nutrient management plans consider the soil

test phosphorus (STP) value for each field as part of the basis for determining appropriate litter application rates. The phosphorus content of the litter being spread is also considered in conjunction with the STP value for each field. Plans are updated at least every 5 (Arkansas) or 6 (Oklahoma) years. Okla. Admin. Code § 35:17-5-3(b)(4); Ark. Admin. Code 138.00.21-2204.3(C). These regulations were crafted to minimize the potential for phosphorus runoff resulting from land application of poultry litter. Nutrient management plans are developed under specific technical guidelines. Soil sampling and laboratory analysis are conducted in accordance with land grant university guidance and industry practice. Nutrient management plans are based on current scientific understanding that recognizes that both source and transport issues are important in nutrient management. When farmers follow these prescriptions, they act in compliance with existing laws and with current scientific understanding regarding management of non-point source pollution.

### **2.3.1 Arkansas**

The Arkansas Soil Nutrient Application and Poultry Litter Utilization Act was enacted by the Arkansas Legislature in 2003. The Arkansas Natural Resources Commission (ANRC) established “Rules Governing the Arkansas Soil Nutrient and Poultry Litter Application and Management Program.” Those rules became effective in 2006. Additionally, based on 2005 amendments to the Act, the requirement for managing land application of poultry litter in Arkansas was established in 2007, with the implementation of a nutrient management plan structure to govern land application of poultry litter within a nutrient surplus area.

Following enactment of legislation in 2003, the ANRC provided a “protective rate” for poultry litter application to be used as an interim measure. The protective rate set limits on application of poultry litter or commercial fertilizer in nutrient-limited areas where landowners had not yet obtained nutrient management plans for their land. The protective rate for poultry litter application expired January 1, 2007, after which any operation applying phosphorus was required to have a Nutrient Management Plan or a Poultry Litter Management Plan.

Much of the water quality data examined at trial pre-dated the widespread adoption of nutrient management plans. Today, Arkansas’s poultry litter regulations have been in place and operating for nearly two decades. According to the Upper Illinois Watershed Management Plan, presently all poultry growers are expected to be managing operations according to nutrient management plans.<sup>2</sup>

The Arkansas Natural Resources Commission (ANRC) Rules Governing the Arkansas Soil Nutrient and Poultry Litter Application and Management Program utilize a “Phosphorus Index” to be referenced in all nutrient management plans and to “govern the terms and conditions under which Nutrients may be land applied.” ANRC revised the rules effective January 1, 2010, to

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<sup>2</sup> Arkansas Dpt. of Ag., Upper Illinois River Watershed Management Plan (Oct. 2024); Patrick Fisk, Personal Communications.

replace the original Phosphorus Index (developed in 2001) with a new Phosphorus Index (developed in 2009).

### 2.3.2 *Oklahoma*

The State of Oklahoma, through the Oklahoma Poultry Waste Applicators Certification Act, has established a comprehensive program that ensures standards for land application of poultry litter, work performance, applicator certification and recertification, and procedures and best management practices are followed (Oklahoma Dep't of Agriculture, *Agricultural Environmental Management Division*, <https://bit.ly/3CGOzZY> (last visited Nov. 17, 2024)) .

The State of Oklahoma regulates poultry feeding operations and litter land application through the Oklahoma Registered Poultry Feeding Operations Act (ORPFOA) and the Oklahoma Poultry Waste Applicators Certification Act (OACA), both of which were enacted in 1998. The ORPFOA requires all poultry feeding operations to register with the Oklahoma State Board of Agriculture, adopt Best Management Practices (BMPs), procure and comply with an Animal Waste Management Plan (AWMP), including litter application rates and associated instructions, and test poultry litter and the soil to which it may be applied on an annual basis. The State Department of Agriculture, Food, and Forestry (ODAFF) is charged with administration and enforcement of the OACA. The department has the authority to suspend, cancel, deny, or revoke applicator certificates. ODAFF enacted regulations for both ORPFOA and OACA to ensure the beneficial use of poultry waste while preventing adverse effects on waters of the State. The ODAFF regulations described the factors that control the amount, location, and manner in which poultry litter may be applied to any particular field based on soil tests, litter tests, and site characteristics.

AWMPs are field-specific plans setting forth the time, location, and amount of poultry litter that may be applied to a parcel of land. An AWMP must set forth “land application rates of poultry waste based on the available nitrogen and phosphorus content of the poultry waste and provide controls for runoff and erosion as appropriate for site conditions” based on “a soil test and current “application rate based upon the Department's standards for land application for poultry waste as promulgated by rules.” [USDA Natural Resources Conservation Service (NRCS)] phosphorous standards.” Okla. Stat. tit. 2 § 10–9.7(C)(5), (G)(3).

AWMPs also incorporate Best Management Practices (BMPs), including all those set forth in the ORPFOA and accompanying regulations. Okla. Stat. tit. 2 § 10–9.7(A), (B). An AWMP contains prohibitions against litter application in certain circumstances, including when the ground is saturated or during rainfall events or when it is frozen. It prohibits application to locations within 100 feet of a perennial stream, within 50 feet of an intermittent stream and to fields with a slope greater than 15 percent or soils less than 10 inches in depth.

Oklahoma regulations authorize the drafting and issuance of AWMPs on behalf of the State by the USDA NRCS or an entity approved by the State Department of Agriculture. Currently, AWMPs are drafted by soil scientists under contract with ODAFF, each of whom possesses training and expertise in this field. Each AWMP is tailored to the characteristics of the specific parcel of land

to which the AWMP relates. Each plan incorporates the requirements from the statutes and the rules, but it also may incorporate particular issues that are associated with that individual's property, including proximity to streams.

The ORPFOA mandates that approved AWMPs include BMPs and provisions designed to prevent discharge of poultry waste to the waters of the state and no contamination of the waters of the state. Under ORPFOA, the procedures documented in the AWMP require that poultry waste shall only be applied to suitable land at appropriate times and rates. Discharge or runoff of waste from the application site is prohibited. If either occurs, the provisions of the ORPFOA require the particular AWMP to be assessed and revised to address any noted deficiencies. Similarly, ODAFF's AWMP Requirements mandate that storage and land application of poultry waste shall not cause a discharge or runoff of significant pollutants to the waters of the state. In 2024, the Oklahoma legislature amended Oklahoma law to confirm that the state agents tasked with drafting and approving plans are expected to prepare plans that minimize the risk of runoff. Accordingly, that same law makes clear that those applying litter in conformance with a plan are not liable for a nuisance. Okla. S.B. 1424 (May 31, 2024).

The OACA requires that anyone who applies poultry litter, whether as a commercial or private applicator, must first obtain an applicator's certificate from the State Board of Agriculture. The OACA also requires litter application to comply at all times with the provisions set forth in the Animal Waste Management Plan, if application is conducted on land operated by a registered poultry operation. All other applications in a nutrient-limited watershed must comply with a Conservation Plan.

The ORPFOA requires all poultry growers and all certified applicators to receive nine hours of education regarding poultry waste handling in the first year and two hours of continuing education every year until the operator has received a total of 19 hours of training; thereafter, growers and applicators must receive two hours of continuing education every three years. The training is generally provided through the Oklahoma State University Extension Service and usually includes participation by ODAFF officials in educational programs and training videos.

IRW growers appear to operate in compliance with their nutrient management plans. The State provided no evidence at trial of substantive violations of nutrient management plans. All growers and applicators uniformly testified at trial that they comply with all specifications included in their nutrient management plans, including litter application rates.

Oklahoma's statutes and regulations set maximum limits on litter application that are dependent on whether the land targeted for application is located in a "Nutrient Limited" or "Non-Nutrient Limited" Watershed. In nutrient limited watersheds, litter may not be applied at the full rate to any land with an STP level greater than 120 lbs/acre, and all application is prohibited on lands in excess of 300 STP. Since July 1, 2006, the State of Oklahoma has designated the Oklahoma portion of the IRW as "Nutrient Limited". Prior to July 2006, the non-nutrient limited Code 590 standards applied to the IRW, which included an STP cap of 400 lbs/acre at that time.

## 2.4 Agronomic Practices and Litter Handling in the Oklahoma and Arkansas IRW

### 2.4.1 Poultry Litter Management and Agronomic Practices

Management of poultry houses by poultry farmers has changed dramatically over the past 15 years. In 2009-2010, growers typically cleaned out their houses at least once per year; today, growers clean out houses on average every 3 to 7 years. This change was driven principally by an improved understanding of bird health.<sup>3</sup> (Patrick Fisk, Personal Communications).

Rather than clean-out, growers will de-cake and windrow their litter, and then re-spread it within the house, perhaps with a fresh top layer of bedding material. De-caking is the removal of the moisture-heavy, crusted top layer. Litter has a tendency to retain moisture and clump together in a process which is referred to as ‘caking’. This caked material is undesirable because it increases house ammonia levels, resulting in adverse effects on flock performance (Miles et al., 2004). De-caked material can be land-applied or stored in a stacking shed awaiting sale and transport.

Windrowing is now a common practice to control pathogen populations and disease risk associated with longer in-house litter retention times. Linear windrows of litter are formed at 18 to 24 inches in height along the length of the house between flocks and turned at least once prior to placement of the next flock. The high temperatures achieved during windrowing work to pasteurize the litter. Leveling of windrows four to five days prior to chick placement will allow for ammonia release as the litter cools and dries. Another method used for managing poultry litter for extended in-house retention is through a ‘partial house cleanout’ during which a limited amount of litter from the middle portion of the house is removed, with the remaining litter redistributed throughout the house.<sup>4</sup>

Growers also now use other methods that address the nutrient content of poultry litter. Many companies, including Tyson, Simmons, and Georges, include additives in their feed (e.g., phytase) to make the nutrients in the feed more available for absorption by the birds, resulting in fewer nutrients in bird waste (Philip Smith, Personal Communication). Phytase-supplemented poultry diets often contain 15 to 25 percent less phosphorus than conventional diets. As a result, more phosphorus provided directly in the feed is retained in the bird and manure phosphorus excretion from animals provided phytase-supplemented diets is reduced 15 to 25 percent compared to manure from birds that have been provided conventional diets. Many growers also now treat poultry litter in the houses with alum. Alum has the effect of binding phosphorous in the litter in a non-bioavailable form.

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<sup>3</sup> Oladeinde, et al., Litter Commensal Bacteria Can Limit the Horizontal Gene Transfer of Antimicrobial Resistance to Salmonella in Chickens, 88 Applied & Env't Biology 9 (2022) (available at <https://doi.org/10.1128/aem.02517-21>); Julianne Isaacs, Poultry litter: How old is too old?, Manure Manager (Oct. 18, 2021), <https://www.manuremanager.com/poultry-litter-how-old-is-too-old/>; Poultry Environmental Quality Handbook, Recycling of Poultry Litter, Univ. of Georgia College of Agric. and Env't Sciences (last accessed Nov. 16, 2024), <https://peqh.uga.edu/2023/10/recycling-poultry-litter/>; John A. Smith, The case for built-up litter in US broiler complexes, The Poultry Site (May 9, 2017), <https://www.thepoultrysite.com/news/2017/05/the-case-for-builtup-litter-in-us-broiler-complexes>. (Josh Payne Personal Communication).

<sup>4</sup> Tom Tabler & Jessica Wells, *Poultry Litter Management*, The Poultry Site (Dec. 17, 2012), <https://bit.ly/3YLvugA>.

Eventually, litter is cleaned out and either land applied by the poultry grower according to their nutrient management plan or sold to a litter stockpiler, transporter, or certified poultry litter applicator. These new methodologies promote bird health and are more economically advantageous for growers.

The State of Oklahoma, primarily through the Oklahoma State University Extension (OSU Extension), provides a variety of educational materials related to poultry litter management, including fact sheets and publications that address topics such as soil sampling, nutrient management, water quality, and other aspects of poultry litter management.

The OSU Extension website includes a dedicated section for poultry waste management education (Okla. St. Univ. Extension, *Poultry Waste Management Education*, <https://bit.ly/4fvvjgN> (last visited Nov. 17, 2024) with links to practical poultry litter management resources including the Oklahoma Litter Market and the Poultry Litter Transfer Program. Additionally, the OSU Extension facilitates cooperation among stakeholders to address challenges through voluntary programs to identify problems and implement solutions. Training topics include:

- Regulations
- Environmental Background
- Understanding the Nutrient Management Plan
- Poultry Litter Nutrient Management
- Soil & Litter Sampling, Spreader Calibration
- Litter Use as a Soil Amendment
- Conservation Practices
- Alternative Waste Management Technologies
- Poultry Litter Commerce

These OSU Extension resources constitute an important part of the overall poultry litter management framework that has become increasingly robust since 2008. These services are integral to sustainable poultry litter management in the IRW. Oklahoma State University has a strong track record in agricultural research, with a focus on practical solutions for farmers and ranchers. They have made significant contributions to improving crop yields, livestock production, and sustainable agricultural practices. Moving forward, the expectation is that OSU will continue to be a leader in agricultural education and research, including the advancement of innovative methods for managing poultry litter to reduce environmental impact.

#### ***2.4.2 Poultry Litter Application and Transportation***

The patterns of poultry litter transportation and application have changed dramatically in the IRW over recent decades. Less litter is land-applied, and vastly more litter is transported significant

distances away from the IRW. As early as 2010, over 100,000 tons of poultry litter was being annually exported from the IRW in Arkansas and Oklahoma, most of which was moved to Kansas and central Oklahoma.<sup>5</sup>

Various efforts have helped to expand the litter export industry in the IRW. The Oklahoma Litter Market, provided through the OSU Extension lists sellers of poultry litter and service providers. The OSU Extension has developed a Poultry Litter Transfer Program that provides incentives for poultry growers to sell litter to a qualified buyer and litter buyers to offset the cost of transport. The Oklahoma Conservation Commission (OCC) has supported the transfer of poultry litter out of nutrient-impacted watersheds (OCC, *2022 Litter Transfer Rules* (Jan. 1, 2022)). Buyers and sellers work with local conservation districts to arrange litter transport and ensure compliance with regulations. Furthermore, poultry integrators in the IRW have supported the removal of litter directly from farms they operate, and have also provided financial incentives to facilitate the export from the IRW of poultry litter generated on contract grower farms through a nonprofit corporation named BMPs Inc. Since 2005, annual export of poultry litter reported by BMPs Inc. increased from approximately 15,000 tons/yr to well over 100,000 tons/yr in recent years. (BMPs, Inc. data sheet Exports 2005-2023).

Data accumulated by the State of Arkansas demonstrates that from 2014 to 2023, an increasingly small fraction of poultry litter generated in the IRW was land applied near where it was generated, around 7% on average in the Benton and Washington counties in the Arkansas IRW. Roughly 80% of the total average 189,369 tons of litter generated in the IRW annually was sold or transferred from these counties from 2014 to 2019, with a significant portion of it appearing to leave the State entirely. (ANRC Annual Data 2014-2023). In 2023, the most recent year for which data is available, in Benton County, growers generated 205,443 tons of litter, of which growers removed 134,699 tons from the houses, land applied 3,740 tons, stored 3,244 tons, sold 127,697 tons, with the remaining 18 tons unaccounted for.<sup>6</sup> Data for Washington County reflects the same trend – 102,106 removed from houses; 7,345 tons land applied; 92,621 tons sold and transported. (ANRC Data 2023)

ODAFF data show that the land application of litter “in the Oklahoma IRW dropped from 31,660 tons in 2009 to 7,700 tons in 2010.” (Herron, et al.). According to ODAFF, 12,774 tons of poultry litter were applied within the Oklahoma IRW from July 1, 2017 through June 20, 2018. Additionally, 34,590 tons of poultry litter originating from within the Oklahoma portion of the IRW was either land applied outside of the IRW in Oklahoma or exported to other states from July 1, 2017 through June 20, 2018.<sup>7</sup> As an example, Adair County was a net importer of poultry litter

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<sup>5</sup> Tomlinson Proposal for 2014-2015 Kansas Fertilizer Research Fund at 1 (citing Herron, S, A. Sharpley, S. Watkins, and M. Daniels. 2012. Poultry Litter Management in the Illinois River Watershed of Arkansas and Oklahoma. Cooperative Extension Service, Division of Agriculture, University of Arkansas. Fact Sheet FSA9535 at 3.

<sup>6</sup> These data sets are not perfect, which is not surprising on account of the self-reporting nature of the data. What matters for my purposes, however, is that the changes in litter handling is changed by orders of magnitude from the time of trial when, as the Court found, most litter was land applied by growers near where it was generated.

<sup>7</sup> Jeremy Seiger, Dir. ODAFF, Report on Poultry Waste Movement (Apr. 19, 2019).

in 2001 (i.e., 113% of the amount generated was applied). This proportion of poultry litter applied decreased to 51% in 2006 and to 33% in 2013. (ODAFF Data 2018; OCC Data 2001, 2006, 2013).

Thus, poultry litter that was once mostly land applied in close proximity to where it was generated in the IRW is now transported outside the watershed. Less is land applied near the houses where it was produced. Whereas in 2009-2010, BMPs accounted for most litter export from the IRW, a robust private market of buyers, stockpilers, and transporters now exists (OSU Litter Market; Patrick Fisk, Personal Communications).<sup>8</sup> More recent data show that a substantial amount of the litter generated and removed from poultry farms in the IRW is exported outside the IRW. The available records from Arkansas and Oklahoma during this period indicate that about 80% to 90% of litter is shipped off the farms where it is generated.

## 2.5 Watershed Management and Partnerships

In response to a 2018 Memorandum of Agreement (MOA) between Arkansas and Oklahoma, both states agreed to develop and begin the process of implementation of a Watershed Improvement Plan (WIP) and to establish a Monitoring and Assessment Workgroup. Additionally, each state agreed to prepare a nine-element Watershed Management Plan addressing nonpoint sources of phosphorus and other pollutants of concern. In 2022, to describe the collaborative nature and long-term vision of these plans to manage the IRW, Shanon Phillips of the Oklahoma Conservation Commission stated: “The Oklahoma Conservation Commission (OCC) and the Arkansas Natural Resources Division (ANRD) are working collaboratively to host a series of stakeholder meetings that will guide the update of the Illinois River Watershed management plan for the next decade.”<sup>9</sup>

A watershed management plan had previously been developed for the Upper IRW in 2012 (FTN Associates, Ltd. July 17, 2012. Watershed-Based Management Plan for the Upper Illinois River Watershed, Northwest Arkansas.). Given the changing landscape of the Illinois River Watershed, the Upper Illinois River Watershed Management Plan has been updated to re-evaluate current water quality conditions, target sub-watersheds for implementation of conservation practices, and engage existing and new stakeholders. This updated plan also established new goals for water quality improvements as a US EPA-approved nine-element watershed management plan. The existing Oklahoma Watershed Management Plan was developed in 2010. Updates to this plan for acceptance by US EPA remain in progress.

Upon acceptance by US EPA, these plans allow for federal funding for conservation practices in the watershed. The Watershed Management Plans and the WIP are connected because two of the nine elements from the Watershed Management Plans will be incorporated into the WIP.

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<sup>8</sup> Oklahoma State University Extension, Oklahoma Litter Market: Sellers and Service Providers (Summer 2022), <https://extension.okstate.edu/programs/poultry-waste-management/media/oklahoma-litter-market-2022.pdf>; Poultry Environmental Quality Handbook, Economics of Transporting Poultry Manure and Litter, Univ. of Georgia College of Agric. & Env't'l Sciences (last accessed Nov. 17, 2024), <https://peqh.uga.edu/2023/09/economics-of-transporting-poultry-manure-and-litter-2/>.

<sup>9</sup> <https://conservation.ok.gov/events/first-public-meeting-for-illinois-river-watershed-management-plan-set-for-october/>

Additionally, the WIP “will include and update 319 projects and a WIP Advisory Group. The WIP will identify possible water-quality improvement strategies for point and nonpoint sources outlined in each states’ watershed based management plans (Ark. Energy & Env’t, *Integrated Water Quality Monitoring Assessment Report* (2020)).”

The updated Upper Illinois River Watershed Management Plan describes a set of conservation practices to be used for addressing potential non-point sources of pollution, including utilization of nutrient management plans for farmland and implementation of best practices for urban storm water management. Furthermore, the Illinois River Partnership has been established to: “improve the integrity of the Illinois River Watershed through public education, outreach, and implementation of conservation and restoration practices throughout the watershed” (Illinois River Watershed Partnership, *Our Mission*, <https://bit.ly/3AOtIzN> (last visited Nov. 17, 2024)).

### 3 RETAINED REMEDIAL OPTIONS

At the trial held in this matter previously in 2009-2010, the State offered some testimony relating to remedies from Mr. Todd King. In his report and testimony, Mr. King identified a number of potential remedies that, he posited, might theoretically be used to address excess phosphorus in the IRW (King 2008). At trial, King testified “I classified them as either retained for further evaluation within this report, or requires additional investigation and assessment because I didn't have enough information to do much within this report, and then finally not retained.” (Trial Tr. 7995). Mr. King “retained” three remedies: (1) cessation of land application of poultry litter, (2) installation of riparian buffer strips, and (3) increased treatment of drinking water. In addition, Mr. King proposed that eight additional remedies be “further assessed”: (1) localized soil excavation, (2) alum application to fields, (3) crop and nutrient management with nitrogen supplementation, (4) stream bank stabilization, (5) constructed wetlands, (6) alum application to Tenkiller Lake, (7) sediment removal from Tenkiller Lake, and (8) layered aeration of Tenkiller Lake. This report addresses these remedies previously raised by Mr. King. We will address at trial any additional discussion the State offers as to these or as to any different remedies the State subsequently raises.

Whether a remedy is appropriate to address an injury depends on a number of factors. First, a remedy must be available, in that it reflects proven technologies and methods, with known effects and consequences. Second, a remedy must be implementable. It should be possible for the court to order and the defendant to effectuate the remedy as a practical matter based on current conditions. Third, a remedy must be effective, in that it addresses the alleged injury resulting from the challenged conduct.

In 2008, King developed a list of what he deemed possible remedies. As King described his methodology, he attempted to “evaluate effectiveness and implementability,” and considered cost as “really just a very rough criteria.” (Trial Tr. 7994). However, none of King’s proposed remedies was supported by data, fieldwork, detailed cost assessment, context of the IRW, health and safety factors, feasibility of land acquisition, or other logistics. King accepted opinions of other state experts as fact and failed even to examine whether any given remedy addressed the particular alleged misconduct and injury asserted in this litigation in the IRW. Without evidence and analysis tying a particular course of action to a particular harm, demonstrating both that the harm results from the alleged wrongdoing and that the proposed action will address that harm, there is no suitable remedy. King also makes no effort to account for third party factors that may confound the suitability or availability of any remedy, such as consent by the U.S. Army Corp of Engineers for any activity on Lake Tenkiller, or third party riparian landowners for whose land is necessary for vegetated buffer strips.

As a general matter, Mr. King did not do the work necessary to support any of his remedies. To the best of King’s knowledge (Deposition, page 181), none of the remediation goals outlined by King in his report have been documented previously by the state of Oklahoma in any official state document. King was not aware (Deposition, page 181) if any of the remediation goals specified in his report were ever presented to the public for comment. King was also not aware of any public process in development of his remediation goals (Deposition, page 182). King agreed (Deposition,

page 184) that he did not consider any comments from interested parties, such as poultry farmers, cattle farmers, poultry integrators, federal government, State of Oklahoma, State of Arkansas, Cherokee Nation, 3<sup>rd</sup> party landowners, municipalities, public utilities, etc., regarding his evaluation or development of remediation alternatives. Thus, there was little or no opportunity for anyone other than Mr. King, himself, to provide input regarding the remediation goals or remedies outlined in the King 2008 Report.

For each remedy proposed by King, the ensuing sections (1) characterize the proposed remedy, (2) identify concerns related to the proposed remedy, and (3) identify information missing and results of analyses not presented by the State to support the remedy.

### 3.1 Cessation

#### 3.1.1 Characterization

King stated that cessation of land application of poultry litter must be implemented to begin addressing injuries identified for the rivers and streams of IRW and Lake Tenkiller. King further stated, however, that **poultry waste should be managed in accordance with applicable laws and regulations** and not allowed to negatively impact human health or the environment within or outside the IRW (King Report, page 11). King also stated that all other remedial action objectives offered in the report were predicated on cessation of land application of poultry litter within the IRW (King Report, page 6). As such, according to King, without cessation of poultry litter, none of the other remedial alternatives are available.

#### 3.1.2 Critique

The two recommendations by King, 1) full cessation or 2) application consistent with existing laws and regulations, are inconsistent. Applicable laws and regulations do not require cessation of land application of poultry litter throughout the IRW. King provided no justification for his claim that all of his suggested remedies necessarily require cessation of poultry litter application. Managing poultry litter in accordance with applicable laws and regulations, and in association with best management practices, can ensure that poultry farmers and certified applicators are environmentally responsible in their land application of poultry litter (Harrison 2023). King agreed with this by stating that “poultry waste should be managed in accordance with applicable laws and regulations”, seemingly suggesting that if poultry litter is land applied according to nutrient management plans and in compliance with all other pertinent rules, then continued land application of poultry litter within the IRW would be appropriate. Given that nutrient management plans have been fully established, a robust litter management program for the IRW is already in place. Furthermore, the Court found that poultry litter is beneficial for use and can be land applied in some instances without environmental harm. Findings of Fact and Conclusions of Law on Defendants’ Motions for Partial Judgement, Docket No. 2884, ¶¶ 7-10. Examples of responsible poultry litter management can include avoiding application near rivers and streams, on steep slopes, or when the ground is frozen. All of these are considerations included in Nutrient Management Plans (NMP) and Animal Waste Management Plans (AWMP; hereafter collectively

referred to as “Nutrient Management Plan”). As discussed, these plans are developed for poultry growers and litter applicators in the IRW.

Although it is known that portions of the IRW are amendable to land application of poultry litter if such application is performed in conformance with applicable laws and regulations and associated nutrient management plans, King also stated that cessation of land application of poultry litter should occur throughout the IRW. If complete cessation of land application of poultry litter is actually what King meant by his recommended “cessation” remedy, then this recommendation cannot be considered as a remedy because there are, of course, areas of the IRW in which poultry litter can be applied in compliance with state-approved nutrient management plans.

Forced cessation would be inconsistent with the existing program of using STP and other guidelines for litter application management. Management plans, if properly drafted and followed, are effective. Oklahoma and Arkansas state programs are sufficient to address litter application issues. It seems inappropriate to overrule the state’s legislatively-enacted statutes and the regulations developed by the state regulatory experts. The goal should be to build up the existing regulatory program.

While the agronomic rate to support forage crop growth is estimated at STP 65, the OSU Extension recommends at least STP 120 to ensure sufficient nutrients for full crop yield. Restricting application to STP 65 would risk increasing erosion and runoff from fields that lack full coverage on account of variability in STP and associated reduction in vegetation coverage in areas with STP below the agronomic demand.

A potential unintended consequence of cessation of land application of poultry litter, particularly wholesale cessation across a broad region, would be the removal of a valuable source of fertilizer on pastures used by farmers in the region (Harrison 2023). Cattle farmers in the IRW rely on poultry litter to fertilize the soil for the production of forage crops utilized for cattle grazing. As such, it is reasonable to assume that the cattle farming industry in the IRW would be adversely impacted by the lack of availability of poultry litter as a forage crop fertilizer.

Furthermore, it is possible or likely that some cattle farmers would replace poultry litter with inorganic fertilizers containing phosphorus, which could reduce or negate the intended benefits of broad-scale cessation of land application of poultry litter (Mark Weathers, Personal Communication). Requiring the use of inorganic fertilizer for cattle forage growth would have immediate effects on cattle farmers due to the higher cost of inorganic fertilizer relative to poultry litter. The price of inorganic fertilizer tracks the price of oil and gas due to the high energy requirements for inorganic fertilizer production. Given that oil and gas energy prices can be highly volatile, this volatility would be expected to be passed on to cattle farmers, introducing more uncertainty into the long-term sustainability of the cattle farming industry in the IRW.

The use of inorganic fertilizer is not expected to yield sufficient forage crop density to accommodate the current typical cattle stocking ratio of one head of cattle per 2.5 acres. Given the

likelihood of lower stocking ratios with less vigorous forage crop growth, a given acreage of land would be expected to yield fewer pounds of beef grown at higher costs. These higher costs would most likely be passed on to the consumer in a time of already high food prices and inflation. The long-term effect of cessation of land application of poultry litter on the region would be significant and potentially result in an overall reduction in the economic productivity of the IRW.

At present, application of poultry litter as a fertilizer is regulated. Commercial fertilizer application is not regulated in Oklahoma. Poultry litter contains bedding materials (e.g., wood shavings, rice hulls, and other plant-based material) that contribute nitrogen and phosphorus to soil in organic forms, which are less water soluble than inorganic forms of nitrogen and phosphorus. The slower release of organically bound nutrients is expected to result in less potential nutrient runoff as compared with inorganic nitrogen contained in urea fertilizer that transforms to nitrate compounds that becomes highly mobile during storm events. Organically complexed nitrogen contained in poultry litter is more durable in soils.

Organic-based poultry litter fertilizer contains micronutrients and has chemical effects that are likely to be difficult to replicate with inorganic commercial fertilizer. Poultry litter builds soil and improves the soil matrix. Organic-based poultry litter fertilizer contains a suite of nutrients to support healthy crop forage growth including nitrogen, phosphorus, potassium, calcium, magnesium, and micronutrients such as manganese and zinc. Replicating this suite of nutrients with application of inorganic fertilizers would likely be challenging for cattle farmers to manage and would increase the costs beyond those associated with supplementing nitrogen requirements with commercial urea. Urea-based fertilizers do not contain calcium, which is important for the maintenance of soil pH in the range (6.8 to 7.2) that promotes the desired forage crops for cattle (e.g., fescue, Bermuda). Although an N-only fertilizer such as urea may fully support desired forage crop growth for a few years, soil pH will diminish over time and the soil will require lime application to minimize undesirable grasses (e.g., broomsage) from encroaching into the more acidic and less fertile soils that are unsupported by organic-based poultry litter fertilizer. Marginal grass cover resulting from inadequate nutrient supply from inorganic fertilizer is more likely to lead to runoff and erosion than when soils are covered by dense forage crop cover supported by organic-based poultry litter fertilizer.

Poultry litter applicators are required to follow regulations related to land application of poultry litter. If a land area is deemed unsuitable for any land application of poultry litter, the cattle farmer would need to use commercial fertilizer and supplement with lime until the STP drops back into the range that would allow for at least some level of poultry litter application.

### ***3.1.3 Missing Required Information***

An IRW-scale determination has not been developed of where land application of poultry litter should be avoided. Areas of the IRW expected to yield the most benefit, in terms of minimizing the likelihood of phosphorus in runoff, in response to cessation of land application of poultry litter, are those with high STP values, on a steep slope, and that are located in close proximity to a stream. Although nutrient management plans developed for individual pastures aim to identify such

locations at present, only a small percentage of litter generated in the IRW is applied on that same poultry grower's land as poultry litter management practices have changed and more poultry litter is sold by growers and exported outside of the watershed. A broader scale analysis of where these higher risk areas may be located would be needed to consider adopting this cessation action at the watershed scale. An understanding of the extent to which cessation of land application of poultry litter in the IRW would affect other stakeholders (e.g., cattle farmers) has not been established.

The State of Oklahoma, through the Oklahoma Poultry Waste Applicators Certification Act, has established a comprehensive program that ensures that appropriate procedures and best management practices for land application of poultry litter are followed. Poultry growers and certified litter applicators in the IRW are known to operate in compliance with requirements of nutrient management plans or litter application procedures. The State provided no evidence, at trial or in intervening years, of violations of nutrient management plans or litter application procedures. Documentation of non-compliance with nutrient management plans or procedures would be needed to consider cessation of poultry litter application as a potential remedy beyond the areas in which cessation already occurs.

## **3.2 Buffer strips**

### **3.2.1 *Characterization***

Buffer strips (also called “vegetated filter strips”; VFS) are used to reduce nutrient runoff from pasture lands, which are found interspersed among forest, urban, and other land cover types in the IRW. They are installed between an expected or possible non-point source of runoff and receiving surface water bodies (e.g., streams, rivers, or lakes). Vegetated filter strips slow water runoff which allows larger soil particles (and adsorbed phosphorus) to settle. The vegetation within the strip reduces the propensity for overland flow (e.g., as sheet flow or through formation of rills and gullies), thereby reducing nutrient runoff from fields to surface waters, facilitating nutrient uptake by plants.

Vegetated filter strips were suggested by King to potentially reduce nutrient runoff from pastures and grasslands to surface waters of the IRW. King suggested that vegetated filter strips should be developed within a width of 100 feet on both sides of streams and rivers that flow through pastures or grassland. The recommendation was for installation either across all such streams within IRW (estimated at 84,927 acres) or for streams 3rd order and above (estimated at 13,347 acres) (King report, page 25).

### **3.2.2 *Critique***

State regulations currently disallow land application of poultry waste within a 100-foot buffer of a perennial stream and 50-foot buffer of an intermittent stream for the purpose of minimizing phosphorus in runoff. Thus, ‘buffer zones’ of areas in which poultry litter cannot be spread are already in place in the IRW. King described that, although vegetated filter strips have been shown in some cases to be effective in reducing phosphorus runoff from fields to surface waters, this is

not always the case: “Vegetative filter strips (VFS) are not always effective at removing soluble P and N. (King report, page 25)”.

The extent to which enhancing the vegetation within existing stream buffers would further reduce phosphorus loading to surface waters of the IRW is unknown. Enhanced stream buffers are likely to be most effective at nutrient capture in areas with a propensity to produce overland flow (i.e., sheet or rill/gully flow). Such areas are well known to individual farmers. Strategic use of cattle exclusion fencing around stream buffers would minimize impacts from cattle entering existing buffers and adjacent streams.

King did not take cattle management practices into consideration in specifying remediation efforts (King Deposition, page 51). King admitted in his trial testimony (page 8122) that cattle were not a focus of his report. In his testimony (page 8122), he stated that it was not better to have a buffer strip that was fenced as compared to one not fenced, with respect to phosphorus movement from land to stream. That is not true. Fencing cattle from the stream avoids phosphorus contributions from erosion and from contributions of cattle excrement directly to the stream and adjacent riparian zone.

Development and maintenance of riparian BMPs throughout the United States are commonly coordinated between state and local conservation or environmental protection agencies and agricultural producers on a voluntary basis, often with federal support. These types of BMPs are under consideration through Watershed Management Plans for the IRW.

### ***3.2.3 Missing Required Information***

The extent to which enhanced buffer strips (i.e., modifications to existing buffer zones) may further reduced the risk of non-point source pollution in the IRW has not been determined.

Forcible means would likely be needed to acquire the land on which to enhance vegetated filter strips. This is not practical to implement across the estimated 13,347 to 84,927 acres recommended by King for consideration. In the event that a land area is forcibly acquired for development or enhancement of a vegetated filter strip, the manner in which the filter strips would be developed or enhanced and maintained would need to be determined.

Developing vegetated filter strips along all streams (or all 3<sup>rd</sup> order and larger streams) that flow through all pastureland in the IRW is not practical. An analysis would be needed of which stream lengths should be provided with vegetated filter strips because they are shown to be contributing to injury and such contributions have been shown to be causally connected to the activities of the Defendants. However, there has been no determination of the extent or location of such stream lengths. Given that a remedy is only available if it addresses the purported injury, vegetated filter strips cannot be considered a remedy because the locations of the theorized source of the injury have not been identified.

### **3.3 Increased treatment of drinking water**

#### **3.3.1 Characterization**

Implementation of water treatment technology was suggested by King as a method to address the potential for formation of disinfection byproducts (DBPs), including trihalomethanes (THMs) and haloacetic acids (HAA5s), in drinking water. It has been suggested that DBPs result from increased organic matter in surface waters in the IRW, purported to have resulted from elevated phosphorus in runoff from land applied poultry litter.

#### **3.3.2 Critique**

Organic matter is correlated with precursors that form DBPs when drinking water is disinfected. The formation of disinfection byproducts such as THMs and HAA5s can be reduced by using enhanced coagulation, softening or granular activated carbon (GAC) to remove these precursors. To determine the extent to which phosphorus in runoff from land applied poultry litter may have increased the formation of DBPs in drinking water supplies of the IRW, a source apportionment analysis would be needed.

#### **3.3.3 Missing Required Information**

No study has been performed to determine how any particular remedy would impact the treatment of drinking water in the IRW. There has also been no documented causation of injury from land application of poultry litter in relation to drinking water or formation of DBPs. Quantification of such a causation would be needed prior to consideration of increased drinking water treatment as a remedy. Given that a remedy is only available if it addresses a purported injury, increased drinking water treatment cannot be considered a remedy because the locations of the theorized source of the injury have not been identified.

## **4 WATERSHED AND RIVER - REMEDIAL OPTIONS TO BE FURTHER ASSESSED**

In addition to his “retained” options, King also proposed that some options be further studied because he lacked the information to do so. In other words, King presented no meaningful case for these options at all. We agree; none of these options should be considered by the Court for that reason alone. Nonetheless, we offer some additional analysis of these options.

### **4.1 Localized Soil Excavation**

#### ***4.1.1 Characterization***

Soil excavation from pasture amended with poultry litter was suggested by King as a method to remove soil phosphorus from the IRW and reduce phosphorus runoff to surface waters. Limited soil excavation was retained by King for further consideration as an approach to consider with respect to soils that have especially high phosphorus levels.

#### ***4.1.2 Critique***

King provided no support for his selection of STP 65 lb/acre as the level of soil phosphorus that would constitute “high”. Given that an STP of 120 is the OSU standard to ensure sufficient nutrients for full crop yield, an STP less than 120 is not considered by experts to be “high”. But in any event, the logistics and costs related to excavation of phosphorus-rich soil and replacement with lower phosphorus soils would make this technology infeasible and not implementable at the scale of the IRW (King report, page 11).

#### ***4.1.3 Missing Required Information***

King admitted that soil excavation, even at a localized scale, would require additional investigations and assessments to (1) identify lands with high phosphorus concentrations that are susceptible to runoff and/or leaching; (2) identify phosphorus loadings to groundwater and surface water associated with identified areas; (3) estimate phosphorus reductions and costs; and (4) compare soil excavation to other technologies to determine relative benefits. (King Report, pages 11-12). Furthermore, an assessment of the locations that would be candidates for localized extraction, how the extraction would be performed, and potential environmental risks would be needed prior to the determination of the efficacy of soil excavation as a phosphorus removal method in the IRW. A determination of how a non-party (i.e., a grower no longer operating or may have moved out of the IRW entirely) would comply with a remedy has not been determined or suggested. Furthermore, the STP level that would be considered “high” would need to be determined prior to the process of identifying which localized soils would be excavated. Lastly, analysis would be required to confirm that the “high” STP levels result from the activities of the Defendants and are tied to alleged harm caused by the Defendants. The State has failed to conduct the work that would have been needed to identify what soil, if any, needs to be remedied. At the present time, the viability of this approach is not known. As such, this proposed remedy is not available.

## **4.2 Alum Application to Fields**

### ***4.2.1 Characterization***

Field application of aluminum sulfate (alum) was suggested by King as a method to reduce phosphorus runoff to surface waters. King suggested that alum might be added to land where poultry waste has been applied, and excess phosphorus persists. (King report, page 12).

### ***4.2.2 Critique***

King failed to identify any locations where field application of alum has been done. Although in-house alum amended poultry litter applications to fields may reduce the potential for phosphorus in field runoff (Moore 1999), there seems to be no prior use cases of alum application directly to fields for the purpose of reducing phosphorus runoff to surface waters. Furthermore, although alum application directly to fields has apparently not been used for this purpose, it may be that the amount of alum that would be applied would be substantially more than what is used for in-house poultry litter amendment. Significant quantities of alum applied to fields in the IRW, particularly at the watershed scale, has the potential to increase the risk of aluminum toxicity to aquatic biota in streams. This requires consideration of the potential adverse ecological effects. Furthermore, landowners may object to spreading alum directly on their lands.

### ***4.2.3 Missing Required Information***

Given the apparent lack of documented use cases or studies related to the efficacy of alum application to fields as a method for reducing phosphorus runoff to surface water, this suggested treatment technology would require effort to document effectiveness and safety. Without precedent for the use of this proposed remedy, an assessment to document effectiveness would have been needed, but has not been provided. Furthermore, the locations of the IRW at which alum application to fields may address conditions associated with the activities of the Defendants have not been identified. The risk of biological and ecological harm stemming from the introduction of aluminum to soils and subsequent transport to surface waters of the IRW would also be needed for this proposed soil phosphorus treatment technology to be considered available for use. No determination has been made with respect to who would pay for the alum material and for the effort involved with field application, nor the environmental monitoring that would be needed to ensure health and safety. Given that this remedy has not been previously documented nor has an assessment of potential effectiveness or viability been performed, this remedy is not available.

## **4.3 Crop and Nutrient Management with Nitrogen Supplementation**

### ***4.3.1 Characterization***

Crop and nutrient management with nitrogen supplementation was suggested by King as a method to treat watershed soil phosphorus in the IRW and reduce phosphorus runoff to surface waters. King stated that crop production and removal from lands where poultry waste has been applied is a technology that may potentially be used to reduce the amount of phosphorus in the soil. Crops would need to be fertilized with nitrogen from a source with little or no phosphorus content.

Harvested crops would then be shipped out of the IRW, thereby reducing the phosphorus mass within the IRW. (King Report, page 13).

#### **4.3.2 Critique**

This type of nutrient management activity is an example of what may be prescribed in an individual nutrient management plan for a given agricultural operation. Potential application at the watershed scale would entail considerable uncertainty and does not appear to be warranted.

Utilization of inorganic fertilizer would create a need for regulations around its use to avoid unintended consequences related to eutrophication effects caused by mobile nitrate leaching. If such a BMP was considered useful for a given parcel, implementation of such a BMP (i.e., crop and nutrient management with inorganic N-based fertilizer) would be specified in a nutrient management plan designed for a given land area based on site conditions.

Although phosphorus removal rates could potentially be increased through crop and nutrient management with nitrogen supplementation, this can result in deficiency of other required plant nutrients (e.g., potassium, calcium). As such, careful consideration of the availability of all essential plant nutrients would be needed when using this practice as a management strategy to reduce soil phosphorus levels. Given the diversity of land use history, farming practices, and site conditions within the IRW, watershed scale implementation of crop and nutrient management with nitrogen supplementation would not be advisable. However, this type of nutrient management activity may be prescribed in an individual nutrient management plan developed for an individual pasture located in the IRW. Furthermore, the potential quantities of phosphorus removed and associated reduction in phosphorus loading to IRW surface waters has not been quantified.

There is substantial risk of eutrophication of streams in the IRW when inorganic nitrogen is introduced to the system. Nitrogen is more mobile in the watershed than phosphorus. Thus, adding nitrogen can increase the eutrophication of the adjacent stream water. Although freshwater systems such as the IRW surface waters are largely phosphorus-limited, nitrogen can still play a role in nutrient limitation. Co-limitation between nitrogen and phosphorus is common. Implementation of crop and nutrient management with nitrogen supplementation throughout the IRW would be reckless and very likely damaging given that inorganic nitrogen can more easily leach to surface waters causing eutrophication. Crop and nutrient management with nitrogen supplementation is already a candidate BMP for prescription in an individual nutrient management plan developed for a given pasture located in the IRW. Thus, this strategy is currently in use for the types of locations and circumstances where it can be implemented in an appropriate manner.

#### **4.3.3 Missing Required Information**

King stated that, due to (1) the time frame for implementation; (2) unknown effectiveness of this technology in the short term for removing phosphorus from soil; and (3) uncertainties associated with reductions in phosphorus loading to groundwater, streams, rivers and Lake Tenkiller, this technology would require additional investigation and assessment (King Report; page 13). This

would be needed prior to consideration of this remedy as available for treatment. Furthermore, given the possibility of watershed scale use of inorganic fertilizer to cause eutrophication effects caused by mobile nitrate leaching, an assessment of this potential and possibility for regulating the use of inorganic fertilizer would be needed prior to considering this remedy as available.

#### **4.4 Stream Bank stabilization**

##### ***4.4.1 Characterization***

King suggested that stream bank stabilization could offer a method to address erosion and phosphorus transport to surface waters of the IRW. Stream and riverbank stabilization can reduce erosion of bank soils into surface waters. A variety of techniques can stabilize banks, ranging from “hard” stabilization using rock or gabions to “soft” stabilization using natural vegetation, plantings or “biologs” (natural materials such as coconut husks woven into the shape of a log).

##### ***4.4.2 Critique***

King concluded that stream bank stabilization is expected to be largely ineffective at reducing phosphorus in surface waters of the IRW, stating that this technology would not substantially reduce soluble phosphorus transport to stream water. In King’s view, bank erosion is not considered to be a substantial contributor to overall phosphorus loading to the rivers and streams of IRW and Lake Tenkiller, but King offers no analysis to support that view. (King Report, page 15). Erosion does seem to be a meaningful contributor of phosphorus loading. (Connolly 2024).<sup>10</sup>

Widespread use of bank stabilization as a remedy would be expensive and would be of limited value in reducing phosphorus transport. It would also cause harm to the stream morphology. Streams meander. Bank stabilization interferes with natural hydrological processes. Furthermore, bank stabilization projects require the consent and cooperation of riparian property owners, who are not parties to this lawsuit.

##### ***4.4.3 Missing Required Information***

Given that stream bank stabilization along all stream lengths is not possible or desirable, an analysis would be needed of which stream lengths should be provided with bank stabilization because they are contributing to injury. However, there has been no determination of the existence, extent, or location of such stream lengths. Lastly, any bank stabilization efforts ordered as a remedy in this suit would need be demonstrated to be remedying circumstances attributable to the conduct of the Defendants, as opposed to phosphorus from other sources being released through natural or human-caused erosion. Given that a remedy is only available if it addresses the purported injury, stream bank stabilization cannot be considered a remedy because the locations of the theorized sources of the injury have not been identified.

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<sup>10</sup> *Illinois River and Tributaries Streambank Erosion Sites and Analysis 2020 Report*, Natural State Streams LLC.

## **4.5 Constructed Wetland**

### **4.5.1 Characterization**

Construction of wetland areas was suggested by King as a method to treat riverine phosphorus in the IRW. Wetlands can be constructed to capture sediments and nutrients from surface water runoff. The conditions required for a constructed wetland to be effective in removing sediments and nutrients include flat topography, stable hydrology, suitable substrate, maintenance and periodic removal of accumulated sediment and suitable plantings. For effectiveness in phosphorus removal, wetland loadings should generally be less than about one gram of phosphorus per square meter per year (Richardson and Qian, 1999). (King Report, page 15)

### **4.5.2 Critique**

The IRW is characterized by significant topographic relief. The Springfield Plateau occupies the northern two-thirds of the IRW. It consists of gently undulating to steeply rolling topography. The Boston Mountains are the highest of the plateaus in the Ozarks. They form the southern portion of the IRW. Local relief in some places exceeds 1,500 feet, and the southern portion is characterized by greater slopes and overall ruggedness. There is very little flat land in the IRW. (Findings, p. 6-7)

Given that wetland areas occur on relatively low-lying and flat areas of land, the topography of the IRW is not conducive to widespread expansion of natural wetlands. According to the National Wetland Inventory, freshwater wetlands (emergent and forested/shrub) not directly linked with a river or lake comprise less than 1% of the IRW (less than 10,000 acres), most of which are situated near higher order streams. Few opportunities for significantly sized constructed wetlands exist in the IRW.

Based on Kadlec et al. (2016) and an assumed wetland phosphorus removal rate of approximately 9 lb/acre/year (i.e., approximately 1 g/m<sup>2</sup>/yr; Richardson and Qian, 1999), approximately 12,000 acres of wetland would be needed to remove 50,000 kg of phosphorus annually. This estimated extent of wetland treatment area is roughly the size of the surface area of Tenkiller Lake and would constitute more than a doubling of the area of existing wetland in the IRW. Given that much of the area conducive to wetlands already exists as wetlands (i.e., pre-existing wetlands are not candidates for restoration), constructed wetlands do not provide viable remedy.

### **4.5.3 Missing Required Information**

A detailed analysis of possible locations for constructed wetlands would be needed prior to consideration of constructed wetlands as viable. Furthermore, a realistic determination would be needed of the possibility for acquisition of the land that would be required for wetland construction on these theoretical land areas. All of this information would be required prior to consideration of constructed wetlands as an available remedy.

## 5 TENKILLER LAKE - REMEDIAL OPTIONS TO BE FURTHER ASSESSED

King proposed three possible engineering solutions to address eutrophication of Tenkiller Lake: sediment removal (dredging), alum application to the lake, and layered aeration. Each of these has been used elsewhere, but mostly in relatively small and shallow lakes. Tenkiller Lake is a deep and large lake (King Deposition, page 55). The feasibility for treating lakes as large and deep as Tenkiller Lake is questionable. King did not cite any comparable examples where this has been done. The modifications to the Tenkiller Lake impoundment suggested by King are seemingly unprecedented. Recommendations regarding a path forward with respect to management of the reservoir would require a very substantial undertaking and inclusion of the U.S. Army Corps of Engineers, among a variety of other stakeholders. Following those recommendations, a detailed and comprehensive evaluation of the proposed management alternatives would be needed.

Defendant's expert Dr. Connolly pointed out that by using only data from the lacustrine portion of the lake, Tenkiller Lake in most cases would qualify as mesotrophic. This calls into question the purported need to undertake a major restoration effort.

*Field and Stream* magazine deemed Tenkiller Lake one of the top 10 fisheries in the US (June 13, 2004). More recently, *Field and Stream* included a new list of top fishing lakes (<https://bit.ly/40SjJaR>). They selected one lake per state (n = 50). Tenkiller Lake was selected as the featured lake for Oklahoma. If Tenkiller Lake has such robust fishery resource, it seems inappropriate to try to fix, using an engineering solution, something that may not be broken.

King (Trial Transcript, page 8073) did not have a definitive proposal to recommend to the court of any steps to be taken directly on Tenkiller Lake. King (Deposition, page 166) agreed that he was not in a position to provide a definitive recommendation or proposal regarding remediation efforts focused on the lake.

King (Trial Transcript, page 8113) did not discuss how his recommendations would deal with the jurisdiction of various federal and state agencies. These would include the Oklahoma Water Resources Board; the Oklahoma Department of Agriculture, Food and Forestry; the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the Oklahoma Department of Environmental Quality, or any of the state agencies in Arkansas.

### 5.1 Sediment Removal

#### 5.1.1 Characterization

Lake sediment removal was suggested by King as a method to address phosphorus loading to Tenkiller Lake. This action would require transportation and disposal of dredged spoils in a facility designed to prevent reintroduction of phosphorus into surface water or groundwater (King Report, page 17).

Dredging involves removing sediment from the bottom of a lake, typically through mechanical or hydraulic methods. An assessment of sediment characteristics is developed prior to determination

of the most appropriate dredging method. Dredging equipment mobilized to the lake area extracts (e.g., through excavation or suction methods) sediments which are transported to a designated disposal site (e.g., landfill). Water quality monitoring during the dredging process is required to document the extent to which operations may cause exceedance of water quality standards, which can result in curtailment of dredging activities and/or biological harm.

### ***5.1.2 Critique***

Although dredging can reduce phosphorus levels in a lake, it can be costly, particularly for large projects. Given the size and depth of Tenkiller Lake, dredging its sediment would be prohibitively difficult and expensive.

Riza et al. (2023) reviewed the effectiveness and environmental impacts of dredging to address lake eutrophication. Case studies included in this review (n = 13) showed that dredging was sometimes effective at controlling lake eutrophication. However, average reported lake depth was dramatically shallower among these case studies, as compared with Tenkiller Lake, with lakes ranging between 1.1 and 2.5 meters in depth. The average depth of Tenkiller Lake (50 meters) is more than 27 times the midpoint of this range (1.8 meters) of depths reported in Riza et al. (2023).

Dredging lake sediments to reduce the amount of phosphorus resuspension from sediment to water columns can be effective in small, shallow lakes. In some cases, the degree of eutrophication remained high, and there was no evident reduction in internal loading (Riza et al. 2023). Tenkiller Lake is likely too large and too deep for dredging to be practical.

Dredging any lake will be disruptive to the lake ecosystem. Sediments become resuspended in the lake while dredging. They can then be transported downstream causing potential perturbations for downstream biota. A suitable disposal site for dredged materials, which would contain potentially toxic chemicals, can be challenging. With respect to lake sediment management, the typical approach is to keep sediments in place unless a strong need for removal is identified. No such showing has been made for Tenkiller Lake.

Tenkiller Lake cannot be dredged without approval from the U.S. Army Corps of Engineers. If one wanted to do something massive, like dredging the lake, that would require preparation of an Environmental Impact Statement. It is not clear who would prepare that and what that would entail.

### ***5.1.3 Missing Required Information***

Approval by the U.S. Army Corps of Engineers would be required prior to consideration of dredging Tenkiller Lake as an available remedy. Furthermore, a detailed feasibility study related to the cost, logistics, and safety issues would be needed as well. There is no question that a detailed Environmental Impact Statement would be needed prior to consideration of dredging Tenkiller Lake as an available remedy. Further still, the extent to which dredging may be needed to reduce nutrients and algal growth in Tenkiller Lake has not been established, let alone the extent to which an injury to the lake has been caused by land application of poultry litter.

## **5.2 Alum Application**

### **5.2.1 Characterization**

Alum application directly to the lake was suggested by King as a method to treat phosphorus resuspension in Tenkiller Lake. Alum treatment of Tenkiller Lake could potentially reduce the internal loading of phosphorus from lake sediments. (King Report, page 19)

The application of alum to lake water removes phosphorus through formation and precipitation of a particulate “floc” that falls out of suspension to lake sediments. It is expected that this settled floc creates a barrier that minimizes sediment phosphorus release.

### **5.2.2 Critique**

Alum cannot be added to Tenkiller Lake without approval from the U.S. Army Corps of Engineers and preparation of an Environmental Impact Statement. There are some risks. Alum can adversely affect aquatic biota. Alum can be toxic to aquatic life at low pH (Cooke et al., 2005). (King report, page 19). Furthermore, aluminum in solution has been linked to Alzheimer’s disease in humans, although the linkage is not fully understood. Nevertheless, an effort to add aluminum to Tenkiller Lake might be met with fierce public disapproval and concern. Although the North American Lake Management Society suggests that alum can be a safe and effective lake management tool, they also acknowledge that alum applications can be toxic. Alum applications should be designed and controlled to avoid concerns with toxicity to aquatic life. ([www.nalms.org](http://www.nalms.org))

Dissolved inorganic monomeric aluminum includes a form ( $Al^{3+}$ ) that is toxic to aquatic biota and is generally not present in appreciable amounts in the environment at pH values above about 6. However, watershed amendment with alum could result in formation of aluminum hydroxide species  $Al(OH)$  and  $Al(OH)_2$  in solution which are not directly toxic; but, at higher pH (above 6) these hydroxide species convert to  $Al(OH)_3$ . Formation of  $Al(OH)_3$  creates especially toxic conditions because  $Al(OH)_3$  is a solid, not dissolved. These solid particles drop out of solution and can stick to fish gills and fish egg membranes, and inhibit respiration (thereby smothering the fish or egg). This formation of  $Al(OH)_3$  occurs when water pH increases, as it does in and near Tenkiller Lake. Thus, formation of aluminum hydroxide species from  $Al^{3+}$  can harm fish (Wilson and Wood 1992; Playle and Wood 1989; Exley et al. 1991). Alum application to Tenkiller Lake, particularly at the whole-lake scale, has the potential to increase the risk of aluminum toxicity to aquatic biota. Lake recreationists may object to the use of alum application to Tenkiller Lake. Careful consideration of the potential adverse ecological effects of alum application is needed.

### **5.2.3 Missing Required Information**

Prior to considering this approach, it must first be demonstrated conclusively, based on current data, that phosphorus resuspension is occurring and causing environmental injury. Moreover, approval by the U.S. Army Corps of Engineers would be required prior to consideration of alum application to Tenkiller Lake as an available remedy. Furthermore, a detailed feasibility study

related to the cost, logistics, and safety issues would be needed as well. There is no question that a detailed Environmental Impact Statement would be needed to prior to consideration of alum application to Tenkiller Lake as an available remedy. Further still, the extent to which alum application may be needed to change the trophic status of Tenkiller Lake has not been established, let alone the extent to which an injury to the lake has been caused by land application of poultry litter.

### **5.3 Layered Aeration**

#### **5.3.1 Characterization**

Layered aeration (also known as “layer aeration”) was suggested by King as a method to increase dissolved oxygen levels that have been purported to have been depleted by algal growth and subsequent die-off from phosphorus loading to Tenkiller Lake. Layered aeration is a technique that manages oxygen levels and water quality in lakes by creating a controlled, isothermal layer within the water column. Layered aeration blends water from warm, oxygen-rich and cold, oxygen-poor depths, creating an intermediate-depth isothermal zone that supports respiratory oxygen demand in colder waters via water oxygenated through photosynthesis. Layered aeration has been used for maintaining aerobic habitat for fish and reducing phosphorus impacts on phytoplankton, as well as creating oxygenated layers at water supply reservoir intakes.

#### **5.3.2 Critique**

Lake aeration is generally associated with relatively shallow lakes, with 45 of the aerated lakes reviewed in Tammeorg (2020) having a mean average depth of 9.3 meters (SD = 14 meters), as compared with the average depth of 50 meters for Tenkiller Lake. Tammeorg et al. (2017) found that anoxia-generated phosphorus release to the hypolimnion is of minor importance in lake water quality management. The literature review conducted by Tammeorg (2020) identified an increasing number of studies reporting minimal effectiveness of improving hypolimnetic oxygen conditions.

Defendant’s expert Dr. Connolly pointed out that by using only data from the lacustrine portion of the lake, Tenkiller Lake in most cases would qualify as mesotrophic. King did not provide data supporting the need for layered aeration in Tenkiller Lake. Only a few dissolved oxygen monitoring locations are available to evaluate the extent of suitable habitat for fish in Tenkiller Lake. However, the lake supports a vibrant fishery for both cold and warm water fish, suggesting that the volume of the lake with oxygen conditions suitable for fish growth and survival is not limiting a robust fishery in the lake. As such, layered aeration in Tenkiller Lake seems to be of little ecological relevance.

Layered aeration within Tenkiller Lake cannot be implemented without approval from the U.S. Army Corps of Engineers and preparation of an Environmental Impact Statement. It is not clear who would prepare that and what that would entail.

### **5.3.3 Missing Required Information**

Approval by the U.S. Army Corps of Engineers would be required prior to consideration of layered aeration of Tenkiller Lake as an available remedy. Furthermore, a detailed feasibility study related to the cost, logistics, and safety issues would be needed as well. There is no question that a detailed Environmental Impact Statement would be needed to prior to consideration of layered aeration of Tenkiller Lake as an available remedy. Further still, the extent to which layered aeration may be needed to support the fishery of Tenkiller Lake has not been established, let alone the extent to which an injury to the lake has been caused by land application of poultry litter.

## **6 SOIL TEST PHOSPHORUS RECORDS**

Soil test phosphorus (STP) results are used in the development of nutrient management plans for IRW growers. The agronomic critical level for phosphorus in soils of the IRW has been represented as 65 lbs/acre. However, a field measuring 65 STP will exhibit significant variability, with different portions measuring higher or lower. Runoff and erosion are best controlled from fields with full vegetative cover; areas with fewer plants and weaker root systems are more likely to exhibit erosion and runoff. Accordingly, Oklahoma State University recommends a target level of 120 STP to account for variability across a pasture to ensure that soil phosphorus levels are sufficient for full crop yield. At trial, State's expert Gordon Johnson agreed, noting that a field STP of 120 lbs/acre (based on an average of 15 to 20 cores per field) can be used to help ensure that 95 percent of the area of a field has sufficient phosphorus to prevent localized deficiencies for vegetation due to variability in soil phosphorus levels.

Although numerous STP results have been compiled (Doc. 2873-1), these records represent stand-alone reports and are not connected to the overall environmental context (e.g., proximity to stream and/or steep slopes), compliance with an NMP, existing fencing, presence of livestock, or history of land application of poultry litter at a given location. This submission was constrained to reports with STP values above 65. The extent to which these reports are representative of STP conditions of the IRW is unknown. The extent to which cessation of land applied poultry litter throughout the IRW would result in reduced phosphorus runoff to surface waters of the IRW has not been shown. These STP reports do not provide a sound basis for the election of an efficacious remedy or the conclusion that any such pasture has or is contributing to any harm to the IRW water resources. Nor do these reports demonstrate that an NMP or law was violated to cause that result.

## **7 CONCLUSION**

Nutrient management and other anthropogenic activities and circumstances in the IRW have changed dramatically since 2008. Over the past 20+ years, the human population of the IRW has increased significantly, bringing with it land use changes, that in many cases have converted forest, farm, and pasture lands into commercial and residential developments. There has been an increased demand for treatment of municipal wastewater, which has taken the form of additional publicly owned treatment works coming on line, and increased flows discharging phosphorus to IRW streams and rivers. Nutrient and watershed management have also advanced considerably over this period. The two states have embraced a cooperative approach to promulgating and implementing

comprehensive watershed management plans, and assessment of water quality criteria. Correspondingly, comprehensive improvements have been made with establishment of a robust framework for managing poultry litter. Important changes have included:

- Increased adoption and implementation of state-approved nutrient management plans
- Decreased land application of poultry litter
- Increased export of poultry litter to outside the IRW
- Increased provision of poultry litter management resources to poultry growers and litter applicators
- Increased education and awareness related to the manner in which non-point source pollution originates and management practices to prevent nutrient runoff
- Establishment of conservation partnerships and implementation of best management practices

The robust nature of these watershed-wide comprehensive improvements is evidenced by the significant progress towards meeting the 0.035 mg/L total phosphorus standard for the Illinois River (Connolly 2024).

As explained by Dr. John Connolly in his report (Connolly 2024), water quality in the IRW is controlled primarily by point sources. No remedies have been proposed by the State to address phosphorus runoff from urban areas or other human sources of phosphorus. Urbanization and human population have increased dramatically in the headwaters of the IRW, with increased runoff of sediments and nutrients. These are significant contributors of point and non-point source pollution. Any remedy considered for addressing phosphorus levels in the IRW should make careful consideration of these urban sources of phosphorus. Typical remedies related to addressing phosphorus loading from urban areas would include:

- Improvement of turf management in both municipal and residential contexts (reduce grass clippings, sediment, and/or transport to sewers)
- Lawn fertilizer management
- Reduced fertilizer needs through natural lawn care and planting native vegetation
- Covering exposed soil with grass or native vegetation to limit particulate transport
- Street sweeping to remove phosphorus-containing soil and debris

- Management of pet waste
- Wastewater treatment plant upgrades
- Septic system replacement

The State of Oklahoma and State of Arkansas have committed to making improvements to water quality by addressing both point and non-point source pollution through a Memorandum of Agreement based on comprehensive EPA-approved Watershed Management Plans. This type of cooperation and coordination among state and federal entities and stakeholders is the foundation for sustainable transboundary watershed management. The goals of this process should be allowed to move forward productively and unimpeded. This will require participation among all stakeholders in the Illinois River Watershed.

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**ATTACHMENTS**

**Attachment A – CV of Timothy J. Sullivan**

## TIMOTHY J. SULLIVAN

### EDUCATION

**Ph.D.** Biological Sciences/Environmental Chemistry, Oregon State University - 1983

**M.A.** Biological Sciences, Western State College of Colorado - 1977

**B.A.** History, Stonehill College - 1972

### CURRENT POSITION

**Past President**, E&S Environmental Chemistry, Inc. Dr. Sullivan co-founded this scientific research and consulting corporation in September, 1988.

**Past President**, E&S Environmental Restoration, Inc. Dr. Sullivan founded this environmental restoration corporation in June, 1996.

### EXPERIENCE

Dr. Sullivan is Principal Scientist Emeritus of E&S Environmental Chemistry, Inc. He has over 45 years of professional experience, including over 30 years of environmental project management experience. His expertise includes the effects of air pollution on aquatic and terrestrial resources; watershed analysis; nitrogen cycling; aquatic acid/base chemistry; mobilization, speciation and toxicity of metals in acidic waters; episodic processes controlling surface water chemistry; and environmental assessment. He is author of the National Acid Precipitation Assessment Program (NAPAP) State of Science and Technology Report on past changes in surface water acid/base chemistry throughout the United States from acid deposition. In recent years, he has also been principal investigator for a comparison between paleolimnological reconstructions of lakewater acid/base chemistry and process-based model reconstructions (U.S. Department of Energy), incorporation of an organic acid submodel into the watershed model MAGIC and testing of the revised model using data from ecosystem manipulation experiments in Norway and the U.S. (U.S. Department of Energy), investigation of the role of land use and landscape in the acidification of surface waters (U.S. Department of Energy), an analysis of the feasibility of adopting standards for deposition of nitrogen and sulfur (U.S. EPA), and a variety of nonpoint source pollution studies in forest/agricultural watersheds. His research and project management experience includes the following:

- Served as Co-PI of Diatom Paleolimnology Data Cooperative, housed at the Academy of Natural Sciences in Philadelphia and funded by NOAA and NSF. This data cooperative disseminates lake sediment core paleolimnological data focused on past climate reconstructions to the climate modeling and research community (<http://diatom.acnatsci.org/dpdc/>).
- Served as project manager for preparation of an Air Quality Review for Class I national parks throughout California. Also co-authored similar reviews for the Pacific

- Northwest and the Rocky Mountain and Great Plains regions of the National Park Service.
- Coordinated and analyzed available data bases throughout the United States, and internationally, providing evidence regarding the extent and magnitude of surface water acidification. Summarized and synthesized pertinent data and authored the State of Science and Technology Report for the National Acid Precipitation Assessment Program (NAPAP) on historical acidification.
  - Served as project manager for a modeling project to assess aquatic and terrestrial effects of air pollutants throughout the southern Appalachian Mountains for the Southern Appalachian Mountain Initiative (SAMI).
  - Served as lead author and individual responsible for synthesis and integration for report to the National Park Service on the sensitivity of natural resources in Shenandoah National Park to air pollution degradation.
  - Coordinated research efforts of a team of experts in the fields of surface water chemistry, mathematical modeling, and paleoecology for the purpose of comparing paleoecological inferences and process-based model hindcasts of Adirondack Mountain lakewater chemistry.
  - Directed field research project for the Alaska Department of Environmental Conservation on the Kenai Peninsula to investigate forest effects from industrial emissions of nitrogen. Coordinated and supervised all logistics and field sampling activities, including aerial infrared photography, measurements of forest growth and health, and collection of soil solution, conifer needles, precipitation, and throughfall. Directed data base construction, QA, data analyses, and interpretation; served as lead author on final report.
  - Served as member of NAPAP's working group that prepared the aquatic portions of the 1990 Integrated Assessment (IA), NAPAP's final policy document for Congress. Drafted major portions of the IA; participated in a series of assessment meetings attended by federal, national laboratory and industry scientists, economists, and policy specialists; provided input on all aquatics sections of the final document. Also authored the aquatic sections of NAPAP's 1996 Report to Congress.
  - Served as project manager for the Tillamook Bay National Estuary Project for several water quality monitoring projects to evaluate the concentrations and loads of nutrients, sediment, and fecal coliform bacteria in the five rivers that flow into Tillamook Bay, Oregon. These projects included long-term monitoring, storm monitoring, source area identification, and evaluation of the relationships between land use and water quality.
  - Served as project manager for E&S's role in the construction and management of a diatom paleoclimate data cooperative for North and South America. The data cooperative brought together paleolimnological data from a multitude of sources that can be used to reconstruct aspects of historical regional climates from diatom remains in dated lake sediment cores.

## **AWARDS AND HONORS**

Academic scholarship, Stonehill College, 1968-72  
Massachusetts State Scholarship, 1969-72  
Cum laude, Stonehill College, 1972

Postdoctoral fellowship, Royal Norwegian Council for Scientific and Industrial Research,  
1984-86  
Director's Technical Contribution Award, Corvallis Environmental Research Laboratory,  
U.S. EPA, 1987  
Northrop Services, Inc., Best Orator, Effective Winning Presentations, 1987  
Best Scientific Paper Award, Corvallis Environmental Research Laboratory, U.S. EPA,  
1988

## **PUBLICATIONS**

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- McDonnell, T.C., C.M. Clark, G.J. Reinds, **T.J. Sullivan**, and B. Knees. 2022. Modeled vegetation community trajectories: Effects from climate change, atmospheric nitrogen deposition, and soil acidification recovery. *Environmental Advances* 9:100271. 10.1016/j.envadv.2022.100271.
- McDonnell, T.C., C.T. Driscoll, **T.J. Sullivan**, D.A. Burns, B.P. Baldigo, S. Shao, and G.B. Lawrence. 2021. Regional target loads of atmospheric nitrogen and sulfur deposition for the protection of stream and watershed soil resources of the Adirondack Mountains, USA. *Environ. Pollut.* 281:117110. 10.1016/j.envpol.2021.117110.
- McDonnell, T.C., G.J. Reinds, G.W.W. Wamelink, P.W. Goedhart, M. Posch, **T.J. Sullivan**, and C.M. Clark. 2020. Threshold Effects of Air Pollution and Climate Change on Understory Plant Communities at Forested Sites in the Eastern United States. *Environ. Pollut.* 262. 10.1016/j.envpol.2020.114351.
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- McDonnell, T.C., S. Belyazid, **T.J. Sullivan**, M. Bell, C. Clark, T. Blett, T. Evans, W. Cass, A. Hyduke, and H. Sverdrup. 2018. Vegetation dynamics associated with changes in atmospheric nitrogen deposition and climate in hardwood forests of Shenandoah and Great Smoky Mountains national parks, USA. *Environ. Pollut.* 237:662-674. 10.1016/j.envpol.2018.01.112.
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### **Presentations at National and International Conferences**

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- Sullivan, T.J.**, B.J. Cosby, and C.T. Driscoll. Calculation of critical loads of acidic deposition for the protection of acid-sensitive surface waters. Paper presented at NADP 2006: Effects of Deposition in Coastal and Urban Environments, October 24-26, 2006, Norfolk, VA.
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- Sullivan, T.J.**, M. Wustenberg, K.U. Snyder, J. Moore, D. Moore, E. Gilbert, and E. Mallery. 2006. Relationship between size of vegetated buffers and transport of fecal coliform bacteria from pasturelands treated with dairy cow manure. Paper presented at American Dairy Science Association/American Society of Animal Science Association Joint Meeting, July 9-13, 2006, Minneapolis, MN.
- Sullivan, T.**, C. Boyle, B.J. Cosby, C. Driscoll, I. Fernandez, A. Herlihy, T. McDonnell, E. Miller, S. Nierzwicki-Bauer, N. Nowicki, K. Snyder, R. Stemberger, and J. Sutherland. 2003. Assessment of extent to which intensively-studied lakes are representative of the Adirondack Mountain region, New York. Poster Presentation, American Geophysical Union, San Francisco, 8-12 December, 2003.
- Sullivan, T.J.**, J.A. Bernert, M. Wustenberg, and J. Moore. Assessment of Water Quality in the Five Major Rivers that Flow into Tillamook Bay. 20th Annual Meeting, Pacific Estuarine Research Society, Tillamook, OR, May 15-17, 1997.

- Sullivan, T.J.** and B.J. Cosby. Testing, Improvement, and Confirmation of a Watershed Model of Acid-Base Chemistry. 5th Intern. Conf. on Acidic Deposition, Gothenberg, Sweden, 26-30 June, 1995.
- Sullivan, T.J.** and J.M. Eilers. Ecological effects of sulfur and nitrogen deposition in the Pacific Northwest Region. Meeting of the International Joint Commission, Vancouver, BC, Canada, October, 1995 (Invited).
- Sullivan, T.J.** Acid Rain as a Threat to Aquatic Resources. Sustainable Society and Protected Areas. 8th Conference on Research and Resource Management in Parks and on Public Lands, Portland, OR, April 17-21, 1995.
- Sullivan, T.J.,** B.J. Cosby, S.A. Norton, D.F. Charles, R.F. Wright, and E. Gjessing. Multisite testing and evaluation of a geochemical model of acid-base chemistry: Confirmation of the MAGIC model using catchment manipulation experiments and historical diatom inferences. Poster presentation, Third International Symposium on Ecosystem Manipulation, Windermere, England, October 1994.
- Sullivan, T.J.** Evaluation of biogeochemical models using data from experimental ecosystem manipulations. Third International Symposium on Ecosystem Manipulation, Windermere, England, October, 1994 (Invited).
- Sullivan, T.J.** Progress in quantifying the role of aluminum in acidification of surface and soil waters. Intern. Conf. on Aluminum in the Environment, Lublin, Poland, 19-22 September, 1994 (Invited).
- Sullivan, T.J.,** R.S. Turner, D.F. Charles, B.F. Cumming, J.P. Smol, C.L. Schofield, C.T. Driscoll, B.J. Cosby, H.J.B. Birks, A.J. Uutala, J.C. Kingston, S.S. Dixit, J.A. Bernert, P.F. Ryan, and D.R. Marmorek. 1992. Use of historical assessment for evaluation of process-based model projections of future environmental change: Lake acidification in the Adirondack Mountains, New York, U.S.A. 4th Intern. Conf. on Acidic Deposition, Glasgow, Scotland, 1990.
- Sullivan, T.J.,** B.J. Cosby, J.A. Bernert, E.A. Jenne, J.M. Eilers, D.F. Charles, and A.R. Selle. 1990. Comparison of paleolimnological and MAGIC model estimates of lakewater acidification in the Adirondack region. Acidic Deposition State of Science and Technology International Conference, Poster presentation, National Acid Precipitation Assessment Program; Hilton Head, South Carolina.
- Sullivan, T.J.** 1990. Historical changes in the acid-base chemistry of lakes and streams throughout the United States. Acidic Deposition, State of Science and Technology International Conference, Hilton Head, South Carolina (Invited).
- Sullivan, T.J.** Aqueous aluminum speciation in acidified areas of southernmost Norway. Presented at Norwegian Chemical Society, Annual Meeting, Oslo. April, 1986.

**Attachment B – CV of Todd C. McDonnell**

**Todd C. McDonnell, Ph.D.**  
**President and Principal Scientist**  
E&S Environmental Chemistry, Inc.  
Corvallis, OR

## **Education**

- Ph.D. 2014     **Oregon State University**  
College of Forestry: Forest Ecosystems and Society
- M.P.S. 2003     **State University of New York**  
College of Environmental Science and Forestry: Forest Hydrology and Watershed  
Management
- B.A. 2001     **The George Washington University**  
School of Engineering and Applied Science: Applied Science and Technology –  
Environmental Science

## **Relevant Experience**

Dr. McDonnell is an environmental scientist with 25 years of experience in water quality assessment, environmental modeling, harmful algal blooms, and agricultural best management practices. He has extensive experience with risk assessment to inform decision making related to anthropogenic impacts on a wide range of environmental components including water and soil chemistry, fisheries, and vegetation. Dr. McDonnell has developed watershed assessments to evaluate physiochemical and biological conditions including aspects of hydrology, water quality, soils, fisheries, wildlife, vegetation, and land use throughout the United States. Dr. McDonnell is experienced with implementation and monitoring related to agricultural best management practices for nutrient pollution reduction while working with E&S and during prior experience with the Ontario County, New York Soil and Water Conservation District and Canandaigua Lake Watershed Council. He regularly communicates project results to project stakeholders through peer-reviewed journal articles, agency reports, and oral presentations. Dr. McDonnell is an advisory board member of the U.S. Critical Loads of Atmospheric Deposition Science Committee of the National Atmospheric Deposition Program. He has served as the principal investigator and/or technical lead on a wide variety of collaborative environmental research and restoration projects conducted by E&S. Most have focused on environmental pollution and its effects on aquatic and terrestrial systems. Some examples are highlighted below.

## **Selected Projects**

### *Water Quality Assessment of the Klamath River Basin*

- Research, monitoring, and assessment of riverine water quality and reservoir harmful algal bloom conditions in the Klamath River Basin; E&S efforts have been ongoing for more than 20 years.
- Lead project manager

*Klamath River Watershed Chinook Population Dynamics*

- Conduct water quality and statistical modeling to develop environmental co-variates for understanding drivers of historical Chinook salmon populations in the Lower Klamath River Watershed.
- Co-author of peer-reviewed manuscript in preparation

*Habitat Suitability Modeling for Acid- and Thermally-Sensitive Stream Biota in the Southern Appalachian Mountains*

- Developed statistical models to estimate the sensitivity of stream water temperature to forecasted increases in air temperature.
- Lead author of journal article

*Tillamook Bay Watershed Research*

- Implemented efforts related water quality monitoring to evaluate effectiveness of riparian buffers for reducing concentrations and loads of nutrients, sediment, and fecal coliform bacteria in the Tillamook Bay Watershed.

*Canandaigua Lake Watershed Monitoring and Assessment*

- Implemented watershed monitoring and restoration activities including streambank stabilization, agricultural best management practices, and water quality characterization.

*Oregon Watershed Assessments*

- Implemented watershed assessment analyses following both state and federal guidelines to evaluate aspects of water quality, hydrology, water use, fisheries, and aquatic habitat in mixed land use watersheds of Oregon.
- Co-author of multiple reports

*Ecosystem Risk Assessment of U.S. National Parks*

- Developed a risk assessment model to rank all U.S. National Parks based on sensitivity to nutrient enrichment and acidic deposition.
- Co-author of agency report

*Spatial Statistical Modeling for Predicting Stream Water Acid Neutralizing Capacity in George Washington National Forest, Virginia*

- Development and application of a novel spatial stream network analysis approach to evaluate stream water acidity for all streams located on the George Washington National Forest.
- Lead author of agency report

*Appalachian Trail Atmospheric Deposition Effects Study*

- Conducted the development of dynamic critical loads of atmospheric nitrogen and sulfur deposition to protect aquatic and terrestrial biota and extrapolated process-model results throughout a 20-km corridor along the entire Appalachian Trail from Maine to Georgia.
- Co-authored journal article and agency report

*Climate and Atmospheric Deposition Terrestrial Vegetation Effects Modeling*

- Conducted statistical model development to evaluate effects of changing climate and atmospheric nitrogen and sulfur deposition on vegetation communities across the United States.
- Lead author of journal article

*Critical Loads of Atmospheric Nitrogen and Sulfur Deposition in the Intermountain Region of the US Forest Service*

- Data analysis and assessment of the expected risk to various biological endpoints (e.g., surface waters, trees, lichen) from air pollution within all 12 National Forests and 50 wilderness areas of the USFS Intermountain Region (R4).
- Lead author of agency report

*Modeling Tree Species Response to Climate Change, Air Pollution, and Forest Disturbance*

- Working in collaboration with researchers at EPA, USFS, and USGS; a primary objective of this project was to generate climate and air pollution thresholds to be used for decision making related to forest management and environmental policy on federal lands.
- Lead author of journal article in preparation

*Greenhouse Gas Budget for New York State's Natural and Working Lands*

- Conducted the development and reporting of net greenhouse gas emissions associated with forest, agricultural, and wetland systems of New York State (NYSERDA) in contribution towards a decarbonization project across all emission sectors of New York State.
- Lead author of agency report

*Willamette River Basin Chinook Salmon Database Design for Oregon Department of Fish and Wildlife*

- Designed a relational database to include data on salmonid distribution and abundance and associated attributes for nearly 50 drainages located throughout the Willamette River Basin in Oregon
- Lead developer

*Garcia River and Tuolumne River Stream Temperature Modeling*

- Developed estimates of stream surface solar radiation exposure for temperature modeling to support salmonid conservation research in California streams
- Lead developer

*Reference Lake Selection for EPA's National Lake Survey*

- Conducted GIS data analyses to determine lake watershed disturbance rankings to assess lake watershed conditions throughout several regions of the United States.
- Co-author of journal article

*Devils Lake Water Quality Database Design*

- Developed a relational database containing physical, chemical, and biological measurements from water quality monitoring of Devils Lake, Oregon.
- Lead developer

*Operational, seasonal, and decadal forecasts of harmful algal blooms (HABs) in Lake Okeechobee*

- Predictive analytics to develop short and long-term forecasts of HABs for Lake Okeechobee.

*Bathymetric Map Development of River Forest Lake*

- Collected field data and created digital maps displaying the bathymetry for an urban lake

## **Computer Applications**

*Geographic information systems:* ArcGIS 3.x – 10.x, Pro; QGIS

*Computer programming:* Python, R

*Environmental modeling:* Steady State Water Chemistry (SSWC), Simple Mass Balance (SMB), VSD+PROPS

## **Professional Memberships**

Critical Loads of Atmospheric Deposition (CLAD) Science Advisory Board Member

Centre for Dynamic Modelling (CDM)

American Geophysical Union

Ecological Society of America

Society for Conservation GIS

## **Published Journal Articles**

Tourville, J.C., M.R. Zarfos, G.B. Lawrence, **T.C. McDonnell**, T.J. Sullivan, and M. Dovčiak. 2023. Soil biotic and abiotic thresholds in sugar maple and American beech seedling establishment in forests of the northeastern United States. *Plant Soil*. 10.1007/s11104-023-06123-2.

**McDonnell, T.C.**, J. Phelan, A.F. Talhelm, B.J. Cosby, C.T. Driscoll, T.J. Sullivan, and T. Greaver. 2023. Protection of forest ecosystems in the eastern United States from elevated atmospheric deposition of sulfur and nitrogen: A comparison of steady-state and dynamic model results. *Environ. Pollut.* 10.1016/j.envpol.2022.120887.

**McDonnell, T.C.**, C.M. Clark, G.J. Reinds, T.J. Sullivan, and B. Knees. 2022. Modeled vegetation community trajectories: Effects from climate change, atmospheric nitrogen deposition, and soil acidification recovery. *Environmental Advances* 9:100271. 10.1016/j.envadv.2022.100271.

**McDonnell, T.C.**, C.T. Driscoll, T.J. Sullivan, D.A. Burns, B.P. Baldigo, S. Shao, and G.B. Lawrence. 2021. Regional target loads of atmospheric nitrogen and sulfur deposition for the protection of stream and watershed soil resources of the Adirondack Mountains, USA. *Environ. Pollut.* 281:117110. 10.1016/j.envpol.2021.117110.

**McDonnell, T.C.**, G.J. Reinds, G.W.W. Wamelink, P.W. Goedhart, M. Posch, T.J. Sullivan, and C.M. Clark. 2020. Threshold Effects of Air Pollution and Climate Change on Understory Plant Communities at Forested Sites in the Eastern United States. *Environ. Pollut.* 262. 10.1016/j.envpol.2020.114351.

- Shao, S., C.T. Driscoll, T.J. Sullivan, D.A. Burns, B.P. Baldigo, G.B. Lawrence, and **T.C. McDonnell**. 2020. The response of stream ecosystems in the Adirondack region of New York to historical and future changes in atmospheric deposition of sulfur and nitrogen. *Sci. Total Environ.* doi:org/10.1016/j.scitotenv.2020.137113.
- Burns, D.A., **T.C. McDonnell**, K.C. Rice, G.B. Lawrence, and T.J. Sullivan. 2020. Chronic and episodic acidification of streams along the Appalachian Trail corridor, eastern United States. *Hydrol. Process.* 10.1002/hyp.13668 34:1498-1513.
- Zarfos, M.R., M. Dovciak, G.B. Lawrence, **T.C. McDonnell**, and T.J. Sullivan. 2019. Plant richness and composition in hardwood forest understories vary along an acidic deposition and soil-chemical gradient in the northeastern United States. *Plant Soil.* 10.1007/s11104-019-04031-y
- McDonnell, T.C.**, S. Belyazid, T.J. Sullivan, M. Bell, C. Clark, T. Blett, T. Evans, W. Cass, A. Hyduke, and H. Sverdrup. 2018. Vegetation dynamics associated with changes in atmospheric nitrogen deposition and climate in hardwood forests of Shenandoah and Great Smoky Mountains national parks, USA. *Environ. Pollut.* 237:662-674. doi:10.1016/j.envpol.2018.01.112.
- McDonnell, T.C.**, G.J. Reinds, T.J. Sullivan, C.M. Clark, L.T.C. Bonten, J.P. Mol-Dijkstra, G.W.W. Wamelink, and M. Dovciak. 2018. Feasibility of coupled empirical and dynamic modeling to assess climate change and air pollution impacts on temperate forest vegetation of the eastern United States. *Environ. Pollut.* 234:902-914. doi:10.1016/j.envpol.2017.12.002.
- McDonnell, T.C.**, T.J. Sullivan, and C.M. Beier. 2018. Influence of climate on long-term recovery of Adirondack Mountain lakewater chemistry from atmospheric deposition of sulfur and nitrogen. *Adir. J. Environ. Stud.* 22:20-45.
- Lawrence, G.B., **T.C. McDonnell**, T.J. Sullivan, M. Dovciak, S.W. Bailey, M.R. Antidormi, and M.R. Zarfos. 2017. Soil base saturation combines with beech bark disease to influence composition and structure of sugar maple-beech forests in an acid rain-impacted region. *Ecosystems* 10.1007/s10021-017-0186-0.
- McDonnell, T.C.**, M.R. Sloat, T.J. Sullivan, C.A. Dolloff, P.F. Hessburg, N.A. Povak, W.A. Jackson, and C. Sams. 2015. Downstream warming and headwater acidity may diminish coldwater habitat in southern Appalachian Mountain streams. *Plos One*. DOI:10.1371/journal.pone.0134757.
- McDonnell, T.C.**, T.J. Sullivan, P.F. Hessburg, K.M. Reynolds, N.A. Povak, B.J. Cosby, W. Jackson, and R.B. Salter. 2014. Steady-state sulfur critical loads and exceedances for protection of aquatic ecosystems in the US southern Appalachian Mountains. *J. Environ. Manage.* 146:407-419.
- McDonnell, T.C.**, S. Belyazid, T.J. Sullivan, H. Sverdrup, W.D. Bowman, and E.M. Porter. 2014. Modeled subalpine plant community response to climate change and atmospheric nitrogen deposition in Rocky Mountain National Park, USA. *Environ. Pollut.* 187:55-64.

- Povak, N.A., P.F. Hessburg, **T.C. McDonnell**, K.M. Reynolds, T.J. Sullivan, R.B. Salter, and B.J. Cosby. 2014. Machine learning and linear regression models to predict catchment-level base cation weathering rates across the southern Appalachian Mountain region, USA. *Water Resour. Res.* DOI: 10.1002/2013WR014203.
- McDonnell, T.C.**, T.J. Sullivan, B.J. Cosby, W.A. Jackson, and K. Elliott. 2013. Effects of climate, land management, and sulfur deposition on soil base cation supply in national forests of the Southern Appalachian Mountains. *Water Air Soil Pollut.* 224:1733. DOI 10.1007/s11270-013-1733-8.
- Sullivan, T.J., G.B. Lawrence, S.W. Bailey, **T.C. McDonnell**, C.M. Beier, K.C. Weathers, G.T. McPherson, and D.A. Bishop. 2013. Effects of acidic deposition and soil acidification on sugar maple in the Adirondack Mountains, New York. *Environ. Sci. Technol.* 47:12687-12694. 10.1021/es401864w.
- Povak, N.A., Hessburg, P.F., Reynolds, K.M., Sullivan, T.J., **McDonnell, T.C.**, and Salter, R.B. 2013. Machine learning and hurdle models improve regional predictions of stream water acid neutralizing capacity. *Water Resour. Res.* doi: 10.1002/wrcr.20308.
- Herlihy, A.T., J.B. Sobota, **T.C. McDonnell**, T.J. Sullivan, S. Lehmann, and E. Tarquinio. 2013. An a priori process for selecting candidate reference lakes for a national survey. *Freshw. Sci.* 32(2):385-396.
- McDonnell, T.C.**, B.J. Cosby, and T.J. Sullivan. 2012. Regionalization of soil base cation weathering for evaluating stream water acidification in the Appalachian Mountains, USA. *Environmental Pollution* 162:338-344
- Sullivan, T.J., B.J. Cosby, **T.C. McDonnell**, E. Porter, T. Blett, R. Haeuber, C.M. Huber, and J. Lynch. 2012. Critical loads of acidity to protect and restore acid-sensitive streams in Virginia and West Virginia. *Water Air and Soil Pollution.* 223:5759–5771. doi: 10.1007/s11270-012-1312-4.
- Sullivan, T.J., B.J. Cosby, C.T. Driscoll, **T.C. McDonnell**, A.T. Herlihy, and D.A. Burns. 2012. Target loads of atmospheric sulfur and nitrogen deposition for protection of acid sensitive aquatic resources in the Adirondack Mountains, New York. *Water Resources Research.* 48: WO 1547, doi:10.1029/2011WR011171
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Sullivan, T.J., B.J. Cosby, A.T. Herlihy, C.T. Driscoll, I.J. Fernandez, **T. C. McDonnell**, K.U. Snyder. 2007. Assessment of the extent to which intensively-studied lakes are representative of the Adirondack region and response to future changes in acidic deposition. *Water Air Soil Pollut.* 185:279-291.

Sullivan, T.J., I.J. Fernandez, A.T. Herlihy, **T.C. McDonnell**, N.A. Nowicki, K.U. Snyder, and J.W. Sutherland. 2006. Acid-base characteristics of soils in the Adirondack Mountains, New York. *Soil Sci. Soc. Amer. J.* 70: 141-152.

## Published Reports

**McDonnell, T.C.**, B. Knees, M.D. Bell, and E. Felker-Quinn. 2024. Effects of climate change and atmospheric nitrogen deposition on forest understory vegetation communities in selected U. S. national parks. National Park Service, Fort Collins, CO. 1 - 26 pp.

**McDonnell, T.C.**, S. Harju, and C.M. Clark. 2024. Tree Growth and Survival Response to Air Pollution, Climate, and Biogeographic Conditions: Initial Bayesian Model Development. White Paper. Prepared for U.S. Environmental Protection Agency. 33 pp.

**McDonnell, T.C.**, P. Gruendike, M. Deas, and D. Ebert. 2023. Evaluation of Thermal Refugia and Habitat Restoration Opportunities of the Klamath River between J.C. Boyle Dam and Copco Reservoir. Prepared for PacifiCorp. 101 pp.

**McDonnell, T.**, M. Diabat, and C. Miwa. 2022. Upper Klamath River - Thermal Infrared Airborne Imagery - Technical Data Report. Prepared for PacifiCorp. 38 pp. July 21. Available online:  
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## Presentations

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**McDonnell, T.C.**, P. Gruendike, M. Deas, D. Ebert. Effects of J.C. Boyle Dam Removal on Thermal Refugia and Implications for Habitat Restoration Priorities. Presentation for Riverine Symposium, March 22, 2023.

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- McDonnell, T.C.**, J. Padilla, S. Harris, and D. Fallon. Water Quality Analysis of Magdalena Bay, Mexico: Determining Sources of Anthropogenic Eutrophication. The School for Field Studies, Center for Coastal Systems Research: Puerto San Carlos, Baja California Sur, Mexico. May 2001.

## **EXHIBIT 6**

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF OKLAHOMA

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State of Oklahoma, et al.,	)	
	)	
	)	05-cv-329 GKF-SH
Plaintiffs,	)	
v.	)	<b><u>DECLARATION OF TREVOR STAHL</u></b>
	)	<b><u>IN SUPPORT OF DEFENDANTS' POST-</u></b>
Tyson Foods, Inc., et al.,	)	<b><u>TRIAL BRIEF</u></b>
	)	
Defendants.	)	
	)	

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Pursuant to 28 U.S.C. § 1746, I, TREVOR STAHL, declare as follows:

1. My name is Trevor Stahl and I am the President of Cargill Turkey Production, LLC. In this role I am responsible for overseeing all commercial aspects of Cargill’s turkey business, including oversight of the team who manages our turkey growing operations. I have held various positions with various Cargill business entities since May 1992.

2. Cargill Turkey Production, LLC (CTP) will be terminating turkey processing operations at its facility in Springdale, Arkansas on or before August 1, 2025. A company-wide announcement to this effect was made on January 28, 2025. See Exhibit A.

3. The closure of the facility impacted approximately 1,065 production and Live Ag CTP employees. Many of the employees were offered opportunities to transfer to operations in other states.

4. The Springdale, Arkansas facility was CTP’s only facility in the Illinois River Watershed and CTP has no plans to re-open the facility or add any facilities in the watershed.

5. Accordingly, CTP has terminated all contracts with its independent turkey growers who raised poultry for processing at the Springdale facility. This includes all growing operations that were contracted with CTP in the Illinois River Watershed.

6. The last turkey flock was processed from a contract grower in the Illinois River Watershed on July 23, 2023. As of that date, CTP will have no outstanding contractual obligations with any poultry growers in the IRW.

7. In letters dated January 28, 2025, CTP notified all poultry growers in the IRW with whom CTP had growing contracts that those contracts would be terminated as of the last flock process date identified for each grower.

8. An example of this communication to poultry growers in the IRW is attached as Exhibit B. The grower identity and confidential financial terms have been redacted.

9. Specifically, as of July 23, 2023, CTP will no longer own any birds placed with any growers in the IRW.

10. As of July 23, 2023, CTP will not place any birds with any growers in the IRW.

11. As of July 23, 2023, CTP will not provide any veterinary services for any birds in the IRW.

12. As of July 23, 2023, CTP will not pick up any birds from any growers in the IRW.

13. As of July 23, 2023, CTP will not inspect grow houses, supervise operations, or give advice or recommendations to growers in the IRW.

14. With the termination of these contracts, as of July 23, 2023, CTP no longer has any contractual right to enter the premises of any grower in the IRW.

15. As of July 23, 2023, CTP will not inspect any birds or related facilities in the IRW.

16. As of July 23, 2023, CTP will not determine what birds any grower in the IRW accepts or from whom.

17. As of July 23, 2023, CTP will not to be able to require that any grower in the IRW comply with state or federal regulations regarding the disposal of poultry or poultry litter.

18. The termination of these contracts also means that CTP has no leverage that might persuade any grower to take any particular action with respect to the application or disposal of poultry litter or the management of any land where poultry litter has previously been applied.

19. I declare under penalty of perjury that the foregoing is true and correct. Executed on July 28, 2025.

THIS CONCLUDES MY DECLARATION



\_\_\_\_\_  
Trevor Stahl

## Springdale Turkey Complex Update

**Date:** Jan. 28, 2025 4:30p CT

**Subject:** Changes to our Turkey Business and Operations

### PROTEIN-ALL ANNOUNCEMENT



*This message is being sent to all legacy Protein – North America employees. You may cascade internally as appropriate.*

After a thorough business analysis and careful consideration, we have decided to close our Springdale, Arkansas, turkey processing complex, effective August 1, 2025. We did not arrive at this decision easily; however, it is the right move to make for the future of our turkey business. We will shift much of Springdale's production to our California, Missouri and Dayton, Virginia turkey processing plants, creating efficiencies that better enable us to deliver high-quality turkey products at competitive prices.

Upon closure, 1,030 production and 35 Live Ag employees will be separated from Cargill. We have notified impacted employees, and our HR team will be spending more time with them in the coming week to ensure they feel supported. In addition to receiving a retention bonus, they will be eligible for severance and offered support and services to aid in job search and placement. The Springdale team has worked diligently to produce high-quality turkey products, and we are grateful for their efforts.

In total, 108 turkey growers in Arkansas and Missouri will also be impacted by this decision. We'll be working with them individually to determine next steps, and consistent with our Guiding Principles, Cargill will honor all contractual commitments it has with growers. Growers play a critical role in helping us deliver on our purpose, and we appreciate their dedication.

While this decision was made independent of Cargill's 2030 strategy, there is strong alignment to 2030 objectives. By streamlining our turkey operations, we are better positioning protein, and our broader Food – North America business, to win with our customers. We will continue to

**Exhibit A**

evaluate our operations and portfolio to ensure we are doing what is best for Cargill and for our customers.

If you receive any media inquiries, please direct them to Chuck Miller at [media@Cargill.com](mailto:media@Cargill.com).

Regards,

Gonzalo Petschen  
Group President, Food – North America

Misty High  
SVP & Managing Director, Value Added Protein,  
Food – North America



DELIVERED VIA FEDEX

January 28, 2025

[REDACTED]

Tahlequah, OK 74464

Re: Agreement and Notice of Termination of Turkey Management Agreement(s)

Dear [REDACTED]:

Cargill Meat Solutions Corporation has made the difficult decision to cease primary turkey processing operations at its facility in Springdale, Arkansas in calendar year 2025. Given this decision, Cargill Turkey Production, LLC will be winding down the supply of turkeys from the Springdale turkey growing complex.

We recognize that this is difficult to hear and understand that you may have questions regarding your farming operations. To help you with decisions going forward, we have prepared the attached agreement, which defines the important details to close out our relationship. A brief summary of the agreement is provided below for reference only, so please refer to the agreement for the final terms.

**Summary:** During the winding down period, we will continue to compensate you for the number of flocks delivered from your facilities. In addition, you will receive a payment based on the total number of years (including any partial years) remaining in your contract(s) as of the date your last flock processes, multiplied by your best recent year of compensation for growing turkeys. Stated another way, the payment is designed to provide substantial compensation for the remaining contract term without requiring you to grow turkeys after you have delivered your last flock.

This decision was not easy and was made upon careful consideration and a thorough business analysis. This is difficult for all of those we have close working relationships with – employees, farmers, and suppliers alike. At Cargill, we are proud to be part of nourishing the world and we are deeply grateful for your important contribution as well.

Please take some time to carefully review the attached agreement. We look forward to discussing the same with you.

Respectfully,

Jason Witt



**AGREEMENT AND NOTICE OF TERMINATION OF  
TURKEY MANAGEMENT AGREEMENT(S)**

Cargill Meat Solutions Corporation will be ceasing turkey processing operations at its facility in Springdale, Arkansas, which is anticipated to occur on or around August 1, 2025. Therefore, the purpose of this Agreement is to provide you with advanced written notification of termination of the turkey management agreement(s) listed in **Schedule I**, and to serve as a binding Agreement of the terms and conditions upon which Cargill Turkey Production, LLC (CTP) and you will wind down and conclusively resolve any and all obligations associated with the turkey management agreement(s).

**I. Flock Placements**

As Cargill Meat Solutions Corporation will be winding down its turkey processing operations at the Springdale, Arkansas processing plant prior to the respective turkey management agreement termination date, CTP will, at CTP's discretion, continue to place an additional number of flocks at your farm during calendar year 2025 to correspond with the demand of the processing plant. You will receive compensation for the transfer of such flocks in accordance with your turkey management agreement.

You must continue to perform all of your obligations under the turkey management agreement, including any obligation associated with the care for any flock of turkeys placed at your facilities. You will also remain bound to perform any obligation under the turkey management agreement which survives termination, including any obligation associated with environmental compliance.

**II. Additional Payment Calculation and Timing**

In addition to any compensation you may receive for flocks transferred to CTP, CTP will provide you with a payment (the "Contract Payment") calculated as follows:

The required two-year notice to terminate the contract has been given as of January 28, 2025.

*The number of number of days remaining through the turkey management agreement termination is calculated from the date that your last flock processes post the January 28, 2025, notice date (the "Last Flock Process Date"). Your contract end date minus the Last Flock Process Date / 365 will determine the number of years for which you will be compensated.*

*X*

*Your best historical annual, calendar-year compensation received under the turkey management agreement or prior agreements between CTP and you associated with the same facilities, excluding any compensation in 2024 and any compensation before 2021.*

*= Contract Payment*

The Contract Payment will be paid in installments with the first payment occurring two (2) weeks after the Last Flock Process Date and subsequent payments occurring annually thereafter on or about January 28<sup>th</sup> of each year until the turkey management agreement(s) termination date. The Contract Payment set forth



in Schedule I is an estimation based on when we expect your Last Flock Process Date to occur. After your last flock processes, a final Contract Payment calculation will be determined and communicated.

In summary, the Payment is calculated as the potential compensation you would have received, based on your best recent annual past performance, over the period from your Last Flock Process Date through the termination date for the turkey management agreement. **Schedule I** defines the estimated input data and the estimated Contract Payment for each turkey management agreement.

With the exception of compensation due for any flock transferred prior to the Last Flock Process Date, you and CTP agree that the Contract Payment accounts for any and all compensation through termination of the turkey management agreement(s) and any other CTP payment obligation arising under the turkey management agreement(s) or otherwise.

**III. RELEASE AND TERMINATION**

Both parties mutually agree that the turkey management agreement(s) shall be terminated as of the Last Flock Process Date. YOU RELEASE AND FOREVER DISCHARGE CTP, ITS CORPORATE PARENT, AFFILIATES, SUBSIDIARIES, AND ALL OF ITS EMPLOYEES, OFFICERS AND REPRESENTATIVES FROM ANY AND ALL CLAIMS, ACTIONS, DEMANDS AND LOSSES WHICH YOU MAY HAVE, OF WHATEVER KIND OR CHARACTER, KNOWN OR UNKNOWN, AND WITHOUT LIMITING THE GENERALITY OF THE FORGOING, WHICH MAY ARISE OUT OF THE TURKEY MANAGEMENT AGREEMENT(S), OR THAT COULD HAVE BEEN CLAIMED UNDER OR BY VIRTUE OF THE TRANSACTIONS, OBLIGATIONS OR PERFORMANCE ASSOCIATED WITH THE TURKEY MANAGEMENT AGREEMENT(S), WHETHER ARISING OUT OF BREACH OF CONTRACT, WARRANTY, TORT, CONTRIBUTION, INDEMNITY, SUBROGATION OR OTHERWISE.

**IV. Binding Agreement**

This Agreement supersedes any verbal or implied representations, and the Agreement may only be modified by a written agreement signed by both parties. In the event of a conflict between this Agreement and any turkey management agreement(s), this Agreement shall control. THIS AGREEMENT IS A BINDING AGREEMENT AND A RELEASE OF ALL OF YOUR CLAIMS. YOU WARRANT THAT YOU HAVE READ AND UNDERSTAND THIS AGREEMENT.

Please confirm your agreement to the foregoing by signing this Agreement where indicated and returning the same to my attention.

###

**Accepted and Agreed to by:**

<i>Cargill Turkey Production, LLC</i>	 By: _____
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<p>By: <u>Jason Witt</u> Jason Witt, Vice President, Poultry Live Operations</p>	<p>Name: _____ Title (if entity): _____ Date: _____</p>
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**Schedule I  
Estimated Payment**

**Total Estimated Payment for all Agreements: \$ [REDACTED]**

Agreement 1:

Grower Name: [REDACTED]

Farm Name: [REDACTED]

Estimated Last Flock Transfer Date: 5/14/2025

Number of Days Remaining Through Termination: 623

Best Historical Annual Compensation: [REDACTED]

Calculation: [REDACTED]

**Estimated Contract Payment: \$ [REDACTED] to be paid out over the remaining term of the contract**