Eubanks & Associates, PLLC
LAW FOR THE PUBLIC INTEREST

(b) (6)
[redacted]
By appointment only

October 28, 2024

Via Email to:
objections-eastern-region@usda.gov
Reviewing Office
ATTN: Administrative Review Staff,
USDA Forest Service, Eastern Region,
626 E. Wisconsin Avenue
Milwaukee, WI 53202

Re: Objection to Buffalo Springs Restoration Project, and Accompanying Environmental Analysis (Hoosier National Forest, Tell City Ranger District – Responsible Official: District Ranger Christopher Thornton)

Dear Reviewing Officer,

Pursuant to 36 C.F.R. § 218.8, on behalf of Indiana Forest Alliance ("IFA"), I hereby submit formal objections to the Buffalo Springs Restoration Project ("Project"), including the U.S. Forest Service's ("Service's") environmental analysis of the Project's effects under the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4347. These objections are submitted on behalf IFA and its members, board members, and supporters:

Indiana Forest Alliance
(b) (6) [redacted]

Contact:
(b) (6) [redacted]

Indiana Forest Alliance's members and constituents routinely utilize the Hoosier National Forest (HNF) and nearby areas, such as Patoka Lake, including the areas affected by the Project for recreational, inspirational, spiritual, scientific, educational, and drinking water purposes. Those interests will be irreparably harmed if the Project is implemented as currently designed. For this reason, Indiana Forest Alliance ("IFA") is committed to safeguarding the ecological integrity of the areas affected by the Project. To the extent the Service is willing to explore mutually satisfactory solutions for avoiding and/or better mitigating the Project's deleterious effects, IFA stands ready to discuss a non-adversarial resolution with the agency. However, if the Service remains committed to forcing through this wrong-headed logging and burning project—and doing so without even preparing an Environmental Impact Statement ("EIS") under NEPA, which is clearly required under the circumstances—IFA also stands ready to utilize all available tools for enforcing federal law, including litigation in federal court.

DISCUSSION

I. The Service arbitrarily suppressed public participation during the project's planning period.

The Service published the Draft Environmental Assessment ("DEA") for the Project on November 16, 2022. When it did, the Service invited the public to comment on the DEA, but allowing only 30 days for the public to do so. Before the comment period expired, the Service rejected the public's request to extend that time period by an additional 30 days, citing the agency's regulation, 36 C.F.R. § 218.25(a)(1)(iv), which provides that "[t]he time period for the opportunity to comment on a proposed project of activity to be documented with an environmental assessment shall not be extended."

In their comments on the DEA ("IFA's Comments"), IFA explained that such a truncated comment period prejudiced them and other members of the public by foreclosing consultation with subject-matter experts regarding affected resources. *See IFA's* Comments at 1 ("IFA reminds the Service that IFA requested an extension of the unduly short 30-day DEA comment period to provide adequate time for IFA and other members of the public to absorb the contents of the DEA and its appendices and specialist reports—which comprise nearly 500 pages of technical material—and provide meaningful comments responding to such analyses.").

Further, we explained that the Service's reliance on 36 C.F.R. § 218.25(a)(1)(iv) to deny any extension is misplaced because "Congress repealed the Appeal Reform Act (originally enacted in 1992), which removed any arguable statutory prohibition that precluded the Service from extending comment periods for DEAs beyond 30 days." IFA's Comments at 1. This means the "Service's decision not to extend a comment period is discretionary rather than mandated by statute[.]" *Id.* Indeed, as IFA pointed out, the Service routinely exercises its discretion to extend comment periods and, therefore, expand opportunities for public involvement and input. *See id.* at 2. (collecting examples and guidance demonstrating the Service's discretion to extend public comment periods notwithstanding the agency's regulations and hardline position in this situation).

Moreover, under the Administrative Procedure Act ("APA"), federal agencies exercising their discretionary authority have a duty to "articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made." *Motor Vehicle Mfrs. Assoc. v. State Farm Mut. Auto. Co.*, 463 U.S. 29, 43 (1983) (citations and quotation marks omitted); *see also* 5 U.S.C. § 553(c) (providing the public with "an opportunity to participate in the rule making through submission of written data, views, or arguments," and compelling agencies to "consider[]" those submissions). Here, however, there is no way for a reviewing court to ascertain why the Service refused to foster meaningful public participation. The agency's own past practice demonstrates that the Service does not view 36 C.F.R. § 218.25(a)(1)(iv) as an inviolate bar against such extensions. Thus, its unexplained citation to that provision does *not* "articulate a satisfactory explanation for its action." *State Farm*, 463 U.S. at 43. Without this explanation, the Service's decision cannot be sustained under the APA. *Int'l Snowmobile Mfrs. Ass'n v. Norton*, 304 F. Supp. 2d 1278 1292-93 (D. Wyo. 2004) ("By giving

limited comment periods and providing the final implementing regulations the day after the comment period has ended, the [agency] has failed to provide meaningful participation in the rulemaking process to the public under the APA."); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1288 (1st Cir. 1996) (setting aside NEPA analysis in which the Service "did not respond to these comments at all" because "[t]he agency did not in any way explain its reasoning or provide a factual basis for its" decision). The Service's refusal to foster meaningful public comments by insisting upon an arbitrary comment deadline—and refusing reasonable, factually, and legally supported requests for extensions—is capricious and unlawful.

Further, the FEA leaves out pertinent information and new developments which further hinder the public in making purposeful comments on the Project. On page 10 In the FEA there are references to Appendix F:

> Maple-beech stands are typically located on sites characterized by mesic soils, which are described as soils containing a moderate amount of moisture. These sites often contain high numbers of species such as American beech, sugar maple, and tulip-poplar. This forest type comprises roughly 14 percent of stands in the Buffalo Springs Project. Many of these stands are overstocked (Appendix F). FEA pg 10. While these pine plantations played an important role in rehabilitating degraded lands, they have now surpassed their growth potential and are degrading on many sites due to age and disease. The species planted are not native to this part of Indiana and are outside of their natural range. These stands are typically overstocked, with common basal areas of 170 to 220 square feet per acre (Appendix F). (FEA pg 10).

These statements both indicate there is more information in Appendix F regarding stand density in the Project area that is critical for reviewers to assess the validity of the state purpose and need for the Project. Yet there is no Appendix F in the FEA nor in the Draft Decision Notice and Finding of No Significant Impact.

Additionally, there are some changes and modifications in the Project from the DEA to the FEA. Notably the acreage and location of treatment areas and needed road mile constructions have been adjusted. Three of the changes are discussed on page 16 of the FEA.

- To ensure protection of heritage resources (Buffalo Trace) and riparian and slope concerns, 156 acres were removed from the proposed action. This is a common occurrence during project analysis.
- An additional 122 acres were removed from the proposed action due to newly available growing space created by the August 7, 2023 tornado.
- The No New Roads Action Alternative was re-analyzed due to the reduction of treatment acres and road miles.

The dates on the maps accompanying the FEA show that they have been updated since the DEA was published, but these new developments are not found on the new treatment maps. Commenters need to assess how or whether their concerns about the DEA were addressed. Excluding these notations from the maps only hinders that understanding. Another example of lack of public participation is that 25 pages of the 43-page Effects to Cultural Resources report

that are completely missing. IFA understands regulations to ensure the security of archaeological sites, but excluding general information of whether and where surveys have been conducted so that the reader cannot confirm the veracity of the Service's claims appears to be concealment rather than transparency. Accordingly, we object to the manner that the Service has utilized for this Project to limit meaningful opportunity for public understanding and comment—as well as disclosure and analysis of relevant impacts—on this controversial and massive project of unprecedented size in the history of the HNF.

II. The Forest Plan is stale; It must be revised before project design, finalization, and implementation can occur.

According to the Service, the Project "is based on" the Hoosier National Forest Land and Resource Management Plan ("Forest Plan"), promulgated in 2006. FEA pg 5. As such, the Service's analysis of the Project's environmental effects refers to that document and the accompanying EIS for the Forest Plan repeatedly to shortcut its analysis of the Project's likely effects even though neither the Forest Plan nor its EIS examined environmental impacts at the more site-specific project level.

Aside from the lack of analysis at the site-specific impact level that NEPA and its implementing regulations require at this stage, IFA's Comments pointed out two related problems with relying on programmatic analyses completed nearly twenty years ago. First, the Forest Plan and, by extension, the environmental analysis prepared in support of it, is now effectively expired (or at least severely outdated). *See* 16 U.S.C. § 1604(f)(5) (mandating that "[p]lans developed in accordance with this section shall . . . be revised from time to time when the Secretary finds conditions in a unit have significantly changed, but at least every fifteen years"). Second, the Forest Plan is woefully outdated and based on principles and facts that are outdated, no longer accurate or accepted in the scientific community. *See* IFA Comments at 27.

Examples of significant changes that have occurred in the HNF since the Forest Plan pointed out in IFA's comments include the advance of emerald ash borer severely impacting multiple species of ash across the HNF, and new federal endangered listings of two bats dependent on the HNFs older interior hardwood forest. Invasions by non-native invasive plant species (NNIS) in the HNF, such as Japanese stiltgrass, and their displacement of native herbaceous plants and adverse effect on forest regeneration have also significantly worsened since the Forest Plan. The FEA acknowledges that the project's silvicultural treatments, trail maintenance, road building, and prescribed fire will exacerbate NNIS spread in the project area FEA pgs 82, 86, and indicates that the same herbicides used for spot treatments to kill trees that compete with oaks, which include glyphosate, will be broadcast spread to control NNIS outbreaks when necessary. FEA pgs 34, 59, and 85-92. However, new research released since the DEA was published and was not addressed in the FEA, let alone the Forest Plan, finds glyphosate in the blood of pregnant women in Indiana and elsewhere in the Midwest and indicates this exposure is causing premature births and other fetal complications in those women. The Forest Plan is also substantially inconsistent with new policy directives concerning mitigation of climate change that are germane to the present context.

Thus, the Project will lock in logging, burning, and road building operations that will significantly encourage NNIS growth and/or likely contaminate a major public drinking water supply with an herbicide to control that growth which appears to be harming pregnant women, cut down the few remaining ash trees in the project area that are resilient to ash borer, harm newly endangered bats, and eliminate mature and emerging old growth forests over a project area of unprecedented size in the HNF based on a Forest Plan and EIS that are already three years beyond its allowable period of use. The Project plans more than 4,800 acres of logging for the next 12 to 15 years (FEA pg 37) and prescribed burning on up to 15,100 acres repeatedly for the next 25 years (FEA pg 29). Therefore, a plan to conduct project activities based on a markedly outdated 2006 Forest Plan that will have serious impacts on forest resources not analyzed in that Plan, will lock in those activities until 2049 – a full 43 years after the Service issued the Forest Plan in 2006!

IFA's concern here is with the validity of key assumptions underlying the Forest Plan that were made without the benefit of more recent information, scientific research, and agency policy directives regarding forest management, not merely the number of days since the Plan was promulgated. Courts routinely set aside NEPA analyses predicated on outdated or "stale" information. *W. Watersheds Project v. Abbey*, 719 F.3d 1035, 1049-53 (9th Cir. 2013) (setting aside a grazing allotment analysis under NEPA for failure to consider a no grazing option, in part because of stale information relied on by the agency); *see also Blue Mtns. Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1214 (9th Cir. 1998) (tiering not appropriate where programmatic EIS did not address significant new information concerning changes to forest due to fire); *Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 783 (9th Cir. 2006) (agency may not rely on programmatic EIS that "does not adequately address the potential impacts of" the site-specific action).

The Service should reconsider its decision to forgo revising the Forest Plan before finalization of Project, design, and project implementation. Pressing forward in the absence of current scientific understanding and information and contrary to current agency policy risks doing far more harm to the ecological integrity of the Forest. Accordingly, we object to this project moving forward prior to the revision that is needed and statutorily required for the HNF.

III. The FEA's purpose and need for the project is arbitrary, capricious, and not in accordance with law, and artificially skews the scope and range of alternatives considered.

The purpose for the proposed Project remains unchanged from the DEA:

> Purpose for Action
> This proposal meets Forest Plan direction to promote tree growth, reduce insect and disease levels, and move the landscape toward desired conditions. It would also increase the resiliency and structure of forested areas (stands) by restoring the composition, structure, pattern, and ecological processes necessary to make these ecosystems sustainable. (DEA at 11. FEA pg 13)

-The FEA does not explain how project activities will promote tree growth or reduce insect and disease levels.

The FEA continues to state that "mortality from pests and pathogen attacks is currently increasing on the forest" (FEA pg 10), but provides no data to support this statement let alone demonstrate that such mortality is increasing in the Project area despite IFA having raised this concern over the lack of such data in the DEA (IFA comments at 5 & 6). Nor does it provide data indicating that tree growth is declining in the HNF or the project area, or documenting that any of the project activities will reduce insect and disease levels.

The FEA continues to refer to a "2020 Defoliation event" yet acknowledges that subsequent investigations indicated that most of the oaks affected have *recovered* without any apparent need for any management actions. (FEA pg 11). No indication is provided indicating whether the event even occurred in the project area or whether two sources thought to contribute to the event, oak anthracnose or oak shothole leafminer, are prevalent in the area. As such, there is no support or explanation in the FEA the purpose and need as stated.

The FEA repeats the statement from the DEA that oak wilt is prevalent in the project area but does not indicate where it is, why it might be occurring, or what vegetative treatment might address this fungal disease. The acknowledgment that oak wilt can be spread beyond immediate oak stands by sap beatles spreading spores of the fungus (FEA pg 12) suggests that silvicultural treatments such as thinning may not stop the disease.

The FEA repeats the DEA's discussion about oak decline with the addition of two sentences stating, "Oak decline is occurring heavily in the Tell City Ranger District, around and near the project area (IDNR 2019). The goal is to prevent widespread occurrence in the Project area." (FEA pg 11). These statements appear to concede that oak decline has not been found anywhere on the 19,000 acres of national forest *in the project area*. Furthermore, without a map or other information indicating where oak decline is occurring, it is impossible to understand whether this disease is occurring in unmanaged or managed stands of oak in the Tell City Ranger District, such as those in the Uniontown North, Uniontown South, Oriole and German Ridge Restoration Projects.

IFA finds the assertion in the FEA that reducing stand densities will prevent oak decline (FEA pg 11) to be arbitrary and unsupported. Furthermore, the FEA presents no assertion or evidence that suggests that oak decline, endemic to the central hardwood region (CHR) for millennia, will not subside as the older oaks in these stands succumb to the disease or die from other causes. Rather than killing all oaks, oak decline targets vulnerable oaks in the oldest age classes, creating gaps that allow more natural levels of sunlight into the forest and younger oaks and other trees to ascend into the canopy. The Service has presented no evidence refuting this logical and well-established scenario. Instead of launching into vegetative treatments, the agency should monitor oak decline in the project area to gain a stronger understanding of where it is occurring and how oaks in the HNF are responding to it.

Oaks have been surviving oak decline in unmanaged wild forests in eastern North America for thousands of years. According to Service researchers, oak decline is

> A stress-mediated disease that results from the interactions of physiologically mature trees, abiotic and biotic stressors that alter carbohydrate physiology, and opportunistic fungal pathogens and inner bark-feeding insects. Symptoms include reduced radial growth and slow, progressive crown dieback. Decline occurs over several years or decades, ending in death of vulnerable trees.
> . . .
> The disease has **regulated oak populations since oak species and interacting antagonists first appeared in the CHR**, and that role continues to the present. (Emphasis added).[1]

Without more site-specific information and data documenting actual forest health issues in the project area and supporting the assertions that project activities will address those issues, we object to the project's purpose as arbitrary and find its significant adverse impacts to be completely unjustified—for the same reasons stated in our DEA comments. *See* IFA Comments at pages 5 through 8.

-The Project will not meet the desired conditions prescribed by the Forest Plan.

More than two thirds of the Project will occur in part of the Forest called "Management Area 2.8." The FEA still does not explain why the Service cherry-picked certain "desired conditions" for Management Area 2.8 (MA 2.8) from the 2006 Forest Plan, while entirely ignoring other, equally if not more important "desired conditions" for this management area more conducive to natural forest conditions. On page 12, the FEA states:

> The desired conditions include maintaining 4 to 12 percent of that management area in young forest habitat and diversity of age class and forest structure. The Forest Plan states, "Habitat in these areas is best suited to wildlife that uses large hardwood trees and a mosaic of different-aged hardwood forests. The Forest manages the area primarily for plant and animal habitat diversity and timber harvest is an appropriate tool for use in this area" (USDA FS 2006). (FEA pg 12).

This discussion leaves out other significant aspects of the "desired conditions" described for MA 2.8 in the Forest Plan which include:

> [L]arge areas of old forests . . . different canopy levels and animal communities associated with vertically diverse, shade tolerant vegetation, as well as different successional stages of vegetation. . . . Habitat in these areas is best suited to

1 Chapter 3 Oak Decline in Central Hardwood Forests: Frequency, Spatial Extent, and Scale, S. W. Oak (*) USDA Forest Service, Southern Region Forest Health Protection (retired), e-mail: swoclo@charter.net, M. A. Spetich USDA Forest Service, Southern Research Station. e-mail: mspetich@fs.fed.us, R. S. Morin USDA Forest Service, Northern Research Station, Forest Inventory and Analysis, e-mail: rmorin@fs.fed.us, © Springer International Publishing Switzerland 2016 C.H. Greenberg, B.S. Collins (eds.), Natural Disturbances and Historic Range of Variation, Managing Forest Ecosystems 32, DOI 10.1007/978-3-319-21527-3_3

hardwood forests. . . . Large trees with continuous canopy characterize much of this area. 2006 Forest Plan 3-28.

IFA's comments pointed out that, by selectively choosing only the desired conditions that include early successional habitat for this Project and targeting older forests for reduction to create this habitat, these other desired conditions from the Forest plan will *not* be met in the Project area. Indeed, only 15% of the forest in MA 2.8 is 100 or more years old, 4.5% is 120 or more years old, and less than 2% is 130 or more years old, making it crucial to conserve the few "large areas of old forests" that exist in the Project area to meet the desired conditions. Yet the Project will cut 51% of the forests that are 100 or more years old, 58% of the forests that are 120-129 years old, and 61% of the forests that are 130-139 years old. Furthermore, rather than "large trees with continuous canopy," the forests throughout MA 2.8 in the Project area will be riddled like swiss cheese with hundreds of openings from clearcuts, shelterwood cuts, group tree openings, and patch openings from selective cutting. IFA's Comments 7.

The slight reduction of logging by less than 300 acres in the Project will not significantly lessen this massive impact, which will replace continuous canopy with edge-saturated forest throughout MA 2.8 in the project area.

The FEA has not explained how this approach is consistent with the Forest Plan, NFMA, or the agency's own regulations. Older forest, continuous canopy, and interior forest habitat is limited in the scattered national forest ownership within the Project area relative to other areas of the HNF. Accordingly, we object to this cherry-picking of certain desired future conditions to the detriment of other desired future conditions that conserve continuous forest canopy in MA 2.8 in the Project Area. We request that the Service re-examine this issue and follow a management that ensures all "future desired forest conditions" from the Forest Plan will be retained before Project implementation. Otherwise, the project will not only fail to satisfy the stated purpose of the proposed action, but will actually achieve the *opposite* of the stated purpose and move the forest away from desired conditions in the 2006 Forest Plan.

-The FEA does not explain how its activities will make the forest ecosystem sustainable.

Like the DEA, the FEA also fails to explain why the Service believes it should engage in project activities designed to sustain an ecosystem that is not naturally sustaining itself. It does not explain how these activities—which are aimed at reducing the natural diversity of forests in the project area by killing the majority of native hardwoods and retarding the development of older age classes that are extremely scarce in the project area—will, as a stated purpose of the action, "increase the resiliency and structure of forested areas by restoring the composition, structure, pattern, and ecological process necessary to make these ecosystems sustainable and durable to projected future climate change impacts.." (FEA pg 13). This appears to be nothing more than a promotional statement to hype the purported benefits of the project, without any explanation or substantiation that such "restoration" is either needed or sustainable in the long term absent intensive and destructive management activities. We object to this as well. *See* IFA's Comments at pages 14-15.

-The Project's needs are legally and factually unsupported.

In addition to the Project's fatally flawed purpose, the stated need for the project in the FEA is equally deficient. The FEA identifies the project's need on page 13:

> Need for Action
> This proposal is needed to provide a mosaic of forest conditions dominated by hardwoods and restore upland hardwood forest ecosystems that have not experienced periodic disturbance due to fire or other naturally occurring events. (FEA pg 13).

IFA's comments on the DEA pointed out that this contrived articulation of the needs for the Project is contradicted by every tree that has fallen, every wind storm, tornado, ice storm, lightning strike, insect infestation, blight, and disease outbreak that has occurred in the Buffalo Springs project area in the last 220 years. (IFA pg 8). Indeed, on pages 6 & 7, the FEA acknowledges that *since the DEA was published* a tornado and wind damage increased the early successional habitat in the area *by ten times* from 8 acres to 80 acres. The very purposes outlined for the project to reduce insect and disease levels and arrest increased tree mortality imply that considerable natural disturbance is occurring in forests within the project area.

Nevertheless, the FEA repeats the same alleged "needs" for the proposed action that were discussed in the DEA, ignoring public comments including those of IFA that provided substantive information refuting those needs. *See* IFA's Comments at pages 8 through 19. These needs would "restore" the oak-hickory forest type asserted to have predominated in the area, return fire as a natural disturbance agent, establish more early successional habitat, reduce nonnative pines, and reduce stand density. These needs are based on premises that are either false as a factual matter or not supported by sufficient evidence to be a compelling (let alone rational) basis for the activities authorized in the FEA for the Buffalo Springs project area.

-Oak Hickory was not the predominant forest type in the natural forest ecosystem of the Buffalo Springs Area.

A fundamental rationale for this Project repeated throughout the FEA is that the project activities are needed to restore the native oak-hickory forest type to the area. Yet the FEA fails to respond to the most relevant and definitive evidence on this subject from the U.S. Government surveys within the area encompassed by the Buffalo Springs Project. These surveys were undertaken during the early settlement period of 1804 through 1807. They document that the forests of the area were far more diverse mixed mesophytic hardwood forests dominated more by the beech-maple than oak-hickory forest type. (IFA's Comments, 13-14). A composite of these early settlement era surveys shows that, while oaks and hickories were certainly present, they were far from dominant. Beech trees were the most numerous trees identified in the surveys at 43.5%, maples represented 11.8%, and poplars represented 6.1% of the trees identified. In comparison, all oaks combined represented approximately 21% and hickories constituted 6% of trees documented in the surveys. Some 13 other species comprised 11.7 % of trees identified in these surveys.

The issue of atypical oak dominance in forests of the eastern U.S. was addressed in a study by Abrams and Nowacki published in 1992, which reported in part:

> . . .
> Conclusions
> Paleoecological studies indicate that oak domination of eastern forests occurred during warmer and drier climatic periods at the beginning of the Holocene Epoch and that these conditions are thought to have increased the incidence of fire. Indian burning practices and other disturbance factors may have elevated oak dominance in certain presettlement forests. Further increases in oak occurred after European settlement, whose activities included fire exclusion in tall grass prairie and southeastern pine forests; logging and burning of northern pine-hemlock forests; and the charcoal iron industry, land clearing and the chestnut blight in the mid-Atlantic region. Thus, the postsettlement distribution of oak greatly exceeded that of the pre-settlement era in various regions of eastern North America. **However, the evidence indicates that oak is not a typical dominant in late successional forests, and its stability is probably limited to sites of extreme edaphic or climatic conditions or areas that are periodically burned.** (Emphasis added). (IFA pg 11).

Because the Service has not meaningfully responded to or addressed this issue in any authoritative (let alone compelling manner), we continue to object to this aspect of the FEA.

The Service is also contradicting the need to restore the native forest type and remove nonnative pines from the area by proposing to devote much of the project in the Paoli Experimental Forest to propogating a new oak-shortleaf pine community as a "transition" forest type for addressing dryer conditions in the HNF as a result of climate change. (FEA pgs 22-24). Shortleaf pine (*Pinus echinata*) is not native to the HNF. There was no discussion in the DEA of this new project activity. An oak-shortleaf pine community would be a completely nonnative, artificial forest type in the HNF. Yet, there is little explanation for why the Service has arbitrarily chosen this nonnative tree type as the focus of a transition forest, rather than trees known to be native to this region.

-Fire was not a significant natural disturbance agent in the project area.

Substantial documentation was provided in the IFA's Comments establishing that fire events were not a significant natural disturbance in southern Indiana in the pre-settlement period. Due to the wetter climate of the Central Hardwood Region (CHR) – in contrast to the American west – forests in the Project area are not wildfire prone. (IFA's pgs 8-12).

Accordingly, the pervasive use of repeated prescribed fire proposed on 12,135 - 15,100 acres in the Project area cries out for more scrutiny. In fact, there is no study or research on forests in Indiana that suggests fire was a significant agent of natural disturbance in the state within the past millennium. IFA's receipt of data after the comment period for the DEA reinforces the fact that fire is not a significant agent of natural disturbance in the HNF. That

data provided by HNF fire staff indicates that of 442 fires recorded in the HNF between 2002 and the spring of 2019, *only 3 have been conclusively linked to natural causes* (lightning strikes). They burned a total of 1.4 acres—an extremely nominal amount of acreage.[2]

The FEA promotes fire as a significant natural disturbance agent by pointing to fires that Native Americans set in Indiana and other eastern states to help clear small areas for farming. Actually, fires were more frequently set by settlers in the early post-colonial period to extensively clear land for farming. However, the fact that Native Americans or settlers used fire to clear some areas of hardwood forest does not mean that fire was a significant "natural disturbance agent" or even prominent in this forest. In fact, a study of fire in the one area of Indiana's hardwood forests often relied upon by promoters of prescribed fire to assert the importance of fire as a natural disturbance agent, the oak barrens of south-central Indiana along the Ohio River, states:

> It is likely that anthropogenic ignitions were the primary source of fire in the Barrens region because of the extremely low frequency of lightning caused fires (Schroeder and Buck, 1970) due largely to heavy rains that accompany storms in this region .[3]
>
> . . .
>
> There is little evidence that historic fire events corresponded to droughts. This is evidenced by few fire years directly corresponding to drought conditions and significant changes in the fire regime being unrelated to PDSI variability.[4]
>
> . . .
>
> As has been documented elsewhere (Guyette and Dey, 1995, 1997, 2000; Guyette et al., 2002), the sequence and abrupt changes in the frequency of fire at the study site suggest that a strong relationship exists between fire frequency and human population density, settlement and migration.

This study examined fire rings in 27 post oaks in Perry County's Boone Creek Barrens within the HNF to discern the frequency of fires in this area over a 345-year period (1654 to 1999). Not surprisingly, given the record of human presence in the Ohio Valley region, this study found that the vast majority of anthropogenic ignitions, i.e., human-caused fires, were started by European settlers and their descendants, not by Native Americans.

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[2] This information is from data transmitted by the HNF to IFA by email on July 6, 2023. The email and data file are submitted as Exhibit 1a July 6 2023 Forest Service Email Providing HNF Fire Data to IFA and Exhibit 1b HNF Fire Data attached to these objections.

[3] GUYETTE, RICHARD P., DEY, DANIEL C., and STAMBAUGH, MICHAEL C., Fire and Human History of a Barren-Forest Mosaic in Southern Indiana, Source: The American Midland Naturalist, 149(1); pages 21-34, Published by: University of Notre Dame. Quote is from page 22. URL: https://doi.org/10.1674/0003-0031(2003)149[0s021:FAHHOA] 2.0.CO;2

[4] Ibid, pages 26-27.

There were four fires recorded (as fire scars on tree rings) in the Boone Creek Barrens from the 1650s through the 1680s, a time when the Osage and Quapaw Indians are thought by researchers to have inhabited the Ohio Valley. However, these Native Americans reportedly moved to the west out of this region after European settlement had begun to the east resulting in the Ohio River Valley containing the lowest Native American population density in Eastern North America at the time of contact with settlers according to researchers (Waldman 1985). The near absence of Native Americans living in the Ohio Valley Barrens region and the lack of fire there as a result is supported by the study's fire ring analysis which found no fire scars in the Barrens' post oaks for 108 years from 1693 to 1801. In contrast, after 1800 when settlers began arriving in significant numbers in the area, there were 14 years from 1801 to 1900 with fire scars. The frequency of fires from farmers routinely using fire to clear ground for farming and grazing reached a peak from 1888 to 1929 when the average interval between fires was a mere 2.1 years. In fact, there were 15 fires in the area in the first thirty years of the twentieth century before an era of fire suppression started in 1930. The important fact from the Boone Creek Barrens study that has not been accounted for in the FEA is that the fires being suppressed in the CHR were not naturally occurring fires, but rather human-caused ignition events. Thus, there is no evidence that suppressing such fires has harmed the health or ecological resilience of old growth central hardwood forests.

The FEA does not provide information that refutes (or coherently responds to) the IFA characterizations and underlying documentation concerning the relative scarcity of natural fire events in eastern U.S. central hardwood forests and the artificial dominance by oak in those forests due to human-induced fire events. The preponderance of evidence borne out by longstanding studies of old growth forests in the CHR indicates that the decline of the oak-hickory forest type is a natural progression in these forests as maple, beech, poplar, walnut ,and other species that are more adapted to a wetter climate return to ascendency. Accordingly, we object to the repeated false assertions in the FEA that the decline of the oak-hickory forest type is unnatural and needs to be reversed with project actions and that prescribed fire is needed to restore the natural disturbance regime in the Buffalo Springs Project area.

-There are far more than 80 acres of early successional habitat in the project area

A third unfounded "need" for this action is that the Project area is deficient of "early successional habitat," and thus in need of timber harvest to create that habitat. The FEA states that even with 72 acres of additional early successional habitat added from a tornado in August 2023, the inventory of forest stand ages (from the Federal Inventory and Analysis, FIA) indicates less than 1% of the forests in the Project area are between 0-9 years old. (FEA pgs 6-7). Still, Table 1 summarizing forest type by age class in the MA 2.8 has not been updated to reflect this ten-fold increase in early successional habitat. (FEA pg 9).

IFA outlined several reasons that this need is overstated in its comments on the DEA. (IFA 15-17) These include the following:

- failure to include early successional habitat being created by natural forest succession and the increased mortality cited by the FEA as occurring in the Project area. The downed

logs and leaning trunks create a vertical and structural diversity in such openings which enhance the value of this natural early successional habitat over that created by logging. Yet openings created by this natural forest thinning which increase as a forest ages, are arbitrarily not counted as early successional habitat by the Federal Inventory and Analysis if they are less than one acre in size or have no dimension that is larger than 200 feet across.

- failure to include 30 wildlife openings totaling 234 acres managed for early successional habitat in the project area. (FEA pg 84). A Forest Service claim that these openings do not contain ample saplings and trees in the 0-9 year age class is readily refuted by the first glance at most of them.

- failure to include an estimated 214 acres of utility right of ways which include two power transmission lines and one gas pipeline being managed permanently as early successional habitat that traverse national forest lands inside the boundaries of the project area. IFA provided a photograph in its DEA comments of one of the utility power transmission right of ways that showed trees and woody vegetation in the 0-9 year age class in the right of way. (IFA 16). There are also hundreds of additional acres of early successional habitat along roadways and their associated powerline and water line easements.

- failure to include many hundreds—if not thousands—of acres of young forest, fields and brush *directly adjacent* to national forest land on the approximate 10,000 acres of private lands in the Buffalo Springs project area.

Not counting any early successional habitat on private lands, adding the 80 acres of acknowledged early successional habitat in MA 2.8 to the 234 acres of wildlife openings and 214 acres of utility right of ways traversing national forest land brings the total acreage of early successional habitat to 528 acres inside the project area. This acreage comprises 5% of the forest stands in or adjacent to MA 2.8 which meets the desired condition in the 2006 Forest Plan of 4-12 percent of stands in the 0-9 year age class.

It should be noted that the wildlife that are dependent upon early successional habitat in the project area are not occupying that habitat based on who owns it. With some 29,714 acres delineated on project maps inside the project area and 17,643.2 acres of that HNF land, the FEA's preoccupation with early successional habitat just on the 10,500 acres of MA 2.8 within the project area is arbitrarily mischaracterizing the supposed need for such habitat in the area.[5]

Notwithstanding the uncounted acres of early successional habitat in wildlife openings, the Forest Service has claimed that it will not account for such habitat existing on lands not under its jurisdiction in the project area. Nevertheless, the failure to take many acres of early

[5] The 29,714 and 17,643.2 acreage figures are estimated from the Buffalo Springs project boundary digital GIS shapefile (.shp) provided to IFA by the Forest Service via email attachment on April 30, 2024. IFA Geospatial Conservation Consultant, Sam Armstrong, used ESRI's ArcGIS Pro software to analyze the data on the shapefile to confirm the acreage.

successional habitat on utility easements and adjacent private lands into account in estimating the number of existing acres of early successional habitat and thus defining the purported "need" for this action on a grossly exaggerated deficit of such habitat in the project area, defies current Forest Planning regulations (36 C.F.R. § 219.1) that state Forest Plans shall guide projects that implement "sustainable, integrated resource management of the resources within the plan area *in the context of the broader landscape, giving due consideration to the relative values of the various resources in particular areas*" (emphasis added). This is also consistent with NEPA, which requires that agencies consider, as part of their alternatives to the proposed action, alternatives that could achieve the agency's objectives even though the agency lacks jurisdiction over non-Federal lands where such alternatives would occur. *See, e.g.*, *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 814 (9th Cir. 1999) (holding that the Forest Service was required to consider purchasing lands as alternative to land exchange, even though "it was not clear that the funds would be available for such a purpose," and the agency had not requested the funds).

Because the FEA inaccurately overlooks early successional forest in wildlife openings and fails to consider alternatives for obtaining the desired amount of early successional forest in the project area—assuming that is even a legitimate need—from such forest conditions on utility land traversing MA 2.8 or private land directly adjacent to MA 2.8 in the project area, the agency is violating NEPA and its implementing regulations, and acting arbitrarily and capriciously. Accordingly, we object to these violations of law.

-Pines provide positive wildlife benefits and are aging out in the project area and being replaced naturally by hardwoods

According to the Service, more than three-fourths of the pine stands in MA 2.8 within the project area are to receive vegetative treatments: 698 acres are to be clear cut and 1472 thinned. (FEA Tables 1 & 2) On page 14, the FEA states, "There is a need to reduce the amount of pine in the project area to provide more suitable habitat to a wider array of wildlife species." As was done in the DEA, the FEA repeats this assertion over and over without acknowledging or addressing relevant facts that should be considered in assessing this purported need which were presented in IFA's Comments. *See* IFA's Comments at pages 17-18.

These include the many benefits that pine stands provide to wildlife in the HNF. In addition to cover in the winter, conifers such as the white pine pines are actually important habitat components for animals such as the ruffed grouse, a Regional Forester Sensitive Species, that the Project seeks to benefit by replacing pines with early successional habitat. (FEA pg 71). Further while the FEA asserts that pine snags offer less bat roosting habitat than hardwoods and targets white pines for clearcutting to improve bat habitat, (FEA pg 62), endangered bats such as the Indiana and northern long-eared bat have been known to utilize pines as roost trees. In fact, bat biologists located an Indiana bat roost in a white pine snag (surrounded by hardwood trees) in the Houston South Project area in an IFA 2023 bat survey.[6]

[6] The results of this survey were reported to the Forest Service by Environmental Solutions and Innovations on a nightly basis for the locations and emergence surveys of roosts located such as

Removing the pine and pine oak stands will also eliminate the moderate sun/shade regimen in many of the pine groves that is actually conducive to oak regeneration (particularly for northern red oak). Indeed, 30% of the pine forest type in FEA Table 1 on page 9 is identified as "Oak-Pine." Seedlings, saplings, and pole timber-sized tulip poplars, maples, walnuts, sassafras and other hardwoods are also fairly common in many pine stands in the project area. The DEA comment response document explains oak-pine forest types are actually defined to include at least 50% commercial hardwoods many of which are not oak. Clear cutting non-native pines and oak pine stands will not mimic natural disturbances in central hardwood forests. Rather such cutting will remove mast, including oak mast, a prime need presented for the Project, and create significant adverse edge effects on the nesting success of forest songbirds and other wildlife species that have adapted to the forest with pine over the last 50-90 years. Such logging will also exacerbate the displacement of native herbaceous plants by NNIS. Thus, by rapidly removing pine and pine hardwood canopies, the Service could likely cause more ecological harm than benefits attempting to accomplish at a high risk what is already happening naturally, hardwood regeneration. While it fails to acknowledge hardwood regeneration is pervasively occurring in pine stands, the FEA does state on page 12 that field surveys are finding heavy needle loss, decline and resulting mortality of white pines in the project area and concludes: "Disease susceptibility will likely be compounded by the effects of climate change, as summer and fall seasons are expected to become hotter and drier in southern Indiana." The DEA comment response document also concedes that, "Hardwood species would gradually replace the current pine overstory as these species age and senesce even without management." (Comment Response pg 170).

Thus, the fact that the pines are already visibly declining, likely to continue declining and being replaced by hardwoods combined with the adverse ecological risks of quickly logging wide swaths of them raises fundamental doubts about the need to remove them. We object to the complete failure of the FEA and its comment response document to acknowledge these concerns presented in IFA comments and call upon the Service to examine an alternative that retains the pines and allows nature to take its course.

-The forests in the project area are naturally thinning.

On page 14, the FEA repeats the DEA statement, "One of the reasons this area was selected for the proposed treatments is because stand density is very high in portions of the project area and mortality is occurring." IFA comments pointed out that there is no discussion in the DEA of actual stand densities in the project area nor any identification of levels of stand densities that are considered to be too high for a healthy hardwood forest, much less specific examples of harm occurring from that density in the project area. *See* IFA Comments at page 18. It is therefore impossible to determine whether this stand density concern is a legitimate problem or whether in fact the mortality occurring is part of the natural thinning process that occurs in all central hardwood forests as they undergo forest succession from the stem exclusion to mature and eventually old growth conditions.

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this one and in a final report of the Survey presented to the Forest Service in December, 2023. This report is attached as Exhibit 2 HNF Bat Survey. Please see Table 8, page 24.

We object to the vague and generalized need repeatedly advanced in the FEA to thin stand densities without any objective metric given for when a stand's density begins to impair forest health, any examples provided of locations of vegetative treatments proposed to address specific problems identified from over-crowded stands, or any explanations for why human intervention must occur instead of letting nature take its course. The "overcrowded stands" being alleged in the FEA could be used to characterize *every* natural area in the HNF and *every* state park and nature preserve in the state that foresters want to "manage," which underscores the importance of the Forest Service analyzing this issue and providing an explanation (with support) for this assertion.

IV. The project will have a significant and adverse impact on many aspects of the natural and human environments, and therefore requires an EIS.

The proposed Project is the largest logging and burning project ever proposed in the history of the HNF. Although the FEA made some very minor reductions in the acreages to be affected by proposed silvicultural activities, the proposed actions still entail logging over nearly 7.6 square miles (4,846 acres) of forest stands—nearly half (46%) of the forest in the primary management area within the project's boundaries. Between 19 and 23.6 square miles (64-79%) of forest in the Project area will be burned three times at a rate of 2.3 square miles per year. Areas torn up by logging will be subsequently burned, which creates significant sediment runoff, toxic ash, and other chemical byproducts that contribute to air and water pollution. Fifteen miles of roads will be built or rebuilt, and hundreds of miles of log skidder trails and fire lanes will be blazed and excavated through the forest to haul out logs and control fires. Up to three different chemical herbicides will be applied to 771 acres to kill "undesirable trees" and potentially many more acres to try to control non-native invasive species (NNIS) whose presence will extend into the deepest recesses of forest as a result of the logging, burning, and road building.

The proposed impacts are extensive, largely adverse, and will be felt for many decades. Indeed, some project activities would continue for two decades or more. The Service is proposing to substantially disrupt many forest stands that have been undisturbed and undergoing natural succession for many decades with major activities that will eliminate or substantially alter their structure and composition, particularly for the older forests in the project area. The resulting drier conditions, reduced downed logs and snags, reduced tree diversity, reduced old forest, and greatly increased edge, and potentially year-round burning will harm nesting success of interior forest birds and adversely impact many bats (potentially including endangered species) and other small mammals, reptiles, amphibians and invertebrates. Heavily used recreational trails such as the Youngs Creek and Springs Valley Trails will be closed indefinitely in multiple places, causing significant loss of recreation and tourism, with resultant socio-economic harm to local municipalities, businesses, and residents. Whether or not Service staff are correct that there will be positive net impacts from these activities once the project is complete*,* **there can be no debate that the project's impacts during the next two decades (or more) of project implementation** on the natural and human environment will be highly

significant. Accordingly, this project satisfies the definition of "significance" under NEPA and its implementing regulations, and thus warrants preparation of an EIS.

-The magnitude of the proposed project alone makes it significant.

It is highly instructive that the Service—and federal courts—have repeatedly recognized that projects of this magnitude (or significantly smaller, or involving less invasive logging plans) in our national forests require an EIS. See, e.g., Bark v. U.S. Forest Serv., 958 F.3d 865, 871 (9th Cir. 2020) (ordering EIS for logging and related forest management that would affect up to 11,742 acres); Blue Mountains Biodiversity Project. v. Blackwood, 161 F.3d 1208, 1214 (9th Cir. 1998) (ordering EIS for logging 4,186 acres of burned forests and revegetating 4,500 acres); Sierra Club v. U.S. Forest Serv., 843 F.2d 1190, 1193–95 (9th Cir. 1988) (ordering EIS for several timber lease sales); Oregon Wild v. BLM, No. 6:14-CV-0110-AA, 2015 WL 1190131, (D. Or. Mar. 14, 2015) (ordering EIS for 265 acres of logging, 180 acres of which was mature forest of 80 years or older); Cascadia Wildlands v. U.S. Forest Serv., 937 F. Supp. 2d 1271, 1280-84 (D. Or. 2012) (ordering EIS for 2,100 acres of logging through thinning and gap creation methods); Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv., 373 F. Supp. 2d 1069, 1080 (E.D. Cal. 2004) (ordering EIS for logging 1,354 acres scattered throughout the project area).

The smallest project in the HNF for which an EIS was required—the German Ridge Restoration Project—involved logging only 432 acres and prescribed burns on 2,170 acres, both about an **order of magnitude less** than the acreages that are proposed in the present project.[7] Because the current Project area involves approximately ***10 times*** more acreage for logging and prescribed burning than the German Ridge project over a project area containing much more sensitive cultural resources and substantially greater wildlife habitat and poses a greater threat to a large public water supply, there can be no legal or logical justification for conducting solely an EA rather than an EIS to satisfy NEPA requirements.

-Multiple "significance" factors are triggered by the proposed action and its likely effect on the Project Area.

Federal courts and agencies have long looked to a non-exhaustive list of resource impact factors to help determine the "significance" of the impacts of a proposed action, which informs the need for an EIS. Implicating any one of the factors may be sufficient to require development of an EIS. *See Grand Canyon Trust v. FAA*, 290 F.3d 339, 347 (D.C. Cir. 2002), as amended (Aug. 27, 2002) (granting a petition for review after finding a project implicated only one factor, without reaching additional factors). Notably, every single resource factor is implicated by the proposed action, often in very serious and significant ways. *See* IFA Comments at pages 21through 28.

The **first factor**, <u>impacts may be both beneficial and adverse,</u> clearly applies. In its FEA, the Service continues to assert repeatedly that the project will achieve substantial benefits, such as restoring and maintaining a dominant oak-hickory forest composition. Though IFA vigorously

[7] Forest Service, German Ridge Restoration Project (2007), https://www.fs.usda.gov/project/?project=755&exp=overview

disagrees with the Service's assertions of positive benefits, even if the Service's assertions of such "benefits" are assumed to be accurate, it is beyond question that the project will impose highly substantial impacts, including the negative impacts of extensive logging, prescribed urning burning, and herbicide application on the local forest ecosystem in the course of realizing its purported long-term benefits.

Research has documented major adverse impacts from substantial amounts of new edge creation, like those to result from the proposed project. Increased forest edges will severely impact the nesting success of interior forest dependent neotropical songbirds, such as the worm-eating, black and white, and hooded warblers (all three state species of special concern), as well to the ovenbird, scarlet tanager, red eyed vireo, wood thrush, and cerulean warbler. The latter species is endangered in the state and also a Regional Forester Sensitive Species that nests in mature hardwood forests. The FEA fails to acknowledge this problem,

Research also documents that the proposed logging and burning of thousands of acres is likely to have major adverse impacts on several amphibian and reptile species, including state-listed species of special concern. The logging and burning will degrade substantial areas of undisturbed, mature forest stands that are essential to the smoky shrew and pygmy shrew—two state listed species of special concern likely to be in the project area. The immensity and concentration of project activities will also likely harm, harass, disturb, molest, and otherwise take migratory birds protected by federal law from such actions without express authorization of the U.S. Fish and Wildlife Service (USFWS).

Without science-based seasonal restrictions, logging and burning activities have been documented to kill, harm, harass, and otherwise take mothers and pups of Indiana bats, Northern Long-eared bats, Tri Colored bats, and Little brown bats—all of which are either listed as federally endangered species, proposed to be listed, or under species status assessment for possible listing by USFWS. These species have been detected in the Project area during their maternity roosting season through acoustic monitoring. The unauthorized taking of these species is prohibited by Section 9 of the Endangered Species Act (ESA), 16 U.S.C. § 1538(a)(1)(B).

In addition, the Service admits that "[s]ilvicultural treatments *would change the visual character of the area*, particularly within the first several years." (FEA pg 53) (emphasis added). When added together, it is impossible to conclude that the sheer number and type of significant impacts here render this action "significant" within the meaning of NEPA.

The **second factor**, the degree to which the project impacts public health and safety, is of great concern since the project area adjoins Patoka Lake, the second largest surface water supply in southern Indiana, supplying more than 100,000 Hoosiers with water for drinking, household use, livestock, and other agricultural use. Logging on steep slopes with shallow, highly erodible soils and prescribed burning on these slopes and other areas will foreseeably result in significant amounts of sediment, toxic ash, and burn byproducts being carried by storm runoff to streams, creeks, and rivers that flow into the reservoir. Previous research has documented significant increases in sediment and nutrient runoff from prescribed burning on ground with significantly shallower slopes than the slopes that will be burned close to Patoka Lake. Nearly twenty square miles of national forest land that drains into the Patoka River and Patoka Lake will be burned repeatedly in the Project area, adding immense amounts of new pollutants into the watershed and

thereby seriously endangering the drinking water supply and the health and lives of those who rely on this water for drinking, cooking, economic, and other purposes. This is a paramount public health and safety concern, thus requiring further study and rigorous analysis through an EIS to determine whether this project should proceed and, if so, what degree of protective buffers around Patoka Lake and the Patoka River and its headwaters should be instituted to reduce the risk of significant harm to the public.

Also, there are many residences in areas that will be surrounded by national forest burns under the project, raising a serious issue of human exposure to harmful smoke and particulates that will degrade air quality and likely trigger a spike in incidences of asthma, respiratory issues, and breathing difficulties. The need to keep local residential traffic away from prescribed burns and the burns away from homes, outbuildings, and livestock raises substantial public health and safety concerns.

The planned widespread use of glyphosate and two other herbicides that, if misapplied, have toxic effects on wildlife and possibly humans, raises another significant concern for public health and safety. There will be stem treatments of these herbicides applied in logging areas that comprise more than a square mile and broadcast applications over potentially a much larger area to control the growth of invasive weeds that will result from logging, burning, and road building proposed under the project. IFA asserts that application of these three herbicides throughout a large number of acres in the Project Area can be expected to contribute to contaminated storm runoff to Patoka Lake which is immediately adjacent to portions of the project area.

IFA also notes that some questions remain concerning the safety of glyphosate use. In June 2022, the U.S. Court of Appeals for the Ninth Circuit invalidated the EPA's Interim Registration of glyphosate under FIFRA, based on the Court's vacation of EPA's analysis of human health effects of glyphosate exposure. Subsequently, in September 2022, EPA withdrew its interim decision on registration renewal for glyphosate and has not reported any further action on this matter. Potentially relevant is the considerable amount of class action litigation that has arisen concerning glyphosate. A jury in an Indiana court has recently awarded over $2 billion in damages to cancer victims who were exposed to glyphosate. Bayer has paid approximately $10 billion to a fund for compensation of persons claiming their cancer or other ailments derive from glyphosate exposure. Research published since the DEA for this project establishes that glyphosate is being found in the blood of pregnant women in Indiana and harming their pregnancies. *See* page 34 of these Comments. IFA contends that the Service has failed to scrutinize how to protect persons receiving their drinking water from Patoka Lake from potential glyphosate exposure.[8]

[8] The Service asserts that "the project will not significantly affect public health or safety" because "[a]ll the management actions included in this decision have been implemented before on the Hoosier National Forest without compromising public health and safety" and "[t]here are no circumstances or conditions associated with the proposed action to indicate there will be unusual or substantial risks to public health and safety." Draft Decision Notice and Finding of No Significant Impact at 7. But that is not accurate. In reality, the Service has *never* conducted major burning, logging, and herbicide application activities on steep slopes this close to a public drinking water supply, which places health and safety in jeopardy in a manner (to IFA's knowledge) that has not occurred with any prior project in the HNF.

The **third factor**, unique characteristics of the geographic area, clearly applies. There are major archaeological, historic, and cultural resources in the project area that could be substantially harmed, if not destroyed, by the project's activities. Several ton skidders dragging even heavier hardwood logs as well as 30-60 ton feller bunchers can easily crush and erase the outlines, evidence, and remains of these fragile resources if they are not discovered, adequately inventoried, and specifically protected from project activities.[9]

Cultural resources in the Project are non-renewable and very sensitive to disturbance. The Effects to Cultural Resources specialist report published with the DEA states,

> Cultural resource sites are fragile and non-renewable. **Effects to cultural resources are long lasting and, in some cases, permanent.** ECR 6 (Emphasis added).

The two most significant sites located within the Project area are the Buffalo Trace and Lick Creek Settlement. The Service stated in 2012,

> *The Buffalo Trace is a heritage **resource of great importance** to the history of Indiana and the history of westward migration in the United States.* It engages themes of military history, exploration, and settlement, Native American peoples, and natural history themes surrounding the bison.[10] (Emphasis added).[11] (Emphasis added)

An EIS is required to ensure a rigorous examination of the many unique characteristics of the project area and the foreseeable and possibly permanent impacts to these resources, including effects to iconic historic and cultural resources "of great importance" such as the Buffalo Trace.

The threshold for the **fourth factor,** the degree to which the effects on the quality of the human environment are likely to be highly controversial, has clearly been met. Project activities will require the multiple closures of popular horseback riding and hiking trails in the area such as the Youngs Creek, Springs Valley, and Lick Creek Trails for extended periods and degrade the recreational and aesthetic values of the area, which are very uncommon in Indiana, and which greatly support the local economy. It is hard to imagine a Forest Service project in the HNF that would have a more deleterious and controversial effect on local communities, the local economy, and recreational opportunities than this immense and ecologically damaging proposal.

In addition, there are major unresolved disputes—as detailed throughout this document—concerning this project. Indeed, the effects of this project on a myriad of vitally important resources, public drinking water supplies, wildlife, historic and cultural resources, human health and safety, recreational access, local communities, and socioeconomic factors, are predicted to be massive, adverse, long-term, and unprecedented in magnitude in the history of HNF

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[9] Forest Service, German Ridge Restoration Project (2007), https://www.fs.usda.gov/project/?project=755&exp=overview

[10] Lost and Forgotten Historic Roads: The Buffalo Trace, a case study: S. Snell, R. Jackson, and A.Krieger

[11] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5444947.pdf page 10

restoration or management projects.[12] Additionally, as explained herein, there are significant, serious disputes with even the basic purpose and need(s) underlying the action, its size, nature, and extent that the Service has failed to explain let alone justify in any compelling manner. Essentially every aspect of this proposed project engenders debate and intense controversy, including with respect to the consideration of (or the FEA's failure to consider in detail) the foreseeable impacts to a number of important resources that will be impacted by the project. It is the textbook example of a "highly controversial" project under NEPA that requires an EIS. *See, e.g., Nat'l Parks Conservation Ass'n v. Semonite*, 916 F.3d 1075, 1083-86 (D.C. Cir. 2019).

The **fifth factor**, the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks, suggests significant impacts from the project because there has been no comprehensive baseline inventory of the flora and fauna, including invertebrates, in the project area. Without such an inventory of baseline conditions and species present, Service staff cannot know what the impact of this Project will be on many species of flora and fauna that likely exist in the forests of the Project.

Although it is indisputable that project activities will adversely impact the immediate watershed that drains into the Patoka Lake, which provides drinking and agricultural water for 100,000 Hoosiers, the actual extent of sedimentation, erosion, and pollutant contribution resulting from logging, burning, and herbicide application in the Project is not quantified in *any way* in the DEA or the FEA (other than for turbidity to a limited extent). Even with the use of Best Management Practices (BMPs), research and experience demonstrate that the extensive logging and burning proposed on steep slopes will result in higher stream flows, greater erosion, sedimentation, and nutrient release into the watershed and ultimately Patoka Lake. Given this grave uncertainty involved regarding the extent of new pollutants that this project will contribute to the Patoka Lake watershed and the consequent health impacts, this factor too warrants an EIS.

The **sixth factor**, the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration, is also implicated. It is beyond legitimate dispute that the Service ordinarily prepares EISs for logging or burning actions affecting an acreage of this size (or even much smaller size) because an action of this size will, by definition, always have significant impacts to affected resources. Yet, by amalgamating many smaller patches of forest into a single, very large "project area" for the Project, while still proceeding with an EA, the Service is effectively proposing to set a precedent as to what it now evidently views as an appropriate size for a single project and the magnitude of a project that can avoid consideration in an EIS. These precedents will be extremely troubling, will pose substantial potentially negative environmental consequences, and are of highly questionable legality.

Remarkably, for the first time ever, the Service is proposing prescribed burning over more than 5,000 acres of Prescription 6.2 management area surrounding Lick Creek trail as part of this project. The Land and Resource Management Plan for Prescription 6.2 areas calls for a desired condition that:

creates a physical setting that provides an opportunity for solitude and a feeling of

[12] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5444947.pdf

> closeness to nature. The area is general forest land with the appearance of extensive stands of forest dominating the landscape. Over time, extensive stands of natural-appearing forests of shade-tolerant species will characterize the area. Stands will be dominated by large mature trees and will provide habitat for late-successional species. Some younger trees and openings will result from natural causes. Removal of commercial vegetation is not appropriate, other than salvage or sanitation harvest when it is compatible with overall objectives. Key recreation activities include nature watching, hunting, trail use, and backpacking. Forest Plan 3-38.

By authorizing the Prescription 6.2 acres to undergo extensive prescribed burning, this action is setting a precedent that will totally subvert the primary purpose and desired condition of Prescription 6.2 management areas outlined in the 2006 HNF LRMP. The Service's proposal of a project that will have such extensive and dramatic deviations from the purpose for a management area expressed in the existing Forest Plan unquestionably warrants evaluation through an EIS. The creation by the Service of openings exceeding 10 acres for clearcutting and shelterwood logging in Prescription 2.8 acres in the project would also appear to violate standards in the 2006 Forest Plan and set another destructive precedent for future projects. Nowhere does the FEA or the Service's response to comments seriously address these issues.

The **seventh factor**, whether the action is related to other actions with individually insignificant but cumulatively significant impacts, gets at the essence of some of our most serious concerns with this project. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment (and specifically the same resources that will be adversely affected by this action). Significance cannot be avoided by terming an action as temporary or by breaking it down into smaller component parts. While IFA strongly believes that the impact on the natural resources of the Project Area is significant under each of these factors, the cumulative impacts are overwhelmingly significant. For example, the FEA hardly addresses—let alone takes a hard look at—the many cumulative impacts on Patoka Lake that, in combination with the project's effects, will join together to unleash substantial amounts of pollutants into this important drinking water supply, potentially threatening public health.

An additional consideration under this factor is that an EIS is needed not only to assess the likely adverse impacts of this proposed project, but should have a broader scope to include a rigorous evaluation of the impacts of this project, in conjunction with the cumulative impacts of other HNF-approved projects that remain ongoing or have been approved, which adversely affect many of these same resources in other portions of the HNF—such as the Houston South Vegetation Management and Restoration Project, Uniontown South Restoration Project, Uniontown North Restoration Project, Tell City Barrens Restoration Project, and Tell City Openings Project. The Service's choice to wear blinders and avoid analyzing its various decisions in the same national forest affecting many of the same resources (e.g., wildlife, air, and water) is both legally problematic and also counsels strongly in favor of an EIS here.

The **eighth factor** involves the loss of significant scientific resources, which, we believe, is an important factor for the proposed project. For example, old growth forest areas are so scarce in the HNF (and Indiana), and little is known about how our old-growth forests will react to today's rapidly changing climate, which is especially important given the carbon storage benefits provided by mature and older forests. There are virtually no old growth stands in management

prescription 2.8 forests in the Project area. Yet, while more than half the forest stands in the project area are only 2 to 4 decades from becoming secondary old growth forests (the 15% of acres in Table 1 on page 7 of the DEA that are 110 old or older), they could be prevented from reaching old-growth status for more than another century by the harvesting and silvicultural treatments planned as part of this project. This as well as the loss of older forest without prior baseline biological inventories as discussed in the fifth factor, would be a devastating blow to the scientific resources and research opportunities represented by these mature forests.

Also, as discussed above under the third factor, proposed project activities could easily result in irreversible destruction of significant cultural and/or historical resources in the project area, some of which are quite fragile, such as the iconic Buffalo Trace.

The **ninth factor** relies upon the degree to which the project may adversely affect a federally listed endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act. In this regard, acoustic and mist netting monitoring indicates and the DEA acknowledges that the forests in the Project area contain maternity roosting habitat for the federally endangered Indiana and Northern long-eared bats, the tricolored bat proposed for federal endangered status by USFWS, and the little brown bat that is being assessed by USFWS for possible listing. The project proposes no seasonal limits on the logging and burning in this important wildlife habitat, raising the distinct prospect that mothers and pups of these imperiled species will be injured, wounded, or killed. Moreover, the massive alteration of the essential habitat of these federally protected species will almost certainly result in "harm" and "harassment" as those terms are defined by the ESA. See 50 C.F.R. § 17.3 (defining "harm" as "an act which actually kills or injures wildlife"; "[s]uch act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering," and defining "harass" as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." Rather than actually analyze the significant effects this project will have on ESA-listed species (let alone in combination with other ongoing and foreseeable Service projects in the HNF), the Service stated simply that "[p]roject activities would not jeopardize these species and therefore effects are not significant." Draft Decision Notice and Finding of No Significant Impact at 7. But this conflates two different regulatory regimes (i.e., jeopardy under Section 7 of the ESA and "significance" under NEPA), and, in any event, the Service is wrong—legally and practically—that it must only prepare an EIS where a listed species faces jeopardy under the ESA. We object to the Service's finding as to the (lack of) significance of this factor.

Regarding the **tenth factor**, whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment, there are numerous federal laws (and potential violations thereof) that implicate this factor, individually and collectively with respect to the Project.

As one example, the proposed Project will undeniably impact migratory birds— by logging and burning their habitat, applying herbicides that injure and kill them and adding new pollutants and sediment to Patoka Lake where they routinely stop to rest, feed, and seek shelter during migration. The same adverse impacts are threatened for the nesting pairs of federally

protected Bald eagles, their eaglets, and their nests that make Patoka Lake and surrounding environs, including segments of the Project area, their home. It does not appear that the Service has evaluated such impacts on migratory birds or Bald eagles nor has it announced that it has received, or intends to receive, incidental take (or any) authorization from USFWS under the Migratory Bird Treaty Act (MBTA) or the Bald and Golden Eagle Protection Act (BGEPA) before the Service commences project activities. The MBTA, at 16 U.S.C. § 703, and the BGEPA, at 16 U.S,C. § 668c, both define "take" very broadly. Without lawful authorization to take migratory birds or Bald eagles, the Service will be in violation of—and certainly at least "threatens" a violation of—these two federal laws designed to protect wildlife from precisely the kind of activities here that will harm, harass, molest, disturb, injure, or kill members of these federally protected wildlife species.

In addition, the Service's proposed Project threatens violations of the National Forest Management Act (NFMA) since the proposal is made under the auspices of a markedly outdated, stale management plan adopted in 2006. The Service will not even start project implementation until 2025, at the earliest, and would not complete logging activities until roughly 2040 or burning activities until nearly 2050. In light of the NFMA's instruction that the Service should not rely upon forest plans older than 15 years—a threshold that the current Forest Plan already surpasses—it would be egregiously inconsistent with the letter and spirit of the NFMA to allow the Service to initiate a project of unprecedented size under an effectively expired management plan that would not conclude until 43 years after issuance of the outdated Forest Plan. *See* 16 U.S.C. § 1604(f) (mandating that "[p]lans developed in accordance with this section shall . . . be revised from time to time when the Secretary finds conditions in a unit have significantly changed, but **at least every fifteen years.**" (Emphasis added).

Because the Service refuses to revise the 2006 Forest Plan to account for significant new information about listed species in the HNF, climate change (where science has evolved rapidly since 2006), and many other factors—and instead proposes to continue business as usual by relying on the severely stale 2006 Forest Plan to authorize ill-advised, outdated implementation actions another 25 years into the future—this action threatens a serious violation of federal law. The grievously outdated status of the 2006 forest plan is further exacerbated by the fact that it does not reflect, and actually runs counter to, the requirements of Executive Order 14072 issued in 2022, which directs the Service to amend management plans for all forests in the National Forest System to incorporate provisions for conserving mature and old-growth Forests.

Finally, Patoka Lake—which is one of the most important resources that will be impacted by this project in view of the human health and safety concerns hanging in the balance—already faces a difficult challenge to provide clean, healthy drinking water and water for agricultural and other uses for 100,000 Hoosiers. This reservoir has consistently been listed for decades on the Section 303(d) list of impaired waterbodies under the federal Clean Water Act. *See, e.g.*, Indiana Dep't of Envtl. Mgmt., Patoka Lake WMP, https://www.in.gov/idem/nps/resources/watershed-management-plans/patoka-lake-wmp/. Thus, the Project's contribution of additional chemical pollutants, toxic ash, sedimentation and nutrients into the watershed, and ultimately the Patoka Lake, will further degrade and impair the water quality in the reservoir and potentially result in violations of state water quality standards for sediment pollutants and/or violations of the federal Clean Water Act. This, too, clearly warrants analysis in an EIS.

In conclusion, for all reasons stated above, the proposed action clearly surpasses the thresholds for each of the ten factors by which federal agencies determine a proposed action's "significance," indicating that preparation of an EIS is warranted under NEPA, and we wholeheartedly object to the decision to prepare a draft Finding of No Significant Action that **inevitably and foreseeably cause significant, long-term impacts to many resources of great importance**. If the Service refuses to prepare an EIS, that decision is unlawful and extremely vulnerable to legal challenge. For all of these reasons, we object to the Service's arbitrary and unreasoned decision not to prepare an EIS for this obviously significant action.

V. The FEA fails to take a hard look at the full spectrum of foreseeable impacts that will result from the project's activities

Notwithstanding IFA's Comments, the Service's proposed action, as described in the FEA, is essentially unchanged from the original proposal, although some revisions around the margins of the original proposal are noted in the FEA pgs. 18-19. These revisions reduce timber harvests by 156 acres, approximately 3% of the total acreage originally proposed for vegetative treatments.

IFA's comments on the DEA described myriad impacts the Service either overlooked entirely, or arbitrarily minimized via flawed rationales. Below, we revisit those issues in turn and, where appropriate, discuss the Service's subsequent response.

-Inadequate examination of serious water pollution threat that Project activities pose to the Patoka Lake water supply and Lost River watershed

The Project area contains two critical watersheds; Patoka and Lost River. IFA comments on the DEA voiced grave concerns about the Project's likely effects on Patoka Lake, which is the source of drinking water for 65,000 residents in Southern Indiana. *See* IFA's Comments regarding the risk of polluted runoff from the project's proposed logging and prescribed fire in close vicinity to Patoka Lake at pages 29-37 and the project's monitoring that will not detect significant sediment and nutrients draining from these activities to the Lake at pages 43-44. We also voiced concern about project impacts on the Lost River, a world class karst system that includes two National Natural Landmarks, Wesley Chapel Gulf and the Orangeville Rise. The hydrology of the Lost River system is complex, not completely mapped and not well understood. It is a unique watershed with subterranean flows of surface water and several species of fish and aquatic invertebrates that are state endangered or listed and require clean, sediment-free water to survive. (IFA pgs 37-38)

-Project logging will impact water quality and karst resources.

Patoka Reservoir (aka "Patoka Lake") has been officially listed on the Section 303(d) list of impaired waterbodies in Indiana for many years under the federal Clean Water Act. *See, e.g.*, Indiana Dep't of Envtl. Mgmt., *Patoka Lake WMP*, https://www.in.gov/idem/nps/resources/watershed-management-plans/patoka-lake-wmp/. On page 38, the FEA acknowledges that Patoka Lake has water quality problems from

sedimentation, nutrient overloading, and blue-green algae blooms. On page 40, it recognizes that sediment itself carries nutrients that can cause harmful algae blooms and pose a eutrophication threat to the Patoka Reservoir drinking water supply. It concedes on page 41 that opening up forests from logging can increase the risk of slumps and slides contributing increased sediment loads to drainages and streams. It also states, "steep slopes on forested land exist within the Lost River and Patoka Lake-Patoka River watersheds" that can "encourage greater run-off, sediment and nutrient losses than otherwise observed on flatter slopes." (FEA pg 41).

Unfortunately, this is as far as the serious discussion of the threat to water quality from logging goes. IFA presented grave concerns that the threat to water quality of Patoka Lake from the project's logging on 300 to 400 acres of the forested hillsides in the Patoka watershed every year for the next 12-15 years, including on steep slopes in very close vicinity to Patoka Lake, were not adequately addressed in the DEA. (IFA 30-33). These concerns included the details of a peer-reviewed study of the adverse impacts of logging on streams in a hilly forested watershed in Kentucky similar to the Patoka watershed. Expert comment was also submitted from a hydrogeologist, Dr. Sally Lassiter of Indiana University, pointing to the likely potential for project activities to pollute Patoka Lake and local wells in the area. Yet, without any new information or data, the FEA continues to brush off any pollution threat from project activities by stating that Forest Plan standards and guidelines "would mitigate any potential soil movement and sedimentation to the background level" (FEA at 38), and the Project would use "adequate Best Management Practices (BMPs)" to "keep excessive soil erosion from being detrimental to water quality (Jones 1997)." (FEA at 40).

Saying that the Project will comply with BMPs does not provide credible assurance that its activities will not worsen Patoka Lake's water quality. The aforementioned study of runoff from two clearcuts in the hilly topography of the Robinson Forest in southeastern Kentucky similar to that in the Buffalo Springs project area illustrates the fact that BMPs do *not* eliminate significant pollution from timbering.[13] One clearcut was undertaken with BMPs and the other without. Stream water intercepting runoff from both cuts was compared to stream water in an uncut adjacent watershed. **Streamflow increased substantially** in both the BMP and Non-BMP cut watersheds in the 17 months after cutting and **remained significantly elevated eight years after harvesting** compared to the uncut watershed. While the pollution exiting the Non-BMP site was the highest, the flux of sediment (mass or amount) exiting the stream from the BMP site was still 14 times higher than sediment exiting the uncut watershed during the cutting and remained 4 times higher in the 17 months after the cutting.

Furthermore, in this same post-harvest period, **statistically significant increases in nitrates and other nutrient concentrations occurred in the stream draining the BMP-cut watershed compared to concentrations in the stream draining the uncut watershed.** Average nitrate concentrations were more than 4 times higher in the receiving stream draining

[13] Arthur, M.A., G. B. Coltharp, and D. L. Brown, EFFECTS OF BEST MANAGEMENT PRACTICES ON FOREST STREAMWATER QUALITY IN EASTERN KENTUCKY, JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION, VOL. 34, NO.3, AMERICAN WATER RESOURCES ASSOCIATION, JUNE 1998, pages 481-495. A copy of this Study is attached to these objections as Exhibit 3 Kentucky BMP Study.
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the BMP-cut site than in the stream draining the uncut site. While they remained well under the drinking water standard for nitrate in the stream draining the uncut site, nitrate concentrations reached 13.5 mg/l, exceeding the EPA drinking water standard in the receiving stream of the BMP cut watershed in this period.

As the FEA acknowledges, many nutrients are carried by suspended sediment. In the Kentucky Study, the increase in water and sediment exiting the cut watersheds translated into an even more significant mass of nutrients (nutrient concentration times the water flux) draining from the cut watersheds. For example, while the nitrate concentration was four times higher, the mass of nitrate in the stream exiting the BMP-cut watershed was 8 times higher (795%) than the mass of nitrate exiting the uncut watershed during the 17 months after logging. The mass of phosphorus exiting the BMP-cut site rose by 136% compared to the uncut site. Potassium rose by 298% and calcium 274% from the BMP-cut watershed compared to the uncut watershed.

The FEA asserts that BMPs "can keep excessive soil erosion from being detrimental to water quality." (FEA pg 40). However, this study demonstrates that in addition to exceeding the drinking water standard, the mass of nutrients leaving the BMP-cut watershed was nearly as bad as the nutrients leaving the non-BMP-cut watershed. During the 17-month period following the logging, the mass of nitrate leaving the non-BMP-cut watershed was nine times higher than the mass of nitrate leaving the uncut watershed. This compares to the mass of nitrate leaving the BMP-cut watershed being *eight times higher* than that leaving the uncut watershed. In other words, the BMPs only reduced nitrogen loading from logging by roughly 11%.

Additionally, the lasting impacts of the pollution in this study are alarming considering the FEA's statement on page 37 that "Sedimentation effects to water resources are not expected to exceed one complete vegetative growing cycle (one year) after project completion because the combination of vegetative growth and lessened disturbance provide protection from sediment movement." Yet the Study revealed that the statistically significant increase in sediment flux continued from the BMP-cut watershed compared to the uncut watershed for nearly two and a half years (29 months) after the logging, and the difference in flux would continue to spike from storms. More than three years after the logging was concluded, a 7.5-centimeter rain event in November 1987 produced a flux of 733 kg/ha of suspended sediment draining the BMP-cut watershed. This was more than ***75 times higher*** than the 9.7 kg/ha of sediment flux draining the uncut watershed.

The fact that water yields in the BMP-cut watershed remained "significantly elevated compared to the uncut watershed for 8 years after harvesting" and were still elevated at the conclusion of the study is particularly of grave concern. In addition to the sediment running off the clearcut, these increased water flows caused streambank erosion, another "major source" of sediment in the receiving streams according to the study. **Fourteen years after these cuts were concluded, the study's authors state, "*accelerated streambank erosion is still evident in Watersheds B (cut with the BMPs) and C (cut without the BMPs), likely the result of elevated streamflows during this period.*" (emphasis added).**

The BMPs used in the Kentucky study were ***more protective*** than the "pertinent Forest Plan Standards, Guidelines and BMPs" to be used in the Buffalo Springs project described on pages 40 and 41 and outlined in Appendix C of the FEA. For example, the Kentucky BMPs

included the restriction of all roads to grades no more than 10%, a 50-foot-wide streamside buffer strip, a requirement to winch logs up to roads to be skidded to log landing areas, and avoidance of repeated skidding on the same road as well as excessive downhill skidding. This compares to a recommended limitation of road grades to 35% and a prohibition of log skidding and use of heavy equipment within streambeds in the Buffalo Springs BMPs and standards and guidelines in the Forest Plan.

The FEA did not acknowledge or respond to the Kentucky Study but the Forest Service response document for comments received on the DEA ("Consideration of Comments for Buffalo Springs Restoration Project Environmental Assessment") states the following:

> The study referenced by the commenter evaluated the impact of clearcut harvesting with and without BMPs. These were complete clearcuts on very steep slopes that averaged 45%. Not comparable to the Buffalo Springs project where clearcuts are proposed on lesser-sloped ground and is only a small portion of the project area.
>
> Additionally, this study took place in the Cumberland Plateau region of southeastern Kentucky. The area has different soil types, geology, and topography - not comparable to the Buffalo Springs project.

The slopes of the clearcuts were steep but the study does NOT say that the main slopes in the clearcuts averaged 45% incline. Rather it says, "Sideslopes in the study area were steep, averaging approximately 45%." Nevertheless, while clearcuts planned at Buffalo Springs may be on more moderate slopes, there is no data or information provided in the FEA or in the "Effects to Soil and Water" Specialist Report for the project that would allow the public to discern even the approximate steepness of slopes (% grade) in the project area and thus judge the steepness of slopes on which logging is slated to occur. There is also no water quality data or study from any timber harvest site referenced in the Specialist Report. What is clear is that the FEA acknowledges that, "steep slopes on forested land exist within the Lost River and Patoka Lake-Patoka River watersheds" that can "encourage greater run-off, sediment and nutrient losses than otherwise observed on flat slopes." (FEA pg 41). And the Specialist Report states the following about the geology/topography of the landscape in the project area:

> **Geology and Soils within the Analysis Area**
>
> The project area lies within the physiographic region called the Crawford Upland. The Crawford Upland is known for some rugged topography and sinkholes, karst valleys and caves are common throughout portions of the escarpment (Gray, 2000). . . . The soils composed mainly of Wellston and Adyeville silt loams and some are highly erodible depending on how rugged the terrain (USDA, 2017).

In response to IFA's concerns about water quality impacts from logging, the Forest Service comment response document further states:

> The draft EA referenced local studies that demonstrate the effectiveness of BMPs, including Lake Monroe Diagnostic and Feasibility Study (Jones et al. 1997), Comprehensive Indiana Forestry Best Management Practices Monitoring Results 1996-2016 (McCoy and Sobecki. 2017), and the Lake Monroe Watershed

Management Plan (Sullivan 2022), which recognizes that BMPs are effective for timber harvests.

Yet the only local study that provides data on logging impacts to water quality referenced here is the Pate Hollow Study described on pages 135 and 136 in the Lake Monroe Diagnostic and Feasibility Study (Jones et al, 1997). Discussion of this Study's results state: "*Preliminary results are contained in Table 8-4 . . . Nitrate nitrogen levels were elevated in Watershed PH4 following clearcutting, and remained elevated for two years (relative to the control watershed).*"

Furthermore, neither the Comprehensive Indiana Forestry Best Management Practices Monitoring Results 1996-2016 (McCoy and Sobecki. 2017) nor the Lake Monroe Watershed Management Plan (Sullivan 2022) state that BMPs or the 2006 Forest Plan standards and guidelines will eliminate all water pollution from logging or mitigate any soil movement or sedimentation from logging to the background level. Nor do either of these sources provide any water quality data or refer to a single report containing water quality data from a timber harvest site utilizing BMPs or Forest Plan standards and guidelines.

Given the safety of a major municipal water supply and source of drinking water is at stake, we strongly object to the failure of the FEA or any other project documents to reference at least one water quality study of timbering on steep slopes in the HNF that demonstrates water pollution from logging was held to background levels by BMPs or Forest Plan standards and guidelines. Even if the water quality degradation from the project's logging, road building, and prescribed burning will be substantially less than the level of degradation occurring from private lands, a significant incremental addition to that pollution load from project activities will exacerbate pollution problems that Patoka Reservoir is already experiencing as an impaired water body, something the project is required to avoid under the Clean Water Act. We strongly object to the Service's handling of this issue in the FEA and response to comments.[14]

-Prescribed burning will adversely impact water quality and karst resources.

IFA's comments on the DEA outlined the significant potential for increased sediment and nutrient runoff caused by the fires prescribed by the Project to reach Patoka Lake. *See* IFA's Comments at pages 43-44. The Project is located within the Patoka River watershed with prescribed fire proposed on hillsides that slope directly into the western end of Patoka Lake, extensively into the Patoka River for several miles beginning less than half a mile upstream of Patoka Lake, and into Youngs Creek approximately two miles upstream of its entry into Patoka Lake. As a result, runoff containing ash and sediment from bare soils exposed by fire and half burned duff and litter layers along with the nutrients that are components of the ash and contained within the sediments will no doubt end up in Patoka Lake.

IFA's comments presented 5 studies including three from forests in the eastern US that showed significant increases in concentrations and masses of sediments and nutrients in runoff

[14] The Service also fails to reconcile its finding that water quality impacts from the project will be minimal with its own acknowledgement that "steep slopes on forested land exist within the Lost River and Patoka Lake-Patoka River watersheds," and "[t]hese conditions encourage greater run-off, sediment and nutrient losses than otherwise observed on flatter slopes." FEA at 41.

from prescribed burns into receiving waters. *See* IFA's Comments at pages 35-37. One of those studies of repeated prescribed burning around a lake in Osceola National Forest indicated that the nitrogen and carbon were being released to the atmosphere while phosphorus was being released to the lake from the burning. Other research that IFA cited indicated that the altering of nitrogen/phosphorus ratios by burning around water bodies enhances the aquatic environment for harmful blue green algae blooms.

IFA also noted the lack of research documenting the impacts on water quality and soils from repeated prescribed burns across large areas of watersheds on the scale planned in this project. This is particularly the case for the forests of the eastern US. Studies we found of prescribed burns in Illinois and South Carolina measured water quality impacts from prescribed burning across sites ranging from 0.15 to 5.4 acres in size. None of the eastern US sites measured runoff from burns on hundreds of acres of slopes on a scale similar to what will be burned in this project.

Yet, without referring to a single study—much less a study from the HNF or another national forest in the central hardwoods region—with data demonstrating no harmful effects, the FEA repeated verbatim the DEA's summary dismissal of any potential for the project's prescribed fires to create any harmful runoff. On page 29, the FEA states:

> Prescribed fire analysis has shown that lower intensity burns only burn the top layer of the organic material, leaving the soils and root mass intact (Rigg and Larson 2007). Subsequent and more recent monitoring has revealed similar results (Mullins 2022). Soil-stabilizing vegetation after burning recovers within six months of the prescribed burn (Rigg and Larson 2007).

On page 30, the FEA states:

> Prescribed burning on the Hoosier typically occurs in the cool season, with low intensity fires. Under these conditions any loss of nutrients and sediment runoff is negligible (USDA FS 2006b).

This discussion acknowledges that soils and root masses are left intact but are more thinly covered under reduced layers of organic material if not completely bare. Additionally, in Indiana, the cool season, i.e., November through March, is the period of the year when there is substantial precipitation and virtually no vegetative growth. Depending upon its location, an area burned to bare or thinly covered soil by prescribed fire in early November will be subjected to precipitation for an entire winter and most of a spring, 150 to 180 days, before vegetative regrowth begins to cover that soil. Most of that soil in the project area will be on slopes, and sometimes steep slopes. All of the canopy on slopes in the hardwood stands will have no leaf cover in this period. Rain drops will not even be intercepted by branches in sites whose canopy has been removed by clearcutting, shelterwood cutting or group tree selection in the Project. The FEA fails to explain why burning in those cool season months will not result in more, rather than less, sediment and nutrients running off into streams as winter and spring rains hit the sloping bare ground, unimpeded.

Indeed, the FEA's statement on page 34 that, "*Fire would create a nutrient flush for a short period that would benefit both native and invasive plants*" adds to this obvious concern that runoff from thousands of acres of slopes burned to bare ground and ash will bring significant nutrients into Patoka Lake.

Yet, the FEA maintains on pages 75 & 76 that, "[m]onitoring data shows that prescribed burning has no effect on soil and water resources because enough of the duff layer remains to prevent soil displacement until the area revegetates (Rigg 2007)." The DEA comment response document states this source is: "*Rigg, Zach; Larson, Kirk. 2007. Plant and soil resource monitoring report: 2007 Maumee prescribed fire. On file with the Hoosier National Forest, 811 Constitution Avenue, Bedford, IN 47421.*" The source is not available in the Buffalo Springs Project files or elsewhere on the HNF website and could not be found in a Google search. Without further discussion of this "monitoring data" and its results in the FEA or project documents, it is impossible to assess the credibility of this assertion.

The FEA also repeats the DEA's dismissal of the possibility that runoff from prescribed burns in sinkhole areas could degrade subterranean water quality in the Lost River Watershed. IFA commented on this critical deficiency. (IFA pgs 37-38). On page 30, the FEA states, "*Fire effects on sinkholes have been found to be negligible based on observation and a study in the Buffalo Springs area in 2017 (Menke 2017).*" In Appendix A, this study is referenced as "*Menke, C. 2017. Jenny Hollow Wildfire Effects Analysis to Karst Sink Soils. On file with the Hoosier National Forest, 811 Constitution Avenue, Bedford, IN 47421.*"

Water moves though dissolution channels in karst ecosystems much more quickly than groundwater flow. Monitoring karst system water quality is difficult because karst systems are forever changing courses as new dissolution channels form diverting water flow to new courses. Yet it is important to monitor water quality in the Lost River watershed because its springs provide domestic well water to rural residents—thereby implicating important public health and safety issues. Furthermore, the state endangered Northern cave fish and other aquatic life in the Lost River's karst ecosystem are very pollution sensitive.

The Jenny Hollow study lacks any sampling of water quality in the two sinkholes involved or of any karst drainages downstream of the sinkholes. The Service has no idea of whether there was any nutrient release or sediment runoff into karst drainages from the fire in the study. Obviously, sampling and monitoring of water quality in the Lost River's karst systems should be conducted before this project proceeds in the Buffalo Springs area and continue throughout the project's full duration.

The Service also needs to rectify a contradiction between the Project's stated goal of restoring oak and hickory dominant forests and its claim that prescribed burns will preserve the existing soil. After the DEA was published, the Service completed research (Callaham, 2023, Taylor et al 2023) concluding that "to accomplish a shift from the current mesophysic condition to the desired oak-hickory forest would require elimination of the duff layer along with more

aggressive treatments."[15] In other words, to achieve the desired oak-hickory forest, the Service must destroy the duff layer (in the Project's soil).

This means either: (1) the Project's prescribed burns will not affect the duff layer and thus the Project will fail to accomplish its stated purpose and need of transitioning the Project area to an oak-hickory forest; or, (2) the Project's prescribed burns eliminate the duff layer and therefore achieve the purpose and need, but in the process the Project will have eliminated the specific mitigation measure that the agency has said will protect streams that feed into Patoka Lake. The Service must explain how it plans to move the forest to the desired oak-hickory conditions while preserving the duff layer in the area's soil.

We object to the FEA's failure to address the substance of IFA's comments or the studies IFA referred to that document serious concerns with the threats posed by the project's prescribed burns over as much as 15,100 acres repeatedly to Patoka Reservoir and the Lost River's karst ecosystem. These concerns as well as the contradiction between the project's purpose and its mitigation of water quality impacts from prescribed burning must be addressed in an EIS.

-Wholly deficient water quality monitoring and ineffective corrective action standards

IFA's comments on the DEA also expressed serious concerns over the Service's grossly inadequate plan to monitor water quality. *See* IFA's Comments at 43-45. No changes were made in that monitoring plan in the FEA.

The spatial analysis for evaluating cumulative impacts to soil and water quality from prescribed burning, logging and road building in the project will be the Project Boundaries and the Patoka Lake-Patoka River and Lost River watersheds according to pages 29 & 37 of the FEA. For logging and roadbuilding, the FEA states,

> The spatial boundaries used to evaluate direct effects are the areas with proposed actions within the Buffalo Springs Project boundary. This spatial boundary was chosen because it can be used to determine threshold effects to soil and water quality from proposed actions.

These statements range from being incredulous to patently false. There will be no monitoring of water quality at *any* boundaries. Rather than the boundaries of treatment areas, watersheds, or the project, water quality will actually be monitored at only three points for turbidity to ensure that BMPs are working (FEA 45)—three points to monitor runoff quality from project logging, excavation for roads, skidder trails and fire lanes, and burning that is spread over 24 square miles of hilly terrain. These monitoring points will be located on Cane Branch, Youngs Creek, and Patoka River. The FEA explains the corrective action standard that will be employed by this monitoring:

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[15] Oak Woodlands and Forests Fire Consortium Presentation by Dr. Marc Callaham (Oct. 24, 2023), https://oakfirescience.com/video/the-dangers-of-duff-how-long-term-fire-exclusion-canput-fire-tolerant-trees-at-risk/

> Turbidity monitoring would be ongoing throughout the life of the Buffalo Springs Project to ensure BMPs are effective. Higher turbidity can be associated with lower stages and discharges depending on land use disturbances (agriculture, timber harvest, etc.) within the area. If turbidity levels are monitored higher than control background information, further investigation, remediation, and monitoring would be deployed to ensure BMPs are effective within the project boundary. (FEA pg 45).

Following are some of the reasons this monitoring plan is grossly inadequate (and why IFA objects to it in its current form):

- Drainage from major portions of the Apple Chapel area and tracts north and south of Patoka River to be logged and burned within one mile of the Patoka Lake will not be monitored by these monitoring points (see FEA 46, Fig 10);

- NO water quality monitoring will occur of the impacts of project activities on water quality in Tucker Lake or elsewhere in the Lost River watershed;

- Given the large size of the area, use of only these three monitoring points means that there will be no upstream/downstream monitoring of project impacts crucial for helping the Service pinpoint the locations of water pollution problems that may occur from project activities. Thus, the Service will be unable to determine if turbidity rises are due to the failure of project BMPs or other land use disturbances in the area. (FEA pg 45);

- Using turbidity as the only monitoring parameter will not allow for increases in the masses or concentrations of sediments draining treatment sites to be discerned quickly and, in the case of nutrients, discerned at all;

- Baseline monitoring has not established the discharge volumes associated with many of the turbidity samples taken at these monitoring points. Thus, the range of turbidity that can occur at these points which varies with stream discharge has not been characterized at these points and a clear corrective action standard has not been determined.

- Other key details of the monitoring and corrective action standard utilized at these points are not explained anywhere in the FEA or project documents. These include whether the monitoring will be performed by grab sample (very inadequate) or undertaken more continuously, and whether increases in turbidity must be statistically significant or based on a certain number of samples to trigger corrective actions. These details are discussed further on pages 43 and 44 of IFA's comments.

The FEA also does not explain what happens if investigation from high turbidity levels monitored at any of these points finds that serious erosion and pollution is occurring from logging, burning, road building, herbicide applications, or other activities. Are the activities to be halted until BMPs become effective? Will other parameters such as suspended solids, nutrients and or herbicides be measured at that point? How long after project activities will the monitoring program extend to? IFA comments on the DEA asked these and other questions about the undescribed corrective actions which are still not described in the FEA. (IFA page 44). Substantially more explanation is needed to ensure that project activities affecting water quality

at these monitoring points will (or even can) be ascertained and corrected before large amounts of pollution from the activities reaches Patoka Reservoir.

IFA also raised concerns about the other form of corrective action discussed in the DEA which concerns "Expanded Soil Disturbance Monitoring" and which discussion was repeated on page 42 of the FEA. This standard is enforced by comparing pre-activity soil conditions to post-activity soil conditions. If "detrimental disturbance" of soil such as "compaction, rutting, and solid displacement" occurs over more than 15% of an activity area such as a timber harvest, remedial actions must be taken. What those actions are is not explained but what is clear is that this standard will allow considerable damage to occur which is then mitigated after the logging, burning, or road building has been completed, hardly a prescription for avoiding significant environmental damage from an activity.

In summary, the monitoring of water quality and BMP effectiveness touted in the FEA are not designed to prevent significant pollution of the Patoka Lake municipal drinking water supply or the Lost River watershed from occurring. No monitoring will occur at all of the Lost River's fragile and unique karst ecosystem that faces the prospect of serious damage from project activities. Corrective action standards are hopelessly vague and inadequate. Accordingly, we object to these serious deficiencies and request they be fixed by additional analysis in an EIS before any project is decided upon let alone implemented.

-Failure to protect public health from the smoke of prescribed burns

We are also concerned about and object to the negative air quality impacts that will occur from repeated prescribed burns over an area of up to 24 square miles for the next 25 years. Figures 6 & 7 on page 33 in the FEA demonstrate that the impacts of smoke will extend many miles beyond the spatial boundary for monitoring direct and indirect air quality impacts from the fires which the FEA identifies on page 29 as the project boundary. National ambient air quality standards for both ozone and particulates (PM 2.5) should be monitored during all prescribed burns in and adjacent to the project in sufficient locations to protect the health of elderly and asthmatic residents in the project area and surrounding communities. IFA brought up these concerns in its comments on the DEA at pages 38-39. Given the large number of rural residents who live in homes, towns, and farms interspersed among public lands that will be repeatedly burned as part of this project, we object to the failure of the FEA and this project to include any ambient air monitoring much less any specific corrective action standards. These standards must supply measuring, enforceable thresholds for avoiding and extinguishing prescribed fires before unhealthy conditions for vulnerable citizens are exceeded and Clean Air Act standards that protect public health are violated.

-Concerns over herbicide use and the spread of nonnative invasive plants

The Service acknowledges that three pesticides Glyphosate, Imazapyr, and Triclopyr will be used to kill trees and woody plants that compete with oaks by treating the stumps, trunks and stems of these competitors on 771 acres in the Project area. (FEA 56-57). It also states,

> Herbicide would be applied specifically to the trunks and stumps of targeted woody vegetation resulting in a relatively small area of application with little to no herbicide contacting the soil.

However, the Service also notes that there are 27 nonnative invasive plants in the project area and gives shade tolerant plants such as Japanese stiltgrass and garlic mustard the highest priority for treatment. (FEA 85, Table 10). It states that these two plants *pose the greatest threat to natural ecosystems in the project area* and "*[i]nfestations of these two species occur primarily along trails or shaded roadside ditches next to forest edges, and riparian stream zones or draws.*" (FEA pg 87). Often these sites are where project activities are likely to occur. "*Current surveys estimate that at least 70 percent of the proposed roads and trails to be used for this project contain some level of stiltgrass infestation, with infestations usually reaching an average of 3.5 feet beyond road edges.*" (FEA pg 85). The Service acknowledges that project activities will likely spread stiltgrass infestations:

> The species spreads primarily by movement of seeds and plant fragments; thus, road work, harvest, and fireline activities have the potential to contribute to the expansion of these populations because of ground disturbance or seed movement by equipment. The extent of possible expansion and new colonization directly or indirectly depends on where these actions occur in proximity to the populations. (FEA pg 87).

While it does not emphasize it, the FEA concedes, "*[f]oreseeable future activities in the project area include possible treatment of non-native invasive vegetation with the same herbicides proposed in this project.*" Later, the FEA states:

> To act quickly in response to any new infestations that may result from project activities, the Forest Service would use hand, mechanical control, and herbicides on NNIS plants where needed and appropriate to best meet this direction. (FEA 91-92)

The Soil and Water Specialist Report for the project is more straightforward about this use of herbicides, stating: "*NNIS and silviculture treatments will be done using herbicides.*"[16]

What the DEA and FEA fail to acknowledge is that controlling infestations of weeds like Japanese stiltgrass and garlic mustard will require weed killers like Glyphosate to be broadcast sprayed on the ground instead of applied to individual stems to kill trees and shrubs that compete with oak. IFA's comments on the DEA brought up the need to more sufficiently address possible harmful effects to the environment, humans, and public health from the application of the three herbicides to be used in the project particularly due to the widespread broadcast application of herbicides that will be needed to control NNIS. *See* IFA's Comments at 39-43.

[16] Report for the Buffalo Springs Restoration Environmental Assessment, Effects to Soil and Water, USDA, Forest Service, Hoosier National Forest, Chad Menke Hydrologist/Fish Biologist, Page 4 of 24.

A study of 187 pregnant women in the Midwest published in 2022 found Glyphosate in the urine of all but one of them and correlated higher levels of Glyphosate in their urine with lower fetal birth weights and higher risk of preterm births.[17] A subsequent IU School of Medicine study published in 2024 has found nearly all of 150 pregnant Indiana women studied have two other weed killers, Dicamba and 2,4-D, in their urine. These herbicides have been marketed as replacements to kill growing numbers of Glyphosate-resistant weeds. What is clear is that weed killers that are potentially dangerous to humans, are pervasive in our environment, and are being ingested by people.

Yet, despite this new troubling information, the FEA remains silent on this matter, ignoring potential significant effects from broadcast spraying of Glyphosate and any other herbicides usage on the local and visiting populations in the Project area as well as the entire base of customers that rely on Patoka Lake for domestic consumption including drinking water and water for cooking. The FEA completely ignores these recent studies demonstrating the pervasive ingestion of Glyphosate and other weed killers from the environment into the urine and blood of pregnant women in Indiana and the harm that ingestion appears to be causing to these women and their fetuses in Indiana and the Midwest.

How will the project monitor and prevent Glyphosate or other herbicides that have been sprayed on the ground to treat NNIS throughout the project area from getting into the domestic water supply of 100,000 people? We object to the Service's continued failure to acknowledge and address this serious concern and request this failure be addressed through analysis in an EIS (or at least some hard look at this issue before the project is finalized).

-Adverse impacts on forest wildlife minimized

The FEA continued to dismiss the major impacts of the project on forest-dependent wildlife, not once acknowledging that project activities will essentially gut most of the interior forest habitat and old forests within MA 2.8 in the project area. Essentially no changes were made in the project despite numerous comments on the DEA from the public including IFA (see pages 120-151 in Comment Response and pages 45-51 in IFA comments) that provided detailed concerns about impacts to species that should be avoided and, in many instances, could be significantly reduced without substantively changing the project's purposes.

Endangered and rare bats - IFA comments on the DEA pointed out results provided to IFA by the Service that revealed significant observances of male and female tricolored and little brown bats in the Buffalo Springs area in four surveys, two of which occurred in 2011 and 2014, after White Nose Syndrome was known to be in the state. The 2011 survey also caught a male Indiana bat. Since then, the Service has divulged that five species of bats that are officially proposed to be federally endangered, under species status assessment by USFWS for this listing, state endangered, or state species of special concern have been confirmed to be present in the project area by the Service's own acoustic monitoring surveys in 2020 and acoustic monitoring

[17] Gerona et al., Glyphosate exposure in early pregnancy and reduced fetal growth: a prospective observational study of high-risk pregnancies, Environmental Health (2022) 21:95, https://doi.org/10.1186/s12940-022-00906-3. This study is provided as Exhibit 4 Glyphosate Study.

and mist net surveys in 2023. These bats are the tricolored bat (proposed federal endangered), little brown bat (under species status assessment), evening (state endangered), eastern red (state special concern) and hoary (state special concern). Clearly, the forests in the project area, which the FEA concedes have been largely unmanaged for many years (FEA pg 8), are providing very suitable habitat for rare and endangered bats.

Furthermore, due to the Project's proposed logging and burning in likely maternity roost habitat, the Services September 5, 2023 Biological Evaluation for Threatened and Endangered Species states the project is *"**likely to adversely affect**"* the Indiana bat, northern long-eared bat (NLEB), tricolored bat (TCB), and little brown bat. (Biological Evaluation pg 27 of 40).

Yet, there is not one sentence in the entire five pages devoted in the FEA to discussing the direct and indirect effects of the proposed action to these bats that discusses *any* survey result from or near the project area or the quality of habitat in the area. Instead, the discussion repeatedly focuses on the beneficial effects that the project will produce for these bats by creating a mosaic of habitats they purportedly need and otherwise will not obtain without the project's activities. The discussion also points out three times that there is no critical habitat that has been designated in the HNF or the project area for these bats. (FEA 61-65). This is not relevant because the USFWS does not believe that critical habitat designations are viable for endangered bats and therefore has not designated *any* critical habitat for an endangered bat anywhere in the United States. The relevant points are that these bats (except for the NLEB) have been confirmed to be in the project area in recent surveys and the project area is considered to be "suitable summer habitat" in the core range of the NLEB.

Another example of the bias for this project permeating the FEA, are the multiple falsehoods stated in its brief description of the "No Action" alternative and its effects on these bats on page 65. For example, this description states, "*low quality habitat areas (non-native pines) would not be replaced by high quality habitat (native hardwoods).*" In fact, non-native pines are being replaced naturally by hardwoods throughout the project area. (FEA pg 12, Comment Response pg 170). A second example: "*Bat species would not have the beneficial effects of vernal pools.*" (FEA pg. 66). If the Service would allow forests in the project area to grow older instead of logging them, one of the benefits in addition to gaining great roost trees for extended periods, would be the creation of more natural vernal pools in the pits created by the massive trunk buttresses of those trees when they age and eventually fall to the ground. It is called natural disturbance. Furthermore, the decision to create vernal pools on closed roadbeds can be made and implemented easily and more quickly by pursuing road closures instead of the Action Alternative. A final self-serving statement: "*Enhanced prey production and improved foraging and roosting areas would not be created.*" (FEA pg. 66). The Service has not even begun to demonstrate why the allegedly high insect and disease levels and resulting tree mortality that the project is seeking to reduce, (FEA pgs 13-15), are not already accomplishing these objectives.

The USFWS has just issued final guidance for federal development projects that are ***likely to adversely affect*** northern long-eared and tricolored bats.[18] The guidance is meant for

[18] Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects Version 1.0, October 15, 2024. U.S. Fish and Wildlife Service.

projects involving the removal or conversion of NLEB or TCB habitat rather than "sustainable forest management" projects. Nevertheless, its "Minimum Conservation Measures (MCMs)" for cutting trees are illustrative of protections believed to be needed for these bats by bat biologists, and the guidance is meant to be applied to the use of prescribed fire.[19]

Among them are:

> MCM-3: Avoid removing suitable roost trees within 0.25- mile of a known NLEB and/or TCB hibernaculum entrance(s) during spring staging and fall swarming.
>
> MCM-5: Avoid removing suitable roost trees within 1.5-miles of a NLEB and/or TCB capture/acoustic record location during the pup season.

The pup season in Indiana is May 15 – July 31.[20] In addition, projects within suitable summer habitat for NLEBs and TCBs will be eligible to receive a predetermined "no effect" or "not likely to adversely affect" outcome, meaning a streamlined approval, if they:

- apply herbicides only through targeted methods, such as hack-and-squirt, basal bark, injections, cut-stump, or spot-spraying and not by broadcast applications;
- conduct prescribed fires outside the pup season when temperatures are ≥40 degrees Fahrenheit;
- avoid removing suitable roost trees:
    - outside the summer occupancy period for NLEB;
    - outside the pup season for TCB;
    - outside spring staging and fall swarming periods within known NLEB and/or TCB spring staging/fall swarming areas (i.e., 5.0-miles or 3.0-miles from NLEB or TCB hibernaculum entrances, respectfully); and
    - from not more than 100 acres if the surrounding 25 square kilometers are equal to or greater than 30% forested.

Myotis bats have a high tendency to return to their summer roosts year after year, known as "philopatry." This last requirement is designed to prevent the indirect impact of losing too many summer roost trees when these bats are hibernating, an impact that stresses many pregnant female bats sickened with WNS into miscarriages as they search for a lost summer roost. The FEA acknowledges that stress like this during spring emergence can negatively affect the reproductive success of females. (FEA pg 63).

This guidance was published as Interim Guidance by the USFWS on March 31, 2023. The FEA states that the Service approached USFWS on April 19, 2023 for a second consultation under Section 7 of the Endangered Species Act in April 2023 to chart this project's compliance with the ESA after the proposed listing of the TCB as endangered on September 13, 2022 and final endangered listing of the NLEB on November 29, 2022. Yet, aside from one mention that "no

[19] *Id.*, Purpose, pg 1.
[20] *Id.*, Appendix 2. Bat Activity Periods. pg 14.

prescribed fires would occur during the pup season" on page 64, we cannot find another word in the FEA or project documents indicating any of these other steps including any protections during spring emergence or fall swarming will be taken by the Service in implementing the project. This is alarming given the following FEA admission on page 65:

> Some known hibernacula for tricolored and little brown bats are inside the project area and would not be directly affected by the proposed project due to protective buffers prescribed by the Forest Plan. However, some associated staging/swarming areas may be adversely affected.

We object to the lax approach taken in the FEA about a project that could cause immediate and serious harm to four bats that the federal government is supposed to be protecting. An EIS is needed to examine the status of these bats more closely in the project area and develop alternatives that will afford them much more protection. At minimum, the Service needs to take a hard look at these serious impacts to federally protected wildlife.

Negative effects of edge – The substantial adverse impacts to the nesting success of forest birds from increased predation and brood parasitism resulting from the hundreds of miles of artificial edge that will be cut into virtually every area of national forest in the project area by logging except Lick Creek (where project burning will fry the fledglings of ground nesting forest birds) was presented by IFA in its DEA comments. (IFA pgs 46-49). IFA summarized the results of three studies that documented these impacts from edge created by logging and other human activities. All of them documented this serious problem in Indiana's HNF and state forests, one finding reduced reproductive success for cerulean warblers from these edge effects.[21] The cerulean warbler, a state endangered bird that nests in mature and old growth forest canopies, is the one Regional Forester Sensitive Species, RFSS, that the FEA identifies in the project area. Yet the FEA provides no discussion of the effects of edge from the dozens of clearcuts, shelterwood cuts, and group tree openings in the action alternative that will be carried out in its habitat.

Instead, the Service responds in the DEA Comment Response document by citing a study which finds that negative edge effects occur in more fragmented forests as a result of agriculture and residential development (King and Schlossberg, 2013). (Comment Response pg 135). However, the forests in the Buffalo Springs area are more fragmented due to more scattered public ownership amidst farms and homes on private lands than forests further north or south in more contiguous public ownerships within the HNF. They face the very conditions that King and Schlossberg talk about.

The Service also states repeatedly that the 2006 Forest Plan EIS studied edge effects. (Comment Response pg 135). However, by definition, a Forest Plan does not analyze the site-specific impacts of projects that the Service might later authorize. Those impacts are left to be studied at the project level (i.e., *now* for the Buffalo Springs Project).

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[21] Nemes, Claire E., Islam, Kamal. "Breeding season microhabitat use by Cerulean Warbler (Setophaga cerulea) in an experimentally-managed forest." Forest Ecology and Management, November 2016. Pp 52-63. This study is attached as Exhibit 5 Cerulean Warbler Study.

Accordingly, we object to the failure of the FEA and its Biological Evaluation for RFSS to analyze the negative effects of edge from the unprecedented level of project activities on forest-dependent birds and other wildlife in the project area and request that an EIS be prepared to analyze those effects and alternatives that reduce and eliminate them.

Negative effects on amphibians – In its comments on the DEA, IFA described and referenced 27 studies that documented the negative effects of logging operations (clearcutting, shelterwood, single and group tree selection) on amphibians, particularly salamanders, all important insect predators in eastern hardwood forests. (IFA pgs 49-50).

The FEA did not mention these studies or commit the project to reducing—let alone avoiding—the harmful effects of the project's logging and burning on amphibians. Instead, the Service points to measures recommended in an Aquatic Resources Specialist Report for the Project, two studies to protect ephemeral streams and reduce cut sizes that the FEA does not indicate the project will undertake, and a third measure, to retain high amounts of down woody debris in clearcuts, that the project's prescribed burns will eliminate. (Comment Response pg 136).

Accordingly, we object to the failure of the FEA and project documents to meaningfully analyze the negative effects of project activities on amphibians and request that an EIS be done to analyze those effects and alternatives that reduce and eliminate them.

Baseline inventory of flora and fauna – IFA called for a baseline inventory of life to be undertaken in both the Patoka River and Lost River watersheds within the project area before the project begins. (IFA pgs 50-51). No such inventory is mentioned in the FEA. The Service responded by stating that no unique or unusual effects have occurred from similar projects or will occur from this project and that the proposed project is in compliance with federal laws and executive orders. (Comment Response pg 136).

Without a baseline inventory of plants—vascular or nonvascular, fungi, lichens, invertebrates, fish, mammals, birds, reptiles, and amphibians—the agency has a very incomplete picture of the species that may be adversely affected by this project and cannot document or report on such impacts to any definitive degree. Such an inventory is also crucially important to inform decision-making during project implementation that can avoid adverse impacts on species. For example, herpetologists recommend that prescribed fire managers survey areas to determine the populations of amphibians and reptiles that are present before the areas are subjected to prescribed burns to avoid burning in key locations and at critical times when these animals are active (mwparc.org/products/fire/plan/). Such data on species presence must also inform future management decisions to better conserve the state's native biodiversity.

To understand and conserve biodiversity, IFA continues to request that a baseline biological inventory be done immediately in the Patoka Reservoir-Patoka River and Lost River watersheds within the project area and that its results be incorporated into analysis of the project and alternatives, in order to bring this project into compliance with NEPA and its implementing regulations.

-New cost analysis still fails to examine financial impacts to recreation, tourism and the surrounding community.

IFA comments expressed concern that the harm of the project's unprecedented level of logging, burning, and road-building on recreation and the local economy (which is largely sustained by that recreation industry) were not accounted for in the DEA's analysis of the project's economic impacts. (IFA 54-58).

We continue to find the two-page economic analysis in Appendix D (FEA 134-135) to be suspect, vague, and deficient for a project of unprecedented scope and size in the history of the Hoosier National Forest. We note that stated assumptions in this Appendix that only 70% of proposed timber treatments will be completed and the numerous proposed clearcuts and shelterwood cuts exceeding 10 acres "*would*" be arranged to avoid violating the 10-acre size limit for openings by such logging in MA 2.8 (a Forest Plan standard)—are speculative. The 10-acre limit on harvest opening sizes is not discussed in the FEA's description of the proposed action on pages 19-24; not presented in Appendix B - Design Measures on pages 121-124 or Appendix C - Pertinent Forest Plan Guidance Associated with Soil and Water Quality and Indiana Logging Forestry Best Management Practices on pages 125-133; and not mentioned in the maps of project activities.

The discussion in Appendix D does not clearly indicate how important direct costs from logging operations such as road construction are accounted for and therefore whether the government is getting a good price for timber sold in the project. The total discussion of direct expenses is as follows:

> We used historical costs for similar projects on the Hoosier as estimates. The estimated timber sale revenue is based on sale history over the last eight quarters. Historical sale prices take into account, skidding distance, distance to the mill, and road costs. This analysis assumes these costs to be part of timber sale contracts and accounted for in the sale price of the timber. (FEA 134)
>
> Before any National Forest timber is sold, it would be appraised to estimate the products' fair market value. A timber sale is offered competitively, and the contract is normally awarded to the firm offering the highest bid. . . . For this analysis, stumpage values used the base period prices effective in May 2022 for the Hoosier National Forest. Prior to sale offer, these base stumpage rates may be adjusted for sale specific stump to truck, transportation, logging overhead, and road construction costs. (FEA 135)

It is not clear from this discussion what role the fair market value plays in the final sale price for the timber. Furthermore, does this discussion mean the timber buyer builds the roads and offers a price for the timber that incorporates that cost, does it mean the Service builds the roads and only accepts a sale price that includes this cost, or does it mean something else? It is not clear who pays for the road construction. Nor is there any discussion of whether the Service enforces a minimum bid price to ensure that all direct costs resulting from the timber harvests will be recuperated by federal taxpayers in the timber sales. These include costs for road construction, all harvest planning, site and sale preparation, cleanup, grading, reseeding, and

other BMP installations, inspection of BMPs and Expanded Soil Disturbance Monitoring and treatments of NNIS infestations that are caused or exacerbated by the logging and attendant road building. Without a minimum bid price, we are not persuaded that logging will generate a net profit for this project.

The data underlying the numbers in Table D-1: "Estimated Economic Analysis" on page 135, need to be provided to "determine whether the proposed activities represent a prudent means of achieving the resource objectives outlined in the Forest Plan", the objective of this Economic Analysis stated on page 134. Without that data, it is difficult to assess the credibility of the Benefit Cost ratio of 1.06 for the action alternative.

We also object to the following discussion on page 134:

> Both the Action and No-action alternatives incur costs related to general administration and program management. These are costs incurred regardless of the decision and are therefore excluded from this analysis.

There are inherent substantive savings to be realized from not moving forward with the action alternative. This analysis should not be constrained by an inflexible agency structure that will waist tax dollars regardless of whether program work is or is not occurring. Cost savings in the no-action alternative should include significant reductions in general administrative and program costs such as the reduced bookkeeping and logistical support and reduced program staff hours needed from eliminating silvicultural and prescribed fire work. Failure to present these savings for direct costs for the no-action alternative further renders this economic analysis deficient.

We also note that the following discussion from Appendix D of the DEA is repeated:

> Many values generated by the project, both positive and negative, involve goods and services not priced in the marketplace. This comparison does not represent those values. These goods and services involve such things as the value of a hunting experience, a hike in the woods, wildlife viewing, or the water quality of streams and lakes. For purposes of this discussion, the only revenues considered are those with more finite estimates associated with timber production. (FEA 134)

The HNF is not a private tree farm. One of the primary purposes for public forests like the HNF is to provide these values that are "not priced in the marketplace" to the public. If the value of a hunting experience or a hike in the woods could not be presented in Appendix D, it was incumbent upon the Service as the public agency charged with managing the HNF, to present that value in the socioeconomic analysis added to the FEA in Appendix E. Certainly, the value of water quality, indeed of clean water in Patoka Lake (a major source of drinking water in the region, should have been presented in Appendix E's analysis particularly given it was not analyzed in Appendix D.

Unfortunately, instead of such an analysis that substantively examines the impact of the project on the local water supply as well as the recreation and local tourism in this area of unique natural beauty in the state, Appendix E's cursory, two-page analysis focuses on irrelevant,

misleading, and false assertions to reach the conclusion that the project will not have significant impacts on the local socioeconomic community.

Appendix E includes no discussion whatsoever of the costs that will be necessary to address algae blooms, respond to sediment spikes, or maintain clean water in Patoka Lake, should BMPs fail (as they will) to keep project activities from worsening this Lake's impaired condition. In addition to being the sole source drinking water supply for 65,000 people, Patoka Lake serves a much larger number of Hoosiers (>100,000) for domestic and agricultural consumption. Given that the project will log and burn hilly forestland immediately upstream of Patoka Lake and in some cases, adjacent to this reservoir, this is an egregious deficiency.

In addition, there is a clearly dismissive approach throughout the two pages of Appendix E that gives short shrift to the adverse impacts to recreation and tourism that this project's activities will cause. Negative impacts to recreational use are briefly acknowledged on page 136:

> It is expected that some recreational user's experiences would be impacted due to project activities. While some users may feel displaced due to the temporary loss of trails, others may adjust their activities or seek recreational experiences elsewhere.

Rather than looking at use statistics for any of the recreational resources of the area, the Service relies on the Visitor Use Report for the entire Hoosier National Forest. Appendix E uses this Report on Forest-wide visitor use to characterize the behavior by recreational users displaced by project activities as good news for the local community:

> The Hoosier National Forest Visitor Use Report (USDA FS 2023b) finds approximately 60% of visitors indicated that if they were unable to visit the national forest they would travel elsewhere for the same activity. Over 50% of these visitors would travel less than 25 miles to a substitute location. Another 15% state they would come back another time. This indicates that many visitors will continue to recreate in the local region even if temporarily displaced by management activities. (FEA 136)

An alternative way of characterizing the facts in this statement is that 60%—a robust majority of the HNF's visitors—indicated they would travel elsewhere and only 9%, (15% x 60%), less than one in ten visitors will return to the local region for recreation if their recreational visit was displaced by management activities. Furthermore, the project dimensions span a rectangular area approximately 12 miles from east to west by 10 miles from north to south. Traveling up to 25 miles to a substitute location may easily take visitors well outside of the local area. Even worse, if visitors travel to a closer substitute location within the project area and logging and/or burning is/are also occurring at that location, what will their inclinations be about returning to the area anytime soon for recreation?

The analysis points out that visitors who travel 'from out of town' to their destinations in the HNF spend more money on overnight stays, campgrounds, restaurants, food, and fuel than local visitors. It states the National Visitor Use Report indicates that 54% of the HNF's visitors

have traveled from more than 25 miles to reach their destinations. It stands to reason that those visitors will be more inclined not to return to the project area if their visit was displaced by a logging or burning operation, given the higher cost of this displacement to them, than such costs to local residents from a displacement. This conceivably should translate into a larger negative impact to tourism in Orange County than one might conclude from reading this analysis of displaced recreation visits due to the project. It focuses on the impacts to the entire HNF to conclude the following:

> The Hoosier National Forest continues to provide a wide variety of high-quality recreation opportunities and a road and trail network providing access to a diversity of recreation opportunities. At an aggregate level, the proposed action is not expected to result in changes to the number of visitors or types of recreation opportunities occurring in the Forest and therefore recreation visitor spending is also not expected to change. (FEA 136)

However, the more relevant concern is the socioeconomic impacts *on the local area* which spans one of the poorest areas in the state of Indiana. The large majority of commenters in the public response document to the DEA are concerned about the unprecedented size and scope of the project and its impact on the local community.

The Service is proposing to burn up to 24 square miles of forest repeatedly over the next 25 years at an average rate of 1,500 acres per year. Notwithstanding the Houston South Project which is under court challenge, there is no project in the history of the HNF that has *ever* proposed to burn anywhere near as much acreage as this project. This coupled with logging to occur on nearly 5,000 acres in the project area will close every hiking and horseback riding trail in the 24 square mile area multiple times in multiple locations. When the closures are due to logging, they will extend for many months if not a year or more. The analysis dismisses recreational use by local residents as producing less economic value than visits from tourists who come from farther away. Yet many of these local hikers, horseback riders, mushroomers, squirrel hunters, and other "recreationists" have known these trails and the forests they traverse for their entire lives. When they return to these trails after they've been reopened from project activities, they will find the entire surrounding forest understory blackened and dead and many of the tree trunks and logs charred if the forest was just burned. If it was also logged, they may hardly recognize their favorite hollow, charred by unnatural fire, clearcut, or pocked with large openings surrounded by snags or damaged and dying trees. Instead of a dirt path under overarching canopy, in many places they will be walking on a 12-20 foot wide sun-baked gravel road past thickets, stumps, scraped trunks, torn roots, bare dirt and dirt piles, many of which may be covered by invasive plants that were not there before. Yet the discussion in Appendix E trivializes these impacts as follows:

> On average, of the 204,000 acres of National Forest System land comprising the Hoosier, about 266 acres are actively managed annually, or 0.13%. If approved, the intention would be to continue that same pace across the Forest. This results in a small amount of management at any given time. Socioeconomic effects, such as changes in tourism patterns or resident use, resulting from this displacement would occur locally over the short-term, for the duration of project implementation or

shortly thereafter. These impacts would be minor and would not result in measurable disruption to local socioeconomic conditions. FEA pg 136

This discussion is outrageous (and patently arbitrary) on two levels. First, this analysis advances the implausible assertion that the pace of actively managing areas in the HNF will not change, when the existing Uniontown projects that are logging the current 266 acres annually are far from complete, and at least 350 more acres per year of logging for the next 15 years has just been authorized for the Houston South Restoration Project. Further, even if we assume the longest pace of 15 years is followed to complete the harvests proposed in the Buffalo Springs Project, that would add 323 more acres of logging per year just for this project. This means this project along with two other projects authorized and underway will log up to 939 acres per year across the HNF, three and a half times more acres than this discussion indicates. And this assumes the longest (slowest) pace of logging proposed at Houston South and Buffalo Springs is followed. If the Houston South and Buffalo Springs Projects move at their quickest—10-12 year logging rates— the amount of approved logging would be up to 1,090 acres per year, four times more acres than this analysis suggests.

This is just the logging. If the Service were to acknowledge that its prescribed burning is also disrupting recreational use, it would need to add about 4,000 acres per year more to this sum of annual acres in the HNF disrupted by active management in these three projects.

Thus, focusing exclusively on the Buffalo Springs area, instead of 266 acres of logging spread out over the whole HNF falsely implied here, just within the project area local residents and tourists who are drawn to Orange County for its natural beauty will find up to 1,823 acres of the national forest either being logged (323 acres) or burned (1,500 acres) every year for the next 25 years if the action alternative in the FEA is authorized.

Second, after conceding there will be negative impacts to recreation, the discussion, indeed the entire two-page analysis of Appendix E, fails to include any site-specific data or even approximate estimates of these impacts to tourism or recreation visits from this logging and burning. No estimates are provided of visitors to Orange County or tourism dollars spent in the local area, despite the presence and high recreational use of Patoka Lake and surrounding national forest lands in those counties. No mention is made let alone any identification provided of the numerous hotels, motels, restaurants, outdoor supply businesses, outfitters or campgrounds that support horseback riding, camping, fishing, boating, hiking in the project area. No mention is made of the numbers of root dealers, mushroomers, squirrel hunters, deer hunters, horseback riders, and others whose favorite locations may be wiped out by project activities. Most of these users have to obtain permits or tags; their numbers are tracked. No estimate of the dollars they spend on their forays to the area is attempted. No discussion of use statistics for any of the Springs Valley, Youngs Creek and Lick Creek Trails in the project area, much less any estimates of how much project activities will depress usage of these trails, or visits to area businesses related to use of these trails or of national forest at the Tucker Lake, Patoka Lake, Young's Creek, or Lick Creek areas that will go down as a result of project activities.

On a final note, more than half of Appendix E (pages 137-138) is taken up by the Service applauding itself for providing benefits to Orange County that have little to do with the socioeconomic impacts of the project on Orange County. The $113,938 of annual payments to

Orange County cited for 2022, pale in comparison to the damages and wear and tear that trucks loaded with heavy hardwood logs will cause to county roads and bridges which can easily exceed $1 million per year. The analysis points out that the poverty level in Orange County exceeds the statewide average by more than two percentage points and the median household income in Orange County is $6,400 below the state's median household income, yet the analysis concludes that the project's closure of trails and other recreational facilities and impacts to aesthetics would not disproportionately adversely affect minority or low-income people. This conclusion is arbitrarily reached without any additional data or reasoning, despite many recreational users of the HNF in Orange County living close to if not below the poverty level.

In conclusion, we object to the economic analysis in Appendix D and socioeconomic analysis in Appendix E of the FEA as being a completely deficient slap in the face to the public but, particularly to the residents of Orange County. We request that adequate analyses of the project's economic and socioeconomic impacts be undertaken in an EIS.

-The impact of the Project on carbon storage and release is not adequately addressed

IFA's Comments (p. 51) contend, among other things, that the Service has failed to address the impact of the Proposed Action on carbon storage and carbon releases. In the FEA, the Service perfunctorily endeavors to address this contention under the last of nine issues listed by the Service under the heading of Environmental Effects. Issue 9 is stated by the Service as "Concern that harvesting timber could decrease the rate of carbon sequestration."

In its discussion, the Service acknowledges that:

> Forests play an important role in the global carbon cycle by taking up and storing carbon in plants and soil. . . . Forests can influence the exchange of carbon with the atmosphere, either by increasing storage through tree growth or releasing as trees die and decay. FEA p. 93

Significantly, the Service also acknowledges, based on satellite imagery data, that:

> ". . . timber harvest has been the dominant disturbance type on Hoosier NF from 1990 to 2011".

The overall impact of the proposed action would be to subject 4,846 acres of HNF to timber harvesting and up to 15,100 acres to prescribed burning. The Service seeks to minimize concern over this impact by asserting that:

> . . . any initial carbon emissions from this proposed action would be balanced and possibly mitigated as the stand recovers and regenerates, because the remaining trees and newly established trees typically have higher rates of growth and carbon storage. (Hurteau and North 2009; Dwyer et al. 2010; McKinley et al. 2011) FEA pgs 96-97

The Service's contention that the **harvesting and thinning of more mature forests results in the remaining trees and newly established trees typically having higher rates of**

growth and carbon storage is, perhaps, the primary controverted issue for IFA with respect to likely negative impacts of the proposed action on the storage of carbon in the Project Area. This contention is made several times in the FEA, where it is said that the new oaks that start growing in areas where more mature trees have been harvested have higher rates of growth and carbon storage than the former mature trees demonstrated.

IFA observes that the Service's claim that new trees established following harvesting and prescribed burning will typically have higher rates of growth and carbon storage may be literally true. However, this contention is highly misleading in its implication that carbon absorption achieved by young trees is superior to that achieved by more mature trees. Young trees a few years in age may have a much higher growth rate, calculated as the ratio of added tree mass to the previous total tree mass at the beginning of a growth season, than the growth rates demonstrated by more mature trees, say 50 or 100 years in age. However, the comparison is likely to be reversed when we assess relative amounts of actual tree mass (and absorbed carbon) added over a growing season for young trees as compared to more mature trees.

IFA presents the following hypothetical example, involving a comparison of three trees of differing ages, to show the differences in growth rate and in the amount of mass increase as trees age. The example and supporting literature demonstrate that the Service's contention that young trees have higher rates of growth and associated carbon storage than mature trees, while accurate, leads to an erroneous understanding that young trees are more important than mature trees for carbon sequestration.

-Oak tree sapling (3-year)

Suppose a 3-year-old pin oak tree increases its mass by 75% in its next growing season from 4.24 lb. to 7.42 lb. So, the mass of this young tree increased by only 3.18 lb. even though the rate of increase in mass is 75%. Since around 50% of the dry mass of oak tissue is carbon, the amount of stored carbon would increase by the same percentage – 75% but the amount of increase in stored carbon mass is only 1.59 lb.

-Young Oak tree (10-year)

An intermediate age example is provided by a hypothetical 10-year-old tree that is 30 feet tall with a 5-inch diameter trunk that adds 0.5 inch to its diameter (0.25 inch growth ring) during its next growing season. To simplify calculations of tree mass, only a 20-feet trunk section below the crown is used. The baseline dry mass is calculated to be 109.2 lbs and 37.64 lbs would be added by the 0.5 inch gain in diameter from the next growing season. The dry density for oak is assumed to be 44.5 lbs/cubic foot. The growth rate for tree mass and carbon would be 34.5%. Compared to the sapling, the 10-year old tree has a lower growth rate but its one-year increase in mass and stored carbon is much greater than that achieved by the sapling.

-Mature Oak tree (100-year)

Finally, consider a hypothetical 100-year-old mature pin oak that is 80 feet tall and 3 feet in diameter at its base. Assume that in the next growing season it increases its diameter by 1 inch (i.e., 0.5 inch growth ring) to 37 inches. Again, to simplify calculations of tree mass, only the lower 50 feet of trunk below the crown of the hypothetical tree, with an average diameter of 3 feet, will be used. The volume of the 50-feet trunk section will increase by 19.95 cubic feet as a

result of the 0.5 inch growth ring. The increase in mass of this tree from one season's growth is 887.8 pounds, yielding an increase in stored carbon of 443.9 lbs. This represents a 5.65% growth rate (increase in weight from a season's growth as a percentage of the weight of the tree trunk preceding the new growth). However, the one-year increase in mass and stored carbon are much greater than for the 10-year old tree.

Comparative One-Year Tree Growth Data from Hypothetical Oak Tree Examples

Tree Sapling (3-year)		Young Tree (10-year)		Mature Tree (100-year)	
Growth Rate	Increase in Mass	Growth Rate	Increase in Mass	Growth Rate	Increase in Mass
75%	3.18 lbs	34.5%	37.64 lbs	5.65%	887.8 lbs

The hypothetical example demonstrates that as a tree grows and ages, the growth rate (for mass accumulation) decreases with age while the amount of mass and carbon storage added by tree growth markedly increases with age.

The important take-away from this example is that mature trees will store much more mass of carbon in their tissues with each year's growth than will young trees, even though the young trees have a higher growth rate in percentage terms. Numerous studies and articles published in recent years support this well-established understanding.[22] The author observes that, "[a]lthough younger forests grow faster proportionally, they are not adding as much carbon in a single year as older forests with large trees." Similarly, in the article, "Why Keeping Mature Forests Intact Is Key to the Climate Fight," published in Yale Environment in 2019, noted environmental scientist William Moomaw, while appreciative of efforts to plant billions of young trees, observed that preserving existing mature forests will have an even more profound effect on slowing global warming in the coming decades since immature trees sequester far less CO2 than older ones. He reaffirmed that, "as trees get older, they absorb more carbon every year, and because they are bigger they store more carbon."[23] Another study compared the carbon removal benefits of afforestation and avoided deforestation, finding the latter to provide twice the amount of carbon removal over the near term.[24]

Part of the explanation for the advantage presented by mature trees as carbon sinks is the

[22] What you should know about protecting the United States' old forests," S. Ruiz, Woodwell Climate Research Center, June 1, 2023

[23] Why Keeping Mature Forests Intact Is Key to the Climate Fight," published in Yale Environment 360, Oct. 15, 2019

[24] References: D. N. Wear, M. Wibbenmeyer, "Land use change, no net-loss policies, and effects on carbon dioxide removals," Resources for the Future, https://www.rff.org/publications/

fact that they have immensely greater leaf area, which is where carbon absorption starts as carbon dioxide is absorbed to fuel photosynthesis.[25]

A third point favoring conservation of mature trees is that they can store immense volumes of carbon now, in contrast to newly planted trees which will need several decades to grow to the size where they are storing significant volumes of carbon. But the carbon storage capacity is needed now if we are to have any chance of reaching net zero carbon emissions by 2050.

Accordingly, IFA asserts it is indisputable that much more carbon can be stored in the tissue of mature trees as a result of each year's growth than can be stored with young trees. Consequently, preservation of mature trees is much more effective as a strategy for quickly achieving natural absorption of atmospheric carbon dioxide than going through repetitive cycles of harvesting mature trees and managing the growth of young replacement trees. This is why, no doubt, President Biden made it a priority in E.O. 14072 for the Service to develop agency policies aimed at conserving mature and old-growth forests.

The Service's stubborn promotion of prescriptive treatments and harvesting of older, mature trees with substantial commercial value conflicts with the directives from E.O. 14072 and the Secretary Vilsack Memorandum requiring the Service to conserve mature and old-growth forests for their value in sequestering carbon to help mitigate climate change. Regrettably, the Service continues to seek to justify its proposed action with erroneous arguments and assertions that denigrate the value of mature trees as frontline tools for sequestering carbon.

IFA objects to the Service's position under Issue 9, which is clearly arbitrary and capricious, and again demands that the Service withdraw its Proposed Action and develop a revised management plan for HNF after an EIS is completed, including the Project area, that provides for the conservation of both mature forests and old-growth forests consistent with the directives of E.O. 14072 and Secretary Vilsack's Memorandum.

VI. The Project contravenes federal directives to protect mature and old growth forests.

As part of the project, the Service is clearly proposing to log mature if not old growth forests that Biden Administration directives set out to protect in the national forests two and half years ago. Although it is not identified in the Table of Contents, the FEA includes a "New Information" section which briefly describes the June 22, 2023 memorandum issued by USDA Secretary Vilsack entitled, "Climate Resilience and Carbon Stewardship of America's National Forests and Grasslands." (FEA 17). This Memorandum directs the Service to inventory and protect mature and old-growth forests in the National Forest System to aid in climate resilience and carbon stewardship. The FEA does not mention that the Secretary's Memorandum was drafted to implement an executive order issued by President Biden (EO 14072) in April 2022. EO 14072 is principally focused on the critical role the nation's forests play in mitigating the

[25] *See* the article, "Old trees store more carbon, more quickly, than younger trees," published in ClimateWire, January 16, 2014.

worsening impacts of climate change and emphasized the importance of conserving mature and old-growth forests that are present on Federal lands in achieving this objective.

Page 17 of the FEA describes the Mature and Old Growth Report (FS-1215a) prepared to provide the required inventory of mature and old-growth forests managed by the Service and the Bureau of Land Management and address other initial requirements of the Vilsack Memorandum. The discussion states,

> The Mature and Old Growth report also provides guidance on how this information can direct **current** and future management at the National Forest level. While the report does not alter existing Land Management Plans it **provides the framework for an adaptive management process** with the most recent science, local partnerships, and social science which will improve the U.S. Forest Service and BLM's knowledge regarding mature and old-growth forests (FS-1215a, page 23). (Emphasis added)

Yet, the project has not been adapted in any way to protect mature and old growth forests within the project area from project activities that will retard their older forest conditions. Both EO 14072 and Secretary Vilsack's Memorandum expressly specify that mature forests, as well as old-growth forests, are to be conserved in the national forests. The FEA states, "[t]he project area is currently dominated by mature forest." (FEA 6). Nonetheless, despite these policy directives, the lack of protection for mature or old growth stands in the project area is evident from the following FEA discussion:

> No stands proposed for silvicultural treatment in the Project Area meet the old growth characteristics as defined in FS-1215a (regional definition of old-growth). Prescribed fire is proposed to be conducted on 191 acres of dry-mesic oak forest and 162 acres of mixed mesophytic and western mesophytic forest (353 acres total) in **stands that are greater than 130 and 140 years old respectively.** Based on the silviculturist's assessment, these stands do not appear to meet old growth criteria in the silvicultural treatment areas due to the lack of large trees per acre that are needed to qualify a stand as old-growth; however, there is no plot-level stand exam data on stand basal area, large trees per acre, or dead trees per acre to definitively determine whether the acres meet the criteria for old growth conditions as defined." (Emphasis added)

These statements are quite objectionable. Their assertions that no stands proposed for silvicultural treatment meet the old growth characteristics as defined in FS-1215a, the Mature and Old Growth Report, because they lack the large trees per acre to qualify a stand as old growth is immediately refuted by the admission that there is no plot-level stand exam data on large trees per acre. The absence of data on a parameter does not confirm that the parameter is absent. Furthermore, assuming we can accept the use of old growth definitions for a Region (Region 8) that does not include the Hoosier National Forest to define whether old growth forests exist in the project area (which seems facially arbitrary), these statements reveal that at least 353 acres of forests that are to be burned, meet Region 8's age criteria for both mixed mesophytic and western mesophytic old growth forests. Additionally, IFA's examination of the data for stands in the project to receive silvicultural treatments indicates that many of these stands also

exceed the highest basal area criterion for old growth forests in Region 8 of 40 square feet per acre of live trees exceeding 5 inches diameter at breast height. This is stand exam data that another of these statements falsely implies does not exist. In fact, in addition to the 191 acres of stands mentioned here exceeding 130 years old that will undergo prescribed fire, an examination of the stand data reveals more than 60 acres of oak-hickory stands to be logged also exceed 130 years of age and have basal areas ranging from 113 to 133 square feet per acre. Stand data for vegetative treatment areas in the project is accessible at:
https://storymaps.arcgis.com/stories/00b0f32be3884187b6fd927d02b474d1

Furthermore, if one looks at the definitions for old growth forests in the Mature Old Growth Report for Region 9 where the project is *actually located*, 799 acres of the oak-hickory stands that will undergo prescribed burning and be logged in this project are more than 101 years old, surpassing the age criterion for old growth dry oak forests in this Region. Thus, these statements are arbitrarily using a lack of stand data on the number of large trees per acre to assert that no stands to receive treatment meet old growth criteria when the truth is hundreds of acres meet two of the criteria for old growth forests of two forest community types in Region 8 and one of the criteria for one forest community type in Region 9. The lack of additional data needed does not warrant proceeding with logging and prescribed burning in these stands that will eliminate their documented old growth conditions for the next 80 to 100 years. This is particularly the case in the Central Hardwoods Region where there is little old growth forest anywhere.

Moreover, whether or not these stands technically meet all of the criteria for applicable definitions of old-growth community types, forest stands that are older than 100 years, much less 130 years or more years old, are unquestionably mature forests. **The directives of E.O. 14072 and Secretary Vilsack's Memorandum clearly are to protect mature as well as old growth forest.** Otherwise, old growth conditions will never return to eastern national forests like the HNF where they barely exist if at all.

The stand data indicates shelterwood cutting is proposed for 227.3 acres in 13 forest stands that are more than 100 years old in the project area. All of these acres will also receive herbicide treatments (FEA 56, Table 7) and 150 acres of these cuts will undergo prescribed burning (according to the stand data map) to eliminate mesic tree species and understory that compete with oaks. Thus, the entire canopy of dominant and codominant trees and maples, beeches, poplars, cherries, basswoods, elms, walnuts, ashes, gums, and other species will be removed from these stands not for forest health or the surgical treatment of insect pests or forest pathogens. Rather, these trees will be removed to regenerate one class of species, oaks, that the Forest Service desires arbitrarily above all other native species that have long existed in the natural mixed mesophytic hardwood forest of the project area, including species that were more dominant in that natural forest than oak.

Finally, on page 18 of the FEA, the Service references its notice of intent to prepare an EIS concerning the agency's plans to amend National Forest Plans to provide direction addressing old-growth forest conditions in the National Forest System. Safeguarding the carbon-storing capacity of mature and old-growth trees is precisely the reason for the USDA's recent announcement of its intent "*to amend all 128 national forest land management plans to conserve and steward old-growth forest conditions and recruit future old growth conditions in light of*

increasing threats due to rapidly changing climate conditions." U.S. Forest Serv., *National Old-Growth Amendment*, http://bit.ly/3Vwt4Ci (last visited June 9, 2024. The Service published notice on June 21, 2024, of the opportunity to provide comments on the Draft Environmental Impact Statement ("DEIS") to Amend Land Management Plans to Address Mature and Old-Growth Forests (Project 65356). The Service has indicated that it does not expect the national plan amendment for old-growth forests to be final until 2025. This could be delayed given the debate over the plan amendment in its current form.

In the meantime, the climate continues to worsen, and the Service needs to revise proposed management projects like this one to be consistent with the framework for adaptive management established by E.O. 14072 and the Secretary Vilsack Memorandum as the FEA stated on page 17 of the FEA. Yet, the project proposes to lock in timbering operations and herbicide treatments for the next 12-15 years and prescribed fires for the next 25 years in hundreds of acres of mature, if not old-growth hardwood forests that will eliminate their mature and old growth conditions in contravention of these directives. Accordingly, IFA strongly objects to these project activities and insists they be put on hold until this plan amendment is completed with the "most recent science, local partnerships, and social science." and in a manner consistent with the policy dictates of E.O. 14072 and then revised to comply with these dictates.

VII. The FEA fails to examine a reasonable range of alternatives to the proposed action.

Under NEPA, an agency proposing an action with significant environmental impacts must consider a range of reasonable alternatives and explain its evaluation of those alternatives in its EA or EIS. In its DEA for the proposed Project, the Service offered only a single alternative to its proposed action—a No Action alternative—after dismissively discussing a few others, such as No New Roads, Private Land Management, and Young Forest Harvest. IFA asserted that the DEA failed to meaningfully consider possible alternatives that could accomplish some—if not all—of the agency's purported needs to be met by the Project but with reduced environmental impacts. (IFA 57-65). We suggested two mid-range alternatives and two different focus alternatives that could have been considered, Alternatives A, B, C, and D:

- **Mid-Range Alternative A:** This alternative would restrict the project size to a range of 2,000 to 3,000 acres where the Service's proposed "treatments" could be applied as a test run to be followed by monitoring to assess the efficacy of such measures in achieving the stated purposes. This smaller project area would be located farther away from the Patoka Lake and its immediate watershed to provide better assurance of protection of the public water supply, while still leaving the Service the option in the future if it wished to issue separate decisions for logging or other activities elsewhere within the current project area. (IFA 57-58)

- **Mid-Range Alternative B:** This alternative would focus timber harvests on the creation of early successional habitat and maintenance of the oak-hickory forest type on xeric sites. Pine harvests would move forward with the exception that oak-pine stands would not be clearcut. Treatment on Mesic sites would be reduced to ¼ of the acreage and restricted to single tree selection and thinning with no prescribed burning. A water supply

protection zone would be maintained on project lands within one mile of Patoka Lake in which no logging, road building, herbicide application or prescribed burning would occur and no treatments on slopes exceeding 30%. There would be seasonal restrictions on timber harvests and prescribed burns and more extensive water quality monitoring. There would be a baseline survey of flora and fauna across the project area to document its biodiversity prior to project implementation and protect key habitats from project activities. (IFA 58)

IFA contended that the Project's stated purpose and needs for its proposed action are obviously arbitrary and lack a reasonable basis. (IFA at 5-19). In turn, the dispositive flaws lurking behind the stated purpose and needs are narrowly (and arbitrarily) designed to lead to but one solution. Accordingly, IFA suggested two other alternatives that focus on preservation of the ecological, recreational, and cultural value of the project area, which sits in the Crawford Upland physiographic region recognized as one of the most natural and scenic areas in Indiana, protection of the Patoka Lake water supply, protection of the uniquely valuable Buffalo Trace and other archaeological and cultural features, and conservation of carbon by the maturing forests in the project area.

- **Alternative C Protection of Recreational, Environmental, and Human Health Resources Alternative:** Promotes the ecological and recreational value of the project area, the protection of the Patoka Reservoir water supply, and sequestration of carbon in maturing forests. A designation of USFS National Scenic Recreational Area would be considered. **(**IFA pg 58).

- **Alternative D Cultural Heritage Resources Alternative:** Develop the USFS Buffalo Trace National Historical Trail and protect and promote public enjoyment of cultural resources, recreational, scenic, and ecological values, protect the Patoka Reservoir public water supply, and sequester carbon. **(**IFA pg 59).

The FEA responded with some alterations of the project's vegetative treatments described on page 18. They include the following:

- To ensure protection of heritage resources (Buffalo Trace), 39 acres of proposed hardwood thinning treatments and 22 acres of selection harvest were removed from the proposal.
- An additional 122 acres of hardwood selection harvests were removed due to gaps created by the August 7, 2023 tornado.
- Due do riparian, slope, and heritage concerns, 86 acres of proposed pine thinning treatments were removed.
- Thirty-seven acres of proposed shelterwood were changed to stand improvement.
- Due to riparian area concerns, 20 acres of proposed clearcut harvest were removed.
- 11 acres of clearcut harvest were added in an area where the agency contends that the land suitability classification for the stands was incorrect in the original stand analysis.
- Road construction or reconstruction was reduced from 17.2 to 15.2 miles (with still more than 130 miles of skidder trails and fire lanes planned).

Of note is a separate 120-acre salvage harvest that was authorized this summer in the Paoli Experimental Forest within the project area that will subject an area of newly created early successional habitat and adjacent forest to the adverse impacts of logging on an "emergency" basis without demonstrating that any emergency exists. Thus, the net effect of these adjustments reducing the impacts of vegetative treatments by 158 acres (3% of total vegetative treatments) is minimal given the high number of heritage sites identified in the project's Cultural resources documents, the unprecedented size of the project, and the expansive areas of project activities on moderate to steep slopes that will impact water resources, restrict and degrade recreational activities, and eliminate interior forest habitats.

Four Alternatives were addressed and "eliminated from detailed analysis" in the FEA on pages 25-28. Each of the alternatives proposed was summarily rejected on the basis that none met the project's stated purpose and need.

None of the four alternatives proposed by IFA were acknowledged or considered in the FEA. The DEA Comment Response document addressed the midrange alternative A by inferring that no consideration of this alternative was needed because the project itself would only be carried out in small increments, a few treatment areas per year:

> The result is that only a small portion of the area would be affected at any given time.
>
> On average, of the 204,000 acres of National Forest System land comprising the Hoosier, about 266 acres are actively managed annually, or 0.13%. If approved, the intention would be to continue that same pace across the Forest. (Comment Response pgs 290-291).

The response stated further that project monitoring was sufficient to protect soil and water resources. The response gave no reason for refusing to consider an alternative that was limited in size to 2,000 to 3,000 acres, which is at the high end of project sizes historically in the HNF. This response also did not explain how, if the project proposes timber harvests on 4,846 acres over the next 10 to 15 years, the entire Hoosier National Forest would continue to harvest only 266 acres per year, given the Uniontown Restoration projects where most of this logging is occurring are far from complete and the agency has approved an additional 350-420 acres per year to be harvested under the Houston South Project. Even if we assume the longest pace of 15 years is followed to complete the harvests proposed in this project, that would average 323 acres of timber harvests per year. Nor did the response address the serious concerns that IFA raised about the unprecedented scope and size of the project and complete inadequacy of the project's proposed monitoring and corrective action standards, which this alternative would address by reducing the size of the project and monitoring water quality more intensively before, during and after the project at the spatial boundaries of the vegetative treatment areas. In fact, the vague response did not give any reason why this alternative was not considered in the FEA.

The Comment Response document dismissed IFA's midrange alternative B because it did not go along with ALL of the vegetative treatments and other activities proposed in the project:

> This alternative would not address many of the stated desired conditions for the Buffalo Springs Project area: restore mesic forestland habitats degraded by a lack of stand age class and structural diversity; lower stand densities to increase tree growth and vigor and resistance to insects and disease; and improve the health of *all* harvested areas making them more adaptable to climate change. (Emphasis Added). (Comment Response pg 291)

Table 1 in the FEA indicates that most of the stands in MA 2.8 in the project, 6,172 acres out of 10,500 acres, are the drier, xeric oak-hickory forest type. Only 1,467 acres are the mesic beech-maple or elm-ash-sycamore forest types. Alternative B proposed to let the Service do all of the vegetative treatments in the present project that are in dry forest stands and pine or pine hardwood stands as long as harvests were kept off dangerously steep slopes (30% or greater) and clearcuts of pine-hardwood stands were avoided. In addition, thinning and selective logging would continue on one fourth of the mesic stands. Thus, most of the project's selective logging and thinning of both pine and hardwood stands, to reduce stand densities and spread age classes out, would have been allowed to continue as long as dangerously steep slopes were avoided. The use of vegetative treatments, herbicides, and fire would have been allowed to encourage continued dominance of the oak-hickory forest type across the project area. More early successional habitat would be created from several hundred acres of pine stands that would be clearcut as well as dozens of group tree openings that would be allowed in selective cuts.

Alternatives C (to protect ecological and recreational resources) and D (to protect important cultural and archaeological resources) were summarily dismissed like other alternatives considered in the FEA because they did not focus on the specific, comprehensive purpose and need that the Service decided upon in its scoping analysis for this project:

> Alternatives must meet the purpose and need ((36 CFR 220.7 (b)(2)). *NEPA requires agencies to consider alternatives to the proposed action that are reasonable and feasible.* The stated goal of a project (Purpose and Need) dictates the range of reasonable alternatives. (Emphasis Added). (Comment Response 289).

We concur that NEPA requires agencies to consider a broad range of reasonable and feasible alternatives to proposed federal actions that have major impacts. We do not believe however that this means the Service has the right to constrict that analysis only to alternatives that meet a single goal or an artificially narrow set of purposes and needs to achieve a goal that precludes a meaningful consideration of other goals, purposes, and needs authorized for the project area under the applicable Forest Plan.

We also do not agree that the Service can arbitrarily dismiss consideration of midrange alternatives that will meet each of its stated purposes and needs for this project simply because they do not meet them on every single, specific tract proposed for such activities in the Service's preferred alternative. Any meaningful alternatives analysis—or, for that matter, any objective consideration of conflicting resources and competing interests and any genuine solicitation of public input under NEPA—would recognize that there are multiple important goals, purposes,

and needs that require substantive consideration for decisions to made on projects that will determine the long-term fate of thousands of forest acres in the HNF.

We therefore object to the FEA's egregious failure to meaningfully consider a broad and reasonable range of alternatives—including by artificially designing the purpose and need so narrowly as to exclude alternatives that are, in fact, feasible for achieving many, if not all, of the goals outlined in the Forest Plan—and we again call for such alternatives to be considered in an EIS (or at least a new EA) for this project to bring the Service's decision into compliance with NEPA in this respect.

CONCLUSION

The Service's FEA and Draft Decision Notice and Finding of No Significant Impact fail to disclose or address many important issues and impacts of the Project, fail to adequately consider and analyze a reasonable range of alternatives and the impacts of the Project, and violate NEPA and its implementing regulations in a variety of ways, including the Service's failure to prepare an EIS for this obviously significant action.

As a suggested remedy, IFA urges the Forest Service to reconsider its decision in light of these objections, or, at minimum, to conduct additional NEPA analysis (which should be an EIS) to consider and mitigate the magnitude and significance of this Project. If the Service does not do so, IFA stands ready to utilize all available tools for enforcing federal law, including litigation in federal court. That is an avoidable outcome. IFA welcomes the opportunity to discuss these objections with you in a meeting or conference call at your convenience.

Respectfully submitted,

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Signed and submitted on behalf of Indiana Forest Alliance