CENTER for BIOLOGICAL DIVERSITY Because life is good.

October 12, 2017

Via FAX AND U.S. Postal Service

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The Center for Biological Diversity (the "Center"), Heartwood, Ohio Environmental Council ("OEC"), Sierra Club, Buckeye Environmental Network formerly known as Buckeye Forest Council ("BEN"), Athens County Fracking Action Network ("ACFAN"), and Keep Wayne Wild, (collectively "Conservation Groups") hereby file this Protest of the Bureau of Land Management's ("BLM") planned December 14, 2017 Competitive Oil and Gas Lease Sale and the Determination of NEPA Adequacy (DNA) for oil and gas leasing in the Wayne National Forest, Marietta Unit of the Athens Ranger District, Monroe County, Ohio (DOI-BLM-Eastern States-0030-2017-0006-DNA) ("DNA"), pursuant to 43 C.F.R. § 3120.1-3. We formally protest the inclusion of each of the five parcels, covering 350.06 acres in Ohio:

ES-001-12/2017 OHES 058308 ACQ
ES-002-12/2017 OHES 058309 ACQ
ES-003-12/2017 OHES 058310 ACQ
ES-004-12/2017 OHES 058311 ACQ
ES-005-012/2017 OHES 058312 ACQ

PROTEST

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The Center is a non-profit environmental organization dedicated to the protection and recovery of native species on the brink of extinction and their habitats through science, policy, and environmental law. The Center has and continues to actively advocate for increased protections for species and their habitats in Ohio and the Wayne National Forest. The lands that will be affected by the proposed lease sale include habitat for listed, rare, and imperiled species that the Center has worked to protect, including the Indiana bat, Northern long-eared bat, fanshell, pink mucket pearly mussel, sheepnose mussel, and snuffbox mussel. The Center also works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health. The Center has over 52,000 members, including those living in Ohio who have visited these public lands in the Wayne National Forest for recreational, scientific, educational, and other pursuits and intend to continue to do so in the future, and are particularly interested in

protecting the many native, imperiled, and sensitive species and their habitats that may be affected by the proposed oil and gas leasing.

The Sierra Club is a national nonprofit organization of approximately 819,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Ohio Chapter of the Sierra Club has more than 23,000 members in the state of Ohio. For more than four decades, the Sierra Club has worked to protect the Wayne National Forest and Ohio's other public lands from harmful activities such as clear-cutting, mineral extraction, commercial development, pipelines, and oil and gas drilling. Sierra Club members use the public lands in Ohio, including the lands and waters that would be affected by actions under the lease sale, for quiet recreation, scientific research, aesthetic pursuits, and spiritual renewal. These areas would be threatened by increased oil and gas development that could result from the proposed lease sale.

The Ohio Environmental Council is a non-profit environmental organization whose mission is to secure healthy air, land, and water for all who call Ohio home. OEC has over 100 environmental and conservation member organizations and thousands of individual members throughout the state of Ohio. The OEC has a long history of working to protect the ecological integrity, and recreational and aesthetic qualities of the Wayne National Forest. Many of our members have visited these public lands in the Wayne National Forest for recreational, scientific, educational, and other pursuits and intend to continue to do so in the future.

Heartwood is a non-profit regional environmental organization dedicated to protecting the public forests of the Central Hardwood Region. Heartwood represents over seventeen hundred individual members and numerous member organizations who depend on these public lands, including the Wayne National Forest, for recreational, spiritual and ecological purposes. Heartwood members have, do and will continue to use these public lands, including the Wayne National Forest, for non-consumptive purposes and they derive important tangible and intangible ecological benefits from the presence and ecological integrity of these public lands, including the lands that will be affected by the oil and gas leasing proposed by this action.

The Buckeye Environmental Network aka Buckeye Forest Council (BEN) is a membership-based, grassroots organization dedicated to protecting Ohio's native forests and their inhabitants through education, advocacy and organizing. BEN has advocated for ecological management of the Wayne National Forest as well as Ohio's state forests to protect biodiversity, ecosystem services, including air and water purification, and climate stability since 1992. Many hundreds of BEN members from around Ohio and beyond our region have relied on Wayne National Forest as a place of solace, protected wild land, native forest biodiversity, and low-impact recreation.

Athens County Fracking Action Network (ACFAN) was formed in 2011 to protect the Wayne National Forest and our region from the risks to air, water, climate, and community economic and public health from the industrial practice of deep shale drilling and high-pressure, high-volume horizontal fracturing (commonly known as fracking). ACFAN's 900+ network members have consistently urged Wayne and BLM personnel to fully evaluate the potential highly significant impacts of fracking before leasing, an irrevocable commitment of resources,

with full public input, as required by NEPA. This has not been done in spite of thousands of appeals and documentation of potential impacts with extensive peer-reviewed science through petitions, meetings, letters, and formal protests since October 2011. ACFAN has mobilized government officials from the local to federal levels as well as drinking water suppliers, environmental and tourism organizations, the President of Ohio University, hundreds of residents of Washington, Monroe, and Morgan County, and thousands of other residents of Ohio, the region, and the nation to urge the USFS to authorize an Environmental Impact Statement before further consideration of this dangerous industrial process, as required by NEPA given the scale of likely harm to the human community as well as to the Forest. Especially because the Wayne is Ohio's only National Forest and one of the nation's smallest and most fragmented, members of ACFAN are highly committed to its protection and to the USFS and BLM taking seriously the extreme and well documented public concerns that have been shared extensively with USFS and BLM officials since 2011.

Keep Wayne Wild is a volunteer-run organization working to raise awareness about the importance of protecting Ohio's only national forest and how it could be impacted by fracking. We began organizing in response to the Bureau of Land Management's decision to begin auctioning off land in Wayne National Forest for horizontal hydraulic fracturing. Our efforts include educational presentations and informational meetings around the region, group outings and activities in Wayne National Forest, distributing information at events and via social media, and organizing and participating in public demonstrations. Our members include people who regularly visit the Marietta Unit for recreation including hiking, camping, kayaking on the Little Musikingum River, deer hunting, wildlife photography, and mushroom foraging. Some of our members live just outside of the forest in Washington and Monroe counties, where they will be impacted by the increased traffic and pollution.

II. Statement of Reasons as to Why the Proposed Lease Sale Is Unlawful

BLM's proposed decision to lease the parcels listed above is procedurally and substantively flawed for the reasons discussed below and in the following attachments:

First, the Conservation Groups hereby incorporate by reference the Center et al.'s September 6, 2017 Comments on the BLM's Determination of NEPA Adequacy for the December, 2017 Competitive Oil and Gas Lease Sale, Wayne National Forest, as well as all references cited therein.[1]

Next, BLM failed to prepare an Environmental Impact Statement (EIS) analyzing the impacts of competitive oil and gas leasing in the Wayne National Forest, and specifically the impacts of leasing the aforementioned parcels, in violation of the National Environmental Policy Act (NEPA). Relatedly, BLM failed to take a hard look at site-specific, reasonably foreseeable, and cumulative impacts of leasing in the Wayne. Further, BLM's Determination of NEPA Adequacy ("DNA) improperly relied on the December 2016 Final Environmental Assessment, Finding of No Significant Impact, and Decision Record for Oil and Gas Leasing, Wayne

[1] The Center et al.'s September 6, 2017 Comments on Determination of NEPA Adequacy, December, 2017 Competitive Oil and Gas Lease Sale, Wayne National Forest.

National Forest, Marietta Unit of the Athens Ranger District, Monroe, Noble, and Washington Counties, Ohio (collectively, the "EA" OR "Programmatic EA") to analyze those impacts.

In addition, BLM failed to analyze the cumulative impacts of oil and gas leasing in connection with the impacts of neighboring pipelines and other infrastructure associated with fracking in the Wayne (in particular risks associated with the Rover Pipeline currently under construction). It also failed to demonstrate that new oil and gas development in the Wayne National Forest conforms with the State Implementation Plan for attainment of sulfur dioxide air quality standards under the Clean Air Act.. Finally, BLM failed to consult with the Fish and Wildlife Service ("FWS") pursuant to Section 7 of the Endangered Species Act (ESA) on the impacts of leasing on threatened and endangered species present in the Wayne National Forest and improperly relied on an outdated biological opinion to fulfill its Section 7 obligations.

1. The Programmatic EA Fails to Consider the Potential for New Federal Leasing to Open Up Private Minerals and Private Surface to Horizontal Drilling

The DNA's reliance on the Programmatic EA violates NEPA because the EA fails to clearly disclose that leasing federal minerals would open up substantial private minerals and private surface for development. This is because large portions of the Marietta Unit are private surface or private mineral and surround tracts of federal minerals, which are too small to develop on their own, but which operators wish to access to develop adjacent private minerals. Further, any horizontal drilling and related oil and gas operations would likely occur on private surface, as operators would likely prefer to develop on private surface out of the reach of federal surface regulations. The EA's acknowledgement that leasing federal minerals within the Marietta Unit "*may* lead to additional future mineral development on private land and private minerals within the area"[2] understates the reality that leasing federal minerals within the Unit would not only certainly enable private mineral and surface development, but also appears geared towards that end.[3] The EA, however, is less than forthcoming about this purpose and need, as well as these foreseeable consequences of federal leasing. The EA's failure to clearly acknowledge, analyze, and discuss mitigation for these entirely foreseeable consequences renders the EA fundamentally flawed.

In scoping, proponents of federal leasing argued that development of private minerals would be difficult, if not impossible, without BLM's leasing of federal minerals for development. As Senator Andy Thompson explained in his comments to BLM:

> The main issue here isn't merely mineral extraction; it's property rights. Unlike federal lands in the Western U.S., the Wayne National Forest is not one large contiguous piece of property. Wayne National Forest property is often next to or surrounding property owned by individual Ohioans. Leasing of Wayne National

[2] Final EA at 120 (emphasis added).
[3] Final EA at 21 (identifying public's concern that "[e]nabling oil and gas activities will provide private landowners the opportunity to develop their minerals, and withholding leasing the federal minerals will pose an obstacle to development of private minerals"). *See also id*. at 30 (rejecting no-action alternative because it "would unnecessarily constrain oil and gas occupancy, especially in this highly fragmented landscape, where the ability to cross federal land may be critical to enabling an operator to develop").

> Forest property simply gives private citizens the opportunity, if not the guarantee, to develop the minerals they own.[4]

Congressman Bill Johnson's comments to BLM echoes this issue that private mineral leases cannot be developed unless federal minerals in the Wayne National Forest are opened for leasing:

> Some residents, particularly in Monroe and Washington Counties, have elected to lease their private mineral rights for the purpose of oil and natural gas development. But many are finding themselves in a situation where their private leases are at risk of not being developed because their private mineral leases are adjacent to, or under the surface of, the Wayne National Forest.[5]

Indeed, the EA itself acknowledges surface and mineral ownership is "highly fragmented and complicated" throughout the Wayne National Forest.[6] Over three-quarters of the Marietta Unit is private surface, almost all of which overlays private minerals.[7] Federal surface within the Marietta Unit is scattered throughout this area and is non-contiguous.[8] Of this federal surface, nearly three-quarters is underlain by private oil and gas.[9]

In 2012, the Forest Service prepared a Supplemental Information Report ("2012 SIR") addressing the potential impacts of horizontal well development, to assess whether the 2006 Forest Plan should be updated. According to the Forest Service's 2012 SIR, horizontal drilling is only economically feasible if sufficiently large expanses of minerals are available.[10] The 2012 SIR projects that 10 horizontal well pads could be developed on federal surface in the Marietta Unit and that horizontal wells would likely target the Utica and Marcellus shales.[11] To drill up to eight wells from a single horizontal well pad, the scenario considered in the 2012 SIR, each lateral wellbore would extend one to two miles,[12] with a minimum spacing of 1,000 feet between

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[4] Downing, B. Strong support in southern Ohio for Wayne NF drilling. Akron Beacon Journal. Ohio.com. (Jan. 22, 2016), available at http://www.ohio.com/blogs/drilling/ohio-utica-shale-1.291290/strong-support-in-southern-ohio-for-wayne-nf-drilling-1.656368 (accessed November 4, 2016).

[5] *Id.*; *see* also Landowners for Energy Access and Safe Exploration (LEASE), Press Release, Landowners Encourage Public Comment In Support of Leasing Wayne (May 11, 2016), available at http://www.ohio.com/blogs/drilling/ohio-utica-shale-1.291290/ohio-landowners-urge-blm-to-proceed-with-wayne-nf-drilling-1.682216 (spokesperson of private mineral owners complaining that delay in leasing has "block[ed] landowners from developing their private mineral rights" and that "should the agency take no further action, landowners' private property rights would continue to be squandered").

[6] Draft EA at 18.

[7] Draft EA at 50.

[8] U.S. Forest Service, Athens Ranger District- Marietta Unit Map, available at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5108534.pdf.

[9] Draft EA at 50.

[10] "Horizontal drilling into a formation requires that the formation in question be thick enough that the drill bit can penetrate the formation, be turned horizontally and remain in the formation during drilling and production. *The driller must also have the right to access a continuous and large enough portion of the formation to make the wells economically viable*." 2012 SIR, Appendix C at 2 (emphasis added).

[11] 2012 SIR at 4.

[12] Geology.com, Utica Shale – Horizontal Wells Drilled in Ohio, available at http://geology.com/utica.shtml (noting horizontal wells can extend underground up to two miles beyond the drilling location); FracTracker, Ohio Shale Gas Viewer (showing horizontal wellbores of one to two miles), available at http://maps.fractracker.org/3.13/?appid=2b7611b38d434714ba2033d76cc0ccc3) & http://maps.fractracker.org/3.13/?appid=1d7ab8d708544885a3bb093cd82b30d4; *see also* Wickstrom, Larry et al.,

each lateral.[13] The total production area per well pad amounts to approximately one to two square miles, or 640 to 1,280 acres.

Many of the nominated parcels for lease, however, are substantially smaller than 640 or 1,280 acres and thus would not be exploitable via horizontal drilling unless they were "pooled" with adjacent private minerals. By the same token, private oil and gas extraction within the Marietta Unit may not be feasible unless the minerals are pooled with adjacent federal minerals. Further, if horizontal wells could be drilled from different locations, operators would undoubtedly choose to drill from private surface where they would be subject to the least stringent regulations, and less federal oversight.[14] BLM and Forest Service officials recognized this fact while BLM was preparing the EA.[15] And "[g]iven the highly fragmented nature of land ownership in the Marietta Unit, a well pad on one parcel, federal or private, may be serviced by roads, pipelines, tank batteries, and other infrastructure on other parcels in other ownerships."[16]

Thus, a reasonably foreseeable consequence of federal leasing is opening up private surface for oil and gas development, including private surface overlying private minerals. Indeed, development on the proposed parcels and on adjacent private surfaces are connected actions and inextricably linked, such that private surface development should have been considered in the EA. *See Sierra Club v. United States DOE,* 255 F. Supp. 2d 1177, 1185 (D. Colo. 2002) ("NEPA regulations define a connected action as one that 'cannot or will not proceed unless other actions are taken previously or simultaneously.'") (citing 40 C.F.R. § 1508.8(a)(1)(ii)).

Neither the EA nor its underlying documents, however, meaningfully analyze the potential for federal oil and gas leasing to open up private minerals and lands. The 2004 Reasonably Foreseeable Development Scenario ("2004 RFDS") prepared for the Wayne National Forest only analyzed the total number of *vertical* well pads that could be developed on *federal* surface.[17] The 2004 RFDS formed the basis for the 2006 Forest Plan EIS's effects

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The Utica-Point Pleasant Shale Play of Ohio, Ohio Dept. of Natural Resources, Division of Geological Survey at 5, available at https://geosurvey.ohiodnr.gov/portals/geosurvey/energy/Utica-PointPleasant_presentation.pdf ("Wickstrom") ("Optimally, operators would like to have lease blocks of about 2 square miles contiguous to allow drilling in two directions from one central drill pad.").

[13] For wells over 4,000 feet deep, the minimum spacing is 1,000 feet (vertically and horizontally). 2012 SIR at 3. Utica shale is around 6,000 to 7,000 feet deep. *See* Wickstrom at 30; *see also id*. at 6 (noting 1,000 foot spacing).

[14] "With only 7 wells on federal surface over the last 8 years, the extensive drilling in Washington and Monroe Counties has not significantly impacted the WNF. This lack of drilling activity in the Marietta Unit is most likely attributed to operator's disdain for the additional paperwork and operating requirements associated with being on Forest Service surface and their unwillingness to wait for the necessary authorization to begin their projects (The average time to receive a drilling permit from the Ohio Division of Oil and Gas was 12.6 days in 2002 compared to Forest Service processing times requiring from 60 days to one year.)." 2012 SIR, Appendix B at 12; *see also* Final EA at 95-96 ("noting operators "may use directional drilling to locate a pad on a parcel not directly above the bottom hole location for various reasons, thus enabling federal minerals to be accessed from outside the federal surface.").

[15] *See* Email from Thomas Thompson U.S. Forest Service to BLM officials re: WNF Oil and Gas leasing (Sept. 8, 2015) ("The first choice of preference would be the lessees will try and drill off lease (private land), this would be depending [sic] what minerals they have leased from the private land owner, then they may have no choice but to drill on federal land.").

[16] Final EA at 95.

[17] 2012 SIR, Appendix B at 1 (forecasting "total number of new wells and associated surface disturbance that will

evaluation. In the 2012 SIR, the Forest Service considered whether the new potential for horizontal well development would exceed the development footprint projected in the 2004 RFDS and 2006 Forest Plan EIS, and concluded it would not. But the 2012 SIR's horizontal well projection only includes "well sites that may take place on federal minerals or private minerals *underlying WNF surface lands*," disregarding the potential for private surface land development within the Wayne's administrative boundary.[18] The EA adopts the 2012 SIR's curtailed analysis.

While the EA attempts to respond to the Conservation Group's previously stated concerns regarding the Draft EA's total disregard of this issue, the Final EA not only downplays the significance and effects of private surface development, but its discussion of these effects is incoherent and inconsistent. On the one hand, the Final EA suggests that one of the purposes of the action is to enable private mineral development that could not otherwise occur without federal leasing. In rejecting the "NSO stipulation alternative"—which would have prohibited surface occupancy on all lands available for leasing—BLM noted that this alternative "would not fulfill the purpose and need" of the action as it "would unnecessarily constrain oil and gas occupancy, *especially in this highly fragmented landscape*, where the ability to cross federal land *may be critical* to enabling an operator to develop."[19] This explanation strongly suggests that BLM is not simply concerned with allowing operators to develop federal land and minerals, but is also concerned with allowing development of private land and minerals in the Wayne National Forest's "highly fragmented landscape."[20] As explained above, private mineral access in the Wayne National Forest cannot occur without BLM opening up federal minerals for leasing.

On the other hand, the Final EA's analysis of the No Action Alternative (i.e., no leasing) misleadingly suggests that private mineral development within the Wayne National Forest would occur regardless of federal leasing: "Without a lease (No Action Alternative), operators would not be authorized to access federal minerals at the time of development but could develop adjacent privately owned minerals, potentially resulting in drainage of federal minerals without benefit to the government. Therefore, not leasing the parcel would not meet the purpose of and need for the Proposed Action."[21]

Further, the Final EA greatly understates the importance of federal leasing in allowing private mineral development and fails to analyze the extent to which private oil and gas development could occur by (1) suggesting that private mineral and private surface development are merely *possible* effects of federal leasing (federal leasing "*may* lead to additional future mineral development on private land and private minerals within the area"[22]) and (2) treating private mineral and surface development as a "cumulative action" that would not necessarily directly result from federal leasing, but could happen coincidentally alongside federal mineral development.[23] By mischaracterizing private mineral and surface development as merely a "potential cumulative action," BLM purports to limit its analysis of these effects in the Final

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likely occur on federal surface over the next 10 years, regardless of mineral classification").
[18] 2012 SIR at 3.
[19] *Id.* at 30 (emphases added).
[20] *Cf.* Final EA at 17 (merely noting proposed action's purpose is "to support the development of oil and natural gas resources that are essential to meeting the nation's future needs for energy").
[21] Final EA at 30.
[22] Final EA at 120 (emphasis added).
[23] Final EA at 23.

EA's cursory "cumulative effects" section. *See* Final EA at 23 ("These lands and minerals [i.e., private inholdings with private minerals] were not included in the Proposed Action, but are acknowledged as a potential cumulative action."). Confusingly, however, elsewhere the EA purports to analyze private surface development as part of the proposed action, claiming that the EA's discussion of federal surface impacts also applies to private surface: "All anticipated resource impacts would be associated with the potential impacts of future oil and gas development on both the Forest Service lands and on adjacent private lands within the Marietta Unit."[24]

In any case, the EA fails to conduct any quantitative or meaningful qualitative analysis of air, water, soil, or other impacts from oil and gas development on the adjacent private lands, as further discussed below. Moreover, because the EA equivocates as to whether private surface development is a result of the proposed action or merely a cumulative action, it is unclear whether BLM and Forest Plan mitigation requirements discussed throughout the EA would apply to private surface.[25] To the extent the EA relies on the 2012 SIR, that document only addresses federal surface impacts and largely rests on mitigation requirements in the 2006 Forest Plan, which only applies to federal surface.[26] As a result, the entire EA is infected by BLM's failure to clearly analyze and disclose the private-land and private-mineral development impacts of leasing federal minerals in the Marietta Unit. By opening up federal *and* private minerals to drilling, and consequently overlying private surface, the proposed leasing could dramatically increase the total number of new well pads and wells, total surface disturbance, watershed impacts, cumulative air pollution emissions, public health risks, habitat loss, and disturbance to wildlife. Below are examples of impacts that are likely to result from opening up private mineral development, which BLM failed to consider.

a. The EA Fails to Analyze Disturbance from Private Surface Development

BLM's analysis of surface disturbance impacts from private development is cursory, if not completely lacking. This is especially troubling given that (1) development on private surface is more likely than development on federal surface (when federal and private mineral resources are pooled), as noted above,[27] and (2) BLM and Forest Service regulations would not necessarily mitigate the effects of such development, as the EA suggests.[28]

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[24] Final EA at 80.

[25] BLM's insertion of Appendix C in the Final EA, which merely discusses the state and federal agencies that have jurisdiction over non-federal land and non-federal minerals, does not make up for this shortfall. While BLM may take into account any regulations in its analysis of foreseeable impacts, it cannot claim – without analysis and quantification of potential effects and of effectiveness of potential mitigation or state regulations – that no significant impacts would result from its action simply because other agencies have regulatory authority. *See Nat'l Parks & Conservation Assoc. v. Babbitt*, 241 F.3d 722, 734 (9th Cir. 2001) ("A perfunctory description or mere listing of mitigation measures, without supporting analytical data, is not sufficient to support a finding of no significant impact." [citations and internal quotation marks omitted]); *Dine Citizens Against Ruining Our Env't v. Klein*, 747 F. Supp. 2d 1234, 1258 (D. Colo. 2010) (same).

[26] *See, e.g.*, 2006 Forest Plan FEIS at 3-115 ("Management of non-Federal lands are under the discretion of the landowner and conservation measures applied on NFS lands may not be used on these other ownerships.").

[27] *Cf.* EA at 30 (noting only that "operators could choose to locate potential future well pads and other infrastructure on land owned by the WNF").

[28] *Compare* Final EA at 23 ("There would be very little federal oversight in the development of private minerals under federal surface….") and EA at 120 (noting "federal oversight of mineral development on federal land/federal

The Final EA fails to analyze or quantify how much new private surface disturbance could result from new leasing, or where such disturbance could occur, among a host of other potential effects discussed further below. There is thus no evidentiary or scientific basis for the Final EA's conclusion that "[t]he amount of surface disturbance projected on the WNF with the use of high-volume, horizontal fracturing technology is within the amount of surface disturbance analyzed in the 2006 Forest Plan Final EIS (2012 SIR, p. 45, 47, 49)."[29] The 2006 Forest Plan Final EIS did not take into account private surface disturbance, nor did the 2006 Reasonably Foreseeable Development Scenario ("RFDS") include any projections of disturbance on adjacent private lands.[30] BLM clearly has the means to quantify this disturbance, as it has done in other Reasonably Foreseeable Development Scenarios.[31]

BLM also failed to take into account the disturbance on private surface that would be left unmitigated, which could impact streams, exacerbate the spread of invasive species, and increase habitat fragmentation. For example, although BLM intends to require operators to reclaim disturbed areas on federal surface, BLM will only require an operator using private land to have a land use agreement with the private owner, "which *may* detail minimum reclamation requirements."[32] The Final EA therefore does not provide adequate assurance that impacts from private surface disturbance will be mitigated to less than significant levels. *See Davis v. Mineta*, 302 F.3d 1104, 1125 (10th Cir. 2002)("Mitigation measures may be relied upon to make a finding of no significant impact only if they are imposed by statute or regulation, or submitted by an applicant or agency as part of the original proposal… As a general rule…agencies… should not rely on the possibility of mitigation as an excuse to avoid the EIS requirement.").

b. The EA Fails to Consider Impacts to Vegetation and Sensitive or Endangered Species Habitat from Development of Private Minerals / Private Lands

The EA failed to meaningfully analyze vegetation impacts on private lands. This missing analysis is important for determining potential habitat impacts on the Indiana bat and other bat species, which would be adversely affected by the removal of oak hickory and other suitable habitat. The Final EA notes that while "vegetative cover types on the federal lands are well delineated" —enabling BLM "to state where development may have different types of impact and where development would be restricted in order to protect plant and animal habitat and populations"—"[t]his is not true for the private lands."[33]

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minerals is more stringent than on private land/private minerals") *with* EA at 23 (suggesting that BLM and Forest Service have control over activities "no matter the ownership status of the minerals"), *id*. at 105 (noting "BLM and Forest Service would not approve water withdrawals that would draw down a surface waterbody to the extent that aquatic life would be measurably adversely impacted," without addressing whether this applies to well development on private surface), and *id*. at 57 (stating "when federal minerals are leased by BLM, all *surface* and downhole activities must comply with federal regulations," without noting BLM's limited authority over private surface development [emphasis added]).

[29] Final EA at 95.

[30] Final EA at 25.

[31] *See*, *e.g*, BLM, White River Field Office, Colorado Reasonably Foreseeable Development Scenario, 36 (2007) (quantifying number of wells and surface disturbance on private land within planning area); BLM, Grand Junction Reasonably Foreseeable Development Scenario (2012) ("The Study Area includes all lands within the Grand Junction Field Office boundary regardless of surface or mineral ownership.").

[32] Final EA at 102 (emphasis added).

[33] EA at 96.

The Final EA notes that for private lands, such analysis "may be done through aerial photo analysis and on-the-ground observation," but notes in conclusory fashion that a complete assessment of vegetative cover on the private lands would be prohibitively expensive.[34] Even if an analysis of the entire Marietta unit is too costly, this says nothing about whether such analysis can be done for the specific parcels offered in the December lease sale, or whether this analysis would even be done at the application for permit to drill ("APD") stage. Moreover, given the lack of existing information about baseline vegetation conditions, the severity of harm that oil and gas development could have on vegetation on private surface and suitable habitat for the Indiana bat is "highly uncertain," which requires preparation of an EIS. 40 C.F.R. § 1508.27(b)(5) (EIS must be prepared when an action's effects are "highly uncertain or involve unique or unknown risks"); *see also Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 732 (9th Cir. 2001) (preparation of EIS "mandated where uncertainty may be resolved by further collection of data" or where the collection of such data may prevent speculation on potential effects).

The EA includes a general discussion of potential loss of forest vegetation, such as in the oak-hickory and pine forests, from oil and gas development. The decline of oak-hickory in forest communities is not favorable for the endangered Indiana bat because oak-hickory species possess exfoliating bark, which makes the oak-hickory species suitable for roosting.[35] The EA, however, summarily dismisses these losses, concluding that vegetation loss associated with potential future oil and gas development would not be expected to adversely affect the sustainability of oak-hickory forest areas in the Marietta Unit "overall" because "[t]he 2006 Forest Plan goal for herbaceous or shrubby habitat in the Diverse Continuous Forest Management Area is 2 to 4%; an APD may not be approved that threatens to create open habitat in excess of that goal."[36] However, this does not account for vegetation loss associated with potential future oil and gas development of private mineral and private lands; Forest Plan goals do not apply to private surface. Indeed, the Final EA notes that "[e]ach separate private landowner would be responsible for setting the terms for land clearing and reclamation,"[37] suggesting that no regulatory agency would prevent Indiana bat habitat from being destroyed or would require it to be reclaimed.

Moreover, the EA's discussion of lease stipulations that target particular species that may be taken at the APD stage, fails to discuss whether these protections would apply to private lands. Numerous habitat and species protections that apply to federal surface do not apply to private lands. For example:

- Forest Plan Stipulations pertaining to species-related mitigation measures, e.g., Stipulation 10, 12, 13, and 14, are not reflected in state laws. There are no provisions in the state oil and gas laws that require, for example, species reviews, surveys, or other species-related mitigation measures.

[34] Final EA at 96.
[35] USDA Forest Service. Final Environmental Impact Statement for the Wayne National Forest 2006 Land and Resource Management Plan Appendix F1 Final Biological Assessment at F1-46.
[36] Final EA at 97.
[37] Final EA at 96.

- The Forest Plan requires "closed systems" for storing wastewater instead of wastewater ponds and prohibits netting, to protect the ESA-listed Indiana bat.[38] However, Ohio law allows wastewater pits to remain in operation throughout the producing life of a well, so long as standing wastewater is drained and removed at least every 180 days.[39] Ohio law does not prohibit the screening or netting of these pits.

- Forest Plan Stipulation 15, "Controlled Surface Use – Riparian areas," allows Forest Service to impose occupancy conditions to protect riparian areas in the Wayne. However, this stipulation is not reflected in state law and therefore would not apply to riparian areas on private surface. Ohio law contains only the waivable requirement that new wells and tank batteries not be located within fifty feet of a water body.[40]

- Ohio law does not require safety valves at stream crossings for gathering pipelines, in contrast to Forest Plan protections.[41]

The EA should have, but failed, to discuss the impacts of private surface activities on sensitive bat species and their habitat.

c. The EA Fails to Consider Private Land-Use Changes

The EA notes that "future mineral development would lead to construction of well pads, roads, and other supporting infrastructure."[42] Although these potential land use changes on federal land are required to be in conformance with "desired management objectives (such as vegetation and species) identified in the 2006 Forest Plan," the same cannot be said of private land, which would only need to be in conformance with "local planning and zoning requirements."[43] The EA does not analyze baseline private land use conditions surrounding the areas for lease (or even identify the specific areas available for leasing),[44] or consider the potential for private land-use changes, even though it is apparent that private oil and gas developers are eager to acquire federal minerals so that they can develop their private minerals, and are more likely to do so on private land.

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[38] 2012 Supplemental Information Report ("SIR") at 47.
[39] Ohio Administrative Code ("OAC") 1501:9-3-08(A).
[40] Ohio Revised Code ("ORC") 1509.021(L): "The location of a new well or a new tank battery of a well shall not be within fifty feet of a stream, river, watercourse, water well, pond, lake, or other body of water."
[41] 2012 SIR at 40 (noting SFW-ARR-17, which requires "appropriate technology on all pipelines that cross streams so that supply and flow can be shut off upon detection of a leak").
[42] Final EA at 81.
[43] Final EA at 81.
[44] Conservation Groups have put together their own map using data provided by the Forest Service to show where all 40,000 acres in the Marietta Unit potentially available for leasing are located. *See* Center Parcel Map (2017). According to Forest Service staff, this acreage could include minerals reserved by the private owner when the surface rights were transferred to federal ownership. If and when those reservations expire, they could eventually come under federal ownership. These minerals are considered federal minerals that could be leased in BLM's EA.

d. The EA Lacks Adequate Analysis of Surface Water and Groundwater Impacts

The EA is unclear regarding BLM's authority to mitigate surface water impacts of private surface development that would reach federal minerals. For example, the EA states that if some development were to occur on privately owned surface, "federal and state regulations do exist in order to address any potential concerns regarding contamination or spills. However, if the development occurs on private lands and pipelines or well development reaches federal minerals, the BLM would ensure that the construction of such well is in compliance with all applicable safety standards."[45] But the EA never actually identifies what authority BLM has over pipelines that reach federal minerals or well pads on private surface, or pipelines crossing private surface; nor does the EA identify which federal and state regulations would apply to spills.

The EA also mentions that the "BLM and Forest Service would not approve water withdrawals that would draw down a surface waterbody to the extent that aquatic life would be measurably adversely impacted, for example, by dewatering a stream enough to entrap fish or expose mussels to dry conditions in a stream that would normally have perennial flow."[46] Again, it is unclear what requirement or binding commitment prohibits BLM from disapproving such activities, and whether this requirement would apply to wells developed on private surface where they accessed federal minerals. As for the Forest Service, it can only prohibit water depletions from streams on Forest Service lands.[47] Indeed, "[t]here is no agency (federal or state) that regulates water withdrawals from streams and rivers in the State of Ohio."[48] Thus, the only limits on an operator's ability to withdraw water from private surface would be the private landowner's consent.[49]

The 2012 SIR assumes that the Forest Plan's prohibition on wastewater injection disposal would avoid the impacts of wastewater contamination. Again, this rule would not prohibit wastewater injection on private surface or outside the Wayne. Indeed, wastewater injection is already occurring on private surface within the Marietta Unit, [50] which could impact adjacent federal lands. Gaps in Ohio's regulation of wastewater injection could put surface and groundwater resources at risk.[51] For example, Ohio does not require monitoring of groundwater quality near injection wells or testing or disclosure of chemicals in waste before injecting it underground.[52]

BLM's failure to analyze the impacts of private surface development, or consider and analyze mitigation for private surface activities, violates NEPA, which requires discussion of all

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[45] Final EA at 27.
[46] Final EA at 105.
[47] *See* 2012 SIR at 29-30.
[48] 2012 SIR at 29.
[49] *See id*. 29-30.
[50] FracTracker Injection Well Map, *available at* http://maps.fractracker.org/3.13/?appid=2a68b20a338f464da12d6e8f1cb66c08&webmap=0f6bdbb82b1246f6a2d2d7a6c4c3bb74.
[51] Steinzor, Nadia & Bruce Baizel, Earthworks. Wasting away: Four states' failure to manage gas and oil field waste from the Marcellus and Utica Shale at 46-51 (April 2015), available at https://www.earthworksaction.org/files/publications/WastingAway-FINAL-lowres.pdf (providing overview of Ohio waste disposal problems) ("Steinzor 2015").
[52] *Id.* at 35-36.

indirect effects that are reasonably foreseeable, 40 C.F.R. § 1508.8, and of connected actions and cumulative impacts. *Id*. at § 1508.7 (cumulative impacts are impacts of "other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."); *id*. at § 1508.25(a) (actions are connected if they "[c]annot or will not proceed unless other actions are taken previously or simultaneously"); *see also Grand Canyon Trust v. FAA*, 290 F.3d 339, 342 (D.C. Cir. 2002) (EA "must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum"). BLM's failure to prepare an EIS without adequate assurances that the effects of increased private disturbance will be avoided or mitigated to less-than-significant levels also violates NEPA. The EA Bases Its Finding of No Significant Impacts on Inaccurate Estimates of Surface Disturbance for Well Pads, Compressor Stations, and Gathering Lines, in Violation of NEPA.

The EA's surface impact footprint estimates for well pad sites, compressor station sites, and gathering lines are significantly lower than empirical field data suggests, thereby precluding a complete disclosure and analysis of soil, water quality, vegetation, and wildlife impacts.

Gathering lines, which transport natural gas from the well to a central collection point, are the single largest source of surface disturbance associated with oil and gas development, yet neither the EA nor the underlying NEPA documentation account for their surface disturbance. The 2004 RFDS and 2012 SIR dismiss this class of impact out of hand, stating: "Given the long history of gas production in the WNF, there is already a well developed pipeline infrastructure in place which should minimize the need for lengthy gathering lines to service new wells."[53]

The EA offers a mere two passing statements on the subject of pipeline construction, stating only: "If the well produces natural gas, and the flowline is in the road, another 0.5 acres may be affected by flowline construction. … If the well is productive, additional land may be affected by pipeline construction."[54] The EA fails to elaborate on these statements, or quantify how much pipeline construction could result from a productive well.

This cursory treatment of gathering lines is wholly improper, particularly in light of ample evidence that gathering lines for horizontal well operations result in significant land clearing. According to one source, over two-thirds of the surface disturbance caused by horizontal well development in the Marcellus shale region, or about 19 acres per well pad site, is caused by the construction of gathering pipelines.[55] Similarly, an analysis of 122 horizontal well pads in Eastern Ohio found an average of over 17 acres of direct pipeline disturbance per well pad.[56] And separate, ongoing research in Eastern Ohio has found approximately 8.5 acres of

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[53] 2012 SIR, Appendix B at 7.
[54] Final EA at 26.
[55] The Nature Conservancy, Land Use and Ecological Impacts from Shale Development in the Appalachians, Summary Statement for DOE Quadrennial Energy Review Public Stakeholder Meeting Pittsburgh, PA July 21, 2014, available at http://energy.gov/sites/prod/files/2014/07/f17/pittsburg_qermeeting_minney_statement.pdf; *see also* Slonecker, E.T. et al., Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004–2010: USGS Open-File Report 2012–1154 at 26 (2012), available at https://pubs.usgs.gov/of/2012/1154/of2012-1154.pdf ("Pipeline construction was the source of most of the increase in forest patch number.") ("Slonecker 2012").
[56] *See* McClaugherty, Charles et al., Landscape Impacts of Infrastructure Associated with Utica Shale Oil and Gas Extraction in Eastern Ohio, 100th ESA Annual Meeting (Aug. 9-14, 2015), abstract available at http://esa.org/meetings_archive/2015/webprogram/Paper52636.html (873 ha of pipeline divided by 122 well pad

gathering line clearing for *every acre* of well pad; in areas with relatively low well pad density, ratios have averaged up to 14:1.[57]

Moreover, contrary to the EA's suggestion, it is unlikely that existing gathering line infrastructure on the Wayne could support future horizontal operations. Field studies conducted by The Nature Conservancy show that "the supporting [horizontal well] infrastructure is much larger in scale (24" diameter pipelines to gather gas from wells versus 2" or 4" pipelines in shallow fields)."[58] In the Marcellus region, gathering lines may range from 6 to 24 inches in diameter and may clear rights-of-way of 30 to 150 feet wide.[59] These are much larger than gathering lines used in shallow gas fields, which generally range from 2 to 6 inches in diameter.[60] Moreover, photographic documentation of fracking activities on private surface within the administrative boundary of the Marietta Unit shows that in many instances large swaths of forested land are being razed for the construction and burial of gathering lines.[61]

Another oversight of the 2012 SIR's horizontal well site disturbance estimates is the apparent failure to account for "Limits of Disturbance" (LOD) for each well pad, i.e., the clearing and earth-moving impacts that occur immediately adjacent to the pad itself, not including access roads, gathering lines, and transmission lines. The 2012 SIR estimates that horizontal well pad sites average a total of 3-5.5 acres of disturbance during construction and prior to reclamation, and 0.68-1.38 acres during the production phase, after reclamation.[62] A review of 122 horizontal wells in East-Central Ohio, however, revealed that surface disturbance for LOD *alone* averaged 6.9 acres.[63] Ongoing research of 285 well pads in Eastern Ohio has found LODs of 10-14 acres per pad.[64]

Furthermore, the 2012 SIR grossly underestimates surface disturbance for compressor stations at 1 to 5 acres.[65] Ongoing research in East-Central Ohio suggests that compressor station sites tend to range between 15 to 30 acres in size.[66] It is also not clear whether the 2012 SIR and 2006 EIS consider the surface footprints of freshwater or wastewater retention ponds. The

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sites) ("McClaugherty 2015").

[57] Information obtained from Ohio Environmental Council attorney Nathan Johnson's January 28, 2016 conversation with Ted Auch, PhD, The FracTracker Alliance, relating to his ongoing landscape impact research in East-Central Ohio in collaboration with Chuck McClaugherty's lab at the University of Mt. Union (examining 285 well pads and associated infrastructure); *see also* Auch, Ted, FracTracker Alliance, Letter re Land-Use Footprint of High Volume Hydraulic Fracturing in Eastern Ohio (May 2016).

[58] Johnson, Nels, Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind, The Nature Conservancy – Pennsylvania Chapter and Pennsylvania Audubon at 9 (2010), available at http://www.nature.org/media/pa/tnc_energy_analysis.pdf ("Johnson 2010").

[59] Johnson, Nels, et al., Pennsylvania Energy Impacts Assessment, Report 2: Natural Gas Pipelines. The Nature Conservancy – Pennsylvania Chapter at 1 (2011), available at http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/pennsylvania/ng-pipelines.pdf ("Johnson 2011").

[60] *Id*.

[61] Exhibit C ¶ 17 (citing Exs. F, G, H, I, J, K, L, and M attached thereto).

[62] 2012 SIR at 4.

[63] McClaugherty 2015.

[64] Auch Comm., *supra* n.57; *see also* Auch Letter, *supra* n.57.

[65] 2012 SIR at 2, Table 1.

[66] Auch Comm., *supra* n.57; *see also* Auch Letter, *supra* n.57.

enormous water use and wastewater generation associated with hydraulic fracturing and horizontal drilling could foreseeably result in the development of such ponds.

The EA's inaccurate surface disturbance analysis results in a failure to fully disclose and analyze the leasing proposal's significant effects on numerous resources, including water quality, scenic resources, vegetation, and wildlife. In particular, increased surface disturbance would exacerbate existing habitat fragmentation and edge effects on wildlife. In a recent review of 242 Marcellus well pads, researchers found "[w]ell pads occupy 3.1 acres on average while the associated infrastructure (roads, water impoundments, pipelines) takes up an additional 5.7 acres, or a total of nearly 9 acres per well pad."[67] This study found an average of 21 additional acres of edge effect disturbance, for an average of 30 acres total of both direct and indirect interior forest habitat loss per well pad.[68] Another study found that each mile of a 100-foot right-of-way directly disturbs 528,000 square feet or approximately 12 acres and creates an additional 72 acres of new forest edges.[69]

A more highly fragmented forest landscape could have far-reaching effects not discussed in the EA. New open corridors inhibit the movement of some species, such as forest interior nesting birds, which are reluctant to cross openings where they are more exposed to predators.[70] Fragmentation effects from conventional oil and gas development on the Allegheny National Forest greatly reduced core forest habitat type and negatively impacted neotropical migrant songbird species, while benefitting less desirable species.[71]

The 2006 Forest Plan and EIS, 2012 SIR, and EA severely underestimate the potential surface impacts of well pad site development and associated infrastructure—both the immediate effects of land clearing and earthmoving, and the resulting surface runoff, industrialization, habitat fragmentation, edge effects, and species impacts, in violation of NEPA. *See* 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1502.24 (agency "shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements").

2. The EA Fails to Address a Host of Environmental Impacts Related to Fracking

The EA fails to mention or consider information on the environmental and public health risks of fracking.[72] For example, the environmental and public heath risks highlighted by the following studies must be considered, but were ignored:

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[67] Johnson 2010 at 9-11.
[68] *Id.*
[69] Johnson 2011 at 5.
[70] *Id*. at 6; *see also* Slonecker 2012 at 2, available at https://pubs.usgs.gov/of/2012/1154/of2012-1154.pdf (noting fragmentation resulting in loss of migration corridors). 158 bird species inhabit the Wayne National Forest. *See* USFS, Watchable Wildlife, https://www.fs.usda.gov/detail/wayne/about-forest/?cid=fsm9_006107; *see also* USFS, About the Forest, https://www.fs.usda.gov/detailfull/wayne/about-forest/?cid=fsm9_006053.
[71] Thomas, Emily H. et al. Conventional oil and gas development alters forest songbird communities, The Journal of Wildlife Management, 78 (2), 293-306, abstract available at DOI: 10.1002/jwmg.662.
[72] According to the U.S. Energy Information Administration, development of the Marcellus and Utica shale plays is a main driver of growth in total U.S. shale gas production. Fracking of these shale plays underlying the Wayne National Forest is therefore reasonably foreseeable. *See* USEIA, Annual Energy Outlook 2017, available at https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf; USEIA Drilling Productivity Report For Key Tigght Oil and Shale Gas Regions (April 2017), available at https://www.eia.gov/petroleum/drilling/pdf/dpr-full.pdf.

Risks to Drinking Water Sources

The EPA recently completed its study on the impacts of fracking on drinking water resources, which found scientific evidence that hydraulic fracturing activities can impact drinking water resources under some circumstances.[73] The report identifies certain conditions under which impacts from hydraulic fracturing activities can be more frequent or severe.[74] The EPA identified a number of risk factors that may increase the risks of drinking water contamination, all of which are present in the Wayne National Forest:

- **Risk factor 1:** Water withdrawals for hydraulic fracturing in times or areas of low water availability, particularly in areas with limited or declining groundwater resources.

  The Wayne National Forest is an area of limited water resources in terms of both groundwater and surface waters, compared to the enormous water demands of fracking in the Utica and Marcellus shales. In Ohio, the average amount of water used in fracking has increased from 5.6 million gallons per well in 2011 to 7.6 million gallons in 2014.[75] FracTracker has found that "[f]or each lateral that is fractured in Ohio, ~6.6 million gallons of fresh water are needed, and this figure, too, is increasing by 1.6 million gallons per year. This trend equates to an increase of 7,777 gallons of water used for every extra foot the lateral is extended out into the ground."[76] However, because "[t]here is no agency (federal or state) that regulates water withdrawals from streams and rivers in the State of Ohio," the only limits on an operator's ability to withdraw water would be landowner's consent.[77] According to EPA, without management of the rate and timing of withdrawals, surface water withdrawals have the potential to affect both drinking water quantity and quality, especially in seasonal low-flow periods.[78] In Ohio's Marcellus and Utica Shales, reuse of wastewater is uncommon.[79]

- **Risk factor 2:** Spills during the handling of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources.

  Enormous volumes of wastewater are produced in the completion of horizontal wells in Ohio, and major spills have occurred in the state. For example:

  - In 2010, a fracturing flowback pit was cut by a track hoe in 2010, causing more than 1.5 million gallons of fluid to spill into the environment.[80]

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[73] USEPA, Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (2016) ("USEPA 2016").
[74] *See id*. at ES-3.
[75] Arenschield, Laura. Drillers Using more water to frack Ohio shale, Columbus Dispatch (Feb. 8, 2016), available at http://www.dispatch.com/content/stories/local/2016/02/07/drillers-using-more-water-to-frack-ohio-shale.html#.
[76] Auch, Ted et al. Fractracker Alliance, The Ultimate Price of PA State Forest Drilling (Nov. 4, 2015), available at https://www.fractracker.org/2015/11/pa-state-forest-drilling/.
[77] 2012 SIR at 29.
[78] EPA 2016 at 4-37.
[79] EPA 2016 at 4-36.
[80] ODNR, Notice of Violation No. 1278508985 (June 21, 2010).

- In 2008, the back wall of a pit in Ohio gave way, causing pit contents to spill and flow towards a creek.[81]

- In June 2014, the Statoil Eisenbarth well pad located in Monroe County, close to the proclamation boundary of the Marietta Unit, caught fire and took nearly a week to completely extinguish. "As a result of fire-fighting efforts and flow back from the well head, significant quantities of water and unknown quantities of products on the well pad left the Site and entered an unnamed tributary of Opossum Creek that ultimately discharges to the Ohio River." [82] The runoff killed approximately 70,000 fish in a 5-mile long fish kill. Opossum Creek, the location of the Eisenbarth fish kill, is partially located within the proclamation boundary of the Marietta Unit.

Frack chemicals and wastewaters may have chronic effects on aquatic organisms aside from immediate lethal effects, including endocrine-disrupting effects,[83] and impacts on microbial community structure and functioning in sediments and stream waters, altering nutrient cycling and antibiotic resistance.[84]

A new study analyzing spill records in several states (Colorado, New Mexico, North Dakota, and Pennsylvania) show spills are a chronic risk of oil and gas development: 2-16% of wells report a spill each year, while 75-94% of spills occur within the first three years of well life when wells were drilled, completed, and had their largest production volumes.[85] According to another nationwide review of oil and gas spills since 2009, 2,500 spills have been reported to have affected groundwater, but this is likely an undercount as many oil and gas agencies don't track whether spills affect water, or even spills.[86] Overall, 10,348 spills, blowouts and other mishaps at oil and gas sites occurred in 2015; 11,283 such events occurred in 2014.[87] At least 76 spills occurred in Ohio in 2015, 43 of which affected water resources.[88]

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[81] ODNR, Notice of Violation No. 2016754140 (May 16, 2008).
[82] *See, e.g.*, U.S. Environmental Protection Agency Pollution/Situation Report, Statoil Eisenbarth Well Response, POLREP #1, *available at* http://www.theoec.org/sites/default/files/Eisenbarth%20well%20pad%20fire.pdf; Junkins, Casey, *EPA: 70K Fish, Aquatic Life Killed*, Wheeling Intelligencer, July 22, 2014, *available at* http://www.theintelligencer.net/page/content.detail/id/607167.html; Ohio Environmental Protection Agency, Directors Final Findings & Orders NPDES In the Matter of Statoil USA Onshore Properties, Inc. (November 6, 2015).
[83] He, Yuhe, et al., Effects on Biotransformation, Oxidative Stress, and Endocrine Disruption in Rainbow Trout (Oncorhynchus mykiss) Exposed to Hydraulic Fracturing Flowback and Produced Water, Environ. Sci. Technol., (2017) 51, 940−947, doi: 10.1021/acs.est.6b04695.
[84] Fahrenfeld, N.L., Shifts in microbial community structure and function in surface waters impacted by unconventional oil and gas wastewater revealed by metagenomics, Science of the Total Environment, 580 (2017) 1205–1213, http://dx.doi.org/10.1016/j.scitotenv.2016.12.079.
[85] Patterson, Lauren A. et al. Unconventional Oil and Gas Spills: Risks Mitigation Priorities, and State Reporting Requirements, Environ. Sci. Technol., 51(5), pp 2563–2573 (2017), doi: 10.1021/acs.est.6b05749.
[86] Soraghan, Mike & Pamela King, Drilling mishaps damage water in hundreds of cases, Energywire (Aug. 8, 2016), available at https://www.eenews.net/stories/1060041279.
[87] *Id*.
[88] *Id*.

Recently, in Pennsylvania, a shale gas driller was fined $1.2 million when a wastewater impoundment leaked and contaminated the drinking water of five Westmoreland County families.[89] The families are still without adequate, permanent water supplies and still depend on bottled water.

One of the parcels offered in the December lease sale, OHES 058311, is within the Little Muskingum River Basin, which contains exceptionally high-quality surface waters important for aquatic species.[90]

- **Risk factor 3:** Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources.

  Ohio only recommends monthly monitoring of "mechanical integrity" of Class II wastewater injection wells unless doing so is "not feasible" for operators.[91] In 2007, a frack well with insufficient and improperly placed cement led to contamination of 26 drinking water wells in Brainbridge Township, Ohio.[92]

- **Risk factor 4:** Injection of hydraulic fracturing fluids directly into groundwater resources.

  An EPA report has singled out Ohio for not requiring operators disposing of waste to reveal its chemical content, increasing the risk of groundwater contamination by harmful chemicals.[93]

- **Risk factor 5:** Discharge of inadequately treated hydraulic fracturing wastewater to surface water.

  Ohio Revised Code 1509.22 allows facilities to "store," "recycle," "treat," "process," and "dispose" of oil and gas wastewater if done pursuant to a permit or order granted by the Ohio Division of Oil & Gas Resources Management (DOGRM). Although this statute directs DOGRM to adopt rules governing the aforesaid activities, the state of Ohio has never adopted the applicable rules. As a result, the discharge or disposal of recycled, treated, or processed oil and gas wastewater is not subject to any enumerated state standards or prohibitions. Nor are there any applicable state standards governing

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[89] Hopey, Don, Shale gas driller fined $1.2M for contaminating drinking water in Westmoreland, Pittsburgh Post-Gazette (Feb. 28, 2017), available at http://www.post-gazette.com/local/westmoreland/2017/02/28/WPX-Energy-Appalachia-shale-gas-company-fined-Pennsylvania-water-contamination-Westmoreland-County/stories/201702280305.

[90] Exhibit B (citing Ex. A attached thereto); Ohio EPA, Beneficial Use Support Document Little Muskingum River Basin (2016), available at http://epa.ohio.gov/Portals/35/rules/Little%20Musky.pdf.

[91] Steinzor, Nadia & Bruce Baizel, Earthworks. Wasting away: Four states' failure to manage gas and oil field waste from the Marcellus and Utica Shale (April 2015), 34, available at https://www.earthworksaction.org/files/publications/WastingAway-FINAL-lowres.pdf.

[92] USEPA 2016 at 6-28.

[93] *Id*. at 36.

treatment methods, volumes, or chemical parameters applicable to recycled, treated, or processed wastewater.

Moreover, Ohio Revised Code 1509.226 allows Ohio political subdivisions to authorize the discharge of oil and gas wastewater on local roadways for dust and ice control purposes. Runoff of this wastewater could potentially contaminate surface waters.

- **Risk factor 6:** Disposal or storage of hydraulic fracturing wastewater in unlined pits resulting in contamination of groundwater resources.

Ohio does not have specific standards for pits, requiring only that they "prevent the escape" of waste substances. *See* ORC § 1509.22(C)(2).[94] Pit liners are not required.[95] Between 1983 and 2007, 63 incidents of spills contaminating groundwater were caused by leaks from unlined pits.[96] Improper construction or maintenance of production pits was the primary cause of groundwater contamination, accounting for nearly 44% (63) of all documented contamination incidents.[97]

Public Health Risks

Due to the frequent and heavy use of chemicals in fracking operations, proximity to fracked wells is associated with higher rates of cancer, birth defects, poor infant health, and acute health effects for nearby residents who must endure long-term exposure:

- In one study, residents living within one-half mile of a fracked well were significantly more likely to develop cancer than those who live more than one-half mile away, with exposure to benzene being the most significant risk. [98]

- A new study shows a link between proximity to oil and gas development and childhood leukemia. Researchers found children diagnosed with acute lymphocytic leukemia were more likely to live in areas of high-density oil and gas development compared to children with other types of cancer.[99]

- Another study found that pregnant women living within 10 miles of a fracked well were more likely to bear children with congenital heart defects and possibly neural tube defects.[100] A separate study independently found the same pattern; infants born near fracked gas wells had more health problems than infants born near sites that had not yet conducted fracking.[101, 102] The study analyzed birth records from 2004 to 2011 to assess

[94] Steinzor 2015 at 16.
[95] Richardson, Nathan, The State of State Shale Gas Regulation, Resources for the Future, 51 (June 2013).
[96] USEPA 2016 at 8-44.
[97] Steinzor 2015 at 14.
[98] McKenzie, L. et al., Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources, 424 Science of the Total Environment 79 (2012) ("McKenzie 2012").
[99] McKenzie, Lisa M., et al., Childhood hematologic cancer and residential proximity to oil and gas development, PLoS ONE 12(2): e0170423 (2017), http://dx.doi.org/10.1371/journal.pone.0170423.
[100] McKenzie, L. et al., Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, Advance Publication Environmental Health Perspectives (Jan. 28, 2014), http://dx.doi.org/10.1289/ehp.1306722 ("McKenzie 2014").
[101] Hill, Elaine L., Unconventional Natural Gas Development and Infant Health: Evidence from Pennsylvania,

the health of infants born within a 2.5-kilometer radius of natural-gas fracking sites. They found that proximity to fracking increased the likelihood of low birth weight by more than half, from about 5.6 percent to more than 9 percent.[103] The chances of a low Apgar score, a summary measure of the health of newborn children, roughly doubled, to more than 5 percent.[104]

- Another recent Pennsylvania study found a correlation between proximity to unconventional gas drilling and higher incidence of lower birth weight and small-for-gestational-age babies.[105]

- A recent study found increased rates of cardiology-patient hospitalizations in zip codes with greater number of unconventional oil and gas wells and higher well density in Pennsylvania.[106] The results suggested that if a zip code went from having zero wells to well density greater than 0.79 wells/km^2, the number of cardiology-patient hospitalizations per 100 people (or "cardiology inpatient prevalence rate") in that zip code would increase by 27%. If a zip code went from having zero wells to a well density of 0.17 to 0.79 wells/km^2, a 14% increase in cardiology inpatient prevalence rates would be expected. Further, higher rates of neurology-patient hospitalizations were correlated with zip codes with higher well density.

- A new study found that prenatal exposure of female mice to chemicals associated with fracking and unconventional oil and gas development had adverse effects on reproductive and developmental health, including altered hormone levels, increased body weights, altered uterine and ovary weights, increased heart weights and collagen deposition, disrupted development of ovary follicles, and other adverse health effects. Even the lowest dosage exposures—equivalent to concentrations reported in drinking water sources in drilling regions—caused adverse health effects.[107]

- Recently published reports indicate that people living in proximity to fracked gas wells commonly report skin rashes and irritation, nausea or vomiting, headache, dizziness, eye irritation and throat irritation.[108]

Cornell University (2012).

[102] Whitehouse, Mark, *Study Shows Fracking is Bad for Babies*, Bloomberg View, Jan. 4, 2014, *available at* http://www.bloombergview.com/articles/2014-01-04/study-shows-fracking-is-bad-for-babies.

[103] *Id*., citing Janet Currie of Princeton University, Katherine Meckel of Columbia University, and John Deutch and Michael Greenstone of the Massachusetts Institute of Technology.

[104] *Id.*

[105] Stacy, Shaina L. et al. (2015) Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania. PLoS ONE 10(6): e0126425. doi:10.1371/journal.pone.0126425, *available at* http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0126425.

[106] Jemielital, T. et al. Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates. PLoS ONE 10(7): e0131093, *available at* http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0131093.

[107] Kassotis, Christopher D., et al., Adverse Reproductive and Developmental Health Outcomes Following Prenatal Exposure to a Hydraulic Fracturing Chemical Mixture in Female C57Bl/6 Mice, Endocrinology, 157(9):3469–3481 (2016), doi: 10.1210/en.2016-1242.

[108] Rabinowitz, P.M. et al., Proximity to Natural Gas Wells and Reported Health Status: Results of a Household Survey in Washington County, Pennsylvania. Environmental Health Perspectives Advance Publication (2014); Bamberger, Michelle and R.E. Oswald, Impacts of Gas Drilling on Human and Animal Health, 22 New Solutions 51 (2012); Steinzor, N. et al., Gas Patch Roulette: How Shale Development Risks Public Health in Pennsylvania,

- A survey found agreement among experts that a minimum setback of a quarter mile from oil and gas development is necessary to protect public health. [109] Half of the experts recommended a 1 to 1 ¼ mile setback. The panel also agreed that additional protections are necessary for vulnerable populations such as children and the elderly.[110]

- In Texas, a jury awarded nearly $3 million to a family who lived near a well that was hydraulically fractured.[111] The family complained that they experienced migraines, rashes, dizziness, nausea and chronic nosebleeds. Medical tests showed one of the plaintiffs had more than 20 toxic chemicals in her bloodstream.[112] Air samples around their home also showed the presence of BTEX — benzene, toluene, ethylbenzene and xylene —colorless but toxic chemicals typically found in petroleum products.[113]

Given these known health risks the EA should have, but fails to, analyze site-specific impact on towns and municipalities located near the proposed parcels. Specifically, the EA should have analyzed public health impacts to residents of Paden City, which is located less than four miles from parcel OHES 058308, and less than six miles from parcels the remaining parcels.[114]

Seismic Risks

New studies have shown that fracking and not just wastewater injections can induce earthquakes. Induced seismicity has been linked to fracking events in Ohio, Oklahoma, and Canada.[115] Indeed, a 2015 study showed that 77 earthquakes occurring in March 2014 near Youngstown, Ohio triggered a microfault previously unknown to operators and regulators, including a magnitude 3.0 earthquake.[116] The EA lacks any meaningful discussion of these risks, especially given that the locations of deep, active faults in Ohio are unknown. According to the Ohio Department of Natural Resources:

Earthworks Gas & Oil Accountability Project (2012).

[109] Brown, David et al. The Problem of Setback Distance for Unconventional Oil & Gas Development: An analysis of expert opinions. Southwest Pennsylvania Environmental Health Project Technical Reports, Issue 2 (May 9, 2016).

[110] *Id*.; *see also* Webb, Ellen et al. Potential hazards of air pollutant emissions from unconventional oil and natural gas operations on the respiratory health of children and infants, Review Envtl. Health 2016, available at http://ecowatch.com/wp-content/uploads/2016/05/fracking_study.pdf (suggesting greater protection from unconventional oil and gas development necessary for children and infants).

[111] *Parr v. Aruba Petroleum, Inc*., Case No. 11-01650-E (Dallas Cty., filed Sept.13, 2013).

[112] Deam, Jenny, *Jury Awards Texas family Nearly $3 million in Fracking Case*, Los Angeles Times (Apr. 3, 2014) http://www.latimes.com/nation/la-na-fracking-lawsuit-20140424-story.html.

[113] *Id*.

[114] Center Parcel Map; (also available at http://center.maps.arcgis.com/apps/View/index.html?appid=0c1b3d15cceb48e4874dab091d627f69)

[115] Arenschield, Laura, Study ties 77 Ohio earthquakes to two fracking wells, Columbus Dispatch (Jan. 8, 2015) ("Arenschield 2015"), available at http://www.dispatch.com/content/stories/local/2015/01/08/Research-ties-Ohio-quakes-to-fracking.html; Skoumal, Richard, et al., Earthquakes Induced by Hydraulic Fracturing in Poland Township, Ohio (2015), available at http://www.bssaonline.org/content/early/2015/01/01/0120140168.abstract; Soraghan, Mike, Okla. officials link some quakes to fracking, E&E News Energywire (Dec. 12, 2016), available at http://www.eenews.net/energywire/stories/1060047006/; Gronewold, Nathaniel, New research suggests fracking triggered active faults, E&E News Energywire (November 28, 2016), available at http://www.eenews.net/energywire/stories/1060046240/; .

[116] Arenschield 2015.

> The origins of Ohio earthquakes, as with earthquakes throughout the eastern United States, are poorly understood. Those in Ohio appear to be associated with ancient zones of weakness in the Earth's crust that formed during rifting and continental collision events about a billion years ago. These zones are characterized by deeply buried and poorly known faults, some of which serve as the sites for periodic release of strain that is constantly building up in the North American continental plate due to continuous movement of the tectonic plates that make up the Earth's crust. [117]

On April 2, 2017, a 3.0 earthquake occurred in the Marietta Unit of the Wayne National Forest near Graysville, a site within five miles of eight Utica shale fracking sites.[118] This area of southeastern Ohio does not have a long history of earthquake activity.[119] Fracking operations within the vicinity of the earthquake's epicenter were suspended, and Ohio Department of Natural Resources is investigating whether fracking may have caused the earthquake. BLM must analyze the potential for increased fracking and wastewater disposal in this area to cause seismic activity and mitigation measures to reduce these risks.

Vegetation and Soil Impacts

Razing large areas of the forest will be required to allow the development of well pads, pipelines, compressor stations, roads, and wastewater pits. Such land-clearing could also involve the removal of mountaintops or hilltops in the highly rugged and hilly landscape of the Marietta Unit, and the clearing of steep slopes for the construction and burial of gathering lines connecting hilltop wellpads to compressor stations and other centralized distribution points. These practices have recently been documented on private surface in the Marietta Unit,[120] and could result in landslides, erosion, and runoff pollution and sedimentation. Such risks have never been addressed or analyzed in the EA, 2012 SIR, or 2006 Forest Plan EIS. It is also unclear where operators would store or dispose mountaintop-removal waste—mountaintop-removal waste from coal mining is commonly dumped into streams in Appalachia.

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The EA must address the unique risks and impacts of fracking but fails to do so. *See Hayes v. Chaparral Energy, LLC*, 180 F. Supp. 3d 902, *28-*29 (N.D. Okla. 2016) (failure to address impacts of fracking in EA violated NEPA), *vacated as moot by Hayes v. Osage Minerals Council*, No. 16-5060, 2017 U.S. App. LEXIS 11780 (10th Cir. June 30, 2017). Further, BLM cannot tier to a non-NEPA document—the 2012 SIR—for discussion of these impacts. 40 C.F.R. § 1508.28 (noting that tiering under NEPA is appropriate only when the initial broader analysis is found in an EIS). BLM's failure to prepare an EIS regarding these serious impacts to public

[117] http://geosurvey.ohiodnr.gov/earthquakes-ohioseis/seismic-risk-in-ohio
[118] Renault, Marion, Ohio investigates cause of weekend earthquake in drilling region, Columbus Dispatch (April 4, 2017) ("Renault 2017"), available at http://www.dispatch.com/news/20170404/ohio-investigates-cause-of-weekend-earthquake-in-drilling-region; *see also* Center for Biological Diversity, Parcel Map (2017).
[119] Renault 2017.
[120] Exhibit C ¶ 15 (citing Exs. B & C attached thereto).

health and safety and Wayne National Forest resources also violates NEPA. Courts have recognized that fracking poses unique risks that warrant supplemental analysis in an EIS. *See Ctr. for Biological Diversity v. BLM*, 937 F. Supp. 2d 1140, 1157-59 (N.D. Cal. 2013); *Los Padres ForestWatch v. United States BLM*, 2016 U.S. Dist. LEXIS 138782, *33-*35 (C.D. Cal. Sept. 6, 2016). Indeed, recently, both the Texas National Forests and the Los Padres National Forest in southern California halted new oil and gas leasing in the forests to address concerns about fracking in supplemental environmental reviews.[121] BLM's failure to analyze the unique risks and impacts of fracking and prepare an EIS is arbitrary and capricious.

3. BLM Failed to Adequately Address Potential Impacts to Threatened and Endangered Species, as Required by NEPA

BLM failed to adequately address in the EA the potential impacts from the proposed oil and gas leasing on species that are federally designated as threatened or endangered with extinction, including the Indiana bat, Northern long-eared bat, fanshell, pink mucket pearly mussel, sheepnose mussel, and snuffbox mussel.

In determining whether NEPA requires an EIS for a proposed action, agencies must consider the degree to which the action may adversely affect threatened or endangered species, or their critical habitat. 40 C.F.R. § 1508.27(b)(9). The EA failed to provide the required hard look at the potential impacts to listed species and their habitat.

a. The EA Does Not Properly Document Baseline Conditions for Species Within the Areas for Lease

In order to properly assess the potential environmental impacts of a proposed action, it is first necessary to assess the affected environment. *See* 40 C.F.R. § 1502.15. It remains unclear, however, whether surveys for the Indiana bat, Northern long-eared bat, and other threatened and endangered species and their habitat have been performed on the Marietta Unit. The EA only indicates that BLM "conducted site visits on October 26 and 27, 2015 within portions of the Marietta Unit that have already been requested for leasing to document the physical characteristics of the area and collect information on baseline conditions."[122] These limited visits on "portions" of the areas that have "already been requested for leasing" do not provide a sufficient basis to document baseline conditions and identify issues of concern for all areas of the Marietta Unit in which leasing is proposed. Indeed, it is entirely unclear where all 40,000 acres that could be leased are located in the Marietta Unit, as the EA does not provide any maps or description of these locations.

[121] U.S. Forest Service, Letter to U.S. Fish & Wildlife Service Re Los Padres National Forest Leasing & Enclosure (U.S. Forest Letter to BLM) (Nov. 18, 2016) ("The Forest Service's 2005 ROD and FEIS…did not address environmental impacts of fracking…. I believe that voluntary supplementation of our environmental analysis to address fracking would further the purposes of the National Environmental Policy Act"); U.S. Forest Service, Letter to BLM Re Texas National Forests (withdrawing consent to new leasing in Texas National Forests in light of "environmental concerns surrounding the offering of 31,169.19 acres of land for oil and gas leasing" and noting Forest Service "wishes to evaluate these concerns to see whether changes are warranted to either the availability of these parcels for leasing or the conditions of surface occupancy") (Feb. 18, 2016).

[122] Final EA at 19.

Without performing such surveys in advance, appropriate stipulations for the protection of sensitive wildlife (or other resources) may be lacking, and it may be too late to include them when site-specific drilling is proposed. Under BLM's interpretation of its regulations, absent a no surface occupancy stipulation, a lessee cannot be prohibited entirely "from surface use of the leased parcel once its lease is final." *See N.M. ex rel. Richardson v. BLM*, 565 F.3d 683, 718 (10th Cir. 2009) (citing 43 C.F.R. § 3101.1-2 ["A lessee shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to: Stipulations attached to the lease . . . [and other] reasonable measures . . . ."]); *see also* BLM Handbook H-1624-1 ("By law, these impacts [from oil and gas development] must be analyzed before the agency makes an irreversible commitment. In the fluid minerals program, this commitment occurs at the point of lease issuance.").

b. The EA Fails to Adequately Analyze Impacts to the Indiana Bat

BLM acknowledges in the EA that the Indiana bat "is well-documented on all units of the [Wayne National Forest] and is present year-around."[123] Moreover, BLM acknowledges that oil and gas activities "are likely to adversely affect Indiana bat."[124] The EA, however, devotes only three sentences to address the potential impacts of the proposed action on this endangered species.[125] Remarkably, BLM neglects to even mention white-nose syndrome, which is widely recognized as the greatest threat to the Indiana bat. As recognized by the Forest Service, "[w]hite-nose syndrome has caused extremely high mortality in six bat species, including the endangered Indiana bat."[126] BLM also neglects to mention how climate change may impact the habitat for the Indiana bat. Climate change is expected to result in increasing temperatures throughout the Midwest, which would impact the temperature-sensitive Indiana bat.[127]

Finally the EA also fails to discuss or analyze the dramatic reductions in Indiana bat populations documented by the FWS in the recently released 2017 Indian Bat (*Myotis sodalist*) Population Status Update.[128] The Status Update provides an overview of Indiana bat population trends over time by state and region. The Status Update shows a range-wide population decline of 3.5% from 2015-2017, the most recent review period.[129] Over that same time period Ohio has experienced a 39.9% decline in Indiana bat populations.[130] The Status Update also shows that Ohio is not the only state experiencing dramatic bat population decline; Vermont, West Virginia, and Tennessee have seen Indiana bat populations decline by 64%, 54%, and 48% respectively over the same time period.[131] In fact, sixteen of the eighteen states studied have seen declines in

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[123] Final EA at 48.
[124] *Id.* at 99.
[125] *Id*.
[126] http://www.fs.fed.us/research/invasive-species/terrestrial-animals/white-nose-syndrome.php
[127] Pryor, S. C., et al., Ch. 18: Midwest. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 418-440 (2014), doi:10.7930/J0J1012N; *see also* n.127 below & accompanying text.
[128] U.S. Fish and Wildlife Service, 2017 Indian Bat (*Myotis sodalist*) Population Status Update, (available at https://www.fws.gov/Midwest/endangered/mammals/inba/pdf/2017IBatPopEstimate5July2017.pdf). (Hereafter "Status Update").
[129] *Id.* at Table 3.
[130] *Id.*
[131] *Id.*

Indiana bat populations from 2015-2017.[132] The EA does not consider the recent dramatic decline in bat populations in Ohio over the last two years and therefore fails to adequately address the potential impacts of fracking to weakened Indiana bat populations as required by NEPA.

Without considering the impacts of the proposed action in the context of these critically important threats, along with the effects of private surface and private mineral development activities, BLM has failed to take the required hard look and its conclusion that the proposal will not have measurable negative impacts is unsupported.

c. The EA Fails to Adequately Analyze Impacts to the Northern Long-Eared Bat

According to the EA, the Marietta Unit "contains ample suitable foraging and roosting habitat" for the northern long-eared bat.[133] Unlike its analysis for the Indiana bat, BLM recognized in the EA that white-nose syndrome is the primary threat to the northern long-eared bat.[134] As with the Indiana bat, however, BLM failed to consider how climate change may already be impacting this species and its habitat.

In assessing potential impacts to the northern long-eared bat from the proposed action, BLM stated that tree removal may result in impacts to individuals.[135] BLM failed to consider, however, the significance of this loss of trees in the context of the ongoing threats from white-nose syndrome and climate change, as well as private surface development. Moreover, BLM failed to consider how the proposed leasing and drilling activities could fragment the bat's remaining habitat for spring staging/fall swarming and foraging, disrupt breeding and foraging patterns, pollute and degrade the bat's drinking water sources, and result in death traps for bats in the form of wastewater pits.

d. The EA Fails to Adequately Analyze Impacts from Water Depletion, Surface Disturbance, and Toxic Spills From Horizontal Drilling that Will Harm Aquatic Species

BLM states in the EA that the fanshell and pink mucket pearly mussel are not documented on the Wayne National Forest.[136] The fanshell, however, is found immediately downstream of the Marietta Unit in the Belleville and Racine pools of the Ohio River in Wood County, West Virginia and in the lower Muskingum River.[137] And the pink mucket has been found in the Belleville, Racine, Gallipolis, and Greenup pools of the Ohio River and potentially still exists in the lower Muskingum River; its distribution is presumed to be in Gallia, Meigs, Morgan, Washington, and Lawrence counties.[138] These species' host fish are also found within the Wayne National Forest. Because the host fish may move between the streams in the Wayne

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[132] *Id.*
[133] Final EA at 48.
[134] *Id*.
[135] Final EA at 100.
[136] Final EA at 49.
[137] Forest Plan EIS, Appendix F1, Biological Assessment at F1-112.
[138] Forest Plan EIS, Appendix F1, Biological Assessment at F1-126 – F1-127.

and the Ohio River, they may play a role in the life cycle of these mussels.[139] Moreover, BLM acknowledges that the endangered snuffbox mussel and sheepnose mussel may be present in waterways within the Wayne National Forest.[140]

The EA provided no analysis for impacts to these endangered species, claiming that forest activities are "not likely to adversely affect" fanshell and pink mucket pearly mussel, and will have "no effect" on sheepnose and snuffbox mussels.[141] The BLM relied on a 2012 "Supplemental Information Report" (SIR), which is not a NEPA analysis because it did not go through public comment and review. Tiering the required analysis in a NEPA document to a non-NEPA document is improper. 40 C.F.R. § 1508.28 (noting that tiering under NEPA is appropriate only when the initial broader analysis is found in an EIS).

In addition, the 2012 SIR acknowledges that these species are threatened by reduced water flows. High volume water depletions for fracking and horizontal drilling would impact these species, whether or not those depletions occur on private or federal surface. And the 2012 SIR was wrong to conclude that "[a]t the site specific level the WNF will be able to control withdrawals and limit them to periods when water is plentiful," as many depletions could occur in connection with private surface activities.

e. The EA fails to perform site-specific analysis of impacts and risks of drilling operations to water resources located within, or in close proximity to the December 2017 Parcels.

Maps created by the Center with data provided by the BLM indicate that several different waterways pass through, or near to, all of the nominated parcels. Parcel OHES 058308 ACQlie less than 0.5-.08 miles away from both Little Trail Run and the headwaters of Claylick Run. Dogskin Run, moreover, passes directly through OHES 058312, while Little Muskingum Run touches the western portion of OHES 058311; Walnut Camp Run passes through OHES 058310 as well.[142]

The DNA, and the December 2016 EA to which it tiers, fails to address the site-specific impacts these waterways from drilling operations in the proposed parcels. This is especially problematic given the potential for spills and leaks, as evidenced by persistent spill problems associated with the Rover Pipeline highlighted in the following section. The BLM must conduct an EIS, or at the very least an EA, to assess the potential site-specific impacts to the waterways identified above; this assessment should include taking a hard look at potential direct and indirect impacts of leasing on the identified waterways including, but not limited to, impacts to municipal water supplies, recreation areas (e.g., the Little Muskingum River), and special status species that may be present.

4. BLM Failed to Account for the Cumulative Impacts of Private Surface Development and Fracking Projects on the Ohio River and Other Related Infrastructure Projects.

[139] Forest Plan EIS, Appendix F1, Biological Assessment at F1-116, F1-122.
[140] Final EA at 49.
[141] Final EA at 100.
[142] Center Parcel Map; (also available at http://center.maps.arcgis.com/apps/View/index.html?appid=0c1b3d15cceb48e4874dab091d627f69)

BLM failed to adequately analyze the cumulative impacts of its approved leasing, in connection with past, present, and future projects planned in and around the Wayne National Forest. First, the EA performs no meaningful analysis of existing and expected oil and gas development on private lands and/or on private minerals in and around the forest and throughout southeast Ohio. It completely glosses over the fact that extensive horizontal drilling and fracking are already occurring in this area,[143] and has already caused severe impacts on resources within the forest's administrative boundary. [144] As a result, it fails to acknowledge the cumulative effects of these existing projects, in connection with fracking enabled by the December 2017 lease sale and prior sales. BLM must consider the cumulative effects of this project in connection with new leasing for purposes of both NEPA and ESA Section 7.

In addition, several other major projects have been proposed in the vicinity of the Marietta Unit, but the EA fails to address their cumulative effects in connection with new leasing. First, petrochemical giant PTT Global Chemical is considering the construction of a massive multibillion-dollar ethane cracker in Dilles Bottom, Ohio, in Belmont County, north of the Marietta Unit.[145] Ethane would be sourced from the Marcellus and Utica shales and processed at the cracker plant for conversion to ethylene, and other compounds for the production of antifreeze and plastic products. Land clearing and cleanup of the project site is ongoing, and a final decision on whether the project will be built is expected early this year. JobsOhio, a private nonprofit corporation, has already invested $14 million in the project, while PTT is investing $100 million in a feasibility study for the project.[146] The Ohio EPA recently approved water pollution permits for the project's discharges into the Ohio River and is currently considering the project's air permits.[147] PTT Global Chemical also recently purchased 168 acres in Belmont County for the future site of its plant.[148]

Second, Energy Storage Ventures (ESV) has proposed a massive project to store 168 million gallons of natural gas liquids in eight underground salt caverns along the Ohio River in Monroe County, 12 miles south of the proposed Belmont cracker plant.[149] The project is proposed on a former coal mine and expected to be operating in 2018. ESV has begun testing for the project and has applied for a 401 water quality certification with Ohio EPA and other permits with Ohio Department of Natural Resources. Located in the heart of the Utica and Marcellus shale plays, the project could potentially serve the Belmont cracker, Royal Dutch Shell's

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[143] FracTracker, Utica Shale Hydrliac Fracturing Wells in Ohio as of June 2017, available at http://maps.fractracker.org/3.13/?appid=2b7611b38d434714ba2033d76cc0ccc3; ODNR, Location Data for Ohio Utica Shale Wells (as of July 9, 2017).
[144] *See* Exhibit C at ¶¶ 14-17.
[145] Junkins, Casey, Work on Dilles Bottom Cracker Plant Goes On, The Intelligencer (July 14, 2016), available at http://www.theintelligencer.net/news/top-headlines/2016/07/work-on-dilles-bottom-cracker-plant-goes-on/.
[146] Gearino, Dan, JobsOhio invests in prep work for planned Belmon County Plan, The Columbus Dispatch (Dec. 5, 2016), available at http://www.dispatch.com/content/stories/business/2016/12/06/jobsohio-invests-in-prep-work-for-planned-belmont-county-plant.html.
[147] O'Brien Dan, OEPA Issues Permits for Belmont County Cracker Plant, Business Journal Daily (Jan. 18, 2017), available at http://businessjournaldaily.com/oepa-issues-permit-for-belmont-county-cracker-plant/.
[148] Funk, John, Ohio ethane cracker plant closer to reality on former FirstEnergy property, Cleveland Plain Dealer (July 12, 2017), available at http://www.cleveland.com/metro/index.ssf/2017/07/ohio_ethane_cracker_plant_clos.html.
[149] Junkins, Casey, Ethane to Be Stored Underground in Monroe County, The Intelligencer (Feb. 5, 2017), available at http://www.theintelligencer.net/news/top-headlines/2017/02/ethane-to-be-stored-underground-in-monroe-county/.

proposed cracker plant in Beaver County, Pennsylvania, a plant across the Ohio River in West Virginia, and production operations in surrounding areas, including the Wayne National Forest. The potential for accidental leaks from gas storage facilities is illustrated by the recent catastrophe at the Aliso Canyon facility in Porter Ranch, California in 2015-2016. The leak spewed 109,000 metric tons of methane into the air, took four months to cap, forced the evacuation of 7,000 residents, and resulted in complaints of headaches, fatigue, nausea, and rashes.[150] Some residents also experienced these symptoms before the leak.

Third, Royal Dutch Shell has committed to the construction of a multibillion dollar cracker plant in Beaver County, Pennsylvania—one of the largest of its kind in North America.[151] Like the cracker and storage projects above, Shell's plant will be built on the banks of the Ohio River. The project will process 105,000 barrels of ethane per day from Marcellus and Utica shale producers and produce 1.6 million tons of polyethylene per year. Shell's decision makes it far more likely that PTT Global Chemical will build its proposed cracker plant in Belmont County. Increased operational efficiencies are possible with another cracker in the region, in the event pipelines or plant operations go down.

Fourth, the Rover Pipeline (the "Pipeline"), currently under construction by Energy Transfer Partners LP (ETP) and its subsidiary Rover Pipeline LLC (Rover), is planned to extend over 700 miles across four states.[152] The Pipeline will transport natural gas from the Marcellus Shale play to delivery points in Michigan and Canada.[153] Portions of the Pipeline run directly adjacent to segments of the Wayne National Forest. Some parts of the Pipeline pass within four miles of the nominated December 2017 parcels.[154] It seems highly likely that pipelines from lease parcels in the Wayne will feed into the Rover Pipeline.

Since work began on the pipeline in March of this year, the Ohio Environmental Protection Agency (Ohio EPA) has "registered more than 30 environmental complaints…including a leak of at least 2 million gallons — the state says it could be as much as 5 million gallons — of drilling mud in April…" in Stark County.[155] The spill occurred over roughly, "500,000 square feet of wetland near the Tuscarawas River…[such] [d]ischarges can affect water chemistry and potentially suffocate wildlife, fish and microinvertebrates."[156]

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[150] KPBS, Utilities Comission Approves Aliso Canyon Investigation (Feb. 8, 2017), available at http://www.kpbs.org/news/2017/feb/09/utilities-commission-approves-aliso-canyon-investi/; Cardwell, Diane, The Long Reach of the Aliso Canyon Gas Leak, New York Times (Jan. 14, 2017), available at https://www.nytimes.com/2017/01/14/business/energy-environment/aliso-canyon-gas-leak.html?_r=0.

[151] Marcellus Drilling News, Shell PA Cracker Plant Project A Lot Bigger Than First Thought (June 2016), available at http://marcellusdrilling.com/2016/06/shell-pa-cracker-plant-project-a-lot-bigger-than-first-thought/; Litvak, Anya, Shell cracker plant in Beaver County to provide 600 jobs when it opens, Pittsburgh Post-Gazette (June 7, 2016), available at http://powersource.post-gazette.com/powersource/companies/2016/06/07/Shell-says-Marcellus-cracker-is-a-go-ethane-beaver-county-pennsylvania-pittsburgh/stories/201606070131.

[152] Mandel, Jenny, Ohio takes legal action over Rover construction violations, Environment & Energy News Reporter, (Jul. 11, 2017), https://www.eenews.net/energywire/stories/1060057181/search?keyword=Ohio+takes+legal+action+over+Rover+construction+violations.

[153] *Id.*

[154] *See* Center Parcel Map

[155] *Id.*

[156] Renault, Marion, Ohio pipeline construction spill sends 2 million gallons of mud into two Ohio wetlands, The Columbus Dispatch, (Apr. 20, 2017), *available at* http://www.dispatch.com/news/20170420/pipeline-construction-

ETP initially led regulators to believe that the spill contained only non-toxic, but environmentally harmful, drilling "mud."[157] In June, however, diesel fuel was detected in the spilled mud in at least three separate locations, in violation of the terms of ETP's permit for mud composition, as well as its permit for the storage of the leaked material in a quarry located roughly "1,000 feet from the city of Massillon's public water system intake."[158] As of May 2017, the Ohio EPA has fined ETP for 18 separate spills.[159] This includes a spill of 50,000 gallons on April 14 occurring just one day after the Stark County spill and also impacting a sensitive wetland in Richland County.[160]The above projects are reasonably foreseeable and could have far-reaching, significant effects on the Wayne National Forest, Ohio River, and neighboring communities. Some of these projects will certainly require a network of pipelines for transport of ethane, including pipelines through the Wayne National Forest and along the Ohio River, and/or an enormous amount of truck traffic. They also entail known and foreseeable spill risks. Accordingly, BLM must consider the cumulative effects of new oil and gas leasing in connection with these projects' water quality, air quality, climate change, wildlife, and public health impacts, under both NEPA and ESA Section 7.

5. The EA Fails to Demonstrate Conformity with the Clean Air Act

BLM failed to establish conformity with Clean Air Act requirements triggered by the Washington County sulfur dioxide (SO2) non-attainment area. As noted in the EA, Washington County is currently in non-attainment for sulfur dioxide.[161] A non-attainment designation triggers further requirements under the Clean Air Act. BLM completely failed to meet these additional requirements in the EA.

Implementation of the Clean Air Act exemplifies cooperative governance between the states and the federal government. The Clean Air Act aims "to protect and enhance the quality of the Nation's air resources . . . ." 42 U.S.C. § 7401(b)(1). The Clean Air Act states: "No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity" that does not conform to an approved state air quality implementation plan or "SIP." 42 U.S.C. § 7506(c)(1). "The assurance of conformity . . . shall be an affirmative responsibility of the head of such . . . agency." To ensure conformity, agency actions must not "cause or contribute to any new

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spill-sends-2-million-gallons-of-drilling-mud-into-two-ohio-wetlands.

[157] *Id.* .

[158] Mandel, Jenny, Diesel found in Ohio Rover spill draws new fines, Environment & Energy News Reporter, (Jun. 9, 2017), *available at* https://www.eenews.net/energywire/stories/1060055786/search?keyword=Diesel+found+in+Ohio+Rover+spill+draws+new+penalties.

[159] Mufson, Steven, Pipeline spill by Dakota Access company could have a "deadly effect", The Washington Post, (May 8, 2017), *available at* https://www.washingtonpost.com/news/energy-environment/wp/2017/05/08/pipeline-spill-by-dakota-access-company-could-have-a-deadly-effect/?utm_term=.0ff8270e7d7f; Renault, Marion, Feds shut down new drilling along Rover pipeline project, Columbia Dispatch (May 11, 2017), *available at* http://www.dispatch.com/news/20170511/feds-shut-down-new-drilling-along-rover-pipeline-project; Sierra Club Ohio Chapter, Rover Pipeline Proves to be Disastrous Update (May 31, 2017), *available at* http://www.sierraclub.org/ohio/blog/2017/05/rover-pipeline-proves-be-disastrous-update.

[160] Mufson, Steven, The company behind the Dakota Access pipeline is in another controversy, Washington Post, (Apr. 27, 2017), *available at* https://www.washingtonpost.com/news/energy-environment/wp/2017/04/27/the-company-behind-the-dakota-access-pipeline-is-in-another-controversy/?utm_term=.fd37869145a2.

[161] Draft EA, pp. 36-37.

violation of any [air quality] standard" or "increase the frequency or severity of any existing violation of any standard in any area." *Id.* § 7506(c)(1)(B). This statute is very broadly applicable.

A SIP is a federally approved set of state regulations that are designed to prevent air quality deterioration and to restore clean air in areas that are out of attainment with federal standards. Conformity to a SIP as defined in the Clean Air Act, 42 U.S.C. § 7506(c)(1)(AB), means:

(A) conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and

(B) that such activities will not—

(i) cause or contribute to any new violation of any standard in any area;

(ii) increase the frequency or severity of any existing violation of any

standard in any area; or

(iii) delay timely attainment of any standard or any required interim

emission reductions or other milestones in any area.

The "assurance of conformity" to a SIP "shall be an affirmative responsibility" of a federal agency. 42 U.S.C. § 7506(c)(1). For Federal actions not related to transportation plans, "a conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by a Federal action would equal or exceed..[tons]/per year." 40 C.F.R. § 95.153(b).

There are certain limited exceptions to general conformity requirements under the Clean Air Act, such as when emissions from federal actions are below de minimis thresholds. Portions of federal actions that require a permit under the Clean Air Act's new source review program, as set forth under 42 U.S.C. §§ 7410(a)(2)(c) and 7503, are also not subject to general conformity requirements. See 40 C.F.R. § 93.150(d).

The purpose of general conformity is to "prevent the Federal Government from interfering with the States' abilities to comply with the CAA's requirements." *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 758 (2004). An action "delays attainment only if its implementation postpones attainment beyond the date by which it would have been achieved without the project." *Nat. Res. Def. Council v. E.P.A.*, 661 F.3d 662, 665 (D.C. Cir. 2011).

Before action is taken, a federal agency must make a determination that the federal action conforms to "certain threshold emission rates set forth in § 93.153(b)." *Pub. Citizen*, 541 U.S. at 771. If the action's direct and indirect emissions will exceed de minimis levels, then the agency must demonstrate conformity. *Ctr. for Biological Diversity v. Bureau of Land Mgmt.*, 833 F.3d 1136, 1148 (9th Cir. 2016); see also 40 C.F.R § 93.153(b)(1) (defines de minimis emission rates). Because "[n]either the federal nor the state rule identify the form an agency must use

when deciding whether a project necessitates a full-scale conformity determination," courts have found it sufficient for an agency to explain their conformity decision in a NEPA document. *California ex rel. Imperial Cty. Air Pollution Control Dist. v. U.S. Dep't of the Interior*, 767 F.3d 781, 799 (9th Cir. 2014). Thus, "[a]n agency need not prepare a stand-alone document explaining such a decision." *Id*. Likewise, the Federal Land Policy and Management Act (FLPMA) requires the Secretary of the Interior, in developing and revising land use plans, to "provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans." 43 U.S.C. § 1712(c)(8).

Sulfur Dioxide (SO_2) has been shown to cause an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms.[162] Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics.[163]

A 2011 interagency guidance memorandum of understanding, signed by the Department of Interior, outlines a commitment by the agency to undergo detailed analyses of air quality compliance, with a particular focus on non-attainment areas. The MOU establishes "a clearly defined, efficient approach to compliance with [NEPA] regarding air quality . . . in connection with oil and gas development on Federal lands."[164] The MOU "provides for early interagency consultation throughout the NEPA process; common procedures for determining what type of air quality analyses are appropriate and when air modeling is necessary; specific provisions for analyzing and discussing impacts to air quality and for mitigating such impacts; and a dispute resolution process to facilitate timely resolution of differences among agencies."[165] The goal of this process is to ensure that "[F]ederal oil and gas decisions do not cause or contribute to exceedances of the National Ambient Air Quality Standards (NAAQS)."[166] The MOU outlines recommended technical, quantitative procedures to follow, which include identifying the reasonably foreseeable number of oil and gas wells and conducting an emissions inventory of criteria pollutants. Further air quality modeling is required if certain criteria are met, based on the level of emissions impact and the geographic location of the action.[167] The MOU indicates that "[e]xisting reasonably foreseeable development scenarios can be used to identify the number of wells."[168]

In response to this interagency MOU, BLM implemented internal regulations in 2012 establishing a 10-step process for conducting a general conformity determination in compliance with the Clean Air Act section 176(c).[169] The EA makes no mention of requirements under CAA

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[162] U.S. Environmental Protection Agency, Sulfur Dioxide http://www.epa.gov/airquality/sulfurdioxide/health.html, available at (accessed July 29, 2015).
[163] *Id.*
[164] Memorandum of Understanding Among the U.S. Department of Agriculture, U.S. Department of the Interior, and U.S. Environmental Protection Agency, regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process, Preamble (2011), available at: https://www.epa.gov/sites/production/files/2014-08/documents/air-quality-analyses-mou-2011.pdf.
[165] *Id*. at 4.
[166] *Id*. at 1, 2.
[167] *Id.* § V.E.1., pg. 9.
[168] *Id*.
[169] United States Department of the Interior, Bureau of Land Management, Instruction Memorandum No. 2013-025, *Guidance for Conducting Air Quality General Conformity Determinations* (December 4, 2012) *found at*

section 176(c), and does not cite to any conformity analysis in the preceding 2006 Forest Plan or the 2012 SIR. But, even if BLM did a full conformity determination in these past documents, the analysis would not reflect the current non-attainment designations and Ohio's most recent SIP revisions, and are therefore inadequate for purposes of demonstrating conformity to CAA requirements.

BLM can practically control air emissions in a number of ways including, but not limited to, by choosing not to lease certain areas or by including stipulations that require limits on emissions or emitting practices. The agency has continuing program responsibility for those emissions, both through subsequent permit actions and ongoing inspection and enforcement oversight. BLM provides no emissions inventory, monitoring data or analysis of any potential direct and indirect emissions based on oil and gas industry standards for development, operations and ongoing maintenance. The BLM also did not include a comprehensive and enforceable set of air quality mitigation measures to ensure its decision to lease will not cause or contribute to violations of air quality standards. BLM "encourages industry to incorporate and implement Best Management Practices"[170] ("BMPs") to reduce air quality impacts, but such measures would be encouraged, not required. These non-mandatory measures do not go far enough in either analysis or commitments. The discretionary and non-specific nature of the BMPs is very concerning since they are relied upon in the EA as a primary means for protecting air resources and are part of BLM's justification for not proposing additional mitigation to address air quality impacts. Therefore, BLM utterly ignored requirements under the CAA to demonstrate conformity in its decision to lease parcels for oil and gas development in the Wayne National Forest.

6. BLM Violated Section 7 of the ESA by Failing to Consult with FWS on the Impacts of the Proposed Oil and Gas Leasing on Threatened and Endangered Species

Congress enacted the ESA to provide "a program for the conservation of . . . endangered species and threatened species." 16 U.S.C. § 1531(b). Section 2(c) of the ESA establishes that it is "the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." 16 U.S.C. § 1531(c)(1). The ESA defines "conservation" to mean "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this [Act] are no longer necessary." 16 U.S.C. § 1532(3). Section 7(a)(1) of the ESA explicitly directs that all federal agencies "utilize their authorities in furtherance of the [aforesaid] purposes" of the ESA. 16 U.S.C. § 1536(a)(1).

Section 7 of the ESA requires BLM, in consultation with FWS, to insure that any action authorized, funded, or carried out by the agency is not likely to (1) jeopardize the continued existence of any threatened or endangered species, or (2) result in the destruction or adverse modification of the critical habitat of such species. 16 U.S.C. § 1536(a)(2). For each proposed federal action, BLM must request from FWS whether any listed or proposed species may be

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https://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-025.html.

[170] Draft EA, p. 66. Merely stating that operations that would violate an applicable air quality standard would not be approved is insufficient; NEPA requires more than an analysis of whether a project will violate other environmental statutory requirements.

present in the area of the agency action. 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12. If listed or proposed species may be present in such area, BLM must prepare a "biological assessment" to determine whether the listed species may be affected by the proposed action. *Id*.

If BLM determines that its proposed action may affect any listed species or critical habitat, the agency must engage in formal consultation with FWS. 50 C.F.R. § 402.14. To complete formal consultation, FWS must provide BLM with a "biological opinion" explaining how the proposed action will affect the listed species or habitat. 16 U.S.C. § 1536(b); 50 C.F.R. § 402.14. If FWS concludes that the proposed action will jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of critical habitat, the biological opinion must outline "reasonable and prudent alternatives." 16 U.S.C. § 1536(b)(3)(A).

BLM's oil and gas leasing decisions—including its decision to open up all federal minerals in the Marietta Unit for oil and gas leasing and its decision to lease federal minerals in the December 2017 lease—are each agency actions under the ESA. Action is broadly defined under the ESA to include all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies, including the granting of leases, and actions that will directly or indirectly cause modifications to the land, water, or air. 50 C.F.R. § 402.02. BLM, however, failed to request from FWS whether any listed or proposed species may be present in the action area. 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12.

Moreover, there are listed species in the action area, and thus BLM further violated the ESA by failing to prepare a biological assessment for its leasing decision. 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12. As BLM admits in the EA, the Indiana bat is "well-documented on all units" of the Wayne National Forest, the Marietta Unit "contains ample suitable foraging and roosting habitat" for the northern long-eared bat, and sheepnose and snuffbox mussels "may be present on waterways within the [Wayne National Forest]." EA at 48-49. Additionally, the fanshell is found immediately downstream of the Marietta Unit, and the pink mucket has been found in the Belleville, Racine, Gallipolis, and Greenup pools of the Ohio River and potentially still exists in the lower Muskingum River in the Belleville and Racine pools of the Ohio River in Wood County, West Virginia and in the lower Muskingum River.[171] To the extent that BLM initiated consultation on its proposal to open up all federal minerals in the Marietta Unit to oil and gas through the preparation of its November 4, 2015 Biological Assessment (BA)[172] and submission of the BA to FWS, BLM and FWS have failed to complete consultation, in violation of 16 U.S.C. § 1536(a)(2) and 50 C.F.R. §§ 402.13(a), 402.14.

BLM's leasing decisions may affect the threatened and endangered species in the action area, and downstream from the action area. As stated in the EA, the Forest Service has already determined that "oil and gas activities are likely to adversely affect Indiana bat," and "tree removal may result in impacts to individual northern long-eared bats." EA at 99-100. Additionally, the water depletions, increased surface disturbance, and toxic spills from hydraulic fracturing and horizontal drilling throughout the Marietta Unit "may affect" the sheepnose and snuffbox mussels, as well as fanshell and pink mucket pearly mussels found downstream from

[171] Forest Plan EIS, Appendix F1, Biological Assessment at F1-112, F1-126 – F1-127.
[172] BLM, Northeastern States District, Biological Assessment of Wayne National Forest Leasing 2015-2016 All Units (January 2016).

the proposed areas for lease. BLM therefore violated the ESA by failing to consult with FWS concerning the impacts of its oil and gas leasing proposal on these listed species. 16 U.S.C. § 1536(a)(2). And because BLM has failed to comply with the Section 7 consultation procedures, it cannot insure that the proposed oil and gas leasing will not jeopardize any listed species, or destroy or adversely modify any critical habitat, in further violation of Section 7 of the ESA. *Id*.

BLM asserts in the EA that it can wait to engage in ESA consultation with FWS when it receives an application for a permit to drill. EA at 20. This position, however, violates the ESA and has been rejected by the courts. For instance, in *Conner v. Burford*, the Forest Service issued oil and gas leases on national forests in Montana without preparing an EIS, and without consulting on all phases of the oil and gas leases. 848 F.2d 1441 (9th Cir. 1988). The United States Court of Appeals for the Ninth Circuit held that the sale of a non-NSO oil and gas lease constitutes an irreversible commitment of resources. *Id*. at 1451. For BLM's oil and gas leasing decisions on the Wayne National Forest, NSO leases are proposed for only a small portion of the overall area available for leasing, with non-NSO leases proposed for the majority of the national forest. *See* EA at 43.

The federal agency defendants in *Conner v. Burford* did not even dispute that the agencies were required to consult under Section 7 of the ESA, and that FWS was required to prepare a biological opinion, before any of the leases could be sold. *Conner*, 848 F.2d at 1453. The Ninth Circuit further held that FWS was required to consider all phases of the oil and gas leases within the biological opinion, including all post-leasing activities. *Id*. "Therefore the FWS was required to prepare, at the leasing stage, a comprehensive biological opinion assessing whether or not the agency action was likely to jeopardize the continued existence of protected species." *Id*. BLM's failure to consult with FWS on its oil and gas leasing decisions for the Wayne National Forest plainly violates Section 7 of the ESA. 16 U.S.C. 1536(a)(2).

7. BLM's Reliance on the 2005 Forest Plan Biological Opinion Violates the ESA

BLM relies extensively on the 2005 Biological Opinion prepared by FWS for the 2006 Forest Plan for the Wayne National Forest.[173] BLM acknowledges, however, that this 2005 Biological Opinion is programmatic and "non-site-specific."[174] This 2005 programmatic biological opinion for the Forest Plan does not excuse BLM's obligation to consult under the ESA for its oil and gas lease decisions. *See Conner*, 848 F.2d at 1453.

Moreover, BLM's reliance on the 2005 Biological Opinion is misplaced because it is out of date. Agencies are required to reinitiate ESA consultation if (1) the amount or extent of taking specified in the incidental take statement is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the action is modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action. 50 C.F.R. § 402.16. Despite extensive new information and newly listed species, the Forest Service and FWS have failed to reinitiate consultation on the 2005 Biological Opinion.

[173] Final EA at 19.
[174] *Id*.

i. New Information

The 2006 Biological Opinion for the 2006 Forest Plan does not address three issues where there has been significant new information over the past decade that is directly relevant to the Forest Plan and its impacts on listed species and critical habitat: new drilling techniques, white-nose syndrome, and climate change. This failure to reinitiate consultation on the 2005 Biological Opinion to address this decade of significant new information violates the ESA. 50 C.F.R. § 402.16.

a. Horizontal Well Development

The 2005 Biological Opinion for the Forest Plan is woefully outdated, failing to address the severe impacts of hydraulic fracturing and horizontal drilling on the Indiana bat and other species. As discussed, the Forest Service only analyzed the effects of vertical well development on the federal surface in the EIS for the 2006 Forest Plan. The rise in fracking and horizontal drilling, and recent data regarding horizontal well pad surface disturbance, constitutes new information revealing effects of the action that may affect listed species in a manner or to an extent not previously considered, and triggers the duty of the BLM, Forest Service, and FWS to reinitiate consultation on the 2005 Biological Opinion. 50 C.F.R. § 402.16(b).

The likelihood that new federal leasing will open up private minerals for development and entail the development of horizontal well pads on private surface also triggers reinitiation. The effects of the proposed leasing must be evaluated "together" with these "interdependent" private surface activities in a reinitiated consultation, regardless of whether BLM or the Forest Service authorizes the private surface activities. 50 C.F.R. §§ 402.02, 402.16; *Sierra Club v. U.S. DOE*, 255 F. Supp. 2d 1177, 1188 (D. Col. 2002) (agency that granted easement to mine required to analyze mine's impacts on listed species, even though another agency authorized mine). While the number of new horizontal well pads on private surface that federal leasing could lead to has never been analyzed, significant habitat loss (e.g., fragmentation and loss of maternal summer roost areas) that is not accounted for in the 2005 Biological Opinion and hazardous conditions endangering listed species could result from these activities. Moreover, weaker state regulations, such as those permitting wastewater ponds, would govern these private activities.

The same holds true for effects of horizontal drilling on federal surface activities overlying private minerals (which could also be opened up with new federal leasing)—in these split estate situations, the Forest Service can only request operators to voluntarily comply with Standards and Guidelines set forth in the Forest Plan. Indeed, if well development on private and federal surface were proportionate to the Marietta Unit's private and federal surface acreages, a significant portion of wells within the Forest (75%) would escape mandatory federal controls. The resulting take could be cumulatively significant and lead to forest-wide, population-level effects on the Indiana bat and other species.

BLM's implicit determination in the EA that existing regulatory mechanisms will reduce or avoid effects on the Indiana bat and other listed species from private surface and mineral development activities is not a proper basis for failing to consult with Fish and Wildlife Service regarding these impacts. Because it is clear that private surface and mineral development adjacent to federal surface in the WNF "may" affect listed species—issues that have never been considered in prior consultations—BLM and the Forest Service must reinitiate consultation with

Fish and Wildlife Service on the 2005 Biological Opinion to ensure that oil and gas leasing does not jeopardize the Indiana bat or others species before these leases can proceed.

b. White-Nose Syndrome

White-nose syndrome ("WNS") is a fatal disease affecting hibernating bats that is named for a white fungus that appears on the muzzle and other parts of bats. The disease has spread rapidly across the eastern and midwestern United States, and is estimated to have killed more than 6 million bats in the Northeast and Canada.[175] Bats with white-nose syndrome "act strangely during cold winter months, including flying outside during the day and clustering near the entrances of caves and other hibernation areas."[176] These abnormal behaviors "may contribute to the untimely consumption of stored fat reserves causing emaciation, a characteristic documented in a portion of the bats that die from WNS."[177]

White-nose syndrome has spread to 16 counties in Ohio,[178] including in the Wayne National Forest in Lawrence County.[179] It has also spread to West Virginia's Wetzel County, which lies directly across from Monroe County, on the other side of the Ohio River, and very near the Marietta Unit.[180] In 2011, the Forest Service performed a review of new information regarding the Wayne National Forest Plan and white-nose syndrome and concluded that supplementation of the environmental review for the Forest Plan was not necessary at that time. However, since then, a 2013 study has determined that white-nose syndrome threatens the Indiana bat with a high risk of extirpation throughout large parts of its range.[181] The study concluded:

> Our sensitivity analyses indicated that management actions devoted to increasing, in order, winter, summer, and fall survival of breeding adult females would have the greatest potential for mitigating impacts of WNS on Indiana bat populations. Management actions for improving survival, however, may be difficult to achieve because these parameters are quite high (95% seasonal survival) in the absence of WNS. Alternatively, increasing reproduction, while less efficient at addressing a declining population trajectory, has more room for improvement; further, if

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[175] USFWS, White-nose syndrome: The devastating disease of hibernating bats in North America (May 2016), *available at* https://www.whitenosesyndrome.org/sites/default/files/resource/white-nose_fact_sheet_5-2016_2.pdf.
[176] *Id.*
[177] USGS, National Wildlife Health Center, White-Nose Syndrome, *available at* http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/.
[178] Ohio Dept. of Natural Resources, White-nosesSyndrome.org, *available at* https://www.whitenosesyndrome.org/partner/ohio-department-natural-resources; White-nose Syndrome.org, Updated white-nose syndrome map (May 10, 2016) https://www.whitenosesyndrome.org/resource/updated-white-nose-syndrome-map-may-10-2016.
[179] USFS, White-nose Syndrome Detected in Ohio (Mar. 30, 2011), *available at* http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPyhQoY6BdkOyoCAGixyPg!/?ss=110914&navtype=BROWSEBYSUBJECT&cid=STELPRDB5288711&navid=180000000000000&pnavid=null&position=News&ttype=detail&pname=Wayne%20National%20Forest-%20News%20&%20Events.
[180] White-Nose Syndrome.org, WNS Information Resources (2017), available at https://www.whitenosesyndrome.org/resources.
[181] Thogmartin, Wayne E. et al. White-nose syndrome is likely to extirpate the endangered Indiana bat over large parts of its range, Biological Conservation, Vol. 160, pp. 162-172 (April 2013), *available at* http://www.sciencedirect.com/science/article/pii/S0006320713000207.

> management actions on the breeding grounds to improve reproduction also improve adult female summer survival, our global sensitivity analyses suggest improved performance in the other parameters may occur as well. *Because of the heightened risk faced by small, range-restricted populations* (Terborgh and Winter, 1980; Gilpin and Soulé, 1986; Schoener and Spiller, 1987), *it is also prudent in the face of this potential extinction agent to limit additive sources of mortality.* Our model suggests a timeframe for action, for the species is expected to reach its lowest level of abundance by the early 2020s, no more than a decade hence.[182]

Moreover, since 2011, Ohio has experienced steep declines in bat populations throughout the state. In a February 19, 2015 letter initiating formal conferencing for the northern long-eared bat, the Forest Service cited data showing the rapid declines of the bats likely from white-nose syndrome:

> In Ohio, hibernaculum surveys from pre-2011 (before WNS) to 2014 (post-WNS) suggest an 85% decline in the winter bat population (Norris 2014). A 2014 mid-winter bat census at the Lawrence County mine indicated the collapse (99% decline) of the hibernating bat population. Statewide summer acoustic surveys in Ohio indicate a declining trend in the number of overall bat detections (all species) recorded. For instance, a comparison of the number of calls detected in 2014 to 2011 suggests 47% fewer bats detected overall (Norris 2014J. Preliminary bat capture data collected on the WNF during the summer of 2014 suggest relative declines in several previously common species that are now WNS-affected, including little brown bats and NLEBs. The averaged pre-WNS (1997-2008) bat capture rate for all species (6.6 bats per net-night) declined by 75% to1.64 bats per net-night in 2014 (post-WNS). While there is evidence that there may be some persistence of WNS -affected bats on the landscape in the longest affected areas of the northeastern USA (unpublished data, 7th Annual White-Nose Syndrome Workshop, 8-12 Sept 2014, St. Louis, MO), and bats can and do survive and heal from the disease (Fuller et al. 2011), long-term survivorship is difficult to predict due to the newness of the disease.[183]

Since these 2015 findings, the impacts of white-nose syndrome have worsened. As of 2016, white-nose syndrome has spread to 19 counties in Ohio,[184] but according to Ohio state officials, the disease is probably much more widespread. Since the outbreak of white-nose syndrome in Ohio in 2011, researchers have now recorded a 90 percent decline in hibernating bat populations at the state's two largest hibernacula — a closed limestone mine in Preble County near the Indiana border west of Dayton, where nearly 40,000 bats had once been observed, and a shuttered mine in Lawrence County near Ohio's southern tip.[185] Bat-detection rates in the

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[182] *Id.*

[183] Wayne National Forest Supervisor's Office Letter to Dan Everson U.S. Fish and Wildlife Service initiating formal conferencing for the northern long-eared bat (February 19, 2015)

[184] Lyttle, E. Hikers spreading fungus that's killing Ohio bats. *The Columbus Dispatch.* June 15, 2016 ("Lyttle 2016"), available at http://www.dispatch.com/content/stories/local/2015/06/15/humans-have-role-in-spread-of-bat-ills.html

[185] Lyttle 2016.

summer have fallen by more than 50 percent.[186] Finally, these declining population trends are supported by the findings of the FWS's 2017 Indian Bat (*Myotis sodalist*) Population Status Update, which again show a near 40% decrease in Ohio populations since 2015, and near 70% drop since 2009.[187]

The potential for white-nose syndrome to wipe out the Indiana bat in large parts of its range makes the bat's population much more sensitive to other threats, including oil and gas development. It is therefore crucial to reduce these threats. Moreover, the bat's extremely slow reproduction rate (at most, one pup per year) and specialized summer roosting habitat needs (mature or dying trees or oak or hickory trees with exfoliating bark) compound these threats.[188] Maximizing availability of summer roosting trees is thus essential to recovery of the species, while loss of roosting trees would undermine its survival and recovery.

New information concerning this devastating disease reveals effects of the leasing proposal that "may affect [the Indiana bat]…in a manner or to an extent not previously considered," and compels reinitiation.

c. Climate Change

Climate change is also projected to shift the Indiana bat's range, because the species' reproductive cycles, hibernation patterns, and migration are closely linked to temperature. One landmark study projects that warming summer temperatures will cause "maternity colonies in the western portion of the range [including Ohio]…to begin to decline and possibly disappear in the next 10–20 years," causing the range to shift northeast-ward.[189] The researchers note that "the effects of climate change should be considered in future threats analyses and conservation strategies for the Indiana bat," and that "management actions which foster high reproductive success and survival…will be critical for the conservation and recovery of the species."[190] The 2005 Biological Opinion does not account for climate change effects. BLM and the Forest Service must consult with FWS regarding these effects on the Indiana bat.

ii. Newly Listed Species

In addition to the significant new information, there have also been species listed since the 2005 Biological Opinion that may be affected by the Forest Plan, and oil and gas leasing proposal. The agencies, however, have failed to reinitiate consultation, in ongoing violation of

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[186] *Id.*; see also Ohio Dept. of Natural Resources, http://wildlife.ohiodnr.gov/speciesandhabitats/fishandwildliferesearch/whitenosesyndrome (data showing declines in bat detection).

[187] United States Fish and Wildlife Service, 2017 Indian Bat (*Myotis sodalist*) Population Status Update, at 2, available at https://www.fws.gov/Midwest/endangered/mammals/inba/pdf/2017IBatPopEstimate5July2017.pdf.

[188] *See* USFWS, Characteristics of Indiana Bat Summer Habitat (2008), available at https://www.fws.gov/northeast/njfieldoffice/pdf/ibatsummerhab.pdf; Kniowski, Andrew et al., Summer Ecology of Indiana Bats in Ohio (2011), available at https://www.dot.state.oh.us/Divisions/Planning/SPR/Research/reportsandplans/Reports/2011/Environmental/134387_FR.pdf .

[189] Loeb, Susan C.& Eric A. Winters, Indiana bat summer maternity distribution: effects of current and future climates, Ecology and Evolution 2013; 3(1):103–114, *available at* http://onlinelibrary.wiley.com/doi/10.1002/ece3.440/abstract.

[190] *Id.*

the ESA. 50 C.F.R. § 402.16. The following species have been designated by FWS as threatened or endangered under the ESA subsequent to the 2006 Forest Plan, and may be impacted by the projects and activities authorized by the Plan: (1) the Northern long-eared bat, designated as threatened on May 4, 2015; (2) the sheepnose mussel, designated as endangered on April 12, 2012; and (3) the snuffbox mussel, designated as endangered on March 15, 2012. The agencies, however, have not reinitiated consultation on the Forest Plan to address the potential impacts on these listed species.

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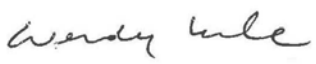
For the foregoing reasons, both the DNA and the December 2016 Programmatic EA on which it relies, fail to take a hard look at the environmental consequences of the BLM's decision to offer the proposed parcels for lease, in violation of NEPA. The BLM has also failed to consult with the USFWS over the impact of its leasing decision on threatened and endangered species, such as the Indiana bat, and improperly relies on an outdated biological opinion to fulfill its consultation duties under the ESA. For these reasons, in addition to those stated above stated above, BLM may not lease the proposed parcels until an EIS, or at the very least an updated EA, is prepared to analyze the foreseeable impacts of its decision to lease the parcels, and until BLM initiates consultation with the USFWS over the impacts of its decision to lease the parcels on threatened or endangered species. Thank you for your time.

Sincerely,



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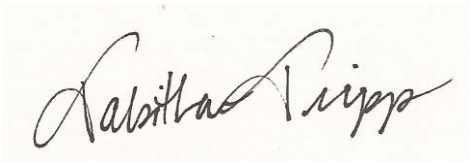

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List of References

Arenschield, Laura, Drillers Using more water to frack Ohio shale, Columbus Dispatch, Feb. 8, 2016, http://www.dispatch.com/content/stories/local/2016/02/07/drillers-using-more-water-to-frack-ohio-shale.html#

Arenschield, Laura, Study ties 77 Ohio earthquakes to two fracking wells, Columbus Dispatch, Jan. 8, 2015, http://www.dispatch.com/content/stories/local/2015/01/08/Research-ties-Ohio-quakes-to-fracking.html

Auch, Ted, Letter re Land-Use Footprint of High Volume Hydraulic Fracturing in Eastern Ohio, FracTracker Alliance (May 2016)

Auch, Ted et al., The Ultimate Price of PA State Forest Drilling, Fractracker Alliance, Nov. 4, 2015, https://www.fractracker.org/2015/11/pa-state-forest-drilling/

Bamberger, Michelle and R.E. Oswald, Impacts of Gas Drilling on Human and Animal Health, 22 New Solutions 51 (2012)

Brown, David et al., The Problem of Setback Distance for Unconventional Oil & Gas Development: An analysis of expert opinions, Southwest Pennsylvania Environmental Health Project Technical Reports, Issue 2 (May 9, 2016)

Cardwell, Diane, The Long Reach of the Aliso Canyon Gas Leak, New York Times, Jan. 14, 2017 https://www.nytimes.com/2017/01/14/business/energy-environment/aliso-canyon-gas-leak.html?_r=0

Center for Biological Diversity, Parcel Map (2017)

Center for Biological Diversity et al., September 6, 2017 Comments on Determination of NEPA Adequacy, December 2017 Competitive Oil and Gas Lease Sale, Wayne National Forest

Deam, Jenny, Jury Awards Texas family nearly $3 million in Fracking Case, Los Angeles Times, Apr. 3, 2014, http://www.latimes.com/nation/la-na-fracking-lawsuit-20140424-story.html

Downing, B., Strong support in southern Ohio for Wayne NF drilling, Akron Beacon Journal/Ohio.com, Jan. 22, 2016, http://www.ohio.com/blogs/drilling/ohio-utica-shale-1.291290/strong-support-in-southern-ohio-for-wayne-nf-drilling-1.656368 (accessed November 4, 2016)

Email from Thomas Thompson U.S. Forest Service to BLM officials re: WNF Oil and Gas leasing (Sept. 8, 2015)

Exhibit A, Declaration of Emily S. Jeffers, IBLA No. 2016- Notice of Appeal and Petition for Stay, 3120 (930 JRK), December 2016 Lease Sale, Decision Record for Environmental Assessment DOI-BLM-ES-0030-2016-0002-EA, Oil and Gas Leasing Wayne National Forest Marietta Unit of the Athens Ranger District, Monroe, Nobel, and Washington Counties, Ohio.

Exhibit B, Declaration of Jill Hunkler, IBLA No. 2017- Notice of Appeal and Petition for Stay, 3120 (930 JRK), March 2017 Lease Sale, Decision Record for Environmental Assessment DOI-BLM-ES-0030-2016-0002-EA, Oil and Gas Leasing Wayne National Forest Marietta Unit of the Athens Ranger District, Monroe, Nobel, and Washington Counties, Ohio.

Exhibit C, Declaration of Joseph Hazelbaker, IBLA No. 2017- Notice of Appeal and Petition for Stay, 3120 (930 JRK), March 2017 Lease Sale, Decision Record for Environmental Assessment DOI-BLM-ES-0030-2016-0002-EA, Oil and Gas Leasing Wayne National Forest Marietta Unit of the Athens Ranger District, Monroe, Nobel, and Washington Counties, Ohio.

Fahrenfeld, N.L., Shifts in microbial community structure and function in surface waters impacted by unconventional oil and gas wastewater revealed by metagenomics, 580 Science of the Total Environment 1205 (2017) http://dx.doi.org/10.1016/j.scitotenv.2016.12.079

FracTracker, Injection Well Map http://maps.fractracker.org/3.13/?appid=2a68b20a338f464da12d6e8f1cb66c08&webmap=0f6bdbb82b1246f6a2d2d7a6c4c3bb74

FracTracker, Ohio Shale Gas Viewer http://maps.fractracker.org/3.13/?appid=2b7611b38d434714ba2033d76cc0ccc3

FracTracker, Utica Shale Hydrliac Fracturing Wells in Ohio as of June 2017, http://maps.fractracker.org/3.13/?appid=2b7611b38d434714ba2033d76cc0ccc3

Forest Plan Environmental Impact Statement, Appendix F1, Biological Assessment

Funk, John, Ohio ethane cracker plant closer to reality on former FirstEnergy property, Cleveland Plain Dealer, July 12, 2017, http://www.cleveland.com/metro/index.ssf/2017/07/ohio_ethane_cracker_plant_clos.html

Gearino, Dan, JobsOhio invests in prep work for planned Belmon County Plan, The Columbus Dispatch, Dec. 5, 2016 http://www.dispatch.com/content/stories/business/2016/12/06/jobsohio-invests-in-prep-work-for-planned-belmont-county-plant.html

Geology.com, Utica Shale – Horizontal Wells Drilled in Ohio, http://geology.com/utica.shtml

Gronewold, Nathaniel, New research suggests fracking triggered active faults, E&E News Energywire, November 28, 2016, http://www.eenews.net/energywire/stories/1060046240/

He, Yuhe, et al., Effects on Biotransformation, Oxidative Stress, and Endocrine Disruption in Rainbow Trout (Oncorhynchus mykiss) Exposed to Hydraulic Fracturing Flowback and Produced Water, 51 Environ. Sci. Technol. 940 (2017), doi: 10.1021/acs.est.6b04695

Hill, Elaine L., Unconventional Natural Gas Development and Infant Health: Evidence from Pennsylvania, Cornell University (2012)

Hopey, Don, Shale gas driller fined $1.2M for contaminating drinking water in Westmoreland, Pittsburgh Post-Gazette, Feb. 28, 2017, http://www.post-gazette.com/local/westmoreland/2017/02/28/WPX-Energy-Appalachia-shale-gas-company-fined-Pennsylvania-water-contamination-Westmoreland-County/stories/201702280305

Jemielital, T. et al., Unconventional Gas and Oil Drilling Is Associated with Increased Hospital Utilization Rates, 10 PLoS ONE 7: e0131093, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0131093

Johnson, Nels, Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind, The Nature Conservancy – Pennsylvania Chapter and Audubon Pennsylvania (2010) http://www.nature.org/media/pa/tnc_energy_analysis.pdf

Johnson, Nels, et al., Pennsylvania Energy Impacts Assessment, Report 2: Natural Gas Pipelines. The Nature Conservancy – Pennsylvania Chapter (2011)

Junkins, Casey, EPA: 70K Fish, Aquatic Life Killed, The Intelligencer, July 22, 2014, http://www.theintelligencer.net/page/content.detail/id/607167.html

Junkins, Casey, Ethane to Be Stored Underground in Monroe County, The Intelligencer, Feb. 5, 2017, http://www.theintelligencer.net/news/top-headlines/2017/02/ethane-to-be-stored-underground-in-monroe-county/

Junkins, Casey, Work on Dilles Bottom Cracker Plant Goes On, The Intelligencer, July 14, 2016, http://www.theintelligencer.net/news/top-headlines/2016/07/work-on-dilles-bottom-cracker-plant-goes-on/

Kassotis, Christopher D., et al., Adverse Reproductive and Developmental Health Outcomes Following Prenatal Exposure to a Hydraulic Fracturing Chemical Mixture in Female C57Bl/6 Mice, 157 Endocrinology 9:3469 (2016), doi: 10.1210/en.2016-1242

Kniowski, Andrew et al., Summer Ecology of Indiana Bats in Ohio (2011)

KPBS, Utilities Comission Approves Aliso Canyon Investigation (Feb. 8, 2017) http://www.kpbs.org/news/2017/feb/09/utilities-commission-approves-aliso-canyon-investi/

Litvak, Anya, Shell cracker plant in Beaver County to provide 600 jobs when it opens, Pittsburgh Post-Gazette, June 7, 2016, http://powersource.post-gazette.com/powersource/companies/2016/06/07/Shell-says-Marcellus-cracker-is-a-go-ethane-beaver-county-pennsylvania-pittsburgh/stories/201606070131

Loeb, Susan C. & Eric A. Winters, Indiana bat summer maternity distribution: effects of current and future climates, 3 Ecology and Evolution 1:103, (2013) http://onlinelibrary.wiley.com/doi/10.1002/ece3.440/abstract

Lyttle, E., Hikers spreading fungus that's killing Ohio bats, The Columbus Dispatch, June 15, 2016, http://www.dispatch.com/content/stories/local/2015/06/15/humans-have-role-in-spread-of-bat-ills.html

Mandel, Jenny, Diesel found in Ohio Rover spill draws new fines, Environment & Energy News Reporter, Jun. 9, 2017, https://www.eenews.net/energywire/stories/1060055786/search?keyword=Diesel+found+in+Ohio+Rover+spill+draws+new+penalties

Mandel, Jenny, Ohio takes legal action over Rover construction violations, Environment & Energy News Reporter, Jul. 11, 2017, https://www.eenews.net/energywire/stories/1060057181/search?keyword=Ohio+takes+legal+action+over+Rover+construction+violations

Marcellus Drilling News, Shell PA Cracker Plant Project A Lot Bigger Than First Thought, June 2016, http://marcellusdrilling.com/2016/06/shell-pa-cracker-plant-project-a-lot-bigger-than-first-thought/

McClaugherty, Charles et al., Landscape Impacts of Infrastructure Associated with Utica Shale

Oil and Gas Extraction in Eastern Ohio, 100th ESA Annual Meeting, Aug. 9-14, 2015, http://esa.org/meetings_archive/2015/webprogram/Paper52636.html

McKenzie, Lisa et al., Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, Advance Publication Environmental Health Perspectives, Jan. 28, 2014, http://dx.doi.org/10.1289/ehp.1306722

McKenzie, Lisa M., et al., Childhood hematologic cancer and residential proximity to oil and gas development, 12 PLoS ONE 2: e0170423 (2017), http://dx.doi.org/10.1371/journal.pone.0170423

McKenzie, Lisa et al., Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources, 424 Science of the Total Environment 79 (2012)

Mufson, Steven, The company behind the Dakota Access pipeline is in another controversy, Washington Post, Apr. 27, 2017, https://www.washingtonpost.com/news/energy-environment/wp/2017/04/27/the-company-behind-the-dakota-access-pipeline-is-in-another-controversy/?utm_term=.fd37869145a2

Mufson, Steven, Pipeline spill by Dakota Access company could have a "deadly effect", Washington Post, May 8, 2017, https://www.washingtonpost.com/news/energy-environment/wp/2017/05/08/pipeline-spill-by-dakota-access-company-could-have-a-deadly-effect/?utm_term=.0ff8270e7d7f

O'Brien Dan, OEPA Issues Permits for Belmont County Cracker Plant, Business Journal Daily, Jan. 18, 2017, http://businessjournaldaily.com/oepa-issues-permit-for-belmont-county-cracker-plant/

Ohio Administrative Code, 1501:9-3-08(A)

Ohio Department of Natural Resources: Division of Geology Survey, Earthquakes and Seismic Risk in Ohio, 3 GeoFacts, (May 2012)

Ohio Environmental Protection Agency, Directors Final Findings & Orders NPDES In the Matter of Statoil USA Onshore Properties, Inc. (November 6, 2015)

Ohio Environmental Protection Agency, Beneficial Use Support Document Little Muskingum River Basin (2016), http://epa.ohio.gov/Portals/35/rules/Little%20Musky.pdf

Ohio Department of Natural Resources, Location Data for Ohio Utica Shale Wells (July 9, 2017)

Ohio Department of Natural Resources, Notice of Violation No. 1278508985 (June 21, 2010)

Ohio Department of Natural Resources, Notice of Violation No. 2016754140 (May 16, 2008)

Ohio Revised Code, 1509.021(L)

Ohio Department of Natural Resources, White-nosesSyndrome.org, https://www.whitenosesyndrome.org/partner/ohio-department-natural-resources

Ohio Department of Natural Resources, http://wildlife.ohiodnr.gov/speciesandhabitats/fishandwildliferesearch/whitenose syndrome

Patterson, Lauren A. et al., Unconventional Oil and Gas Spills: Risks Mitigation Priorities, and State Reporting Requirements, 51 Environ. Sci. Technol. 5, 2563 (2017), doi: 10.1021/acs.est.6b05749

Press Release, Landowners for Energy Access and Safe Exploration (LEASE), Landowners Encourage Public Comment In Support of Leasing Wayne (May 11, 2016), available at http://www.ohio.com/blogs/drilling/ohio-utica-shale-1.291290/ohio-landowners-urge-blm-to-proceed-with-wayne-nf-drilling-1.682216

Pryor, S. C., et al., Ch. 18: Midwest. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, (2014), doi:10.7930/J0J1012N

Rabinowitz, P.M. et al., Proximity to Natural Gas Wells and Reported Health Status: Results of a Household Survey in Washington County, Pennsylvania, Environmental Health Perspectives Advance Publication (2014)

Renault, Marion, Feds shut down new drilling along Rover pipeline project, Columbia Dispatch, May 11, 2017, http://www.dispatch.com/news/20170511/feds-shut-down-new-drilling-along-rover-pipeline-project

Renault, Marion, Ohio investigates cause of weekend earthquake in drilling region, Columbus Dispatch, April 4, 2017, http://www.dispatch.com/news/20170404/ohio-investigates-cause-of-weekend-earthquake-in-drilling-region

Renault, Marion, Ohio pipeline construction spill sends 2 million gallons of mud into two Ohio wetlands, The Columbus Dispatch, Apr. 20, 2017, http://www.dispatch.com/news/20170420/pipeline-construction-spill-sends-2-million-gallons-of-drilling-mud-into-two-ohio-wetlands

Richardson, Nathan, The State of State Shale Gas Regulation, Resources for the Future (June 2013)

Sierra Club Ohio Chapter, Rover Pipeline Proves to be Disastrous Update (May 31, 2017), http://www.sierraclub.org/ohio/blog/2017/05/rover-pipeline-proves-be-disastrous-update

Skoumal, Richard, et al., Earthquakes Induced by Hydraulic Fracturing in Poland Township, Ohio (2015), http://www.bssaonline.org/content/early/2015/01/01/0120140168.abstract

Slonecker, E.T. et al., Landscape Consequences of Natural Gas Extraction in Bradford and Washington Counties, Pennsylvania, 2004–2010: USGS Open-File Report 2012-1154 (2012)

Soraghan, Mike & Pamela King, Drilling mishaps damage water in hundreds of cases, E&E News Energywire, Aug. 8, 2016, https://www.eenews.net/stories/1060041279

Soraghan, Mike, Okla. officials link some quakes to fracking, E&E News Energywire, Dec. 12, 2016, http://www.eenews.net/energywire/stories/1060047006/

Stacy, Shaina L. et al., Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania, 10 PLoS ONE 6: e0126425 (2015), doi:10.1371/journal.pone.0126425, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0126425

Steinzor, Nadia & Bruce Baizel, Wasting away: Four states' failure to manage gas and oil field waste from the Marcellus and Utica Shale, Earthworks (April 2015)

Steinzor, N. et al., Gas Patch Roulette: How Shale Development Risks Public Health in Pennsylvania, Earthworks Gas & Oil Accountability Project (2012)

The Nature Conservancy, Land Use and Ecological Impacts from Shale Development in the Appalachians, Summary Statement for DOE Quadrennial Energy Review Public Stakeholder Meeting Pittsburgh, PA (July 21, 2014)

Thogmartin, Wayne E. et al., White-nose syndrome is likely to extirpate the endangered Indiana bat over large parts of its range, Biological Conservation, Vol. 160 (April 2013), http://www.sciencedirect.com/science/article/pii/S0006320713000207

Thomas, Emily H. et al., Conventional oil and gas development alters forest songbird communities, 78 The Journal of Wildlife Management 2, 293, (Feb. 2014), doi: 10.1002/jwmg.662

U.S. Bureau of Land Management, Grand Junction Reasonably Foreseeable Development Scenario (2012)

U.S. Bureau of Land Management, Instruction Memorandum No. 2013-025, Guidance for Conducting Air Quality General Conformity Determinations (December 4, 2012) https://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-025.html

U. S. Bureau of Land Management, Northeastern States District, Biological Assessment of Wayne National Forest Leasing 2015-2016 All Units (January 2016)

U. S. Bureau of Land Management, White River Field Office, Colorado Reasonably Foreseeable Development Scenario (2007)

U.S. Department of Agriculture, Memorandum of Understanding Among the U.S. Department of Agriculture, U.S. Department of the Interior, and U.S. Environmental Protection Agency, regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process, Preamble (2011)

U.S. Environmental Impact Assessment, Annual Energy Outlook 2017, https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf

U.S. Environmental Impact Assessment, Drilling Productivity Report For Key Tight Oil and Shale Gas Regions (April 2017), https://www.eia.gov/petroleum/drilling/pdf/dpr-full.pdf

U.S. Environmental Protection Agency, Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (2016)

U.S. Environmental Protection Agency, Pollution/Situation Report, Statoil Eisenbarth Well Response, POLREP #1

U.S. Environmental Protection Agency, Sulfur Dioxide http://www.epa.gov/airquality/sulfurdioxide/health.html (accessed July 29, 2015)

U.S. Fish and Wildlife Service, Characteristics of Indiana Bat Summer Habitat (2008)

U.S. Fish and Wildlife Service, 2017 Indian Bat (*Myotis sodalist*) Population Status Update, (2017)

U.S. Fish and Wildlife Service, 2017 Indian Bat (*Myotis sodalist*) Population Status Update, at 2

https://www.fws.gov/Midwest/endangered/mammals/inba/pdf/2017IBatPopEstimate5July2017.pdf

U.S. Fish and Wildlife Service, White-nose syndrome: The devastating disease of hibernating bats in North America (May 2016)

U.S. Forest Service, About the Forest, https://www.fs.usda.gov/detailfull/wayne/about-forest/?cid=fsm9_006053

U.S. Forest Service, Athens Ranger District- Marietta Unit Map

U.S. Forest Service, Final Environmental Impact Statement for the Wayne National Forest 2006 Land and Resource Management Plan Appendix F1 Final Biological Assessment

U.S. Forest Service, Letter to U. S. Bureau of Land Management Re Texas National Forests (Feb. 18, 2016)

U.S. Forest Service, Letter to U.S. Fish & Wildlife Service Re Los Padres National Forest Leasing & Enclosure (Nov. 18, 2016)

U.S. Forest Service, Watchable Wildlife, https://www.fs.usda.gov/detail/wayne/about-forest/?cid=fsm9_006107

U.S. Forest Service, White-nose Syndrome Detected in Ohio (Mar. 30, 2011), http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPyhQoY6BdkOyoCAGixyPg!/?ss=110914&navtype=BROWSEBYSUBJECT&cid=STELPRDB5288711&navid=180000000000000&pnavid=null&position=News&ttype=detail&pname=Wayne%20National%20Forest-%20News%20&%20Events

U. S. Forest Service, http://www.fs.fed.us/research/invasive-species/terrestrial-animals/white-nose-syndrome.php

U.S. Geological Survey, National Wildlife Health Center, White-Nose Syndrome, http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/

Wayne National Forest Supervisor's Office Letter to Dan Everson U.S. Fish and Wildlife Service initiating formal conferencing for the northern long-eared bat (February 19, 2015)

Webb, Ellen et al., Potential hazards of air pollutant emissions from unconventional oil and natural gas operations on the respiratory health of children and infants, Review Envtl. Health 2016, http://ecowatch.com/wp-content/uploads/2016/05/fracking_study.pdf

Wickstrom, Larry et al., The Utica-Point Pleasant Shale Play of Ohio, Ohio Dept. of Natural Resources, Division of Geological Survey, https://geosurvey.ohiodnr.gov/portals/geosurvey/energy/Utica-PointPleasant_presentation.pdf

Whitehouse, Mark, Study Shows Fracking is Bad for Babies, Bloomberg View, Jan. 4, 2014, http://www.bloombergview.com/articles/2014-01-04/study-shows-fracking-is-bad-for-babies

White-nose Syndrome.org, Updated white-nose syndrome map (May 10, 2016) https://www.whitenosesyndrome.org/resource/updated-white-nose-syndrome-map-may-10-2016

White-Nose Syndrome.org, WNS Information Resources (2017), https://www.whitenosesyndrome.org/resources