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Subject: Comments on the NiSource Multi-Species Habitat Conservation Plan

Thank you for the opportunity to comment on the NiSource draft Multi Species Habitat Conservation Plan (MSHCP or Plan) for an Incidental Take Permit.

The Nature Conservancy is an international, non-profit conservation organization working around the world to protect ecologically important lands and waters for nature and people. Our mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. We are best known for our science-based, collaborative approach to developing creative solutions to conservation challenges. Our on-the-ground conservation work is carried out in all 50 states and more than 30 foreign countries and is supported by approximately one million individual members. We have conserved nearly 15 million acres of land in the United States and Canada and more than 102 million acres with local partner organizations globally.

Overview

We support the landscape-scale approach to conservation planning used in the MSHCP. The concept of landscape-scale targeting of priority areas, and pooling funds to undertake substantial projects of conservation significance represents a meaningful advance over more piecemeal approaches. We think that this concept has the potential to serve as a model for future mitigation work. In particular, the Green Infrastructure approach, by presenting an affirmative vision of what conservation success looks like, is a good starting point for guiding mitigation.

However, there are certain aspects of the Plan which cause concern. We describe these in detail below, but provide an overview here.

- First, the duration of the requested permit- 50 years- is too long. Uncertainty about various projections (such as listed species populations, human populations and development, and climate

change) makes it impossible to determine whether proposed actions are adequate to offset take over that timescale. We recommend that the permit be restricted to 25 years.

- Second, there are a few primary issues with the structure of the conservation and mitigation programs that should be addressed:
    - Conservation Goals. We encourage NiSource and the USFWS to develop net positive impact goals for covered species and to base take ratios, mitigation activities, and monitoring measures on these goals.
    - Avoidance measures for species other than the Louisiana Black bear and Cheat Mountain salamander are lacking. We urge NiSource to use The Conservation Fund's Green Infrastructure habitat modeling tool (e.g. core areas) to delineate 'no take' areas within the covered area. Covered activities should be avoided altogether in these 'no take' areas. This would result in a reduction of the proposed covered area.
    - Cumulative Impacts. The plan fails to adequately account for cumulative impacts to species. We suggest that projected land-use changes, including energy development, crop conversion, and residential subdivision, be incorporated into impact calculations and subsequently into the development of take ratios and mitigation measures.
    - Take Ratios. While in line with FWS regulations, the Plan's take ratios do not account for cumulative impacts or temporal loss if mitigation strategies are not implemented by the time of impact or if restoration actions take many years to achieve conservation goals; therefore, it is uncertain whether these calculations will lead to full mitigation of impacts.

- Third, the Conservancy recommends that the monitoring and adaptive management provisions in the MSHCP be supported by appointment of an oversight committee to review the annual reports and the adaptive management measures that are selected.

- Also, given the proposed length of the permit, and even for a 25-year permit, we strongly encourage that proposed or candidate species be considered in the MSHCP analysis. This is supported in the Habitat Conservation Planning Handbook:

> The Services should explain to any HCP applicant the benefits of addressing unlisted species in the HCP and the risks of not doing so, and should strongly encourage the applicant to include as many proposed and candidate species as can be adequately addressed and covered by the permit. The primary reasons for addressing unlisted species with the listed species are: (1) to provide more planning certainty to the permittee in the face of future species listings; and (2) to increase the biological value of HCPs through comprehensive multi-species or ecosystem planning that provides early, proactive consideration of the needs of unlisted species. (US DOI 1996)

In particular, we recommend including two additional bat species which are at risk from White-nose Syndrome and currently in review for threatened or endangered listing: the small-footed (Myotis leibii) and northern long-eared (Myotis septentrionalis) bats (USFWS 2011). And, we believe the Plan should cover the Virginia Northern Flying squirrel (Glaucomys sabrinus fuscus), which is currently listed as Endangered and occurs in covered counties of the Plan.

- Last, an important element of the Plan for evaluating whether avoidance, mitigation, and monitoring measures are adequate is Appendix L (Survey and Other Protocols), which appears to be incomplete. We strongly urge that Appendix L be completed and open for public comment before the permit is awarded.

The Conservancy's involvement in developing the MSHCP

Section 1.5.2 names The Nature Conservancy as having been consulted in the development of the Plan and states that the Conservancy will be involved in mitigation opportunities at the state chapter level. While NiSource and the USFWS did contact the Conservancy during the development of the Plan, we did not provide significant technical assistance or feedback during its development. Additionally, we have not discussed specific mitigation opportunities with NiSource and/or The Conservation Fund. Therefore, we request that specific references to the Conservancy's participation be taken out of the report.

Duration of the HCP/ITP

The Conservancy recommends that the HCP and ITP be limited to 25 years, given the uncertainties inherent in such a large-scale project with numerous covered species and the decreasing accuracy of predictive impact models after a 20-25-year timeframe.

An effective HCP must be founded on scientific data including biological information on the covered species, as well as information on the cumulative impacts across HCPs and any future activities affecting the covered species during the life of the plan, including land-use change and environmental uncertainty (Kareiva et al. 1998). Predictive models that accurately measure future land-use change, including energy development, are essential to: (1) calculate the cumulative impacts to species over the life of the plan (Kareiva et al. 1998); and (2) appropriately construct and site compensatory mitigation measures (Kiesecker et al. 2010).

The Conservancy believes a 50-year ITP is too long because: (1) current land-use change models lose accuracy after approximately 25 years (Theobald and Hobbs 1998); (2) current projections for energy development are forward looking approximately 25 years (DOE 2008); and (3) while land-use change models have been used for decades, there are few models that have been applied specifically to energy development impacts on species (Copeland et al. 2009) and those that do exist are based on the 20-25-year timeframe.

More specifically, there is an inability to project the reactions by threatened and endangered species to impacts and changes in habitat. This is largely due to a lack of data. For example, available data shows current species distribution, but we don't have access to historic species distribution that would indicate how threatened and endangered species react to impacts like climate change. For a more thorough review of the issues related to temporal uncertainty regarding predictive modeling see: Araújo and Luoto, M., (2007); Austin et al. (2006); Barbet-Massin et al. (2010); Buisson et al. (2010); Fitzpatrick and Hargrove (2009); Nenzen and Araujo (2011); Thuiller (2004); and Thuiller et al. (2004).

While the Conservancy believes that there is too much uncertainty about future land-use change and energy development to support a 50-year ITP, we also understand that some mitigation measures may not reach maturity until decades after implementation and there are benefits to a longer duration HCP and ITP. We believe that a 25-year ITP will both allow for conservation actions requiring long-term implementation to secure outcomes and minimize the uncertainties inherent in a longer duration ITP.

Conservation Program

Conservation Strategy and Goals

While the holder of an ITP is not required by law to contribute to the recovery of a species, the Conservation Habitat Planning Handbook states that "Applicants should be encouraged to develop HCPs that produce a net positive effect for the species or contribute to recovery plan objectives" (US DOI 1996). Therefore, we encourage NiSource and the USFWS to adopt net positive impact goals for covered species.

The Conservancy supports the goals of the conservation strategy in section 5.1.1. namely, to "support species conservation actions using a landscape approach" and to "enhance the conservation of MSHCP species through the application of rigorous planning, adaptive management, and sound scientific principles". However, the individual species conservation goals in Chapter 6 are simply "to the maximum extent practicable, minimize and mitigate the impacts of any incidental taking" and do not include goals for net positive impact.

The Conservancy urges NiSource to consider net positive impact conservation goals for three reasons:

1) In most cases the plan covers a significant portion of the covered species' habitat, and the cumulative impacts of covered activities may "appreciably reduce" or "jeopardize" the recovery of the species (US DOI 1996);
2) Given the size and duration of the HCP, net positive impact goals have the potential to significantly advance the conservation and recovery of the covered species; and
3) "Net positive impact" provides a clear goal against which HCP actions and performance can be measured and monitored.

Additionally, given the uncertainty of many of the AMM and mitigation measures, as discussed below, a net positive impact goal would assure against AMMs that fail to meet proposed conservation outcomes.

Avoidance Measures

The Conservancy is concerned with the lack of true avoidance measures in the Plan. We feel that most of the "Measures to Avoid and Minimize" are in fact minimization measures and that stronger avoidance measures must be developed and given priority. NiSource has actively made decisions to avoid all impact by altering the covered area of the plan for only two species- the Louisiana Black bear and the Cheat Mountain salamander. However, NiSource has not adequately identified areas to avoid for the other covered species of the Plan. While NiSource has identified temporal avoidance measures (i.e. limited clearing of summer habitat during the summer months), they have failed to indentify spatial measures or 'no take zones' within the covered area. Identifying areas where impact will be avoided altogether or 'no take zones' is an important first step in the 'mitigation hierarchy' (McKenney and Kiesecker, 2010).

Therefore, the Conservancy recommends that NiSource utilize the habitat mapping tools of the Green Infrastructure model to identify locations in the covered area of the Plan where activities causing impacts to species should be avoided altogether. For example, to be consistent with the goals identified in the Green Infrastructure approach, all core areas should be avoided where possible. These 'no take' areas should be included in the MSHCP and updated as new species data becomes available.

Additionally, it's not clear whether the AMMs listed in relation to each species are prioritized in order of their intended use. In some cases that makes a difference and we recommend that NiSource indicate the order in which they would be used.

Mitigation Program

Accounting for cumulative impacts

While the MSHCP takes into account changed circumstances such as climate change, drought, and floods in 10.3, the plan does not adequately assess the impacts of broad land-use change on species habitat. Given the long-term nature of the Plan, attempts should be made to project land-use changes such as energy development (wind, bio fuels, natural gas) and residential subdivision to properly account for cumulative impacts. Including this data could have significant impacts on the conservation and mitigation strategies for species. For example, if impacts not related to the MSHCP (i.e. residential subdivision) significantly impact a species' habitat, there may be the need to alter the take ratio for that species; or limit the amount of take permitted.

Take ratios

We recommend improving the Plan's take ratios by more transparently incorporating key factors in their calculation. While the Plan provides some logical grounding for why take ratios increase, the Plan lacks metrics or an accounting framework. On what basis will these take ratios fully compensate for impacts of take? When the Plan purports that "the mitigation package presented above fully compensates for the impact of the take" (6.2.1.6 Indiana bat p. 57), there needs to be a clear basis as to how the proposed ratios will support the achievement of this goal. Will a 1.5-to-1 ratio suffice? Why not 3-to-1 or 10-to-1? We believe the Plan's take ratios could be improved by more transparently incorporating the following factors:

- Cumulative impacts. Developing take ratios in isolation of other projected impacts to the covered species is a piecemeal approach. As noted above, we suggest that projected land-use changes, including energy development and residential subdivision, be incorporated into impact calculations and subsequently into the development of take ratios and mitigation measures. For example, the Plan increases take ratios by a multiplier of 1.5 for a number of species "to compensate for greater impacts to small isolated populations that may have less resilience" (p. 122, 149, 174, 199, 224). If the Plan is going to adjust take ratios based on factors like resilience, then it is essential to understand cumulative landscape impacts that could affect this resilience (connectivity, functionality), not just project impacts.
- Temporal losses. We recommend that temporal losses be incorporated into the development of take ratios. We suggest applying discounting to address temporal losses of mitigation strategies not implemented by the time of impact, or where the conservation goals of restoration actions are

achieved after the time of impact. The Plan considers temporal losses in the case of riparian restoration: "For all riparian restoration, a multiplier of 3 will be used to account for the time it takes riparian restorations to mature, stabilize, and become fully functional" (p. 122, 149-150, 174, 224). However, it is unclear why a multiplier of three is applied. The multiplier should be based on the time required to achieve restoration, with a longer period requiring a higher multiplier.

- Probability of success. We recommend that take ratios reflect the probability of achieving conservation goals through the proposed conservation actions, as some actions are more likely to succeed than others. The Plan considers the probability of success for restoration in at least one case: "A multiplier of 1.5 is used for all mitigation to compensate for the failure of some of the introduced animals to survive the transplanting process..." (6.2.5.6, p. 149-150). We recommend that the Plan provide a transparent basis – i.e., cite a study finding – as to why a 1.5 multiplier is appropriate. We recommend assessing the probability of success for proposed restoration actions (e.g., high, medium, low) based on existing studies of covered species to provide a sounder basis for adjusting take ratios. If studies are unavailable, then the MSHCP should err on the side of net environmental impact and monitoring measures should be developed to confirm the likelihood of success.
- Protection against a "background rate of loss." We recommend developing an estimate of the background rate of loss for covered species based on an analysis of projected cumulative impacts (see recommendation above). This will provide a basis for estimating the value of protection actions and for establishing take ratios. Protection has a value because it is mitigating/preventing an impact. Some places face greater impact threats than others. Understanding the background rate of loss provides a basis for estimating the "additionality" (new contribution to conservation) of a protection action. This is one critical element for establishing an appropriate take ratio. The greater the background rate of loss is, the higher the value of a protection action, and the lower the necessary take ratio associated with that protection action.

Monitoring

The Conservancy recommends that the monitoring and adaptive management provisions in the MSHCP be supported by appointment of an oversight committee to review the annual reports and the adaptive management measures that are selected. This oversight committee would operate under the provisions of the Federal Advisory Committee Act assuring that the public would be kept fully apprised of the progress in meeting the biological goals of the Plan.

The Fish and Wildlife Service published an Addendum to the HCP Handbook in June, 2000. The Addendum describes the value of an oversight committee in the following terms:

> For large scale or regional HCPs, oversight committees should periodically evaluate the permittee's implementation of the HCP, its incidental take permit, and EIA and the success of the operating conservation program in reaching its identified biological goals and objectives. Such committees usually include species experts and representatives of the permittee, the Services, and other affected agencies and entities. Submitting the committee's findings to recognized experts in pertinent fields (e.g., conservation biologists or restoration specialists) for review or having

technical experts conduct field investigations to assess implementation of the terms and conditions would also be beneficial. (US DOI 2000)

This is a large scale, regional MSHCP that should include appointment of an oversight committee to review each annual report for the reasons that the Service outlines in the Addendum.

Although the Conservancy recognizes the intent of the No Surprises policy and the need to reconcile its purpose with the concept of adaptive management, we find that the remedies for failed avoidance and minimization measures and mitigation strategies are too narrowly drawn in the draft MSHCP. If the AMMs and mitigation measures proposed by the permittee in this application do not work, it should be a requirement of the MSHCP that the permittee accept other reasonable measures to fully mitigate for take even if those measures are not explicitly set forth in the MSHCP today. The purpose of adaptive management is to learn by doing. A policy that restricts future options to what is understood today cannot take full advantage of the opportunities for adaptive management.

Also, in a number of cases, if AMMs that have been used for some time appear to be effective, then no further effectiveness monitoring would be required. We find this problematic for two reasons. First, we can't assume that threatened and endangered species will continue to act in the same way over time, especially given other cumulative impacts to their habitats. Additionally, it should be clear that any new activity causing impact should employ AMMs and those should be monitored each time there is a new disturbance. In other cases monitoring is required in regular intervals for the first 5 years and is not required thereafter. We feel strongly that monitoring should continue in some interval throughout the life of the permit and that monitoring frequency should be based on life history traits of the target species and rigorous enough to statistically evaluate mitigation success.

Species- Specific Comments

Addition of Virginia Northern Flying Squirrel (Glaucomys sabrinus fuscus)

The MSHCP fails to consider the Virginia Northern Flying Squirrel (VNFS), a federally endangered species that occurs in Pendleton and Randolph counties, West Virginia and in Virginia. Specific areas referenced in Appendix E that contain VNFS and will be crossed by NiSource facilities include Monongahela National Forest, Laurel Fork Wilderness North, Laurel Fork Wilderness South, Canaan Valley NWR, and Blackwater Falls State Park. The MSHCP should consider the potential for impacts to the VNFS.

Addition of the Small-Footed (Myotis leibii) and Northern Long-eared (Myotis septentrionalis) Bats

We recommend that the Plan cover two additional bat species, the small-footed (Myotis leibii) and northern long-eared (Myotis septentrionalis), which are at risk from White- nose Syndrome and currently in review for threatened or endangered listing (USFWS 2011). While the MSHCP discusses the impacts that White-nose Syndrome is having on the Indiana bat, the plan does not discuss a method for incorporating emerging information on additional bat species that are at risk from the disease, including bat species that are currently under review for proposed listing by the USFWS. At the very least, we recommend that the MSHCP include an annual review and process for incorporating new federally listed bat species.

Indiana bat

- The discussion of implementing Best Management Practices (BMPs) is lacking. Options for habitat improvement in areas of suitable bat habitat, especially in proximity to known maternity colonies, could include installation of wood or aluminum bat boxes on poles in direct sunlight, planting shag/shellbark hickories, and creating corridors periodically where species have cover to assist in movement. Also, BMPs related to infrastructure development are lacking. This could include adopting a policy to limit noise pollution (the MSHCP mentions 75 dB at 1 mile- this is too loud at 200 m) or light pollution (limit work lighting and direct only downward onto site).
- Long term monitoring (bat recruitment, success of mitigation measures, etc.) does not appear in the document and should be addressed.
- There seems to be incomplete data on the locations and quantity of take. For example, Table 6.4-1 on page 271 does not include several Pennsylvania counties with known Indiana bat populations and maternity colonies, including Green, Adams, Fayette, Lawrence, Beaver, and Butler counties. This is particularly concerning for Adams and Green counties, where the proposed pipeline appears to be going through the Adams county Indiana bat maternity colony as well as the Green county maternity colony.
- Similarly, much of the areas affected by the pipeline will go through lands that have never been surveyed via netting for possible presence of bats. Appendix L is lacking information about how monitoring and surveying will be completed and we recommend that further information be collected and made available before the approval of the permit.
- We are concerned that the mathematics used in the calculation of take underestimate the probable number of bats and maternity colonies affected by the pipeline. More specifically:
    - 6.2.1.1 Page 21 states that because Indiana bats do not occupy all suitable habitats, the method overestimates the number of impacted colonies. This statement could be true if maternity colonies were uniformly distributed across their range and ROW corridors did not intersect maternity colonies. However, colonies are not uniformly distributed and the ROW corridors impact at least 14 known colonies. Given that ROWs occur on suitable habitat, there is the possibility that impacts could significantly underestimate the potential effects on Indiana bats.
    - 6.2.1.1 Page 21 also mentions that an analysis to account for this overestimate was performed across the entire bat range to come up with an adjustment ratio. However, using the entire bat range seems inappropriate as there is no distinction made to habitat quality or suitability.
    - 6.2.1.4 Page 36 (and additional analyses) claims that colonies were considered viable if there was 10% suitable habitat within a 2.5 mile home range. This 10% habitat threshold seems too low. It could potentially be appropriate if the 10% was highly suitable habitat and there was a matrix of 25-75% suitable habitat. However, 10% habitat, by itself, does not seem realistic. This is important because if the 10% threshold was raised to 20% (perhaps a more realistic minimum), the number of viable sites would be reduced thereby increasing the adjustment factor and ultimately increasing the number of maternity colonies affected.
    - 6.2.1.4 Page 37 further demonstrates that the models used in this analysis may not be appropriate. If modeling results suggest that only 2 maternity colonies will be affected

yet at least 14 known maternity colonies are found to cross the ROW covered lands (and that is from the limited number of known maternity colonies), then the model is clearly underestimating the potential for impact on Indiana bats.

- By referring to a model that significantly underestimates (6.2.1.4 Page 37: 2 modeled versus 14 known colonies) impact, and then moving to use the 14 known colonies as the default impact, there seems to be an inaccurate accounting of the potential impact on unknown maternity colonies.
- Further, in the calculation of take (6.2.1.4 Page 37), the value of 14 maternity colonies x 120 bats is used to determine that 1,680 individuals will be taken by O&M activities alone. However, there is an additional take that is not factored into this equation- because this algorithm assumes that females would only give birth and have pups over one year. By removing this maternity colony from the population, additional take should be accounted for which includes a certain proportion of the potential bats that may have been birthed, produced and allowed to reach sexual maturity (producing their own pups) over the course of the 50 years.

6.2.1.1 While we understand the 10-mile threshold used in the exclusion of hibernacula because Indiana bats using those hibernacula beyond 10 miles of the covered lands perhaps may "not be impacted by covered activities" (p.19), we encourage a more thorough examination (including citations) of this threshold.

6.2.1.2 Page 23 mentions one strategy for hibernacula conservation could be to ensure landowners adjacent to priority hibernacula understand various options for restoring and maintaining their land as buffer. This is an interesting idea, however, there is no further information regarding how this will actually be achieved and monitored.

6.2.1.3

- Page 26: We would like to see a citation for the definition of "unoccupied" dates for summer habitat (August 15 through May 14) and swarming habitat (November 15 to March 31).
- Page 26: While the MSHCP addresses that NiSource is responsible for developing and providing sufficient information as to whether suitable habitat exists, there is no explanation of how identification of new roost sites, colonies, etc. will be reported to state or federal wildlife officials which we feel is critical.
- Page 27: We agree that habitat assessments are a vital part of determining impacts to the Indiana bat, however Appendix L provides no information (to date) as to how these assessments will be conducted or completed. We encourage NiSource to make these recommendations available as soon as possible so that USFWS and other reviewers can determine if the methodologies proposed are appropriate and sufficient.
- Page 29: We believe that a 100-foot distance from a brush fire that is >600 sq ft in size is too close and that impacts at this distance could be substantial. We recommend a minimum of 200 feet from a burning brush pile.
- Page 31, #28: This recommendation should be reworded to include a buffer area around the maternity colony site.

6.2.1.4 Page 34, #25: The citation of Niver 2009 is referencing 'personal communication' and not any form of written, gray or peer-reviewed literature or publications. The exclusion of all lands in the

state of New York >900 feet in elevation as being suitable should be reviewed and excluded only if further additional information supports this claim.

Bog Turtles

6.2.2.1

- Page 61: The grading to remove the herbaceous vegetation will likely have an adverse effect on the nesting habitat for more than 1 nesting season. The structure of the micro topography is equally as important as the suite of plant species in the nesting habitat, and may take years to develop and longer to establish and maintain. Development/adoption and implementation of BMPs (for bog turtle conservation) while in the bog turtle range should be established and adopted as part of this MSHCP.
- Page 61: We do not agree with the statement that the likelihood of hibernacula occurring directly over an existing pipeline is low. The Conservancy have documented (unpublished reports have been shared with the USFWS) through our radio telemetry work that turtles do hibernate on pipeline ROWs. (TNC 2005)
- Page 61 claims that NiSource will attempt to avoid new ROWs through or near bog turtle sites. We are happy to see this statement as increased human access is a major threat to bog turtles because of the greater risk of illegal collection. However, the MSHCP does not provide information on how this avoidance will be conducted and what decisions will made be to minimize impacts.
- Page 61 states that there is "no information suggesting there are problem areas" from ATVs in bog turtle habitats. While this may be the case on a limited number NiSource ROWs in bog turtle habitats, we do not believe this is the normal level of impact. Illegal ATV use in remote areas is a very difficult and common problem that the Conservancy deals with across our properties, including bog turtle habitats.
- Page 61: We urge extreme caution when discussing the alteration of the hydrologic period, especially during the turtle hibernating season (especially lowering of the water table, even temporarily). These activities have the potential to result in the mortality of all turtles using the particular hibernacula that is affected, and may render the hibernacula permanently unsuitable.
- Page 62: In some wetlands, utility ROWs may provide the only suitable nesting area, but even routine maintenance (especially if done during the active season) may completely destroy the suitable habitat and/or wipe out an entire population of bog turtles.
- Page 62: Again, regarding altered hydrology, our radio telemetry studies have documented that the majority of turtles hibernate within 5 to 8 cm of the surface, so even a change of only a few centimeters in water level can result in the mortality of hibernating turtles. (TNC 2005)
- Page 63 states that it will be "far less likely" to injure turtles if vehicles are driven directly adjacent to turtle wetlands. This is not necessarily true, as our radio telemetry studies have shown that turtles may occur on terrestrial, hard-surface lands more than 25 meters from the wetland and they may use uplands adjacent to wetlands during the entire field season. (TNC 2005)
- Page 63: While moving turtles out of a work area will still be considered take, we question whether this is the most appropriate strategy. Bog turtles have a homing ability that will cause them to try to return to their home range (wetland), which could potentially result in higher risk of mortality for the turtle.

- Page 63: For chemicals used within or near bog turtle wetlands, we would like to refer NiSource to the Biological Opinion (addendum to the bog turtle recovery plan), which identifies the chemical products, application methods, and timing that the USFWS allows in bog turtle habitats. (US DOI 2006)

6.2.2.2 Page 65: We are happy to see Objective 1 and Objective 2 listed together, because while Objective 1 only protects known populations, bog turtles are known to be secretive, and small populations can remain undetected, even after phase II surveys have been conducted. In addition to these objectives, we encourage adding an Objective to include the protection of potential habitats, especially those in neighboring proximity to known turtle sites.

6.2.2.3 Page 67: Step 2a- first bullet- should also include potential habitat.

6.2.2.5 Page 78: We disagree with the statement that a temporary reduction of reproductive success would not result in a significant impact to the population. We also disagree with the statement that any short-term loss in reproduction will be offset by habitat restoration. Bog turtles do not reach sexual maturity until they are 6 to 8 years old, they have only 1 small clutch of eggs each year, nest predation is high (TNC 2005), and predation of hatchling and juvenile turtles is high. Any reduction in reproductive or nesting success, or the mortality or removal of even a few individuals from a population of turtles could result in the decline and eventual extirpation of a population.

Similarly, we are concerned with the calculated loss of 4 to 13 turtles from populations of 15 -30 turtles and we consider this a major impact to any population, and believe this could result in the extirpation of multiple populations of turtles within a watershed or metapopulation. This is primarily because even the loss of a single turtle from a small population could easily take decades for the population to recover, even without other stressing factors.

<u>Mussels (clubshell, fanshell, Northern riffleshell, James spineymussel, sheepnose mussel)</u>

We have the following general comments to sections concerning each of mussel species listed above:

- Current stream mitigation measures are not adequate for long-lived impacts. The standards of monitoring should be for a full range of biological functions, assess all life stages, and extend for at least 10 years to assess ecological health.
- The standard for successful mitigation of stream channel impacts by bank and riparian restoration should require evidence of stream ecological function benefits, not just project completion.
- Enough pipeline construction projects have occurred that rare events (such as landslides, erosion and sedimentation control failures, contaminant spills, frac-outs during drilling, etc.) can be included in risk analyses. These events should be assessed and included in the impacts analysis to provide USFWS with the appropriate context in which to determine the adequacy of avoidance, minimization, and mitigation measures.
- Any high density mussel assemblage supporting listed species should be avoided because replacement of these occurrences is currently not feasible or very difficult and very resource intensive. Pre-project biological surveys should be required for any potentially supporting habitat and projects modified to avoid such occurrences if they are found.

- Propagation and augmentation of mussel populations is a developing management technique. If these are necessary as mitigation measures, then NiSource should support the development of propagation and augmentation techniques and protocols for evaluating their success by funding appropriate facilities. Development of this tool for other taxa should be pursued as well.

The following comments refer to the clubshell mussel section, but should be applied to assessments of the fanshell, Northern riffleshell, James spineymussel, and sheepnose mussels as appropriate as well.

6.2.4.1

- There is no calculation of the risk of an accidental sediment failure or contaminant release. This possibility is dismissed as outside the scope of the MSHCP. However, the risk should be taken into account as part of the cumulative impact analysis for this type of project. At least two recent natural gas line projects in Virginia had catastrophic sedimentation events during rain storms.
- Water withdrawal should be prevented or substantially limited during low flows to protect the hydrologic needs of the mussel fauna.
- Page 103 states that there are no studies about the toxicity of drilling muds. A study by Robert Hudson of Presbyterian University in Clinton, SC, Dave McKinney of Tennessee Wildlife Resources Agency, and others found that there could be some toxicity in drilling muds. They presented their findings "Effects of Drilling Agents on the Growth and Survival of Juvenile Mussels" (Hudson 2003) at the 2003 annual meeting of the Freshwater Mollusk Conservation Society.
- The MSHCP should account for the possibility of causing major rock fractures that allow stream water to drain underground and significantly alter hydrology, particularly during low flow times.

6.2.4.2 Objective 1. It is unclear specifically what NiSource will do to restore and protect habitat.

6.2.4.3

- It should be assured that Appendix L will be finished before authorizing the MSHCP. It should require significant post-project monitoring that will detect population level changes in mussels.
- Any mussel survey should be conducted multiple times during different times of year to detect mussels burrowed below the stream substratum during the initial sampling event.
- The EM&CP plan needs to be sufficient for large rainfall events, which will happen over a 50-year (or 25-year) time frame.
- P 108. Horizontal directional drilling may be more risky than open ditch crossing for medium to small streams. Virginia has had a couple significant frac-outs during pipeline installation. These risks should be evaluated.
- Regarding hydrostatic test water, we would like to stress that even seemingly common additives like surfactants can be toxic or harmful to mussels at low to moderate concentrations.
- Equipment with the potential to harbor zebra mussels or veligers should be thoroughly washed before use in any stream due to the downstream mobility of zebra mussel veligers and the potential to reach suitable mussel habitat.

6.2.4.4

- The take calculation should include estimates of the risk of large sediment slumps during storm events. They also should include potential downstream effects which will be influenced by time of year, EM&CP controls, chemicals used, etc. Impacts during spawning or glochidial release seasons could be much more harmful to mussel populations than at some other times of year.
- Mussels are clumped in distribution so average density population density estimates may be grossly in error. Therefore, some assessment should be done prior to any instream work to determine potential take. Crossing sites should be selected to avoid high quality mussel habitats so that densely populated mussel assemblages will be avoided.
- Calculating the incidental take based on qualitative mussel density estimates is inadequate. Density estimates based on qualitative sampling have been shown to be very inaccurate. Therefore, the actual population density could be much higher than that estimated without quantitative sampling. (Strayer and Smith 2003)
- The calculated impact area estimate leaves the possibility for a larger impact than mitigated in good mussel habitats due to the use of the 50% occupancy factor. The estimated impact area should be derived on a site specific basis.
- States that sediment loads in large rivers are okay because these rivers inherently carry more sediment on an annual basis. This is problematic. These rivers may be significantly altered due to other human activity; however, the goal should be to protect river functions within the natural range of variability.

6.2.4.6 Page 121: We encourage NiSource to explore tributary restoration/erosion fixes as mitigation opportunities in addition to mainstem projects. Some arguments can be made that tributary projects are better in sediment reduction and may be more ecologically beneficial than mainstem bank restoration.

Adaptive Management

First, in a number of sections in the Adaptive Management chapter, NiSource is required to monitor 3 projects to support whether impacts fit the hypothesis of AMMs and mitigation measures. This standard is too low. Standard statistical measures with normal distributions require 6-10 independent samples to develop a distribution upon which conclusions about means and variances can be drawn. Therefore, we believe that, as a rule of thumb, NiSource should monitor at least 6-10 covered events instead of three.

7.4

- Several references are made to "individuals or surrogates" of take species, yet there is little to no reference to surrogates in the text for specific species. We suggest removing that language if surrogates are not being used. If surrogates are to be used there needs to be adequate documentation of their suitability as representatives of 'take' species.
- States that "For AMMs that have been successfully implemented by the industry for many years and have been proven effective at avoiding or minimizing impact to MSHCP species, no effectiveness monitoring is required." We advise that effectiveness monitoring should be used in all situations. Circumstances are unique for threatened and endangered species and changes must be tracked over time.

7.4.1

- We believe there is an issue with the timeline of actions regarding "indirect effects". NiSource proposes to set aside money for a study by year 5 or prior to construction that would affect know maternity colony habitat. This is too long to wait to start monitoring the effects of construction. NiSource should set aside the money at the beginning of the permit and start the study immediately to create a baseline for further study.
- Again, the timeline for "direct and indirect effects" causes concern, primarily due to missing information. It states the NiSource will contract a bat biologist to do baseline surveys, and that monitoring will begin the first summer following the publication of acoustic monitoring guidelines. The Conservancy encourages that the baseline surveys and monitoring start immediately.

7.6.3 States that if an AMM fails to provide the anticipated protection (or performs better) and there is evidence from "credible sources (e.g. the local Service Field Office)", the MSHCP may be amended. This implies that the Service Field Office has responsibility for effectiveness monitoring. We suggest that the process for conveying this responsibility and recording results be developed in advance of awarding the ITP.

7.6.4.1.1 There is inconsistency in this section with regard to distances from the coffer dams; the hypothesis says 10 feet upstream of the coffer dam and 100 feet downstream. But the adaptive management measures indicate 175-feet upstream and 200 feet downstream. Also NiSource proposes to measure sediment immediately after construction in the hypothesis but in the adaptive management description they indicate that measurement will happen "not more than 48 hours after major earth disturbance". This is too long to detect the potentially lethal effects of sediment downstream, and we recommend that the limit be within 24 hours.

7.6.4.1.1 AMM#9: States that if stream banks are stable and there is little change between annual monitoring, then monitoring will be reduced to every two years. It should be acknowledged that if new disturbances affect the stream bank, NiSource will monitor the new disturbances annually.

7.6.4.1.2

- States that a qualified biologist will do a site visit one year and two years after restoration starts to evaluate for a 75% survival rate. Monitoring should be adequate and intense enough to detect and estimate recruitment. We believe that one year is too long to wait to assess the effectiveness of the restoration. NiSource should monitor every 6 months to see if crayfish remain present and be ready to reestablish another population well before 2 years.
- AMM #1: NiSource should consider a study to relocate suitable surrogate species into the impact area after all reclamation is complete and monitor survival, immigration, and emigration. If the population establishment is successful, consideration could be given to moving Nashville crayfish back into the impacted zone and monitoring the results.
- Alternative A: Any unoccupied habitat designated for use as a relocation site should be evaluated using a suitable surrogate species prior to relocation of the endangered species. The habitat may be unoccupied for an unknown reason and be unsuitable for the target crayfish. The suitability of

the habitat should be monitored over the course of a full generation to verify suitability for a sustainable population.

- Alternative C: Relocation to a pond is unacceptable. If no stream site can be found and pond relocation would be required, the project is jeopardizing the Nashville crayfish and NiSource must avoid the site.
- AMM #4: Alternative A: This alternative should include a provision for the Service to hire an independent 3rd party HDD expert to develop a revised HDD plan.
- AMM #7: Monitoring for this task should include sediment deposition sampling during construction, as well as before and after, to evaluate cofferdam and EM&CP controls effectiveness. Sampling should continue after construction completion until substrate stabilization status is verified.
- AMM #9: NiSource should use some quantitative method of measuring bank erosion, such as horizontal bank pins, to determine sediment loadings from project areas and effectiveness of reclamation efforts. They also should be required to measure instream sediment immediately upstream and downstream of the disturbance to evaluate impact on the stream.

7.6.4.2.1

- AMM#3. Assumes that if a worker finds a turtle in a work zone, that the silt fence failed; but it doesn't take into account that this could be a turtle site that was previously unidentified.
- AMM#20 and #21. Since the hypothesis is that activities will not permanently alter bog turtle wetlands, NiSource must establish a baseline to know what the hydrology of the wetland is before any activities begin for known sites and then monitor 3 times (beginning, middle, end) during the spring/summer. We suggest that this monitoring continue for at least 10 years.
    - Alternative A. This alternative should be reworded to say "Revise AMMs to utilize more or different trenchline barriers so that the activities do not alter the hydrology of the sites..."
    - Alternative B. The way this is worded implies that activities are only draining wetlands, but conceivably activities could add water to the wetlands. This should be reworded to say "to develop other methods to insure the original hydrology of the wetlands".

7.6.4.2.2 The hypothesis should be reworded to state "restoration measures will recreate suitable habitat for bog turtles and the turtles will colonize those sites, and expand nesting and basking within occupied sites."

7.6.4.3.1

- AMM#5. The hypothesis should be rephrased to read "Disposal of spoil material as close as 100 feet to known Indiana bat entrances and associated sinkholes will not impact known Indiana bat hibernacula within the covered lands". Or "Known Indiana bat hibernacula within the covered lands will not be impacted by disposal of spoil material as close as 100 feet of known Indiana entrances and associated sinkholes". However, we believe that 100 feet is too close. We also recommend that even if no "measurable modification to hibernacula" is found that NiSource continue to monitor effects from any new disposal.
    - Alternative A is also concerning. It says that NiSource will determine a distance that disposal won't modify microclimate. First, we feel that physical measurements of the

microclimate and video may not be effective in assessing impact. Second, it is unclear how NiSource will "determine the distance... that spoil disposal may occur without modifying hibernacula microclimate". It is conceivable that it would be cheaper and more efficient for NiSource to adopt a bigger buffer upfront.

- AMM #7. The hypothesis should be rephrased to read "Known Indiana bat hibernacula within the covered lands will not be impacted by blasting as close as 0.5 mile..." Again, we recommend that the distance be greater than .5 mile from any entrance or underground passage. Also, NiSource suggests that studies "will be performed for the first three blasting activities conducted within 2.5 miles of known and/or presumed Indiana bat hibernacula". We suggest that hibernacula be evaluated within a 1-mile radius.
- AMM#8. Alternative A. This is a similar concern as above. We encourage NiSource to start with an adequate buffer instead of determining the distance through trial and error. We suggest using the same distance as for blasting.
- AMM#27. We believe that the hypothesis should simply state that bats will not roost in trees less than 9 inches in diameter in the covered area. NiSource should survey the bats before any activity occurs to see what size trees they use to establish a baseline. If it's less than 9 inches then the hypothesis needs to be changed. NiSource should continue to survey bats after activities to see if they changed roosting habits. An alternative hypothesis would be "O&M activities are unlikely to affect the size of trees that bats use to roost"; and again this would need to be tested before and after the activity. Also, we believe that Alternative A should be altered to say that trees should not be cleared during the active period.

7.6.4.3.2 We would like to stress that winter restoration is entirely experimental. This section appears to be transferring responsibility of success from NiSource to bat and cave experts. For example, it states that if bats don't occupy the cave in 4 years, mitigation is considered complete. These are untested experiments, and NiSource is giving itself up to 10 years to identify an alternative if the experiment doesn't work. If this measure is to be employed there must clear guidelines for calculating the temporal loss from failed measures.

7.6.4.4.1

- The standard of monitoring the first 3 projects to determine whether the impacts fit the initial hypotheses is too few. Since topographies and geologies of the streams in the covered area vary significantly, monitoring should be conducted in multiple locations within each distinct habitat unit type. Otherwise, comparison will be made among conditions that are not alike, yielding skewed results and possibly missed impacts.
- We question the assumptions in the hypothesis regarding the sediment transport model and believe there should be more clarity on how the thresholds were derived.
- We believe that 48 hours is too long to wait to monitor sediment after commencement of the covered activity. Monitoring should commence prior to or coincide with ground-disturbing activities.
- We would like NiSource to justify the suspended sediment cutoff level of 600 mg/L.
- Measurements of sediment deposition need to take flow conditions into account since expected results will be different depending on the relative level and velocity of flow. The deposition

sampling should be conducted at multiple locations both upstream and downstream of the disturbance area.

- Some sedimentation sampling should be conducted at each crossing because each site is different and control measures that were adequate at one site may not be at another.
- This approach seems to assume that physical sedimentation is the only "taking" threat. No provisions are made to monitor contaminants, temperature and light regime alterations, effects on groundwater flow, etc.
- Mussels have a life cycle that is too long to allow proper assessment given the proposed monitoring protocols.
- Some in situ and laboratory exposures should be conducted to evaluate potential impacts, particularly on juvenile mussels.

7.6.4.4.2

- The AMM's listed seem to not apply to the James Spiny mussel. Basic ecology and impacts are similar for the James spinymussel as for the other species.
- The overall monitoring approach should not explicitly avoid sampling during storm events since these are the prime erosion times when sediment is most likely to move into stream channels.
- AMM #3 & #8: Same comments as above for the Nashville crayfish.
- AMM #17 and #18: NiSource should adopt a time-of-year restriction for instream work or water withdrawals/releases to avoid glochidial and juvenile entrapment or contaminant impacts on sensitive life stages. Sedimentation is not the primary issue with water releases, rather contaminant exposures are the biggest threat. NiSource should conduct experimental exposures with juvenile mussels using both effluent components and the overall mixture. Water withdrawals should not be taken from areas of known mussel aggregations or prime habitat to minimize risk of glochidial and juvenile entrapment.
- AMM #20: There is no margin for error for this impact. Visual inspection of the equipment is inadequate to detect potential invasive species specimens. The equipment must be sterilized whenever moved from one watershed to another. Any equipment that is used in a watershed with possible invasive species of concern (didymo, zebra mussels, etc.) should not be used in a watershed which currently is free from those organisms. If that is not possible, the equipment should be cleaned, dried and quarantined long enough to ensure no transfer of invasive species (typically up to 4 weeks).
- Mitigation: The objective for substrate stability is longer than 5 years and should be approached as more than 25 years. Therefore, the stability should be monitored at least 10-20 years. Substrate composition is driven by flow conditions and the energy of water in the stream. The balance between substrate particle size/density and flow velocity/frequency determines the natural substratum composition. Stream restoration engineers should be involved to appropriately design any instream habitat restoration work to be long-lasting.
- Alternative A: Re-working a failed substrate improvement effort is likely a waste of time unless the underlying flow and sediment delivery issues are fixed prior to another attempt.
- Alternative B: Any enhancement area should be implemented at a ratio of greater than 2:1 to the impacted area due to the uncertainties of "creating" habitat and the general lower quality of engineered instream habitats compared to natural habitats.

- Mitigation Option A: Achieving an 80% of base population survival is not adequate success for a propagation/augmentation effort. In order to re-establish a viable, recruiting population at a site, a more appropriate goal would be 200% of the original base population level or a known viable population level based on other studies with the same species. It is likely that there will be some decrease in the augmented population size after five years as it adapts to self sustaining. At the very least, the desired objective should be a net positive impact on the species population. Monitoring must be conducted with a suitably rigorous design and long enough time span to detect reproduction and recruitment at viable levels. Monitoring should extend for at least 10 years due to the relatively long life history cycles of freshwater mussels.

7.6.4.6.1

- It is unclear why the trigger to implement adaptive management is the identification of "more than 3 karst" features that require remediation.
- Qualified geologists are required to monitor for destabilization where subsidence has occurred for a minimum of 5 years. We believe that monitoring should occur at intervals throughout the life of the permit.

7.8.2 Page 33 notes that current data sharing agreements do not allow direct data sharing from NiSource to USFWS. We strongly urge NiSource and the Service to update these agreements to allow for direct data sharing before commencement of the ITP.

Last, we would like to see further explanation as to why the "All AMMs Alternative" (11.4) was rejected. It would be beneficial to see exactly which AMMs NiSource considers "physically impossible at certain times" or "inconsistent with NiSource's business constraints", before this alternative is rejected altogether.

Please see appendix for list of literature cited.

Thank you for your consideration and please feel free to contact me with questions.

Sincerely,

R. Bendick

Robert Bendick
Director, U.S. Government Relations

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