Professional Review of the DEIS and Related Documents for the Rapp Road Residential/Western Avenue Mixed Use Redevelopment Projects, Town of Guilderland, Albany County, New York

Naima Starkloff, Ph.D.

Report prepared for the Town of Guilderland Planning Board

at the request of Save the Pine Bush, Albany, New York

15 May 2020

Contact Information and Statement of Qualifications

Naima Starkloff, Ph.D.

nstarkloff@albany.edu
518-334-4639

Dr. Starkloff completed her Ph.D. at the State University of New York and has a background in disease ecology and community ecology of songbirds in North America. Naima has been awarded three research grants to carry out field and lab work and has presented her work at conferences in three continents. She was an ornithology research fellow at the New York State Museum from 2016-2020. She has participated in bird banding programs at the Albany Pine Bush Preserve during the fall migration of 2016 and 2017 as well as in their Advanced Bird Banding workshop in 2017. She is an active member of the American Ornithological Society and Wilson Ornithology Society.

ISSUES

Incomplete and inaccurate assessment and conclusions

1. Bird survey techniques or times have not been documented
2. The status of avian vulnerability has been insufficiently considered
3. Climate change impacts have not been assessed
4. Impacts of window collisions on birds have not been assessed
5. Effective habitat restoration was not considered as a reasonable alternative

Mitigation measures insufficient and unsupported

1. Rational for justifying the loss of 19.68 acres with the protection of 8.4 acres of land is not sufficiently demonstrated
2. The appropriateness of the 200' buffer zone is not demonstrated

INCOMPLETE AND INACCURATE ASSESSMENT AND CONCLUSIONS

1. Bird survey techniques or times have not been documented

These sites provide habitat for year-round residents, breeding migratory birds and birds taking a migratory stopover along the Atlantic Flyway. The DEIS states that "extensive multi-year and multi-season examinations" were conducted for all flora and fauna (p46), however, the time of day, frequency and length of individual assessments were not stated. As habitat use by bird species varies considerably through the year, an accurate representation of the avifauna of these sites must include surveys throughout the two migratory seasons (Spring and Fall) and throughout the breeding season. Different species of birds breed and migrate at different points within these seasons. In addition, surveying throughout the breeding season is necessary as birds often use different habitats for building nests than for post-fledging (Pagen et al. 2000). Lastly, bird species vary in their activity levels and thus detectability throughout the day (Ralph et al. 1995). Bioacoustic surveys—in addition to more typical point count surveys—would provide a more accurate idea of the full assemblage of birds in these sites, especially more cryptic species (Teixeira et al. 2019).

The DEIS also did not provide qualifications of the surveyor of bird species in the sites. The experience level of the surveyor would significantly affect the data collected. I noticed three inaccuracies in the bird lists in the Vegetation, Wildlife and Soil Conditions Reports for Site 1 and Site 2/3: (1) the common name "Feral Pigeon" was incorrectly used for "Rock Pigeon", (2) while the taxonomic distinction within this species is still under debate (Toews et al. 2016), its official common name is "Yellow-rumped Warbler" rather than "Myrtle Warbler", and (3) the scientific name of the Blue Jay was incorrectly labelled "*Buteo jamaicensis*" rather than "*Cyanocitta cristata*". Additionally, several species that are easily identifiable by call or sight were absent from the lists. I surveyed the sites on two occasions: (1) 10-minute quick walk-throughs (along the road for Site 1) between 6:30am and 7:30am on April 25, 2020 and (2) 40-minute point counts between 6am and 7:30am on May 1, 2020 (again, along the road for Site 1). During these surveys, six species were absent from the list from Site 1 and eight species from Site 2/3 (Appendix 1). These species should not have been missed

considering the "extensive multi-year and multi-season examinations". Lastly, the DEIS states "One Cooper's hawk was observed during field investigations, but it was soaring high over the Site and so was not utilizing it. The site and many other sites may provide hunting habitat for these hawk species. As none of these species have been observed to use the site, there are no potential significant adverse impacts to such avian species." As several common and easily detectable species were absent from their surveys, more extensive site evaluations are necessary to ensure that these hawk species (1) do not hunt there and (2) will not experience adverse impacts of habitat loss.

2. Inadequate consideration of the status of avian vulnerability

Species risk is only considered here in an "emergency room" manner, i.e. which species are **most** at risk for extinction (Redford et al. 2011). However, as climate change and other human-induced environmental risks have put us in what is called "the sixth mass extinction event" (Ceballos et al. 2017), it is important to have more precautionary metrics of species risk. These metrics do exist and tell a story that is much more urgent than the current federal and state metrics of vulnerability.

Extinction begins with the loss of population numbers and 29% of bird abundance has been lost in the last 50 years and losses are occurring in 57% of bird species in North America (Rosenberg et al. 2019). More than 90% of this loss in bird abundance is a result of declines in 12 families, eight of which are represented across the three sites (Appendix 1). Loss in bird numbers is not just seen in rare and threatened species, but also in widespread and common species that may have disproportionate contributions to ecosystem function. Eastern North America is experiencing significant loss of birds throughout the annual cycle. Firstly, there is a significant drop in migratory birds using the Atlantic Flyway, more so than any other region of country. This makes the protection and creation of more habitat suitable for migratory stopovers of crucial conservation significance. Secondly, 63% of birds in eastern forests are in decline, which is higher than birds across the continent as a whole. Based on these findings, Rosenberg and colleagues (2019) communicate the urgency of addressing issues such as habitat loss and climate change to "avert continued biodiversity loss and potential collapse of the continental avifauna."

The urgency of the decline in North American birds has led to new and more robust metrics of the vulnerability of species than standard state and federal metrics. The Cornell Lab of Ornithology and Partners in Flight used population numbers over long periods of time to determine the status of conservation concern of 1154 native bird species in North America (Panjabi et al. 2017). This metric states that of the 54 bird species documented in the three sites, 36 species are of low concern, 14 are of moderate concern and one species—the Wood Thrush—is of high concern putting it on the "Watch List" (Appendix 1). Another metric was established by scientists in collaboration with the National Audubon Society assessing the vulnerability of 588 North American Bird species to climate change (Langham et al. 2015, Wilsey et al. 2019). If we experience a warming of 3 degrees Celsius by the year 2080 as is currently expected ("business as usual" scenario), 53% of North American bird species will lose more than half of their geographic range due to changes in climatic conditions. Of the 54 bird species documented in the three sites only 22 species are expected to have stable ranges

by the year 2080. Contrastingly, 10 have low vulnerability, 12 have moderate vulnerability and 10 have high vulnerability. Included in those birds highly vulnerable to climate change, is the Wood Thrush which has been designated a "Priority Bird".

Even if these more robust and precautionary metrics are not considered as they should be, the DEIS did not adequately evaluate species risk based on the current state metrics. The DEIS quotes the NYDEC in defining a threatened species as "any native species likely to become an endangered species" (p48). Table 2 in the Vegetation, Wildlife and Soil Conditions Report for Site 1 documents the presence of the Wood Thrush in this site, which I confirmed on May 1, 2020 in my survey from the road between 6:05 am and 6:45 am. This species is listed as a "Species of Greatest Conservation Need" which states that the "status is known and conservation action is needed. These species are experiencing some level of population decline, have identified threats that may put them in jeopardy, and need conservation actions to maintain stable population levels or sustain recovery" (NYDEC 2015). In addition to being identified as a "Priority Bird" with high vulnerability to climate change risks (Wilsey et al. 2019) and on the "Watch List" for population decline (Panjabi et al. 2017), the Wood Thrush is listed as a "Bird of Conservation Concern" by the Migratory Bird Treaty Act as stated by the USFWS in Appendix B of the Vegetation, Wildlife and Soil Conditions Report for Site 2 and 3. The lack of inclusion and discussion of the Wood Thrush in the DEIS and related documents even based only on state metrics of species makes the DEIS incomplete.

The DEIS states "no significant adverse environmental impacts will occur to any wildlife species, flora and fauna" (p46), however, this is an overstatement. It is clear that these three sites are providing habitat for birds that are experiencing declines in population numbers and are at risk of habitat loss. As a result, it is necessary to conduct more thorough evaluations of habitat use and reproductive output of these bird species to address the true risk of loss of habitat as a result of development on these three sites.

3. Climate change impacts have not been assessed

The impacts of climate change have not been assessed at all. Impacts of predicted climatic changes such as increases in temperature and extreme weather events on the development should be explored.

Felling of trees has commenced in Site 2, yet there has been no evaluation of the loss of carbon sinks and subsequent emissions of carbon dioxide associated with these actions. Additionally, there are no mitigations described to account for these actions, such as the planting of trees that allows for equal amounts of, or ideally more, carbon to be sequestered.

Over half of the bird species that can be supported in these sites are expected to have some loss of habitat due temperature rises as a result of unmitigated global carbon emissions. This "business as usual" will lead to ten of these species being highly vulnerable and losing up to half of their geographic ranges (Wilsey et al. 2019). Thus, the additional loss of habitat as a result of development adds further strain to these vulnerable species.

4. Impacts of window collisions on birds have not been assessed

Up to one billion birds die of window collisions each year (Loss et al. 2014). If a bird does not die immediately from colliding with a window, it will likely perish later from internal bleeding (Powell 2019). Certain species of birds have a higher risk of collision with windows and that risk varies with type of building: residence (1-3 stories), low rises and high rises (Loss et al. 2014). Many bird species that currently occur in these sites as well as those that occur in the local habitat are documented as high risk for collision (Loss et al. 2014). Two bird species of Conservation Concern found in the sites that are at risk of collision with residence buildings include the Wood Thrush and the Field Sparrow. There are several methods that can be used to minimize window collisions that should be considered in the DEIS such as screens, netting, shutters and shades (Powell 2019).

5. Effective habitat restoration was not considered as a reasonable alternative

While there is a "no action" alternative proposed, there is no suggestion of habitat restoration as a reasonable alternative. As stated in a letter from the Albany Pine Bush Preserve Commission dated March 10, 2020: "the soils analysis indicates the site supports APB soils and could be restorable to pitch pine-scrub oak barrens". That suggests that if these sites were managed and restored, they could provide habitat to rare species associated with this unique ecosystem. These sites already support species such as the Eastern Towhee, Pine Warbler and Common Yellowthroat (Appendix 1) which are species that are associated with pitch pine-scrub oak barrens (Albany Pine Bush Preserve Commission 2017).

While North American birds are seeing declines in numbers in almost every habitat type, the habitat type seeing the steepest decline is grassland habitat, such as pitch pine-scrub oak barrens (Rosenbeurg 2019). This loss in bird numbers is seen in 74% of grassland species leading to a cumulative loss of 55% of grassland birds in the last 50 years. This habitat and its species are the most vulnerable in the continent and every opportunity to restore and protect it should be taken.

The DEIS should consider the benefits of restoring and conserving this land as a viable alternative. In addition to the ecological benefits of creating habitat for rare species, there are numerous benefits to the residents of these neighborhoods. The DEIS states "the development of Site 1, Site 2 and Site 3 will provide connectivity with nearby neighborhoods" (p26), however, the restoration of this land to barrens can provide a similar connectivity through trails for human use and through green corridors for use of wildlife. This green space will provide recreational use for surrounding residents, a commodity that has been in short supply during the current pandemic.

MITIGATION MEASURES INSUFFICIENT AND UNSUPPORTED

1. Sufficient rational for justifying the loss of 19.68 acres with the protection of 8.4 acres of land must be provided

The DEIS states that the voluntary donation of an 8.4-acre parcel of land "offset[s] this development, and the potential greenhouse gas emissions", however, there is no evaluation of carbon sinks on this parcel or the three sites to support this claim. A formal evaluation of net losses and gains of sequestered carbon should be carried out in all three sites and the 8.4-acre parcel. However, the maintenance of a **current** carbon sink is unlikely to account for the loss of several other carbon sinks as a result of the felling of trees across the three sites (including those already cut without permission) as well as the carbon and other greenhouse gases expelled through construction and maintenance of this development. To truly mitigate the greenhouse emissions associated with construction and maintenance as well as the loss of current carbon sinks in the three sites, **new** and equivalent carbon sequestration needs to be employed.

Net carbon balancing aside, the DEIS does not provide a sufficient explanation as to why the protection of 8.4 acres of pine barrens habitat sufficiently mitigates the loss of ~47 acres of the three sites. No new habitat is being created to mitigate the loss of the acreage on these three sites which have the potential to be restored to barrens habitat. The 8.4 acres are barrens habitat proposed for Full Protection by the commission and should be maintained as such regardless. Meanwhile, this development leads to the loss of ~47 acres of potential barrens habitat, ~20 acres of which have been identified for Partial Protection. As such, development on at least Site 1 should be mitigated with a 1:1 ratio of new, protected land.

2. The appropriateness of the 200' buffer zone is not demonstrated

Ecological buffers are used as a protective zone around sensitive or critical areas (Godfrey 2015). However, the width of an effective buffer varies depending on the conservation function of that buffer (wildlife, fire, erosion, flood control, etc.) as well as factors such as slope and vegetation. Typically buffers for wildlife exceed 200' (Godfrey 2015). The function of the buffer should be outlined more clearly to adequately allocate the width of the buffer.

Recommendations

1. Clear outline of methods for bird surveying.
2. Bioacoustic surveys to document the full assemblage of bird species.
3. Updated assessment of bird vulnerability based on newer metrics associated with habitat loss and climate vulnerability.
4. Appropriate calculations of greenhouse emissions and loss of carbon sinks as a result of development.
5. Fair provision of land and carbon sinks in mitigation of loss of ~47 acres of potential barrens habitat. A 1:1 ratio of land is recommended.
6. Mitigations to limit avian mortality as a result of window collisions.
7. Assessment of climate change impacts on development.

References

Albany Pine Bush Preserve Commission (2017). *2017 Management Plan Update for the Albany Pine Bush Preserve*.

Ceballos, G., Ehrlich, P. R., & Dirzo, R. (2017). Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. *Proceedings of the national academy of sciences*, *114*(30), E6089-E6096.

Godfery, M. (2015). Ecological Buffers. *Reducing Ecological Impacts of Shale Development*, 1-6.

Langham, G. M., Schuetz, J. G., Distler, T., Soykan, C. U., & Wilsey, C. (2015). Conservation status of North American birds in the face of future climate change. *PloS one*, *10*(9).

Loss, S. R., Will, T., Loss, S. S., & Marra, P. P. (2014). Bird–building collisions in the United States: Estimates of annual mortality and species vulnerability. *The Condor*, *116*(1), 8-23.

NYDEC. (2015). *New York State Species of Greatest Conservation Need*. http://www.dec.ny.gov/docs/wildlife_pdf/sgnc2015list.pdf

Pagen, R.W., Thompson, F.R., Burhans, D.E. (2000). Breeding and post-breeding habitat used by forest migrant songbirds in Missouri Ozarks.

Panjabi, A. O., Blancher, P. J., Easton, W. E., Stanton, J. C., Demarest, D. W., Dettmers, R., ... & Partners in Flight Science Committee. (2017). *The Partners in Flight handbook on species assessment Version 2017*. Partners in Flight.

Powell, H. (2019). *Why Birds Hit Windows-and How You Can Help Prevent It*. Retrieved from https://www.allaboutbirds.org/news/why-birds-hit-windows-and-how-you-can-help-prevent-it/

Ralph, C. J., Droege, S., & Sauer, J. R. (1995). Managing and monitoring birds using point counts: standards and applications. *In: Ralph, C. John; Sauer, John R.; Droege, Sam, technical editors. 1995. Monitoring bird populations by point counts. Gen. Tech. Rep. PSW-GTR-149. Albany, CA: US Department of Agriculture, Forest Service, Pacific Southwest Research Station: p. 161-168*, *149*.

Redford, K. H., Amato, G., Baillie, J., Beldomenico, P., Bennett, E. L., Clum, N., ... & Lieberman, S. (2011). What does it mean to successfully conserve a (vertebrate) species?. *BioScience*, *61*(1), 39-48.

Rosenberg, K. V., Dokter, A. M., Blancher, P. J., Sauer, J. R., Smith, A. C., Smith, P. A., ... & Marra, P. P. (2019). Decline of the North American avifauna. *Science*, *366*(6461), 120-124.

Teixeira, D., Maron, M., & van Rensburg, B. J. (2019). Bioacoustic monitoring of animal vocal behavior for conservation. *Conservation Science and Practice*, *1*(8), e72.

Toews, D. P., Brelsford, A., Grossen, C., Milá, B., & Irwin, D. E. (2016). Genomic variation across the Yellow-rumped Warbler species complex. *The Auk: Ornithological Advances*, *133*(4), 698-717.

Wilsey, C., Bateman, B., Taylor, L., Wu, J. X., LeBaron, G., Shepherd, R., ... & Stone, R. (2019). Survival by Degrees: 389 Bird Species on the Brink. *National Audubon Society: New York, NY, USA*.

Appendix 1

List of species identified in the sites based on lists provided in the Vegetation, Wildlife and Soil Conditions Reports for Site 1 and for Site 2 and 3. Species identified in each site were denoted with a "Y". Species that were absent from these lists but were identified in my surveys in either site were noted with a red "Y". Data on the species' annual habitat use in the local area is noted. The vulnerability of each species is described based on (1) habitat loss due to climate change ("Climate Vulnerability", Wilsey et al. 2019) and (2) population sizes and trends ("State of North American Birds", Panjabi et al. 2017). The second metric only considers native birds and allocates them into the "low" category with a score of <9, in a "moderate" category from 9-13 and a "high category" >13. Bird families experiencing the highest loss of population numbers in North America are bolded (Rosenberg et al. 2019).

	Common Name	Family	Scientific Name	Site 1	Site 2/3	Local habitat use	Climate Vulnerability	State of North American Birds score	State of North American Birds Conservation Concern
1	Wild Turkey	Phasianidae	*Meleagris gallopavo*	Y		Year-Round	Stable	7	Low
2	Canada Goose	Anatidae	*Branta canadensis*		Y	Breeding	Moderate	6	Low
3	Mourning Dove	Columbidae	*Zenaida macroura*	Y		Year-Round	Stable	7	Low
4	Rock Pigeon	Columbidae	*Columbia livia*		Y	Year-Round	Stable	-	-
5	Killdeer	Charadriidae	*Charadrius vociferus*	Y		Breeding	Stable	11	Moderate
6	Great Blue Heron	Ardeidae	*Ardea herodias*	Y		Visitor	Stable	7	Low
7	Black Vulture	Cathartidae	*Coragyps atratus*	Y		Breeding	Stable	5	Low
8	Turkey Vulture	Cathartidae	*Carthartes aura*	Y	Y	Breeding	Stable	5	Low
9	Cooper's Hawk	Accipidridae	*Accipiter cooperii*	Y		Year-Round	Stable	7	Low
10	Red-tailed Hawk	Accipidridae	*Buteo jamaicensis*	Y	Y	Year-Round	Stable	6	Low
11	Yellow-belled Supsucker	Picidae	*Sphyrapicus varius*	Y		Year-Round	High	7	Low
12	Red-bellied Woodpecker	Picidae	*Melanerpes carolinus*	Y	Y	Year-Round	Stable	7	Low
13	Downy Woodpecker	Picidae	*Dryobates pubescens*	Y	Y	Year-Round	Stable	7	Low
14	Northern Flicker	Picidae	*Colaptes auratus*	Y	Y	Year-Round	Moderate	9	Moderate
15	Pileated Woodpecker	Picidae	*Drycopus pileatus*		Y	Year-Round	Stable	7	Low
16	Eastern Phoebe	**Tyrannidae**	*Sayornis phoebe*		Y	Breeding	Low	8	Low
17	Eastern Kingbird	**Tyrannidae**	*Tyrannus tyrannus*	Y	Y	Breeding	Moderate	11	Moderate
18	Blue Jay	Corvidae	*Cyanocitta cristata*	Y	Y	Year-Round	Stable	8	Low
19	American Crow	Corvidae	*Corvus brachyrhynchos*	Y	Y	Year-Round	Low	6	Low
20	Fish Crow	Corvidae	*Corvus ossifragus*		Y	Year-Round	High	10	Moderate
21	Black-capped Chickadee	Paridae	*Poecile atricapillus*	Y	Y	Year-Round	Low	7	Low
22	Tufted Titmouse	Paridae	*Baeolophus bicolor*	Y	Y	Year-Round	Stable	7	Low
23	Ruby-crowned Kinglet	Regulidae	*Regulus calendula*	Y	Y	Migrant	High	6	Low
24	White-breasted Nuthatch	Sittidae	*Sitta carolinensis*	Y	Y	Year-Round	Low	6	Low
25	Blue-gray Gnatcatcher	Polioptilidae	*Polioptila caerulea*		Y	Visitor	Stable	7	Low
26	House Wren	Troglodytidae	*Troglodytes aedon*	Y		Breeding	Moderate	5	Low
27	Carolina Wren	Troglodytidae	*Thryothorus ludovicianus*	Y	Y	Year-Round	Stable	7	Low
28	Gray Catbird	Mimidae	*Dumetella carolinensis*	Y	Y	Breeding	Stable	8	Low

29	Northern Mockingbird	Mimidae	*Mimus polyglottos*	Y	Y	Year-Round	Stable	8	Low
30	Wood Thrush	**Turdidae**	*Hylocichla mustelina*	Y		Breeding	High (Priority Bird)	14	High
31	American Robin	**Turdidae**	*Turdus migratorius*	Y	Y	Year-Round	Moderate	5	Low
32	Cedar Waxwing	Bombycillidae	*Bombycilla cedrorum*	Y	Y	Year-Round	Low	6	Low
33	House Finch	**Fringillidae**	*Haemorhous mexicanus*	Y	Y	Year-Round	Low	6	Low
34	American Goldfinch	**Fringillidae**	*Spinus tristis*	Y	Y	Year-Round	Moderate	6	Low
35	Chipping Sparrow	**Passerellidae**	*Spizella passerina*	Y	Y	Breeding	Moderate	8	Low
36	Dark-eyed Junco	**Passerellidae**	*Junco hyemalis*	Y	Y	Wintering	High	8	Low
37	White-throated Sparrow	**Passerellidae**	*Zonotrichia albicollis*	Y		Wintering	High	9	Moderate
38	Song Sparrow	**Passerellidae**	*Melospiza melodia*	Y	Y	Year-Round	Moderate	8	Low
39	Field sparrow	**Passerellidae**	*Spizella pusilla*	Y		Breeding	High	12	Moderate
40	Eastern Towhee	**Passerellidae**	*Pipilo erythrophthalmus*	Y	Y	Breeding	High	11	Moderate
41	House Sparrow	**Passeridae**	*Passer domesticus*	Y	Y	Year-Round	Low	-	-
42	Baltimore Oriole	**Icteridae**	*Icterus galbula*	Y		Year-Round	Low	10	Moderate
43	Red-winged Blackbird	**Icteridae**	*Agelaius phoeniceus*		Y	Breeding	Stable	8	Low
44	Brown-headed Cowbird	**Icteridae**	*Molothrus ater*		Y	Breeding	Stable	7	Low
45	Common Grackle	**Icteridae**	*Quiscalus quiscula*	Y	Y	Breeding	Low	9	Moderate
46	European Starling	**Sturnidae**	*Sturnus vulgaris*		Y	Year-Round	Stable	-	-
47	Common Yellowthroat	**Parulidae**	*Geothlypis trichas*	Y	Y	Breeding	Low	9	Moderate
48	American Redstart	**Parulidae**	*Setophaga ruticilla*	Y	Y	Breeding	Moderate	11	Moderate
49	Blackburnian Warbler	**Parulidae**	*Setophaga fusca*		Y	Migrant	High	9	Moderate
50	Pine Warbler	**Parulidae**	*Setophaga pinus*		Y	Breeding	High	7	Low
51	Yellow-rumped Warbler	**Parulidae**	*Setophaga coronata*		Y	Migrant	Moderate	6	Low
52	Ovenbird	**Parulidae**	*Seiurus aurocapilla*	Y		Breeding	Moderate	9	Moderate
53	Northern Cardinal	Cardinalidae	*Cardinalis cardinalis*	Y	Y	Year-Round	Stable	5	Low
54	Indigo Bunting	Cardinalidae	*Passerina cyanea*	Y		Breeding	Moderate	9	Moderate