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This is such an unsuitable site for this project. It is surrounded by forest, wetlands, and streams. We believe this project will have a significant impact on these natural resources.

Forest

This plan proposes clear-cutting 11.49 acres of trees and an additional "trimming" of 7.8 acres of trees.

It makes no sense to sacrifice forests for solar development. Instead of reducing carbon emissions, **clear-cutting actually contributes to climate change by releasing into the atmosphere the large amount of CO 2 stored in the trees, along with the enormous amounts of carbon in the soil.**
(Dartmouth College. 2016, April 15. Clear-cutting destabilizes carbon in forest soils, study finds.ScienceDaily. Retrieved May 13, 2017 from www.sciencedaily.com/releases/2016/04/160415125925.htm)
This release of carbon can go on for decades. (In parts of the Pacific Northwest, a clear-cut replanted with conifer seedlings can continue to emit CO 2 for as long as 20 years. (DEC Trees: The Carbon Storage Experts))

Our government recognizes the critical role healthy forests play in absorbing carbon. Under the REPLANT Act, approximately $140 million is being spent annually to reforest millions of acres, in part to help mitigate the impacts of climate change.

Forests are as important as solar development in the fight against climate change. These trees should not be cut down.

Clear-cutting also can increase stormwater run-off.
Trees are also recognized for their importance in managing runoff. More stormwater runoff will be created by the project. The soils on this site have a hydrologic rating D, indicating a very slow infiltration rate with high runoff potential. Construction activity compacts soil. The impervious nature of the panels themselves creates stormwater runoff . (APA Large Scale Solar)
At the present time, there are no storm water management practices specifically developed for solar facilities, which are unlike any housing or commercial projects. As a result, we have no idea how to manage

stormwater adequately to prevent adverse impacts. Replacing forested land with newly seeded area that will take years to mature, will make matters worse.

Any new runoff discharged into the wetlands, will negatively impact the wetlands surrounding the site.

Wetlands

There is a water balance in wetlands that must be maintained. Altering the natural flow of water into wetlands by increasing or decreasing the flow, or changing the timing of the flow can negatively impact the ecological function of the wetland. For example, For example, amphibian species may require water for breeding during spring but may also require habitat to be seasonally dry. Similarly, some wetland plants will be outcompeted by upland plants if a wetland dries out too early, leading to shifts in the ecological community.

Not only will the wetlands be impacted by runoff, but science tells us that regulation of adjacent land use is a critical component of wetland conservation. Policies that focus exclusively on activities within the wetland itself and/or a narrow buffer zone are unlikely to provide adequate protection for wetland biodiversity.
(The Effect of Adjacent Land use on Wetland Species Richness and Community Compositon 2006, Houlahan, Keddy, Makkay and Findlay)

There is a guidebook on the DEC website, " Conserving Natural Areas and Wildlife in Your Community" . Chapter 5 discusses the conservation of inland wetlands.

It states: Do not assume that if state and federal laws are followed that there are no impacts to wetlands. It is possible to follow those laws and still have an impact on local wetlands.

Regulatory buffer widths of 100 feet were designed for maintaining water quality only and are not wide enough protect wildlife according to most of the research. To protect all animals that use the wetlands, you need to consider adjacent upland habitat.

Adjacent upland is critical to the survival of wetland dependent wildlife, and its importance for wildlife extends well beyond 100'. This area provides the habitat critical for activities including nesting, feeding, cover, and over-wintering. Without providing protection to the adjacent upland, a wetland is unable to support the same biodiversity.
(Lynn Boyd Wetland Conservation Professional Program Department of Natural Resources Conservation University of Massachusetts July, 2001)

Which brings us back to the forests on the site. Forested uplands is vitally important.

The science is clear:

Wetland buffers and beyond:
Findlay and Houlahan (1996) demonstrated the importance of maintaining a wide wetland buffer zone for species richness. "The removal of 20% of the forest cover on lands within 3280.8 ft. (1000 M) of a wetland appears to have approximately the same impact on herptile and mammal species richness as the loss of 50% of the wetland proper (Findlay and Houlahan, 1996)."

Wetland functions also can be affected by construction outside the wetland itself out to a distance of 1,500 feet or more (Houlahan *et al.* 2006). For example, wildlife that breed in wetlands, such as reptiles and amphibians, normally range into the adjoining uplands for distances of many hundreds of feet in eastern North America during the course of an annual cycle. If the adjacent lands are deforested or paved, or the wetland isolated by an intervening road or fence, the wetland habitat can be rendered useless to such creatures. By way of further example, altering the light and wind by removing the surrounding forest can cause a major change in the plants and animals that can survive in a wetland. Surface disturbances outside a wetland also can have major impact on the hydrology of the wetland, profoundly altering its ecosystem by draining or flooding it.

A study (Anthropogenic Correlates of Species Richness in Southeastern Ontario Wetlands
C. Scott Findlay, Jeff Houlahan, First published: 06 March 2003) concludes that herptile and mammal species richness showed a strong positive

correlation with the proportion of forest cover on lands within 2 km (1.24 miles). The results provide evidence that forest removal on adjacent lands pose significant risks to wetland biodiversity. Furthermore, they suggest that most existing wetland policies, which focus exclusively on activities within the wetland itself and/or a narrow buffer zone around the wetland perimeter, are unlikely to provide adequate protection for wetland biodiversity.

Another study (The Effects of Adjacent Land Use on Wetland Species Richness and Community Composition, Houlahan, Keddy, Makkay, Findlay) finds that wetland plant communities play a fundamental role in maintaining the important ecosystem functions of wetlands and are increasingly threatened by human modifications of the landscape, such as deforestation. Adjacent land use 250-300m (820-984 feet) from the wetland affects plant diversity in two important ways. First, it alters the abundance and distribution of propagules in adjoining habitats. Second it alters the number of dispersal routes. The results suggest that current management practices are inadequate and that regulation of adjacent land use is a critical component of wetland conservation.

CHRIS FERLA

Table 5-1. Benefits of Various Stream and Wetland Buffer Widths

This table provides guidelines on buffer widths based on current scientific literature. Only a site-specific biological survey can provide the exact buffer width needed to preserve species and ecosystems at a site. Note that the buffer sizes listed are not meant to be prescriptive, but are intended to help local governments better understand stream and wetland conservation. Buffer width in your municipality should be determined both by science and by what is acceptable in your community.

buffer width (in feet)	conservation benefit	source
80	nutrient and pollutant removal	Kennedy et al. 2003
100–200	buffer to protect water resources and core aquatic habitat	Semlitsch and Bodie 2003
100	temperature and microclimate regulation	Kennedy et al. 2003
100	core temporary woodland pool habitat (vernal pool)	Calhoun and Klemens 2002
160	stream detrital input and bank stabilization	Kennedy et al. 2003
330	water quality and minimal wildlife protection (includes adjacent upland)	Kennedy et al. 2003
250	stream salamander core habitat and buffer	Crawford and Semlitsch 2007
250–575	minimum corridor width needed to include 90 percent of bird species that use streamside habitat (adjacent upland)	Spackman and Hughes 1995
465–950	core riparian habitat for reptiles and amphibians (adjacent upland)	Semlitsch and Bodie 2003
535	long-term health of ecosystem (adjacent upland)	Howard 2004
750	critical terrestrial habitat for vernal pool breeding species (adjacent upland)	Calhoun and Klemens 2002

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Table 5-8. A summary of the effectiveness of pollutant removal and the value of tl wildlife habitat of vegetated buffers according to buffer width (Desbonnet et al. 1994).

Buffer Width in Feet (Meters)	Pollutant Removal Effectiveness	Wildlife Habitat Value
16 feet (5 m)	Approximately 50% or greater sediment and pollutant removal	Poor habitat value; useful for temporai activities of wildlife
32 feet (10 m)	Approximately 60% or greater sediment and pollutant removal	Minimally protects stream habitat; poc habitat value; useful for temporary activities of wildlife
49 feet (15 m)	Greater than 60% sediment and pollutant removal	Minimal general wildlife and avian habitat value
66 feet (20 m)	Greater than 70% sediment and pollutant removal	Minimal wildlife habitat value; some value as avian habitat
98 feet (30 m)	Approximately 70% or greater sediment and pollutant removal	May have use as a wildlife travel corridor as well as general avian habit
164 feet (50 m)	Approximately 75% or greater sediment and pollutant removal	Minimal general wildlife habitat value
246 feet (75 m)	Approximately 80% or greater sediment and pollutant removal	Fair to good general wildlife and aviar habitat value
328 feet (100 m)	Approximately 80% or greater sediment and pollutant removal	Good general wildlife habitat value; m protect significant wildlife habitat
656 feet (200 m)	Approximately 90% or greater sediment and pollutant removal	Excellent general wildlife value; likel support a diverse community
1,968 feet (600 m)	Approximately 99% or greater sediment and pollutant removal	Excellent general wildlife value; supports a diverse community; protect of significant species

Table 4.3-3 Recommended Minimum Buffer Widths for Wildlife

Buffer width	Wildlife species	Reference
10-330 ft	amphibians, forest interior wetland birds, upland dependent reptiles and birds	Eddleman and Husband unpubl. manuscr.
20 ft	small mammal habitat (riparian woods)	Cross 1985
30-70 ft	control temperature in small streams (important for wildlife)	Burton and Likens 1973
100-330 ft	amphibians and reptiles	Rudolph and Dickson 1990
100 ft	stream macroinvertebrates	Newbold et al. 1980
100-200 ft	belted kingfisher roosting sites	White 1953
100 ft	to protect invertebrates in steep mountain streams from siltation	Erman et al. 1977
100 ft	salmon breeding habitat (gravel streambeds)	Moring 1982
150 ft	endangered or threatened spp., or trout production areas	Golet et al. 1993
165 ft	pileated woodpecker nest sites; will nest up to 500 ft away from water	Schroeder 1983
180 ft	squirrel habitat	Dickson and Huntley 1987
200 ft	forest interior birds nesting habitat	Tassone 1981
200 ft	boreal forest birds	Darveau et al. 1995
200 ft	interior forest birds	Tassone 1981
200 ft	marten (riparian habitat)	Spencer 1981
200-300 ft	retain plant structure within this distance for wetland dependent wildlife	Castelle et al. 1992
250 ft	forest birds	Small and Johnson 1985; Johnson 1986
300 ft	waterfowl nesting	Foster et al. 1984
300-330 ft	beaver, mink, dabbling ducks	Roderick and Miller 1991
330 ft	furbearers: coyote, bobcat, red fox, fisher, marten, beaver, otter, mink, muskrat	Dibello 1984
330 ft	beaver feeding habitat	Hall 1970
330 ft	mink den sites and habitat for most activity; use habitat up to 600 ft from water	Melquist 1981, Linn and Birks 1981
330 ft	area-sensitive forest birds	Keller et al. 1993
330 ft	forest interior birds, small mammals, reptiles, amphibians	Golet et al. 1993
450 ft	common loon (nesting), pileated woodpecker	Roderick and Miller 1991
575 ft	breeding bird communities in uplands adjacent to streams	Hooper (unpubl. manuscr.)
660 ft	songbird community	Scheuler 1987
660 ft	breeding bird communities	Stauffer and Best 1980
660 ft	travel corridors for all wildlife but black bears	Forman 1983
600 ft	bald eagle (nesting, roosting, perching); cavity nesting ducks (wood duck, bufflehead, goldeneye, hooded merganser), heron rookery	Roderick and Miller 1991
600 ft	wood duck - most nests within this distance from water	Grice and Rogers 1965
840 ft	average distance of blue-winged teal nests from water	Duebbert and Lokemoen 1976