



July 19, 2017

Cape May County Open Space Review Board
Barbara Ernst, Division Director
Open Space & Farmland Preservation
4 Moore Road
Cape May Court House, New Jersey 08210

Re: Proposed Sidewalk along Beach Drive/Shore Drive, Blks. 559+, Lots 1+, Lower Township

Dear Director Ernst and Open Space Review Board Members,

This letter is being submitted by Delaware Riverkeeper Network on behalf of our members in the region and in furtherance of our mission to protect the Delaware River Watershed, its communities and habitats. This letter is endorsed and supported by Sierra Club - New Jersey Chapter, Clean Water Action - New Jersey, and Environment New Jersey.

We are registering our opposition to the approval by the Open Space Review Board (“the Board”) of any funding or necessary consent by the Board for the above referenced project, a proposed sidewalk along Beach Drive/Shore Drive, Blks. 559+, Lots 1+, Lower Township, Cape May County. Our opposition is based on the environmental and safety issues involved with the project and lack of need for the project. We respectfully request that the Board not approve the requested approvals for the proposed project.

Lack of Public Need and Alternatives Analysis; No Justification for Disturbance

We have seen no justification for this project that examines the impacts of the project on the natural environment and ecosystems including local vegetation and animals; changes in the effects of storm events, including flooding and flood damages to infrastructure; on community safety; or on adjacent open space or public lands. We have also not seen a comprehensive alternatives analysis. Consideration of alternatives to the current proposal must be considered under Green Acres regulations and is incumbent on the Board.

There is a sidewalk already on the east side of the road. If repair is needed to the current sidewalk, that could be considered separately and design of that repair may be able to provide space for a bicycle corridor on the east side of the road within current township right-of-way

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without any disturbance or new construction on the dune side of the road and without intrusion into lands with conservation easements. Yet this alternative is not under study or consideration as far as we are aware. Consideration of placing a foot and/or bicycle path made of removable boards on the water side of the existing dune could also be a viable alternative; such a “light footprint” path could be designed to withstand weather, wind spray and wave action or be easily removed in a storm or replaced if necessary.

Additionally, if pedestrian crossings of the dunes need to be reduced and planned with environmental sensitivity and safety considerations – such as the use of boards that go over the dune rather than through it - that too can be accomplished as a separate project without the destruction and loss of the existing dune and the essential functions it now serves. There is no analysis of which we are aware that demonstrates the proposed sidewalk and road project is the optimum project that fulfills public need or public benefit and there is no demonstrated safety issue that cannot be addressed through nonstructural changes to the existing environment utilizing the alternative methods, including the existing sidewalk and road right of way.

Furthermore, if stormwater improvements are needed, there should be an analysis that shows how stormwater can be prevented upgradient, infiltrated on land rather than discharged to the Bay. That analysis should examine how natural and living stormwater systems can be employed to avoid structural discharge systems such as outfalls that are sources of nonpoint source pollution and instead allow stormwater to infiltrate naturally and recharge groundwater through nonstructural systems, as described in the Best Management Practices outlined in New Jersey’s Stormwater BMP Manual.

Flooding in the Township and along the Bay is exacerbated by the flow of stormwater towards the Bayside from upland impervious surfaces, requiring upland remedies to prevent the stormwater runoff through upgradient systems. To invest in the old approach of shunting dirty stormwater to the nearest surface water or to a concrete catch basin not only wastes the water that could be replenishing aquifers but also throws good money after bad by maintaining storm discharges that degrade Bay water quality and do not reduce flood flows, particularly local flooding from off-land runoff.

The use of natural and vegetative stormwater systems will reduce flood flows and help retain water upland to reduce volume and rate of storm flows to the sea during storm events, thereby reducing flood damages. Also, by preventing runoff from the land, less water will be added to flooding from the Bay caused by large storm events. Furthermore, flooding from the Bay and storm protection can best be retarded by the existing mature and intact dune that is stable and established and closer to the land than the water, as discussed further below.

We have seen no traffic study or reports of safety hazards or accidents that justify this project on public safety grounds. In fact, it must be considered that this project could increase traffic and expose pedestrians to more traffic hazards due to increased volume of traffic. A traffic analysis and safety study needs to be done to evaluate and weigh the effects of the project and alternative approaches to addressing current needs.

The lack of an alternatives analysis, the lack of demonstrated public need for this project, and the potential for substantial and long-lived negative impacts removes the rationale of open space funds being used to develop the project and also eliminates the justification for disruption of the existing established dune.

Adverse Impacts are Overwhelming; Proposed Project Does Not Meet Board Requirements

There is an established dune, reportedly as old as 50 years, at the current location. It is most beneficial to retain the established dune in its current location, to retain its vegetation and ecosystem in order to provide safety from storm events, wave action and flooding. The established dune also protects the natural ecosystem and species, and provides protection for the built environment including existing roadways, sidewalks, and homes.

We understand that the proposal is to remove sand from the land side of the dune and place it on the water side. It is stated that this will maintain the footprint of the dune and will just shift the dune water ward, providing protections equal to those provided currently. We disagree. First, a dune is not simply sand that can be moved about. This dune, in particular, is an established ecosystem that performs functions developed over years; it is actually part of the Bay's environment, as well as part of the land. There is also no analysis of which we are aware that analyzes and compares the existing dune's protections and functions with the new dune configuration, especially the issues of dune erosion, stability, and sand transport.

The erosion scarps that are produced along the seaward face of dunes during severe or prolonged storms are inherently unstable. Even when bound together strongly by plants they will eventually slump to a more stable surface. Until this occurs, they may present a hazard to beach users, especially near more populated centers where children jump from or tunnel into them.¹ Erosion may become chronic if the dune is too close to the water. Under constant wave assault, the dune can be redistributed thinly over the entire beach profile. Even the largest dunes are poor protection from long-term or chronic types of erosion.²

It is our opinion that the destruction of the intact dune and proposed movement of the dune will undermine the safety and environmental protection that the dune now provides. This is because a dune closer to land provides greater protection than a dune closer to water and because an established dune provides greater stability and an intact environment that is more effective at deflecting waves, storms, floods and other Bay-related occurrences.

On sandy shorelines, coastal dunes represent the last line of defense against erosion by providing a reservoir of sand for waves to utilize during storms. As well as limiting the landward intrusion of waves, wind and salt spray, dunes act as a barrier to oceanic inundation and they provide for an important morphological and ecological transition from marine to terrestrial environments.³ Moving a dune closer to the water subjects it to a greater probability of storm-induced erosion by reducing the buffer zone between the dune and the water.

¹ NSW Department of Land and Water Conservation 2001, *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle.

² Rogers, S. & Nash, D. *The Dune Book* (2003). North Carolina Sea Grant.

³ NSW Department of Land and Water Conservation 2001, *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle.

Landward dunes always provide better storm protection than the same size dune placed farther seaward. In fact, a more landward location of a small dune may provide equal protection to a larger dune farther seaward.⁴ The difference between a more landward dune locations versus a more seaward dune location may not seem like much, but when a coastal storm occurs the location can mean the difference between safety and flooded houses, cars, and streets as well as prevent the safety hazards from flooding.

Beach dunes vary in shape depending on a combination of factors and should only be reshaped into landforms that might reasonably be expected to have developed naturally.⁵ Dunes move towards some equilibrium and when disturbed they might move back to prior shape naturally. Sand transport modeling should be conducted to verify that the proposed sand dune configuration will be stable and sustainable taking into consideration the natural forces of the Bay.

There are many reductions in value from the replacement of an old established dune with new dune material that is just starting to be vegetated. It has taken many decades for the existing dune to mature. New dunes must establish vegetation over time, making the vegetation vulnerable to destruction and loss of quality and could take decades to match the value of the current dune. The weakening or destruction of dune vegetation can be induced by natural events such as drought, lightning-initiated fires, storm waves, and by disturbance from humans (trampling) and the introduction of weeds.⁶

Vegetation aids in forming the dune and plays an important role in the coastal dune ecosystem. Plants trap blowing sand, causing the formation of sand dunes and the stabilization of soils. The densest clumps of vegetation trap the most sand and are stimulated to grow denser and spread even faster.⁷ The established dune is stable and has developed the ability to trap sand and foster new growth. Without the stabilizing effect of vegetation, sand is easily moved by the wind and the resultant sand drift can progressively bury both natural and built environments.⁸ Once vegetation is lost, wind and repeated use will often lower the dune elevation.⁹ Removing vegetation cover can also lead to dune instability and assist weed invasion.¹⁰

When it comes to the benefits of vegetation for erosion control, the plants' root systems significantly reinforce the soil. Soil profile development can be seriously interrupted by external factors such as burning vegetation, the repeated clearing of vegetation, and other disruptive land uses.¹¹ As a general rule, soil profiles are better developed with increasing distance from the sea. Older dune soils have developed under vegetation over a longer period of time than younger

⁴ Rogers, S. & Nash, D. The Dune Book (2003). North Carolina Sea Grant.

⁵ Coastal Dune Management Manual, Dep of Land and Water Conservation NSW Australia, 2001.

⁶ NSW Department of Land and Water Conservation 2001, *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle.

⁷ Rogers, S. & Nash, D. The Dune Book (2003). North Carolina Sea Grant.

⁸ NSW Department of Land and Water Conservation 2001, *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle.

⁹ Rogers, S. & Nash, D. The Dune Book (2003). North Carolina Sea Grant.

¹⁰ NSW Department of Land and Water Conservation 2001, *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle.

¹¹ Ibid.

sands closer seaward and therefore have a higher moisture retention capacity. Field moisture capacity may vary in volume from 7% in young dune sand to 33% in old dune sand.¹² Finally, any revegetation work and any accompanying infrastructure will eventually be destroyed by waves since the dune is closer to the water.

We consider the proposed project to be incompatible with the requirements for funding by the Open Space Review Board based on environmental impacts that are likely to occur and the lack of analysis that demonstrates how these expected impacts will be avoided. The Cape May County Open Space Trust was established to preserve open space and agricultural land. The trust is funded by a County property tax. In 2013, the program was expanded to include Park/ Recreation Development and Historic Preservation Projects. Municipalities, among other entities, are eligible to apply for funding for the development of lands acquired for recreation and conservation purposes. "Projects that will have a significant adverse impact on environmental resources or open space values" are considered ineligible to receive funding along with "soft costs" associated with engineering, architectural, survey, environmental analyses, etc. **It is our opinion that the proposed project will have significant adverse impacts on environmental resources or open space values and is therefore ineligible to receive funding from the Board.**

There is no analysis of which we are aware that analyzes the long term effect of the proposed project as the coastline retreats in response to rising sea levels due to climate change. More frequent and fierce storm events is another reoccurring phenomena related to the impacts of global climate change. The project location is only 2 miles from the mouth of the Bay and the Atlantic Ocean. FEMA advises communities to prohibit all alterations of sand dunes unless an engineering analysis is conducted that demonstrates that flood damages will not increase due to the proposed dune modifications. There should be such an analysis conducted that considers potential sea level rise and emerging storm patterns.

Regarding flood protection and FEMA, there are several issues that have not been addressed. These include the status of the FEMA maps that define the zone in which the dune and road is located and the zone in which the water side of dune that would be impacted by the additional dune footprint is located. Whether or not FEMA regulations apply depend on the zone classifications. The construction activity and the final dune configuration may also affect Lower Township's ability to participate in the National Flood Insurance Program (NFIP). It is our understanding that currently homes in the adjacent neighborhood receive flood insurance through the NFIP. The project could also affect the flood insurance rates township residents can get as participants in the NFIP. FEMA frowns heavily on construction activities that impact dunes and it makes communities that preserve and expand dune protection eligible for more federal support. FEMA should be consulted before any project is undertaken.

We respectfully request that the funding for this project not be approved. Thank you for the opportunity to comment on this proposal.

¹² NSW Department of Land and Water Conservation 2001, *Coastal Dune Management: A Manual of Coastal Dune Management and Rehabilitation Techniques*, Coastal Unit, DLWC, Newcastle.

Sincerely,



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the Delaware Riverkeeper



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