United States Department of the Interior

NATIONAL PARK SERVICE
Apostle Islands National Lakeshore
415 Washington Avenue
Bayfield, Wisconsin 54814-4809

IN REPLY REFER TO:

1.A.2. September 29, 2015

Mr. Bill Clark
Environmental Review Supervisor
Wisconsin Department of Natural Resources Service Center
810 W. Maple Street
Spooner, WI 54801 (also submitted electronically to DNRBadgerwoodProposal@wisconsin.gov)

Dear Mr. Clark:

Thank you for the opportunity to provide input into the scoping for the Environmental Impact Statement the Wisconsin Department of Natural Resources (DNR) will be conducting to evaluate the proposed Badgerwood, LLC, Concentrated Animal Feeding Operation (CAFO) in Bayfield County, Wisconsin.

Context and Rationale for National Park Service (NPS) Comments

Apostle Islands National Lakeshore (APIS or the national park) is a unit of the US National Park System, whose mission according to Federal Law is "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."(54 US Code 100101). The national park includes 21 islands in Lake Superior, a 12 mile strip of mainland coast, the Ashland Harbor Breakwater Light in Chequamegon Bay, and over 27,000 acres of Lake Superior waters adjacent to all of these land units except the Ashland Harbor Light.

Protecting the park's values is also a matter of state law under Wisconsin Statutes 1.026:

(1) LEGISLATIVE STATEMENT OF PURPOSE AND INTENT.

(a) The legislature concurs with the stated purpose of Congress in authorizing the establishment of the Apostle Islands national lakeshore. It is therefor (sic) the purpose of this section to conserve and develop for the benefit, inspiration, education, recreational use, and enjoyment of the public certain significant islands and shorelands of this state and their related geographic, scenic and scientific values.

(b) It is the policy of the legislature that the Apostle Islands be managed in a manner that will preserve their unique primitive and wilderness character. **The department of natural resources is directed before taking any action or making a decision concerning the Apostle Islands to make a finding that such an action or decision will ensure that the citizens of this state will be assured the opportunity for wilderness, inspirational primitive and scenic experiences in the Apostle Islands into perpetuity.** [emphasis added]

The Badgerwood operation, and most of the agricultural fields that are proposed recipients of the manure to be spread under the accompanying Nutrient Management Plan, is proposed to be placed

approximately 19 km (12 mi) measured along the Fish Creek tributary southwest of Chequamegon Bay, which flows into Lake Superior near Apostle Islands National Lakeshore. Long Island, part of the national park, forms the northernmost land boundary of Chequamegon Bay. The beaches of Long Island are the only location in the state where the federally-endangered piping plover nests, hence as the Superintendent of the National Lakeshore and the federal official responsible for the stewardship of the plovers and other federally-protected resources of the National Lakeshore, I am greatly concerned about the Badgerwood proposal.

In addition, the Kakagon Sloughs is a National Natural Landmark (NNL), which is a wetland complex of global significance and home to one of Lake Superior's largest intact wild rice beds. The NPS has no ownership or jurisdiction over the Sloughs. The NNL program is administered by the NPS and the agency is required by federal regulation (36 CFR 62.6) to monitor and report on known or anticipated damage or threats to one or more of the resources that made the NNL nationally significant. The Sloughs are known to be affected far inland by seiche effect, which could result in transfer of nutrient inputs to this location.

General Concerns

The proposed facility is designed to confine all waste and wastewater produced by the operation within building structures; however, this design could be overwhelmed by severe storm events. Contamination of waterways due to field application or failure of stormwater management at the facility are the greatest threat potential to the water and other resources of the national park and the NNL.

Improved hydrologic assessments should include consideration of appropriateness of the soil types for the proposed uses, on-site silty sand substrate as a conduit for hydraulic transfer of leaked or spilled materials, climate change projections for increased storm intensities, on-site flood and stormwater evaluations, and potential effects to downstream protected areas. If approved, the state of Wisconsin must ensure the nutrient management plan and facility operation plans are strictly adhered to and application field soils are routinely tested to support projected nutrient assimilation capacity.

Near shore Chequamegon Bay waters have been identified as nutrient rich relative to Lake Superior and tributary inputs are not quickly diluted. Coastal currents can move these nutrient enriched waters long distances, including into waters of the national park prior to mixing with the larger lake waterbody.

Scoping Recommendations

The National Park Service has identified the following specific issues that should be addressed to provide for a thorough evaluation of the proposed facility and waste management process:

1. <u>Identify, and consider impact on, NPS protected and designated areas as receiving waters and the impact of the Badgerwood operation on state-designated Outstanding Natural Resource Waters.</u> Apostle Islands National Lakeshore (most notably Long Island) and the Kakagon Sloughs National Natural Landmark are National Park Service managed or affiliated areas in the receiving waters of the proposed facility watershed. Most of the waters of the national park and the Kakagon Sloughs are designated as State Outstanding Resource Waters (ONRW), which Wisconsin Administrative Code states “may not be lowered in quality.” The EIS needs to identify the special designations and legal protections of these receiving waters, and the impact of this proposal on water quality. In addition, the EIS should specify what the current water quality is with regard to potential CAFO-related pollutants (phosphorous, nitrogen, and bacteria levels) in Fish Creek and Chequamegon Bay, so that any degradation may be then defined.

Recent research has shown that waters of Chequamegon Bay have variable circulation – water in the bay can linger along Long Island, be transported into the rest of the Apostle Islands archipelago via currents, or reach far into the Kakagon Sloughs via seiche. The land base for Badgerwood is partly located within the White River watershed (nutrient management plan, page 166), which is a part of the larger Bad River watershed. Nutrient transport via the White and Bad Rivers therefore has the potential to directly impact the Kakagon Slough area, especially during periods of flood when the Bad River can crest and provide overland flows that enter the Kakagon Slough. Two such crests have occurred in the last 10 years during months when manure would be spread on fields; September, 2010 and October, 2005. Additionally, recent research and analysis of satellite imagery has shown that flow and sediment from the Bad River can and does move into much of the Apostle Islands area. (A recent student project illustrated this: https://www.youtube.com/watch?v=S-smuscYD_k). Further, seiche effect has been shown to transport waters from Chequamegon Bay upstream into the Kakagon Sloughs. In addition to local site assessments, nutrient transport and effects on protected waters should be included in project reviews.

2. Consider special biological resources. The beaches of Long Island, part of the Apostle Islands National Lakeshore, are the only location in the state of Wisconsin where the federally endangered Piping Plover nests. Further, a large native mussel bed, rare for Lake Superior, has been noted on the Chequamegon Bay side of Long Island in previous surveys. Multiple species of commercially and recreationally important fish are also found in the Chequamegon Bay and Apostle Islands area. Two species, Lake Sturgeon and Coaster Brook Trout, are of interest to NPS due to their rarity and their occurrence in the Apostle Islands. The White and Bad Rivers are two of only three rivers on the U.S. side of Lake Superior with naturally reproducing populations of Lake Sturgeon, and fish from this population utilize the Chequamegon Bay and Apostle Islands areas.

Whittlesey Creek lies immediately adjacent to the Fish Creek watershed and enters Chequamegon Bay less than one mile from Fish Creek. Whittlesey Creek National Wildlife Refuge was established in 1998 to restore and protect the Coaster Brook Trout, a fish whose populations have declined precipitously throughout Lake Superior. The Whittlesey Creek population is one of just four local source populations of known coasters that would be found nearby and that could contribute to populations within the Apostle Islands.

A third species, lake trout, is also of interest due to commercial, recreational, and ecological importance. In the Apostle Islands area, lake trout receive special protection via zero harvest regulations in two refuge areas that include parts of the Apostle Islands. Specifically, the waters and fish of the Gull Island Refuge would potentially be impacted due to the proximity of this refuge to the outlet of Chequamegon Bay and the mouth of the Bad River.

Increased nutrient loading and subsequent eutrophication in Chequamegon Bay could affect all species listed here, and would likely have cascading effects on forage fish, invertebrates, and food web dynamics. Acknowledgement of these special biological resources and provisions for their protection needs to be clarified in the EIS.

3. Include up-to-date meteorological data and climate change projections. The hydrological assessment and runoff calculations in the Badgerwood application were based on historical records and therefore did not evaluate projected increased severity of extreme weather events (40% increase in >3" precipitation events for WI) associated with climate change for the APIS area. The frequency and

intensity of large rainfall events in the Chequamegon Bay area has been documented to be on the increase, and projections suggest this will be an even larger issue during the life of the proposed facility. DNR's analysis of both the Badgerwood facility and the Nutrient Management Plan needs to consider up-to-date and projected rainfall and runoff patterns (e.g. NOAA's recently published Atlas 14, Volume 8) to assure that pollutant load, holding tank, and flow calculations reflect the expected climate rather than historical conditions.

The state of Wisconsin has developed downscaled climate models that should be utilized to evaluate storm potential related to hydrologic input and runoff.

The first noted harmful algal bloom (HAB) event documented on Lake Superior occurred at APIS in the summer of 2012 and was attributed to extreme precipitation and runoff associated with climate change. Field application and site design evaluations should include a conservative factor based on climate projections to ensure environmental protection into the future and the WNPDES designation as a "no discharge" facility are valid.

4. Evaluate subsurface stratigraphy for secondary containment and leak detection. The introduction to the engineering design in the Badgerwood proposal suggested that clay layers, "fat clay," underlying site soils to a shallow depth (direct push boreholes at the barn site went to only the 15 foot depth) could serve as a natural "secondary containment" below the waste-holding cement vaults (cellars) directly beneath the three barn floors. However, inspection of the borehole logs indicated 5 or more borings (e.g., SE corner of property) with silty sand occurring at a 10' or less total depth below grade underneath the fat clay. The shallow silty sand layer would result in the excavation and placement of the liquid waste vaults (barn foundation structure) below the clay base in this area and potentially too thin a fat clay layer in other areas to provide effective secondary containment. If these vaults leaked, the waste migration pathway would likely be downward into this unsaturated silty sand and not laterally to the edge of the barn footings as surmised in the Engineering Report. The drain along the cement footing around the perimeters of the barns is also intended to serve as a leak detection system. However, this likely would not be the case given the site subsurface conditions, which could allow leaking waste to migrate vertically rather than laterally to the barn perimeter/foundation footing drains. More subsurface stratigraphic information is needed to properly design any leak detection system and evaluate subsurface migration pathways for waste should the manure storage vaults fail and leak.

The EIS should investigate and provide examples of where the integrity of subsurface concrete vaults of this/similar design and size have remained viable (not leaked) over the long term in Wisconsin's freeze-thaw climate.

5. Evaluate water supply needs and well delivery. The site currently has two wells (~ 100 + foot depth range) that are planned to be used as the facility water supply with an average, continuous demand estimated at 65 gpm. Little information is provided about the productivity of these wells or this aquifer, the stratigraphy (aquifers and aquitard intervals) that separates the vaults holding the waste from the water supply intervals, depth to water table or first water, whether the aquifer is confined or unconfined, and if it will hold up long term at the estimated facility demand or well pumping rate. Additional drawdown over time would normally reduce a well's capacity. No well test information was provided; however, this information should be in the EIS analysis. Although the current well capacities appear sufficient in the short term, historic demand, with significantly different land use than the proposed operation, was very likely to have been much less at this site.

6. Evaluate nutrient assimilative capacity of soils. A primary concern related to potential impacts to local water resources is additional nutrient, primarily phosphorous and nitrogen, loading to surface

waters. Should such additional loading occur, it would not appear to meet either WPDES "no discharge" facility designation, nor nondegradation water quality standards. Cumulative effects of the waste management program on application field soils (long term assimilative capacity), limited field treatment area (1420 total acres), depth of soil veneer across fields, slopes, infiltration capacities and associated runoff, application timing related to limited growing season, and limited time of year when the ground is unfrozen need to be considered in detail. The soils in the area appear incompatible with the proposed/intended future use and unfavorable for waste disposal based on existing surveys addressing agricultural disposal of wastewater. Subsurface shallow injection is unlikely to sufficiently address/counter such an overriding concern. These properties should be evaluated by credible and objective agricultural soils practitioners, e.g. the USDA Natural Resources Conservation Service, familiar with local soils and their ability to process projected nutrient loads throughout the projected life of the operation. That evaluation should be included in the EIS.

7. Evaluate microbial/virus persistence. Soil injection is the proposed field application method for manure management. The EIS should evaluate whether this method (utilized in part to control odor), will provide ample time for decay and mortality of parasites and disease associated with hog waste when exposure to solar radiation is minimized/avoided entirely.

8. Evaluate application field hydrology for preferential flow paths. Some spreading fields clearly have internal ephemeral drainages/low spots with buffers established so that spreading in/near the middle of some fields is expected to be avoided. The ability of applicator(s) to achieve avoidance of these areas is questionable. Effectiveness of control of overland flow should also be addressed in the EIS, with consideration of soil conditions/properties (e.g. thin organic layer on fat clay) that are vulnerable to rapid runoff and high erosivity due to the high silt content in surface horizons combined with low permeability of underlying clay.

9. Improve hydrologic description. The hydrology write-up in the engineering report does not adequately describe the hydrologic setting of the area, nor the conceptual approach to preventing surface water intrusion into the operation. Therefore, the purpose and results of the hydrologic/ hydraulic analyses presented in the report is unclear. The EIS needs a clearly labeled hydrology section that provides a good hydrologic understanding of the surface water system in the area and a description of how surface water will be diverted around the site. The hydrologic/hydraulic analysis in the EIS should clearly target relevant issues identified in this section.

10. Identify flood prone areas during the projected life of the operation. It is stated in the proposal that no floodplain areas are indicated on flood maps for the area. This does not eliminate flooding as a topic to be dealt with in the EIS. Flooding from large waterways that would be mapped by FEMA may not be an issue in this area, however managing local runoff is. Supporting flood evaluation information should be clearly available within the hydrology portion of the EIS and include contextual information. Floodplain and field runoff analysis should factor in current and projected future rainfall patterns, not past conditions.

11. Develop an improved hydrologic map. A hydrologic map should be included that clearly shows all the identifiable stream channels in the project area that can flow during rainstorms and/or snowmelt periods. Watershed areas should be shown for each of these channels (or if too large, at least indicated). Where diversion of channels is proposed, the new alignment should be shown and assessed. Associated culverts should also be clearly mapped.

12. Identify design flow standards. The proposal should identify, and the EIS should evaluate, the design flow that ditches and culverts will be sized for. Given the configuration and flow standards the

conveyance system will be designed to, the EIS needs to describe what happens when the capacity is exceeded by a rare event (e.g. 500 year flood event). The EIS should assess the effectiveness of measures (if any) to prevent flows in excess of the design capacity from entering waste storage holding tanks, which could result in a release of wastewater.

13. Quantify the magnitude, duration, and areal extent of projected odors from the facility, including the spreading of manure. The EIS analysis should link the proposed normal and emergency manure spreading operations to the rate of runoff and assimilation, as well as wind patterns in the area. Identify receptor areas that will be impacted by any odor from Badgerwood operations, whether these areas are designated recreation areas or other tourist sites, and the projected economic impact of changes in air quality.

Sincerely,

Robert J. Krumenaker
Superintendent

cc:
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