



MEMORANDUM

To: Northern Waters Solar Park, LLC

From: Victoria Northrop, Environmental Consultant
Brian Ortman, Project Director
Leonard Powell, Associate Director

Date: July 30, 2025

Re: Northern Waters Solar Park – Potential Sandhill Crane Impacts Memorandum

Introduction

Atwell, LLC (Atwell) was contracted by Northern Waters Solar Park, LLC (Client) to conduct a desktop review of potential impacts to sandhill cranes (*Antigone canadensis*) in support of the Northern Waters Solar Park Project (Project). The Project includes development of a 110-megawatt (MW) alternating current (AC) ground mounted photovoltaic solar project covering a total area of approximately 810 acres located in Grant Township, Cheboygan County, Michigan (Fenced Area). The Project is located east of Trudeau Road, to the west of Chamberlain Road, and stretches north to south from Twin Lakes Road, and east to west of N Black River Road. The purpose of this desktop review was to assess potential impacts to sandhill cranes that may be utilizing the Project site.

While sandhill cranes are not listed as threatened or endangered by U.S. Fish and Wildlife (USFWS) or the State of Michigan, they are federally protected by the Migratory Bird Treaty Act (MBTA; U.S. Congress 1918). The MBTA protects nesting migratory birds from intentional or unintentional take which is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (16 U.S.C. §§ 1531, 703-712).

Methods

Potential sandhill crane habitat research was conducted using relevant, publicly available literature. Desktop review of potential sandhill crane habitat on-site was conducted for the 810-acre Fenced Area, 1,626-acre overall Project Area, and a 10-mile buffer using a variety of Geographic Information System (GIS) databases, including the USFWS National Wetlands

Inventory, Multi-Resolution Land Characteristics Consortium's National Land Cover Database, U.S. Geological Survey's (USGS) 3D Hydrography Program, and the USGS Protected Areas Database of the U.S., as well on-site delineations of wetlands and water resources conducted within the Project Area in July 2024 (MRLC 2023; USFWS 2025a; USGS 2025a; USGS 2025b).

Sandhill Crane Habitat

Migratory North American sandhill cranes, including lesser and greater sandhill cranes, are grouped into six populations for management purposes. Michigan lies within the range of the Eastern Population (EP) according to the USFWS population range map (USFWS 2023). The EP consists of the greater sandhill crane subspecies (*Antigone canadensis tabida*) which breeds, migrates, and overwinters primarily within the Mississippi and Atlantic Flyways. The Great Lakes region, including Michigan, serves as a core breeding area, with much of the best nesting habitat occupied by breeding pairs (Ad Hoc Eastern Population SANDHILL CRANE Committee 2010).

The preferred nesting habitat for sandhill cranes primarily consists of open landscapes with grasslands and freshwater wetlands. However, nesting can occur in a variety of habitats within Michigan including, but not limited to: wetlands adjacent to agricultural fields; isolated, open marshes or bogs surrounded by shrubs and forests; expansive grasslands, wet marshy meadows, and early successional areas with wetlands, streams, and sandy or peat soils; as well as wet marsh or sedge meadow areas, heath meadows, and short grass meadows (Ad Hoc Eastern Population SANDHILL CRANE Committee 2010; USFWS 2025b). Sandhill crane habitat use broadens during migration to include shallow lakes, wetlands, shallow impoundments, sandbars, harvested agriculture fields, hayfields, and pastures (USFWS 2025b).

The EP cranes leave their breeding grounds during late summer and early fall to gather at traditional staging areas for several weeks before migrating south. Staging areas are located throughout Michigan, typically occurring within large wetland complexes (Ad Hoc Eastern Population SANDHILL CRANE Committee 2010). The USFWS fall surveys of EP crane staging areas documented a total of 160 sandhill cranes (range 4–84) at staging areas throughout Cheboygan County between 2014 and 2018, with the most recent observation of sandhill cranes in 2018 recording four individuals at a staging area approximately eight miles northwest of the Project Area (45.607292, -84.50134). A 2020 survey recorded no sandhill cranes at a potential staging area approximately three miles northwest of the Project Area (45.559188, -84.426928). No fall surveys were conducted in Cheboygan County in 2019, 2021, or 2022 (USFWS 2022; USFWS 2024).

Sandhill cranes generally travel one to five miles daily from nesting sites or stopover roosts to forage, depending on territorial behavior, season, and location. Territorial sandhill cranes are

typically breeding pairs with established nesting territories and small, predictable home ranges of about 0.5 to 1.1 square miles. Non-territorial cranes, which make up about half of the summer population, are more mobile and occupy much larger home ranges ranging from 12 to 160 square miles. Most non-territorial sandhill cranes in spring forage within 0.75 miles of their roosts but may travel up to three miles, while territorial birds typically feed closer to their nests (USDA-APHIS 2017). Sandhill cranes in Nebraska usually remain within five miles of the river during spring stopover in the Platte River Valley (NGPC 2025). The San Luis Valley in Colorado, an agriculturally dominated stopover area, shows average distances between greater sandhill crane roosts and feeding fields of about 1.5 miles during spring with a maximum of approximately 8.3 miles, while fall averages are around 0.9 miles with a maximum near 8.1 miles (Vanausdall et al. 2025). EP cranes on Manitoulin Island in Ontario, Canada, average foraging flights of approximately four miles during fall, with food availability within three miles serving as the strongest predictor of use (Everett 2017). Sandhill cranes in the winter may forage up to ten miles from wetlands where they roost (USDA-APHIS 2017). Wintering greater sandhill cranes in Arizona and California typically forage one to three miles from roosts (Ivey et al. 2015; Collins et al. 2023). A conservative estimate based on this evidence suggests sandhill cranes are unlikely to travel more than ten miles to feed.

Desktop Review of Potential Sandhill Crane Impacts

Michigan has historically supported EP cranes during summer breeding and fall staging periods (Ad Hoc Eastern Population SANDHILL CRANE Committee 2010). Specifically, records of EP cranes utilizing Cheboygan County have been documented as recently as fall 2018 at a staging area approximately eight miles northwest of the Project Area (USFWS 2022). Desktop review indicates that the Fenced Area, Project Area, and surrounding 10-mile buffer appear to contain potentially suitable breeding, staging, and foraging habitat, including freshwater wetlands, wetlands adjacent to agricultural fields, hayfields, and pastures (Figure 1). The 10-mile buffer around the Project encompasses over 116,000 acres of wetlands and more than 16,000 acres of cultivated cropland, hayfields, and pastures, which may serve as stopover, nesting, and foraging habitat (MRLC 2023; USFWS 2025a).

The presence of potentially suitable habitat within and surrounding the Project Area suggests that sandhill cranes may pass through the area during spring and fall migrations and may utilize surrounding habitats for nesting and foraging during the summer breeding period. As such, there is potential for interaction between sandhill cranes and the Project that warrants consideration during planning.

The Project's proposed solar array locations were sited to avoid wetlands and riparian areas, and wildlife movement corridors have been incorporated into the Project design. Although

approximately 257 acres of the Project Area do not appear to contain suitable habitat, about 1,359 acres include potentially suitable wetland and agricultural stopover, nesting, and foraging habitat. Sandhill cranes may be displaced from 56.7% of this habitat (approximately 771 acres) due to Project activities within the Fenced Area (MRLC 2023; USFWS 2025a). However, the availability of potentially suitable habitat within 10 miles, including wetland and agricultural areas, offers alternative resources. Given that sandhill cranes are known to forage up to 10 miles from roosting areas, approximately 132,481 acres of these surrounding habitats provide alternative foraging and nesting opportunities for sandhill cranes potentially displaced from portions of the Fenced Area (MRLC 2023; USFWS 2025a).

Of the approximately 133,840 acres of potentially suitable habitat within the Project Area and surrounding 10-mile buffer, only 771 acres (0.6%) may result in localized sandhill crane habitat loss or displacement. This extensive availability of alternative habitat ensures that foraging and nesting opportunities for sandhill cranes are largely maintained despite localized impacts.

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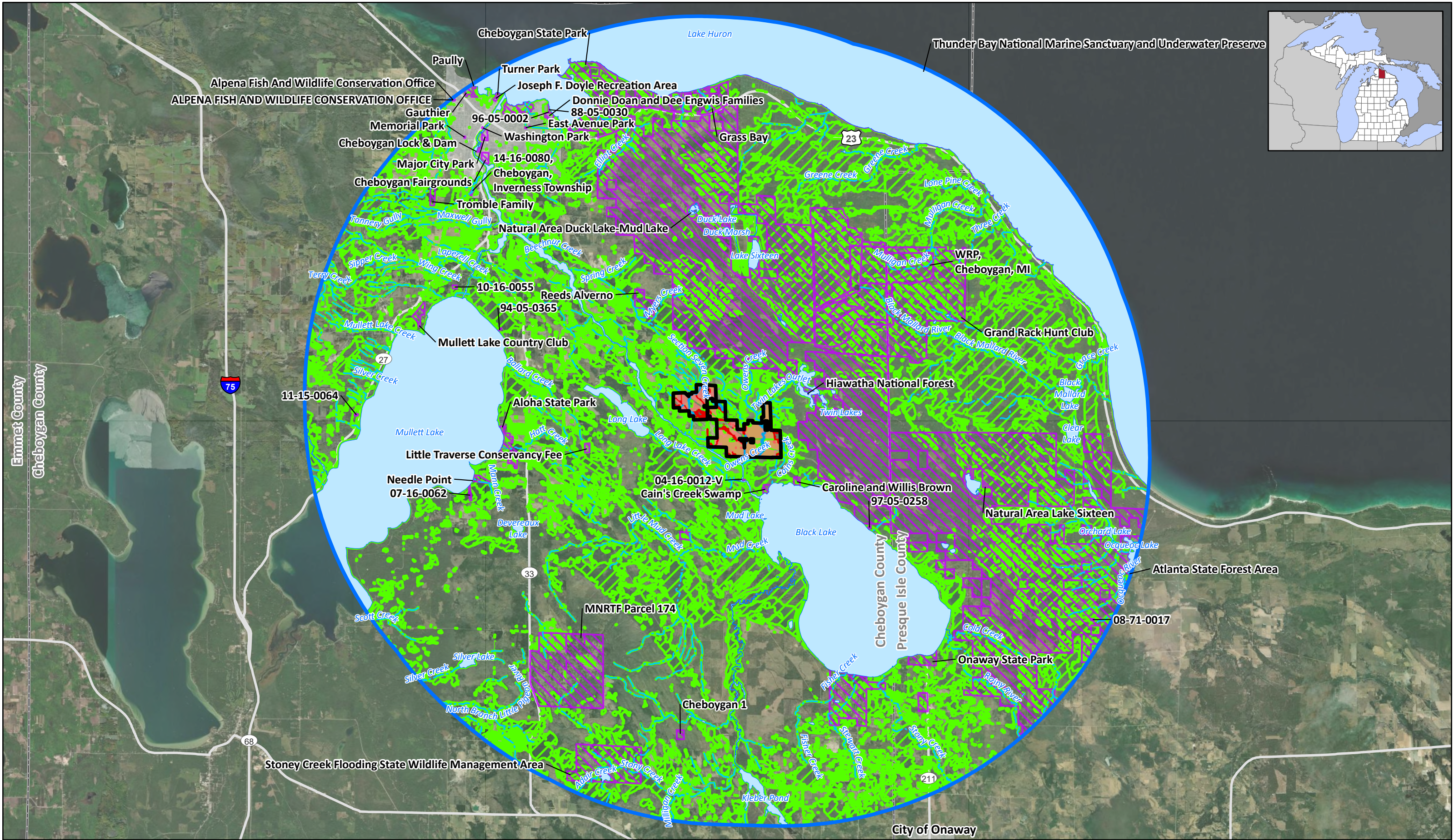
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July 30, 2025

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Miles

- Project Area (~1,626 acres)
- 10-mile Buffer
- Fenced Area (~810 acres)
- USA Major Highways

- County
- Town/Village
- Watercourse (Field Identified)
- Wetland (Field Identified)

- Watercourse (3DHP)
- Waterbody (3DHP)
- Protected Areas (PADUS 4.1)

- Potential Habitat:
- Wetland (NWI)
 - Hay/Pasture (NLCD, 2021)
 - Cultivated Crops (NLCD, 2021)

Sandhill Crane Habitat Map
Grant, Benton, and Aloha Townships
Cheboygan County, Michigan