



MEMORANDUM

To: Toby Valentino
Sean Harris
Heartwood Solar, LLC

From: Alan Plumeau
Tanya Johnson
Bourke Thomas
Atwell LLC

Date: June 22, 2022

Re: **Impact Assessment for the Heartwood Solar Project, Fayette Township, Hillsdale County, Michigan**

Introduction

On behalf of Heartwood Solar, LLC (Heartwood, or the Applicant), Atwell, LLC (Atwell) completed this Impact Assessment for the proposed construction and operation of a 150-megawatt (MW) solar farm (the Project). The Project is proposed to be sited on approximately 700-900 acres of land within Fayette Township in Hillsdale County, Michigan. Because the Project design is not yet final, Atwell analyzed a larger area of approximately 1,650 acres (hereafter referred to as the Study Area). In accordance with Section 14.02 of the Jonesville-Fayette Zoning Ordinance, the purpose of this Impact Assessment is to analyze the potential impacts of the construction and operation of the Project on natural features, stormwater management, surrounding land uses, public facilities and services, public utilities, and traffic. Natural features analyzed in this Impact Assessment include natural vegetation, native plant communities, soils, surface waters, wetlands, and threatened and endangered species (TES).

Prior to preparation of this Impact Assessment, Atwell and other consultants completed field due diligence efforts in the spring and early summer of 2022. These included topographic and aerial mapping surveys, a wetland and watercourse delineation, TES habitat assessment, cultural resource reconnaissance survey, Phase I Environmental Site Assessment, American Land Title Association (ALTA) survey, and landmark tree survey. In addition, Atwell and the Applicant have coordinated with regulatory agencies to discuss the Project. To date, the Applicant and/or Atwell has corresponded with the Hillsdale County Conservation District, the Hillsdale County Drain Commissioner, the U.S. Fish and Wildlife Service (USFWS), the Michigan Department of Natural Resources (MDNR) through the Michigan Natural Features Inventory (MNFI) database, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the Jonesville City Fire Department, and with the Fayette Township Zoning Administrator regarding the Project. The Applicant has reached out to the Jonesville Director of Public Safety to set up a meeting to discuss the Project. Coordination with many of these agencies is ongoing. Results from the completed field studies and information obtained from coordination with these agencies are incorporated into this impact assessment.

Based on the results of these desktop reviews, field studies, and agency coordination efforts, significant impacts to natural features, stormwater management, surrounding land uses, public facilities and services, public utilities, and traffic will be

avoided. The Project will be planted with pollinator-friendly vegetation, which would increase the biodiversity of the area from its current use, as well as reduce the potential for runoff and allow nutrients and groundwater to recharge. As such, impacts to native vegetation, soils, and stormwater will be avoided. In addition, the Project will attempt to avoid delineated surface waters, wetlands, and floodplains. The Project has also been sited so as to avoid potential impacts to TES, in coordination with the USFWS. The Project's sound and glare modeling studies found that potential impacts to neighboring properties are insignificant. The Applicant has also coordinated with the Jonesville Fire Department and Director of Public Safety to discuss the Project. In addition, because the Project's operation and maintenance (O&M) facility will require 2-4 onsite staff, existing public facilities, utilities, and roadways are expected to adequately support Project operation. Thus, impacts to public facilities and services, utilities, and traffic are expected to be negligible.

1. Natural Features

1.1. Natural Vegetation and Native Plant Communities

During the field studies conducted in spring and early summer of 2022, Atwell scientists observed that the Study Area primarily comprises active agricultural lands interspersed with undeveloped woodlots and low-density rural residences. Agricultural fields were observed to contain evidence of the previous year's soybeans (*Glycine max*), corn (*Zea mays*), and alfalfa (*Medicago sativa*). In addition, Atwell conducted a wetland and watercourse delineation in April of 2022. During the delineation, Atwell scientists delineated a total of five watercourses and 28 wetlands within the Study Area. Vegetation recorded within the Study Area during this survey are described below. Additional detail regarding the aquatic features identified within the Study Area are included in Section 1.3 and 1.4, respectively.

Species observed within pastures, field margins, fallow areas, and upland ditches included smooth brome (*Bromus inermis*), chickory (*Chicorium intybus*), common mullein (*Verbascum thapsus*), quack grass (*Elymus repens*), orchard grass (*Dactylis glomerata*), white clover (*Trifolium repens*), tall goldenrod (*Solidago altissima*), horseweed (*Conyza canadensis*), and switchgrass (*Panicum virgatum*). Species observed within upland woodlots and tree rows included sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), northern red oak (*Quercus rubra*), white oak (*Quercus alba*), black cherry (*Prunus serotina*), sweet cherry (*Prunus avium*), pignut hickory (*Carya glabra*), shagbark hickory (*Carya ovata*), boxelder (*Acer negundo*), black locust (*Robinia pseudoacacia*), sassafras (*Sassafras albidum*), white mulberry (*Morus alba*), cottonwood (*Populus deltoides*), staghorn sumac (*Rhus typhina*), and prickly ash (*Zanthoxylum americanum*). Understory species observed included grapevine (*Vitis riparia*), European bittersweet (*Solanum dulcamara*), blackberry species (*Rubus spp.*), multiflora rose (*Rosa multiflora*), bush honeysuckle (*Lonicera spp.*), trout lily (*Erythronium albidum*), and white avens (*Geum canadense*).

Dominant vegetation observed within emergent wetland communities included reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), switchgrass, and cattails (*Typha spp.*). Tree species observed to be dominant within forested wetland communities within the Study Area included red maple, American elm (*Ulmus americana*), swamp white oak (*Quercus bicolor*), boxelder, and black willow (*Salix nigra*). In general, the sapling/shrub layer within these forested wetland communities was observed to be fairly sparse and, in some cases entirely absent. Where present, wetland shrub and sapling species recorded included multiflora rose, ninebark (*Physocarpus opulifolius*), winterberry (*Ilex verticillate*), boxelder, buttonbush (*Cephalanthus occidentalis*), and prickly gooseberry (*Ribes cynosbati*). Similarly, herbaceous wetland species were relatively sparse or absent from forested wetland communities and most commonly included reed canary grass and sedge species (*Carex spp.*). Other herbaceous-layer species observed to be dominant within forested wetland communities included sensitive fern (*Onoclea sensibilis*), marsh marigold (*Caltha palustis*), stinging nettle (*Urtica dioica*), and skunk cabbage (*Symplocarpus foetidus*).

Once constructed, the Project will be planted with pollinator-friendly seed mixes appropriate for the Study Area, including for areas around solar arrays and for underneath array. Heartwood Solar is in the process of coordinating with Pheasants Forever and the Hillsdale County Conservation District with the goal of procuring seed mixes that meet the specifications

of “Michigan Department of Rural Development’s Policy for Allowing Commercial Solar Panel Development on P.A. 116 Lands”. Furthermore, Heartwood Solar has voluntarily elected to install all areas being disturbed with seed mixes meeting these specifications, regardless of enrollment in Michigan’s Farmland Preservation Program (P.A. 116). Because the majority of the Study Area is currently used as agricultural land, planting the entirety of disturbed areas with pollinator-friendly species, many of which may be native species, would result in an increase in vegetative biodiversity from it’s current use.

1.2. Soils

Soils within the Study Area are summarized in Table 1, below. Soils are characterized by map unit, soil type, drainage class, and hydric soil rating¹.

Table 1. Soil Classifications within the Study Area				
Soil Map Unit	Soil Type	Drainage Class	Hydric Soil Rating	Acres within Study Area
10B	Hillsdale-Riddles complex, 2 to 6 percent slopes	Well drained	No	825.68
16B	Fox sandy loam, till plain, 2 to 6 percent slopes	Well drained	No	237.30
10C2	Hillsdale-Riddles complex 6 to 12 percent slopes, eroded	Well drained	No	155.48
42B	Riddles sandy loam, 1 to 6 percent slopes	Well drained	No	135.66
24B	Spinks loamy sand, 0 to 6 percent slopes	Well drained	No	101.73
14	Wolcott silt loam	Very poorly drained	Yes	47.94
16C2	Fox sandy loam, Huron Lobe, 6 to 12 percent slopes, eroded	Well drained	No	22.57
40A	Locke fine sandy loam, 0 to 3 percent slopes	Somewhat poorly drained	No	21.71
16D2	Fox gravelly sandy loam, 12 to 18 percent slopes, eroded	Well drained	No	20.45
33	Houghton muck, disintegration moraine, 0 to 2 percent slopes	Very poorly drained	Yes	19.77
51	Glendora mucky loamy sand, frequently flooded	Very poorly drained	Yes	18.40
44B	Leoni gravelly sandy loam, 1 to 6 percent slopes	Well drained	No	11.12
17	Sebewa loam, disintegration moraine, 0 to 2 percent slopes	Poorly drained	Yes	9.02
25B	Thetford loamy sand, 0 to 4 percent slopes	Somewhat poorly drained	No	7.11
15C	Boyer loamy sand, 6 to 12 percent slopes	Well drained	No	4.53
15B	Boyer loamy sand, 1 to 6 percent slopes	Well drained	No	2.70
37A	Matherton loam, 0 to 3 percent slopes	Somewhat poorly drained	No	2.43
34	Adrian muck	Very poorly drained	Yes	1.64
11B	Eleva channery fine sandy loam, 2 to 6 percent slopes	Somewhat excessively drained	No	1.51
55	Pits, gravel	N/A	Unranked	1.04
10D2	Hillsdale-Riddles complex, 12 to 18 percent slopes, eroded	Well drained	No	0.12
16E	Fox gravelly sandy loam, 18 to 35 percent slopes	Well drained	No	0.06
50C	Coloma sand, 6 to 18 percent slopes	Excessively drained	No	0.02
Total:				1649.69

¹ USDA [U.S. Department of Agriculture]. 2022. Web soil survey. Nat Resour Conserv Serv. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

However, use of the Study Area as a solar farm will not result in the permanent conversion of the existing farmland soils beneath the majority of Project infrastructure. At the end of the Project's operational life, the majority of the Study Area can be returned to its current use as agricultural land. Allowing soils to "rest" from yearly agricultural use will also help to restore nutrients into soils. Furthermore, the Project will be planted with a mix of pollinator-friendly vegetation, which have deep root systems that would reduce erosion, and add nutrients to the soil. Increased pollinator habitat has also been shown to increase crop production for pollinator-dependent crops when compared to, such as soybeans².

In addition, because the majority of the Study Area consists of relatively level terrain, grading activities required for Project construction are anticipated to be minimal. Where required, no soil is anticipated to be removed from the Study Area. Topsoil would first be stripped and stockpiled, subgrade would be shaped to meet grading needs, then topsoil would be replaced. Following construction, soils will be fully stabilized and vegetated with a pollinator-friendly seed mix, as described above. The deep root systems of pollinator-friendly plant species will also help to reduce stormwater runoff. Stormwater management is discussed in Section 2, below.

1.3. Surface Waters and Floodplains

No 100-year floodplains are mapped by the Federal Emergency Management Agency (FEMA) within the Study Area. Atwell performed a preliminary desktop drainage review to determine if watercourses with an upstream drainage area of greater than two square miles are present within the Study Area. Based on this review, two of the watercourses delineated within the Study Area, which are different reaches of the same feature, do have an upstream drainage area of greater than two square miles. As such, state-regulated floodplains associated with this feature are likely present within the Study Area.

During the wetland and waterbody delineation conducted by Atwell in April 2022, Atwell delineated five watercourses within the Study Area. Four of these were observed to be perennial features, with one identified as intermittent. These watercourses are not mapped by the Hillsdale County Drain Commission as regulated County Drains.

The results of the field and desktop studies completed by Atwell were used to inform Project design and, as currently sited, Project infrastructure will avoid impacts to surface waters, to the extent practicable. According to Michigan Administrative Code R. 281.832, Rule 22, a permit under Part 301 of the Natural Resources and Environmental Protection Act (NREPA) is not required for the use of directional drilling or boring methods if a number of provisions are satisfied. The Applicant has committed to boring underground electrical collection lines so as to avoid impacts to surface water features and, pursuant to these standards will conduct directional drilling/boring as follows:

- A minimum of 10 feet is maintained from the top of the conduit and the bottom of the lake or stream;
- The entry and exit points are located far enough away from the lake or stream banks to assure that bank disturbance does not occur;
- The drilling or boring sites (pits) are located outside any applicable natural river designation setback requirements (there are no natural river designations within the Project Area);
- The drilling or boring operations will not result in the eruption/release of any drilling fluids up through the ground into the lake or stream. Although not expected, if eruptions/releases occur below the ordinary high-water mark of the water body, then an after-the-fact permit application will be submitted with a detailed description of how the crossing was completed, how the eruption was minimized, contained, and cleaned up, and how the site was restored.

Underground collection lines will likely be bored underneath the identified surface water features, thus avoiding impacts, and the Applicant is pursuing applicable EGLE permits to conduct this work. In addition, Heartwood Solar is coordinating

² Milfont, MO, Rocha, EEM, Lima, AON, Freitas, BM. 2013. Higher soybean production using wild honeybee and wild pollinators, a sustainable alternative to pesticides and autopollination. *Environmental Chemistry Letters*. 11.4: 335-341

with EGLE to conduct a floodplain elevation review and will use the results of this study to ensure impacts to the probable state-regulated floodplain are also avoided, as feasible.

1.4. Wetlands

During the wetland and waterbody delineation conducted in April 2022, Atwell scientists delineated 28 wetlands within the Study Area. Of the wetlands delineated within the Study Area, 17 were identified as palustrine emergent (PEM) communities with an additional two containing PEM components. PEM wetlands were generally observed as depression features within agricultural fields and were typically dominated by species such as reed canary grass, purple loosestrife, switchgrass, and cattails. In addition, Atwell scientists delineated one palustrine forested (PFO) wetland community and five wetlands containing PFO components. These communities typically comprised mixed hardwood stands. Wetlands that supported PFO components were in wooded stands that have partially disturbed by previous activities. Atwell also identified three open water (OW) wetland communities. These communities were located in depressions that held standing water with depths ranging from three inches to three feet. Of the 28 wetlands identified within the Study Area, Atwell identified 17 that are likely to meet the requirements of Part 303, Wetlands Protection, of the NREPA, as amended. The remaining 11 wetlands were identified as unlikely to fall under EGLE jurisdiction.

The results of Atwell's field delineation were used to inform Project design and the Applicant is in coordination with EGLE to obtain concurrence with the findings of Atwell's delineation and confirm jurisdiction of the features identified. As currently sited, the Project will likely avoid impacts to all wetlands identified as likely to fall under EGLE jurisdiction. In addition, the majority of features identified as unlikely to be regulated by EGLE will likely also be avoided, to the extent practicable. If disturbance of unregulated features occurs, it would be limited to small, isolated, wetlands that are located within existing agricultural fields and are likely consistently disturbed by ongoing agricultural activities.

1.5. Threatened and Endangered Species

In accordance with Part 365, Endangered Species, of the NREPA and Section 7 of the Endangered Species Act of 1973 (ESA), Atwell completed a desktop review to determine the presence of potentially suitable TES habitat in the vicinity of the Study Area. Atwell reviewed the USFWS Information for Planning and Consultation (IPaC) System list regarding ESA-listed TES and other resources, such as critical habitat, for the Study Area and its surroundings. No critical habitat has been designated within or adjacent to the Study Area³. Atwell also reviewed the MNFI database for state-listed TES and species of special concern, rare natural plant communities, and other unique natural features for records within the sections overlapped by the Study Area. The MNFI database contained records of three sensitive species, including two state-listed threatened species and one federally listed species. Northern long-eared bat (*Myotis septentrionalis*), a federally listed threatened species was recorded in 2001 in Sections 32 and 33 of Township 5 South, Range 3 West. This record is associated with the St. Joseph River. In addition, the MNFI also identified the river redhorse (*Moxostoma carinatum*), a state-threatened fish was documented in 1987 the St. Joseph River upstream of Genesee Road, within Sections 29 and 30 of Township 5 South, Range 3 West. In 1860, a state-threatened plant species, starry campion (*Silene stellata*), was also documented in much of the surrounding area, including within Township 5 South, Range 3 West; Township 6 South, Range 3 West; and Township 6 South, Range 4 West⁴.

Table 2 includes TES species identified by the USFWS IPaC and MNFI databases, their habitat requirements, and their potential based on Atwell's review to occur within the Study Area. Based on this review and habitat observed within the Study Area during site visits, Atwell identified two federally listed TES bat species, Indiana bat (*Myotis sodalis*) and

³ USFWS [U.S. Fish and Wildlife Service]. 2022. IPaC - information for planning and consultation. Environ Conserv Online Syst ECOS. <https://ecos.fws.gov/ipac/>.

⁴ MNFI [Michigan Natural Features Inventory]. 2022. Michigan Natural Features Inventory web database search. <https://mnfi.anr.msu.edu/search/login.cfm>.

northern long-eared bat with high potential to occur within the vicinity of the Study Area. Additional detail is provided below and in **Table 2**.

Table 2. Federal- and State-Listed Threatened and Endangered Species			
Species	Status*	Habitat Requirements	Potential to Occur within Study Area
Fish			
River redhorse (<i>Moxostoma carinatum</i>)	ST	Prefers medium- to large-sized rivers with moderate to strong currents and gravel or cobble substrates and are most often observed in deep runs of rivers.	Low Potential. According to the MNFI, this species was last recorded near the Study Area in 1987 and is now presumed extirpated within Hillsdale County. The Study Area does not contain suitable riverine habitat that would support this species.
Insects			
Poweshiek skipperling (<i>Oarisma poweshiek</i>)	FE, ST	In Michigan, occurs only within prairie fen habitats in close proximity to prairie dropseed (<i>Sporoborus heterolepis</i>) or mat muhly (<i>Muhlenbergia richardsonis</i>).	Low Potential. No prairie fen habitats, prairie dropseed, nor mat muhly were observed within the Study Area. In addition, the MNFI database does not contain records of this species occurring within Hillsdale County.
Mammals			
Indiana bat (<i>Myotis sodalis</i>)	FE, SE	May roost in a variety of forested habitats, typically preferring wooded riparian corridors and woodlots in the vicinity of medium-sized rivers and streams. Roosts are almost always found under loose, peeling bark of dead or dying trees, or under the exfoliating bark of live trees such as shagbark hickory.	High Potential. Based on correspondence with USFWS, known roost trees are present near Study Area. Several woodlots within the Study Area were observed to contain high-quality potential habitat for this species.
Northern long-eared bat (<i>Myotis septentrionalis</i>)	FT, SC	May roost in a variety of forested habitats in proximity to wooded or emergent wetlands or riparian corridors. May roost in in trees with a diameter at breast height (DBH) of at least three inches, within holes or cracks, or under exfoliating bark.	High Potential. Based on correspondence with USFWS, known roost trees are present near Study Area. Several woodlots within the Study Area were observed to contain high-quality potential habitat for this species.
Mussels			
Clubshell (<i>Pleurobema clava</i>)	FE, SE	In Michigan, only documented in watercourses associated with the St. Joseph River. Occurs in clean, loose sand and gravel in small to medium rivers and streams, most often occurring in riffles and runs.	Low Potential. According to the MNFI, all documented occurrences of this species are associated with the headwaters of the St. Joseph River. The Study Area is located more than 10 miles downstream of the closest recorded occurrence of this species.
Plants			
Starry campion (<i>Silene stellata</i>)	ST	In Michigan, known to occur in forested banks, oak woodlands, and savanna habitats. Fire suppression practices have likely impacted distribution of this species.	Low Potential. According to the MNFI, the most recent occurrence of this species within Hillsdale County was in 1860 and it is considered to be extirpated within all sections that overlap the Study Area. This species was not observed during field studies conducted within the Study Area in April 2022.
Reptiles			
Copperbelly water snake (<i>Nerodia erythrogaster neglecta</i>)	FT, SE	Found in a variety of wetland habitats including emergent wetland communities, forested swamps, and wet meadows. Prefers shallow, warm, slow-moving wetlands and waters, especially those adjacent to shallow lakes and ponds or slow-moving rivers.	Moderate Potential. Potentially suitable wetland habitats are present within the Study Area, including several with adjacent waters. Recent (2017) records of this species exist within Hillsdale County, but it has not been recorded in sections overlapping the Study Area.

Table 2. Federal- and State-Listed Threatened and Endangered Species			
Species	Status*	Habitat Requirements	Potential to Occur within Study Area
Eastern massasauga rattlesnake (<i>Sistrurus catenatus catenatus</i>)	FT, SC	In southern Michigan, typically occurs in open, shallow wetlands, particularly within prairie fens. May also occur in bogs, shrub swamps, wet meadows, marshes, moist grasslands, wet prairies, and floodplain forests. May also utilize adjacent upland areas including grasslands, fallow fields, or forest clearings during summer months.	Low-Moderate Potential. Wetlands observed within the Study Area could provide potentially suitable habitat, but are not the preferred habitat of this species. The Study Area is over 9 miles from USFWS-mapped Tier 1 or Tier 2 habitat for this species. According to the MNFI database, this species has been recently (2020) recorded within Hillsdale County, but no occurrence records exist within the sections overlapped by the Study Area.
*FE = Federally endangered, FT = Federally threatened, SE = State-endangered, ST = State-threatened, SC = State species of special concern			

Based on the desktop review, field surveys, and agency correspondence conducted for the proposed Project, the river redhorse, Poweshiek skipperling, clubshell, and starry campion were determined to have low potential to occur within the Study Area. As such, impacts to these species are not anticipated as a result of the Project. In addition, the eastern Massasauga rattlesnake was determined to have low-to-moderate potential, and the copperbelly was determined to have moderate potential to occur within the Study Area. Both of these species utilize wetland habitats. As discussed in Section 1.3 and 1.4, the Project has been designed so as to attempt to avoid impacts to all watercourses, to all wetlands likely to fall under EGLE jurisdiction, and to the majority of wetlands identified as likely to be unregulated by EGLE. If unregulated wetlands will be impacted by Project activities, these impacts would likely be limited to small, isolated, low-quality features that have been consistently disturbed by existing agricultural activities. As such, Project-related impacts to the eastern Massasauga rattlesnake or copperbelly water snake are not anticipated.

During the site visit in April 2022, Atwell scientists identified several woodlots as moderate- and high-quality potential roosting habitat for Indiana bat and northern long-eared bat. In addition, based on correspondence with the USFWS Lansing Field Office, known roosts have previously been identified in proximity to the Study Area. Coordination with the USFWS Lansing Field Office is ongoing. Direct impacts to these species will be avoided by conducting tree clearing outside the roost season for these species (April 1 – September 30), to the extent practicable. If clearing must occur during the roost season, emergence surveys will be conducted at any potential roost tree to confirm absence of TES bat species immediately prior to clearing. However, although avoidance of direct impacts to TES bats is anticipated, the USFWS also recommended conducting additional detailed habitat characterization studies and/or presence/absence studies for wooded areas that may be cleared. The results of these subsequent studies as well as ongoing coordination with the USFWS will be used to further refine Project design to avoid direct impacts and minimize potential indirect impacts of the Project to TES bat species.

2. Stormwater Management

The Project will comply with all applicable federal, state, and Hillsdale County regulations related to stormwater management. On April 4, 2022, Atwell received an email from the Hillsdale County Drain Commissioner stating that the County does not currently have a stormwater management plan in place. Atwell and the Applicant met with the Hillsdale County Drain Commissioner and confirmed that a stormwater management plan would not be required due to a lack of expected impacts as a result of the Project.

As discussed in the sections above, as currently designed, the Project will attempt to avoid direct impacts to all identified surface waters, mapped 100-year floodplains, and regulated wetlands, to the extent practicable. Because an area greater than five acres will be disturbed, the Project will obtain Notice of Coverage (NOC) permits in accordance with the National Pollutant Discharge Elimination System (NPDES). The Project will adhere to the requirements of Part 91, Soil Erosion and Sedimentation Control, of the NREPA, as implemented by the Hillsdale County Building Inspection and Environmental Services Department, including implementation of appropriate erosion and sedimentation control best management practices (BMPs). Measures that may be implemented include but are not limited to installation of preservation of existing

vegetation in areas that do not need to be disturbed, installation of silt fencing, straw wattles, sediment traps, storm drain inlet protection, riprap at construction entrances, and use of temporary seeding for stabilization of stockpiled soils. Erosion and sediment control BMPs will be used as appropriate, on a location- and resource-specific basis.

Following construction, The Project will be seeded with a pollinator-friendly mix of vegetation to achieve final soil stabilization of soils. It should be noted that the Applicant has voluntarily committed to seeding all disturbed areas with pollinator-friendly a seed mix, not just those enrolled in the state P.A. 116 program. Use of pollinator-friendly species will benefit stormwater management in several ways. The deep root systems of pollinator-friendly species filter and store more water, thereby decreasing runoff and increasing groundwater recharge⁵. In addition, established pollinator-friendly vegetation do not require use of chemical fertilizers or herbicides, thus decreasing pollutants entering surface waters and groundwater⁶. As such, the Study Area, when fully vegetated will likely ultimately reduce the potential for pollutant-laden stormwater runoff, especially in comparison to existing agricultural uses comprising the majority of the Study Area.

3. Surrounding Land Uses

Land surrounding the Study Area is predominantly used for agricultural production. Lands adjacent to the Study Area in the City of Jonesville are used for single-family residential development, light industrial uses, as well as a manufactured home park.

The Project has been designed and sited so as to minimize impacts to all surrounding land uses. According to the Project's Real Estate Property Value Impact Report (included with the permit application package), solar facilities of similar size located in similar rural areas in Michigan and across the Midwest, have consistently been shown to have no measurable impact on property values in the surrounding area. Direct impacts to surrounding land uses are also not anticipated as a result of the Project. The Project will include landscape buffering along all adjacent, non-participating parcels containing a residence, if requested by the parcel owner to provide privacy screening and to maintain the essential rural character of the area. The rural character of the landscape will be further preserved through use of wooden post woven fiber perimeter fencing, as opposed to standard chain-link fencing. Furthermore, the Project has received wide-ranging support, including the support of neighboring property owners. Letters of support for the Project are included with the permit application package.

The Project will not generate smoke, fumes, or odors that could affect neighboring properties. According to the Project Sound Modeling Study (included in permit application package), under the highest decibel circumstances, sound modeled at the receptor locations analyzed was predicted as ranging from 12 to 48 A-weighted decibels (dBA). As a comparison, a soft whisper heard from three feet away would register at just over 40 dBA and the sound of a dishwasher running in the next room may register at 50 dBA. Furthermore, the Project has been designed so that inverters and the Project substation, which are the components capable of making sound, are centrally located away from non-participating properties. As currently designed, the nearest an inverter is sited from any residence is nearly 400 feet away. Thus, the Project is not predicted to result in adverse impacts to neighboring residences or other land uses.

The Project will also not result in glint/glare that would impact neighboring properties. The Project Glare Hazard Study did identify the potential for glare to be reflected at the Intersection of Deal Parkway and Industrial Parkway in the City of Jonesville. However, the software used to conduct this analysis is not capable of taking existing or proposed visual obstructions into consideration, and because existing structures and woodlots are located between the proposed arrays and these roadways, glare modeled at this location is unlikely to actually be visible. The Project Glare Hazard Analysis is

⁵ Walston, LJ, Li, Y, Hartmann, HM, Macknick, J, Hanson, A, Nootenboom, C, Lonsdorf, E, Hellmann, J. 2021. Modeling the ecosystem services of native vegetation management practices at solar energy facilities in the Midwestern United States. Ecosystem Services. 47. 101227.

⁶ MPCA [Minnesota Pollution Control Agency]. 2022. Minnesota Stormwater Manual: Top 10 reasons to plant pollinator friendly vegetation at your solar site.

https://stormwater.pca.state.mn.us/index.php/Top_10_reasons_to_plant_pollinator_friendly_vegetation_at_your_solar_site

included with the special land use permit application package. Finally, the majority of Project components will not require exterior lighting. The Project would include one overhead, downward-facing light associated with the Project substation for the purposes of security, maintenance, and emergency services. Exterior lighting will comply with the requirements set forth in Section 2.18 of the Jonesville-Fayette Zoning Code and is not anticipated to adversely impact adjacent properties or vehicular traffic.

4. Public Facilities and Services

The existing public streets and highways will adequately serve the Project throughout its construction, operation, and decommissioning. Transportation and installation of Project components will not require special accommodations of the existing infrastructure. Workforce and component delivery routes will follow the routes designated in the Project Haul Route Plan, which is included with the Final Site Plan package. Likewise, during operation, the Project will require a staff of 2-4 onsite personnel, and no special accommodations will be required of existing infrastructure.

The Project will comply with all applicable regulations of the Hillsdale County Drain Commission and existing stormwater drainage patterns within and around the Study Area will remain generally unchanged. In addition, Atwell and the Applicant met with the Jonesville City Fire Department on April 5, 2022, to discuss emergency response plans. During this meeting, the Jonesville Fire Department did not recommend any modifications to Project design. The Applicant will notify the Jonesville Fire Department prior to construction so they can visit during construction to obtain an on-the-ground understanding of the Project and emergency access points. In addition, impacts to local police protection services are also not anticipated as a result of Project development or operation. The Applicant has also reached out to the Jonesville Director of Public Safety to set up a meeting to discuss the Project.

In accordance with federal regulations, a perimeter fence will be installed surrounding the Project, which will limit potential safety or security issues. Furthermore, access roads will be designed so as to provide safe and efficient ingress and egress for maintenance staff and emergency services, should an emergency arise. As such, the Project will not create any additional impacts to drainage, fire, or police, beyond its existing use as primarily agricultural land.

5. Public Utilities

The Project will not result in impacts to public utilities. The Project has completed a review of titles and conducted an ALTA survey. Results from these studies have been incorporated into the design of the Project to ensure that Project components do not affect existing utility easements. In addition, no adverse impacts to the power grid will occur as a result of the Project. The Applicant has already executed a power purchase agreement (PPA) with Consumers Energy for the purchase of the power generated by the Project. Consumers Energy submitted the PPA for approval to the Michigan Public Service Commission on May 13, 2022, and this request is included with the Project's special land use permit application package. During operation, the Project will require 2-4 onsite personnel. Thus, energy, water, and sewage and refuse disposal needs during Project operation are not anticipated to exceed those of an average single-family household. Additionally, the Project will obtain all building, electrical, plumbing, and other permits required by the Hillsdale County Building Inspection and Environmental Services Department. As such, no adverse impacts to public utilities are anticipated as a result of the proposed Project.

6. Traffic

As discussed in Section 4, above, existing public streets and highways will adequately serve the Project throughout its construction, operation, and decommissioning. During Project construction, transportation of Project components and the construction workforce will not require special accommodations be made to existing infrastructure and deliveries will follow the Project's Haul Route Plan, which is included with the Final Site Plan package. Thus, although a minor increase to local traffic is expected to occur during the construction phase, this increase would not be expected to significantly

impact local or regional traffic patterns. Once constructed, the Project will require a staff of 2-4 onsite personnel, and no special accommodations will be required for Project operations or maintenance needs. Furthermore, solar panels will be setback at least 50 feet from all public road right-of-way (ROW). Thus, impacts to traffic patterns during Project operation are expected to be negligible.