Hecate Energy
Cider Solar Farm

Exhibit 11: Terrestrial Ecology

Cider Solar Farm
Towns of Oakfield and Elba
Genesee County, New York

Matter No. 21-01108

EXHIBIT 11: TERRESTRIAL ECOLOGY

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Table of Contents

List of Tables

List of Figures

List of Appendices

Abbreviations

ECNYS	Ecological Community of New York State
USFWS	United States Fish and Wildlife Service
IPaC	Information for Planning and Consultation
NYNHP	New York Natural Heritage Program
BMP	Best Management Practices
NYSDEC	New York State Department of Environmental Conservation
BBA	Breeding Bird Atlas
USGS	United States Geological Survey
BBS	Breeding Bird Survey
CBC	Christmas Bird Count
HMANA	Hawk Migration Association of North America
SWAP	State Wildlife Action Plan
SPDES	Station Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
SPCC	Spill Prevention, Control and Countermeasure
PV	photovoltaic

Glossary of Terms

Applicant	Hecate Energy Cider Solar LLC
Project	Refers to the proposed Cider Solar Farm, an up to 500-megawatt utility scale solar project that will be comprised of photovoltaic panels, inverters, access driveways, electrical collection lines, point of interconnection/substation, construction staging areas, fencing and plantings, located on private land in the towns of Elba and Oakfield, Genesee County, New York.
Project Area	Refers to the Project Site and surrounding/adjacent land totaling approximately 7,518 acres.
Project Footprint	Refers to the limit of temporary and permanent disturbance within the Project Site caused by the construction and operation of all components of the Project totaling approximately 2,452 acres.
Project Site	Refers to those privately owned parcels under option to lease, purchase, easement or other real property interests with the Applicant in which all Project components will be sited totaling approximately 4,650 acres.
Study Area	Refers to the area evaluated for specific resource identification and/or resource impact assessment. The size of this area is appropriate for the target resource and takes into account the project setting, the significance of resource or impact being identified or evaluated, and the specific survey distances included in Chapter XVIII, Title 19 of NYCRR Part 900. As appropriate, the Study Area for each type of survey or resource impact assessment is provided in the respective sections within the Application.

EXHIBIT 11: TERRESTRIAL ECOLOGY

Matter No. 21-01108

The content of Exhibit 11 is provided in conformance with Chapter XVIII, Title 19 of the New York Codes, Rules, and Regulations § 900-2.12, as follows.

a) Vegetative Communities

The Project Site is within the Eastern Great Lakes Lowlands ecological region (ecoregion, Bryce et al. 2010). Within New York State, this ecoregion abuts the Great Lakes and St. Lawrence Seaway to the west and north, and the Allegany Plateau to the south. The valleys and lowlands of this ecoregion are underlain by interbedded limestone, shale, and sandstone rocks that erode more readily than the more resistant rocks of the adjacent highlands. Limestone-derived soils are fine textured, deep, and productive. Consequently, much of the region was cleared for agriculture and urban development, and there is less native forest than in neighboring ecoregions (Bryce et al. 2010).

The Project Site is within the Ontario Lowlands sub-ecoregion. The proximity of this ecoregion to Lake Ontario tempers the climate and contributed to clouds in November and December, frequent fog in the winter, and high snow fall. Historically, forests dominated by beech and sugar maple, and to a lesser extent, white oak, basswood, elm, and ash, entirely covered the Ontario Lowlands (Bryce et al. 2010); however, because of the region's suitable soil, most of the land was converted to agriculture and only fractured woodlots remain.

Stantec used a combination of ExtractXTM remote sensing services, satellite imagery (WorldView-3, May 2020), and ground-truthing to generate a comprehensive inventory of common land use and vegetative community types in the Project Site. Landcover classes include the following upland vegetation communities: active agriculture (row crops), active agriculture hay field, grassland/pastureland, successional forestland, successional shrubland, and disturbed/developed structures. Wetland and watercourse types included: open water, scrub shrub wetland, forested wetland, wet meadow/marshland, and streams. Land use and land cover data was field verified throughout further field investigations including wetland and stream surveys conducted, as described in Exhibit 13: *Water Resources and Aquatic Ecology* and Exhibit 14: *Wetlands* of this Application

The Project Site includes approximately 4,650 acres, while the Study Area (Project Site plus 100 feet) is 5,298 acres. The dominant landcover class in the Study Area is active agriculture (Figure 11-1: *Land Cover in Study Area*), followed by forested wetlands and successional forestland, respectively. Table 11-1: *Landcover Classes Represented in the Study Area* shows other landcover classes present within the Study Area.

EXHIBIT 11: TERRESTRIAL ECOLOGY

Matter No. 21-01108

Table 11-1: Landcover Classes Represented in the Study Area

Landcover Class	Acreage within Study Area*	Percent of Total Study Area
Active Agriculture Row Crop	3289.69	62.10%
Active Agriculture Hay Field	23.28	0.44%
Grassland/Pastureland	187.38	3.54%
Successional Forestland	510.81	9.64%
Successional Scrubland	82.29	1.55%
Disturbed/Developed Structures	221.88	4.19%
Forested Wetlands	881.00	16.63%
Wet Meadow/Marshland	32.23	0.61%
Streams	47.81	0.90%
Open Water	12.13	0.23%
Unidentified	9.24	0.17%
TOTAL	**5297.75**	**100.00%**

Vegetative communities identified in the Study Area are generally common to this region of New York and there are minimal high value habitats or unique vegetative communities present within the Study Area. However, there are habitat types (e.g., forests, grasslands, and wetlands) present in the broader landscape beyond the Project Site (Oak Orchard Wildlife Management Area Adjoins the Project Site's northwestern boundary, Iroquois National Wildlife Refuge adjoins Oak Orchard Wildlife Management Area) that may provide suitable habitat for both state and federal threatened and endangered species.

Stantec conducted an invasive species baseline survey in July and September 2020 and January 2021 and documented 510 occurrences of 14 different invasive species (Appendix 13-E: *Cider Solar Farm Invasive Species Survey Baseline Report* in Exhibit 13). The majority of occurrences were recorded in areas with a history of human disturbance, such as forests with a history of silviculture and the edges of active agricultural areas. A project-specific Invasive Species Control and Management Plan has been prepared to prevent the spread of invasive species during construction and to control invasive populations following construction and during operation of the Project (Appendix 13-E).

Dominant vegetative communities in the Study Area are further described below:

<u>Active Agriculture – Row Crop</u>

Active row crop agricultural land (i.e., cultivated crops) comprises approximately 62% (3,290 acres) of the total Study Area. This type of agricultural land is designated as the cropland/row crop Ecological Community of New York State (ECNYS) (Heritage Rank: unranked cultural), which consist of row crops like corn (*Zea mays*), soybeans *(Glycine max*), and other vegetables.

Active Agriculture – Hay Field

Active agricultural hayfields and comprise 0.4% (23 acres) of the total Study Area. These agricultural lands fall under the cropland/field crop ECNYS (Heritage Rank: unranked cultural) (Edinger et al. 2014). Cropland/field crops are agricultural communities planted with field crops, such as orchard grass (*Dactylis glomerata*), red clover (*Trifolium pratense*), alfalfa (*Medicago sativa*), and timothy (*Phleum pratense*).

Grassland/Pastureland

Grasslands and pastureland represent 3.5% (187.4 acres) of land cover in the Study Area. Grasslands and pastureland can fall within the successional old field (Heritage Rank: G5 S5) and pastureland (Heritage Rank: unranked cultural) ECNYS. Successional old fields are characterized by meadows dominated by forbs and grasses that occur in areas that were previously cleared, plowed and subsequently abandoned (Edinger et al. 2014). Common successional old field herbaceous species include goldenrods (*Solidago* spp.), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), common dandelion (*Taraxacum officinale*), and asters (*Symphyotricum* spp.). Shrubs, such as dogwoods (*Cornus* spp.) and raspberries (*Rubus* spp.), may occur, but represent <50% cover in the community. A successional old field is a relatively short-lived community that will succeed to a shrubland, woodland, or forest community if it is left undisturbed. Pastureland is agricultural land that is permanently maintained for livestock and is subject to pressures associated with the presence of livestock.

Successional Forestland

Successional forestland covers 9.6% (510.81 acres) of the Study Area. A variety of forest communities exist within this cover type, including beech-maple mesic forest (Heritage Rank: G4 S4), maple-basswood rich mesic forest (Heritage Rank: G4 S3), and successional southern hardwoods (Heritage Rank G5 S5) (Edinger et al. 2014). Beech-maple mesic forest is a broadly defined community type that is dominated by sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*). Maple-basswood rich mesic forest is also dominated by sugar maple, as well as American basswood (*Tilia americana*) and white ash (*Fraxinus americana*). Successional southern hardwoods are broadly defined as hardwood or mixed forests that occur on sites that were previously cleared or disturbed. This forest type is common within the region due to historic clearing for agricultural use. Common species within this forest type include American elm (*Ulmus americana*), white ash, red maple (*A. rubrum*), box elder (*A. negundo*), silver maple (*A. saccharinum*), and hawthorns (*Crataegus* spp.). This forest community may also include non-native species, such as common buckthorn (*Rhamnus cathartica*) and honeysuckles (*Lonicera* spp.) that thrive in successional forests (Edinger et al. 2014).

Successional Shrubland

Successional shrublands (Heritage Rank: G5 S5) represent 0.8% (62 acres) of land cover in the Study Area. Successional shrublands occur at sites that were previously cleared or otherwise disturbed. This community is represented by at least 50% cover of shrub species, including characteristic species such as dogwoods, raspberries, viburnums (*Viburnum* spp.), common buckthorn, hackberries, and honeysuckles.

Disturbed/Developed Structures

Disturbed and developed land covers 1.6% (82.3 acres) of the Study Area. This class includes residential structures (i.e., houses and driveways), non-residential structures (e.g., commercial sites, industrial sites, paved roadways), and vegetated areas with high anthropomorphic influence (e.g., mowed lawns) that are represented by ecological communities including mowed lawn with trees (Heritage Rank: unranked cultural), mowed lawn (Heritage Rank: unranked cultural), mowed roadside/pathway (Heritage Rank: unranked cultural), unpaved road/path (Heritage Rank: unranked cultural), paved road/path (Heritage Rank: unranked cultural), rural structure exterior (Heritage Rank: unranked cultural), interior of a barn/agricultural building (Heritage Rank: unranked cultural), and interior of a non-agricultural building (Heritage Rank: unranked cultural).

Vegetation in disturbed and developed areas tends to be sparse when it is not artificially planted or influenced. Many non-native species are resilient to disturbances and they may be able to establish in these sites if not controlled. Non-native species such as multiflora rose (*Rosa multiflora*), common buckthorn, honeysuckles, and various upland grasses (*Poa* spp.) are likely to exist in some disturbed or developed areas.

Wetlands, Streams, and Open Water

Based upon the landcover classification effort, wetlands, streams, and open water account for 18.4% (973.2 acres) of land cover within the Study Area. However, wetland and stream surveys were conducted in the Study Area, and the results are provided in Exhibit 14. Forested wetlands are the most common type of wetland within this category (881 acres). These wetlands receive runoff from the surrounding landscape and are often inundated and characterized by poorly drained soils. Common species of vegetation in forested wetlands include silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), riverbank grape (*Vitis riparia*), spotted jewelweed (*Impatiens capensis*), Morrow's honeysuckle (*Lonicera morrowii*), devil's beggarticks (*Bidens frondosa*), and poison ivy (*Toxicodendron radicans)*.

Other types of wetlands, including wet meadow/marshland (32.2 acres), streams (47.8 acres), and open water (12.1 acres), each cover ≤1% the Study Area. A more detailed description of wetland communities, streams, and open water within the Project Site can be found in Exhibits 13 and 14.

Endangered and Threatened Plants and Rare Habitat

A review of the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) identified one federally threatened and state-endangered species, Houghton's goldenrod (*Solidago houghtonii*). This species is restricted to calcareous beach sands, rocky and cobbly shores, beach flats, edges of marl ponds, and shallow, trough-like interdunal wetlands that parallel lake shorelines. It requires natural dynamics of the Great Lakes system to thrive. Houghton's goldenrod is considered present but rare within Genesee County. The only known location of the species occurs in Bergen Swamp Nature Preserve on a single marl fen, approximately 7 miles to the east of the Project. Similar habitat for this species is absent in the Study Area or the broader landscape of the Project Site.

There is no federally designated critical habitat for any threatened or endangered species in Genesee County (USFWS 2020), and New York Natural Heritage Project (NYNHP) did not identify any state-listed plants or significant natural communities within the Study Area or the broader landscape of the Project Site (Appendix 11-B: *Agency Correspondence*). Stantec did not observe endangered, threatened, or sensitive plants while conducting on-site wildlife, invasive plant, and wetland/streams surveys.

b) Temporary and Permanent Impacts on Vegetative Communities

The Project Footprint or limit of disturbance is 2,451.8 acres, which represents approximately 46.3% of the 5,297.8-acre Study Area. Approximately 2,178.9 acres of land will be occupied by solar panels and maintained areas, which include those areas not covered by panels or other permanent project component. Solar panels and maintained areas will be enclosed within approximately 52 miles of security fence. Approximately 77.7 miles of buried electrical collection line will be installed in single or multiple parallel trenches. Using access from public roadways, the Project will require the construction of approximately18.5 miles of new 20-foot-wide gravel access roads. The substation and switchyard occupy an approximately 5.4-acre area adjacent to the NYPA 345-kilovolt Dysinger to New Rochester transmission line. The Project includes approximately 19.3 acres of temporary laydown yards that will be used for construction and restored upon completion (see Appendix 5-A: *Civil Design Drawings* in Exhibit 5: *Design Drawings* of this Application).

Both temporary and permanent impacts to vegetative communities will occur as a result of Project construction and long-term operation and maintenance. Temporary impacts from construction will involve clearing vegetation for equipment staging, laydown yards and Project component installation (such as solar arrays). These areas will be disturbed during construction and then restored to an herbaceous, meadow cover type. Permanent impacts include the permanent Project footprint that will cleared and converted to built facilities, such as the Project access roads, racking system support posts, inverters, and substation/switchyard.

During the siting and layout design for the Project, significant effort was taken to co-locate the electrical collection lines with proposed access roads. Additionally, wherever feasible, proposed access roads are located on existing farm drives to minimize disturbance to vegetative communities.

Project construction will result in a total disturbance of approximately 2,451.7acres (46.3% of Study Area; Figure 11-2: *Impacts to Land Cover*[1]). Of this area, 2,175.8 acres will be temporarily impacted, 66.7 acres will be permanently converted to built facilities or not restored to their current state, and 210.3 acres will result in permanent conversion, i.e., cleared forest or shrub areas converted to herbaceous cover. Impacts to vegetative communities by landcover class is presented in Table 11-2: *Temporary and*

[1] For the purposes of preparing Figures 11-1 and 11-2 and Tables 11-2 and 11-3, Stantec performed a re-classification of landcover because Stantec's landcover imagery analysis was not accurate for forested wetlands and streams, and resulted in an overestimation of impacts to wetlands. Therefore, Stantec performed an additional analysis by overlaying the field wetland delineation data on Stantec's landcover imagery to determine the temporary and permanent impacts to land cover. This resulted in some areas that were classified by the imagery as forested wetland being reclassified to successional forestland, as well as some areas classified by the imagery as streams being reclassified as the adjacent landcover type. This reclassification was only preformed within the limits of the wetland delineation study area.

Permanent Impacts to Vegetative Communities, while impact to vegetative communities by Project components is presented in Table 11-3: *Impacts to Vegetation by Project Component*.

EXHIBIT 11: TERRESTRIAL ECOLOGY

Matter No. 21-01108

Table 11-2: Temporary and Permanent Impacts to Vegetative Communities

Landcover Class	Temporary Impact – acres	Permanent Impact (Conversion to built facilities) – acres	Permanent Conversion – acres	Total Impact – acres
Upland				
Active Agriculture Row Crop	2098.6	59.2		2157.8
Active Agriculture Hay Field	0.9	0.0[1]		1.0
Grassland/Pastureland	53.1	0.8		53.9
Successional Forestland		5.0	198.1	203.1
Successional Shrubland		0.1	12.1	12.2
Disturbed/Developed Structures	21.4	1.3		22.6
Wetland/Stream				
Forested Wetlands		0.0[2]	0.2	0.2
Wet Meadow/Marshland	0.7	0.1		0.8
Streams	0.1	0.0[3]		0.1
Total	**2174.8**	**66.7**	**210.4**	**2451.8**

[1] Actual Value = 0.01
[2] Actual Value = 0.04
[3] Actual Value = 0.02

Table 11-3: Impacts to Vegetation by Project Component

Project Component	Permanent Impact (conversion to built facilities) – acres	Temporary Impact – acres	Permanent Conversion (Forest/Shrub to herbaceous) – acres	Total Impact – acres
Solar Panels, Maintained Areas[1] and Steel Posts	0.9	1991.62[2]	187.3	2178.9
Buried Electrical Collection		42.4	8.2	50.6
Access Roads	52.8	41.6	3.5	98.0
Substation/Switchyard	5.7			5.7
Laydown Areas		19.2	0.0[3]	19.3
Interconnection/Overhead Electric Line	0.0[4]	0.9	0.3	1.2
Security Fence	6.4	79.9	10.9	97.2
Inverter Pads	0.8			0.8
Total	**66.7**	**2175.8**	**210.3**	**2451.7**

[1]Includes those areas not covered by panels or other permanent project component
[2] Areas where panels are installed and impacting herbaceous or agricultural land which would be converted to another ground cover after construction and during operation
[3] Actual Value = 0.03
[4] Actual Value = 0.003

Row crop fields are ubiquitous throughout the Project Site and are the primary locations sited for the Project Footprint. Project components will be sited on approximately 2,212.7 acres of agricultural land, which includes active agriculture row crop, active agriculture hay field, and grassland/pastureland. Of this agricultural land, the majority 2,152.6 acres (97.3%) will only be impacted temporarily for the installation of solar panels, laydown areas and buried electrical collection lines and restored following the completion of construction. The remaining approximately 60 acres of agricultural land will be converted to built facilities including access roads, inverter pads, and the substation. Once decommissioned after the useful life of the Project has occurred, the agricultural land will be restored in accordance with the Decommissioning and Site Restoration Plan (Appendix 23-A: *Decommissioning and Site Restoration Plan* in Exhibit 23: *Site Restoration and Decommissioning* of this Application). All maintained areas surrounding the panel arrays, inside the security fence, will be planted in native grasses and periodically mowed.

Forested areas are less common throughout the Project Site; however, some impacts will occur to forested areas. Approximately 5.0 acres of successional forestland will be permanently impacted and converted to built facilities, and approximately 198.1 acres will be permanently converted into herbaceous cover.

c) Avoidance and Minimization Measures

Avoidance measures were initiated during the siting and design of the Project to protect sensitive vegetative communities, such as forestland and wetlands, to the extent practicable. Largely, project components have been sited in active agricultural fields that provide limited beneficial wildlife habitat. The Project Parcels do not contain significant natural communities; therefore, Project construction and operation will not result in impacts to significant natural communities. All vegetative communities identified within the Project Footprint are common to New York State. Through careful site planning, Project access roads will be located on existing farm roads and active farmland as much possible. Newly disturbed areas will be confined to the smallest areal extent possible. Project components were sited within open fields and existing agricultural land wherever practicable to minimize impacts to sensitive vegetation and communities that support wildlife including grassland birds and wetlands. Linear project components such as access roads and electrical collection lines have been collocated to minimize impacts to plant communities.

Avoidance, and minimization of impacts to vegetative communities also include:

1. An on-site environmental monitor overseeing compliance with permit conditions and best management practices (BMPs) in the SWPPP, Agricultural Plan, Invasive Species Control Plan, and vegetation management plans;
2. Preconstruction stakeout of the limit of disturbance and demarcation of delineated wetlands and streams within the limit of disturbance;
3. Preconstruction training for the construction workforce to recognize and respect marked boundaries of off-limit areas; and
4. Maintaining a clean work area within the designated construction sites.

Following the construction phase of the Project, the Applicant will restore disturbed areas between and beneath solar panels with a mixture of native, non-invasive grass and forb seeds. Revegetation will allow the native vegetation communities to recover from past agricultural use and may provide valuable habitat for wildlife, including birds and pollinating insects. Additionally, promoting growth of non-invasive grassland vegetation following construction will reduce the amount of mowing necessary for regular maintenance.

d) Wildlife and Wildlife Habitat

Wildlife and wildlife habitat was determined based upon the desktop vegetative community mapping, field reconnaissance and multiple field survey efforts including wetland and stream delineations, breeding bird surveys, invasive species inventory, and winter raptor surveys. The results of these surveys are presented in Exhibit 12: *NYS Threatened or Endangered Species* and Exhibit 14 of this Application. Stantec also completed a Wildlife Characterization Study to summarize existing public information relative to listed federally or state threatened or endangered species with the potential to occur within 5 miles of the Project Site (Appendix 12-A: *Wildlife Site Characterization* in Exhibit 12). The Wildlife Characterization Study includes an evaluation of habitat suitability within the Project Site and Project Parcels for the listed species identified. Given the Project Site's patchwork of forestland, agricultural lands, successional lands,

wetlands/streams, and disturbed/developed areas, the wildlife species expected to occur in the Project Site are common species that are adapted to fragmented and varied habitats. No bat hibernacula have been documented at the Project Site.

The Project Site is dominated by active agricultural row croplands, with additional open upland habitats consisting of grassland/pastureland and active hay fields. Active agricultural lands do not provide high quality wildlife habitat and typically support relatively few species. The grasslands/pasturelands within the Project Site provides suitable habitat for many grassland species. Stantec conducted a BBS to assess baseline uses of the Project Site by breeding birds with an emphasis on detecting breeding grassland species (Appendix 12-B.1: *Hecate Cider Solar Farm Breeding Grassland Bird Survey* in Exhibit 12). Results of the BBS indicated that avian species detected are generally common, regionally abundant, and are representative of the habitats in which they were observed.

Successional forestland is present within the Project Site bordering many of the agricultural fields. Given that most of the forested areas within the Project Site contain significant edge habitat, the Project Site likely supports wildlife that prefer forest edge habitats. The Project Site does not contain mature, interior forests; therefore, forest interior species or species dependent on mature forest types are not expected to occur within the Project Site.

The Project Site contains a limited amount of successional shrubland. Many species of birds, mammals, reptiles, and amphibians use shrubland habitat. Successional shrubland areas within the Project Site generally occur in small patches scattered among areas of active agricultural land. Given the limited overall quantity of shrubland habitat and small patch size within the Project Site, there is minimal habitat for shrubland dependent wildlife species.

Wetlands, streams, and open water habitats occur within the Project Site, with forested wetlands accounting for the majority of these habitat types. Open water wetlands, emergent wetlands, and scrub-shrub wetlands within the Project Site are limited and are generally small in size. Therefore, the Project Site contains limited suitable habitat for wildlife species that are dependent on these habitat types, such as waterfowl, wading birds, and amphibians. Many of the wetlands in the Project Site that are not directly in active agricultural fields have the potential to support various species of wildlife. However, wildlife habitat provided by these wetlands is not necessarily for wetland-dependent species. Many of the wetlands provide foraging, cover, travel corridor, roosting and breeding habitats for generalist wildlife species, similar to upland habitats in the surrounding landscape. Further information regarding wetland communities, streams, and open water within the Project Site can be found in Exhibits 13 and 14.

The Applicant prepared a Wildlife Inventory listing the typical species of birds, mammals, herpetofauna, and terrestrial invertebrates found in the region with the potential to occur within or proximal to the Project Site, as identified through database review, agency consultations, and on-site field surveys (Appendix 11-A). On-site field studies provided direct records through the Project pre-construction BBS (June-July 2020; Appendix 12-B.1 I Exhibit 12), as well as incidental observations by Stantec biologists conducting other on-site studies (e.g., wetland delineation, invasive species survey).

EXHIBIT 11: TERRESTRIAL ECOLOGY

Matter No. 21-01108

Mammals

The terrestrial (grassland, successional forestland, and successional shrublands) and wetland habitat types in the Project Site and Study Area are suitable habitat for common mammalian species as listed in Appendix 11-A. Information regarding sightings or locations of mammalian species in Genesee County is not readily available. Instead, the potential occurrence for various mammals was derived from the following sources:

- Field observations: direct observations of individuals as well as signs (e.g., tracks, scat, burrows, etc.)
- Consultations with NYSDEC, NYNHP, and USFWS (IPaC)
- NYSDEC State Wildlife Action Plan (SWAP)
- Observed available habitat for commonly occurring species

Appendix 11-A includes 25 mammalian species and 3 groups of mammals (various mice, moles, shrews) that have been documented in the Project Site or have the potential to occur within the vicinity of the Project Site based upon their known general distribution. Species known to occur within the Project site based on field observations include eastern chipmunk (*Tamias striatus*), eastern cottontail (*Sylvilagus floridanus*), eastern grey squirrel (*Sciurus carolinensis*), groundhog (*Marmota monax*), muskrat (*Ondatra zibethicus*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), and white-tailed deer (*Odocoileus virginianus*).

The wildlife inventory includes the state- and federally threatened northern long-eared bat (*Myotis septentrionalis*) based upon its general distribution. However, consultations with the above-mentioned agencies did not identify this species or its hibernacula as occurring near the Project. The species may occur in Genesee County, but there is limited potential for this species to occur within the Project Site as it lacks area of mature interior forest.

Birds

Grasslands, successional forestlands, successional shrublands, and the various wetland habitats present in the Project Site provide suitable habitat for an array of common bird species as listed in Appendix 11-A. Information regarding the potential occurrence for bird species was derived from the following sources:

- Pre-construction Breeding Bird Survey (BBS): described and appended in Exhibit 12 and Appendix 12-B.1
- Wintering Raptor Survey: described and appended in Exhibit 12 and Appendix 12-D: *Grassland Habitat Management Plan*
- Consultations with NYSDEC, NYNHP, and USFWS (IPaC)
- Breeding Bird Atlas (BBA)
- eBird (eBird.org)
- Audubon Christmas Bird Count (CBC)
- Hawk Migration Association of North America (HMANA)

- United States Geological Survey (USGS) BBS

The second NYS BBA project occurred from 2000 to 2005. Results were obtained from four NYS BBA survey areas ("blocks") that overlap the Project Site. Observations relative to the Project Site from eBird, Audubon CBC, USGS BBS, and HMANA were limited to within 5 years. eBird is a citizen science project with an online portal for submitting bird detections. eBird observations in Genesee County were included in the inventory. Christmas bird count data included observations from the 15-mile-diameter Oak Orchard Swamp Christmas Bird Count. The center of the Oak Orchard count is approximately 7 miles to the northwest of the Project Site. Reports from the USGS BBS were obtained from the Byron, NY BBS route, which neighbors the Project Site to the east. HMANA hawk migration observations were included from Braddock Bay Bird Observatory, which is approximately 27 miles northeast of the Project Site.

Appendix 11-A includes 269 avian species that have been documented through one or more of the previously described surveys, consultations, and/or online databases. Because of the varied sources of observations, Appendix 11-A includes avian species that may breed, migrate, and/or winter in the vicinity of the Project. Stantec biologists observed 61 avian species in the Project Site while conducting a pre-construction BBS (see Appendix 12-B.1). None of these species were state or federally listed as endangered or threatened; however, five state species of special concern were observed: American bittern (*Botaurus lentiginosus*), Cooper's hawk (*Accipiter cooperii*), common nighthawk (*Chordeiles minor*), grasshopper sparrow (*Ammodramus savannarum*), and vesper sparrow (*Pooecetes gramineus*).

Three state-listed bird species were documented by Stantec biologists during a wintering raptor survey: the state-threatened bald eagle (*Haliaeetus leucocephalus*) and northern harrier (*Circus hudsonius*), and state-endangered short eared owl (*Asio flammeus*). Additional state-listed bird species in Appendix 11-A include the state-threatened king rail (*Rallus elegans*), least bittern (*Ixobrychus exilis*), northern harrier (*Circus hudsonius*), pied-billed grebe (*Podilymbus podiceps*), sedge wren (*Cistothorus stellaris*), and upland sandpiper (*Bartramia longicauda*); and state-endangered black tern (*Chlidonias niger*), peregrine falcon (*Falco peregrinus*). The potential for suitable habitat within the Project Site for the bald eagle, black tern, least bittern, northern harrier, pied-billed grebe, sedge wren, and king rail is described in Appendix 12-A: Wildlife Characterization Study. Peregrine falcons typically nest on ledges of cliff faces or manmade structures, such as tall buildings and bridges. As such, this species is unlikely to occur in the Project Site outside of migration. Upland sandpiper is a grassland species, but they prefer grasslands of a greater size and structural diversity than what are present within the Project Site. Short-eared owls breed in open areas, such as grasslands and marshes. New York state is on the southern edge of this species' breeding range, but no individuals were observed during the pre-construction BBS. Short-eared owls use similar habitat during winter months and become more common in New York as northern breeders move south.

Amphibians and Reptiles

The various wetland habitats, successional forestland, and grasslands present in the Project Site provide suitable habitat for several common species of amphibians and reptiles as listed in Appendix 11-A. Information on amphibians and reptiles (herpetofauna, or "herps") was derived from the following sources:

- New York State Amphibian and Reptile Atlas Project (Herp Atlas)
- Observed available habitat for commonly occurring species

- Consultations from NYSDEC, NYNHP, and USFWS (IPaC)

NYSDEC conducted a 10-year survey (1990-1999) to document the geographic distribution of the state's herpetofauna. Data from the survey are organized by USGS 7.5-minute topographic quadrangle maps, and Oakfield and Batavia quadrangles cover the Project Site.

Distribution maps created from the Herp Atlas and agency consultations identified 19 species (13 amphibians, 6 reptiles) that have the potential to occur in the vicinity of the Project Site. (See the species list included in Appendix 11-A, Wildlife Inventory. Note the inventory list for herps reflects those species reported for the quadrangles in the Project Site. The list is not meant to reflect an entire list of those herps species with potential to occur.) Many of the identified amphibians and reptiles are aquatic or semi-aquatic. These species are more likely to occur within, or near, wetlands or open water.

One state-endangered and federally threatened reptile, the eastern massasauga (*Sistrurus catenatus*), is included in Appendix 11-A. A breeding population of this rattlesnake species occurs in Genesee County, several miles east of the Project Site. This species has a variety of habitat requirements throughout the year, including wetlands, uplands, and peatlands. Peatlands are a crucial habitat type for this species, as it is necessary for their hibernation and gestation. Based on the landscape characteristics and predominance of agricultural activities, it is unlikely that peatlands occur within the Project Site or Project Parcels. Therefore, the Project Site and Project Parcels do not appear to contain the habitat requirements associated with this species, and it is unlikely that this species occurs within the Project Site or Project Parcels.

Terrestrial Invertebrates

Terrestrial invertebrates are a diverse group of animals that do not possess or develop a vertebral column (backbone). These include a variety of arthropods, including insects (e.g., ants, bees, beetles, butterflies and moths, cockroaches, crickets and grasshoppers, dragonflies, flies, mantids, true bugs), arachnids (e.g., spiders, ticks, and mites), and myriapods (e.g., centipedes and millipedes). Other common terrestrial invertebrates include terrestrial species of earthworms and nematodes, as well as terrestrial species of mollusks (e.g., snails and slugs).

The Project Site includes a variety of habitats, which can support a variety of terrestrial invertebrate species. No rare, threatened, or endangered invertebrates were identified through agency correspondences. As such, terrestrial invertebrates that are common in Western New York are presumed to be present within the Project Site.

e) Impacts to Wildlife and Wildlife Habitat

Project Construction

Construction activities include operation of vehicles and heavy equipment, mobilizing, staging, and installing Project components, vegetation removal, and ground disturbance. Each of these elements has the potential to affect wildlife and wildlife habitat directly and indirectly through incidental injury or mortality, sedimentation in waterbodies, habitat disturbance and loss, and displacement from habitats.

Incidental Injury or Mortality

Incidental injury and mortality will be limited to sedentary and slow-moving animals that are unable to quickly escape from active construction. Sedentary and slow-moving animals include some rodents, reptiles, amphibians, and invertebrates. Project infrastructure will be sited to avoid impacts to the majority of forested areas. This approach along with the minimal amount of tree clearing expected will minimize impacts to bird eggs and non-volant bat pups. More mobile species and mature individuals will be able to avoid or escape active construction. Vehicle-related mortality for the slow-moving animals may increase temporarily due to increased traffic volume during construction but is not expected to have any effect on mobile wildlife species and will be further limited by the low speed limits on local, secondary roads.

Sedimentation

Earth-moving and other ground disturbance activities (e.g., installation of buried electrical collection, construction of new access roads, excavation for substation) has the potential to release sediment to nearby waterbodies. These impacts could occur down slope of areas subject to ground disturbance, soil stockpiles, and other types of earth-moving activities at panel/array sites, connectors, substations, and transmission line. Siltation and sedimentation of water bodies can adversely impact water quality and have physiologic and behavioral effects on aquatic organisms, as well as terrestrial organisms with aquatic life phases (i.e., reptiles and amphibians). In this case, sedimentation effects are possible but unlikely. As discussed in Exhibit 13, the Applicant will obtain and comply with the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, which requires development and implementation of a comprehensive Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is described in Exhibit 13: *Water Resources and Aquatic Ecology* and the SWPPP is provided in Appendix 13-C of this Application. The BMPs in the SWPPP and measures required by the SPDES General Permit will avoid and minimize the incidence of sedimentation and the resulting impact on aquatic resources.

Habitat Disturbance and Loss

Construction activities will temporarily increase levels of human intrusion, noise, and dust, and the presence of construction equipment. Project construction will affect approximately 2,451.8 acres of terrestrial wildlife habitat, of which 2,175.8 acres will be temporarily impacted and restored following the completion of construction activities, 66.7 acres will be permanently converted to built facilities such as access roads, the substation, and inverters, and 210.3 acres will be converted from forest or shrub cover types to herbaceous cover types (Table 11-2). Potential long-term habitat degradation and loss is discussed in Section (f)(2) of this Exhibit below.

On-site delineations quantified and characterized wetlands and streams in the Study Area. Detailed results of wetland surveys at the site can be found in Exhibit 14. Construction activities largely avoid wetlands. Impacts to wetlands are discussed in detail in Exhibit 14.

Displacement

The same construction activities resulting in habitat disturbance and loss described above also will disturb the wildlife living in that habitat. Displacement as a result of construction activities will also be temporary and occur at the local level.

The Project is primarily sited on agricultural land that does not support an abundance of wildlife. Construction activities on agricultural lands will likely have a similar displacing effect as the previous agricultural activities. To a lesser extent, construction activities will occur in grasslands and forested areas. Wildlife species most likely to be disturbed/displaced by Project construction include grassland birds, such as bobolink, red-winged blackbird, and savannah sparrow, and forest birds, such as thrushes, vireos, and woodpeckers. Interior forested areas have been avoided to the extent possible by the Project, and impacts to species occupying these areas are expected to be minimal. In this region of New York State, peak breeding time for birds common to agricultural, grassland, and forest habitat occurs in May and June. Construction activities that begin before this time are likely to displace most breeding birds. Conversely, as birds invest more in production, i.e., reaching the egg or chick stages, they are less likely to abandon their nests. Behavioral responses to construction will vary among species and individuals.

Summary

Impacts from construction activities are not expected to be significant as 88% of the proposed areas of disturbance are current active agricultural areas that are regularly disturbed. These agricultural areas are already limited in the wildlife and biodiversity that they can support because of anthropogenic pressures from farming practices. None of the construction-related impacts described above are likely to have population-level effects to any resident or migratory wildlife species. Furthermore, wildlife habitat similar to that affected by the Project is ubiquitous throughout the region.

Project Operation

Potential effects to wildlife from Project operations include habitat loss, habitat degradation, disturbance/displacement due to presence of solar facilities, and mortality due to direct or indirect impacts from solar facilities.

Habitat Changes and Loss

The Project will occupy approximately 2,451.8 acres once restored from construction activities. This represents 46.3% of the 5,297.8-acre Study Area. Approximately (203.1 acres, approximately 3.8% of the Study Area, will occur in successional forestland areas, 12.2 acres, approximately 0.2% of the Study Area, will occur in successional shrubland, and 0.2 acres, < 0.1% of the Study Area, will occur in forested wetlands, as described in Table 11-2.

Changes in vegetation cover, such as the removal of forest or conversion of fields to solar arrays, will result in changes in wildlife species composition. No large blocks of forest are being removed, as use impacts to Interior forest specialists will likely be minimal. However, limited forest clearing could create additional edge habitat that could support species that utilize edge or early successional habitat. The project design has minimized the amount of forest removal. The conversion of agricultural lands to solar

fields will likely provide enhanced habitat for some species due to post-construction revegetation. Existing agricultural land in Project Site consists mainly of monotypic row-crops (e.g., corn, soybean, wheat), and is limited in its capacity to support wildlife. Following construction, disturbed soils will be reseeded with native, non-invasive grasses that are provide more diverse and higher quality habitat than row-crops. Additionally, agricultural practices, such as mowing, that can disturb birds during the breeding season will be reduced in frequency. A total of 2,178.9 acres of the Project Site will be contained within fenced areas, which will affectively result in habitat loss for medium to large sized mammals, such as white-tailed deer. Fencing is not expected to similarly affect small mammals, herpetofauna, or birds.

Habitat Degradation and Fragmentation

Habitat fragmentation occurs when large blocks of contiguous habitat are divided or broken into smaller patches and isolated from other blocks of the same habitat type as a result of vegetation conversion (e.g., forest to agriculture) or vegetation removal (e.g., grassland to impervious surface). In any case where habitat is converted or lost, fragmentation may affect the movement, breeding, roosting, or nesting behavior of birds, bats, and other wildlife at different spatial scales.

The effects of habitat fragmentation will depend on a number of variables, such as land uses, extent of habitat block affected, spatial relationship to other habitat blocks of the same type, and types and levels of activity (e.g., traffic volume, noise levels, visual disturbances). The effects of habitat fragmentation will also depend on the behavioral and reproductive sensitivity of affected species or species group. Different species of wildlife respond differently to fragmentation; in severe cases, area-sensitive species will abandon fragmented habitats while other species will remain and exhibit significant losses in reproductive success (Wilcove and Robinson 1990, Herkert 1994).

The remaining forested areas within the Project Site are relatively small and currently fragmented. It is projected that clearing for all Project components (e.g., solar arrays, inverters, access roads, electrical collection lines, substation/switchyard, construction laydown areas, fencing) may remove up to approximately 203 acres of forest. Forest interior is not expected to be lost or converted to forest edge as a consequence of clearing for Project components. The majority of forests within the Project Site are relatively small and isolated, and they are unlikely to support communities of forest interior species. Rather, these smaller forests likely support edge-tolerant or edge-specialist species. These species are likely already subjected to edge effects and human disturbance, given their proximity to farmed areas, and may be more resilient to Project-related disturbances. Edge-tolerant species are also better suited to adapt to shifting forest boundaries that may result from Project-related forest clearing.

Fencing within the Project Footprint will contribute to habitat fragmentation for some species that are too large or otherwise unable to navigate through a fenced area. This may impact daily movements of medium to large sized mammals, as well as seasonal movements of other species, such as nesting turtles. Fencing is not expected to result in additional habitat fragmentation for wildlife species that can navigate through or around a fence. Conversely, fenced areas may benefit some species by decreasing habitat fragmentation through the post-construction revegetation of project parcels.

Disturbance and/or Displacement

Habitat alteration and disturbance resulting from operation and maintenance of a utility scale solar power facility can make a site unsuitable or less suitable for breeding, foraging, nesting or other wildlife uses. The footprint of solar panels, roads, and other Project components represents 33.3% of the Project Site following construction. Project components, particularly PV solar panels and maintained areas between them, will occupy a large area within the Project Footprint. As stated previously in this section, most of the Project Footprint is currently active farmland that is frequently disturbed and is not quality wildlife habitat. Operation of the solar facility is expected to be less disruptive than current farmland practices due to less soil disturbance, reduction in chemical usage, and allowing the soil to regenerate over time.

Disturbances during the construction phase may cause disruption of local game species (e.g., wild turkey, pheasant, ruffed grouse, white-tailed deer). However, other than nesting locations and infant fawns, these species are highly mobile, and injury and mortality are not expected as a result of immediate disturbance. Following construction phase of the Project, game species will generally adapt to the cleared areas and perimeter fencing. Larger game species, primarily white-tailed deer, may be deterred from the perimeter fencing. It is expected that these species will move to new foraging sites within or around the Project Site where ample habitat exists.

Direct or Indirect Impacts

There is a shortage of data on the impact of the operation of utility-scale solar projects on wildlife populations (Lovich and Ennen 2011). Project operation is expected to have smaller impact on sedentary or slow-moving animals than Project construction due to the decreased presence of heavy machinery and vehicles. Fast-moving animals, particularly some species of birds, have potential to be impacted through collisions with Project components. Solar panels can reflect polarized sunlight in a way that birds or their prey perceive it as a waterbody, thus increasing the risk of collision (Walston Jr. et al. 2016). Aquatic birds, such as the state-threatened Pied-billed Grebe (*Podilymbus podiceps*), are particularly vulnerable to this type of impact. However, utility-scale PV solar facilities are suggested to have lower avian mortality rates than other renewable energy types (e.g., heliostat solar and wind), and substantially lower mortality rates than other anthropogenic sources of avian mortality (e.g., vehicle and building collisions, fossil fueled power plants) (Walston Jr. et al. 2016). Solar facilities may more strongly affect birds at the local scale compared to the population level (Sánchez-Zapata et al. 2016), but, even locally, effects from PV solar facilities on avian populations are minimal (Walston Jr. et al. 2016).

Indirect impacts on avian mortality may exist in areas where there is a permanent conversion of habitat (i.e., forest clearing). However, this type of permanent impact will occur in a small percentage (8.4%) of the overall Project Footprint. Conversely, post-construction re-vegetation provides an opportunity to preserve and increase grassland areas that are currently used for agricultural purposes and will positively affect birds on a larger percentage of the Project Footprint. Additionally, climate change has been identified as a threat to bird populations and increasing the availability of renewable energy will indirectly benefit birds through climate change mitigation.

No known wildlife travel corridors have not been identified in the Project Area. There are no landscape features, such as variable topography or high-quality stopover habitat, within the Project Area that

concentrate or attract migratory birds or bats. As such, a broad-scale migration across the area for most species is expected, and annual occurrences of specific species would be variable and dependent on a variety of factors, including weather. Small-scale travel corridors likely exist for birds, bats, rodents, and furbearers along hedgerows, drainages/streams, and parcel boarders. These would be used to make movements between nests, roosts, dens, and burrows and foraging watering areas. Impacts to vegetation and wildlife habitat, as described by cover type, are summarized in Table 11-2. The Project is primarily sited on agricultural land, and only 53.9 acres, representing 28.7% of grassland habitat in the Study Area, is projected to be impacted.

Avoidance and minimization measures to be implemented to protect plant communities (including vegetation) are described in Section (c) of this Exhibit.

The Project is primarily sited on land that is presently active agriculture and, therefore, relatively low-quality habitat. Consequently, mortality resulting from Project construction and operation is expected to be negligible, with no significant impact to local or regional populations of any species. Construction-related impacts to wildlife will be limited to incidental injury and mortality due to construction activity and vehicular movement, construction-related silt and sedimentation impacts on aquatic organisms, habitat disturbance/loss associated with clearing and earth moving activities, and displacement due to increased noise and human activities. Minimization and avoidance of impacts related to construction activity will be accomplished through careful site design (e.g., using existing roads, avoiding sensitive habitats, and minimizing disturbance to the extent practicable), adherence to designated construction limits, and deployment of an Environmental Monitor during construction. Additionally, to effectively utilize space and minimize impacts, the solar modules will be mounted on a single axis, single portrait tracking system, such as the Horizon tracker manufactured by NEXTracker or a similar manufacturer. Each tracker is approximately 80 meters (262 feet) in length and will support approximately 75 solar modules. Smaller trackers may be employed at the edges of the layout, to efficiently utilize available space.

In addition, solar arrays do not present the same risks as other forms of electric generation. They do not pose a collision risk such as wind turbines or cooling towers. They also don’t produce harmful emissions that pose threats to wildlife.

To avoid and minimize impacts to aquatic resources resulting from construction-related siltation and sedimentation, the Applicant will implement an approved SWPPP. The SWPPP is described in Exhibit 13, and the SWPPP is provided in Appendix 13-C. Proper implementation of these plans will assure compliance with NYSDEC SPDES regulations and New York State water quality standards. In addition, the Applicant has developed a Preliminary Spill Prevention, Control and Countermeasure (SPCC) Plan to be implemented to minimize the potential for unintended releases of petroleum and other hazardous chemicals during Project construction and operation. The Preliminary SPCC Plan is described in Exhibit 13 and provided in Appendix 13-D: *Spill Prevention, Control, and Countermeasure Plan*.

The Project has been primarily sited on active agricultural land to minimize impacts to natural communities and wildlife habitat. Active agricultural land provides limited suitable wildlife habitat due to reoccurring disturbances, such as mowing, tilling, and harvesting by the landowner. Agricultural fields generally consist of a single crop (i.e., are monotypic) and offer little floristic and structural diversity that might support a healthy, diverse wildlife community. Prioritizing construction and siting within agricultural

area will also reduce the impact to higher quality habitat, such as forested areas or wetlands. Following construction, revegetation efforts consisting of seeding native, non-invasive plants should support a greater diversity of plants and wildlife than the former agricultural lands. Furthermore, following the Project's active operational life, agricultural lands can largely be restored as part of the Project's Decommissioning Plan (see Appendix 23-A).

EXHIBIT 11: TERRESTRIAL ECOLOGY

Matter No. 21-01108

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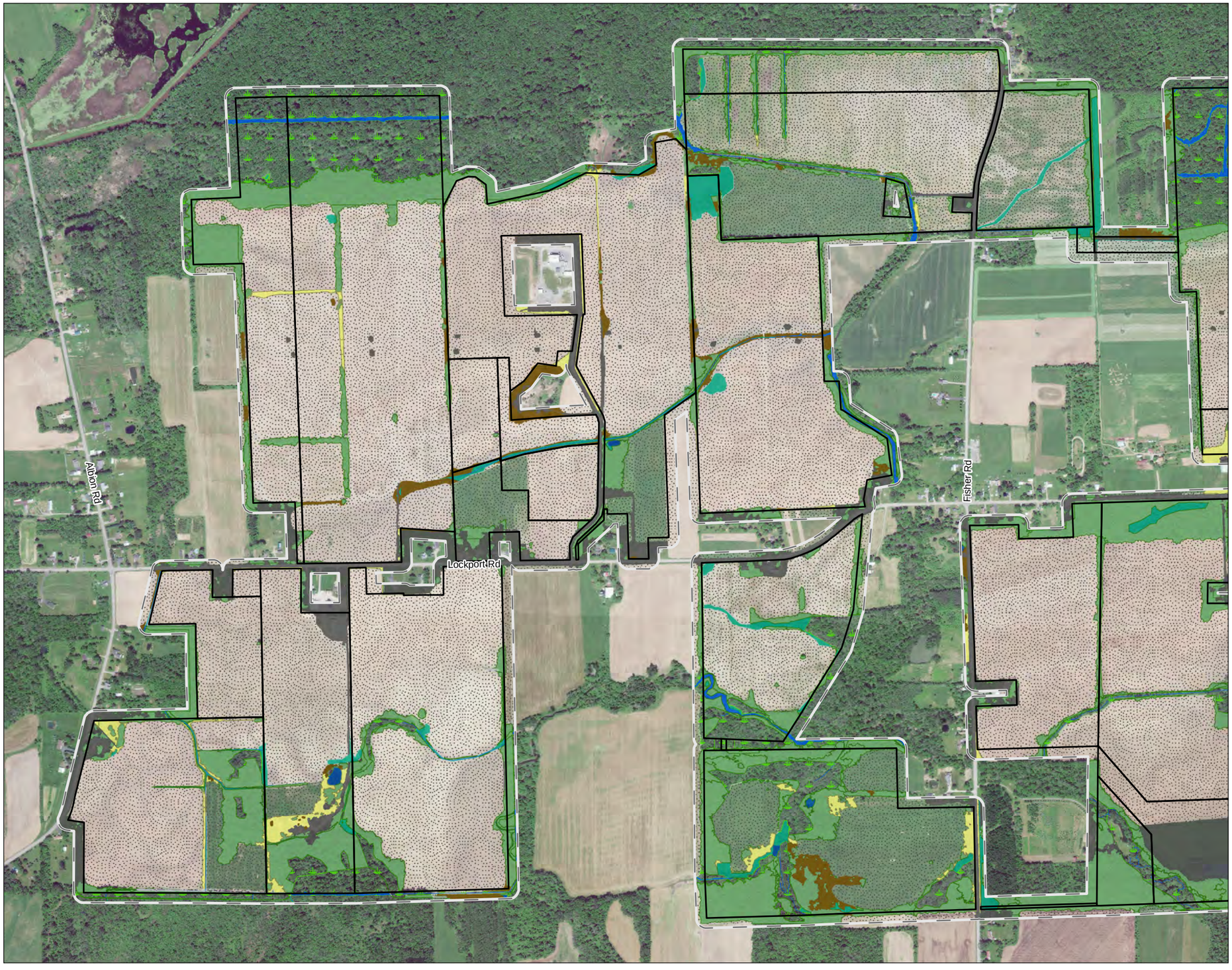
EXHIBIT 11: TERRESTRIAL ECOLOGY

Matter No. 21-01108

FIGURES



Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
- Wet Meadow/Marshland
- Streams
- Open Water

N

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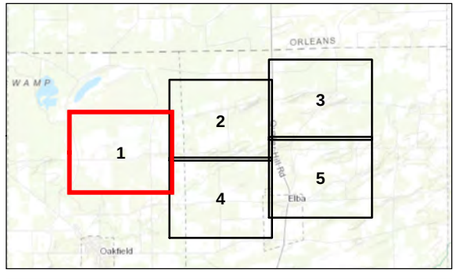
Notes

1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
2. Data Sources: NYS GIS Clearinghouse (https://gis.ny.gov), Stantec generated Land Use/Land Cover (LU/LC) categories using high resolution imagery and elevation datasets with object-based image analysis (OBIA). Imagery was purchased on June 6, 2020, from WorldView-3, and DEM data was downloaded from NYS GIS clearinghouse (https://gis.ny.gov).
3. Background: WorldView-3 satellite imagery purchased on June 6, 2020



Project Location
Town of Oakfield
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-1

Title
Land Cover Types in the Study Area
Map 1 of 5

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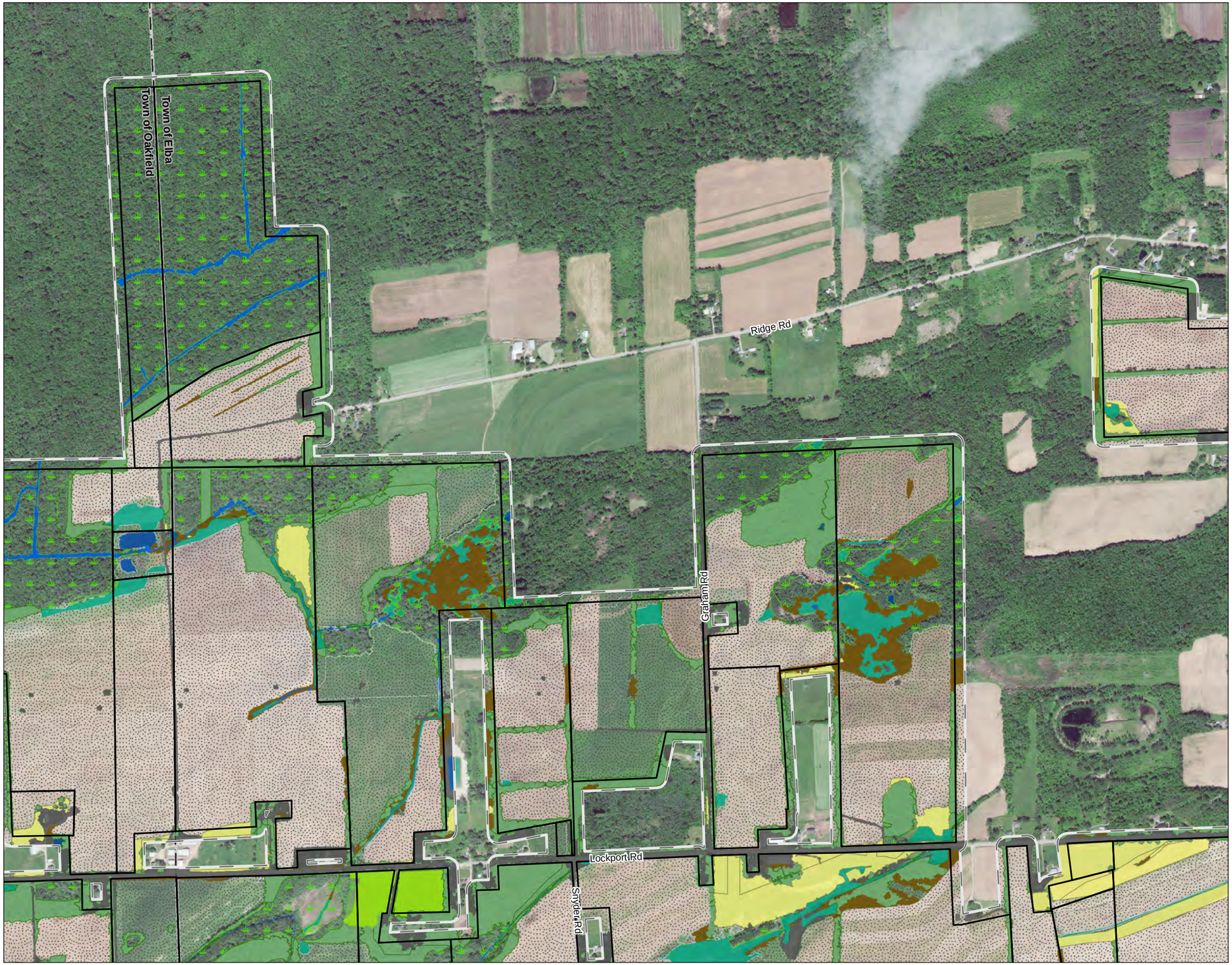

Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
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- Successional Shrubland
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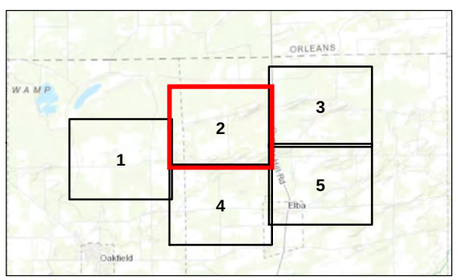

Project Location
Towns of Oakfield & Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-1

Title
Land Cover Types in the Study Area
Map 2 of 5

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Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
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- Streams
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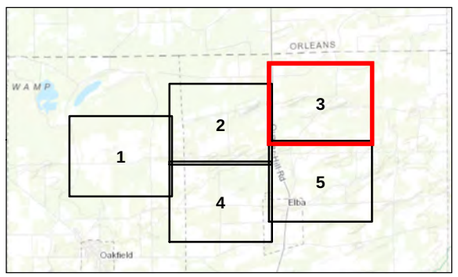

Project Location
Town of Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-1

Title
Land Cover Types in the Study Area
Map 3 of 5

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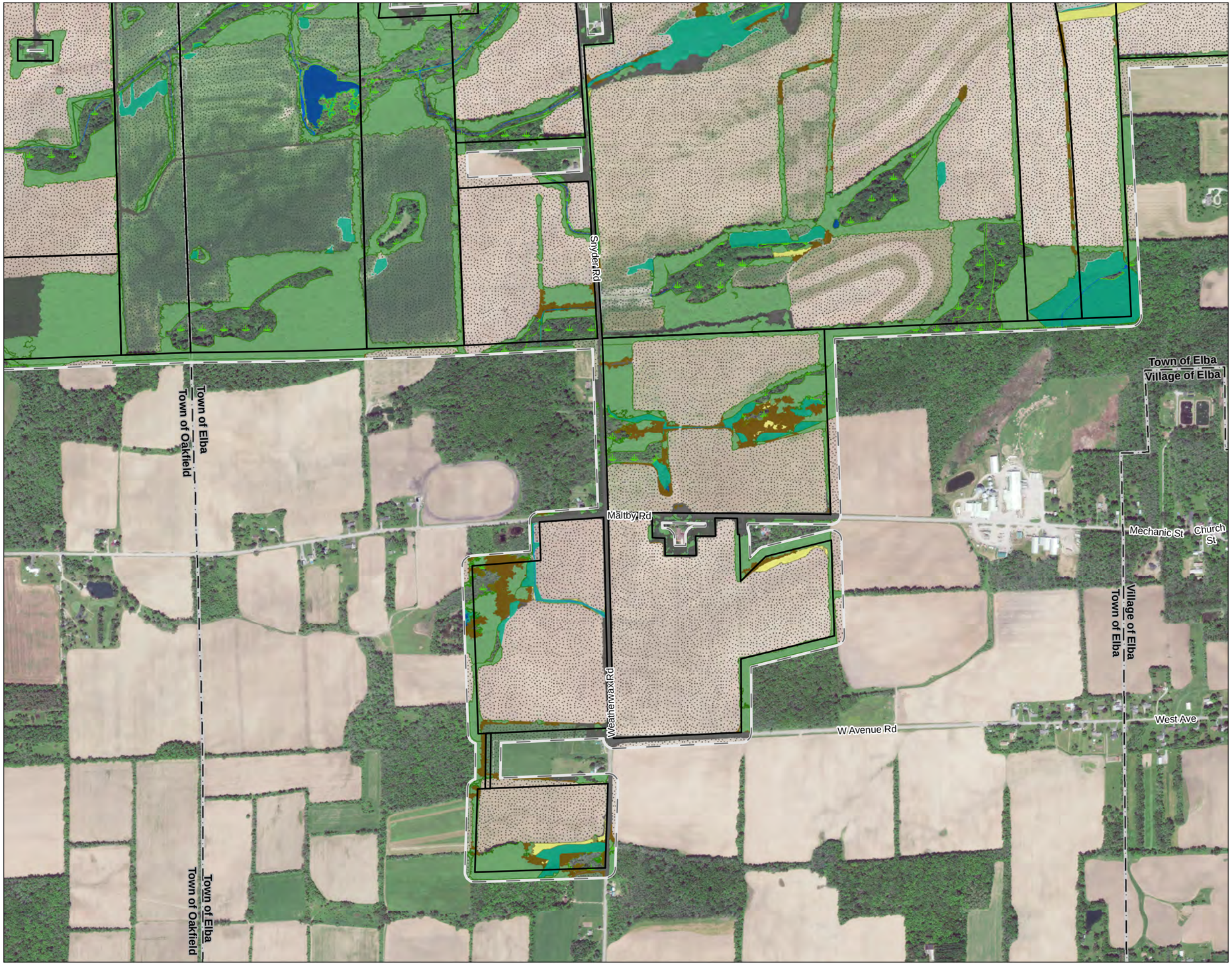

Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

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Land Cover - Upland

- Active Agriculture Row Crop
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Land Cover - Wetland

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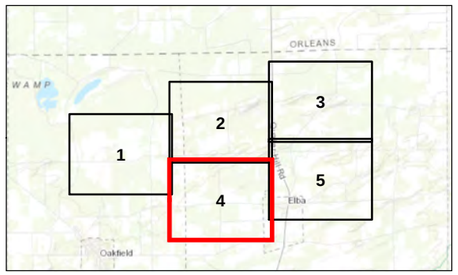


Project Location
Towns of Oakfield & Elba
Genesee County

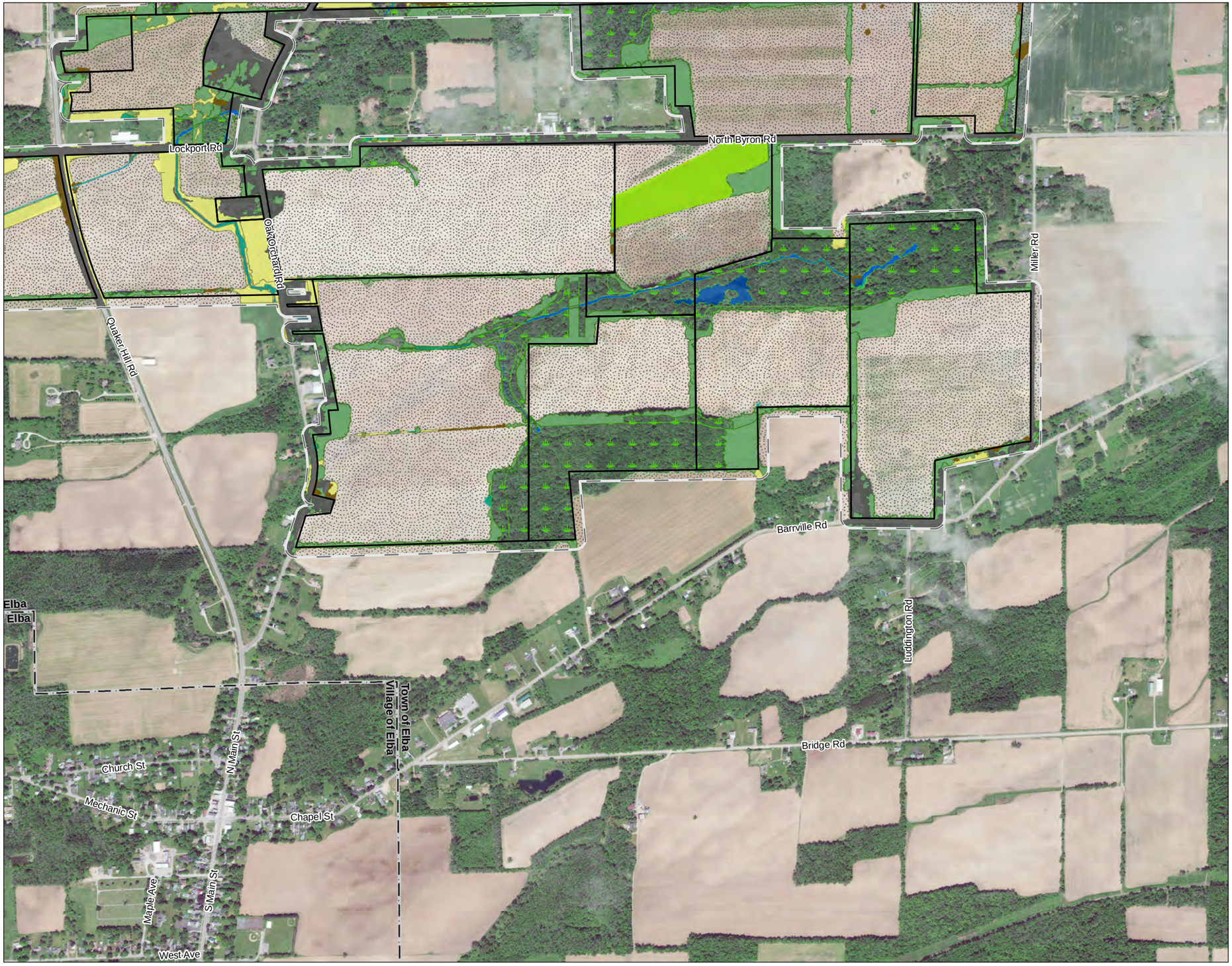
Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

Client/Project
190502038 REVB

Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-1

Title
Land Cover Types in the Study Area
Map 4 of 5



Stantec

Legend

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- 100-foot Study Area

Existing Features

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Land Cover - Upland

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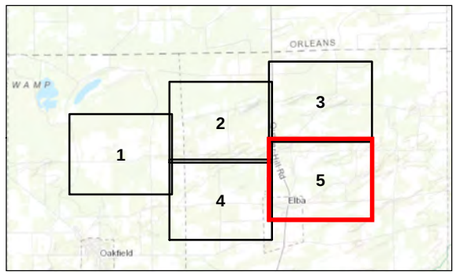
3. Background: WorldView-3 satellite imagery purchased on June 6, 2020



Project Location
Town of Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

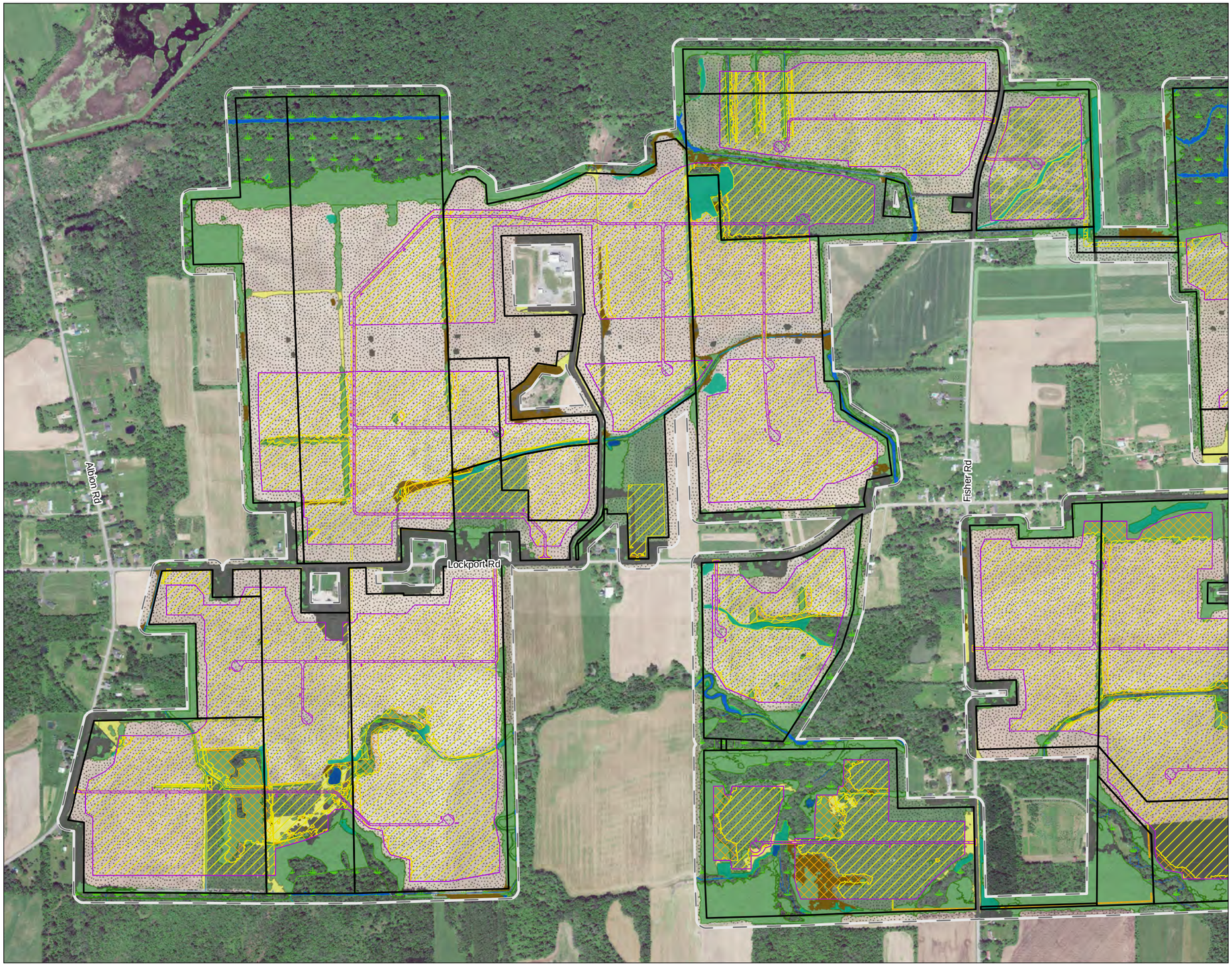
Client/Project
190502038 REVB

Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-1

Title
Land Cover Types in the Study Area
Map 5 of 5

U:\190502038\03_data\gis\mxd\Application\Exhibit11\Fig_11-1_Land_Cover_Types_in_the_Study_Area_CSF.mxd Revised: 2021-05-21 By: astapleton



Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Impacts to Land Cover

- Temporary Impact
- Permanent Impact
- Permanent Conversion Impact

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
- Wet Meadow/Marshland
- Streams
- Open Water

N

0 1,000 2,000 Feet

(At original document size of 11x17)
1:12,000

Notes

1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
2. Data Sources: NYS GIS Clearinghouse (https://gis.ny.gov), Stantec generated Land Use/Land Cover (LU/LC) categories using high resolution imagery and elevation datasets with object-based image analysis (OBIA). Imagery was purchased on June 6, 2020, from WorldView-3, and DEM data was downloaded from NYS GIS clearinghouse (https://gis.ny.gov).
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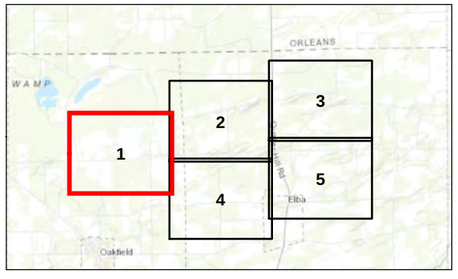


Project Location
Town of Oakfield
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

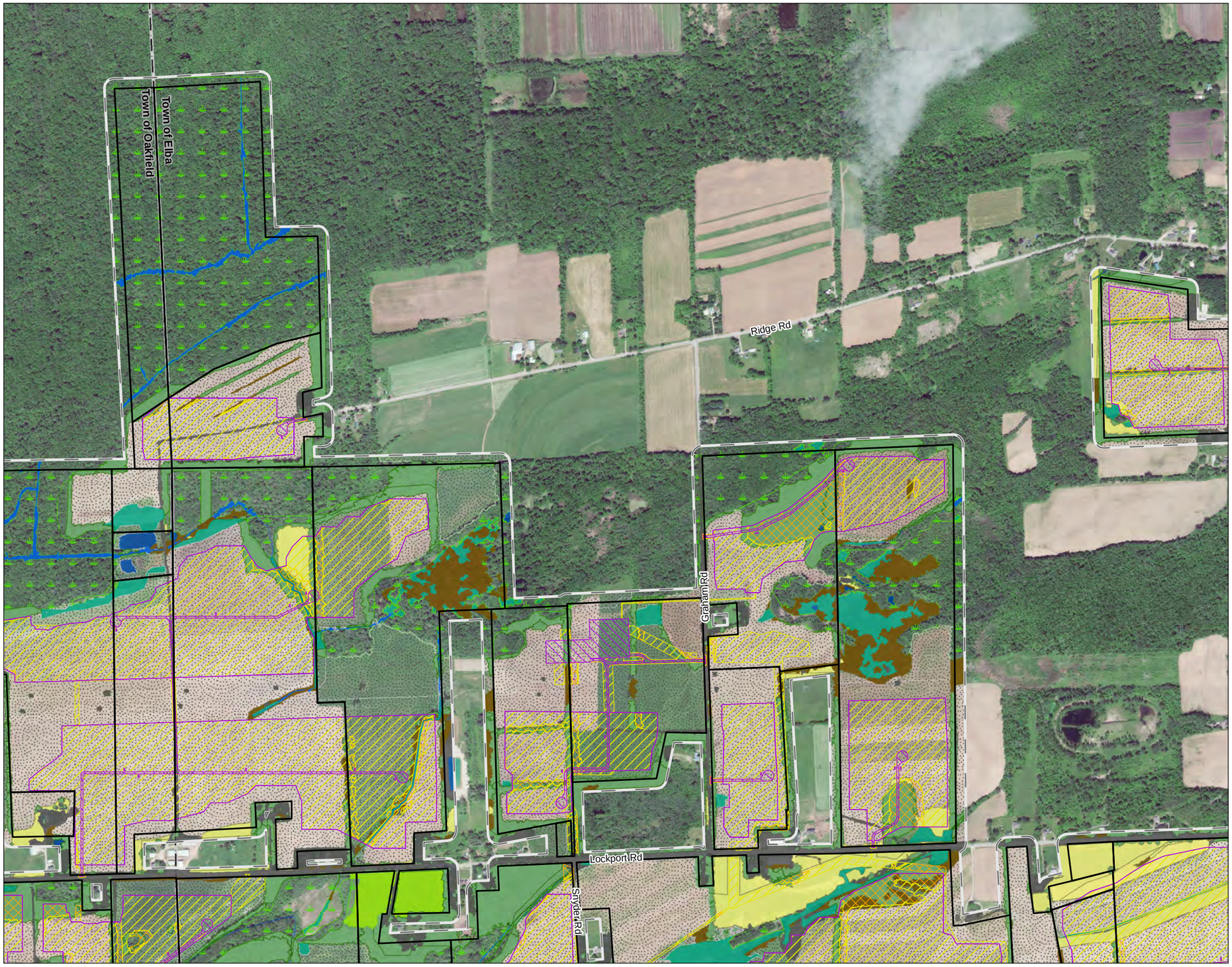
190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-2

Title
Impacts to Land Cover
Map 1 of 5

U:\1905\02038\03_data\gis\mxd\Application\Exhibit11\Fig_11-2_Impacts_to_Land_Cover_CSF.mxd Revised: 2021-05-21 By: astapleton



Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Impacts to Land Cover

- Temporary Impact
- Permanent Impact
- Permanent Conversion Impact

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
- Wet Meadow/Marshland
- Streams
- Open Water

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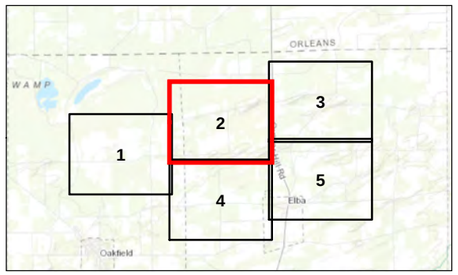


Project Location
Towns of Oakfield & Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

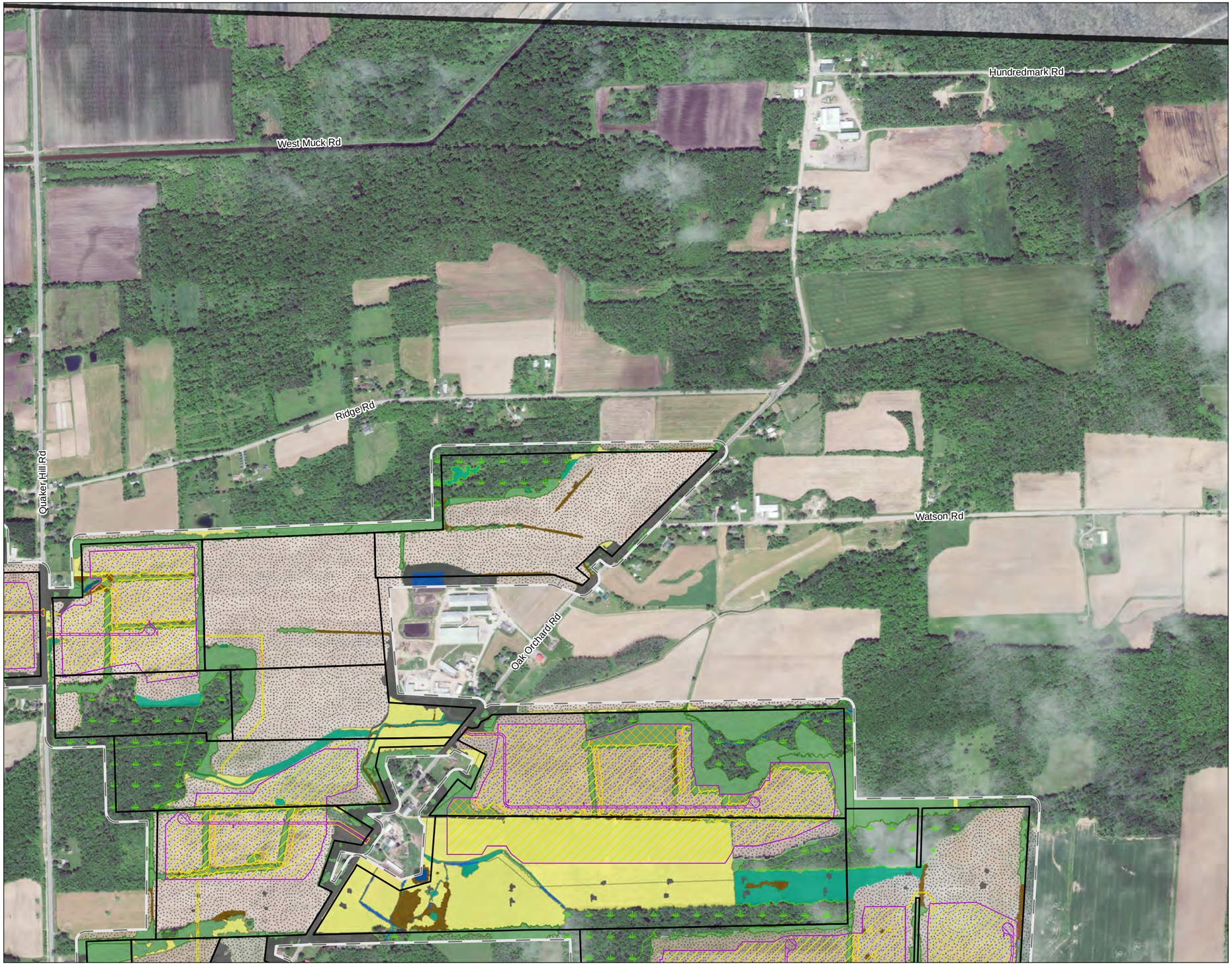
190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-2

Title
Impacts to Land Cover
Map 2 of 5

U:\190502038\03_data\gis\mxd\ApplicationExhibit11\Fig_11-2_Impacts_to_Land_Cover_CSF.mxd Revised: 2021-05-21 By: astapleton



Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Impacts to Land Cover

- Temporary Impact
- Permanent Impact
- Permanent Conversion Impact

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
- Wet Meadow/Marshland
- Streams
- Open Water

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Notes

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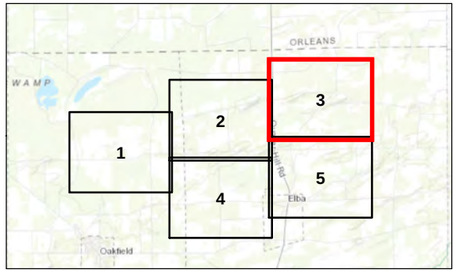


Project Location
Town of Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

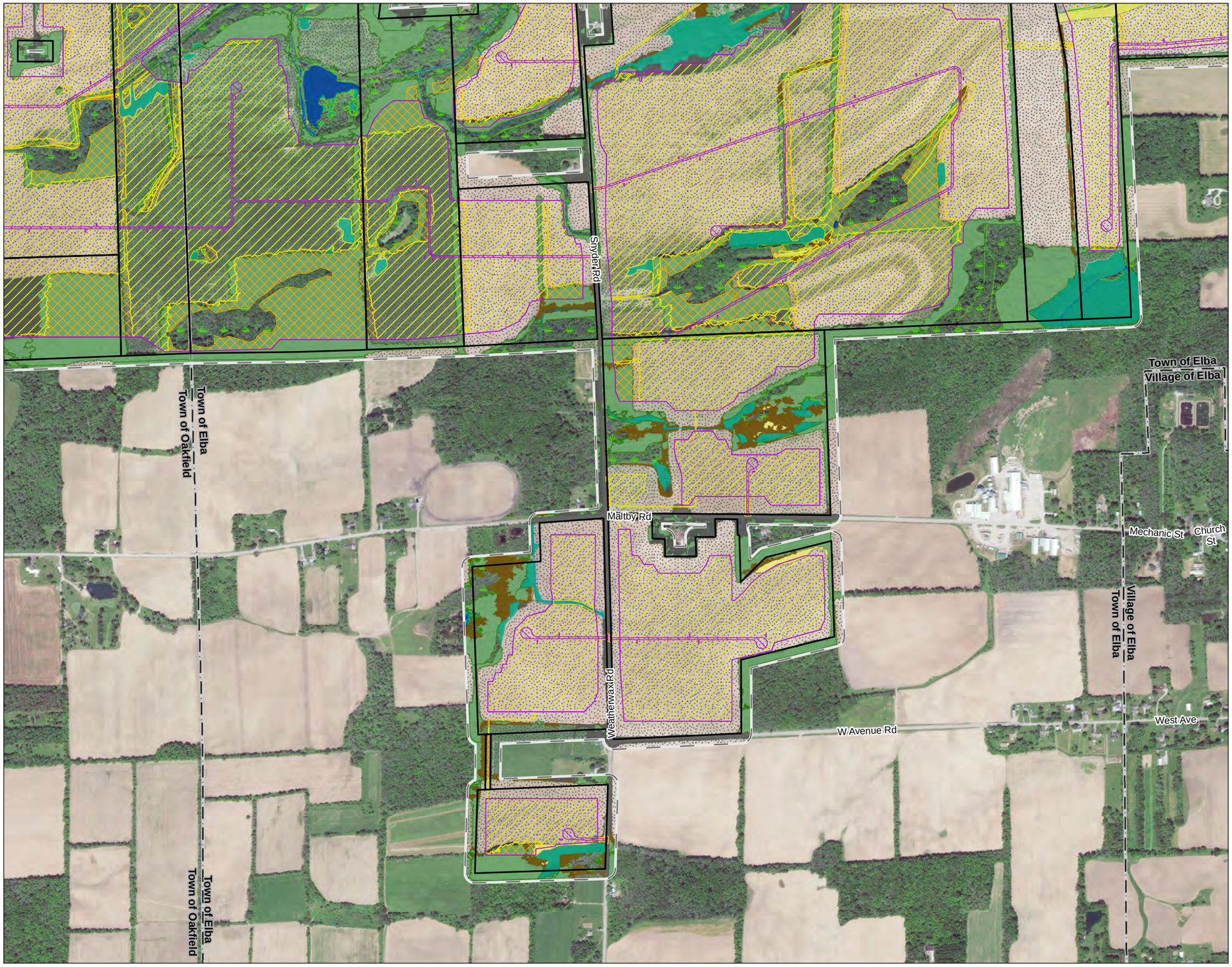
190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-2

Title
Impacts to Land Cover
Map 3 of 5

U:\190502038\03_data\gis\mxd\Application\Exhibit11\Fig_11-2_Impacts_to_Land_Cover_CSF.mxd Revised: 2021-05-21 By: astapleton



Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Impacts to Land Cover

- Temporary Impact
- Permanent Impact
- Permanent Conversion Impact

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
- Wet Meadow/Marshland
- Streams
- Open Water

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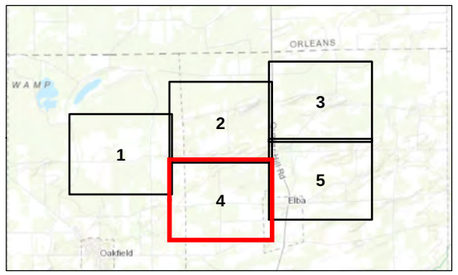


Project Location
Towns of Oakfield & Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

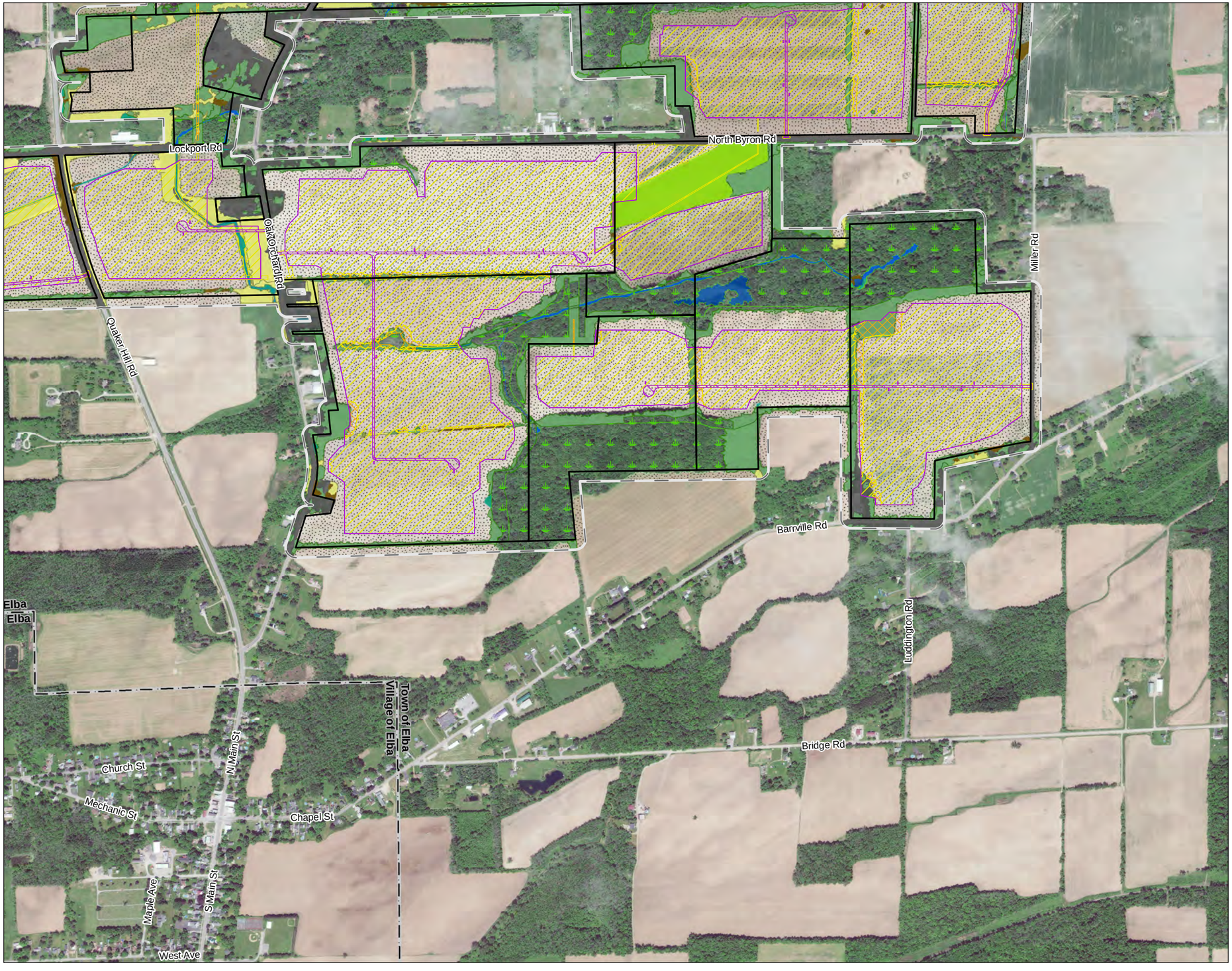
Client/Project
190502038 REVB

Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-2

Title
Impacts to Land Cover
Map 4 of 5

U:\190502038\03_data\gis\mxd\Application\Exhibit11\Fig_11-2_Impacts_to_Land_Cover_CSF.mxd Revised: 2021-05-21 By: astapleton



Stantec

Legend

- Project Site
- 100-foot Study Area

Existing Features

- Municipal Boundary

Impacts to Land Cover

- Temporary Impact
- Permanent Impact
- Permanent Conversion Impact

Land Cover - Upland

- Active Agriculture Row Crop
- Active Agriculture Hay Field
- Grassland/Pastureland
- Successional Forestland
- Successional Shrubland
- Disturbed/Developed Structures

Land Cover - Wetland

- Forested Wetlands
- Wet Meadow/Marshland
- Streams
- Open Water

N

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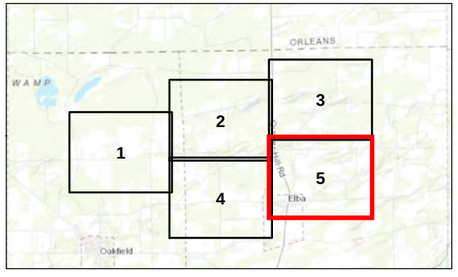

Project Location
Town of Elba
Genesee County

Prepared by AS on 2021-04-29
TR by JA on 2021-04-30
IR by JA on 2021-04-30

190502038 REVB

Client/Project
Hecate Energy Cider Solar LLC
Cider Solar Farm

Figure No.
11-2

Title
Impacts to Land Cover
Map 5 of 5

U:\190502038\03_data\gis\mxd\ApplicationExhibit11\Fig_11-2_Impacts_to_Land_Cover_CSF.mxd Revised: 2021-05-21 By: astapleton