Environmental Design & Research,
Landscape Architecture, Engineering & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000, Syracuse, New York 13202
P. 315.471.0688 • F. 315.471.1061 • www.edrdpc.com

August 14, 2020

Seth Wilmore
Director, Sites & Permitting
Oriden Power
106 Isabella Street, Suite 400
Pittsburgh, PA 15212

Sent via email to: seth.wilmore@oridenpower.com

RE: Rare Plant Survey
Highbanks Solar
EDR Project No. 19191

Dear Seth:

As part of permitting support services for Highbanks Solar, LLC (an indirect subsidiary of Oriden Power), Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR) conducted a targeted rare plant survey at the Project Site in the Town of Leicester, Livingston County, New York (see Figure 1 in Attachment A). Highbanks Solar (the Project) is a proposed 20 megawatt photovoltaic (PV) solar energy generating facility that will consist of rows of PV panels, as well as collection cables and access roads (see Figure 2 in Attachment A). The Project Site consists mostly of tax parcel 105.-1-8.11, which will host the entire Project, with the exception of the far eastern end of the electric line, which extends onto tax parcel 97.-1-47 where the Project will interconnect to the existing Rochester Gas & Electric substation. The majority of the Project Site consists of active agricultural land, with forest communities and an existing utility right-of-way located in the northern portion of the Site.

This letter report documents the goals, methods, and results of the targeted rare plant survey conducted for the proposed Highbanks Solar Project.

Goals

The survey was designed to focus on sensitive plant species identified through correspondence with the New York Natural Heritage Program (NYNHP) and through review of online databases maintained by the U.S. Fish and Wildlife Service (USFWS) (see Attachment B). The preliminary Resources List provided by the USFWS did not identify any federally-listed threatened, endangered, proposed, or candidate plant species in the vicinity of the proposed Project. Therefore, the targeted rare plant survey focused on the two state-listed species identified by the NYNHP: Cooper's milkvetch (*Astragalus neglectus*) and green gentian (*Frasera caroliniensis*). State statuses and appropriate survey periods for these species are summarized below in Table 1.

Table 1. Rare Plant Species of Concern identified by State or Federal Agencies

Common Name	*Scientific Name*	Protected Status	Survey Period
Cooper's milkvetch	*Astragalus neglectus*	State-listed Endangered	June 1 – July 15 (flowering) July 15 – September 15 (fruiting)
Green gentian	*Frasera caroliniensis*	State-listed Threatened	May 15 – October 31 (vegetative) June 1 – July 15 (flowering) July 1 – September 30 (fruiting)

Sources: NYNHP, 2020a, 2020b; Young, 2019.

Cooper's milkvetch occurs in rich calcareous forests, often on cliffs, banks, ravines, or talus slopes. Associated ecological communities include calcareous cliff community, calcareous talus slope woodland, hemlock-northern hardwood forest, maple-basswood rich mesic forest, and shale cliff and talus community (NYNHP, 202a). Green gentian typically occurs along forested slopes, bluffs, and ridges on calcareous soils adjacent to large streams. Associated ecological communities include Appalachian oak-hickory forest, Appalachian oak-pine forest, beech-maple mesic forest, and maple-basswood rich mesic forest (NYNHP, 2020b). Both species can occur over various hydric regimes, ranging from dry to moist soils (NYNHP, 2020a, 2020b).

The goal of this survey was to identify threatened or endangered plants that may occur at the Project Site, so that impacts to sensitive plant populations and their habitats can be avoided during Project development.

Methodology

The survey focused exclusively on areas exhibiting potentially suitable habitat (i.e., forested communities) within the proposed limits of disturbance, based on the provided site plan and associated shapefiles. The proposed Project is mostly sited within active agricultural fields. However, as illustrated in Figure 2, there are two areas where the site plan overlaps forested communities: 1) the northwestern corner of the PV array, and 2) a section of electric line running east from the PV array. These forested areas were the focus of the survey.

The targeted survey was conducted by EDR botanist Sara Stebbins on July 20, 2020. As shown above in Table 1, this date falls within the NYNHP-recommended survey period for Cooper's milkvetch and green gentian, which corresponds to the time of year when these species are most readily identifiable (Young, 2019). The surveys were conducted on foot, using meandering routes to thoroughly cover all areas of potentially suitable habitat. Areas within the Project Site that do not provide potential habitat for species listed in Table 1 (e.g., cultivated agricultural fields) were not surveyed.

As indicated above, the rare plant survey conducted at the Project Site consisted of a targeted survey, focused exclusively on the two state-listed species identified by the NYNHP. A comprehensive floristic survey that would identify all plant species at the proposed Project Site would require a much more extensive time commitment, with multiple site visits required throughout the growing season, typically during a minimum of three survey periods (e.g., late spring, summer, and late summer).

Results

No threatened or endangered plant species were encountered at the Project Site. The forested communities at the Project Site provide poor quality habitat for Cooper's milkvetch and green gentian. The terrain is quite flat, entirely lacking the relief that typically supports Cooper's milkvetch and green gentian (i.e., slopes, cliffs, bluffs, ridges, etc.). Representative photographs of the forested communities within the Project Site are included in Attachment C.

The species composition observed within the forested communities at the Project Site is also inconsistent with plant communities where Cooper's milkvetch and green gentian are known to occur. The forest canopy is dominated by red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*), and red maple (*Acer rubrum*). These species are not typical associates of Cooper's milkvetch, and although they commonly occur in association with green gentian, they are also common and widespread across New York State and are their presence alone is not indicative of suitable green gentian habitat. Other common tree associates of both species were present only in very low numbers, including sugar maple (*Acer saccharum*) and basswood (*Tilia americana*).

The forested communities show signs of past disturbance, including logging, and the understories are densely vegetated, with a thick shrub layer dominated by invasive species, including common buckthorn (*Rhamnus cathartica*), multiflora rose (*Rosa multiflora*), and Morrow's honeysuckle (*Lonicera morrowii*). Invasive plants have been documented as known threats to existing populations of both Cooper's milkvetch and green gentian (NYNHP, 2020a, 2020b). Invasive species outcompete existing populations of rare plants and alter habitat conditions, making them unsuitable for establishment of new populations.

Dominant herbaceous species within the forested communities on site include self-heal (*Prunella vulgaris*), jumpseed (*Persicaria virginiana*), enchanter's nightshade (*Circaea canadensis*), and white snakeroot (*Ageratina altissima*). Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*) vines are also common. Aside from poison ivy and white snakeroot, two very common and widespread species that are known to co-occur with green gentian, none of the other dominant understory species are confirmed associates of Cooper's milkvetch or green gentian (NYNHP, 2020a, 2020b).

A list of plant species observed at the Project Site during the course of the survey is included as Attachment D.

Conclusion

As indicated above, no threatened or endangered plant species were encountered at the Project Site. Furthermore, based on the general lack of suitable terrain and documented associated species within the forested communities, and the dominance of invasive plant species, habitat within the proposed limits of disturbance for the Highbanks Solar Project is unsuitable for Cooper's milkvetch or green gentian.

Sincerely,

Ben Brazell
Principal, Environmental Design & Research

Sara R. Stebbins
Botanist/Senior Ecological Resource Specialist

Attachments

Attachment A. Figures
Attachment B. Agency Correspondence
Attachment C. Photo Documentation
Attachment D. Plant Species List

References

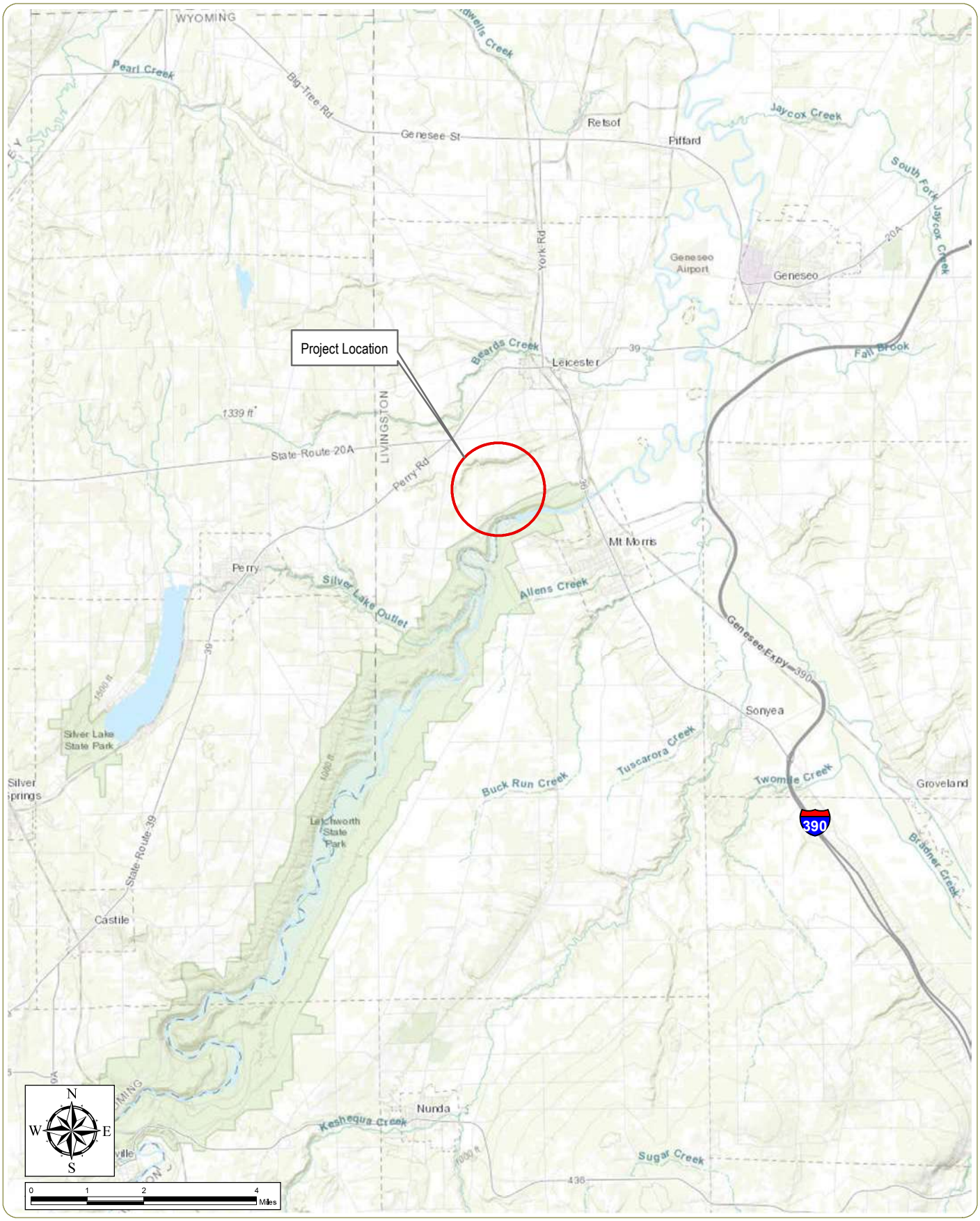
New York Natural Heritage Program (NYNHP). 2020a. Online Conservation Guide for *Astragalus neglectus*. Available at: https://guides.nynhp.org/coopers-milkvetch/ (Accessed July 2020).

NYNHP. 2020b. Online Conservation Guide for *Frasera caroliniensis*. Available at: https://guides.nynhp.org/green-gentian/ (Accessed July 2020).

Young, S.M. 2019. *New York Rare Plant Status Lists*. New York Natural Heritage Program. Albany, New York. March 2019.

Attachment A
Figures

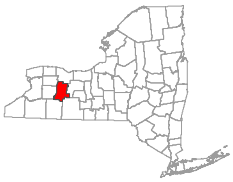
Figure 1. Regional Project Location
Figure 2. Project Site



Highbanks Solar

Town of Leicester, Livingston County, New York

Figure 1: Regional Project Location



Notes: 1. Basemap: ESRI ArcGIS online "World Topographic map" map service. **2.** This map was generated in ArcMap on July 31, 2020. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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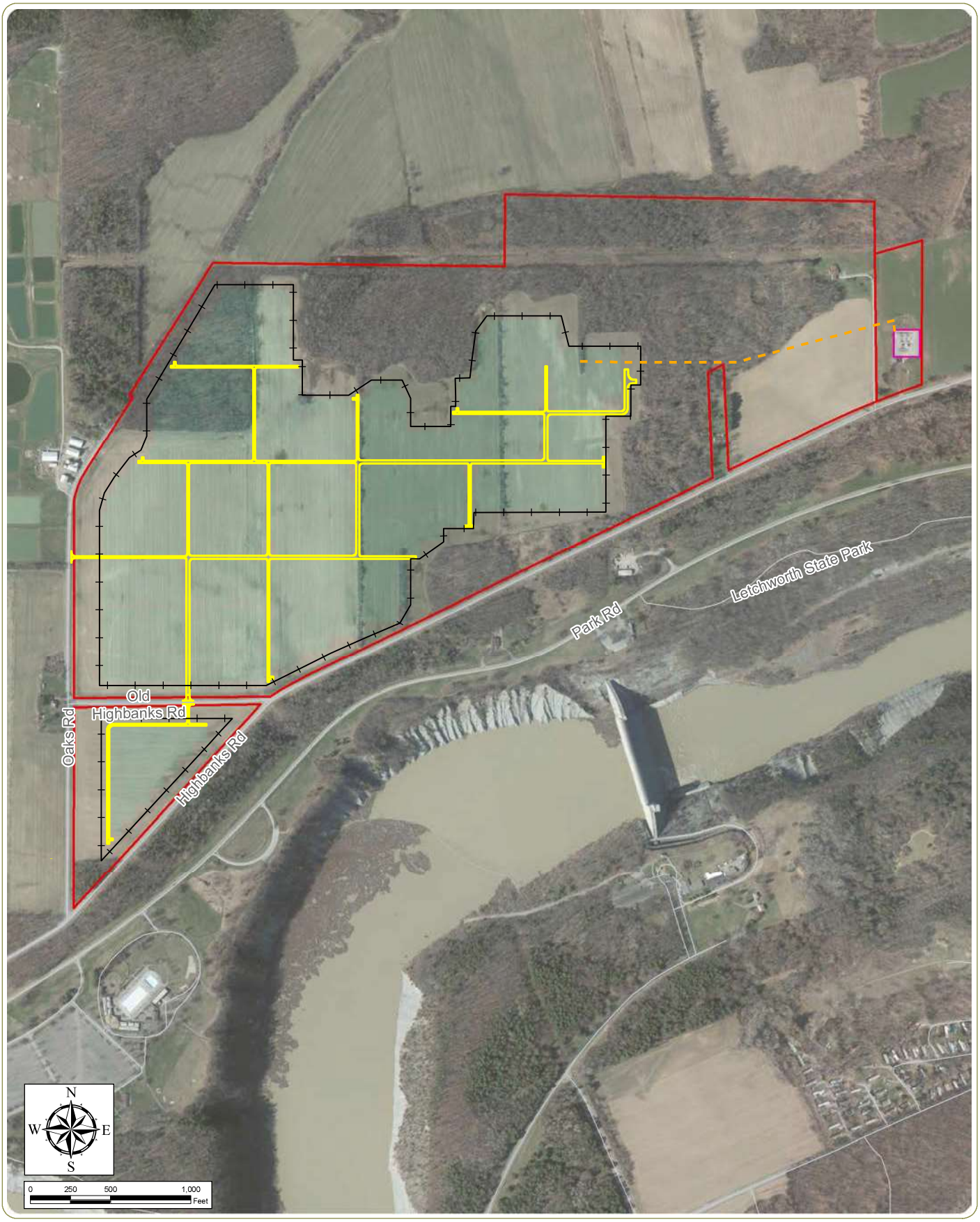

Highbanks Solar

Town of Leicester, Livingston County, New York

Figure 2: Project Site

PV Array
Existing Substation
Electric Line
Access Road
Fence
Project Site

Notes: 1. Basemap: USDA NAIP "2015" orthoimagery map service. 2. This map was generated in ArcMap on August 14, 2020. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

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Attachment B
Agency Correspondence
United States Fish and Wildlife Service
New York Natural Heritage Program

IPaC **U.S. Fish & Wildlife Service**

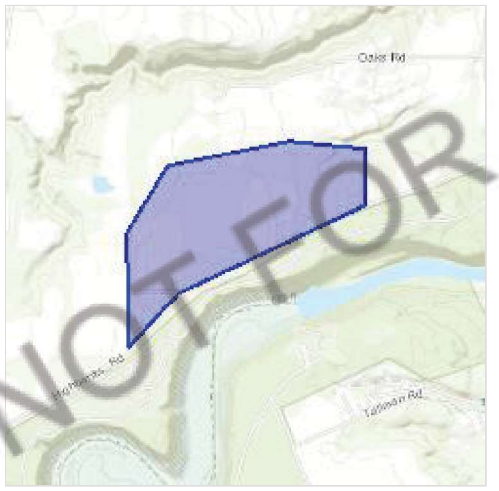
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Livingston County, New York



Local office

New York Ecological Services Field Office

(607) 753-9334
(607) 753-9699

3817 Luker Road
Cortland, NY 13045-9385

http://www.fws.gov/northeast/nyfo/es/section7.htm

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Northern Long-eared Bat Myotis septentrionalis Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Buff-breasted Sandpiper *Calidris subruficollis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488	Breeds elsewhere
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

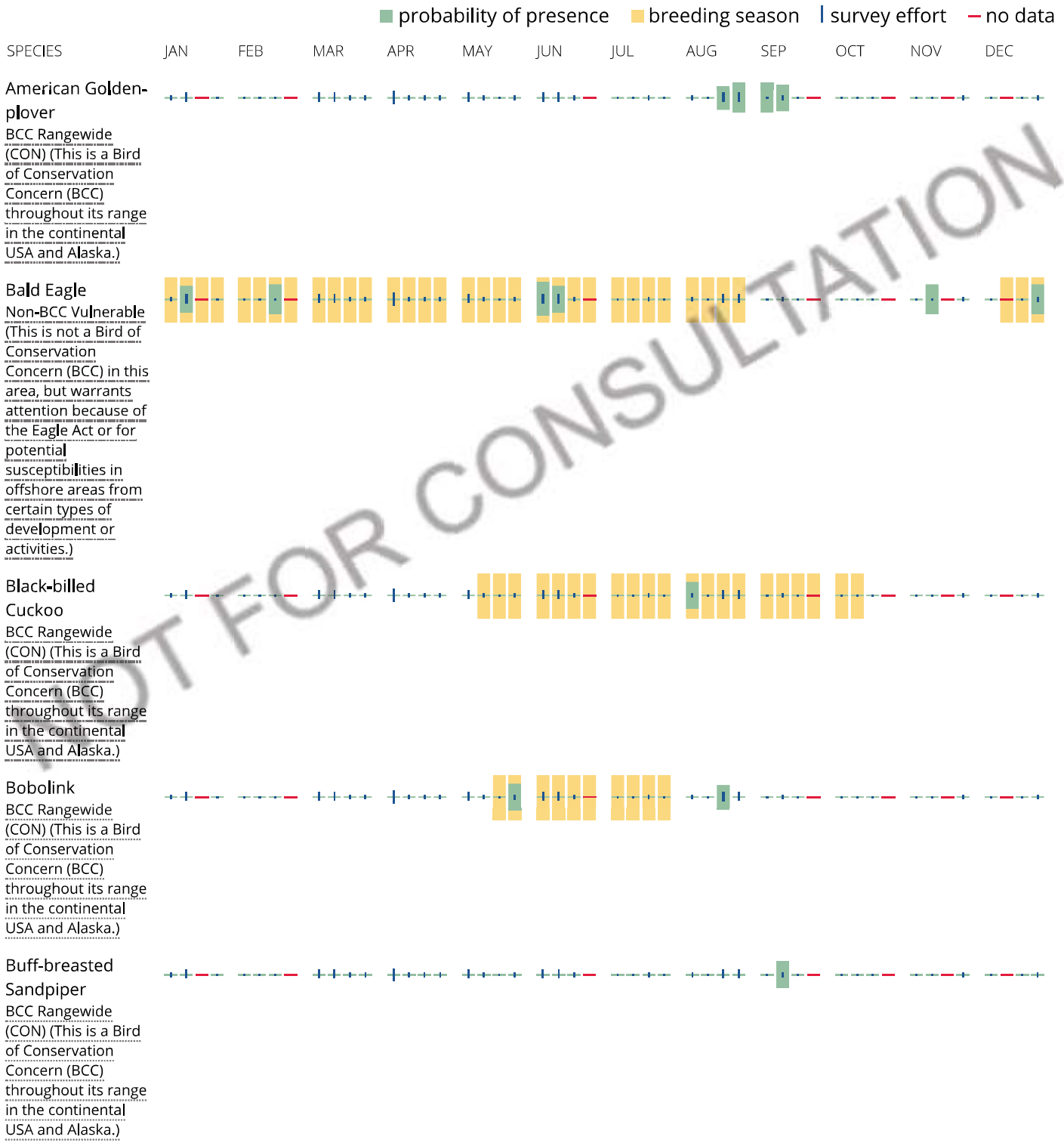
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

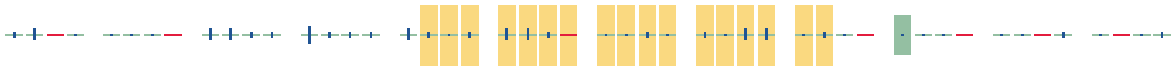
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Red-headed Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wood Thrush
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look

carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PFO1E

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

May 4, 2020

Seth Wilmore
Oriden
106 Isabella Street, Suite 400
Pittsburgh, PA 15212

Re: Highbanks solar project
County: Livingston Town/City: Leicester

Dear Mr. Wilmore:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 8 Office, Division of Environmental Permits, at dep.r8@dec.ny.gov.

Sincerely,

Heidi Krahling
Environmental Review Specialist
New York Natural Heritage Program

425

The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing.

For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 8 Office at dep.r8@dec.ny.gov, (585) 226-5400.

The following species has been documented within 0.2 mile of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Reptiles				
Spiny Softshell	*Apalone spinifera*	Special Concern		3733

The following species has been documented within 0.5 mile of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Bald Eagle *Breeding*	*Haliaeetus leucocephalus*	Threatened		12690

This report only includes records from the NY Natural Heritage database.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at www.dec.ny.gov/animals/7494.html.

The following rare plants and significant natural communities have been documented in the vicinity of the project site.

We recommend that potential impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may still contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following natural community is considered significant from a statewide perspective by the NY Natural Heritage Program. By meeting specific, documented criteria, the NY Natural Heritage Program considers this community occurrence to have high ecological and conservation value.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Upland/Terrestrial Communities			
Hemlock-Northern Hardwood Forest			High Quality Occurrence

Documented within 0.35 mile southeast of the project site. This is a relatively large, high quality hemlock-northern hardwood forest lining small tributaries and ravines of the Genesee River with very few exotic species. Multiple patches of the community are regularly spaced along the river and several very small patches of old growth exist within the community. The community is centered within a 14,500 acre natural area with good to excellent overall internal integrity and buffered by surrounding natural communities. 1195

The following plants are listed as Endangered or Threatened by New York State, and/or are rare in New York State, and so are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Cooper's Milkvetch	*Astragalus neglectus*	Endangered	Critically Imperiled in NYS

Documented within 0.45 mile southeast of the project site. 2003-06-24: The plants are located on a steep (45-70 degree) west-facing, slope within a forested habitat on the upper slope just below the rim of the gorge. The trees are mostly stunted and small in height and diameter. The soils are dry-mesic and are composed of shales and loamy clay. Soils are exposed in many areas and there is also some lichen and bryophyte cover. Canopy trees are diverse and dominants are Juniperus virginiana, Quercus rubra, Quercus velutina, and Pinus strobus. Other canopy trees include Acer saccharum, Pinus resinosa, and Amelanchier arborea. 1537

Green Gentian	*Frasera caroliniensis*	Threatened	Imperiled in NYS

Documented within 0.4 mile southwest of the project site. 2003-07-28: This plant is located in a forested to open habitat at the rim of the Genesee River Gorge. The area mostly has an east to south-facing aspect, but plants occur in areas with almost all aspects. Slopes vary from nearly flat to about 30 degrees. Most plants are under shade. The soils have a high clay content. Dominant trees vary. Right along the rim and in the most exposed areas Juniperus virginiana is dominant. Back a little from the intense erosional slopes, Quercus rubra, is most dominant with sub-dominants being Quercus alba, Quercus montana, Fraxinus americana, Pinus strobus, Carya glabra, Tilia americana, and Acer saccharum. 1384

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org. For descriptions of all community types, go to www.dec.ny.gov/animals/97703.html for Ecological Communities of New York State.

Attachment C
Photo Documentation

Photo 1.
Forest community in northwest part of Project Site, proposed for PV array.

Photo 2.
Forest community in northwest part of Project Site, proposed for PV array.

Highbanks Solar
Livingston County, New York

Attachment D: Photo Documentation
August 2020

Photo 3.
Forest community in eastern part of Project Site, proposed for electric line.

Photo 4.
Forest community in eastern part of Project Site, proposed for electric line.

Highbanks Solar
Livingston County, New York

Attachment D: Photo Documentation
August 2020

Attachment D
Plant Species List

PLANT SPECIES LIST
Observed On-Site During EDR Surveys, 2020

Notes	Family	*Genus*	*species*	common name	Conservation Status/Rank
	Adoxaceae	*Viburnum*	*dentatum*	smooth arrowwood	S5
	Amaranthaceae	*Amaranthus*	*hybridus*	green amaranth	SNA
	Amaranthaceae	*Chenopodium*	*album*	lambs-quarters	SNA
	Amaryllidaceae	*Allium*	*vineale*	wild garlic	SNA
	Anacardiaceae	*Toxicodendron*	*radicans*	poison ivy	S5
	Apiaceae	*Daucus*	*carota*	Queen Anne's lace	SNA
	Apocynaceae	*Apocynum*	*cannabinum*	hemp dogbane	S5
	Apocynaceae	*Asclepias*	*incarnata*	swamp milkweed	S5
	Apocynaceae	*Asclepias*	*syriaca*	common milkweed	S5
	Asteraceae	*Achillea*	*millefolium*	common yarrow	SNR
	Asteraceae	*Ageratina*	*altissima*	white snakeroot	S5
	Asteraceae	*Ambrosia*	*artemesiifolia*	ragweed	S5
	Asteraceae	*Arctium*	*minus*	common burdock	SNA
1	Asteraceae	*Artemisia*	*vulgaris*	mugwort	SNA
	Asteraceae	*Centaurea*	*jacea*	brown knapweed	SNA
	Asteraceae	*Cichorium*	*intybus*	chicory	SNA
	Asteraceae	*Cirsium*	*vulgare*	bull thistle	SNA
	Asteraceae	*Erechtites*	*hieraciifolius*	common pilewort	S5
	Asteraceae	*Erigeron*	*annuus*	annual daisy fleabane	S5
	Asteraceae	*Euthamia*	*graminifolia*	flat-topped goldenrod	S5
	Asteraceae	*Eutrochium*	*maculatum*	joe-pye weed	S5
	Asteraceae	*Gnaphalium*	*uliginosum*	low cudweed	SNA
	Asteraceae	*Hypochaeris*	*radicata*	cat's-ear	SNA
	Asteraceae	*Leucanthemum*	*vulgare*	ox-eye daisy	SNA
	Asteraceae	*Nabalus*	sp.	rattlesnakeroot	S5
	Asteraceae	*Solidago*	*gigantea*	swamp goldenrod	S5
	Asteraceae	*Solidago*	*juncea*	early goldenrod	S5
	Asteraceae	*Symphyotrichum*	*puniceum*	purplestem aster	S5
	Asteraceae	*Taraxacum*	*officinale*	dandelion	SNA
	Balsaminaceae	*Impatiens*	*capensis*	spotted jewelweed	S5
	Berberidaceae	*Podophyllum*	*peltatum*	mayapple	S5
	Betulaceae	*Carpinus*	*caroliniana*	musclewood	S5
	Betulaceae	*Ostrya*	*virginiana*	eastern hophornbeam	S5
	Boraginaceae	*Hackelia*	*virginiana*	Virginia stickseed	S5
1	Brassicaceae	*Alliaria*	*petiolata*	garlic mustard	SNA
	Brassicaceae	*Lepidium*	*campestre*	field pepperweed	SNA
	Campanulaceae	*Lobelia*	*inflata*	bladder-pod lobelia	S5
	Caprifoliaceae	*Dipsacus*	*fullonum*	teasel	SNA

PLANT SPECIES LIST
Observed On-Site During EDR Surveys, 2020

Notes	Family	*Genus*	*species*	common name	Conservation Status/Rank
1	Caprifoliaceae	*Lonicera*	*morrowii*	Morrow's honeysuckle	SNA
	Caryophyllaceae	*Dianthus*	*armeria*	Deptford pink	SNA
	Cornaceae	*Cornus*	*amomum*	silky dogwood	S5
	Cornaceae	*Cornus*	*racemosa*	gray dogwood	S5
	Crassulaceae	*Penthorum*	*sedoides*	ditch stonecrop	S5
	Cyperaceae	*Carex*	*crinita*	fringed sedge	S5
	Cyperaceae	*Carex*	*lupulina*	hop sedge	S5
	Cyperaceae	*Carex*	*pensylvanica*	Pennsylvania sedge	S5
	Cyperaceae	*Carex*	*scoparia*	broom sedge	S5
	Cyperaceae	*Carex*	*vulpinoidea*	fox sedge	S5
	Cyperaceae	*Cyperus*	*esculentus*	yellow nut sedge	SNR
	Cyperaceae	*Dulichium*	*arundinaceum*	three-way sedge	S5
	Cyperaceae	*Scirpus*	*cyperinus*	woolgrass	S5
	Dryopteridaceae	*Dryopteris*	*carthusiana*	spinulose woodfern	S5
1	Elaeagnaceae	*Elaeagnus*	*umbellata*	autumn olive	SNA
	Euphorbiaceae	*Acalypha*	*rhomboidea*	common copperleaf	S5
	Euphorbiaceae	*Euphorbia*	*maculata*	spotted spurge	S5
	Fabaceae	*Gleditsia*	*triacanthos*	honey-locust	SNA
	Fabaceae	*Lotus*	*corniculatus*	bird's foot trefoil	SNA
	Fabaceae	*Medicago*	*lupulina*	black medick	SNA
	Fabaceae	*Medicago*	*sativa*	alfafa	SNA
	Fabaceae	*Melilotus*	*albus*	white sweet clover	SNA
	Fabaceae	*Melilotus*	*officinalis*	yellow sweet clover	SNA
2	Fabaceae	*Robinia*	*pseudoacacia*	black locust	SNA
	Fabaceae	*Trifolium*	*aureum*	hop-clover	SNA
	Fabaceae	*Trifolium*	*hybridum*	alsike clover	SNA
	Fabaceae	*Trifolium*	*pratense*	red clover	SNA
	Fabaceae	*Trifolium*	*repens*	white clover	SNA
	Fabaceae	*Vicia*	*cracca*	cow vetch	SNA
	Fagaceae	*Quercus*	*alba*	white oak	S5
	Fagaceae	*Quercus*	*bicolor*	swamp white oak	S5
	Fagaceae	*Quercus*	*rubra*	red oak	S5
	Geraniaceae	*Geranium*	*maculatum*	wild geranium	S5
	Hypericaceae	*Hypericum*	*mutilum*	dwarf St. John's-wort	S5
	Hypericaceae	*Hypericum*	*perforatum*	common St.John's-wort	SNA
	Juglandaceae	*Carya*	*cordiformis*	bitternut hickory	S5
	Juglandaceae	*Carya*	*ovata*	shagbark hickory	S5
	Juglandaceae	*Juglans*	*nigra*	black walnut	S5

PLANT SPECIES LIST
Observed On-Site During EDR Surveys, 2020

Notes	Family	*Genus*	*species*	common name	Conservation Status/Rank
	Juncaceae	*Juncus*	*effusus*	soft rush	S5
	Juncaceae	*Juncus*	*tenuis*	path rush	S5
	Lamiaceae	*Clinopodium*	*vulgare*	field basil	SNR
	Lamiaceae	*Lycopus*	*americanus*	American bugleweed	S5
	Lamiaceae	*Monarda*	*fistulosa*	wild bergamot	S5
	Lamiaceae	*Prunella*	*vulgaris*	self-heal	SNA
	Malvaceae	*Abutilon*	*theophrasti*	velvetleaf	SNA
	Malvaceae	*Tilia*	*americana*	American basswood	S5
	Oleaceae	*Fraxinus*	*americana*	white ash	S5
	Oleaceae	*Fraxinus*	*pennsylvanica*	green ash	S5
1	Oleaceae	*Ligustrum*	*obtusifolium*	border privet	SNA
	Onagraceae	*Circaea*	*canadensis*	enchanter's nightshade	S5
	Onagraceae	*Ludwigia*	*palustris*	water purslane	S5
	Onagraceae	*Oenothera*	*perennis*	sundrops	S5
	Onocleaceae	*Onoclea*	*sensibilis*	sensitive fern	S5
	Oxalidaceae	*Oxalis*	*stricta*	yellow wood sorrel	S5
	Phytolaccaceae	*Phytolacca*	*americana*	common pokeweed	S5
	Pinaceae	*Pinus*	*strobus*	white pine	S5
	Pinaceae	*Pinus*	*sylvestris*	Scotch pine	SNA
	Plantaginaceae	*Plantago*	*lanceolata*	English plantain	SNA
	Plantaginaceae	*Plantago*	*major*	common plantain	SNA
	Plantaginaceae	*Veronica*	*arvensis*	corn speedwell	SNA
	Plantaginaceae	*Veronica*	*officinalis*	common speedwell	SNA
	Poaceae	*Agrostis*	*gigantea*	redtop	SNA
	Poaceae	*Bromus*	*inermis*	smooth brome	SNA
	Poaceae	*Dactylis*	*glomerata*	orchard grass	SNA
	Poaceae	*Danthonia*	*spicata*	poverty oatgrass	S5
	Poaceae	*Echinochloa*	*crus-galli*	Eurasian barnyard grass	SNA
	Poaceae	*Glyceria*	sp.	manna grass	S5
	Poaceae	*Lolium*	*perenne*	rye grass	SNA
	Poaceae	*Phalaris*	*arundinacea*	reed canary grass	SNR
	Poaceae	*Phleum*	*pratense*	timothy	SNA
	Poaceae	*Setaria*	*viridis*	green foxtail	SNA
	Polygonaceae	*Fallopia*	*convolvulus*	black bindweed	SNA
	Polygonaceae	*Persicaria*	*maculosa*	spotted lady's-thumb	SNA
	Polygonaceae	*Persicaria*	*virginiana*	jumpseed	S5
	Polygonaceae	*Polygonum*	*aviculare*	doorweed	SNA
	Polygonaceae	*Rumex*	*crispus*	curly dock	SNA

PLANT SPECIES LIST
Observed On-Site During EDR Surveys, 2020

Notes	Family	*Genus*	*species*	common name	Conservation Status/Rank
	Polygonaceae	*Rumex*	*obtusifolius*	bitter dock	SNA
	Portulacaceae	*Portulaca*	*oleracea*	common purslane	SNA
	Primulaceae	*Lysimachia*	*nummularia*	creeping Jennie	SNA
	Ranunculaceae	*Clematis*	*virginiana*	virgin's bower	S5
	Ranunculaceae	*Ranunculus*	*abortivus*	kidney-leaved crowfoot	S5
	Ranunculaceae	*Ranunculus*	*recurvatus*	hooked crowfoot	S5
1	Rhamnaceae	*Rhamnus*	*cathartica*	buckthorn	SNA
	Rosaceae	*Agrimonia*	*gryposepala*	tall agrimony	S5
	Rosaceae	*Crataegus*	*sp.*	hawthorn	SNR
	Rosaceae	*Fragaria*	*virginiana*	common wild strawberry	S5
	Rosaceae	*Geum*	*canadense*	white avens	S5
	Rosaceae	*Potentilla*	*argentea*	silvery cinquefoil	SNA
	Rosaceae	*Potentilla*	*norvegica*	ternate-leaved cinquefoil	SNR
	Rosaceae	*Potentilla*	*recta*	sulphur cinquefoil	SNA
	Rosaceae	*Potentilla*	*simplex*	old field cinquefoil	S5
	Rosaceae	*Prunus*	*serotina*	black cherry	S5
	Rosaceae	*Prunus*	*virginiana*	choke cherry	S5
	Rosaceae	*Pyrus*	*communis*	common pear	SNA
1	Rosaceae	*Rosa*	*multiflora*	multiflora rose	SNA
	Rosaceae	*Rosa*	*palustris*	swamp rose	S5
	Rosaceae	*Rubus*	*alleghaniensis*	common blackberry	S5
	Rosaceae	*Rubus*	*flagellaris*	northern dewberry	S5
	Rosaceae	*Rubus*	*occidentalis*	black raspberry	S5
	Rubiaceae	*Galium*	*aparine*	cleavers	S5
	Rubiaceae	*Mitchella*	*repens*	partridgeberry	S5
	Salicaceae	*Populus*	*deltoides*	eastern cottonwood	S5
	Sapindaceae	*Acer*	*negundo*	box elder	S5
	Sapindaceae	*Acer*	*rubrum*	common red maple	S5
	Sapindaceae	*Acer*	*saccharum*	sugar maple	S5
	Scrophulariaceae	*Verbascum*	*blattaria*	moth mullein	SNA
	Solanaceae	*Physalis*	*heterophylla*	clammy ground-cherry	S5
	Solanaceae	*Solanum*	*dulcamara*	deadly nightshade	SNA
	Typhaceae	*Typha*	*latifolia*	broadleaf cattail	S5
	Ulmaceae	*Ulmus*	*americana*	American elm	S5
	Verbenaceae	*Verbena*	*urticifolia*	white vervain	S5
	Violaceae	*Viola*	spp.	violets	SNR
	Vitaceae	*Parthenocissus*	*quinquefolia*	Virginia creeper	S5
	Vitaceae	*Vitis*	*riparia*	riverbank grape	S5

Nomenclature follows the New York Flora Atlas (Weldy et al., 2020).

Notes:

1. This species is listed as a prohibited invasive species in New York State (NYSDEC, 2014).
2. This species is listed as a regulated invasive species in New York State (NYSDEC, 2014).

State Conservation Ranks:

S5 Demonstrably secure in New York State. Common; widespread and abundant.
SNA Species for which a rank is not applicable (e.g., non-native species).
SNR No ranking assigned.

Sources:

New York State Department of Environmental Conservation (NYSDEC). 2014. 6 NYCRR Part 575, Prohibited and Regulated Invasive Species. September 10, 2014.

Weldy, T., D. Werier, and A. Nelson. 2020. New York Flora Atlas. [S. M. Landry and K. N. Campbell (original application development), USF Water Institute. University of South Florida]. New York Flora Association, Albany, New York. Available at: http://newyork.plantatlas.usf.edu/ (Accessed July 2020; last updated July 16, 2020).

EDR
a better environment

PHASE I ARCHAEOLOGICAL SURVEY

Prepared by:

EDR
217 Montgomery Street, Suite 1100
Syracuse, New York 13202
www.edrdpc.com

Highbanks Solar

Town of Leicester, Livingston County, New York

Prepared for:
Highbanks Solar, LLC
106 Isabella Street
Pittsburgh, Pennsylvania 15212

November 2022

Phase I Archaeological Survey

Highbanks Solar Project

Town of Leicester, Livingston County, New York

Confidential – Not for Public Distribution

Prepared for:

Highbanks Solar LLC
106 Isabella Street, Suite 400
Pittsburgh, PA 15212
Contact: Seth Wilmore

Prepared by:

Environmental Design & Research, D.P.C.
217 Montgomery Street, Suite 1100
Syracuse, New York 13202
www.edrdpc.com

November 2022

MANAGEMENT SUMMARY

NYSHPO Project Review Number:	19PR06165
Involved State and Federal Agencies:	New York State Office of Parks Recreation and Historic Preservation (Section 14.09), NYSDEC (State Environmental Quality Review Act)
Phase of Survey:	Phase I Archaeological Survey
Location Information:	Town of Leicester, Livingston County
Survey Area:	
Project Description:	The Project is a proposed 20 megawatt photovoltaic solar energy generating development located within the Town of Leicester, Livingston County, New York.
Project Area:	Approximately 257 acres
USGS 7.5-Minute Quadrangle Map:	*Mount Morris, NY*
Archaeological Survey Overview:	
#/interval of shovel tests:	Shovel tests at 15-meter intervals
#/size of excavation units:	593 shovel tests
Pedestrian surface survey:	Approximately 22 acres
Surface survey transect interval:	Approximately 3-5 meters, 1-3 meters surrounding isolates
Results of Archaeological Survey:	
Native American sites identified:	5
Native American isolates identified:	3
Euro-American sites identified:	0
Report Authors:	Moira Magni, Douglas Pippin, PhD, RPA,
Date of Report:	November 2022

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1.0 INTRODUCTION

1.1 Purpose of the Investigation

On behalf of Highbanks Solar LLC, a wholly owned subsidiary of Oriden LLC (the Applicant), Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR) conducted a Phase I archaeological survey for the proposed Highbanks Solar Project (the Project) located in the Town of Leicester, Livingston County, New York (see Figure 1). The purpose of the Phase I survey is to determine whether archaeological sites are located within areas that may be affected by the proposed Project. The information included in this Phase I survey report is intended to assist the Applicant, the Town of Leicester, and the New York State Historic Preservation Office (NYSHPO) in fulfilling the environmental review required under the State Environmental Quality Review Act (SEQRA) and Section 14.09 of the New York State Preservation Act.

The Phase I survey was conducted in a manner consistent with the New York Archaeological Council's (NYAC's) 1994 *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (the NYAC Standards) and the report was prepared in accordance with the NYSHPO's 2005 *Phase I Archaeological Report Format Requirements* (the NYSHPO Guidelines).

1.2 Project Description

The Project is a proposed 20 megawatt photovoltaic (PV) solar energy generating development located within the Town of Leicester, Livingston County, New York. The Project will consist of rows of PV modules in discrete sub-arrays dispersed throughout the Project Site. These arrays will be enclosed by fences for safety and security purposes. In addition, the Project will include electrical direct current (DC) collection cables that connect to inverters and medium voltage alternating current (AC) cables that run from the sub-arrays to a Point of Interconnection (POI). The proposed Project will consist of the following components (see Figure 2):

- Multiple arrays of PV modules producing DC electricity mounted on fixed-tilt tracking structures or single-axis tracking structures that will follow the sun throughout the day. The arrays of PV modules will be enclosed within secure, fenced areas;
- An electrical collection system that will aggregate the output from the PV panels and convert the electricity from DC to AC via inverters;
- A series of gravel access roads;
- An underground generation tie (gen-tie) line, which will connect the facility to the substation;
- Internal infrastructure including access roads and fencing;
- Medium voltage transformer pads, transformer inverter pads, and a collection and equipment area;
- A temporary laydown area for equipment storage during construction.

To deliver power to electric customers, the Project will connect to the existing Highbanks substation via 34.5 kV bus that is owned by NYSEG and located onsite.

The following terms are used throughout this report:

- **The Project**: Collectively refers to all components of the proposed Project, including PV panels, access driveways, fencing, buried collection lines, and staging areas. All components are located within Leicester, Livingston County, New York (Figure 1).

- **Project Site:** Those parcels, or portions of parcels currently under, or being pursued, for lease (or other real property interests) with the Applicant for the location of all Project components. The Project Site includes approximately 257 acres of leased private land that is primarily rural and agricultural in nature (Figure 2).

- **The APE for Direct Effects:** The Area of Potential Effect (APE) for Direct Effects for the proposed Project is the area where all proposed construction activities for the Project may occur and is defined as the maximum buildable area. However, it is anticipated that most portions of the APE for Direct Effects will experience minimal ground disturbance during construction. Based on the current preliminary Project design, the APE includes approximately 128 acres.

- **The Limits of Significant Ground Disturbance:** This is the area of the APE for Direct Effects where there is substantial proposed ground disturbance with the potential to impact archaeological resources. It consists of all areas of proposed Project components where there is (1) grading and excavation more than six inches deep; (2) grubbing, tree and stump removal; and (3) trenches more than three feet wide. It does not include the locations of PV panel arrays or fence lines. Based on the current preliminary Project design the Limits of Significant Ground Disturbance includes approximately 18 acres.

Figure 1. Regional Project Location

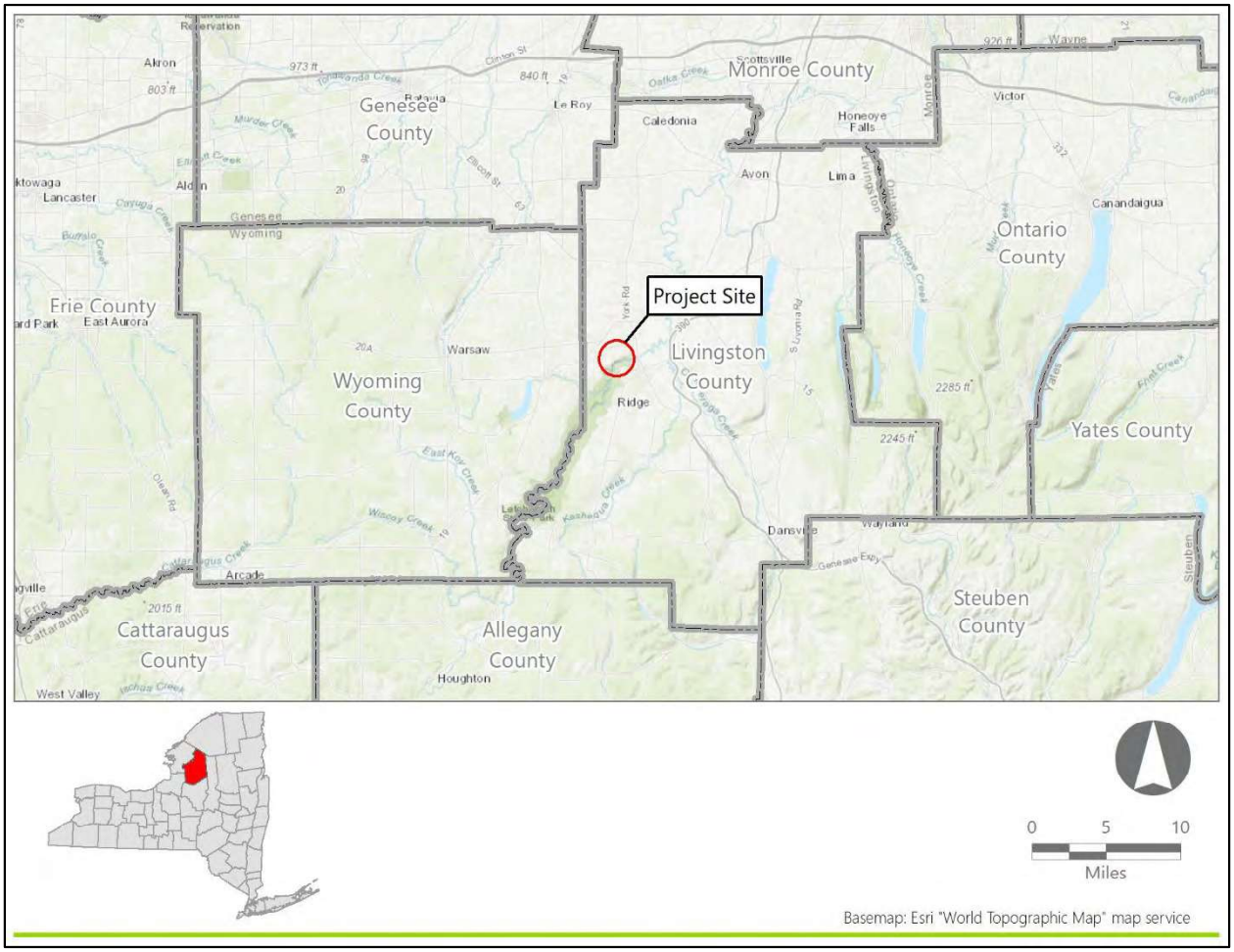
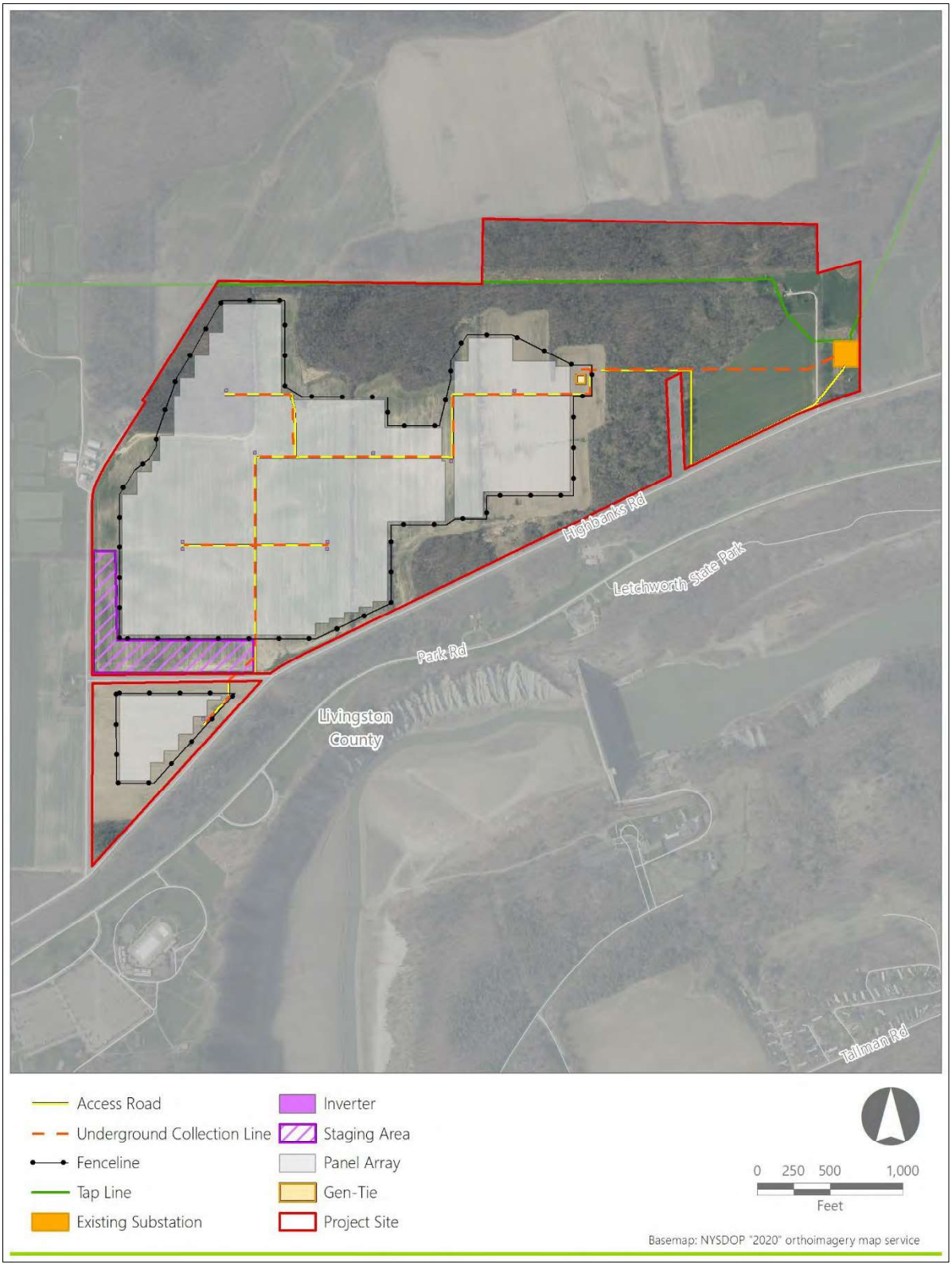


Figure 2. Area of Potential Effect



1.3 Agency Consultation

On behalf of the Applicant, EDR initiated Project consultation with the NYSHPO via the Cultural Resources Information System (CRIS) website under the Project's former name, Coverdale Solar. The consultation included the following:

- On September 4, 2019, EDR submitted a description and preliminary plans for the proposed Project.
- On October 21, 2019, the NYSHPO responded with a request for a Phase I archaeological survey (see Appendix A).
- On October 21, 2020, EDR submitted the Draft Phase I Archaeological Survey to the NYSHPO.
- On November 10, 2020, the NYSHPO responded with recommendations and comments for the draft (Appendix A).
- On May 12, 2022, the NYSHPO confirmed by email a revision to stipulation #2 to the November 10, 2020 letter, that their office was no longer recommending 100% coverage of all areas of the project's APE). The NYSHPO agreed with EDR's recommendation that areas of elevated archaeological sensitivity and significant ground disturbance within the Project area would be investigated in the Phase IB survey, as would be the full extent of the parcel at the eastern end of the project's APE, adjacent to the substation and located within the former Squawkie/Squawky Hill Reservation/Territory.

2.0 BACKGROUND INFORMATION

2.1 Environmental Setting and Soils

The Project Site is located in Livingston County, within the Allegheny Plateau physiographic province of New York State. Livingston County's elevation ranges from 515 feet above mean sea level (amsl) along the Genesee River to approximately 2,300 feet amsl in the southern portion of the county (Figure 3). Distinct glacial events helped form the Genesee River Valley and the western-most Finger Lakes (Hemlock Lake and Conesus Lake). The final maximal extent of Pleistocene glaciers in New York occurred between approximately 28,000 and 24,000 calendar years before present (cal. BP), when the Laurentide ice sheet began to recede, with minor periodic re-advances. By approximately 15,500 cal. BP the ice sheet had receded as far as modern-day Albany. After that point, the ice withdrawal occurred more quickly and the ice sheet receded into modern-day Quebec around 13,100 cal. BP (Ridge, 2003; Lothrop and Bradley, 2012).

In Central and Western New York, around 16,200 cal. BP in the Ontario Basin, proglacial Lake Iroquois formed against the receding ice front to the north. It received water input from the other Great Lakes to the west and eventually expanded beyond the footprint of modern-day Lake Ontario. Sometime between approximately 14,600 and 13,800 cal. BP, the retreating ice opened an outlet for Lake Iroquois near modern-day Rome, New York and the lake began to drain via the ancestral Mohawk River Valley. Lake Iroquois' discharge into what is now eastern New York between 100 and 300 years before the drainage shifted to the St. Lawrence Valley at the northeast end of the Ontario Basin (Lothrop and Bradley, 2012). The Alleghany Plateau is situated today within the St. Lawrence Valley drainage system, in which the primary local resource of this drainage is the Genesee River, located approximately 0.2-miles south of the Project Site. The Project Site consists of relatively level upland terrain with slopes ranging from gentle to steep (Figure 3). The leased parcels of the Project Site are located adjacent to bottomland terrain and north of the Genesee River. Elevations within the Project Site range between approximately 860 and 922 feet (262 and 281 meters) amsl. The bedrock underlying the Project Site is comprised of shales of the Upper Devonian geological age (approximately 382.7 to 358.9 million years BP). These primarily include the lower Walton Formation, West Hill and Gardeau Formations, Lower Beers Hill Shale, Cashaqua and Middlesex Shales, and the Genesee Group (United States Geological Service [USGS], 2020).

The surficial geology of the Project Site is made up of alluvial deposits, glacial till of variable texture and lacustrine silt and clay. EDR reviewed the Soil Conservation Service's (SCS) *Soil Survey of Livingston County, New York* (SCS, 1954) for data relating to soils within the Project Site, as well as electronic data from the Environmental Systems Research Institute (ESRI) and Natural Resources Conservation Service (NRCS) online Web Soil Service (ESRI and NRCS, 2020). Five mapped soil units belonging to three soil series are located within the Project Site. The mapped soil units consist primarily of glacially deposited lacustrine, aeolian, and till sediment as well as alluvium that range widely between clayey, silty, sandy, and loamy deposits. These soils range from poorly to excessively well drained. A summary of typical characteristics for the mapped soils that occur within the Project Site are provided in Table 1. Soil units within the Project Site are depicted in Figure 4.

Table 1: Major Map Soil Units within the Project Site, by Percentage of Project Site

Map Unit Name	Project Site Acre	% Project Site	Slope %	Drainage	Landform
Caneadea silty clay loam, very gently sloping	116.8	45.5%	0 to 3%	Somewhat poorly drained	Lake plains, valley floors, and depressional landscapes
Caneadea silt loam, very gently sloping	53.2	20-7%	0 to 3%	Somewhat poorly drained	Lake plains, valley floors, and depressional landscapes
Retsof silt loam, gently sloping	41.2	16.0%	0 to 8%	Poorly drained	Lake plains, valley floors, and depressional landscapes
Howard gravelly loam, sloping	24.0	9.4%	5 to 10%	Well and excessively well drained	Valley terraces, outwash plains, kame moraines, and eskers
Howard gravelly loam, gently sloping	21.8	8.5%	0 to 5%	Well and excessively well drained	Valley terraces, outwash plains, kame moraines, and eskers

Figure 3. Project Topography

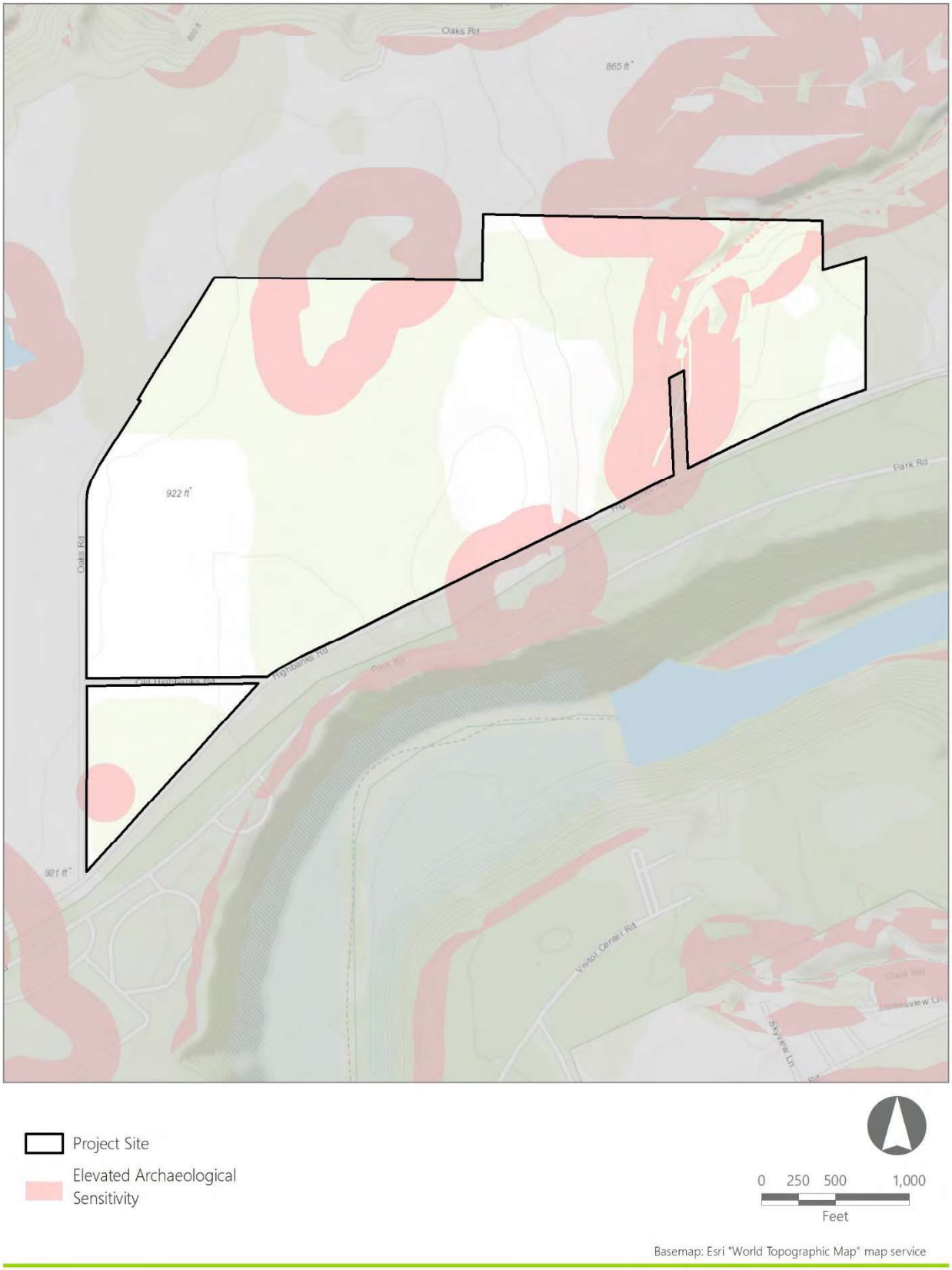
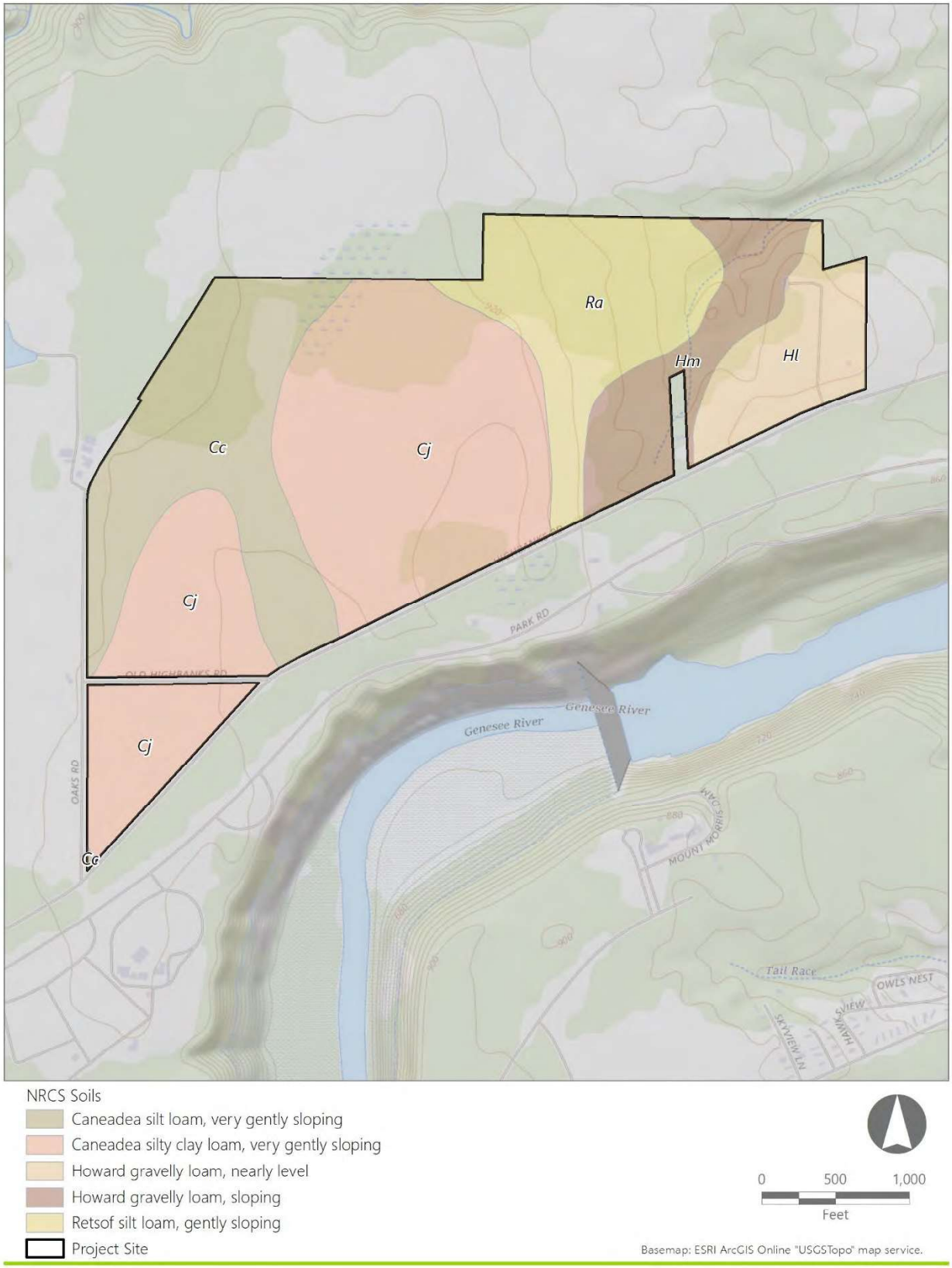


Figure 4. Project Soils



2.2 Historical Context

The traditional homeland of the Seneca Nation, or the Onondowahgah ("The People of the Great Hill" extended from the western Finger Lakes in the east to the Genesee Valley in Western New York (Houghton, 1909; 1920). The earliest occupants of this land specialized in hunting large game (likely caribou, and possibly mammoth and mastodon) in the recently exposed periglacial tundra and boreal forests, although they utilized diverse floral resources, small game, and fish as well (Ritchie and Funk, 1973). These early groups were highly mobile, but there is also evidence of moderate-to-large aggregations in certain places during the year (e.g., the Bull Brook sites in Massachusetts; Curran, 1999).

Post-Glacial conditions stabilized by approximately 10,000 BP, and small groups of hunter-gatherers reduced their mobility to exploit the diverse resources available to them in the newly emerging mixed deciduous/coniferous forests. While megafauna were extinct, medium-to-large game such as deer, elk, moose, and woodland caribou, as well as small game, fish, and wild plants were available (Funk, 1978). Material culture during this time (approximately 11,500 to 2,500 BP) is characterized by stemmed and corner-notched projectile points as well as the first appearance of notched stone net-sinkers (Funk, 1978). Groundstone plant processing technology, including nutting stones which indicate the first systematic utilization of mast resources such as acorns, hickory nuts, and chestnuts, was first used approximately 6,000 years ago (Funk, 1978; Ritchie and Funk, 1973). Beginning approximately 3,500 BP, regional diversity led to a greater variety of stone tools, including broad, side-notched projectile points, as well as gouges, plummets, and ground slate artifacts (Funk, 1978; Ritchie 1980). Between approximately 4,000 and 3,000 years ago, steatite (soapstone) bowls, ceramic vessels, decorative steatite gorgets, and burial ceremonialism appears in the archaeological record (Whitthoft, 1949; Ritchie and Funk, 1973; Tuck, 1978).

Archaeological evidence suggests that the establishment of agriculture in northeastern North America began approximately 2,500 years ago, possibly in response to favorable climatic conditions during the Medieval Climatic Anomaly (Fitting, 1978). The central Genesee Valley was at that time within what is attributed to the Hopewell cultural sphere, characterized by mound burials and other earthworks, dentate-stamped and rocker-stamped ceramic vessels, elaborate tobacco pipes, and stemmed, side-notched, and triangular unnotched Levanna projectile points (Engelbrecht, 2014; Ritchie and Funk, 1973). Crofoot (2005) indicated that a mound was identified in 1899 by workmen who were quarrying for sand. The workmen reportedly recovered a number of artifacts including a native copper axe, gorgets, and numerous stone projectile points, as well and identified the presence of significantly decomposed skeletal remains. He goes on to state that there are "four more mounds all near together, about a hundred rods [approximately 1,650-feet] further down the river" (Crofoot, 2005:593). These are presumably the mounds located northeast of the Project Site, described as "just overlooking the Genesee" by Arthur Parker (Parker, 1922: 598). Additionally, the description of the Muskwaki Sand Hills site (USN 05106.000139; JMA, 2010), which has similarities to Crofoot's quarry, is mapped on the CRIS system as approximately 1,220 feet (370 meter) west of the Project Site.

Groups in the northeast also maintained extensive trade networks during this period, evidenced by the presence of non-local goods (Fitting, 1978; Ritchie 1980; Ritchie and Funk, 1973). Smaller settlements are predominant in the archaeological record during this period in Central and Western New York, with larger

settlements becoming more common around 1,000 BP. In the following centuries, archaeologists attribute the appearance of maize (corn), beans, and squash agriculture to the growth of more substantial village sites, including some protected with palisades and earthwork defenses (Ritchie and Funk, 1973; Ritchie, 1980).

The Haudenosaunee at this time engaged in intense silviculture in addition to the more easily recognized agricultural practices that early European settlers readily identified and noted. Their practices shaped the vegetation growing around their towns and villages, creating a complex, interwoven ecology known as oak savanna. This biome was almost entirely dependent on active, ongoing human intervention to exist. These oak savannas provided a unique environment that the Haudenosaunee were able to harvest consistently and sustainably for much of what they depended upon in daily life; from food to construction materials, these managed forests provided a bounty of the resources necessary to a successful community.

Haudenosaunee oral history supports a deep history of occupation within Central and Western New York (Wonderley, 2004), which is supported by archaeological evidence n (MacNeish, 1952; Tuck, 1971; Hart and Brumbach 2003; 2005; 2009; Hart, 2011). While sources differ on the specific date of the emergence of the Haudenosaunee, many researchers agree that a formalized Confederacy of five nations (also, the Great League of Peace; the Five Nations; and later, the Six Nations) took shape during the late fifteenth or early sixteenth century. The initial five nations of the Haudenosaunee included, loosely from west to east, the Seneca, Cayuga, Onondaga, Oneida, and Mohawk. The Tuscarora became a member nation in 1722. Initially, the Confederacy functioned indirectly as a religious council, calming internal conflicts through ceremonies associated with the Great Law as prescribed by the Peacemaker (Deganawidah) and Hiawatha. As conflicts arose with neighboring nations and European settlers, the Confederacy's role became more political; however, the member nations largely retained their autonomy (Richter, 2005).

The French were the among the first Europeans to enter Western New York. Although Jesuit missionaries and French traders established contacts within the region as early as the 1620s, most of the early European religious, military, and commercial activities were limited. At this time the Seneca were combating the Neutral and Erie peoples for territorial control over western New York. In 1643, the Seneca had either expulsed or absorbed the remaining Neutral people in the Niagara River area, and by 1655 the Erie people had been ejected from the area between the Genesee River and Lake Erie. Thus, the territory of the Haudenosaunee encompassed the entirety of the area between the Hudson River and Lake Erie by the time Europeans began to have more than a cursory presence in the region. (Smith 1881; Morgan, 1962).

In 1656, Father Chaumont established the Mission of St. Michael among the Seneca in present-day Ontario County. By 1668, Father Fremin led St. Michael's and established additional missions throughout Seneca territory. He was succeeded by Fathers Raffeix, Garnier, and Bruyas. While the eastern nations of the Confederacy traded with the Dutch and English, the Seneca traded primarily with the French, but not without periods of conflict and warfare between the Seneca and the French. In 1687, Jacque-René de Brisay Denonville, the Governor-General of New France, led an attack against the Seneca in an attempt to solidify French control of the fur trade. Denonville and his military destroyed crops and burned settlements throughout Western New York, most notably the Seneca village at Ganondagan (in Victor, Ontario County). The Treaty of 1701 established a lasting peace between the Seneca and the French, however. The British

attempted to dismantle French influence in the region following the French and Indian War (1754-1763) by establishing fortifications in the Genesee Valley and sending Protestant missionaries among the Seneca (Smith, 1881; Abrams, 2005a; Dunnigan, 2005).

During the American Revolution, both the British and the Americans embraced the aid of Haudenosaunee nations, despite the Confederacy's official policy of neutrality. The Seneca were allied with the British and led numerous raids on American settlements. In retaliation, Washington ordered the Sullivan-Clinton campaign of 1779 throughout Central and Western New York (Figure 5). The American military, under the leadership of General Sullivan, systematically destroyed Haudenosaunee settlements, homes, and crops. Subsequently, large numbers of Haudenosaunee refugees resettled elsewhere in the Genesee Valley and farther west along the Niagara Frontier. The Haudenosaunee, abandoned by their allies following the American Revolution, were forced to negotiate treaties as separate nations with the Americans. The Confederacy was politically divided; the Seneca, Cayuga, Onondaga, and Mohawk had supported the British, while the Oneida and Tuscarora had supported the colonists. The Haudenosaunee were forced to cede all land west of New York State and Pennsylvania in the second Treaty of Fort Stanwix in 1784. These newly acquired western lands spurred American migration and settlement into the Genesee Valley (MacLeitch, 2005).

Following the American Revolution, the acquisition of large tracts of valuable land in western New York, and the associated removal of indigenous peoples from these lands, became a priority to the country's early capitalists and mercantile entities. These groups were required to acquire title to these western tracts from the Haudenosaunee before subdividing and reselling the land for profit. At the time, both Massachusetts and New York made claims to the area that is now western New York. The 1786 Hartford Treaty set the boundaries and established Massachusetts' right to sell land in New York State; subsequently, Massachusetts sold its these rights to Oliver Phelps and Nathaniel Gorham. Phelps and Gorham planned on funding this purchase through a currency speculation scheme, by paying in Massachusetts Commonwealth currency, which was depressed in value at the time. Through the First Treaty of Buffalo Creek in 1788, Phelps and Gorham purchased title to a six million-acre tract from the Seneca for $5,000 with a perpetuity fee of $500 per year. However, a year later when it came time to acquire the total purchase sum, Federal state debt repayment caused the Massachusetts currency to double in value, and consequently forced Phelps and Gorham to purchase the currency at parity to the dollar instead of fifty cents on the dollar as planned. This resulted in less than half of the initial six-million-acre tract being funded for purchase. The Seneca also did not feel they were treated fairly and, in December of 1790, the Seneca Chief Cornplanter and a delegation of other Seneca met with President George Washington in Philadelphia. In a speech before the President, Chief Cornplanter asserted that Phelps had misrepresented himself as an agent of the Federal government and that through deception and threat of force he coerced the Seneca to cede their lands. Washington consequently ordered an investigation into the matter, though it is unclear if any sanctions were enacted upon Phelps and Gorham as a result (Turner, 1881).

In 1790 and 1791, Robert Morris, an associate of Phelps and Gorham, purchased the pre-emption right of the remaining, unfunded portion of Phelps and Gorham tract. He quickly resold the 1.2-million-acre tract to Pulteney Associates, a London-based capitalist company. The Pulteney Estate comprised 52 townships

throughout Central and Western New York, including the present-day counties of Ontario, Yates, Steuben, Wayne, Monroe, Schuyler, Allegany, Chemung, and Livingston (Abrams, 2005b).

The 1794 Treaty of Canandaigua recognized reserved Haudenosaunee lands from previous treaties, reaffirmed the boundaries of Seneca land claims in Western New York, and prohibited subsequent land claims within the United States. Although Morris had purchased pre-emption right in 1791, he delayed treating with the Seneca to purchase this territory out of fear that they might join the expanding Northwest Indian War (also known as Little Turtle's War) occurring in modern day Ohio. By 1795, this conflict ceased and in 1796 Morris petitioned President Washington to appoint a commissioner to preside over a treaty with the Seneca. In 1797 Robert Morris dispatched his son, Thomas, to conduct negotiations with the Seneca on his behalf at the site of Big Tree[1] so that they might acquire the title to most of western New York State (Abrams, 2005b; Doty, 1905). This event became known as the Treaty of Big Tree.

Though this negotiation was conducted with a more conciliatory tone than previous treaties, it was still conducted in less than good faith, with Morris telling the Seneca in a speech that the foremost reason they should sell their lands was "neither my father, nor any person in his behalf will ever come forward and treat with you on the generous terms now proposed" (Doty, 1905: 201). This, among other half-truths spoken by Thomas, was not strictly true, as Morris had already sold the land to the Holland Land Company and was now required to extinguish the Seneca's title to the land in order to complete the transaction. Morris would certainly have been forced to negotiate under less favorable terms had this been disclosed to the Seneca. However, this was not the case, and despite some of the Seneca's distrust of Morris, he was ultimately able to purchase the 3.3 million acres, which he then transferred to the Holland Land Company. Thus, the Treaty of Big Tree extinguished any remaining Seneca land claims in western New York, and established the following reservations (Doty, 1905; Abrams, 2005b):

Canawaugus	Livingston County
Big Tree	Livingston County
Little Beard's Town	Livingston County
Squawkie (also Squaukie, or Squawkey) Hill	Livingston County
Gardeau	Livingston and Wyoming counties)
Caneadea	Allegany County
Oil Spring	Allegany and Cattaraugus Counties
Allegany	Cattaraugus County
Cattaraugus	Cattaraugus, Chautauqua, and Erie Counties
Canadaway	Cattaraugus and Chautauqua Counties
Buffalo Creek	Erie County
Tonawanda	Erie and Genesee Counties

The Treaty of Big Tree created five Seneca reservations in Livingston County, including the larger Gardeau Reservation approximately 7 miles south of the Project Site, and four smaller reservations including

[1] The Big Tree (not to be confused with the person, or village) is a large oak tree on the eastern bank of the Genesee River near Geneseo and was a place of meeting and Council for the Seneca. The location of the oak has since eroded away, though a portion of the Big Tree remains preserved at the Livingston County Historical Society Museum.

Squawkie Hill, located west of the Genesee River. This reservation was inhabited by descendants the Fox people (also known as the Mesquakie, Muskwaki, or the Outagamie) who moved to the region in the early-eighteenth century from pressure of Bristish officials. Their settlements were along the upper Susquehanna, Allegany, and Genesee Rivers. In 1763 and 1764, during Pontiac's War, a large group of the Fox fled their settlements to the Seneca village at Big Tree. They remained at Big Tree until around 1791, when the Fox chief, Stump Foot, led them back to their lands along the Genesee (Hauptman, 2005d).

In the Treaty of Buffalo Creek of 1826 (or the Second Treaty of Buffalo Creek), the Seneca ceded Squawkie Hill Reservation, along with other reservations in the Genesee Valley, to the Ogden Land Company. While the displaced Seneca moved further west, the remaining reservations, including Buffalo Creek, Cattaraugus, and Tonawanda, were stripped of thousands of acres. As a result of internal tensions during this period, the Seneca based at the Tonawanda Reservation began developing distinct cultural and political identities, embracing the Code of Handsome Lake and asserting an anti-removal and anti-treaty stance (Hauptman 2005a; Hauptman, 2011).

The 1838 Treaty of Buffalo Creek resulted in the loss of all remaining Seneca territory in Western New York (except the Oil Spring Reservation) and Wisconsin in exchange for removal to an allotment of 1.8 million acres in western Indian Territory (Kansas and later, Oklahoma). This treaty also deeded the reservations to the Ogden Land Company. Despite this treaty, many Seneca remained on the reservations (Abrams, 2005a; Hauptman, 2005a, 2005b; Hauptman, 2011). The Tonawanda Seneca staunchly opposed this treaty as a "fraudulent" agreement achieved only through "bribery, forgery, the use of alcohol, and other nefarious methods" (Hauptman, 2011).

In 1842, the Compromise Treaty (also referred to as the Supplemental Treaty of Buffalo Creek) renegotiated the terms outlined in the 1838 Treaty. The Ogden Land Company reinstated the Allegany and Cattaraugus Reservations and offered compensation for the Buffalo Creek and Tonawanda Reservations. Subsequently, many residents of the latter reservations began relocating to nearby reservations or Indian Territory in 1843. The 1842 Treaty elevated the existing tensions among Seneca leadership. The Tonawanda Seneca rejected the validity of this treaty as it disregarded the tradition of consensus among leaders and bypassed the Tonawanda in negotiations for reservation lands. From 1838 to 1847, the Tonawanda lobbied officials in Albany and Washington, D.C. to reverse these treaties, but with little success (Abrams, 2005a, 2005b; Hauptman, 2005b; Hauptman, 2011).

On December 4, 1848, the Seneca Nation of Indians (SNI) formed as an independent political entity, separate from both the Tonawanda Seneca and the Iroquois Grand Council. The SNI developed a new government of elected officials, while the Tonawanda maintained a traditional system of chiefs. Following victories in New York State's lower courts and the Court of Appeals, the Tonawanda Seneca's case against the Ogden Land Company was heard and upheld by the U.S. Supreme Court in 1856-1857. While the Ogden Land Company could not forcibly remove them, the Tonawanda Seneca remained without title to their land. The Tonawanda Treaty of 1857 federally recognized the Tonawanda Band of Seneca as a separate nation; this enabled them to sell their allotment of land in Kansas and use the proceeds to purchase previous portions of the reservation. In 1863, 7,549 acres of the Tonawanda Reservation were conveyed into trust to New York

State, thereby extinguishing Ogden Land Company title. Chief Blacksmith (Tonawanda Seneca), John H. Martindale (American attorney for the Tonawanda Seneca), and Ely S. Parker (Seneca "runner" and Sachem; later, Civil War military secretary and US Commissioner of Indian Affairs) are widely credited for leading the Tonawanda Senecas' political and legal efforts to maintain traditional homelands in New York State (Abrams, 2005a, 2005b; Hauptman, 2011).

Mary Jemison is widely regarded as one of the first permanent European settlers in the Genesee Valley. Born on a ship to Irish immigrants, she lived on the Pennsylvania frontier with her parents until she was captured in 1755 and brought to Fort Duquesne (now Pittsburgh). From there, she was adopted by two Seneca women, and lived with them in Ohio for several years. In 1759, she moved to the Seneca settlement at Beardstown (now in Leicester) and married a Seneca man. Jemison chose to reside with the Seneca for the rest of her life. In the 1797 Treaty of Big Tree, she was allotted nearly 18,000 acres in this area comprising the Gardeau Reservation (now Mount Morris, Livingston County and Castile, Wyoming County). The Project Site is located in what was formerly the Squawkie Hill Reservation, also allotted by the Treaty of Big Tree. Following pressure to sell Seneca reservation lands to land agents, Jemison moved to the Buffalo Creek Reservation with her daughters in 1831 and died two years later. In 1874, her remains were exhumed and reinterred by William P. Letchworth at his estate in Livingston and Wyoming counties (Smith, 1881; Hauptman, 2005c).

Livingston County was formed from Genesee and Ontario Counties in 1821. The county is bisected by the Genesee River, which extends southwesterly to form the western border. Canaseraga, Cashaqua, Beard's, and White creeks traverse the county, while Conesus and Hemlock lakes comprise the eastern border. Formal European-American settlement in the Genesee Valley began in the late eighteenth century. The Wadsworth brothers, James and William, were early settlers in 1790 and became notable landowners throughout the region. The settlement of Western New York immediately followed the acquisition of Haudenosaunee lands by the State and land companies, though progress was slow as early transportation to the region was limited to natural waterways and trails. These trails were quickly cleared and by the 1810s the region was accessible via the Ontario and Genesee Turnpike and Seneca Turnpike. These routes facilitated settlement as well as the transportation of goods produced in the early townships (Smith, 1881; Cook, 2005; Cox, 2005).

In 1859 William P. Letchworth, a successful Buffalo entrepreneur and philanthropist, purchased a substantial amount of land in the Genesee Valley. In 1907, he deeded his estate along the Genesee River and gorge to New York State, and in 1911, it was established as the core of Letchworth State Park. This included Letchworth' s 190-acre residence and farm, Glen Iris Estate, as well as the relocated Seneca Council House (1872), Mary Jemison's relocated grave, grave marker and monument (1874), and a museum (1912). Throughout the mid-twentieth century, the park expanded to include more than 14,000 acres. The region continues to benefit from the tourism and amenities generated by park visitation each year (Gabriel, 2005).

The Town of Leicester was formed on March 30, 1802 as Lester, named in honor of Oliver Phelps's son. By 1805, the name had changed to the present spelling. Its boundaries were adjusted to accommodate the formation of the Towns of Angelica (1805), Perry (1814), Mount Morris (1818), and York (1819). The Village

of Leicester was later incorporated in 1907. The village was originally called Moscow before assuming its current name in 1917. Its location along the Genesee Valley Canal facilitated economic growth and incipient manufacturing enterprises in the early to mid-nineteenth century. The hamlet of Cuylerville became a prominent stop along the canal as it featured storage warehouses for the local grain surplus and mercantile businesses. Leicester was home to small businesses including several distilleries, grist and sawmills, salt mines, and manufacturers of harnesses, wagons and carriages, fanning mills, and shoes. Throughout the twentieth and into the twenty-first centuries, Leicester remained primarily agricultural with limited industry, including Akzo salt mine (closed 1994), CPAC (manufacturing), and a food processing plant (Smith, 1881; Doty, 1905; Cook, 2005; Rapp, 2005).

2.3 Previously Identified Archaeological Resources

EDR consulted the NYSHPO's CRIS database, and maps used by the NYSHPO prior to the establishment of CRIS, to determine if previous archaeological surveys have been conducted within 1 mile (1.6 km) of the Project Site. The results of this research are summarized below in Table 2.

A total of seven previously conducted archaeological surveys occur within 1 mile (1.6 km) of the Project, none having been conducted within the Project Site. The previous surveys were conducted between 1999 and 2015 and consist of four Phase IA/Phase IB surveys, two Phase IA surveys, and one combination Phase I/II survey. Of these seven, only three surveys identified previously unrecorded archaeological sites.

Table 2. Previous Archaeological Surveys within 1 Mile (1.6 km) of the Project Site.

Report Name	Site Number	Distance from Project Site	Reference
Phase I Cultural Resource Investigation for the Livingston County Campus Long Term Care Project, Town of Mount Morris, Livingston County, New York	02SR52583	1.0 miles to the southeast	Ladd Archaeological Services, 2002
Phase 1 Cultural Resource Investigation for the Town of Leicester Sanitary Sewer Project, Livingston County, New York	02SR52967	0.9 miles to the east	Ladd Archaeological Services, 2002
Phase 1 Addendum Deep Testing Investigation for the Town of Leicester Sanitary Sewer Project, Livingston County, New York	02SR53720	0.9 miles to the east	Pierce, Carolyn A., 2002
Phase I Cultural Resource Investigation for the Sand Hill Road Gravel Mine Extension, Town of Mount Morris, Livingston County, New York	05SR55658	0.8 miles to the south	Morton, Ann, 2005

Report Name	Site Number	Distance from Project Site	Reference
Phase I Archeological Survey and Phase 2 Site Evaluations of the Mount Morris Dam Intensive Use Area, Towns of Leicester and Mount Morris, Livingston County, New York	11SR61332	0.1 miles to the south	John Milner Associates (JMA), 2011
Phase I Cultural Resource Investigations for the Proposed Letchworth State Park Dam Overlook Restaurant and Comfort Station Sanitary Disposal Systems, Town of Leicester, Livingston County	99SR50024	0.1 miles to the south	Rochester Museum & Science Center, 1999
Phase IA/IB Cultural Resource Investigation for the Proposed Riverside Park Improvements, Village of Mount Morris, Livingston County, New York	15SR00443	1.0 miles to the southeast	Deuel Archaeology and CRM, 2015

EDR reviewed the CRIS database to determine whether previously recorded archaeological sites are located within the 1-mile (1.6 km) Project Site. According to the CRIS database, no previously recorded archaeological resources are located within the Project Site. Ten previously recorded archaeological sites and one New York State Museum (NYSM) Area are located within 1-mile (1.6 km) of the Project Site boundary. These consist of four sites that are listed on the S/NRHP and six sites that are undetermined for listing on the S/NRHP. These are listed in Table 3 below.

Table 3. Archaeological Sites Located within 1 Mile (1.6 km) of the Project Site.

Site Number	Site Name	S/NRHP-Eligibility	Site Type	Distance from Project Site
05106.000009 (NYSM Area 3670)	Parker #54	Listed	Village (ACP notes mounds and burials)	0.6 miles
05106.000012 (NYSM Site 905)	Squawkie Hills UB 1016, NDA 1-1	Listed	Village	0.8 miles
05106.000047 (NYSM Site 3671)	Parker's Livingston Co Site #55 White Woman's Spring	Listed	Spring / Petroglyphs	0.9 miles

Site Number	Site Name	S/NRHP-Eligibility	Site Type	Distance from Project Site
05106.000138	JMA Mount Morris Pre-Contact Site 3	Undetermined	Camp	0.4 miles
05106.000139	Muskwaki Sand Hills	Undetermined	Burial	0.2 miles
05106.000140	'Buffalo Tom' Jemison Log Cabin Historic Site	Undetermined	Cabin	0.6 miles
05109.000008	Murray Hill Site (Follett F224)	Undetermined	Village with Burial	0.9 miles
05109.000012	Tallman Road Site (Follett F374)	Listed	Camp	0.7 miles
05109.000051	JMA Mount Morris Pre-Contact Site 1	Undetermined	Camp	0.5 miles
05109.000052	JMA Mount Morris Pre-Contact Site 2	Undetermined	Camp	0.5 miles

2.4 Historical Map Review

Historical maps depicting the Project Site were reviewed by EDR to identify map-documented structures (MDS) or other indicators of potential nineteenth and early-twentieth century archaeological resources within or adjacent to the Project. Historical maps reviewed include the 1829 Burr *Map of the County of Livingston* (Burr, 1829; Figure 5), 1840 Burr *Map of the County of Livingston* (Burr, 1840), the 1852 Gillette *Map of Livingston County,* (Gillette, 1852; Figure 6), the 1902 *New Century Atlas of Livingston County* (Century Map Co., 1902; Figure 7), and the 1944 USGS *Mount Morris, NY* 7.5-minute topographic quadrangle (USGS, 1944; Figure 8). The results of this map review and a brief description of the historic context of the Project Site and surrounding area are described below.

The 1829 and 1840 Burr *Map of the County of Livingston* show minimal development in and adjacent to the Project Site. The route of Highbanks Road had not been established at the time these maps were created, though Oak Road which follows a parallel route to the north was present at that time. The western portion of the Project is comprised of large tracts of undeveloped land. The eastern portion of the Project is located within the boundary of the Squawkie Hill Reservation on both maps, with the later 1840 map showing some further subdivision of the larger tracts of land noted in the earlier 1829 map (Figure 5). The 1852 Gillette *Map of Livingston County* (Figure 6) shows the area surrounding the Project Site as largely undeveloped, with scattered residences located along a road to the south that comprises portions of Park Road and Old Highbanks Road. The population was clustered around the nearby villages of Moscow to the north and Mount Morris to the southeast. The 1902 Century Map Co. *New Century Atlas of Livingston County* (Figure 7) shows almost no change to the Project Site and its surroundings with no new residences in the immediate area of the Project. The eastern portion of the Project Site continues to be located within the mapped boundaries of the Squawkie Hill Reservation, while the western portion is noted as being part of Highbanks Farm. The 1944 USGS *Mount Morris, NY* 7.5-minute topographic quadrangle (Figure 8) also shows very little in the way of development or change in character of the Project Site. The current Highbanks Road corridor was yet to be established at that time, and there were few newly mapped structures in the vicinity, and no structures located within the Project Site.

Overall, historical maps reviewed for this report indicate that the area surrounding the Project Site has been sparsely populated with little nineteenth and early-twentieth century development. The Project Site is utilized primarily for agriculture (wheat and sorghum at the time of survey), and its current agricultural nature appears consistent with its historically documented use. While several residences and outbuildings are documented adjacent to the Project Site, none were noted within it. Therefore, the Project Site is considered unlikely to contain historically MDS.

Figure 5. Burr 1829 *Map of the County of Livingston*

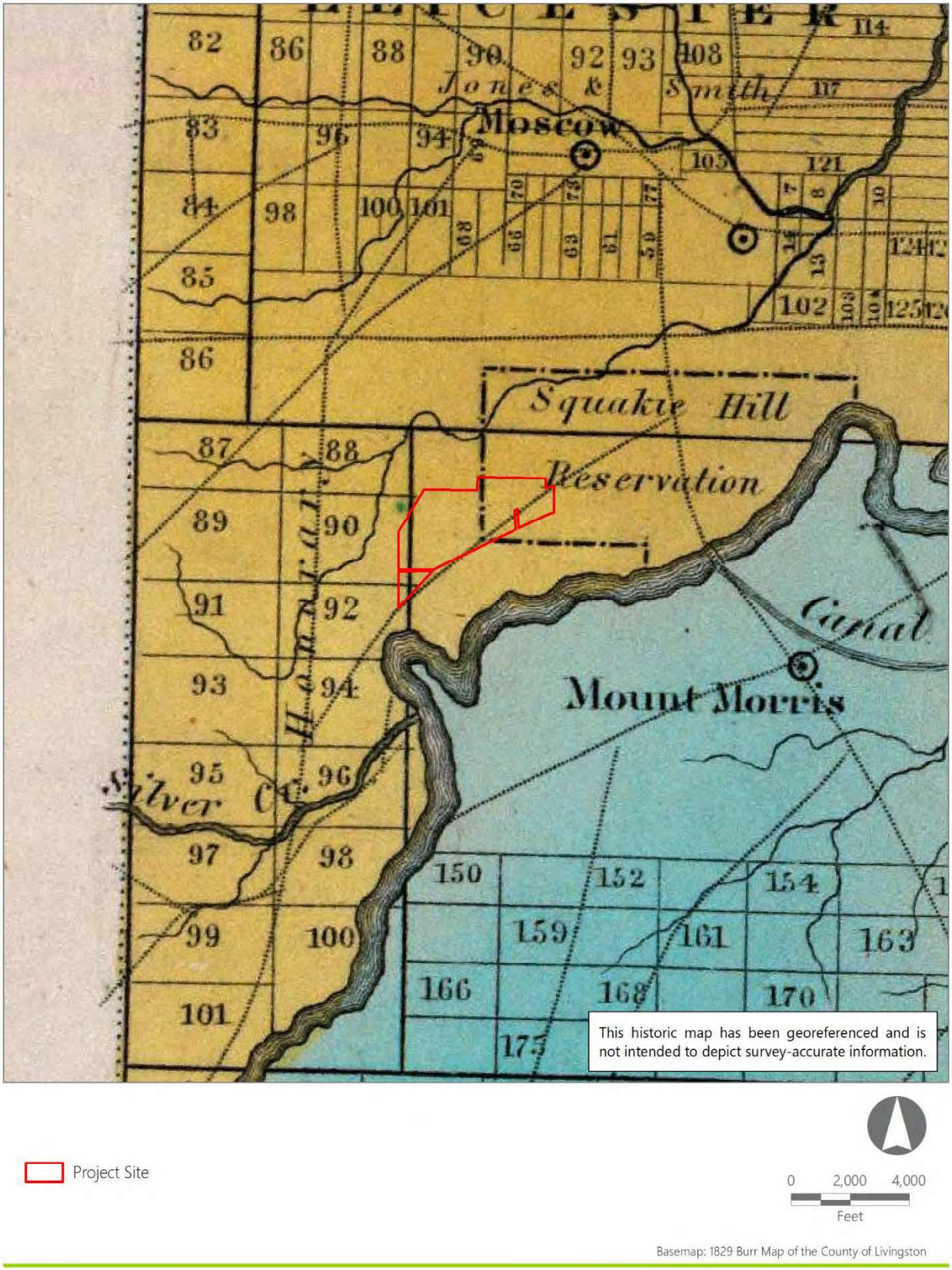


Figure 6. Gillette 1852 *Map of Livingston County*

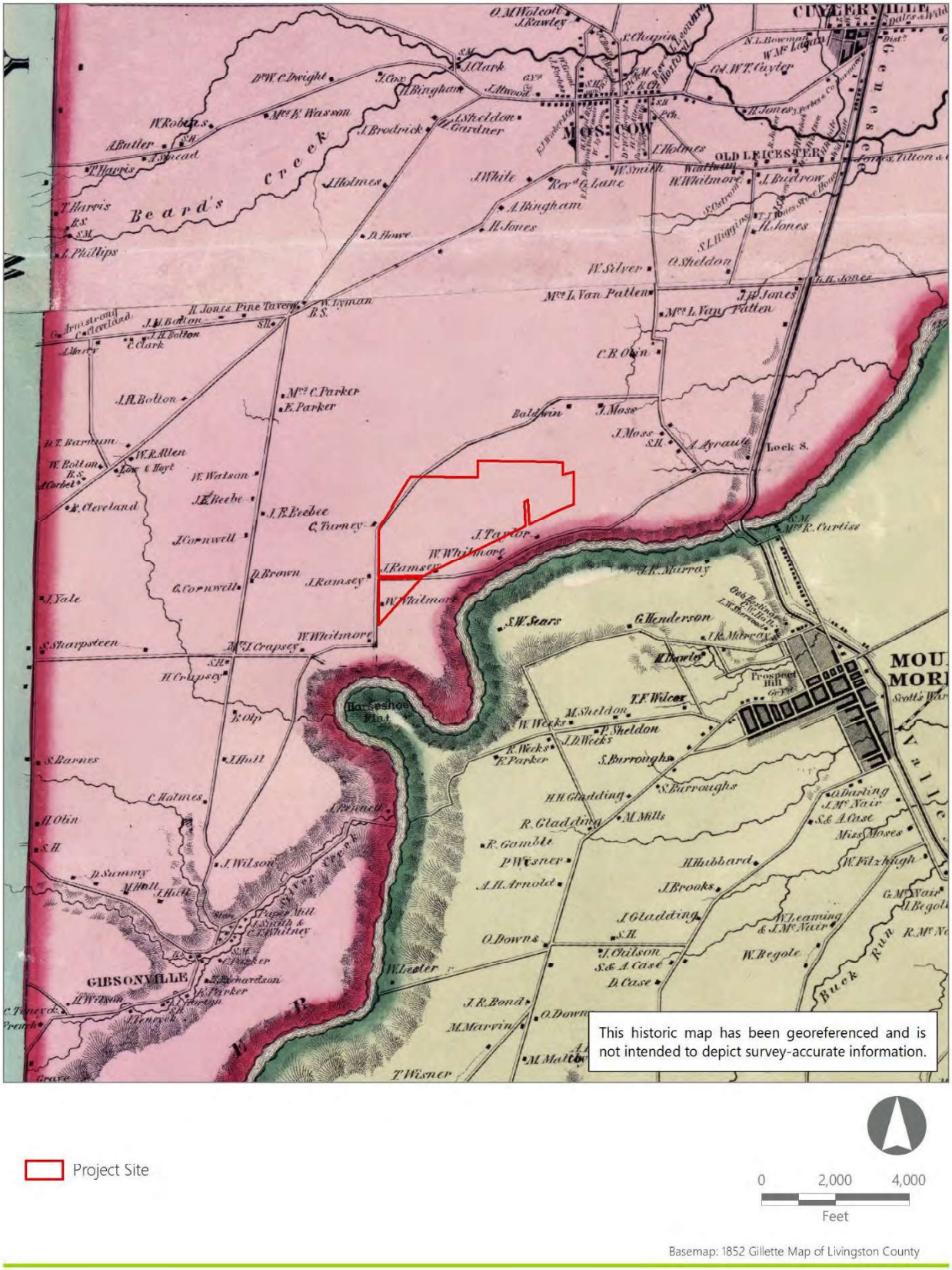


Figure 7. 1902 *New Century Atlas of Livingston County*

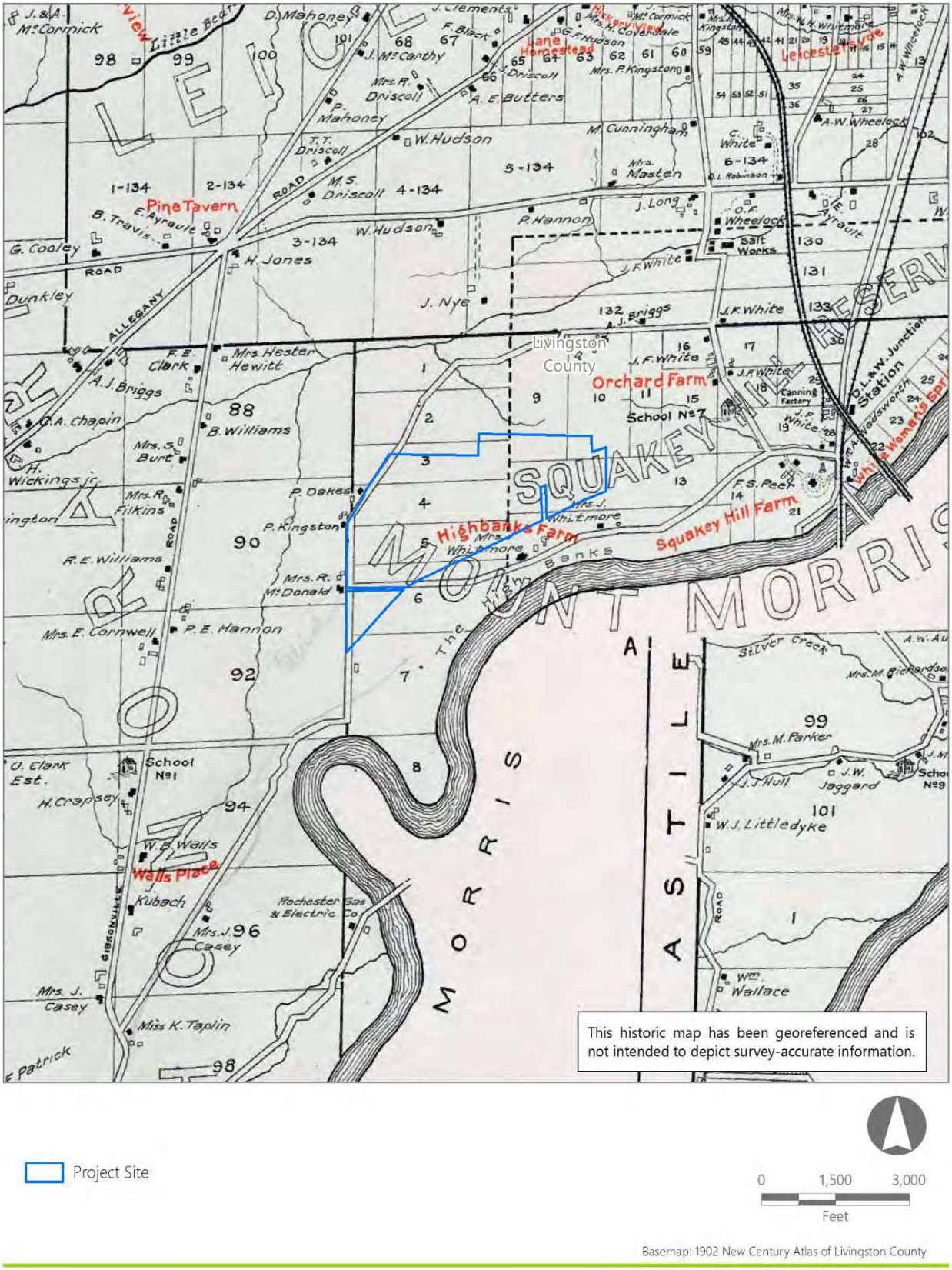
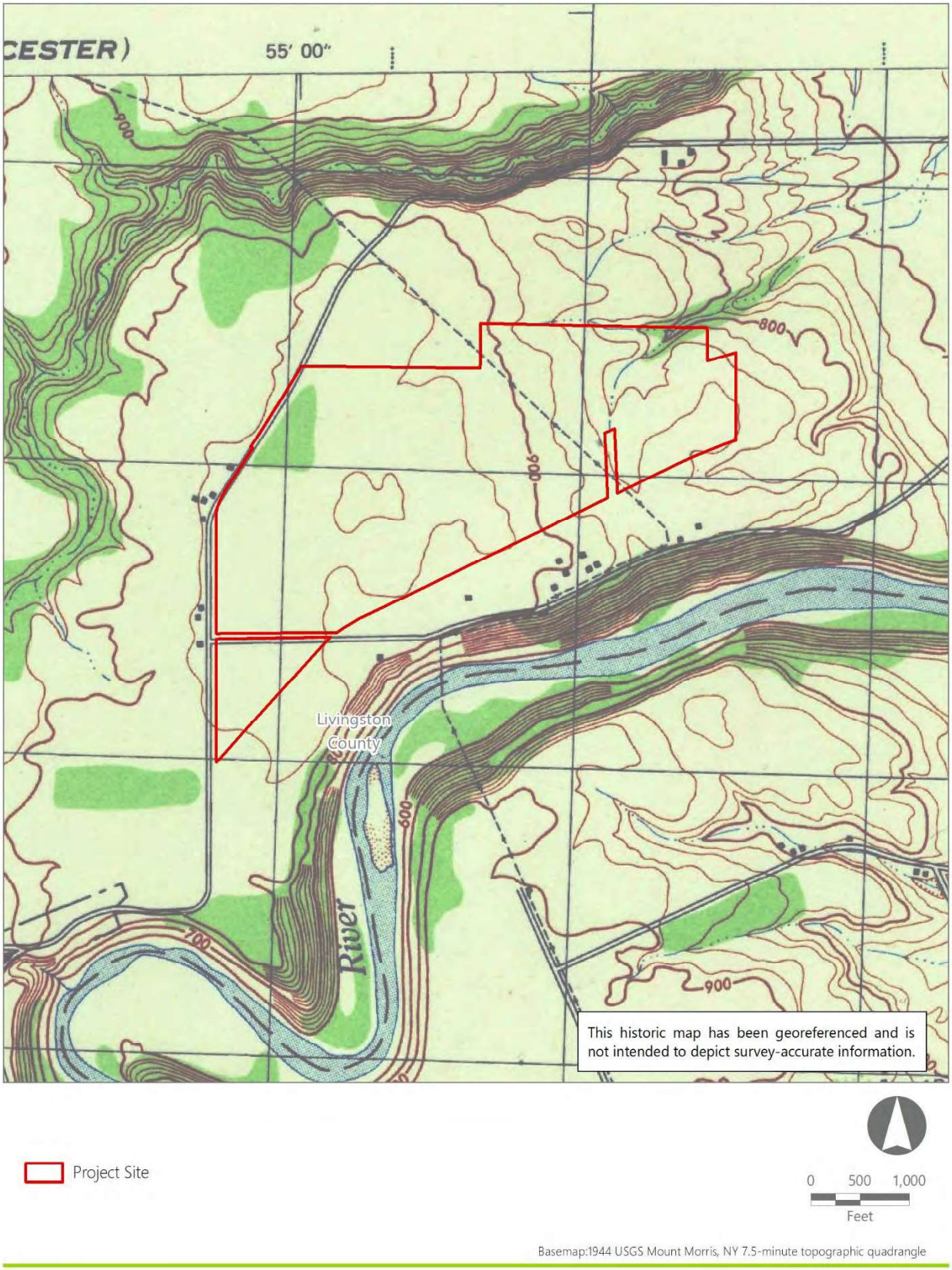


Figure 8. USGS 1944 *Mt. Morris, NY* 7.5 Minute Quadrangle



3.0 PHASE I ARCHAEOLOGICAL SURVEY

3.1 Archaeological Survey Fieldwork Methods

In accordance with NYSHPO (2021a) guidance, EDR's survey methods consisted of the following:

- **Shovel Testing**. Shovel tests were excavated to determine whether archaeological sites were present in the Limits of Significant Ground Disturbance. Shovel tests were typically excavated along transects or in grid patterns at 50-foot (15-m) intervals within the Limits of Significant Ground Disturbance. Shovel tests were typically 12 to 20 inches (30 to 50 cm) in diameter and excavated to sterile subsoil or the practical limits of hand excavation in accordance with the NYAC Standards (NYAC, 1994). Field notes for each shovel test were digitally recorded on standardized forms that described soil stratigraphy, recorded whether any artifacts were recovered, and noted any other relevant observations. All soils excavated from shovel tests were screened through 0.25-inch hardware cloth. If Native American-related artifacts were recovered from an isolated shovel test, then up to eight additional shovel tests were excavated at 1-meter and 3-meter (or greater) intervals around the original shovel test in order to determine whether the artifacts represented an isolated find or indicated the presence of a more substantial archaeological site.

- **Pedestrian Surface Survey:** In existing crop fields and/or previously cultivated areas with greater than 70% ground-surface visibility, archaeologists conducted a pedestrian surface survey to determine whether archaeological sites are present, in accordance with the NYAC Standards (NYAC, 1994). In these areas, archaeologists traversed the archaeological APE along transects spaced at 3- to 5-meter intervals while inspecting the ground surface for artifacts and/or archaeological features. The locations of any artifacts or other indication of an archaeological site observed on the ground surface were recorded using sub-meter accuracy Global Positioning System (GPS) equipment. Transect intervals were reduced in the vicinity of identified artifacts to delineate site boundaries and the horizontal extent of cultural material. After recording the locations of artifacts and/or features in a given area, archaeologists collected the observed artifacts for subsequent laboratory identification and analysis, in accordance with standard archaeological methods. The primary goal of the Phase I surface survey methodology was to determine spatial boundaries of any sites present.

- **Steeply sloped, wetland, and disturbed areas**. No systematic archaeological survey work was conducted in steeply sloped areas, delineated wetlands, or areas where visual inspection can confirm previous soil disturbance (Appendix D; Photos 6, 7). In these areas, archaeological survey was restricted to visual inspection supplemented by judgmental shovel testing if indications of a potential archaeological site were observed (e.g., foundations, structural remains, or rock overhangs suitable for use as shelters).

3.2 Archaeological Survey Fieldwork Results

EDR conducted Phase I archaeological survey fieldwork at the Project Site in July, August, and September 2020 as well as a final mobilization in June 2022. Fieldwork was conducted by Justin Sabino, Diane Yankel, Moira Magni, Beth Peyser, and Josh Altom. During fieldwork, EDR personnel excavated a total of 593 shovel tests for the Highbanks Solar Project.

Figure 9 depicts the areas of Elevated Archaeological Sensitivity within the Project Site. Tabulated shovel test records for shovel tests excavated during the Phase I archaeological survey for the Highbanks Solar Project are included in Appendix E of this report. Additionally, based on the discoveries documented in this report, the client has modified and avoided all archaeological sites including a 50-foot buffer. An updated layout showing avoidance is available in Appendix C.

Appendix B and Table 4 (below) summarizes shovel testing locations and archaeological resources identified during the Phase I archaeological survey.

Table 4. Summary of Archaeological Survey Results by EDR Survey Area

EDR Survey Area	Project Components/ Impacts	Description	Prior Impacts	Shovel Tests Completed	Sites/Isolates Encountered
A	Tree cutting	Level poorly drained secondary growth forest with a thick understory of hawthorn and greenbrier.	Excavation of improved drainage channels	135	EDR-20061-001
B	Collection Line	Gently rolling to level cultivated wheat and sorghum fields.	None evident	79	--
C	Collection Line	Level, cultivated sorghum field.	None evident	5	--
D	Collection Line	Level cultivated wheat field.	None evident	16	--
E	Collection Line	Gently rolling, cultivated sorghum field.	None evident	22	--
F	Collection Line, Inverter Station	Gently sloping and poorly drained secondary growth forest.	None evident	15	--
G	POI Line	Rolling cultivated sorghum and alfalfa hay field.	None evident	321	EDR-Squawkie Hill-1 EDR-Squawkie Hill-2 EDR-Squawkie Hill-3 EDR-Squawkie Hill-4 G19.07 G17.07 G18.01

3.3 Identified Archaeological Sites

In total, the Phase I archaeological survey conducted for the Highbanks Solar Project resulted in the identification of five Native American archaeological resources and three isolated finds, or isolates. Each of these resources is discussed in detail in Subsections 3.3.1 through 3.3.5, below, while the isolates are described in Table 10. In addition to the descriptions of these sites provided herein, the information for each site has been entered into the NYSHPO's CRIS database concurrent with submission of this report.

Four sites (EDR-Squawkie Hill-1, EDR-Squawkie Hill-2, EDR-Squawkie Hill-3, and EDR-Squawkie Hill-4) were identified during Phase I survey of Area G, an agricultural field included in the Project layout as hosting the location of a gen-tie line. Both the Squawkie Hill-1 and 3 sites extended well beyond any potential impacts associated with the installation of buried cable (i.e., the gen-tie line), and therefore were not fully delineated. A line of shovel tests was excavated across the agricultural field (Appendix B, Sheet 6) in a northwest to southeast direction in an effort to find a path for the gen-tie line between EDR-Squawkie Hill-1 and EDR-Squawkie Hill-3. EDR-Squawkie Hill-2 was fully delineated with radial shovel tests at 15, 3, and 1 meter, which recovered one additional debitage fragment from the 1 meter south radial shovel test and appears to be an isolated deposit. EDR-Squawkie Hill-4 was fully delineated with radial shovel tests at 15, 3, and 1 meter, which recovered an additional two fragments of chert debitage from the 3 meter west radial shovel test.

These four identified sites are located within the boundary of the former Squawkie Hill Reservation. They consist of lithic scatters comprised of debitage (angular shatter to tertiary thinning flakes) and one Orient Fishtail projectile point recovered from shovel tests and the ground surface. No European-American material culture was recovered in the Phase I archaeological survey. It should be noted that previous archaeological studies (Section 2.2, Table 2) in the area surrounding the Project Site have identified evidence of Native American occupation of the Squawkie Hill area ranging from the approximately 5,000 years before present to the early-nineteenth century.

The fifth site is EDR-20061-001, which was located during pedestrian survey of the western portion of the Project Site, consisting of a lithic scatter of four surface finds. This lithic scatter includes three debitage flakes and one medial fragment of a projectile point.

3.3.1 EDR-Squawkie Hill-1

Site Type: Lithic Scatter

Archaeology Survey Area: G

Site Description: The EDR-Squawkie Hill-1 site is a lithic scatter located in a cultivated sorghum and alfalfa field on the north side of Highbanks Road. It was initially identified in two shovel tests excavated along the south and west edges of the agricultural field in the lowest portion of a rolling field. The site is located immediately adjacent to the north edge of Highbanks Road, approximately 3,200-foot (1,003 meters) east

of the intersection of Highbanks and Old Highbanks Roads (Appendix B, Sheets 5 and 6; Appendix D, Photos 8-10). Soils within the site area are mapped as Howard fine sandy loam, nearly level, and Howard fine sandy loam, sloping, which are well, to excessively well drained sandy soils formed from glacial outwash deposits (Esri and NRCS, 2020). Vegetation at the time survey consisted of recently harvested sorghum and alfalfa planted in rows. Previous activity in the area was centered on agricultural activities.

The EDR-Squawkie Hill-1 site consists of 11 chert artifacts, recovered from seven shovel tests (Table 5). No artifacts diagnostic of a time period or cultural tradition were recovered.

Soils encountered in shovel tests are interpreted as glacial outwash with the typical profile consisting of a brown (10YR 4/3) sandy loam plowzone between 0 and 36 centimeters below ground surface (cmbgs), over a light yellowish brown (10YR 6/4) sandy loam between 36 and 84 cmbgs, overlying a light brownish gray (10YR 6/2) single grain sand subsoil. The top two strata of shovel tests contained lithics. No lithics were encountered in the bottom stratum, which was interpreted as culturally sterile, and shovel tests were terminated after excavating 10 cm into the sterile subsoil.

Table 5. Artifacts Collected at the EDR-Squawkie Hill-1 Site.

Shovel Test/ Surface Provenience	Stratum	Depth (cmbgs)	Count	Description	Material	Date Range
20061-G2.03	II	34-59	2	Tertiary flake	Gray chert	Undetermined
20061-G1.16	II	29-52	1	Tertiary flake	Gray chert	Undetermined
20061-G1.16 R3S	I	0-31	3	Tertiary flake	Gray chert	Undetermined
20061-G1.16 R3W	I	0-32	2	Tertiary flake	Gray chert	Undetermined
20061-G1.16 R3N	II	36-84	1	Tertiary flake	Gray chert	Undetermined
20061-G1.16 R15N	II	36-61	1	Tertiary flake	Gray chert	Undetermined
20061-G1.16 R30N	I	0-35	1	Tertiary flake	Gray chert	Undetermined

Recommendation: The EDR-Squawkie Hill-1 consists of a moderate-density, lithic scatter identified during Phase I shovel test excavation. Artifacts extended below the plowzone, indicating the potential for intact cultural deposits and features to be present. No features were identified during shovel testing, however. The site remains unevaluated for S/NRHP eligibility. The Applicant will avoid impacts to this site. No further archaeological investigation is recommended.

3.3.2 EDR-Squawkie Hill-2

Site Type: Lithic Scatter

Archaeology Survey Area: G

Site Description: The EDR-Squawkie Hill-2 site is a lithic scatter located in a cultivated sorghum and alfalfa field on the north side of Highbanks Road. It was identified in two shovel tests excavated along the southern edge of the agricultural field on the crest of a small rise. The site is located immediately adjacent to the north edge of Highbanks Road, approximately 4,000-foot (1,010 meters) east of the intersection of Highbanks and Old Highbanks Roads (Appendix B, Sheet 6; Appendix D, Photos 9,10). Soils within the site area are mapped as Howard fine sandy loam, nearly level, which are well drained sandy soils formed from glacial outwash deposits (Esri and NRCS, 2020). The field had standing crops at the time of survey.

The EDR-Squawkie Hill-2 site consists of two chert artifacts, recovered from one shovel test and one 1-meter radial shovel test (Table 6). No artifacts diagnostic of a time period or cultural tradition were recovered.

Soils encountered in shovel tests were comprised of shallow, rocky soils with decomposing shale bedrock. The typical soil profile consisted of a rocky plowzone of brown (10YR 4/3) sand between 0 and 32 cmbgs, overlying a light brownish gray (10YR 6/2) sandy loam with increasing percentages of the soil composed of degrading bedrock. Lithics were only recovered from the upper plowzone stratum with no lithics encountered in the bottom stratum, which was interpreted as culturally sterile, and shovel tests were terminated after excavating 10 centimeters into the sterile subsoil or when the density of the degrading shale bedrock precluded further hand excavation.

Table 6. Artifacts Collected at the EDR-Squawkie Hill-2 Site

Shovel Test/ Surface Provenience	Stratum	Depth (cmbgs)	Count	Description	Material	Date Range
20061-G1.04	I	0-34	1	Tertiary flake	Gray chert	Undetermined
20061-G1.04 R1S	I	0-30	1	Tertiary flake	Gray chert	Undetermined

Recommendation: The EDR-Squawkie Hill-2 site consists of two lithic flakes in a spatially confined deposit identified in the plowzone during Phase I shovel test excavation. This site is considered ineligible for inclusion in the S/NRHP. The Applicant will avoid impacts to this site. No further archaeological investigation is recommended.

3.3.3 EDR-Squawkie Hill-3

Site Type: Lithic Scatter

Archaeology Survey Area: G

Site Description: The EDR-Squawkie Hill-3 site is a lithic scatter located in a cultivated sorghum and alfalfa field on the north side of Highbanks Road. It is sited on the broad level top of Squawkie Hill in the northeast

portion of the same agricultural field discussed above in Sections 3.31 and 3.3.2, approximately 4,217-foot (1,285 meters) east of the intersection of Highbanks and Old Highbanks Roads (Appendix B, Sheet 6; Appendix D, Photo 10). Soils within the site area are mapped as Howard fine sandy loam, nearly level, which are well drained sandy soils formed from glacial outwash deposits (Esri and NRCS, 2020). Previous impacts to the area consisted of some apparent soil grading associated with the construction of the gravel driveway at the eastern portion of the site area.

The EDR-Squawkie Hill-3 site consists of 13 chert artifacts recovered from the ground surface and shovel tests. The artifacts are summarized below in Table 7. One Orient Fishtail projectile point was recovered from shovel test G6.01, which is dated to the Early Woodland Period, approximately 3,000 to 2,000 years BP.

Soils encountered in shovel tests varied, with the primary two soils consisting of brown (10YR 4/3) sandy loam plowzone, over a pale brown (10YR 6/3) sandy loam, overlying a dark yellowish brown (10YR 4/4) single grain sand subsoil (Soil-1) and a brown (10YR 4/3) gravelly sandy loam overlaying an extremely desiccated (10YR 7/2) sandy loam with interlocking gravel and degrading shale fragments (Soil-2). The top two strata of shovel tests that encountered Soil-1 contained lithics. No cultural material was identified in the basal strata, which were interpreted as culturally sterile. Shovel tests were terminated after excavating 10 cm into the sterile subsoil.

Table 7. Artifacts Collected at the EDR-Squawkie Hill-3 Site

Shovel Test/ Surface Provenience	Stratum	Depth (cmbgs)	Count	Description	Material	Date Range
20061-G3.02	II	34-59	2	Tertiary flake	Gray chert	Undetermined
20061-SF.01	Surface	Surface	1	Tertiary flake	Gray chert	Undetermined
20061-G3.02 R15S	I	0-33	3	Tertiary flake	Gray chert	Undetermined
20061-G3.02 R30N	I	0-29	1	Tertiary flake	Gray chert	Undetermined
20061-G3.02 R45N	I	0-25	1	Tertiary flake	Gray chert	Undetermined
20061-G3.02 R45S	I	0-24	1	Tertiary flake	Gray chert	Undetermined
G5.02	I	0-56	2	Angular Debris/ Shatter	Gray chert	Undetermined
G6.01	I	0-30	1	Orient Fishtail Projectile Point	Gray chert	3,000-2,000 BP
G9.03	I	0-32	1	Tertiary Flake	Gray chert	Undetermined

Recommendation: The EDR-Squawkie Hill-3 consists of a moderate density lithic scatter identified during Phase I shovel test excavation with artifacts recovered from the ground surface and extending to below the plowzone in some shovel tests. This indicates that the potential remains for intact cultural deposits and features to be present. No indications of features were identified during shovel testing. The site remains unevaluated for S/NRHP eligibility. The Applicant will avoid impacts to this site. No further archaeological investigation is recommended.

3.3.4 EDR-Squawkie Hill-4

Site Type: Lithic Scatter

Archaeology Survey Area: G

Site Description:

The EDR-Squawkie Hill-4 site is a lithic scatter located in a cultivated sorghum and alfalfa field on the north side of Highbanks Road. It was identified in shovel tests excavated along the southern edge of the agricultural field on the crest of a small rise. The site is located immediately adjacent to the north edge of Highbanks Road, approximately 3,907-foot (1,192 meters) east of the intersection of Highbanks and Old Highbanks Roads (Appendix B, Sheet 6; Appendix D, Photos 9,10). Soils within the site area are mapped as Howard fine sandy loam, nearly level, which are well, to excessively well drained sandy soils formed from glacial outwash deposits (Esri and NRCS, 2020). Previous impacts to the consist of some apparent soil grading associated with the construction of the gravel driveway at the eastern portion of the site area.

The EDR-Squawkie Hill-4 site consists of five chert artifacts recovered from one shovel test and one 3-meter radial shovel test (Table 8). No artifacts diagnostic of a time period or cultural tradition were recovered.

Soils encountered in shovel tests varied. Soil-1 consisted of brown (10YR 4/3) sandy loam plowzone, over a pale brown (10YR 6/3) sandy loam, overlying a dark yellowish brown (10YR 4/4) single grain sand subsoil. Soil-2 consisted of brown (10YR 4/3) gravelly sandy loam overlaying an extremely desiccated (10YR 7/2) sandy loam with interlocking gravel and degrading shale fragments. The top two strata of shovel tests with Soil-1 contained lithics. No cultural material was identified in the bottom stratum of either soil type encountered, which was interpreted as culturally sterile in both cases. Shovel tests were terminated after excavating 10 cm into the sterile subsoil.

Table 8. Artifacts Collected at the EDR-Squawkie Hill-4 Site

Shovel Test/ Surface Provenience	Stratum	Depth (cmbgs)	Count	Description	Material	Date Range
G11.01	I	0-35	3	Tertiary Flake	Gray Chert	Undetermined

G11.01R3S	I	0-39	2	Tertiary Flake	Gray Chert	Undetermined

Recommendation: The EDR-Squawkie Hill-4 consists of a moderate density lithic scatter identified during Phase I shovel test excavation with artifacts recovered from the plowzone. No indications of features were identified during shovel testing. The site remains unevaluated for S/NRHP eligibility. The Applicant will avoid impacts to this site. No further archaeological investigation is recommended.

3.3.5 EDR-20061-001

Site Type: Lithic Scatter

Archaeology Survey Area: A

Site Description:

The EDR-20061-001 site is a lithic scatter located in an agricultural field approximately 0.5 miles northwest of the intersection of Old Highbanks Road and Oaks Road. It was identified during pedestrian survey along the northern edge of a fairly level agricultural field. (Appendix B, Sheet 1; Appendix D, Photos 9,10). Soils within the site area are mapped as Howard fine sandy loam, nearly level, which are well drained sandy soils formed from glacial outwash deposits (Esri and NRCS, 2020). Vegetation at the time survey consisted of recently harvested corn planted in rows.

The EDR-20061-001 site consists of four chert artifacts recovered from the surface (Table 9). No artifacts diagnostic of a time period or cultural tradition were recovered.

Table 9. Artifacts Collected at the EDR-20061-001 Site

Shovel Test/ Surface Provenience	Stratum	Depth (cmbgs)	Count	Description	Material	Date Range
20061-MM-001	Surface	0	1	Projectile Point Fragment	Gray Chert	Undetermined
20061-MM-002	Surface	0	1	Tertiary Flake	Gray Chert	Undetermined

20061-MM-003	Surface	0	1	Tertiary Flake	Gray Chert	Undetermined
20061-MM-004	Surface	0	1	Tertiary Flake	Gray Chert	Undetermined

Recommendation: The EDR-60021-001 site consists of a moderate density lithic scatter identified during Phase I pedestrian survey with artifacts recovered from the ground surface. The site remains unevaluated for S/NRHP eligibility. The Applicant will avoid impacts to this site. No further archaeological investigation is recommended.

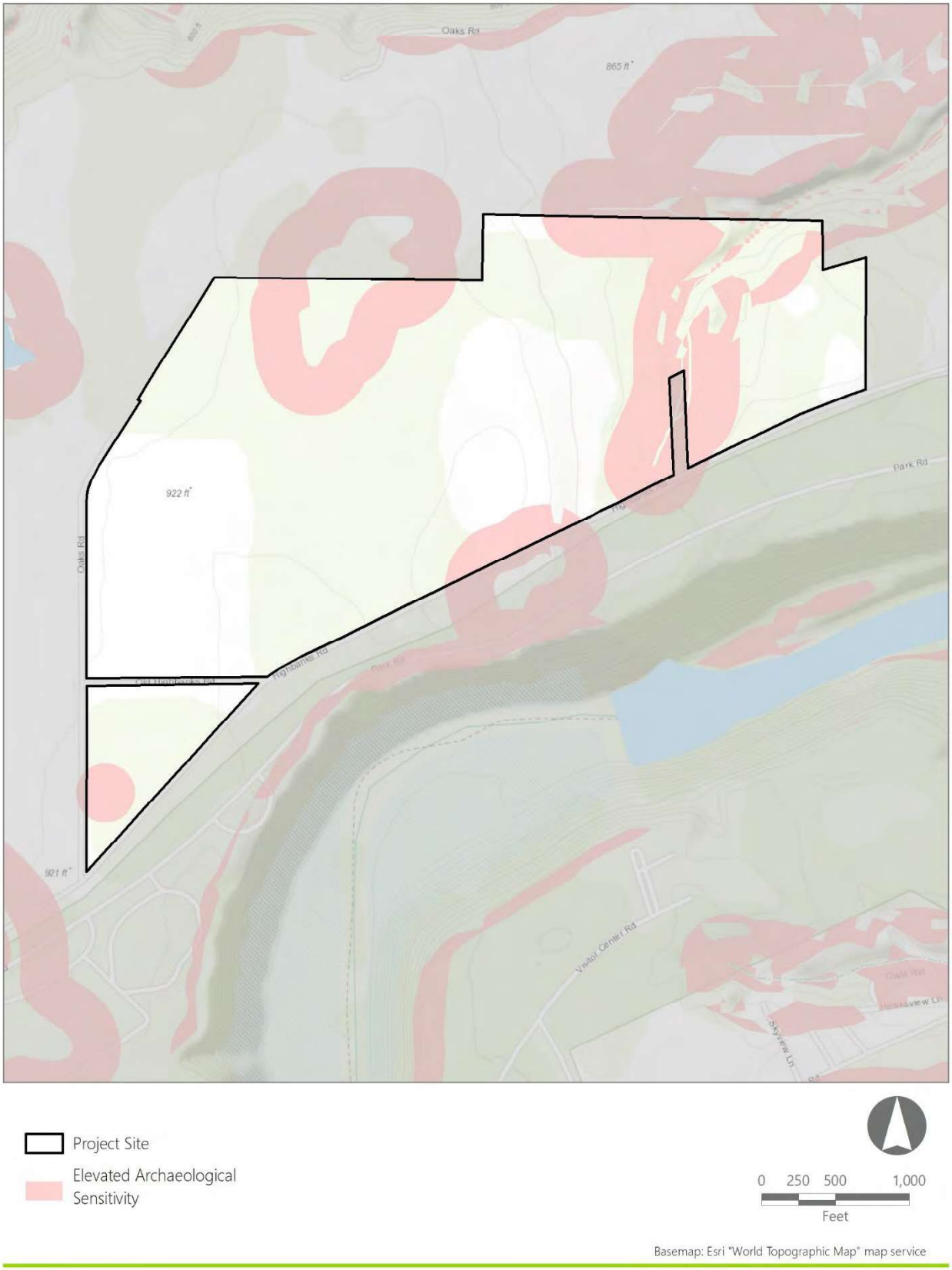
3.3.6 Isolates

The Isolated artifacts recovered from the Phase I archaeological survey are all noted in Table 10, below. No avoidance recommendations are made for the isolated artifact finds.

Table 10. Isolate Artifacts Collected

Shovel Test/ Surface Provenience	Stratum	Depth (cmbgs)	Count	Description	Material	Date Range
G17.07	I	0-35	1	Angular Shatter/ Debris	Gray Chert	Undetermined
G18.01	I	0-34	1	Angular Shatter/ Debris	Gray Chert	Undetermined
G19.07	I	0-36	2	Angular Shatter/ Debris	Grey Chert	Undetermined

Figure 9. Elevated Archaeological Sensitivity



4.0 CONCLUSIONS

4.1 Summary of Phase I Archaeological Survey

The Phase I archaeological survey for the proposed Highbanks Solar Project involved the excavation of 593 shovel tests. The results of the Phase I archaeological survey for the Highbanks Solar Project can be summarized as follows:

- No previously identified archaeological sites were noted within the Project Site. Ten previously recorded archaeological sites occur within the 1-mile of the Project Site.
- Shovel testing conducted by EDR archaeologists consisted of the excavation of 593 shovel tests within and adjacent to the Limits of Significant Ground Disturbance.
- Pedestrian survey conducted by EDR archaeologists covered 22 acres.
- Five Native American sites were identified during Phase I testing (EDR-Squawkie Hill-1, EDR-Squawkie Hill-2, EDR-Squawkie Hill-3, EDR-Squawkie Hill-4, and EDR-20061-001). The Applicant will avoid impacts to these sites.

Table 11 contains summaries of the five sites identified during the Phase I archaeological survey for the Highbanks Solar Project, as well as potential impacts and avoidance measures taken by the Applicant.

Table 11. Summary of Archaeological Resources Identified During the Phase I Survey

Site Name	Description	Location	Primary Investigation Method	Potential Impacts	Avoidance Measures
EDR-Squawkie Hill-1	Lithic Scatter	Approximately 0.6 mile east of the intersection of Highbanks and Old Highbanks Road.	Shovel Testing	None	Avoid by Project design.
EDR-Squawkie Hill-2	Lithic Scatter	Approximately 0.8 mile east of the intersection of Highbanks and Old Highbanks Road.	Shovel Testing	None	Avoid by Project design.
EDR-Squawkie Hill-3	Lithic Scatter	Approximately 0.8 mile east of the intersection of Highbanks and Old Highbanks Road.	Shovel Testing	None	Avoid by Project design.

Site Name	Description	Location	Primary Investigation Method	Potential Impacts	Avoidance Measures
EDR-Squawkie Hill-4	Lithic Scatter	Approximately 0.7 mile east of the intersection of Highbanks and Old Highbanks Road.	Shovel Testing	None	Avoid by Project design.
EDR-20061-001	Lithic Scatter	Approximately 0.5 miles northwest of the intersection of Old Highbanks Road and Oaks Road.	Pedestrian Survey	None	Avoid by Project design.

Based on the discoveries described in this report, the client has modified the project design to avoid all archaeological sites, including a 50-foot buffer around the sites (Appendix C). The proposed Highbanks Solar Project is therefore not anticipated to result in significant adverse effects to any S/NRHP-eligible archaeological resources and no further archaeological investigation is recommended.

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Appendix A

NYSHPO Correspondence

NEW YORK STATE OF OPPORTUNITY. Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

October 21, 2019

Dr. Douglas Pippin
Archaeology Project Manager
Environmental Design and Research, D.P.C.
274 North Goodman Street
Rochester, NY 14607

Re: DEC
Coverdale Solar Construction Project - Oriden Power
Highbanks Road, Leicester, Livingston County, NY
19PR06165.002

Dear Dr. Pippin:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP). The Archaeology Unit has reviewed the submitted materials in accordance with the New York State Historic Preservation Act of 1980 (section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to our concerns for potential impacts to Archaeological Historic/Cultural resources. They do not include comments pertaining to structural/architectural Historic/Cultural Resources. Please continue to consult with Mr. John Bonafide of the Technical Unit regarding potential concerns for above ground resources.

Based on available information, your project is located in an archaeologically sensitive area. Therefore, the OPRHP recommends that a Phase I archaeological survey is warranted and offers the following survey guidance:

Phase IB archaeological testing **IS** recommended for the locations of proposed roads, facilities, retention ponds/basins, drainage tiles, staging areas, parking lots, utility trenches over a foot wide, drainages over foot wide, and areas of grubbing and grading.

The OPRHP does **NOT** recommend Phase IB archaeological testing for areas for panel arrays, perimeter fencing and utility poles *if* their associated posts are driven into the ground and no grubbing or grading is involved. However, if the installation of the panel array supports, fencing or utility poles requires excavation or grubbing and grading then Phase IB archaeological testing is recommended.

If you consider the project area to be disturbed, documentation of the disturbance will need to be reviewed by the OPRHP. Examples of disturbance include mining activities and multiple episodes of building construction and demolition. Agricultural activity is not considered to be substantial ground disturbance and many significant sites have been identified in previously cultivated land.

…2

Documentation of ground disturbance should include a description of the disturbance with confirming evidence. Confirmation can include current photographs and/or older photographs of the project area which illustrate the disturbance (approximately keyed to a project area map), past maps or site plans that accurately record previous disturbances, or current soil borings that verify past disruptions to the land.

Please note that in areas with alluvial soils or fill, archaeological deposits may exist below the depth of superficial disturbances (such as pavement or even deeper disturbances), depending on the thickness of the alluvium or fill. Evaluation of the possible impact of prior disturbance on archaeological sites must consider the depth of potentially culture-bearing deposits and the depth of planned disturbance by the proposed project.

Also, please note that wetlands may have areas of higher elevation that were suitable for habitation and/or the staging of temporary resource procurement camps. In addition, past climatic variations or modern changes in hydrology may have inundated areas formerly available for occupation.

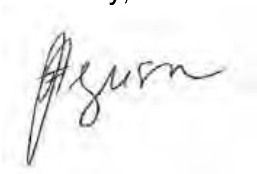
A Phase I survey is designed to determine the presence or absence of archaeological sites or other cultural resources in the project's area of potential effect. The OPRHP can provide standards for conducting cultural resource investigations upon request. Cultural resource surveys and survey reports that meet these standards will be accepted and approved by the OPRHP.

Our office does not conduct cultural resources surveys. A 36 CFR 61 qualified archaeologist should be retained to undertake the Phase I survey. Many archaeological consulting firms advertise their availability in the yellow pages. The services of qualified archaeologists can also be obtained by contacting local, regional, or statewide professional archaeological organizations. Phase I surveys can be expected to vary in cost per mile of right-of-way or by the number of acres impacted. We encourage you to contact a number of consulting firms and compare examples of each firm's work to obtain the best product.

Finally, please verify all state and/or federal agencies that are or will be involved in this project and from which you will be receiving permits, permissions and/or funding, and provide the OPRHP with the contact names and addresses, including email, for each involved agency.

If you have any questions, I can be reached at (518) 268-2218 or via e-mail at Josalyn.Ferguson@parks.ny.gov.

Sincerely,



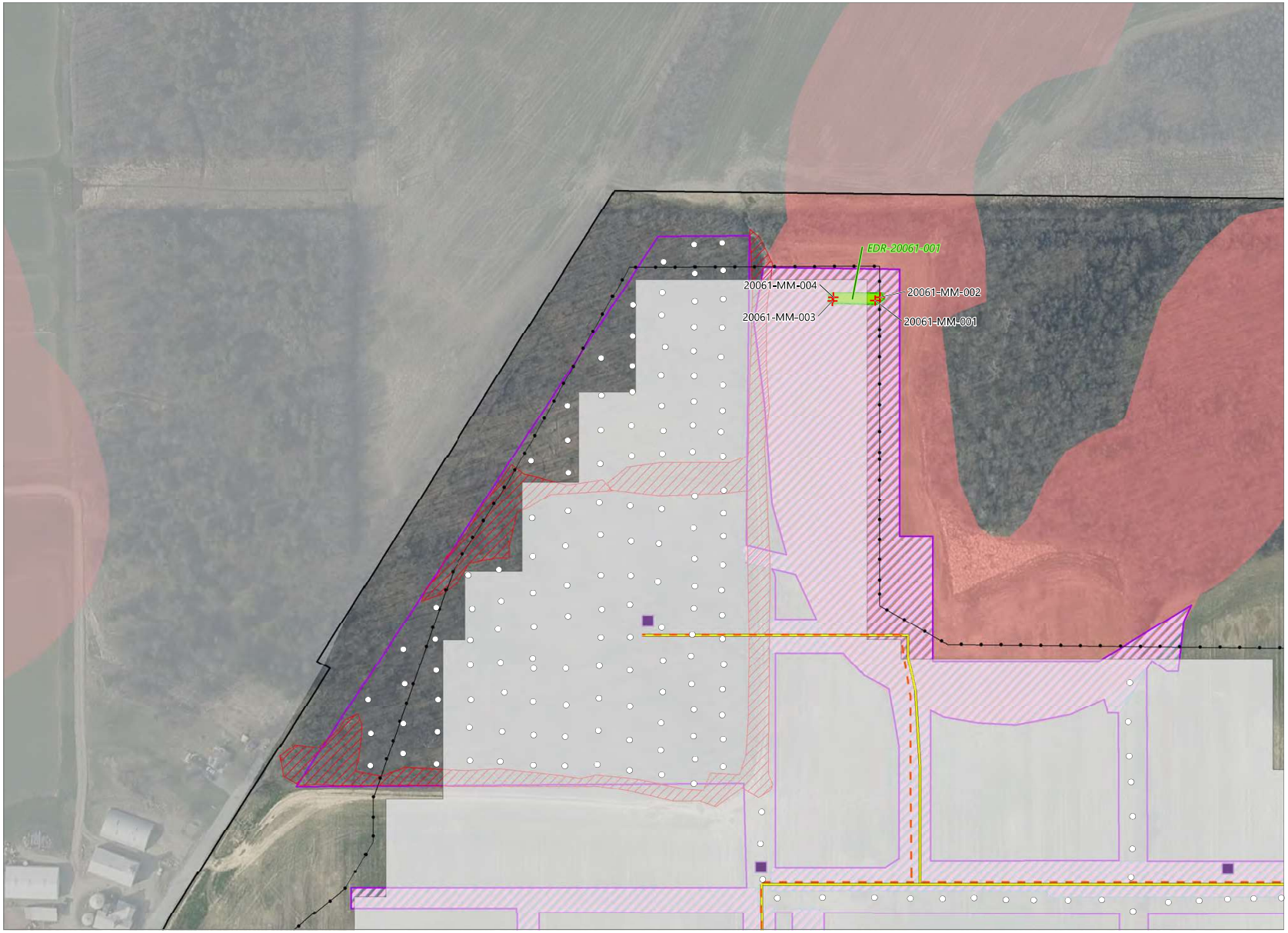
Josalyn Ferguson, Ph.D.
Scientist Archaeology

via e-mail only

c.c. Charles Vandrei, DEC

APPENDIX B

Results of Archaeological Survey



Highbanks Solar

Town of Leicester, Livingston County, New York

Phase IB

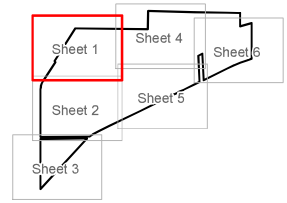
- No Cultural Material

Surface Find

- Native American Artifact
- Archaeological Site Boundary
- Archaeological Survey Area
- Pedestrian Survey Area
- Elevated Archaeological Sensitivity
- Steep Slope

Project Components

- Underground Collection Line
- Access Road
- Inverter
- Panel Array
- Project Site



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Prepared November 10, 2022
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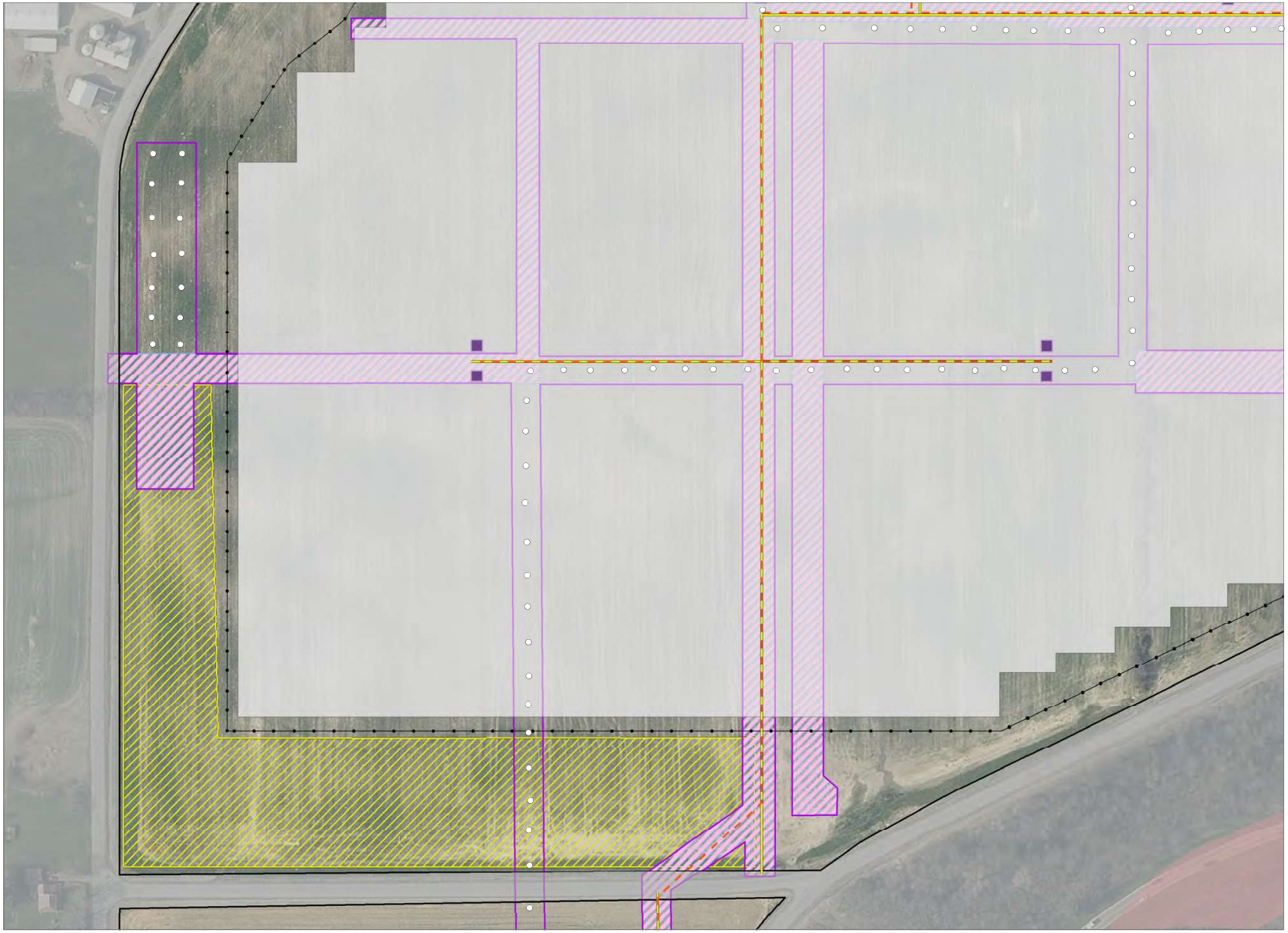
EDR



Highbanks Solar

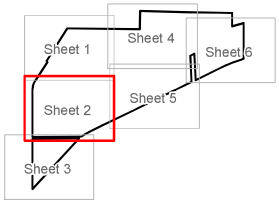
Town of Leicester, Livingston County, New York

Phase IB

- No Cultural Material
- Archaeological Survey Area
- Pedestrian Survey Area
- Elevated Archaeological Sensitivity

Project Components

- Underground Collection Line
- Access Road
- Inverter
- Staging Area
- Panel Array
- Project Site



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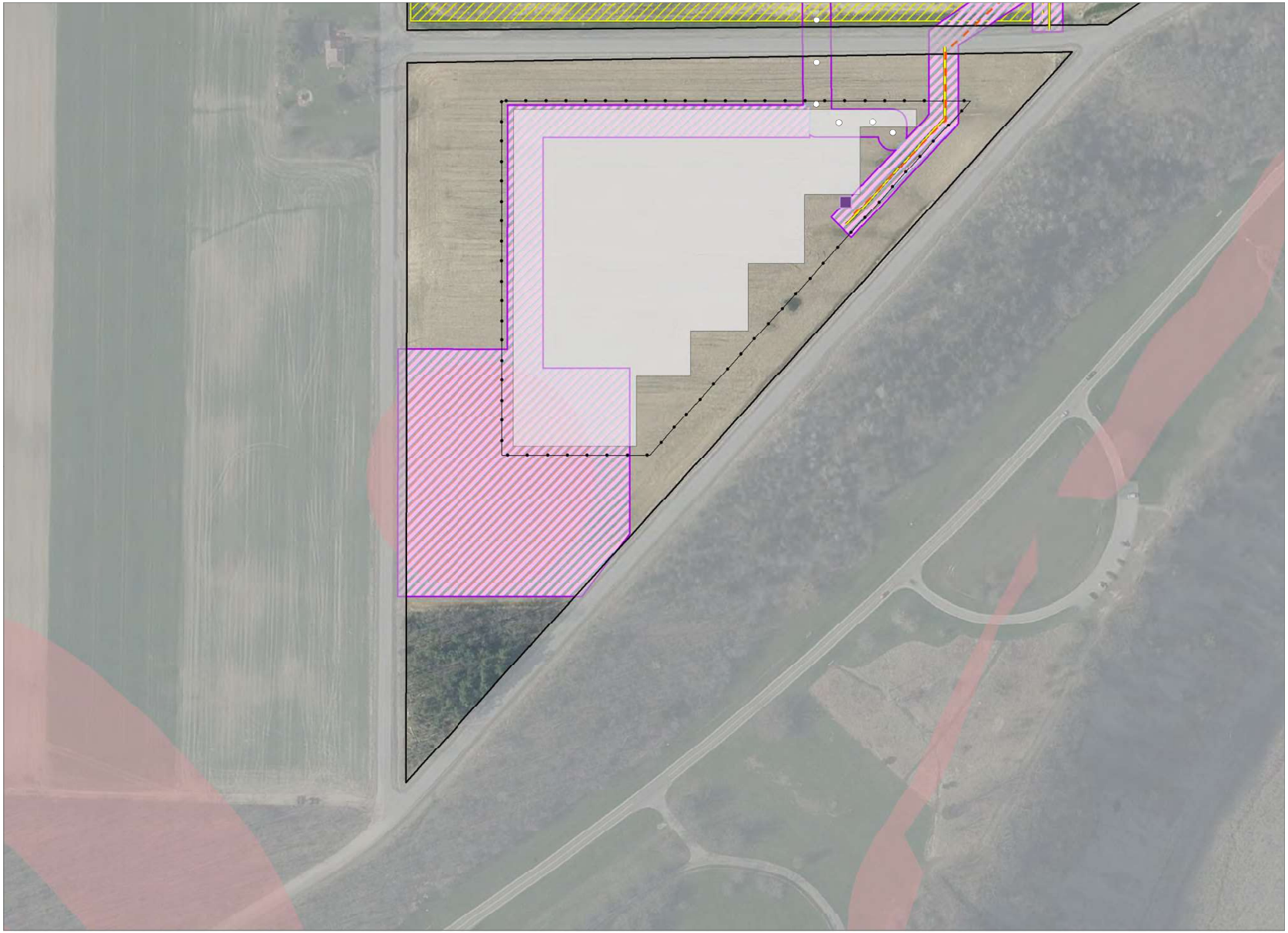


Highbanks Solar

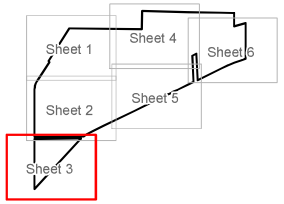
Town of Leicester, Livingston County, New York

Phase IB

- No Cultural Material
- Archaeological Survey Area
- Pedestrian Survey Area
- Elevated Archaeological Sensitivity

Project Components

- Underground Collection Line
- Access Road
- Inverter
- Staging Area
- Panel Array
- Project Site



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Prepared November 10, 2022
Basemap: NYSDOP "2020" orthoimagery map service

EDR

Highbanks Solar

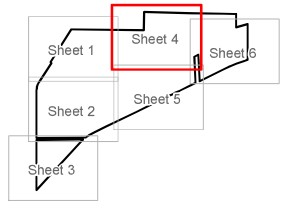
Town of Leicester, Livingston County, New York

Phase IB

- No Cultural Material
- Archaeological Survey Area
- Pedestrian Survey Area
- Elevated Archaeological Sensitivity

Project Components

- Underground Collection Line
- Access Road
- Inverter
- Gen-Tie
- Panel Array
- Project Site



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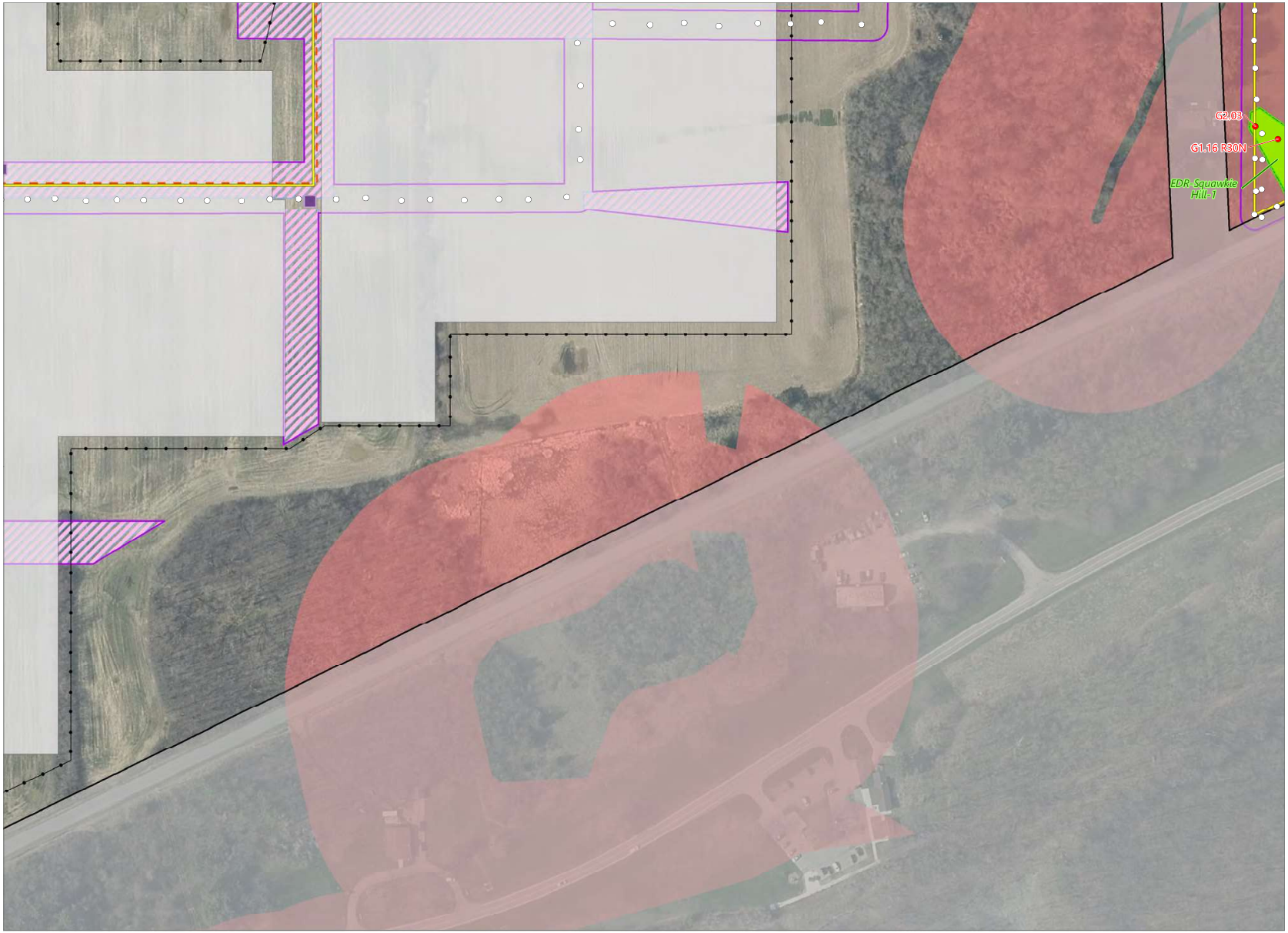


Highbanks Solar

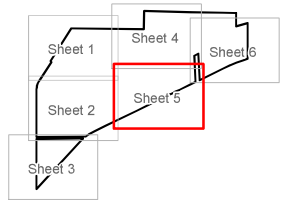
Town of Leicester, Livingston County, New York

Phase IB

Shovel Test
- Native American
- No Cultural Material

Archaeological Site Boundary
Archaeological Survey Area
Pedestrian Survey Area
Elevated Archaeological Sensitivity

Project Components
- Underground Collection Line
- Access Road
- Inverter
- Panel Array
- Project Site



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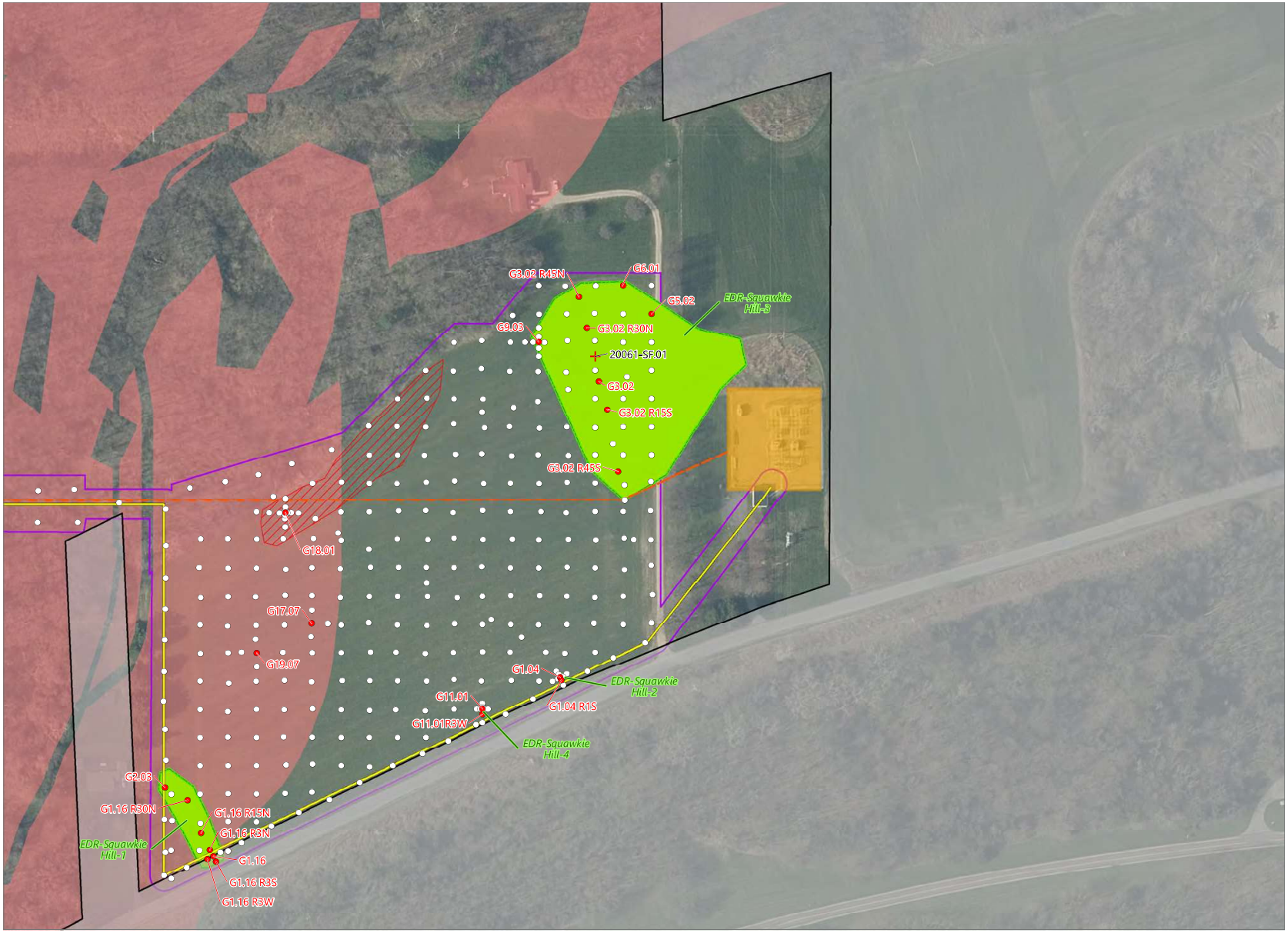


Highbanks Solar

Town of Leicester, Livingston County, New York

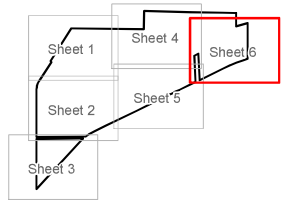
Phase IB

Shovel Test
- Native American
- No Cultural Material

Surface Find
- Native American Artifact

- Archaeological Site Boundary
- Archaeological Survey Area
- Elevated Archaeological Sensitivity
- Steep Slope

Project Components
- Underground Collection Line
- Access Road
- Existing Substation
- Project Site



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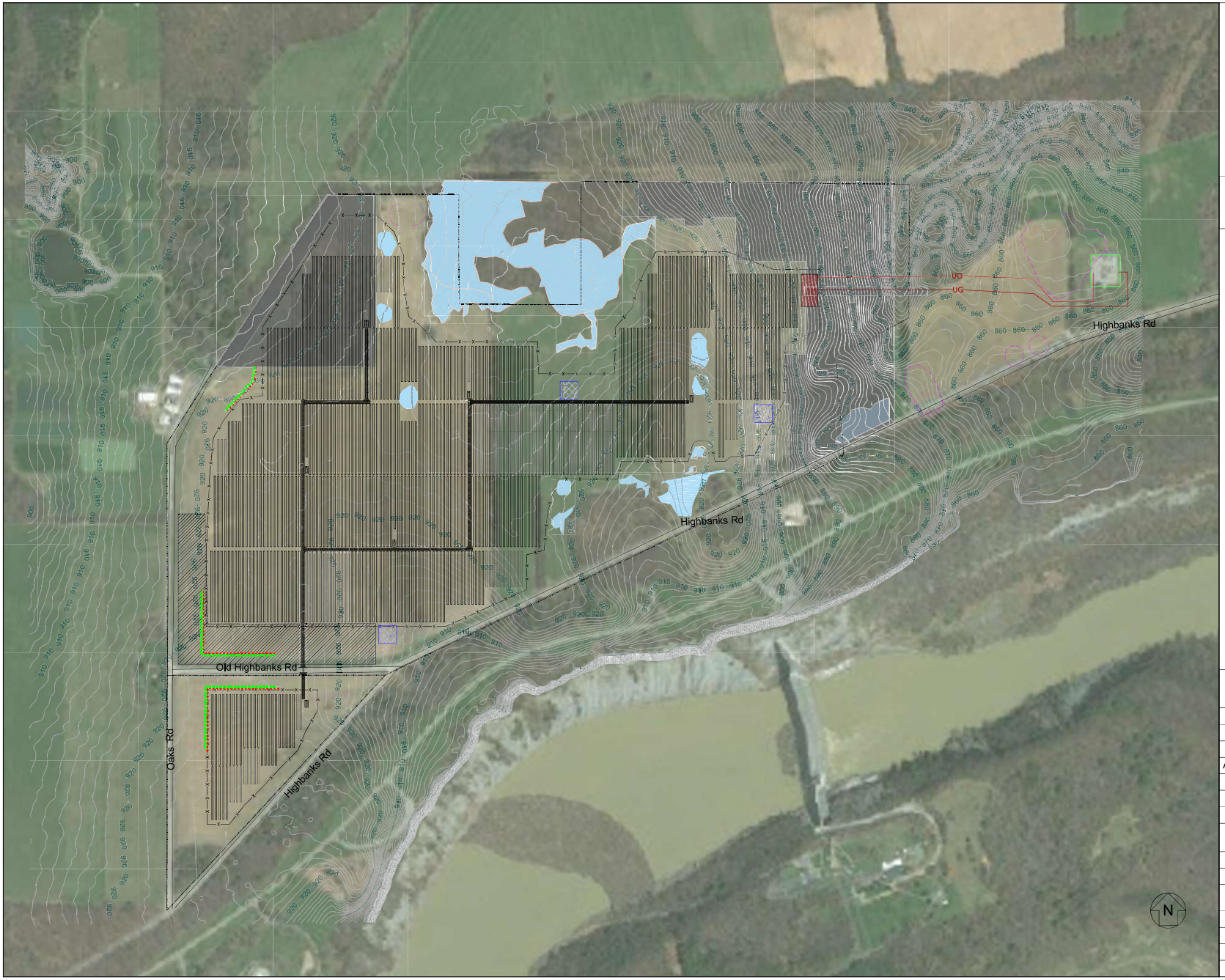
Prepared November 10, 2022
Basemap: NYSDOP "2020" orthoimagery map service

EDR

APPENDIX C

Project Layout Amended for Avoidance



ORIDEN
106 Isabella Street, Suite 400
Pittsburgh, PA 15212

PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

Legend

- Project Boundary
- Fence - 111 Acres/Length- 13,988 ft
- Gen-tie Line
- Internal Roads-14ft wide
- Module Table- 1Hx52 (51)
- Module Table- 1Hx78 (124)
- Module Table- 1Hx104 (382)
- Inverter Pad/Skid
- Stormwater Basins (placeholder)
- Protection Equipment Pad (placeholder)
- Staging Area- 7.9 Acres
- Vegetative Screening
- Tree Clearing Area
- Wetlands
- Cultural Area
- POI (46.72, -77.9)
- 1' Topographic Contours

Highbanks Solar

Leicester, NY - 14,510
Near Old Highbanks Road

System Summary

No. of Modules	52,052
System Capacity (DC)	28,628.6 kW
AC Capacity-Inverter	21,000 kW
AC Capacity-Grid Injection	20,000 kW
Inverter Load Ratio (ILR)	1.3630
DC to AC Ratio- Grid	1.4300
Line Voltage	34.5 kV
Module Model	CSI 550W (TOPCon)
Inverter Model	TMEIC 840kVA
Tilt / Azimuth	SAT
Pitch/ GCR	6m(19.685 ft) / 38.3%
Scale	1" = 20' - 0"
Date	9/27/2022
Designed By	DB
Notes	Updated gentie route 10MW each

APPENDIX D

Photographs

Photo 1

View east along transect B4 showing the gently rolling wheat (foreground) and sorghum fields that comprise the majority of the Project Site.

Photo 2

EDR excavates shovel tests at the location of the proposed laydown yard with Oak Road in the background. Viewed to the south.

Highbanks Solar

Town of Leicester, Livingston County, New York

Phase I Archaeological Survey

Photo 3

Overview of the Project Site from the north. Viewed to the south.

Photo 4

Representative view of conditions in the areas of secondary forest that are present throughout the Project Site. Viewed west along transect F1.

Highbanks Solar

Town of Leicester, Livingston County, New York

Phase I Archaeological Survey

Photo 5

Poorly drained soils, piled deadfall and slash from logging obstructed excavation in the wooded lot in the northwest of the Project Site. Viewed east.

Photo 6

Cobble reinforced farm roads in the poorly drained Caneadea soils which comprised the western portion of the Project Site were excluded from excavation.

Highbanks Solar

Town of Leicester, Livingston County, New York

Phase I Archaeological Survey

Photo 7

Field clearance, dump, and push piles around the perimeter of the wooded lot in area A obstructed excavation. Viewed to the south.

Photo 8

Overview of EDR-Squawkie Hill-1 site from Highbanks Road. Viewed north.

Highbanks Solar

Town of Leicester, Livingston County, New York

Phase I Archaeological Survey

Photo 9

Location EDR-Squawkie Hill-2 site (foreground), with EDR-Squawkie Hill-1 in the distance. Viewed to the west.

Photo 10

Overview of the agricultural field where EDR-Squawkie Hill-1 (1), EDR-Squawkie Hill-2 (2),EDR-Squawkie Hill-3 (3) were identified. Viewed west.

Highbanks Solar

Town of Leicester, Livingston County, New York

Phase I Archaeological Survey

Photo 11

G11.01 shovel test profile of east wall.

Photo 12

View of crew excavating area G looking east

Photo 13

Crew conducting pedestrian survey looking southeast

Photo 14

View south of crew excavating transects G6, G7 and G8

APPENDIX E

Shovel Test Records

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A01.01	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sandy loam, extremely dry soils
A01.01	II	30	55	10YR 6/3, Pale Brown	Sandy Loam	NCM	Very fine sandy loam with compaction and few cobbles
A01.02	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	
A01.02	II	28	38	10YR 6/3, Pale Brown	Sandy Loam	NCM	
A01.03	I	0	23	10YR 4/3, Brown	Sandy Loam	NCM	
A01.04	I	0	22	10YR 4/3, Brown	Sandy Loam	NCM	
A01.04	II	22	32	10YR 6/3, Pale Brown	Sandy Loam	NCM	
A01.05	I	0	23	10YR 4/3, Brown	Sandy Loam	NCM	
A01.05	II	23	33	10YR 6/3, Pale Brown	Sandy Loam	NCM	
A01.06	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	
A01.06	II	26	36	10YR 6/3, Pale Brown	Sandy Loam	NCM	
A01.07	I	0	12	10YR 4/6, Dark Yellowish Brown	Sandy Loam	NCM	
A01.07	II	12	33	10YR 6/3, Pale Brown	Sandy Loam	NCM	
A01.08	I	0	13	10YR 4/3, Brown	Silt Loam	NCM	
A01.08	II	13	29	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	Compacted subsoil
A01.09	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
A01.09	II	29	39	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	Compacted base
A01.10	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
A01.10	II	28	38	10YR 6/3, Pale Brown	Silt Loam	NCM	Compacted
A01.11	I	0	20	10YR 4/3, Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A01.11	II	20	31	10YR 6/3, Pale Brown	Silt Loam	NCM	
A01.12	I	0	18	10YR 4/3, Brown	Silt Loam	NCM	
A01.12	II	18	31	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	Compacted
A01.13	I	0	24	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.13	II	24	34	2.5Y 5/2, Grayish Brown	Clay Loam	NCM	
A01.14	I	0	26	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.14	II	26	36	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
A01.15	I	0	16	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.15	II	16	26	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
A01.16	I	0	31	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.16	II	31	42	10YR 6/3, Pale Brown	Silt Loam	NCM	
A01.17	I	0	21	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.17	II	21	31	10YR 6/3, Pale Brown	Clay Loam	NCM	
A01.18	I	0	24	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.18	II	24	35	10YR 6/3, Pale Brown	Silt Loam	NCM	
A01.19	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.19	II	18	24	2.5Y 5/2, Grayish Brown	Clay Loam	NCM	
A01.20	I	0	28	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.20	II	28	38	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
A01.21	I	0	16	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A01.21	II	16	26	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
A02.01	I	0	19	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A02.01	II	19	29	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
A02.02	I	0	20	10YR 4/3, Brown	Silt Loam	NCM	
A02.02	II	20	35	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
A02.03	I	0	22	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.03	II	22	32	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
A02.04	I	0	23	10YR 4/3, Brown	Silt Loam	NCM	
A02.04	II	23	36	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.05	I	0	22	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.05	II	22	32	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
A02.06	II	26	36	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.07	I	0	20	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.07	II	20	30	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.08	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
A02.08	II	28	38	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
A02.09	I	0	21	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.09	II	21	31	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.10	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	Dense roots
A02.10	II	26	40	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.11	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.12	I	0	19	10YR 4/3, Brown	Silt Loam	NCM	
A02.12	II	19	37	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A02.13	I	0	9	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A02.13	II	9	19	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.14	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.14	II	18	28	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.15	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.15	II	18	28	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.16	I	0	19	10YR 4/3, Brown	Silt Loam	NCM	Large root at 11 cmbs
A02.16	II	19	21	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	Large root impasse from strat I
A02.17	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
A02.17	II	24	34	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.18	I	0	46	10YR 4/3, Brown	Silt Loam	NCM	
A02.18	II	46	56	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.19	I	0	21	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.19	II	21	31	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A02.20	I	0	20	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.20	II	20	30	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
A02.21	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A02.21	II	18	28	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A03.01	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
A03.01	II	25	35	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A03.02	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	
A03.02	II	25	40	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
A03.03	I	0	20	10YR 4/3, Brown	Sandy Loam	NCM	Fine sand loam

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A03.03	II	20	40	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A03.04	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
A03.04	II	29	39	10YR 6/3, Pale Brown	Sandy Loam	NCM	
A03.05	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
A03.05	II	28	38	10YR 6/3, Pale Brown	Silt Loam	NCM	
A03.06	I	0	26	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Fine sand loam
A03.06	II	26	40	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A03.08	I	0	23	10YR 4/3, Brown	Silt Loam	NCM	
A03.08	II	23	37	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A03.09	I	0	33	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Fine sandy loam. Large root 20 cmbgs
A03.09	II	33	46	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A03.10	I	0	21	10YR 4/3, Brown	Sandy Loam	NCM	Fine sand loam
A03.10	II	21	35	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A03.11	I	0	25	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Very fine sands
A03.11	II	25	46	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A03.12	I	0	13	10YR 4/3, Brown	Silt Loam	NCM	
A03.12	II	13	25	10YR 6/3, Pale Brown	Silt Loam	NCM	
A03.13	I	0	29	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A03.13	I	0	22	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A03.13	II	29	40	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A03.13	II	22	32	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A03.14	I	0	24	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A03.14	II	24	35	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	
A03.15	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sands
A03.15	II	26	40	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
A03.16	I	0	21	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A03.16	II	21	31	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A03.17	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	Fine sands. Cobbles at interface. Large root at 20 cmbs
A03.17	II	28	38	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Rock at base of ex
A04.01	I	0	27	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A04.01	II	27	37	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A04.02	I	0	16	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A04.02	II	16	30	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	
A04.03	I	0	17	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A04.03	II	17	27	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A04.04	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A04.04	II	18	28	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A04.05	I	0	22	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Fine sands. Dense roots
A04.05	II	22	40	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A04.06	I	0	12	10YR 4/3, Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A04.06	II	12	22	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A04.07	I	0	28	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A04.07	II	28	41	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Fine sands
A04.08	I	0	26	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A04.08	II	26	36	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A04.09	I	0	19	10YR 4/3, Brown	Silt Loam	NCM	
A04.09	II	19	35	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A04.10	I	0	23	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A04.10	II	23	34	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A04.11	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A04.11	II	25	40	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A04.12	I	0	22	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Very fine sand loam
A04.12	II	22	35	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sand loam
A04.13	I	0	26	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A04.13	II	26	38	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A04.14	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
A04.14	II	25	35	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A04.15	I	0	23	10YR 4/3, Brown	Silt Loam	NCM	
A04.15	II	23	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A05.01	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam. Soil stripped in south side of excavation. Sub at 15 cmbs in the south. Evidence of logging activity south of stp
A05.01	II	28	41	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A05.03	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A05.03	II	27	42	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A05.05	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
A05.05	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A05.06	I	0	21	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Very fine sand loam
A05.06	II	21	35	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A05.07	I	0	19	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A05.07	II	19	30	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A05.08	I	0	19	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A05.08	II	19	31	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A05.09	I	0	21	10YR 4/3, Brown	Silt Loam	NCM	
A05.09	II	21	31	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A05.10	I	0	17	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A05.10	II	17	30	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A05.11	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A05.11	II	28	38	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sand

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A05.12	I	0	26	10YR 4/2, Dark Grayish Brown	Sandy Clay Loam	NCM	Very fine sand loam. Dense roots
A05.12	II	26	36	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A05.14	I	0	25	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A05.14	II	25	35	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A06.01	I	0	28	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Very fine sand loam.
A06.01	II	28	38	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A06.02	I	0	16	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A06.03	I	0	21	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A06.03	II	21	35	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A06.04	I	0	18	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A06.04	II	18	30	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A06.05	I	0	18	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A06.05	II	18	28	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A06.06	I	0	12	10YR 4/3, Brown	Sandy Loam	NCM	Rock across base of ex
A06.07	I	0	22	10YR 4/3, Brown	Sandy Loam	NCM	
A06.07	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam. Large root at 26 cmbgs
A06.07	II	22	37	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A06.07	II	27	29	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sand loam. Root impasse
A06.08	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
A06.08	II	25	35	10YR 6/3, Pale Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A06.09	I	0	17	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A06.09	II	17	35	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
A06.10	I	0	22	10YR 4/3, Brown	Silt Loam	NCM	
A06.10	II	22	32	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A06.11	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
A06.11	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A07.01	I	0	19	10YR 4/3, Brown	Silt Loam	NCM	
A07.01	II	19	30	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A07.02	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
A07.02	II	26		10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A07.03	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
A07.03	II	29	39	10YR 4/3, Brown	Silty Clay Loam	NCM	
A07.04	I	0	20	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam. Dense with tree roots
A07.04	II	20	22	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands. Excavation stop at large tree roots impasse.
A07.05	I	0	25	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A07.05	II	25	35	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A07.06	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
A07.06	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A07.08	I	0	20	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A07.08	II	20	35	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A07.09	I	0	31	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A07.09	II	31	41	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	
A07.10	I	0	27	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A07.10	II	27	37	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	
A07.11	I	0	26	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	High moisture content
A07.11	II	26	40	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A08.01	I	0	23	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A08.01	II	23	33	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	
A08.02	I	0	22	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A08.02	II	22	32	2.5Y 5/2, Grayish Brown	Silty Clay Loam	NCM	
A08.03	I	0	23	10YR 4/3, Brown	Silt Loam	NCM	
A08.03	II	23	35	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A08.04	I	0	18	10YR 4/3, Brown	Silt Loam	NCM	
A08.04	II	18	28	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A08.05	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam. Dense roots
A08.05	II	25	37	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A08.06	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
A08.06	II	24	34	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A08.07	I	0	20	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A08.07	II	20	28	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Large root impasse.
A09.01	I	0	9	10YR 4/3, Brown	Silt Loam	NCM	
A09.01	II	9	19	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A09.02	I	0	22	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam. Dense with roots
A09.02	II	22	35	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
A09.03	I	0	29	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A09.03	II	29	39	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A09.04	I	0	26	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A09.04	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A09.05	I	0	28	10YR 3/2, Very Dark GrayishBrown	Sandy Loam	NCM	Very fine sand loam
A09.05	II	28	38	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A09.06	I	0	27	10YR 4/3, Brown	Silt Loam	NCM	
A09.06	II	27	37	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A09.07	I	0	20	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A09.07	II	20	32	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
A10.01	I	0	15	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A10.01	II	15	25	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A10.02	I	0	21	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A10.02	II	21	31	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A10.03	I	0	21	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A10.03	II	21	37	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
A10.04	I	0	26	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A10.04	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A10.05	I	0	24	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam. Dense large roots starting at 12 cmbgs
A10.05	II	24	30	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Large root impasse.
A10.06	I	0	13	10YR 4/3, Brown	Silt Loam	NCM	
A10.06	II	13	23	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A11.01	I	0	18	10YR 4/3, Brown	Silt Loam	NCM	
A11.01	II	18	28	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A11.02	I	0	20	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sand loam
A11.02	II	20	35	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Very fine sands
A11.03	I	0	22	10YR 4/3, Brown	Silty Clay Loam	NCM	
A11.03	II	22	32	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
A11.04	I	0	30	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
A11.04	II	30	34	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	Fine sands. Rock at base
A12.01	I	0	23	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A12.01	II	23	33	10YR 6/3, Pale Brown	Silt Loam	NCM	
A12.02	I	0	12	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
A12.02	II	12	22	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
A12.03	I	0	9	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	Deflated/ stripped soils
A12.03	II	9	22	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B1.01	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	Compact ag pan
B1.01	II	28	40	10YR 5/2, Grayish Brown	Clay Loam	NCM	Compact
B1.02	I	0	27	10YR 4/3, Brown	Silt Loam	NCM	
B1.02	II	27	40	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B1.03	I	0	27	10YR 4/3, Brown	Silt	NCM	Baked out silt
B1.03	II	27	40	10YR 5/2, Grayish Brown	Silt Loam	NCM	Less compact
B2.01	I	0	27	10YR 4/3, Brown	Silt Loam	NCM	
B2.01	II	27	37	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B2.02	I	0	22	10YR 4/3, Brown	Silt Loam	NCM	
B2.02	II	22	32	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B2.03	I	0	31	10YR 5/3, Brown	Silt Loam	NCM	
B2.03	II	31	41	10YR 6/1, Gray	Silt Loam	NCM	
B2.04	I	0	21	10YR 4/3, Brown	Silt Loam	NCM	
B2.04	II	21	31	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B2.05	I	0	32	10YR 5/3, Brown	Silt Loam	NCM	Baked out
B2.05	I	0	35	10YR 4/3, Brown	Silt Loam	NCM	
B2.05	II	32	42	10YR 6/3, Pale Brown	Silt Loam	NCM	
B2.05	II	35	45	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B2.06	I	0	21	10YR 4/6, Dark Yellowish Brown	Silt Loam	NCM	
B2.06	I	0	38	10YR 4/3, Brown	Silt Loam	NCM	
B2.06	II	21	31	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B2.06	II	38	48	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B2.07	I	0	24	10YR 5/3, Brown	Silt	NCM	Baked out
B2.07	II	24	35	10YR 6/1, Gray	Silt Loam	NCM	
B2.08	I	0	34	10YR 4/3, Brown	Silt Loam	NCM	
B2.08	II	34	48	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
B2.09	I	0	32	10YR 4/3, Brown	Silt Loam	NCM	
B2.09	II	32	43	10YR 6/3, Pale Brown	Clay Loam	NCM	
B2.10	I	0	38	10YR 4/3, Brown	Silt Loam	NCM	
B2.10	II	38	48	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B2.13	I	0	38	10YR 4/3, Brown	Silt Loam	NCM	
B2.13	II	38	50	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B3.01	I	0	37	10YR 4/3, Brown	Silt Loam	NCM	
B3.01	II	37	47	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B3.03	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
B3.03	II	28	38	10YR 6/3, Pale Brown	Clay Loam	NCM	
B3.04	I	0	33	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	
B3.04	II	33	45	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B3.05	I	0	34	10YR 4/3, Brown	Silt Loam	NCM	
B3.05	II	34	44	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B3.06	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
B3.06	II	24	34	10YR 6/3, Pale Brown	Clay Loam	NCM	
B3.07	I	0	20	10YR 4/3, Brown	Silt Loam	NCM	
B3.07	II	20	31	10YR 6/3, Pale Brown	Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B3.08	I	0	20	10YR 4/3, Brown	Silt Loam	NCM	
B3.08	II	20	35	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B3.09	I	0	31	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	Baked out
B3.09	II	31	41	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B3.10	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
B3.10	II	26	36	10YR 6/3, Pale Brown	Clay Loam	NCM	
B3.11	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
B3.11	II	26	36	10YR 6/3, Pale Brown	Clay Loam	NCM	
B3.12	I	0	33	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	Baked out
B3.12	II	33	45	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B3.13	I	0	33	10YR 4/3, Brown	Silt Loam	NCM	
B3.13	II	33	44	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	
B3.14	I	0	38	10YR 5/2, Grayish Brown	Silt Loam	NCM	Baked out
B3.14	II	38	48	10YR 7/1, Light Gray	Silty Clay Loam	NCM	
B3.15	I	0	23	10YR 4/3, Brown	Silt Loam	NCM	
B3.15	II	23	35	10YR 6/3, Pale Brown	Clay Loam	NCM	
B3.16	I	0	34	10YR 4/3, Brown	Silt Loam	NCM	
B3.16	II	34	44	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
B3.17	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
B3.17	II	26	36	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
B3.18	I	0	31	10YR 4/3, Brown	Silt Loam	NCM	Baked out
B3.18	II	31	41	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B4.01	I	0	30	10YR 4/3, Brown	Silt Loam	NCM	
B4.01	II	30	41	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B4.02	I	0	23	10YR 4/3, Brown	Silt Loam	NCM	
B4.02	II	23	34	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.03	I	0	14	10YR 4/3, Brown	Silt Loam	NCM	
B4.03	II	14	24	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.04	I	0	30	10YR 4/3, Brown	Silt Loam	NCM	Dry compacted soils
B4.04	II	30	40	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	Dry compacted soils
B4.05	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
B4.05	II	24	34	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.06	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
B4.06	II	25	35	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.07	I	0	32	10YR 4/3, Brown	Silt Loam	NCM	
B4.07	II	32	42	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B4.08	I	0	36	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	Baked out
B4.08	II	36	46	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B4.09	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
B4.09	II	28	38	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
B4.10	I	0	20	10YR 4/3, Brown	Silt Loam	NCM	
B4.10	II	20	30	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B4.11	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
B4.11	II	29	39	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B4.12	I	0	41	10YR 3/2, Very Dark GrayishBrown	Silt Loam	NCM	
B4.12	II	41	51	10YR 4/6, Dark Yellowish Brown	Silty Clay Loam	NCM	
B4.13	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
B4.13	II	25	35	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.14	I	0	22	10YR 4/3, Brown	Silt Loam	NCM	
B4.14	II	22	32	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
B4.15	I	0	20	10YR 4/3, Brown	Silt Loam	NCM	
B4.15	II	20	30	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.16	I	0	27	10YR 4/3, Brown	Silt Loam	NCM	
B4.16	II	27	37	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.17	I	0	35	10YR 5/3, Brown	Silt Loam	NCM	Baked out
B4.17	II	35	45	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B4.18	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
B4.18	II	24	34	10YR 6/3, Pale Brown	Clay Loam	NCM	
B4.19	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
B4.19	II	24	34	10YR 6/3, Pale Brown	Clay Loam	NCM	Very little oxi
B5.01	I	0	15	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.01	II	15	25	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B5.02	I	0	34	10YR 4/3, Brown	Silt Loam	NCM	
B5.02	II	34	50	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	
B5.03	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
B5.03	II	24	40	10YR 5/3, Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B5.04	I	0	24	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.04	II	24	34	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.05	I	0	33	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.05	II	33	43	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.07	I	0	22	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.07	II	22	32	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.08	I	0	32	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.08	II	32	42	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.09	I	0	26	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.09	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.11	I	0	40	10YR 4/2, Dark Grayish Brown	Silty Clay Loam	NCM	
B5.11	II	40	50	10YR 5/2, Grayish Brown	Clay Loam	NCM	
B5.12	I	0	28	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.12	II	28	40	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.14	I	0	38	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.14	II	38	48	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.15	I	0	31	10YR 4/3, Brown	Silt Loam	NCM	
B5.15	II	31	41	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B5.16	I	0	28	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B5.16	II	28	40	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B6.01	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	Fine sandy loam
B6.01	II	32	42	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B6.02	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
B6.02	II	29	39	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B6.03	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
B6.03	II	25	35	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B6.04	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	
B6.04	II	36	46	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
B6.05	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
B6.05	II	28	38	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
B6.06	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	
B6.06	II	30	42	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
B6.07	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
B7.01	I	0	17	10YR 4/3, Brown	Silt Loam	NCM	
B7.01	II	17	27	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B7.02	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	
B7.02	II	26	36	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
B7.03	I	0	28	10YR 4/3, Brown	Silt Loam	NCM	
B7.03	II	28	38	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B7.04	I	0	35	10YR 4/3, Brown	Silt Loam	NCM	
B7.04	II	35	35	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
B7.05	I	0	37	10YR 3/2, Very Dark GrayishBrown	Silty Clay Loam	NCM	
B7.05	II	37	47	10YR 7/2, Light Gray	Silty Clay Loam	NCM	
B7.06	I	0	40	10YR 4/3, Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
B7.06	II	40	50	10YR 5/3, Brown	Silt Loam	NCM	
B7.07	I	0	39	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
B7.07	II	39	48	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
C1.02	I	0	29	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
C1.02	I	0	30	10YR 4/3, Brown	Silt Loam	NCM	
C1.02	II	29	39	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	
C1.02	II	30	40	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	
C1.03	I	0	30	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
C1.03	II	30	40	2.5Y 5/2, Grayish Brown	Sandy Clay Loam	NCM	
C1.04	I	0	38	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
C1.04	II	38	48	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
C5.05	I	0	39	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
C5.05	II	39	50	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
D1.01	I	0	27	10YR 4/3, Brown	Silty Clay Loam	NCM	
D1.01	II	27	37	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
D1.02	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	
D1.02	II	27	40	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
D1.03	I	0	31	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
D1.03	II	31	41	10YR 5/2, Grayish Brown	Silt Loam	NCM	
D1.04	I	0	29	10YR 4/3, Brown	Silt Loam	NCM	
D1.04	II	29	39	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
D1.06	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
D1.06	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	Compact
D1.06	II	26	36	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
D1.06	II	33	43	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
D1.07	I	0	13	10YR 4/3, Brown	Sandy Loam	NCM	
D1.07	II	13	23	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
D1.08	I	0	23	10YR 4/3, Brown	Sandy Loam	NCM	
D1.08	II	23	35	10YR 6/2, Light Brownish Gray	Clay Loam	NCM	
D1.09	I	0	25	10YR 4/3, Brown	Sandy Clay Loam	NCM	
D1.09	II	25	35	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
D1.10	I	0	28	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
D1.10	II	28	38	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
D1.11	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	Compact
D1.11	II	26	36	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
D1.12	I	0	28	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
D1.12	II	28	40	10YR 5/3, Brown	Silt Loam	NCM	
D1.13	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
D1.13	II	26	36	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
D1.14	I	0	21	10YR 4/3, Brown	Silt Loam	NCM	
D1.14	II	21	31	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
D1.15	I	0	22	10YR 4/3, Brown	Silt Loam	NCM	Degrading shale
D1.15	II	22	32	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	
D1.16	I	0	28	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
D1.16	II	28	38	10YR 5/2, Grayish Brown	Silt Loam	NCM	
E1.01	I	0	17	10YR 4/3, Brown	Silt Loam	NCM	Edge of hedgerow strip soils
E1.01	II	17	30	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
E1.02	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
E1.02	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
E1.03	I	0	24	10YR 4/3, Brown	Silt Loam	NCM	
E1.03	II	24	34	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
E1.04	I	0	32	10YR 4/3, Brown	Silt Loam	NCM	Oxi towards base of strat
E1.04	II	32	42	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
E1.05	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	
E1.05	II	28	38	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
E2.01	I	0	23	10YR 4/3, Brown	Sandy Loam	NCM	
E2.01	II	23	33	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
E2.02	I	0	25	10YR 4/3, Brown	Silt Loam	NCM	
E2.02	II	25	35	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	Second Plowzone
E2.02	III	35	47	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
E2.03	I	0	24	10YR 4/3, Brown	Sandy Loam	NCM	
E2.03	II	24	34	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
E3.01	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sandy loam
E3.01	II	29	40	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	
E3.02	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	
E3.02	II	29	45	10YR 7/2, Light Gray	Silt Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
E3.03	I	0	15	10YR 4/3, Brown	Sandy Loam	NCM	
E3.03	II	15	25	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
E3.04	I	0	22	10YR 4/3, Brown	Sandy Loam	NCM	
E3.04	II	22	32	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
E3.05	I	0	31	10YR 4/3, Brown	Silty Clay Loam	NCM	
E3.05	II	31	41	10YR 7/1, Light Gray	Clay Loam	NCM	
E3.06	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	
E3.06	II	28	40	10YR 6/2, Light Brownish Gray	Silty Clay Loam	NCM	Dense with decay shale
E3.07	I	0	38	10YR 4/3, Brown	Silt Loam	NCM	
E3.07	II	38	48	10YR 6/3, Pale Brown	Clay Loam	NCM	
E3.08	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	Very fine sandy loam
E3.08	II	35	45	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	With decay shale
E3.09	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	
E3.09	II	27	37	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
E4.01	I	0	28	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	
E4.01	II	28	40	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Degrading shale bedrock present in strat 2
E4.02	I	0	26	10YR 4/3, Brown	Silt Loam	NCM	
E4.02	II	26	36	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
E4.03	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	
E4.03	II	29	39	10YR 6/3, Pale Brown	Silt Loam	NCM	Dense with shale
E4.04	I	0	14	10YR 4/3, Brown	Silt Loam	NCM	Degrading shale
E4.04	II	14	24	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
F1.01	I	0	15	10YR 3/3, Dark Brown	Loamy Sand	NCM	
F1.01	II	15	32	10YR 4/3, Brown	Loamy Sand	NCM	
F1.01	III	32	100	10YR 5/4, Yellowish Brown	Loamy Sand	NCM	
F1.02	I	0	36	10YR 4/3, Brown	Loamy Sand	NCM	
F1.02	II	36	68	10YR 5/4, Yellowish Brown	Loamy Sand	NCM	
F1.02	III	68	74	10YR 5/4, Yellowish Brown	Loamy Sand	NCM	
F1.03	I	0	34	10YR 4/3, Brown	Sandy Clay Loam	NCM	
F1.03	II	34	44	10YR 6/2, Light Brownish Gray	Sandy Clay Loam	NCM	
F1.04	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	
F1.04	II	31	46	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	
F1.05	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	
F1.05	II	35	42	10YR 7/2, Light Gray	Silty Clay Loam	NCM	
F1.06	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	Compact
F1.06	II	36	46	10YR 7/2, Light Gray	Sandy Clay Loam	NCM	Compact
F1.07	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	
F1.07	II	28	48	10YR 6/3, Pale Brown	Sandy Clay Loam	NCM	
F2.01	I	0	32	10YR 4/2, Dark Grayish Brown	Silt Loam	NCM	
F2.01	II	32	45	10YR 6/3, Pale Brown	Silt Loam	NCM	
F2.02	I	0	27	10YR 4/2, Dark Grayish Brown	Silty Clay Loam	NCM	
F2.02	II	27	40	10YR 5/3, Brown	Silty Clay Loam	NCM	
F2.03	I	0	34	10YR 3/2, Very Dark GrayishBrown	Silty Clay Loam	NCM	Oxi in rood channels, wetland soils
F2.03	II	34	45	10YR 5/2, Grayish Brown	Silty Clay Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
F2.05	I	0	36	10YR 4/3, Brown	Silty Clay Loam	NCM	
F2.05	II	36	48	10YR 6/3, Pale Brown	Silty Clay Loam	NCM	
F3.01	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	
F3.01	II	32	42	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	Degrading bedrock
F3.02	I	0	27	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Degrading shale throughout
F3.02	II	27	37	10YR 5/2, Grayish Brown	Silt Loam	NCM	Degrading shale throughout
F4.04	I	0	38	10YR 2/2, Very Dark Brown	Silty Clay Loam	NCM	Oxi in root channels, wetland soils. stp photographed
F4.04	II	38	49	10YR 5/3, Brown	Silty Clay Loam	NCM	
G1.01	I	0	35	7.5YR 4/3, Brown	Sandy Loam	NCM	
G1.01	II	35	75	10YR 5/4, Yellowish Brown	Sand	NCM	Fine sand with pebble and decay shale towards base if strat. Bedrock at base of ex
G1.02	I	0	32	7.5YR 4/3, Brown	Sand	NCM	
G1.02	II	32	53	10YR 5/4, Yellowish Brown	Sand	NCM	
G1.03	I	0	35	7.5YR 4/3, Brown	Sand	NCM	
G1.03	II	35	72	10YR 5/4, Yellowish Brown	Sand	NCM	
G1.04	I	0	32	10YR 4/3, Brown	Sand	Native	
G1.04	II	32	40	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	Rock impasse at 40. stopped in degrading bedrock

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G1.04 R15N	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	Plastic sheeting noted and not collected
G1.04	II	36	50	10YR 5/3, Brown	Sandy Loam	NCM	Decay shale
G1.04 R1E	I	0	37	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04 R1E	II	37	47	2.5Y 5/2, Grayish Brown	Sand	NCM	Clay inclusions
G1.04	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04	II	27	40	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	
G1.04 R1S	I	0	30	10YR 4/3, Brown	Sandy Loam	Native	
G1.04 R1S	II	30	41	2.5Y 5/2, Grayish Brown	Sand	NCM	Clay pockets and dense rock
G1.04	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04	II	31	41	10YR 6/2, Light Brownish Gray	Sand	NCM	Single grain loose
G1.04 R3E	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04 R3E	II	36	46	2.5Y 5/2, Grayish Brown	Sandy Loam	NCM	Dense with rock and decay shale
G1.04	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04	II	31	45	2.5Y 5/2, Grayish Brown	Sandy Loam	NCM	Dense with rock
G1.04 R3S	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04 R3S	II	34	45	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	
G1.04	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	
G1.04	II	30	42	7.5YR 4/3, Brown	Sandy Loam	NCM	
G1.04	III	42	52	7.5YR 5/2	Sand	NCM	
G1.05	I	0	58	10YR 4/3, Brown	Sandy Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G1.05	II	58	70	10YR 7/2, Light Gray	Sand	NCM	Bedrock at base of ex. Decay shale throughout
G1.06	I	0	30	10YR 4/3, Brown	Sand	NCM	
G1.06	II	30	50	10YR 7/2, Light Gray	Sand	NCM	Some clay in sub
G1.07	I	0	34	10YR 4/3, Brown	Sand	NCM	
G1.07	II	34	67	10YR 5/4, Yellowish Brown	Sand	NCM	
G1.07	III	67	100	10YR 7/2, Light Gray	Sand	NCM	
G1.08	I	0	30	7.5YR 4/3, Brown	Sandy Loam	NCM	
G1.08	II	30	46	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	
G1.08	III	46	50	10YR 7/2, Light Gray	Sand	NCM	
G1.09	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	
G1.09	II	26	80	10YR 4/6, Dark Yellowish Brown	Sandy Loam	NCM	
G1.09	III	80	94	10YR 6/2, Light Brownish Gray	Sand	NCM	
G1.10	I	0	26	10YR 4/3, Brown	Sand	NCM	
G1.10	II	26	54	10YR 5/4, Yellowish Brown	Sand	NCM	
G1.10	III	54	68	10YR 7/2, Light Gray	Sand	NCM	
G1.11	I	0	30	7.5YR 4/3, Brown	Sandy Loam	NCM	
G1.11	II	30	60	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	
G1.11	III	60	80	10YR 7/2, Light Gray	Sand	NCM	
G1.12	I	0	45	10YR 4/3, Brown	Sand	NCM	
G1.12	II	45	85	10YR 7/2, Light Gray	Sand	NCM	Clay inclusions
G1.13	I	0	49	10YR 4/3, Brown	Sandy Loam	NCM	
G1.13	II	49	100	10YR 6/3, Pale Brown	Sand	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G1.14	I	0	30	7.5YR 5/4, Brown	Sandy Loam	NCM	
G1.14	II	30	65	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	
G1.14	III	65	90	10YR 7/2, Light Gray	Sand	NCM	
G1.15	I	0	34	10YR 4/3, Brown	Sand	NCM	
G1.15	II	34	67	10YR 5/4, Yellowish Brown	Sand	NCM	
G1.15	III	67	85	10YR 7/2, Light Gray	Sand	NCM	
G1.16	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	
G1.16	II	29	52	10YR 6/3, Pale Brown	Sandy Loam	Native	
G1.16	III	52	70	10YR 6/1, Gray	Sand	NCM	
G1.16	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	
G1.16	II	36	61	10YR 6/4, Light Yellowish Brown	Sandy Loam	Native	
G1.16	III	61	74	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	
G1.16	I	0	35	10YR 4/3, Brown	Sandy Loam	Native	
G1.16	II	35	77	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G1.16	III	77	103	10YR 5/3, Brown	Sandy Loam	NCM	
G1.16 R3E	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	
G1.16 R3E	II	35	66	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G1.16 R3E	III	66	80	10YR 6/2, Light Brownish Gray	Sand	NCM	
G1.16	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	
G1.16	II	36	84	10YR 6/4, Light Yellowish Brown	Sand	Native	
G1.16	III	84	90	10YR 7/2, Light Gray	Sand	NCM	
G1.16 R3S	I	0	31	10YR 4/3, Brown	Sandy Loam	Native American	One artifact found within the interface of I and Ii

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G1.16 R3S	II	31	63	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	
G1.16 R3S	III	63	75	10YR 7/2, Light Gray	Sand	NCM	
G1.16	I	0	32	10YR 4/3, Brown	Sandy Loam	Native	
G1.16	II	32	63	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G1.16	III	63	75	10YR 4/3, Brown	Sand	NCM	
G1.17	I	0	25	10YR 3/3, Dark Brown	Sandy Loam	NCM	Dense with gravel, highly compact
G1.17	II	25	50	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Highly compact and dese with gravel. Rock and compaction impasse
G1.18	I	0	34	10YR 4/3, Brown	Sand	NCM	
G1.18	II	34	45	10YR 5/4, Yellowish Brown	Sand	NCM	
G1.18	III	45	74	10YR 7/2, Light Gray	Sand	NCM	
G2.01	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	
G2.01	II	40	60	10YR 4/2, Dark Grayish Brown	Sandy Clay Loam	NCM	With 10 YR 5/3 clay pockets
G2.02	I	0	36	10YR 4/3, Brown	Sand	NCM	
G2.02	II	36	53	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	
G2.03	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	
G2.03	II	26	60	10YR 6/3, Pale Brown	Sandy Loam	Native	
G2.03	III	60	70	10YR 4/2, Dark Grayish Brown	Sand	NCM	
G2.05	I	0	30	10YR 3/3, Dark Brown	Sandy Loam	NCM	High compaction and gravel content
G2.05	II	30	52	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Highly compact

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G2.05	III	52	75	10YR 7/2, Light Gray	Sand	NCM	
G2.06	I	0	36	10YR 4/3, Brown	Sand	NCM	
G2.06	II	36	59	10YR 5/4, Yellowish Brown	Sand	NCM	
G2.06	III	59	86	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	
G2.08	I	0	35	10YR 3/3, Dark Brown	Sandy Loam	NCM	Mod compaction
G2.08	II	35	93	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	
G2.08	III	93	105	10YR 5/6, Yellowish Brown	Sandy Clay Loam	NCM	
G2.09	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	
G2.09	II	33	91	10YR 5/4, Yellowish Brown	Loamy Sand	NCM	Banded with 10YR 6/2, Light Brownish Gray, Light Brownish Gray with heavy oxi
G2.09	III	91	100	10YR 5/6, Yellowish Brown	Sandy Clay	NCM	
G2.10	I	0	40	10YR 3/3, Dark Brown	Sandy Loam	NCM	
G2.10	II	40	77	10YR 6/3, Pale Brown	Sandy Loam	NCM	Banded with oxi
G2.10	III	77	90	10YR 5/4, Yellowish Brown	Sandy Clay Loam	NCM	
G2.11	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	
G2.11	II	26	56	10YR 4/3, Brown	Sandy Clay Loam	NCM	Mixed with 10YR 6/3, Pale Brown
G2.11	III	56	66	10YR 4/2, Dark Grayish Brown	Sandy Clay Loam	NCM	
G2.12	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	Darker humic layer appx 15 cm thick
G2.12	II	45	100	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Limit of hand excavation
G3.01	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	
G3.01	II	29	48	10YR 5/3, Brown	Sandy Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G3.01	III	48	58	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.02	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	
G3.02	II	34	59	10YR 6/3, Pale Brown	Sandy Loam	Native	
G3.02	III	59	70	10YR 4/3, Brown	Sand	NCM	
G3.02	I	0	33	10YR 4/3, Brown	Sandy Loam	Native	
G3.02	II	33	49	10YR 5/2, Grayish Brown	Sandy Loam	NCM	
G3.02	III	49	65	2.5Y 4/2, Grayish Brown	Sandy Loam	NCM	
G3.02	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	
G3.02	II	30	40	10YR 7/2, Light Gray	Silt Loam	NCM	
G3.02	I	0	23	10YR 4/3, Brown	Sandy Loam	Native	
G3.02	II	23	60	7.5YR 4/4, Brown	Sandy Loam	NCM	
G3.02	I	0	25	10YR 4/3, Brown	Sandy Loam	Native	
G3.02	II	25	35	10YR 7/2, Light Gray	Sandy Loam	NCM	
G3.02	I	0	11	10YR 4/3, Brown	Sandy Loam	NCM	
G3.02	II	11	31	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	
G3.02	I	0	12	10YR 4/3, Brown	Sandy Loam	NCM	
G3.02	II	12	32	10YR 4/4, Brown	Sandy Loam	NCM	
G3.02	III	32	42	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.03	I	0	15	10YR 4/3, Brown	Sandy Loam	NCM	
G3.03	II	15	40	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.03	III	40	63	10YR 4/3, Brown	Sand	NCM	
G3.03	I	0	29	10YR 4/3, Brown	Sandy Loam	Native	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G3.03	II	29	50	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.03	III	50	60	10YR 5/3, Brown	Sandy Loam	NCM	
G3.04	I	0	12	10YR 4/3, Brown	Sandy Loam	NCM	
G3.04	II	12	48	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.04	III	48	65	10YR 4/3, Brown	Sand	NCM	
G3.05	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	
G3.05	II	32	55	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.05	III	55	70	7.5YR 4/4, Brown	Sand	NCM	
G3.06	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	
G3.06	II	31	56	10YR 5/3, Brown	Sandy Loam	NCM	
G3.06	III	56	91	10YR 6/3, Pale Brown	Sand	NCM	
G3.07	I	0	18	10YR 4/3, Brown	Sandy Loam	NCM	
G3.07	II	18	47	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.07	III	47	68	7.5YR 4/4, Brown	Sand	NCM	
G3.08	I	0	19	10YR 4/3, Brown	Sandy Loam	NCM	
G3.08	II	19	42	10YR 5/3, Brown	Sandy Loam	NCM	
G3.08	III	42	67	10YR 5/4, Brown	Sand	NCM	
G3.08	IV	67	100	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G3.09	I	0	16	10YR 4/3, Brown	Sandy Loam	NCM	
G3.09	II	16	34	10YR 5/3, Brown	Sandy Loam	NCM	
G3.09	III	34	49	10YR 4/3, Brown	Sandy Loam	NCM	
G3.10	I	0	13	10YR 4/3, Brown	Sandy Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G3.10	II	13	29	10YR 5/3, Brown	Sandy Loam	NCM	
G3.10	III	29	72	10YR 5/4, Brown	Sandy Loam	NCM	
G3.11	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	
G3.11	II	29	52	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
G3.12	I	0	12	10YR 4/3, Brown	Sandy Loam	NCM	
G3.12	II	12	48	10YR 3/3, Dark Brown	Sandy Loam	NCM	
G3.12	III	48	56	10YR 6/2, Light Brownish Gray	Silt Loam	NCM	
G4.01	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	
G4.01	II	34	54	10YR 5/4, Yellowish Brown	Sand	NCM	
G4.01	III	54	64	10YR 5/3, Yellowish Brown	Sand	NCM	
G4.02	I	0	32	10YR 4/3, Brown	Sand	NCM	
G4.02	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	
G4.02	II	32	92	10YR 5/4, Yellowish Brown	Sand	NCM	
G4.02	II	40	50	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G4.03	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	
G4.03	II	29	40	7.5YR 4/4, Brown	Sandy Loam	NCM	
G4.04	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	
G4.04	II	36	50	10YR 6/3, Pale Brown	Sand	NCM	
G4.05	I	0	30	10YR 4/3, Brown	Sand	NCM	
G4.05	II	30	50	7.5YR 5/3, Brown	Sand	NCM	
G4.06	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	
G4.06	II	34	46	10YR 6/3, Pale Brown	Sandy Loam	NCM	

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G4.07	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	
G4.07	II	28	38	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	
G4.08	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	
G4.09	I	0	59	10YR 4/3, Brown	Sandy Loam	NCM	
G4.09	II	59	69	10YR 6/3, Pale Brown	Sandy Loam	NCM	
G5.01	I	0	39	10YR 4/3, Brown	Sandy Loam	NCM	
G5.01	II	39	60	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G5.02	I	0	56	10YR 4/3, Brown	Sandy Loam	Native American Contents	2 chert shatter
G5.02	II	56	70	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G5.03	I	0	60	10YR 4/3, Brown	Sandy Loam	NCM	Road gravel
G5.03	II	60	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G5.04	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.04	II	36	50	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G5.05	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.05	II	45	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G5.06	I	0	40	10YR 4/3, Brown	Silt	NCM	AP
G5.06	II	40	50	10YR 6/4, Light Yellowish Brown	Silt	NCM	None
G5.07	I	0	40	10YR 4/3, Brown	Silt	NCM	AP
G5.07	II	40	55	10YR 6/4, Light Yellowish Brown	Silt	NCM	None
G5.08	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.08	II	45	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G5.09	I	0	37	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.09	II	37	50	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G5.10	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	Road gravel

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G5.10	II	45	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G5.11	I	0	41	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.11	II	41	55	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G5.12	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.12	II	31	45	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G5.13	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G5.13	II	45	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G6.01	I	0	30	10YR 4/3, Brown	Sandy Loam	Native American Contents	One point
G6.01	II	30	45	10YR 5/6, Yellowish Brown	Sand	NCM	Fine sand
G6.02	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.02	II	29	49	10YR 5/6, Yellowish Brown	Sand	NCM	Fine sand
G6.03	I	0	38	10YR 4/3, Brown	Silt	NCM	AP
G6.03	II	38	48	10YR 5/6, Yellowish Brown	Silt	NCM	None
G6.04	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.04	II	40	54	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G6.05	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.05	II	28	46	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G6.06	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.06	II	40	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G6.07	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.07	II	25	40	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G6.08	I	0	24	10YR 4/3, Brown	Silt	NCM	AP
G6.08	II	24	37	10YR 5/6, Yellowish Brown	Silt	NCM	B Horizon
G6.08	III	37	50	10YR 6/4, Light Yellowish Brown	Silt	NCM	None
G6.09	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.09	II	25	39	10YR 5/3, Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G6.10	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.10	II	28	41	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G6.11	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.11	II	34	44	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G6.12	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G6.12	II	28	41	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G7.01	I	0	30	10YR 4/3, Brown	Silt	NCM	AP
G7.01	II	30	42	10YR 6/4, Light Yellowish Brown	Silt	NCM	None
G7.02	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.02	II	33	45	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G7.03	I	0	42	10YR 4/3, Brown	Silt	NCM	None
G7.03	II	42	60	10YR 5/4, Yellowish Brown	Silt	NCM	None
G7.03	III	60	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G7.04	I	0	41	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.04	II	41	95	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G7.04	III	95	105	10YR 6/6, Brownish Yellow	Sand	NCM	None
G7.05	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.05	II	34	60	10YR 5/6, Yellowish Brown	Sand	NCM	None
G7.06	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G7.06	II	30	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G7.07	I	0	39	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.07	II	39	88	10YR 5/6, Yellowish Brown	Sand	NCM	None
G7.07	III	88	105	10YR 6/6, Brownish Yellow	Sand	NCM	None
G7.08	I	0	40	10YR 4/3, Brown	Silt	NCM	None
G7.08	II	40	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G7.09	I	0	43	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.09	II	43	90	10YR 5/6, Yellowish Brown	Sand	NCM	None
G7.09	III	90	105	10YR 6/6, Brownish Yellow	Sand	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G7.10	I	0	45	10YR 4/3, Brown	Silty Clay Loam	NCM	None
G7.10	II	45	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G7.10	III	60	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Pockets of sacllo
G7.11	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G7.11	II	30	100	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	None
G7.12	I	0	50	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.12	II	50	81	10YR 5/6, Yellowish Brown	Sand	NCM	None
G7.12	III	81	105	10YR 6/6, Brownish Yellow	Sand	NCM	None
G7.13	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G7.13	II	30	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G7.14	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G7.14	II	30	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Pockets of sacllo
G8.01	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.01	II	35	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	50% rock
G8.01	III	55	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	15% rock
G8.01	IV	70	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	50% rock slate
G8.02	I	0	37	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.02	II	37	67	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.02	III	67	100	10YR 5/1, Gray	Sandy Clay Loam	NCM	Layer of slate present at top of strat
G8.03	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.03	II	40	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	15% rock
G8.03	III	70	85	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	30% rock pockets of 10 yr 6/2 sacllo
G8.03	IV	85	100	10YR 5/6, Yellowish Brown	Silt Loam	NCM	75% rock
G8.04	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.04	II	35	72	10YR 5/4, Yellowish Brown	Sand	NCM	Oxidized clay inclusion at 63 cmbs

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G8.04	III	72	100	2.5Y 5/3, Light Olive Brown	Sandy Clay Loam	NCM	None
G8.05	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.05	II	28	72	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.05	III	72	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	25-30% gravel.
G8.06	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.06	II	40	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.06	III	55	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Pockets of 6/2 sacllo
G8.07	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.07	II	34	100	10YR 5/4, Yellowish Brown	Sand	NCM	None
G8.08	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.08	II	31	65	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.08	III	65	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G8.09	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.09	II	35	88	10YR 5/6, Yellowish Brown	Sand	NCM	None
G8.09	III	88	105	10YR 6/6, Brownish Yellow	Sand	NCM	None
G8.10	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.10	II	32	78	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.10	III	78	108	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G8.11	I	0	38	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.11	II	38	100	10YR 5/4, Yellowish Brown	Sand	NCM	None
G8.12	I	0	23	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.12	II	23	52	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.12	III	52	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G8.13	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G8.13	II	45	90	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G8.13	III	90	100	10YR 6/6, Brownish Yellow	Sand	NCM	None
G9.01	I	0	30	10YR 4/3, Brown	Silt	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G9.01	II	30	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G9.02	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.02	II	30	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.03	I	0	32	10YR 4/3, Brown	Sandy Loam	Native American Contents	1 x flake
G9.03	II	32	58	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.03	III	58	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G9.03.R7.5N	I	0	20	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G9.03.R7.5N	II	20	59	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G9.03.R7.5N	III	59	82	10YR 6/3, Pale Brown	Sandy Loam	NCM	None
G9.03R3W	I	0	38	10YR 4/3, Brown	Silt Loam	NCM	Ap
G9.03R3W	II	38	59	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Bt1
G9.03R3W	III	59	87	10YR 5/4, Yellowish Brown	Loamy Sand	NCM	Bt2
G9.03R3W	IV	87	109	10YR 6/2, Light Brownish Gray	Sand	NCM	C
G9.03R3.N	I	0	50	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.03R3.N	II	50	80	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.03R3.N	III	80	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G9.03R3S	I	0	38	10YR 5/3, Brown	Silt Loam	NCM	None
G9.03R3S	II	38	78	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.03R3S	III	78	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G9.03R7.5S	I	0	31	10YR 5/3, Brown	Silt Loam	NCM	None
G9.03R7.5S	II	31	66	10YR 6/4, Light Yellowish Brown	Silt Loam	NCM	None
G9.03R7.5S	III	66	100	10YR 6/3, Pale Brown	Sand	NCM	None
G9.03R7.5W	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.03R7.5W	II	36	75	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.03R7.5W	III	75	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G9.04	I	0	32	10YR 4/3, Brown	Silt	NCM	None
G9.04	II	32	100	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	None
G9.05	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.05	II	40	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	20% rock
G9.05	III	70	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	60% rock
G9.06	I	0	33	10YR 4/3, Brown	Silt	NCM	None
G9.06	II	33	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G9.07	I	0	31	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.07	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.07	II	31	57	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.07	II	40	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G9.07	III	57	95	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G9.07	III	60	90	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.07	IV	95	105	10YR 5/4, Yellowish Brown	Sand	NCM	None
G9.08	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.08	II	34	70	10YR 5/4, Yellowish Brown	Sand	NCM	None
G9.08	III	70	100	10YR 3/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G9.09	I	0	36	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.09	II	36	56	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.09	III	56	90	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G9.09	IV	90	105	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.10	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.10	II	35	45	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.10	III	45	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.11	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.11	II	35	59	10YR 5/4, Yellowish Brown	Sand	NCM	None
G9.11	III	59	100	10YR 3/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G9.12	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G9.12	II	30	50	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G9.12	III	50	95	10YR 5/2, Grayish Brown	Sandy Loam	NCM	None
G9.12	IV	95	105	10YR 5/6, Yellowish Brown	Sand	NCM	None
G10.01	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.01	II	35	100	10YR 5/4, Yellowish Brown	Sand	NCM	None
G10.02	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.02	II	34	93	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G10.02	III	93	102	10YR 6/6, Brownish Yellow	Sand	NCM	None
G10.03	I	0	38	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.03	II	38	100	10YR 5/6, Yellowish Brown	Sand	NCM	None
G10.04	I	0	55	10YR 4/3, Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G10.04	II	55	90	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G10.04	III	90	110	10YR 6/6, Brownish Yellow	Sand	NCM	None
G10.05	I	0	41	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.05	II	41	63	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G10.05	III	63	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G10.06	I	0	36	10YR 4/3, Brown	Silt	NCM	None
G10.06	II	36	100	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	None
G10.07	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.07	II	29	54	10YR 5/3, Brown	Sandy Loam	NCM	None
G10.07	III	54	100	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.08	I	0	42	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.08	II	42	56	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G10.08	III	56	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G10.09	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G10.09	II	30	48	10YR 5/4, Yellowish Brown	Silt	NCM	None
G10.09	III	48	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G10.10	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.10	II	30	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G10.10	III	55	100	10YR 5/4, Yellowish Brown	Sandy Clay Loam	NCM	Pockets of 10 yr 5/1 cllo
G10.11	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	Many shale pieces
G10.11	II	26	47	10YR 5/3, Brown	Sandy Loam	NCM	None
G10.12	I	0	40	10YR 4/3, Brown	Silt	NCM	None
G10.12	II	40	100	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	None
G10.13	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G10.13	II	35	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G11.01	I	0	35	10YR 4/3, Brown	Sandy Loam	Native American Contents	3 chert flakes, one possibly heat treated.
G11.01	II	35	61	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Rounded stones with subamgular shales
G11.01	III	61	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	With pockets of 10 yr 5/1 cllo
G11.01 R1E	I	0	66	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone, dense subangular and subrounded gravel and cobbles. Dense shale cobbles present. Gravel more present deeper you go down. Stopped for rock impasse.
G11.01 R3W	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone, many angular and sub angular rocks present
G11.01 R3W	II	32	52	10YR 5/3, Brown	Sandy Loam	NCM	Many angular and sub angular rocks present, decaying bedrock present, excavation impasse for rocks
G11.01 R7.5S	I	0	42	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone, very rocky, subangular and subrounded gravel, very compact.
G11.01 R7.5S	II	42	45	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Very rocky, same as strat I, rock impasse.
G11.01R1 N	I	0	87	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G11.01R1 N	II	87	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G11.01R1 W	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G11.01R1 W	II	35	68	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.01R1 W	III	68	100	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	None
G11.01R3 E	I	0	43	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Ap
G11.01R3 E	II	43	71	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Bt1 dense wifh compact rocks ans cobbles
G11.01r3s	I	0	39	10YR 5/3, Brown	Silt Loam	NCM	None
G11.01r3s	II	39	78	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G11.02	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.02	II	28	49	10YR 5/3, Brown	Sandy Loam	NCM	None
G11.02	III	49	100	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	None
G11.03	I	0	12	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.03	II	12	43	10YR 5/4, Yellowish Brown	Sand	NCM	Clay inclusions present throughout layer
G11.03	III	43	100	10YR 3/4, Dark Yellowish Brown	Sandy Loam	NCM	Clay inclusions present throughout layer
G11.04	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.04	II	28	58	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.04	III	58	100	10YR 5/4, Yellowish Brown	Sandy Clay Loam	NCM	None
G11.05	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.05	II	30	47	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Very compact
G11.06	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.06	II	30	64	10YR 5/4, Yellowish Brown	Sand	NCM	None
G11.06	III	64	100	10YR 3/3, Dark Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G11.07	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.07	II	29	48	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.07	III	48	87	10YR 4/2, Dark Grayish Brown	Sand	NCM	None
G11.07	IV	87	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	Very gravelly in last strat
G11.08	I	0	38	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.08	II	38	51	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.08	III	51	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G11.09	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.09	II	35	61	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.09	III	61	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G11.10	I	0	42	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.10	II	42	59	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.10	III	59	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	None
G11.12	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.12	II	32	62	10YR 5/4, Yellowish Brown	Sand	NCM	None
G11.12	III	62	100	10YR 3/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G11.13	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	None
G11.13	II	25	51	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.13	III	51	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G11.14	I	0	30	10YR 5/3, Brown	Sandy Loam	NCM	None
G11.14	II	30	62	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G11.14	III	62	100	10YR 4/3, Brown	Sand	NCM	None
G12.01	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.01	II	45	85	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G12.01	III	85	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G12.02	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.02	II	35	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G12.03	I	0	33	10YR 4/3, Brown	Silt	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G12.03	II	33	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G12.04	I	0	34	10YR 4/3, Brown	Silt	NCM	None
G12.04	II	34	40	10YR 5/4, Yellowish Brown	Silt	NCM	None
G12.04	III	40	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G12.05	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.05	II	30	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G12.06	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.06	II	35	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G12.06	III	60	100	10YR 5/4, Yellowish Brown	Sand	NCM	None
G12.07	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G12.07	II	30	45	10YR 5/4, Yellowish Brown	Silt	NCM	None
G12.07	III	45	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G12.08	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.08	II	25	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G12.09	I	0	40	10YR 4/3, Brown	Silt	NCM	None
G12.09	II	40	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G12.10	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.10	II	33	73	2.5Y 5/6, Light Olive Brown	Sandy Loam	NCM	None
G12.11	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.11	II	45	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G12.11	III	70	105	10YR 4/6, Dark Yellowish Brown	Sandy Loam	NCM	None
G12.12	I	0	25	10YR 4/3, Brown	Sandy Loam	NCM	None
G12.12	II	25	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.01	I	0	58	10YR 4/3, Brown	Silt	NCM	None
G13.01	II	58	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G13.02	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G13.02	II	28	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.02	III	55	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Pockets of 10 yr 5/1 cllo

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G13.03	I	0	50	10YR 4/3, Brown	Silt	NCM	None
G13.03	II	50	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G13.04	I	0	34	10YR 5/3, Brown	Sandy Loam	NCM	None
G13.04	II	34	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.04	III	60	100	10YR 4/3, Brown	Sand	NCM	None
G13.05	I	0	37	10YR 4/3, Brown	Sandy Loam	NCM	None
G13.05	II	37	63	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.05	III	63	110	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G13.06	I	0	40	10YR 4/3, Brown	Silt	NCM	None
G13.06	II	40	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G13.07	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G13.07	II	35	53	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.07	III	53	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	None
G13.08	I	0	38	10YR 4/3, Brown	Sandy Loam	NCM	None
G13.08	II	38	80	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.08	III	80	105	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G13.09	I	0	38	10YR 4/3, Brown	Silt	NCM	None
G13.09	II	38	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G13.10	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G13.10	II	35	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.10	III	60	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G13.11	I	0	35	10YR 4/3, Brown	Silt	NCM	None
G13.11	II	35	54	10YR 5/6, Yellowish Brown	Silt	NCM	None
G13.11	III	54	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G13.12	I	0	36	10YR 4/3, Brown	Silt	NCM	None
G13.12	II	36	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G13.13	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G13.13	II	35	75	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G13.13	III	75	104	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G13.14	I	0	28	10YR 4/3, Brown	Silt	NCM	None
G13.14	II	28	58	10YR 5/6, Yellowish Brown	Silt	NCM	None
G13.14	III	58	100	10YR 4/4, Dark Yellowish Brown	Silt Loam	NCM	None
G14.01	I	0	17	10YR 2/2, Very Dark Brown	Sandy Loam	NCM	None
G14.01	II	17	37	10YR 3/4, Dark Yellowish Brown	Sand	NCM	None
G14.01	III	37	100	10YR 3/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G14.02	I	0	55	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.02	I	0	42	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.02	II	55	85	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G14.02	II	42	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G14.02	III	85	100	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G14.02	III	70	100	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G14.03	I	0	60	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.03	II	60	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G14.04	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.04	II	33	100	10YR 3/4, Dark Yellowish Brown	Sand	NCM	None
G14.05	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.05	II	45	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G14.06	I	0	41	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.06	II	41	85	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G14.06	III	85	110	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G14.07	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.07	II	34	100	10YR 6/3, Pale Brown	Sandy Loam	NCM	None
G14.08	I	0	33	10YR 5/3, Brown	Sandy Loam	NCM	None
G14.08	II	33	54	10YR 6/3, Pale Brown	Sandy Loam	NCM	None
G14.08	III	54	100	10YR 4/3, Brown	Sand	NCM	None
G14.09	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G14.09	II	33	100	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	None
G14.10	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G14.10	II	45	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G14.11	I	0	31	10YR 5/3, Brown	Sandy Loam	NCM	None
G14.11	II	31	62	10YR 6/3, Pale Brown	Sandy Loam	NCM	Vey compact
G14.11	III	62	89	10YR 4/3, Brown	Sand	NCM	None
G14.12	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G14.12	II	30	56	10YR 5/6, Yellowish Brown	Silt	NCM	None
G14.12	III	56	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G15.02	I	0	34	10YR 4/3, Brown	Silt	NCM	None
G15.02	I	0	35	10YR 4/3, Brown	Silt	NCM	None
G15.02	II	34	53	10YR 5/4, Yellowish Brown	Silt	NCM	None
G15.02	II	35	50	10YR 5/6, Yellowish Brown	Silt	NCM	None
G15.02	III	53	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G15.02	III	50	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G15.03	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.03	II	35		10YR 6/3, Pale Brown	Sandy Loam	NCM	None
G15.03	III		100	10YR 4/6, Dark Yellowish Brown	Sandy Loam	NCM	None
G15.04	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.04	II	45	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G15.05	I	0	55	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.05	II	55	75	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G15.05	III	75	100	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G15.06	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G15.06	II	30	46	10YR 5/4, Yellowish Brown	Silt	NCM	None
G15.06	III	46	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G15.07	I	0	34	10YR 5/3, Brown	Sandy Loam	NCM	None
G15.07	II	34	63	10YR 6/3, Pale Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G15.07	III	63	100	10YR 4/3, Brown	Sand	NCM	None
G15.08	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.08	II	45	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G15.09	I	0	38	10YR 4/3, Brown	Silt	NCM	None
G15.09	II	38	62	10YR 5/6, Yellowish Brown	Silt	NCM	None
G15.09	III	62	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G15.10	I	0	22	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.10	II	22	53	10YR 6/3, Pale Brown	Sand	NCM	None
G15.10	III	53	100	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.11	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G15.11	II	45	76	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G15.11	III	76	109	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G16.01	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.01	II	35	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Very few rocks
G16.02	I	0	35	10YR 4/3, Brown	Silt	NCM	None
G16.02	II	35	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G16.03	I	0	35	10YR 4/3, Brown	Silt	NCM	None
G16.03	II	35	55	10YR 5/4, Yellowish Brown	Silt	NCM	None
G16.03	III	55	100	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G16.04	I	0	43	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.04	II	43	67	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G16.04	III	67	100	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G16.05	I	0	33	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.05	II	33	74	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G16.05	III	74	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G16.06	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.06	II	35	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G16.07	I	0	41	10YR 4/3, Brown	Silt	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G16.07	II	41	68	10YR 4/4, Dark Yellowish Brown	Silt	NCM	None
G16.07	III	68	100	10YR 5/4, Yellowish Brown	Silt	NCM	None
G16.08	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G16.08	II	30	55	10YR 5/3, Brown	Silt	NCM	None
G16.08	III	55	100	10YR 5/6, Yellowish Brown	Silt	NCM	None
G16.09	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.09	II	40	85	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G16.09	III	85	103	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G16.10	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.10	II	35	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G16.12	I	0	3	10YR 4/3, Brown	Sandy Loam	NCM	None
G16.12	II	3	50	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G16.12	III	50	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G17.01	I	0	34	10YR 4/3, Brown	Silt	NCM	None
G17.01	II	34	64	10YR 5/3, Brown	Silt	NCM	None
G17.01	III	64	100	10YR 5/4, Yellowish Brown	Silt	NCM	None
G17.02	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.02	II	40	80	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.02	III	80	101	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G17.03	I	0	36	10YR 4/3, Brown	Silt	NCM	None
G17.03	II	36	56	10YR 5/3, Brown	Silt Loam	NCM	None
G17.03	III	56	100	10YR 5/4, Yellowish Brown	Silt	NCM	None
G17.04	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.04	II	30	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.05	I	0	38	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.05	II	38	72	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.05	III	72	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G17.06	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G17.06	II	40	60	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.07	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.07	II	35	67	10YR 5/6, Yellowish Brown	Sandy Loam	Native American Contents	One chert flake
G17.07	III	67	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G17.07 R7.5E	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.07 R7.5E	II	45	72	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.07 R7.5E	III	72	100	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	None
G17.07 R7.5N	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone, many angular and sub angular rocks present
G17.07 R7.5N	II	34	54	10YR 5/3, Brown	Sandy Loam	NCM	Decreasing mount of rocks
G17.07 R7.5N	III	54	66	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Many sub angular and sub rounded rocks snd decaying bedrock present, excavation impasse for rocks
G17.07 R7.5S	I	0	45	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grassfield. Dense subangular and subrounded gravel. Rock impasse.
G17.08	I	0	50	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.08	II	50	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.09	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.09	II	45	85	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G17.09	III	85	100	10YR 6/6, Brownish Yellow	Silty Clay Loam	NCM	None
G17.10	I	0	37	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G17.10	II	37	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G17.11	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G17.11	II	45	100	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G18.01	I	0	34	10YR 4/3, Brown	Sandy Loam	Native American Contents	1 chert debitage
G18.01	II	34	48	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G18.01	III	48	80	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Compaction impass
G18.01 R1E	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	Very rocky plowzone, subangular and subrounded gravel. Very compact. Rock impasse,
G18.01 R1N	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G18.01 R1S	I	0	28	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Sterile subsoil. Dense subangular and subrounded gravel. Rock impasse
G18.01 R1W	I	0	30	10YR 4/3, Brown	Silt Loam	NCM	Rock impasse
G18.01 R3 E	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone, many compacted sub rounded, sub angular and, angular rocks and gravel present, excavtion mpasse fot rocks
G18.01 R3N	I	0	40	10YR 4/3, Brown	Silt Loam	NCM	Rock Impasse
G18.01 R3S	I	0	27	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grass field. Dense subangular and subrounded gravel. Rock impasse

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G18.01 R3W	I	0	35	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grass field. Dense subangular and subrounded gravel present. Stopped for rock impasse.
G18.01 R7.5E	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	Very rocky plowzone, dense subangular and subrounded gravel, very compact. Rock impasse.
G18.01 R7.5N	I	0	47	10YR 4/3, Brown	Sandy Loam	NCM	None
G18.01 R7.5S	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	Many compacted sub rounded, sub angular, and angular rocks and gravel present, excavation impasse for rocks
G18.01 R7.5W	I	0	32	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone, grass field. Dense subangular and subrounded gravel. Stopped for rock impasse,
G19.01	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	Very rocky plowzone, sub angular gravel.
G19.01	II	30	70	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Subrounded gravel, very compact, Bw1.
G19.01	III	70	100	10YR 6/3, Pale Brown	Sand	NCM	Subrounded gravel, Bw2, looser sand. Ended for meter deep.
G19.03	I	0	29	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone
G19.03	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone
G19.03	II	29	53	10YR 5/3, Brown	Sandy Loam	NCM	None
G19.03	II	34	82	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Bw1, no rocks.
G19.03	III	53	100	7.5YR 4/4, Brown	Sandy Loam	NCM	None

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G19.03	III	82	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Looser sand, Bw2, no rocks, ended for meter deep.
G19.04	I	0	31	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	None
G19.04	II	31	81	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	No rocks
G19.04	III	81	100	10YR 5/4, Yellowish Brown	Sand	NCM	No rocks
G19.05	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone
G19.05	II	34	60	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Bw1, some subrounded gravel.
G19.05	III	60	93	7.5YR 4/4, Brown	Sandy Loam	NCM	Bw2. No rocks.
G19.05	IV	93	103	10YR 5/2, Grayish Brown	Sand	NCM	Course sand, sterile subsoil.
G19.06	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone
G19.06	II	32	63	10YR 5/3, Brown	Sandy Loam	NCM	None
G19.06	III	63	100	7.5YR 4/4, Brown	Sandy Loam	NCM	None
G19.07 R7.5N	I	0	33	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	Plowzone grass field.
G19.07 R7.5N	II	33	70	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Few subrounded gravel.
G19.07 R7.5N	III	70	100	10YR 5/2, Grayish Brown	Sand	NCM	Sterile subsoil. Single grain no structure sand. Few rounded gravel pieces
G19.07 R7.5S	I	0	40	10YR 4/3, Brown	Silt	NCM	None
G19.07 R7.5S	II	40	74	10YR 5/4, Yellowish Brown	Silt	NCM	None
G19.07 R7.5S	III	74	100	10YR 5/6, Yellowish Brown	Silt	NCM	None
G19.07 R7.5W	I	0	40	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone with subrounded gravel.
G19.07 R7.5W	II	40	80	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Bw1, some subrounded gravel.

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G19.07 R7.5W	III	80	100	7.5YR 4/4, Brown	Sandy Loam	NCM	Bw2, no rocks. Ended for meter deep.
G19.08	I	0	30	10YR 4/3, Brown	Sandy Loam	NCM	Some subrounded gravel present. Plowzone.
G19.08	II	30	55	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Bw. Subrounded gravel.
G19.08	III	55	75	10YR 4/4, Dark Yellowish Brown	Sand	NCM	Very rocky, dense subrounded cobbles and gravel. Rock impasse. Channel lag.
G19.09	I	0	34	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone. Few subangular gravel present
G19.09	II	34	50	10YR 6/3, Pale Brown	Sandy Loam	NCM	Sterile subsoil. About 50% of strat rounded gravel. Simular to channel gravel
G19.10	I	0	36	10YR 4/3, Brown	Silt	NCM	None
G19.10	II	36	100	10YR 5/4, Yellowish Brown	Silt	NCM	None
G19.11	I	0	28	10YR 4/3, Brown	Sandy Loam	NCM	None
G19.11	II	28	75	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G19.11	III	75	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	With cobbles
G19.12	I	0	37	10YR 5/3, Brown	Silt Loam	NCM	None
G19.12	II	37	82	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G20.01	I	0	48	10YR 6/3, Pale Brown	Sandy Loam	NCM	None
G20.01	II	48	69	10YR 4/3, Brown	Sandy Loam	NCM	None
G20.01	III	69	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	None
G20.02	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G20.02	II	35	55	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G20.02	III	55	95	10YR 6/6, Brownish Yellow	Sandy Loam	NCM	None
G20.02	IV	95	105	10YR 6/2, Light Brownish Gray	Sandy Loam	NCM	None
G20.03	I	0	47	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	Plowzone, grass field

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G20.03	II	47	80	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Few subrounded pea gravel
G20.03	III	80	100	10YR 6/3, Pale Brown	Sand	NCM	Sterile subsoil. No structure sand. Few rounded pea gravel present
G20.04	I	0	40	10YR 4/3, Brown	Silt	NCM	None
G20.04	II	40	100	10YR 5/4, Yellowish Brown	Silt Loam	NCM	None
G20.05	I	0	30	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grass field.
G20.05	II	30	100	10YR 6/4, Light Yellowish Brown	Sand	NCM	Sterile subsoil. Single grain no structure sand. Few rounded pea grsvel present.
G20.06	I	0	38	10YR 4/3, Brown	Sandy Loam	NCM	None
G20.06	II	38	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G20.06	III	70	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G20.07	I	0	30	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grass field.
G20.07	II	30	47	10YR 5/2, Grayish Brown	Sandy Loam	NCM	None
G20.07	III	47	87	10YR 5/4, Yellowish Brown	Sand	NCM	None
G20.07	IV	87	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	Loose single grain, no structure sand. Few rounded gravel. Sterile subsoil
G20.08	I	0	36	10YR 5/3, Brown	Silt Loam	NCM	None
G20.08	II	36	82	10YR 5/6, Yellowish Brown	Silt Loam	NCM	None
G20.08	III	82	100	10YR 5/4, Yellowish Brown	Silt Loam	NCM	None
G20.09	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G20.09	II	30	65	10YR 5/4, Yellowish Brown	Silt	NCM	None
G20.09	III	65	100	10YR 5/6, Yellowish Brown	Silt	NCM	None
G20.10	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	None
G20.10	II	35	100	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G20.11	I	0	36	10YR 5/3, Brown	Sandy Loam	NCM	Compact

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G20.11	II	36	66	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	None
G20.11	III	66	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G20.12	I	0	27	10YR 4/3, Brown	Sandy Loam	NCM	None
G20.12	II	27	87	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	Power line in bottom of strat
G21.01	I	0	62	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grass field. On Edge of field.
G21.01	II	62	72	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	Mix with 10yr 6/2. Channel gravel. Dense rounded gravel
G21.02	I	0	30	10YR 4/3, Brown	Silt	NCM	None
G21.02	II	30	65	10YR 5/4, Yellowish Brown	Silt	NCM	None
G21.02	III	65	100	10YR 5/6, Yellowish Brown	Silt	NCM	None
G21.04	I	0	41	10YR 4/3, Brown	Sandy Loam	NCM	None
G21.04	II	41	74	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G21.04	III	74	100	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	None
G21.05	I	0	26	10YR 4/3, Brown	Sandy Loam	NCM	Ap
G21.05	II	26	78	10YR 6/4, Light Yellowish Brown	Sand	NCM	Bt1
G21.05	III	78	89	7.5YR 5/6, Strong Brown	Sand	NCM	Bt2
G21.05	IV	89	100	10YR 6/2, Light Brownish Gray	Sand	NCM	None
G21.06	I	0	21	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone, grass field
G21.06	II	21	62	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Few rounded gravel
G21.06	III	62	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	Sterile subsoil, loose no structure single grain sand
G21.07	I	0	30	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone, grass field
G21.07	II	30	50	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	None
G21.07	III	50	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Sterile subsoil. Saturated. Super compact soils
G21.08	I	0	29	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Plowzone grass field.

Shovel Test	Stratum	Min Stratum Depth (cm)	Max Stratum Depth (cm)	Soil Color	Soil Texture	Contents	Comments
G21.08	II	29	40	10YR 5/2, Grayish Brown	Sandy Loam	NCM	
G21.08	III	40	82	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	Super compact. Few rounded gravel
G21.08	IV	82	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	Sterile subsoil. Single grain no structure sand. Few rounded gravel
G21.09	I	0	32	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone
G21.09	II	32	60	10YR 5/3, Brown	Sandy Loam	NCM	None
G21.09	III	60	78	7.5YR 4/4, Brown	Sandy Loam	NCM	None
G21.09	IV	78	100	10YR 6/3, Pale Brown	Silt Loam	NCM	None
G21.10	I	0	34	10YR 4/3, Brown	Sandy Loam	NCM	Plowzone
G21.10	II	34	86	10YR 6/4, Light Yellowish Brown	Sandy Loam	NCM	Bw1, some subrounded gravel.
G21.10	III	86	100	10YR 4/4, Dark Yellowish Brown	Sandy Loam	NCM	Bw2, ended for meter deep.
G21.11	I	0	45	10YR 4/3, Brown	Silt	NCM	None
G21.11	II	45	74	10YR 5/4, Yellowish Brown	Silt	NCM	None
G21.11	III	74	100	10YR 5/6, Yellowish Brown	Silt	NCM	None
G21.12	I	0	35	10YR 4/3, Brown	Sandy Loam	NCM	Many compacted sub angular and angular rocks and gravel, Excavation impasse, compaction
G22.02	I	0	32	10YR 5/3, Brown	Silt Loam	NCM	None
G22.03	I	0	45	10YR 4/3, Brown	Sandy Loam	NCM	None
G22.03	II	45	70	10YR 5/6, Yellowish Brown	Sandy Loam	NCM	None
G22.03	III	70	100	10YR 5/4, Yellowish Brown	Sandy Loam	NCM	None
G22.04	I	0	29	10YR 5/3, Brown	Silt Loam	NCM	None
G22.04	II	29	61	10YR 4/2, Dark Grayish Brown	Sandy Loam	NCM	None
G22.04	III	61	100	10YR 4/2, Dark Grayish Brown	Sand	NCM	None

November 13, 2024

Ms. Paula Smith, Planning Board Chair
Town of Leicester
132 Main Street
Leicester, NY 14481

Re: Site Plan Review
Highbanks Solar
HUNT 3576.001

HUNT Engineers, Architects, and Land Surveyors is in receipt of the comments provided by MRB Group in a letter dated November 12, 2024. Please see below for our responses:

General Comments

1. It is recommended that the applicant coordinate with the Town CEO and Fire Marshal to ensure that this project complies with the requirements of section 503.1.1 of the NYS Fire Code. Please note that, where approved by the fire code official, fire apparatus access roads shall be permitted to be exempted or modified for solar photovoltaic power generation facilities. This exemption, or compliance, should be in place prior to the issuance of a building permit and construction beginning.

   Response: Noted. The final design will be coordinated with the Town CEO and Fire Marshal prior to issuance of the building permit.

Operation and Maintenance Plan Comments

2. Prior to issuance of a building permit and construction beginning, the applicant, in consultation with Leicester/Cuylerville Fire Department Chief and emergency services shall develop an emergency management plan. The plan should include the following:

   a. The plan should include procedures for safe shutdown, de-energizing, or isolation of equipment and systems under emergency conditions to reduce the risk of fire, electric shock and personal injuries, and for safe start-up following cessation of emergency conditions.
   b. Procedures for inspection and testing of associated alarms, interlocks, and controls.
   c. Procedures to be followed in response to notifications from the solar energy system, when provided, that could signify potentially dangerous conditions, including shutting down equipment, summoning service and repair personnel, and providing agreed upon notification

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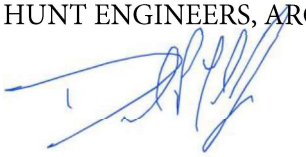
to fire department personnel for potentially hazardous conditions in the event of a system failure.

d. Emergency procedures to be followed in case of fire, explosion, release of liquids or vapors, damage to critical moving parts, or other potentially dangerous conditions. Procedures can include sounding the alarm, notifying the fire department, evacuating personnel, de-energizing equipment, and controlling and extinguishing the fire.
e. Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required.
f. Procedures for dealing with solar energy system equipment damaged in a fire or other emergency event, including maintaining contact information for personnel qualified to safely remove damaged battery energy storage system equipment from the facility.
g. Other procedures as determined necessary by the municipality to provide for the safety of occupants, neighboring properties, and emergency responders.
h. Procedures and schedules for conducting drills of these procedures and for training local first responders on the contents of the plan and appropriate response procedures.

Response: An Emergency Response Plan will be prepared and submitted for review with the building permit application. The plan will be developed and coordinated with the local fire department and emergency services.

If you have any questions about any of the comments above, please contact me at (585)327-7950 or yanoshd@hunt-eas.com.

Sincerely,
HUNT ENGINEERS, ARCHITECTS, LAND SURVEYORS & LANDSCAPE ARCHITECT, DPC



Daniel P Yanosh Jr, PE
Project Manager

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cc: Bill Caruthers – Oriden Power
Mike Berlin – Oriden Power
Steve Ondishin – VC Renewables