

Cultural Landscape of the Genesee Valley

**Written on behalf of
Residents United to Save our Hometown,
and the Town of Rush, New York**

Pertaining to the proposed Horseshoe Solar Project:

NY State Historic Preservation Office
Project Review No. 18PR07941

NYS Department of Public Service
Case No. 18-F-0633

Justin A. Tubiolo

September 23, 2021

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The proposal to construct Horseshoe Solar Power Generation facilities in the Genesee Valley presents serious concerns regarding damage to cultural resources. Dialogue about avoidance of archaeological sites has focused primarily on 18th- and 19th-century sites. While this is a pivotal period in Native American and early U.S. history, it is a relatively recent selection of cultural sites encompassed within the proposed industrial development.

A Cultural Resource Management (CRM) survey conducted by Panamerican Consultants, Inc. was well strategized and conscientiously executed for such a complicated project, and within the requested parameters set by their client, Invenergy. However, construction plans proposed by Invenergy and Horseshoe Solar Energy LLC greatly exceed the sampled soil depths. There is ample reason to expect cultural resources, older than the 18th-century sites generally considered, existing below the sampled depth, and therefore will be encountered during construction. In addition to depth, the horizontal range of construction excavation would involve extensive subsurface disruption across the entire project area on a scale that has not been discussed in the correspondence between the NYS Department of Public Service (DPS) and NYS Office of Parks, Recreation and Historic Preservation (OPRHP). A review of these extensive disturbances is included in this commentary.

Artifact Counts and Lab Analysis

Meaningful differences appear in the artifact counts between Panamerican's December 2020 Phase 1B EOF (End of Fieldwork) report and the updated April 2021 Phase 1B report. The Phase 1B report includes laboratory analysis of artifacts collected in the field. The lithic count from the field was 644 for Parcel 25; but after laboratory examination that number jumped to 838, including 54 stone tools. This is to be expected due to necessary laboratory analysis that normally follows fieldwork.

Archaeological research is a detective pursuit, with information derived from many sources and methods. Fieldwork may be the most visible aspect of archaeology, but it is only one facet of the research process. For example, field crew members will recognize chert and collect it for later inspection. A few pieces will be immediately recognizable, such as projectile points, but detailed analysis does not occur until later. Once the collected material is washed, it will be sorted and examined in the laboratory under ideal lighting and magnification. Reference materials will be at hand, and specialists consulted as needed.

Generally speaking, over half of archaeological discoveries are made in the lab and in non-field research during the process of assessing collected information. This is

where the significance of field finds and their distribution patterns become apparent; where data is compiled and interpretations begin to be synthesized. Using the chert example, the chert assemblage is sorted in the lab, where the debitage of lithic reduction (stone tool-making) is assessed. Fractured by-products of knapping are separated into categories according to their stages of production in the tool-making process, categorizing everything from raw chert nodules to finished products and spent chert cores. Some pieces will be found to have secondary retouching – that is, they are not waste flakes but tools or fragments of tools. Many others will exhibit edge wear from use (e.g., cutting, scraping). Most of these characteristics are not readily apparent upon initially finding them in the ground. Special attention may be drawn to objects that are diagnostic of particular groups and/or time frames. The mineral itself can also be sourced to the geologic formation of its origin, such as Onondaga chert. Stone that is exotic to the locale might represent trade from another region, and the analysis can indicate whether minerals from other regions were imported as raw material or finished products, helping to place the activities at one site within the context of its contemporary world (Rieth and Johnson 2011). Laboratory analysis of each type of physical evidence – in this example, chert – provides details about people’s lives, occupations, and relationships with other people and the landscape they inhabited.

The numbers and variety of knapped lithics reported from the 1B survey establishes that the valley is archaeologically unusually rich. Other types of artifacts, including ground stone tools, ceramics, and animal bone, must separately undergo analyses as well. Panamerican performed a good lithics analysis, as detailed in Section 2.3 of the April 2021 Phase 1B report, and in doing so demonstrated the necessity of pairing laboratory studies with observations and collections made in the field. Time is required to accomplish lab analyses, but this necessary step is skipped in construction monitoring, and a site may be developed before the lab can analyze a collection from the now-destroyed site. In a place like the Genesee floodplain, so unusually rich in cultural resources, monitoring is not a viable means to protect the resources.

Surveys, Then and Now

One hundred seventy years ago, Ephraim George Squier sought out, paced off and sketched the outlines of native settlements across Upstate New York by looking for embankments, ditches, and other evidence of village outlines or palisades. He had difficulty finding surface-level features in some parts of the fertile Genesee valley:

A number of ancient works are reported to exist higher up the Genesee River, in the southern part of Livingston and in Alleghany counties; but this entire region has been brought so thoroughly under cultivation, that it was esteemed hopeless to look for them with a view to their survey or measurement. [Squier 1851:63]

By 1851, repeated plowing had already obscured the visibility of occupation – and Squier had a keen eye for spotting them and was guided by locals to approximately

where to look. The intensity of agriculture since then has further reduced any obvious ancient features in the fields and created a homogeneity across the surface. Even so, farmers in the Genesee Valley continue to find quantities of native objects turning up amid plowed furrows.

Invenergy has agreed to complete avoidance of Parcel 25, Site 1. This location is a good example of the agricultural erasure of obvious surface features, yet its exposed artifacts indicate cultural features below the observed/tested depth. “Seven of the artifacts found at this location have evidence of heat alteration (e.g., potlid scars and heat spalls) suggesting hearth features could be present below the agricultural plow zone (see Figure 5.4)” (Panamerican Phase 1B 2021:5-2). The cited Figure 5.4 map illustrates that the artifact concentrations at Parcel 25, Site 1 are associated with the previously documented Strong Site, and Panamerican has deduced that it probably is the actual location of the Strong Site. Its diagnostic projectile points and pottery date from separate time periods thousands of years apart: 2,800-500 years BP (before the present) and 6,000-3,300 BP, indicating that this location “is comprised of multiple recurrent occupations (i.e., a multi-component site)” (Panamerican Phase 1B 2021:5-2). Only a few areas, such as Parcel 25, Site 1, have been designated for construction avoidance, yet the general region holds archaeological potential and is culturally important.

The CRM survey contracted by Invenergy paralleled Squier’s efforts, confirming both the erasure of visible features due to modern farming, and the ongoing abundance of native objects near the surface. “The results of the Phase 1B field investigation are consistent with the previous assessments and understanding that the HSE project area is located in a setting that is highly sensitive for the presence of Native American archaeological cultural resources. Numerous (n=10,637) Native American artifacts were found within the project APE [Area of Potential Effect]” (Panamerican Phase 1B 2021:6-1).

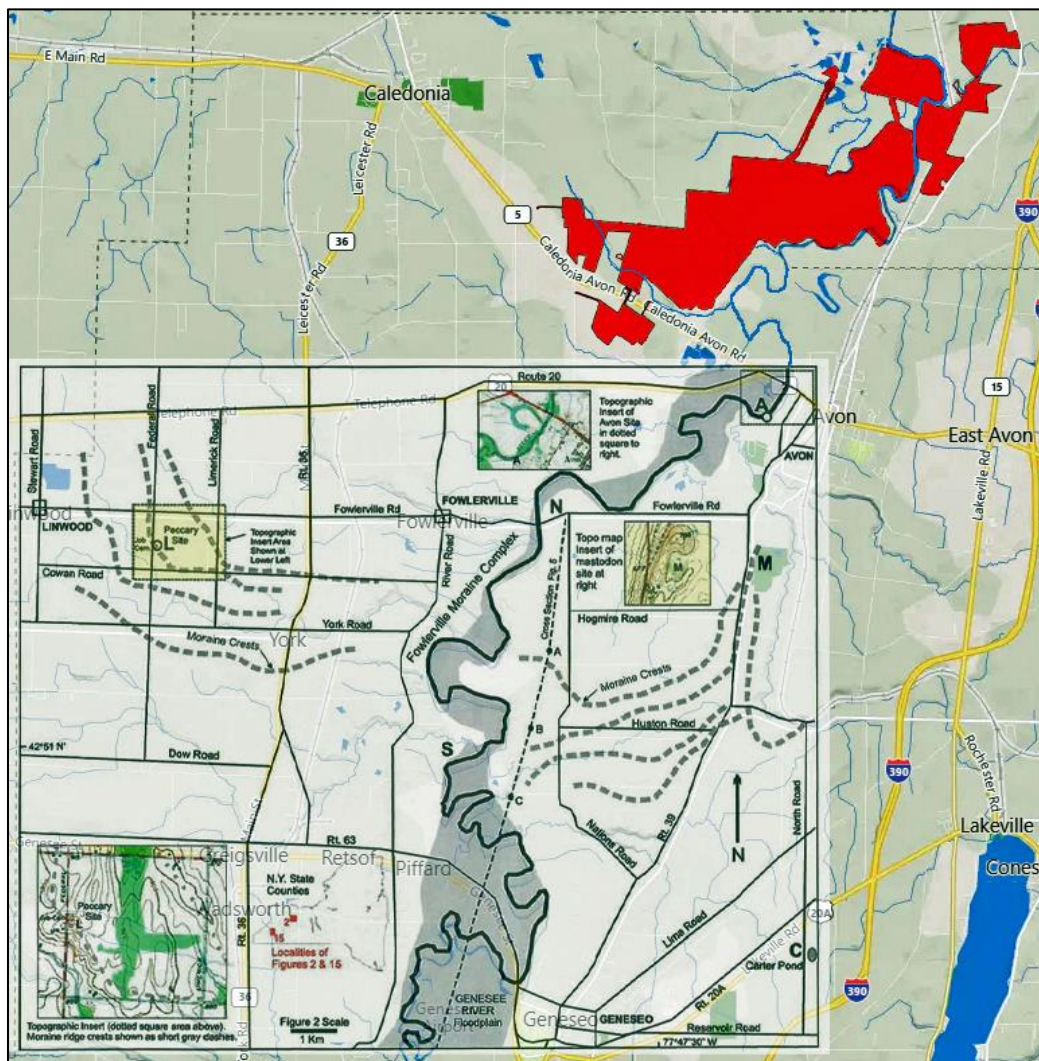
Setting for Earliest Occupation

People have lived in the region south of Lake Ontario since shortly after the latest glacial recession (Anderson 2010; Eren et al. 2011; Laub 2012; Lothrop et al. 2014). Recently conducted geological studies, particularly by Richard Young of SUNY Genesee, show the area around Avon and Fowlerville in Livingston County to have been forested by 13,000 years ago. This is confirmed by reliable radiocarbon dates from two well-preserved forest-dwelling mammals, a Pleistocene peccary at Linwood and a mastodon in Avon (Young et al. 2021:282-283, 287). Spruce and larch (tamarack) were among the dominant arboreal species in this setting, which was also ideal habitat for caribou herds (Lothrop et al. 2016:7). The Farview Mastodon in Avon was excavated (1991) from a peat bog in a kettle hole, and the juvenile peccary at Linwood was found (1978) within a vertical shaft of ancient quicksand. Both animals were remarkably complete, and the mastodon skeleton is the centerpiece of a major exhibition at the Rochester Museum and Science Center.

Human occupation was possible at that time, although glacial recession paused and ice sheets re-advanced twice through the forest during the Younger Dryas period,

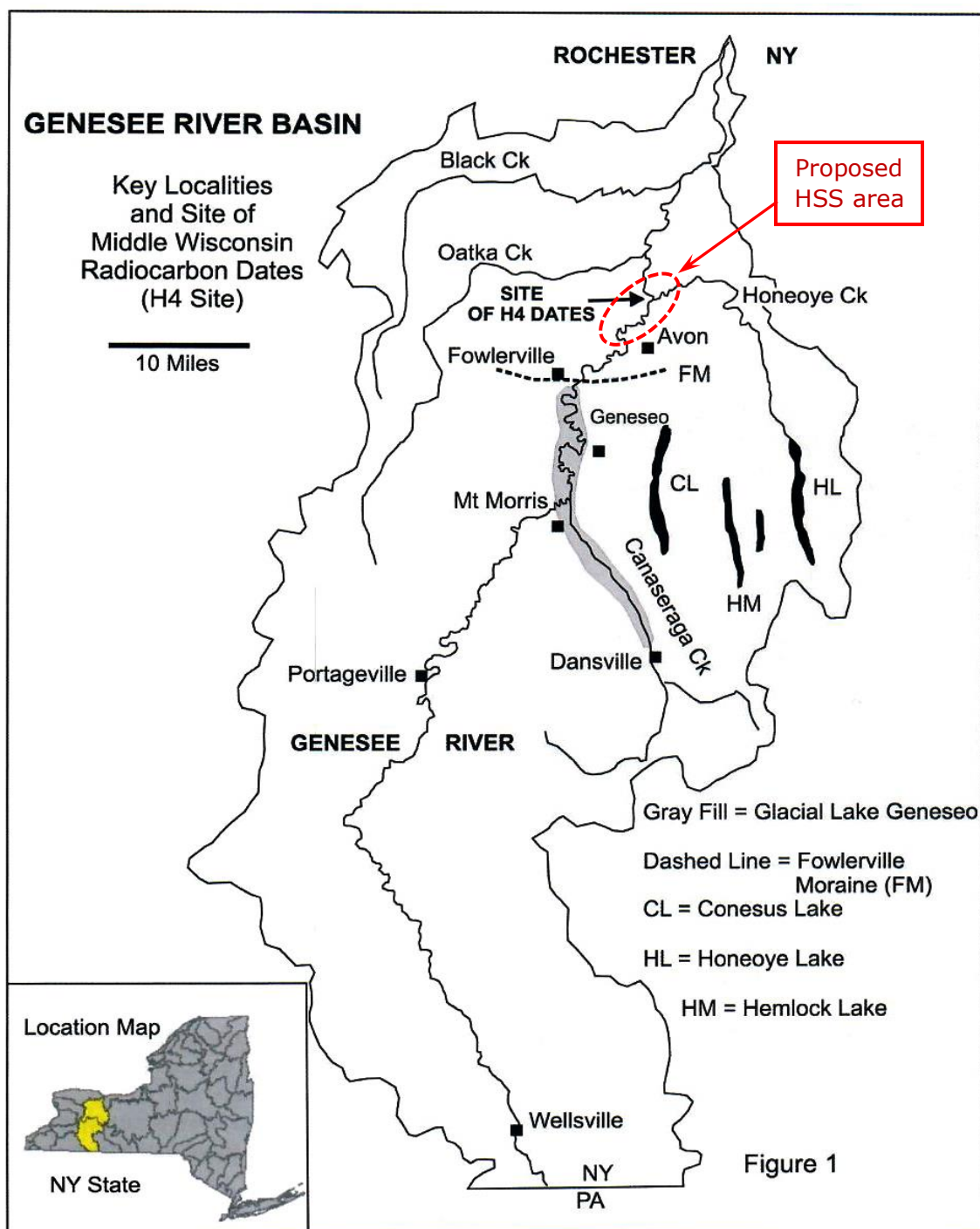
~12,800-11,600 years ago; named after a cold-weather flower that became prevalent in Europe during that period (Young et al. 2021). Warm interstadial climate returned and stabilized by 11,600 years ago, at which point the Genesee Valley's ecological succession had progressed again to a woodland biome, which soon hosted the first people. "Review of radiocarbon dates for mastodon remains at the Hiscock site in Genesee County suggest several centuries of overlap between mastodon and Paleoindian populations in New York" (Lothrop et al. 2014:3).

During the latest glacial event, the ice front and moraine crests dammed the northward flowing Genesee River at least twice, for a period of centuries each time, as determined from varved lacustrine sediments (Young 2012:7). The retained water formed a proglacial lake in the valley between Dansville and Fowlerville (occasionally as far north as Avon). It was essentially another large Finger Lake, 120 feet deep. The modern Genesee River floodplain conforms with the footprint of proglacial Lake Genesee.



Genesee River floodplain approximately 13,000 years ago. Crests of glacial moraine are indicated, as well as locations of Linwood Peccary (L) and Farview Mastodon (M) (Young et al. 2021:277). Area of proposed Horseshoe Solar in red.

The valley contained prevalent wetlands for millennia as Lake Genesee dried up, which influenced locations for encampments during the initial peopling of the area, as well as the ranges of useful plants and game animals. Small bands of year-round hunters and foragers (Anderson and Cook 2017:271) would favor closeness to the lakeshore and proximity to marshes for the seasonal biodiversity they provided, e.g., fish, turtles, and waterfowl, while sheltering themselves nearby upon higher, drier spots of the glacial moraine (Lothrop et al. 2014).



Lake Genesee, just prior to earliest human occupation. (Young 2012:3)

Panamerican Consultants provided sample images of a few representative artifacts found during the survey, and one pictured chert tool merits particular attention. It is an artifact in Figure 5.18 identified as Parcel 39 Surface Find 2774 Onondaga chert “endscraper with heavy usewear” (Panamerican Phase 1B 2021:5-27, Appendix C. Artifact Catalog C-72). It appears from the photograph to be a unifacial spurred end-scraper. If so, this tool type is associated with Paleoindian occupation, 12,000-10,000 BP (years before the present), and is diagnostic of that early period (Eren et al. 2013; Robinson et al. 2004; Rogers 1986; Shott and Scott 1995). It is a combination tool, the graving spur probably for incising wood, bone, or antler as deduced through use-wear analyses and experimental studies (Maika 2012). Paleoindian spurred scrapers have been found at other Genesee floodplain sites, notably the Piffard Site and the Stone Farm Site (Richard Bark 2017, personal communication). These stone tools are direct evidence of Paleoindian occupation in the proposed Horseshoe Solar area during the earliest postglacial era, and the chert tool in Panamerican’s collection from Parcel 39 could be another such example.

Two other lithics of interest were catalogued by Panamerican but not illustrated in the report. These may be generic scrapers, or diagnostics of the Paleoindian spurred type:

Parcel 31 Surface Find 17, described as an Onondaga chert “multi-purpose scraper and graver tool” (Panamerican Phase 1B 2021:4-16, 5-11, Appendix C. Artifact Catalog C-8).

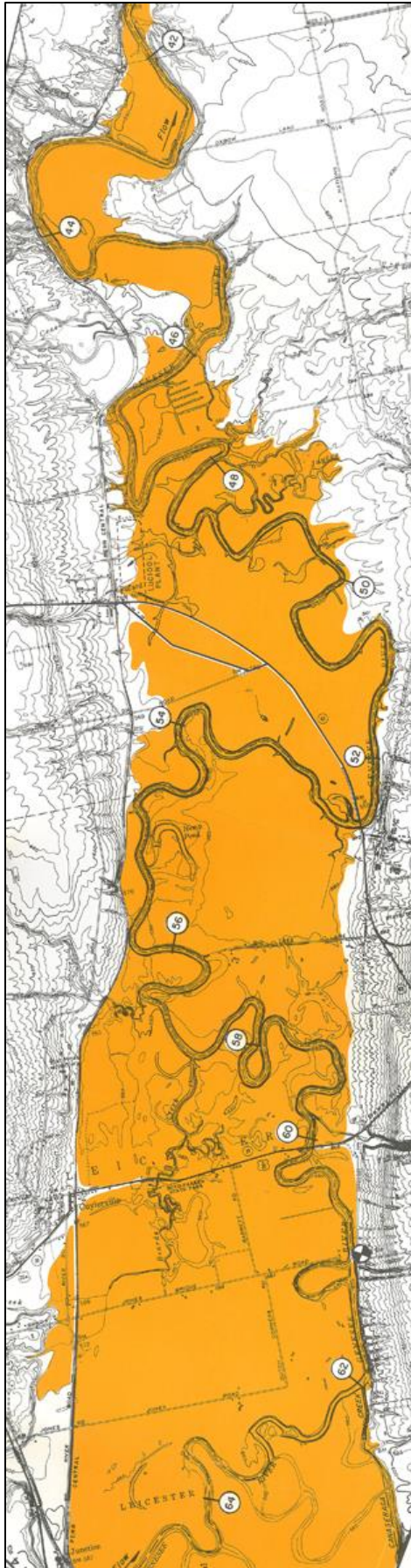
Parcel 37, Surface Find 8, listed as an Onondaga chert “end scraper and side scraper” (Panamerican Phase 1B 2021:5-11, 6-2, Appendix C. Artifact Catalog C-10).

Parcels 31 and 37 are proposed for construction monitoring, but not avoidance.

The River

The Genesee corridor has been favorable for human occupation since the latest glacial recession, with soil and water resources providing abundant habitat for fish, game, and plant foods, as well as natural transportation and trade routes. The river flows through two rocky gorges: at Rochester’s High Falls in Monroe County and Letchworth Gorge in Livingston County. Between those two gorges, the river flows through open glacial moraine, where it meanders widely and constantly forms new banks, shallows, oxbows, and ponds (Young 2012:16). The meandering has long been noted. “The distance was sixty-five miles by river from Geneseo to Rochester, and thirty miles by carriage” (Parsons and Rockfellow 1894:33).

The north-south Genesee Valley Canal was opened from Rochester to Mount Morris in 1840 (Warlick 1994) to provide a consistent and straighter waterway linking the Erie Canal in Rochester with towns to the south. The canal actually ran along a very ancient indigenous trail that was actively used for thousands of years. It remained a major route into recent times, linking the post-Revolutionary Seneca communities at Canawaugus, Big Tree & Little Beard’s Town, Squawkie Hill, Gardeau, and the



Ohagi Tuscarora Village (Seaver 1860:295). The canal's towpath was repurposed during the late 19th century into a railway bed; and the railway bed was again repurposed in the 20th century as today's Genesee Valley Greenway State Park, which is a 90-mile-long hiking/bicycling trail (NYS OPRHP website 2021) that follows the aboriginal Genesee trail. "As a result of hundreds of years of human habitation, the area encompassing the Genesee Valley Greenway State Park has been found to be rich in archeological resources" (NYS OPRHP 2013:51).

The river's lateral meanderings and flooding influenced distribution and density of native settlements and cemeteries. Before the Mount Morris Dam was completed in 1952 to regulate flooding, the Genesee flooded the plain on average every seven years (U.S. Army Corps of Engineers). Even with the dam, another major flood occurred in 1972, placing the entire floodplain again underwater.

Map of 1972 flood, which submerged nearly a thousand homes, published by the OpenValley Project.

Original caption:

"Composite image that combines two separate maps appearing in the U.S. Army Corps of Engineers' report on the 1972 Hurricane Agnes flood. It shows the Genesee Valley between Avon and Mt. Morris, and the extent to which flooding reproduces the footprint of proglacial Lake Genesee."

(OpenValley Project, SUNY Geneseo)

The average seven-year flooding translates into hundreds of major floods throughout the valley's 10,000-year history of occupation. Lacustrine deposition would accompany each flood, covering and sealing the domestic sites, workshops, and cemeteries of earlier generations. An altered landscape may sometimes emerge after a flood, with changes in the river channel and its tributary creeks within the terrain of the glacial moraine, offering new locations favored for habitation, canoe landings, gardens & crops, work spaces, and burials (Walker et al. 1997).

Settlement locations were further influenced by more ordinary, non-catastrophic variables introduced by the riverine setting, including annual overbank alluvium, erosion from lateral channel migration, and deposition of lesser floodwater sediments. The numerous horseshoe- and crescent-shaped ponds on the Genesee floodplain are vestigial oxbows that attest to the river's lateral meanderings since the last glacial recession 13,000 years ago. Loopy shifts in the channel erode banks and redeposit transported material downstream (Young 2012:16). Channel erosion, however, is contained within the "beltway" of a river and generally does not extend onto an open floodplain. Lowland rivers with wide floodplains usually preserve most of their archaeological record (Clevis et al. 2006:867-868). The Genesee River fits this description.

Floodplain Sediments

Genesee floodplain deposition is directly relevant to the Horseshoe Solar project. The U.S. Army Corps of Engineers estimates the accumulation of alluvial soils prior to European arrival at 4-6 inches per century (Young 2012:16). That rate has more than doubled since European settlement.

Stratification, or the superposition of younger sites atop older ones, is typical in the Genesee floodplain and can be visualized by using some known examples. During a 1936 salvage dig at Canawaugus (before a mechanized disturbance), the Rochester Museum of Arts and Sciences recorded six burials at depths of 1' to 1'10" (Hayes 1965:4-7; Ritchie 1969:323-324). The burials were from the Reservation years of the late-18th to early-19th century. Older burials and habitation features at Canawaugus may be completely sealed by intervening culturally-sterile sediments, which can effectively mask older cultural elements below (Benedetti et al. 2006; Clevis et al. 2006). In Panamerican's field methodology, "Shovel tests averaged 16 inches (40 centimeters [cm]) in diameter and were excavated at least four inches (10 cm) into culturally sterile soil unless an impasse such as bedrock was encountered or digging was precluded by water seepage" (Panamerican Phase 1B, 2021:2-7). The noted depth of four inches represents a century of average floodplain sediment build-up, yet the valley hosted human activity for over 100 centuries.

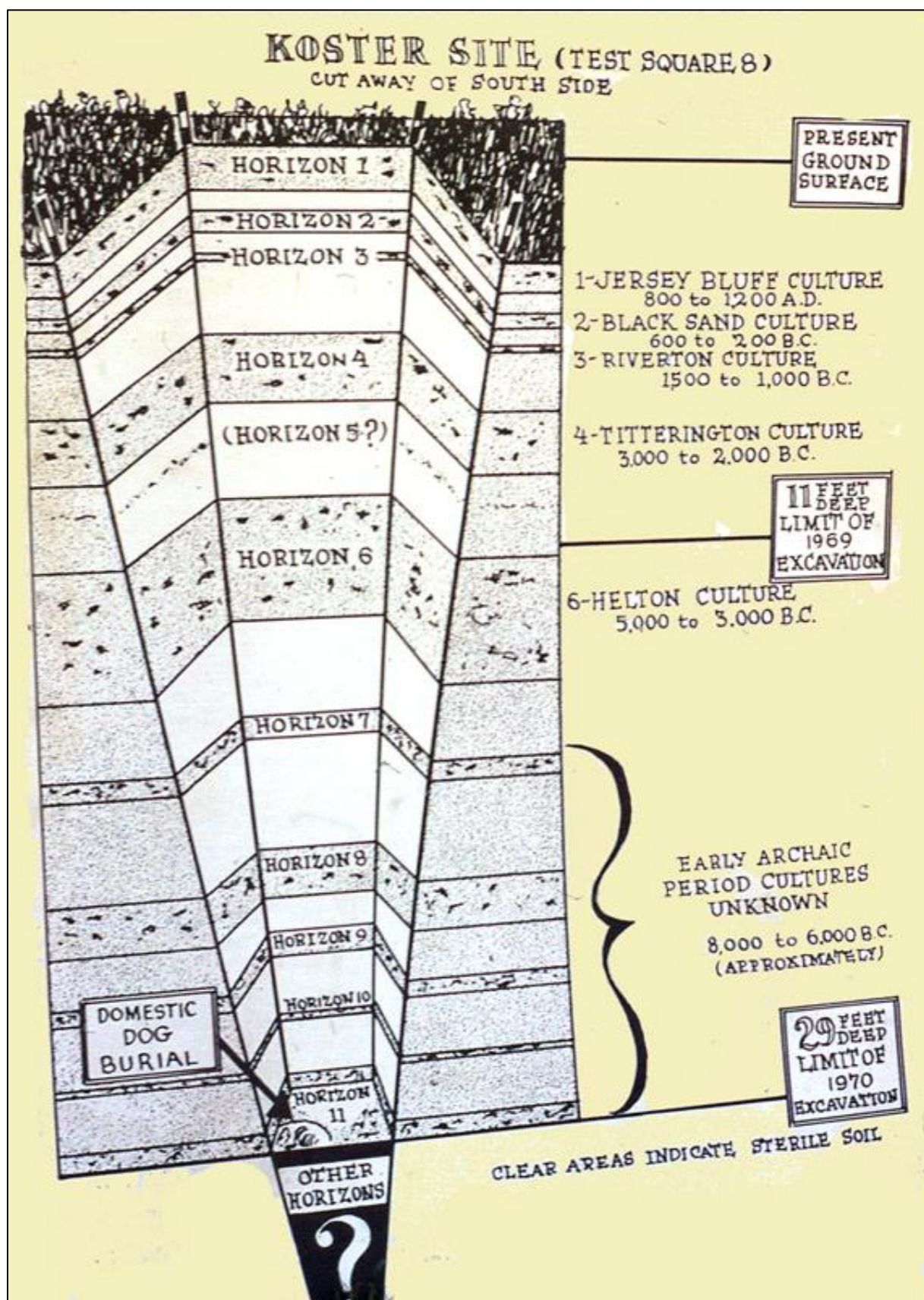
The overall floodplain deposition is deep, with the potential for holding a sequence of cultural material between many of the strata:

Floodplain sediments such as those of the Genesee River usually contain a detailed sedimentary record of the erosional and depositional history averaged over a large region. ... such fluvial sediments often contain the best local records of climatic variability, archaeology, and tectonic history. ... The postglacial history of the Genesee Valley is preserved within approximately 50 feet of fluvial sediments ... within the confines of the modern Genesee River floodplain. [Young 2012:14]

Sites that are said to be multi-component (recurring periods of increased population intensity) are often detected during surface collecting by finding mixed artifacts of different ages, as Panamerican Consultants did during the Phase 1B survey. Further, the Genesee floodplain is a stratified (layered) environment, containing layered sequences of cultural material of different ages between alluvial sediments. This vertical dimension was not addressed by the Phase 1B field investigation.

It was just such a surface collection that drew initial attention to a farmer's field in the Illinois River valley in 1967, where subsequent archaeological exploration of the alluvial sediments revealed a deeply stratified multi-component site on the Koster Farm (Digital Archaeological Record 2018). The Illinois River floodplain has subsurface conditions comparable to the Genesee River floodplain.

As an example of stratification, the following drawing is the vertical soil profile of a test square excavated at the Koster Site in the Illinois River floodplain during 1969-1970. Note the layering of cultural horizons, often separated by culturally sterile layers of alluvial sediments. Clearly, encountering sterile strata does not indicate, nor even suggest, the absence of cultural material further below. Instead, the sterile layers act more like "bookmarks" for the archaeologist by conveniently separating sequentially older, deeper cultural components. This particular profile records several early periods of residence in the upper 11 feet, dating to 2,000 B.C. Deeper excavation continued the following year, revealing several more occupations dating to 6,000 B.C. or older, including the discovery of previously unknown Early Archaic settlements. The researchers also noted that more cultural material is expected to lie further below the extent of this particular unit's excavation.



Source: St. Louis Community College, <http://users.stlcc.edu/mfuller/koster.html>

Most of the proposed Horseshoe Solar construction is designed to intrude 5 feet to 20 feet deep, which is far deeper than the surface soils that were visually inspected, or which were shovel-tested to only the first culturally sterile stratum in Phase 1B. Horseshoe Solar construction therefore poses the likelihood of damaging resources encountered below the tested depth. "Because the APE contains approximately 1227 acres of alluvial soils, there is also a potential for deeply buried cultural deposits," (NYS OPRHP 2019).

Intersections of waterways, such as the Honeoye Creek/Genesee River juncture, attract human habitation for the practicalities of waterborne transportation and bountiful natural resources. Another floodplain, very similar to the Honeoye Creek intersection with the Genesee, was excavated in 1995 at the confluence of tributary Bald Eagle Creek with the West Branch of the Susquehanna River, at Memorial Park outside the City of Lock Haven in Clinton County, Pennsylvania.

As a result of these excavations, at least 15 components, ranging in age from ca. 5900 B.C. to A.D. 1334, were identified in stratified deposits extending to at least three meters below ground surface within a 50 meter by 200-meter study area. This study area was covered by fill material over two historic plow zones. The combined thickness of the fill and plow zones ranged between 40 cm and 125 cm. [Hart and Sidell 1996:4-5]

Researchers at the Memorial Park Site mapped a great many pit features and the post mold patterns of several aboriginal structures (Hart and Sidell 1996:5). It is noteworthy that those extensive cultural elements were encountered well below the plow zone, and their stratification extended 3 meters (9.8 feet) deep, which is exactly within the ground disturbance depth proposed for Horseshoe Solar construction. It is another example that floodplains in the glaciated Northeast run deep; they preserve stratified multi-component sites within alluvial sediments; and they retain most of their archaeological resources. There is no basis to believe that the proposed Horseshoe Solar footprint on the Genesee floodplain is an exception to this pattern.

Panamerican Consultants has repeatedly alerted Invenergy to the high probability of cultural features preserved within the layered soils below the plow zone in the Ground Disturbance Area (GDA), which would be damaged or destroyed by the proposed Horseshoe Solar installation. Even before the field survey, Panamerican had already determined through its literature search and maps that "22.1 acres of the GDA for the project's non-linear components and 136,966 ft of its linear portions are on land that has relatively high potential to contain Native American archaeological materials" (Panamerican 2021 Phase 1B:2-3).

Cultural Evolution in the Valley

It is necessary to bear in mind the Genesee Valley's immeasurable contribution to cultural evolution due to its early and continuous settlement. Major river valleys the world-over are recognized as birthing places of societies, and this also holds true for North America. The Hudson, Mohawk, Genesee, Susquehanna, St. Lawrence,

Ohio, and Niagara all played their parts as long-term centers of population aggregation and the emergence of Northern Iroquoian nations (Birch 2015; Engelbrecht 2003). The Genesee Valley is a rarity in the Northeast because it remains relatively intact, having thus far avoided wholesale encroachment by commercial development.

Many of these valleys, including the Genesee, were cosmopolitan areas in the sense of hosting a range of communities, sometimes melding but often competing for the same subsistence resources. For instance, the steatite potsherds in the Klink inventory (RMSC HNE 25-1 records) denote a connection involving migration or trade with eastern Pennsylvania, the source of steatite (Wholey and Shaffer 2014). Territorial competition among differing groups is hypothesized as a factor for establishing cemeteries near naturally rich food producing areas. It complements a bond between the people and the sustaining landscape, and with the sacred and eternal elements of life, and marks a group's homeland as the resting place of its ancestors (Walker 2015:162). In essence, cemeteries are territorial markers, for no one holds a closer bond with the land than those whose bones have returned to Mother Earth within its soil.

Seneca communities moved their towns on average every 20 years or so, or about once every generation, to a fresh site with abundant firewood, new dwellings and granaries, and fewer crop-eating insect larvae and rootworms which eventually establish themselves in cornfields and squash patches. (Birch et al. 2021; Jordan 2004, Starna et al. 1984). Prior to horticulture, communities shifted locations through a seasonal rotation of sites for resource procurement within their territory (Walker 2015). In later periods when villages were large, work parties could make the appropriate rotation to exploit seasonal fish runs on the river or migrations of waterfowl and passenger pigeons, to harvest wild edibles, collect mast, harvest fibrous black ash saplings, sweetgrass, and basswood bark, cut elm bark, boil maple sap, etc. Such seasonal forays may be evidenced by small, short-term sites that were repeatedly used as specialized work areas for processing specific resources (Engelbrecht 2003). As documented in the 18th century, a number of communities or population clusters simultaneously occupied the Genesee Valley during all time periods. "Seasonal riparian wetlands could have supported large corporate groups for extended durations of time, and so the strategic exploitation of these habitats may have led to increased sedentary behavior among local populations" (Walker 2015:155).

These formative events and patterns of life occurred exactly in the proposed Horseshoe Solar area. Proposed construction maps endeavor to avoid published sites in order to advance the conclusion that doing so places the most noteworthy archaeological resources outside the Area of Potential Effect. Pinpointing sites in this manner, rather than viewing the larger landscape, improperly diminishes uncertainties about what lies below the tested depths. The area is multi-component and stratified, and a sparsity of surface finds provides no basis to dismiss the significance of as-yet undisturbed cultural deposits.

Multitude of Sites

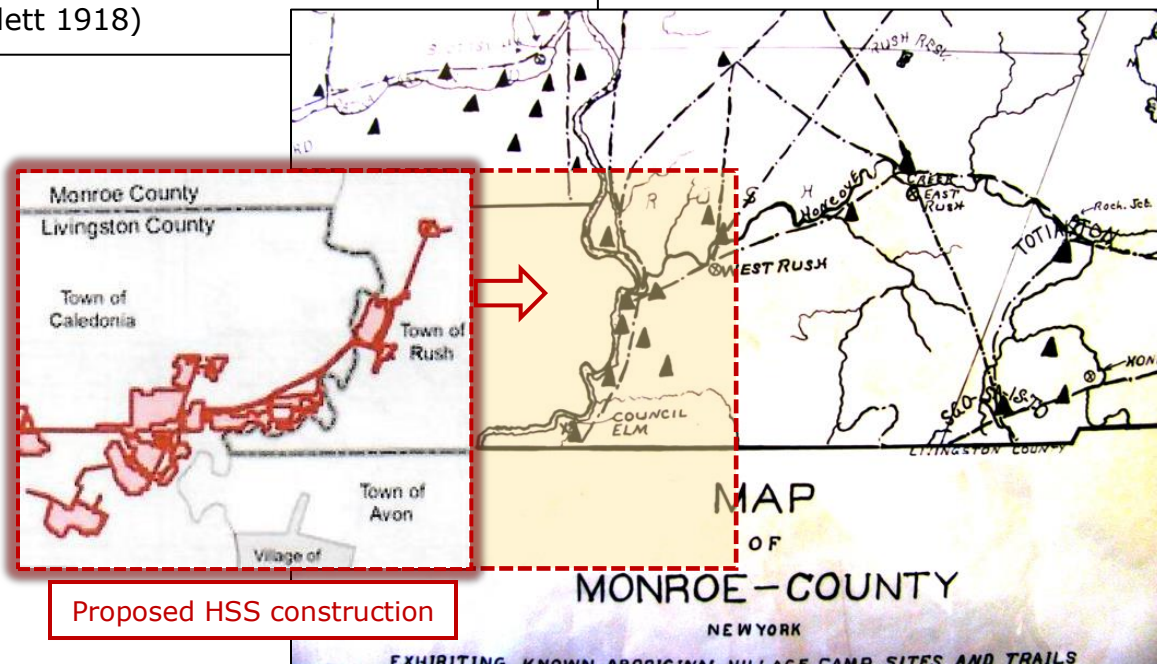
Indigenous sites throughout the Genesee Valley reflect all cultural time periods, from the immediate postglacial era to the present. A few examples, from south to north:

- Scores of early sites are situated in the short stretch between Big Tree & Little Beard's Town (Geneseo) and Squawkie Hill (Mount Morris). A large proportion are dated 3,000-5,000 years old (Bark 1982, 1984, 1985, 1986; Vitale 1983), and some are older (Trubowitz 1979:55).
- Sites in the immediate vicinity of the State University of New York at Geneseo have been explored, fourteen of which are called the Macauley Complex and excavated 1965-1989 by the SUNY Geneseo Anthropology Department. Many of the Macauley sites were occupied multiple times over 5,000 years, through Late Archaic, Early Woodland, and Late Woodland periods (Maxson 2010, 2015).
- Cultural Resource Management (CRM) surveys conducted in the 1970s, prior to construction of the Genesee Expressway Interstate 390, discovered numerous sites along the entire expressway route east of the Genesee River (Trubowitz and Miller 1982).
- A site was discovered in 2011 by Panamerican Consultants at Oak Openings in Rush, near the Livingston County border (Hanley et al. 2012). A concentration of lithics at one locus was datable to circa AD 1300-1500, while the surrounding area presented artifacts from earlier periods dating 1500-100 BC. These results indicate traditional recurring use of the location through time.

One hundred years ago, the newly-chartered New York State Archaeological Association (NYSAA) and its founding chapter, Lewis Henry Morgan Chapter (1916) of Rochester, created some regional maps of sites, initially building upon the works of their 19th-century predecessors. NYSAA's inception and guidance came from the first NYS Archaeologist Arthur C. Parker, who was a Seneca and the first Native American professional archaeologist (Baugher 2018:1-3). Harrison C. Follett, the one-time mayor of Avon, collaborated in these studies and contributed many maps and notes published by Parker, including sites in the Genesee Valley. These efforts provided an early-20th-century inventory of cultural resources, although many of their records were unfortunately not precise, and some of their field methods and site interpretations are now considered outmoded as well.

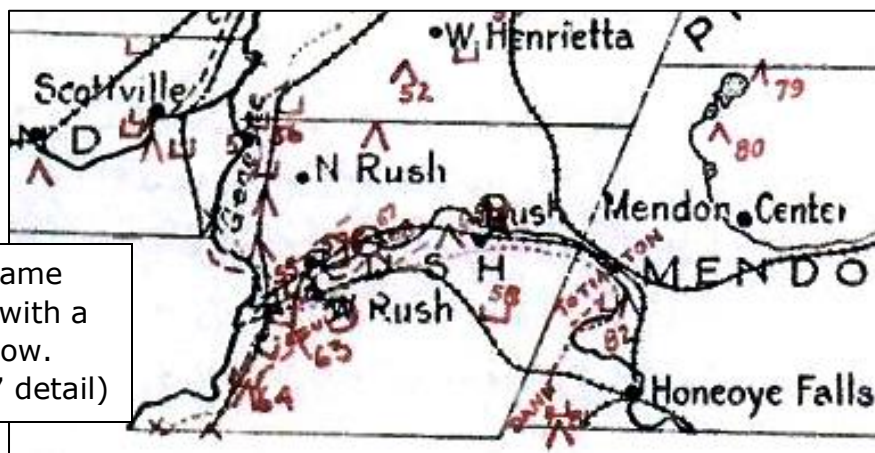
The confluence of the Genesee River and its tributary Honeoye Creek has been a longstanding busy intersection of human activity, and this is seen in the mapping projects of Follett, Parker, and others.

Detail of Monroe County map showing
aboriginal sites and trails at the confluence
of Honeoye Creek and the Genesee River.
(Follett 1918)



Proposed HSS construction

Parker's edition of the same
juncture of waterways, with a
key to map symbols below.
(Parker 1920: Plate 187 detail)



▲	Village site. In all cases numerals refer to the text.
×	Camp site or other indications covering small area.
○	Earth work or earthen ring.
◐	Incomplete ring or crescent.
□	Burial site or grave.
□	Ossuary of series in which several skeletons are buried.
●	Mound or location of mound now destroyed.

└─┘	Rock shelter or cave.
⊗	Petroglyph.
---	Traces of occupation.
☼	Indian spring.
☼	Shell heaps or kitchen middens.
☼	Stone heap or cairn.
U	Caches or pits.

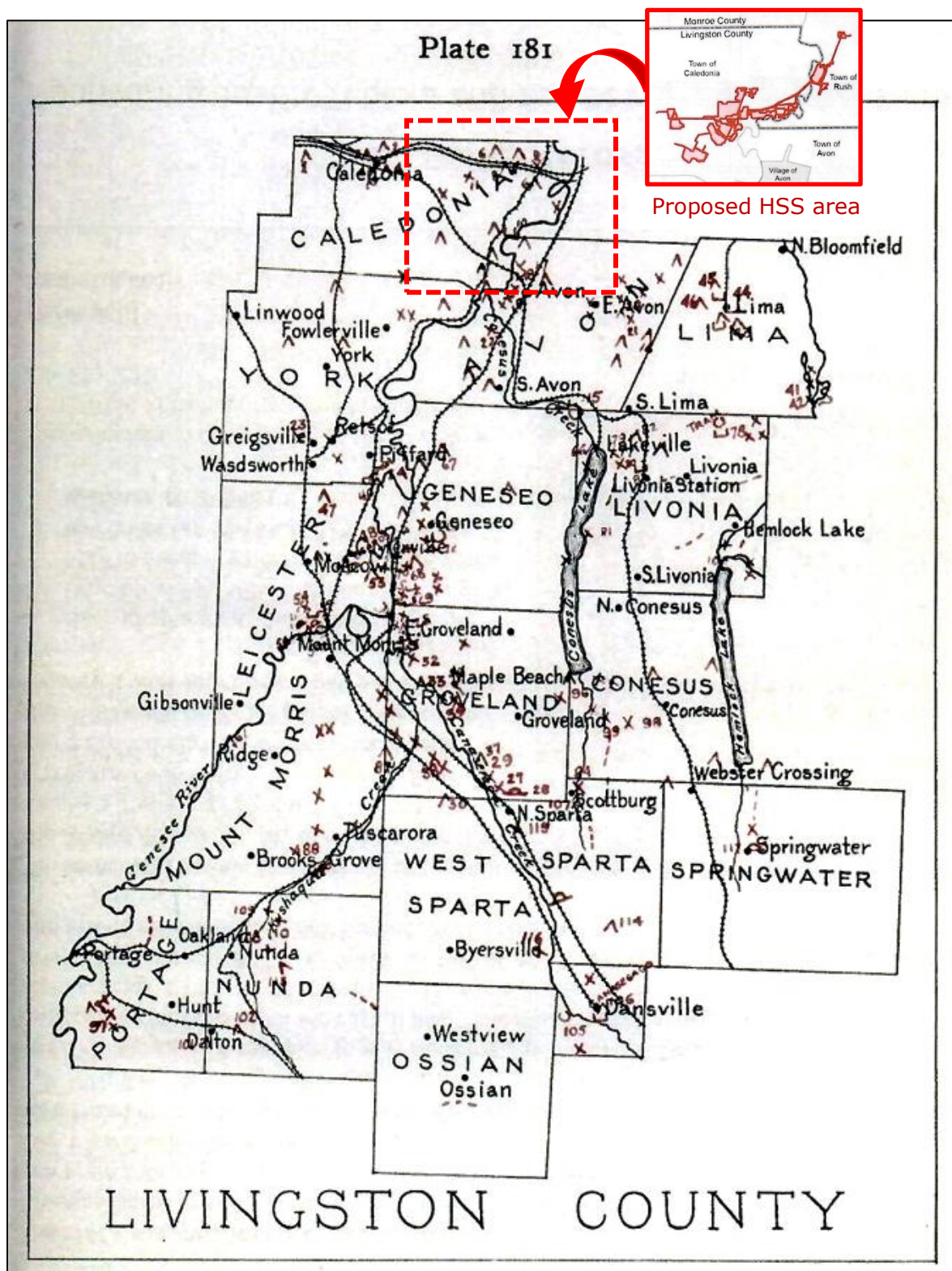
Fig. 69 Key to Characters on County Maps

The following list accompanies Parker's Plate 187 about the sites indicated on the above detail of Honeoye Creek in the Town of Rush (Parker 1920:614-615):

- 53 Camp site near the Genesee where many *Unio* shells have been found. This was on a hillside three-fourths of a mile east of the mouth of Allen creek.
- 54 Early village site on the Burgett farm 2¼ miles south of West Rush and west of the road. Relics have been found scattered over the farm. In 1911 a skeleton was found in a sand knoll one-fourth of a mile east of the Burgett residence.
- 55 Village site stretching along the south bank of the Honeoye near the mouth and north of the New York Central Railroad tracks. Here an Iroquoian occupation overlaps an older Algonkian. The sites stretch along the creek for three-fourths of a mile. At the eastern end, about one-half of a mile from Golah, Joseph Mattern opened an ossuary containing a number of skeletons, but there were no relics.
- 56 Burial site in a sand pit 150 feet north of the Rush town line in Henrietta, and 200 feet from the river. A skull and kettle were plowed up 200 feet east of these. Some skeletons were also found on the line of the Erie Railroad 200 feet north of the town line.
- 57 Village site with stone implements occurs on the Thomas farm, 1½ miles southwest of East Rush. This is south of Honeoye creek and near the mouth of Stony brook.
- 58 Burial site midway between Honeoye Falls and West Rush, and about 2 miles directly south of Rush along the railroad track. Partly explored by Joseph Mattern.
- 59 Burial site north of West Rush village just south of the Lehigh Valley Railroad tracks and on both sides of the road. Many iron tomahawks and war arrowheads have been found in a slight gully three-fourths of a mile northwest of West Rush, and twelve skeletons were exhumed in digging a cellar about the same distance north of that village. Across the road others were found. These were on the land of Peter Martin and J. B. Hamilton.
- 63 Village site on the Stull farm on the east side of the Genesee, just south of the Honeoye at its confluence. The region here shows several occupations by similar and different stocks and at widely different periods. The Stull farm has yielded both early and recent Iroquoian objects, some fine clay pipes, and also pre-Iroquoian slate objects. The burials are found between the Stull house and the railroad. A few burials also have been discovered back of the house on the hillside slope to the river.
- 64 Village on the Morris farm yielding stone implements of good quality. This site is on a hill overlooking the river on the east.
- 65 Village site in East Rush cemetery, noted by Harris (p. 60). Stone implements have been found.
- 66 Small village site on north side of the Honeoye at West Rush. Many flint blades and a few celts have been found.
- 67-68 Two enclosures were in Rush near the village of West Rush and on the banks of Honeoye creek, which defended one of these on one side. The other

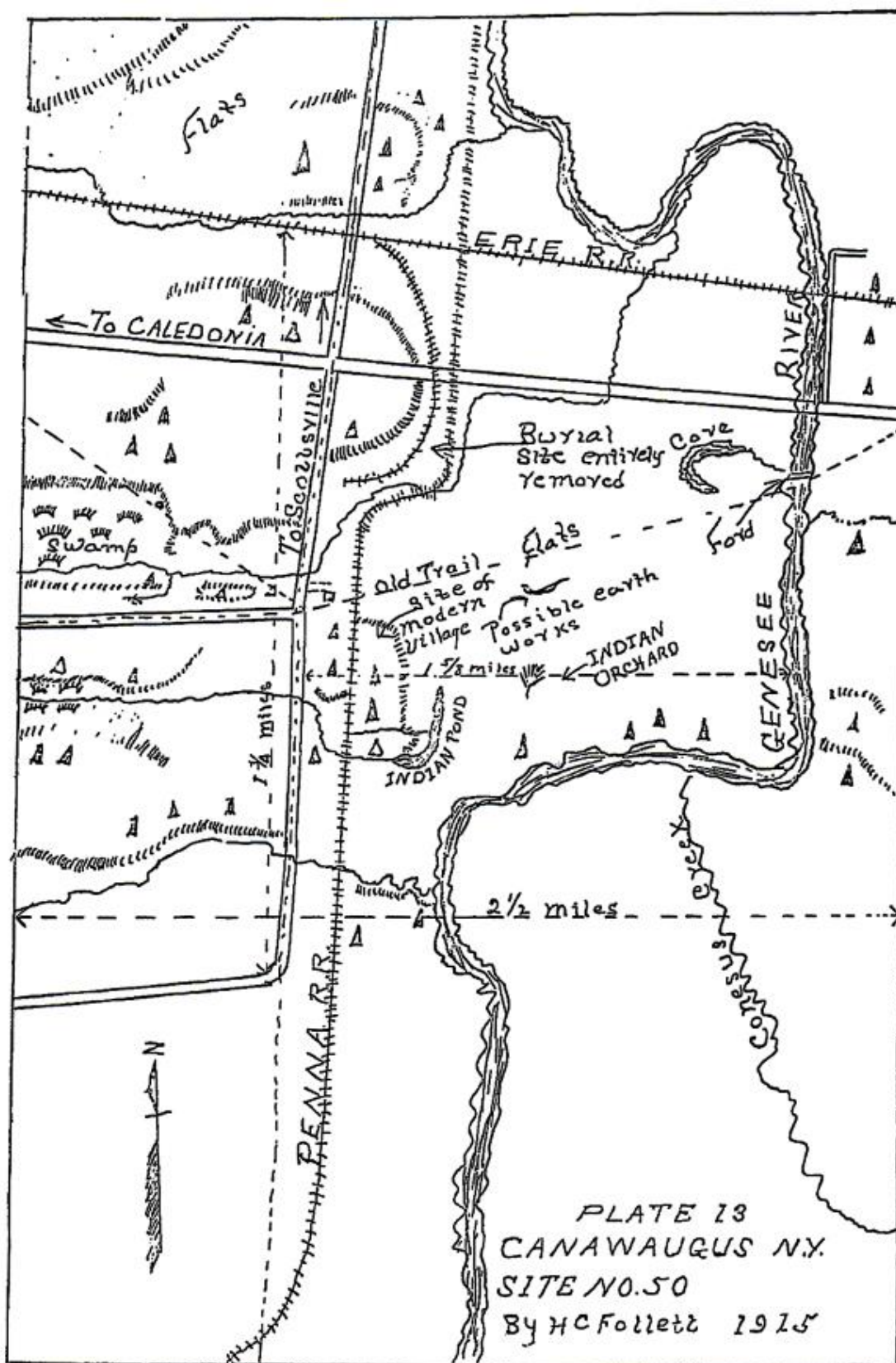
was on higher ground 100 rods southward. Each was of 4 acres and had caches and broken pottery (Squier, p. 60). These are probably on lot 51.

Similar density is reported throughout the Genesee floodplain in Livingston County:

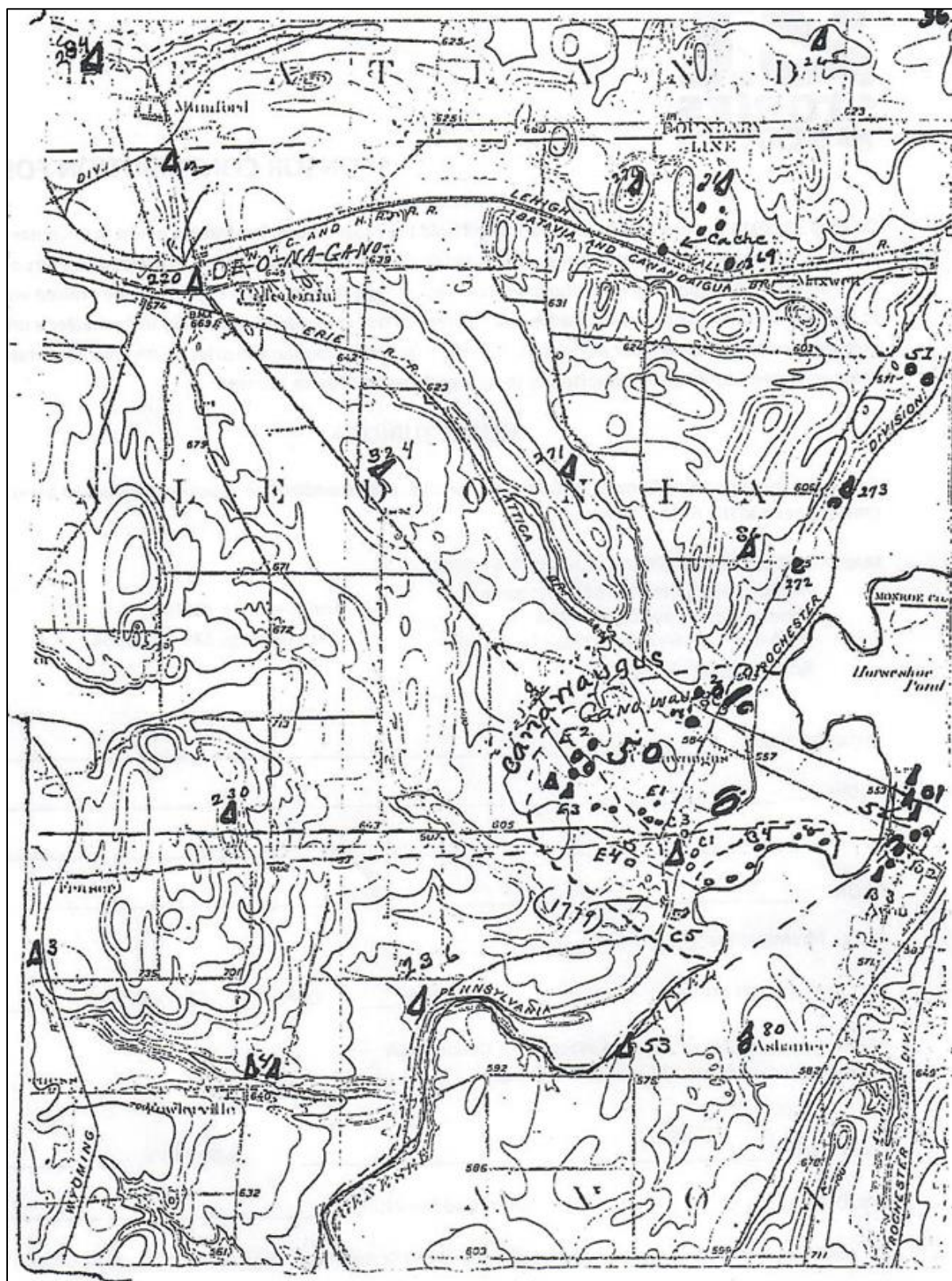


Livingston County sites (Parker 1920: Plate 181)

Follett and others also mapped details of many specific sites, such as Canawaugus:



Canawaugus (Follett 1915: Plate 13)



Canawaugus (Follett and Schoff 1924: Map 36)

These historical maps reveal indigenous sites in great profusion along the river and creeks. Maps generated by Panamerican Consultants show comparable site density in the HSS project area, and Panamerican responsibly expresses caution regarding cultural sensitivity. "Consultation with Seneca Nation and Tonawanda Seneca confirmed the sensitivity of the area adjacent to the confluence of the Honeoye Creek and the Genesee River ('Rush Junction ')" (Panamerican Phase 1B EOF 2020:6). This sentiment echoes the findings made by all researchers over the last two centuries:

... the fertile area of western New York — characterized as this area is, by its numerous streams and interior lakes, and presenting a superficies abounding in all the elements of ancient subsistence. In its forest state, it was known to abound in game and fish, which yielded the hunter a ready reward ... Geographically, it possessed some very strong points to favor the prosperity of its ancient possessors, connected as it was, by water, with the Ohio valley, the upper lakes, and the Atlantic ocean ... [Schoolcraft 1847:39-40]

Palimpsest of Native Occupation

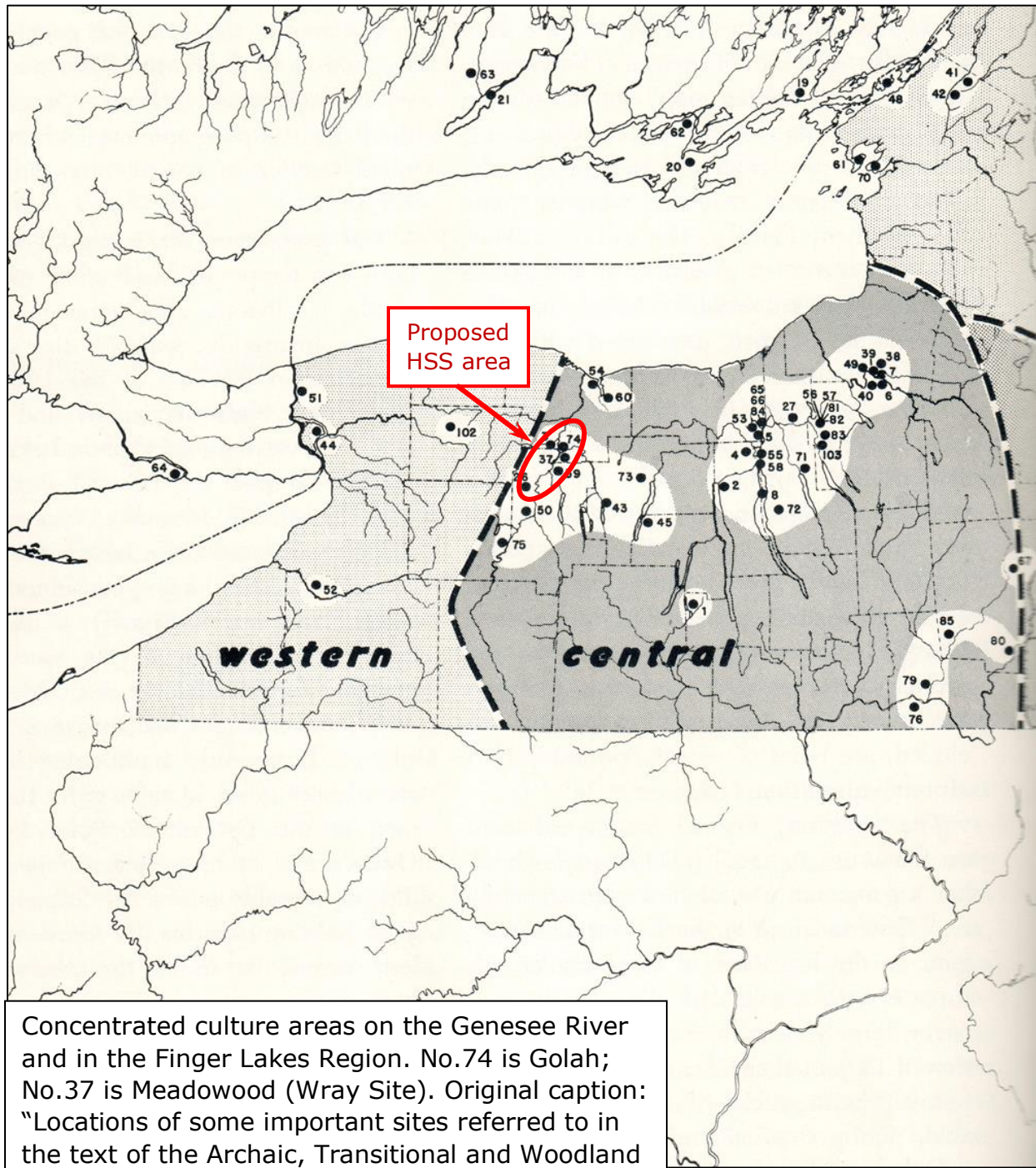
Geological forces shaped the Genesee country through multiple glaciations, and the meandering river and its active floodplain continue to shape it today. Nature has overwritten the landscape many times, and humans played their role upon this moving stage for millennia. The river periodically spreads a fresh coat of sediment over the scene, providing a clean slate for continued occupation that overwrites previous human activities and manmade features, creating multi-component stratification. In these ways, the archaeological record of the Genesee Valley is a palimpsest of native occupation and cultural evolution through all time periods.

It has long been recognized that the aboriginal sites on the Genesee and its major tributaries are numerous, and bespeak a great antiquity to native presence here. "The whole of this country was occupied by the Senecas; and their cemeteries, and the traces of their ancient forts and towns, are particularly numerous along the Genesee River, and on the banks of the Honeoye" (Squier 1851:60).

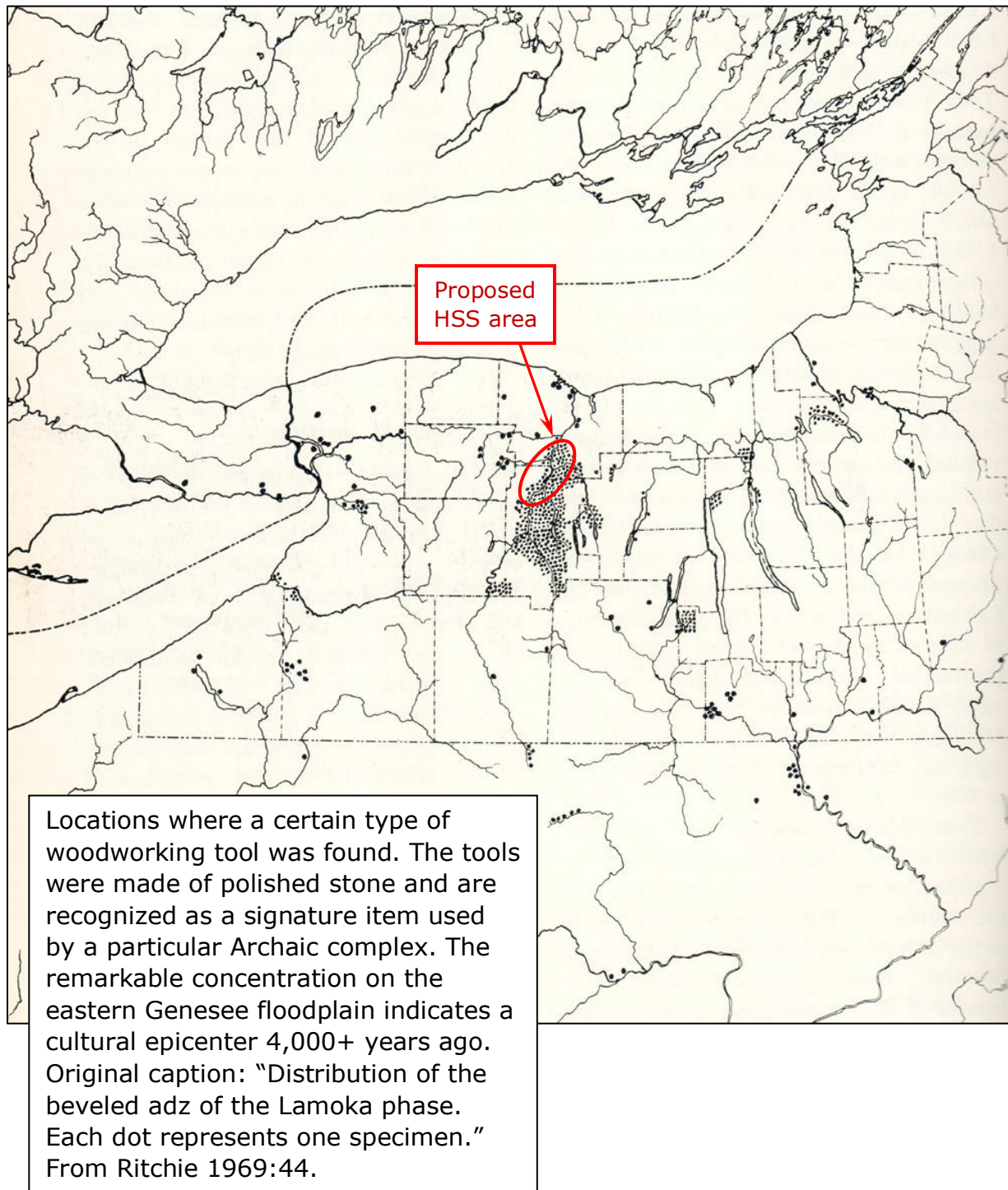
Archaeological evidence reveals repeated occupation of sites over thousands of years (Madrigal 2006). William Ritchie's selection of artifacts circa 1,000-700 BP photographed from the Klink Site (Ritchie 1944:51, Plate 24) post-date the mostly earlier artifacts circa 6,000-3,300 BP found by Panamerican in Parcel 39 Golah during their surface inspection (Panamerican Phase 1B 2021, Figs. 5.13 – 5.18) and described in paragraph 5.6.1.1 (5-16). Panamerican reminds us on the same page and many other places in the report, "the Phase 1B artifact assemblage at Locus ... indicates recurrent occupation (i.e., multi-component)." Panamerican performed a well-strategized Phase 1A-B survey, sampling a range of cultural resources in the proposed Horseshoe Solar Area of Potential Effect (APE), which is embedded within a richly endowed cultural environment. While discussions among DPS, OPRHP, and Invenergy have generally centered upon the most recent, historical Native reservations, "it is worth noting that *all* [sic] of the known post-Revolutionary Haudenosaunee sites have earlier, prehistoric components" (Ryan 2017:156).

Epicenter

Two more maps clearly illustrate the concentration of indigenous heritage along the Genesee corridor in southern Monroe County and Livingston County. These maps were published by William A. Ritchie, a past State Archaeologist for New York.



Concentrated culture areas on the Genesee River and in the Finger Lakes Region. No.74 is Golah; No.37 is Meadowood (Wray Site). Original caption: "Locations of some important sites referred to in the text of the Archaic, Transitional and Woodland stages." From Ritchie 1969:40.



Every available archaeological or historical map depicts a rich native heritage in the Genesee Valley, and together they portray a center of cultural evolution through time. Land proposed for the Horseshoe Solar facility lies in the heart of this region of Haudenosaunee ancestry and the emergence of the modern Seneca Nation. Construction avoidance of archaeological sites *per se* embodies a limited recognition

of the broader context of a cultural landscape (ACHP 2016:2; Salisbury and Niemel 2005:4). Every investigator who researched the Genesee Valley over the last two centuries has expounded upon the density and overlap of Native cultural resources. Panamerican Consultants, Inc. consistently reaffirmed this fact at each stage of the CRM study. "As outlined in the Phase 1A investigation (Hanley et al. 2020), the project area is generally highly sensitive for Native American archaeological cultural resources and significance" (Panamerican 2021 Phase 1B:1-7).

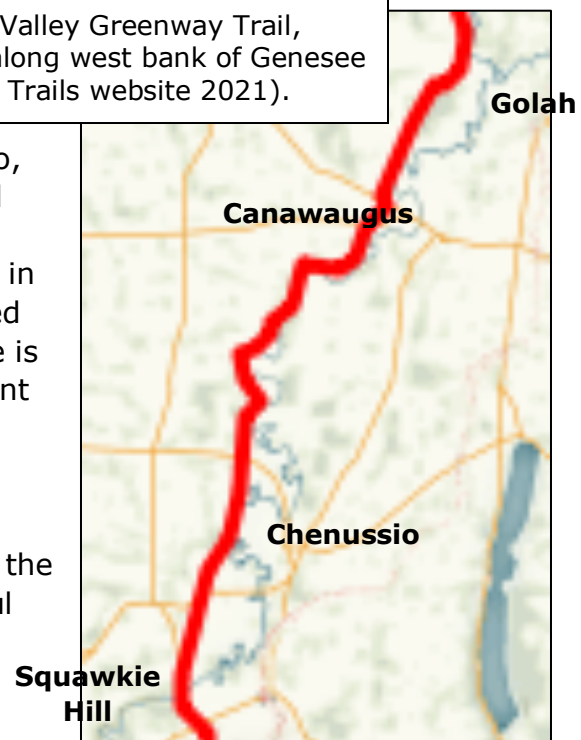
Traditional Places, and Generations

An aboriginal trail through the Genesee Flats was established millennia ago, running the most effectual north-south land route through the valley alongside the west bank of the river. The ancient path remains in use today as a hiking/biking trail, designated as a New York State Park. The trail distance is roughly 25 miles from Squawkie Hill at Mount Morris to Golah in Rush, transiting the floodplain directly through Canawaugus (All Trails website 2021).

The Genesee Trail is a traditional feature of the Native landscape. Genesee means "beautiful valley" in Seneca, and Canawaugus is an example of a traditional locale within this Beautiful Valley. The Seneca place name of Canawaugus translates as "smelly water," connoting the odor emitted from several sulfur springs on the east side of the river.

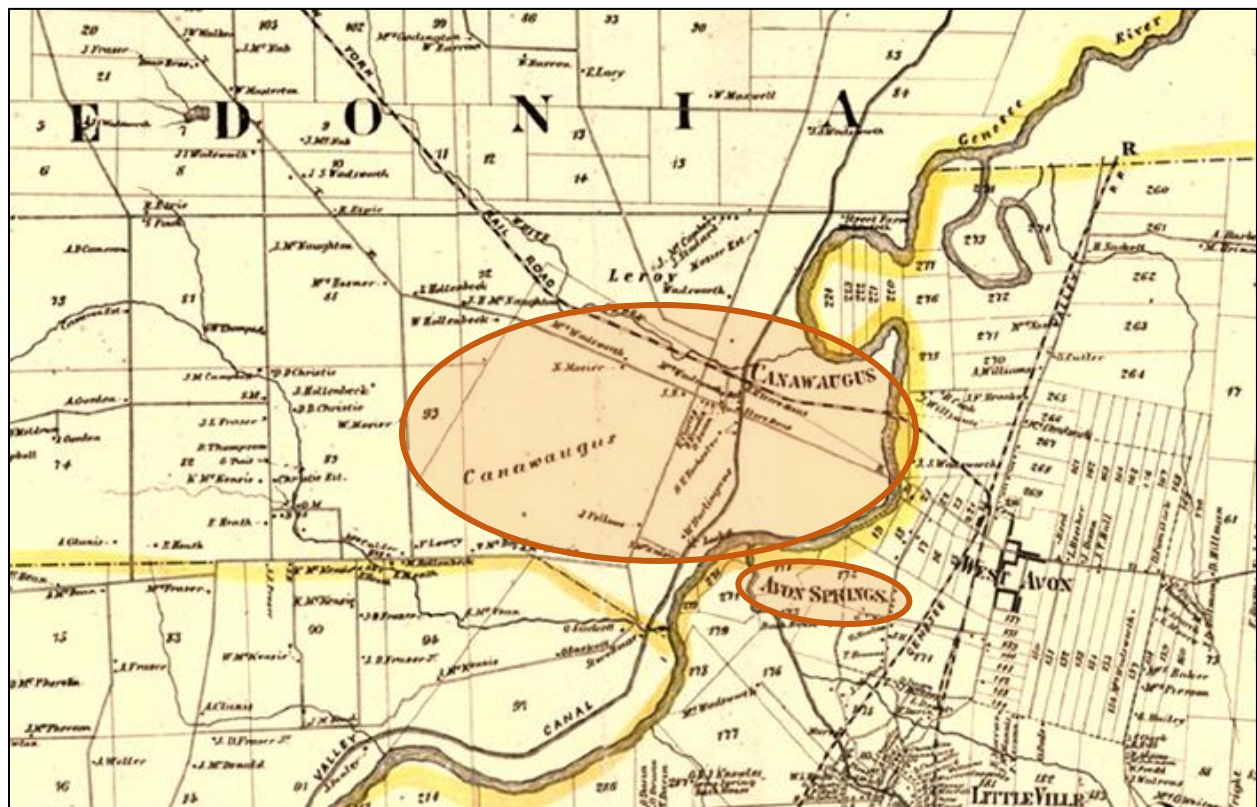
People of all eras tend to favor the same locations, and Canawaugus is but one example of a Seneca place that later attracted European Americans. The sulfur springs, like the Genesee Trail, were recognized as useful resources by enterprising European Americans who migrated into the valley. They built an industry of mineral spas, health resorts and a sanitarium centered in Avon. Sulfur spring water was transported to Pennsylvania for bottling as a patent medicine (Stecher 2013). Prominent landholders started these ventures and, decades after the businesses waned, attempted to revive them with support from the NY State Legislature during the Great Depression (*New York Times* 1936:35). The location of the springs is marked on 19th-century maps (Burr 1829; Gillette 1858).

Genesee Valley Greenway Trail,
running along west bank of Genesee
River (All Trails website 2021).



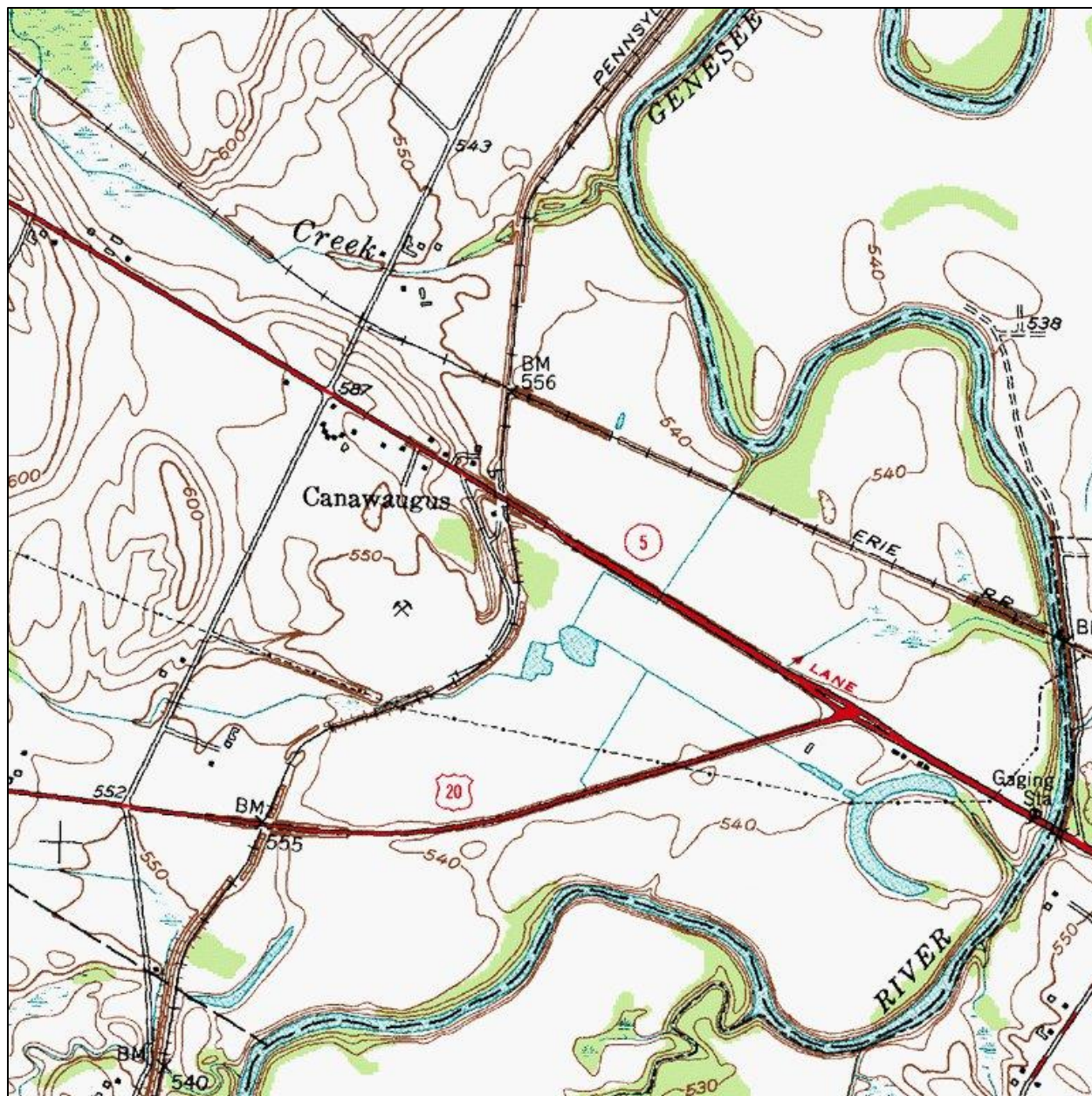


Canawaugus, "smelly water," and Avon's Mineral Spring. Detail from Burr's Map of the County of Livingston 1829.



Canawaugus and Avon Springs, from Gillette's Map of Livingston County 1858. Note that Canawaugus includes more territory than the designated reservation.

Canawaugus Reservation was surveyed and plotted as a rectilinear piece of real estate, according to European American custom, after the 1797 council at Big Tree. Canawaugus was never previously bounded in this manner, but was instead the general location of a traditional place at the river near the sulfur springs, together with its outlying orchards, cropland, and associated oak savanna.



Current topography of the Canawaugus oxbow on the west side of the Genesee River. The crescent pond, lower right, is a vestigial oxbow that also appears in Follett's 1915 map. Additional ponds and wetlands located inside the river's prominent oxbow offered favorable conditions for riparian resource procurement by settled communities over many generations (USGS map detail of Caledonia).

Canawaugus has always been part of a living community, somewhat analogous to a neighborhood where people spend part of their lives, then temporarily relocate but return to again. The living landscape refreshes itself during those intervening years, developing new woody growth and receiving fresh deposits of alluvial sediment from the river to fertilize the soil. "The Haudenosaunee view of the landscape has always been based on the premise that both humans and non-humans are consciously interactive. The environment is interdependent spiritually as well as biologically" (Venables 2010:41).

As people shifted residential locations within the Genesee Valley, their previous residence continued to be part of the community because it held their memories, life experiences, and family burials. Traditional places in the valley were unlikely to be completely unoccupied, and village movement did not entail a sudden departure. The society's horticulturists might return for roots, shoots, and seeds from gardens and nursery stock from orchards to transplant to their new village locations. Remaining structures provided welcome lodging for hunters. As the woods grew in, occasionally girdling a few undesirable saplings would help maintain The Clearing. The same people or their descendants would reestablish residence after returning from other traditional locales. These interims between periods of residential intensity create the multi-component nature of many sites (Joe Stahlman 2021, personal communication).

Comprehending the number of generations involved is illuminating. We know the post-glacial Genesee Valley was habitable as early as 13,000 years ago, and that people definitely lived here by 10,000 years ago. Lifespans and generational cycles were generally shorter in the past, and young women probably married early in life. Mary Jemison was married by age 15 (Seaver 1860:67). Using very conservative figures of five generations per century for 100 centuries, we see that well over 500 generations of Seneca ancestors resided in the valley before European arrival. Space is another revealing factor. As previously noted, the length of the Genesee Flats from Golah to Squawkie Hill is about 25 miles. During any given period, the valley population resided in a number of concurrent settlements with their outlying hamlets and work stations, each shifting to a new location approximately every generation (Birch et al. 2021; Engelbrecht 2003). It quickly becomes apparent why the Genesee Valley is so unusually rich in cultural sites, is so meaningful to the Haudenosaunee, and holds such future learning potential if the valley is preserved.

Colonial Period

The colonial period fur trade in the Northeast often hinged on events transpiring in Western New York, with power struggles between European competitors and intertribal warfare among native confederacies. The Seneca were key players in the historic drama, and some of their villages were depicted in Europeans' early maps. Seneca settlements identified on colonial period maps demonstrate consistency in traditional place names through generations. Canawaugus (Ganöwögës, "smelly or fetid waters" in Seneca, due to nearby sulfur springs) is such a place. For instance, Cornplanter and Handsome Lake were born at Canawaugus in the 1730s (Morgan

Passage from 1798, as related by Squier 1851:61

LIVINGSTON COUNTY—EARTH-WORKS, ETC. 61

LIVINGSTON COUNTY.

THIS county, which adjoins Monroe on the south, was also a favorite ground with the Senecas. It is unsurpassed in beauty and fertility by any territory of equal extent in the State, and abounds with mementoes of its aboriginal possessors, who yielded it reluctantly into the hands of the invading whites. Here, too, once existed a considerable number of ancient earth-works, but the leveling plough has passed over most of them; and though their sites are still remembered by the early settlers, but few are sufficiently well preserved to admit of exact survey and measurement.

→ "In 1798," said the venerable Judge Augustus Porter, of Niagara, in a letter to O. H. Marshall, Esq., of Buffalo, "I surveyed the Indian Reservation of *Kanawageas*. There were then in the open flats of the Reservation the embankments of an old fort, which included very nearly two acres. It corresponded in situation and appearance with many others which I have seen in this part of the country, and which seem to bear a high antiquity." The Kanawageas Reservation embraced the township of York in this county.

Judge Porter also mentioned that he knew of two other works on the "Smith and Jones's Flat," near Mount Morris, (also in Livingston county,) all of which had the same appearance.

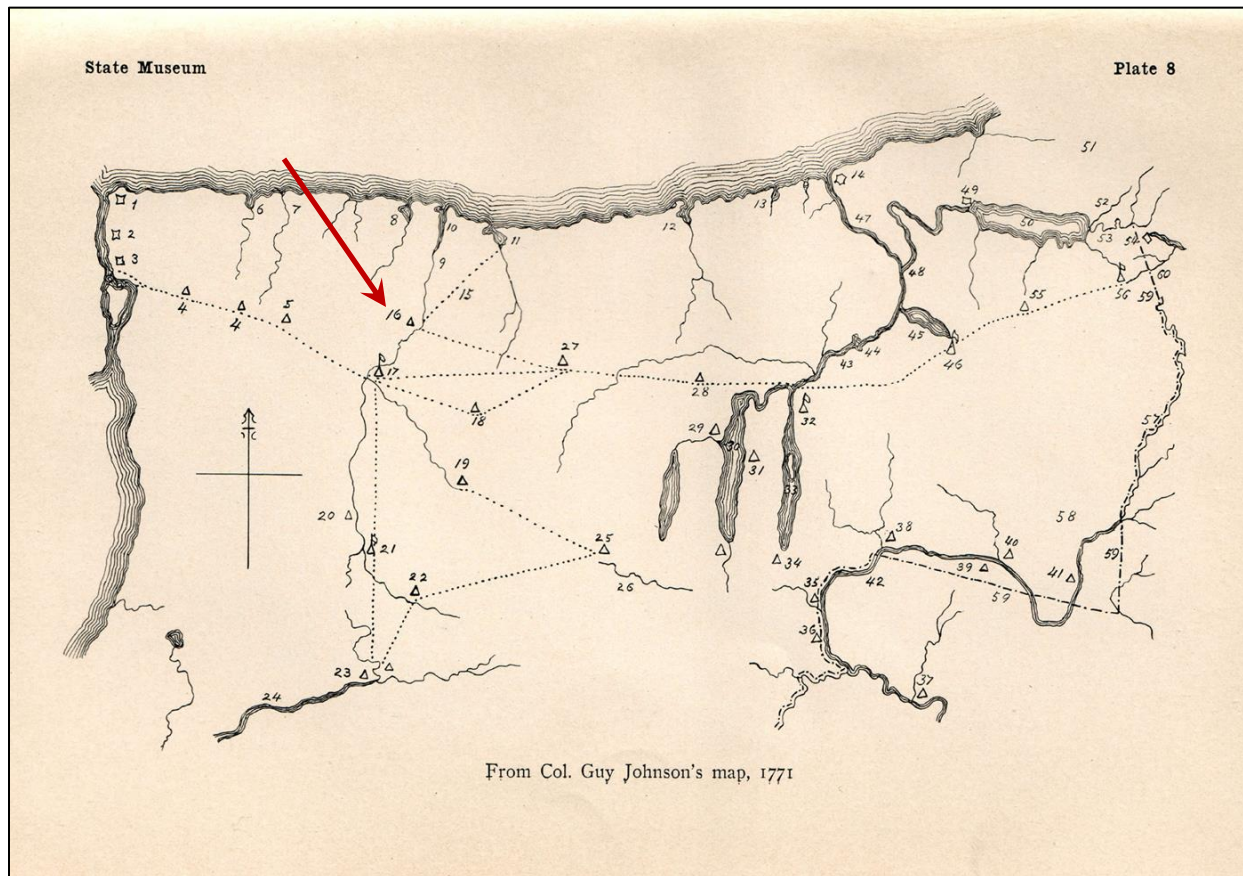
A work also occurs in the town of Avon, not far from the beautiful village of Avon Springs, upon the flats of the Genesee River. It is described by W. H. C. Hosmer, Esq., in the notes to his beautiful poem of "YONONDIO."

Another and very similar work once existed in the north-eastern part of Avon township, about two and a half miles from the village of Lima. Some portions of the lines may yet be traced, but with difficulty.

The second paragraph describes, in 1798, the physical remains of an earlier Canawaugus village on the same site. This is reasonable, for a favored location would see repeated occupation. This passage corroborates the French map made forty years earlier.

American Revolution

As the Revolutionary War brewed, English military officers spent considerable time, energy, and gifts in reaffirming their alliance with the Haudenosaunee, who had fought with them against the French in the previous war. This map was made by one of the English officers during his time in Seneca territory:



Map by Col. Guy Johnson, 1771. Canawaugus is identified as No.16 on the Genesee River, and Chenussio is No.17. From Beauchamp 1905: Plate 8.

More than a residential location, Canawaugus was an important crossroad of east-west and north-south transportation routes, just as it is today.

Canawaugus, near present-day Avon, New York, was a small Seneca village on the Genesee River occupied several decades prior to the Revolution until shortly after 1826, when the Genesee Villages were sold in the Treaty of Buffalo Creek. Though small, the village was a key node for Haudenosaunee travel and trade from the mid-eighteenth to early-nineteenth century, centrally located on the intersection between the east-west thoroughfare—connecting east to the Finger Lakes, and west to Lake Erie—with the north-

south route that connected Lake Ontario with the rich hunting grounds of the Genesee and Allegheny. [Ryan 2017:181]

Historical figures and events of the Genesee Valley are important in American history of the Colonial and Federal Periods. While most of the American Revolution was fought close to the Atlantic seaboard and in the Hudson-Champlain corridor, armed conflict involving the Haudenosaunee carried the war deep into the interior of the continent, with the Genesee Valley as one of the westernmost theaters of military operations. It is aptly noted by the Seneca Nation of Indians, as articulated in a statement attached to OPRHP's June 9, 2021 letter to the Department of Public Service, that Canawaugus "qualifies as an Area of Significance for the Colonial Period from the American viewpoint as well as the Native viewpoint" (NYS OPRHP letter 2021:5).

Over the centuries, the alluvial flats along the river became the breadbasket of the Seneca Nation. Main trails intersected at Canawaugus, which was home to the diplomat Cornplanter and his half-brother the Prophet Handsome Lake, founder of the Longhouse Religion (Fenton 1968; Morgan 1851; Wallace 1969), as well as their nephew the prominent war chief Governor Blacksnake. Many other famed leaders and orators are associated with villages and historical events in the valley, including Tall Chief, Little Beard, Big Kettle, Farmer's Brother, Red Jacket, and Old Smoke (Hagan 1976). So, too, is the "White Woman of the Genesee" Mary Jemison, an adopted Seneca (Seaver 1860).

Chennusio, also known as Little Beard's Town, was the principal western Seneca village, located between present Genesee and the village of Cuylerville. Its eastern contemporary was Kanadasaga, now Geneva, on Seneca Lake. A Haudenosaunee trail, part of today's U.S. Route 20, ran directly from Kanadasaga to Canawaugus. These places were important reprovisioning stops for Joseph Brant and Butler's Rangers on their way to and from British Fort Niagara during the Revolutionary War (Graymont 1981:31; Seaver 1860:117), and were the home region of Seneca forces led by Old Smoke, Cornplanter, and Blacksnake. For these reasons, the towns, their crops and food stores were targeted for destruction by the Continental Army under command of Major General John Sullivan, as ordered by Commander-in-Chief George Washington (Cook and Conover 1887; Hagan 1976:34-42).

It was the second time in a century that European-American military campaigns attempted to eliminate the Haudenosaunee. The Senecas' great-great-grandparents were young children ninety-two years earlier, when the French governor of Canada, Marquis Denonville, swept through the region with virtually the same objective and scorched-earth strategy (Jordan 2004; Tooker 1981:11).



"Flight from Little Beard's Town," 1936, watercolor by Ernest Smith, Tonawanda Seneca. Indian Arts Project Collection of the Rochester Museum and Science Center.

Mary Jemison was one of the residents who fled Little Beard's Town in September 1779 at the approach of Sullivan's army. "At that time I had three children who went with me on foot, one who rode on horseback, and one whom I carried on my back." Upon returning, "we found that there was not a mouthful of any kind of sustenance left – not even enough to keep a child one day from perishing with hunger" (Seaver 1860:123-124).

"Ernest Smith's ancestral relatives were among the last of the Seneca Iroquois to flee from the Genesee Valley ahead of the army of Major General John Sullivan in 1779. Ernest always felt very strongly about this traumatic event in Seneca history" (Hayes 1981:v).

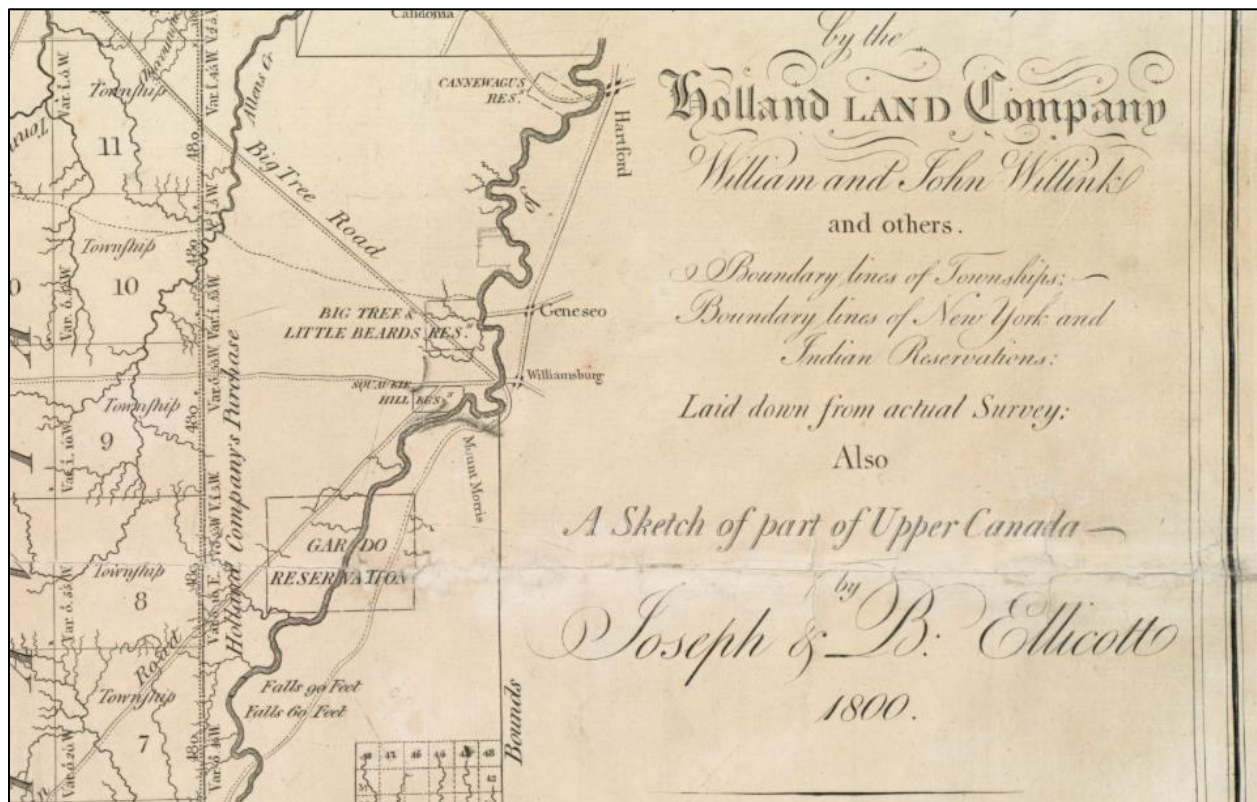
Preemption

Many of the pioneers from New England had served in the Revolution. Some ... went down the Susquehanna with General Clinton, and thence to the fertile lands of the Genesee. Most notable of all the impressions they had carried home were impressions of the fertility of this New York soil ... This was strikingly true of the Genesee country, where the ears of corn they had plucked from extensive fields cultivated by Indians awakened astonishment that still survived. Accordingly, the history of the re-peopling of this frontier is mainly a history of the migration poured into it from Massachusetts and Connecticut. [Halsey 1901:338]

Indian removal became a systematized element of the land grant process after the Revolutionary War. Land speculators were required by the lending government agencies to obtain treaties that preemptively removed native title to western lands. This had to be accomplished before the major speculators were permitted to resell large tracts for settlement, and profit. It became a confused business of dealing with separate native nations for their traditional homelands, which often descended into outright swindling, as in the Phelps & Gorham Purchase (Turner 1851:99-126), but was occasionally performed with a veneer of formal civility as at Big Tree (Doty 1897).

The council at Big Tree in 1797, often mistakenly termed a "treaty," initiated the cascade of Seneca dispossession (Hauptman 2011). After that date, the Seneca retained reservations on the Genesee River for only another generation. Since waterways were the most desirable real estate for new towns with water-powered industries, Canawaugus, Big Tree and Little Beard's Town, and the other Genesee Valley reservations were soon lost as well. The fact that this is Seneca homeland made no difference to land speculators or the government. Both considered preexisting land rights preempted by these new contracts.

Rochester attorney Lewis Henry Morgan held a close relationship with the residents of Tonawanda Reservation in the 1840s and later, and he particularly deplored the operations of the Ogden Land Company who acted "for the last fourteen years, with a degree of wickedness hardly to be paralleled in the history of human avarice. Not only have every principle of honesty, every dictate of humanity, every Christian precept been violated by this company, in their eager artifices to despoil the Senecas; but the darkest frauds, the basest bribery, and the most execrable intrigues which soulless avarice could suggest, have been practiced" (Morgan 1851:33).



Map detail of 1800 by Joseph Ellicott, showing lands purchased by the Holland Land Company from Robert Morris, who had made preemptive deals with the Senecas. Four remaining Haudenosaunee reservations along the Genesee River are identified, from north to south: Canawagus, Big Tree & Little Beard's Town, Squawkie Hill, and Gardeau. The Tuscarora village of Ohagi is a bit further south. All these reservations would also be lost within one more generation. From Ellicott 1800.

The Genesee Valley had been the setting for the emergence of Seneca cultural and political identity, and was also the last place where Seneca communities resided in their original homeland before relocation to the modern reservations. New York State consistently usurped Federal authority in dealing with sovereign native nations throughout that period, and even attempted to erase memory of them by omitting the reservations from maps during the first half of the nineteenth century. "Officially sanctioned New York State maps from the period reveal the systematic elimination of the Iroquois from the cartographic landscape" (Mano 1993).

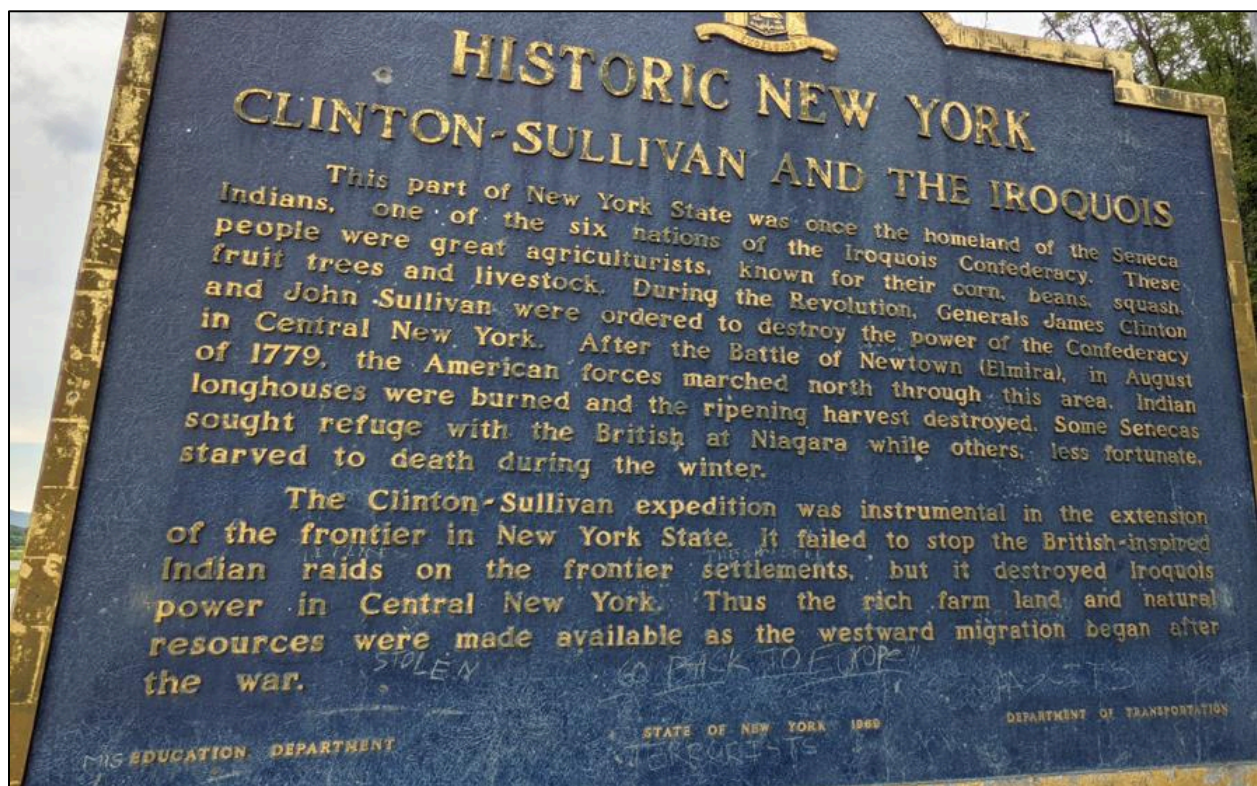
The process of Indian removal has never ended. George Washington and Secretary of War Henry Knox were preoccupied during the first term of the first presidency in establishing official relations with Indigenous Nations east of the Mississippi. They sought two primary outcomes: to secure peace along the western frontier of the new American republic, and to create independent territories for native peoples that would not be encroached upon by American settlers or the separate states (Ellis 2018:181-191). The 1794 Treaty of Canandaigua, aka Pickering Treaty, between

the Haudenosaunee League and Washington's administration was originally framed within this context. The Treaty acknowledges Haudenosaunee sovereignty and remains in effect to this day (Oberg 2019), although the U.S. Government and the State of New York have repeatedly violated its terms. "The Senecas in the West underwent a long and confusing history of dispossession, sometimes by the state, sometimes by the federal government" (McSloy 1998:1057).

As a separate but parallel illustration, when the U.S. Interstate Highway System was conceived and built in 1938-1967, planners laid out cross-town expressways routed through what they labeled the most deteriorated or blighted real estate in every major city – the red-lined urban neighborhoods occupied by African American tenants (Rothstein 2017: Chapter 8, Section V). (A historic district in Rochester, including the home of Lewis Henry Morgan, was demolished in this process.) That enterprise is viewed as unconscionable now, and any similar plan would never be tolerated amid today's efforts toward ethnic inclusion and equity. Yet this same code of fairness is not extended to Indigenous communities in Western New York, whose interests continue to be openly marginalized, as in these comparable recent cases:

- Robert Moses Niagara Hydro-Electric Power Station, constructed 1957-1961. U.S. Supreme Court approved New York Power Authority to seize 550 acres of the Tuscarora Reservation and flood it for the reservoir behind the dam (CourtListener 2021; Williams 1976:181-204).
- Kinzua Dam, constructed 1960-1965. U.S. Army Corps of Engineers flooded 10,000 acres of Allegany Seneca territory – one-third of the reservation – taken by eminent domain, including 130 residences and cemeteries (Austin 1986:123; Diaz-Gonzalez 2020; Hauptman 2014; Haynes 2020; Rosier 1995). [A Brief History of the Kinzua Dam | Seneca-Iroquois National Museum \(senecamuseum.org\)](https://www.senecamuseum.org)
- Plug Power, Inc., currently (2021) constructing the largest liquid hydrogen processing plant in North America in the Town of Alabama, Genesee County, on a site that straddles the Tonawanda Seneca Nation reservation and the Iroquois National Wildlife Refuge. The project, Western New York Science, Technology and Advanced Manufacturing Park (STAMP), is receiving multi-million-dollar state and federal incentives to build, as well as hydropower allocations from New York Power Authority's Niagara Power Project at the Robert Moses Dam. Tonawanda Seneca Nation and EarthJustice are currently battling this case in New York State Supreme Court (Kane 2021; Pietrorazio June 2021; Supreme Court of the State of New York, County of Genesee 2021).
- Horseshoe Solar Energy in Genesee Valley, currently proposed. A super-sized solar power generation facility that is receiving multi-million-dollar state and federal incentives. Proposed siting is on farmland currently under cultivation, which is also the ancestral region of Seneca cultural development.

Industrial and political interests meld in monumental construction developments and, although practical alternatives are proposed, federal and state governments consistently choose to place commercial enterprises on land of special importance to Indigenous Americans. The terminology of preemption, Indian removal and termination are no longer in vogue, yet the overt pattern persists of government and industry initiating actions that harm the ethnic identity and cultural survival of Native American communities in New York State. "Proponents of the [Kinzua] dam cloaked their argument in the rhetoric of the 'common good,' claiming that the Indians impeded economic progress and thus threatened national security" (Rosier 1995:347).



Public Information about Genesee Valley History. Visitors to the Genesee Valley, driving north from Pennsylvania, are greeted by this historical marker at the first public rest stop upon entering New York. Erected in 1969, the sign perpetuates one-sided historical perspective as well as cultural insensitivity by touting the 1779 American military expedition for destroying Haudenosaunee villages and crops. "Thus the rich farm land and natural resources were made available as the westward migration began after the war" (NYS Education Department and Department of Transportation).

Oak Savannas

The important role of ancestors in Haudenosaunee spirituality, and the long Native American history along the Genesee that is manifest in oral tradition, the archaeological record, and the presence of the oaks (among other sources of evidence) serve to underscore and continually reify the deep connection between the Haudenosaunee (living and ancestral) and the lands around the project. [Panamerican Phase 1B 2021:2-1]

The Genesee Flats, the broad floodplain that includes Invenergy's proposed project area, was aptly described by the adopted Seneca Mary Jemison (Seaver 1860), and in the journals of Continental Army officers during the 1779 military campaign, such as this entry from Lieut.-Col. Adam Hubley:

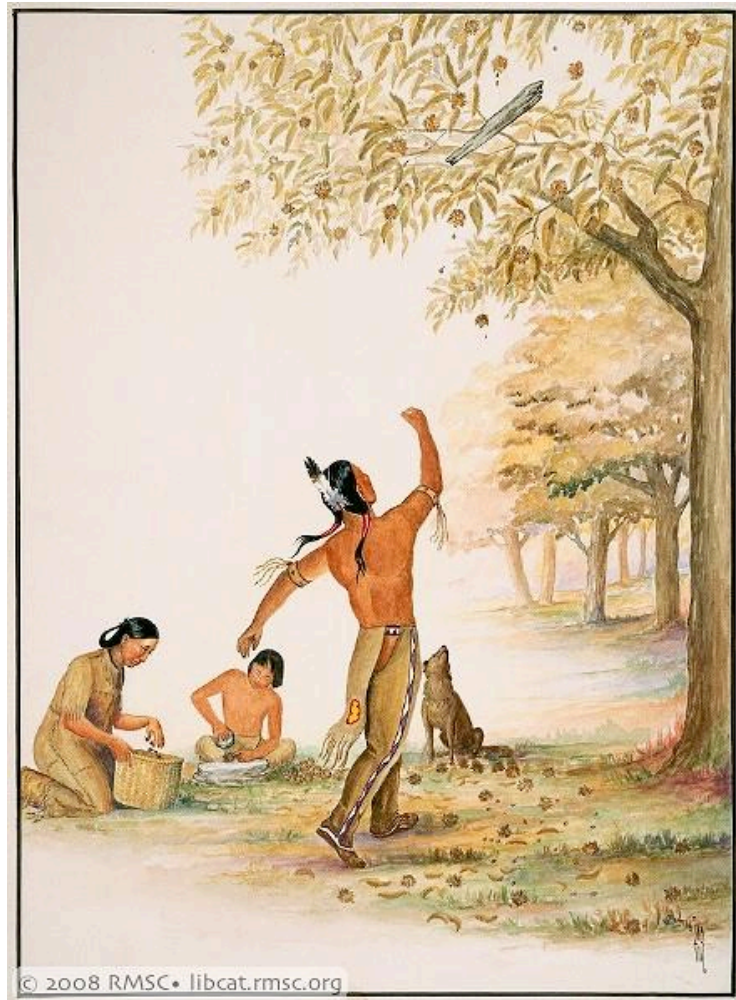
Tuesday, Sept. 14th. —the whole [army] crossed a branch of the Jenise river, and moved through a considerable swamp, and formed on a plain the other side, the most extensive I ever saw, containing not less than six thousand acres of the richest soil that can be conceived, not having a bush standing, but filled with grass considerably higher than a man. We moved up this plain for about three miles in our regular line of march, which was a beautiful site, as a view of the whole could be had at one look, and then came to Jenise river, which we crossed ... and then ascended a rising ground, which afforded a prospect which was so beautiful that, to attempt a comparison, would be doing an injury, as we had a view as far as our eyes could carry us of another plain, besides the one we crossed, through which the Jenise river formed a most beautiful winding, and, at intervals, cataracts, which rolled from the rocks, and emptied into the river. [Cook and Conover 1887:162]

What the Continental soldiers observed and described in their journals were oak savannas, produced by longtime Native American land management practices. The open grasslands, punctuated by mature oaks, and formerly American Chestnuts on slopes above the floodplain (Tulowiecki 2020), were created by periodic controlled burns. Chestnut was present at Avon into the late 1970s (Cook and Forest 1979). (Blighted Asian chestnut nursery stock was imported into the region circa 1900 by the Mt. Hope Nursery of Ellwanger and Barry in Rochester (Anagnostakis 1997).)

Panamerican Consultants Inc. provides a succinct overview of oak savannas in the Genesee Valley (Panamerican Phase 1B, 2021:3-10 to 3-16). Prescribed burning shaped the environment to optimize its agronomic productivity in support of village populations. As an added bonus, fires also leave charred wood (Ryan and Noste 1985), which is highly useful as cooking fuel. While maize was the principal staple (Fenton 1968; Hart 2021), it was complemented with many garden vegetables and tree fruits, as well as wild edibles from the managed savannas, including nuts, large and small game, and a proliferation of berry bushes on the forest fringe (Fulton and Yansa 2019). These foods could be further supplemented by fish and riparian grains (Birch 2015:276; Pfeiffer et al. 2014; Walker 2015:152-155).

"Gathering Chestnuts," watercolor by Ernest Smith, Tonawanda Seneca. Indian Arts Project Collection of the Rochester Museum and Science Center.

Indigenous life and historical events of the Genesee Valley are embedded in memory and art of the Haudenosaunee people. Artist Ernest Smith (1907-1975), a Tonawanda Seneca of the Heron Clan, devoted his life and talent to illustrating native traditions and stories that were passed on to him through living cultural memory (Fenton 1981).



Burning off surface thatch is necessary for rejuvenation of sweetgrass, an aromatic and economically important fibrous plant for basketmaking (Shebitz 2005). Reduction of forest competition also encouraged mixed stands of American elm and black ash (Burns and Honkala 1990), needed for their bark and basketry splints, respectively. Elm bark was a critical construction material for Haudenosaunee longhouses, canoes, and storage containers (Morgan 1851). "Native populations may have engaged in arboriculture, in which trees competing with desired species were eliminated by girdling" (Black et al. 2006:1272).

Savannas indicate nearby Native American towns. People maintained the openings as food-production areas for their respective villages. Together, the residential village and its communal openings were considered a settlement unit, or "The Clearing" (Venables 2010). The Clearing, up to the Wood's Edge, would be analogous to a township in American thinking. In the Cayuga and Onondaga region of Central New York, domestic sites "acted as foci of disturbance, extending outward into the surrounding landscape, with progressively diminishing impacts at greater distances from sites" (Fulton & Yansa 2019:271). Fanning out from their associated villages, the more carefully cleared and intensely cultivated areas ranged

an average of 5-6 km out from a village for agricultural use and, beyond that, out to 15-20 km overall for additional silviculture (Fulton & Yansa 2019:272).

Historical accounts and archaeological maps inform us that occupation sites in the Genesee Valley are concentrated along both sides of the waterways (see previous pages), where residents could take advantage of the aquatic resources and canoe launches for transportation and trade; having the watercourse on one side of a village and the managed savanna extending out onto the plain in other directions. Settlements of earlier periods may have been sited nearby or at different locations from the historic towns, as influenced by periodic major flooding and fluctuations in the river's oxbows and horseshoe ponds (see previous sections).

There is much more to learn, even at sites that were considered to have already been understood, such as Canawaugus.

In addition to the springs, Canawaugus was situated to take advantage of the rich soils and riverine resources of the Genesee River and was located near a good fording place. ... Archaeological evidence suggests that the Seneca ancestors also appreciated the natural benefits of Canawaugus. ... A recent archaeological investigation within the bounds of Canawaugus identified a precontact site (A05102.000039) further attesting to the rich archaeological history of the area. [NYS OPRHP letter 2021:2-3]

As communities moved, each generation could maintain or extend the oak opening to provide for its livelihood. Archaeologically, "the earlier assemblages suggest that these locations have had a long history of rich subsistence resources. In this way, the post-Revolutionary towns can be thought of as occupying places of great cultural meaning and history, as well as valuable agricultural, hunting, and strategic territory" (Ryan 2017:157).

The riverside occupation zone where the residential villages stood is an Area of Potential Effect in the Horseshoe Solar Energy construction proposal. "As pointed out in the ATP [Archaeological Testing Plan] and Phase 1A Investigation report, the area around Canawaugus and the Genesee is particularly sensitive for village sites from ca. AD 1000 through the following several centuries, as well as human burials from any time period" (Panamerican Phase 1B EOF 2020:3).

A geographic-ecological study was conducted by Tulowiecki, Robertson, and Larsen, who compiled Haudenosaunee land use as it stood at the close of the 18th century, the beginning of the reservation period (Tulowiecki et al. 2019). Their focus was on oak savannas associated with prescribed burns, and their maps show the Genesee valley to have been extensively used for many generations.

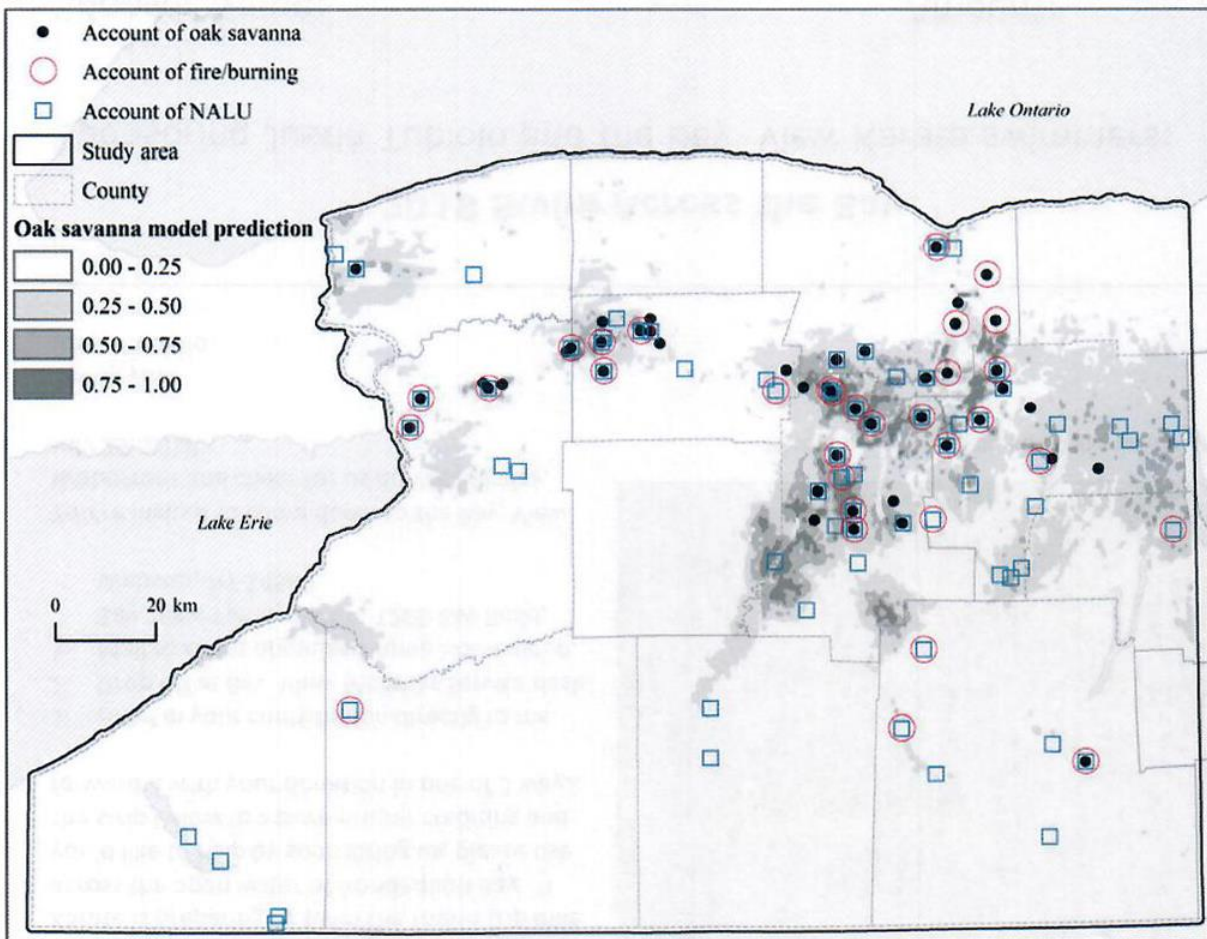


Figure 6. Comparison between model predictions (i.e., mean of Models 2 and 6) and historical accounts of oak savannas, burning, or NALU. Depending on its characteristics, one account can be symbolized up to three times (i.e., an account describing oak savanna, NALU, and fire/burning). Accounts are mapped using “best guess” locations. NALU = Native American land use.

Oak Savannas, circa 1795. From Tulowiecki et al. 2019:16.

This map, and historical accounts, depict only the latest emanation of an ancient anthropogenic landscape. No white man ever saw the Genesee Valley as a natural wilderness (Engelbrecht 2003:9-10). It is postulated that periodic prescribed burns were practiced in Eastern North America for three millennia prior to European arrival (Matlack 2013:918; Shebitz 2005:61). Evidence of ancient fire events and datable charcoal, which can also be identified for tree species, should lie within sedimentary strata of the floodplain (Abrams & Nowacki 2019:2), beneath the surface layer tested in the Phase 1B survey and within the 5- to 20-foot impact depth of Horseshoe Solar’s proposed solar panel racking systems.

Moreover, Native American land use in 1795 may represent a smaller version of former savanna configurations. The Contact Period, 1500-1800, brought a drastic reduction in indigenous population through introduced European diseases and

increased warfare (Abrams and Nowacki 2019:17). It also coincided with the colder, wetter aberration in climate called the Little Ice Age (Koch et al. 2019). "For these reasons, by the time substantial European immigration began in the 17th century, settlers encountered landscapes that were adjusting to less frequent burning" (Ryan et al. 2013:e17).

The Genesee savanna might well have been recently re-groomed by fire before the first Europeans entered the valley. It is hypothesized that the expansion of Seneca population during the early Contact Period, due to absorption of displaced remnant groups from other native nations, may have increased the incidence of purposeful burns around then-current villages. "Such intense activity just prior to settlement could have magnified the effects of Native Americans on the landscape" (Black et al. 2006:1273).

These questions may eventually be answered by future studies, if the valley is preserved. The oak savanna and its associated occupation sites are examples of future research potential along the Genesee corridor. The senior forester for the NYS Department of Environmental Conservation, in 1998, stated the importance of this environmental and historical treasure. "Rush Oak Openings, located in southern Monroe County contains a globally rare plant community commonly referred to as an 'oak opening' or 'oak savannah.' This site is the only known intact oak opening remaining in New York State" (Keister 1998:1).

Future Research Potential

Over 10,000 years of indigenous occupation is represented in the Genesee Valley. This setting is where a living ethnic group within our modern population traces its ancestry. It was also the last piece of original homeland held by the Seneca before being completely engulfed by European American expansion. Native people, and especially the Haudenosaunee, embrace this place as a sacred landscape. "The essence of traditional Haudenosaunee identity comes from our close connection to the natural world and to our homeland" (LaFrance and Costello 2010:62).

These sentiments should not be difficult to understand, but the proposal to site an industrial complex in this location reveals a disregard for Native American culture. Additionally, the valley's cultural resources are a reservoir of knowledge and a living laboratory for future generations, and a source of pride for the Town of Rush. In its Comprehensive Plan, the Town identifies the preservation of Native American cultural resources as a goal of land use planning (Abraham 2021). The Genesee Valley landscape and its preserved cultural resources are needed for future learning if we are to understand "the social contexts that led to the development of tribal nations and confederacies in northeastern North America" (Birch et al. 2021:84).

This locale is equally valuable for understanding more recent cultural history. The Seneca went through a period of accelerated political and economic changes during the late 18th and early 19th centuries, as well as sweeping religious reforms (Fenton 1968; Wallace 1969). Seneca post-Revolutionary adaptation during the Federal

Period was “not decline, but transformation,” and the prophecy of Handsome Lake called for “embracing change in a purposeful way” (Dennis 2010). Haudenosaunee homes of that period are indicative of those changes, with the transition of housing style from bark-covered longhouses to smaller log cabins that relate accompanying social and familial changes. The smaller size and different interior layout of the log cabin “reflected a shift from the traditional, matrilineal, matrilineal, extended family to smaller extended and nuclear families as the basic units of economic life, within reservation settlements, surrounded by expanding Euroamerican agricultural communities, and mercantile and industrial cities” (Hamell 1992:58).

The Genesee Valley hosted these cultural transformations. Much of the valley remains intact and has not yet been erased by modern development. Portions have been destroyed over the last two centuries, but most of the floodplain is still as it was at the time of European contact. This is unusual and very fortunate, from the perspective of Indigenous People, scholars, and the local community.

Human and landscape reconstructions are challenging across the North American continent and especially problematic in the northeastern United States. Here the broad reach of Euroamerican impacts across the landscape has resulted in whole-scale recontouring of prehistoric terrain. Because the greatest potential for integrating depositional and occupational records lies in ancient floodplains and these are also the land segments most widely damaged by development, the long-term archaeological record in the Northeast is not as well documented as in other parts of the Eastern Woodlands. [Cremeens and Hart 2003:181]

Undeveloped areas with high densities of cultural resources will be invaluable to future generations, who will have the means to acquire more accurate information through less-invasive research methods than we possess today, by using analytical tools and technologies not yet invented (NYS DEC 2016:75). We already benefit from wondrous advances that were devised just in our own lifetime, such as:

- Accelerator Mass Spectrometry (AMS) for radiocarbon dating of organic objects with only a miniscule sample, rather than more destructive large samples required by the earlier conventional method (Harry Gove 2002, personal communication).
- Total Station is today’s state-of-the-art theodolite that includes an onboard computer and enables more accurate land surveying than any previous instrument.
- Global Positioning System (GPS), a satellite-based navigation system that instantaneously pinpoints any location on the surface of the planet.
- Unmanned Aerial Vehicle (UAV), aka “drone,” use is becoming an affordable part of site inspection, with cameras sensitive to different spectral wavelengths (Themistocleous et al. 2015).

- Light Detection and Ranging (LiDAR), aerial high-resolution imaging for mapping ground surface features through vegetation and detecting surface contours and dense subsurface features such as stone foundations. Not yet independently applicable to most Northeastern woodland sites, which were constructed of perishable wood, but can be used in combination with other sensing methodologies (Henry et al. 2019).
- Ground-Penetrating Radar (GPR), and other ground-based sensing systems are continually being improved for imaging subsurface features, offering promise for further development and refinement (Dojack 2012).
- The growing applicability of X-Ray Fluorescence (XRF), a technology that provides immediate readings of an object's elemental composition without damaging it (Bruce Kaiser and Peter Reuben 2008, personal communication; Rieth and Johnson 2011:45-46). Portable XRF spectrometers can be taken into the field. A generation ago, such an instrument would have been deemed imaginative science fiction.
- Tests for soil chemistry, particularly phosphate content, can detect concentrations of human presence in each soil layer, providing spatial and temporal contexts of a site (Heather Menz 2016, personal communication).
- Similarly, one of the newer methods for scanning soils is Magnetic Susceptibility (MS):

This non-invasive geophysical technique is becoming increasingly more popular for archaeological investigations ... In very simple terms, an MS meter measures how 'magnetizable soil is, which can be a marker of past human activity.' MS enhancement of soils is related to the longevity and concentration of human occupation of a particular archaeological site ... Even organic remains, like wooden posts ... can be detected with MS if there are magnetite-producing bacteria in the soil. [Winchell-Sweeney et al. 2020:51]

Some of the new technologies yield information that could otherwise go undetected in the absence of durable artifacts such as lithics or fired ceramics. Traditional tasks performed in early settlements included food preservation, hide-dressing, pottery making, basketmaking, woodcarving, rope making, and canoe building, in addition to agriculture. Such occupations involve mostly perishable materials that leave little or no tangible evidence, and could often be distanced apart from residential areas. Newer detection and analytical methods will become increasingly advantageous in rendering our more complete understanding of overall land use. "The ability to conduct archaeological research while protecting and preserving archaeological sites (and at the very least minimizing site impacts) is becoming increasingly important, in particular where culturally sensitive features (such as human burials) are concerned" (DoJack 2012:2).

Not very long ago, archaeology was a contentious topic for Native Americans, but thankfully a change is underway in the forging of beneficial partnerships with scientists. Mutual respect and cooperation are key ingredients (Birch 2015:304; Pfeiffer et al. 2014). Growing sophistication of data collection and analysis are providing new insights into early indigenous crops of Western and Central New York's floodplains, and the related human alterations to the natural landscape. Studies of ancient pollen have recently shown that a suite of native foodplants, such as gourds and sunflowers, were already cultivated as standard crops for over a thousand years before the introduction of maize from the south (Fulton 2019). Maize was an addition to the horticultural complex, and beans were introduced later still. This suggests that maize was not the deciding factor in the transition from a primarily hunting-foraging subsistence; and long-term settlements and The Clearing were already taking shape at roughly 7,000 to 4,500 years ago (Fulton 2019:3-4). Undisturbed floodplain strata hold these secrets.

The Genesee Valley is a scientific laboratory and an archive of knowledge to be gained through carefully deliberated research. This is the basis for preservation of historical landscapes and archaeological sites, making our responsible stewardship of them a gift to future generations. It may soon become possible to explore subsurface resources without much physical disturbance, while acquiring superior information than can be obtained through traditional manual excavation. "Should systematic archaeological inventory be undertaken at some point in the future it is very likely that additional resources will be identified" (NYS DEC 2016:74).

Construction Monitoring

Archaeological monitoring during large-scale construction is not an adequate mitigation measure in such a culturally dense and sensitive area as the Genesee Valley floodplain. First, laboratory analysis would be shortchanged, since the land would be developed before artifacts recovered during construction could be processed and their information regarding the site comprehended. Second, proposed Horseshoe Solar construction methods – pile-driving and trenching – do not visibly expose subsurface cultural features for observation and recovery by monitors.

Moreover, there is the distinct probability of disturbed cultural material being missed altogether by monitors. The objects inventoried by PanAmerican from Phase 1B visual inspections were gathered by technicians walking slowly and scrutinizing a motionless surface, pausing frequently to kneel in the dirt, bag a find, label it with provenience, take a GPS reading, flag the location, and record it. Hand-excavated soil from shovel test pits was checked by workers bent over sifting screens with their noses to the dirt and fingers handling everything. By contrast, a monitor standing a safe distance from heavy machinery cannot spot everything being churned up.

The proposed Horseshoe Solar farm is not an above-ground installation, since it would heavily impact subsurface levels. Archaeological "features" are manmade

elements of the landscape, and are innately nonportable. Regarding monitoring, the New York Archaeological Council (NYAC) recommends:

This procedure could include supervised removal of the topsoil to expose potential features or observation of construction by an archaeologist to identify artifacts. Monitoring should include explicit procedures for periodic halts in construction to allow examination of exposed soil or halts to allow excavation of areas producing concentrations of artifacts. [NYAC 2000:14]

Relevant questions arise:

- How slowly would the construction contractor agree to work in order for monitors to see what is being pushed and tumbled by bulldozers, front-loaders, and trenchers, or impaled by pile drivers?
- How often and for how long could equipment operators pause at the archaeological monitors' discretion so they can inspect strata in trenches?
- What plans will accommodate the occurrence of striking cultural features?

Such contingencies for monitoring are detailed by the New York Archaeological Council (NYAC 2002) <https://nysarchaeology.org/nyac/monitoring-guidelines/>. Inevitable encounters with human burials will implicate the Native American Graves Protection and Repatriation Act (NAGPRA) and its numerous federal requirements (NYAC 1994, Section 5.0:9).

Pile-driving and trenching are especially threatening. It is not possible for a monitor to know when an I-beam is driven through a cultural feature at 10 or 15 feet below the surface. Each pile has the capacity to destroy a burial, and this step would be repeated 40,000 or 80,000 times across the impacted acreage, depending on the type of racking system chosen (Invenergy Deficiency Response:13). Cultural features could be lost, sight unseen and never recorded.

Installation of underground electrical cables poses the probability of extensive destruction to subsurface features. Trenchers rip through soil as giant chain saws with the ability to destroy anything in their paths. Exhibit 11 describes, "A typical trenching machine uses a large circular blade or 'saw' to excavate a small open trench approximately 14 inches wide and to side cast excavated material immediately adjacent to the trench" (Invenergy Exhibit 11:11-9).

This 91-second video demonstrates the type of trencher described:
https://youtu.be/xa_9ibza4sY

The volume and pace of soil extruded from industrial trenching machines renders archaeological monitoring meaningless. One cannot assess significance of artifacts that are not seen, nor make whole again features that are obliterated.

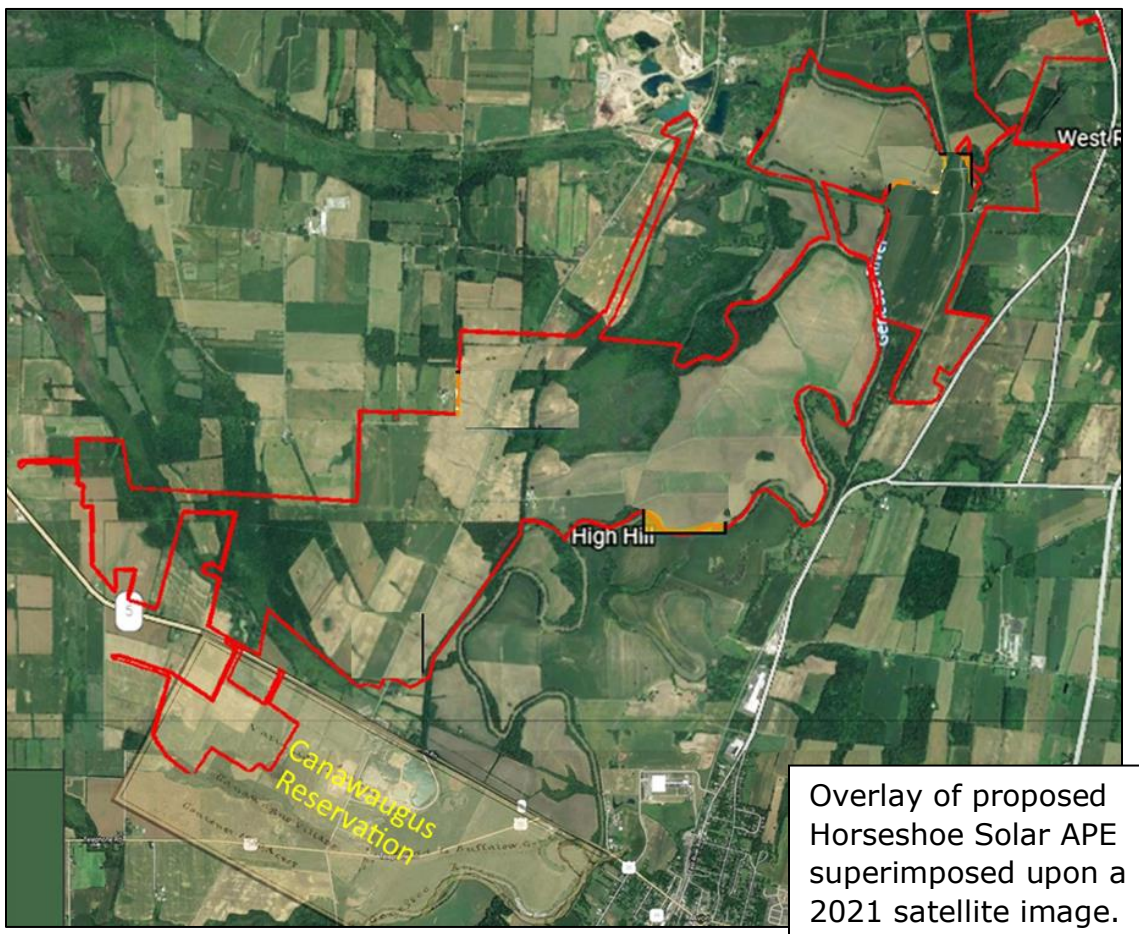
In considering the shallow testing of the Phase 1B survey and Invenergy's deeper, proposed construction plans, there are no known means to control or censor vertical destruction of cultural features during pile-driving. Mechanical trenching would necessitate frequent work stoppage as the monitor examines what was just trenched. In all cases, archaeological monitors would be relegated to recording damage after the fact, if they see it, rather than preventing it.

Agriculture

The Genesee Valley is some of New York's most fertile farmland, and the HSS proposal would represent a loss in production. "Agriculture is a vibrant part of New York State's economy and is especially so in the Genesee Valley region in Western New York. The region is much more developed agriculturally than New York in general" (Park 2012:1, 5). The trend toward using prime agricultural acreage for solar energy is becoming economically counterproductive:

Concerning the future USSE [Utility-Scale Solar Energy] development in NYS, from the land use analysis, it can be inferred that the agricultural land and land with good soil quality is, indeed, the preferred land for the USSE development so far. This trend, if continued unabated, could give rise to the conversion of large swaths of productive agricultural land into land covered by USSE installations—a trend that would negatively impact the agro-economy in the state and exacerbate the competition between food production and energy production on agricultural land. [Katkar 2020:23]

Almost every parcel proposed for the Horseshoe Solar project is actively farmed or is comprised of prime agricultural soils, as a current satellite image illustrates:



"The region's strengths are the major crops produced in volumes that support regional exports. Exports of these crops from the region to the rest of the state, country or beyond provide income to the growers, packers, shippers, processors, and distributors" (Park 2012:13). The loss of productive farmland is another detrimental factor in Invenergy's proposal to develop the land industrially.

Missing Construction Information

There are several construction specifications that remain undisclosed:

1. Invenergy Exhibit 21 informs us, "HSS estimates that construction will require excavation of approximately 489,000 cubic yards of material" (Invenergy Exhibit 21-3). This is over 300,000 tons. Is grading included in that count, or is this *in addition* to grading?
2. Invenergy's Preliminary Stormwater Pollution Prevention Plan reiterates New York State regulations about potential situations to be remedied as needed during construction (Invenergy SWPPP; Invenergy Exhibit 11:11-12). It does not offer estimates for anticipated drainage ditches, culvert excavation or the number and size of French drains or catch basins, if any. These elements of the construction plan could be considerable in size, would likely threaten underground cultural resources, and should be related publicly. The affected land should also be archaeologically surveyed prior to construction excavation.
3. 50-ft. tall steel riser poles (Invenergy Exhibit 11-16) to carry overhead transmission lines have not been fully explained. There is no apparent public information about the total number of poles or dimensions for their embedments (foundation footings), although they would obviously need to be of large diameter and set very deep (Invenergy Deficiency Response 8-31-2020:2).
4. Racked solar panels would be mounted on a tracking axis (Invenergy Exhibit 11-5 and Fig.11-3), but HSE has not committed to which of two referenced racking systems would be used for the panel arrays, and therefore how many I-beam support piles would be required for the structures (Invenergy Exhibit 21-16). This makes an immense difference: a double portrait (2P) orientation requires 40,000 piles, whereas a single portrait (1P) orientation requires 80,000 piles (Invenergy Deficiency Response:13). Each I-beam pile would be driven 10 feet to 20 feet deep (Invenergy Exhibit 21-6).

All the above are intensive earthmoving activities that should be disclosed by Horseshoe Energy and seriously considered by OPRHP and DPS when determining whether this is an acceptable site.

Construction Considerations

Protection of traditional cultural landscapes has always been an ongoing concern among Indigenous People, and the Genesee Valley is a case where Haudenosaunee have a keen interest in doing so. "The Haudenosaunee believe that Western science and the spirit of the natural world are two very powerful integrative tools for ecosystem survival and preservation. Our people have never been averse to evaluating new technologies, rejecting those that are harmful and incorporating those that are useful" (LaFrance and Costello 2010:61).

In reviewing the Horseshoe Solar Project, the SHPO has requested that grading be minimized, and recommended that Canawaugus Reservation proper and Parcels 25, 31, and 39 (Golah) be avoided, and requested archaeological monitoring during construction. Panamerican Consultants has also advised archaeological monitoring at several locations. Despite these precautions, it appears inescapable that construction would indeed subject a proportion of existing below-ground cultural resources to violent disruption:

- **GRADING** – The scale of earthmoving involved in "gentle" grading of over 567.4 acres would be enormous (Panamerican Phase 1B 2021:1-3, Table 1.1). Grading is a process of evening the surface, of altering slopes and elevations by removing high areas and filling in low areas. Nearly a square mile of land is targeted for grading in the HSS plan.
- **PILING** – After grading, the installation would involve driving 40,000 I-beam support piles (or 80,000 piles, depending on the racking system), with each pile driven 10 feet to 20 feet deep for racking solar panel arrays.
- **TRENCHING** – Trenching a network of 52.2 miles of underground collection cables 5 feet deep. The racks of solar panels would be connected by underground electrical collection lines, laid in trenches 1.5' wide and five feet deep (Panamerican Phase 1B 2021:1-3). The proposed 1.54 square miles (987 acres) to be covered by the array would be cross-hatched by 52.2 miles (275,730 linear feet) of trenches (Phase 1B 2021:1-3, Tables 1.1 & 1.2).
- **RISER POLE EMBEDMENTS** – Setting several embedments for large riser poles to carry overhead lines. The steel poles are 50 feet tall. Bearing the weight of the poles themselves plus the overhead lines would require large foundation footings, in both diameter and depth (Invenergy Deficiency Response:2).
- **INTERNAL ROADS and ACCESS ROADS** – Eighteen miles of access roads and internal roads would be constructed, 16-feet wide by 2-feet deep (Panamerican Phase 1B 2021:1-7), plus construction laydown yards, a substation, and operational and maintenance facilities for the solar farm.
- **STORMWATER DRAINAGE SYSTEMS** – The drainage system has yet to be revealed, including such possible elements as ditches, culverts, French

drains, and catch basins. Any of these constructions could require substantially deep mechanical excavation.

Each of these construction activities involves intensive soil displacement. The combined industrial complex would displace almost 1.75 square miles. The shallowest disturbance – after grading – would be 2-feet deep for the foundation of 18.6 miles of access roads and internal roads, extending below the plow zone. Similar depths are associated with the temporary laydown yards for heavy construction equipment, and some maintenance and operational facilities. This 2-foot depth is deeper than the soils sampled during the Phase 1B cultural resource survey. Every action of the proposed construction would exceed the surveyed depth and penetrate into undisturbed soils and features in the Horseshoe Solar layout.

Another phase of disturbance would occur when tearing down the enormous installation after the solar panels degrade and cease to function in 35 years or less. The manufacturer's warranty for the panels is 25 years, but Invenergy hopes to extend their function a few more years at reduced capacity (Invenergy Exhibit 29:29-1 to 29-2). Decommissioning would involve removal of all underground supports, access roads, and stormwater drainage system, backfilling, and then grading the land once again (Invenergy Exhibit 29:29-5).

A permanent vestige of the HSS solar farm will be its 52.2 miles of buried electrical lines. Invenergy is not committing to their removal. "Remove electrical cables and conduits to a depth of 36-48 inches as applicable" (Invenergy Exhibit 29:29-5). This is in accordance with a handout from the NYS Department of Agriculture & Markets, which calls for removal of concrete piers, footers, and other supports to a depth of 48 inches upon decommissioning, but "Underground electric lines should be abandoned in place" (NYS Dept. of Agriculture & Markets, 2017:5). Invenergy would bury their collection lines 5 feet deep, and leave them there.

It is conceivable that, after decommissioning and termination of Invenergy's leases, the network of buried 34.5 kV power cables (Invenergy Deficiency Response:3; Invenergy Exhibit 11-24) could, at any time thereafter, be mined by enterprising landowners to salvage copper and aluminum scrap for supplemental income. Any such recovery activities during future years would potentially disturb more cultural resources, and their discovery would likely entice intensified relic hunting. The Native American Graves Protection and Repatriation Act, NAGPRA, does not apply to privately-owned land (Daehnke and Lonetree 2011).

One euphemistic note in HSS's decommissioning plan adds, "De-compact subsoils (if required), restore and revegetate disturbed land to pre-construction conditions to the extent practicable" (Invenergy Exhibit 29:29-5). This suggests more earth-moving to introduce a cosmetic surface finish. It is not possible, of course, to restore or reassemble archaeological sites, their features and strata. Despoiled cultural resources would not be considered, the focus being to return the surface to agricultural condition. A surge of artifact collectors will be attracted to the fields due to the deeper material that was turned over and brought to the surface, separated from their archaeological contexts.

After its brief existence, the solar installation would leave behind permanent damage to the valley's irreplaceable cultural resources, as well as another historical injury to Indigenous members of our community. President Matthew B. Pagels of the Seneca Nation of Indians stated, "The Nation understands that the ambitious goal of achieving zero greenhouse gas emissions from all man-made sources will require large-scale development of renewables. Generally speaking, we support this concept. But we are emphatic that it not come at an irreversible cultural cost" (Pietrorazio February 2021).

At that point, the integrity of subsurface resources would be so compromised that the land could be devoted to future commercial-industrial projects whenever not under cultivation. We must admit that humanity's efforts at producing renewable, fossil-free energy are only in their infancy. Technological improvements will surely improve efficiency and preclude the need for sprawling deployments of photovoltaic solar panels with only a short-term production capability of less than 35 years, for which large-scale end-of-life recycling has yet to be solved and will likely become the next generation's disposal problem (Raja 2020).

Over the last twenty years, the Haudenosaunee conducted two separate research projects pertaining to burials excavated in Western New York; one study by the Haudenosaunee Standing Committee, and a second by the Seneca Nation Tribal Historic Preservation Officer. Their results revealed that 2,100 Seneca burials have been dug up over the last 120 years. The two studies also compiled burial depths, as recorded in all available documentation, ranging from 6" to 36" in Western New York (Stahlman 2021, personal communication). This range is certainly within the proposed Horseshoe Solar depth of disturbance.

Moreover, as alluvial sediments continually build soil in the Genesee Valley, cemeteries as well as habitation sites of all time periods can be expected to exist below that average burial range, especially in regions where traditional places were long favored for Native settlements, such as the confluence of the Genesee River with Honeoye Creek. This is unfortunately the area proposed for the Horseshoe Solar development. Arthur C. Parker recognized the sensitivity of this area a century ago. "Important sites are near the mouth of the Honeoye creek at its juncture with the Genesee river" (Parker 1920:610).

A consensus of scholarly opinion emphasizes the expectation of cultural resources preserved *in situ* within alluvial sediments below the plow zone of the Genesee floodplain. This includes the Ground Disturbance Area (GDA) of the proposed Horseshoe Solar installation, and within the vertical depth of its proposed construction.

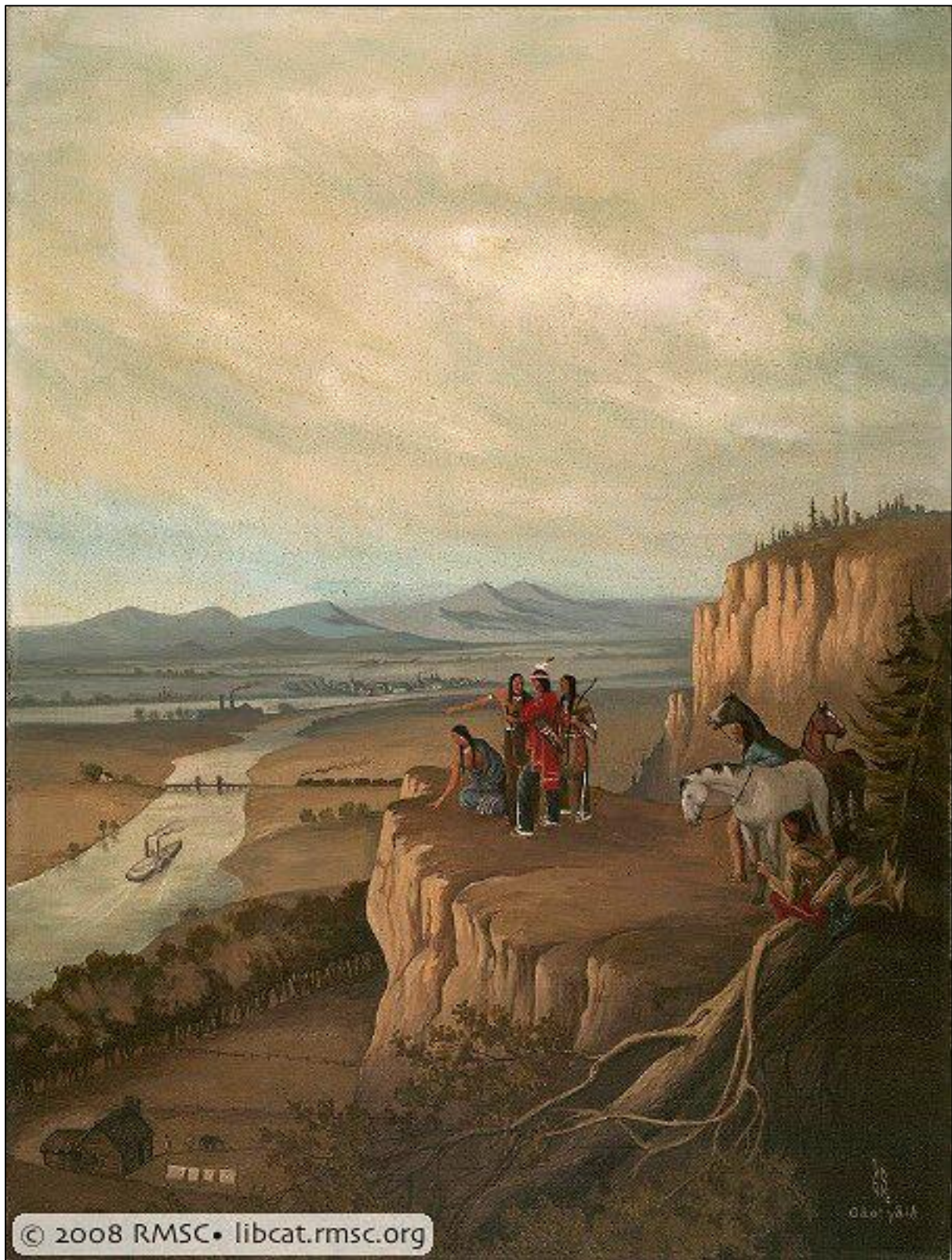
There is a total of at least 70 Native American archaeological loci within one mile of the project. Of these, the reported locations – with varying degrees of confidence – of [sic] at least 19 are in the project area and an additional 10 are within 1,000 ft (Figure 2.1). Besides these, there are possibly three additional sites in the project area south of State Route 5 that were identified by Follett, but whose locations are poorly documented. [Panamerican Phase 1B 2021:2-1]

This is a staggering concentration of archaeological resources: 70 known loci within a one-mile radius, in addition to the 10,637 artifacts found during the survey. This extraordinary density does not even take into account the stratification of alluvial soils that seal deeper, older deposits. The question must be asked, why Invenenergy believes its proposed 52 miles of 5-foot-deep trenches and 80,000 I-beams driven 10 feet below grade would not cause destruction?

We must acknowledge the longevity of the entire Genesee Valley as a unique area of cultural development. The corridor is replete with cultural resources of all types, sizes, and ages after 500+ generations of Indigenous People who spent their lives here and are buried in a 25-mile stretch along the meandering river. "Besides the continuing presence of Haudenosaunee people themselves, the rich archaeological record in the Genesee Valley serves as one resource that speaks to the extensive, dynamic, and long-duration Native American history in the area" (Panamerican Phase 1B 2021:2-1).

The Genesee Valley's cultural resources have been preserved through agricultural use of this fertile land, and being tilled only by surface plowing. It is a symbiotic relationship of productive land use while also preserving unique cultural heritage. Industrial development of 1.75 square miles would extinguish this beneficial historic arrangement that protected these exceptional cultural resources for the past two centuries. This sacred, cultural landscape holds special importance to Seneca identity and ancestry, and is a living laboratory where the Haudenosaunee, in partnership with scientists and historians, can seek new knowledge long into the future that will enrich our understanding of the Indigenous People in contemporary American society. The Beautiful Valley is a singular landmark in New York State.

On the 13,000-year timeline discussed here, together with future prospects of new learning, it is intuitively unwise to whittle down an irreplaceable cultural landscape for such short-term industrial facilities that should be sited in more preferable locations. Onondaga Chief Leon Shenandoah, Tadadaho of the Haudenosaunee League, once remarked of the European Americans, "For some reason, the Creator has allowed you to stay. I don't know why. And I don't think you know why. But I do know that we will have to work it out together" (Venables 2010:28).



"Progress," oil on canvas by Ernest Smith, Tonawanda Seneca. Indian Arts Project Collection of the Rochester Museum and Science Center.

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