

STAGE 1 ARCHAEOLOGICAL INVESTIGATION
FOR
GENERAL MOTORS TONAWANDA PLANT EXPANSION PROJECT
TOWN OF TONAWANDA,
ERIE COUNTY, NEW YORK

OPRHP No. 00 PR 1164

○

August 4, 2000

○

Prepared For:

Phillips, Lytle, Hitchcock, Blaine & Huber, LLP
3400 HSBC Center
Buffalo, New York 14201

 **COMMONWEALTH CULTURAL
RESOURCES GROUP, INC.**

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ABSTRACT

A Stage 1 archaeological investigation was conducted for a 47-acre parcel proposed for expansion of the General Motors Powertrain Facility in the Town of Tonawanda, Erie County, New York. The acreage covered three parcels - 240, 280 and 344 Vulcan Street. Prior to the archaeological study, an architectural study was completed and presented to OPRHP (00 PR 1166). Background research, site file, historic map and atlas review and interviews all seemed to indicate that historic impacts had most likely obliterated any evidence of previous original ground surfaces. Several locations had historically been low and wet and had been brought up to grade to serve as storage areas and parking lots. Stage 1B field investigations attempted to shovel test in any locations that contained grass and a minimum of obvious debris. The latter locations included the 240 and 280 Vulcan Street parcels; the 344 Vulcan Street parcel was not tested. Field methods included shovel testing at 50-foot intervals and coring a concrete parking lot between subsurface utility lines. Several shovel tests in the southwestern corner of the project area yielded lithics, mostly debitage. All were of Onondaga chert. Close-intervals (10-foot) shovel tests were placed at each findspot. While the material was genuinely cultural, the context in which it was recovered led the author to determine that the material had been brought in fill used to fill in low wet locations. In other words, the material was re-deposited from a location(s) unknown. No further cultural resource investigations are recommended for the GM Plant Expansion project.

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1. INTRODUCTION

1.1 INTRODUCTION

On May 17, 2000, Commonwealth Cultural Resources Group, Inc. (CCRG), 105 Robie Avenue, Buffalo, New York 14214 was contracted by Mr. Adam Walters, Attorney, (Phillips, Lytle, Hitchcock, Blaine & Huber, LLP), 3400 HSBC Center, Buffalo, New York 14201 on behalf of the General Motors Capital Projects Group (GM) to conduct a Stage 1 archaeological investigation at the 47-acre site for proposed expansion of the existing GM Powertrain Group Tonawanda Engine Plant. The archaeological study is in advance of constructing a new GM L-6 Engine Plant (EMCON 2000).

The archaeological investigations is one component of cultural resource studies required by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). The other component consists of an architectural assessment of extant structures within and adjacent to, the GM Expansion project. The architectural assessment was conducted by Christine Longiaru in May 2000 (Longiaru 2000).

The proposed expansion project will encompass three parcels - 240, 280 and 344 Vulcan Street - located in the Town of Tonawanda, Erie County, New York (see Figures 1-1 and 1-2). The three parcels are adjacent to the larger 165-acre GM Chevrolet Tonawanda Engine Plant and industrial complex with offices at 2995 River Road, Town of Tonawanda (see Figure 1-3).

As part of the proposed expansion project, GM will construct a new facility encompassing the three parcels mentioned above (total of 47 acres) (see Figure 1-4). In order to accomplish this, extant structures on two of the parcels will be demolished. This includes a currently active facility - the GM Plant 5 at 280 Vulcan Street and three other structures within the 344 Vulcan Street parcel.

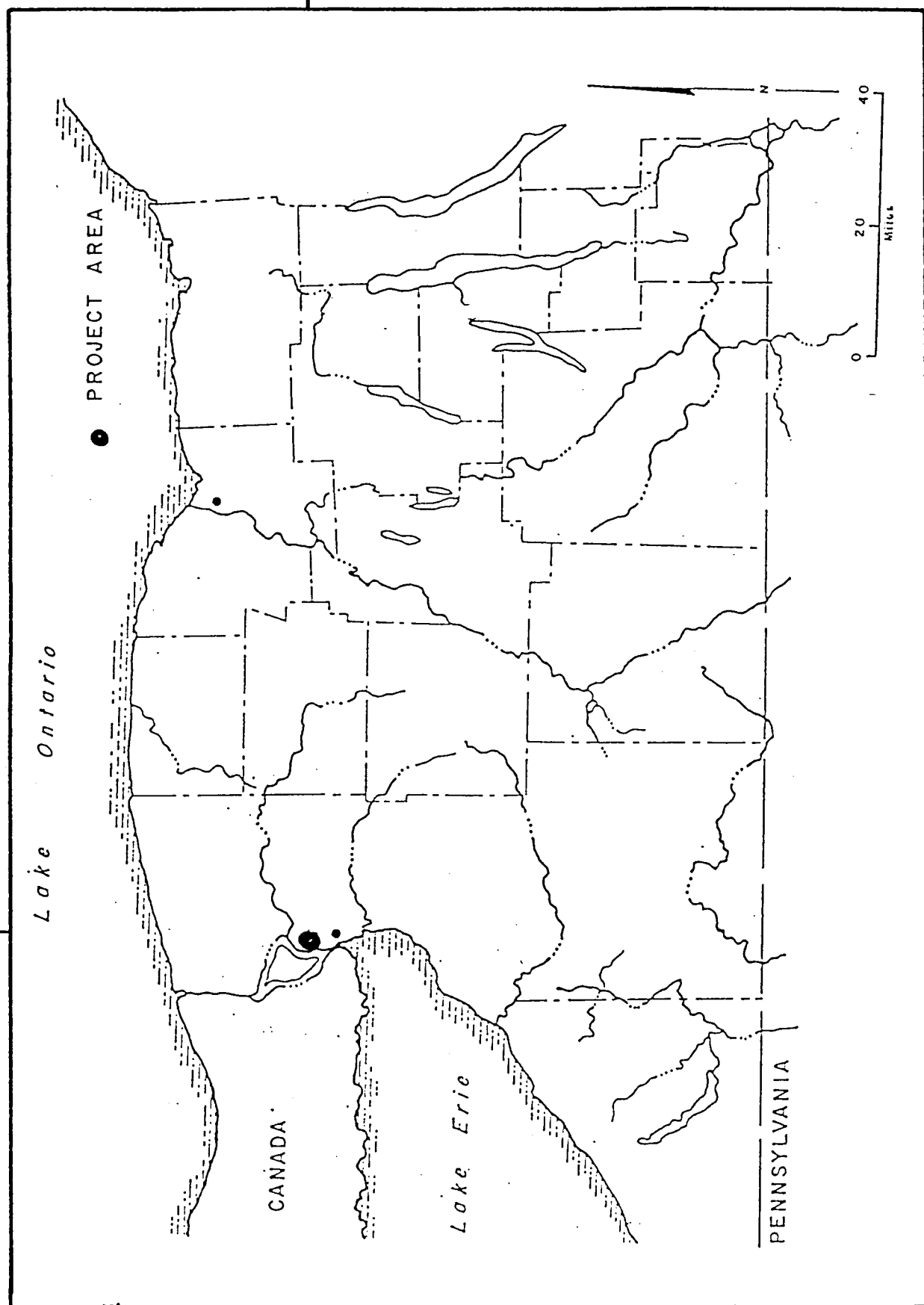


FIGURE 1-1. Project Location in New York State.

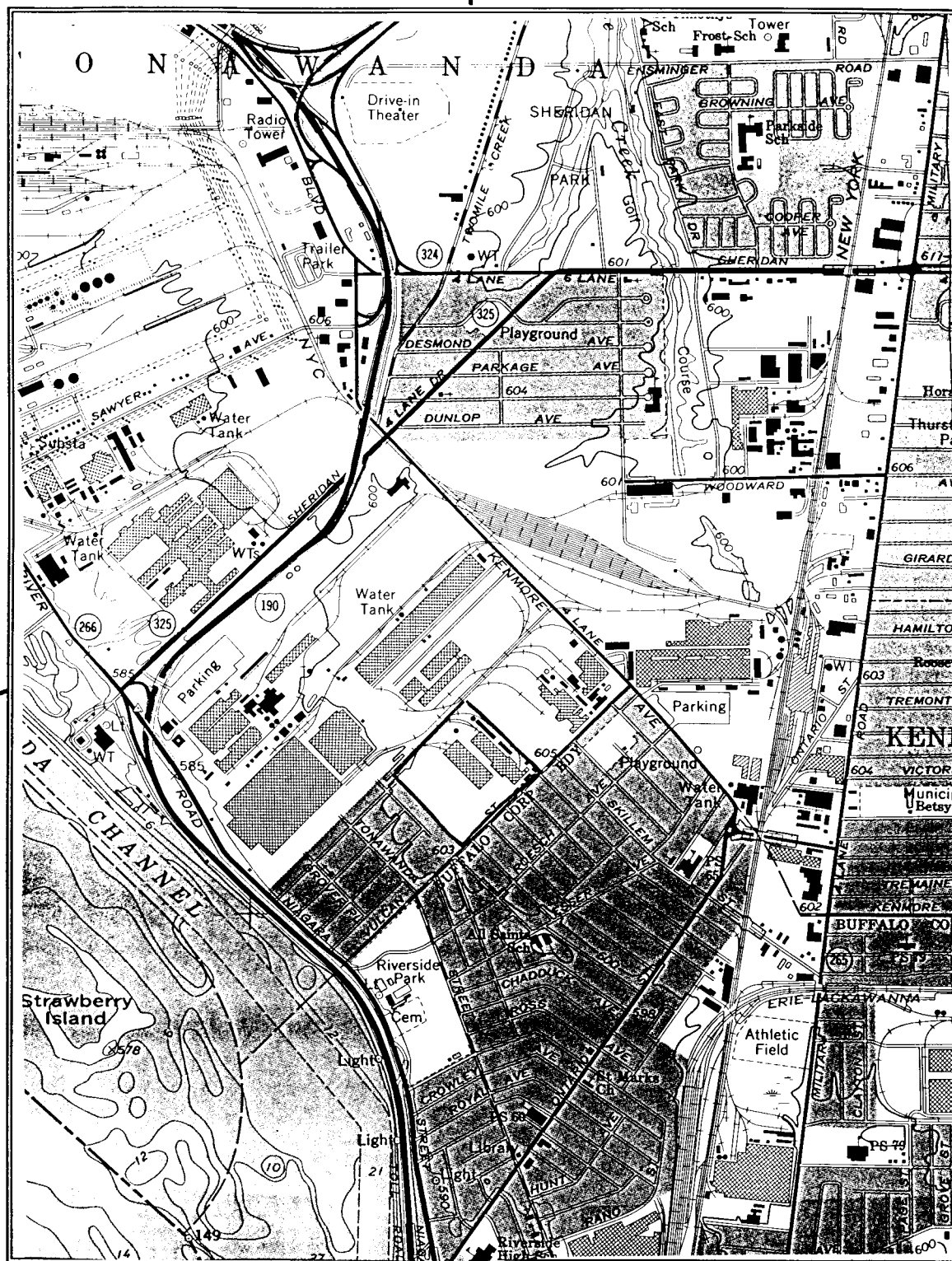
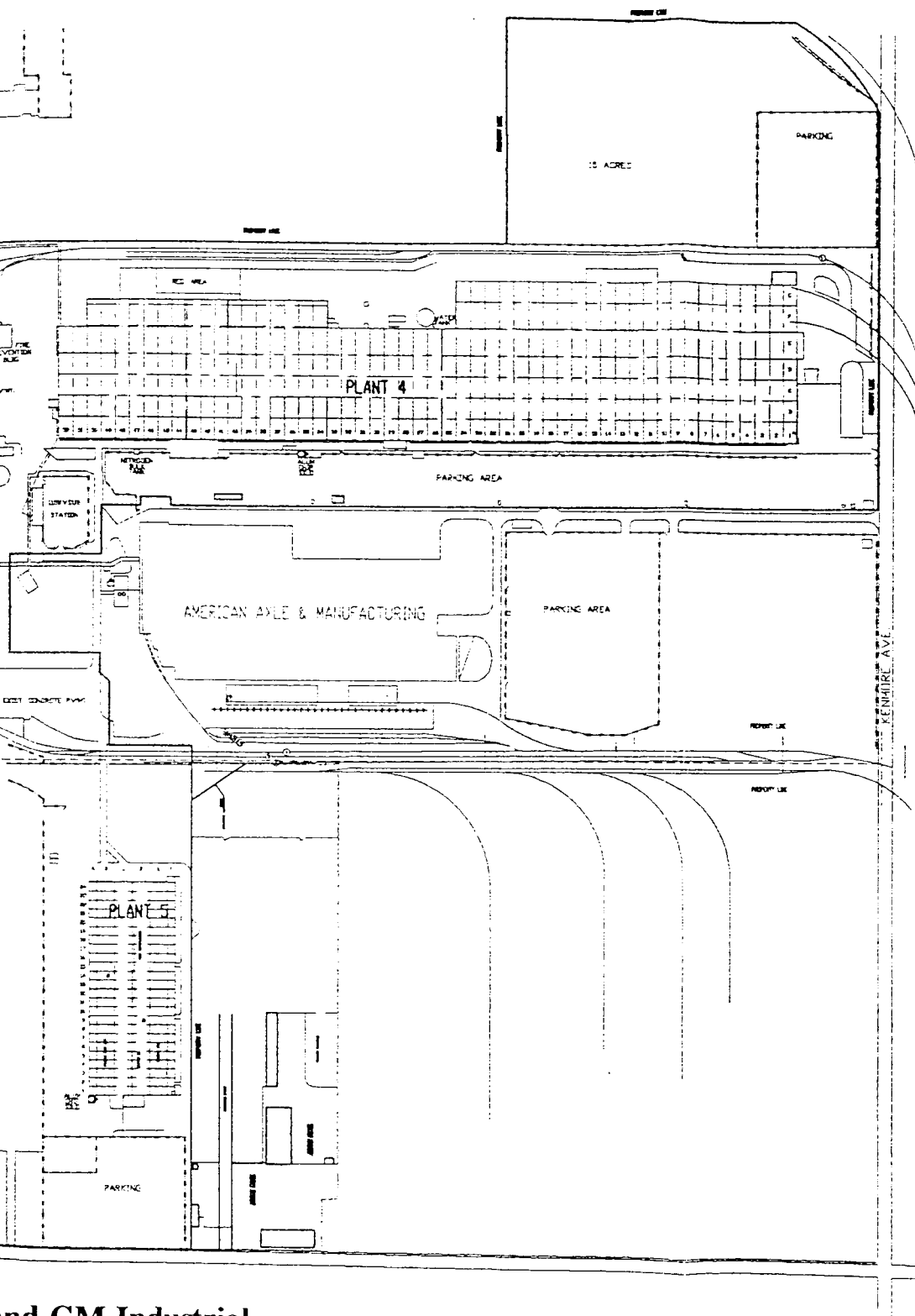


FIGURE 1-2. Project Location on 1986 Buffalo, NW, NY 7.5 Minute Series Quadrangle.



LEGEND

- = COMPLEX PROPERTY LINE
- = VULCAN STREET PROPERTY LINE

and GM Industrial

N



REV	DATE	DESCRIPTION	DES BY	CHK BY	APP BY
1	11/18/98		JLL		



GM POWERTRAIN TONAWANDA ENGINE PLANT
ENVIRONMENTAL IMPACT ANALYSIS
TONAWANDA, ERIE CO., NEW YORK

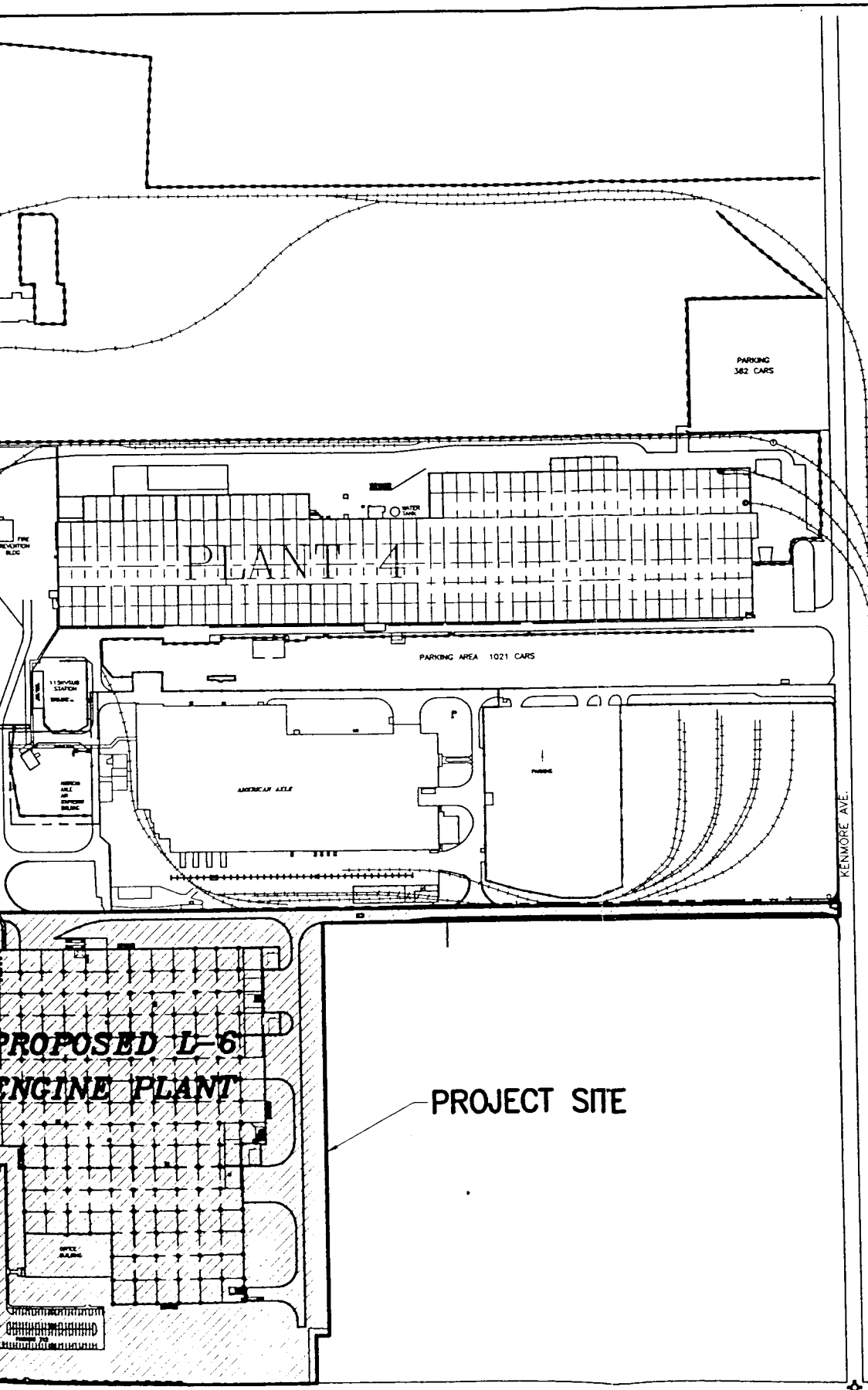
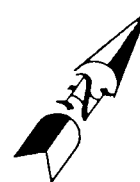
EXISTING SITE PLAN

FIGURE

1-1

PROJECT NO.

796196



REV	DATE	DESCRIPTION	CHK BY	DES BY	CHK BY	APP BY
1	3/20/00	WMP				



emcon

GM POWERTRAIN TONAWANDA ENGINE PLANT
ENVIRONMENTAL IMPACT ANALYSIS
TONAWANDA, ERIE COUNTY, NEW YORK

PROPOSED SITE PLAN

FIGURE

1-2

PROJECT NO.
798196

1.2 EXISTING CONDITIONS

1.2.1 240 Vulcan Street

The 17-acre 240 Vulcan Street parcel is bounded on the south by Vulcan Street; on the east by the 280 Vulcan Street Parcel; on the north by the existing GM Tonawanda Engine Plant complex; and on the west by the fenceline of marked adjacent property lines (see Figures 1-2 and 1-3).

Historic map and aerial photographic research indicated that this parcel remained vacant for much of its existence (EMCON 2000). In the recent past the property was utilized by GM as a parking lot for a now-demolished foundry located within the northern GM industrial complex. Later, the area was covered with concrete and used as a helicopter pad. The far northern quarter of this parcel now holds large racks holding completed powertrain engines (see Appendix A, Photo 10). As can be seen in Figure 1-5, the storage racks were, at one time placed across the southern section of the adjacent (east) parcel.

The central portion of the 240 Vulcan Street parcel is covered with thick concrete, while the southern portion (within the fence) is partially grass-covered. Closer to the fence, ground surfaces have been covered with black plastic sheeting upon which large chunks of gravel (typical of parking lot gravel) (see Appendix A, Photos 2, 3, 4 and 8). No structures are present on the 240 Vulcan Street parcel.

1.2.2 280 Vulcan Street

The ten±-acre 280 Vulcan Street parcel is bounded on the south by Vulcan Street; on the east by the 344 Vulcan Street Parcel; on the north by the existing GM Tonawanda Engine Plant complex; and on the west by the 240 Vulcan Street parcel (see Figures 1-2 and 1-3).

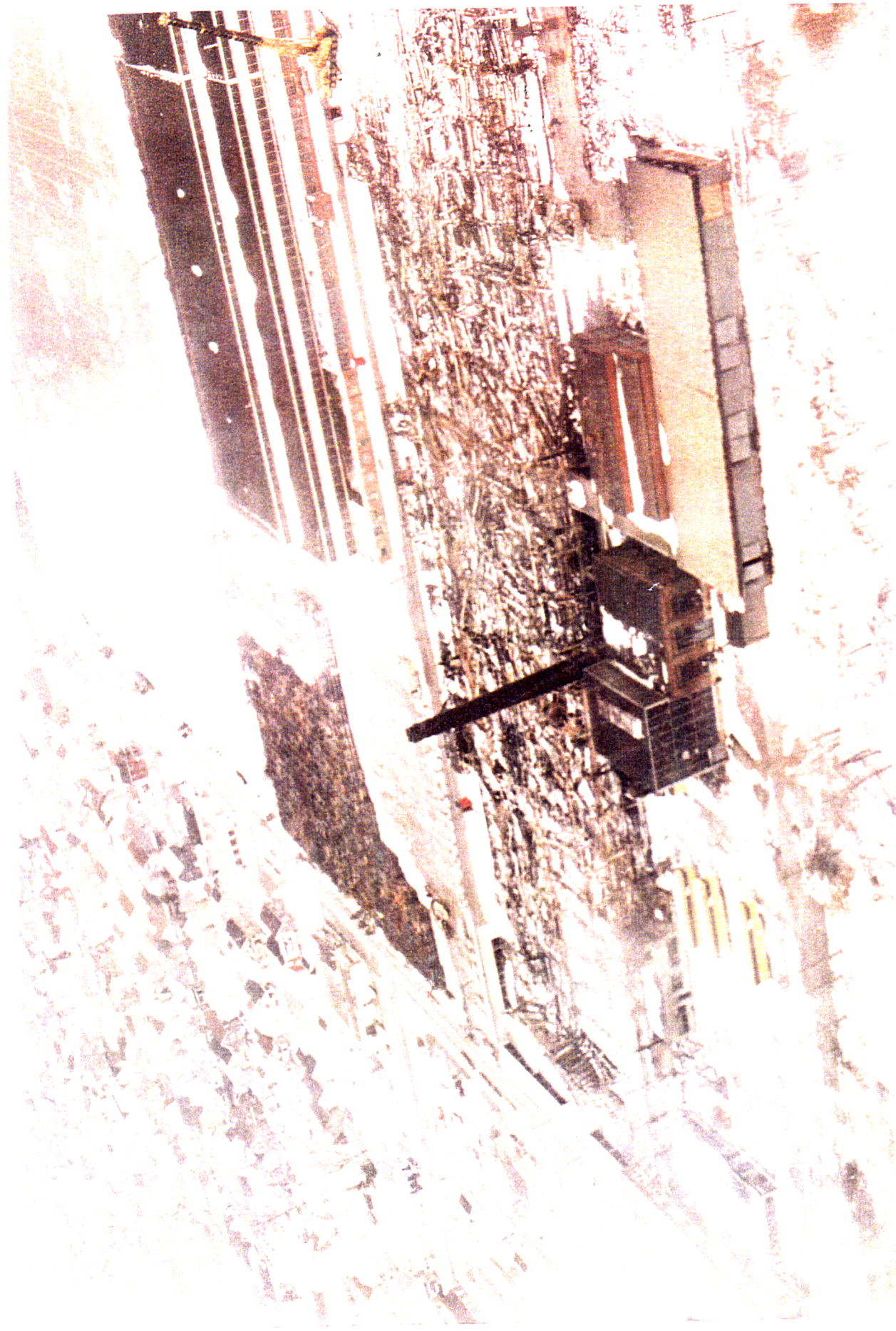


FIGURE 1-5. Photograph Showing Project Area Following 1986 Fire at Former Farrel Birmingham Facility. (Note: Powertrain Storage Racks At South End of 280 Vulcan Street and Undeveloped 240 Vulcan Street)

(Source: (GM Powertrain Group))

According to EMCON (2000), this parcel was undeveloped until 1942 when Farrel Birmingham constructed a manufacturing building adjacent to their main manufacturing complex (i.e., 344 Vulcan Street). This second facility reportedly manufactured PT boats for the U.S. Navy during World War II. Following the War (circa 1949), the facility was sold to American Brake Show Company, a manufacturer of railroad frogs and witches. American Brake Shoe later became the AMBEX Corporation.

In 1971, GM purchased the 280 Vulcan Street parcel and, initially, used it as a storage area (see Figure 1-5). Since 1986, the one-story GM Plant 5 and associated parking lots (southern sector) have been used for the manufacture and finishing of pistons and connecting rods for several engine lines.

A section of grassy lawn with a single mature elm tree can be seen at the western side of the Plant (see Appendix A, Photos 6 and 7). The 2000 Longiaru study suggested that the GM Plant 5 building was potentially eligible for the NRHP under Criteria A and C. Plant 5 was determined to be potentially eligible because of its association with the former Farrel Birmingham Company, a pioneer in the development of propulsion reduction gear units for small naval vessels during World War II. Constructed in 1942, the structure retains a largely intact exterior that is thought to embody the distinctive characteristics of its type, period and method of construction. Despite significant alterations of its interior and minor exterior modifications, the factory retains integrity of location, association, materials, feeling and association (Longiaru 2000).

1.2.3 344 Vulcan Street

The ten ±-acre commercially developed 344 Vulcan Street parcel is bounded on the south by Vulcan Street; on the east by marked adjacent property lines; on the north by the existing

western portion of the parcel to stage trucks, rollofs and trailers (see Appendix A, Photos 11 and 13).

At the present time, the original administrative office building is used by several businesses; the garage is used for storage; and the personnel building is occupied by a former property owner as a private residence. With the exception of the latter residence, the 344 Vulcan Street parcel will be included in the GM Expansion project (EMCON 2000).

1.3 PROJECT GOALS

The purpose of the current study was to conduct a comprehensive background search to identify potential archaeological locations that might exist within the project parcels and determine if any archaeological resources that are eligible for the *State and National Registers of Historic Places* (NRHP) will be impacted by proposed GM Plant Expansion.

In order to accomplish this goal, CCRG conducted archival, literature and site file research at pertinent institutions including, but not limited to: the New York State Office of Parks, Recreation and Historic Preservation (OPRHP); New York State Museum (NYSM); Buffalo and Erie County Historical Society (BECHS); Buffalo and Erie County Public Library (BECPL); State University of New York at Buffalo (SUNYAB) Archaeological Site Files; the Reinstein Library - History Department. In addition, CCRG met with persons knowledgeable of the project area. The meeting, held on May 25, 2000, was attended by Carolyn Pierce, CCRG; Kathy Galanti, EMCON; Miguel Antonetti (GM Powertrain Group; Norman D. Kosmerl, Customer Contact (GM Powertrain Group); Peter P. Schiffmacher, Senior Environmental Engineer (Worldwide Facilities Group Environmental & Energy Operations); and Thomas S. Orwat, Senior Plant Engineer, and Thomas E. May, Superintendent, and John M. Pauly, Plant Engineer (Manufacturing Engineering). Some of the attendees were familiar with

the 240 Vulcan Street parcels in terms of past land use as they had once worked at the no longer standing foundry.

In addition, CCRG conducted a field reconnaissance of the project area in order to document the extent of disturbances that might have compromised the archaeological sensitivity of the project parcels. Following this, a limited Stage 1B shovel testing investigations and examination of coring samples in a concrete parking lot was undertaken.

This report describes proposed project improvements; reviews the cultural and environmental contexts of the project area; assesses the archaeological sensitivity of the project parcels and the potential for undisturbed ground surfaces; summarizes the results of the Stage 1B field investigations; and presents recommendations.

All cultural resource investigations were performed in compliance with federal and state guidelines for cultural resource studies including the National Environmental Policy Act of 1969; the National Historic Preservation Act of 1966; Executive Order 11593; the Archeological and Historic Preservation Act of 1974; and the New York State Historic Preservation Act of 1980. As guidelines for these investigations, CCRG used the amended procedures outlined in the *Code of Federal Regulations*, Title 36, Chapter VII, Part 800 and followed the guidelines of the OPRHP Standards. All personnel participating in this study, meet or exceed the professional qualifications as outlined in the *Secretary of the Interior's Professional Qualifications Standards* 48 CFR, Part 44738-9.

The Principal Investigator for this project was Carolyn A. Pierce, M.A. who was responsible for the background research and site file review, field investigations and report writing. Ms. Pierce was assisted by Robert Peltier and Todd Harrington, crew chiefs and Andrew Collura and William Clark, archaeological field assistants.

2. ENVIRONMENTAL SETTING

2.1 TOPOGRAPHY

The project area parcels are situated within the Erie-Ontario lowland physiographic region on relatively level terrain at an average elevation of 600 feet above mean sea level (see Figure 1-2). In the past some sections were lower (see Figure 2-1). In general this landscape is a result of glacial lake activity, precursors to the present lake, that once occupied the Lake Erie basin. Sediments discharged into these lakes contributed to the flat landscape now present (Calkin and Miller 1977). Additionally, the level terrain found at the project parcels has been enhanced somewhat by past episodes of grading and filling. The most noticeable relief within the project parcels has been created by mounding up of soils, vegetation and material discarded after the fire at the 344 Vulcan Street parcel. This is found in the northern portion of 344 Vulcan Street (see Appendix A, Photos 11 through 18).

2.2 GEOLOGY

According to EMCON (2000), the geology of the project area is relatively uniform with little variation across the project parcels. At least five episodes of glaciation have deposited till, a non-sorted, unstratified mixture ranging in size from clay to boulders and coarse-grained sandy outwash and ice contact deposits. Relatively thick layers of silt and clay were deposited in glacial lakes, including the glacial predecessors of modern Lake Erie. The total thickness of glacial deposits in the Tonawanda area range from 55 to 95 feet thick (EMCON 2000).

Specific bedrock of the project area consists of Lockport Dolostone at a depth of approximately 65 feet below ground surface. This upper Salina Group consists of shale, dolomites (including Lockport dolostone) with layers of gypsum and occasional halite of the

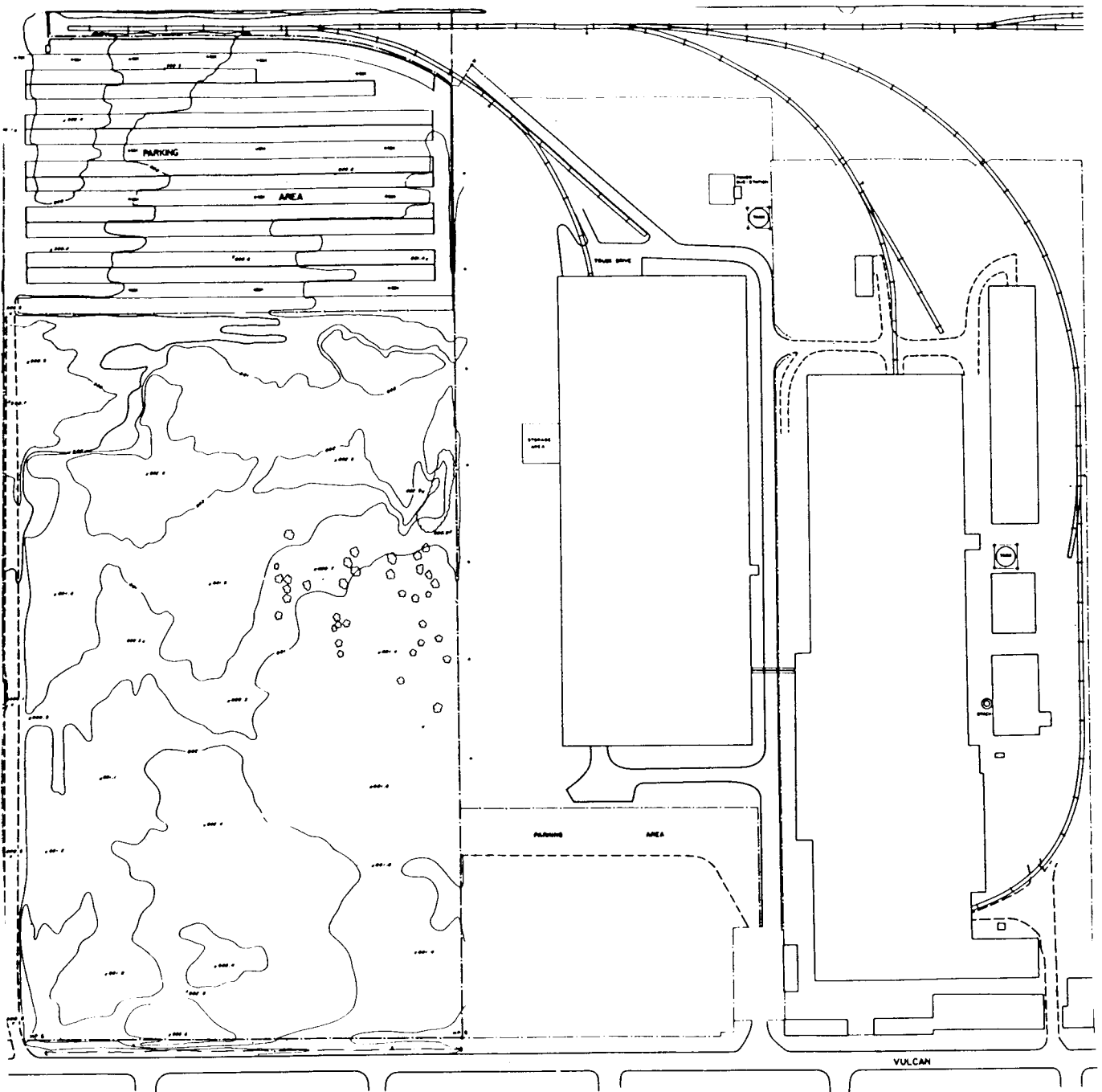


FIGURE 2-1. Map Showing Original Topography Across Project Area Prior to Use of 240 Vulcan Street For Parking Lot/Helicopter Pad. (Note: Lower Southwest Corner.)

Akron, Bertie, Camillus, Syracuse and Vernon Formations. Locally, the carbonate portions of these formations are a massive fine-grained limey shale with solution channeling through vertical joints and horizontal bedding planes. Massive gypsum layers, up to five feet thick, are interbedded within the shales and dolomites. No exposed bedrock was observed anywhere within the project area.

2.3 SOILS

In general, the stratigraphy at the project consists of localized zones of fill material overlying reddish brown clay and silt, glacio-lacustrine sediment believed to have been deposited from ancient glacial lakes. The upper portion of this clayey unit is moderately stiff to stiff with the lower portion grading into a soft to very soft saturated plastic silty clay (EMCON 2000). Below this can be found gravelly sandy till material, but at depths of approximately 40 to 65 feet below the surface (far below any current or proposed construction plans).

In general, soils within the project area are classified as those within the Urban Land Series (see Figure 2-2). Urban land (Ud) is a nearly level miscellaneous area in which 80 percent or more of the soil is covered by asphalt, concrete, buildings or other impervious structures including parking lots, shopping and business centers and/or industrial parks (USDA 1986).

The localized fill material layer mentioned above varies across the project area, but is found obviously in the 344 Vulcan Street parcel. This fill is typically comprised of crushed stone, cinders, ash and occasionally old construction materials such as red brick or cement. This unit ranges in thickness from 0.5 feet to 5.0 feet as reported by EMCON (2000). The fill layer is generally moderately compacted and dense.



FIGURE 2-2. Map Showing Soil Types Within the GM Expansion Project Area (USDA 1986).

2.4 DRAINAGE

The primary drainage in the vicinity of the project is the Niagara River, which flows in a northerly direction less than a half mile to the east (see Figure 1-2). The headwaters of Two-mile Creek are also located nearby, approximately 5,500 feet to the east and north (see Figure 1-2). In addition, it appears as if certain locations within the project parcels may have originally contained low wet uninhabitable spots, particularly in the southwestern and northwestern corners of the overall project area. This formerly low and wet condition might account for the fact that residential construction stopped just short of the westernmost boundary line at 240 Vulcan (see Figures 2-1 and 2-2). The residential history of the vicinity is discussed in more detail below in Chapter 3.

2.5. VEGETATION

In general, vegetation within the project area was sparse because of historic impacts (i.e., building and parking lot construction). The 240 Vulcan Street parcel contains a small swathe of grass along the southern boundary (see Appendix A, Photos 1 through 5, 8 and 10).

Within the 280 Vulcan Street portion of the project, the only vegetation consisted of a grassy lawn with a single mature elm tree located just west of the Plant 5 building (see Appendix A, Photos 6 and 7).

Vegetation within the 344 Vulcan Street parcel was equally non-existent with the exception of overgrown grasses, weeds and shrubs (i.e., sumac, wild carrot, wild pea, and burdock) in the northernmost sector where a railroad line once ran (see Figures 1-2 and 2-1; Appendix A, Photos 11 through 18).

2.6. MANMADE FEATURES AND ALTERATIONS

The grassy locations within 240 and 280 Vulcan Street parcels give a relatively undisturbed appearance (i.e., maintained lawns between street and property fence, west of Plant 5 and southern portion of parking lot at 240 Vulcan Street). This relatively undisturbed appearance may be misleading however, since, known several subsurface utilities are present across the two parcels, as well, of course at 344 Vulcan Street (see Figure 2-3).

Disturbances within all three project parcels are fairly extensive. Most of the project is completely covered by sidewalks, parking lots, buildings, roadways, and former building and/or railroad track locations (see photos in Appendix A). In many locations, subsurface utilities (i.e., water, sewer) are present (see Figure 2-3).

As indicated above, the project parcels have been highly disturbed by historic impacts. Not only have building, parking lot and railroad construction impacted these locales, but pre-construction filling and grading have occurred. In addition to episodic building and demolition, the aftermath and cleanup following a severe fire within the 344 Vulcan Street parcel created many impacts, including demolition, bulldozing, hazard materials cleanup and more. The photographs in Figures 1-5 and 2-4 indicate the parcel following the fire.

Because of the extreme nature of the historic impacts, there are few locations within the project area that remain undisturbed.

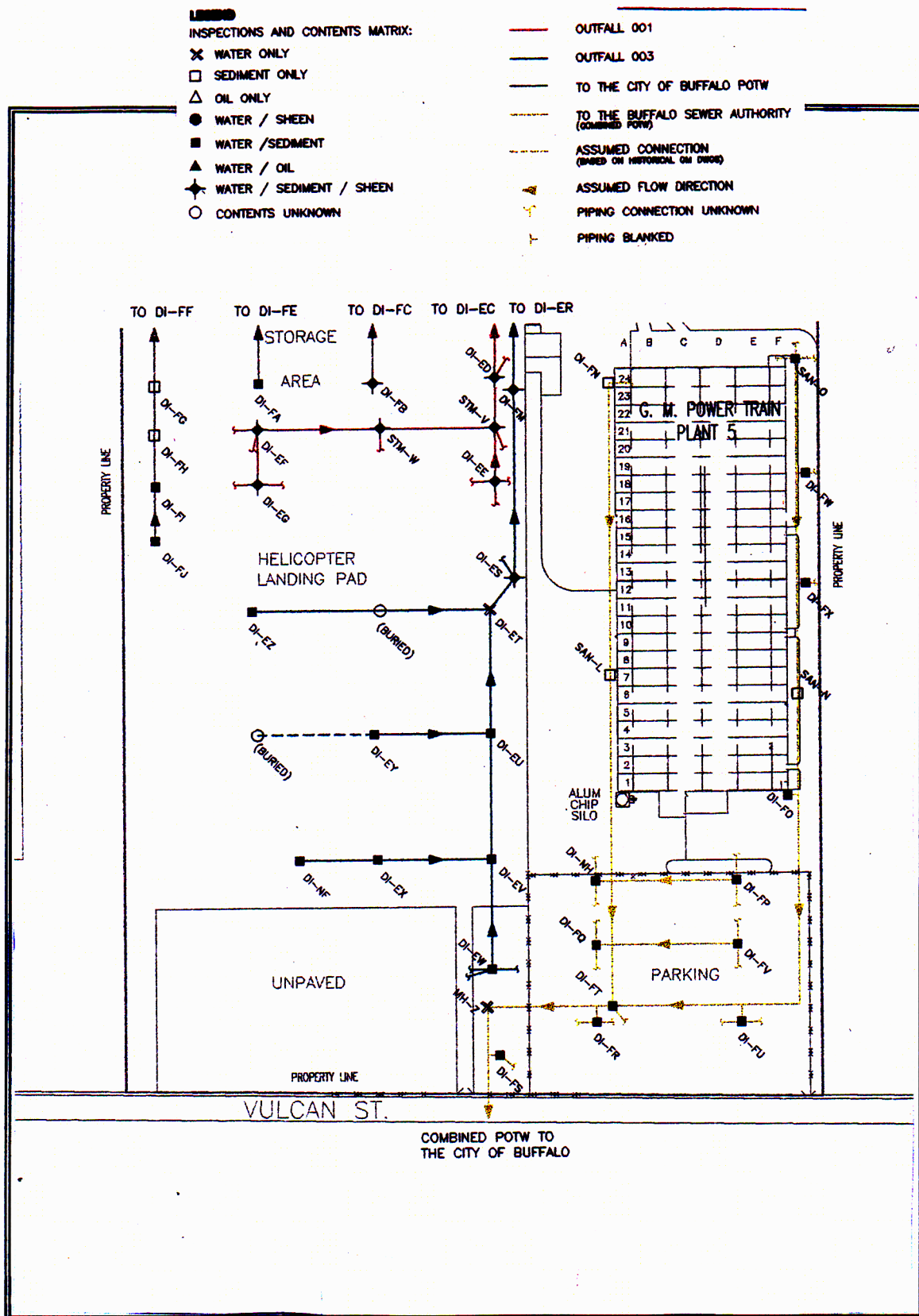


FIGURE 2-3. Map Showing Subsurface Utility Emplacement at 240 and 280 Vulcan Street Parcels.

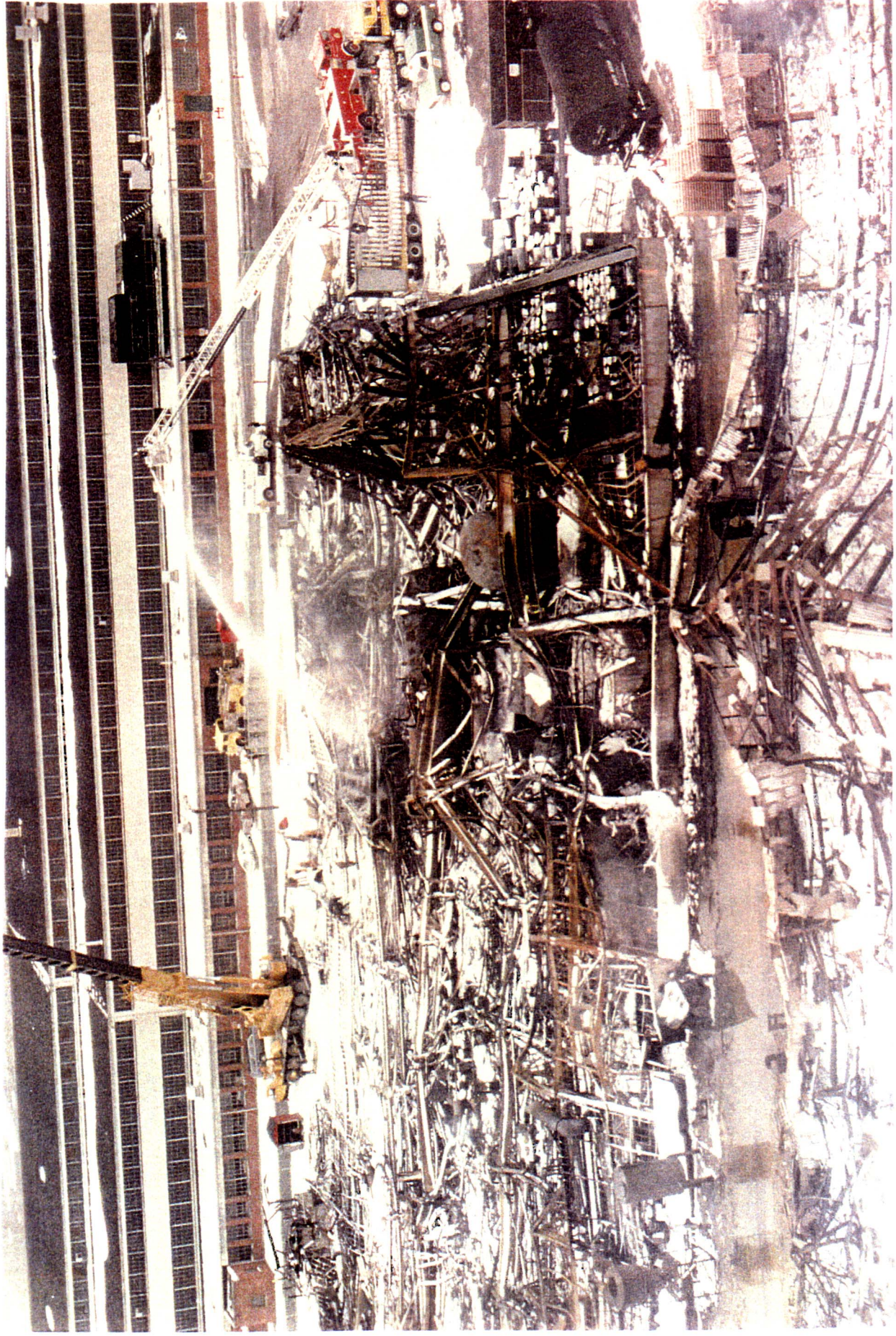


FIGURE 2-4.

Photograph Showing Portions of Project Parcel Following Farrel Birmingham Fire (circa 1983) At 344 Vulcan Street.

(Source: GM Powertrain Group)

3. CULTURAL CONTEXT

The proposed General Motors Powertrain Group Tonawanda Engine Plant Expansion parcel was considered to be sensitive for the location of unrecorded cultural resources primarily because of its proximity to known archaeological sites, as well as its location near the Niagara River.

In order to determine the specific cultural resource sensitivity for the project area, a review of pertinent background literature, site files and historic maps was undertaken (Stage 1A). The site file and map research for the GM Expansion project area was conducted by consulting literature, site files, historic maps and atlases, environmental reports and cultural resource documents.

Sources consulted for this project were found at the GM Plant; the Archaeological Survey, State University of New York at Buffalo (SUNYAB), Amherst, New York; the Office of Parks, Recreation and Historic Preservation (OPRHP) in Albany; the New York State Museum (NYSM), Albany; the Buffalo and Erie County Historical Society (BECHS); the Buffalo and Erie County Public Library; the Buffalo Friends of Olmstead Parks; the Preservation Coalition of Buffalo and Erie County. Research included a review of the New York and National Register of Historic Places (NRHP), and the NRHP-eligible and State/NRHP-proposed lists, as well as a review of relevant historic maps and atlases, histories and regional cultural resource reports.

Interviews with people knowledgeable of the project area were also conducted. A meeting was held on May 22, 2000, in which several long time GM representatives with experience at the Facility discussed previous land use and possible filling and/or grading episodes. The meeting is discussed above.

Prior to the Longiaru (2000) architectural assessment of the project area, there were no cultural resources listed on, or eligible for, the NRHP or the State/NRHP-proposed lists recorded within the project area. Nor were any such resources recorded adjacent to the project area. The National Register sites closest to the project area, however, include the library at Hertel and Delaware Avenues, the Public School at Grant and Germain, the Buffalo and Erie County Historical Society building, the Albright Knox Art Gallery, the Buffalo Pshychiatric Center and the Olmsted Parks and Parkways System. Riverside Park, within view of the project parcels at Vulcan and River Roads, is a component of this parkway system. (The project will not affect Riverside Park.) In addition, the Longiaru study determined that the Plant 5 building might be potentially eligible for the NRHP.

3.1 PREHISTORY

A general overview of the cultural sequence in western New York indicates that prehistoric aboriginal populations inhabited the area from approximately 11,000 or 10,500 years ago to about A.D. 1600. Native populations continued to reside in the area following European contact, retaining many elements of their indigenous culture while acquiring an increasing number of European cultural traits.

Environmental changes from the late Pleistocene to recent times have been broadly paralleled by technological and social changes, many of which were adaptations to new subsistence requirements and opportunities. Much of the prehistoric cultural sequence in New York is based on sites excavated by William Ritchie and his associates. The following discussion draws heavily on Ritchie's work in its most recent synthesis (1980), supplemented by other summaries and area-specific assessments (e.g., Ritchie and Funk 1973; Pierce 1996; Cowan, Drumlevitch and Nagel 1988; Kieber and Nagel 1988; Tuck 1971; Beauchamp 1900; Parker 1922; Squier 1851).

The prehistoric occupation of western New York is divided into four sequential cultural periods: Paleoindian, Archaic, Woodland and Ethnohistoric. These periods begin at approximately 10,000 B.C. and conclude in A.D. 1600 when Native Americans came into contact with Euroamericans or were trading for Euroamerican goods with other Native American groups. Each of these cultural periods is characterized by essentially different cultural/ecological adaptations employed by Native American populations. These adaptations are revealed in the archaeological record by distinctive settlement patterns, subsistence practices and corresponding tool types (see Table 3-1).

While these periods are relatively well established within the Northeast, not all of these periods are well established in western New York and are certainly not well established within the vicinity of the project area (see Table 3-2). A majority of sites recorded nearby the project area are listed as "unidentified prehistoric". That is, some type of artifact (usually lithic debitage) has been recovered, but none for which dates can be positively discerned. The prehistoric archaeological record for the heavily urbanized/developed vicinity of the project area is limited. Rapid urban expansion beginning in the early nineteenth century undoubtedly obliterated extant prehistoric sites without proper documentation.

Heavy reliance is placed on the records of early collectors and avocational archaeologists, such as Beauchamp (1900), Benedict (1901), Morgan (1851), Houghton (1909), Parker (1922), Reed (n.d.) and Squier (1851); other sites were located by regional researchers (Ritchie 1980; Ritchie and Funk 1973; White 1961, 1967, 1978a, 1978b). Still others were located during recent cultural resource investigations (Pierce 1996). Equally as important in determining prehistoric settlement patterns, were those studies which did not identify or locate prehistoric resources, but synthesized existing data (e.g., Prahl 1977a, 1977b, 1977c, 1977d; Schieppati and Drumlevitch 1981; Daly and Ruggiero 1982; Salkin and Zeitlin 1984; Johnson 1991; Pierce 1988, 1991; Barbour and Jackson 1997; Herold, Longiaru and Hartner 1997; Barbour et al. 1993; Herold, McKenna and Nelson 1986; Pierce 1987; Hanley, Cinquino and Steinback 1998; Hartgen 1992; Slawson and Herold 1992).

TABLE 3-1

GENERAL PREHISTORIC CULTURAL HISTORY OF WESTERN AND CENTRAL NEW YORK

CULTURAL PERIODS	DATES	GENERAL ENVIRONMENTAL CHARACTERISTICS	DOMINANT SUBSISTENCE STRATEGIES	LOCAL PREFERENCES
Paleoindian	10,000 - 8,000 B.C.	Park Tundra	Large game (<i>Megafauna</i>); limited plant utilization assumed	High elevations, primarily overlooking major streams
Early Archaic	8,000 B.C.-6,000 B.C.	Spruce Forest Transforming into Pine Forest.	Aquatic resources (avian and fish), small mammals in area; aquatic plants	Margins of Major aquatic features (e.g., bogs, swamps, streams)
Middle Archaic	6,000 B.C. - 4,000 B.C.	Pine Forest transforming into Deciduous Forest.	Aquatic resources with more reliance upon game	Margins of aquatic features; more variability in landform
Late Archaic	4,000 B.C. - 1,500 B.C.	Deciduous Hemlock-Oak Forest	Broad spectrum resource exploitation, including hunting, fishing and foraging	Margins of aquatic resources, but more sites located in different topographic areas.
Transitional	1,500 B.C. - 1,000 B.C.	Deciduous Oak Forest, Hemlock Decline	Unclear; broad spectrum with emphasis on aquatic resources	Unclear; possible stream orientation
Early Woodland	1,000 B.C. - A.D. 500	Deciduous Oak Forest	Broad spectrum adaptation similar to Late Archaic	Similar to Late Archaic
Middle Woodland	A.D. 500 - A.D. 1,000	Oak Forest; Hemlock Increase	Broad spectrum, possible introduction of certain cultigens	Similar to Late Archaic
Late Woodland	A.D. 1,000 to Contact	Oak Forest; Hemlock Stabilization	Hunting, fishing, foraging; increasing reliance upon maize horticulture	Diverse according to resources procured

(After Trubowitz 1983; Kieber and Nagel 1988)

TABLE 3-2

ARCHAEOLOGICAL SITES WITHIN A 2.0-MILE RADIUS OF THE GM PLANT EXPANSION PROJECT

SITE NAME	SITE NUMBER(S)	CULTURAL AFFILIATION	DESCRIPTION	DISTANCE FROM PROJECT (ft)
ACP-Erie-1	NYSM 3170	Unidentified Prehistoric	Parker (1922) described as "village site in the town of Tonawanda almost opposite the head of Grand Island. Scattered relics are found along the creek."	1,000 ft NW
ACP-Erie-Unnumbered	NYSM 7123	Unidentified Prehistoric	This extensive "traces of occupation" follows the Mile-Strip Reservation along the River and encompasses the project area, the symbol for "traces" in Parker can also indicate a trail (Parker 1922)	--
ACP-Erie-6	NYSM 3175	Unidentified Prehistoric	Parker (1922) described this site as "a village site on the river bank at Buffalo opposite Strawberry island. Many open-air workshops occur along the river." Mapped in Riverside Park.	3,000 ft SW
ACP-Erie-Unnumbered	NYSM 3252	LW	Described (Parker 1922) as a "village" site.	10,500 ft South
ACP-Erie-Unnumbered	NYSM 6620	Unidentified Prehistoric	Described by Parker as "traces of occupation."	10,500 ft NW
Forest Lawn Group	---	Unidentified Prehistoric	Parker (1922) describes this as "as east of Black Rock, embracing eight small sites..."	10,500 ft SE
Squaw Island Site	UB 281; A029-23-0001	UP	This site is represented by the discovery of a single projectile point (Pahl 1977).	12,000 ft SW
ACP-Erie-2 Site (On Squaw Island)	NYSM 3171	LW/Iroquois	This site was described by Parker (1922) as "A large ossuary ... near the river in Black Rock ... the skeletons were "in a circle with their heads radiating from a large copper kettle which had been placed in the center and filled with bones." There were other early and modern articles. Also described by Squier (1851). One of Benedict's groups lay east of this and embraced eight sites." (i.e., the Forest Lawn Group)	
Buffalo S Site	UB 183; A029-40-0100	Unidentified Prehistoric	Described by Benedict (1900) as on "north bank of Scajaquada Creek with boundary of park on hillside".	12,000 ft South
Houghton No. 9 Site	A029-40-0099	Unidentified Prehistoric	site described by Pahl (1977) as "the Houghton #9 site [Houghton 1909] at the mouth of Cornelius Creek..."	6,000 ft SW

EA - Early Archaic; MA - Middle Archaic; LA - Late Archaic; EW - Early Woodland; MW - Middle Woodland; LW - Late Woodland; IF - Isolated Find; UP - Unidentified Prehistoric

NYSM - New York State Museum; A0... - Office of Parks, Recreation & Historic Preservation; ACP - Parker (1922); UB - SUNY Buffalo

TABLE 3-2 (Continued)

SITE NAME	SITE NUMBER(S)	CULTURAL AFFILIATION	DESCRIPTION	DISTANCE FROM PROJECT (ft)
Erie Canal-Grand Canal, Prime Slip & Commercial Slip Area (NRHP)	A029-40-4623 (DO5)	Historic Canal System	"remains of the canal, associated structures, lock & other features" (Prahl 1977, Hartgen 1988)	
Martin Site	UB 214; A029-14-0017	LA through LW	Large Occupation Site on Grand Island	6,000 ft West
River Lea Site	A029-14-0051	Unidentified Prehistoric	Site described (Rosenzweig 1988) as a lithic scatter with lithic debitage, biface fragments, a core and a hammerstone.	8,000 ft West

Several divisions of the general prehistoric periods and details of the cultural manifestations represented, remain obscure in New York State prehistory. This overview must, therefore, be regarded as general in nature.

3.1.1 Paleoindian Period (10,000 B.C. to 8000 B.C.)

The earliest prehistoric cultural period known for the Northeast is referred to as the Paleoindian Period and is regionally dated at 10,000 to 8,000 B.C. The earliest occupants of western and central New York, the Paleoindians, are thought to have entered the region by following major drainages from the south and west (i.e., along the Ohio and Allegheny rivers) as the Wisconsin ice sheet retreated and the vast meltwater lakes subsided (Ritchie 1980). Funk (1978) believes that this period of entry occurred about 9,500 B.C., although there is some evidence that human populations may have inhabited the Northeast prior to 12,000 years ago (Adovasio et al. 1975). These latter conclusions, however, are currently open to question, primarily due to questions raised regarding the integrity of association between the dated sample and recovered materials (Dincauze 1984).

As modern drainage patterns began to establish themselves, pioneer plant communities of a park-tundra character gradually spread into the newly ice-free land. Park-tundra is described as a cool grassland habitat with isolated stands of spruce and other minor species. This unique ecology developed following the retreat of the Wisconsin ice sheet and associated post-glacial lakes (Calkin and Miller 1977). This habitat supported populations of large grazing mammals. The animal communities that followed the recession of the ice included numerous megafauna species that soon became extinct (e.g., mastodon, giant beaver, bison, mammoth) and others (e.g., caribou, elk, moose and musk ox) that now dwell in environments far north of central and western New York. The people of the Paleoindian period have been characterized as small groups of nomadic hunters who are believed to have subsisted by hunting these late Pleistocene megafauna. They undoubtedly exploited a variety of other resources as well,

including non-migratory small game, fish, nuts, berries and other wild plants. A 1988 study (Kelly and Todd 1988) suggests that Paleoindians depended on high mobility animals due to lack of any known territories within which to operate.

The movement of early groups from the south is suggested by the discovery of tools made from non-local lithic materials such as Coshocton County (Ohio) chert, Pennsylvania jasper and Flint Ridge (Ohio) chalcedony (Ritchie 1980; Ritchie and Funk 1973). While local cherts were well-utilized by Paleoindian peoples during their occupation of western New York, little or no debitage (waste flakes) of the non-local lithic material is found on these sites. This suggests that the finished tools fashioned from non-local materials were carried in, discarded when exhausted, and replaced by tools made from local chert. As mentioned above, exhausted tools made from western New York cherts are found in similar circumstances on Paleoindian sites from Ohio and Massachusetts.

Many Paleoindian artifacts are found in locations that closely parallel discoveries of megafaunal remains (Calkin and Miller 1977; Ritchie 1980). Paleoindian materials in western New York consist primarily of surface finds. Sites are usually recognized by the presence of distinct "fluted" spear points (i.e., Clovis points) and non-fluted lanceolate projectile points. The flute, a groove on one or both sides of the point, was probably related to hafting. Other tools recovered from sites of this period include gravers, sharpened flakes, hammerstones, endscrapers, spokeshaves and drills.

Although the remains of mastodon, mammoth and Pleistocene forms of elk, deer and peccary had been found in the general vicinity to the east (i.e., Monroe and Genesee counties) (Ritchie 1980; Harris n.d.), it was not generally known whether the fossil remains were contemporary with the earliest human occupations of the area or whether they preceded human arrival. Traces of Paleoindian occupancy are rare in western New York; however, at least three fluted point localities have been documented in Monroe County (Hamell 1966) and at least four others in Niagara County (personal communication, M. Rosenzweig 1991; Pierce and Cohen

1992, 1995; Weir, Schuldenrein and Pierce 1992) and Erie county (Pierce 1995). Important recent research in Byron (Genesee County) revealed fluted points and other tools in apparent association with fossil caribou or elk bones (O'Brian 1985).

Most of the major recorded Paleoindian sites in the Northeast are found on high, well-drained locations such as hills, drumlins, knolls or terraces (Funk 1978; Ritchie 1980). These higher elevations may have been especially desirable locations for observing game, such as migratory herds (MacDonald 1968; Ritchie and Funk 1973). In western New York, however, Paleoindian finds are associated with a variety of localities such as "low swampy ground formerly occupied by lakes" (Ritchie 1980) and "major waterways and their tributaries, Lake Chautauqua and valley floors" (Calkin and Miller 1977).

Paleoindian sites known for the northeast include a) single-use small campsites, b) quarry or workshop sites, c) large multiple-use habitation sites and d) rockshelters (Ritchie and Funk 1973). The first two site types have been investigated in New York State more often than the latter. Small Paleoindian campsites include the Davis site (Ritchie 1980); the Potts site (Oswego County) (Ritchie 1980; Gramly and Lothrop 1984) and the King's Road site (Funk, Weinman, and Weinman 1969; Ritchie 1980). Campsites closest to the project area are the Bush and McKee sites (Niagara County), the Blackberry site (Erie County) (Pierce 1995); and the Diver's Lake Quarry (Genesee County), a multicomponent site situated near a chert outcrop (Prisch 1976; Ritchie 1980). All are small sparse lithic scatters and are not reliably dated. Quarry or workshop sites include the Divers Lake Quarry (Prisch 1976; Ritchie 1980) and the Athens Hill site (Ritchie and Funk 1973). These sites are situated at or near chert outcrops and contain large quantities of lithic debitage and partially completed or rejected tools. Both are multi-component sites; neither has been radiocarbon-dated.

Until recently, multi-use habitation sites and rockshelters, were not as well-studied either in the vicinity of the project area or in the state. Current investigations, however, at the Lamb, Hiscock and Arc sites in Genesee County may give us data on the former type (Ritchie 1980;

Gramly and Vanderlaan 1986; Vanderlaan 1986; Gramly 1988; Laub et al. 1988; Fisher 1988; Miller 1988; Weir, Schuldenrein, Robertson and Egan 1994). These sites appear to cover large areas, contain numerous and varied artifact types and refuse and show some feature and/or artifact concentrations.

Large multiple-use habitation sites attributed to Paleoindian occupation have also been located in the northeast. These include the Bull Brook site (Massachusetts) (Byers 1955); the Debert site in Nova Scotia (MacDonald 1985); and the Reagan site in Vermont (Byers 1955, 1956). All of these cover relatively large areas and contain numerous and varied artifact types and refuse, which suggests that diverse activities were carried on at the sites. All sites show large feature and/or artifact concentrations indicating recurrent usages and, in some cases, there are suggestions of Paleoindian house patterns. The Debert site has been dated to $8,635 \pm 370$ and Bull Brook to 7,000 B.C. Both dates appear to be mid- to late in the period and suggest that Paleoindian groups may have adopted loose territories and a modified form of the restricted wandering settlement pattern (Ritchie and Funk 1973). This pattern may coincide with the decline of certain paleofaunal species and a wider exploitation of smaller game and local floral food sources (Eisenberg 1978; Ritchie 1980).

Rockshelters represent the fourth Paleoindian site type. These include the Duchess Quarry Cave ($10,580 \pm 47$ B.P.) (Funk, Fisher and Reilly 1970) and the Meadowcroft Rockshelter in Pennsylvania (15,120 B.P.) (Adovasio and Carlisle 1987). Both sites are habitation sites that exhibit multi-component usage. Dates from these sites are the earliest for Paleoindian habitation of the region. A recently published date of $19,600 \pm 2,400$ B.P. (Adovasio and Carlisle 1987) from Meadowcroft associated with a putative fragment of basketry may eventually show an even earlier occupation of the northeast than had been previously considered. This date, however, is not universally accepted and further evidence of this early occupation remains to be discovered.

3.1.2 Archaic Period (8,000 to 1,500 B.C.)

The Archaic is divided into three sequential sub-periods based on the temporal appearance in the archaeological record of various cultural complexes: Early (8,000 B.C. to 6,000 B.C.); Middle (6,000 B.C. to 3,000 B.C.); and Late (3,000 B.C. to 1,000 B.C.). The Archaic Period is regarded by Ritchie (1980) as "an early level of culture based on hunting, fishing and gathering of wild vegetable foods". Archaic assemblages generally include a wider variety of stone tools than those noted for Paleoindian occupations, bone and copper tools and pottery in very late complexes. A variety of burial practices have been documented, but the burials generally do not include mortuary offerings. Sites of the period give evidence of mobility, small band organization and simple social structure. Most sites are small and lack traces of substantial dwellings, fortifications, storage pits or graves. Settlement pattern for the Archaic is regarded as a fully developed centrally based wandering system in which a loosely defined territory was utilized for seasonally available subsistence resources by small extended family groups for social and religious purposes during certain times of the year.

The first two subperiods are poorly documented in western New York (Ritchie 1980). The Early Archaic overlaps the late Paleoindian and is characterized by certain side- and corner-notched projectile point forms. The absence of Early and Middle Archaic sites in western New York may be explained by the hypothesis put forth by Ritchie (1979) and Fitting (1968) who suggested that the boreal forest biome which followed post-glacial environments failed to provide the diversity of floral and faunal species that made the area attractive to human settlement. This seems unlikely for a number of reasons. In the first place, the obscurity of the Early Archaic may be better explained as a failure of researchers to recognize such sites based on artifact types that resemble those of later Archaic complexes (Aldenderfer and Hansen 1984; Larsen 1985). Trubowitz (1979), Broyles (1971) and Calkin and Miller (1977), for example, note that Early and Middle Archaic point types (e.g., Kirk stemmed, LeCroy and St. Albans) have been found in western New York. Recently, a Kirk Stemmed point was recovered at the Zinselmeier site in the town of Victor, Ontario County (Weir, Schuldenrein, Pierce and Cohen 1994).

Secondly, some (e.g., Ritchie 1980; Fitting 1968) suggest that the paucity of Early and Middle Archaic sites is due to unfavorable environmental conditions, while others (e.g., Calkin and Miller 1977) argue that ecological conditions had become essentially the same as those that exist today, with the exception of minor floral and faunal variation. However, bog studies and pollen analysis near the village of Cattaraugus (Miller 1973) lend credence to the latter theory. These analyses unequivocally demonstrate a transition of spruce woodland to pine, with definite deciduous characteristics between 8,500 B.C. and 7,500 B.C. This was followed by a decline in pine pollen with deciduous forest remaining as the dominance regional vegetation.

Sites of the Late Archaic period are well-represented in western New York. The Late Archaic saw the first development of local traditions adapted to local ecological conditions and having distinctly local traits (Salkin and Zeitlin 1984). Hardwood forests predominated in the region by 5,000 B.P. (Miller 1973) and the subsistence base included white-tailed deer, black bear and an abundance of small game as well as aquatic and wild vegetable food sources. The dense concentrations of sites of this period suggest large population increases either through new migrations of extant groups into the region or via an increase of indigenous populations; probably both were factors.

The tool inventory of Late Archaic sites is diverse and it includes large numbers of bone tools, groundstone implements used for woodworking and grinding/milling stones used for processing vegetable foods. This subperiod is characterized by small-stemmed or side-notched projectile points; a well-developed bone tool industry that includes fish hooks and daggers; and beveled adzes (Ritchie 1980). Late Archaic sites range in size from small surface scatter camps to sites of over three acres with deep refuse deposits (e.g., the Lamoka Lake). Ritchie (1980) believes that many of the larger sites may have been occupied the year round. Waterside locations such as lakes, medium-sized to large rivers, and marshes were preferred, although research along the Genesee Expressway route (I-390) revealed the presence of upland Lamoka sites (Trubowitz 1983).

The most numerous sites of the Late Archaic period in western and central New York are those of the Laurentian Tradition; manifestations of which are labeled the Late Archaic include the Lamoka and Brewerton Phases. All cultures of the Laurentian Tradition are basically similar in tool inventory, with minor variation in projectile point form and including the use of ground slate, copper and a variety of groundstone implements. The settlement locations of the Laurentian parallels and overlaps that of the Lamoka, although upland sites are more common for Laurentian culture with a greater subsistence reliance on hunting indicated (Ritchie 1980; Ritchie and Funk 1973).

The Lamoka Culture is dated at approximately 2,500 B.C. The type-site, Lamoka Lake, is located in central New York and represents a recurrently occupied large camp with substantial refuse, middens, burials, and house patterns. Numerous small camps are noted throughout western and central New York State. Lamoka settlement pattern is riverine-oriented and of either the restricted or centrally-based wandering type. Lamoka tool inventories conform to the general Archaic pattern with minor variations which include the diagnostic beveled adze and fishing gear (i.e., predominantly the notched pebble netsinker) (Ritchie 1980; Ritchie and Funk 1973).

Other sites of the Laurentian Tradition in western and central New York are several closely related cultural groups that include the Vosburg, Vergennes and Brewerton Phases. The type site for the Brewerton phase is located in Onondaga County, at the foot of Oneida Lake, while another important Brewerton component is found in the stratified O'Neil site on the Seneca River near Weedsport (Ritchie 1980; Ritchie and Funk 1973). Recent investigations in Orchard Park have identified a NRHP, undisturbed Brewerton site (Quaker Crossing No. 1) overlooking an unnamed tributary to Smoke's Creek (Pierce and Cowan 1996).

Cultural contact between the Brewerton Phase and Lamoka Phase has been documented at the Frontenac Island site in central New York. The island contains a semi-permanent camp occupied about 2,500 B.C. Subsistence practices and tool inventories common to both groups

are reported. Additionally, a cemetery has been excavated on the island which contained remains of the different Lamoka and Brewerton skeletal forms as well as a "hybridized" group, indicating inter-marriage between these populations. A total of 163 graves have been excavated at the site. The contents of these strongly suggest that over the roughly 500 years of occupation, initial conflict between the groups eventually led to an assimilation of the Lamoka population by the Laurentian. Also of note is the differential placement of grave offerings, which may possibly indicate a recognition of individual status in social systems previously thought to have been egalitarian. Exotic materials, such as marine shell ornaments, recovered from some burials suggests that long distance trade occurred during Late Archaic times (Ritchie 1980; Ritchie and Funk 1973). Locally, sites containing both Brewerton and Lamoka components are located closer to eighteen-Mile Creek in the town of Hamburg (Trubowitz 1979; Vandrei 1984) and on Grand Island across the river from the vicinity of the project.

Late Archaic Lamoka and Brewerton artifacts are among the oldest materials found in the vicinity of the project area. Lamoka and Brewerton points have been found at several sites on Grand Island west of the project area, as well as in Buffalo, mostly along major creeks (i.e., Buffalo, Smoke's, Cazenovia, Cayuga) and the Niagara River.

3.1.3 Transitional Period (1,500 B.C. to 1,000 B.C.)

The Transitional Period is dated from approximately 1,500 B.C. to 1,000 B.C. This was a period marked by change of large proportion from traditional lifestyles that had persisted with minor environmentally oriented adaptations, since Paleoindian times. Reasons for such modifications are not as yet clearly understood; however, increasing populations and possibly incipient horticulture may have been major factors. What has been preserved within the archaeological record is evidence for a gradual change in material culture and by inference, subsistence practices.

The hallmark of these changes is manifested in the appearance of pottery. While some Late Archaic cultures are known to have utilized pottery, it is not common in the archaeological record of Northeastern cultures until the Transitional Period. The earliest pottery was carved from steatite by maritime cultures of the east and Mid-Atlantic coastal regions during the terminal Archaic Period, followed by the introduction of true ceramics (Ritchie and Funk 1973). This type site is located in stratum 2 of the multi-component site near Weedsport on the Seneca River (Ritchie and Funk 1973).

Along with pottery came an elaborate form of mortuary ceremonialism that reached its peak during the later Middle Woodland Period. The Transitional Period culture first credited with these traits was the Orient Phase recognized on eastern Long Island, New York. The type sites, Orient No. 1 and 2, are cemetery sites. The Orient Phase, radiocarbon dated between 1,043 B.C. and 763 B.C., featured carved steatite pottery, a quartz-based lithic technology and both single and multiple burials of cremated individuals that were usually interred with large amounts of red ocher and elaborate grave offerings (Ritchie 1980; Ritchie and Funk 1973). The basic subsistence pattern and lifestyle of the Orient people were similar to those identified in the preceding Archaic Period and differed only in the traits mentioned above.

While the Orient Phase corresponded to maritime orientation, a related complex, the Frost Island Phase, dated to 1250 B.C. (± 100) from the O'Neil site in central New York, represents a riverine-oriented culture. Sites of the Frost Island Phase have generally been found on the terraces and islands of major river drainages such as the Susquehanna, Genesee and Allegheny Rivers. Tool inventories suggest a subsistence strategy based on hunting and fishing. Storage pits and tools for the processing of vegetable foods are not known for this culture, however, both steatite and early Vinette ceramics are found on Frost Island sites. Few burials have been investigated, although Frontenac Island and the Piffard site in central New York have produced cremation burials with red ocher and Frost Island grave goods. These burials appear to lack the elaborate ceremonialism characteristic of Orient graves (Ritchie 1980; Ritchie and Funk 1973).

Transitional period materials have not been well represented in the general vicinity of the project area. Until recently, points were found from the Buffalo O site and a Transitional point was recovered at the Creekside Grove site east of the Peace Bridge on Cayuga Creek (Salkin 1982). Both of these are located on major creeks. Recent excavations associated with the development of the Canadian Peace Bridge Plaza on the west side of the Niagara River in Fort Erie recovered thousands of artifacts, a majority of which date to approximately 1800 B.C. (Buffalo News 1994; Williamson and MacDonald 1997,1998).

3.1.4 Woodland Period (1,000 B.C. to Contact [ca. A.D. 1600])

The Woodland period is dated to 1,000 B.C. to about A.D. 1600 in New York State. As in the preceding Archaic, this period is divided into sequential subperiods (Early, Middle and Late) based on the appearance of various cultural manifestations which exhibit broad similarities yet differ both temporally and in significant culturally adaptive details. Cultures of the Woodland Period form part of a continuum, features of which were developing during the Transitional Period. The Archaic type hunting and gathering system of the Early Woodland cultures was transformed quite rapidly into the horticulturally based system of the Late Woodland period.

3.1.4.1 Early Woodland Period (1,000 B.C. to 500 B.C.)

Settlement patterns and subsistence practices are not notably different from those recorded for the preceding Transitional or Archaic Periods; hunting and fishing remain the primary subsistence base. Chipped stone, bone groundstone, and some copper tools show stylistic variation from previous forms but are essentially unchanged. The aspects of Early Woodland assemblages which most clearly differentiate them from their predecessors are pottery, which begins to occur in relatively large quantity and the presence of ceremonial objects and artifacts

such as gorgets, birdstones, smoking pipes, and copper ornaments. Features of this period include elaborately furnished cremation burials, large sites containing many storage pits, and the first occurrence of burial mounds in New York (Ritchie 1980; Ritchie and Funk 1973). Broken and/or unfinished slate gorgets, possibly dating to this period, were reported to have been found on the bluff at Fort Porter along the river to the south of the project area (White 1898; Benedict 1901). A solitary skeleton was also found "... in the bluff at Fort Porter by Professor Bishop, accompanied by rude implements of the stone age, indicating considerable antiquity... as that of the relics obtained from the plateau above" (White 1898). It is unclear, however, as to whether the gorgets were associated with the burial.

In western and west-central New York, sites of the Early Woodland period are assigned to the Meadowood Phase (1,000-500 B.C.). The Meadowood was originally defined as part of the Middle Woodland Point Peninsula tradition, but is now considered as Early Woodland on the basis of Vinette I pottery association (Ritchie and Funk 1973). Meadowood settlement pattern is oriented toward rivers, lakes, streams, and marshes. Both large, apparently intensively occupied sites and small campsites reminiscent of the Archaic are found throughout the region. The larger sites include Riverhaven No. 2 site on Grand Island (Kochan 1961) and the Sinking Ponds site in East Aurora (Granger 1978). Large amounts of lithic debitage, almost universally of western Onondaga chert, are common on these sites. Granger (1978) has suggested that these sites may have had some ceremonial function in the production of the distinctive Meadowood cache/mortuary blades commonly found associated with burials or in caches where they can number in the thousands. Most known Meadowood sites are cemeteries and document elaborate provision for the welfare of the dead. The burials are usually cremation, liberally sprinkled with powdered red ocher and accompanied by elaborate grave goods including quantities of cache blades, birdstones, tubular smoking pipes, discoidal shell beads, fish net, basketry and copper tools. Cemeteries are typically situated on natural knolls (Ritchie 1980; Ritchie and Funk 1973). Although no definite evidence has been found that would indicate horticultural activity during the Early Woodland, a putative corn cob was recovered from grave

fill at the Wray site. The cob has since deteriorated and the question thus remains open (Ritchie 1944, 1980).

The Middlesex Phase of the Early Woodland Period bears great similarity to Meadowood but also shows a strong Adena influence. This phase has not been dated in New York, although somewhat inconsistent radiocarbon dates from Delaware, New Jersey and Maryland place the phase between 610 and 360 B.C. Middlesex site tool inventories include artifacts of exotic materials such as Ohio fired clay, Flint Ridge (Ohio) chalcedony, banded slate, Indiana limestone and Harrison County (Indiana) chert. Several distinctive artifact forms reflect the Adena influence noted above. These include bust-type birdstones, locked-end tubular pipes, Adena-like stemmed projectile point and a variety of copper artifacts. This group also used recumbent and elaborate grave offerings but used flexed extended and bundle burials forms in addition to cremations. The Middlesex Phase may represent a migration of Adena peoples from their Ohio homeland under pressure from the expanding Hopewell culture. Available evidence suggests the Middlesex people moved east and north, following major river drainages and were subsequently assimilated by extant cultures in their new home areas (Ritchie 1980; Ritchie and Funk 1973).

3.1.4.2 Middle Woodland Period (A.D. 500 to A.D. 1000)

The Middle Woodland in much of the northeast is practically synonymous with the Hopewellian manifestations. The concept of Hopewell can be viewed as a culture, an art style, a horizon or as a religion, depending on which region is in question. For example, in Illinois, Ohio and Indiana, the cultures developed an elaborate art style and built large earthworks and burials containing items obtained in trade. The most notable features of this period are the most elaborate mortuary ceremonialism known for the Northeast and the apparent trend toward more permanent perhaps year-round settlements within defined territories.

The Canoe Point phase of the Middle Woodland period has been investigated in upper to middle levels of the multi-component Vinette and O'Neil sites in central New York and at the type-site in Grindstone Island, Jefferson County, New York. This phase extends into Ontario, Canada where it is dated between 688 ± 220 and 519 ± 60 . The distinguishing features of this phase are its use of Vinette I ceramics and the relatively large area encompassed by its distribution ranging from Minnesota through southern Ontario to the St. Lawrence valley and southward to central New York State. Campsites tend to be small and briefly occupied with a heavy reliance upon fishing and wild vegetable food collection. Copper artifacts are common as are side-notched and stemmed projectile points. Pottery tends to be small (two to four quart capacity) with medium to coarse grit tempering. Vessels exhibit conoidal bases and nearly straight to moderately everted collarless rims. Interior channeling is also common, producing groups of parallel striae of varying breadths and depths, which at times cross each other obliquely. Decoration was chiefly by the stamping technique in various patterns (Ritchie 1980; Ritchie and Funk 1973).

In western New York, the early Middle Woodland is represented by the Squawkie Hill phase where it is known exclusively from burial mound sites (Ritchie 1980). Most mounds which have been professionally excavated have produced artifacts suggesting a connection with the Ohio River basin Hopewell. These artifacts usually include exotic materials such as copper tools and ornaments, Ohio chert projectile points/cache blades, Ohio firestone pipes, mica and silver ornaments. In addition to these exotic materials, locally produced items such as side-notched projectile points, cache blades and Vinette pot sherds are found. Burials range from cremations to extended flexed and bundle forms (some intrusive). Sites of the Squawkie Hill Phase in western New York include the Tonawanda Island and Lewiston Mounds (Niagara County); the Cain Mound (Erie County); the Rector Mound (Wayne County) and the LeVesconte Mound (Ontario, Canada). In addition, the Buffalo K site is reported to have yielded a Snyders point, a diagnostic of the Squawkie Hill phase (Salkin and Zeitlin 1984).

Little more can be said regarding this phase due to the lack of recognized occupation sites of the period. There remains some question as to who the builders of these features were (e.g., migrating Hopewellian populations or local cultures influenced by the dynamic Hopewell social and religious systems). Too little skeletal material has been professionally examined to answer this question. Although over one hundred mounds are recorded for western New York, their high visibility attracted "antiquarian or treasure hunter" interest resulting in the destruction of most before any systematic research could be done to determine their origins (Shetrone 1930).

A separate Middle Woodland development was the Point Peninsula tradition, representing a transition toward the more sedentary cultures of the Late Woodland period. Distinctive culture traits of this period include ceramics, Jack's Reef corner-notched and Pentagonal projectile points, straight-based platform pipes and several styles of stone pendants (Ritchie 1980).

The Kipp Island Phase is dated at 310 ± 100 to A.D. 630 ± 100 at the type-site in central New York. The Kipp Island Site is a relatively large, recurrently occupied site with deep middens and associated burials. Another type-site is the Jack's Reef site, located on the Seneca River in central New York; this site also contained extensive middens associated with its use as a fishing camp. Settlement pattern of the Kipp Island was oriented toward river, lake, stream and marsh environments and subsistence was heavily dependent on aquatic resources. Tool inventories include the Jack's Reef corner-notched and pentagonal projectile point forms, as well as Levanna type triangular points. These points are small and light enough to have served as arrow points. Barbed bone harpoon points of various styles are also found in Kipp Island assemblages. No cultivated plant remains have been found, although large storage pits are common. Smoking pipes of various styles are known from most sites. Exotic materials such as marine shell, fossil shark teeth, non-local lithic materials and copper indicate a substantial trade network. The ceramics of the Kipp Island Phase differ from earlier Point Peninsula styles in several respects: vessels are generally large in size, have broader more rounded to slightly flattened lips with cord-malleated exterior surfaces and corded decorative motifs applied over

the cord-roughened surface. Many of these traits set the general trend for the development of early Owasco ceramics (Ritchie 1980).

The Hunter's Home Phase is the final phase of Point Peninsula and is considered to be ancestral to Late Woodland Period Owasco. The phase is dated from A.D. 895 to 1000. Sites attributed to this phase in New York include the Hunter's Home site in Wayne County and the White site in Chenango County, both large sites containing middens and associated burials; the Kipp Island #4 site, a large cemetery; and the Portage site, a probable fishing camp on the Niagara River north of the project area.

The Hunter's Home Phase differs from the preceding Kipp Island Phase in several cultural and materials ways. Treatment of the dead indicates a fading of previous burial ceremonialism. Elaborate grave offerings disappeared and a general trend toward multiple burials within the single excavations became commonplace. Burial modes included secondary, flexed, bundle burials and cremations. Tool assemblages also underwent some changes during this phase. Bone harpoon styles became simple small points barbed along both edges. The triangular Levanna-style point largely replaced the corner-notched Jack's Reef type. Smoking pipes became more numerous and more elaborate. Ritchie (1980) suggests this may be due to local cultivation of native tobacco. Ceramics continued the trend toward early Owascoid forms and pendants including a crude maskette form begin to appear in site assemblages.

The Middle Woodland period is, in general, sparsely represented in western New York, although recent excavations in Fort Erie (Williamson and MacDonald 1997, 1998) have produced a large number of tools and debris dating to the Middle Woodland period (Pierce 1996). White (1898) states that ". . . the one fragment of pottery found at Fort Porter is closely covered with marks of finger nails and the clay is heavily loaded with crushed quartz, characteristics of the Fort Erie pottery and it seems probable that it was brought across the river. . .".

The Point Peninsula Tradition of the Middle Woodland represents a transition toward the more sedentary cultures of the Late Woodland period.

3.1.4.3 Late Woodland Period (A.D. 1000 to A.D. 1600)

This period is the most researched and best documented in western and central New York. It is characterized by an increased dependence on horticulture (e.g., maize and beans) and the founding of large-scale settlements. In central New York, the Owasco Culture has been identified with this period and is considered by many to be the precursor of the historically known Iroquois culture. The Owasco economy was a mixed agricultural/hunting/gathering type and was based on the above mentioned crops.

The Late Woodland Owasco occupation is divided into three sequential phases, defined largely on the basis of ceramics. Each phase is about 100 years in duration and grades almost imperceptibly into the next (Tuck 1978). The phases are Carpenter Brook (A.D. 1000-1100), Canandaigua (A.D. 1100-1200) and Castle Creek (A.D. 1200-1300). The long-term trend through the phases is that of a general settlement move from valleys to permanent towns on defensible hilltops. This may represent an early expression of Iroquois warfare patterns (Tuck 1978). For example, the Carpenter Brook sites contain large houses with no indication of fortifications. One of the best examples is the Maxon-Derby site, located near the village of Jordan, south of the pipeline route (Ritchie and Funk 1973). The pattern of earthworks and fortifications had begun by this time, as the Sackett site exhibited both. The Castle Creek phase represents the late Owasco. Sites from this phase also are fortified, a trait that continued on to the historic Iroquois.

These cultures are best understood from areas in western and central New York (White 1961; Tuck 1971; Ritchie 1980; Niemczycki 1984). Large triangular points (Levanna) appear around A.D. 1000 and are gradually replaced by smaller Madison triangular points. The shift

to small triangular points may coincide with the adoption of the bow and arrow throughout the Northeast. During this time there is a shift from round to large rectangular structures (longhouses). By the 1300s, the traditional Iroquoian longhouse appears to have been prevalent. Many villages were relocated "from river flats or other poorly-defended sites to hilltop situations" (Tuck 1971).

The Castle Creek Phase (AD 1200 to AD 1300) has not been the subject of much scholarly research and few sites have been extensively excavated. Sites include Chamberlin (Tuck 1971), Nahrwold No. 1 (Ritchie 1980) and the Castle Creek site (Ritchie (1944). The Chamberlin site encompassed an area of over one acre and was enclosed within an earthwork. Large rectanguloid-oblong house patterns have been noted for several sites of this phase considered to represent terminal Owasco culture.

The Oakfield Phase is regarded as a western New York manifestation of the Owasco Castle Creek phase of west-central New York. Identification of this phase is based on excavations by Marian White in 1961 and 1967 at several sites including the Oakfield site, Genesee County. Little information has been published on this phase to date (White '963) suggested that the Oakfield site, although large, had only been seasonally occupied, probably for the express purpose of cultivating crops. House patterns at the Oakfield site strongly resemble typical Iroquois-style longhouse patterns (Aldenderfer and Hansen 1984).

By A.D. 1300, Iroquois materials can be identified in central and western New York. Prehistoric Iroquois cultural developments have been divided into three phases: Oak Hill, Chance and Garoga. They are divided on the basis of ceramics and other artifact classes, especially pipes. There is an unbroken sequence of cultural development through these phases, during which the classic Iroquois longhouse became dominant.

Although the Iroquois are the most thoroughly researched of all prehistoric groups in New York, information is still lacking on the exact origin of the culture. previous thoughts on

this subject suggested that the Iroquois had migrated into the area from some point south or west of New York. However, MacNeish's (1952), and more recently, Niemczycki's (1984) concept of in situ development of Iroquois culture has gained favor over the previous theory. The fact remains, however, that to date no direct links have been discovered to prove cultural continuity between late Owasco and early Iroquois.

The earliest Iroquois occupation is described as the Oak Hill Phase. This phase is not found in western New York, but temporally succeeds Owasco in the northern, eastern and central portions of the state. The Oak Hill phase is dated to AD 1300 to 1390. Sites of this phase include the Kelso site (Ritchie and Funk 1973), the Furnace Brook site (Tuck 1968) and the Howlett Hill site (Tuck 1968). These village sites feature substantial stockades and a variety of house patterns, the largest of which are similar to the historically observed Iroquois longhouses. Populations were slightly larger than preceding Owasco occupations. Subsurface storage pits were generally not found and structures which may have served as corn cribs are suggested (Tuck 1968). Assemblages from Oak Hill phase sites consist of pottery sherds similar to later Iroquois vessels. Triangular arrow points, celts, adzes and other woodworking tools are common. Smoking pipes are uncommon. Burials are virtually unknown, suggesting the cemetery areas were located away from village sites during this phase. Subsistence was mainly directed toward the cultivation of crops with hunting, fishing and collection of wild vegetable foods supplementing the diets (Ritchie 1980; Ritchie and Funk 1973).

The Chance Phase is distributed over the same general area as listed for the Oak Hill Phase and published dates suggests this is not significantly more recent. Sites of this phase include Getman (Wright 1966) and Oak Hill No. 7 (Lenig 1965). The Getman site is relatively small (just over one acre). It possesses a double-walled stockade with six to eight typical Iroquois longhouses enclosed although it is estimated that only three or four of these structures were occupied at any one time. Population estimates for the site range from 160 to 200 persons. Tuck (1968) has proposed that in central New York, three to four independent communities

developed during this phase, each occupying a successive series of villages within a designated territory.

The Garoga phase is considered the final phase of the prehistoric Iroquois sequence. Its most characteristic feature is the generally large size of occupied villages (8 to 10 acres). The village sites are located on high, readily defensible hills and have substantial stockades. The phase dates from the end of the Chance Phase until the contact period (AD 1600). Sites of this phase include the Garoga site (Ritchie 1980); the Cayadutta site and the Otsungo site. The Garoga site encompasses an area of 2.5 acres, is situated on a hilltop and is palisaded. Enclosed longhouses are large, up to 210 feet in length. Both storage and fire pits were located inside these structures. Tool inventories are much the same as those of the preceding periods although ceramics are decorated with incised linear patterns of oblique lines, generally chevrons and rim castellations and bold base-of-collar notches are common (Ritchie 1980; Ritchie and Funk 1973).

3.1.5 Ethnohistoric Period (ca. A.D. 1550 to 1700)

The Seneca, Cayuga, Onondaga, Oneida and Mohawk nations of the historic Iroquois are sufficiently distinct to be recognized by the sixteenth century (Fenton 1978). Among the most exhaustively studied Native American groups, the Iroquois sociopolitical, religious and sociological aspects have been scrutinized as closely as their material culture.

Although the Iroquois are the most thoroughly researched of all prehistoric groups in New York, information is still lacking on the exact origin of their culture(s). Previous thoughts on this subject suggested that the Iroquois migrated into the area from some point south or west of New York. However, MacNeish's (1952) and Wray and Schoff's (1953) and, more recently, Niemczycki's (1984), Tuck's (1971) and Bradley's (1987) theories of in situ development of Iroquois culture(s) have gained favor over the previous theories. The fact remains, however,

that to date no direct links have been discovered to prove cultural continuity between late Owasco and early Iroquois.

Events in western New York State during the latter period of Iroquois development were somewhat different from the rest of the state in that the area was inhabited by Iroquois groups in conflict with one another. The populations occupying western New York during the period are known as the Erie, inhabiting sites along Lake Erie near Buffalo and Hamburg, New York from approximately AD 1550 to 1650. The material and social culture of the Erie were similar in most respects to those described for the Iroquois elsewhere in New York State (e.g., central and eastern). A chain of village sites appear in western New York as the result of periodic village movements occurring approximately every 15 to 20 years between 1,200 and 1600 A.D. (Miller 1976; White 1961). The Kleis site, located in Hamburg, was the last in a series of Erie villages before the group was forced by the encroaching Neutral nation to move south into the area of Ripley, New York (White 1978a).

A site discovered in the past 15 years, the R. Haas 2 site, may be from this period. Preliminary research at this site has revealed evidence of palisade walls and trade beads (Vandrei et al. 1980; Hansen 1988; Pierce 1989; Pierce and Cohen 1991; Gramly 1996).

The Neutral were originally located in a series of villages in northwestern New York. They were reported along the Niagara River and to the south along Eighteen Mile Creek. The Neutral nation was described by the Jesuits in 1640 as composed of 40 villages. Most of these were located west of the Niagara River, but at least one was occupied east of the river about 1630 to 1645. According to archaeological evidence, there were four probable Neutral sites in the northern part of the Niagara Frontier during the early seventeenth century (White 1971).

Allied with the Neutral were the Wenro who, following the dissolution of the alliance were forced to move northward and joined the Huron Confederacy in 1638 (White 1978b). The displacement of these groups was due in large part to pressure from the Seneca Iroquois who,

following the expulsion of Neutral and Erie in AD 1647, exploited the area of present western New York for fur trade purposes (White 1978a, 1978b; Hunt 1940).

Following the termination of the Garoga phase in the east, ca AD 1640, the Historic Iroquois Period began. The period was marked by strong influence from the European powers, notably England and France, who were vying for economic interests in the form of the fur trade and strategic military outposts that could be secured through alliances with native groups. European trade goods were an important factor in negotiations. These included everything from utilitarian items such as cooking pots to steel axes and knives to glass beads, metal brooches pendants and firearms. Much intertribal warfare resulted and the Seneca gained control of western New York by the mid-seventeenth century. Through skillful diplomatic and military efforts, the Seneca controlled the area until well after the American Revolution (Graymont 1972; Hunt 1940).

At the time of initial European contact, the Seneca occupied the region east of the Genesee River. After the war with the Neutral in 1650, they moved west of the Genesee and made some settlements along the Niagara River; these were thought to be hunting camps. The Iroquois came into conflict with the Erie to the west whom they finally destroyed. After this the Niagara area was thought to be depopulated for a time (Houghton 1909). However, it remained a 'frontier' area for the Seneca who still lived mainly in the Genesee Valley but who probably traveled throughout the west hunting and trapping (Miller 1976). During the last half of the eighteenth century, the Seneca established villages along the Niagara Frontier (Houghton 1909).

3.2 HISTORY

3.2.1 Early Historic Period (ca A.D. 1600 to 1800)

The project area is located well within the heartlands of the historic Seneca peoples. Seneca territory included all the land from the region of the Upper Allegheny and Susquehanna

Rivers to the south, to the shores of Lake Ontario to the north. On the east, Seneca territory extended as far as Seneca Lake where it abutted the lands of the Cayuga and to the west, where it included land as far as the southern shores of Lake Erie. Considered to be the most powerful, as well as most populous, of the individual Iroquois nations, the Seneca were the "Keepers of the Western Door" for the Iroquois Nation (Wallace 1972).

Sites of the Historic period are characterized by assemblages that reflect the preference of the native populations for European trade goods. Traditional crafts such as ceramic manufacture and flint-knapping steadily declined while scraps of brass (cut from worn trade pots), musket parts and European gun flints are increasingly prevalent in site assemblages. The settlement pattern during the Historic period was severely disrupted due to the influx of Euroamericans, culminating in the establishment of the reservation system after the Pickering Treaty of 1794. Both housing and subsistence after this time followed a basically Euroamerican agricultural pattern (Ritchie 1980).

By the time Europeans, especially the English and the French, showed interests in the vast woodland and prairie region of western New York, the land already had a long history of changing ownership and use. By the early 1600s, the Iroquois had begun their domination of the area (Mau 1958); they had formed the League of the Iroquois (League of the Ho-de-no-sau-nee) (Morgan 1972).

The Iroquois Confederacy (the League of the Five Nations), included the Mohawk, Oneida, Onondaga, Cayuga and Seneca nations. These five nations, over a period of years, defeated and scattered the surrounding tribes, including the Erie and Neutral Nations (so-called because they kept the peace among the Hurons to the north and east) (see Figure 3-1).

The first Europeans penetrated and wrote about western New York approximately 200 years prior to settlement. The Niagara Frontier in general had an important place in various episodes of American and Canadian history. The period between 1650 and 1700 saw an

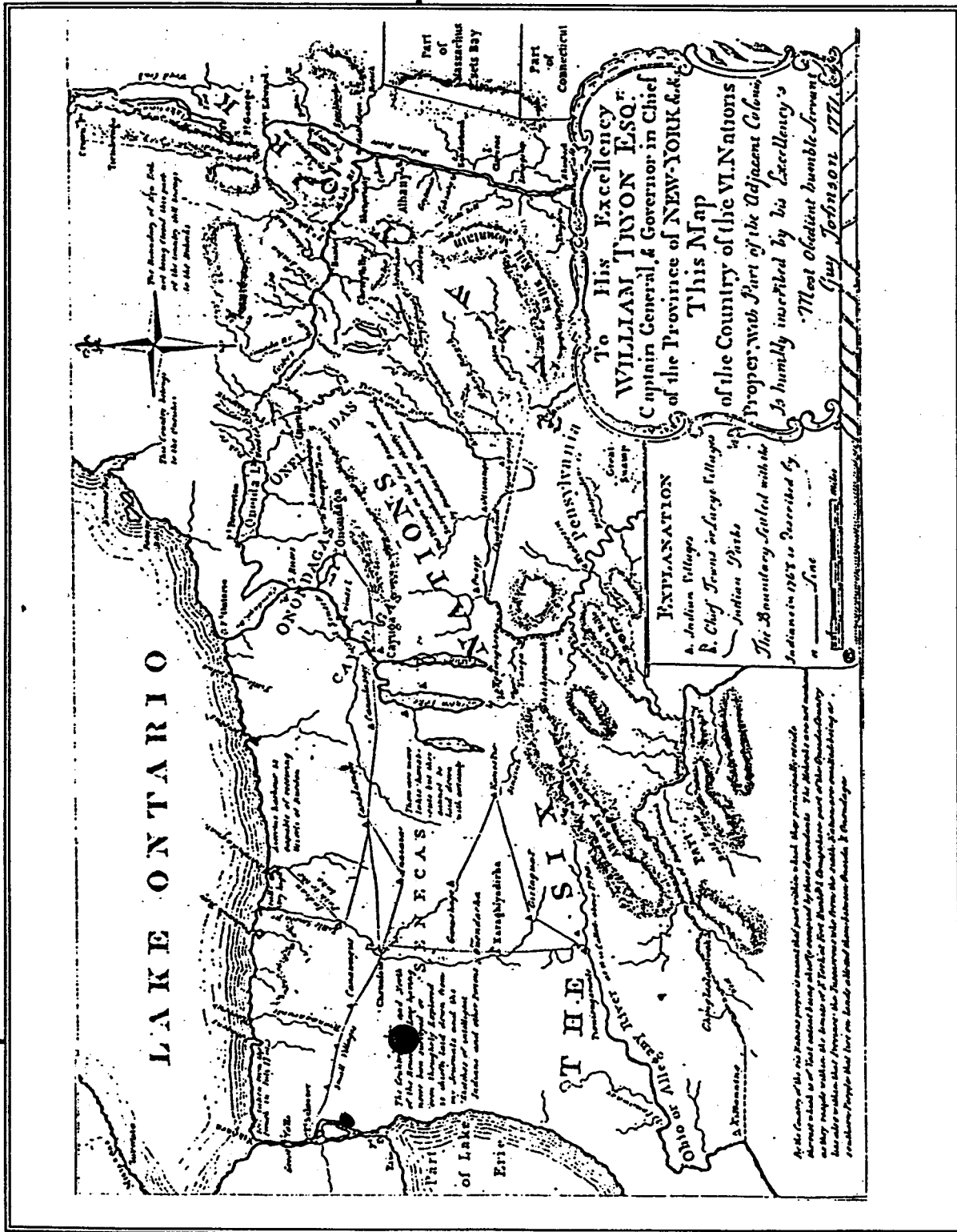


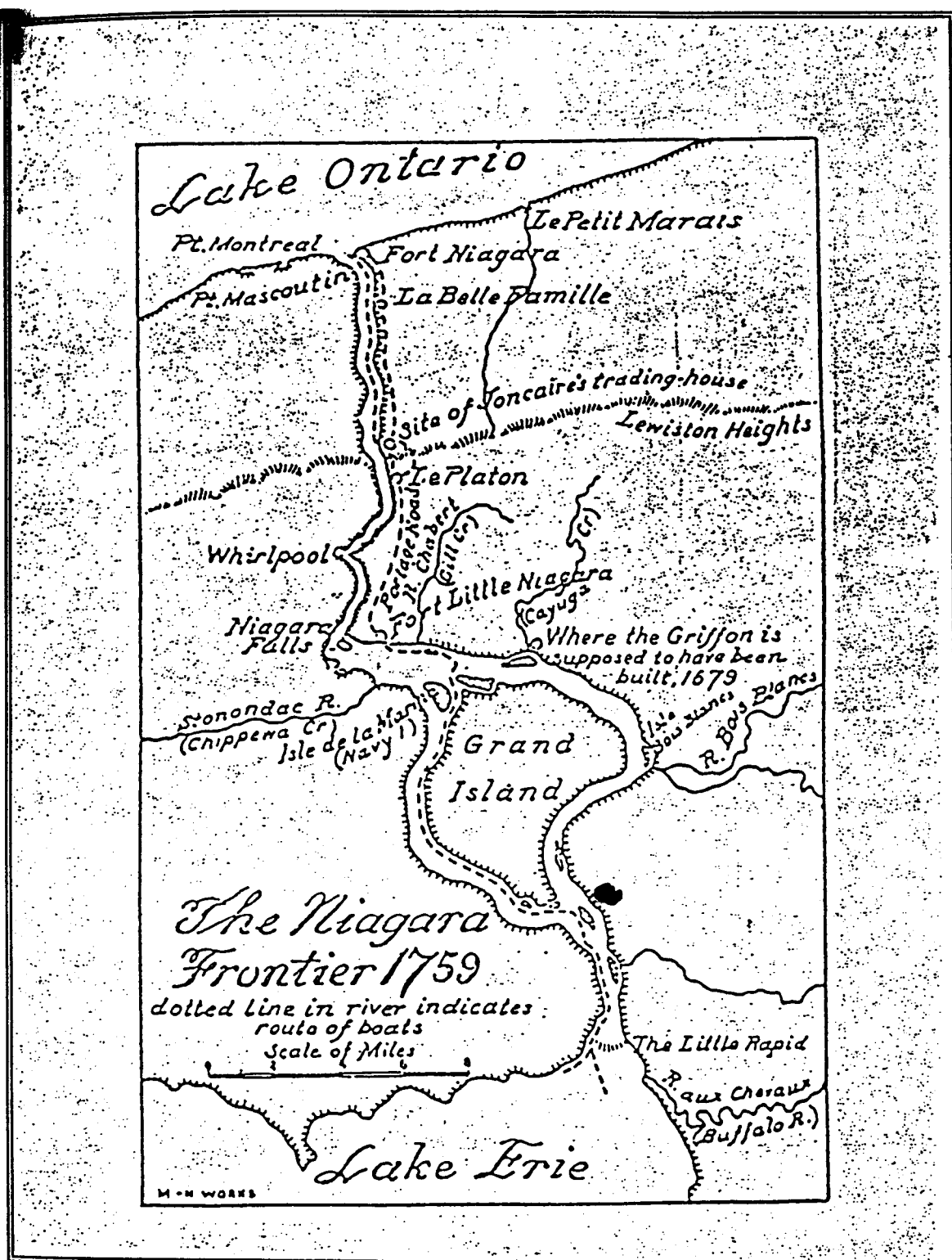
FIGURE 3-1. Guy Johnson's Map of New York - 1771.

(Source: Doy 1925)

intensive French effort and Erie county was often included in maps of New France. One of the motivations behind the French interest in the Niagara Frontier was the consolidation of the Five Nations Confederacy and their expansion to the west at the expense of French trading partners such as the Huron. The French were also concerned about the increasing activities of the British.

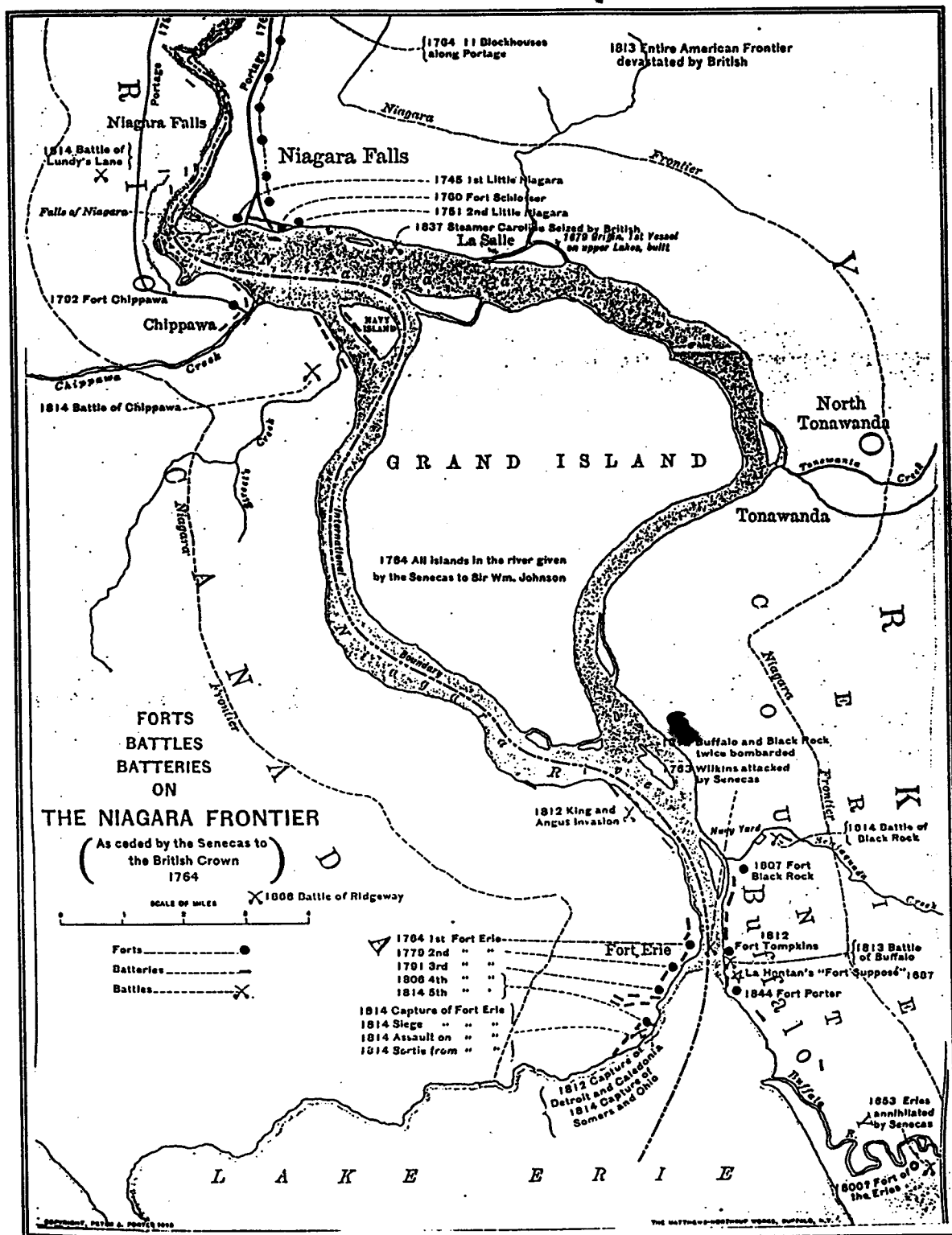
Between 1650 and 1800, the history of western New York centers around the Niagara River and the southern shore of Lake Ontario. The French were the first to explore the Niagara Frontier and incorporate it into a colonial entity. In 1640, Fathers Brebouef and Cahumont were among the Erie (Johnson 1876). It is not known if any of the early explorers landed, or even viewed the vicinity of Buffalo. In 1678, La Salle was sent on an expedition to the Niagara River; he selected a site on the east side of the Niagara River to lay the keel for the *Griffon*, the first ship built on the Great Lakes, reportedly in the area just south of Cayuga Creek in Niagara county; this location can be seen on Figure 3-2. The boat was cited as having anchored at Squaw Island (Bingham 1931) just south of the project area. Prior to the launching of the *Griffon*, Father Hennepin canoed up the Niagara River past the site of Buffalo to assess conditions. As such he may have been the first European to examine the area (Bingham 1931). In 1684, DuLuth and Perrot passed by the Buffalo area on the way to an aborted attack on the Five Nations. However, the hostilities between the French and the Five Nations were the spur for the Marquis Denonville to erect the first Fort Niagara in 1687 to demonstrate the French possession of the eastern side of the river.

Later in the century, Baron de Louis-Armand de Lom D'Arce La'Hontan, author of a popular book on travel and description, a noted traveler in the New World, and in 1689, in military service under Count de Frontenac, Governor of New France, became very familiar with the Lake Erie-Niagara River region. About 1690, he drew a map of this area and recommended three strategic sites upon which to build forts (see Figure 3-3). One of these forts was "Fort Suppose' on the east bank of the Niagara River at the outlet of Lake Erie (now the Peace Bridge plaza, and formerly the site of Fort Porter) (Severance 1917). Although he recommended the



(Source: Daly and Ruggerio 1982)

FIGURE 3-2. Location of Some Sites Relating to the French Occupation of the Niagara Frontier.



(Source: Porter 1914)

FIGURE 3-3. Map Showing Forts, Battles and Batteries on the Niagara Frontier.

erection of a fort on this site, nothing ever came of it.

For nearly 50 years (from 1655 to 1697) the French had a slight edge over the English for control in western New York. In 1697, the Treaty of Ryswick established boundaries of lands for the French and the English but left most of western New York unclaimed (Johnson 1876). Of course, both the French and the English claimed sovereignty with the English eventually predominating, largely because the Iroquois sided with them and engaged in active hostilities against the French. In 1702, the Iroquois professed neutrality, although the Seneca sided with the French.

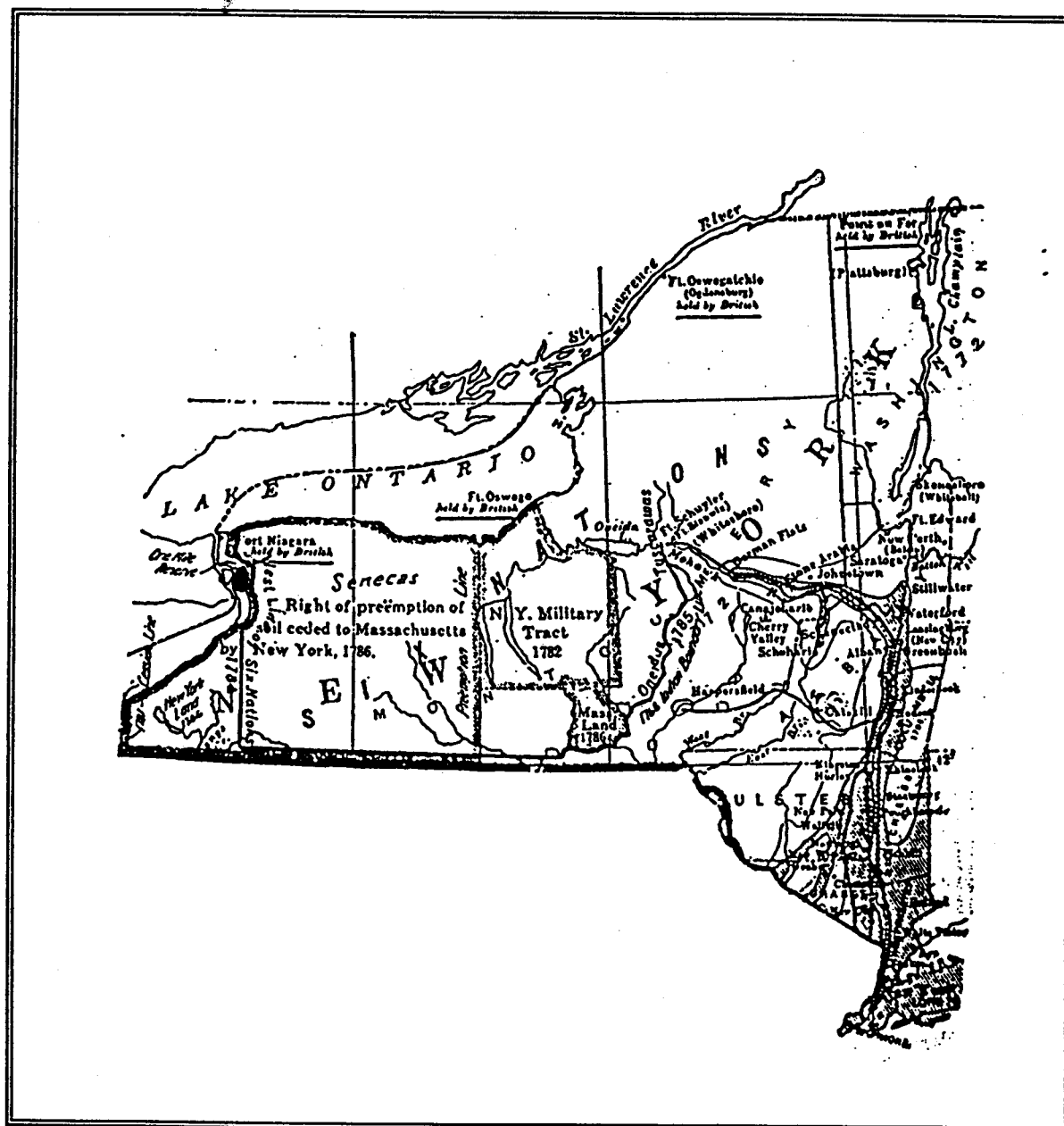
The Niagara River was as an important avenue of communication from the earliest days of European contact as it was prehistorically. A portage route developed on the east side of the river, above the falls; after French military occupation in 1720 it became a military road (Kent 1974). In 1753, Louis Thomas Joncaire-Chabert, a French trader, was given the task of moving equipment and supplies over the Niagara portage for a military expedition to the Ohio region to expel the British. He established a trading post and portage station at the Little Rapids where the Niagara River flows out of Lake Erie. Part of his task was also to settle Native American in the vicinity of Buffalo Creek (Barrick 1970). Ultimately, this expedition resulted in open war between the French and British in 1754 (Kent 1974).

Ascendancy and influence alternated between the French and English. In 1760, the French surrendered to the British and in February 1763, a treaty was signed ending French dominance in North America (White 1898). In the same year, a British column was ambushed and destroyed by the Seneca at Devil's Hole on the portage route around the Niagara Falls and a troop convoy was reportedly fired on by the Seneca in the vicinity of Black Rock, but the precise location is not known (Johnson 1876). Conflict in the area continued between the British and the Seneca; in 1764, the Seneca were forced to cede the Niagara Strip (including the project area), from Lake Ontario to the rapids of Lake Erie, to the British who occupied until 1796 (Kent 1974). For the next 20 years, the English exerted complete authority over this area.

Bracketed by the French and English establishments at Fort Niagara and Fort Stanwix, the western sector of New York remained in Iroquois possession until the last quarter of the eighteenth century. While General John Sullivan's advance into the eastern edge of this region during the Revolutionary War had effectively knocked the confederated tribes out of active participation in the war, conflicting claims over this region by both New York and Massachusetts tended to curtail Euroamerican settlement, with the exception of a handful of squatters. The colonial charters of New York and Massachusetts (the Convention of Hartford) indicated that each had a valid claim to western New York.

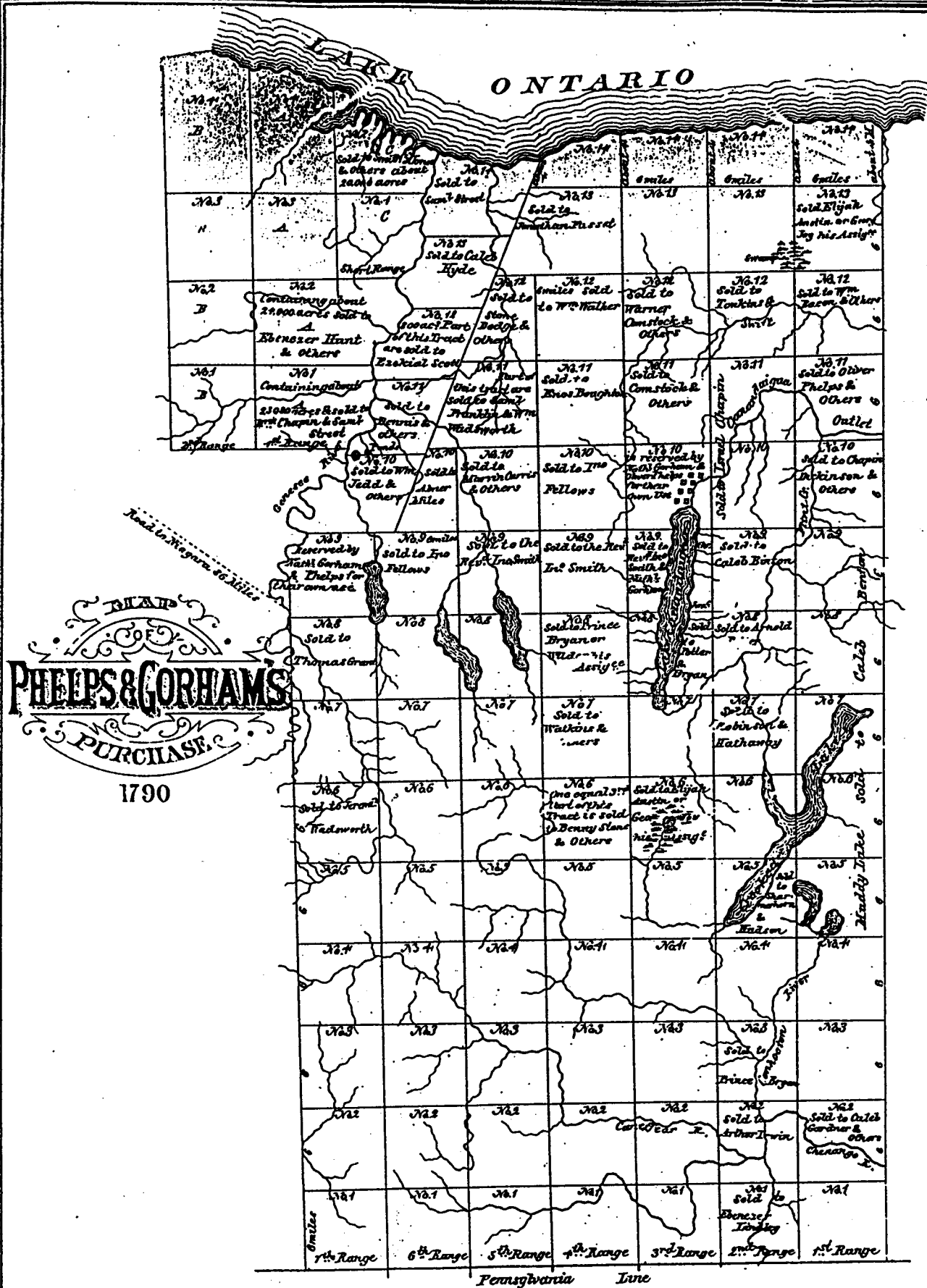
In 1784, a treaty was made between the United States and the League of Nations (the Tuscarora became the sixth nation in 1712) that gave to the former all of Chautauqua County and large parts of Erie and Cattaraugus counties (Johnson 1876; White 1898). In 1786, an agreement was made that gave Massachusetts the right of pre-emption (the right of first purchase) from the Native Americans, but the government was to be under the jurisdiction of New York (see Figure 3-4) (Aldrich 1893; Mau 1958).

Treaties that were concluded with the Oneida, Onondaga and Cayuga in 1788 and 1789 gained a sizable block of territory for New York between the Mohawk River and Seneca Lake, most of which was set aside as a military bounty tract for Revolutionary War veterans in 1789. At about the same time, Oliver Phelps and Nathaniel Gorham, heading a group of investors, purchased Massachusetts' right to the state of New York's holdings and, in July 1788, at a conference held at Buffalo Creek, secured the termination of native title to the central part of the state (Aldrich 1893; Turner 1852). A post-war land boom was just beginning and quick profit could be made by buying the pre-emptive rights of Massachusetts, releasing the land from Native American claims and selling to prospective settlers. In April 1788, Phelps and Gorham purchased 6,200,000 acres - an area roughly comprising all of present New York State lying west of Seneca Lake (see Figure 3-5). Payment was to be made in three annual installments, payable in the consolidated securities of Massachusetts (White 1898). In 1789, Massachusetts granted New York State ownership of the Mile Strip along the shores of Lakes Ontario and Erie,



(Source: Doty 1925)

FIGURE 3-4. Map of New York State - 1786.



(Source: Doty 1925)

FIGURE 3-5. 1790 Map of Phelps and Gorham's Purchase.

as well as the Niagara River (including the project area).

Phelps and Gorham immediately began a survey of the lands. Ranges were set off and divided into townships. Sales of these lands were slower than anticipated and, in addition, the work of the new federal government resulted in a substantial rise in the market value of the Massachusetts consolidated securities. Although they were granted an extension in time to make the first payment, Phelps and Gorham were unable to raise the necessary funds. They turned back to Massachusetts roughly two-thirds of the purchase that had not yet been freed from Native American claims (White 1898). In 1790, the two had more difficulties and, keeping two townships for themselves, sold the land to Robert Morris (White 1898). Morris quickly resold the land to English capitalists and netted himself a considerable profit.

Impressed by this quick turnaround, Morris bought from Massachusetts the two-thirds of the original Phelps and Gorham purchase that was still tied to Native American claims (Mau 1958). This land consisted of 4,000,000 acres - roughly the extent of New York State west of the Genesee River. Morris kept approximately 500,000 acres for himself and in 1792-93 sold the remainder to a group of Dutch capitalists known as the Holland Land Company. Due to financial problems and to increasingly hostile attitudes of Native Americans, the Native American title to the land was not extinguished until 1797. At that time, tracts of land were set aside as reservations for the Native Americans, including the Buffalo Creek Reservation in parts of present day Genesee, Niagara and Erie Counties (see Figure 3-6). As a condition of the sale, Morris agreed to extinguish the Native American title held by the Senecas as soon as possible. This tract of land came to be known as the Holland Land Purchase (see Figure 3-7). Genesee, Niagara and Erie counties were part of this purchase.

The Seneca, however, still held title to the land. In 1797, the Treaty of Big Tree extinguished this title with the exception of ten tracts of land that included the Cattaraugus, Tonawanda and Buffalo Creek Reservations, which remained with the Indians (see Figure 3-6) (Houghton 1901). In 1798 a survey of the Holland Purchase was begun and in 1800 the

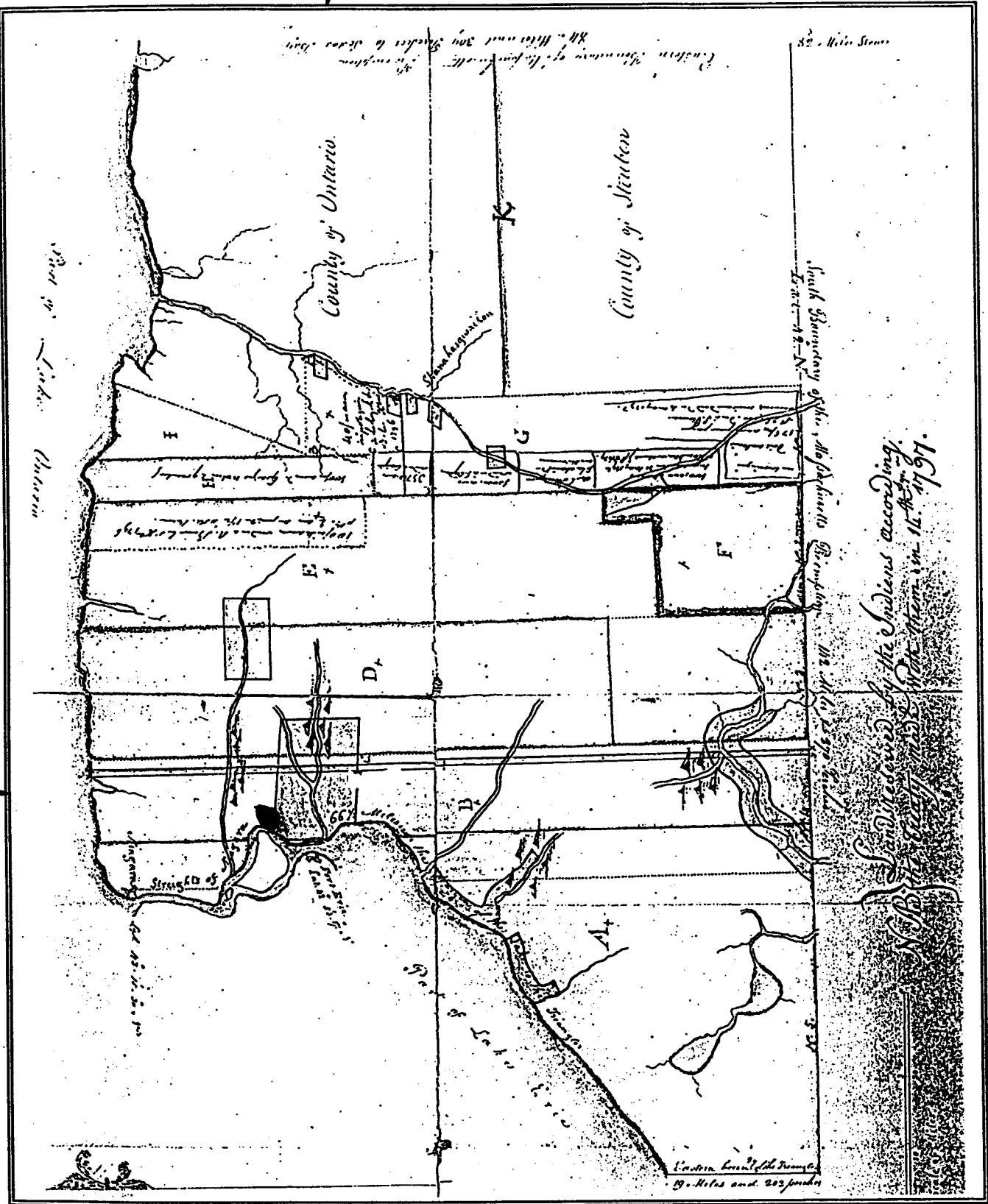


FIGURE 3-6. Map Showing Native American Reservations in West-Central New York State in 1797.

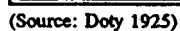


FIGURE 3-7. Map of Holland Land Company Preliminary Survey - 1797.

purchase was divided into townships and some lots were offered for sale (White 1898). The Holland land Company purchase included the area which would become Buffalo. Settlement centered around two rival communities, New Amsterdam at the mouth of Buffalo Creek and Black Rock, including and just south north of the project area. (The project area is in the neighborhood known now as the "Riverside" section of the City of Buffalo.)

3.2.2 Euroamerican Settlement (A.D. 1800 to 1860)

The early development of western New York proceeded very slowly. The 1790 census of New York indicated that 340,120 people lived in new York (Drescher n.d.). Of these only 24 lived west of the Genesee River. Contributing factors to this slow settlement included: 1) the continuing presence of the British at Fort Niagara and other outposts (including frequent visits to Buffalo Creek) that tended to deflect westward migration to the south along the Allegheny and Ohio valleys; 2) the presence of a large Native American population with dubious ties to the United States; and 3) a lack of roadways (see Figure 3-8).

By the end of the eighteenth century, immigration to central and western New York increased due to the development of early roads and the flight of settlers from New England (e.g., by 1820, 60% of New Yorkers were estimated to have come from New England) (Ellis, Frost, Syrett and Carmen 1967). Very few of the early settlers in western New York were from Europe; they were either of British or Dutch ancestry (European immigration did not begin until the 1840s).

3.2.2.1 Black Rock Settlement

The project area is located in the neighborhood known today as Riverside and part of the settlement of Lower Black Rock. The vicinity of Black Rock had not been part of the Holland

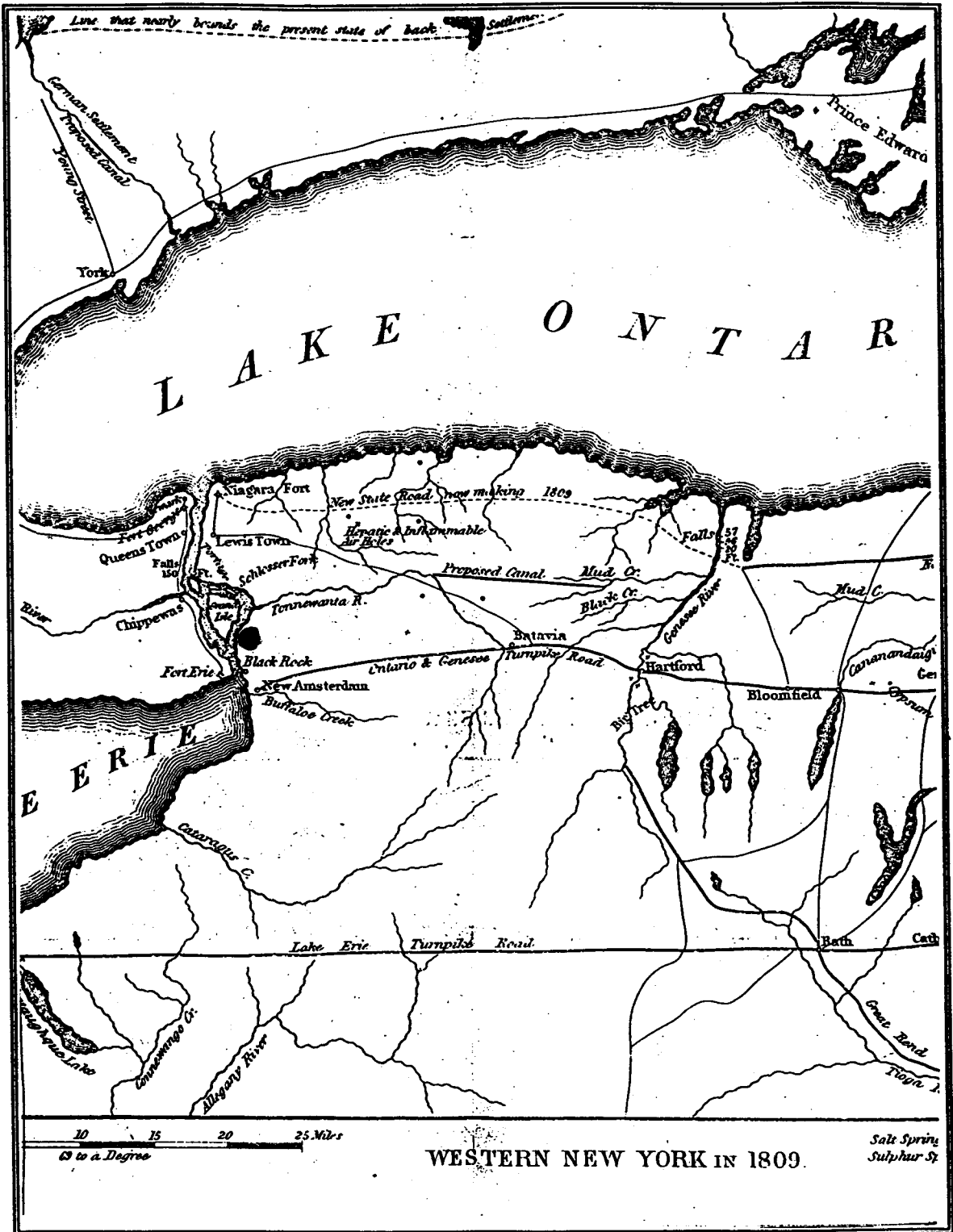
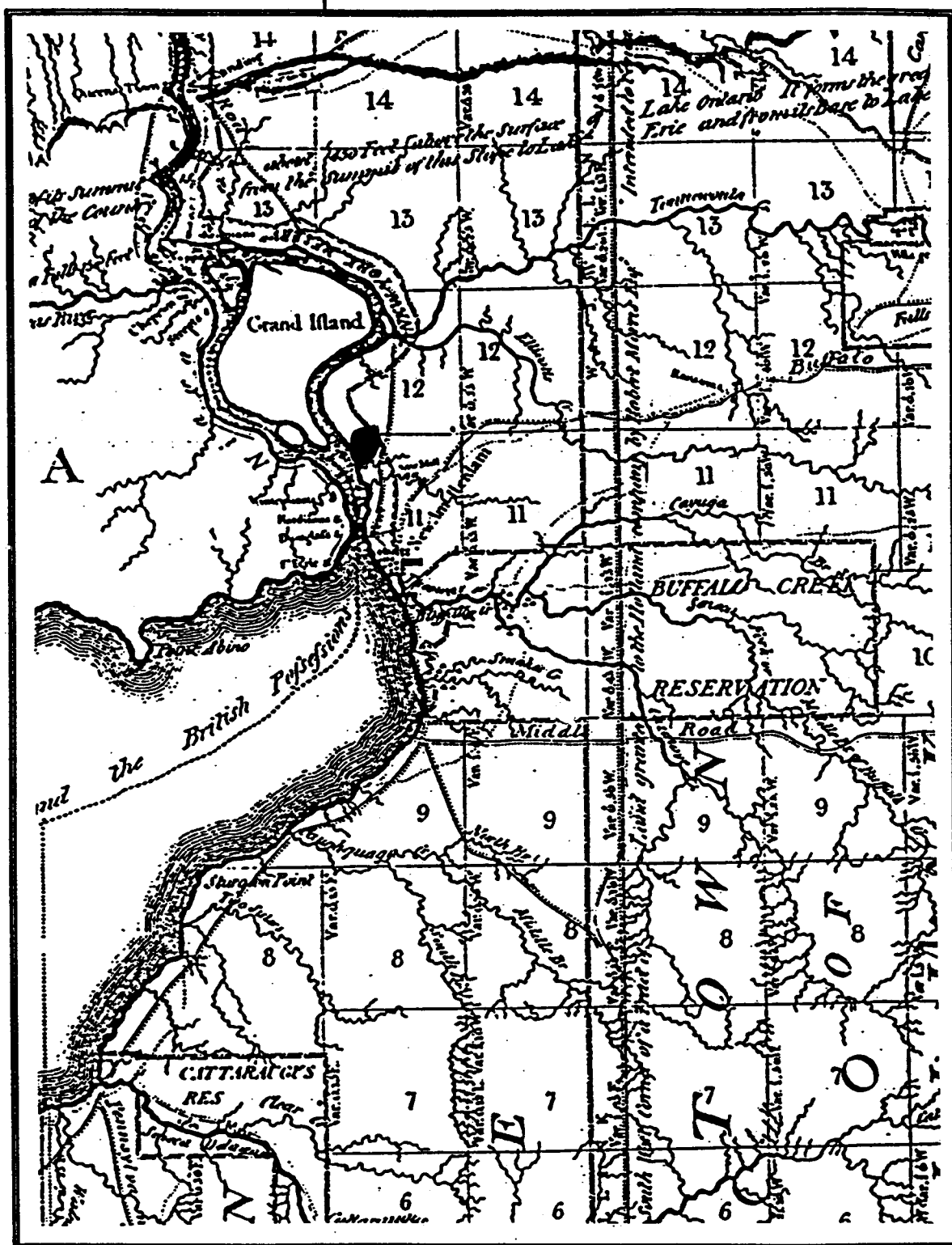


FIGURE 3-8. Map Showing New York State Roadways in 1809.

Land Company Purchase of 1792-1793, but had been allotted to the State of New York and reserved for the Seneca as a result of the Hartford Conference of 1787. As mentioned above, it was known as the "Mile Strip" because it was a one-mile-wide strip of land paralleling the Niagara River (Bingham 1931). In 1797, the Seneca gave a square mile of this strip just north of Scajaquada Creek to Jaspar Parrish. The project area is located in Lot 103 of this parcel. Archibald McIntyre purchased the 132-acre parcel in 1831 (Longiaru 2000).

The survey and allotment of land in the village of Black Rock took place in the years of 1803 and 1804 after New York State secured title from the Iroquois to the mile-wide strip of land along the Niagara River. Within this mile-strip the State Legislature laid out for sale the first housing lots of what became the Upper Village of Black Rock; settlement began about 1805 (Bingham 1931; Landmark Society n.d.). The village between the settlement of New Amsterdam (Buffalo) and Scajaquada Creek was known as Upper Black Rock (Goldman 1973); early settlement in Upper Black Rock was concentrated around Ferry Street just north of the project area, while development of Lower Black Rock occurred north of Scajaquada Creek (see Figures 3-9 and 3-10).

Black Rock received its name and its reason for existence by virtue of a large wedge of black limestone formation that projected at a northwesterly angle into the Niagara River near the point where School Street and Niagara Street intersect. Its flat surface was 200 feet wide at its northern end and rose four or five feet above the normal level of the river - Kis-tan-goi, as the Senecas called it, thus formed a natural pier (Landmark Society, n.d.). The rock formed a perfect natural landing place and was used as early as the time of the American Revolution as a ferry point. According to Smith (1884), in 1804 the road to Black Rock consisted of ". . . a small pathway trodden mostly by Indians, with some appearance of wagons having passed that way.." and by 1809 what is now Niagara Street had been cut through the woods, although it was not used much until after the War of 1812 (Brigham 1931; Smith 1884).



(Source: Ellicott & Ellicott 1804)

FIGURE 3-9. Map Showing Project Area in 1804.

The firm of Porter, Barton and Company began a transport business and obtained the portage monopoly around Niagara Falls in 1807 and, just before the War of 1812, built a large pier below Bird Island at Black Rock where vessels were loaded and unloaded (White 1898). The northern anchorage of the falls was at Lewiston and the southern anchorage above the falls was at Black Rock. Peter B. Porter, one of the earliest settlers of Black Rock area and a partner of the portage company, believed that their village would become the center of Lake Erie trade, by virtue of the natural harbor and because the harbor at Buffalo was often impassable due to sand bars (Severance 1902). A battle preceding the burning of the villages of Black Rock and Buffalo took place on December 15, 1813 between Guide Board Road and the Black Rock ferry (Bingham 1931) (see Figure 3-3).

A rivalry developed very early between the villages of Black Rock and Buffalo as to which would be the Port of Entry for the Niagara area. In the first place, when Peter B. Porter attempted to purchase large tracts of land from the Holland Land Company in order to settle the Black Rock area, he was refused. He instead purchased state lands along the Niagara River where he planned to build warehouses and other trading facilities, as well as lay out a town site (Grande 1982). Joseph Ellicott and others tried unsuccessfully to persuade the Holland Land Company to buy several thousand acres of the state land at Black Rock to sabotage Porter's scheme. When they refused, Ellicott convinced the Holland Land Company to lend money to anyone who would purchase land between Buffalo and Black Rock for the same purpose.

A second controversy occurred over the location of the Federal Customs House; this was resolved by compromise. For seven months of the year Black Rock was the port of entry and for the remainder, Buffalo Creek was the port (Bingham 1931). This rivalry intensified as the construction of the Erie Canal across the State began. Both Buffalo and Black Rock wanted to be the western terminus to the Canal. The rivalry was predicated on the importance of providing peripheral services to such a settlement. By 1812, there was considerable settlement at Black Rock. The village of Black Rock developed as many early lake ports did, centered around warehouses and taverns in the waterfront area (Bingham 1931). By 1823, the settlement reached

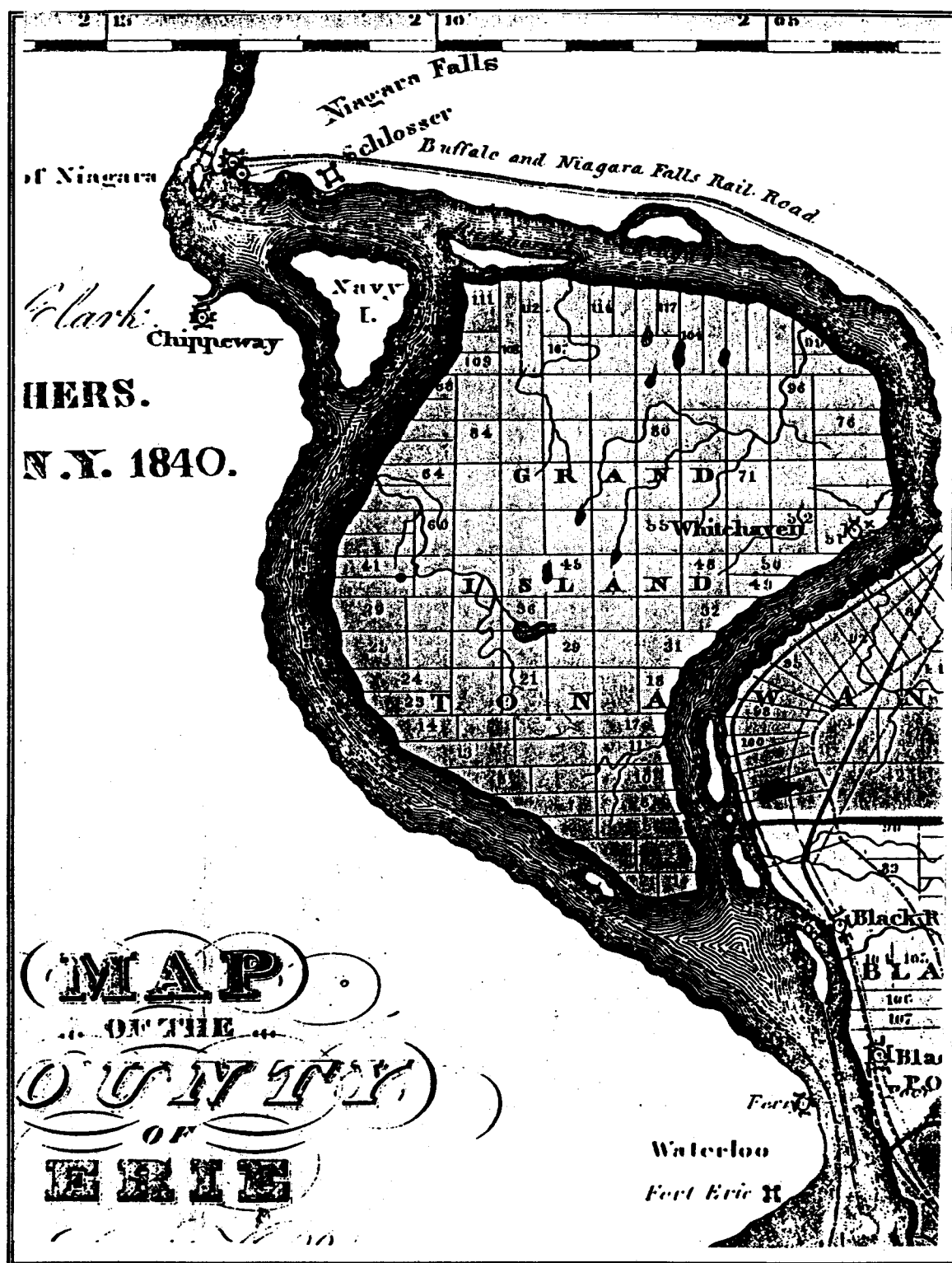
a peak of prosperity with the completion of harbor improvements - all conducted in the hopes that the terminus of the planned Erie Canal would be located there instead of to the south in Buffalo. The latter was not achieved, however, without a great deal of struggle between Peter B. Porter, Black Rock's leading citizen, and those with vested interests (e.g., Busti, Wilkeson and others) from the settlement of Buffalo.

Buffalo also improved its harbor, however, and once the choice of Buffalo was made as the western terminus of the Canal, Buffalo quickly eclipsed Black Rock as a lake port. Symbolic of this, the rock formation which gave Black Rock its name was destroyed in conjunction with construction of the Erie Canal to Buffalo (Severance 1902; Bingham 1931). In 1832, Buffalo was incorporated as a city, while Black Rock was formed into a town (Barrick 1979; White 1898) (see Figure 3-10).

Settlement increased along the banks of the canal and, by the mid-nineteenth century, rural development intensified along River Road in Tonawanda. The town was officially formed from the City of Buffalo in 1836 (Smith 1884). At that time, the town encompassed the present town of Grand Island (see Figure 3-10).

Longiaru (2000) summarizes the historic settlement of the project vicinity. It is reiterated here in more detail so that archaeological sensitivity can be assessed. At the time that the town of Tonawanda was formed, the Lot 103 (in which the project is located) was part of the sparsely settled northern limits of the City of Buffalo (or Lower Black Rock/North Buffalo) (see Figures 3-10 through 3-13). Development at this time was limited to the eastern side of River Road both north and south of the project Lot.

The earliest available maps that show structures are the David Burr maps produced between 1829 and 1840. These maps show the locations of mills, schools, churches and settlements, none of which are found within the project parcel (see Figure 3-10).



(Source: Burr 1839).

FIGURE 3-10. Map Showing Vicinity of Project Area in 1839.

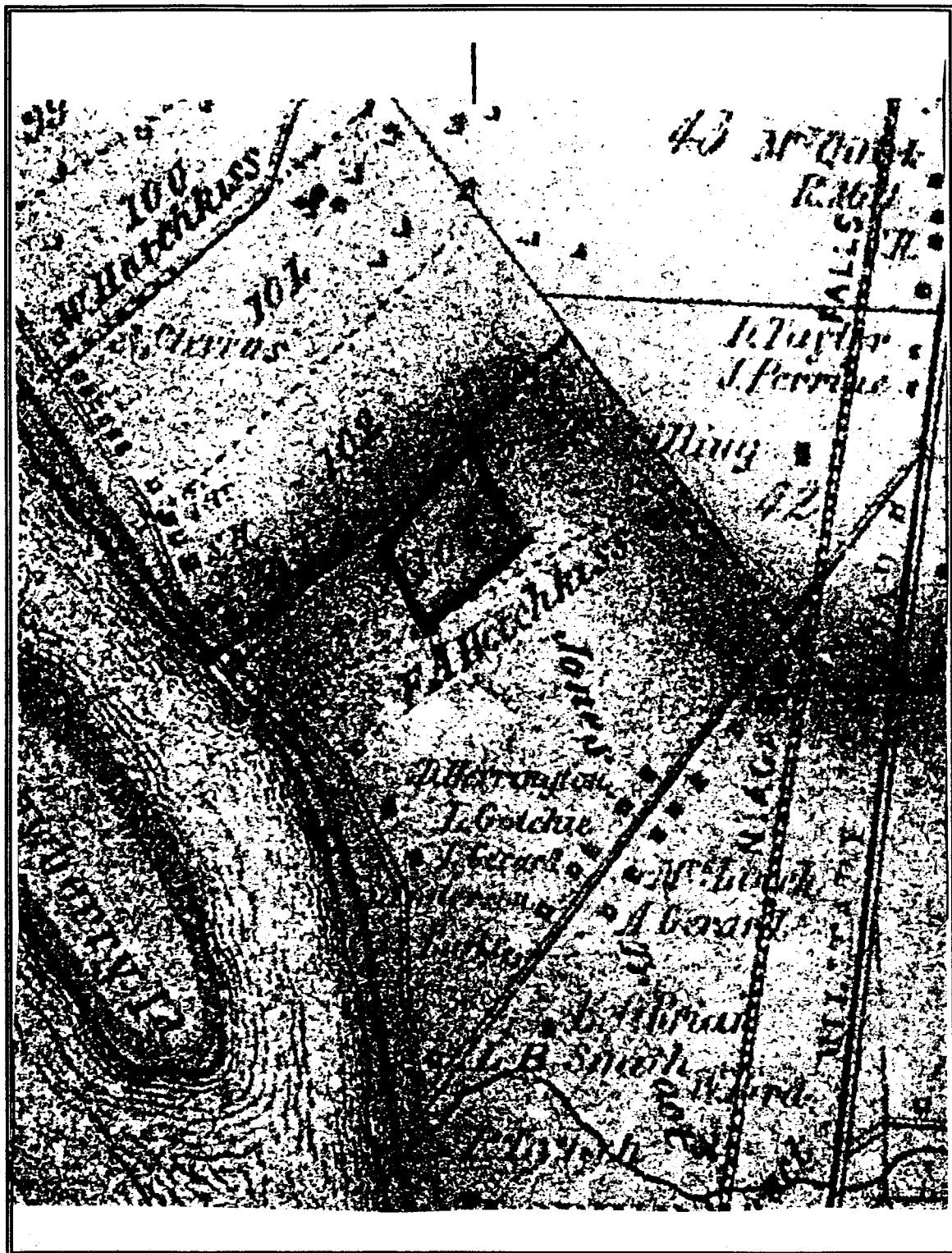


FIGURE 3-11. Project Location On Geil 1855 Map.

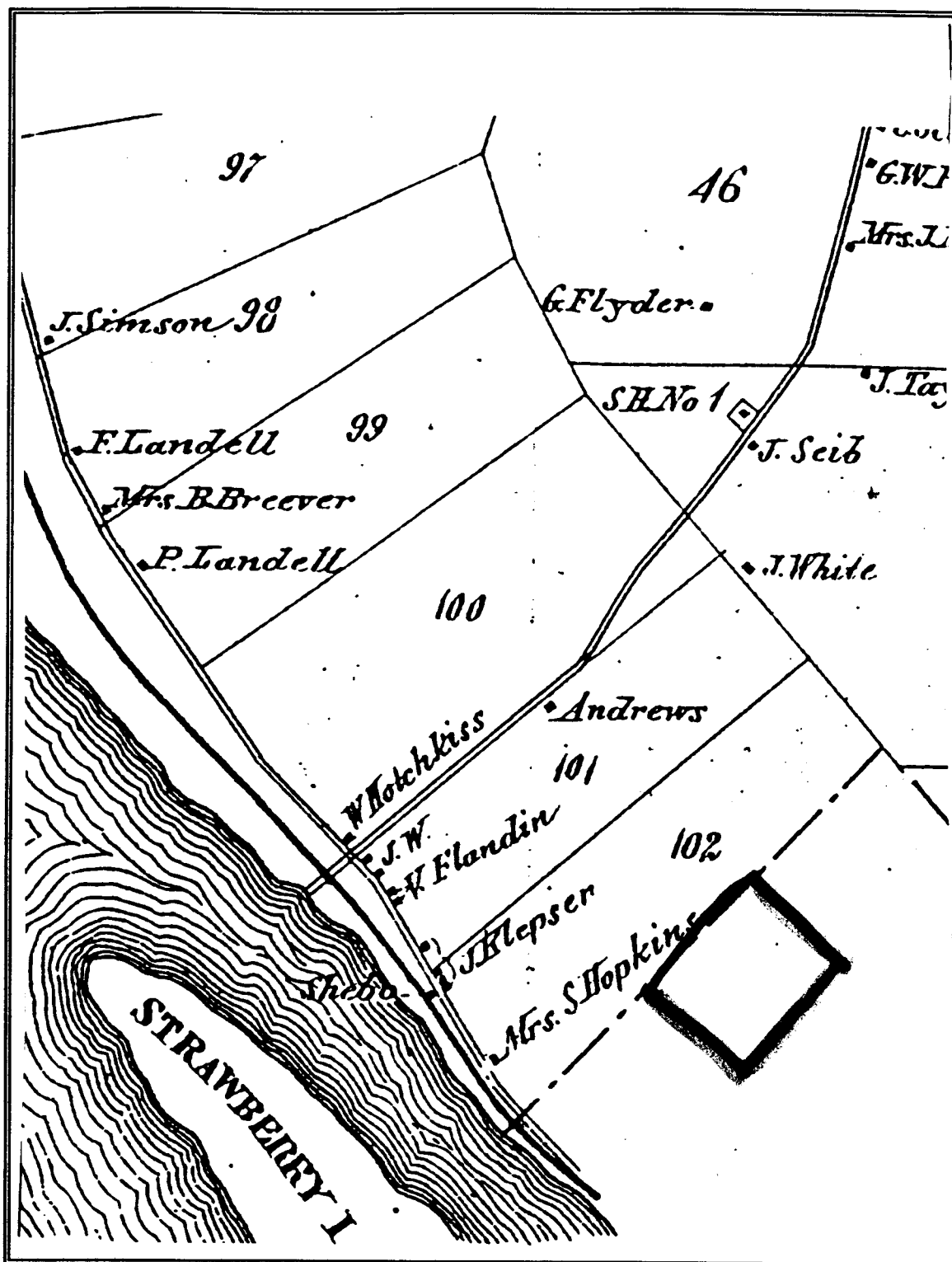


FIGURE 3-12. Lot 102 Location on Stone and Stewart 1866 Map.



FIGURE 3-13. Lot 103 Location on Stone and Stewart 1866 Map.

In 1855, the Geil map (see Figure 3-11), does show ownership. The project parcel, part of Lot 103, is a somewhat pie-shaped lot owned by Hopkins, also the owners of Lot 102 to the north. Lot 102 is the present location of the GM Complex. No structures are present within the project area at this time. Most settlement at this time is along River Road. The project area is the rear part of a probable farm lot.

The sometimes sparsely populated landscape is present ten years later as seen on the 1866 Stone and Stewart map (see Figures 3-12 and 3-13). The 1866 map also shows a road leading out of Lower Black Rock to the less populated area. This would be Tonawanda Street. It may be a "paper" street at this time as there is little occupation along it as it approaches Lot 103. No structures are present within the project area yet.

Vulcan Street, shown for the first time, was initially called O'Neil after one of the property owners on the southwest corner of Lot 1-3 (see Figure 3-13). At this time, O'Neil (Vulcan) Street formed the northern boundary of the City of Buffalo (see Figures 3-13, 3-14 and 3-15) as Lot 103 was incorporated into the limits of Tonawanda at this time. Proposed subdivision of the Lot is apparent (see Figure 3-14); it was subdivided into 41 smaller parcels. The project area is comprised of sublots 22 through 30 on that map. The 160-acre Lot 102 to the north is shown still shown as belonging to 'Sarah A. Hopkins' (see Figure 3-14).

According to Longiaru (2000), the 1890s signified the beginning of the transformation of western Tonawanda, from a primarily agricultural region, to a nascent industrial center. Tonawanda's extensive waterfront, coupled with cheap electrical power from the Niagara Falls, lured industries to the eastern bank of the River. In turn, the growing industrial nature of the western part of the town attracted immigrant workers to the area (Percy 1997). Many eastern Europeans settled in the Riverside area of Tonawanda and Buffalo. The new industries also contributed to suburban growth in the village of Kenmore, in the southeastern section of town. The electric railway enabled workers from neighboring communities to access the new factories in western Tonawanda. The New Century maps from 1909 to 1915 (see Figures 3-15 and 3-16),

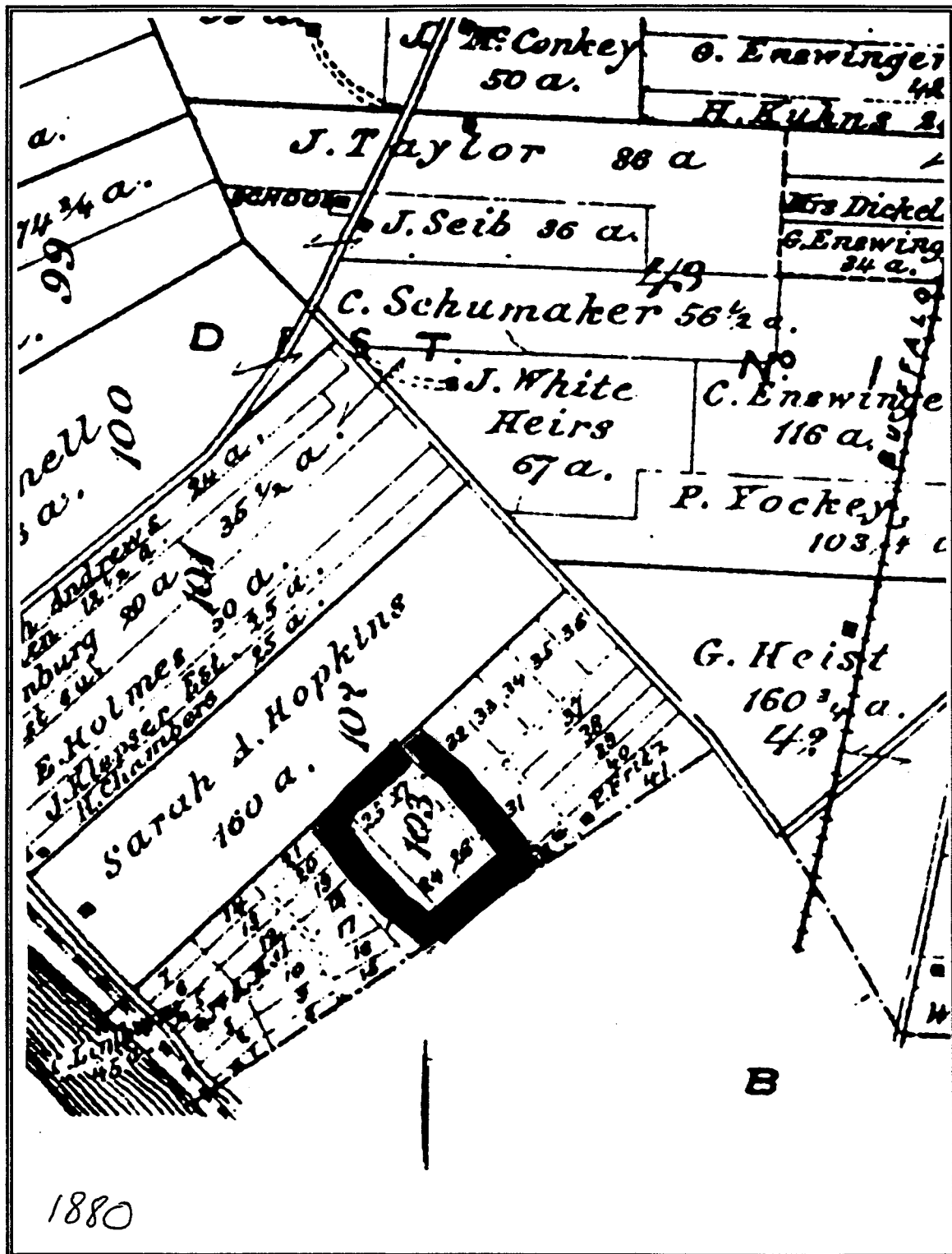
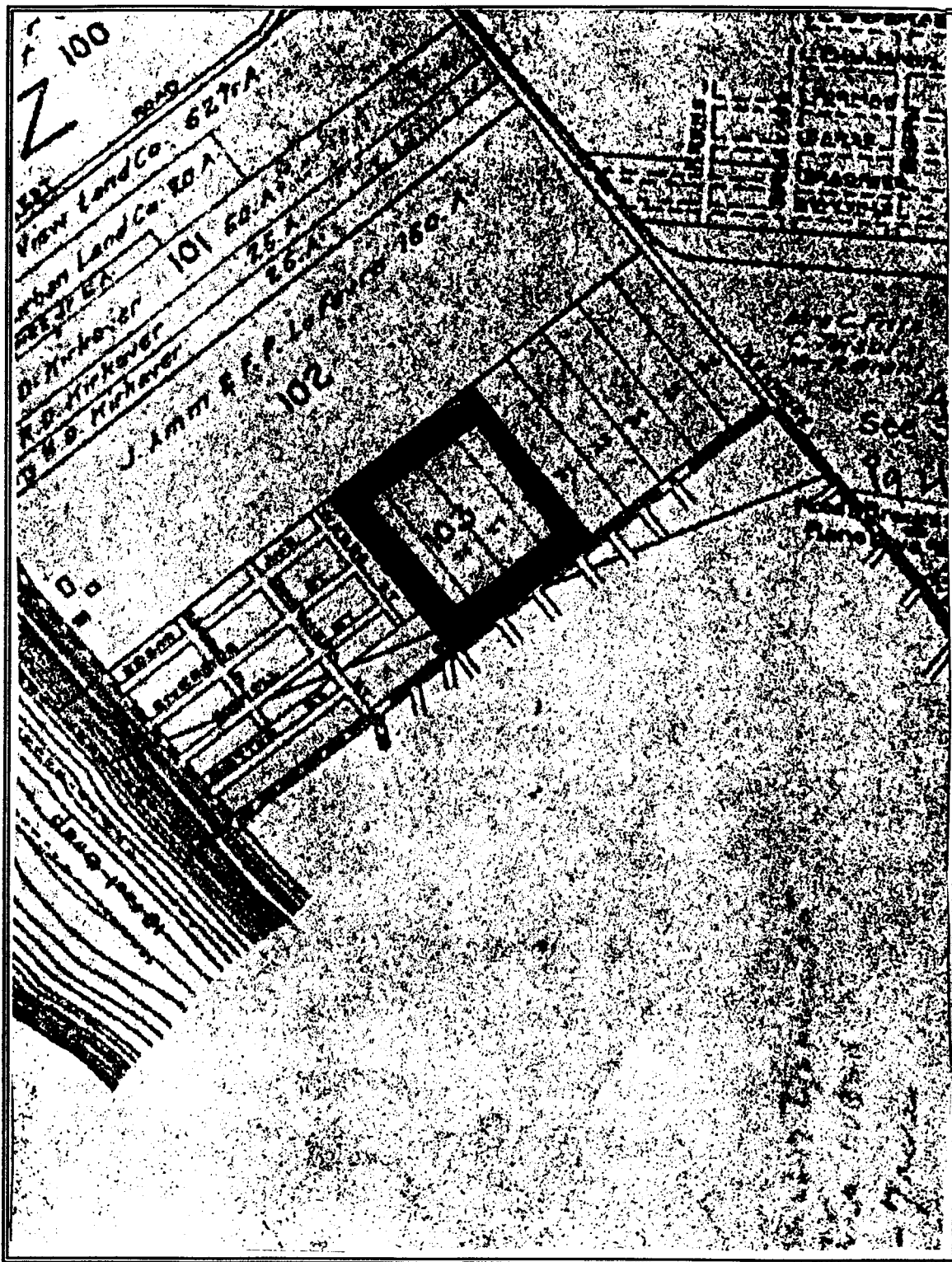
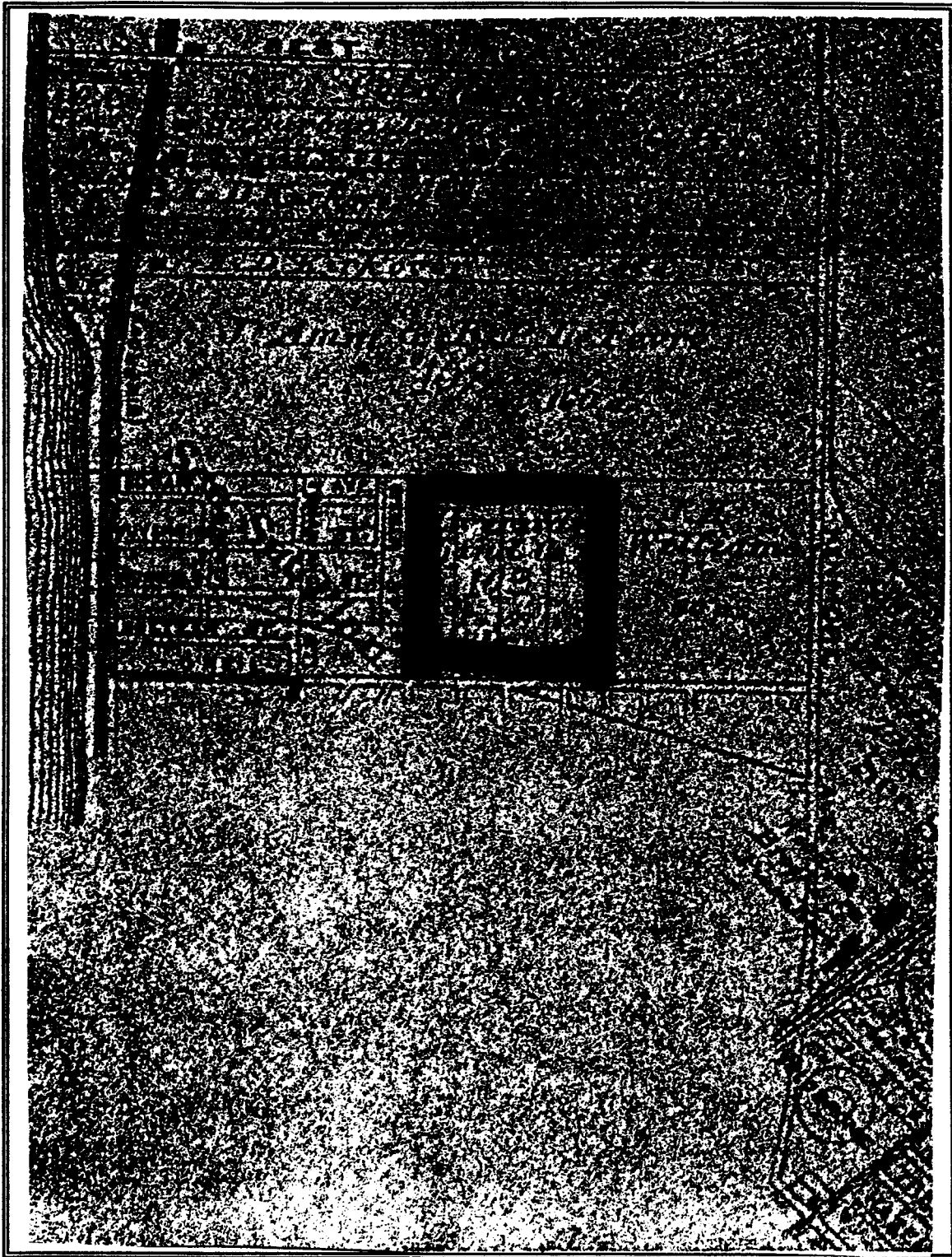


FIGURE 3-14. Project Location On Beers 1880 Map.



(Source: New Century Atlas 1909)

FIGURE 3-15. Project Location in 1909.



(Source: New Century Atlas 1915)

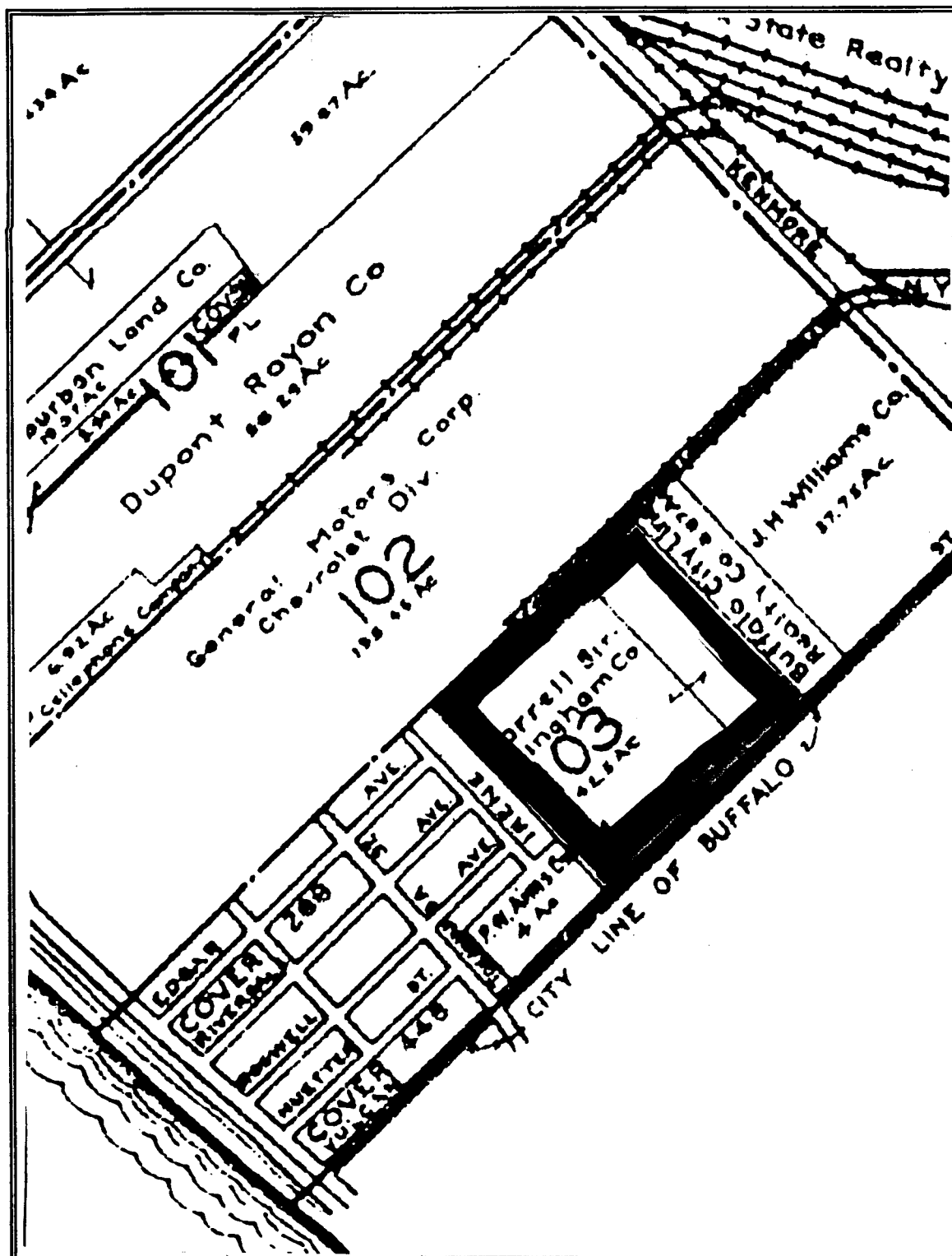
FIGURE 3-16. Project Location in 1915.

show the project area as well as the neighboring lots prior to the rapid industrial development of the town. On both maps, Lot 102, shown as owned by 'J. Amm' & 'F.P. LeFevre', was still undeveloped; Lot 103 is still shown as subdivided, but not occupied. In 1909, the project area was still subdivided, but with fewer sublots; six years later, the project area was part of the 91-acre Riverside Land Company development (see Figures 3-15 and 3-16). The lots to the west are occupied and streets are named.

The industrial development of this section of Tonawanda began around the turn of the century. One of the earliest industries was the J.H. Williams Company of Brooklyn, New York, who in 1911 constructed a million-dollar drop forge plant just east of 344 Vulcan Street (see Figures 3-16 and 3-17). This period also saw an increase in the Buffalo area concomitant with that in Detroit (Lemon 1952). Automobile manufacturing plants began to dominate the local industrial picture in western New York. For example, 30 individual car manufacturing plants were in the vicinity at that time, including the Pierce Arrow Corporation on Elmwood Avenue further south of the project area. The smaller auto manufacturing companies could not compete with the large ones (i.e., GM and/or Ford) and so they ultimately failed.

As World War I began and progressed, even more industries were established in western Tonawanda. These are the industries that were supplied with inexpensive power from the Buffalo General Electric Company's 1916 facility on River Road (located northwest of the larger GM complex). This was the same year that River Road was illuminated by power generated from the new electric plant (Longiaru 2000).

During the 1920s, the Niagara River industrial corridor catered to plants engaged in steel, rubber, chemical and aircraft manufacturing (Percy 1997). The town witnessed substantial residential growth as a result of the increased job opportunities. GM purchased Lot 103 during this period and began construction of their Engine Plant facility (see Figure 3-17). The plant was designed by Albert Kahn, an internationally recognized industrial architect who preferred designs that included steel frame construction and multi-storied daylight style factories that could



(Source: Niagara Frontier Planning Board 1939)

FIGURE 3-17. Project Location in 1939.

accommodate the technology pertinent to automobile manufacturing. This can be seen on maps by continual subdivision of properties and occupation. Although the Depression eras impeded significant industrial development in this area, World War II revived industrial activity and brought in additional workers from surrounding areas. The 1939 Works Progress Administration (WPA) map (see Figures 3-17 and 3-18), identifies several industries along River Road and Kenmore Avenue, including Farrell Birmingham, GM, Dupont and others.

3.3 SENSITIVITY ASSESSMENT

3.3.1. Historic Archaeological Sensitivity

It can be stated with certainty that the project area holds a very low, if non-existent sensitivity for the location of unrecorded historic archaeological sites. Mapa research clearly indicates that the project parcels were undeveloped for a long period of time, while the areas to the south (Lower Black Rock/Riverside) became more populated. Much of the development in this vicinity was predicated on the transition from farmland to industrial. The housing and development that occurred at this time appear to be associated with providing housing so that workers would live conveniently to the industrial plants. There was simply no development within the project area until the industrial complex of Farrell Birmingham took place.

3.3.2. Prehistoric Archaeological Sensitivity

Initially, the project area was considered to have a high potential for the location of previous unrecorded prehistoric archaeological sites. This is based primarily on the fact that the area along the river was long known as being utilized prehistorically (see Table 3-2). This aside, the primary consideration of sensitivity must be related to whether or not intact ground surface, and thus sites, would be present.

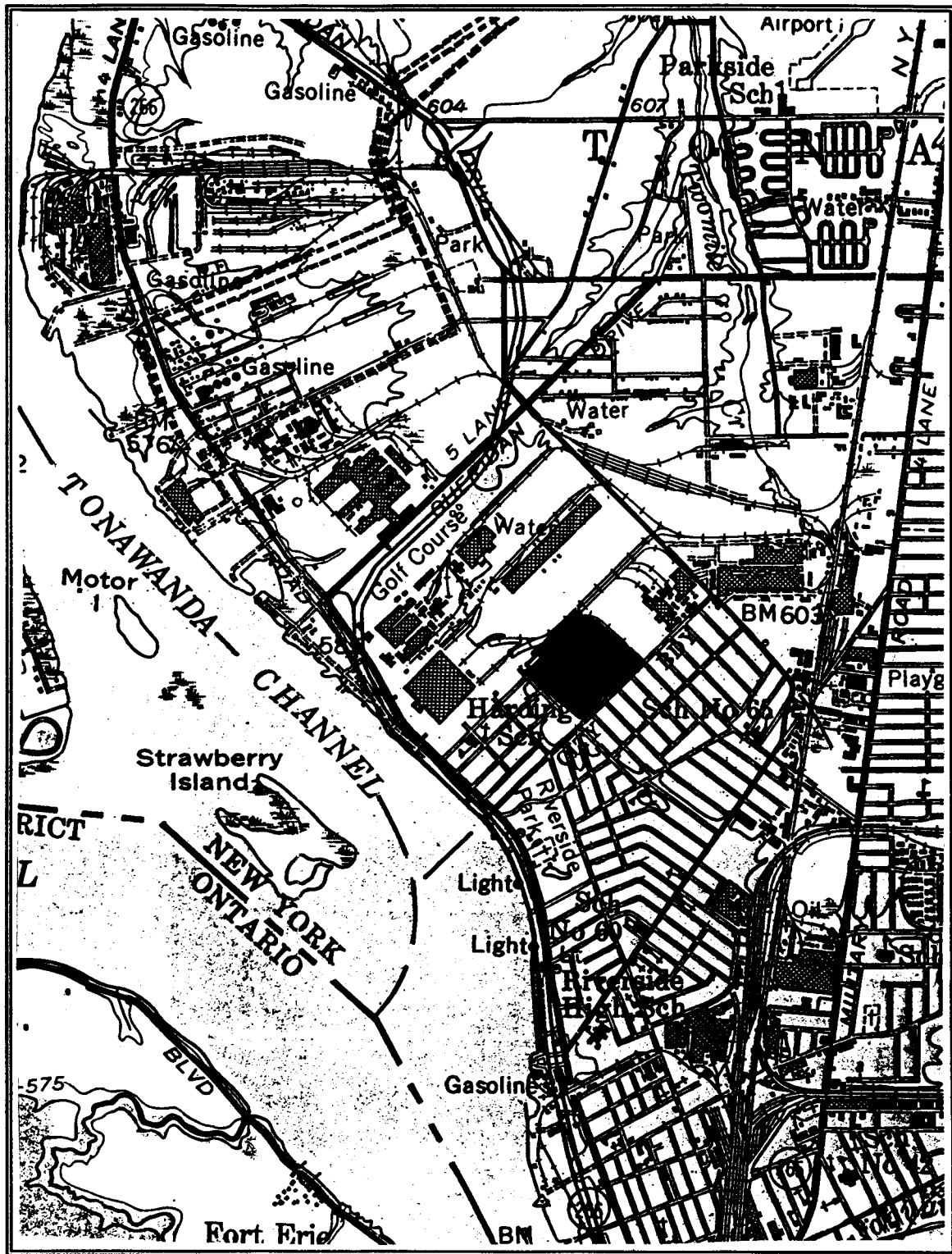


FIGURE 3-18. Project Location on 1948 USGS *Tonawanda, NY* 15 Minute Series Quadrangle.

It is uncertain to what degree the urbanized landscape has affected the apparent distribution of recorded sites. The majority of the sites in Table 3-2 were documented by early archaeologists such as Dr. A.L. Benedict, Frederick Houghton and Arthur who worked in this area between 1890 and 1920, prior to heavy population and development. The presence of farms in and near the project area in the nineteenth century suggests that any large sites might have been known to local collectors, particularly since Benedict recorded numerous sites elsewhere. The types of sites recorded in settings similar to the project area consist mostly of short term camps, small lithic scatters and stray finds. Few of these site had identifiable cultural affiliations. The few recurrently occupied camps, villages, quarries and burials recorded near the project area all occur in close association with a large drainage (i.e., the adjacent Niagara River or Scajaquada Creek to the south) and/or the Onondaga escarpment (southeast of the project).

Background site file, literature and historic map research have identified several prehistoric archaeological sites recorded within a 1.0-mile radius of the project area, but none within it. The nearest recorded site to the project area is approximately 2,000 feet away under the main GM Complex along River Road - Plant 1. The archaeological sensitivity of the project area varied by parcel (e.g., 240 Vulcan Street; 280 Vulcan Street; 344 Vulcan Street).

3.3.2.1 344 Vulcan Street

The 344 Vulcan Street parcel, the so-called Farrell Birmingham parcel, maintains a low archaeological sensitivity. In spite of its proximity to recorded prehistoric sites, historic impacts to the parcel have effectively disturbed original ground surfaces. The types of disturbances across 344 Vulcan Street include episodic construction, demolition and removal activities for buildings and railroad lines; subsurface utility emplacement; and cut and fill activities to bring the parcel up to grade (at various times). No basements were constructed at the 344 Vulcan Street parcel. The reinforced concrete slabs which supported the various buildings, however,

are thick, and in various states of erosion. In addition, two- to four-foot-deep depressions and holes in the slabs, once used to support machinery, are apparent across the few locations where the slabs are still in place. The destruction (by fire) of the Farrell Birmingham building in 1985 and the subsequent environmental remediation activities have also contributed to lowering the archaeological sensitivity of the 344 Vulcan street parcel. Based on the above facts, no archaeological field investigations are recommended for the 344 Vulcan Street Parcel.

3.3.2.2 280 Vulcan Street

Background site file, literature and historic map research indicated that the 280 Vulcan parcel has never been occupied prior to the construction of the Plant 5 complex. No information was available that would verify impacts (aside from subsurface utilities) to the areas outside of Plant 5 at this time.

The 280 Vulcan Street parcel contains the potentially NRHP-eligible Plant 5 Building (built on concrete slab circa 1942) (Longiaru 2000). The remainder of the parcel is currently undeveloped, primarily supporting a reinforced concrete slab parking lot to the south and various highly disturbed locations and staging areas to the north where former railroad tracks once were. In only one location is lawn present - just west of Plant 5. Shovel testing can be attempted in the lawn, but the parking lot and northern area here are too disturbed for testing.

3.3.2.3 240 Vulcan Street

The 240 Vulcan Street parcel is currently undeveloped, primarily supporting a reinforced concrete slab helicopter landing pad and concrete slab parking and staging areas. In two locations, grass lawn is present: a) south of the heli-pad; and b) between the south property

line and Vulcan Street. Available utility maps for the parcel indicate subsurface utilities throughout the concrete slab heli-pad and staging areas, but not within the grassy locations.

Recommendations for the 240 and 280 Vulcan Street parcels include shovel testing at 50-foot intervals in the grassy areas in order to determine a) the extent of past historic impacts to those locations and b) the presence or absence of original ground surfaces and/or archaeological resources. It is also recommended that coring be done under the parking lot at 240 Vulcan Street to ascertain ground surface presence and stratigraphy.

It should also be noted that at this time plans for the proposed GM L-6 Engine Plant call for construction on top of the existing surfaces and brought up to grade. In this case, with the possible exception of deep supporting caisson locations, the current surfaces and sub-surfaces will be sealed in place.

3.3.3 HISTORIC STRUCTURES

The Longiaru (2000), in a separate study, assessed the architectural value of all extant structures at 240, 280 and 344 Vulcan Street. This is discussed above.

4. STAGE 1B FIELD INVESTIGATIONS AND RESULTS

The purpose of the Stage 1B investigations at the proposed GM Plant Expansion project property was to locate and identify any previously unrecorded cultural resources, prehistoric or historic, that might exist within the project area.

Overall, background research indicated that the project area had low to moderate potential for the location of unrecorded prehistoric archaeological sites, due primarily to the high degree of historic impact to the parcels. The potential for locating historic cultural material, refuse or foundations, was considered to be virtually nil.

As indicated above, for ease of field investigations and reporting, the project area was divided into smaller, more manageable study units. These units were based on several criteria, including previous and/or present land use; suitability to specific field methods; and location (i.e., inside or outside of the Facility gates) (see Figure 4-1). Based on the sensitivity assessment, no testing was conducted within the 344 Vulcan Street parcel. Study Areas A and C were located within the 240 Vulcan Street parcel, while Area B was tested within the 280 Vulcan Street parcel (see Figure 4-1; Appendix B, Photos 1 through 21).

Stage 1B shovel testing and coring was conducted at the project area on four days between May 22 and May 25, 2000. The Stage 1B field team consisted of a Principal Investigator, Carolyn Pierce); a crew chief, Robert Peltier, a laboratory director, Todd Harrington, and two archaeological field assistants, Andy Collura and Bill Clark.

4.1 FIELD METHODOLOGIES

Two field methodologies were used at the GM Plant Expansion project area in order to identify and/or locate previously unrecorded cultural resources. These methods included:

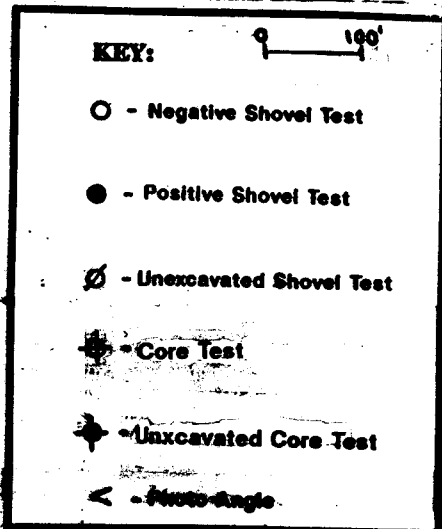
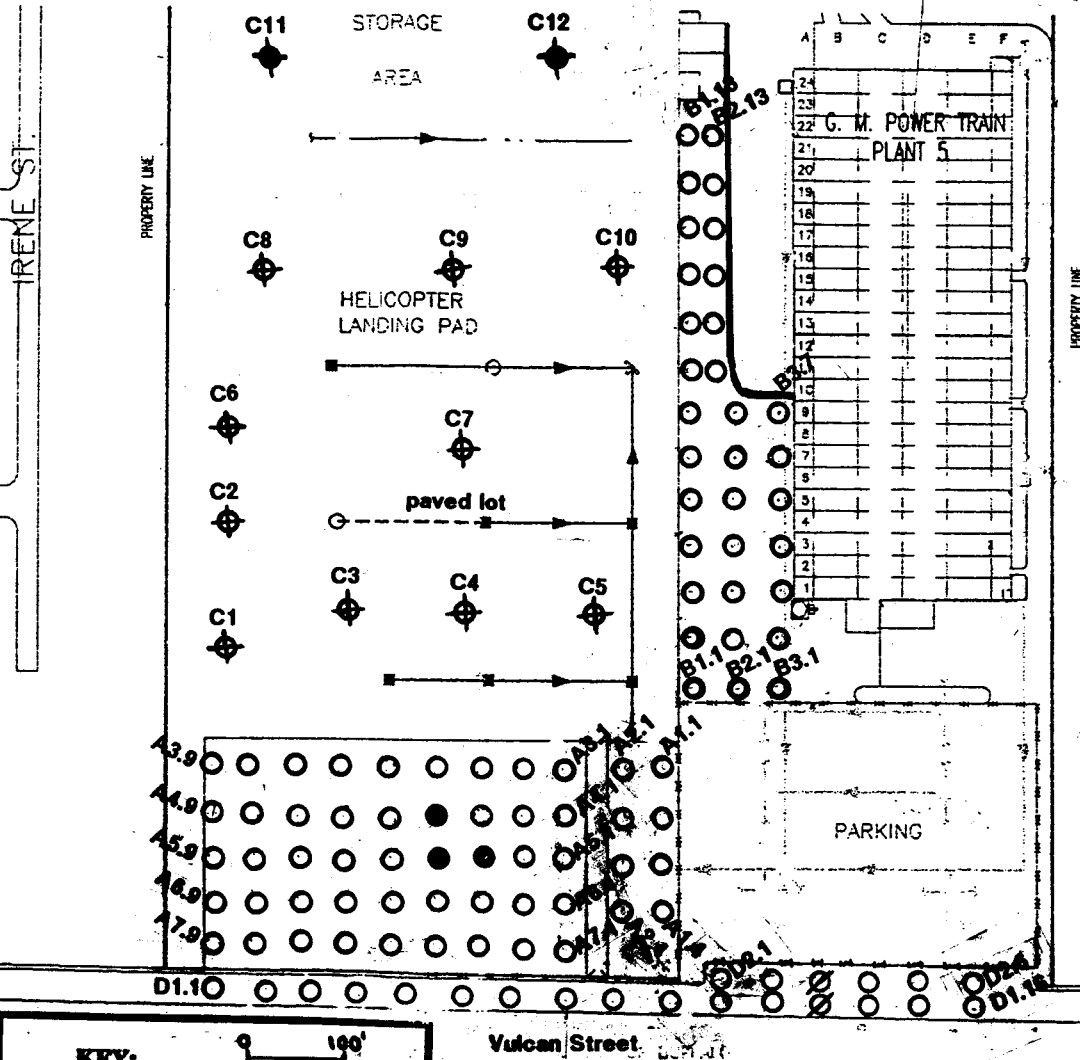


FIGURE 4-1. Map Showing Shovel and Coring Test Locations and Positive Findspots Within Project Area.

1) subsurface (shovel) testing at 50-foot intervals; 2) close-interval (10-foot) shovel testing around findspots; and 3) test coring in the concrete parking lot.

4.1.1 Shovel Testing

Ground surface visibility was nil in both tested project parcels. 240 Vulcan Street contained one grassy location conducive to testing while the remainder was covered with concrete parking lot. 280 Vulcan Street contained only one location that was testable - Area B (see Figure 4-1; Appendix A, Photos 6 and 7).

A 50-foot by 50-foot grid of shovel tests was placed in each of these areas. In addition, two transects covered the area outside of the fence and parallel to Vulcan Street (see Figure 4-1). Shovel tests were located along transects using handheld compasses and tape measures. Tests were excavated with shovels and hand tools, with all soils screened through ¼-inch mesh hardware cloth and carefully examined for the presence or absence of cultural material (see Appendix A, Photo 19). Pertinent information for each shovel test (i.e., stratigraphy, depth, texture, soil type, soil color [Munsell], etc.) was recorded in field notebooks (see Appendix B).

Close-interval (i.e., 10-foot) tests were placed around several findspots to determine if they represented isolated finds or small lithic scatters. The original findspot was used as a datum in these cases. Close-interval tests were placed in cardinal directions and if new material was encountered were excavated to a double negative. If, for example, no new material was recovered, close-interval testing was halted. Figure 4-2 represents a typical pattern of close-interval shovel testing around locations where no additional material was recovered. The results of all shovel testing can be found in Appendix B.

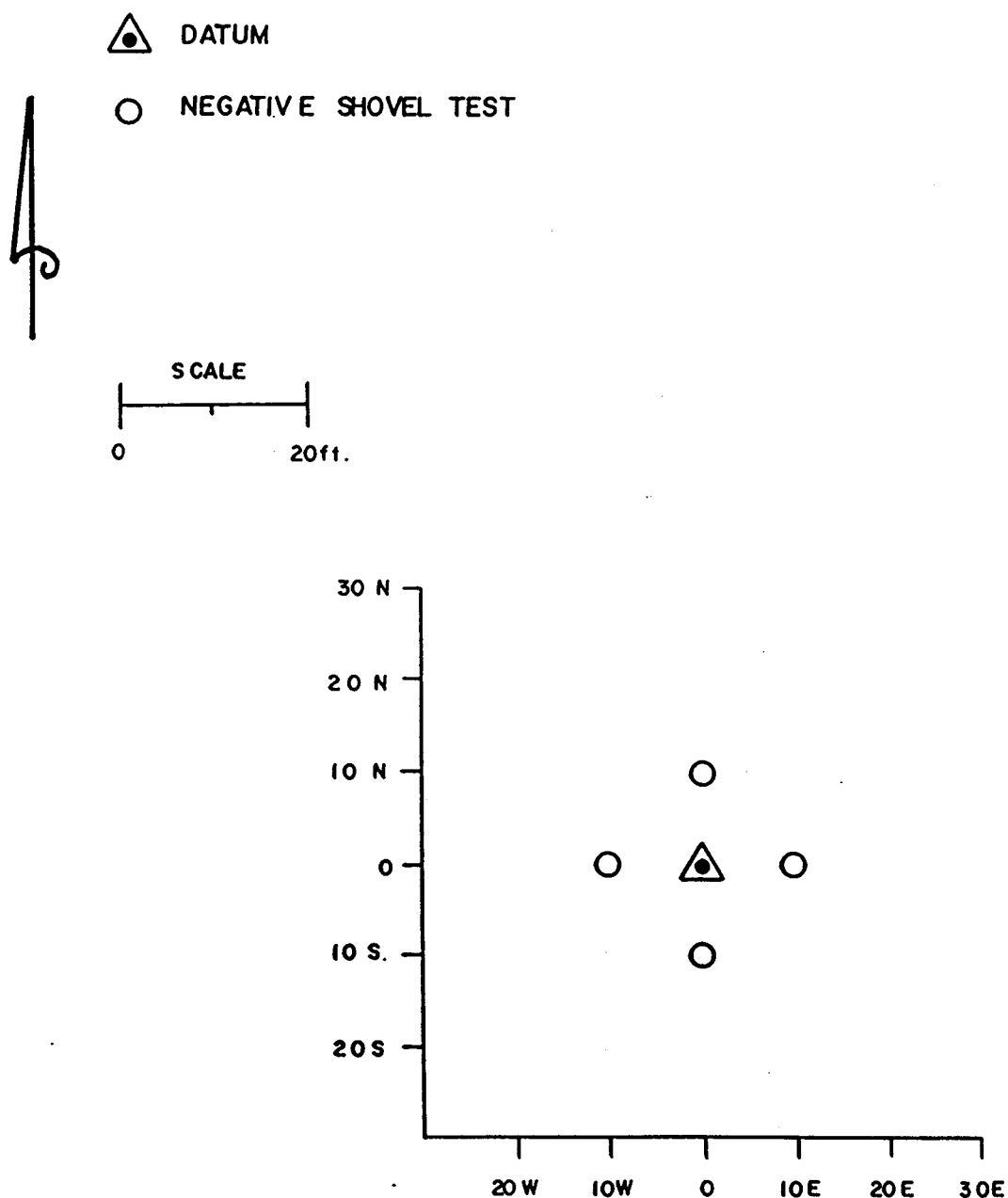


FIGURE 4-2. Map Showing Typical Close-Interval Shovel Testing Around Findspot With No Additional Material.

4.1.2 Coring

Shovel testing was not feasible in Area C, a concrete parking lot criss-crossed with subsurface utilities (see Figure 2-3). Background research, aerial photographs and interviews suggested that the entire project area (all three parcels) had been impacted in any one or more of numerous ways. In spite of this, and in order to determine if original ground surfaces or disturbances were present under the parking lot at Area C, it was decided to use coring methods to at least try and discern stratigraphy (i.e., original or disturbed, etc.). The locations where testing of any kind was impossible was to the north where storage racks and machinery were situated.

Removal of the concrete pavement and underlying base material was conducted to expose, if possible, original ground surfaces and/or native soils for archaeological sampling. The pavement and subbase material were recovered using a free-standing, concrete boring machine. The boring machine was equipped with a rotating, four-inch diameter, diamond-tipped core bit. Although 12 locations had been chosen for sampling in this manner, only ten were able to be cored (see Figure 4-1). Various staff of the IT/EMCON Group were present during the two days of coring.

Coring was continued at each location until native clayey soils were reached. Approximately two inches of concrete pavement and 16 to 18 inches of stone subbase material were encountered at the core locations (see Appendix B). These materials were encountered upon the native clayey soils (see Appendix A, Photo 21). In a few tests, a fine black sand was encountered atop the native clay soils. This sand was most likely associated with the former foundry in this area. No cultural material was observed in any of the core tests (see Appendix B).

4.2 RESULTS

Figure 4-1 indicates the locations of the Stage 1B shovel testing and core locations at the 240 Vulcan Street (Areas A and C) and 280 Vulcan Street (Area B) parcels. The 344 Vulcan Street parcel was not conducive to shovel testing as discussed above. In addition, shovel testing was conducted within the grassy strip along 240 and 280 Vulcan Street and the fence (Area D) (see Figure 4-1).

4.2.1 Area A

Area A, located within 240 Vulcan Street, measures approximately 550 feet by 250 feet in size (i.e., about three acres). Located in the southern third of the parcel, Area A is bounded on the west by a fenceline; on the north by a concrete parking lot/helicopter pad (Area C); on the east by the 280 Vulcan Street parcel; and on the south by Vulcan Street (see Figure 4-1).

Forty-five shovel tests were proposed for excavation in Area A, a grassy section. Shovel tests were placed at 50-foot intervals along seven transects that ran west of and perpendicular to the eastern fenceline, which served as a baseline (see Figure 4-1).

Soil profiles from shovel testing in Area A were difficult to describe since no general pattern was clear (see Appendix B). This is most likely due to the fact that this portion of the property, once low and wet, has been filled in to alleviate the wetness and bring it up to grade for use as a parking lot. As Appendix B indicates, most of the soils are mottled and mixed with road gravel and many contained evidence of debris. In particular the shovel tests along the southern edge, although more consistent, showed evidence of standing water and wet profiles, even though it had not rained from many weeks prior to testing.

In spite of the highly disturbed and wet conditions in Area A, several shovel tests contained prehistoric material. The cultural material recovered from shovel testing in Area A included lithic debris of the sort used in lithic reduction. Shovel tests A4.3, A4.5, A5.3 and A5.4 each contained a single flake fragment. Shovel test A5.5 yielded a flake fragment, a whole flake and a flake tool. Close-interval shovel testing around these findspots only produced a single additional lithic - a small core fragment from A4.5 (0N/10E) (see Figure 4-3; Appendix B).

The context of the material recovered from Area A was suspect. It was mixed with gravel, clay, modern trash, as well as being mixed with chert samples that had clearly only recently been broken (probably by large machinery and mowing equipment or from dumping activities) (see Appendix A, Photo 21). The material described (all of Onondaga chert) in the shovel test summary has clearly been culturally altered. is clearly cultural. However, the context of the material with its matrix suggest strongly that the material came in with fill, the source of which is not known.

It is not surprising to have found some evidence of prehistoric activity in this vicinity, since so many "traces of occupation" have been reported by Parker (1922) and recorded in various institutions (see Chapter 3 above). There is absolutely no way to determine the original location of the cultural material found in Area A.

4.2.2 Area B

Area B measures approximately 425 feet by 125 feet (i.e., 1.2 acres) in size. Located adjacent to Plant 5 (west), Area B is bounded on the west by a paved parking lot; on the north by a paved lot and Plant 4; on the east by a chainlink Fence and Plant 5; and on the south by a chainlink fence and a parking lot (see Figure 4-1; Appendix A, Photos 6 and 7).

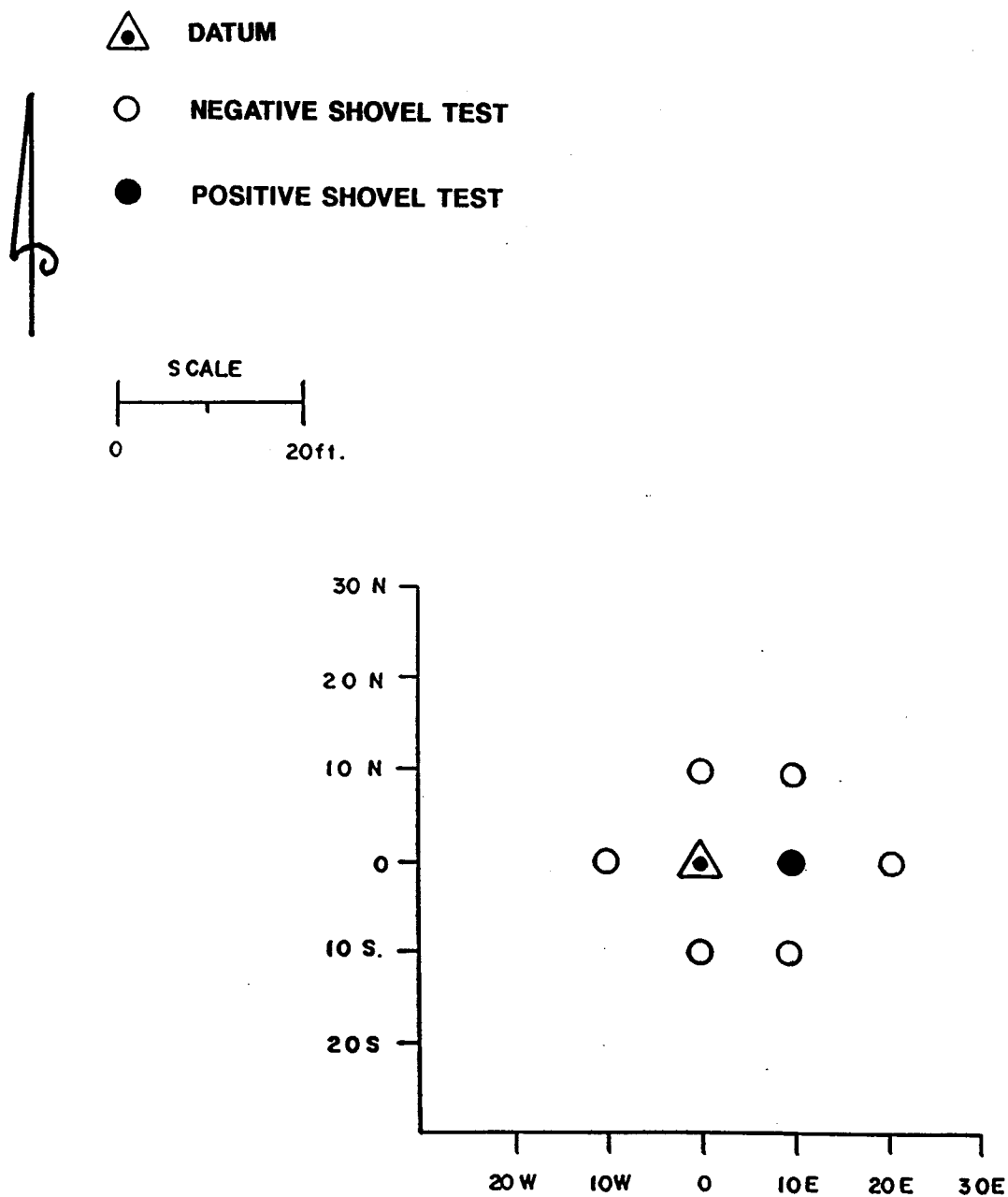


FIGURE 4-3. Map Showing Close-Interval (10-Ft) Shovel Test Pattern Around A4.5 Findspot.

Forty-three shovel tests were proposed for excavation in Area B. Shovel tests were placed at 50-foot intervals along three transects that ran north of, and perpendicular to, a chainlink fence, which served as a baseline (see Figure 4-1). All tests proposed for excavation in Area B were dug.

Soils profiles from shovel testing in Area B were fairly consistent, consisted of very dark grayish brown (10YR 4/2) to grayish brown (10YR 5/2) silty clay topsoils to an average of 12 inches below the surface. These overlay brown silty clay subsoils to an average depth of 15.6 inches below the surface (see Appendix A). Shovel tests to the north of the study area appeared to be more mottled than elsewhere.

No cultural material was recovered from shovel testing in Area B.

4.2.3 Area C

Area C comprises the middle half (the parking lot portion) of 240 Vulcan Street. As indicated above, the northern portion of the parcel was covered with heavy storage racks and machinery, precluding testing. This is also near the former foundry location. The unit measures approximately 850 feet by 525 feet (about 10 acres in size) (see Figure 4-1). Area C is bounded on the south by Area A, on the east by the 280 Vulcan Street parcel (Area B); on the west by a fenceline and storage area; and on the north by the approximate three-acre heavy equipment machinery and storage rack area.

As indicated above, test coring was the method used in Area C. Ten out of the 12 proposed core location were able to be cored. The remaining two were in locations containing heavy equipment and racks (see Appendix A, Photos 5, 9, 10).

Soils from the test coring are described in general above. Specific stratigraphy is found in Appendix B. Basically, all cores went into native heavy clay subsoils, indicating a lack of an A horizon (see Appendix A, Photo 20). In a few locations, black fine sand (originally associated with the former foundry was found in core tests (see Appendix A).

No cultural material was observed in Area C.

4.2.4 Area D

Area D measures about 1,025 feet by 40 feet (one acre) in size. Located along the southern edge of the 240 and 280 Vulcan Street parcels, the unit is bounded on the west and north by paved parking lots and Area A; and on the south by Vulcan Street (see Figure 4-1; Appendix A, Photos 1 and 2).

A total of 22 shovel tests was proposed for excavation in Area D. The tests were placed at 50-foot intervals along two transects that ran east and parallel to Vulcan Street. Only two shovel tests were not able to be excavated, due to the presence of subsurface utilities (see Appendix B).

Soils from shovel testing in Area D generally consisted of dark grayish brown (10YR 4/2) or very dark grayish brown (10YR 3/2) clayey silt to an average depth of 12.1 inches below the surface. These overlay yellowish brown (10YR 5/4) to brownish yellow (10YR 6/6) sandy clay subsoils to an average depth of 17.9 inches below the surface (see Appendix B).

5. STAGE 1B SUMMARY AND RECOMMENDATIONS

5.1 SUMMARY

Stage 1B archaeological investigations were completed at the proposed GM Plant Expansion project, in the Town of Tonawanda, Erie County, New York. Historic map, atlas, site file and literature research suggested a low sensitivity for the recovery of historic archaeological resources within the project area and a low to moderate sensitivity for prehistoric archaeological resources.

Stage 1B archaeological field investigations included systematic (50-foot)) shovel testing within portions of the project parcel where feasible (i.e., Areas A, B, C and D) and test coring through a concrete parking lot in order to determine if original ground surfaces might be intact that would hold archaeological sites.

A total of 108 shovel tests and ten test cores were excavated across the two parcels considered to be conducive to testing (i.e., 240 and 280 Vulcan Street). Five of these tests, all in study area A, were found to contain prehistoric cultural material. Shovel tests A4.3, A4.5, and A5.3 each contained a flake fragment. Shovel test A5.4 contained a flake fragment and a core fragment. Shovel test A5.5 contained a whole flake, a flake fragment and a scraper (see Appendix B). Only one of the radial tests contained additional cultural material, although the amount of gravel and debris and fill in some of the tests made it difficult to determine in the field if an object was cultural or not. Laboratory analysis later determined that most of the material in the radials was not.

Overall, analyses of the recovered material suggests that the GM material were most likely brought in when the low, wet area was filled.

5.2 RECOMMENDATIONS

No further archaeological investigations are recommended for the GM Expansion Plant project. Historic impacts to the 47-acre project area have included construction into nearly all of the original ground surfaces (i.e., 344 Vulcan Street parcel) and/or filling formerly low and wet areas to grade (study area A and C).

Although a few prehistoric lithic reduction flakes were found in shovel testing in Area A, subsequent lithic identification and laboratory analysis indicated that the material was not in its original context. The flakes had been most likely re-deposited from their original location(s), which are completely unknown. The lithics were sometimes mixed with modern debris (e.g., bottle glass, whiteware sherds) and mottled fill soils (see Appendix B). It was not surprising to find some evidence of prehistoric activity in this area. As discussed above, the entire region paralleling the river were undoubtedly utilized by prehistoric populations, as reported by early archaeologists (see Table 3-2). The material retrieved from the small filled area at the GM Expansion Plant project is not considered to be culturally important. It lacks context and cultural affiliation.

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Processing and identification of prehistoric artifacts recovered at the project area during the course of the investigations were conducted by Todd P. Harrington. Production of this report was a joint effort involving numerous individuals. Principal author of the report was Carolyn A. Pierce with contributions by Todd Harrington and Robert Peltier. Word was done by Barbara Miller. Drafting and graphics expertise was provided by Robert Peltier. Report production was completed by Todd Harrington and Robert Peltier.

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